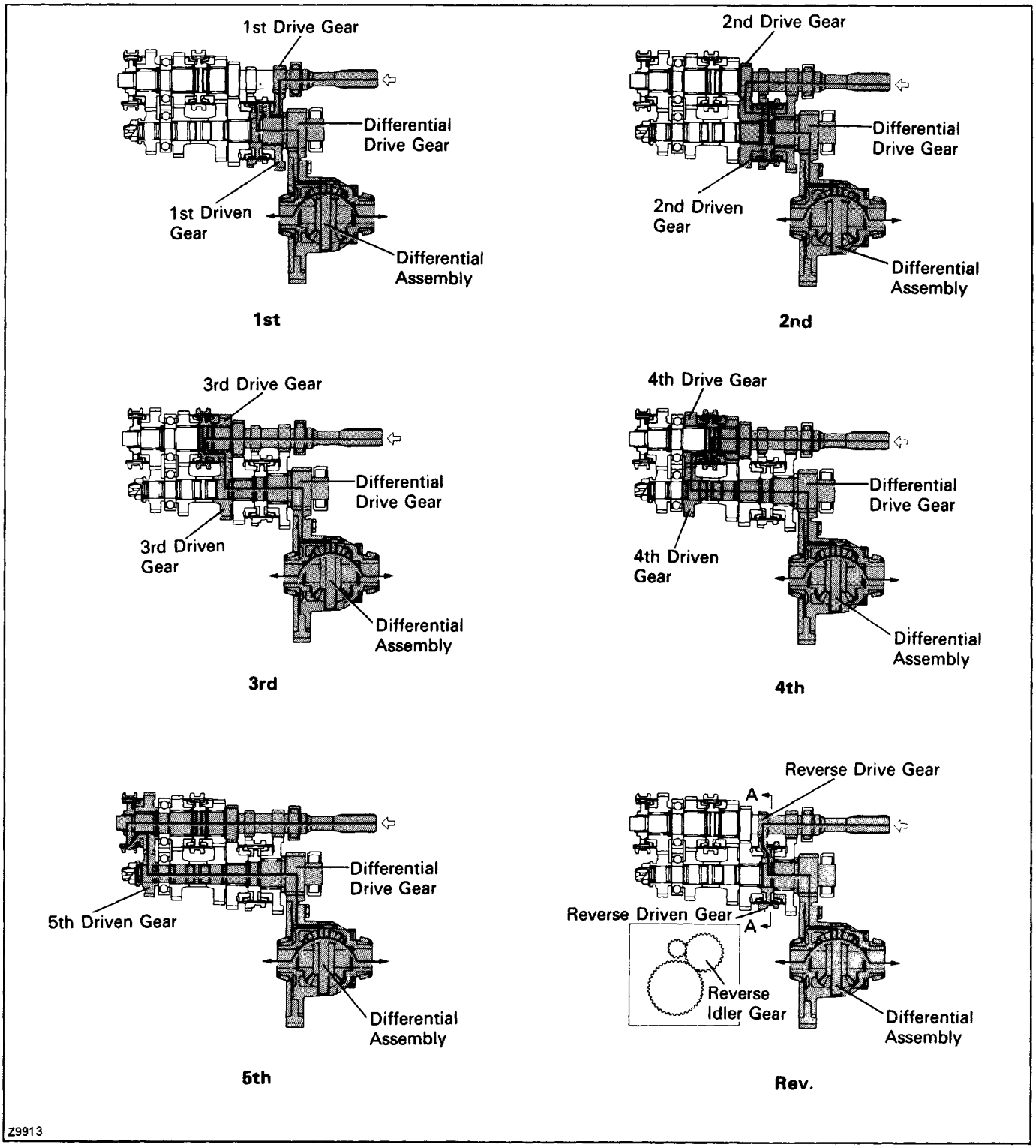
MANUAL TRANSAXLE

(C52 TRANSAXLE/2WD) DESCRIPTION

- Transaxle types C52 is composed 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 is as follows: API GL–4 or GL–5 SAE 75W–90
- The illustrations below show the engagements of transaxle gears.



PRECAUTIONS

When working with FIPG material, you must be 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
Noise	Transmission or differential faulty Wrong oil grade Oil level low	Disassemble and inspect transmission or differential Replace oil Add oil	MT–12
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–12 SA–21
Hard to shift or will not shift	Control cable faulty Transmission faulty	Replace control cable Disassemble and inspect transmission	 MT–12
Jump out of gear	Transmission faulty	Disassemble and inspect transmission	MT–12

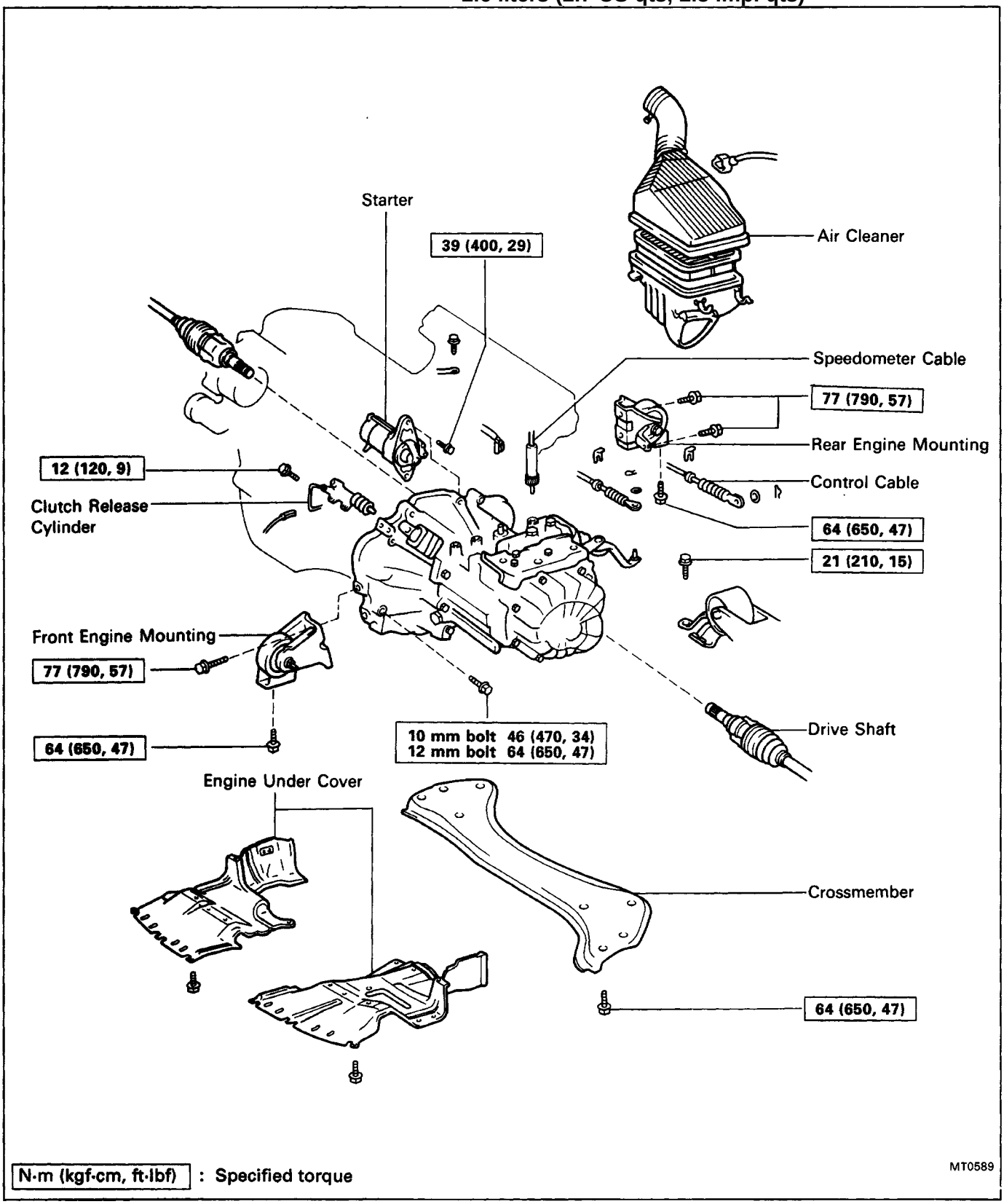


REMOVAL AND INSTALLATION OF TRANSAXLE

Remove and install the parts as shown.

HINT:

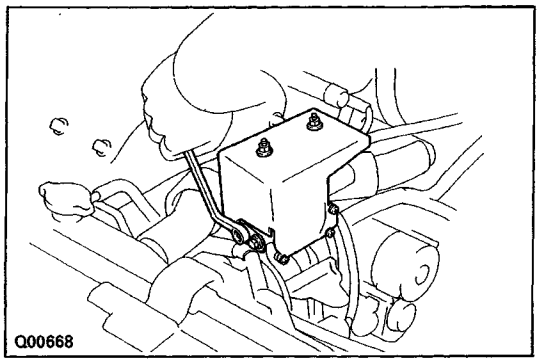
Oil capacity C52 and S53
2.6 liters (2.7 US qts, 2.3 Imp. qts)



REMOVAL OF TRANSAXLE

1. REMOVE NEGATIVE BATTERY GABLE

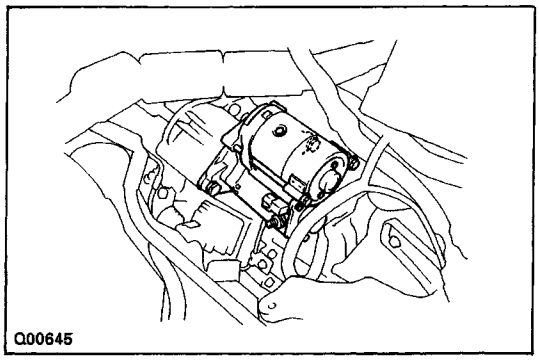
2. REMOVE AIR CLEANER CASE ASSEMBLY WITH AIR HOSE



3. REMOVE CRUISE CONTROL ACTUATOR

(a) Disconnect the connector.

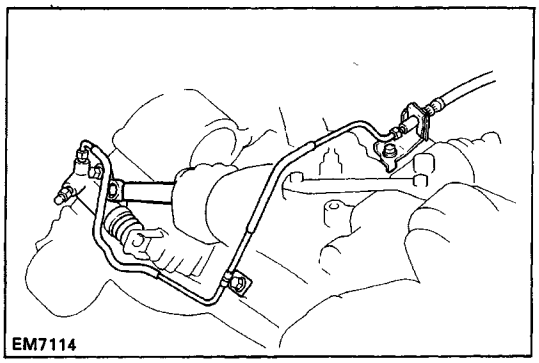
(b) Remove the four bolts and control actuator with bracket.



4. REMOVE STARTER

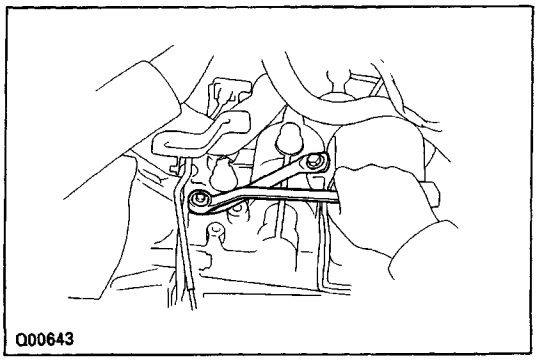
(a) Disconnect the connector and wire from the starter.

(b) Remove the two bolts and starter.



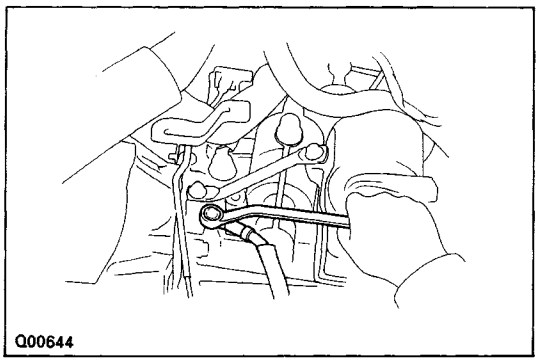
5. REMOVE CLUTCH RELEASE– CYLINDER WITHOUT DISCONNECTING TUBE

Remove the four– bolts, release cylinder and tube from the transaxle.

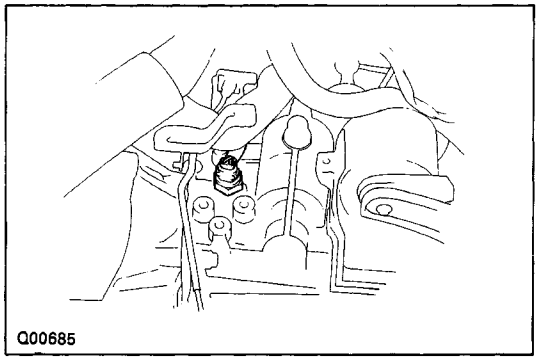


6. REMOVE ENGINE MOUNTING LEFT STAY

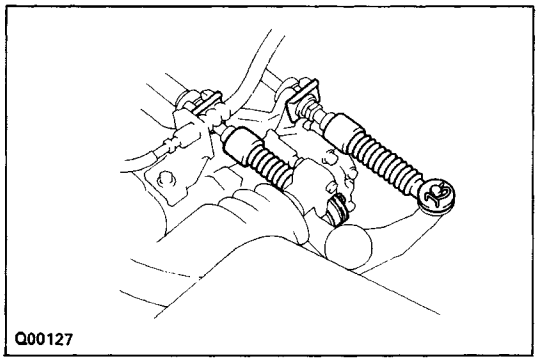
Remove the bolt, nut and mounting left stay.



7. REMOVE EARTH CABLE



8. DISCONNECT BACK–UP LIGHT SWITCH CONNECTOR



9. DISCONNECT CONTROL CABLES

(a) Remove the clips and washers.

(b) Remove the retainer from the cables.

10. DISCONNECT SPEEDOMETER CABLE

11. REMOVE TRANSAXLE MOUNTING BOLTS OF TRANSAXLE CASE UPPER SIDE

12. REMOVE ENGINE LEFT MOUNTING BOLTS OF ENGINE LEFT MOUNTING UPPER SIDE

13. REMOVE FRONT WHEEL

14. RAISE VEHICLE

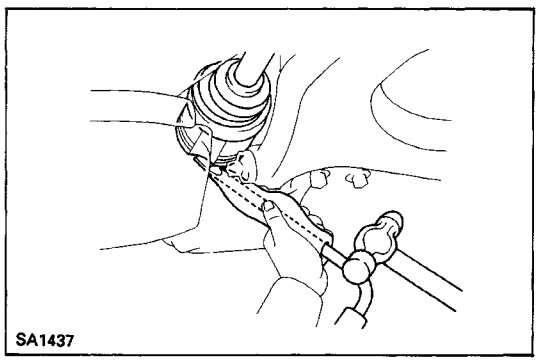
NOTICE: Be sure the vehicle is securely supported.

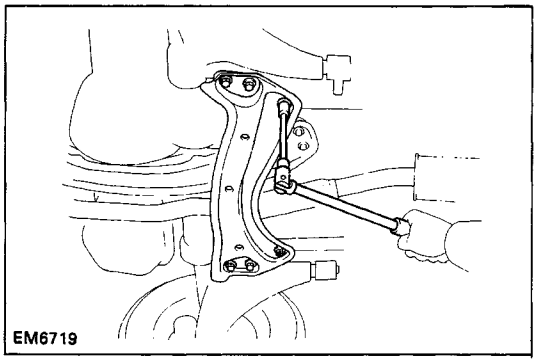
15. REMOVE UNDER COVERS

16. DRAIN TRANSAXLE OIL

17. REMOVE DRIVE SHAFT

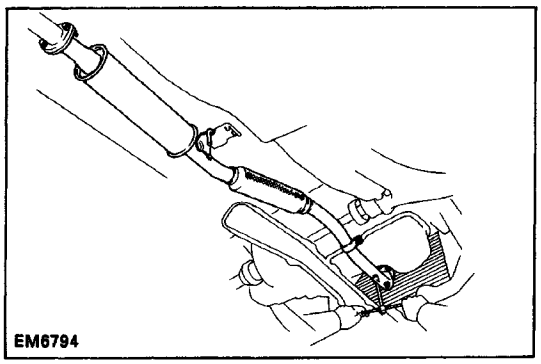
(See page SA–17, 18)





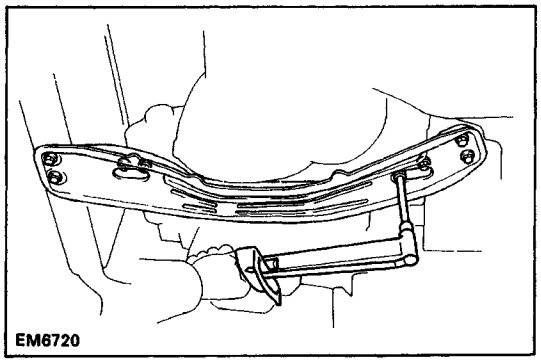
18. REMOVE LOWER CROSSMEMBER

Remove the four bolts, two nuts and lower crossmember.



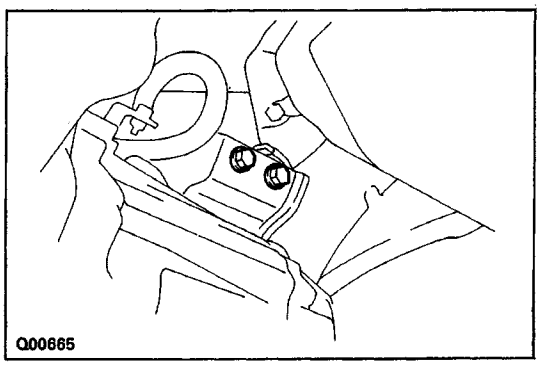
19. REMOVE FRONT EXHAUST PIPE

(a) Remove the three nuts.
(b) Remove the two bolts.
(c) Loosen the bolt, and disconnect the clamp from the support bracket.
(d) Disconnect the support hock on the front exhaust pipe from the support bracket, and remove the front exhaust pipe.



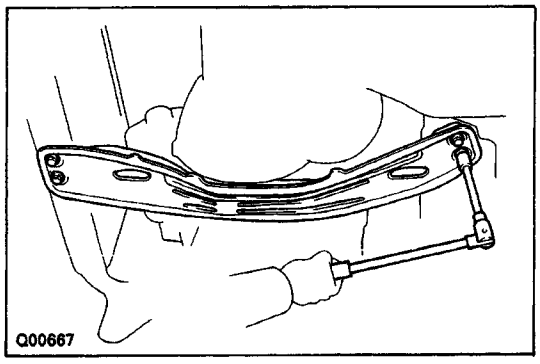
20. DISCONNECT ENGINE MOUNTING FROM CENTER MEMBER

Remove the two hole plugs and four bolts.



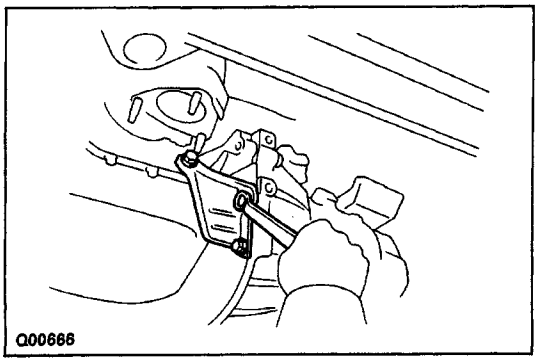
21. DISCONNECT ENGINE LEFT MOUNTING

Remove the two bolts.



22. REMOVE CENTER MEMBER

(a) Raise the transaxle and engine slightly with a hock and wooden block in between.
(b) Remove the four bolts and center member.



23. REMOVE STIFFENER PLATE

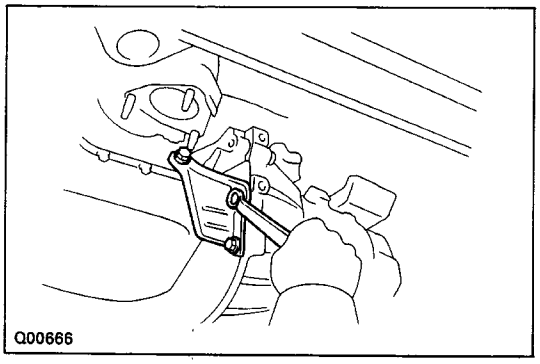
24. REMOVE TRANSAXLE

(a) Remove the transaxle mounting bolts.
(b) Lower the engine left side and remove the transaxle from the engine.

INSTALLATION OF TRANSAXLE

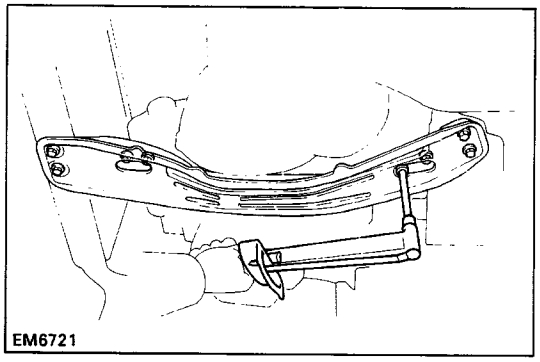
1. INSTALL TRANSAXLE TO ENGINE

(a) Align the input shaft spline with the clutch disc and install the transaxle to engine.



2. INSTALL STIFFENER PLATE

Torque: 37 N–m (380 kgf–cm, 27 ft–lbf)



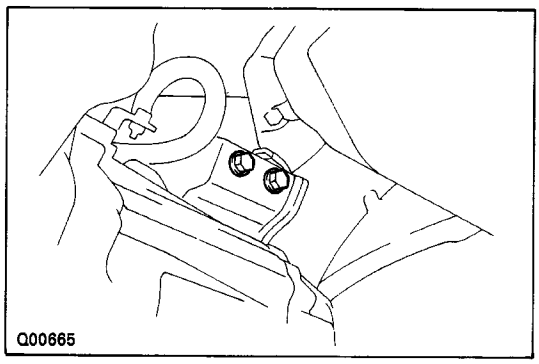
3. INSTALL CENTER MEMBER

(a) Install the center member with the four bolts.

Torque: 52 N–m (530 kgf–cm, 38 ft–lbf)

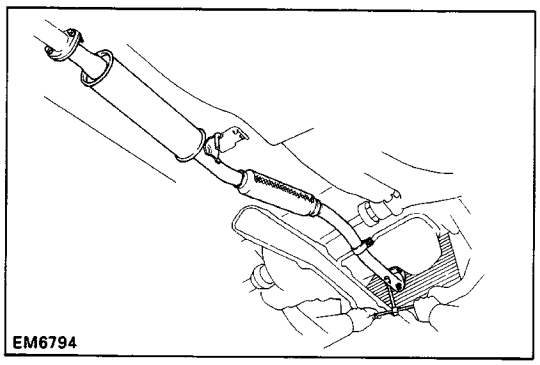
(b) Install and torque the four bolts holding the insulators to the center member.

Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)



4. CONNECT ENGINE LEFT MOUNTING

Torque: 63 N–m¿650 kgf–cm, 47 ft–lbf j



5. INSTALL FRONT EXHAUST PIPE

(a) Install the support hook on the front exhaust pipe to the support bracket.

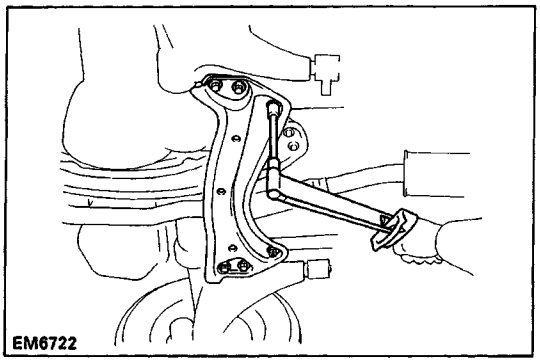
(b) Install and torque the three nuts.

Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)

(c) Install and torque the two bolts and nuts.

Torque: 43 N–m (440 kgf–cm, 32 ft–lbf)

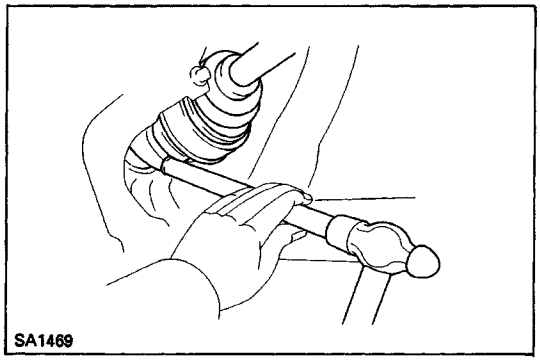
(d) Install the clamp with the bolt.



6. INSTALL LOWER CROSSMEMBER

Install the lower crossmember with the four bolts and two nuts.

Torque: 152 N–m (1,550 kgf–cm, 112 ft–lbf)



7. INSTALL DRIVE SHAFT

(See page SA–17, 18)

8. FILL TRANSAxLE WITH GEAR OIL

Oil: Gear oil super (08885–02106) or equivalent
Recommended oil

Oil grade:

API GL–3, 4 or 5

Viscosity:

SAE 75W–90
Above –18˚C (0˚F) SAE 90
Below –18˚C (0˚F) SAE 75W

9. INSTALL UNDER COVERS

10. INSTALL FRONT WHEEL AND LOWER VEHICLE

Torque: 103 N–m (1,050 kgf–cm, 76 ft–lbf)

11. INSTALL ENGINE LEFT MOUNTING BOLTS OF ENGINE LEFT MOUNTING UPPER SIDE

Torque: 63 N–m (650 kgf–cm, 47 ft–lbf)

12. INSTALL TRANSAXLE MOUNTING BOLTS OF TRANSAXLE CASE UPPER SIDE

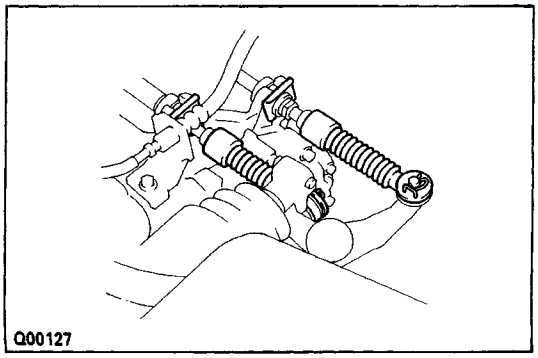
Torque: 10 mm bolt 46 N–m (470 kgf–cm, 34 ft–lbf)
12 mm bolt 64 N–m l650 kgf–cm, 47 ft–lbf)

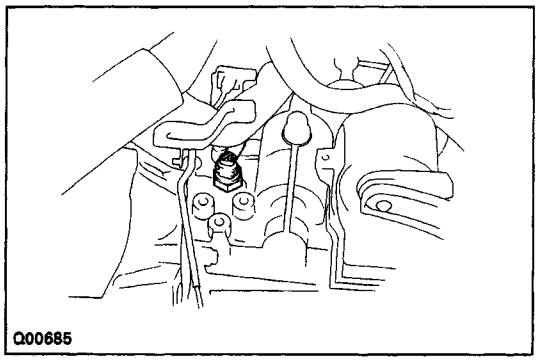
13. CONNECT SPEEDOMETER CABLE

14. CONNECT CONTROL CABLES

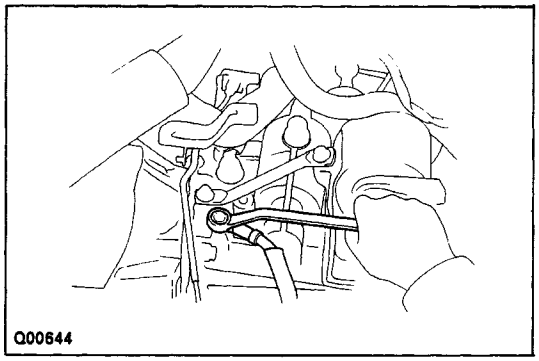
(a) Install the retainer to the cables.

(b) Connect the cables to the linkage with washers and clips.



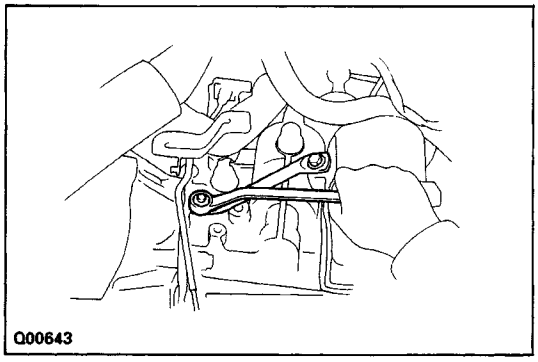


15. CONNECT BACK–UP LIGHT SWITCH CONNECTOR



16. INSTALL EACH CABLE

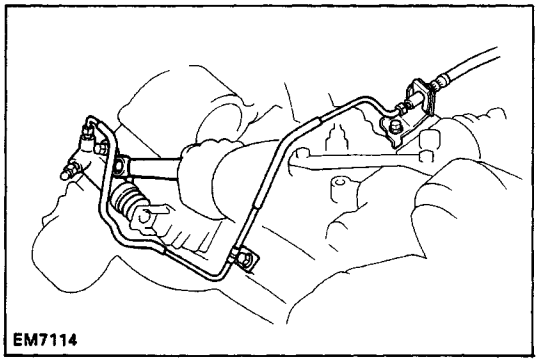
Torque: 21 N–m (21o kgf–cm, 15 ft–lbf)



17. INSTALL ENGINE MOUNTING LEFT STAY

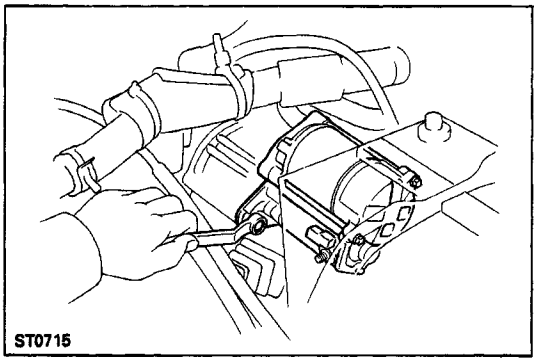
Install the mounting left stay with the bolt and nut.

Torque: 21 N–m (210 kgf–cm, 15 ft–lbf)



18. INSTALL CLUTCH RELEASE CYLINDER

Install the release cylinder and tube with the four bolts.



19. INSTALL STARTER

(a) Install the starter with the two bolts.

Torque: 39 N–m l400 kgf–cm, 29 ft–lbf)

(b) Connect the starter wire with the nut.

(c) Connect the starter connector.

20. INSTALL CRUISE CONTROL ACTUATOR

(a) Install the cruise control actuator with bracket the four bolts.

(b) Connect the connector.

21. INSTALL AIR CLEANER CASE ASSEMBLY WITH AIR HOSE

22. INSTALL NEGATIVE BATTERY CABLE

23. BLEEDING OF CLUTCH SYSTEM

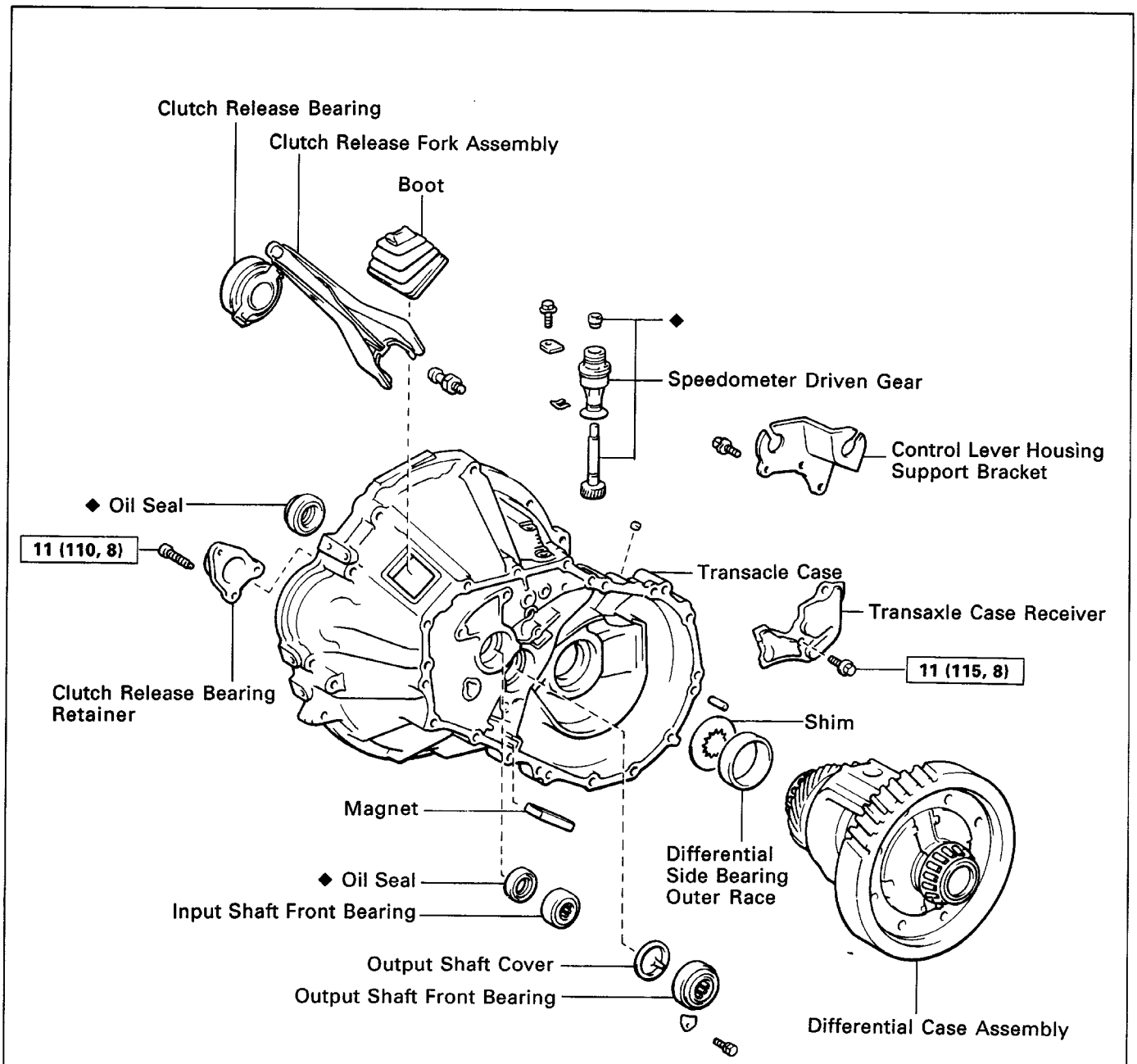
(See page CL–4)

24. PERFOPM ROAD TEST

Check for abnormal noise and smooth shifting.

REMOVAL OF COMPONENT PARTS

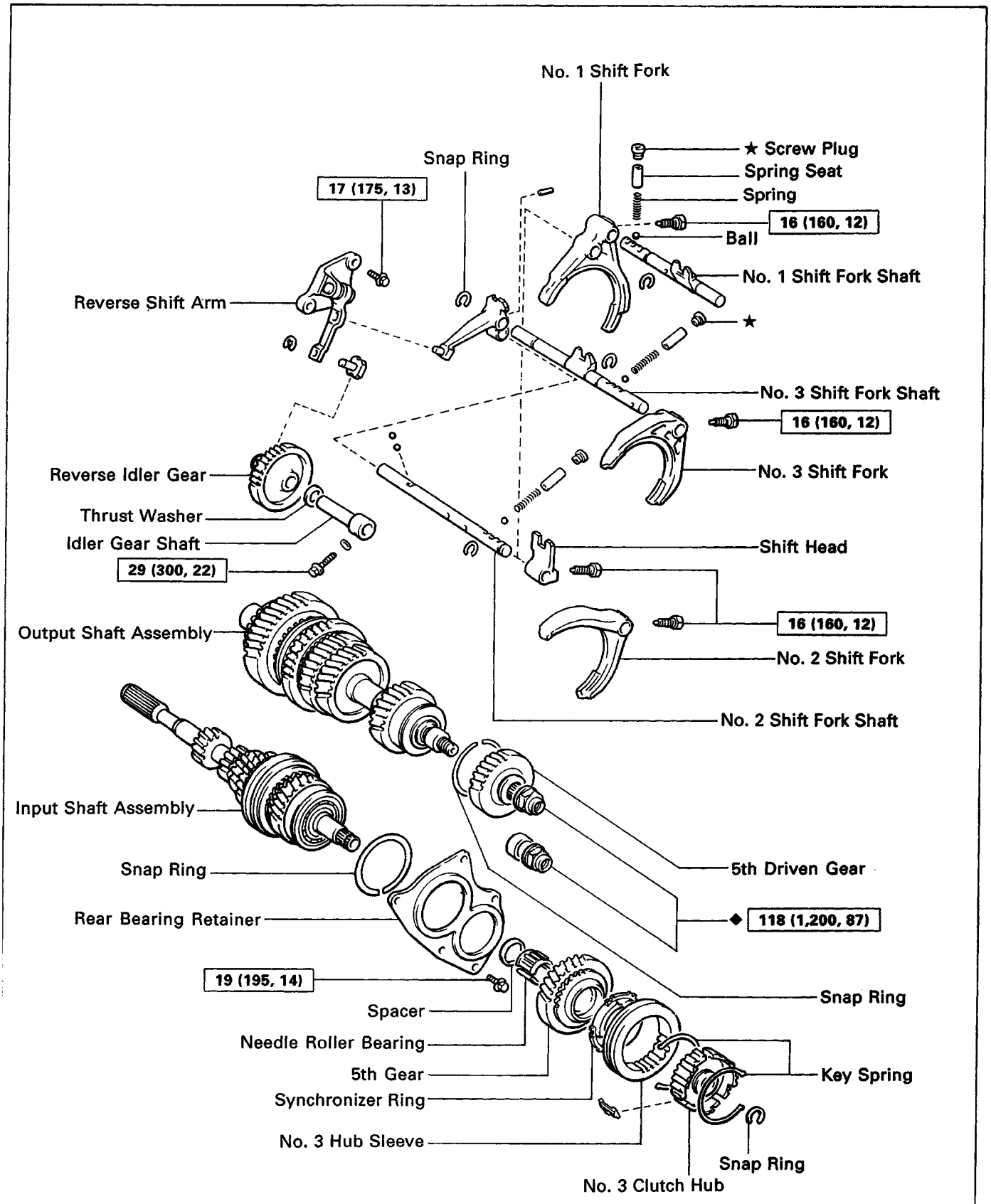
COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

Q00609

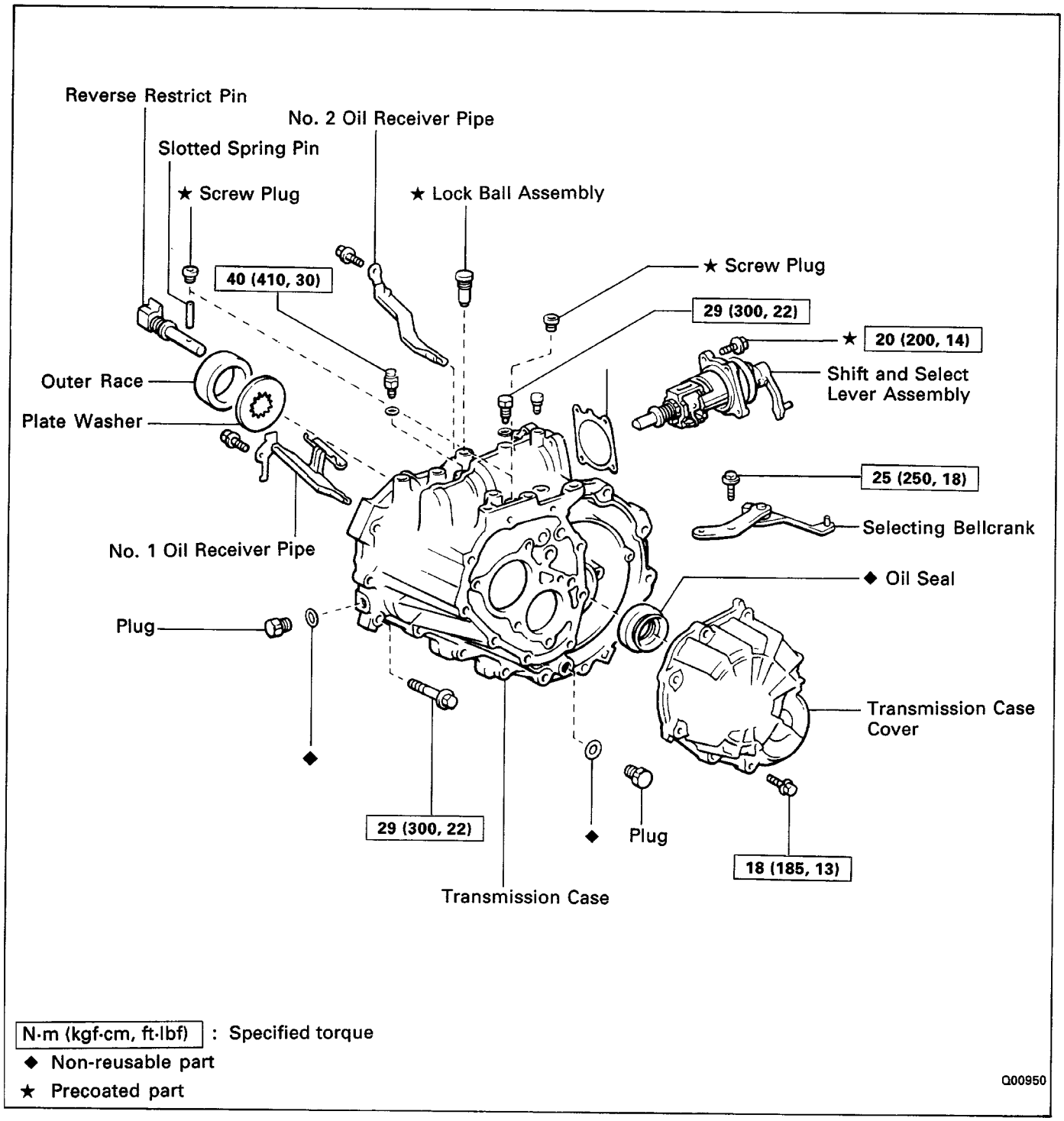
COMPONENTS (Cont'd)

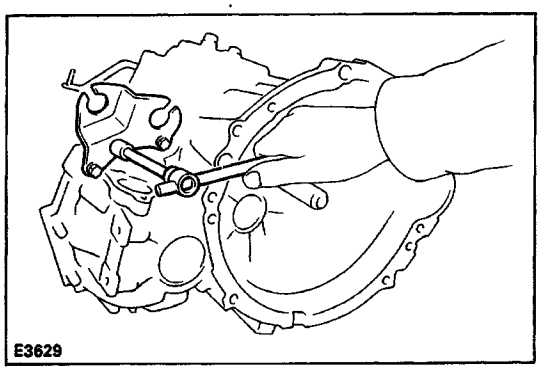


N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

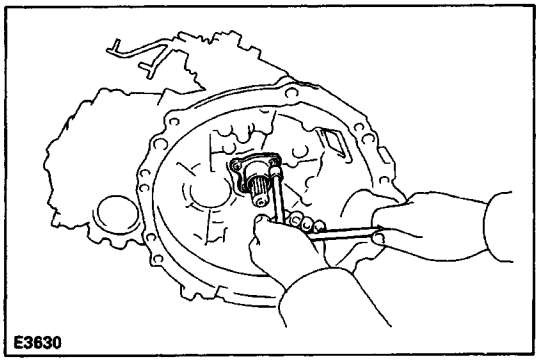
Q00810

COMPONENTS (Cont'd)

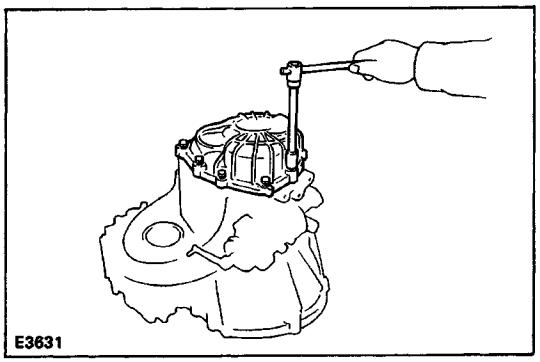




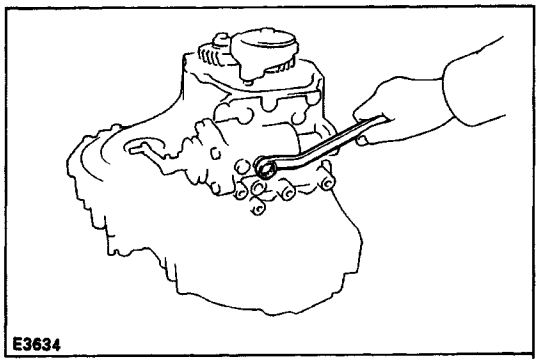
1. REMOVE RELEASE FORK, BEARING AND
2. SPEEDOMETER DRIVEN GEAR
3. REMOVE BACK–UP LIGHT SWITCH
4. REMOVE SELECTING BELLCRANK ASSEMBLY
5. REMOVE CONTROL LEVER HOUSING SUPPORT BRACKET



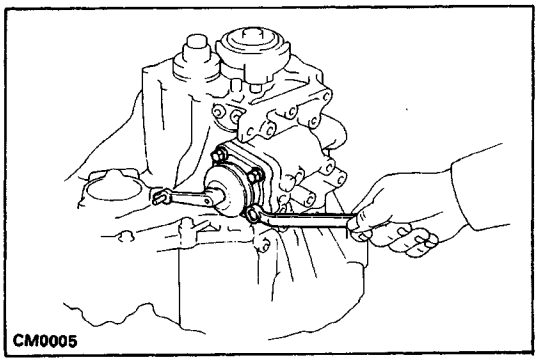
6. REMOVE FRONT BEARING RETAINER
Using a trox wrench, remove the three trox screws.
Trox wrench T30 09042–00010



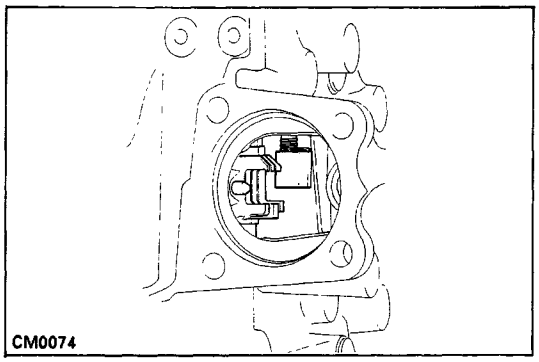
7. REMOVE TRANSMISSION CASE COVER



8. REMOVE SHIFT AND SELECT LEVER SHAFT ASSEMBLY
(a) Remove the lock bolt.



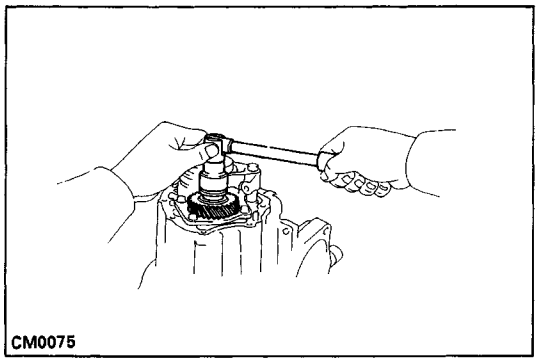
(b) Remove the four bolts and pull out the shift and select lever shaft assembly.



9. REMOVE LOCK NUT

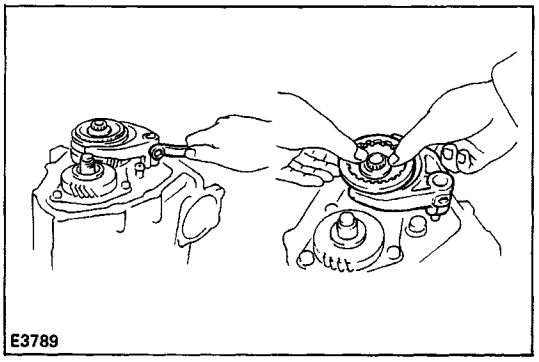
(a) Engage the gear double meshing.

(b) Using a hammer and chisel, loosen the staked part of the nut.



(c) Remove the lock nut.

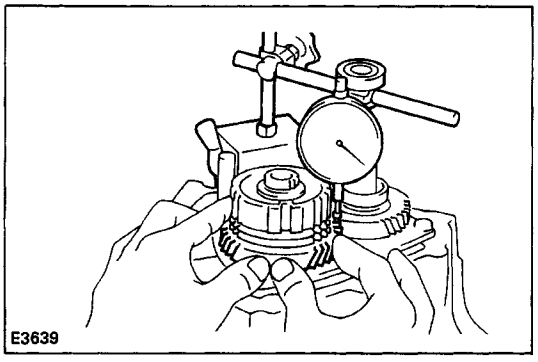
(d) Disengage the gear double meshing.



10. REMOVE NO. 3 HUB SLEEVE AND NO. 3 SHIFT FORK

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

(b) Remove the No. 3 hub sleeve and shift fork.

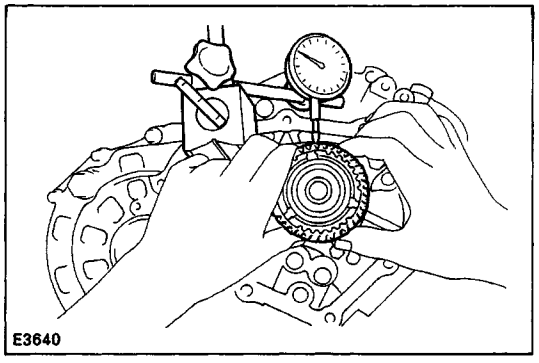


11. INSPECT FIFTH GEAR OIL CLEARANCE

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 (0.056 in.)



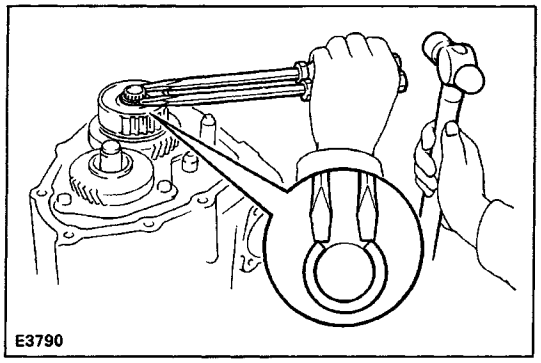
12. INSPECT FIFTH GEAR OIL CLEARANCE

Using a dial indicator, measure the oil clearance.

Standard clearance: 0.015 – 0.058 mm (0.0006 – 0.0023 in.)

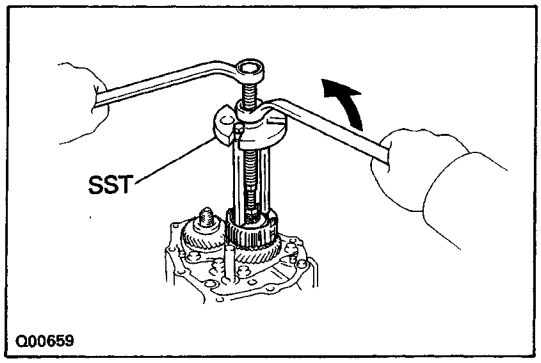
Maximum clearance: 0.070 mm (0.0028 in.)

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



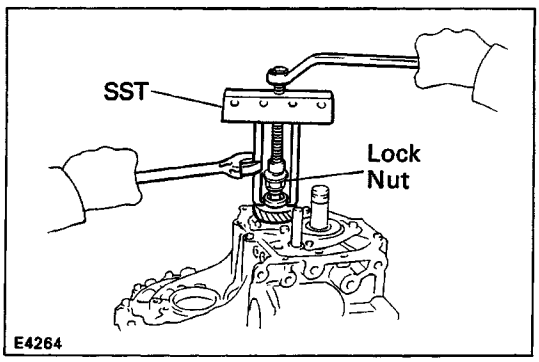
13. REMOVE NO. 3 CLUTCH HUB AND FIFTH GEAR

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



(b) Using SST, remove the No. 3 clutch hub.
SST 09310–17010 (09310–07010, 09310–07020, 09310–07030)

(c) Remove the synchronizer ring, 5th gear and needle roller bearing.

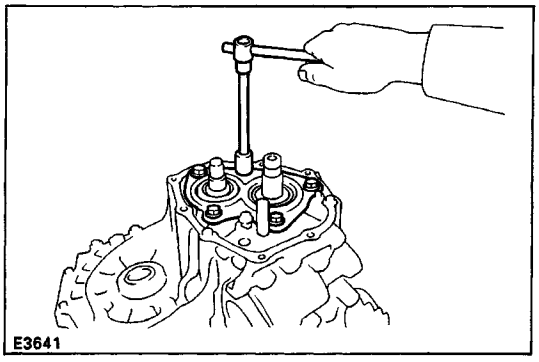


14. REMOVE FIFTH DRIVEN GEAR

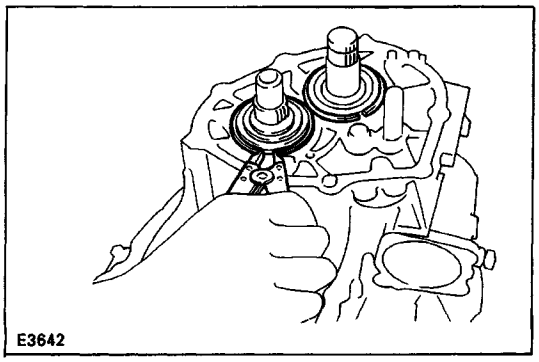
(a) Install the lock nut to the output shaft shown in the illustration.

(b) Using SST, remove the 5th driven gear.
SST 09213–36020

(c) Remove the lock nut.

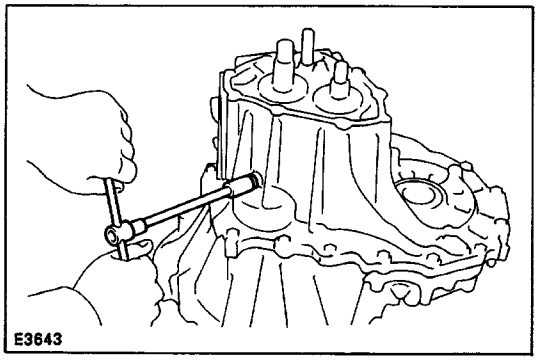


15. REMOVE REAR BEARING RETAINER

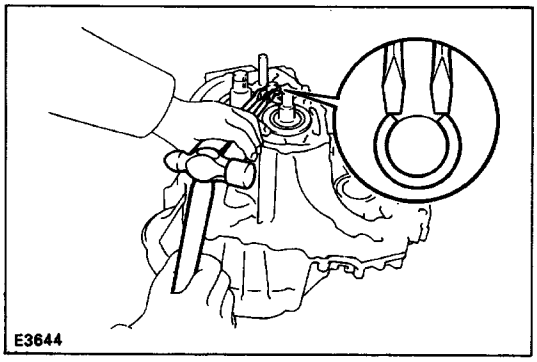


16. REMOVE BEARING SNAP RINGS

Using a snap ring expander, remove the two snap ring.
HINT: If it is difficult to remove the snap rings, pull up the shafts.

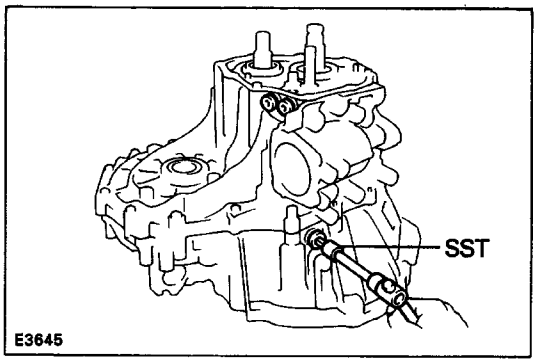


17. REMOVE REVERSE IDLER GEAR SHAFT LOCK BOLT



18. REMOVE SNAP RING FROM NO. 2 SHIFT FORK SHAFT

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

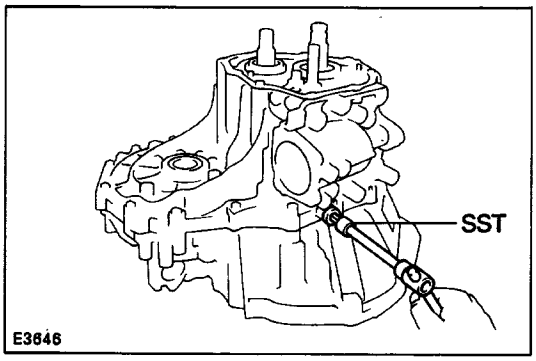


19. REMOVE PLUGS, SEATS, SPRINGS, BALLS AND LOCK BALL ASSEMBLY

(a) Using SST, remove the three plugs.

SST 09313–30021

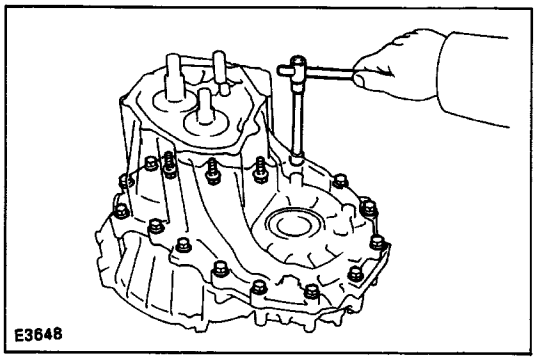
(b) Using a magnetic finger, remove the three spring seats, springs and balls.



20. REMOVE LOCK BALL ASSEMBLY

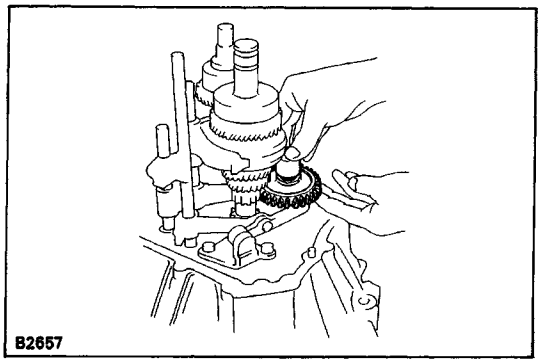
Using SST, remove the lock ball assembly.

SST 09313–30021

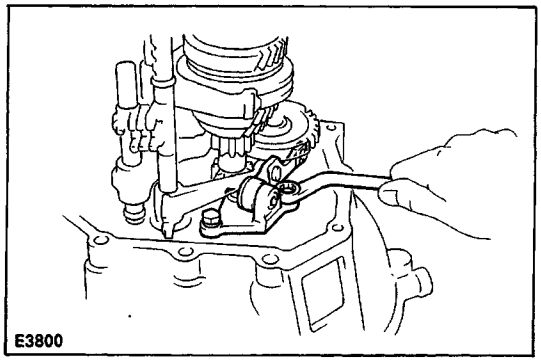


21. REMOVE TRANSMISSION CASE

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

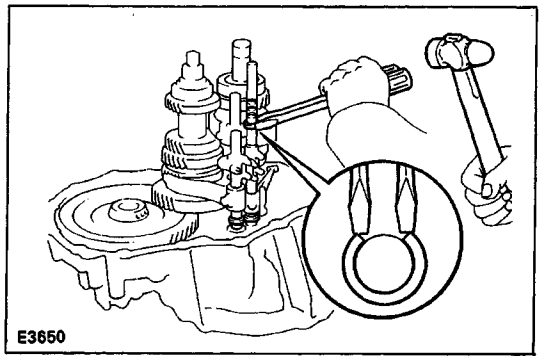


22. REMOVE RESERVE IDLER GEAR, THRUST WASHER AND SHAFT



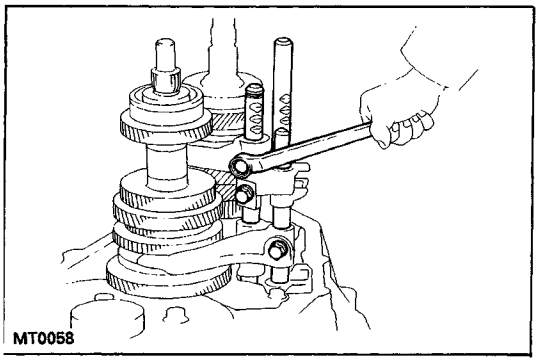
23. REMOVE REVERSE SHIFT ARM BRACKET

Remove the two bolts and bracket.

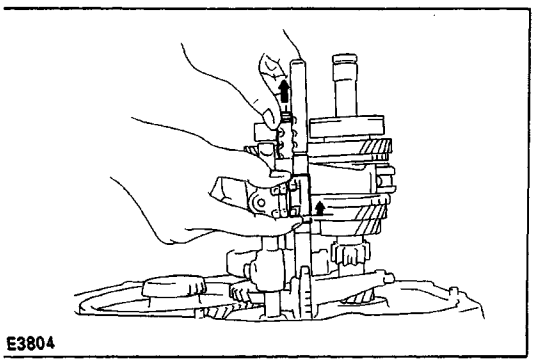


24. REMOVE SHIFT FORKS AND SHIFT FORK SHAFTS

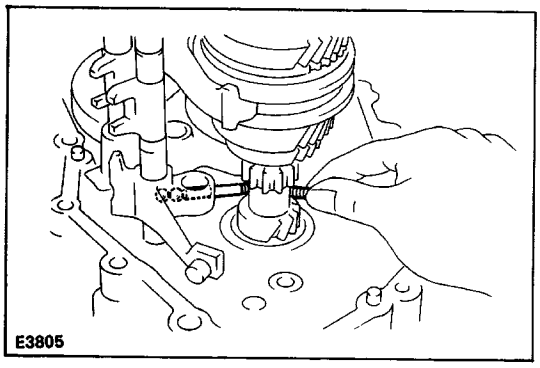
(a) Using two screwdrivers and a hammer, tap out the three snap rings.



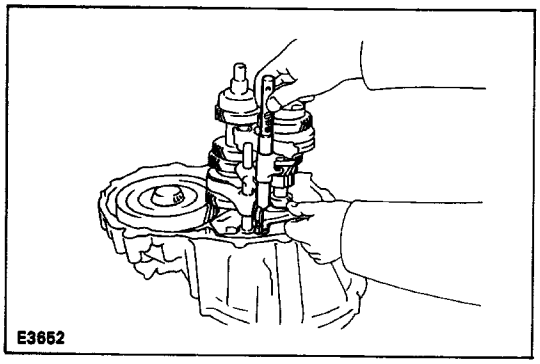
(b) Remove the three set bolts.



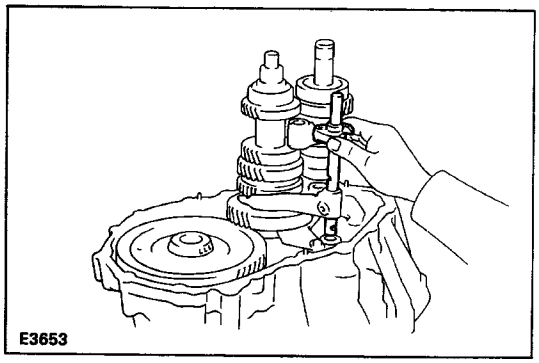
(c) Pull up No. 3 shift fork shaft, remove the No. 2 fork shaft and the shift head.



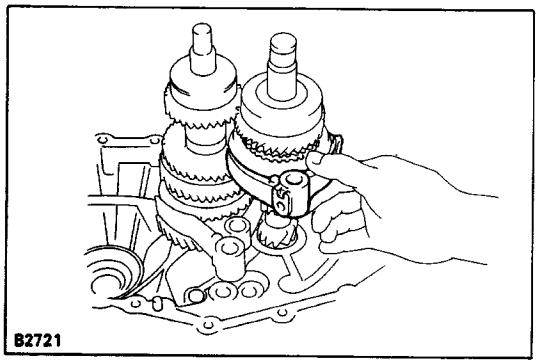
(d) Using a magnetic finger, remove the two balls from the reverse shift fork.



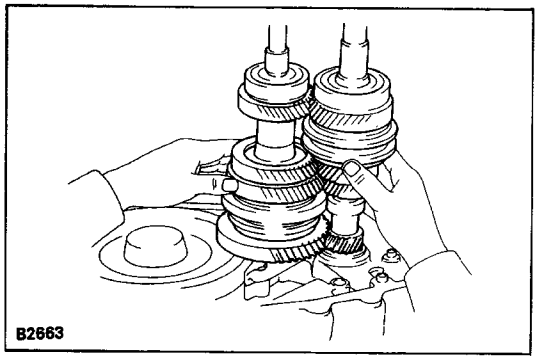
(e) Remove the No. 3 fork shaft and the reverse shift fork.



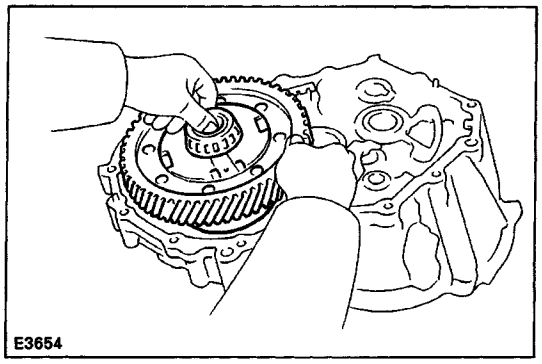
(f) Pull out the No. 1 fork shaft.



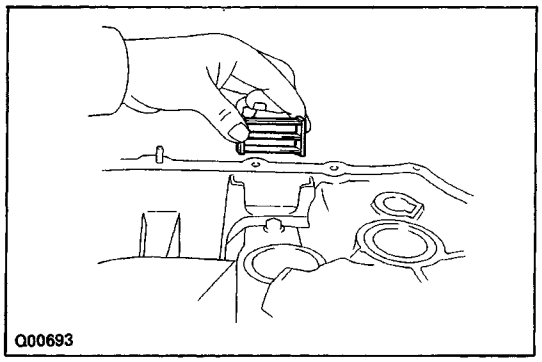
(g) Remove the No. 1 and No. 2 shift forks.



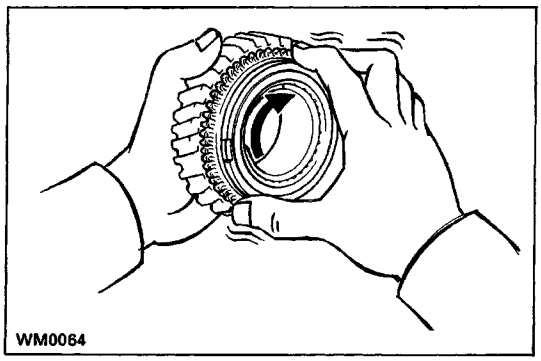
25. REMOVE INPUT AND OUTPUT SHAFTS TOGETHER FROM TRANSAXLE CASE



28. REMOVE DIFFERENTIAL ASSEMBLY



27. REMOVE MAGNET FROM TRANSAXLE CASE



INSPECTION OF COMPONENT PARTS

1. INSPECTION SYNCHRONIZER RING OF FIFTH GEAR

(a) Check for wear or damage.

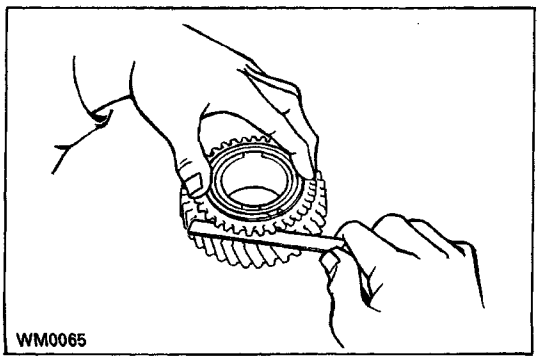
(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear– cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by apply a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

Check again the braking effect of the synchronizer ring.

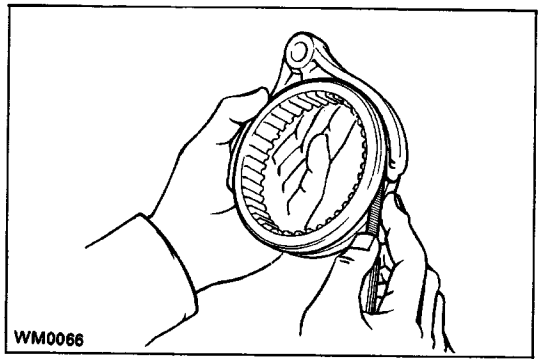


(c) Measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance: 0.6 mm 10.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

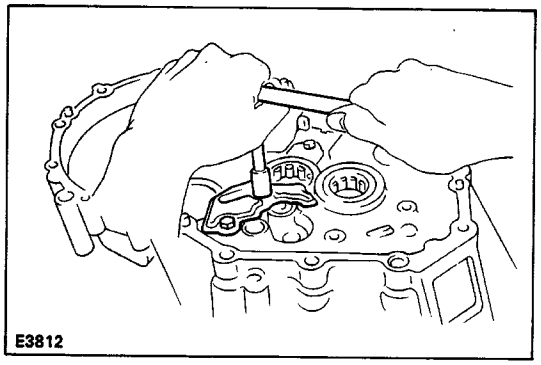


2. INSPECT CLEARANCE OF SHIFT FORK AND HUB SLEEVE

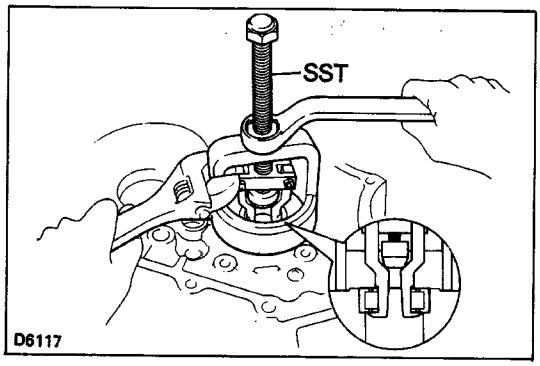
Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

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

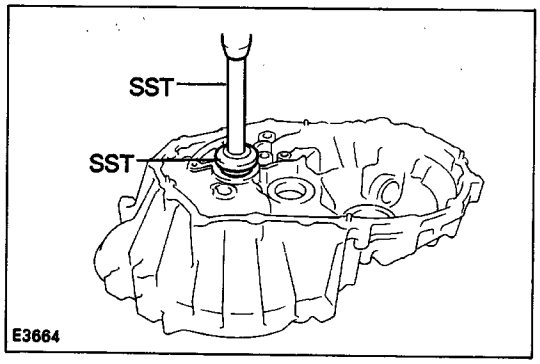


3. REMOVE TRANSAXLE CASE RECEIVER

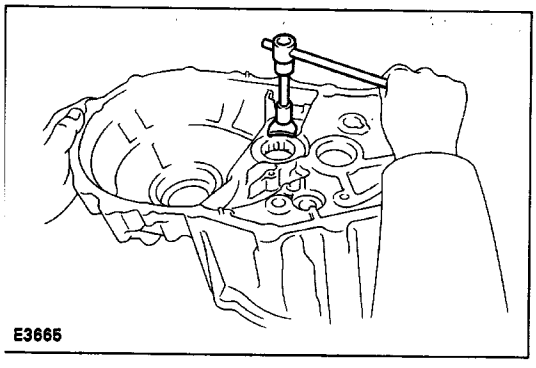


4. IF NECESSARY, REPLACE INPUT SHAFT FRONT BEARING

(a) Using SST, pull out the bearing.
SST 09612–65014

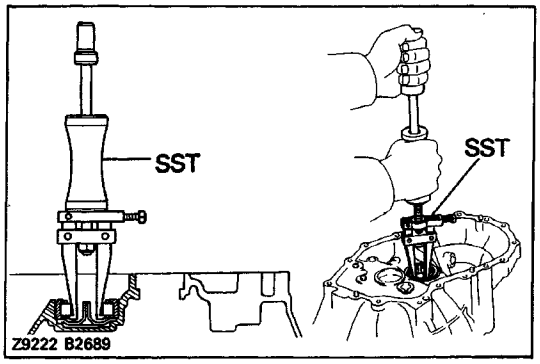


(b) Using SST and press, install a new bearing.
SST 09608–12010 (09608–03020, 09608–00030)

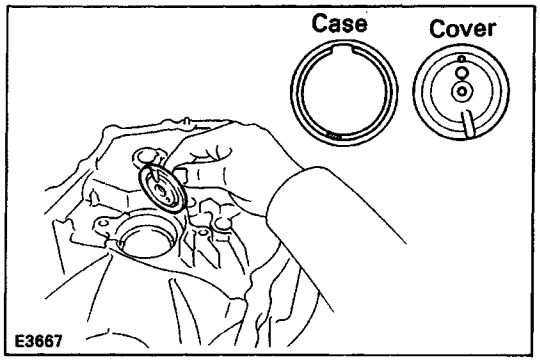


5. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT BEARING

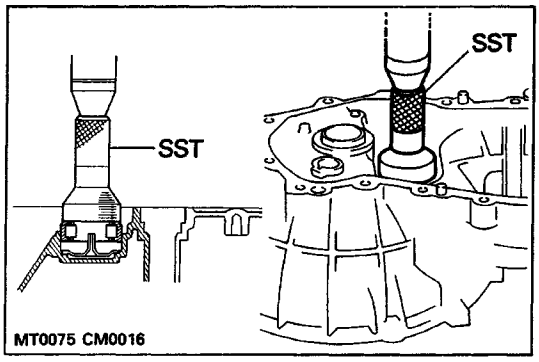
(a) Remove the bolt and bearing lock plate.



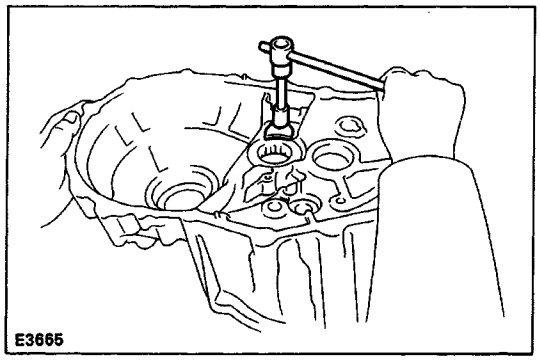
(b) Using SST, pull out the bearing.
SST 09308–04010
(c) Remove the output shaft front cover.



(d) Install the output shaft front cover.
HINT: Install the output front cover projection into the case side hollow.



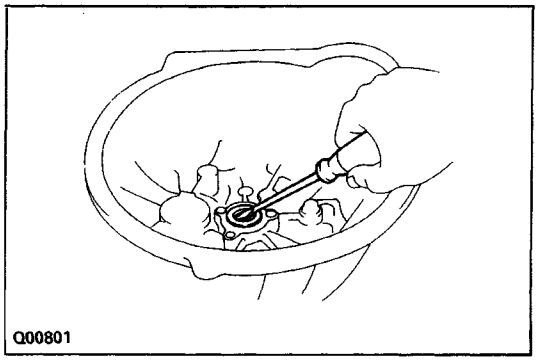
(e) Using SST and a press, install a new bearing.
SST 09310–35010

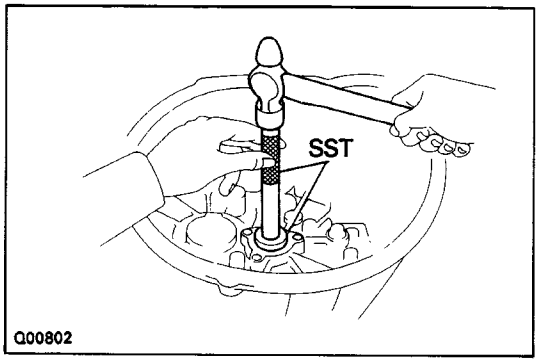


(f) Install the bearing lock plate and torque the bolt.
Torque: 11 N–m (715 kgf–cm, 8 ft–lbf)

6. IF NECESSARY, REPLACE INPUT SHAFT FRONT OIL SEAL

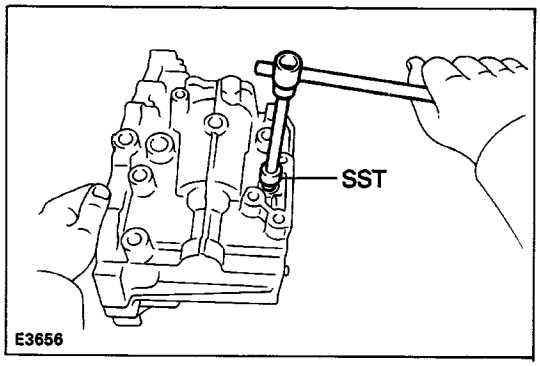
(a) Using a screwdriver, pry out the oil seal.



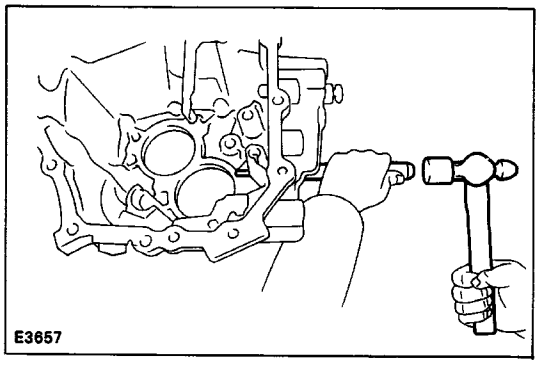


(b) Using SST, drive in a new oil seal.
SST 09608–12010 (09608–00020, 09608–00080)
(c) Coat the lip of the oil seal with MP grease.

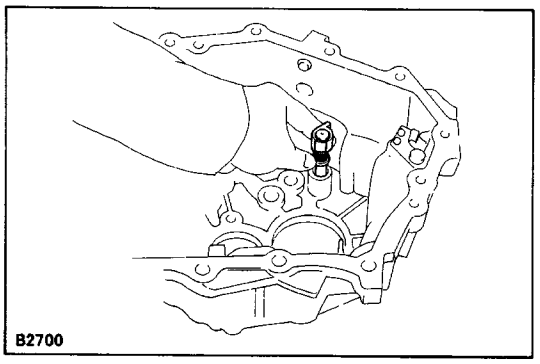
7. IF NECESSARY, REPLACE REVERSE RESTRICT PIN



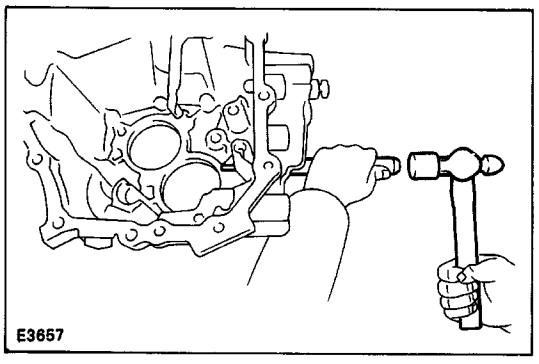
(a) Using SST, remove the straight screw plug.
SST 09313–30021



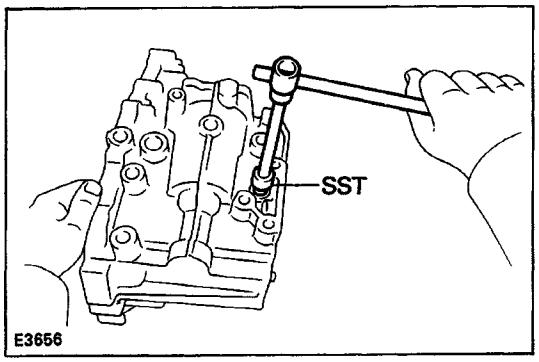
(b) Using a pin punch and hammer, drive out the slotted spring pin.



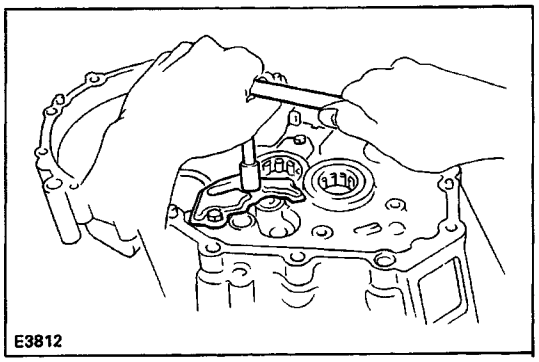
(c) Replace the reverse restrict pin.



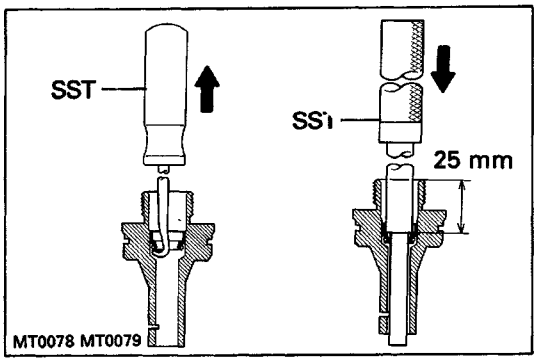
(d) Using a pin punch and hammer, drive in the slotted spring pin.



(e) Apply sealant to the screw plug threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(f) Using SST, install the straight screw plug.
SST 09313–30021
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)

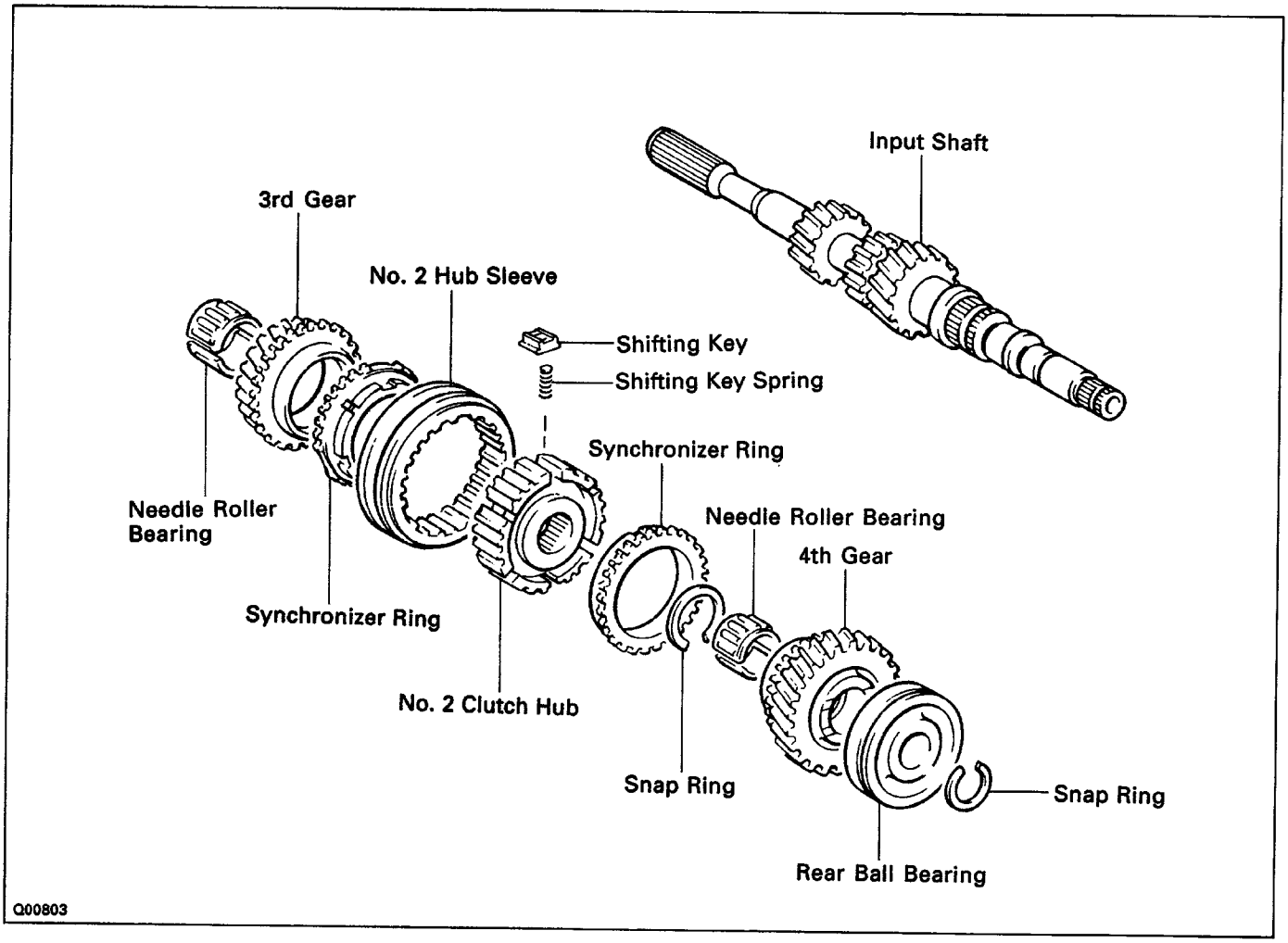


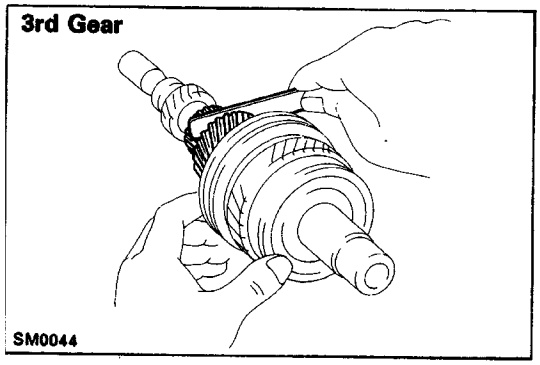
8. INSTALL AND TORQUE TRANSAXLE CASE RECEIVER
Torque: 11 N–m (115 kgf–cm, 8 ft–lbf)

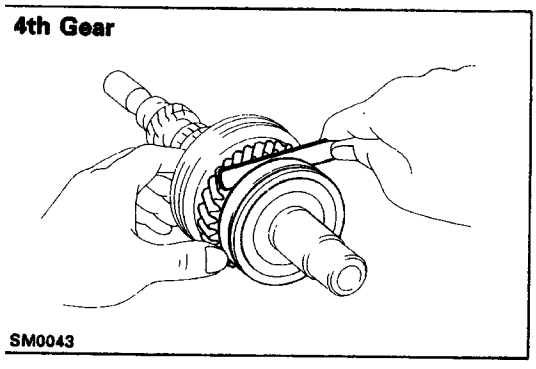


9. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL
(a) Using SST, pull out the oil seal.
SST 09921–00010
(b) Using SST, drive in a new oil seal.
SST 09201–60011
Drive in depth: 25 mm (0.98 in.)
(c) Coat the lip of the oil seal with MP grease.

COMPONENT PARTS
Input Shaft Assembly







DISASSEMBLY OF INPUT SHAFT ASSEMBLY

1. INSPECT 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.)

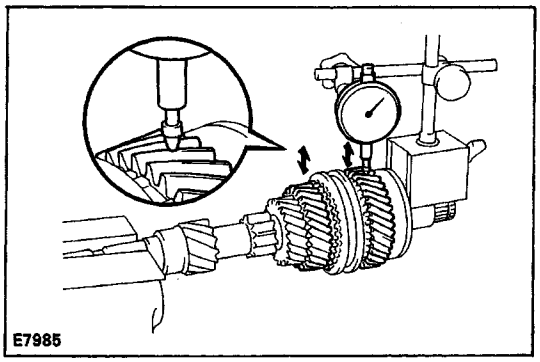
Maximum clearance:

3rd gear

0.40 mm (0.0157 in.)

4th gear

0.60 mm (0.0236 in.)



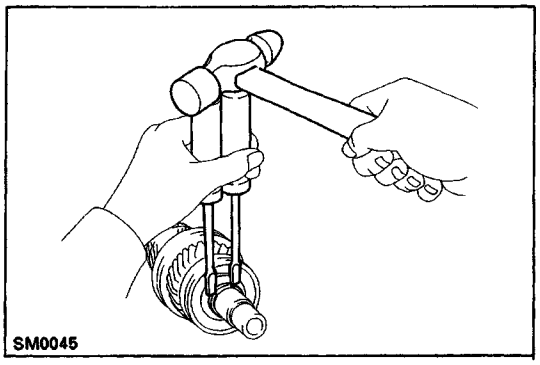
2. INSPECT THIRD AND FOURTH GEAR OIL CLEARANCE

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

Standard clearance:¿ 0.015 – 0.058 mm (0.00006 – 0.0023 in.)

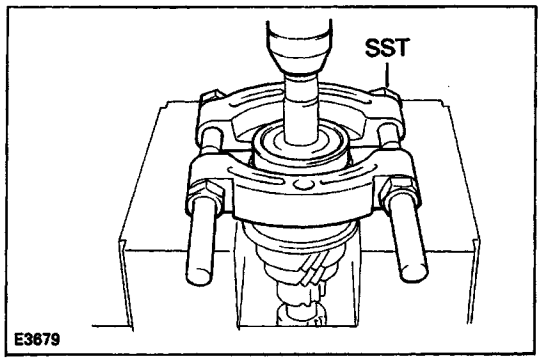
Maximum clearance: 0.070 mm (0.0028 in.)

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



3. REMOVE SNAP RING

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



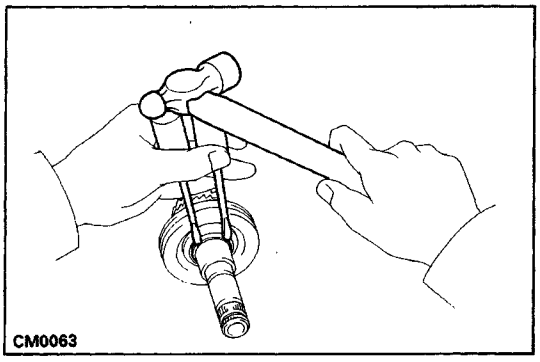
4. REMOVE REAR BALL BEARING, FOURTH GEAR, NEEDLE ROLLER BEARING, SPACER AND . SYNCHRONIZER RING FROM INPUT SHAFT

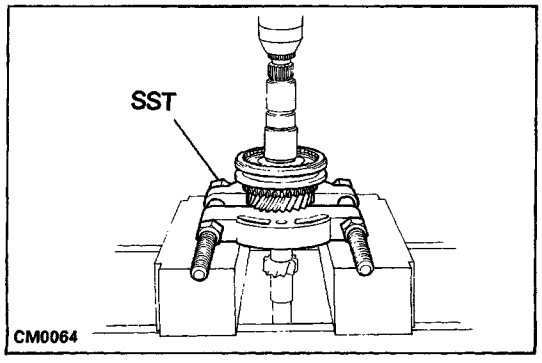
(a) Using SST and a press, remove the rear ball bearing.
SST 09950–00020

(b) Remove the 4th gear, needle roller bearing, spacer and synchronizer ring.

5. REMOVE SNAP RING

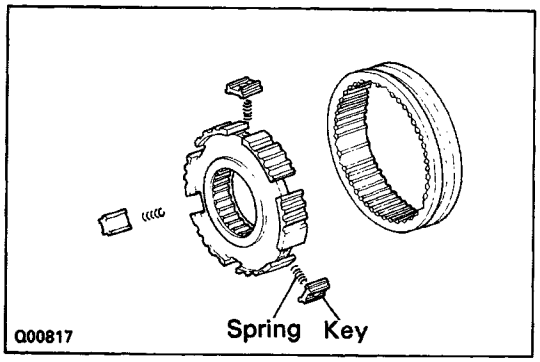
Using two screwdriver and a hammer, tap out the snap ring. . .





6. REMOVE NO. 2 HUB SLEEVE ASSEMBLY, THIRD GEAR, SYNCHRONIZER RING AND NEEDLE ROLLER BEARING

Using SST and a press, remove No. 2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearing.
SST 09950–00020



7. REMOVE NO. 2 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO. 2 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and springs from No. 2 clutch hub.

INSPECTION OF INPUT SHAFT COMPONENT PARTS

1. INSPECT SYNCHRONIZER RING FOR THIRD GEAR

(a) Check for wear or damage.

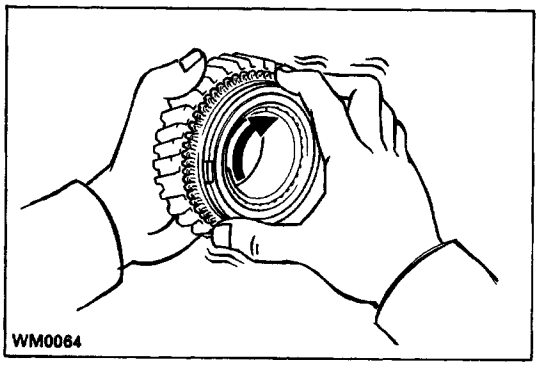
(b) Check the braking effect of the synchronizer ring.

Turn– the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

Check again the braking effect of the synchronizer ring.

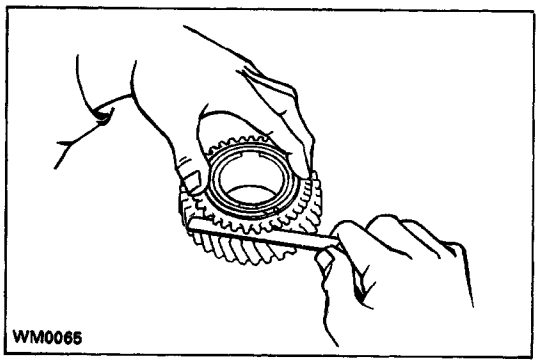


(c) Measure the clearance between the synchronizer ring back and gear spline end.

Maximum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.



2. INSPECT SYNCHRONIZER RING FOR FOURTH GEAR

(a) Check for wear or damage.

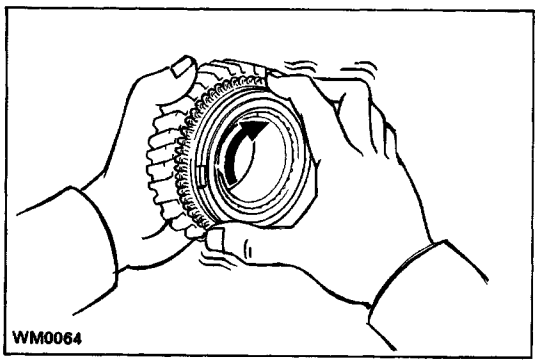
(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

Check again the braking effect of the synchronizer ring.

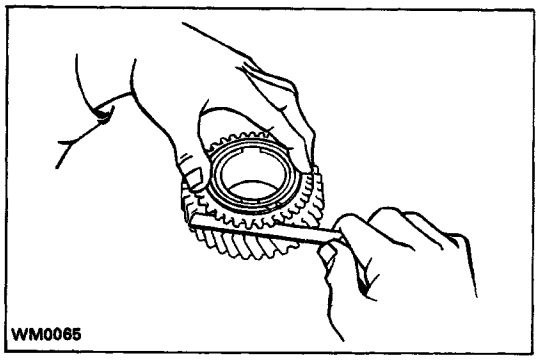


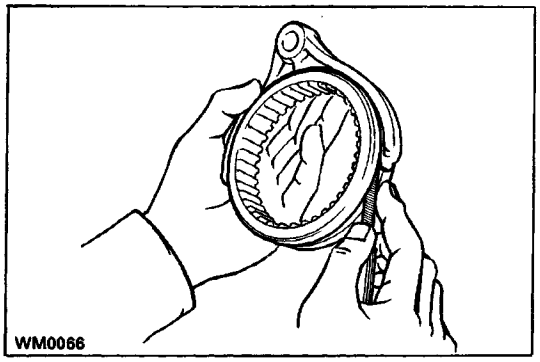
(c) Measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.



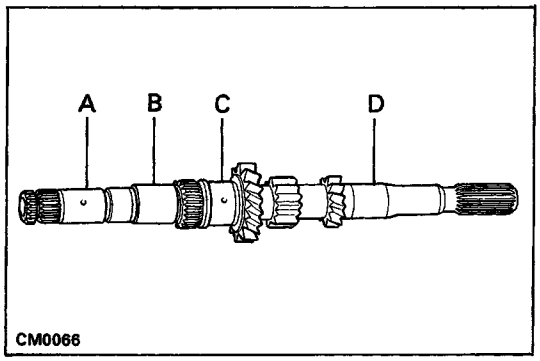


3. INSPECT CLEARANCE OF SHIFT FORK AND HUB SLEEVE

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 maximum, replace the shift fork or hub sleeve.



4. INSPECT INPUT SHAFT

(a) Check the input shaft for wear or damage.

(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

Maximum clearance:

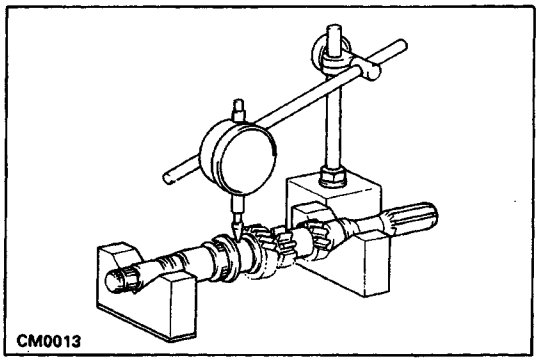
Part A
24.870 mm (0.9791 in.)
Part B
28.970 mm (1.1405 in.)
Part C
30.970 mm (1.2193 in.)
Part D
24.970 mm (0.9831 in.)

If the outer diameter exceeds the minimum, replace the input shaft.

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

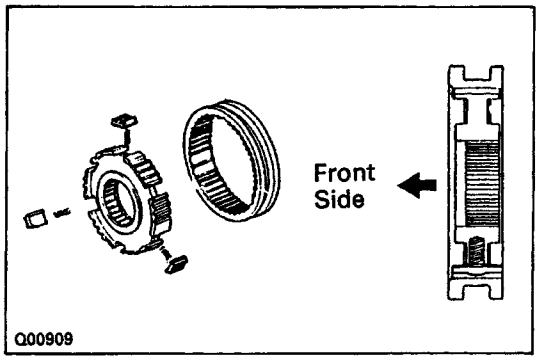
Maximum clearance: 0.05 mm (0.0020 in.)

If the runout exceeds the maximum, replace the input shaft.



ASSEMBLY OF INPUT SHAFT ASSEMBLY

(See page MT–26)

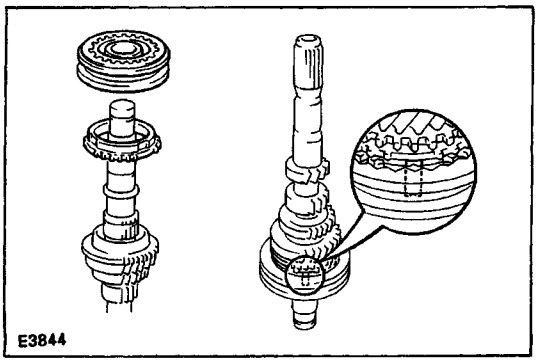


HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSTALL NO. 2 CLUTCH HUB INTO HUB SLEEVE

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

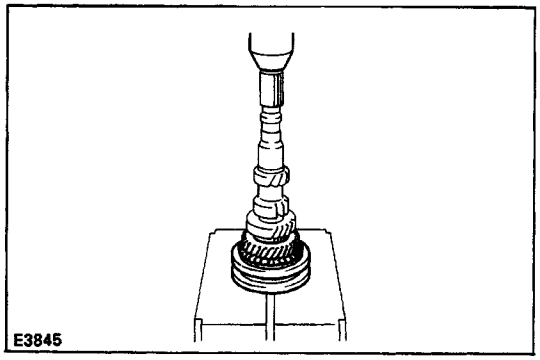
(b) Install the hub sleeve to the clutch hub.



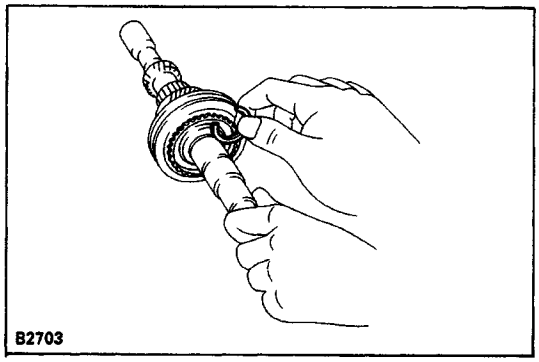
2. INSTALL THIRD GEAR, NEEDLE ROLLER BEARING, SYNCHRONIZER RING AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHAFT

(a) Apply gear oil to the needle roller bearing.

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



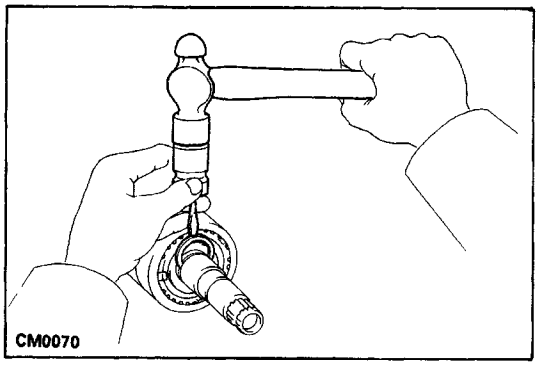
(c) Using a press, install the 3rd gear and No. 2 hub sleeve.



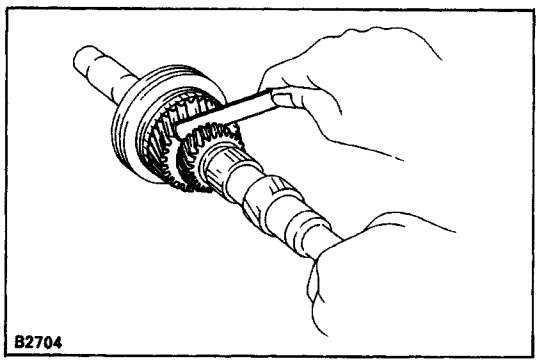
3. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
	2.30 (0.0906) 2.36 (0.0929) 2.42 (0.0953)	3 4 5	2.48 (0.0976) 2.54 (0.1000) 2.60 (0.1024)



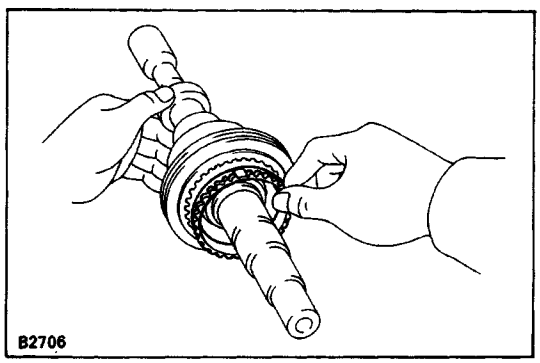
(b) Using a screwdriver and hammer, tap in the snap ring.



4. INSPECT THIRD GEAR THRUST CLEARANCE

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

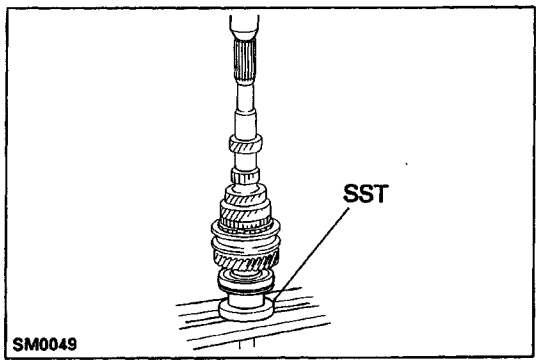
Standard clearance: 0.10 – 0.35 mm (0.0039 – 0.0138 in.)



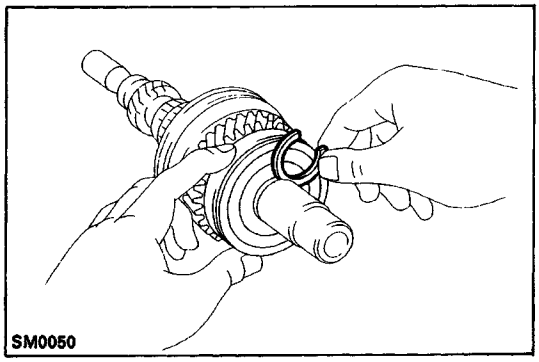
5. INSTALL SYNCHRONIZER RING, NEEDLE ROLLER BEARING, SPACER, FOURTH GEAR AND REAR BALL BEARING

(a) Apply gear oil to the needle roller bearing.

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



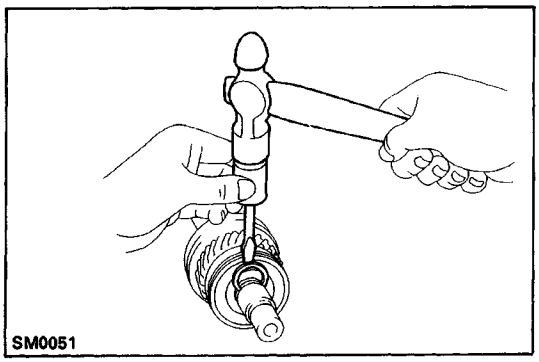
(c) Using SST and a press, install the rear ball bearing.
SST 09608–20012 (09608–03070)



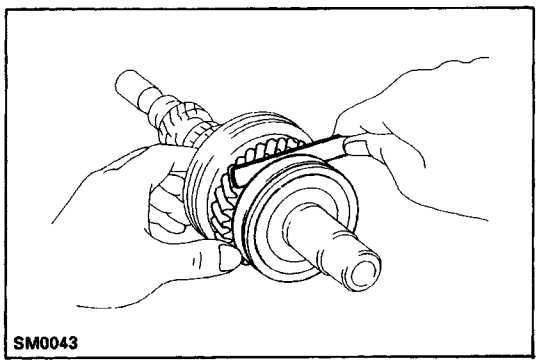
6. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.29 (0.0902)	D	2.47 (0.0972)
B	2.35 (0.0925)	E	2.53 (0.0996)
C	2.41 (0.0949)	F	2.59 (0.1020)



(b) Using a screwdriver and hammer, tap in the snap ring.



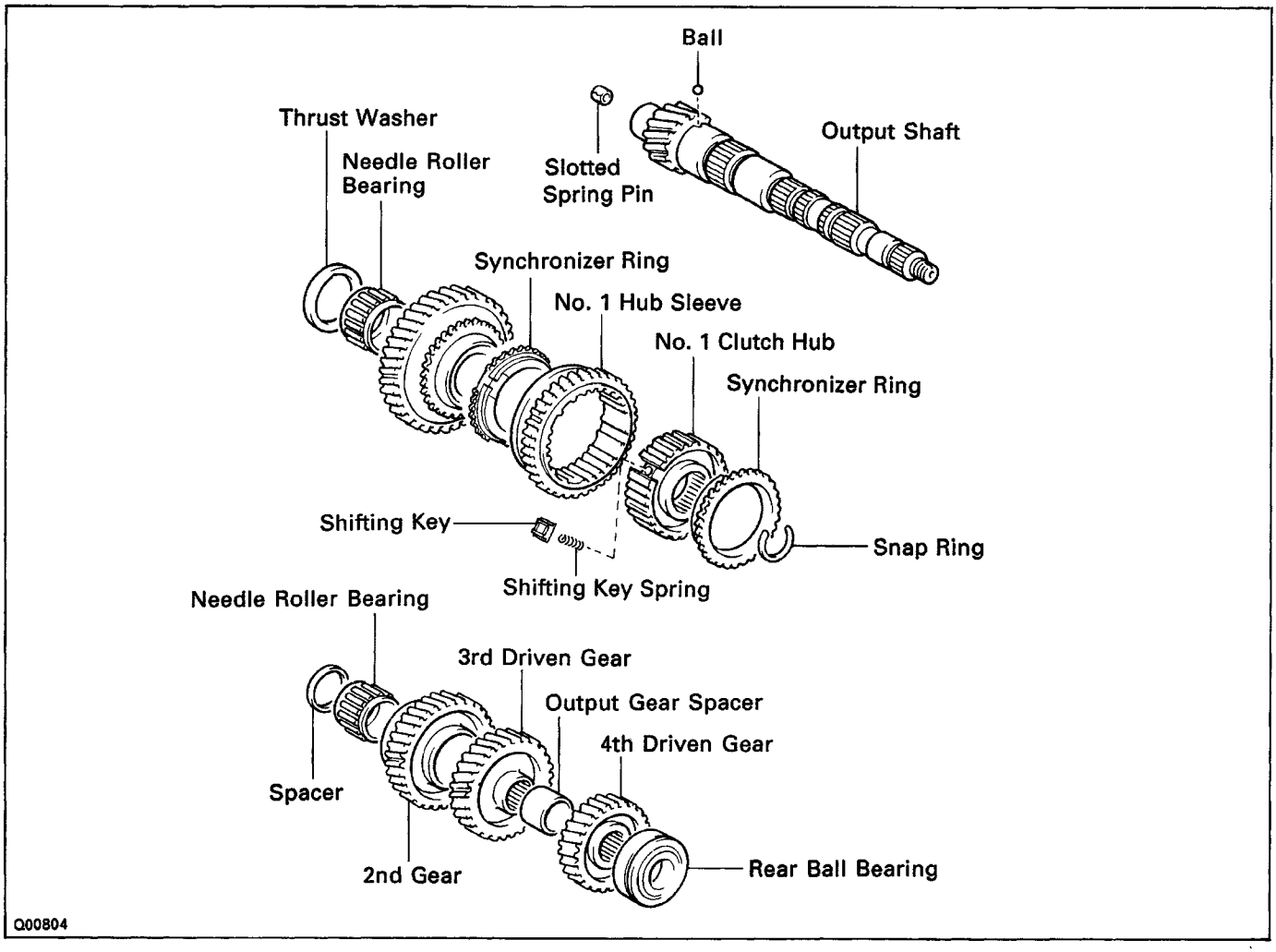
7. MEASURE FOURTH GEAR THRUST CLEARANCE

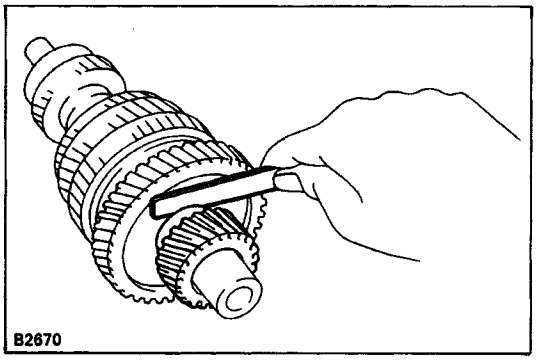
Using a feeler gauge, measure the 4th gear thrust clearance.

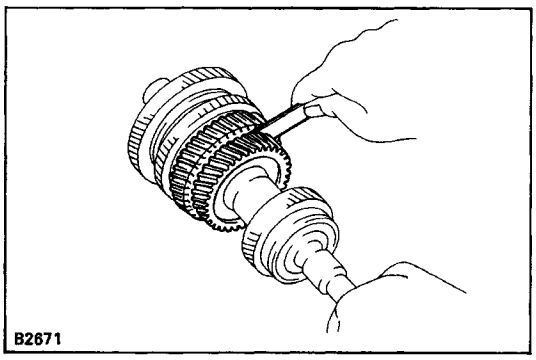
Standard clearance: 0.10 – 0.55 mm
(0.0039 – 0.0217 in.)

Output Shaft Assembly

COMPONENTS







DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. INSPECT FIRST AND SECOND GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance.

Standard clearance:

1st gear

0.10 – 0.40 mm (0.0039 – 0.0157 in.)

2nd gear

0.10 – 0.45 mm (0.0039 – 0.0177 in.)

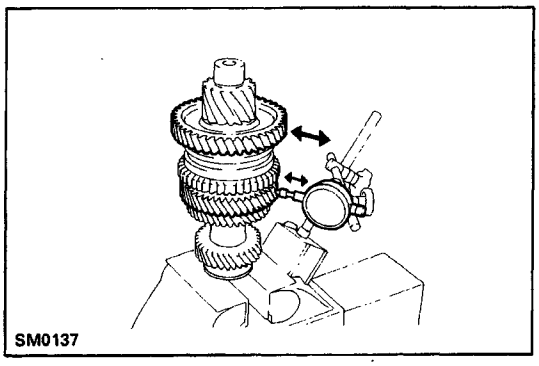
Maximum clearance:

1 st gear

0.45 mm (0.0177 in.)

2nd gear

0.50 mm (0.0197 in.)



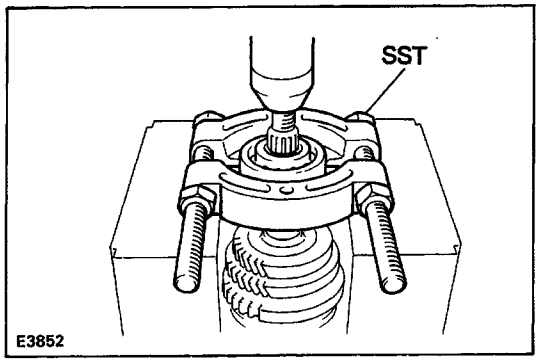
2. INSPECT FIRST AND SECOND GEAR OIL CLEARANCE

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

Standard clearance: 0.015 – 0.058 mm (0.0006 – 0.0023 in.)

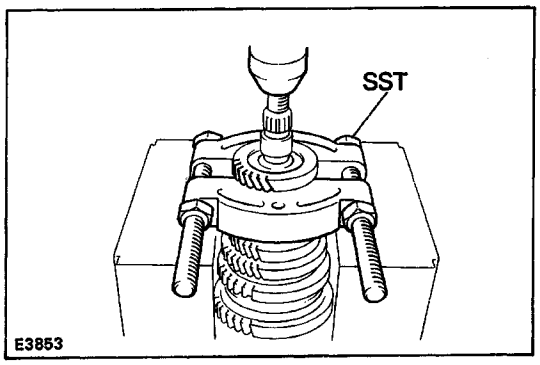
Maximum clearance: 0.070 mm (0.0028 in.)

If the clearance exceeds the minimum, replace the gear, needle roller bearing and shaft.



3. REMOVE REAR BALL BEARING

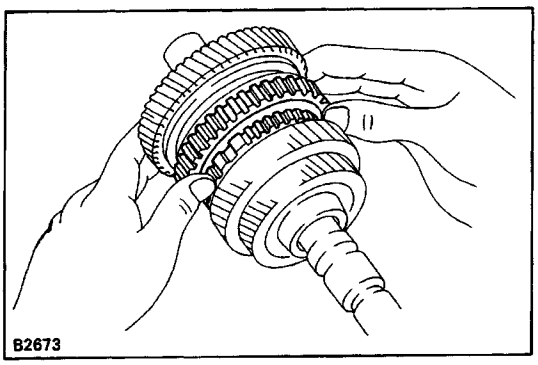
(a) Using SST and a press, remove the rear ball bearing.
SST 09950–00020



4. REMOVE FOURTH DRIVEN GEAR AND OUTPUT GEAR SPACER

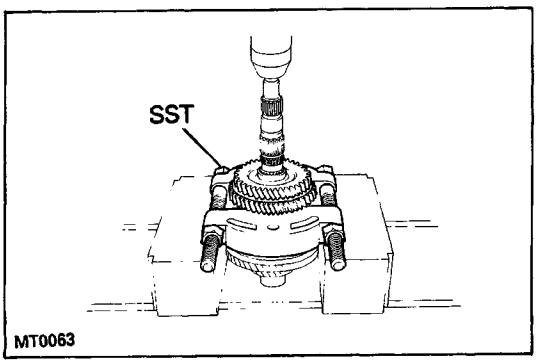
(a) Using SST and a press, remove the 4th driven gear.
SST 09950–00020

(b) Remove the spacer.



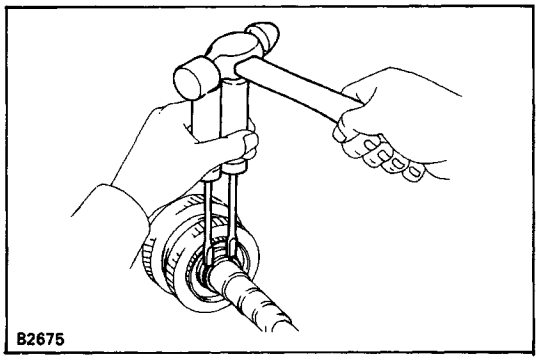
5. REMOVE THIRD DRIVEN GEAR, SECOND GEAR, NEEDLE ROLLER BEARING, SYNCHRONIZER RING AND SPACER

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



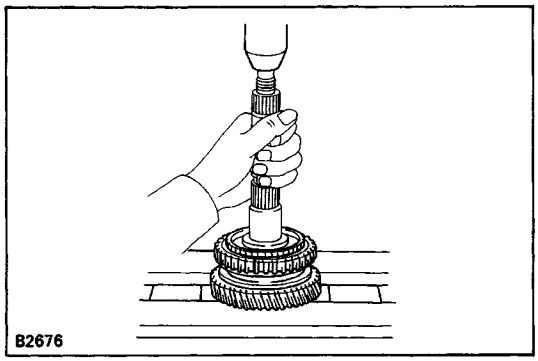
(b) Using SST and a press, remove the 3rd driven gear.
SST 09950–00020

(c) Remove the 2nd gear, needle roller bearing, synchronizer ring and spacer.



6. REMOVE SNAP RING

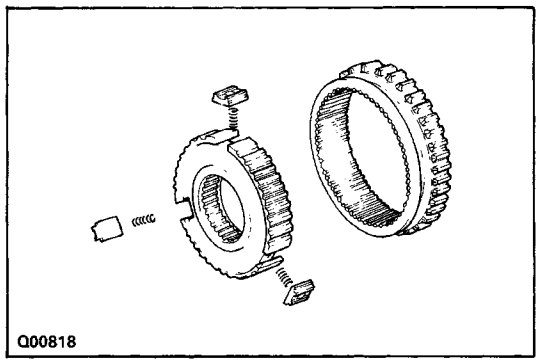
Using two screwdrivers and a hammer, tap out the snap ring.



7. REMOVE NO. 1 HUB SLEEVE ASSEMBLY, FIRST GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARING, THRUST WASHER AND BALL

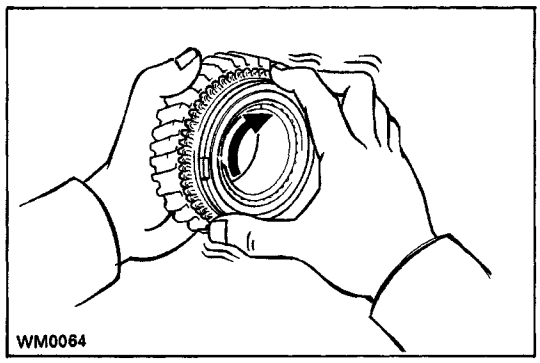
(a) Using a press, remove No. 1 hub sleeve, 1st gear and synchronizer ring.

(b) Remove the needle roller bearing, thrust washer and ball.



8. REMOVE NO. 1 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO. 1 CLUTCH HUB

INSPECTION OF OUTPUT SHAFT COMPONENT PARTS



1. INSPECT SYNCHRONIZER RING FOR FIRST GEAR

(a) Check for wear or damage.

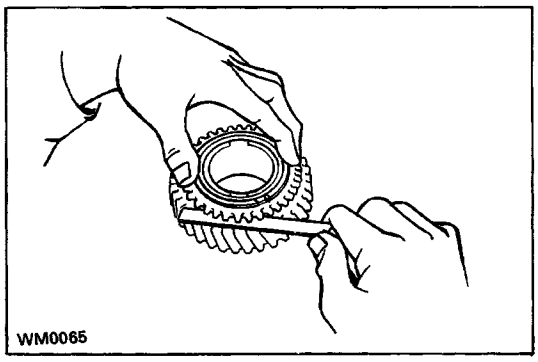
(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the –ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

Check again the braking action of the synchronizer ring.

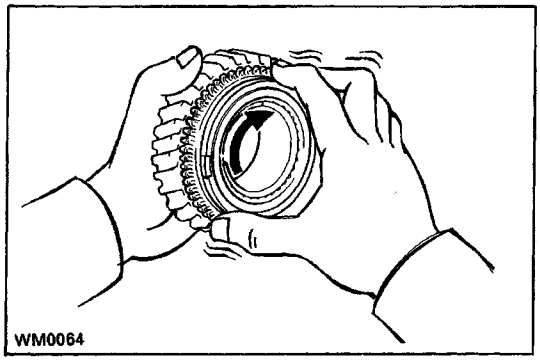


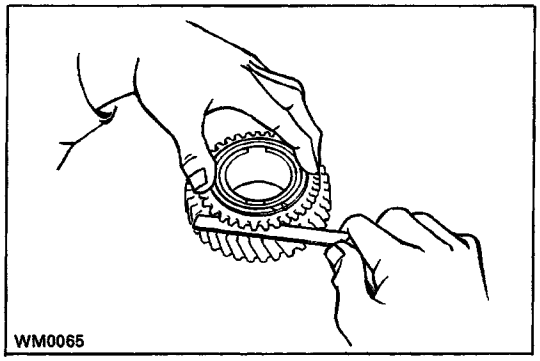
(c) Measure the clearance between the synchronizer ring back and gear spline end.

Maximum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer –ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.





2. INSPECT SYNCHRONIZER RING FOR SECOND GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

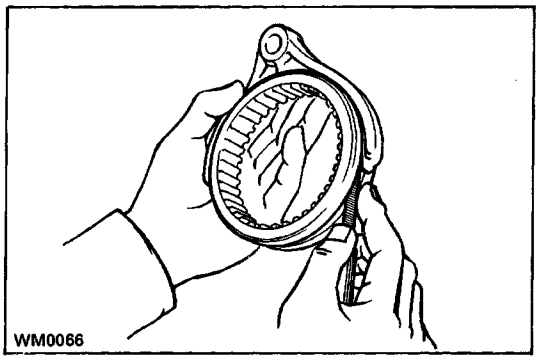
Check again the braking effect of the synchronizer ring.

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

Maximum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

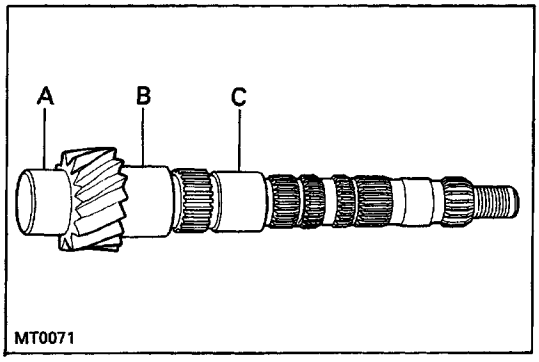


3. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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 maximum, replace the shift fork or hub sleeve.



4. INSPECT OUTPUT SHAFT

(a) Check the input shaft for wear or damage.

(b) Using a micrometer, measure the outer diameter of the output shaft journal surface.

Maximum outer diameter:

Part A

32.970 mm (1.2980 in.)

Part B

37.970 mm (1.4949 in.)

Part C

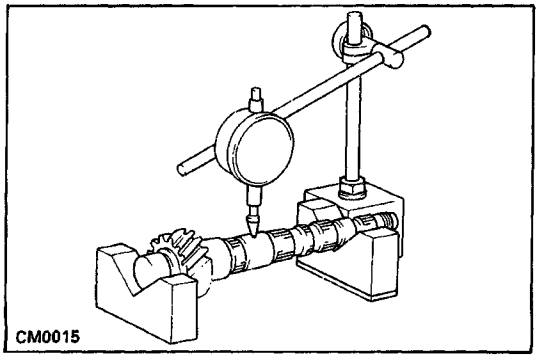
31.970 mm (1.2587 in.)

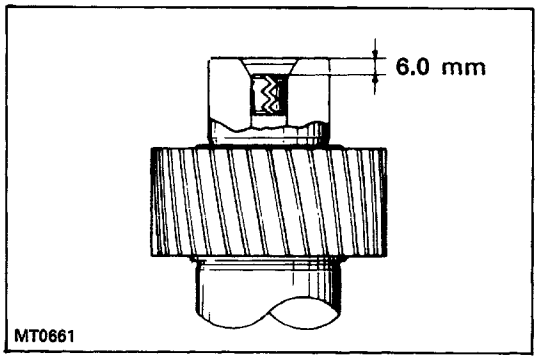
If the outer diameter exceeds the minimum, replace the output shaft.

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

Maximum runout: 0.05 mm (0.0020 in.)

If the runout exceeds the maximum, replace the output shaft.





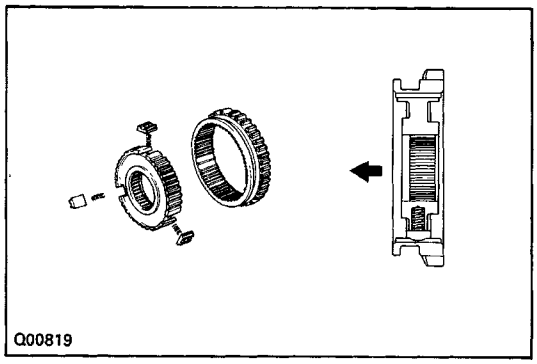
ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

(See page MT–32)

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

1. IF OUTPUT SHAFT WAS REPLACED, DRIVE IN SLOTTED SPRING PIN

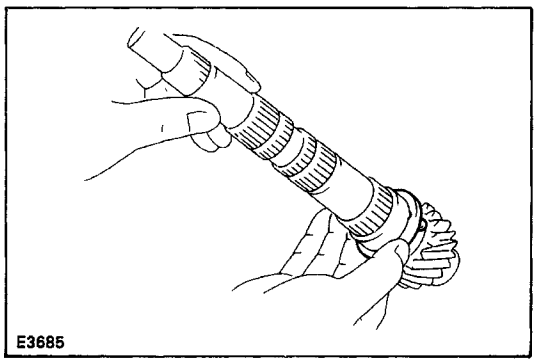
If the output shaft was replaced, drive the slotted spring pin in the output shaft to a depth of 6.0 mm 10.236 in.)



2. INSTALL NO. 1 CLUTCH HUB INTO HUB SLEEVE

1ay Install the three springs and shifting keys to the clutch hub.

(b) Install the hub sleeve to the clutch hub.

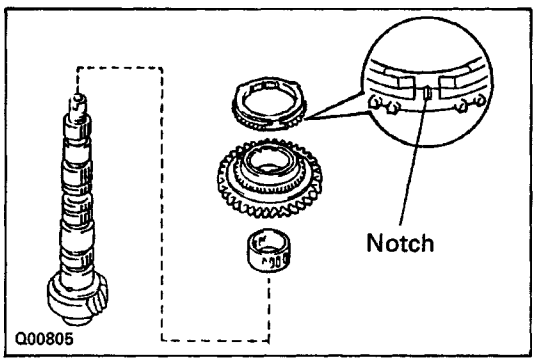


3. INSTALL BALL, THRUST WASHER, FIRST GEAR, NEEDLE ROLLER BEARING, SYNCHRONIZER RING AND NO. 1 HUB SLEEVE TO OUTPUT SHAFT

(a) Install the ball in the shaft.

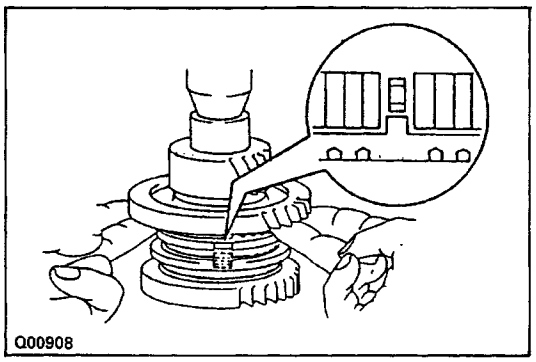
(b) Fit the thrust washer groove securely over the locking ball when installing the thrust on the shaft.

(c) Apply gear oil to the needle roller bearing.

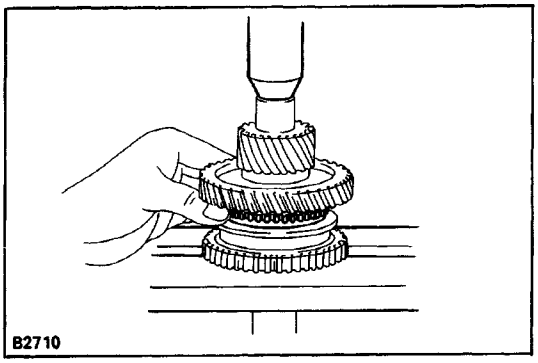


(d) Install the needle roller bearing, 1st gear and synchronizer ring.

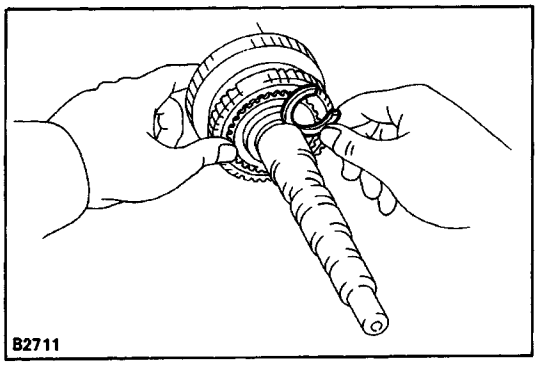
HINT: The synchronizer ring with the notch is for use only with the 1st gear.



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



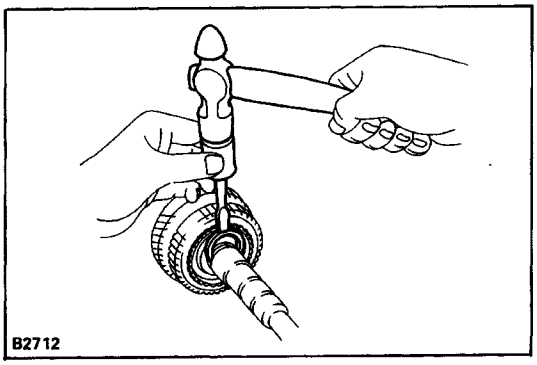
Using a press, install the 1st gear and No. 1 hub sleeve.



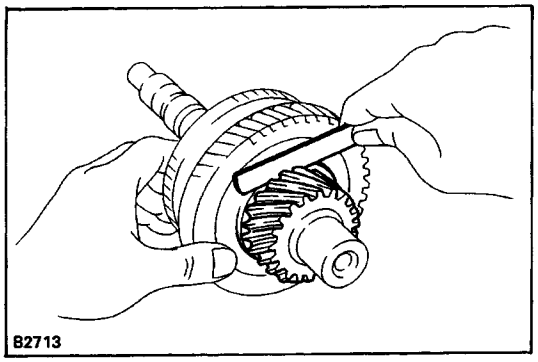
4. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.50 (0.0984)	D	2.68 (0.1055)
B	2.56 (0.1008)	E	2.74 (0.1079)
C	2.62 (0.1031)	F	2.80 (0.1102)



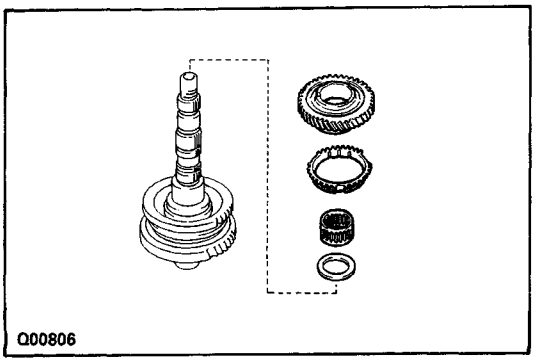
(b) Using a screwdriver and hammer, tap in the snap ring.



5. INSPECT FIRST GEAR THRUST CLEARANCE

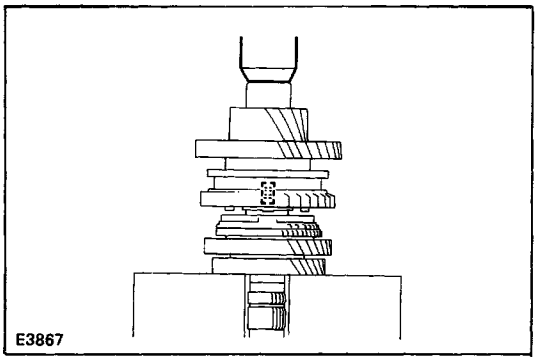
Using a feeler gauge, measure the 1st gear thrust clearance

Standard clearance: 0.10 – 0.40 mm
(0.0039 – 0.0157 in.)

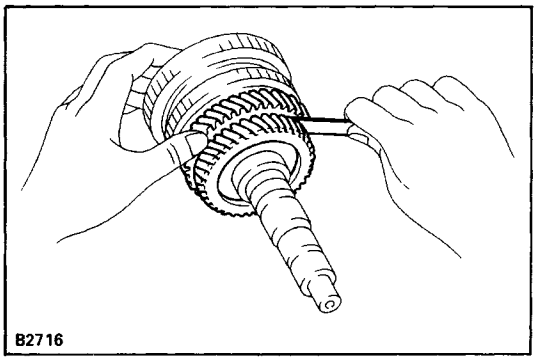


6. INSTALL SYNCHRONIZER RING, SPACER, NEEDLE ROLLER BEARING, SECOND GEAR AND THIRD DRIVEN GEAR

(a) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
(b) Install the spacer.
(c) Apply gear oil to the needle roller bearing.
(d) Install the 2nd gear.



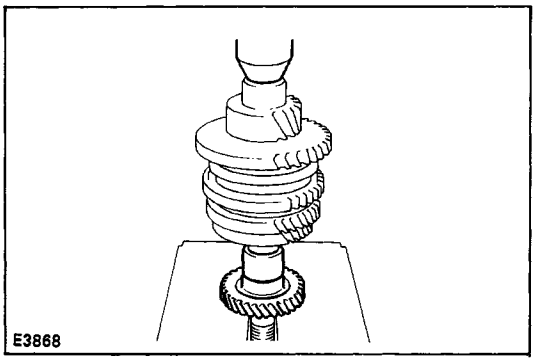
(e) Using a press, install the 3rd driven gear.



7. INSPECT SECOND GEAR THRUST CLEARANCE

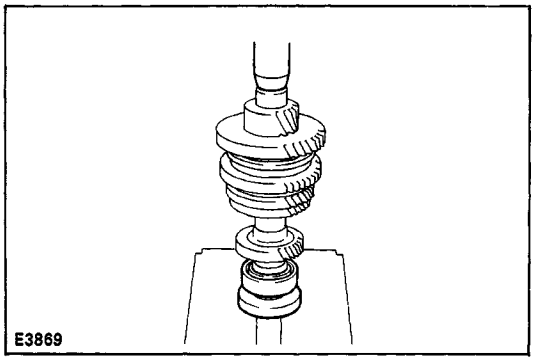
Using a feeler gauge, measure the 2nd gear thrust clearance.

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



8. INSTALL OUTPUT GEAR SPACER AND FOURTH DRIVEN GEAR

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

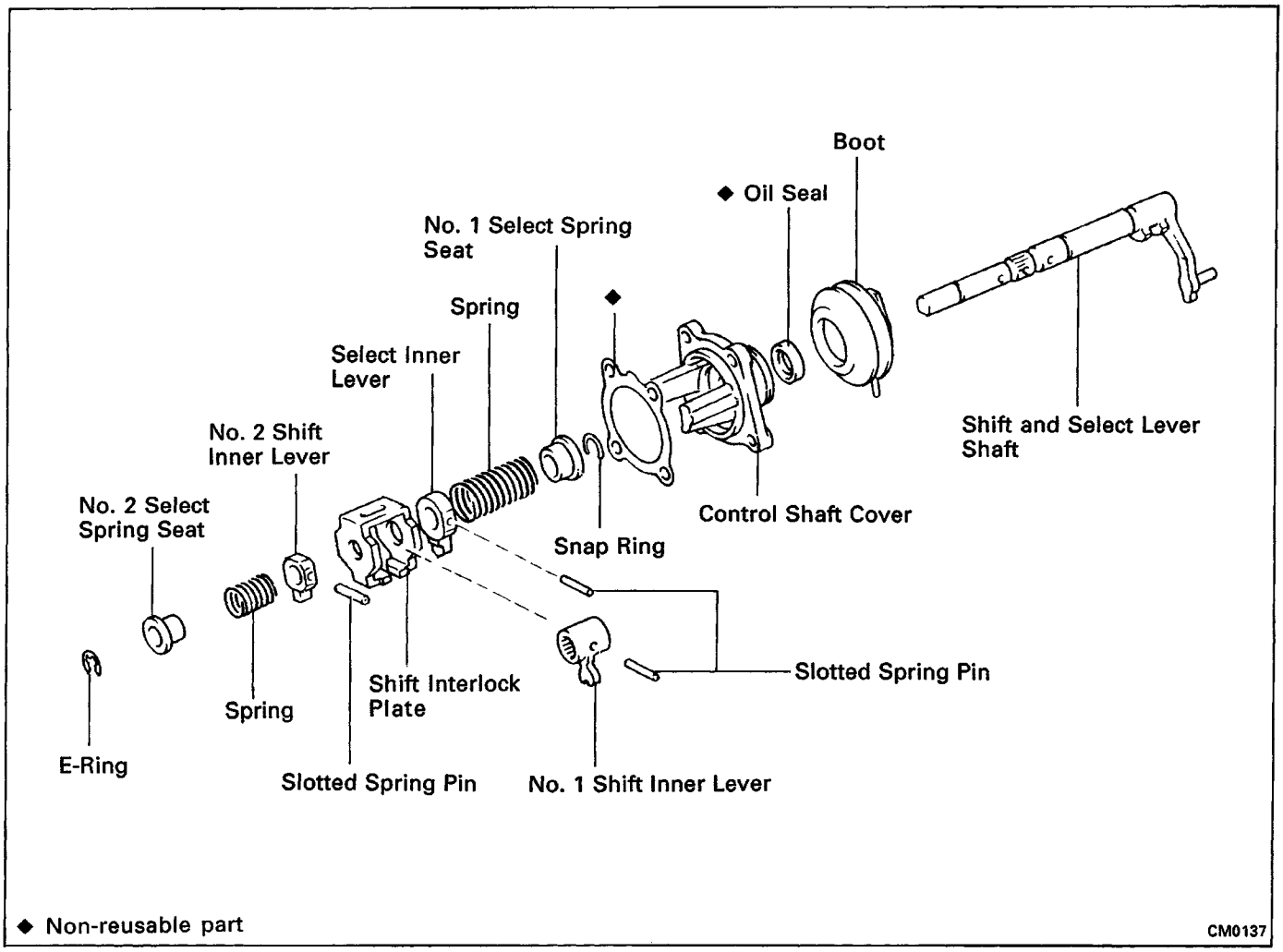


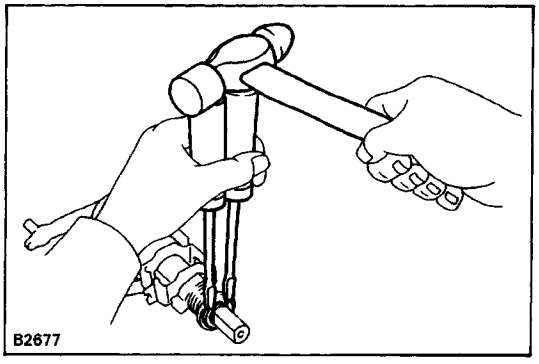
9. INSTALL REAR BALL BEARING

(a) Using SST and a press, install the rear ball bearing.
SST 09316–60010 (09316–00020)

Shift and Select Lever Shaft

COMPONENTS



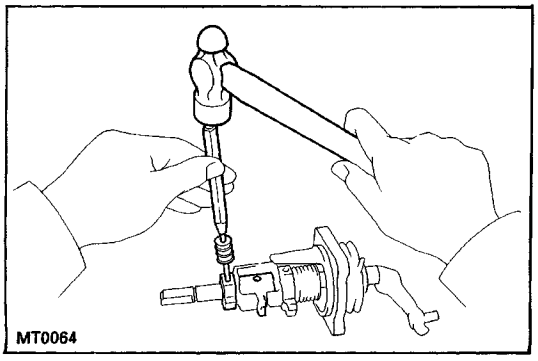


DISASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

1. REMOVE NO. 2 SHIFT INNER LEVER

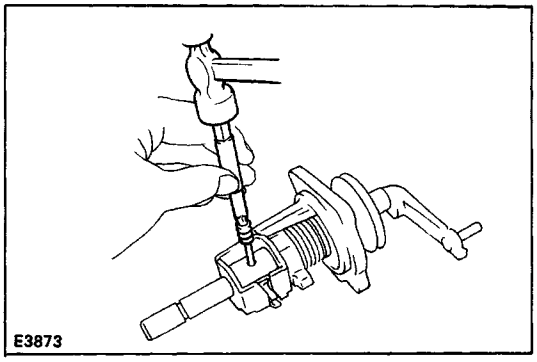
(a) Using two screwdrivers and a hammer, tap out the snap ring.

(b) Remove the compression spring and seat.



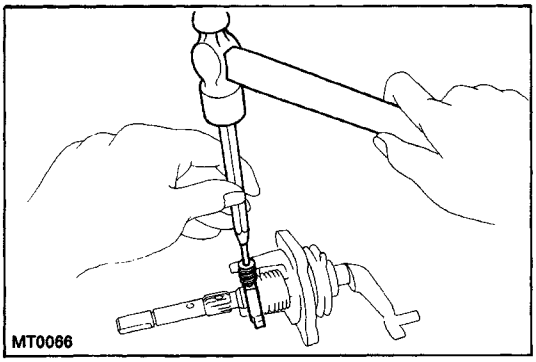
(c) Using a pin punch and hammer, drive out the slotted spring pin from the No. 2 shift inner lever.

(d) Remove the No. 2 shift inner lever.



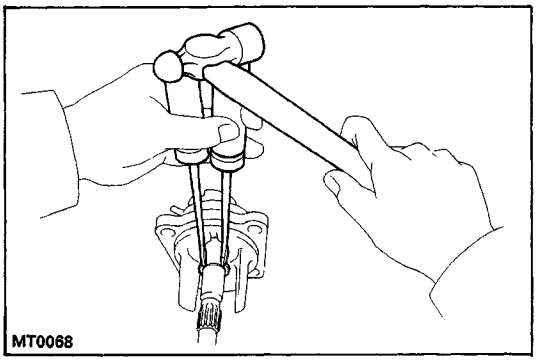
2. REMOVE SHIFT INTERLOCK PLATE AND NO. 1 SHAFT INNER LEVER

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



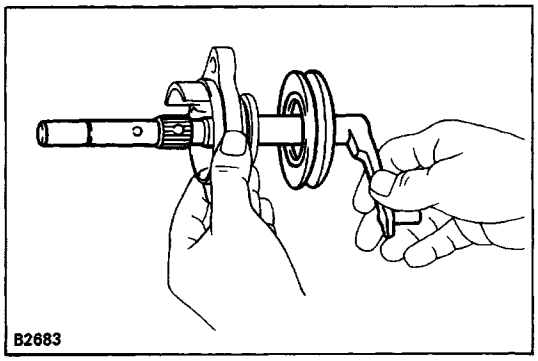
3. REMOVE SELECT INNER LEVER

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

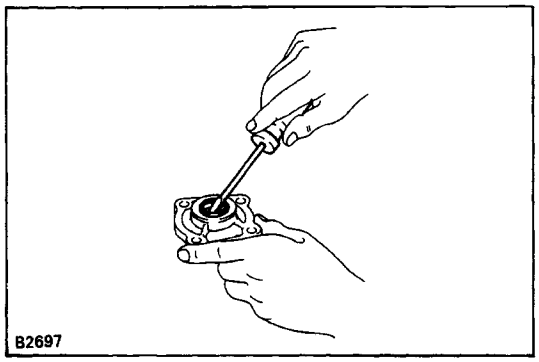


4. REMOVE SNAP RING

Using two screwdriver and hammer, tap out the snap ring.

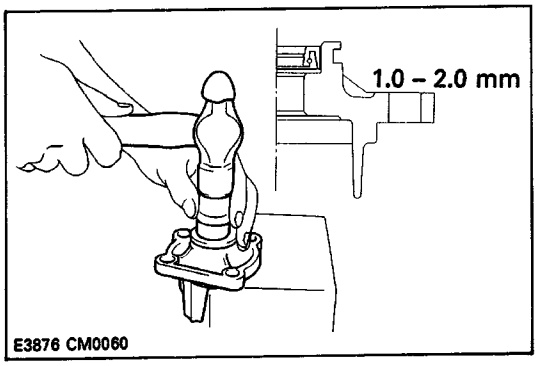


5. REMOVE CONTROL SHAFT COVER AND DUST BOOT



6. IF NECESSARY, REPLACE CONTROL SHAFT COVER OIL SEAL

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



(b) Using a socket wrench and hammer, drive in a new oil seal.

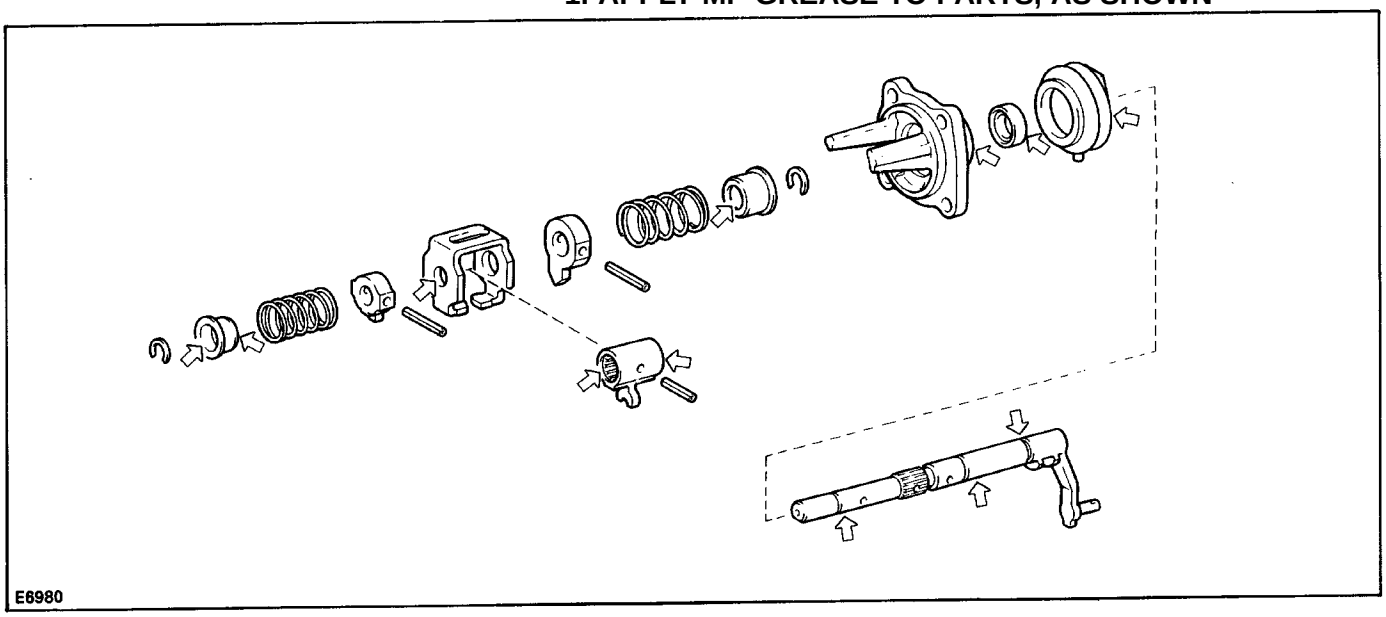
Drive in depth: 1.0 – 2.0 mm I0.039 – 0.079 in.

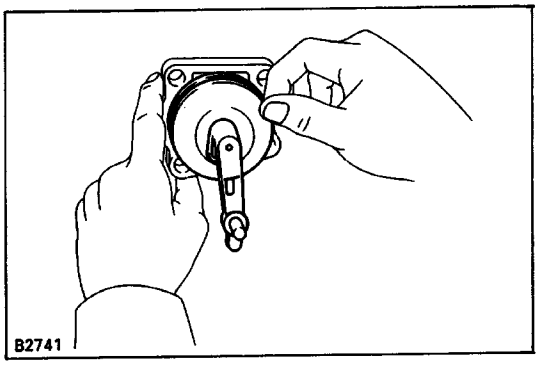
(c) Coat the lip of the oil seal with MP grease.

ASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

(See page MT–39)

1. APPLY MP GREASE TO PARTS, AS SHOWN

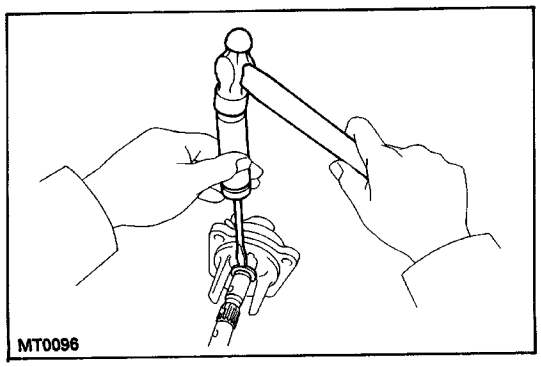




2. INSTALL SHIFT AND SELECT LEVER SHAFT

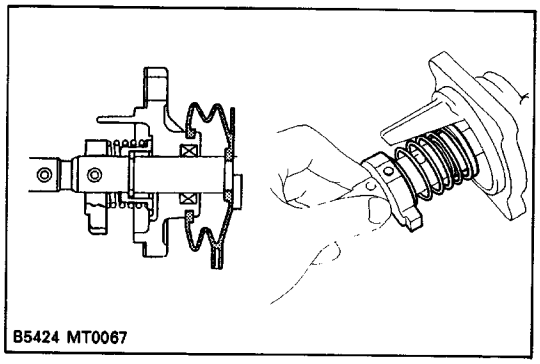
Install the boot and shaft to the control shaft cover.

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



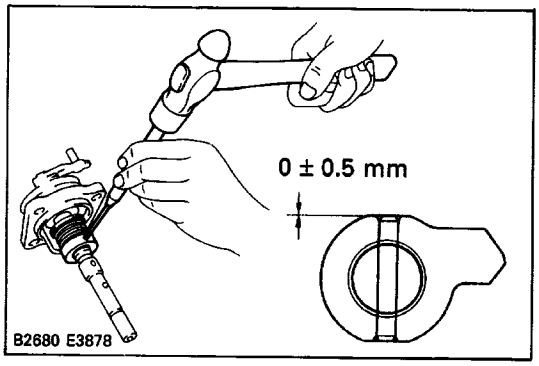
3. INSTALL SNAP RING

Using a screwdriver and hammer, tap in the snap ring.

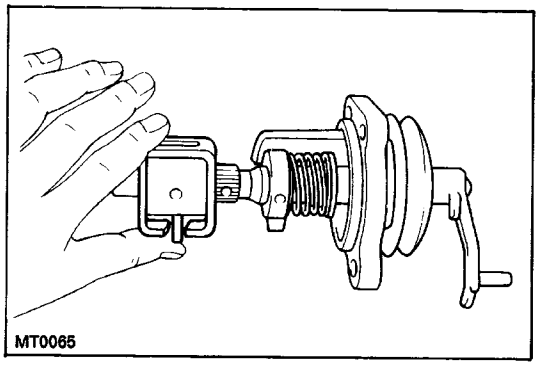


4. INSTALL SELECT INNER LEVER

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

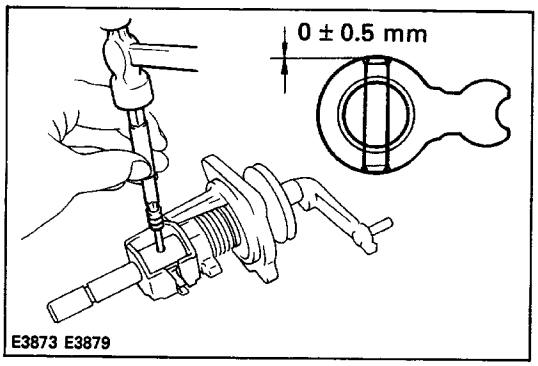


(b) Using a pin punch and hammer, drive in the slotted spring pin to the select inner lever.
Drive in depth: 0 ± 0.5 mm (0 ± 0.020 in.)

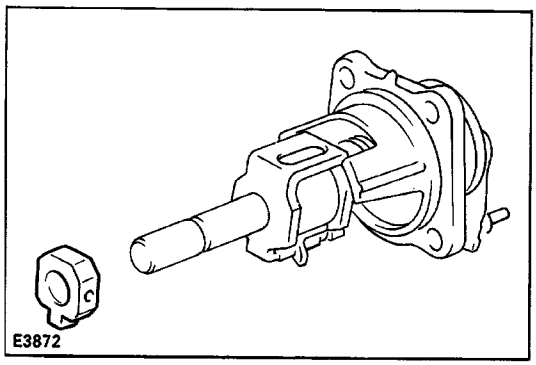


5. INSTALL SHIFT INTERLOCK PLATE AND NO. 1 SHIFT INNER LEVER

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

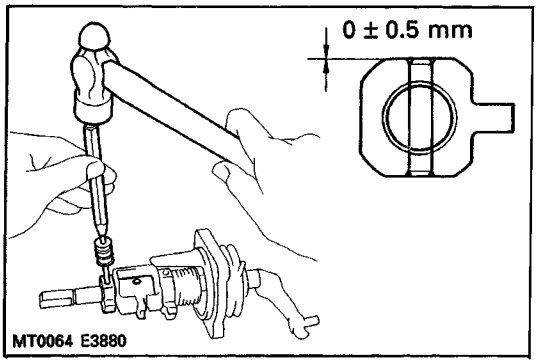


(b) Using a pin punch and hammer, drive in the slotted spring pin to the No. 1 shift inner lever.
Drive in depth: 0 ± 0.5 mm (0 ± 0.020 in.)
(c) Check that the shift interlock plate turns smoothly.

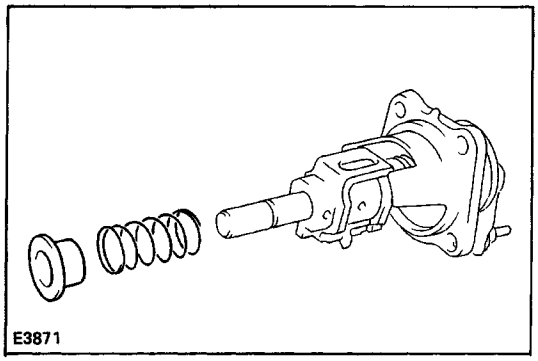


6. INSTALL NO. 2 SHIFT INNER LEVER

(a) Install the No. 2 shift inner– lever.

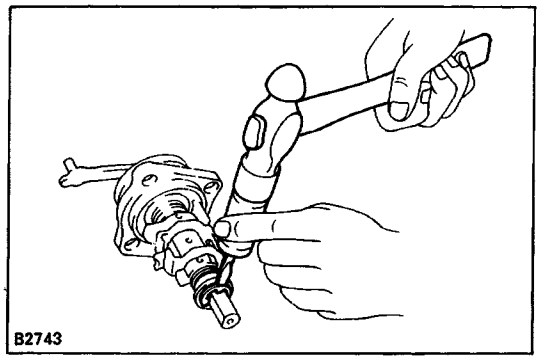


(b) Using a pin punch and hammer, drive in the slotted spring pin to the No. 2 shift inner lever.
Drive in depth: 0 ± 0.5 mm (0 ± 0.020 in.)



7. INSTALL NO. 2 COMPRESSION SPRING, NO. 2 SELECT SPRING SEAT AND SNAP RING

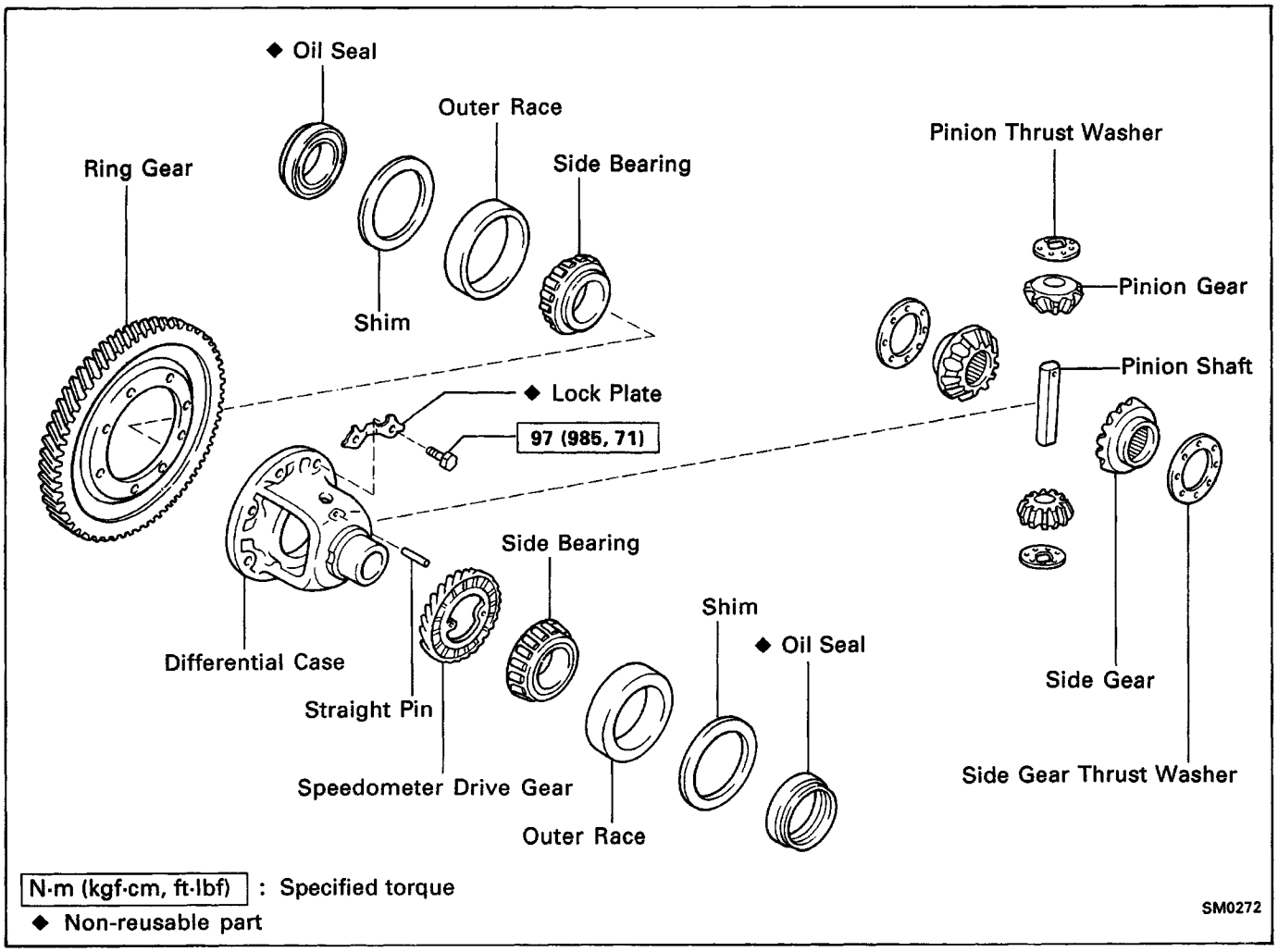
(a) Install the No. 2 compression spring and No. 2 select spring seat.

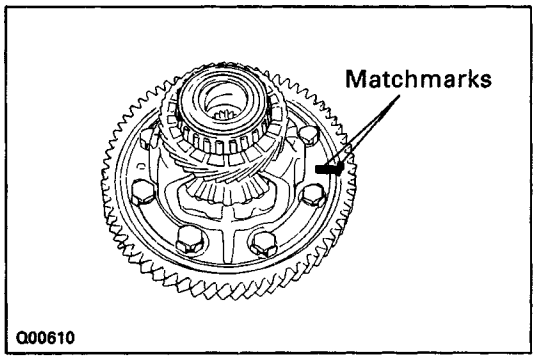


(b) Using a screwdriver and hammer, tap in the E–ring.

Differential Case

COMPONENTS

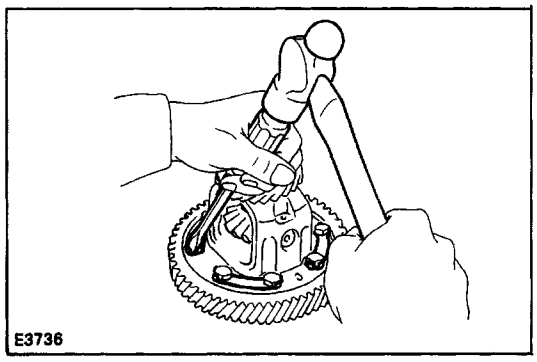




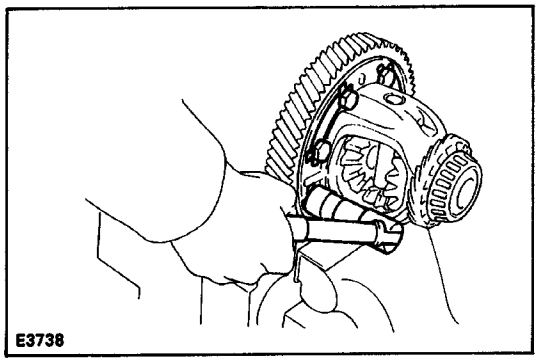
DISASSEMBLY OF DIFFERENTIAL CASE

1. REMOVE RING GEAR

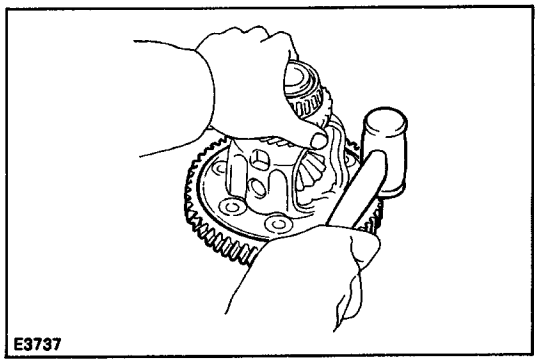
(a) Place matchmarks on the ring gear and the case.



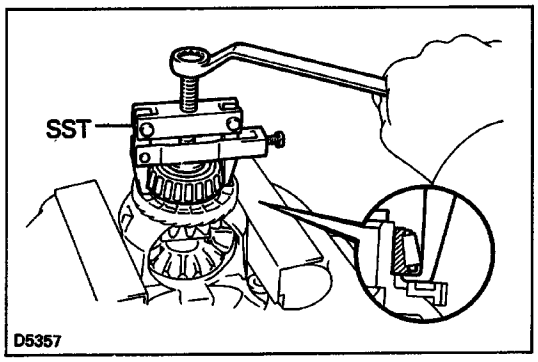
(b) Loosen the staked part of the lock plate.



(c) Remove the eight bolts and four lock plates.



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

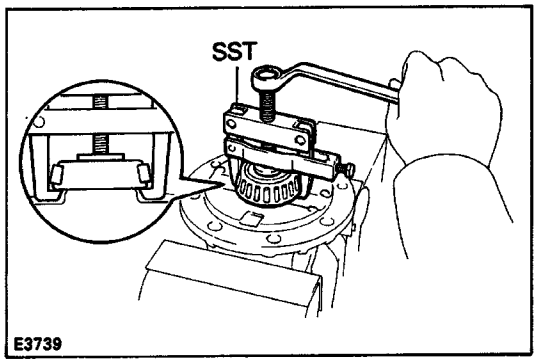


2. (SPEEDOMETER DRIVE GEAR SIDE)
REMOVE SIDE BEARING FROM DIFFERENTIAL CASE

(a) Using SST, remove the side bearing.
SST 09502–10012

HINT: Apply the claw of the SST to the bearing inner race at the position where the speedometer drive gear is indented.

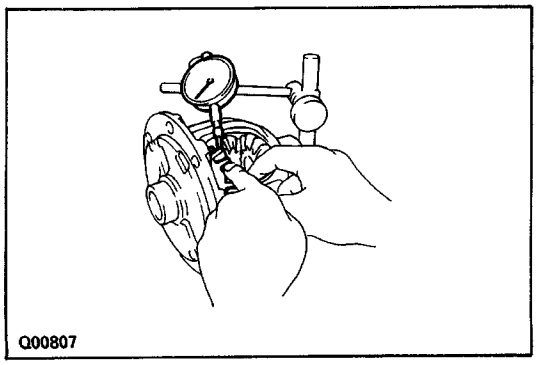
(b) Remove the speedometer drive gear.



3. (RING GEAR SIDE)
REMOVE SIDE REARING FROM DIFFERENTIAL CASE

Using SST, remove the side bearing.
SST 09502–10012

HINT: Apply the claw of the SST to the bearing inner race at the position where the differential case is indented.

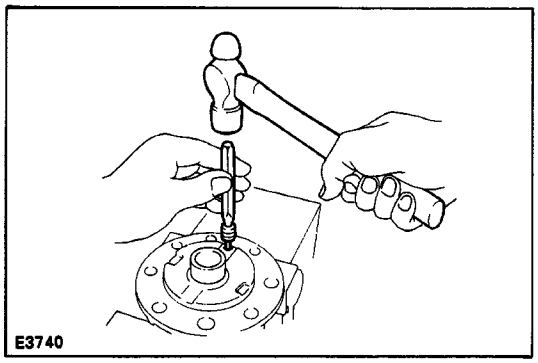


4. INSPECT SIDE GEAR BACKLASH

(a) Using a dial indicator, measure the backlash of one side gear while holding one pinion toward the case.

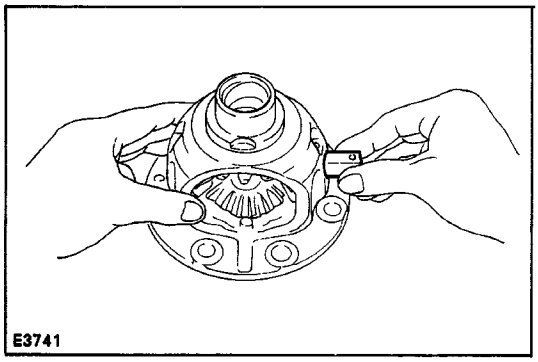
Standard backlash: 0.05 – 0.20 mm
(0.0020 – 0.0079 in.)

If the backlash does not meet specification, install the correct thrust washer to the side gears.



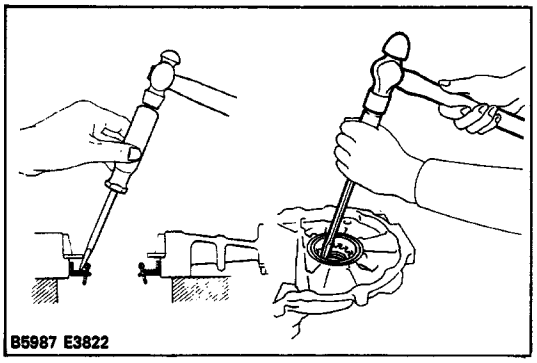
5. DISASSEMBLY DIFFERENTIAL CASE

(a) Using a pin punch and hammer, drive out the pinion shaft lock pin.



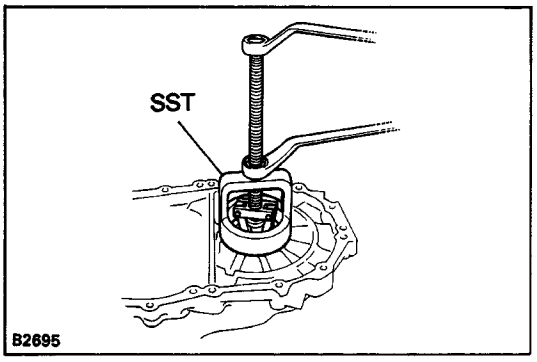
(b) Remove the pinion shaft from the case.

(c) Remove the two pinions and two side gears with the four thrust washers from each gear.



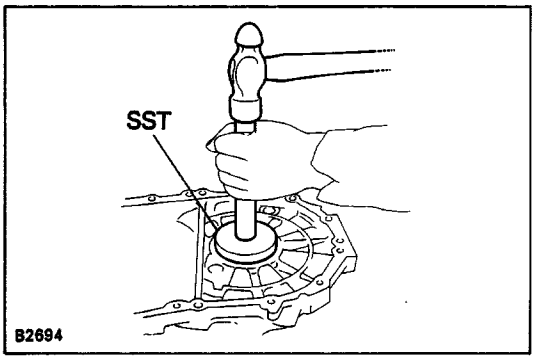
6. (TRANSMISSION CASE SIDE)
IF NECESSARY, REPLACE OIL SEAL AND SIDE BEARING OUTER RACE

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

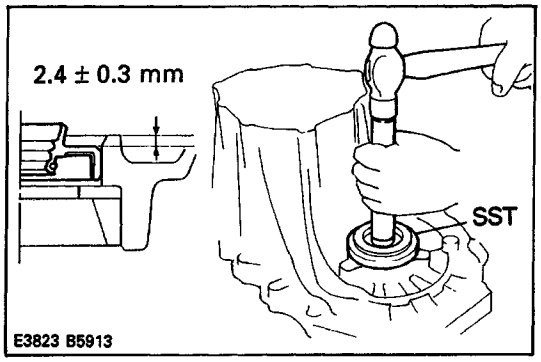


(b) Using SST, pull out the outer race and shim.
SST 09612–65014

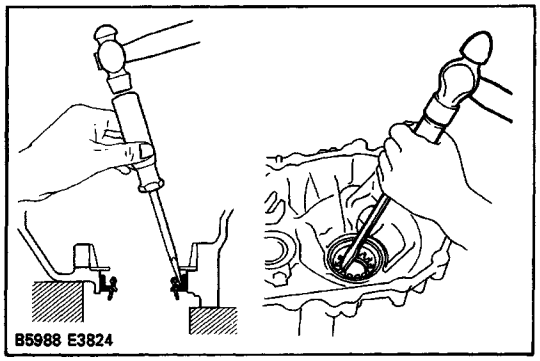
(c) Place the shim into the case.



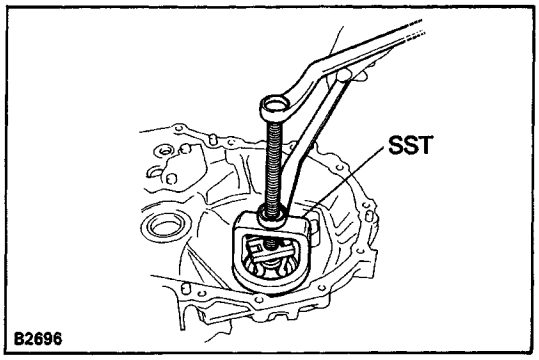
(d) Using SST and a hammer, drive in a new outer race.
SST 09608–20012 (09608–03020, 09608–03090)



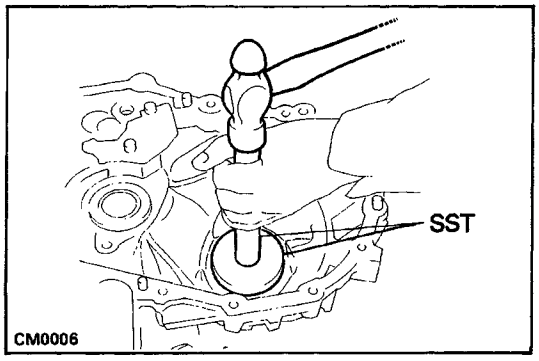
(e) Using SST and. a hammer, drive in a new oil seal.
SST 09350–32014 (09351–32111, 09351–32130)
Drive in depth: 2.1 – 2.7 mm (0.083 – 0.106 in.)
(f) Coat the lip of the oil seal with MP grease.



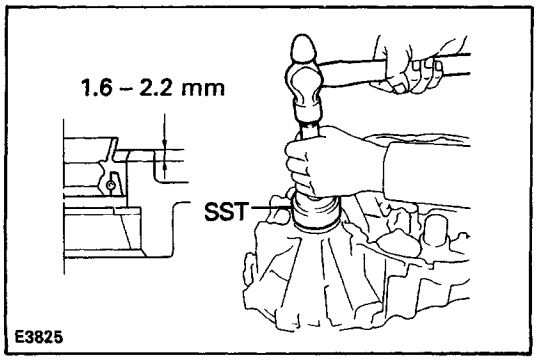
7. (TRANSAXLE CASE SIDE)
IF NECESSARY, REPLACE OIL SEAL AND SIDE BEARING OUTER RACE
(a) Using a screwdriver and hammer, drive out the oil sea l.



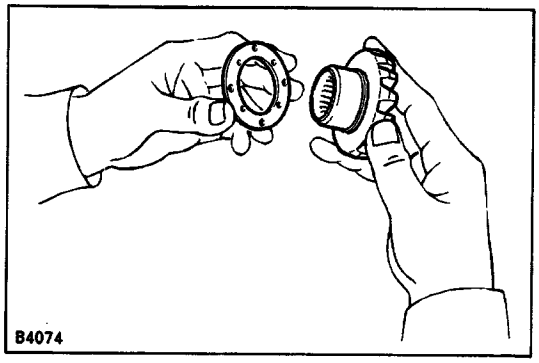
(b) Using SST, pull out the outer race and shim.
SST 09612–65014
(c) Place the shim into the case.



(d) Using SST and a hammer, drive in a new outer race.
SST 09608–20012 (09608–03020, 09608–03060)



(e) Using SST and a hammer, drive in a new oil seal.
SST 09350–32014 (09351–32130, 09351–32150)
Drive in depth: 1.6 – 2.2 mm (0.063 – 0.087 in.)
(f) Coat the lip of the oil seal with MP grease.



ASSEMBLY OF DIFFERENTIAL CASE

(See page MT–44)

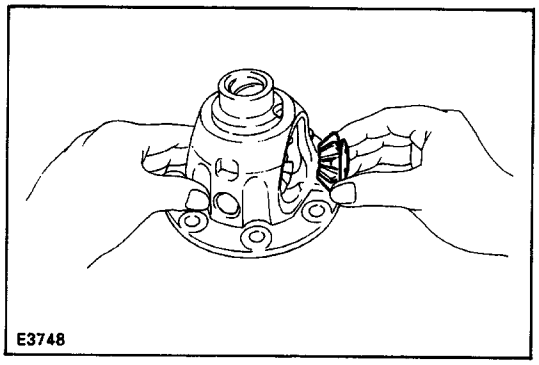
1. ASSEMBLE DIFFERENTIAL CASE

(a) Install the correct thrust washers and side gear. 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 for both sides.

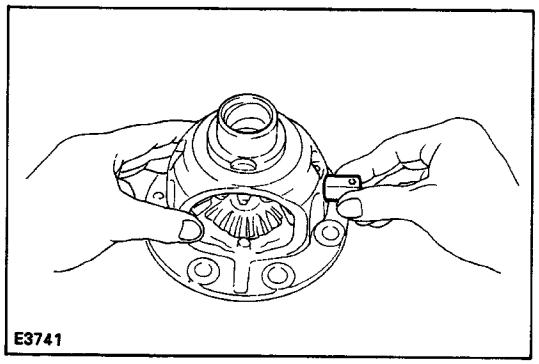
Standard backlash: 0.05 – 0.20 mm
(0.0020 – 0.0079 in.)

Thrust washer thickness

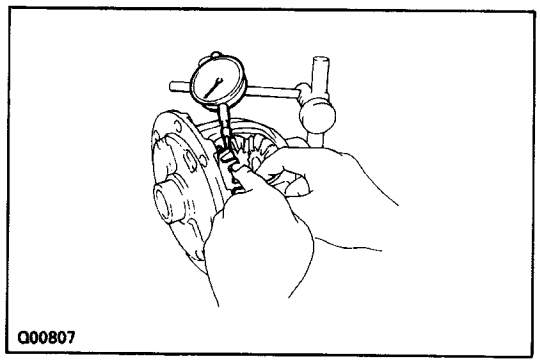
Thickness mm (in.)	Thickness mm (in.)
0.95 (0.0374) 1.00 (0.0394) 1.05 (0.0413)	1.10 (0.0433) 1.15 (0.0453) 1.20 (0.0472)



Install the thrust washers and side gears in the differential case.



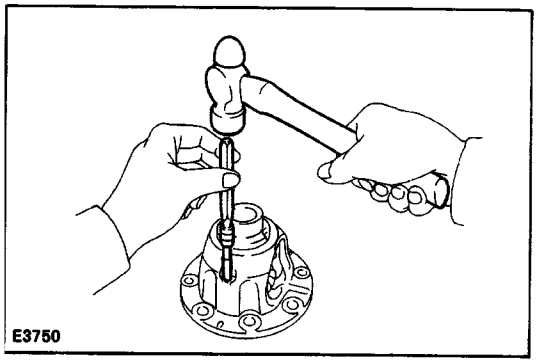
(b) Install the pinion shaft.



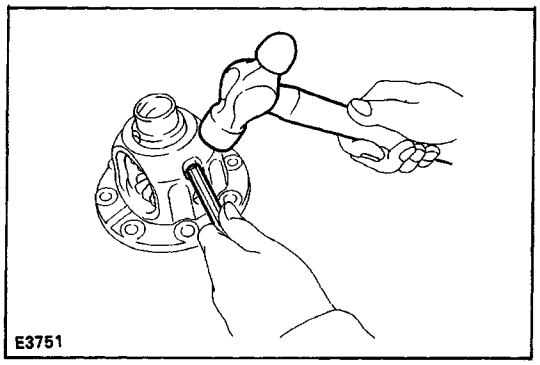
(c) Using a dial indicator, check the side gear backlash.
Measure the side gear backlash while holding one pinion gear toward the case.

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

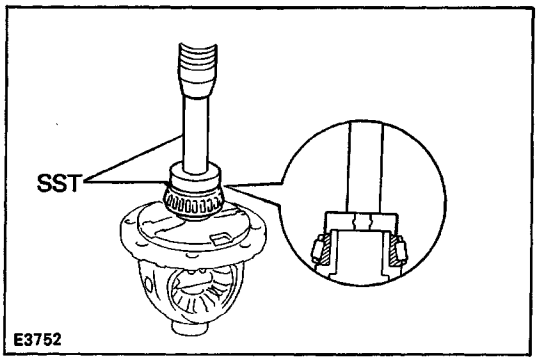
If the backlash is not within specification, install a thrust washer of different thickness.



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

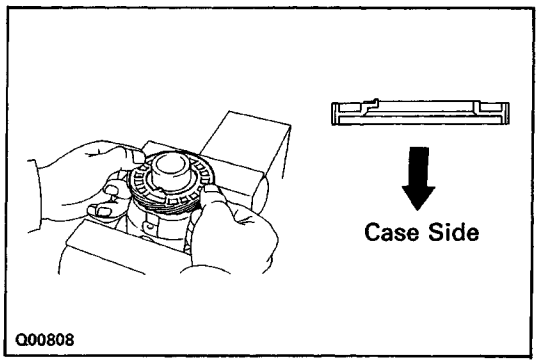


(e) Stake the differential case.



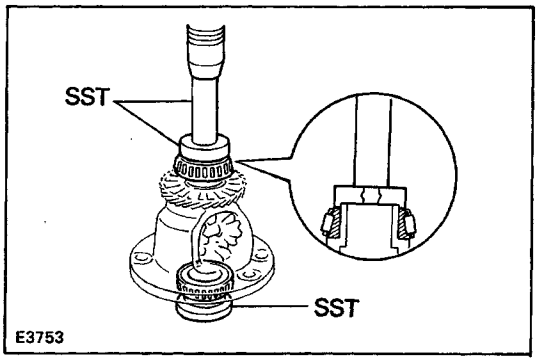
2. (RING GEAR SIDE)
INSTALL SIDE BEARING

Using SST and a press, install the side bearing.
SST 09550–10012 (09252–10010, 09556–10010)

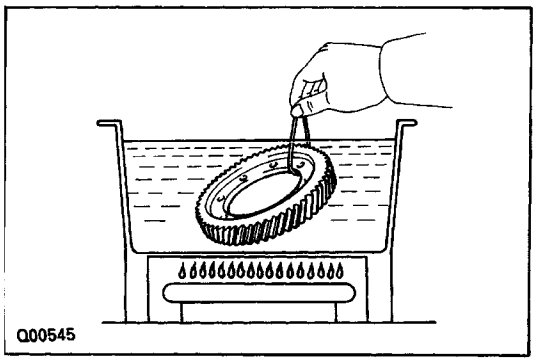


3. (SPEEDOMETER DRIVE GEAR SIDE)
INSTALL SIDE BEARING

(a) Install the speedometer drive gear.

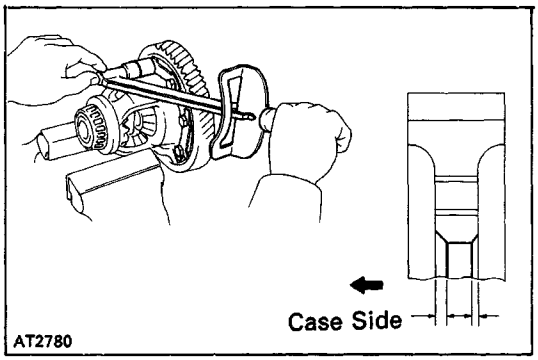


(b) Using SST and a press, install the side bearing.
SST 09550–10012 ^09252–10010, 09556–10010, 09560–10010)



4. INSTALL RING GEAR ON DIFFERENTIAL CASE

(a) Clean the contact surface of the differential case.
(b) Heat the ring gear in boiling water.
(c) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.



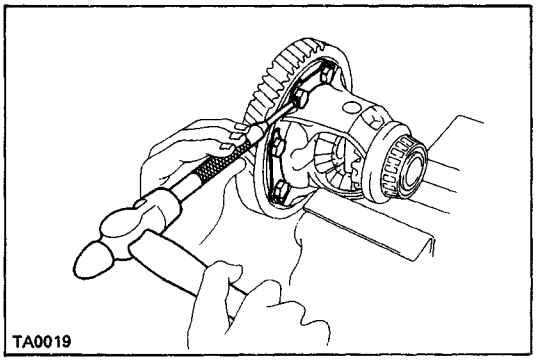
HINT: Align the matchmarks on the differential case and contact the ring gear.

(d) Temporarily install the four lock plates and eight bolts.

NOTICE: The ring gear set bolts should not be tightened until the ring gear has cooled sufficiently.

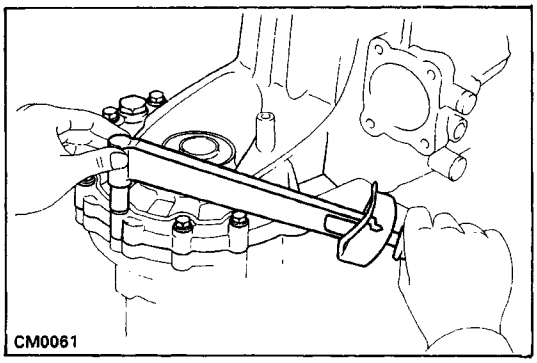
(e) After the ring gear has cooled sufficiently, torque the ring gear set bolts.

Torque: 97 N–m (985 kgf–cm, 71 ft–lbf)



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

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



5. MEASURE DIFFERENTIAL SIDE BEARING PRELOAD

(a) Install the differential to the transaxle case.

(b) Install the transmission case.

(c) Install and torque the case bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)

(d) Using SST and small torque wrench, measure the preload.

SST 09564–32011

Preload (at starting):

New bearing

0.8 – 1.6 N–m

(8 – 16 kgf–cm, 6.9 – 13.9 in.–lbf)

Reused bearing

0.5 – 1.0 N–m

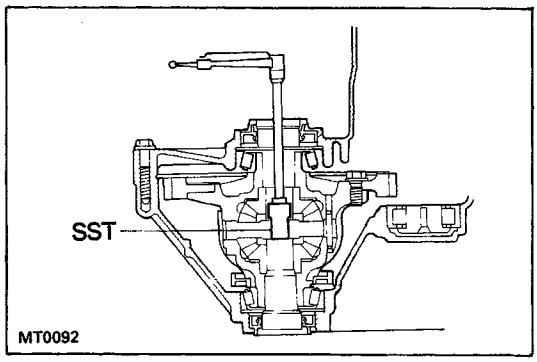
(5 – 10 kgf–cm, 4.3 – 8.7 in.–lbf)

If the preload is not within specification, remove the transmission case side outer race of the side bearing with SST.

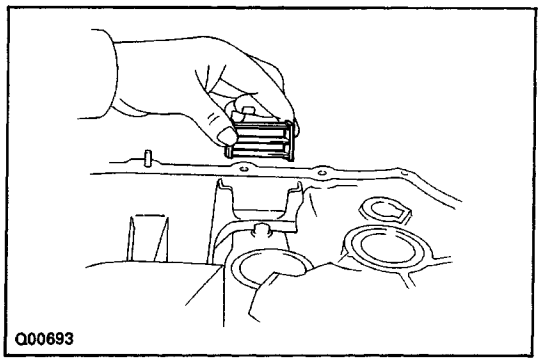
(See page MT–46, 47)

Select another shim.

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



Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.10 (0.0827)	L	2.60 (0.1024)
B	2.15 (0.0846)	M	2.65 (0.1043)
C	2.20 (0.0866)	N	2.70 (0.1063)
D	2.25 (0.0886)	P	2.75 (0.1083)
E	2.30 (0.0906)	Q	2.80 (0.1102)
F	2.35 (0.0925)	R	2.85 (0.1122)
G	2.40 (0.0945)	S	2.90 (0.1142)
H	2.45 (0.0965)	T	2.95 (0.1161)
J	2.50 (0.0984)	U	3.00 (0.1181)
K	2.55 (0.1004)		



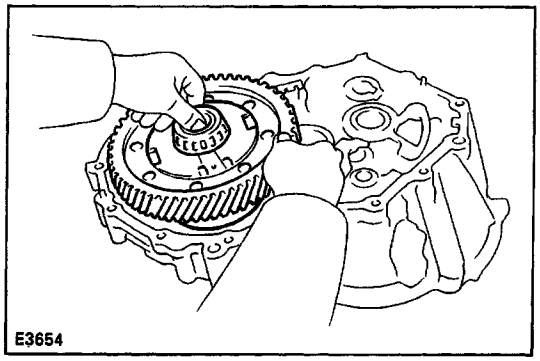
INSTALLATION OF COMPONENT PARTS

(See pages MT–12 to MT–14)

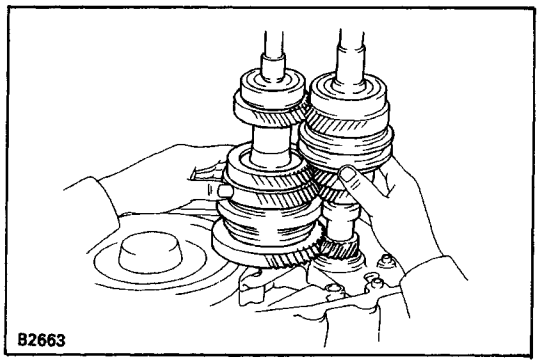
HINT: Coat all of the sliding and rotating sud surface with gear oil before assembly.

1. MEASURE DIFFERENTIAL SIDE BEARING PRELOAD
(See page MT–50)

2. INSTALL MAGNET TO TRANSAXLE CASE

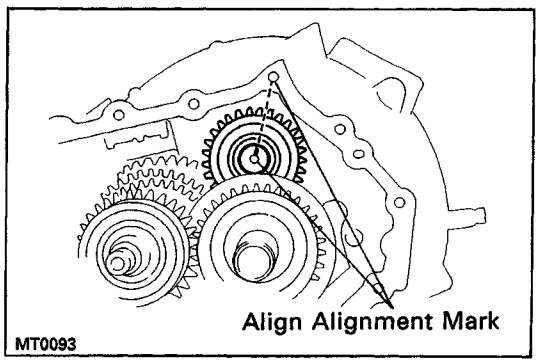


3. INSTALL DIFFERENTIAL CASE ASSEMBLY



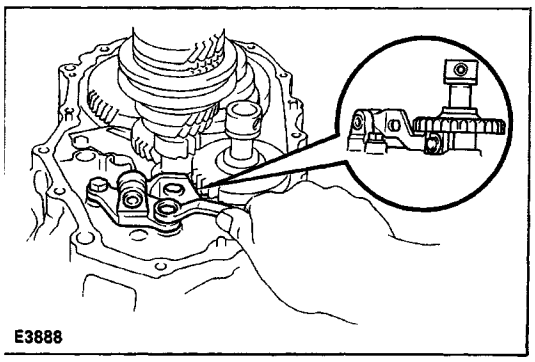
4. INSTALL INPUT AND OUTPUT SHAFTS

Install the input and output shafts together.



5. INSTALL REVERSE IDLER GEAR, THRUST WASHER AND SHAFT

Install the reverse idler gear, thrust washer and shaft as shown.

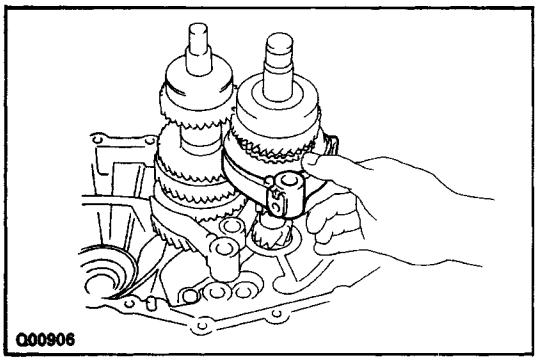


6. INSTALL REVERSE SHIFT ARM BRACKET

(a) Install the reverse shift arm bracket as shown.

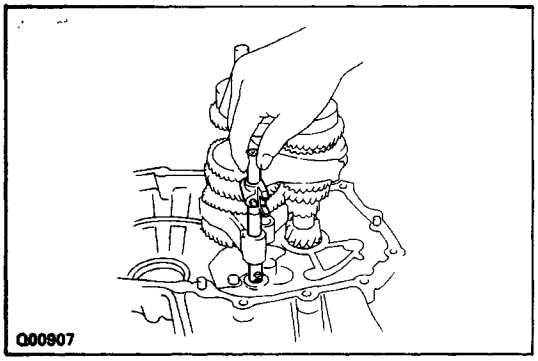
(b) Install and torque the two bolts.

Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)

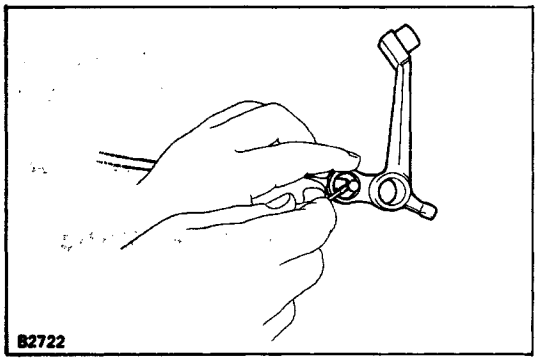


7. INSTALL SHIFT FORKS AND SHIFT FORK SHAFTS

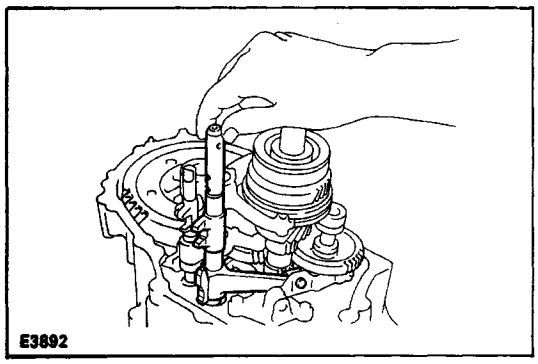
(a) Place the No. 1 and No. 2 shift forks into the groove of No. 1 and No. 2 hub sleeves.



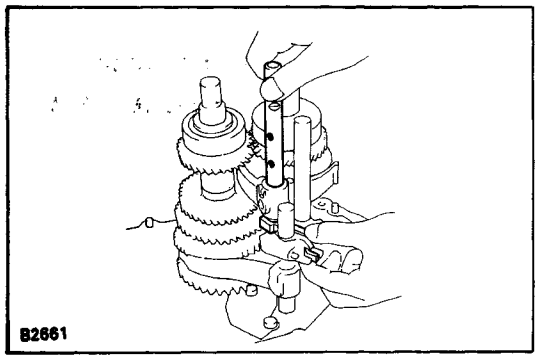
(b) install the No. 1 fork shaft into the No. 1 shift fork hole.



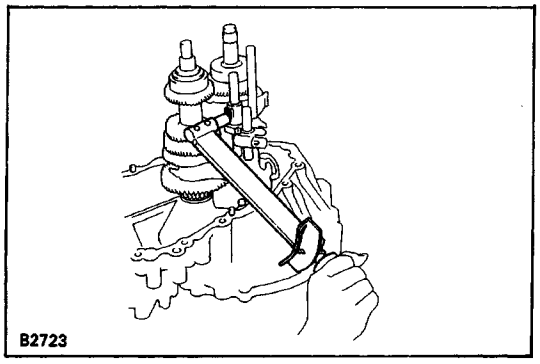
(c) Install the two balls into the reverse shift fork hole.



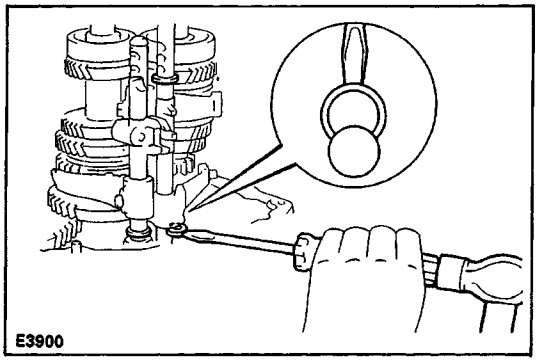
(d) Install the No. 3 fork shaft and the reverse shift fork.



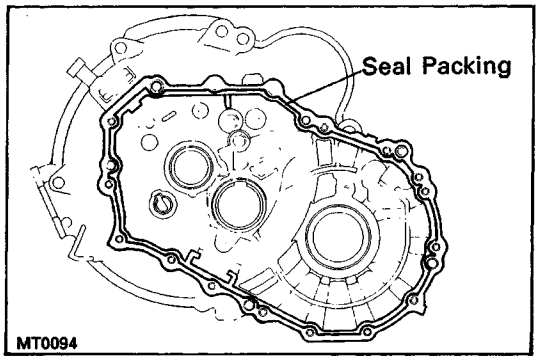
(e) Install the No. 2 fork shaft and the shift head.



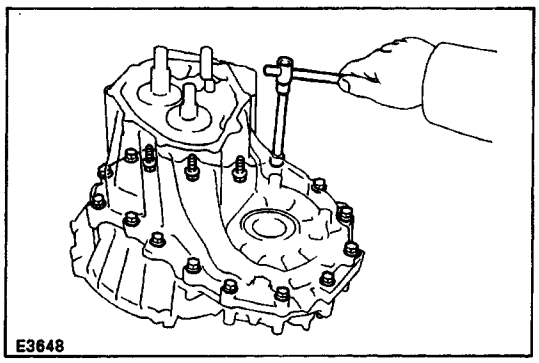
(f) install and torque the three bolts.
Torque: 16 N–m (160 kgf–cm, 12 ft–lbf)



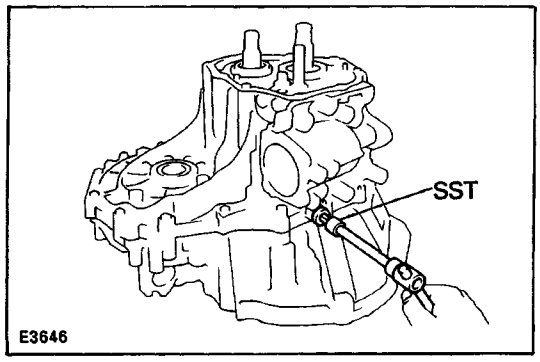
(g) Using a screwdriver and hammer, tap in the three snap rings.



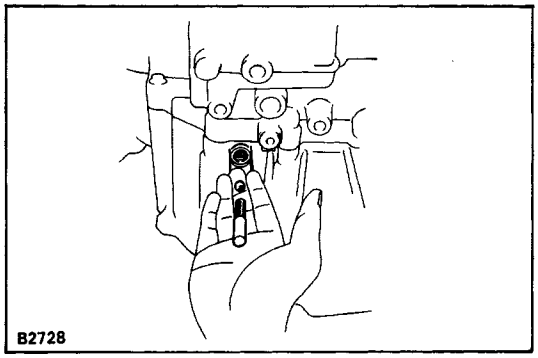
8. INSTALL TRANSAXLE CASE
(a) Remove the any packing material and be , careful not to drop oil on the contacting surface of the transaxle case or transaxle case.
(b) Apply seal packing to the transaxle case as shown in the figure.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent



(c) Install and torque the sixteen bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



9. INSTALL LOCK BALL ASSEMBLY
(a) Apply sealant to the lock ball assembly thread.
Sealant: Part No. 08833–00080, THREE BOND 1344 LOCTITE 242 or equivalent
(b) Using SST, tighten the lock ball assembly.
SST 09313–30021

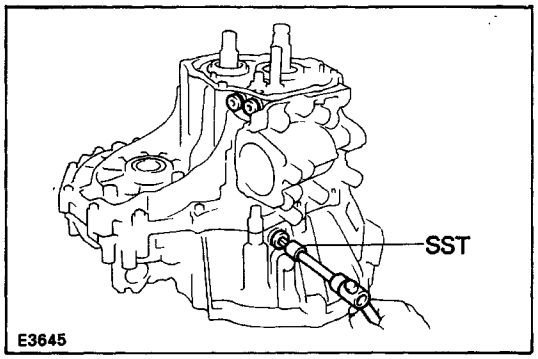


10. INSTALL BALLS, SPRINGS, SEATS AND PLUGS

(a) Install the balls, springs and seats into the holes.

(b) Apply sealant to the plugs threads.

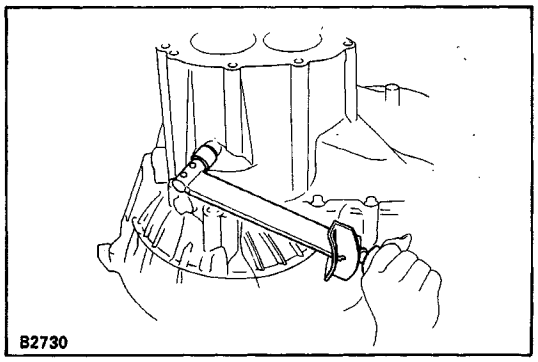
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent



(c) Using SST, tighten the three plugs.

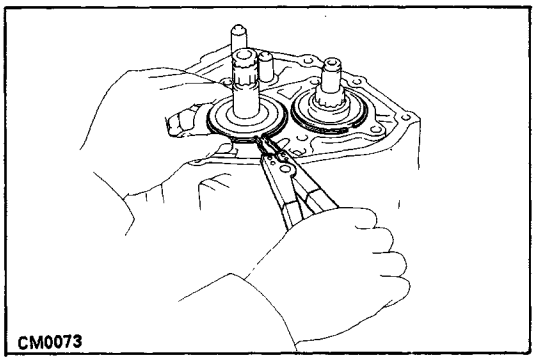
SST 09313–30021

Torque: 25 N–m (250 kgf–cm, 18 ft–lbf)



11. INSTALL AND TORQUE REVERSE IDLER GEAR SHAFT LOCK BOLT

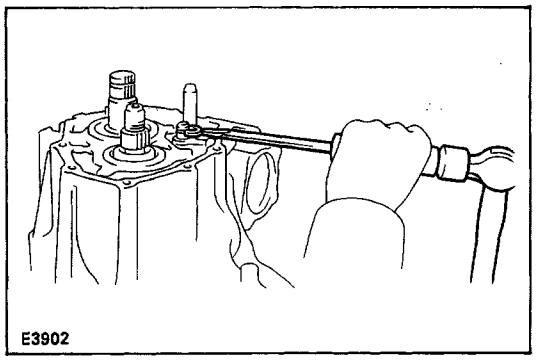
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



12. INSTALL BEARING SNAP RINGS

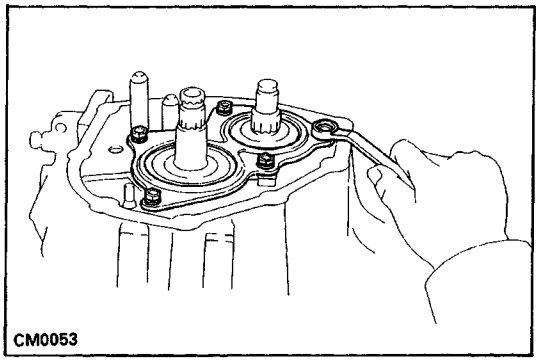
Using a snap ring expander, install the two snap rings.

HINT: If it is difficult to install the snap rings, pull the shafts.



13. INSTALL SNAP RING TO NO. 2 FORK SHAFT

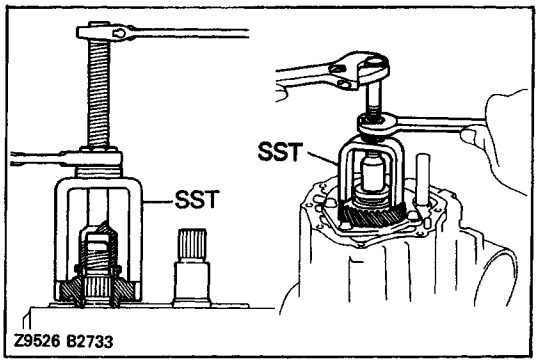
Using a screwdriver and hammer, tap in the snap ring.



14. INSTALL REAR BEARING RETAINER

Install and torque the five bolts.

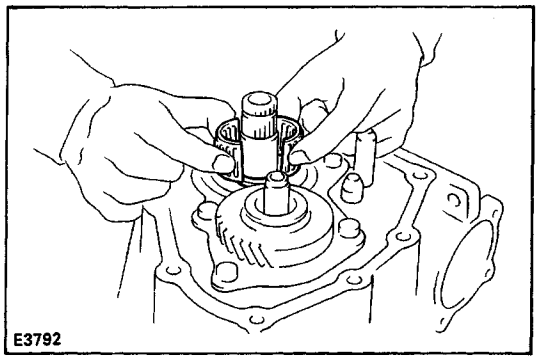
Torque: 19 N–m (195 kgf–cm, 14 ft–lbf)



15. –INSTALL FIFTH DRIVEN GEAR

Using SST, instal! the 5th driven gear.

SST 09309–12020

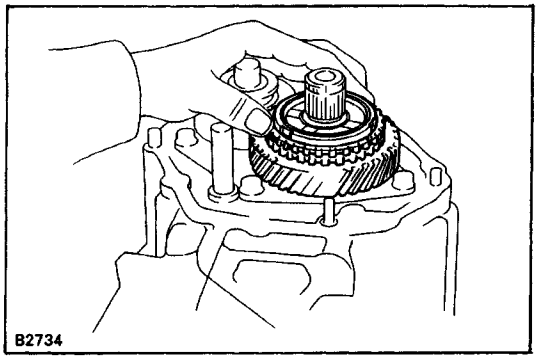


16. INSTALL SPACER, NEEDLE ROLLER BEARING, FIFTH GEAR AND SYNCHRONIZER RING

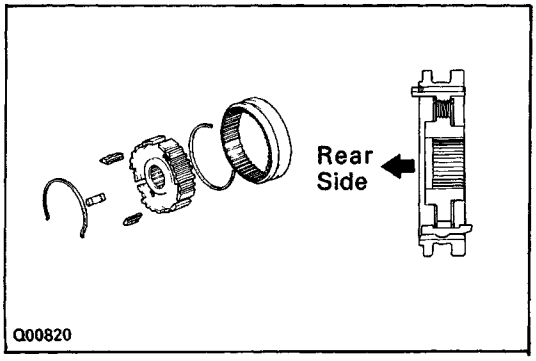
(a) Install the spacer.

(b) Apply gear oil to the needle roller bearing.

(c) Install the needle roller bearings.



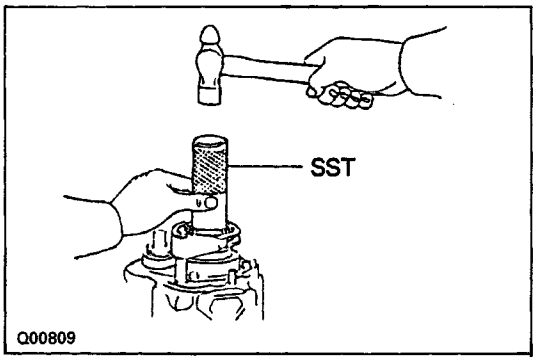
(d) Install the 5th gear and synchronizer ring.



17. INSTALL NO. 3 CLUTCH HUB INTO HUB SLEEVE

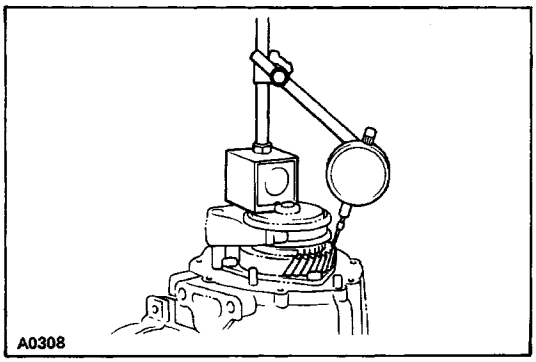
(a) Install the three key springs and shifting keys.

(b) Install the hub sleeve to the clutch hub.



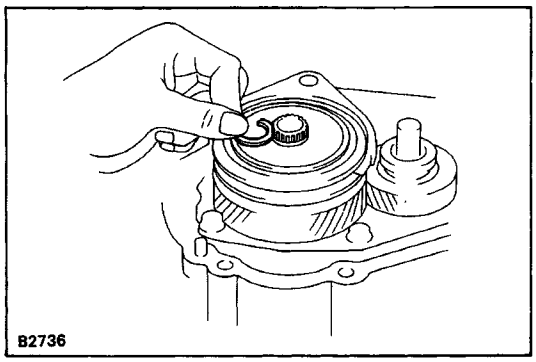
18. INSTALL NO. 3 HUB SLEEVE ASSEMBLY WITH NO. 3 SHIFT FORK

(a) Using SST and a hammer, drive in No. 3 hub sleeve with shift fork.
SST 09636–20010
NOTICE: Align the synchronizer ring slots with the shifting keys.



19. MEASURE FIFTH GEAR THRUST CLEARANCE

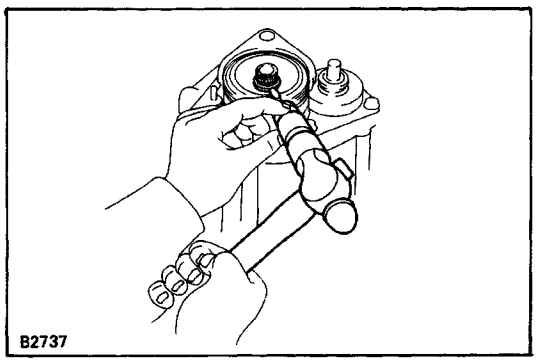
Using a dial indicator, measure the thrust clearance.
Standard clearance: 0.10 – 0.57 mm (0.0039 – 0.0224 in.)



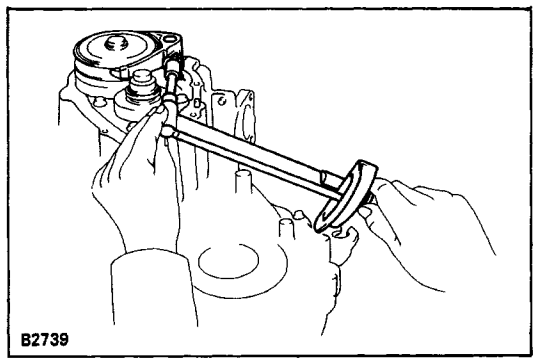
20. INSTALL SNAP RING

(a) Select a snap ring that will minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.25 (0.0886)	E	2.49 (0.0980)
B	2.31 (0.0909)	F	2.55 (0.1004)
C	2.37 (0.0933)	G	2.61 (0.1028)
D	2.43 (0.0957)		

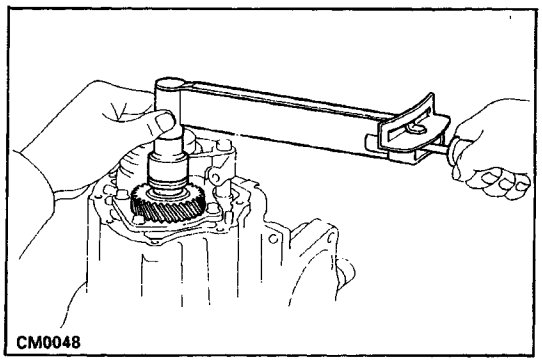


(b) Using a screwdriver and hammer, tap in the snap ring.



21. INSTALL BOLT

Torque: 16 N–m (160 kgf–cm, 12 ft–lbf)



22. INSTALL LOCK NUT

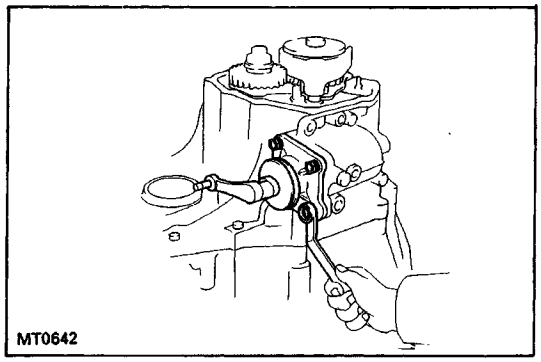
(a) Engage the gear double meshing.

(b) Install and torque the nut.

Torque: 118 N–m (1,200 kgf–cm, 87 ft–lbf)

(c) Disengage the gear double meshing.

(d) Stake the lock nut.



23. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY

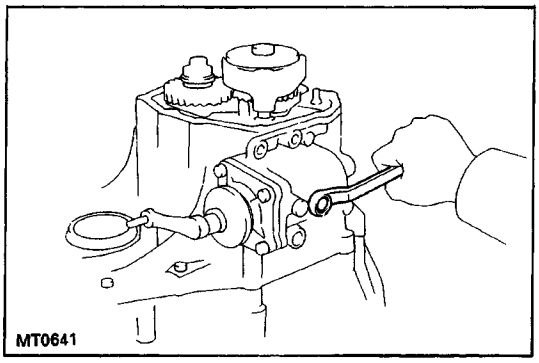
(a) Place a new gasket in position on the control shaft cover.

1by Apply sealant to the bolt threads.

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

(c) Install the shift and select lever shaft and torque the bolts.

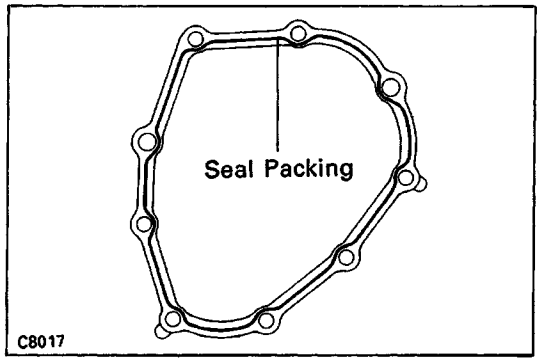
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)



24. INSTALL LOCK BOLT

Install and torque the lock bolt.

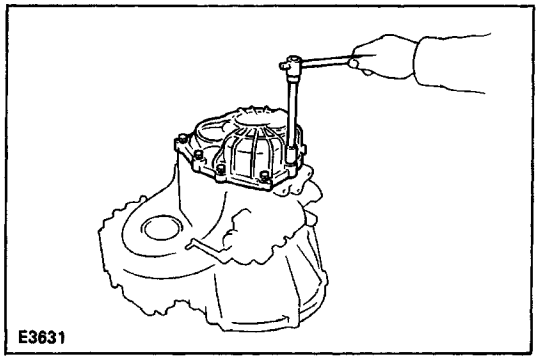
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



25. INSTALL TRANSMISSION CASE COVER

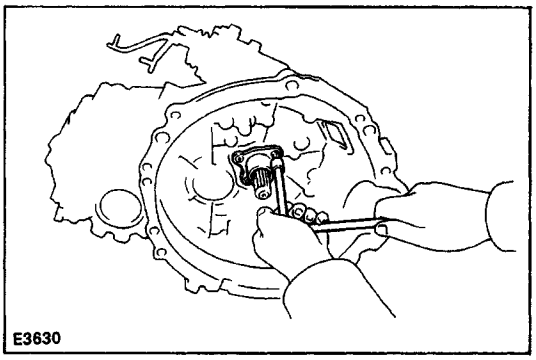
(a) Apply seal packing to the transmission case as shown in the figure.

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



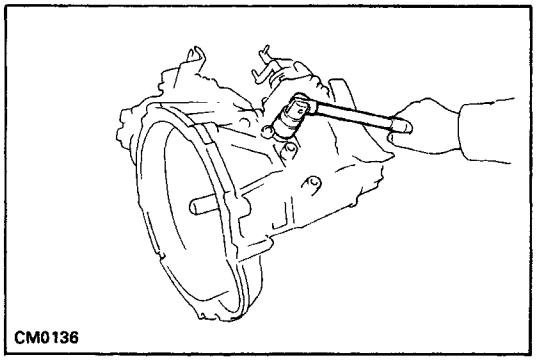
(b) Install and torque the nine bolts.

Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



26. INSTALL FRONT BEARING RETAINER

Using a trox wrench, install the three trox screws.
Torx wrench T30 09042–00010



27. INSTALL SELECTING BELLCRANK

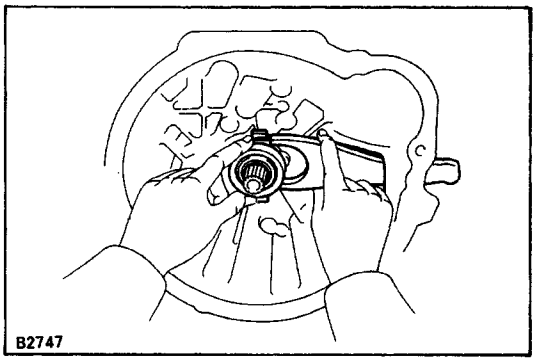
28. INSTALL CONTROL LEVER HOUSING SUPPORT BRACKET

29. INSTALL BACK–UP LIGHT SWITCH

Install and torque the back–up light switch.

Torque: 40 N–m (410 kgf–cm, 30 ft–lbf)

30. INSTALL SPEEDOMETER DRIVEN GEAR



31. INSTALL RELEASE FORK AND BEARING

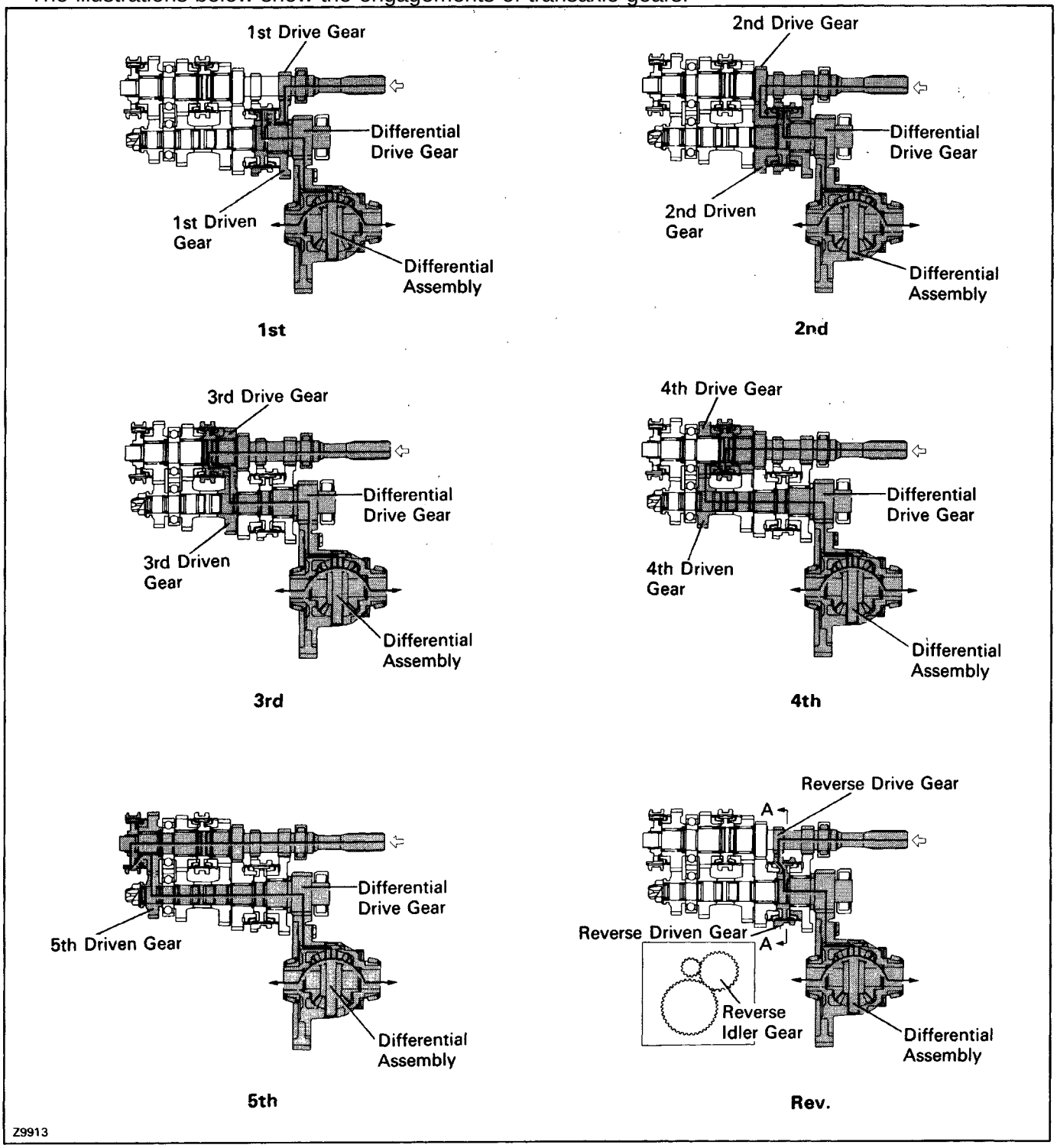
(a) Apply molybdenum disulphide lithium base grease to the following parts.
Release bearing hub inside groove
Install shaft spline
Release fork contact surface

(b) Apply MP grease to the front surface of the release bearing.

(c) Install the release fork and bearing to the transaxle.

(S53 TRANSAXLE/2WD) DESCRIPTION

- Transaxle types S53 is composed 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 is as follows: Oil grade API GL–3 Viscosity SAE 75W–90**
  In case the above is unavailable
  Oil grade API GL–4 or 5
- The illustrations below show the engagements of transaxle gears.



PRECAUTIONS

When working with FIPG material, you must be 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

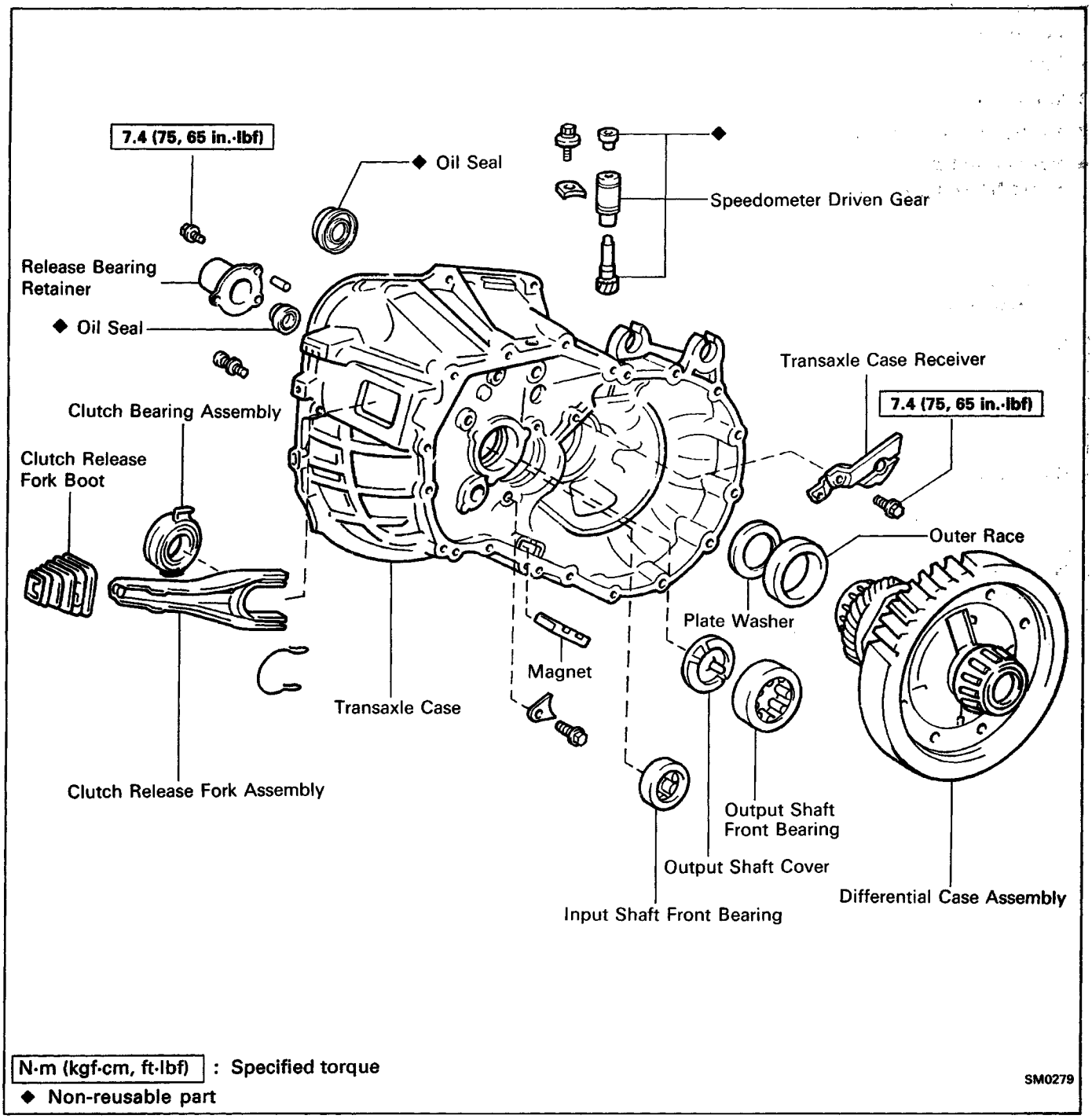
Problem	Possible cause	Remedy	Page
Noise	Transmission or differential faulty Wrong oil grade Oil level low	Disassemble and inspect transmission or differential Replace oil Add oil	MT–61
Oil leakage	Oil level too high Oil seal, 0–ring or gasket worn or damaged	Drain oil Replace oil seal, 0–ring or gasket	 MT–61 SA–21
Hard to shift or will not shift	Control cable faulty Transmission faulty	Replace control cable Disassemble and inspect transmission	 MT–61
Jump out of gear	Transmission faulty	Disassemble and inspect transmission	MT–61

REMOVAL AND INSTALLATION OF TRANSAXLE

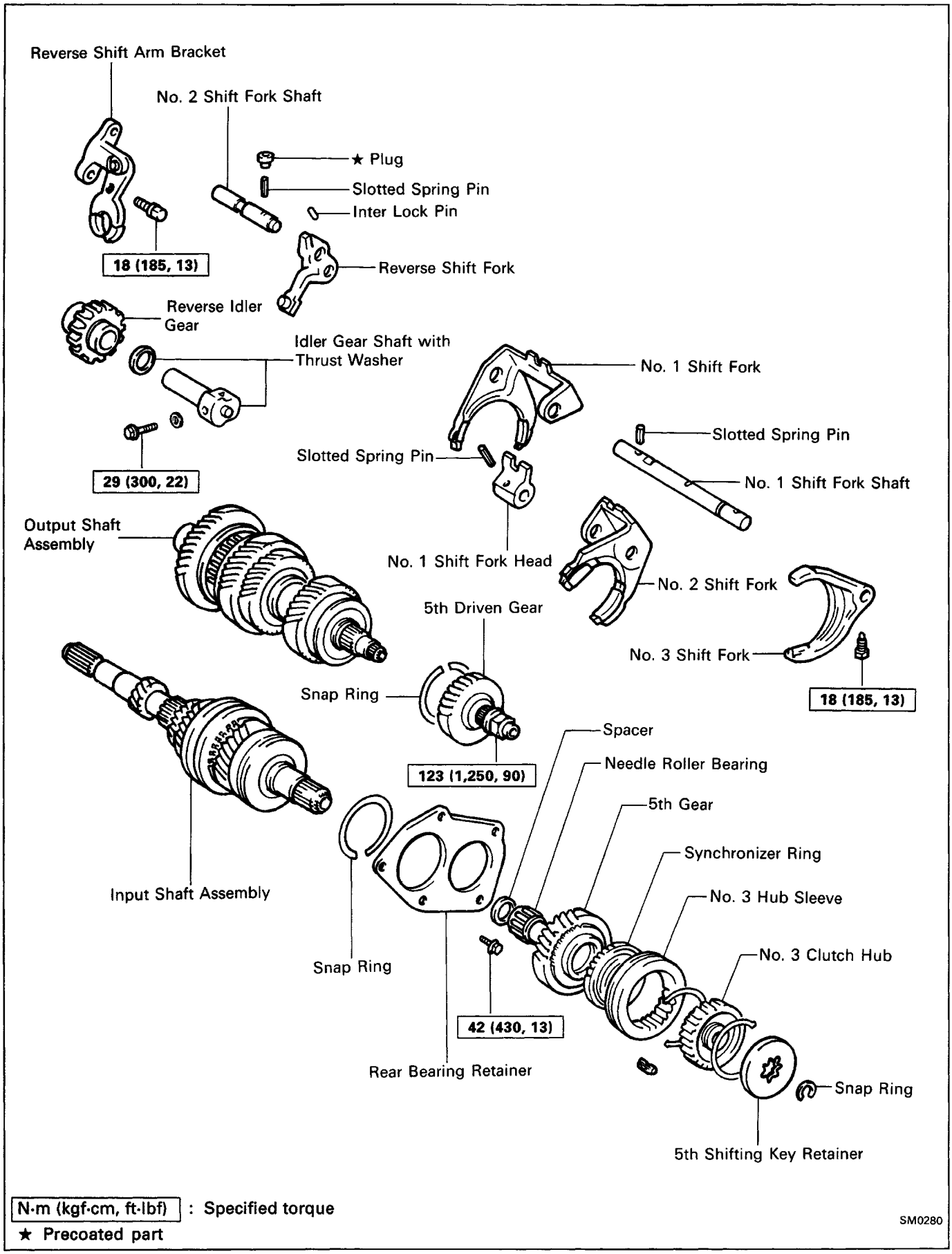
(See page MT–4)

REMOVAL OF COMPONENT PARTS

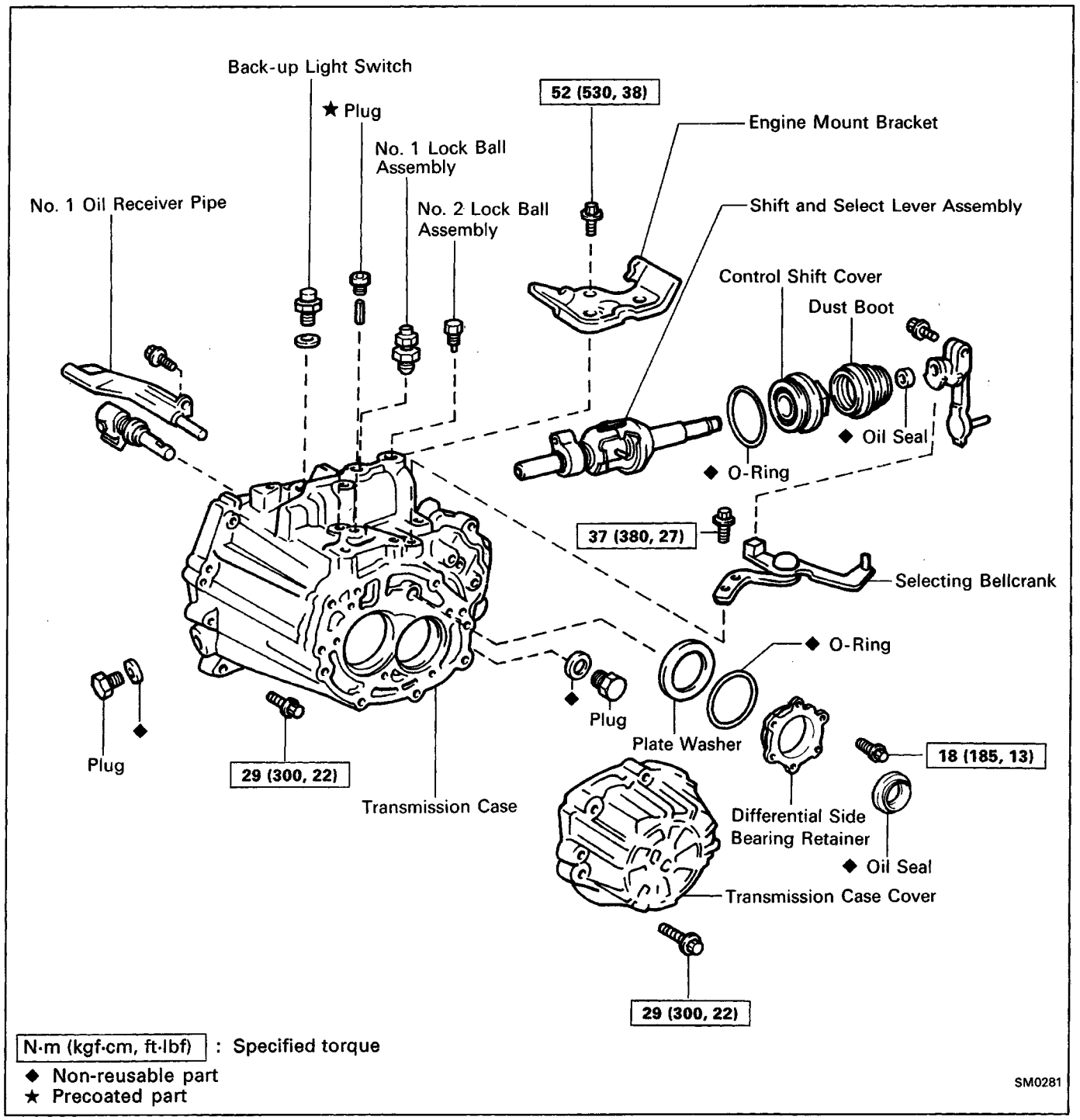
COMPONENTS

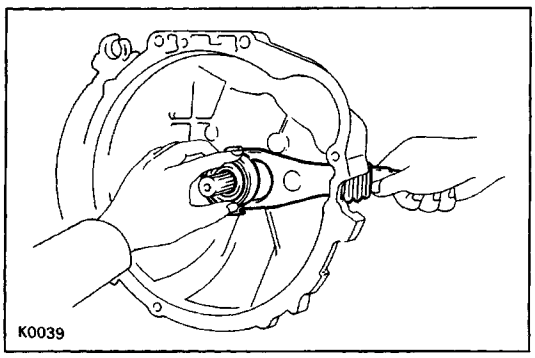


COMPONENTS (Cont'd)

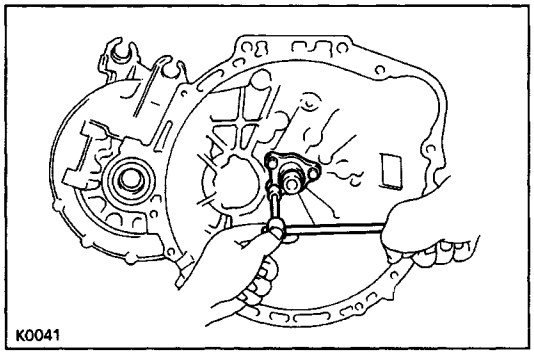


COMPONENTS (Cont'd)

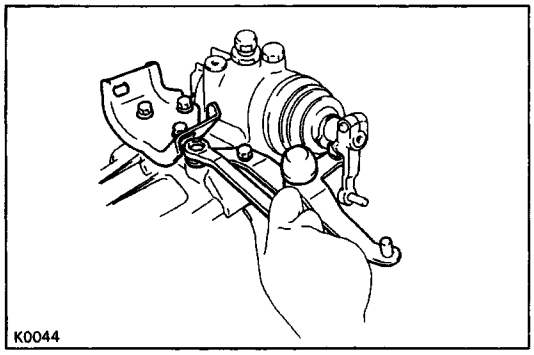




1. REMOVE RELEASE FORK, BEARING, BACK–UP LIGHT SWITCH AND SPEEDOMETER DRIVEN GEAR

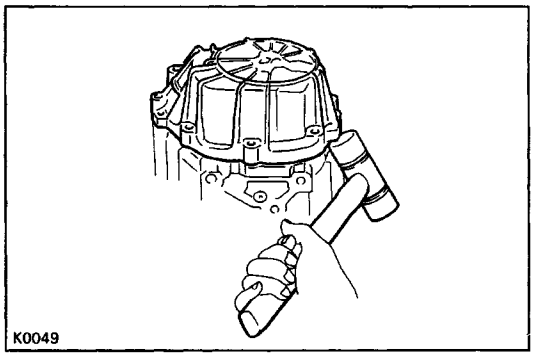


2. REMOVE RELEASE BEARING RETAINER



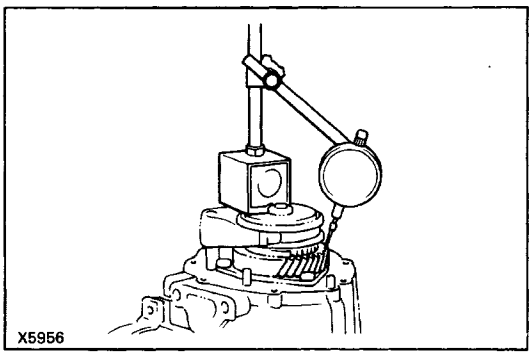
3. REMOVE SELECTING BELLCRANK AND ENGINE MOUNT BRACKET

(a) Remove the two bolts and selecting bellcrank.
(b) Remove the three bolts and engine mount bracket.



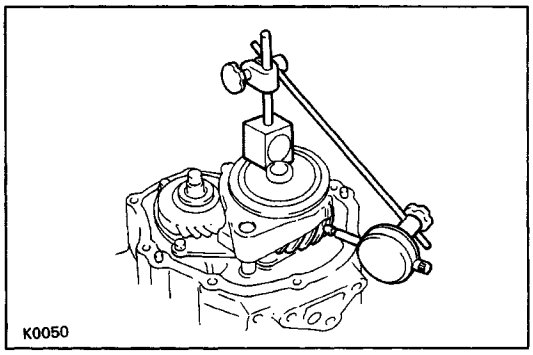
4. REMOVE TRANSMISSION CASE COVER

(a) Remove the eight bolts.
(b) Using a plastic hammer, tap off the transmission case cover.



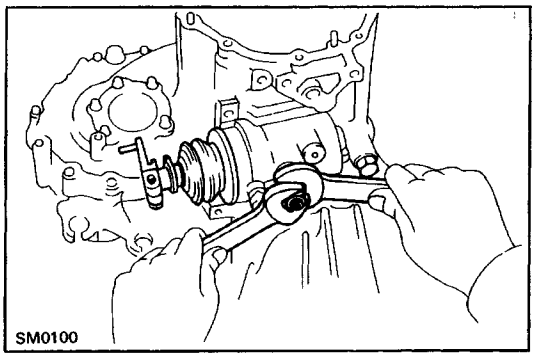
5. INSPECT FIFTH GEAR THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance.
Standard clearance: 0.20 – 0.40 mm
(0. 0079 – 0.0157 i n .)
Maximum clearance: 0.45 mm (0.0177 in.)



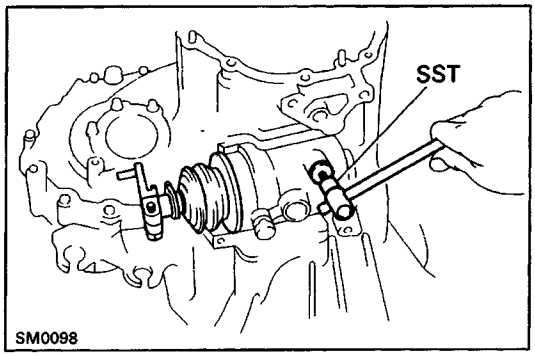
6. INSPECT FIFTH GEAR OIL CLEARANCE

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

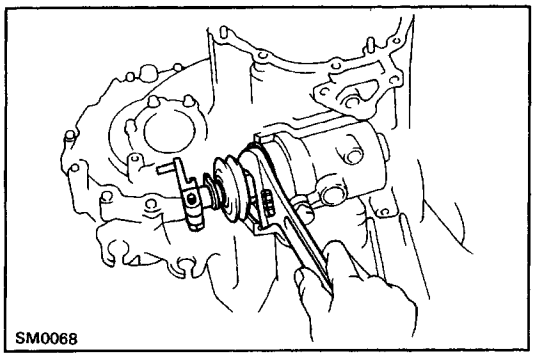


7. REMOVE NO.1 AND NO.2 LOCK BALL ASSEMBLIES

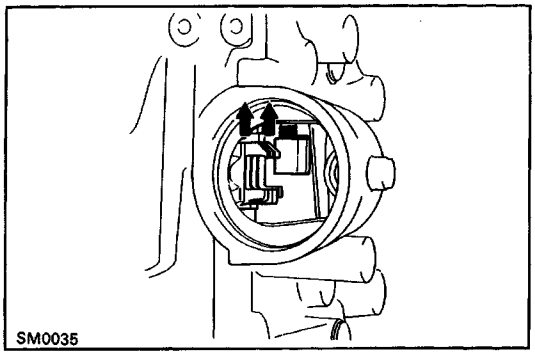
(a) Loosen the lock nut and remove the No. 1 lock ball.



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

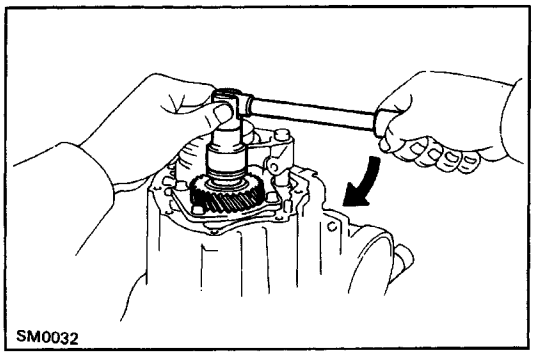


8. REMOVE SHIFT AND SELECT LEVER ASSEMBLY

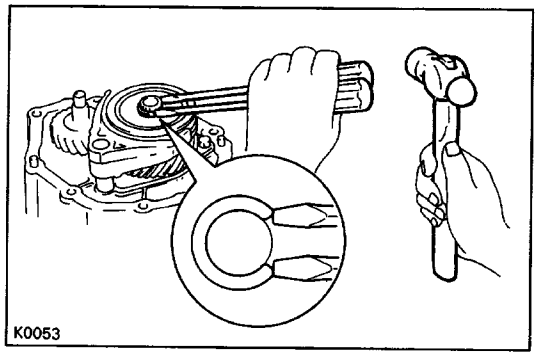


9. REMOVE OUTPUT SHAFT LOCK NUT

(a) Unstake the nut.
(b) Engage the gear double meshing.

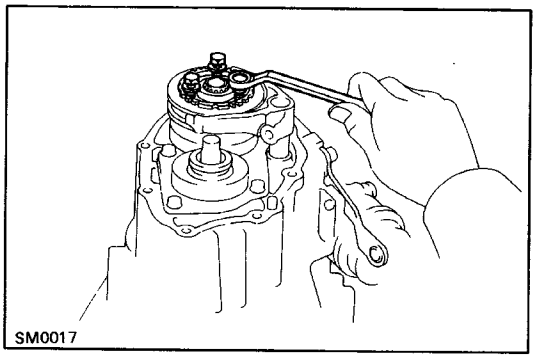


(c) Turn the lock nut clockwise and remove it.
HINT: The lock nut has LH threads.
(d) Disengage the gear double meshing.



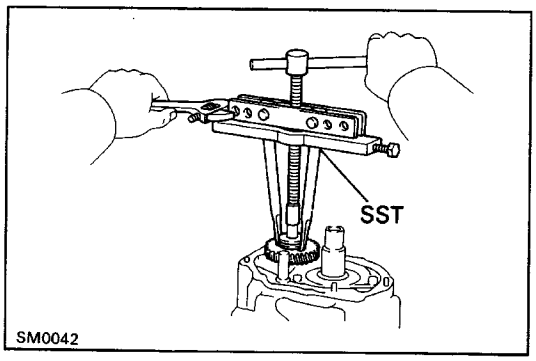
10. REMOVE NO. 3 HUB SLEEVE ASSEMBLY AND NO. 3 SHIFT FORK

(a) Using two screwdrivers and a hammer, tap out the snap ring.
(b) Remove the shifting key retainer.
(c) Remove the bolt from the No. 3 shift fork.



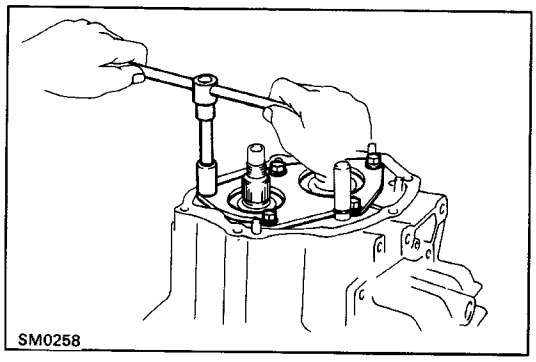
(d) Using the three case cover set bolts, tighten the three bolts a little at a time and remove the No. 3 hub sleeve assembly and shift fork.

11. REMOVE FIFTH GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS AND SPACER

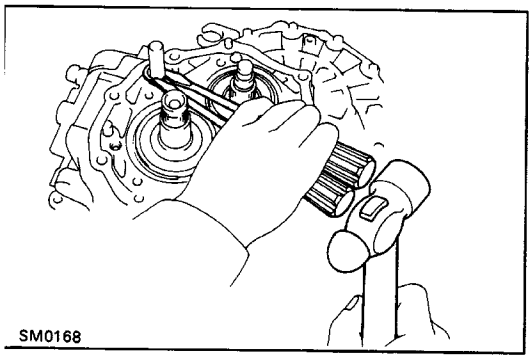


12. REMOVE FIFTH DRIVEN GEAR

Using SST, remove the 5th driven gear.
SST 09950–20017

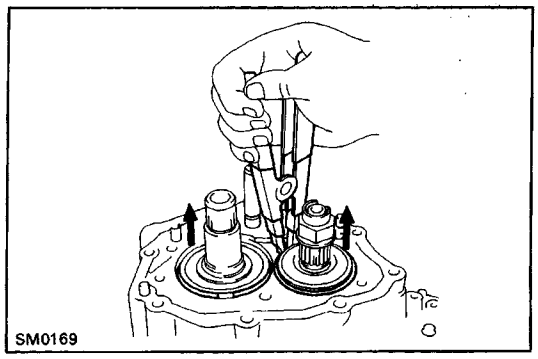


13. REMOVE REAR BEARING RETAINER



14. REMOVE SNAP RING FROM NO. 1 SHIFT FORK SHAFT

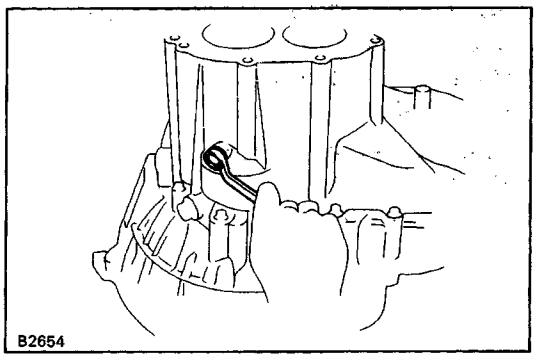
Using two screwdrivers and a hammer, tap out the snap ring.



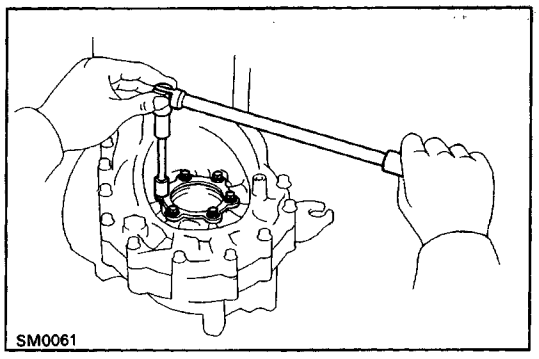
15. REMOVE BEARING SNAP RINGS

Using a snap ring expander, remove the two snap rings.

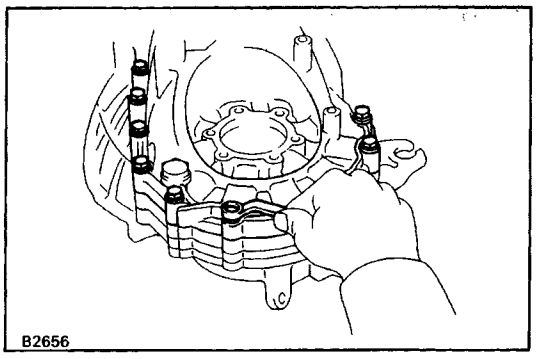
HINT: If it is difficult to remove the snap rings, pull up the shafts. .



16. REMOVE REVERSE IDLER GEAR SHAFT LOCK BOLT



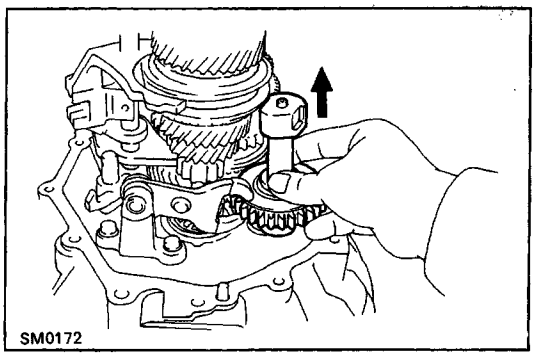
17. REMOVE DIFFERENTIAL SIDE BEARING RETAINER AND SHIM



18. REMOVE TRANSMISSION CASE

(a) Remove the seventeen bolts.

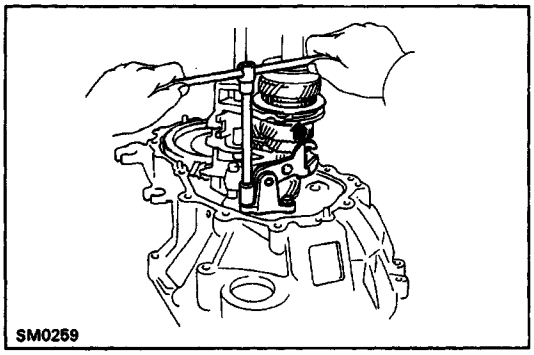
(b) Using a plastic hammer, tap off the transmission case.



19. REMOVE REVERSE IDLER GEAR AND SHAFT

(a) Pull out the shaft.

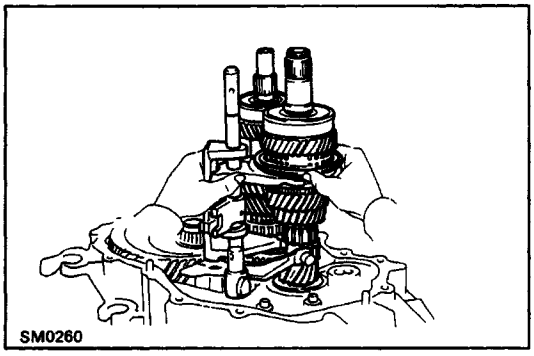
(b) Remove the idler gear and thrust washer.



20. REMOVE REVERSE SHIFT ARM

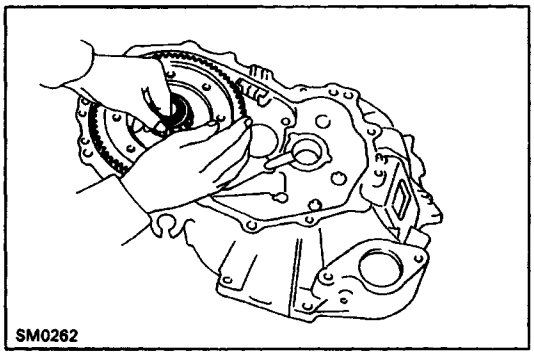
(a) Shift the fork shaft into the reverse.

(b) Remove the two bolts and pull oft the reverse shift arm.

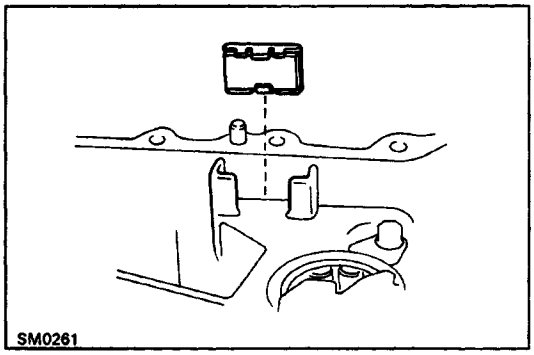


21. REMOVE NO. 1 SHIFT FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1 AND NO. 2 SHIFT FORKS, REVERSE SHIFT FORK WITH INTERLOCK PIN, INPUT AND OUTPUT SHAFT ASSEMBLY

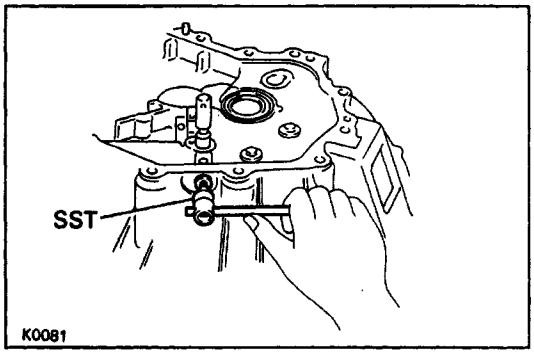
Remove the input shaft assembly and output shaft assembly together with the No. 1 fork shaft, shift head and shift forks with the interlock pin from the transaxle case.



22. REMOVE DIFFERENTIAL ASSEMBLY

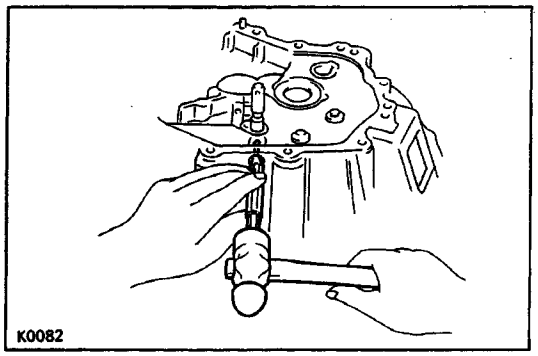


23. REMOVE MAGNET FROM TRANSAXLE CASE

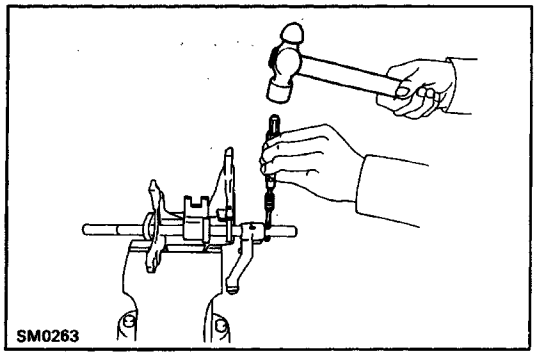


24. REMOVE NO. 2 FORK SHAFT

(a) Using SST, remove the straight screw plug.
SST 09312–30021

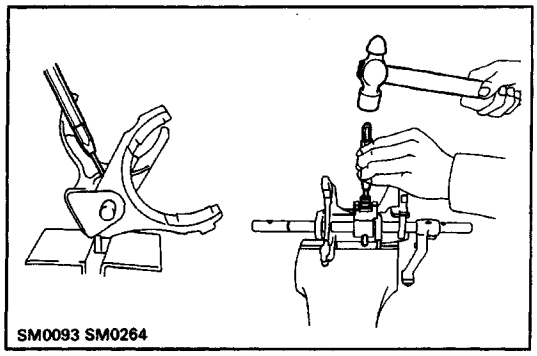


(b) Using a pin punch and hammer, drive out the slotted spring pin.
(c) Pull out the shaft.

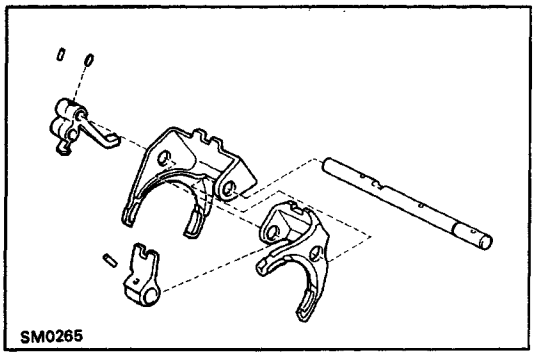


25. SEPARATE NO. 1 FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1, NO. 2 SHIFT FORKS AND REVERSE SHIFT FORK

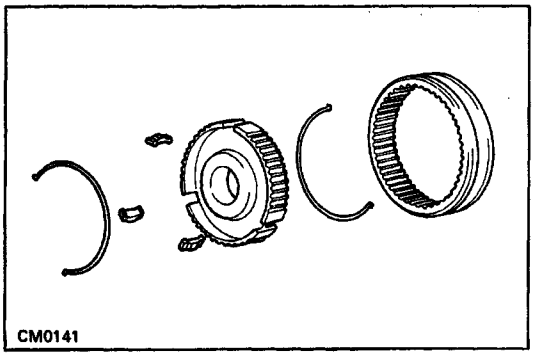
(a) Mount the shift forks to the vise.
(b) Using a pin punch and hammer, drive out the slotted spring pin from the No. 1 fork shaft.



(c) Using a pin punch and hammer, drive out the slotted spring pin from the No. 1 fork shaft as shown in the figure.

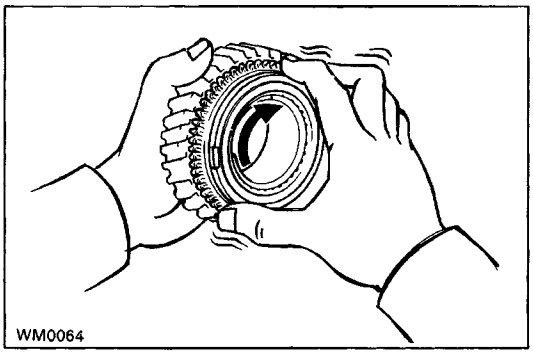


(d) Separate the No. 1 shift fork shaft, No. 1 shift head, No. 1, No. 2 shift forks and reverse shift fork.



26. REMOVE NO. 3 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO. 3 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and springs from the No. 3 clutch hub.

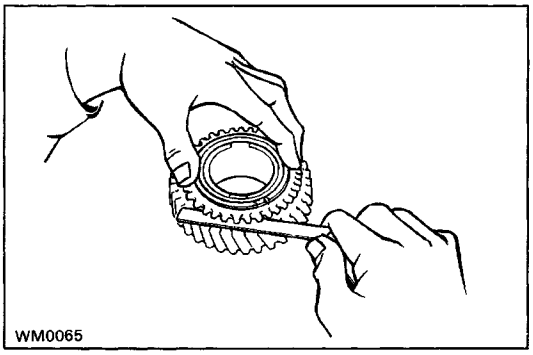


INSPECTION OF COMPONENT PARTS

1. INSPECT SYNCHRONIZER RING OF FIFTH GEAR

(a) Check for wear or damage.

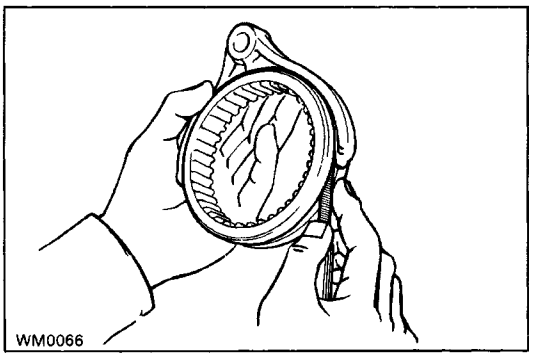
(b) Turn the ring and push it in to check the bearing action.



(c) Using a feeler gauge, 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 minimum, replace the synchronizer ring.

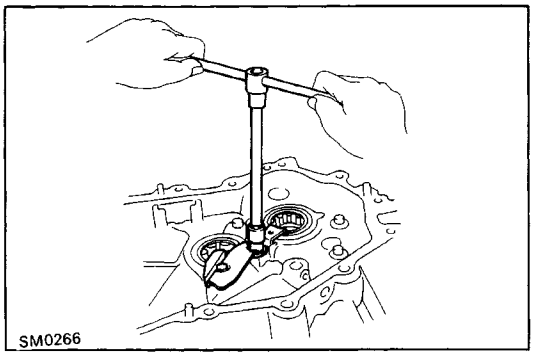


2. INSPECT NO. 3 SHIFT FORK AND NO. 3 HUB SLEEVE CLEARANCE

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

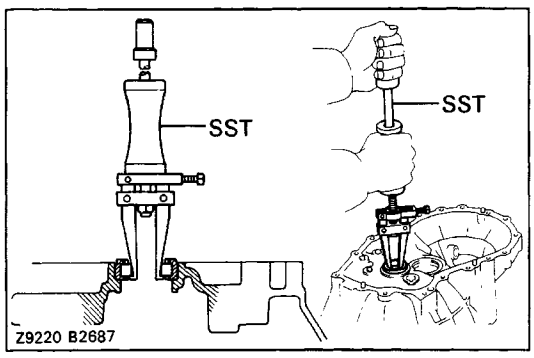
Maximum clearance: 1.0 mm (0.039 in.)

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



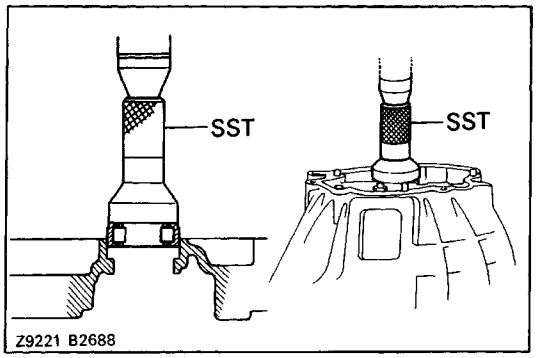
3. IF NECESSARY, REPLACE INPUT SHAFT FRONT BEARING

(a) Remove the bolt and transaxle case receiver.

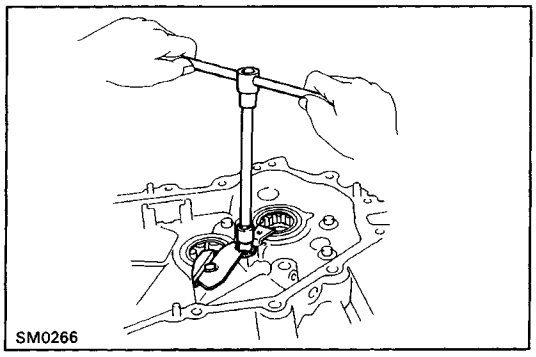


(b) Using SST, remove the bearing.

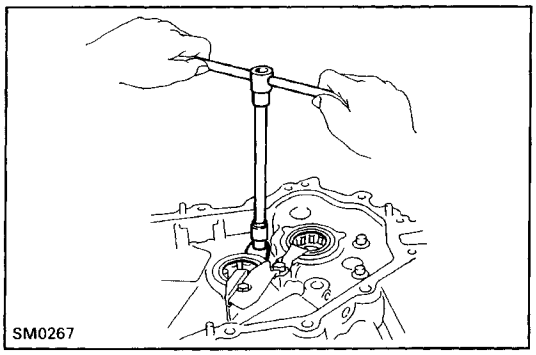
SST 09308–00010



(c) Using SST and a press, install a new bearing.
SST 09310–35010

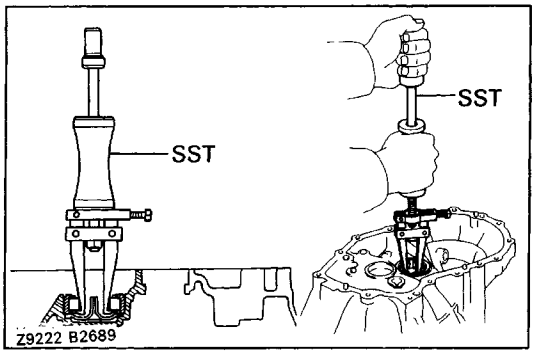


(d) Install the transaxle case receiver and torque the bolt.
Torque: 7.4 N–m (75 kgf–cm, 65 in.–lbf)

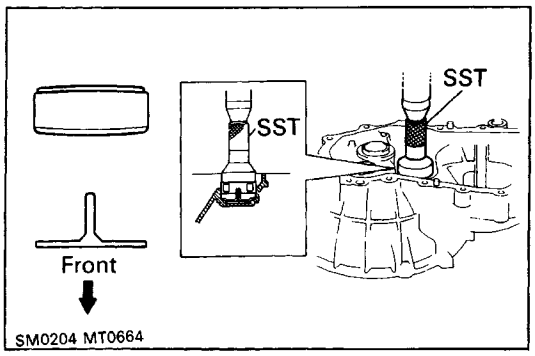


4. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT BEARING

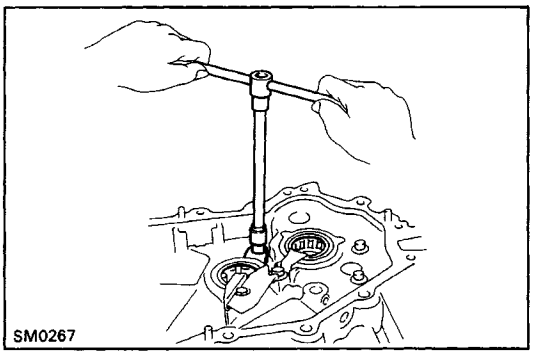
(a) Remove the bolt and bearing lock plate.



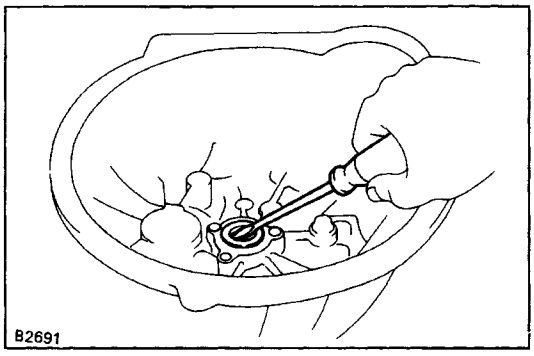
(b) Using SST, remove the bearing.
SST 09308–00010



(c) Using SST and a press, instal! a new bearing.
SST 09310–35010

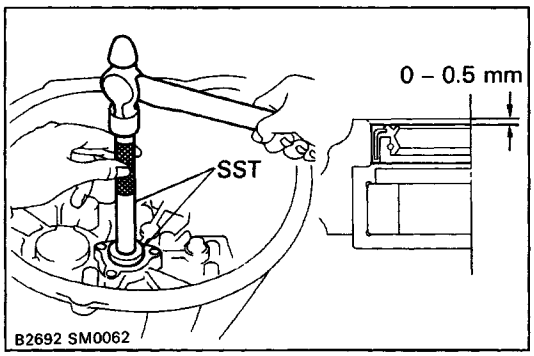


(d) Install the bearing lock plate and torque the bolt.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



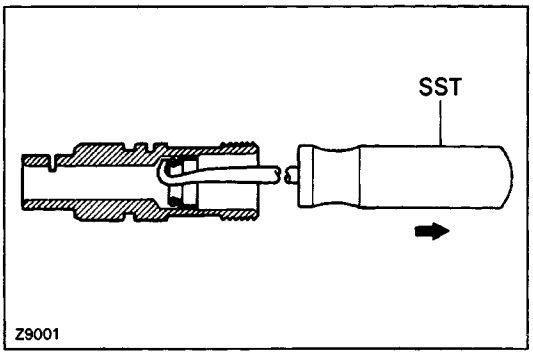
5. IF NECESSARY, REPLACE INPUT SHAFT FRONT OIL SEAL

(a) Using a screwdriver, pry out the oil seal.



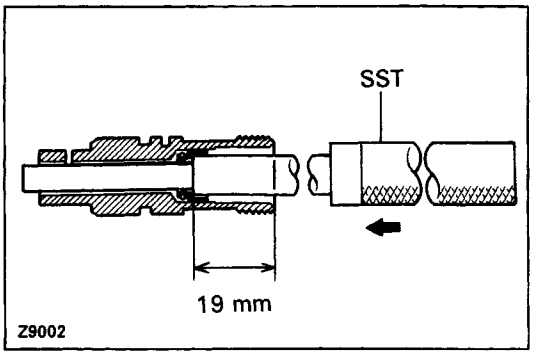
(b) Using SST and a hammer, drive in a new oil seal.
SST 09608–20012 (09608–00080,09608–03020)
Drive in depth: 0 – 0.5 mm (0 – 0.020 in.)

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



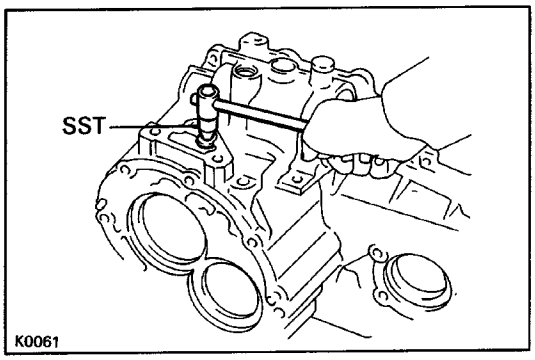
6. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL

(a) Using SST, remove the oil seal.
SST 09921–00010



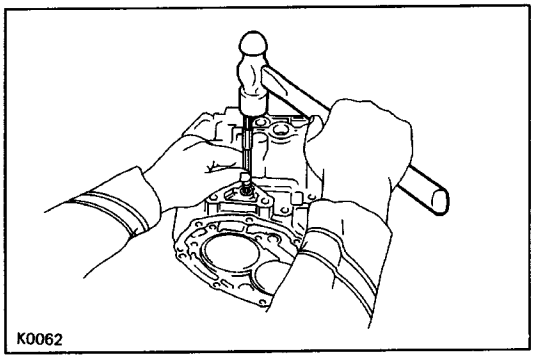
(b) Coat the lip of the oil seat with MP grease.

(c) Using SST and a hammer, drive in a new oil seal.
SST 09201–60011
Drive in depth: 19 mm (0.75 in.)

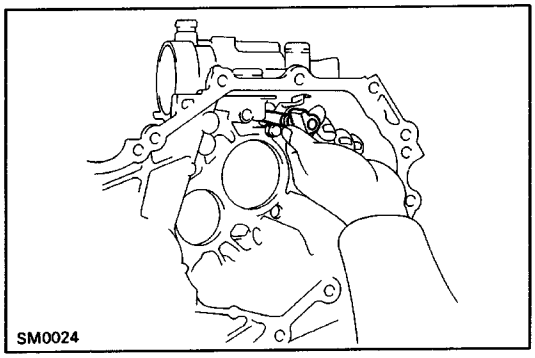


7. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

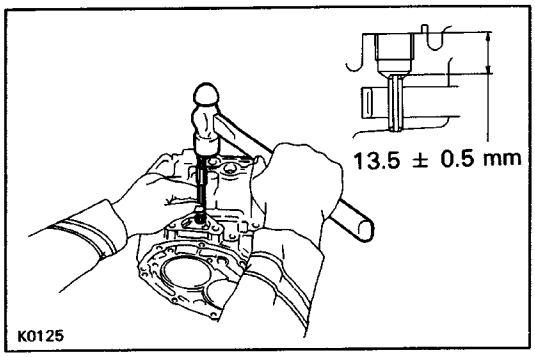
(a) Using SST, remove the straight screw plug.
SST 09313–30021



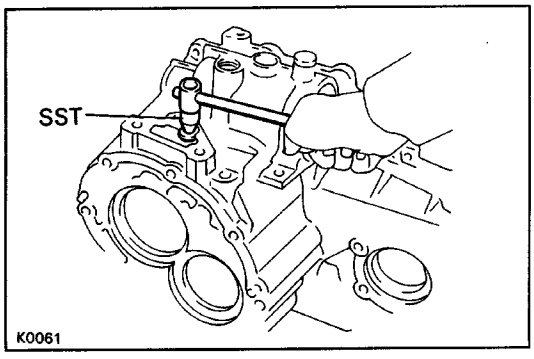
(b) Using a pin punch and hammer, drive out the slotted spring pin.



(c) Replace the reverse restrict pin.



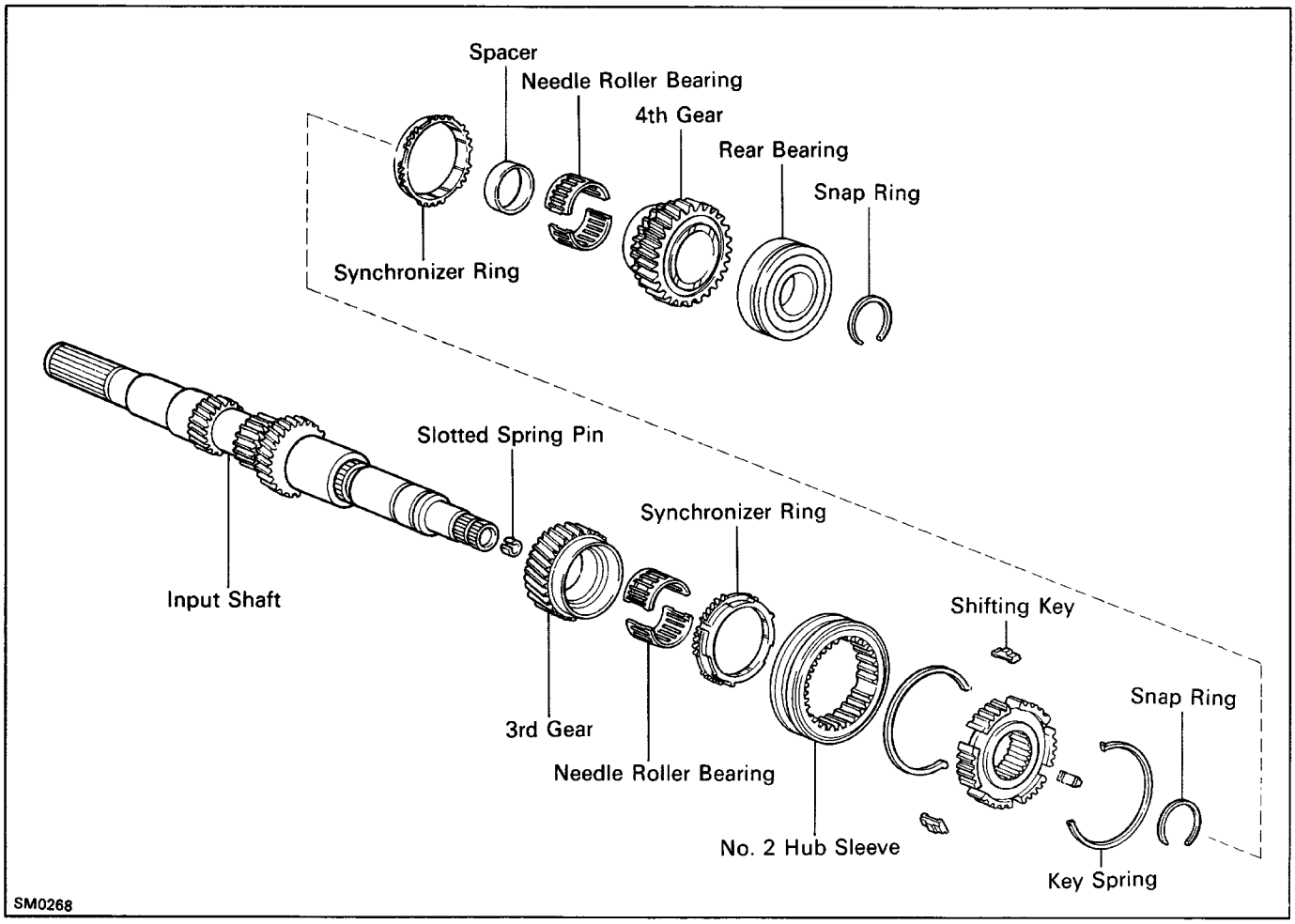
(d) Using a pin punch and hammer, drive in the slotted spring pin.

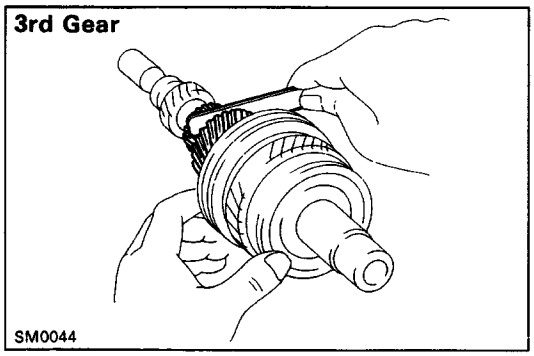


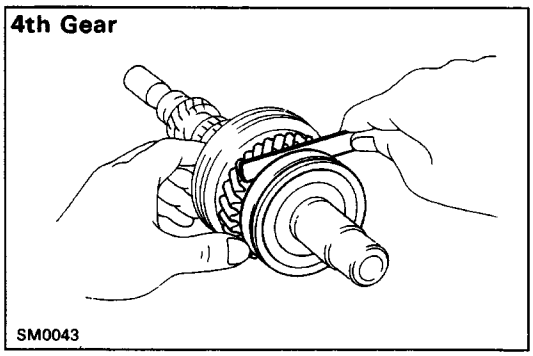
(e) Apply sealant to the plug threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(f) Using SST, install the straight screw plug.
SST 09313–30021
Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)

COMPONENT PARTS
Input Shaft Assembly







DISASSEMBLY OF INPUT SHAFT ASSEMBLY

1. INSPECT THIRD AND FOURTH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance.

Standard clearance:

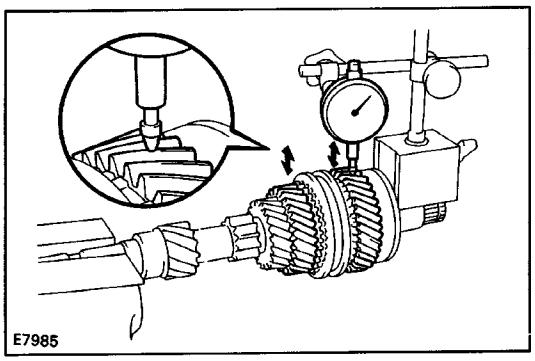
3rd gear 0.10–0.25mm (0.0039 – 0.0098 in.)

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.)

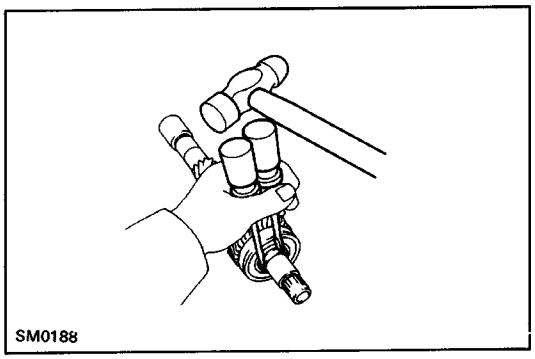


2. INSPECT THIRD AND FOURTH GEAR OIL CLEARANCE

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

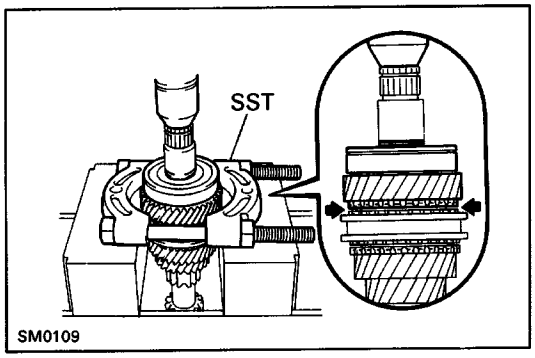
Standard clearance: 0.009 – 0.053 mm
(0. 0004 – 0.0021 in.)
Maximum clearance: 0.070 mm (0.0028 in.)

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



3. REMOVE SNAP RING

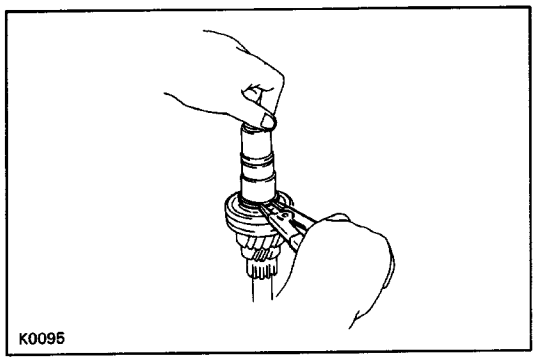
Using two screwdrivers and a hammer, tap out the snap ring.



4. REMOVE REAR BALL BEARING, FOURTH GEAR, NEEDLE ROLLER BEARINGS. SPACER AND SYNCHRONIZER RING

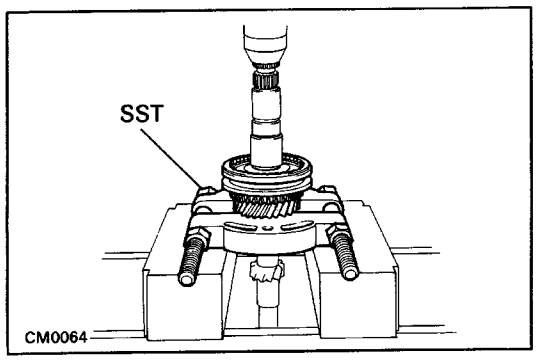
(a) Using SST and a press, remove the 4th gear and rear ball bearing.
SST 09950–00020

(b) Remove the needle roller bearings, spacer and synchronizer ring.



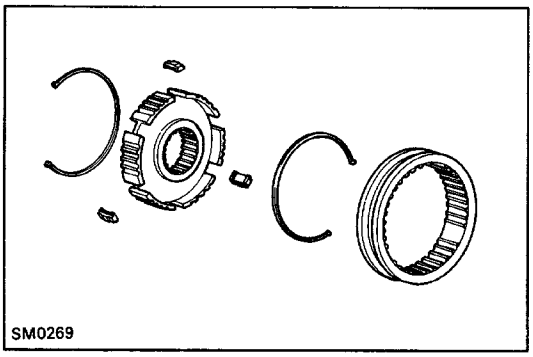
5. REMOVE SNAP RING

Using a snap ring expander, remove the snap ring.



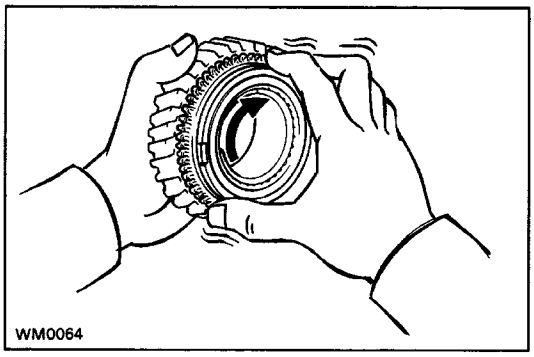
6. REMOVE NO. 2 HUB SLEEVE ASSEMBLY, THIRD GEAR, SYNCHRONIZER RING AND NEEDLE ROLLER BEARINGS

Using SST and a press, remove the No. 2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearings.
SST 09950–00020



7. REMOVE NO. 2 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO. 2 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and springs from the No. 2 clutch hub.

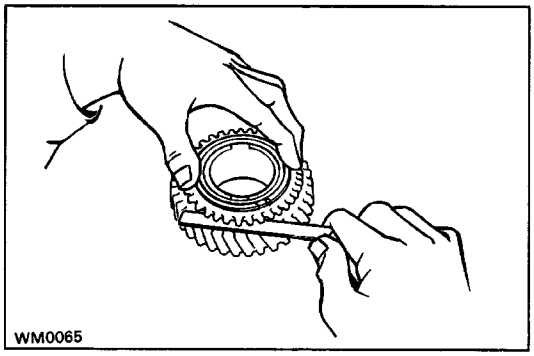


INSPECTION OF INPUT SHAFT COMPONENT PARTS

1. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

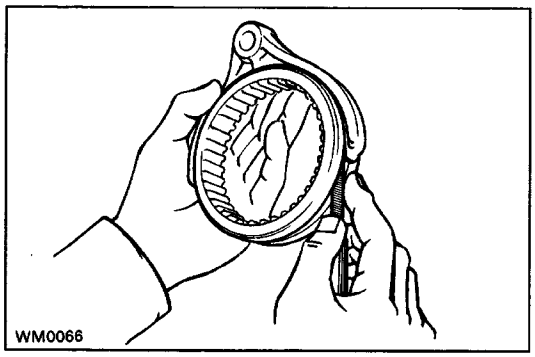
(b) Turn the ring and push it in to check the bearing action.



(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

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

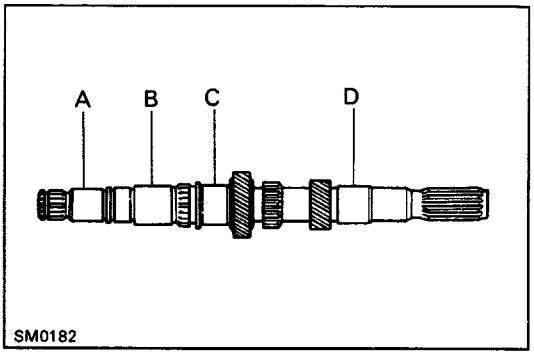


2. INSPECT CLEARANCE OF NO. 2 SHIFT FORK AND HUB SLEEVE

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 maximum, replace the shaft fork or hub sleeve.



3. INSPECT INPUT SHAFT

(a) Check the input shaft for wear or damage.

(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

Minimum outer diameter:

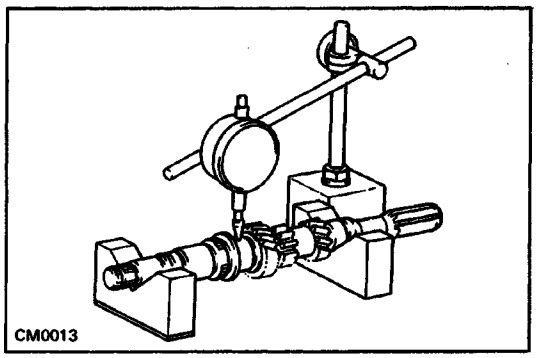
Part A 26.970 mm (1.O618 in.)

B 32.470 mm (1.2783 in.)

C 33.090 mm (1.3028 in.)

D 29.970 mm (1.1799 in.)

If the outer diameter exceeds the minimum, replace the shaft.



(c) Using a dial indicator, check, the shaft runout.
Maximum runout: 0.050 mm (0.0020 in.)
If the runout exceeds the maximum, replace the shaft.

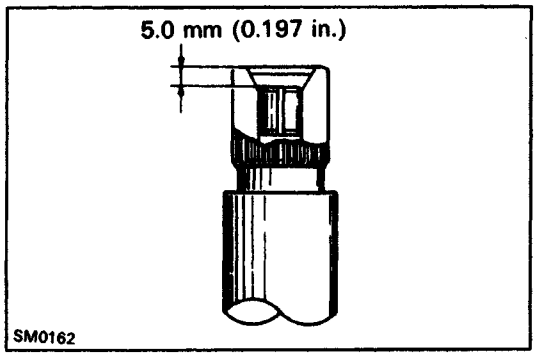
ASSEMBLY OF INPUT SHAFT ASSEMBLY

(See page MT–74)

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

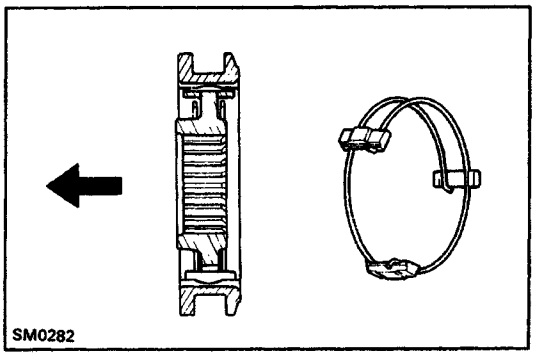
1. IF INPUT SHAFT WAS REPLACED, DRIVE IN SLOTTED SPRING PIN

If the input shaft was replaced, drive the slotted spring pin in the input shaft to a depth of 5.0 mm (0.197 in.).



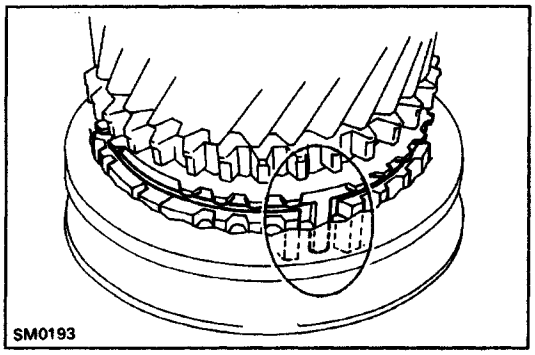
2. INSTALL NO. 2 CLUTCH HUB INTO HUB SLEEVE

(a) Install the No. 2 clutch hub and shifting keys to the No. 2 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.

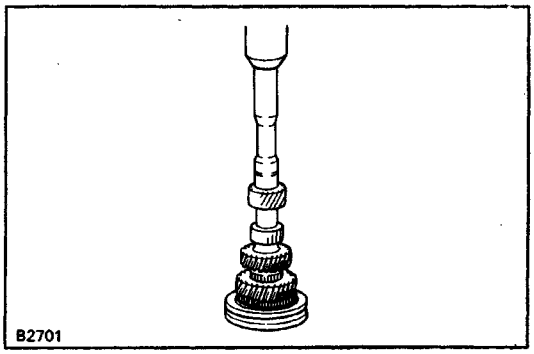


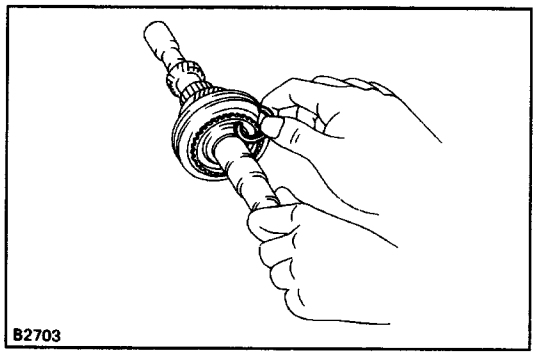
3. INSTALL THIRD GEAR, NEEDLE ROLLER BEARINGS, SYNCHRONIZER RING AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHAFT

(a) Apply gear oil to the needle roller bearings.
(b) Install the needle roller bearings.
(c) Place the synchronizer ring on the gear.
HINT: Align the ring slots with the shift keys, and the ring projections with the hub slots.



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

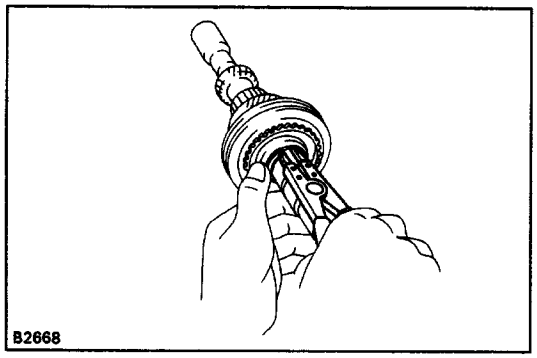




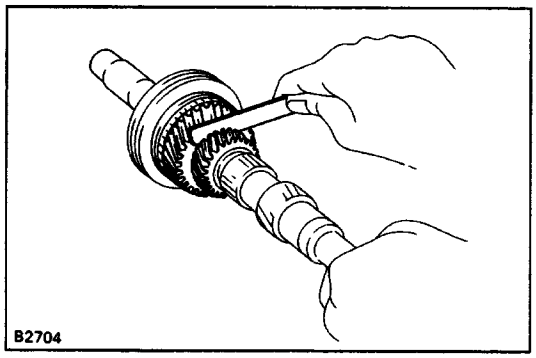
4. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

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)



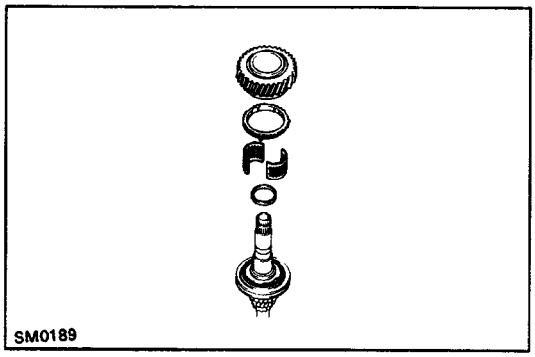
(b) Using a snap ring expander, install the snap ring.



5. INSPECT THIRD GEAR THRUST CLEARANCE

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

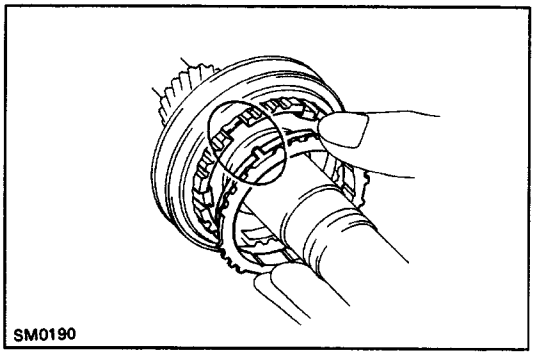
Standard clearance: 0.10 – 0.25 mm (0.0039 – 0.0098 in.)



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

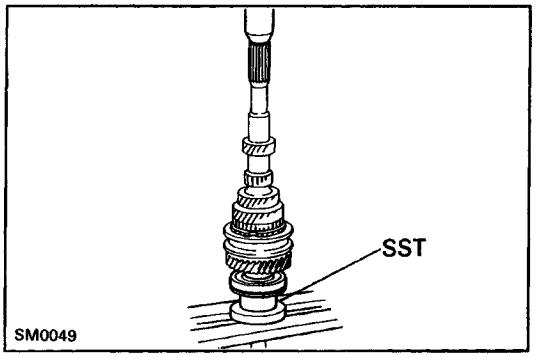
(a) Apply gear oil to the needle roller bearings.

(b) Install the spacer and needle roller bearings.

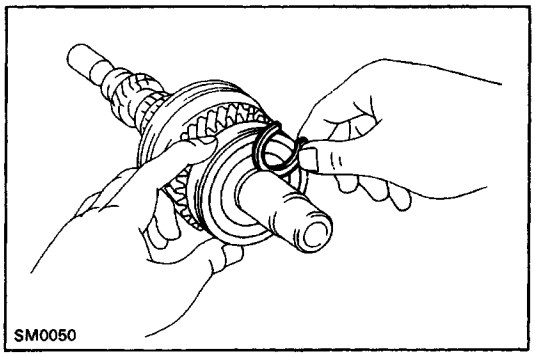


(c) Place the synchronizer ring on the gear.

HINT: Align the ring slots with the shift keys, and the ring projections with the hub slots.



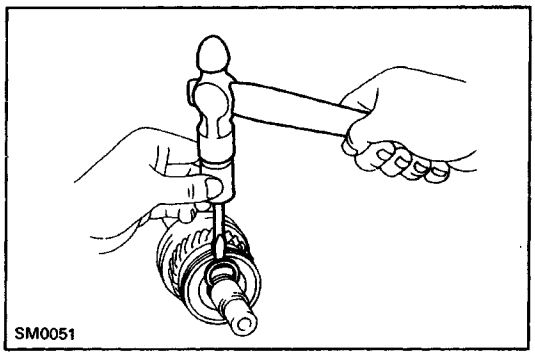
(d) Using SST and a press, install the rear ball bearing.
SST 09608–12010 (09608–00070)



7. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

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)

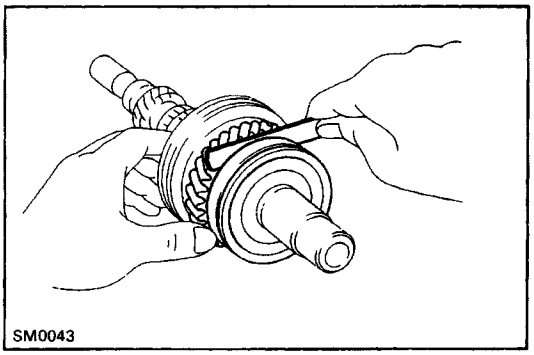


(b) Using a screwdriver and hammer, tap in the snap ring.

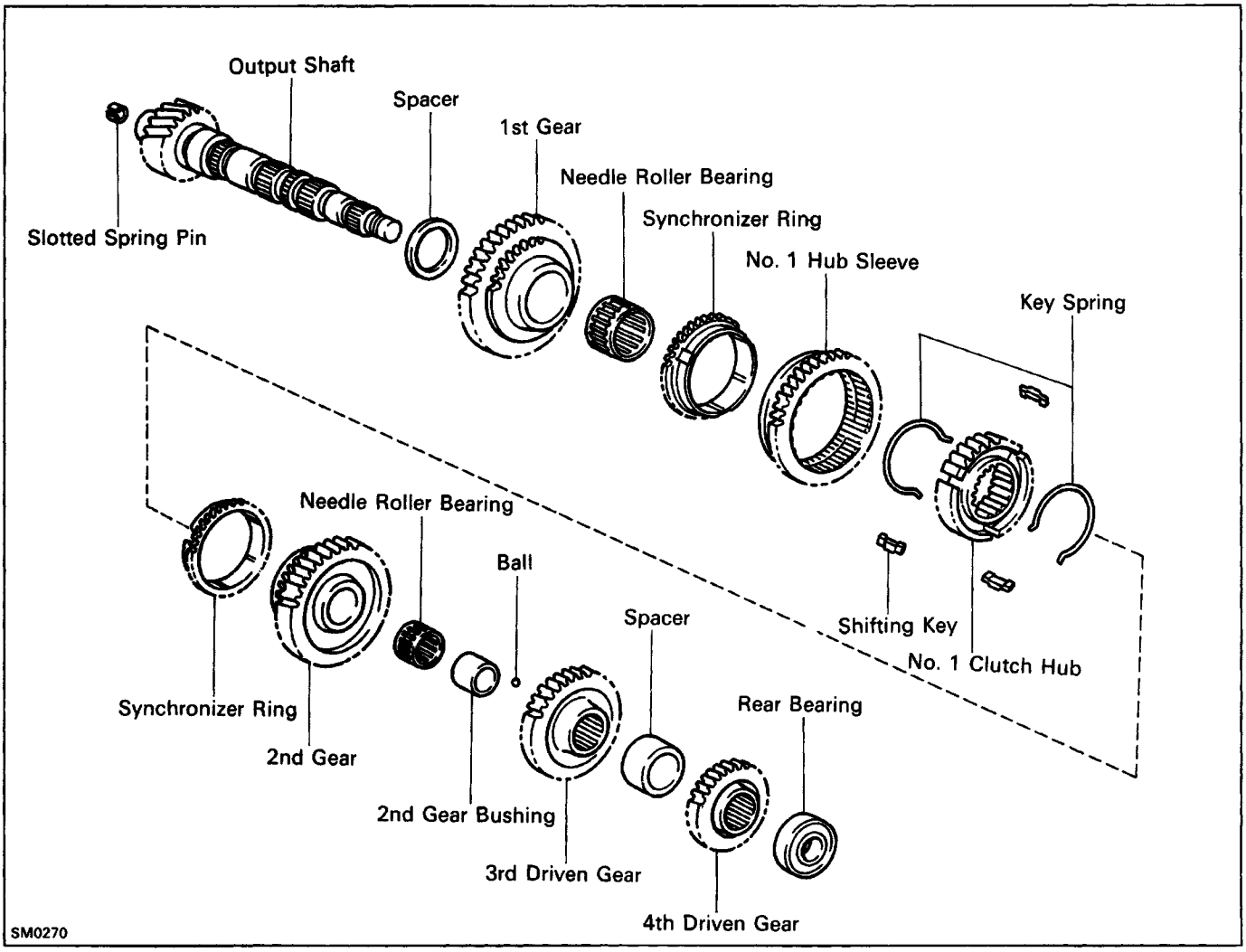
8. INSPECT FOURTH GEAR THRUST

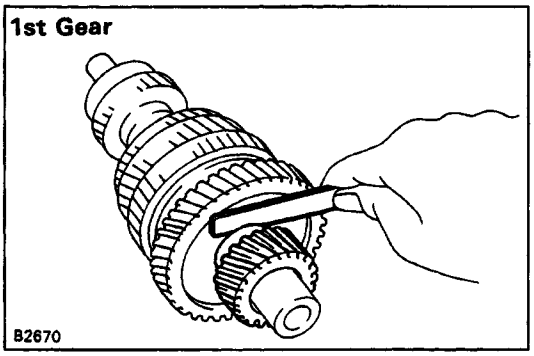
Using a feeler gauge, measure 4th gear thrust clearance.

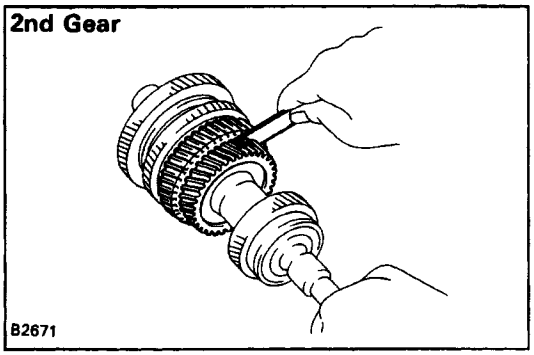
Standard clearance: 0.20 – 0.45 mm
(0.0079 – 0.0177 in.)



Output Shaft Assembly







DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. INSPECT FIRST AND SECOND GEAR THRUST CLEARANCE

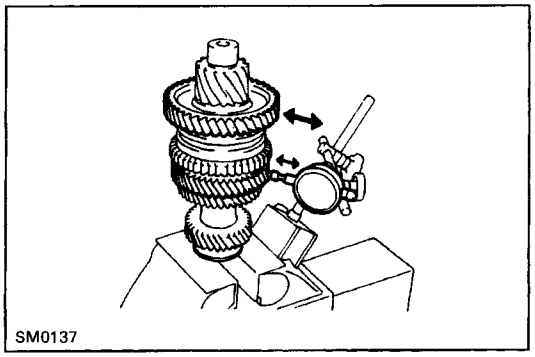
Using a feeler gauge, measure the thrust clearance.

Standard clearance:

1st gear 0.10–0.29m
(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.)



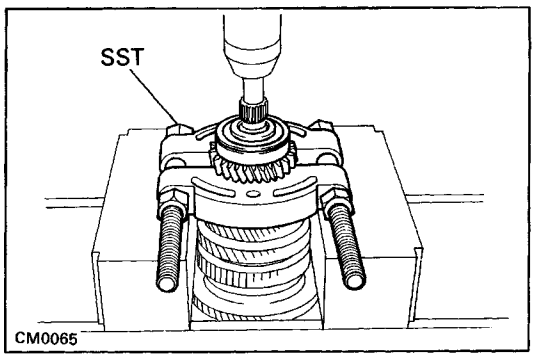
2. INSPECT FIRST AND SECOND GEAR OIL CLEARANCE

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

Standard clearance: 0.009 – 0.053 mm (0.0004 – 0.0021 in.)

Maximum clearance: 0.070 mm (0.0028 in.)

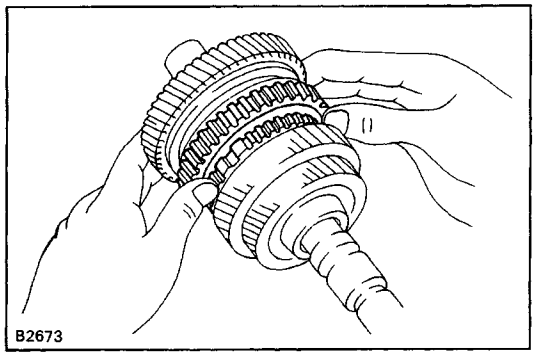
If the clearance exceeds the maximum, replace the gear, needle roller bearing or shaft.



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

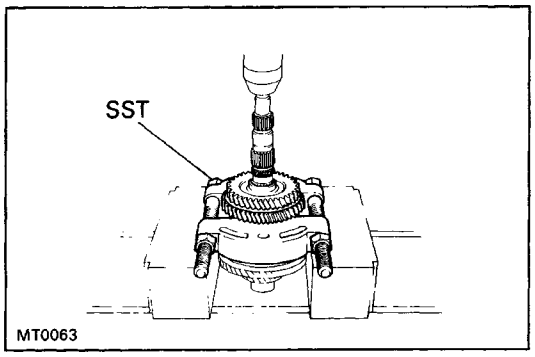
(a) Using SST and a press, remove the rear ball bearing and 4th driven gear.
SST 09950–00020

(b) Remove the spacer and ball.



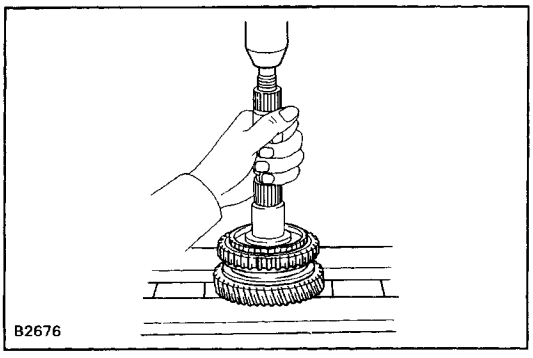
4. REMOVE THIRD DRIVEN GEAR, SECOND GEAR, NEEDLE ROLLER BEARING AND SYNCHRONIZER RING

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



(b) Using SST and a press, remove the 3rd driven gear and 2nd gear.
SST 09950–00020

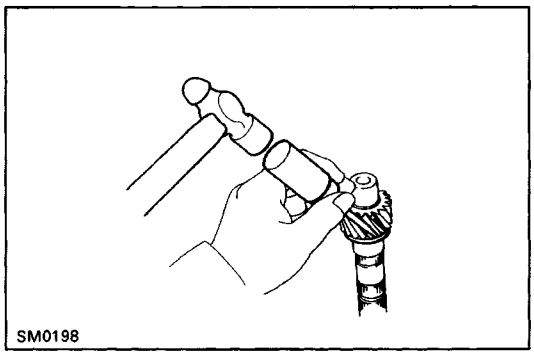
(c) Remove the needle roller bearing and synchronizer ring.



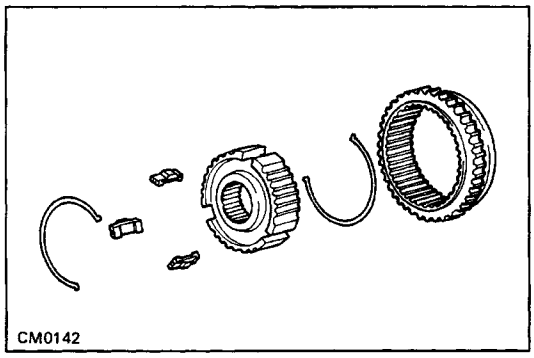
5. REMOVE NO. 1 HUB SLEEVE ASSEMBLY, FIRST GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARING, THRUST WASHER AND LOCKING BALL

(a) Using a press, remove the No.1 hub sleeve assembly, 1 st gear and synchronizer ring.

(b) Remove the needle roller bearing and locking ball.


SM0198

(c) Using a screwdriver and hammer, tap out the thrust washer.


CM0142

6. REMOVE NO. 1 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO. 1 CLUTCH HUB

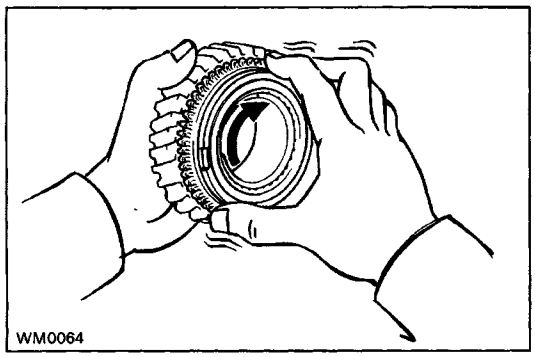
Using a screwdriver, remove the three shifting keys and springs from the No. 1 clutch hub.

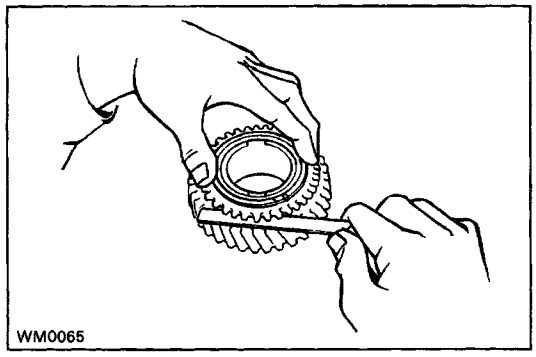
INSPECTION OF OUTPUT SHAFT COMPONENT PARTS

1. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

(b) Turn the ring and push it in to check the braking action.

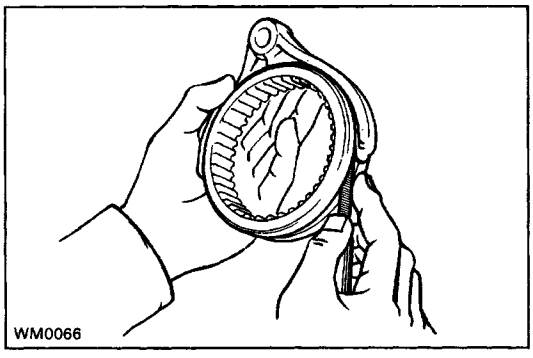

WM0064


WM0065

(c) Using a feeler gauge, 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 minimum, replace the synchronizer ring

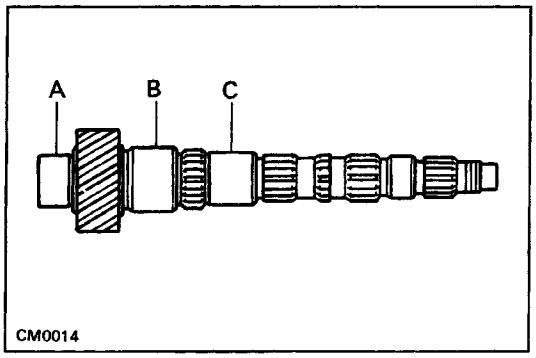

WM0066

2. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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

Maximum clearance: 1.0 mm (0.039 in.)

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



3. INSPECT OUTPUT SHAFT

(a) Using a micrometer, measure the outer diameter of the output shaft journal surface.

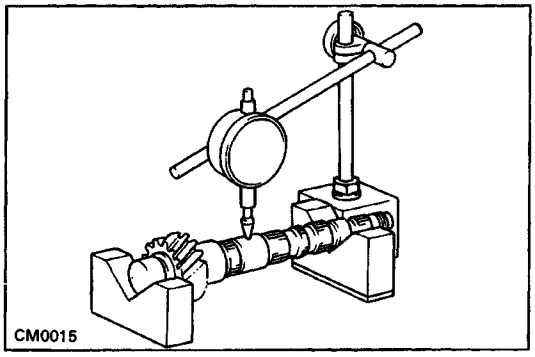
Minimum outer diameter:

Part A 31.970 mm (1.2587 in.)

B 37.970 mm 0.4949 in.)

C 31.990 mm (1.2594 in.)

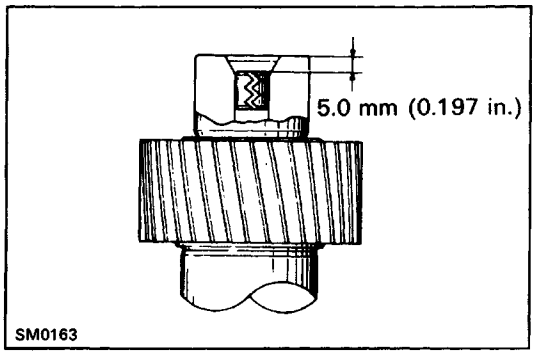
If the outer diameter exceeds the minimum, replace the shaft.



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

Maximum runout: 0.050 mm (0.0020 in.)

If the runout exceeds the maximum, replace the shaft.



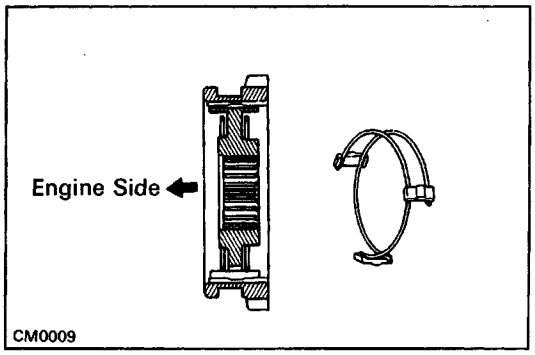
ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

(See page MT–80)

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

1. IF OUTPUT SHAFT WAS REPLACED; DRIVE IN SLOTTED SPRING PIN

If the output shaft was replaced, drive the slotted spring pin in the output shaft to a depth of 5.0 mm (0.197 in.).

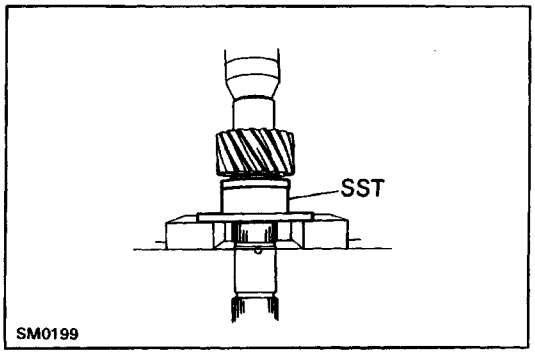


2. INSTALL NO. 1 CLUTCH HUB INTO HUB SLEEVE

(a) Install the No. 1 clutch hub and shifting keys to the No. 1 hub sleeve.

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

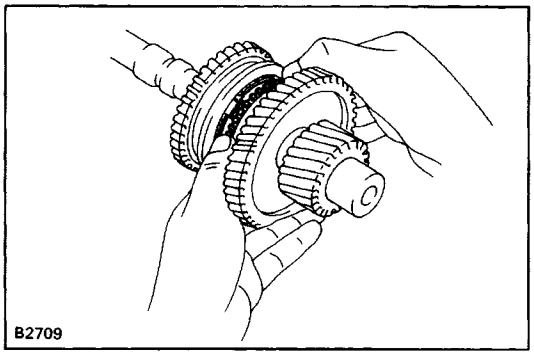
NOTICE: Install the key springs positioned so that their end gaps are not in line.



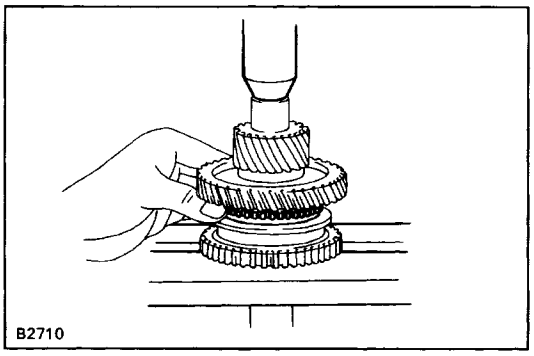
3. INSTALL THRUST WASHER, FIRST GEAR, NEEDLE ROLLER BEARING, SYNCHRONIZER RING AND NO. 1 HUB SLEEVE ASSEMBLY TO OUTPUT SHAFT

(a) Using SST and a press, install the thrust washer.
SST 09316–60010 (09316–00040)

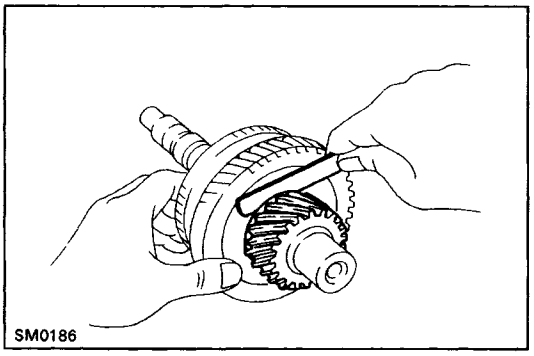
(b) Apply gear oil to the needle roller bearing.


B2709

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


B2710

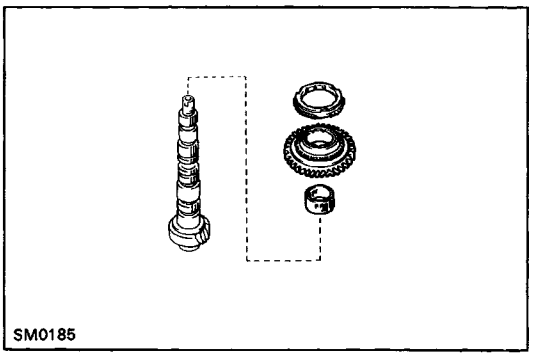
(d) Using a press, install the 1 st gear and No. 1 hub sleeve assembly.


SM0186

4. INSPECT FIRST GEAR THRUST CLEARANCE

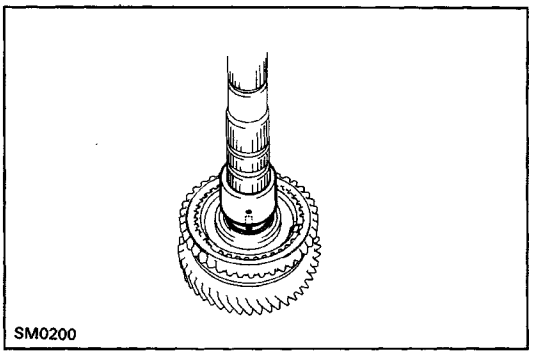
Using a feeler gauge, measure the 1 st gear thrust clearance.

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

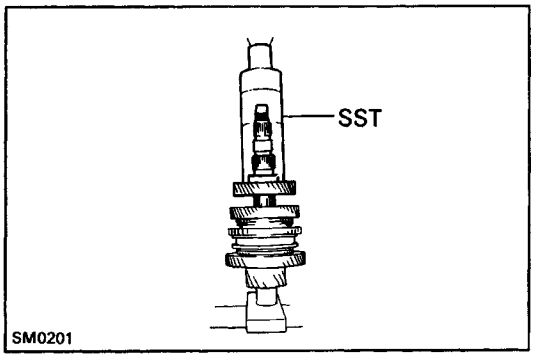

SM0185

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

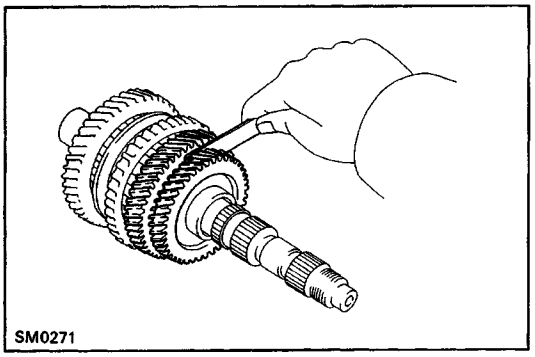
(a) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
(b) Apply gear oil to the needle roller bearing.
(c) Install the ball.


SM0200

(d) Fit the 2nd gear bushing groove securely over the ball when installing the 2nd gear bushing on the shaft.
(e) Install the 2nd gear.



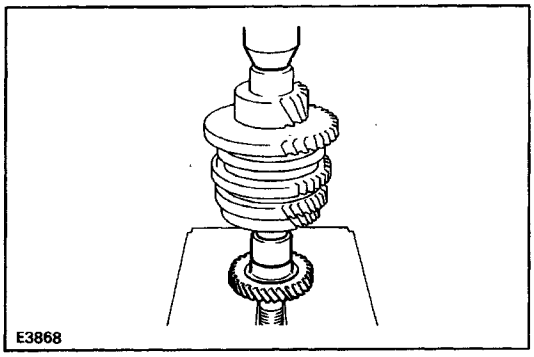
(f) Using SST and a press, install the 3rd driven gear.
SST 09316–60010 (09316–00010)



6. INSPECT SECOND GEAR THRUST CLEARANCE

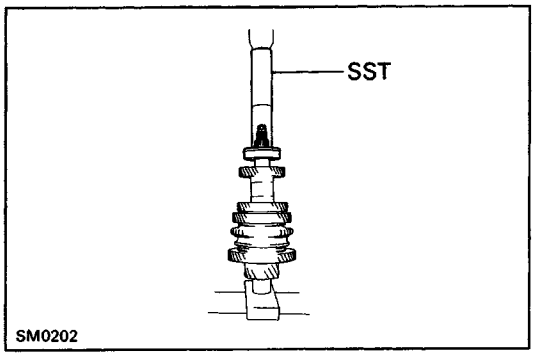
Using a feeler gauge, measure the 2nd gear thrust clearance.

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



7. INSTALL SPACER, FOURTH DRIVEN GEAR AND RADIAL BALL BEARING

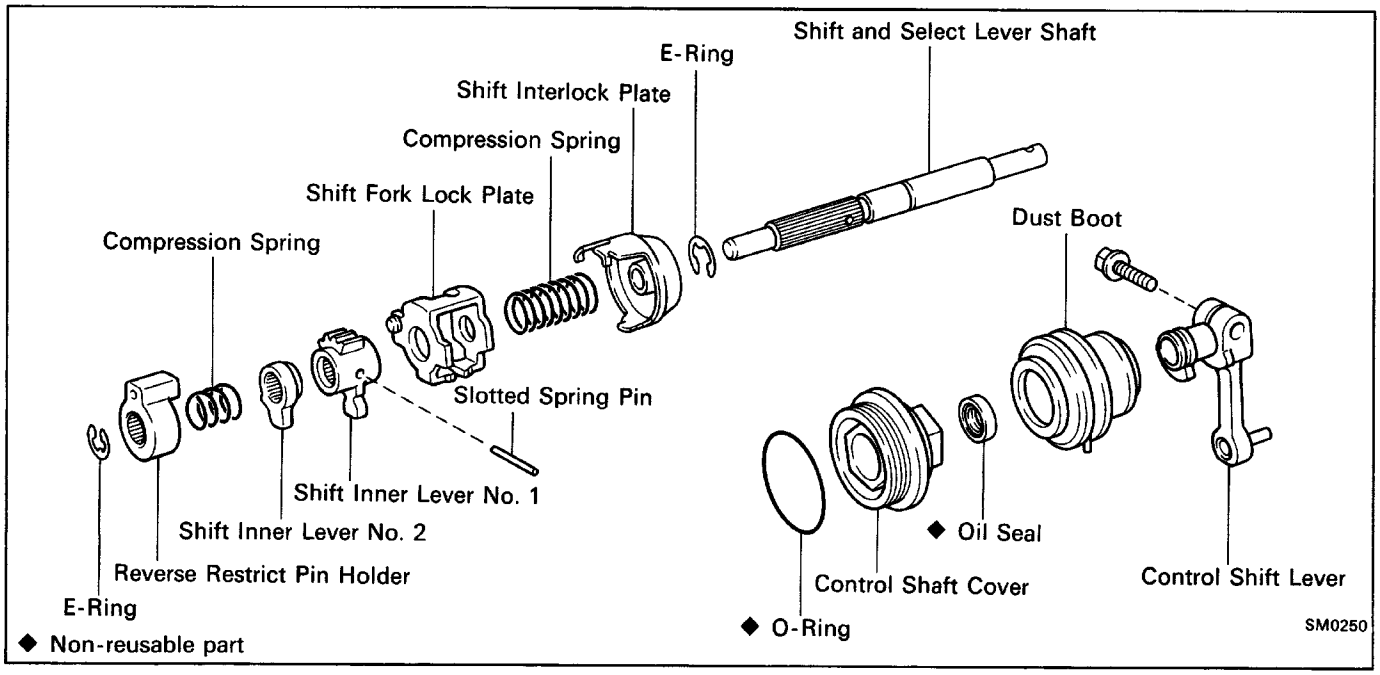
(a) Install the spacer.
(b) Using a press, install the 4th driven gear and bearing.

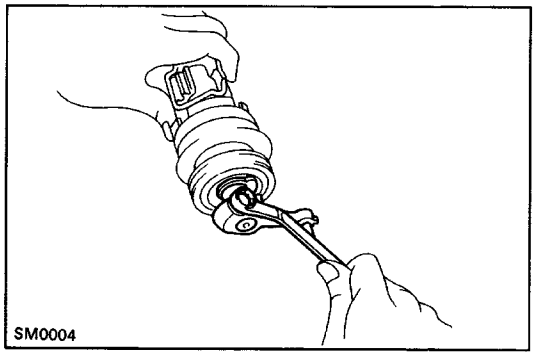


8. INSTALL REAR BEARING

Using SST and a press, install the rear bearing.
SST 09612–22011

Shift and Select Lever Shaft





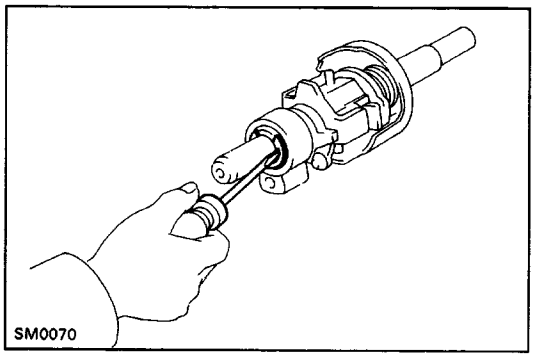
DISASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

1. REMOVE CONTROL SHIFT LEVER, DUST BOOT AND CONTROL SHAFT COVER

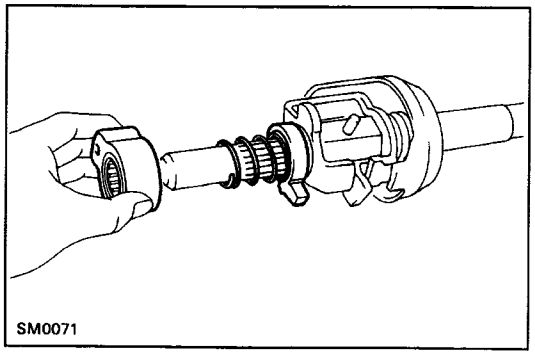
(a) Remove the nut and washer.
(b) Remove the lever lock pin.
(c) Remove the control shift lever.
(d) Remove the dust boot.
(e) Remove the control shaft cover.

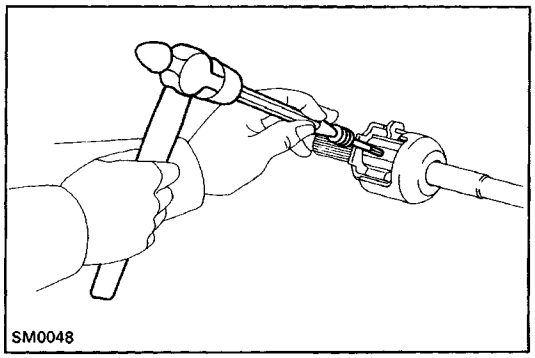
2. REMOVE REVERSE RESTRICT PIN HOLDER AND NO. 2 SHIFT INNER LEVER

(a) Using a screwdriver, pry out the E–ring.



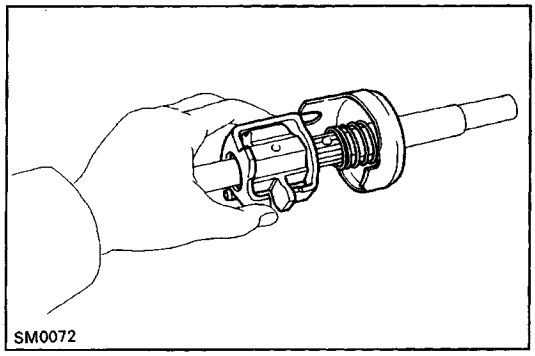
(b) Remove the reverse restrict pin holder, spring and No. 2 shift inner lever.



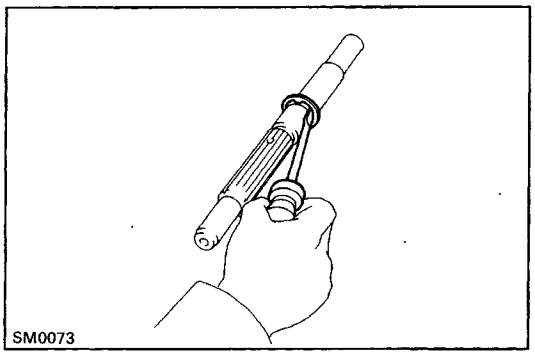


3. REMOVE SHIFT FORK LOCK PLATE, NO. 1 SHIFT INNER LEVER AND SHIFT INTERLOCK PLATE

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



(b) Remove the shift fork lock plate, No. 1 shift inner lever, spring and shift interlock plate.



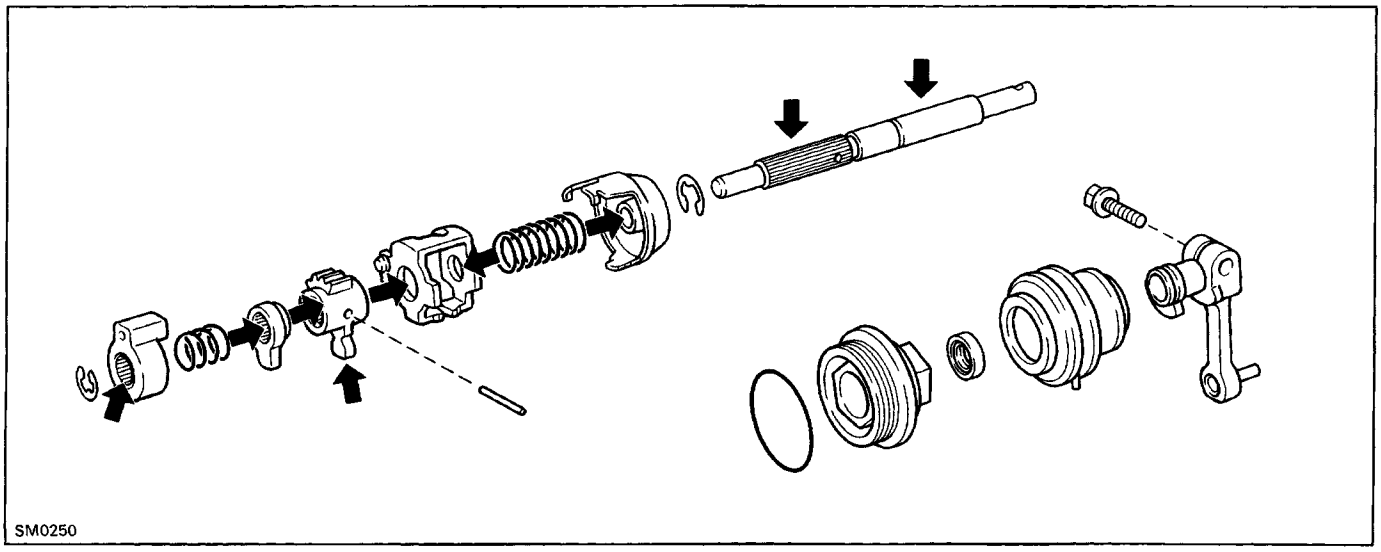
4. REMOVE E–RING FROM SELECT LEVER SHAFT

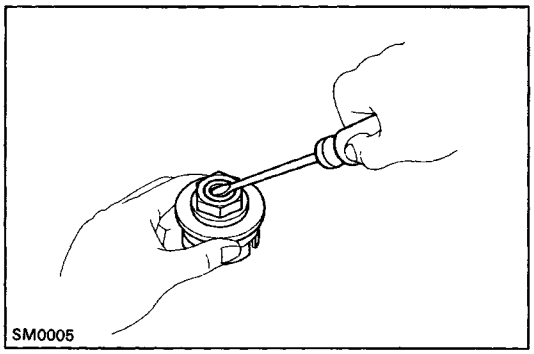
Using a screwdriver, pry out the E–ring.

ASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

(See page MT–86)

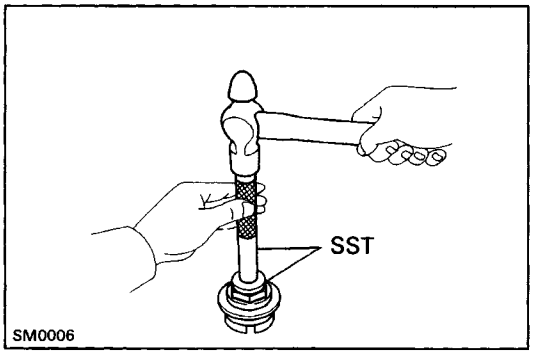
1. APPLY MP GREASE TO PARTS, AS SHOWN





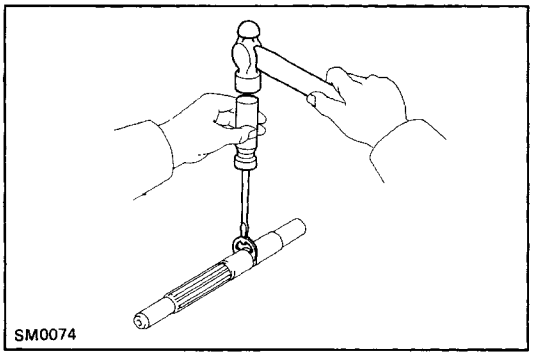
2. IF NECESSARY, REPLACE CONTROL SHAFT COVER OIL SEAL

(a) Using a screwdriver, pry out the oil seal.



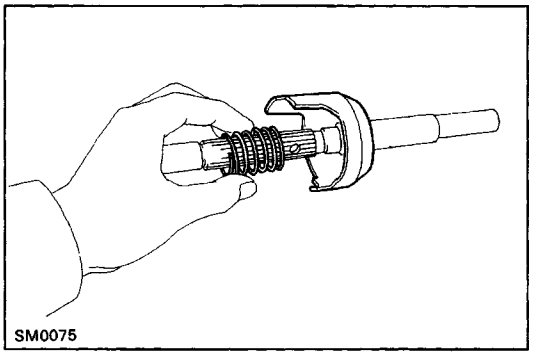
(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the shaft cover surface.
SST 09608–20012 (09608–00080,09608–03020)

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



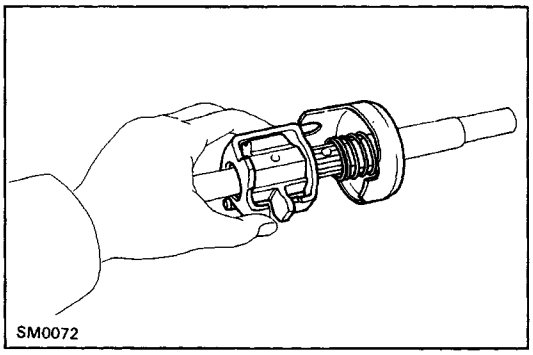
3. INSTALL E–RING TO SELECT LEVER SHAFT

Using a screwdriver and hammer, tap in the E–ring.



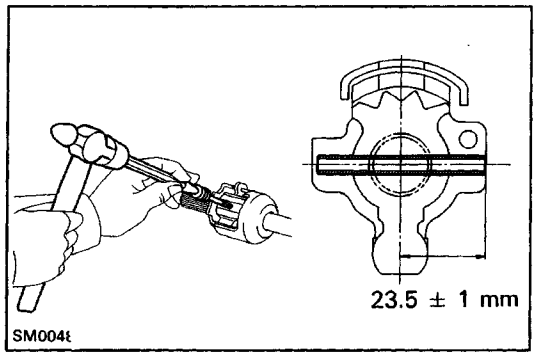
4. INSTALL SHIFT INTERLOCK PLATE, NO. 1 SHIFT INNER LEVER AND SHIFT FORK LOCK PLATE

(a) Install the shift interlock plate and spring.

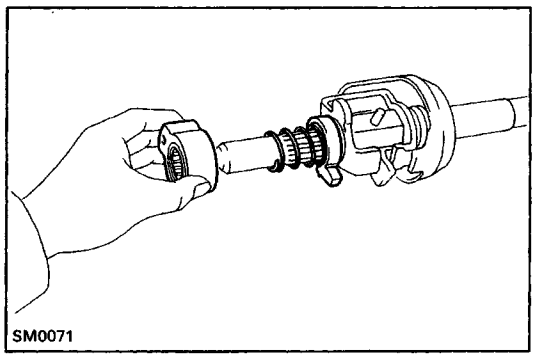


(b) Install the No. 1 shift inner lever with the shift fork lock plate.

HINT: One of the spline teeth of the shift and select lever shaft has been eliminated. Therefore, be certain to correctly align this portion to the matching portions on the parts during assembly.

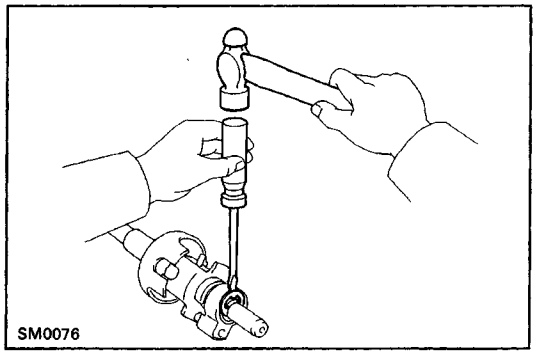


(c) Using a pin punch and hammer, drive in the slotted spring pin.

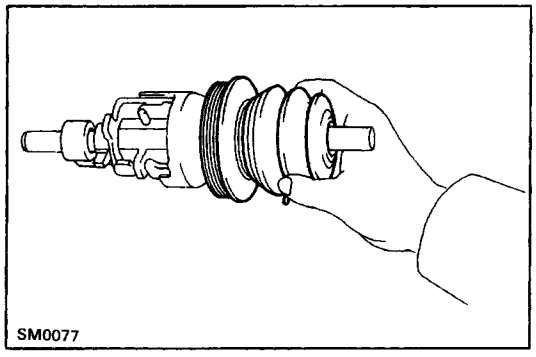


5. INSTALL NO. 2 SHIFT INNER LEVER AND REVERSE RESTRICT PIN HOLDER

(a) Install No. 2 shift inner lever, spring and reverse restrict pin holder.



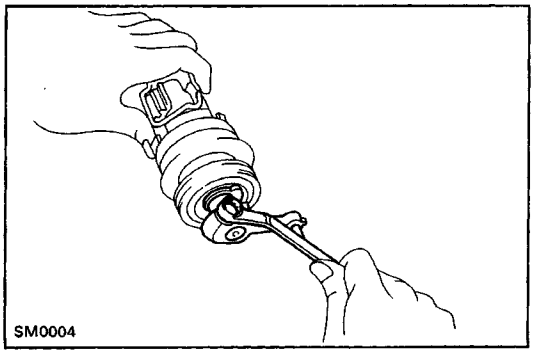
(b) Using a screwdriver and hammer, tap in the E–ring.



6. INSTALL CONTROL SHAFT COVER, DUST BOOT AND CONTROL SHIFT LEVER

(a) Install the control shaft cover and dust boot.

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

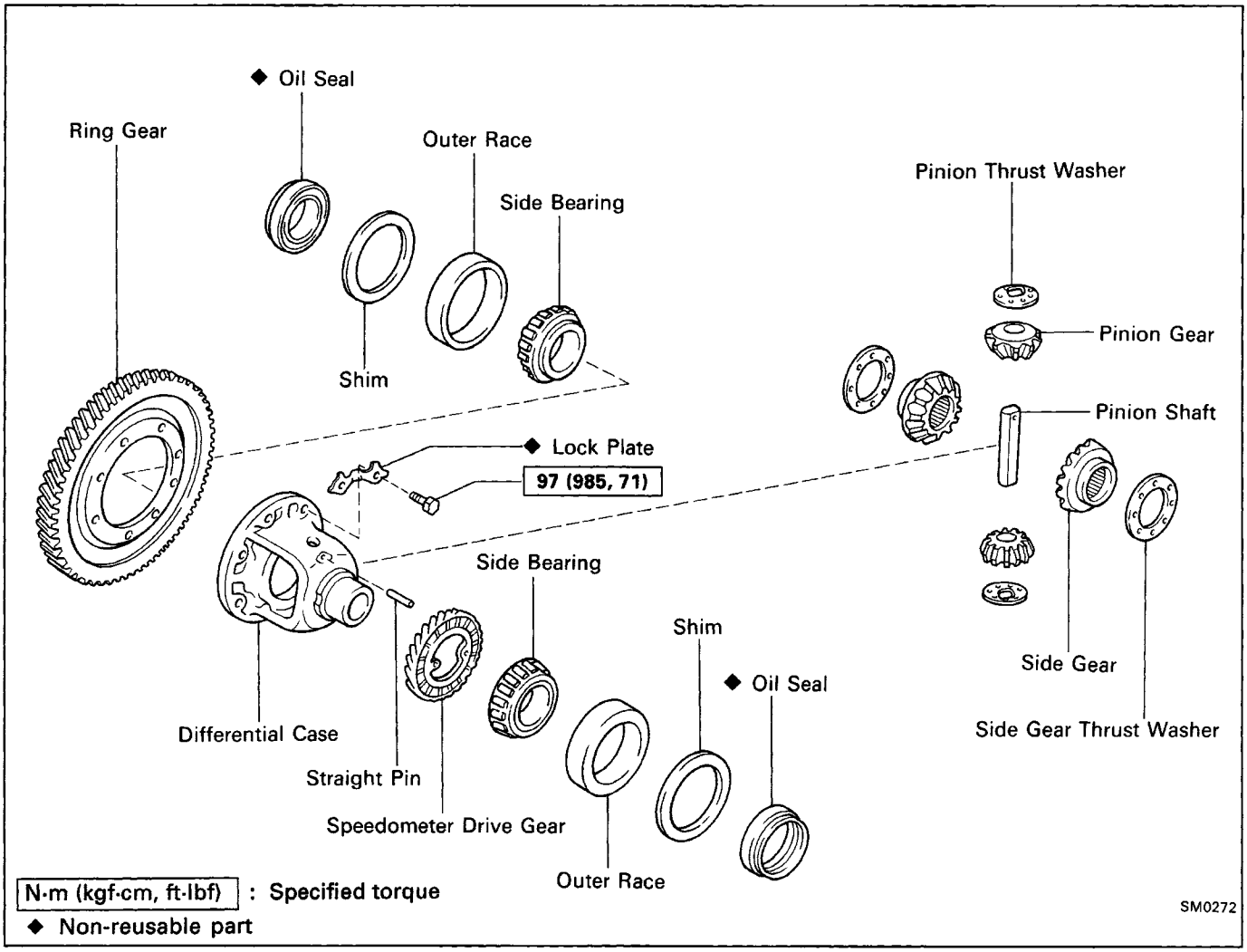


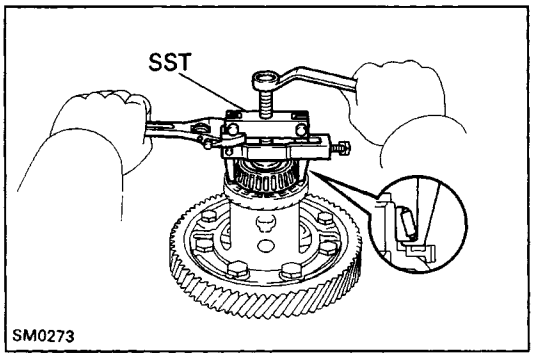
(b) Install the control shift lever.

(c) Install the lever lock pin to the control shift lever.

(d) Install the washer and lock nut.

Differential Case



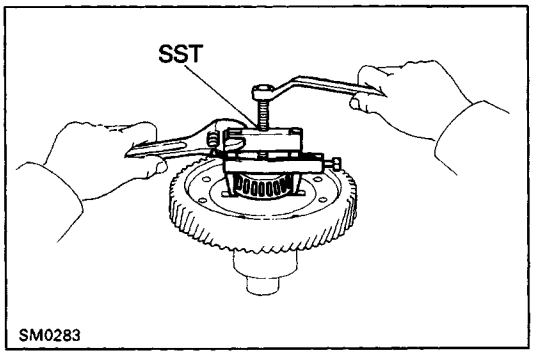


DISASSEMBLY OF DIFFERENTIAL CASE

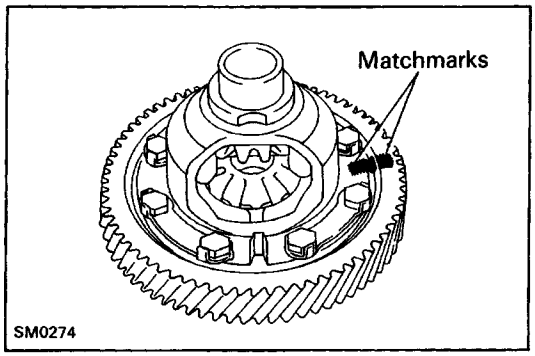
1. REMOVE SIDE BEARING FROM DIFFERENTIAL CASE

(a) Using SST, remove the bearing from both side of the case.
SST 09502–10012

(b) Remove the speedometer drive gear.

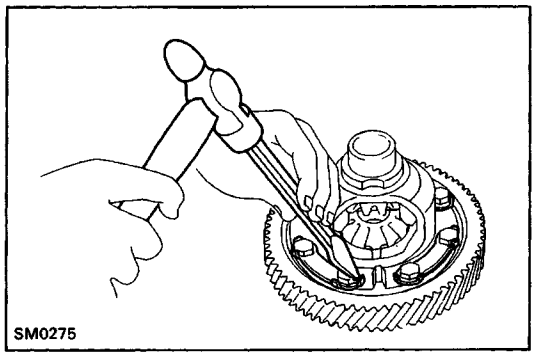


(c) Using SST, remove the bearing from both side of the case.
SST 09502–10012



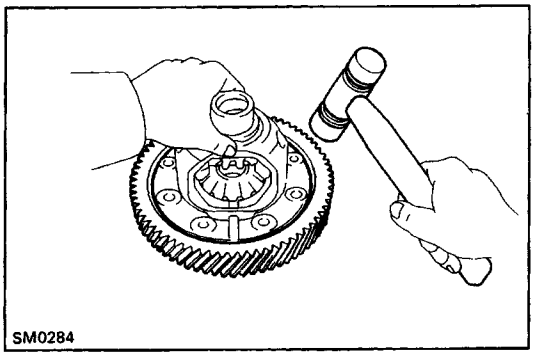
2. REMOVE RING GEAR

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

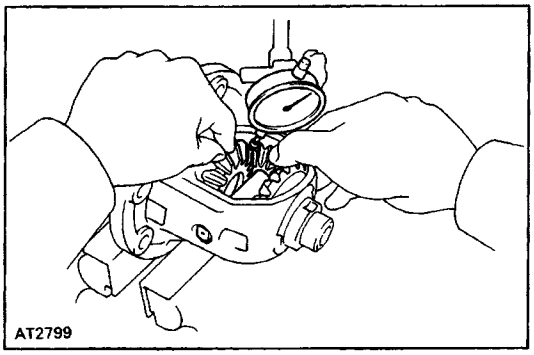


(b) Using a chisel and hammer, unstake the lock plate.

(c) Remove the eight bolts.



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



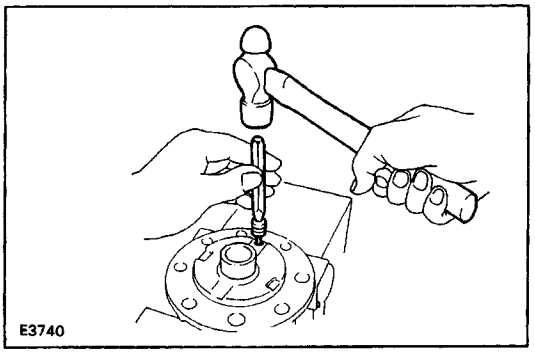
3. INSPECT SIDE GEAR BACKLASH

Using a dial indicator, measure the backlash of one side gear while holding one pinion toward the case.

Standard backlash:

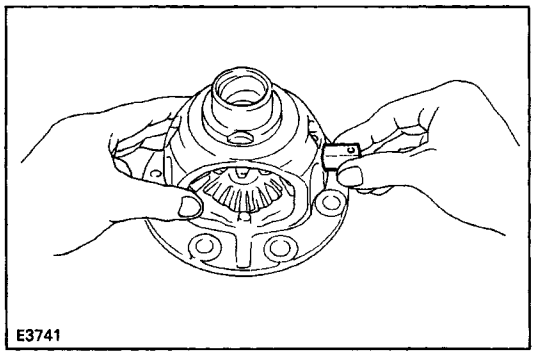
0.05 – 0.20 mm (0–0020 – 0.0079 in.)

If the backlash does not meet specification, install the correct thrust washer to the side gears.

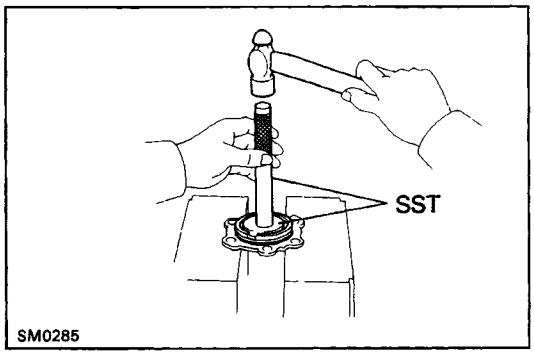


4. DISASSEMBLE DIFFERENTIAL CASE

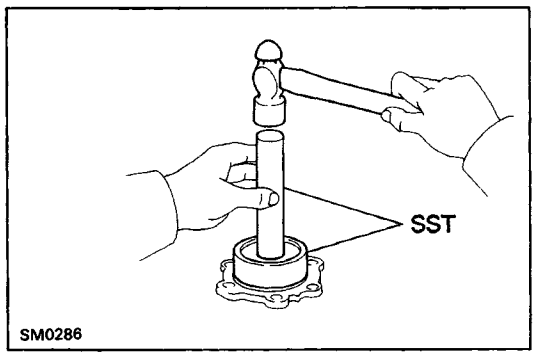
(a) Using a pin punch and hammer, drive out the straight pin.



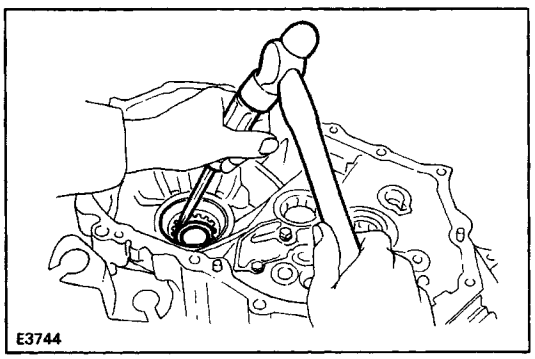
(b) Remove the pinion shaft from the case.
(c) Remove the two pinions and two side gears with the
four thrust washers from each gear.



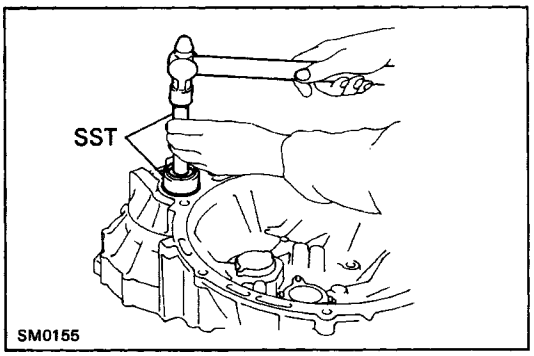
5. (Transmission Case Side)
IF NECESSARY, REPLACE DIFFERENTIAL SIDE BEARING RETAINER OIL SEAL
(a) Using SST and a hammer, drive out the oil seal from the retainer.
SST 09608–20012 (09608–03020, 09608–03060)



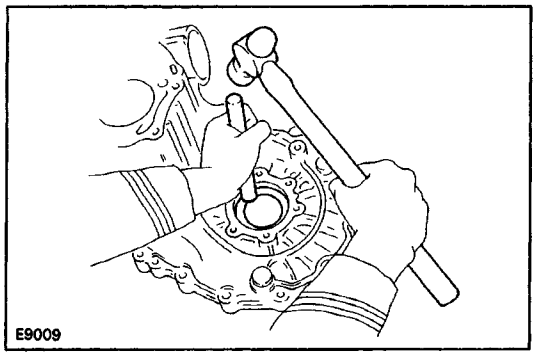
(b) Using SST and a hammer, drive in .a new oil seal until its surface is flush with the case surface.
SST 09350–32014 (09351–32130, 09351–32150)
(c) Coat the lip of the oil seal with MP grease.



6. (Transaxle Case Side)
IF NECESSARY, REPLACE SIDE OIL SEAL
(a) Using a screwdriver and hammer, drive out the oil seal.



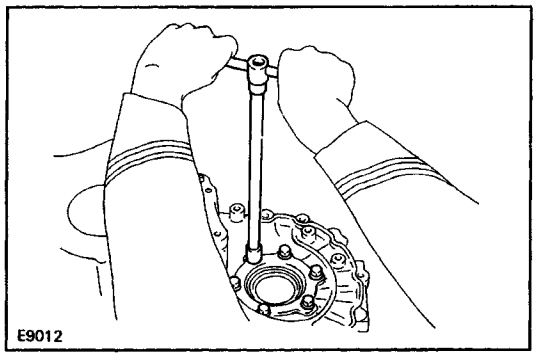
(b) Using SST and a hammer, drive in a new oil seal until its surface is flush with the case surface.
SST 09350–32014 (09351–32130, 09351–32150)
(c) Coat the lip of oil seal with MP grease.



7. (Transmission Case Side)

IF NECESSARY, REPLACE SIDE BEARING OUTER RACE

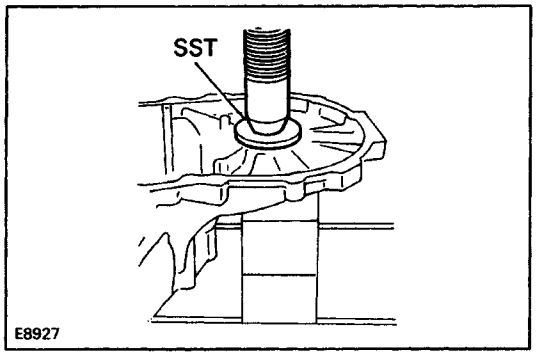
(a) Using a brass bar and hammer, drive out the bearing outer race.



(b) Install the bearing retainer without an O–ring.

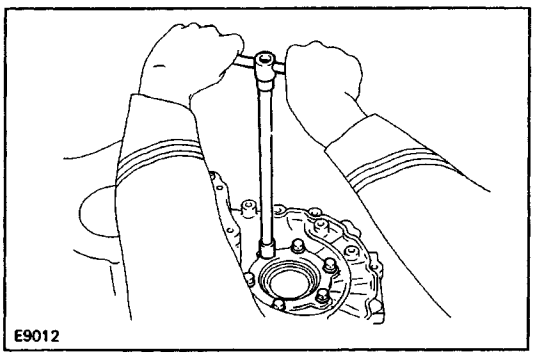
(c) Install and torque the bearing retainer bolts.

Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



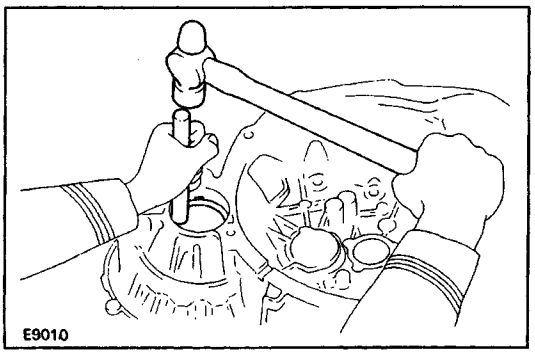
(d) Place the thinnest shim into the case.
(See table on page MT–92)

(e) Using SST and a press, install a new bearing outer race.
SST 09608–20012 (09608–03020, 09608–03060)



(f) Remove the retainer bolts.

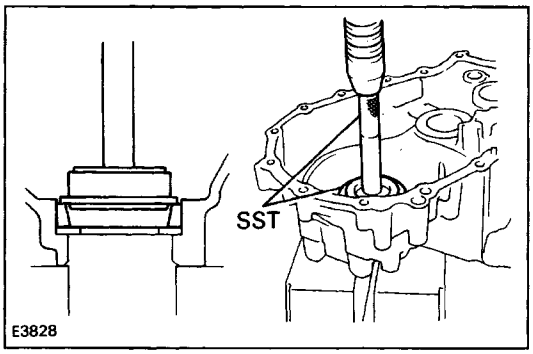
(g) Remove the bearing retainer and shim.



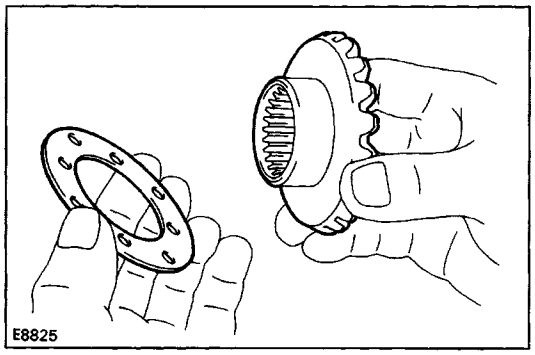
8. (Transaxle Case Side)

IF NECESSARY, REPLACE SIDE BEARING OUTER RACE

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



(b) Place the shim into the case.
(c) Using SST and a press, install a new bearing outer race.
SST 09608–20012 (09608–03020, 09608–03060)



ASSEMBLY OF DIFFERENTIAL CASE

(See page MT–90)

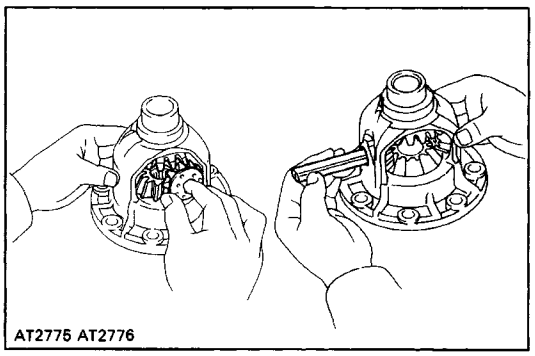
1. ASSEMBLE DIFFERENTIAL CASE

(a) Install the correct thrust washers and side gears.
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 for both sides.

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

Thrust washer thicknesses

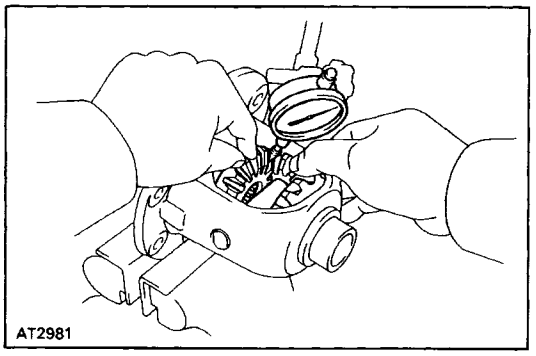
Thickness mm (in.)	Thickness mm (in.)
0.95 (0.0374) 1.00 (0.0394) 1.05 (0.0413)	1.10 (0.0433) 1.15 (0.0453) 1.20 (0.0472)

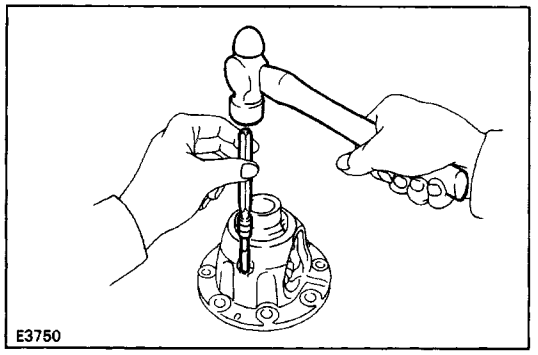


Install the thrust washers and side gears in the differential case.
(b) Install the pinion shaft.
(c) Check the side gear backlash.
Measure the side gear backlash while holding one pinion gear toward the case.

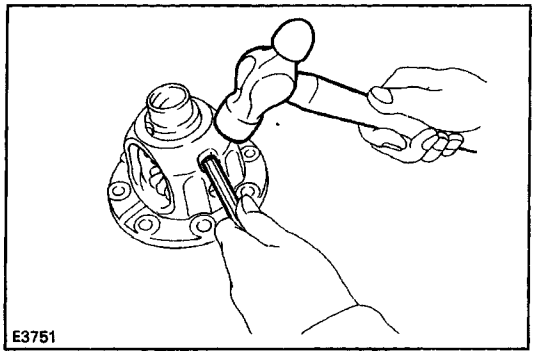
Standard backlash: 0.05 – 0.20 mm
(0.0020 – 0.0079 in.)

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

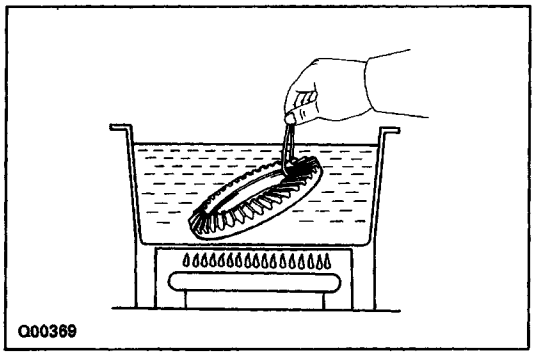




(d) Using a pin punch and hammer, drive in the straight pin through the case and hole in the pinion shaft.



(e) Stake the differential case.

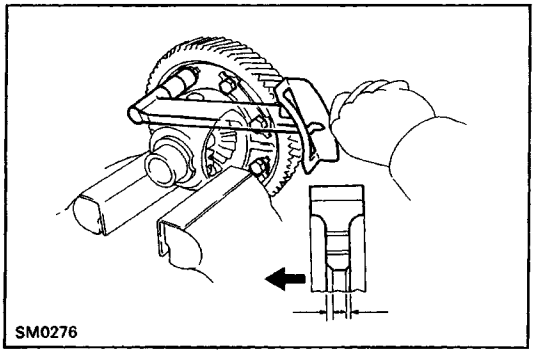


2. INSTALL RING GEAR

(a) Clean the contact surface of the differential case and the threads of the ring gear and differential case.

(b) Heat the ring gear in boiling water–.

(e) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

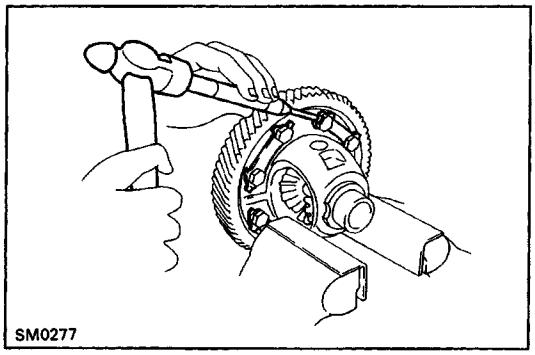


(d) Then quickly install the ring gear on the differential case.

(e) Align the matchmarks on the ring gear and differential case.

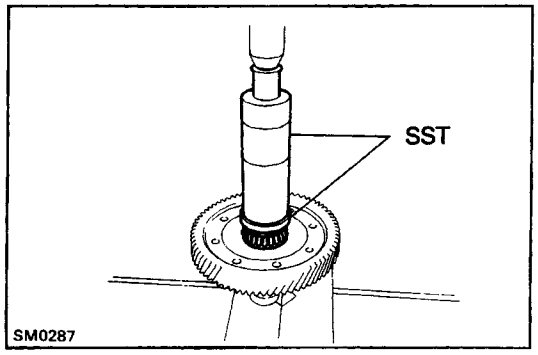
(f) Install the six bolts uniformly and a little at a time in
succession. Torque the bolts.

Torque: 97 N–m (985 kgf–cm, 71 ft–lbf)



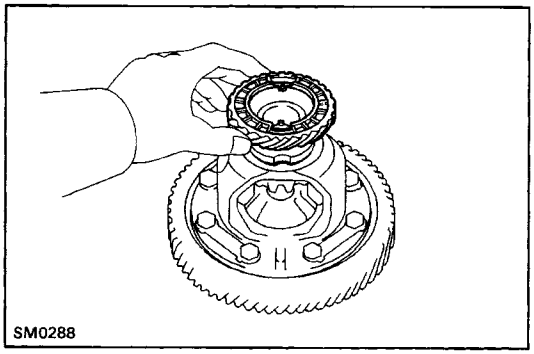
(g) Using a chisel and hammer, stake the lock plates.

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

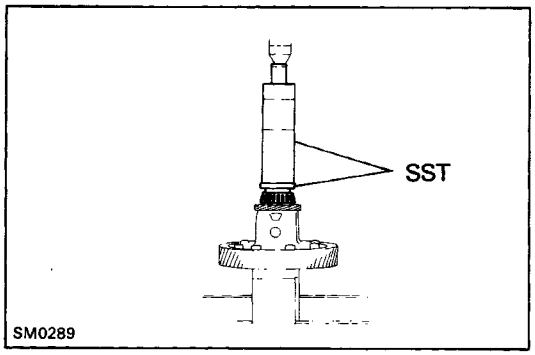


3. INSTALL SIDE BEARINGS TO DIFFERENTIAL CASE

(a) Using SST and a press, install the side bearing to the transmission case side.
SST 09316–60010 (09316–00010)
09350–32014 (09351–32120)

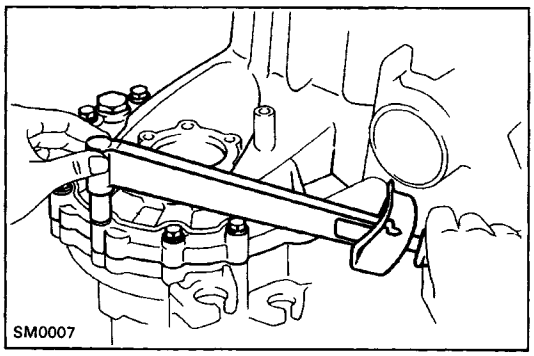


(b) Install the speedometer drive gear to the transaxle case side.



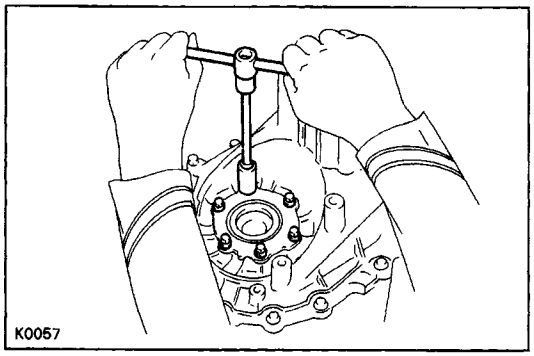
(c) Using SST and a press, install the side bearing to the transaxle case side.
SST 09316–60010 (09316–00010)
09350–32014 (09351–32120)

NOTICE: Install the black cage bearing on the speedometer drive gear side.



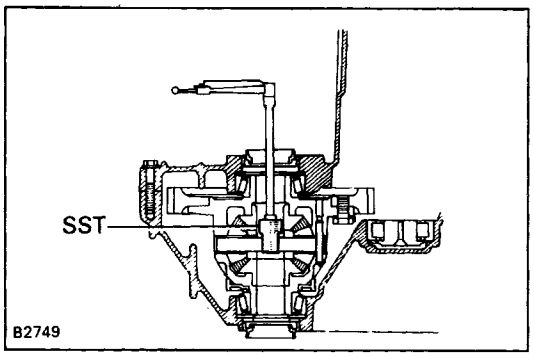
4. MEASURE DIFFERENTIAL SIDE BEARING PRELOAD

(a) Install the differential to the transaxle case.
(b) Install the transmission case.
(c) Install and torque the case bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)
(d) Install the shim into the transmission case.
(e) Install the bearing retainer without an 0–ring.
(f) Install and torque the retainer bolts.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)
(g) Using SST and torque meter, measure the preload.
SST 09564–32011
Preload (at starting)
0.8 – 1.6 N–m (8 – 16 kgf–cm, 6.9 – 13.9 in.–lbf)

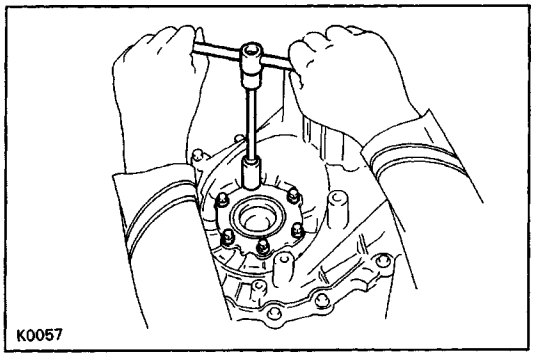


If the preload is not within specification, remove the transmission case side bearing retainer.
Select another shim.

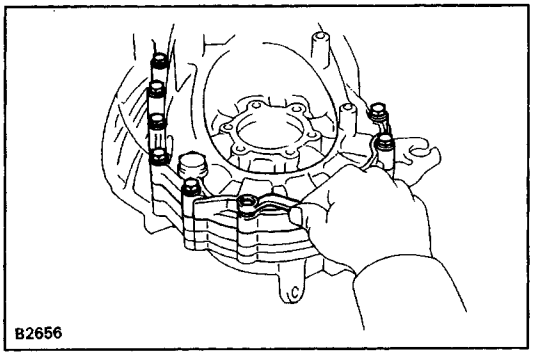
HINT: The preload will change about 0.3 – 0.4 N–m (3 – 4 kgf–cm, 2.6 – 3.5 in.–lbf) with each shim thickness.



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



(h) Remove the retainer bolts.
(i) Remove the bearing retainer and shim.



(j) Remove the case bolts.
(k) Remove the transmission case.

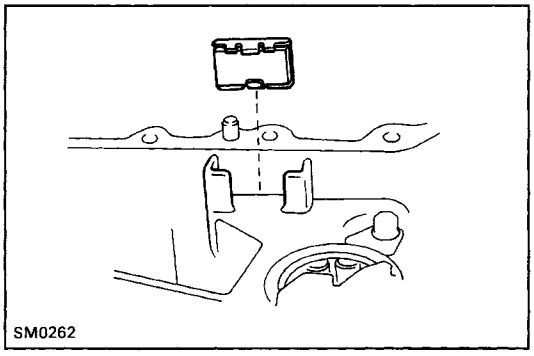
INSTALLATION OF COMPONENT PARTS

(See pages MT–61 to MT–63)

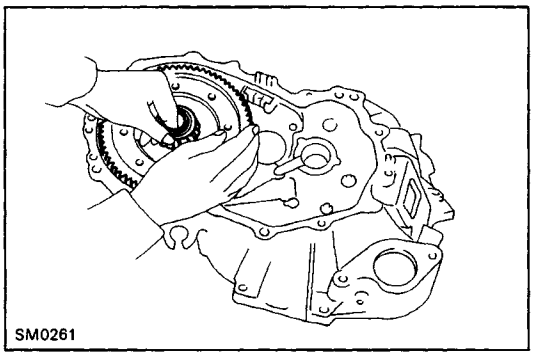
HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSPECT DIFFERENTIAL SIDE BEARING PRELOAD

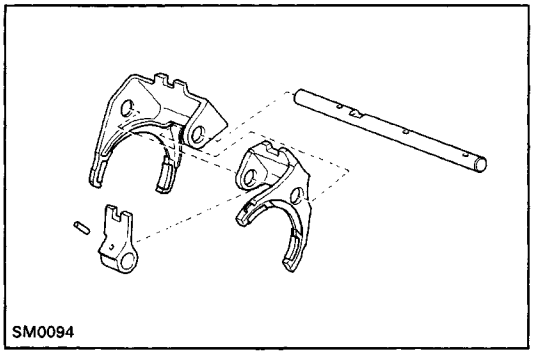
(See step 4 on page MT–96)



2. INSTALL MAGNET TO TRANSAXLE CASE

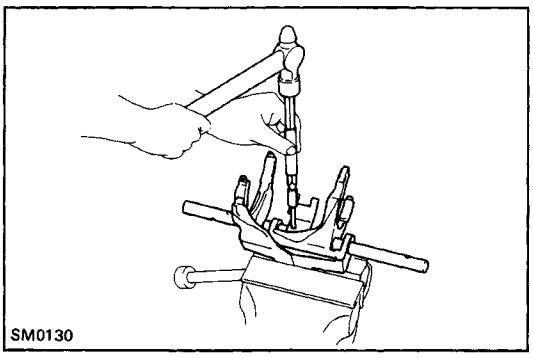


3. INSTALL DIFFERENTIAL CASE ASSEMBLY



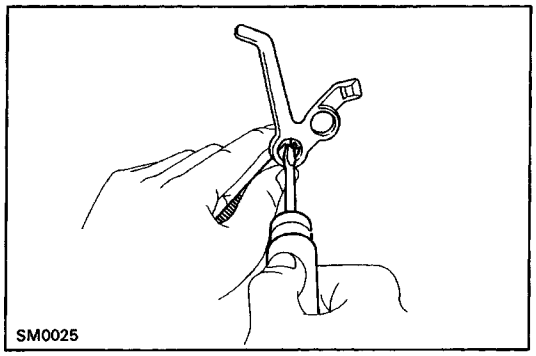
4. ASSEMBLE NO. 1 SHIFT FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1 AND NO. 2 SHIFT FORKS

(a) Assemble the No. 1 shift fork shaft, No. 1 shift head, No. 1 and No. 2 shift forks.



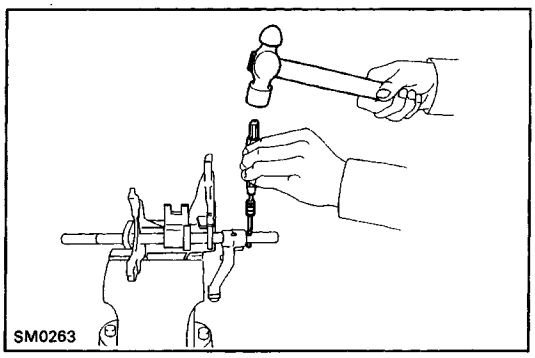
(b) Mount the shift forks to the vise.

(c) Using a pin punch and hammer, drive in the slotted spring pin to the' No. 1 fork shaft as shown in the figure.

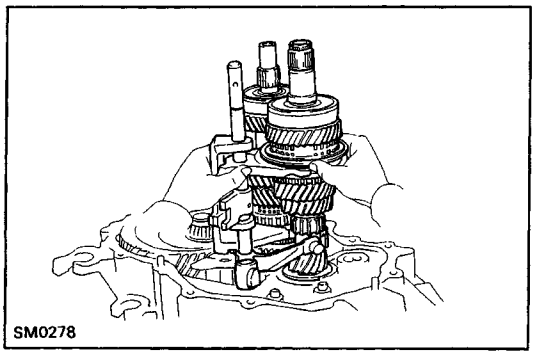


(d) Coat the interlock pin with MP grease.
(e) Using a screwdriver, install the interlock pin into the reverse shift fork hole.
(f) Install the reverse shift fork to the No. 1 shift fork shaft.

HINT: When installing the reverse shift fork with interlock pin to the No. 1 shift fork shaft, make sure the interlock pin does not drop out.

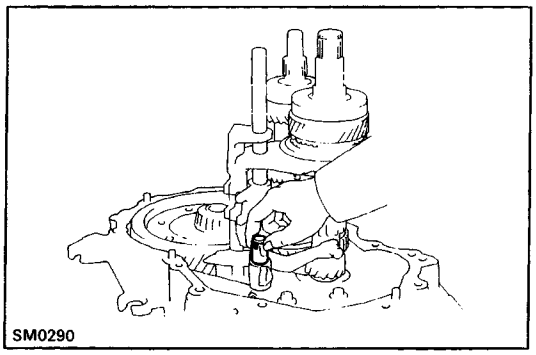


(g) Using a pin punch and hammer, drive in the slotted spring pin to the No. 1 fork shaft.



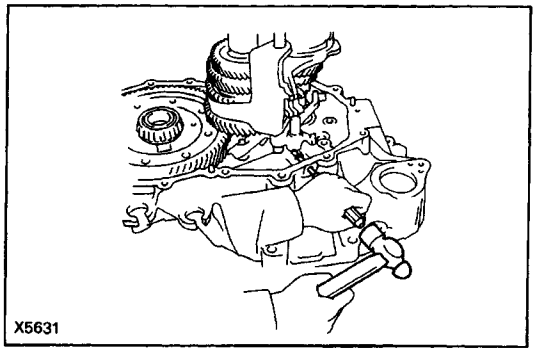
5. INSTALL NO. 1 SHIFT FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1, NO. 2 SHIFT FORKS, REVERSE SHIFT FORK WITH INTERLOCK PIN, INPUT SHAFT ASSEMBLY OUTPUT SHAFT ASSEMBLY

Install the input shaft assembly and output shaft assembly together with the No. 1 fork shaft, shift head and shift forks with the interlock pin to the transaxle case.

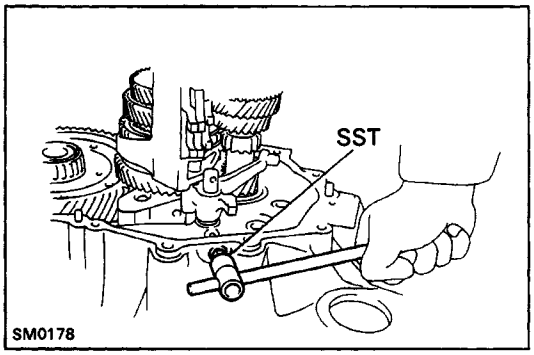


6. INSTALL NO. 2 FORK SHAFT

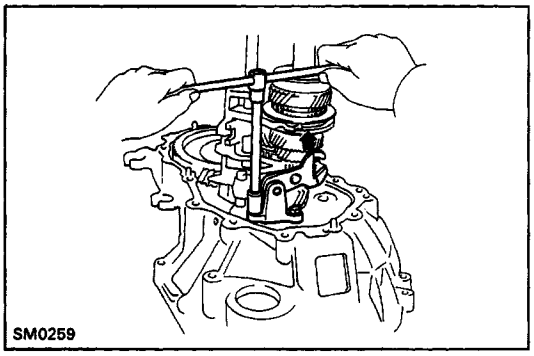
(a) Install the No. 2 fork shaft to the transaxle case through the reverse shift fork.



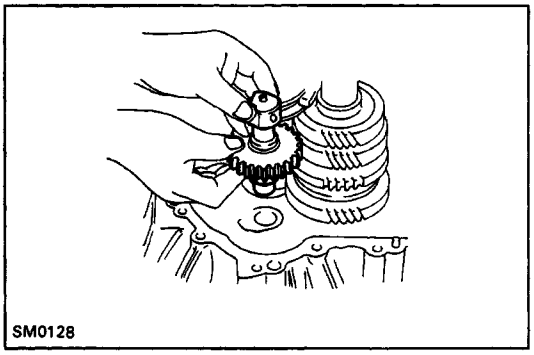
(b) Using a pin punch and hammer, drive in the slotted
spring pin.



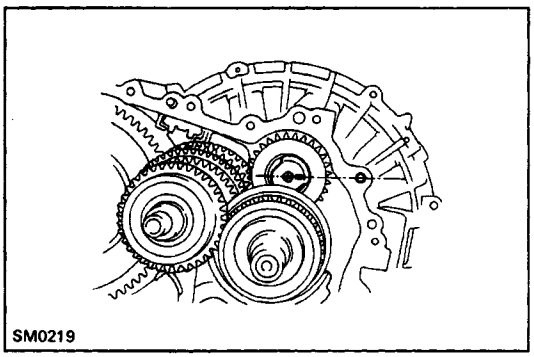
(c) Apply sealant to the plug threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(d) Using SST, install the straight screw plug.
SST 09313–30021
Torque: 13 N–m (730 kgf–cm, 9 ft–lbf)



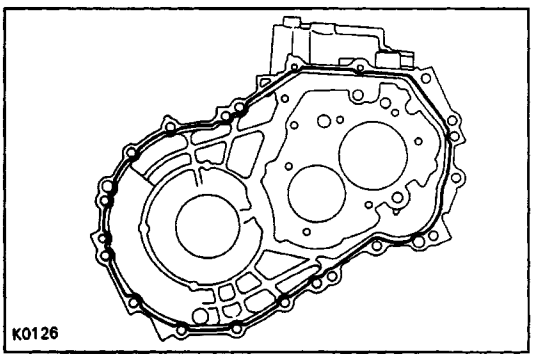
7. INSTALL REVERSE SHIFT ARM
(a) Put the reverse shift fork pivot into the reverse shift arm and install the reverse shift arm to the transaxle case.
(b) Shift the reverse shift arm into the reverse.
(c) Install and torque the two bolts.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)
(d) Shift the reverse shift arm to the neutral position.



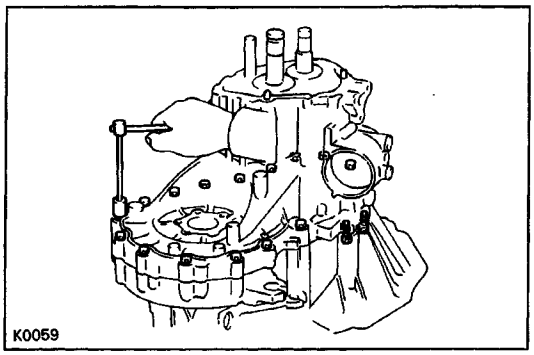
8. INSTALL REVERSE IDLER GEAR AND SHAFT
(a) Install the washer and reverse idler gear to the shaft.



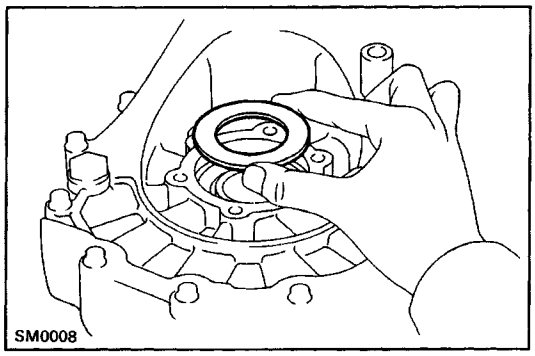
(b) Install the reverse idler gear and shaft as shown.



9. INSTALL TRANSMISSION CASE
(a) Remove the any packing material and be careful not to drop oil on the contacting surface of the transaxle case or transmission case.
(b) Apply seal packing to the transmission case as shown.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent

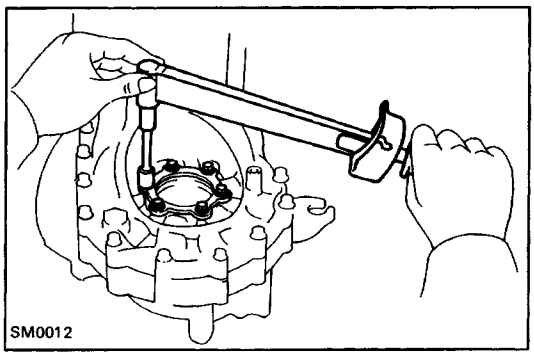


(c) Install and torque the seventeen bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)

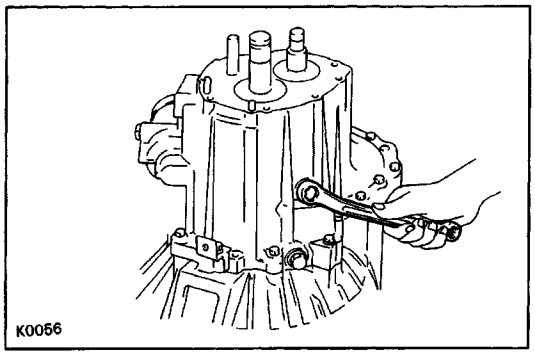


10. INSTALL SHIM AND SIDE BEARING RETAINER WITH O–RING

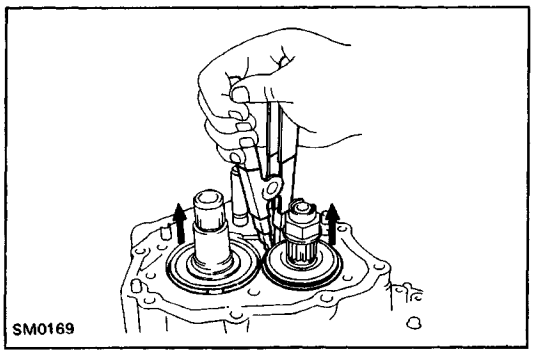
(a) Install a new 0–ring on the retainer.
(b) Install the shim and retainer.



(c) Apply sealant to the bolt threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(d) Install and torque the six bolts.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)

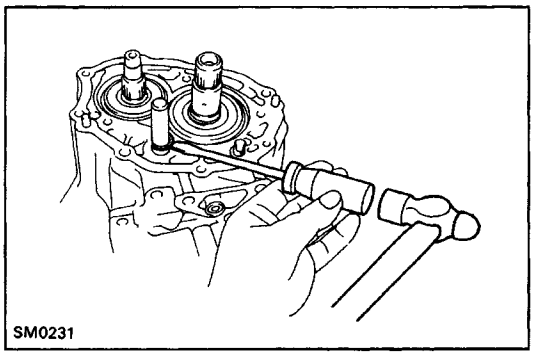


11. INSTALL AND TORQUE REVERSE IDLER GEAR SHAFT LOCK BOLT
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



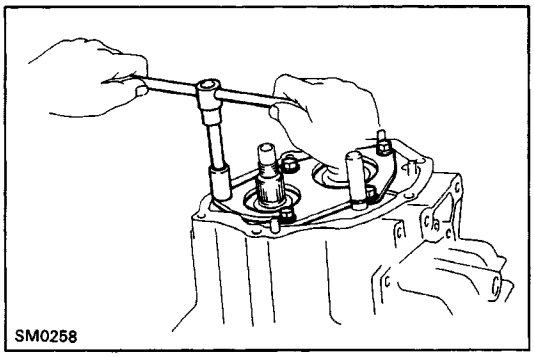
12. INSTALL BEARING SNAP RINGS

Using a snap ring expander, install the two snap rings.
HINT: If it is difficult to install the snap rings, pull up the shafts.



13. INSTALL NO. 1 FORK SHAFT SNAP RING

Using a screwdriver and hammer, tap in the snap ring.

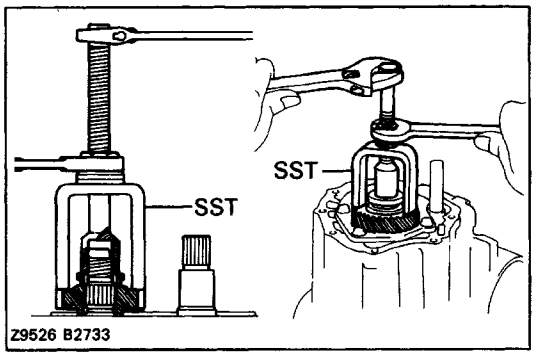


14. INSTALL REAR BEARING RETAINER

(a) Apply sealant to the bolt threads.
Sealant: Part No. 08833–00070, THREE BOND 1324 or equivalent

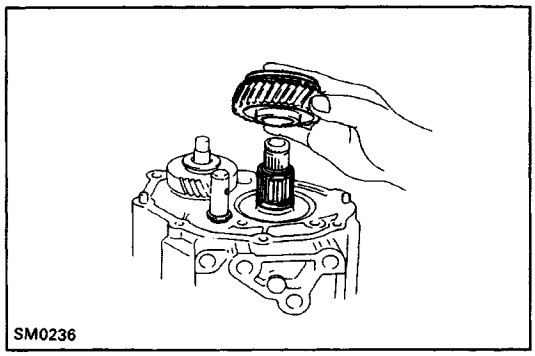
(b) Install and torque the five bolts.

Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)



15. INSTALL FIFTH DRIVEN GEAR

Using SST, install the 5th driven gear.
SST 09309–32050

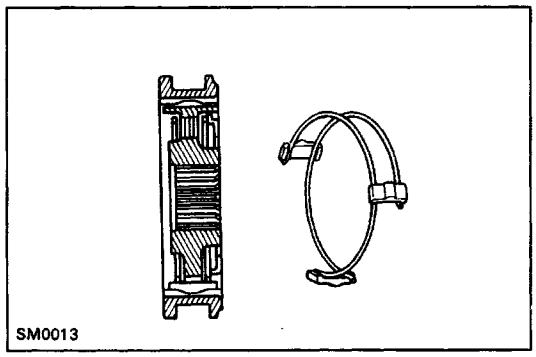


16. INSTALL SPACER, NEEDLE ROLLER BEARINGS, FIFTH GEAR AND SYNCHRONIZER RING

(a) Install the spacer.

(b) Apply gear oil to the needle roller bearings.

(c) Install the 5th gear with the needle roller bearings and synchronizer ring.

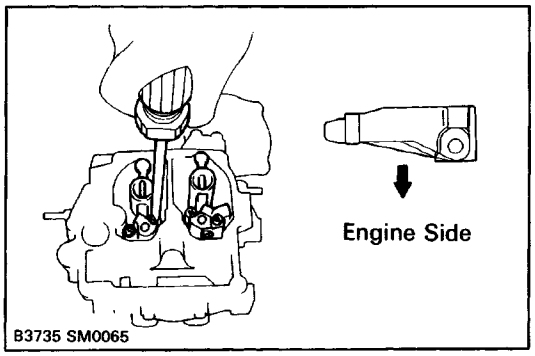


17. INSTALL NO. 3 CLUTCH HUB INTO HUB SLEEVE

(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.



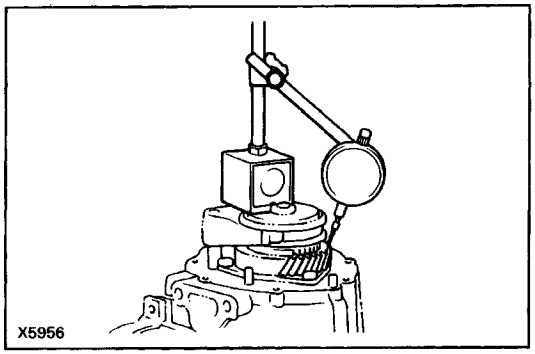
18. INSTALL NO. 3 HUB SLEEVE ASSEMBLY WITH SHIFT FORK

(a) Support the tip of the input shaft with a spacer or such to raise the transaxle assembly.

(b) Using SST, drive in No. 3 hub sleeve with shift fork.
SST 09612–22011

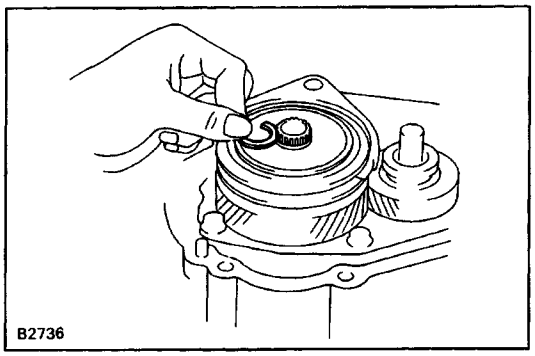
NOTICE: Align the synchronizer ring slots with the shifting keys.

(c) Install and torque the bolt to the No. 3 shift fork.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



19. INSPECT FIFTH GEAR THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance.
Standard clearance: 0.20 – 0.40 mm (0.0079 – 0.0157 in.)

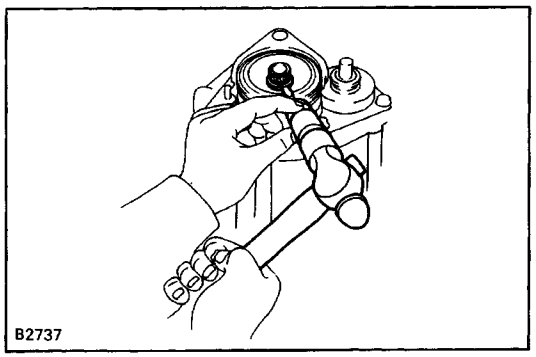


20. INSTALL SHIFTING KEY RETAINER AND SNAP RING

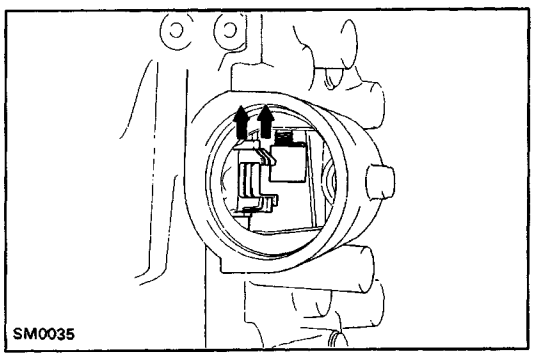
(a) Install the retainer.

(b) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
13	2.20 – 2.25 (0.0866 – 0.0886)	21	2.60 – 2.65 (0.1024 – 0.1043)
14	2.25 – 2.30 (0.0886 – 0.0906)	22	2.65 – 2.70 (0.1043 – 0.1063)
15	2.30 – 2.35 (0.0906 – 0.0925)	23	2.70 – 2.75 (0.1063 – 0.1083)
16	2.35 – 2.40 (0.0925 – 0.0945)	24	2.75 – 2.80 (0.1083 – 0.1102)
17	2.40 – 2.45 (0.0945 – 0.0965)	25	2.80 – 2.85 (0.1102 – 0.1122)
18	2.45 – 2.50 (0.0965 – 0.0984)	26	2.85 – 2.90 (0.1122 – 0.1142)
19	2.50 – 2.55 (0.0984 – 0.1004)	27	2.90–2.95 (0.1142–0.1161)
20	2.55 – 2.60 (0.1004 – 0.1024)		

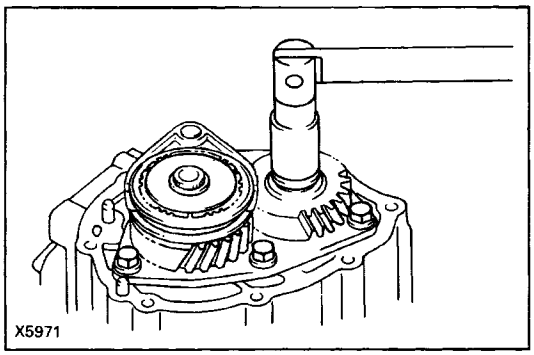


(c) Using a screwdriver and hammer, tap in the snap ring.

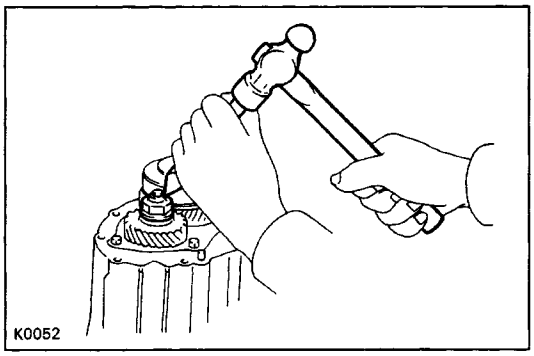


21. INSTALL OUTPUT SHAFT LOCK NUT

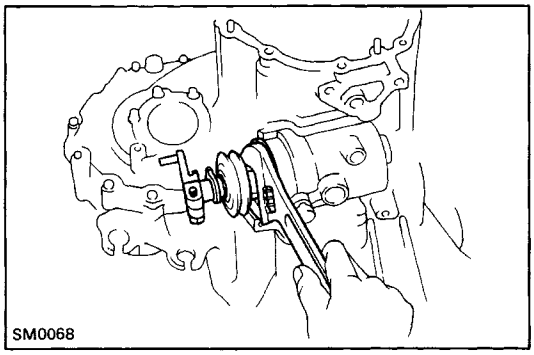
(a) Engage the gear double meshing.



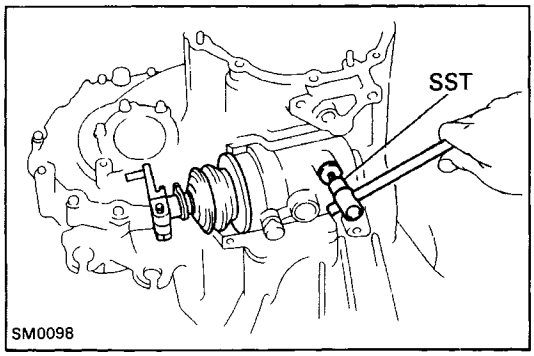
(b) install and torque the new lock nut.
Torque: 123 N–m (1,250 kgf–cm, 90 ft–lbf)



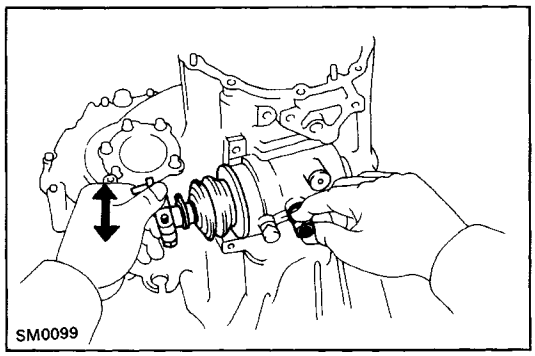
(c) Stake the lock nut.
(d) Disengage the gear double meshing.



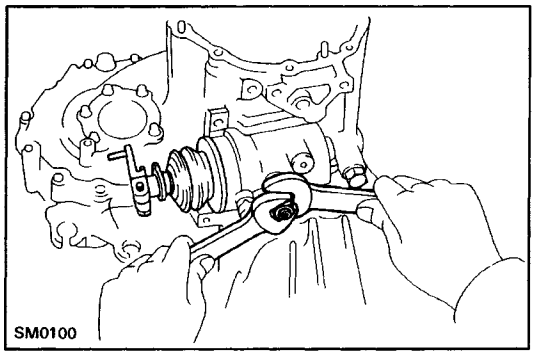
22. INSTALL SHIFT AND SELECT LEVER ASSEMBLY
(a) Apply seal packing to the underside of the flanged portion of the control shaft cover.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent
(b) Install the shift and select lever assembly and torque the control shaft cover.
Torque: 37 N–m (375 kgf–cm, 27 ft–lbf)



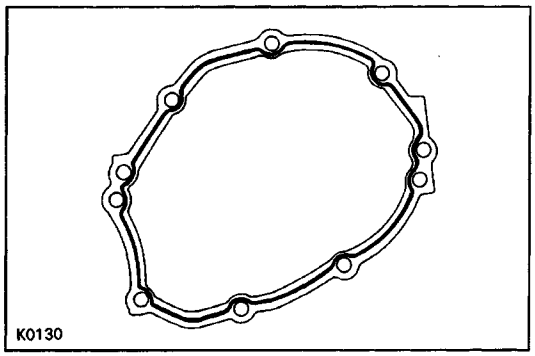
23. INSTALL NO. 2 LOCK BALL ASSEMBLY
(a) Apply sealant to the lock ball assembly threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(b) Using SST, install and torque the plug.
SST 09313–30021
Torque: 23 N–m (230 kgf–cm, 17 ft–lbf)



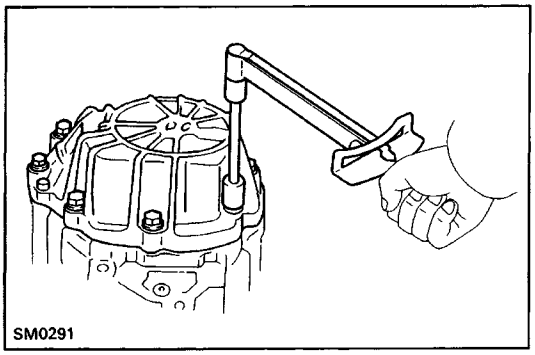
24. INSTALL AND ADJUST NO. 1 LOCK BALL ASSEMBLY
(a) Fully loosen the lock nut.
(b) Fully screw in the lock ball.
(c) Loosen the lock ball to where the play at the shift outer lever tip is 0.1 – 0.5 mm (0.004 – 0.020 in.).



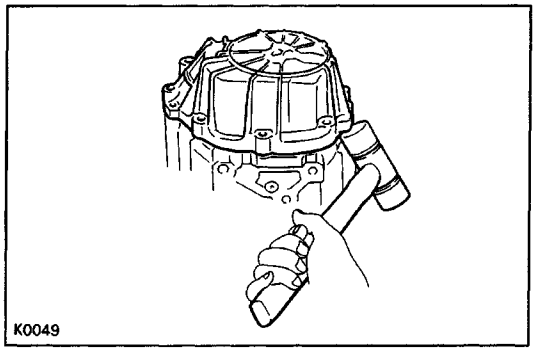
(d) Hold the lock ball and tighten the lock nut.
Torque: 37 N–m (375 kgf–cm, 27 ft–lbf)
(e) Check the shift outer lever tip play.
Lever tip play: 0.1 – 0.5 mm
(0.004 – 0.020 in.)



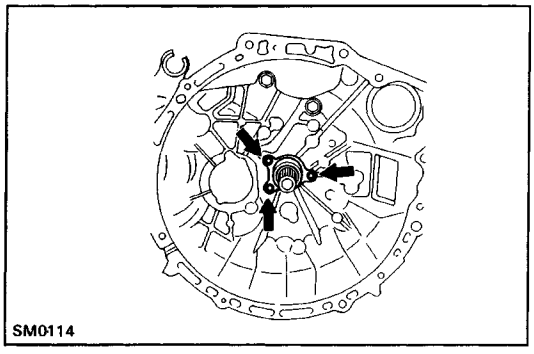
25. INSTALL TRANSMISSION CASE COVER
(a) Remove the any packing material and be careful not to drop oil on the contacting surface of the transmission case or transmission case cover.
(b) Apply seal packing to the transmission case cover as shown.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent



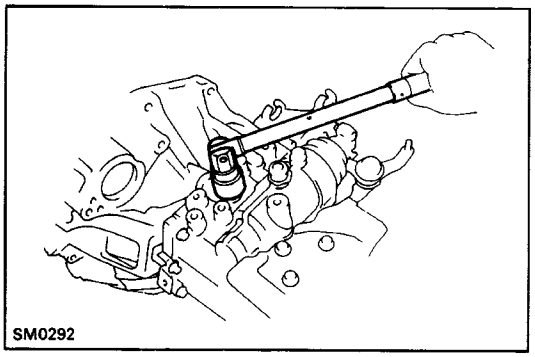
(c) Install the transmission case cover.
(d) Apply sealant to the bolt threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(e) Install and torque the eight bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



26. INSTALL ENGINE MOUNT BRACKET AND SELECTING BELLCRANK
(a) Install the engine mount bracket and torque the three bolts.
Torque: 52 N–m (530 kgf–cm, 38 ft–lbf)
(b) Install the selecting bellcrank and two bolts.



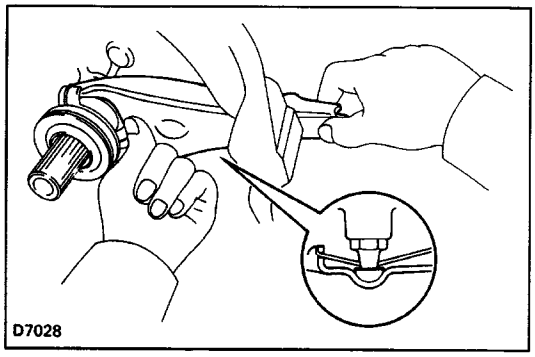
27. INSTALL RELEASE BEARING RETAINER
Install the release bearing retainer and torque the three bolts.
Torque: 7.4 N–m (75 kgf–cm, 65 in.–lbf)



28. INSTALL BACK–UP LIGHT SWITCH

Torque: 44 N–m (450 kgf–cm, 33 ft–lbf)

29. INSTALL SPEEDOMETER DRIVEN GEAR



30. INSTALL RELEASE FORK AND BEARING

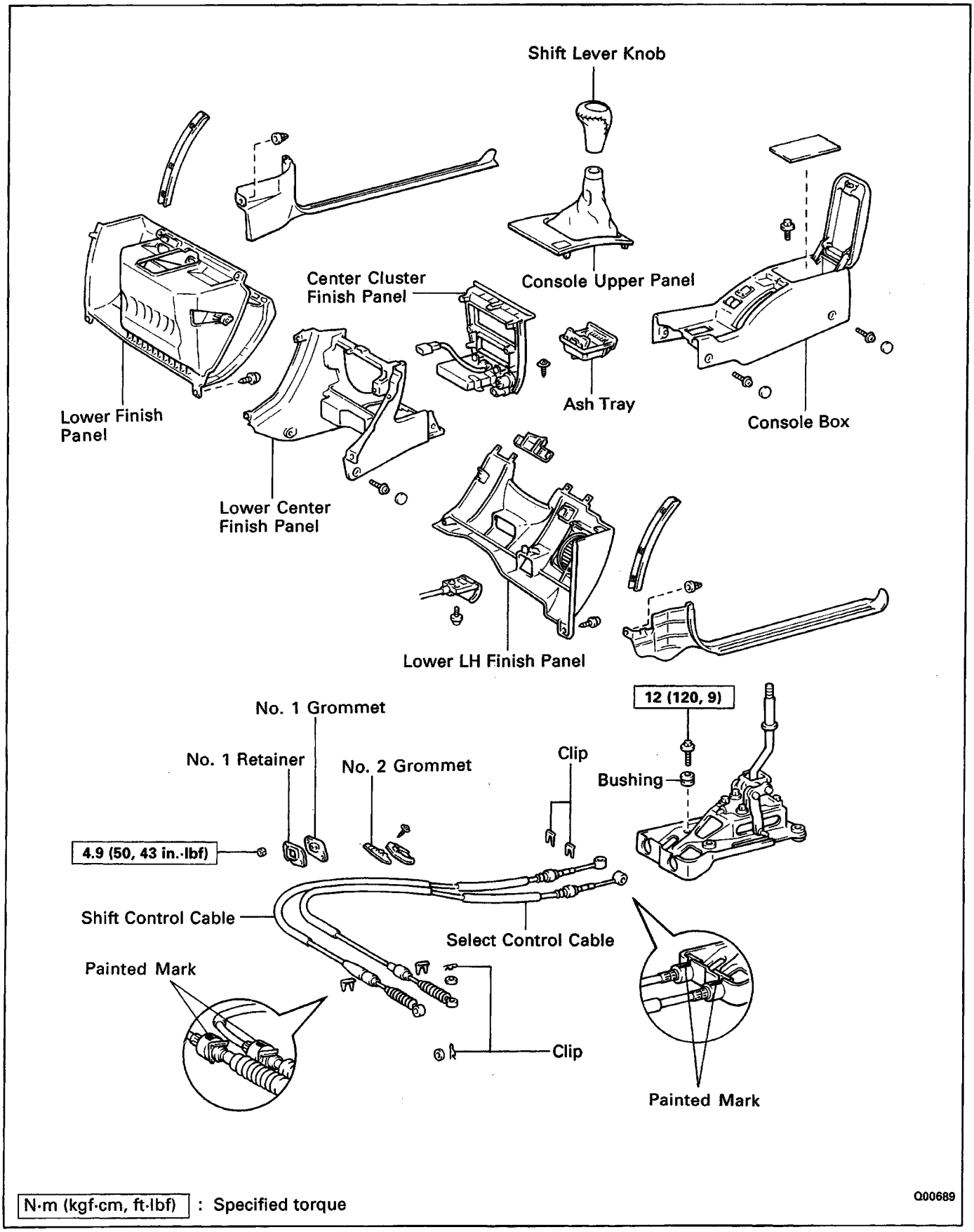
(a) Apply molybdenum disulphide lithium base grease to the following parts:

- Release bearing hub inside groove
- Input shaft spline
- Release fork contact surface

(b) Apply MP grease to the front surface of the release bearing.

SHIFT LEVER AND CONTROL CABLE

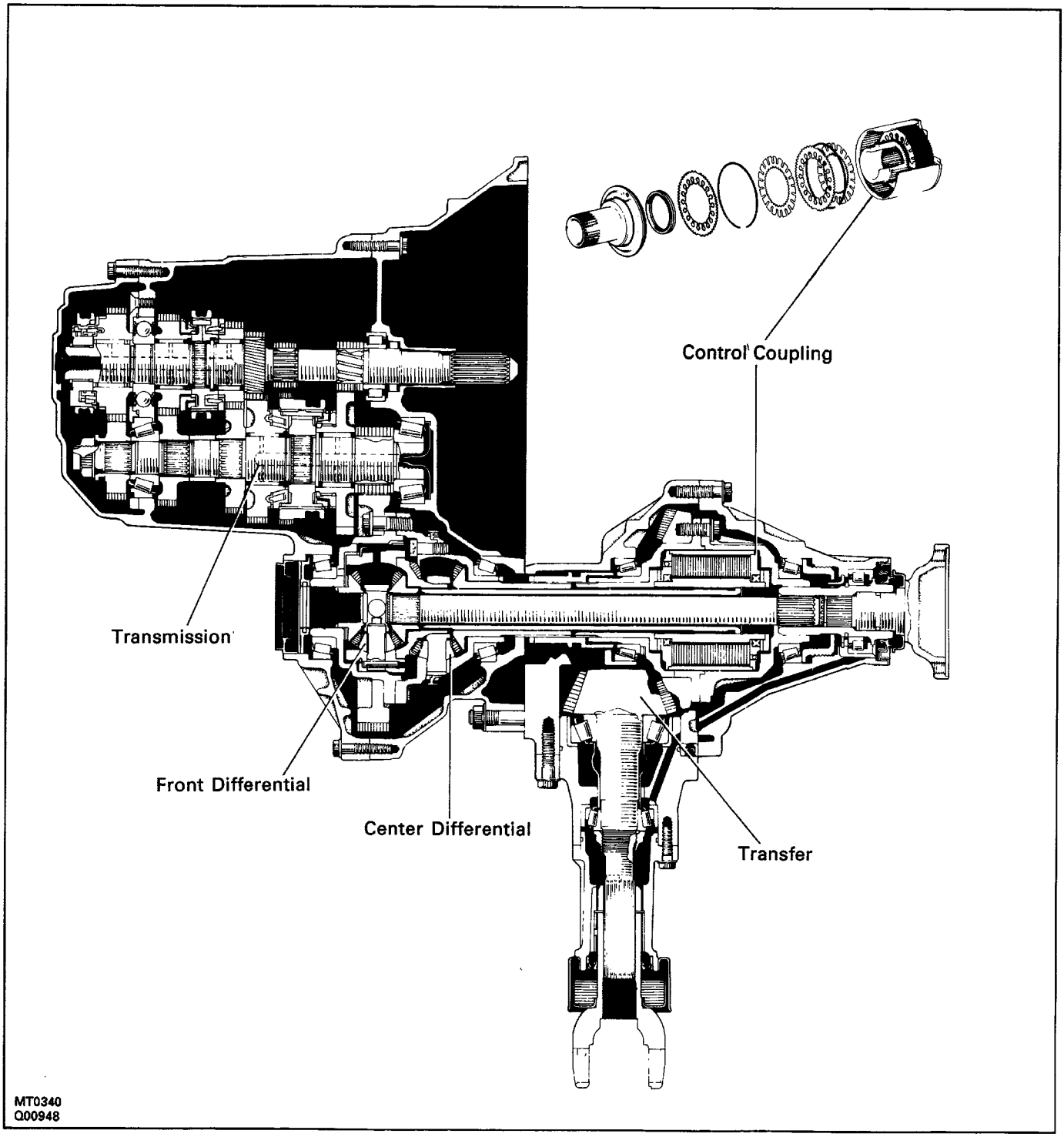
COMPONENTS



(E150F TRANSAXLE/4WD)
DESCRIPTION

GENERAL

- The El 50F transaxle has been compactly designed by arranging the transmission, the center differential, the front differential and the transfer on the same quadruple case axle.
- The center differential, which compensates the difference in rotation speed between the front and rear wheels, utilizes bevel gear to provide durability and reliability by distributing the engine power from the transmission 50/50 to both front and rear propeller shafts. This center differential has been equipped with a control coupling which functions as a LSD.



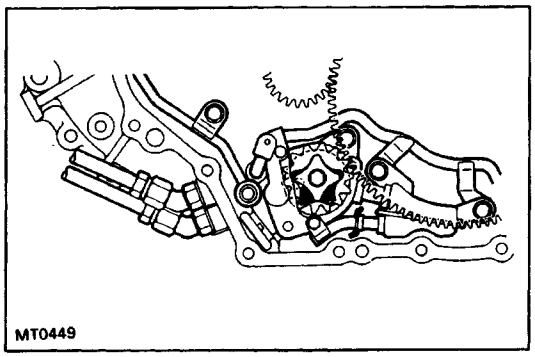
Transaxle type	E150 F	
Transmission	Operation method	Floor shift vehicles provided with push–pull type remote control
	Transmission type	Forward: Constant mesh Reverse: Sliding mesh
	Reduction side (Gear type)	Helical gear
	Differential side (Gear type)	Bevel gear
	Type of differential center mechanism	Viscous coupling
Center differential	Gear Type	Hypoid gear
Transfer		

- The oil used in each transaxle is as follow:

  Transaxle oil E50 (08885–80206) or gear oil super (08885–02106) or equivalent

  (Recommended oil
  Viscosity: SAE 75W–90 or 80W–90
  Above – 18˚C (0˚F) SAE90
  Below – 18˚C (0˚F) SAE80W)

- The oil capacity: 5.2 litters (5.5 US qts, 4.6 Imp.qts)

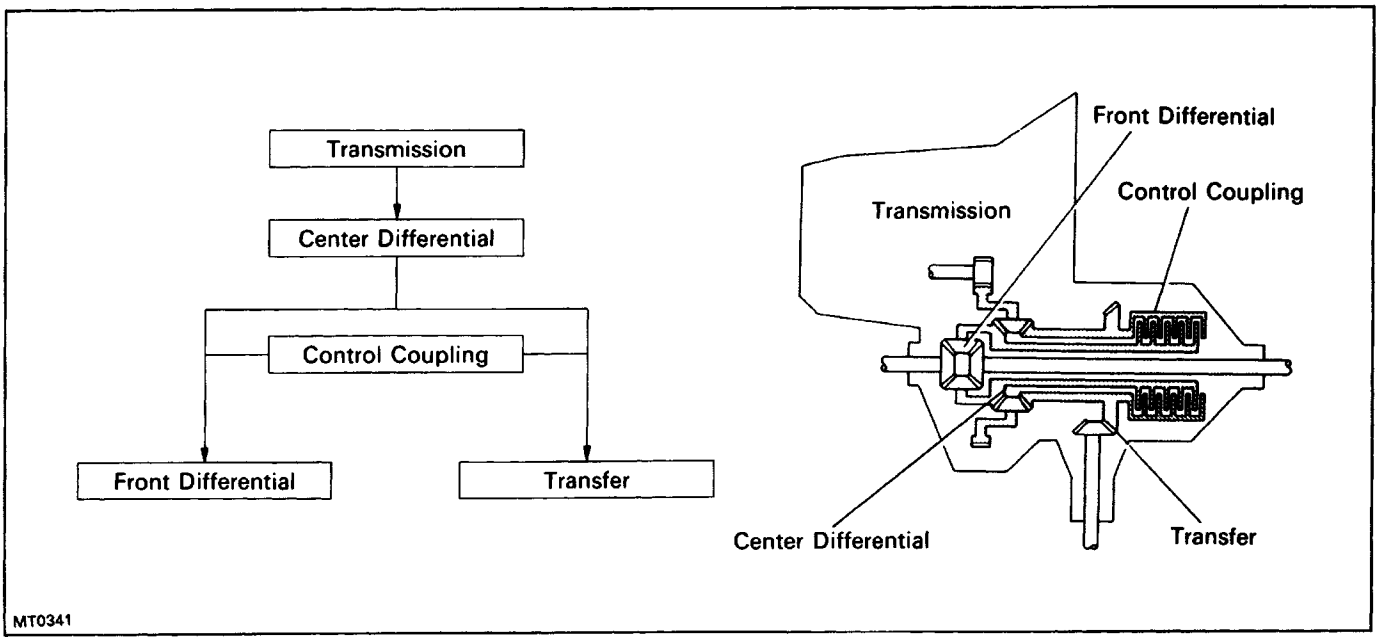


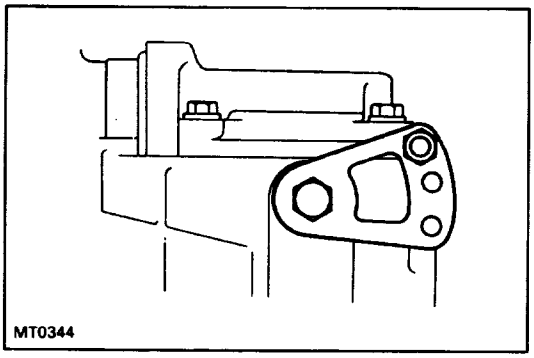
OIL PUMP

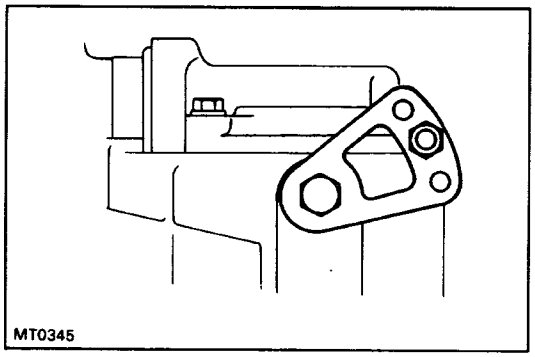
- The oil pump is of the trochoid type, and is driven by the differential ring gear and the pump drive gear. It is located at the bottom of the transaxle case.

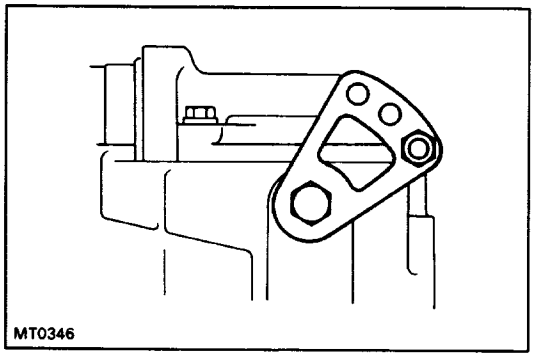
POWER TRANSMISSION

- Power from the transmission is transmitted along the route shown below:









SELECT LEVER FOR SERVICING

- Ordinarily, there is no need for the ordinary customer to operate anything.
- However, to operate 2 wheels out of the four, the following switches have been installed.

VISCOUS MODE

This is the mode for use during normal driving. After finishing inspection, be sure to return the lever to this mode and attach the lock bolt.

VISCOUS FREE MODE

This mode cuts off the driving force transmitted from the center differential to the control coupling, and makes the center differential free.

NOTICE: Never use this during normal driving.

FF MODE

This mode cuts off the driving force transmitted from the center differential to the transfer, and locks the center differential.

However, when the lever is shifted to this mode, the driving force is transmitted only to the front wheels.

NOTICE: Never use this during normal driving. It will have a bad effect on the transaxle.

PRECAUTIONS

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

- **Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surface.**
- **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.**

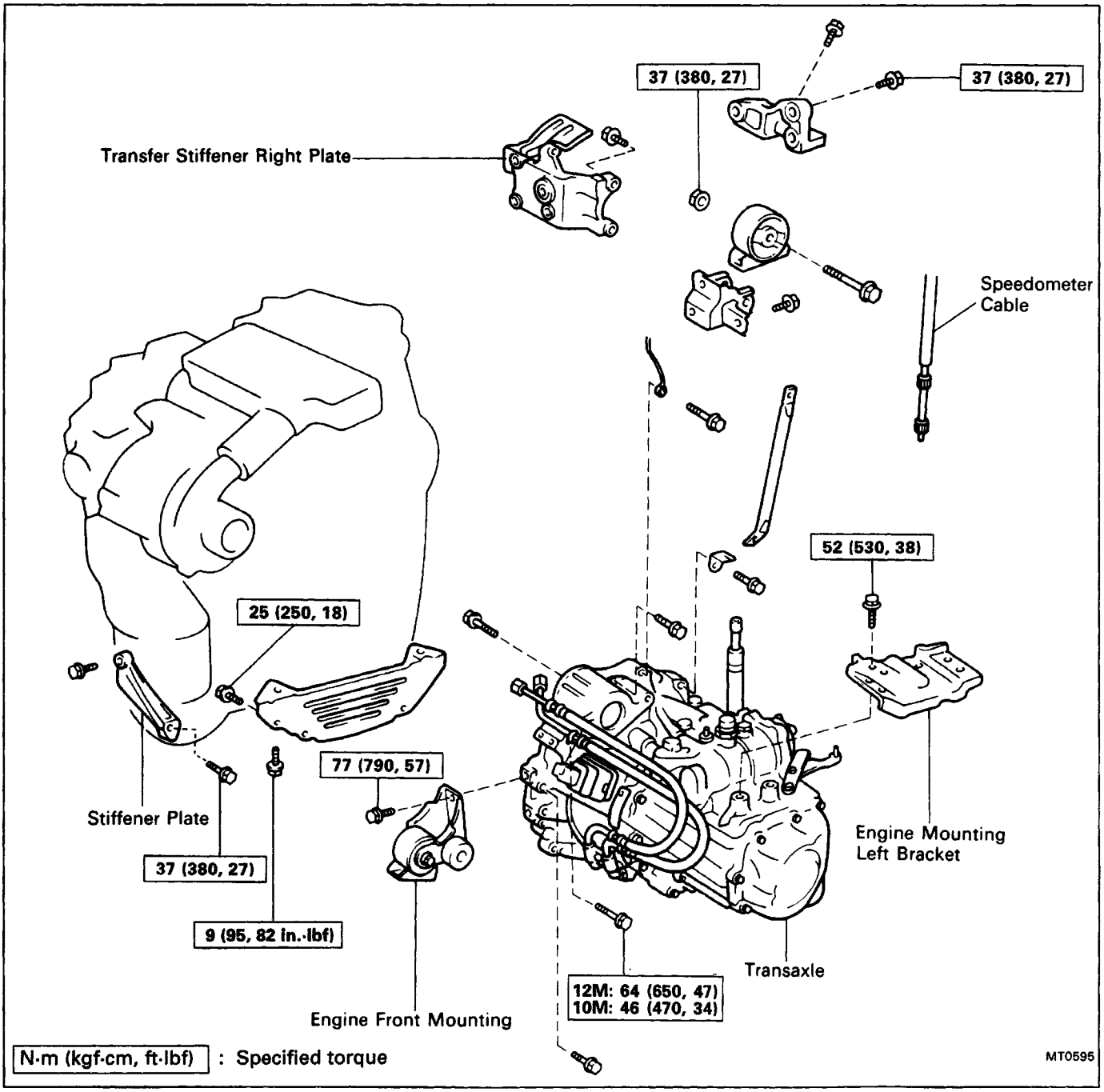
TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Noise	Transmission, differential or transfer faulty Wrong oil grade Oil level low	Disassemble and inspect transmission, differential or transfer Replace oil Add oil	MT–135 MT–131
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–135
Hard to shift or will not shift	Control cable faulty Transmission faulty	Replace control cable Disassemble and inspect transmission	MT–221 MT–135
Tight corner braking	Differential, center differential or transfer faulty	Replace differential, center differential or transfer	MT–167 MT–183

REMOVAL AND INSTALLATION OF TRANSAXLE (4WD)

REMOVAL AND INSTALLATION OF TRANSAXLE

REMOVE AND INSTALL TRANSAXLE AS SHOWN



REMOVAL OF TRANSAXLE

1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the ”LOCK” position and the negative H terminal cable is disconnected from the battery.

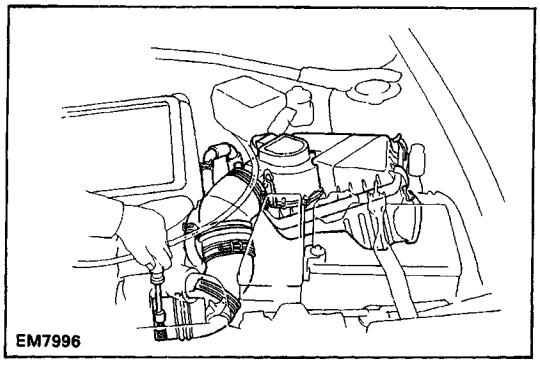
2. REMOVE HOOD

REMOVE ENGINE UNDER COVERS

4. DRAIN ENGINE COOLANT

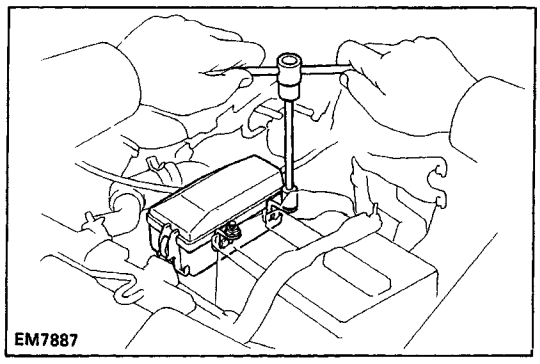
5. DRAIN ENGINE OIL

6. DRAIN TRANSAXLE OIL



7. REMOVE AIR CLEANER ASSEMBLY

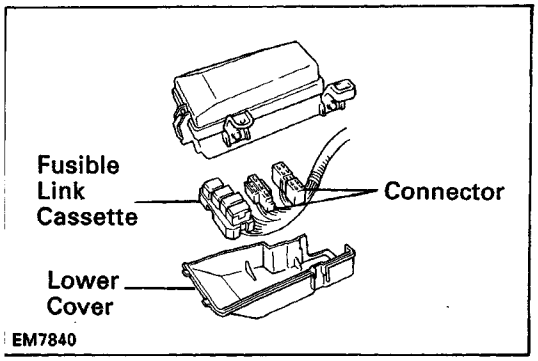
(a) Disconnect the air flow meter connector.
(b) Disconnect the four air cleaner cap clips.
(c) Disconnect the following hoses:
(1) Air cleaner hose from turbocharger
(2) PCV hose from cylinder head cover
(3) Air hose from air tube
(d) Remove the air cleaner cap, air flow meter assembly and element.
(e) Remove the three bolts and air cleaner case.



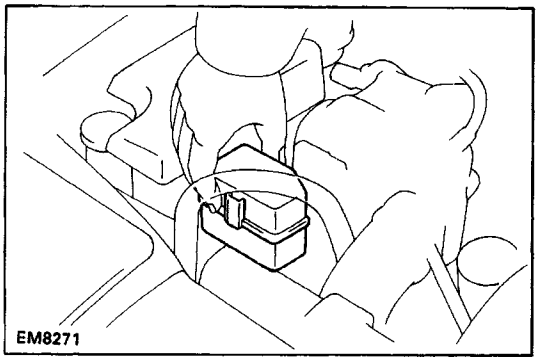
8. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

9. REMOVE ENGINE RELAY BOX, AND DISCONNECT ENGINE WIRE CONNECTORS

(a) Remove the two nuts, and disconnect the relay box from the battery.



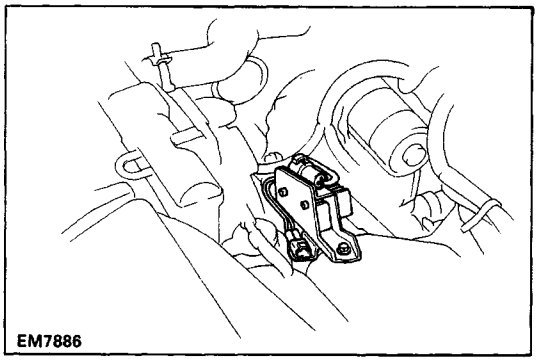
(b) Remove the lower cover from the relay box.
(c) Disconnect the fusible link cassette and two con–nectors of the engine wire from the relay box.



10. REMOVE A/C RELAY BOX FROM BRACKET

Remove the A/C relay box from the bracket.

11. REMOVE BATTERY

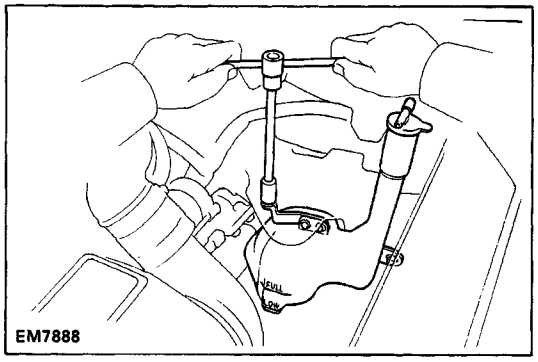


12. REMOVE INJECTOR SOLENOID RESISTOR AND FUEL PUMP RESISTOR

(a) Disconnect the two connectors.

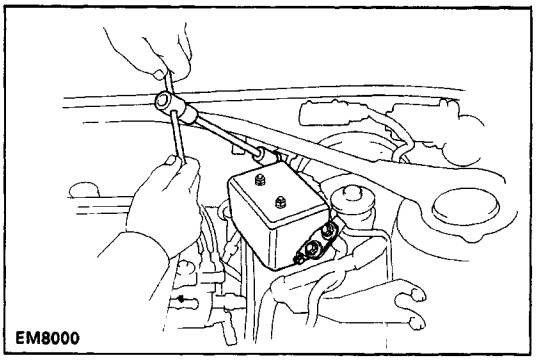
(b) Remove the bolt, the solenoid resistor and fuel pump resistor assembly.

13. REMOVE RADIATOR



14. REMOVE RADIATOR RESERVOIR TANK

Remove the two nuts and reservoir tank.



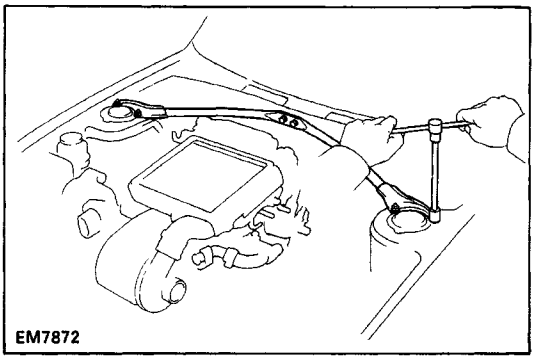
15. (w/ CRUISE CONTROL SYSTEM)
REMOVE CRUISE CONTROL ACTUATOR

(a) Remove the two nuts and actuator cover.

(b) Remove the three bolts, and disconnect the actuator.

(c) Disconnect the actuator connector.

(d) Disconnect the cable from the actuator.

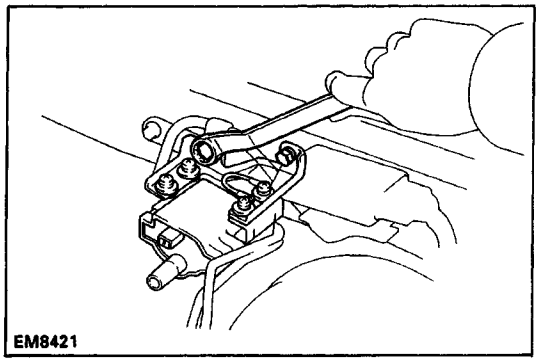


16. REMOVE SUSPENSION UPPER BRACE

(a) Remove the two wiper arms.

(b) Remove the outside lower windshield moulding.

(c) Remove the two bolts, four nuts and upper brace.



17. REMOVE IGNITION COIL

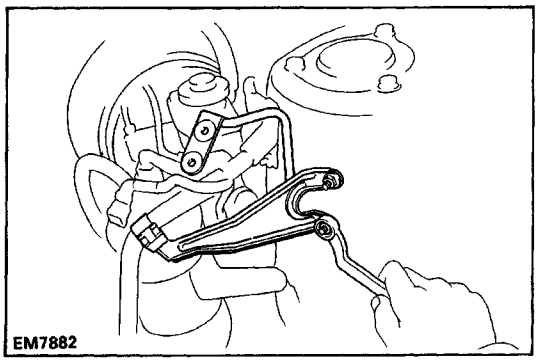
(a) Disconnect the ignition coil connector.
(b) Disconnect the high–tension cord.
(c) Remove the two bolts and ignition coil.

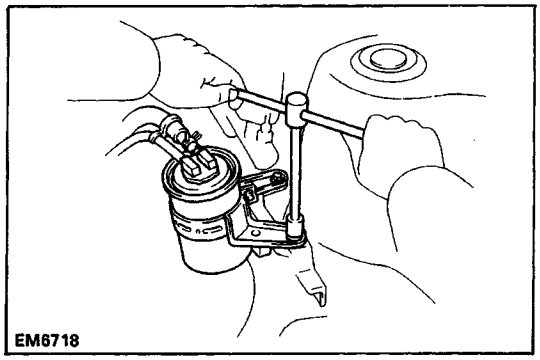
18. DISCONNECT WIRES AND CONNECTORS

(a) Check connector.
(b) Igniter connector.
(c) Ground strap from LH fender apron.

19. REMOVE ENGINE WIRE BRACKET

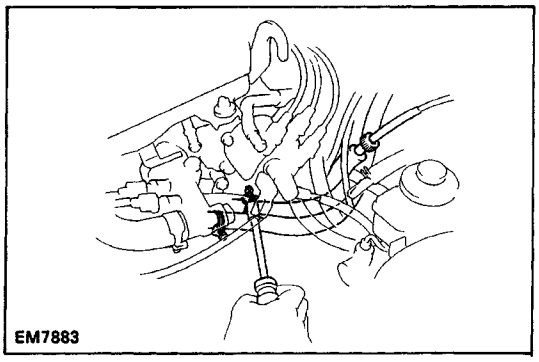
(a) Disconnect the wire clamp from the wire bracket.
(b) Remove the two bolts and wire bracket.





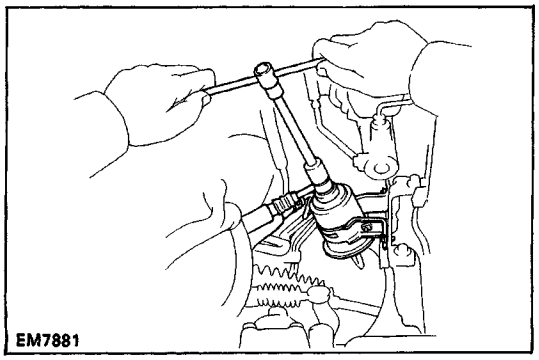
2O. REMOVE CHARCOAL CANISTER

(a) Disconnect the two vacuum hoses from the charcoal canister.
(b) Remove the two bolts and charcoal canister.



21. DISCONNECT HEATER HOSES

22. DISCONNECT SPEEDOMETER CABLE



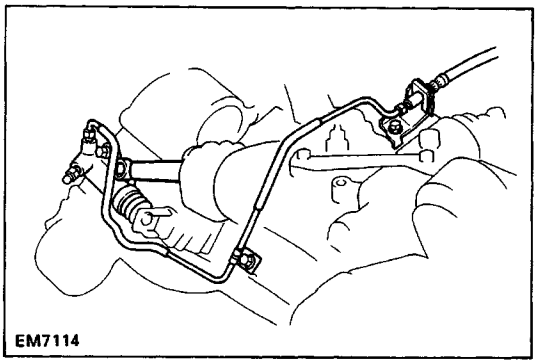
23. DISCONNECT FUEL HOSES

CAUTION: Catch leaking fuel in a container.

24. DISCONNECT CONNECTORS

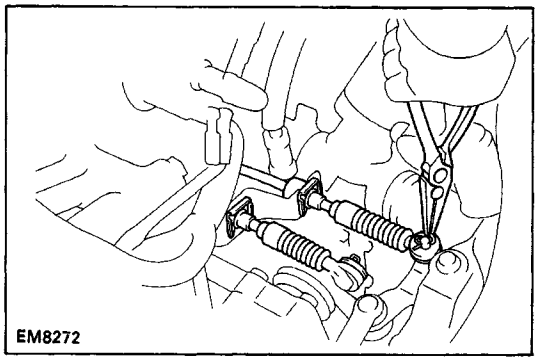
(a) Engine room wire connector.
(b) Noise filter connector.

25. REMOVE STARTER

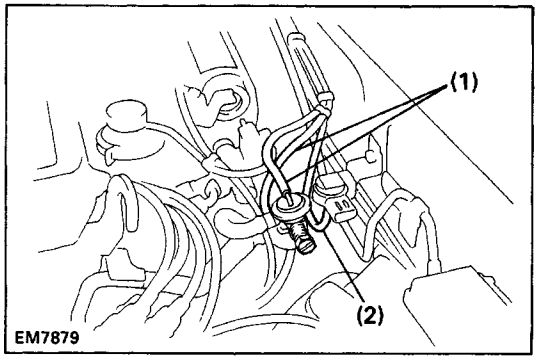

EM7114

26. REMOVE CLUTCH RELEASE CYLINDER WITHOUT DISCONNECTING TUBE

Remove the four bolts, release cylinder and tube from the transaxle.


EM8272

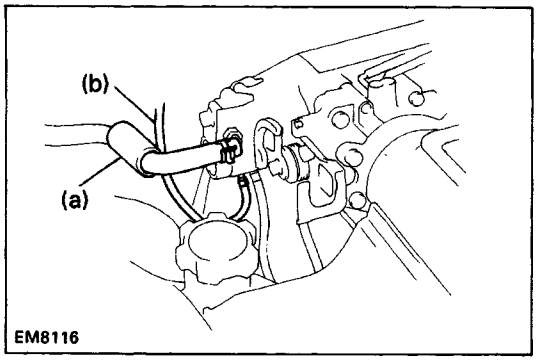
27. DISCONNECT TRANSAXLE CONTROL CABLES FROM TRANSAXLE



EM7879

28. DISCONNECT TURBOCHARGING PRESSURE SENSOR AND A/C ASV FROM BODY

(a) Disconnect the turbocharging pressure sensor.
(b) Disconnect the following hoses:
(1) Two vacuum hoses from A/C ASV
(2) Vacuum hose from turbocharging pressure sensor
(c) Remove the bolt, and disconnect the turbocharging pressure sensor and A/C ASV from the body.



EM8116

29. DISCONNECT HOSES

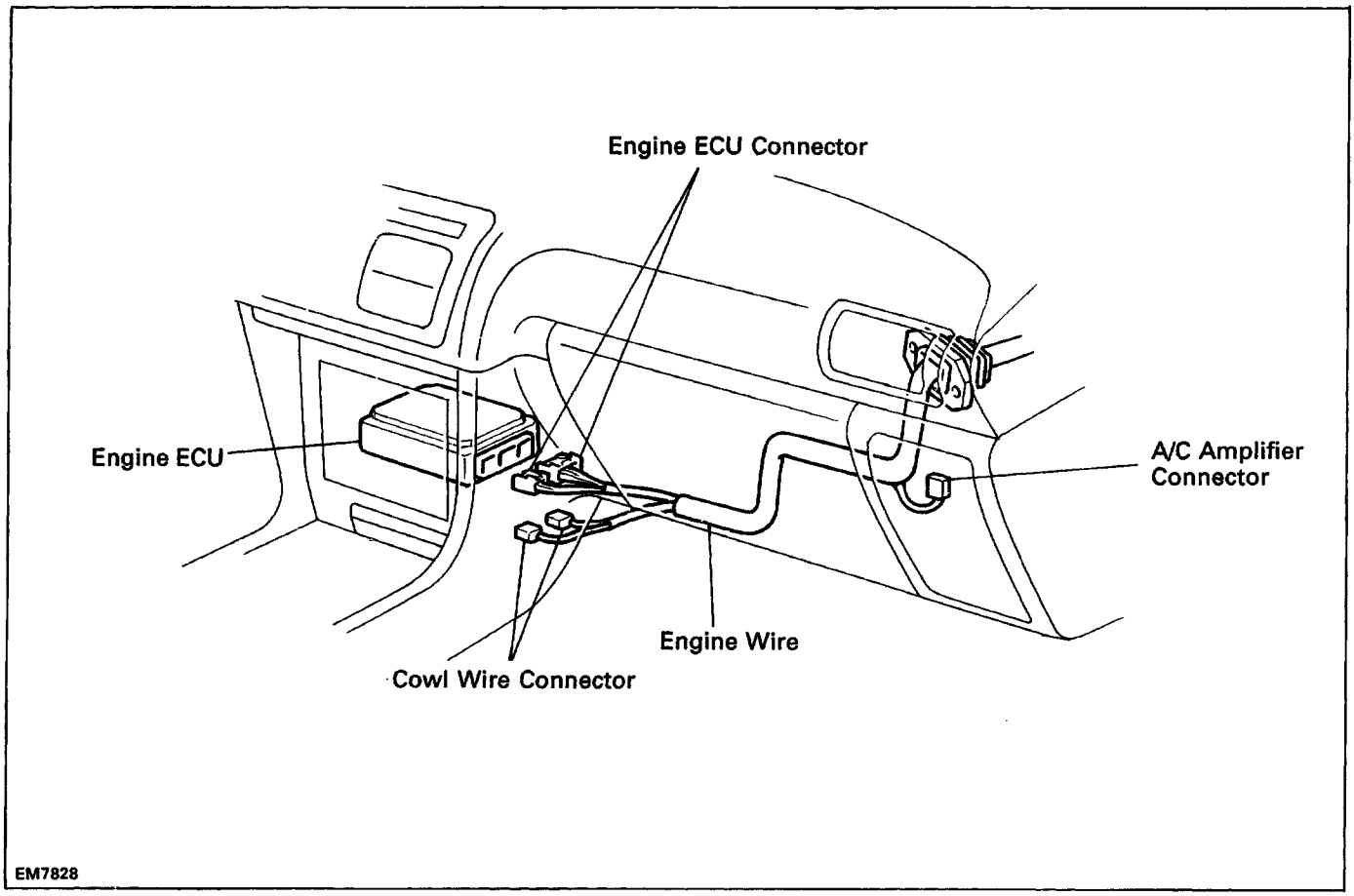
(a) Brake booster vacuum hose from intake manifold.
(b) Turbocharging pressure sensor hose from intake manifold.

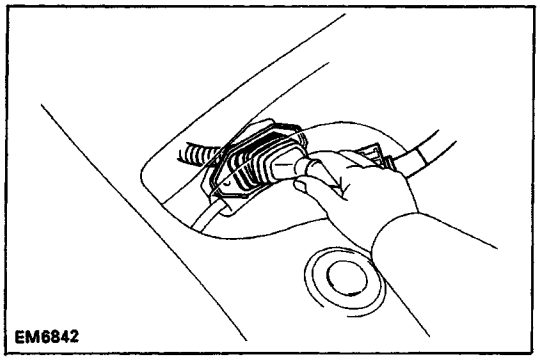
30. DISCONNECT ENGINE WIRE

(a) Engine wire clamp from wire bracket on RH fender apron.
(b) Two cowl wire connectors.

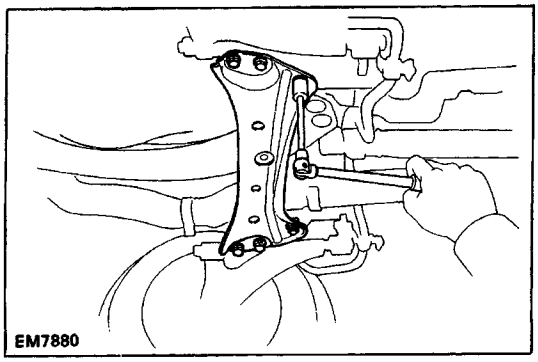
31. DISCONNECT ENGINE WIRE FROM CABIN

(a) Disconnect the following connectors:
(1) Two engine ECU connectors
(2) Two cowl wire connectors
(3) A/C amplifier connector



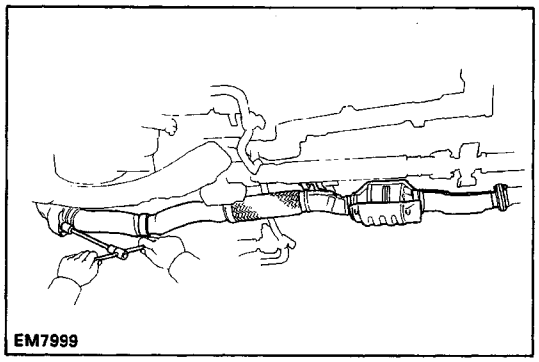


(b) Remove the two nuts, and pull out the engine wire from the cowl panel.



32. REMOVE SUSPENSION LOWER CROSSMEMBER

Remove the four bolts, two nuts and lower crossmember.



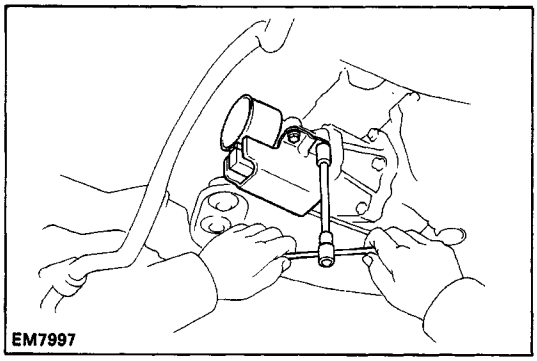
33. REMOVE FRONT EXHAUST PIPE

(a) Loosen the bolt, and disconnect the clamp from the bracket.

(b) Remove the two bolts and nuts holding the front exhaust pipe to the center exhaust pipe.

(c) Using a 14 mm deep socket wrench, remove the three nuts holding the front exhaust pipe to the catalytic converter.

(d) Disconnect the support hook on the front exhaust pipe from the support bracket, and remove the front exhaust pipe and two gaskets.



34. REMOVE DRIVE SHAFTS (See page SA–33)

35. REMOVE FRONT PROPELLER SHAFT (See page PR–3)

36. REMOVE DEFLECTOR FROM TRANSFER EXTENSION HOUSING

37. REMOVE DYNAMIC DAMPER FROM TRANSFER EXTENSION HOUSING

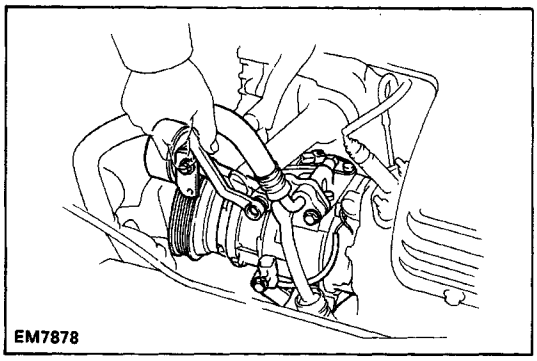
38. REMOVE ALTERNATOR

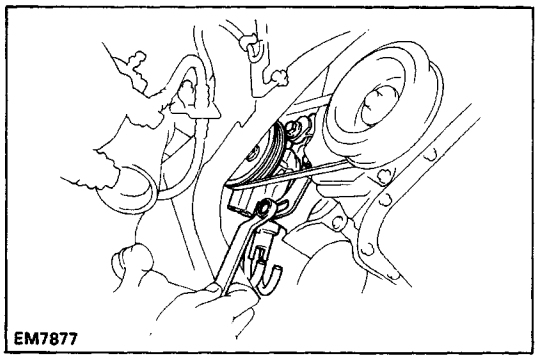
39. REMOVE IDLER PULLEY BRACKET AND A/C COMPRESSOR WITHOUT DISCONNECTING HOSES

(a) Disconnect the A/C compressor connector.

(b) Remove the four bolts and idler pulley bracket, and disconnect the A/C compressor.

HINT: Put aside the compressor, and suspend it to the radiator support with a string.





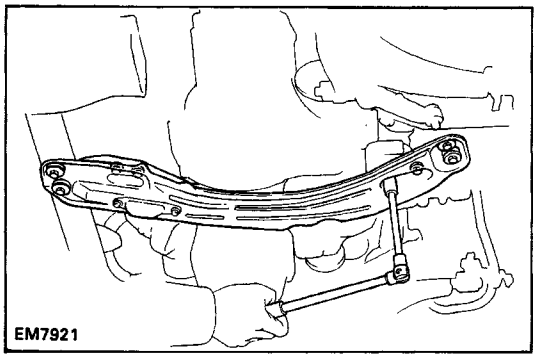
40. REMOVE PS PUMP WITHOUT DISCONNECTING HOSES

(a) Disconnect the two air– hoses from the air pipe.

(b) Remove the PS drive belt.

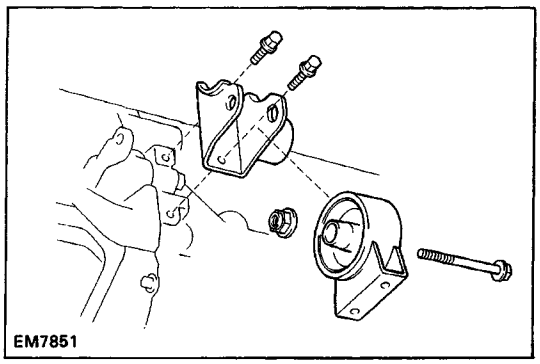
(c) Remove the four bolts, and disconnect the PS pump from the engine.

HINT: Put aside the pump and suspend it to the cowl with a string.



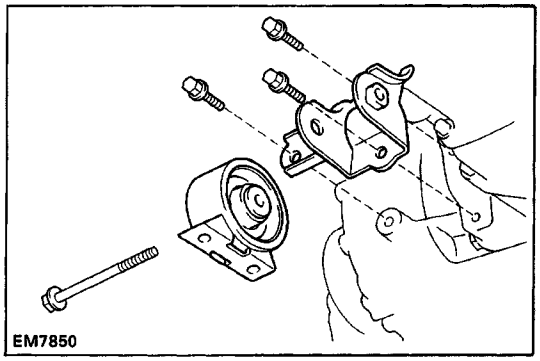
41. REMOVE ENGINE MOUNTING CENTER MEMBER

Remove the eight bolts and center member.



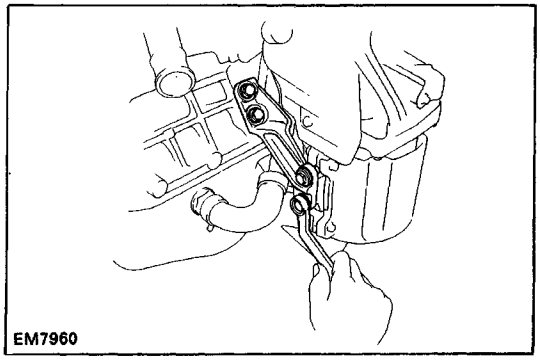
42. REMOVE FRONT ENGINE MOUNTING INSULATOR AND BRACKET

(a) Remove the through bolt, nut and mounting insulator.
(b) Remove the two bolts and mounting bracket.



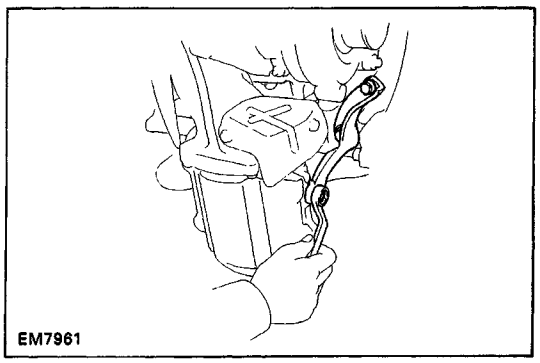
43. REMOVE REAR ENGINE MOUNTING INSULATOR AND BRACKET

(a) Remove the through bolt and mounting insulator.
(b) Remove the three bolts and mounting bracket.

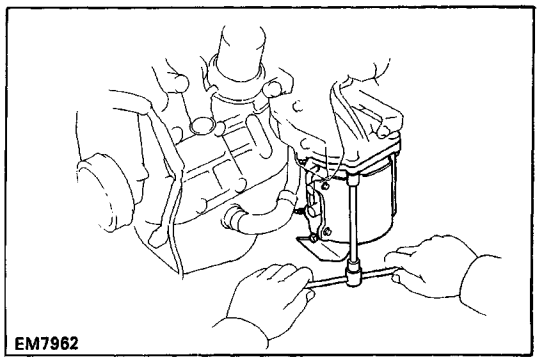


44. REMOVE CATALYTIC CONVERTER

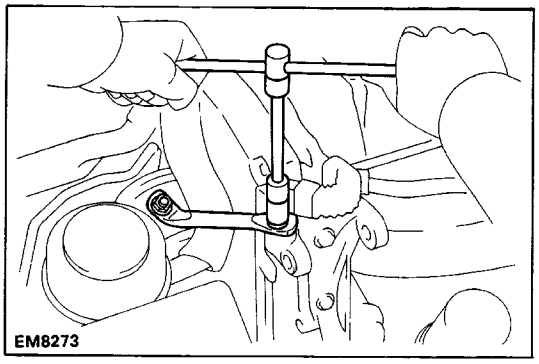
(a) Remove the four bolts and RH converter stay.



(b) Remove the three bolts and LH converter stay.

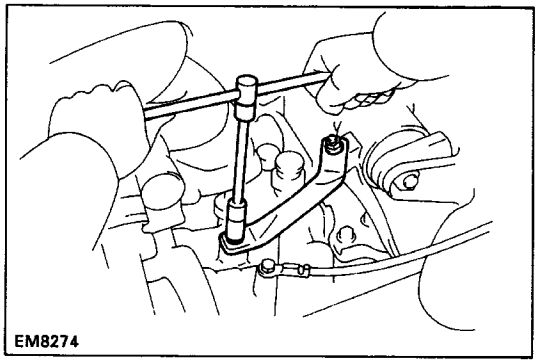


(c) Remove the three bolts, two nuts, catalytic converter, cushion, retainer and gasket.



45. REMOVE RH ENGINE MOUNTING STAY

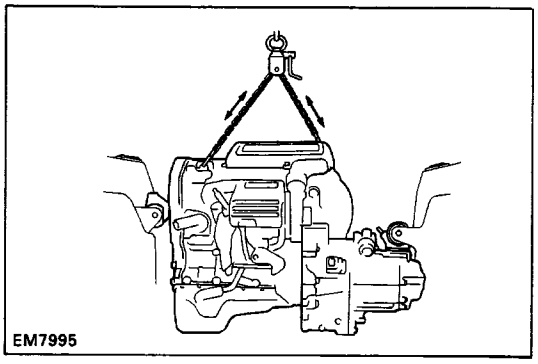
Remove the bolt, nut and mounting stay.



46. REMOVE LH ENGINE MOUNTING STAY

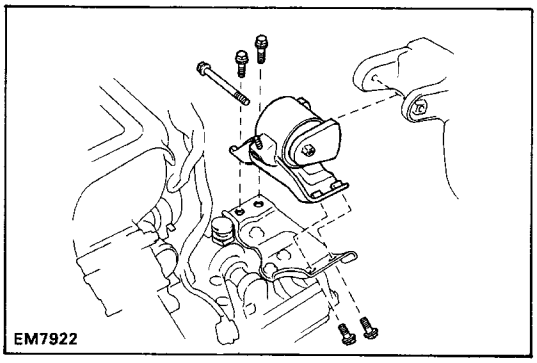
(a) Remove the bolt, nut and mounting stay.

(b) Remove the bolt, and disconnect the ground strap.

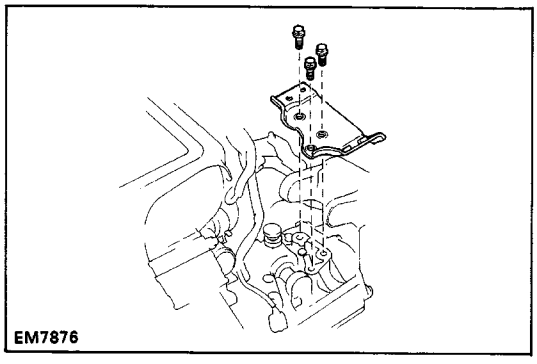


47. REMOVE ENGINE AND TRANSAXLE ASSEMBLY FROM VEHICLE

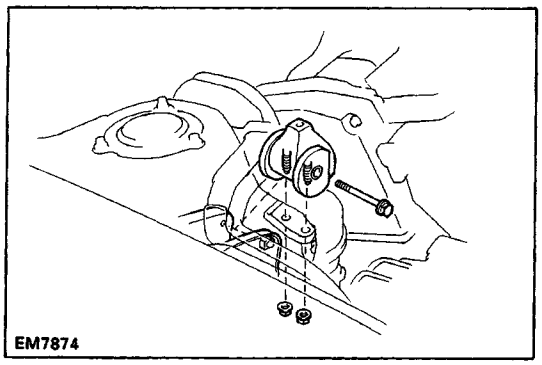
(a) Attach the engine chain hoist to the engine hangers.



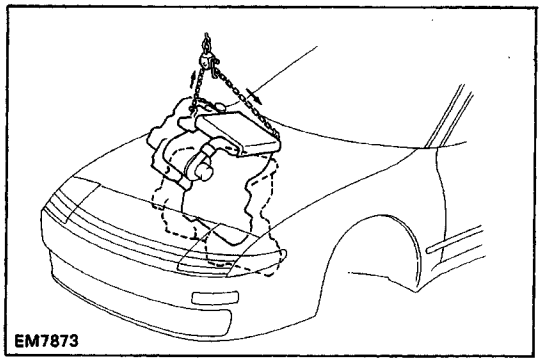
(b) Remove the through bolt, four bolts and LH mounting insulator.



(c) Remove the three bolts and LH mounting bracket.



(d) Remove the through bolt, two nuts and RH mounting insulator.

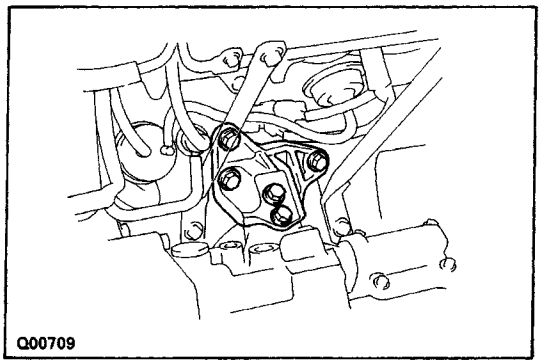


(e) Lift the engine out of the vehicle slowly and carefully.

NOTICE: Be careful not to hit the PS gear housing.

(f) Make sure the engine is clear of all wiring, hoses and cables.

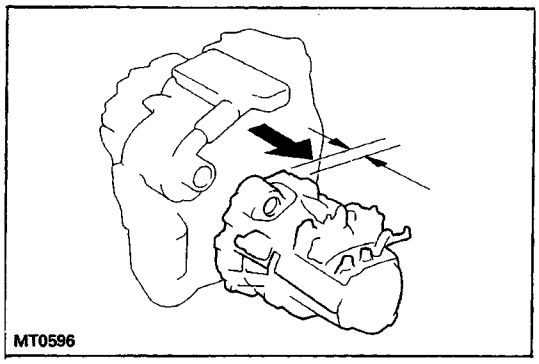
(g) Place the engine and transaxle assembly onto the stand.



48. REMOVE TRANSFER STIFFENER RIGHT PLATE

49. REMOVE TRANSFER STIFFENER PLATE

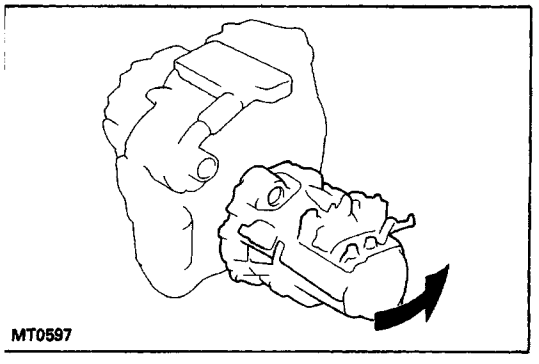
50. REMOVE STIFFENER PLATE



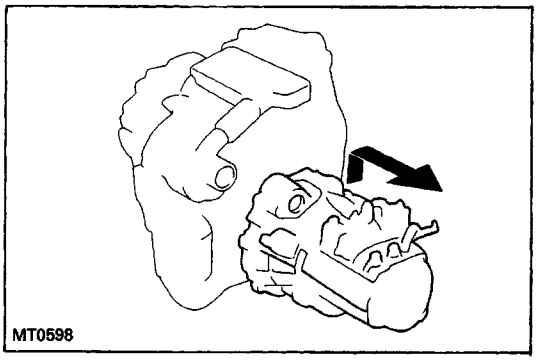
51. REMOVE TRANSAXLE ASSEMBLY

(a) Remove the transaxle mounting bolts from the engine.

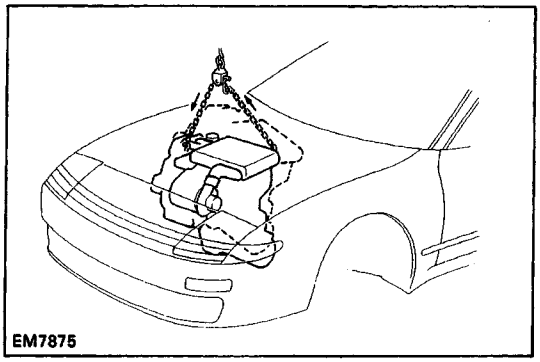
(b) Pull straight until there are space of 60 – 80 mm (2 – 3 in.) between engine and transaxle case.



(c) Move the transmission case cover to the arrow in the illustration.



(d) While holding transfer output slightly, pull out whole transaxle.


EM7875

INSTALLATION OF TRANSAXLE

1. INSTALL TRANSAXLE ASSEMBLY FOLLOWING REMOVAL SEQUENCE IN REVERSE

(See page MT–112)

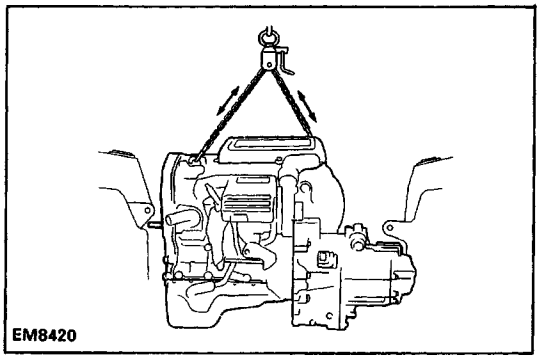
2. INSTALL ENGINE AND TRANSAXLE ASSEMBLY IN VEHICLE

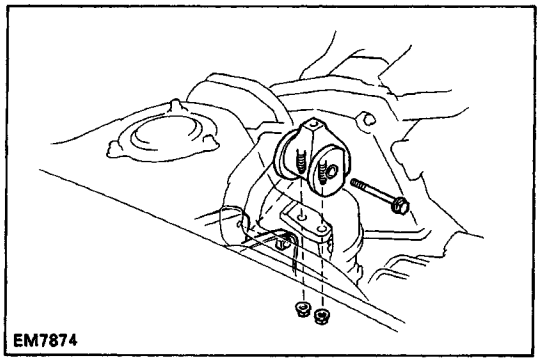
(a) Attach the engine chain hoist to the engine hangers.

(b) Lower the engine into the engine compartment. Tilt the transaxle downward, lower the engine and clear the LH mounting.

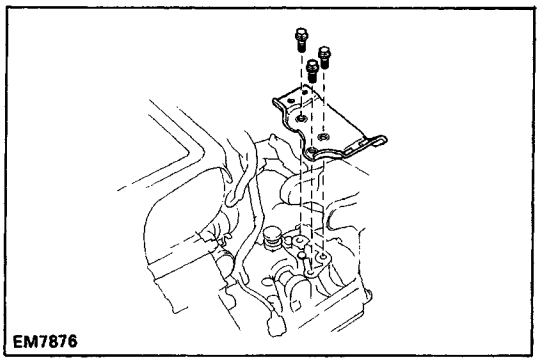
NOTICE: Be careful not to hit the PS gear housing.

(c) Keep the engine level, and align RH and LH mounting with the body bracket.


EM8420

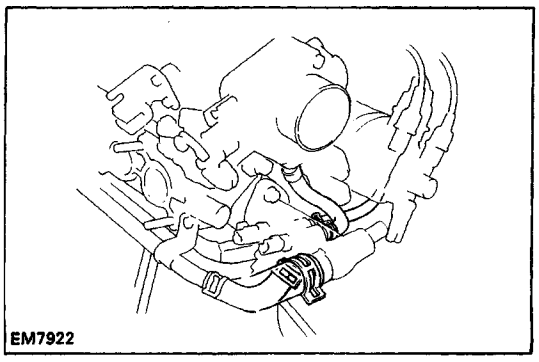

EM7874

(d) Attach the RH mounting insulator to the mounting bracket and body, and temporarily install the through bolt and two nuts.


EM7876

(e) Install the LH mounting bracket to the transaxle case with the three bolts.

Torque: 52 N–m (530 kgf–cm, 38 ft–lbf)


EM7922

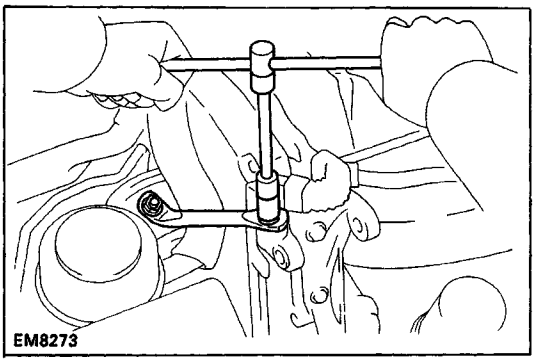
(f) Attach the LH mounting insulator– to the mounting bracket and body with the through bolt and four bolts. Tighten the bolts.

Torque:
Bolt 63 N–m (650 kgf–cm, 47 ft–lbf)
Through bolt 87 N–m (890 kgf–cm, 64 ft–lbf)

(g) Tighten the through bolt and two nuts of the RH mounting insulator.

Torque:
Nut 52 N–m (530 kgf¿cm, 38 ft–lbf)
Through bolt 87 N–m (890 kgf–cm, 64 ft–lbf)

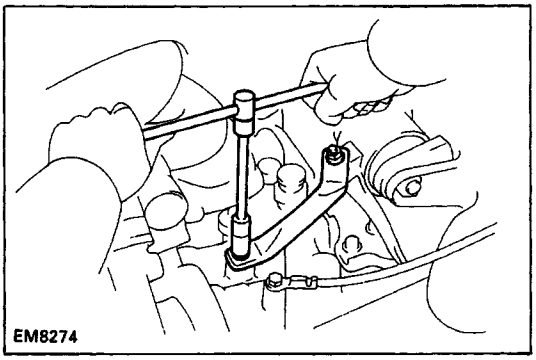
(h) Remove the engine chain hoist from the engine.



3. INSTALL RH ENGINE MOUNTING STAY

Install the mounting stay with the bolt and nut.

Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)



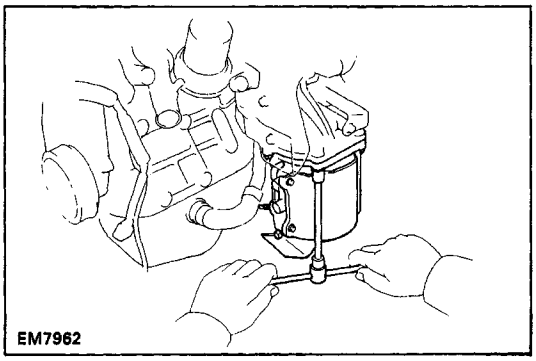
4. INSTALL LH ENGINE MOUNTING STAY

Install the mounting stay with the bolt and nut.

Torque: 21 N–m (210 kgf–cm, 15 ft–lbf)

5. CONNECT GROUND STRAP

Connect the ground strap to the transaxle with the bolt.

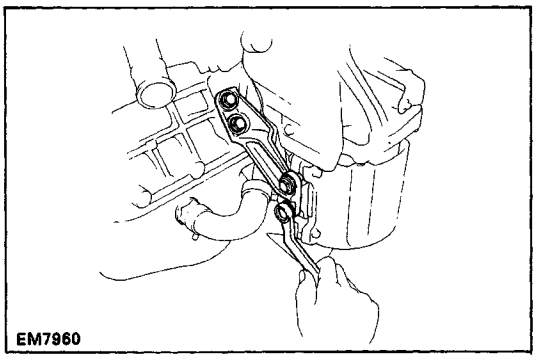


6. INSTALL CATALYTIC CONVERTER

(a) Place new cushion, retainer and gasket on the catalytic converter.

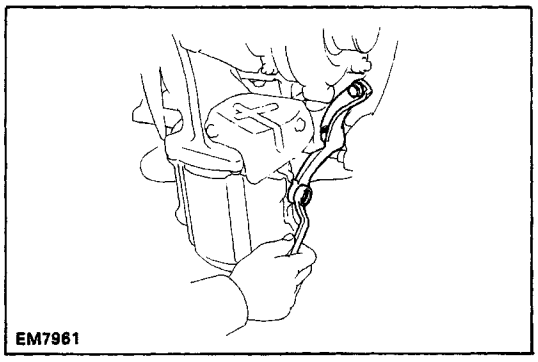
(b) Install the catalytic converter with the three bolts and two nuts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



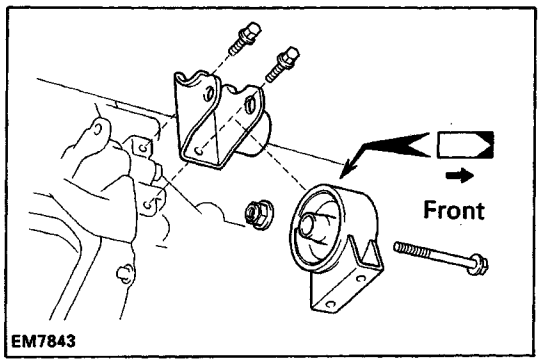
(c) Install the RH converter stay with the four bolts.

Torque: 59 N–m (600 kgf–cm, 43 ft–lbf)



(d) Install the LH converter stay with the three bolts.

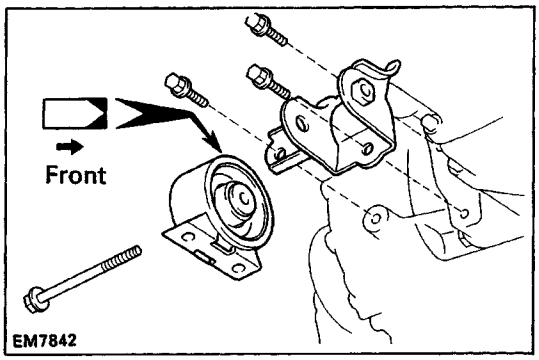
Torque: 59 N–m (600 kgf–cm, 43 ft–lbf)



7. INSTALL FRONT ENGINE MOUNTING BRACKET AND INSULATOR

(a) Install the mounting bracket with the two bolts.
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)

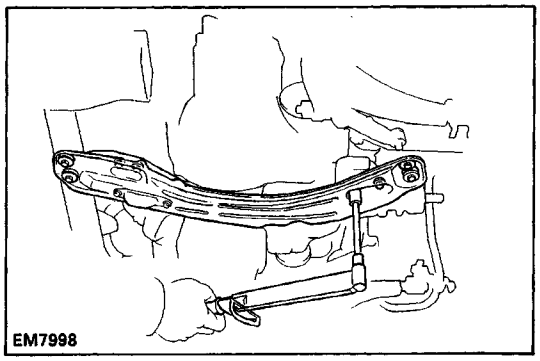
(b) Temporarily install the mounting insulator with the through bolt and nut.



8. INSTALL REAR ENGINE MOUNTING BRACKET AND INSULATOR

(a) Install the mounting bracket with the three bolts.
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)

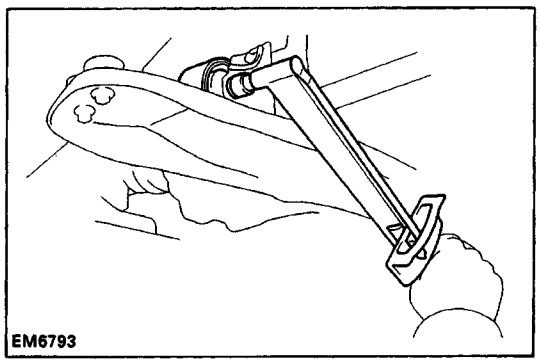
(b) Temporarily install the mounting insulator with the through bolt.



9. INSTALL ENGINE MOUNTING CENTER MEMBER

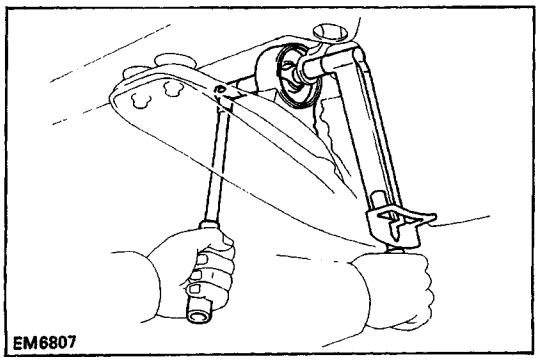
(a) Install the engine mounting center member with the four bolts.
Torque: 52 N–m (530 kgf–cm, 38 ft–lbf)

(b) Install and torque the four bolts holding the insulators to the center member.
Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

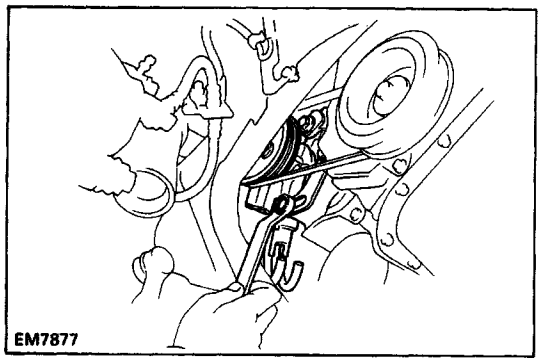


10. TIGHTEN FRONT AND REAR ENGINE MOUNTING THROUGH BOLTS

(a) Tighten the rear through bolt.
Torque: 87 N–m (890 kgf–cm, 64 ft–lbf)



(b) Tighten the front through bolt.
Torque: 87 N–m (890 kgf–cm, 64 ft–lbf)



11. INSTALL PS PUMP

(a) Install the PS pump with the four– bolts.

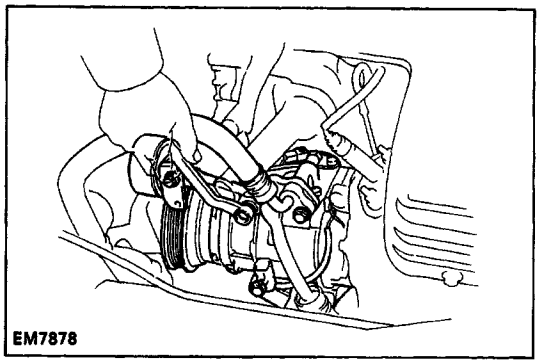
Torque:

Adjusting bolt 39 N–m i400 kgf–cm, 29 ft–lbf)

others 43 N–m (440 kgf–cm, 32 ft–lbf)

(b) Install the drive belt.

(c) Connect the two air hoses to the air pipe.



12. INSTALL A/C COMPRESSOR AND IDLER PULLEY BRACKET

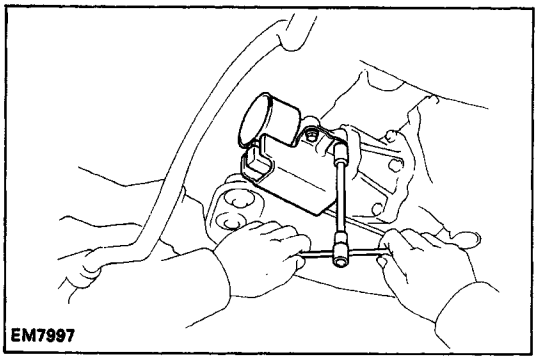
(a) Install the compressor and idler pulley bracket with the four bolts.

Torque: 27 N–m I280 kgf–cm, 20 ft–lbf)

(b) Connect the two connectors.

(c) Connect the A/C compressor connector.

13. INSTALL ALTERNATOR



14. INSTALL DEFLECTOR TO TRANSFER EXTENSION HOUSING

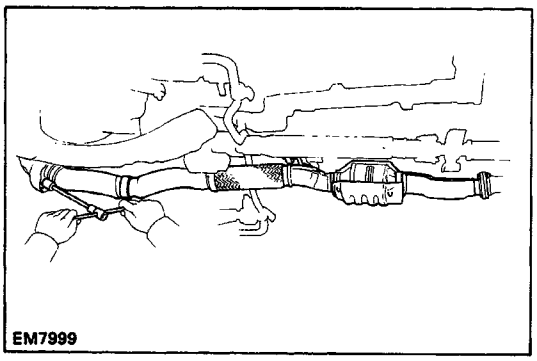
15. INSTALL DYNAMIC DAMPER TO TRANSFER EXTENSION HOUSING

16. INSTALL FRONT PROPELLER SHAFT

(See page PR–3)

17. INSTALL DRIVE SHAFTS

(See page SA–33)



18. INSTALL FRONT EXHAUST PIPE

(a) Install the support hook on the front exhaust pipe to the support bracket.

(b) Place two new gaskets on the front and rear of the front exhaust pipe.

(c) Temporarily install the two bolts and new nuts holding the exhaust pipe to the center exhaust pipe.

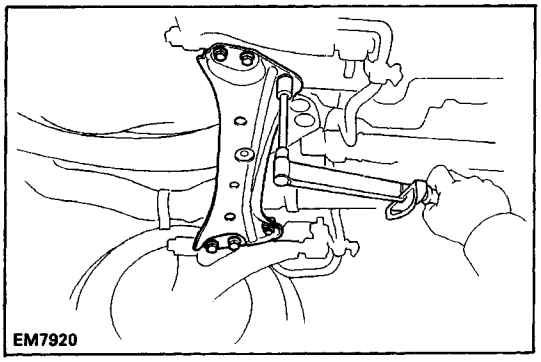
(d) Using a 14 mm deep socket wrench, install the three new nuts holding the exhaust pipe to the catalytic converter.

Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)

(e) Tighten the two bolts and nuts holding the exhaust pipe to the center exhaust pipe.

Torque: 43 N–m (440 kgf–cm, 32 ft–lbf)

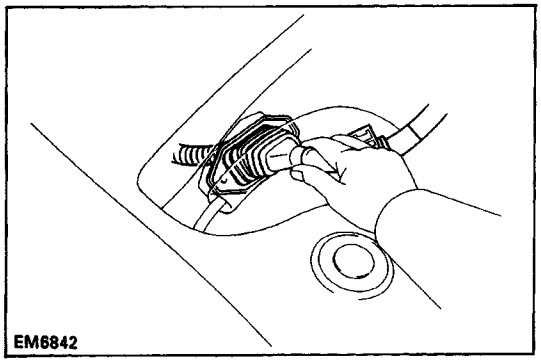
(f) Install the clamp with the bolt.


EM7920

19. INSTALL SUSPENSION LOWER CROSSMEMBER

Install the lower crossmember with the four bolts and two n uts.

Torque: 152 N–m (1,550 kgf–cm, 112 ft–lbf)


EM6842

20. CONNECT ENGINE WIRE TO CABIN

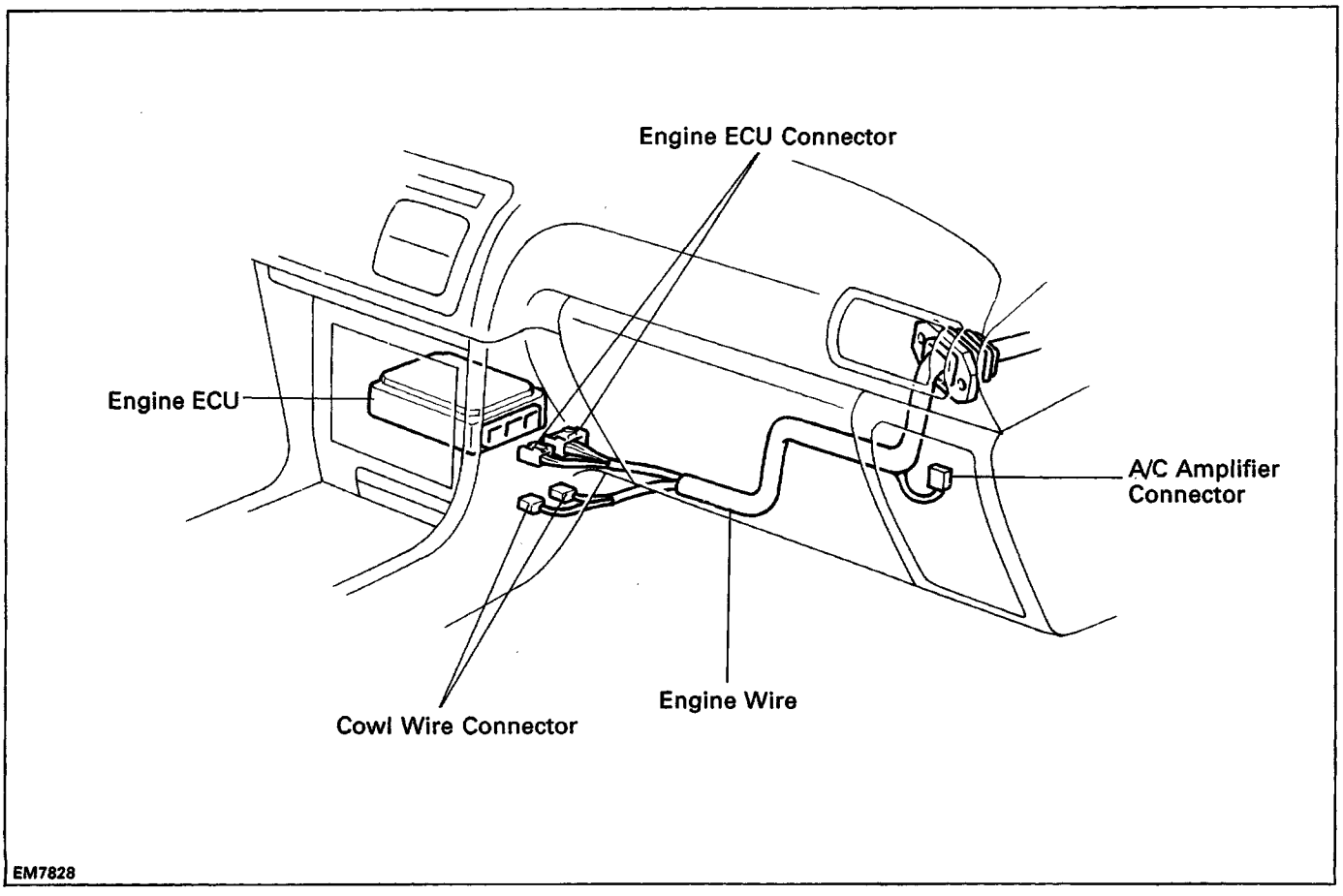
(a) Push in the engine wire through the cowl panel. Install the two nuts

(b) Connect the following connectors.

(1) Two engine ECU connectors

(2) Two cowl wire connectors

(3) A/C amplifier connector

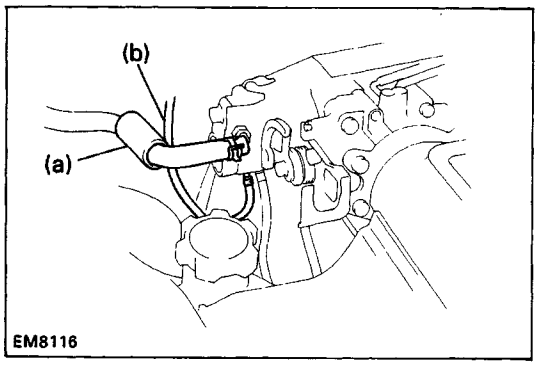


EM7828

21. CONNECT ENGINE WIRE

(a) Engine wire clamp to wire bracket on RH fender apron.

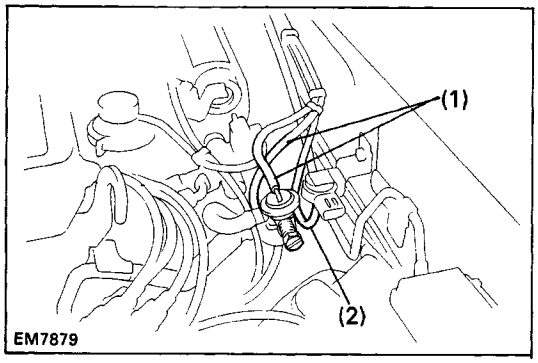
(b) Two cowl wire connectors.



22. CONNECT HOSES

(a) Brake booster vacuum hose from intake manifold.

(b) Turbocharging pressure sensor hose from intake manifold.



23. INSTALL TURBOCHARGING PRESSURE SENSOR AND A/C ASV

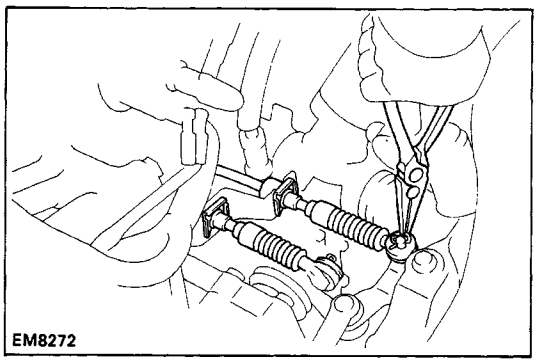
(a) Install the turbocharging pressure sensor and A/C ASV with the bolt.

(b) Connect the following hoses:

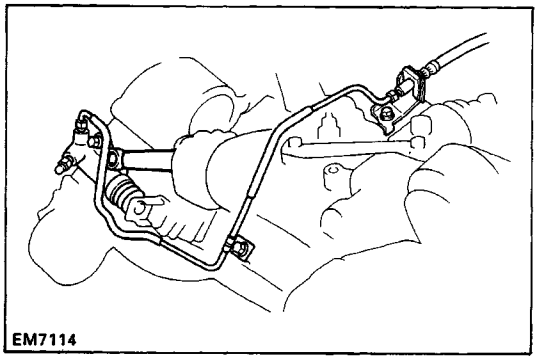
(1) Two vacuum hoses to ASV from A/C ASV

(2) Vacuum hose to ASV from turbocharging pressure sensor

(c) Connect turbocharging pressure sensor connector.



24. CONNECT TRANSAXLE CONTROL CABLES TO TRANSAXLE



25. INSTALL CLUTCH RELEASE CYLINDER

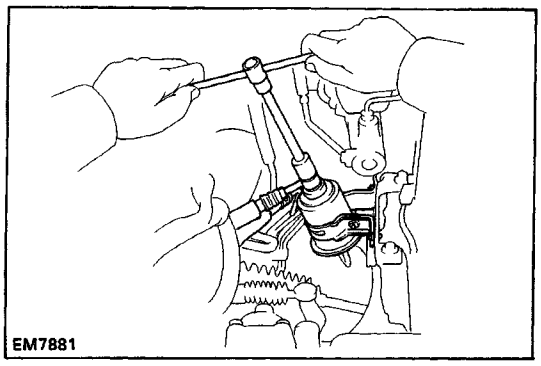
Install the release cylinder and tube with the four bolts.

26. INSTALL STARTER

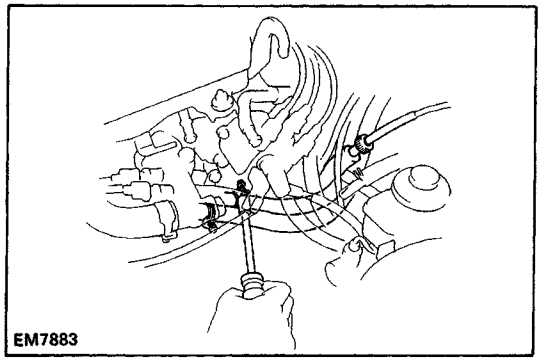
27. CONNECT CONNECTORS

(1) Engine room wire connector

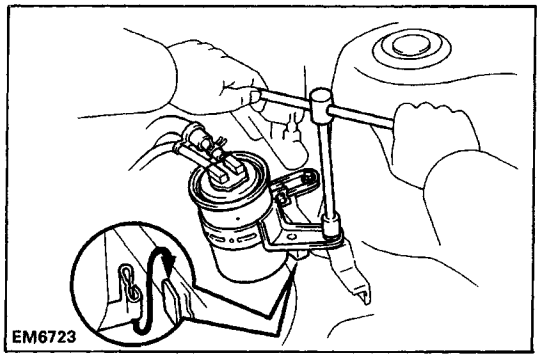
(2) Noise filter connector



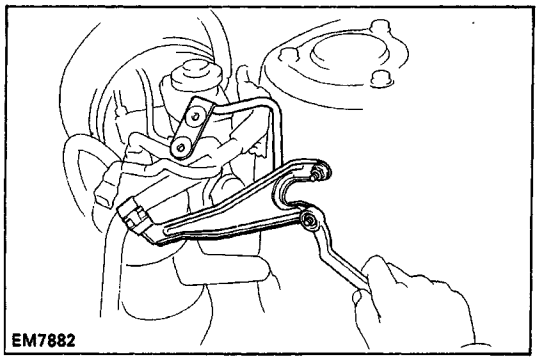
28. CONNECT FUEL HOSES
Torque (Union Bolt): 29 N–m (300 kgf–cm, 22 ft–lbf)



29. CONNECT SPEEDOMETER CABLE
30. CONNECT HEATER HOSES

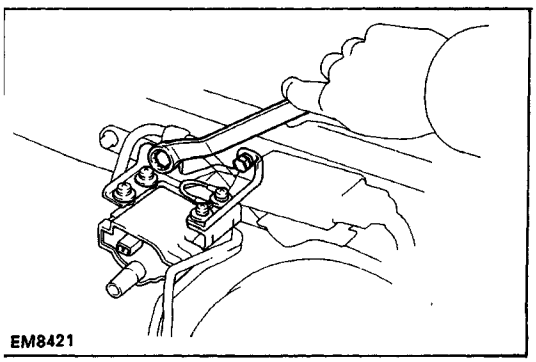


31. INSTALL CHARCOAL CANISTER
(a) Install the charcoal canister with the two bolts.
(b) Connect the two vacuum hoses.

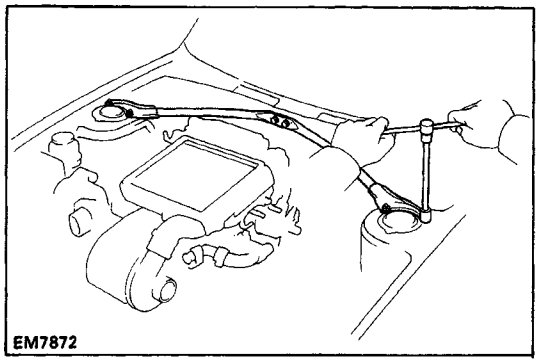


32. INSTALL ENGINE WIRE BRACKET
(a) Install the wire bracket with the two bolts. Install the noise filter.
(b) Install the wire clamp to the wire bracket.

33. CONNECT WIRES AND CONNECTORS
(a) Check connector.
(b) Igniter connector.
(c) Ground strap from LH fender apron.



34. INSTALL IGNITION COIL
(a) Install the ignition coil with the two bolts.
(b) Connect the high–tension cord.
(e) Connect the ignition coil connector.



35. INSTALL SUSPENSION UPPER BRACE

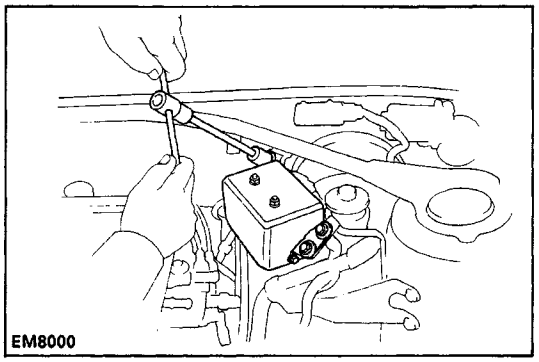
(a) Install the suspension upper brace with the two bolts and four bolts.

Torque: Bolt 21 N–m (210 kgf–cm, 15 ft–lbf)

Nut 64 N–m (650 kgf–cm, 47 ft–lbf)

(b) Install the outside lower windshield moulding.

(c) Install the two wiper arms.



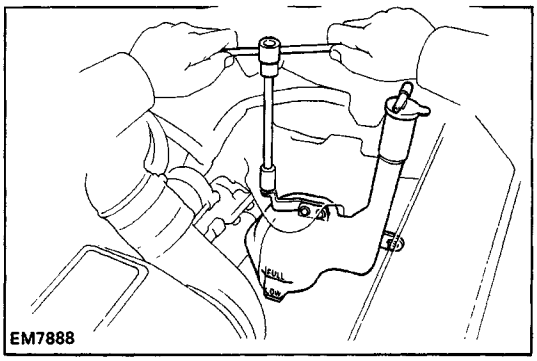
36. (w/ CRUISE CONTROL SYSTEM)
INSTALL CRUISE CONTROL ACTUATOR

(a) Connect the cable to the actuator.

(b) Connect the actuator connector.

(c) Install the actuator with the three bolts.

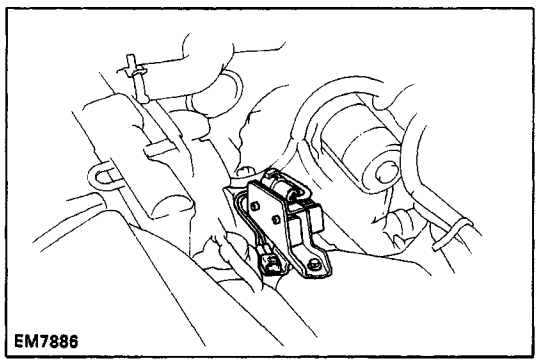
(d) Install the actuator cover with the two nuts.



37. INSTALL RADIATOR RESERVOIR TANK

Install the reservoir tank with the two nuts.

38. INSTALL RADIATOR

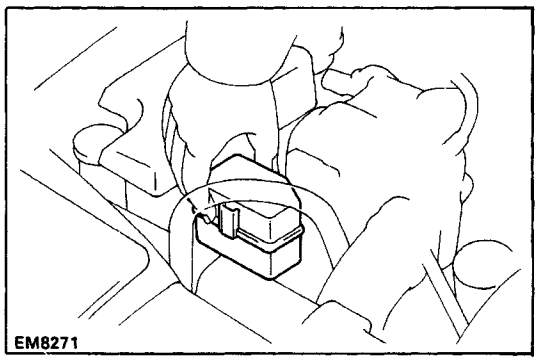


39. INSTALL INJECTOR SOLENOID RESISTOR AND FUEL PUMP RESISTOR

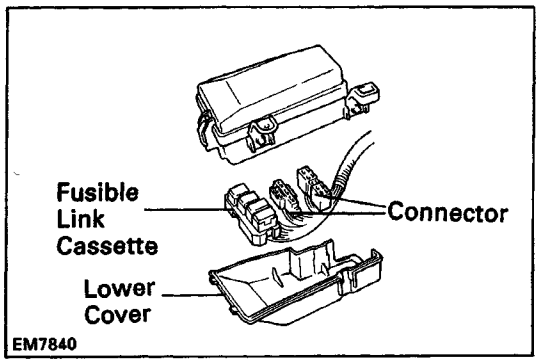
(a) Install the solenoid resistor and fuel pump resistor with the bolt.

(b) Connect the two connectors.

40. INSTALL BATTERY



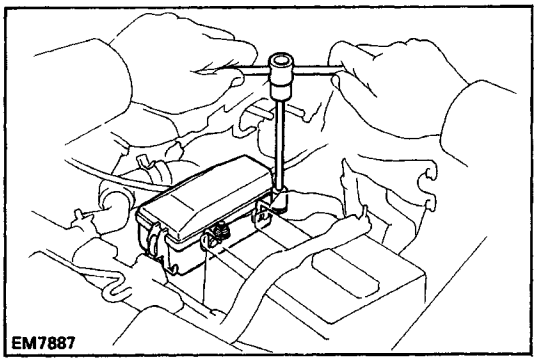
41. INSTALL A/C RELAY BOX



42. CONNECT ENGINE WIRE, AND INSTALL ENGINE RELAY BOX

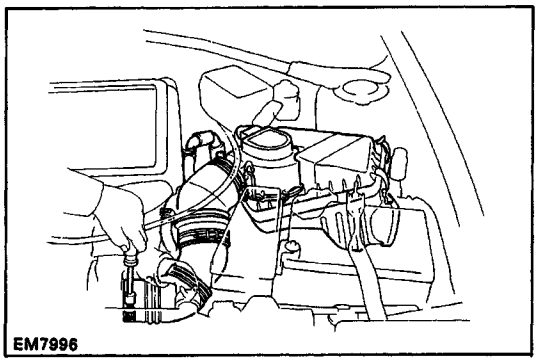
(a) Connect the fusible link cassette and two connectors of the engine wire to the relay box.

(b) Install the lower cover to the relay box.



(c) Install the relay box with the two nuts.

43. INSTALL ACCELERATOR CABLE, AND ADJUST IT



44. INSTALL AIR CLEANER ASSEMBLY

(a) Install the air cleaner case with the three bolts.

(b) Install the air cleaner element.

(c) Connect the following hoses:

(1) Air cleaner hose from turbocharger

(2) PCV hose from cylinder head cover

(3) Air hose from air pipe

(d) Install the air cleaner cap and air flow meter.

(e) Connect the air flow meter connector.

45. FILL WITH TRANSAXLE OIL

Capacity: 4.8 liters (5.1 US qts, 4.2 Imp. qts)

46. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

47. FILL WITH ENGINE COOLANT

Capacity (w/ Heater):

6.4 liters (6.8 US qts, 5.6 Imp. qts)

48. FILL WITH ENGINE OIL

Capacity:

Drain and refill

w/ Oil filter change

3.9 liters 14.1 US qts, 3.4 Imp. qts)

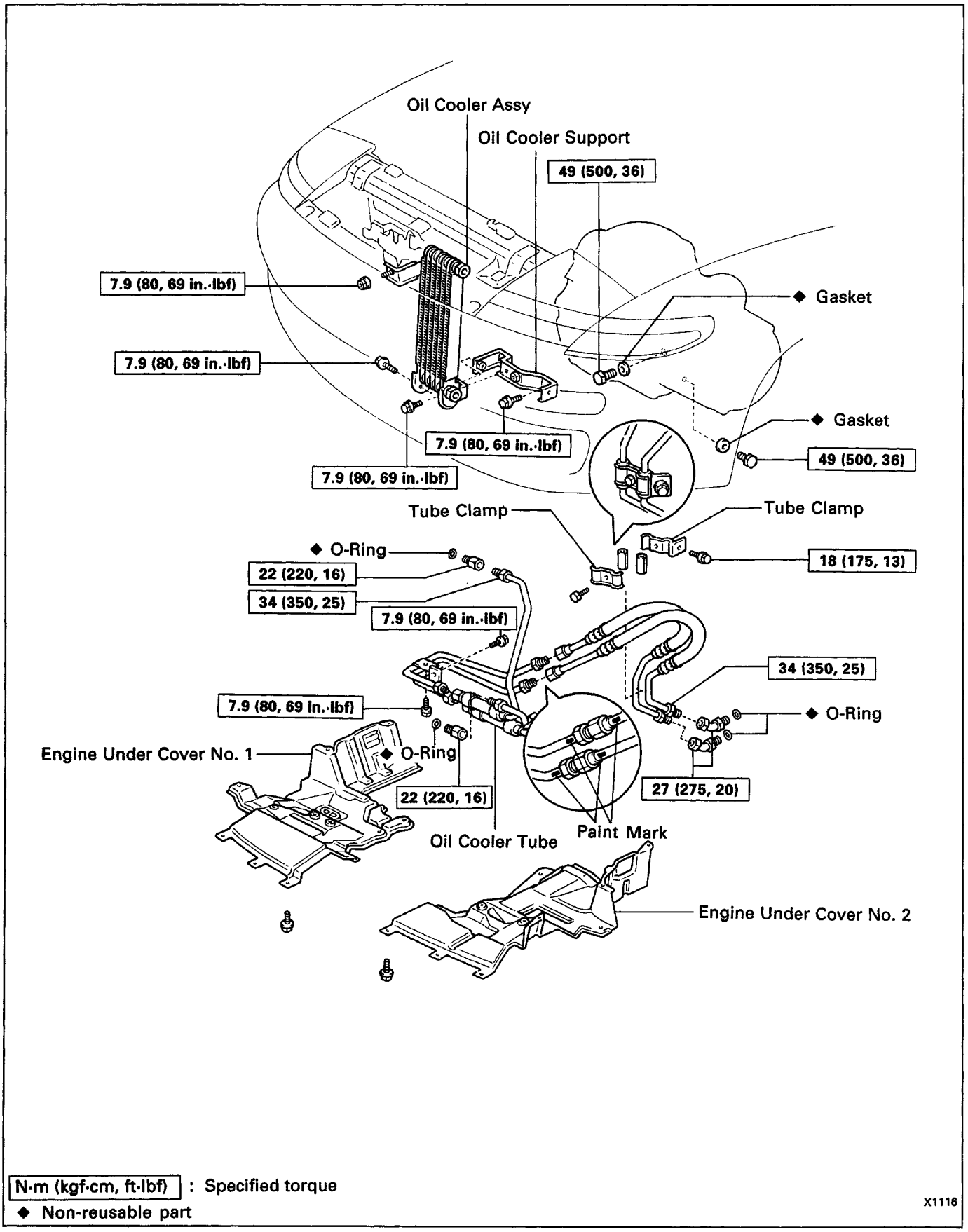
w/o Oil filter change

3.6.liters (3.8 US qts, 3.2 Imp. qts)

Dry fill 4.3 liters (4.5 US qts, 3.$ imp. qts)

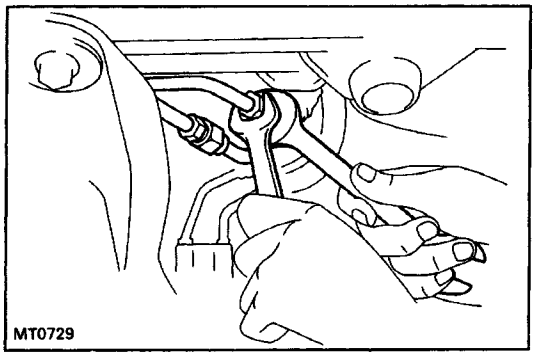
REMOVAL AND INSTALLATION OF OIL COOLER

REMOVE AND INSTALL OIL COOLER AS SHOWN



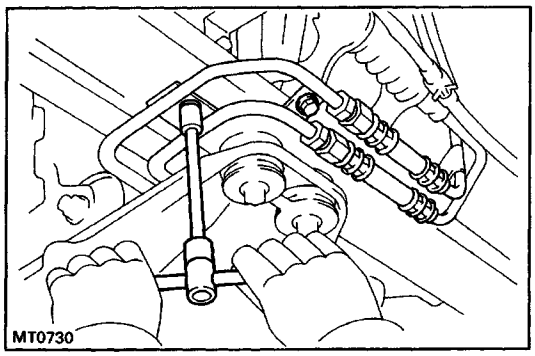
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

X1116



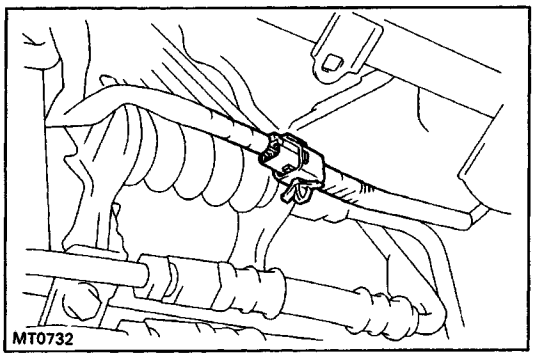
REMOVAL OF OIL COOLER

1. DISCONNECT OIL COOLER TUBE

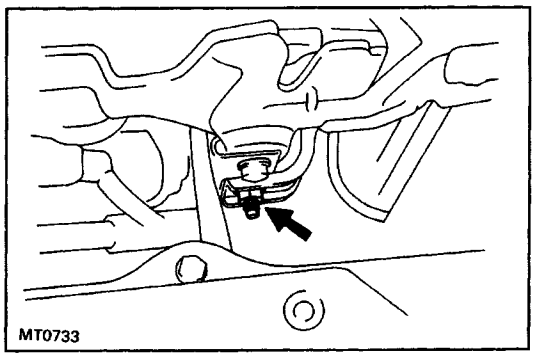


2. REMOVE TUBE SET BOLTS

Remove the two loots.

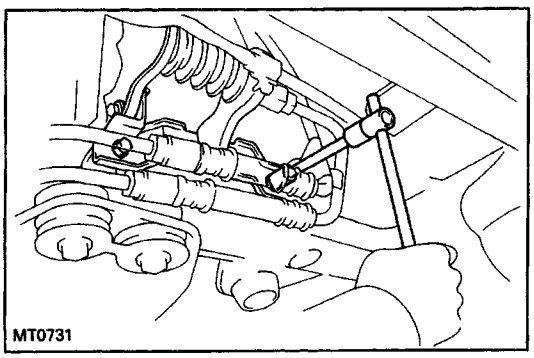


3. DISCONNECT CONNECTOR



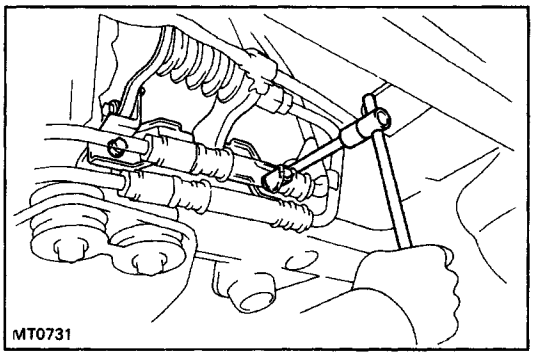
4. REMOVE OIL COOLER SET BOLTS AND NUT

(a) Remove the nut.



(b) Remove the two bolts.

5. REMOVE OIL COOLER

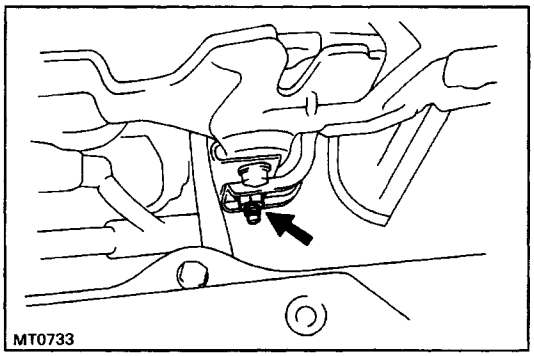


INSTALLATION OF OIL COOLER

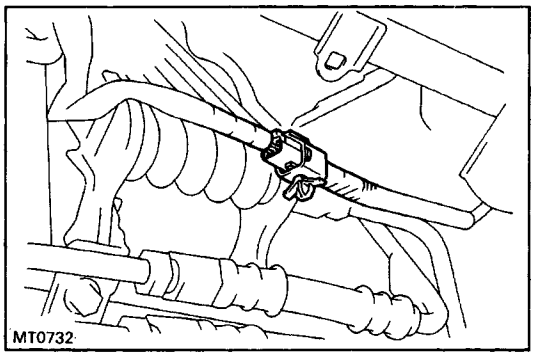
1. INSTALL OIL COOLER

2. INSTALL OIL COOLER SET BOLTS AND NUT

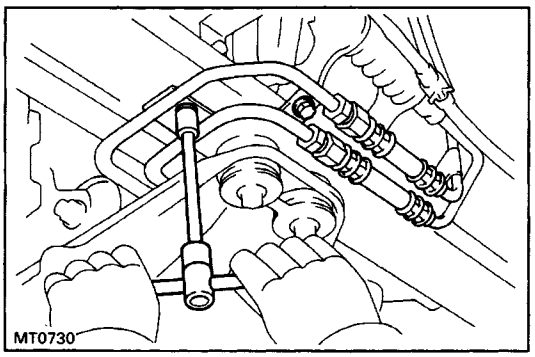
(a) Install the two bolts.



(b) Install the nut.

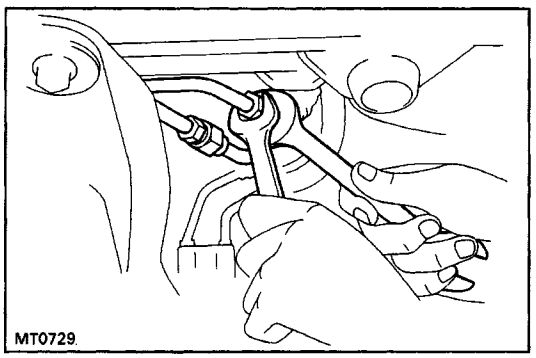


3. CONNECT CONNECTOR



4. INSTALL TUBE SET BOLTS

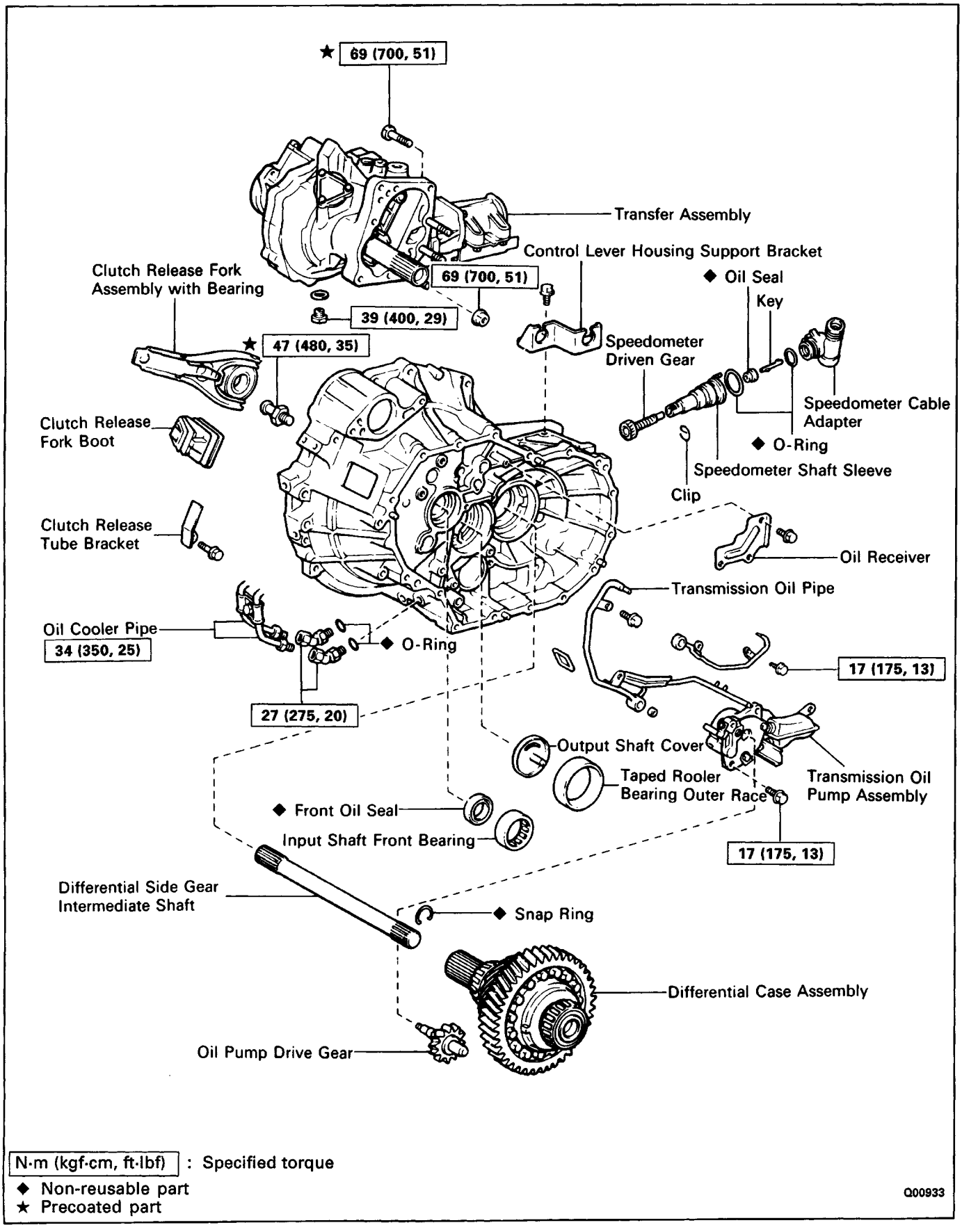
Install the two bolts.



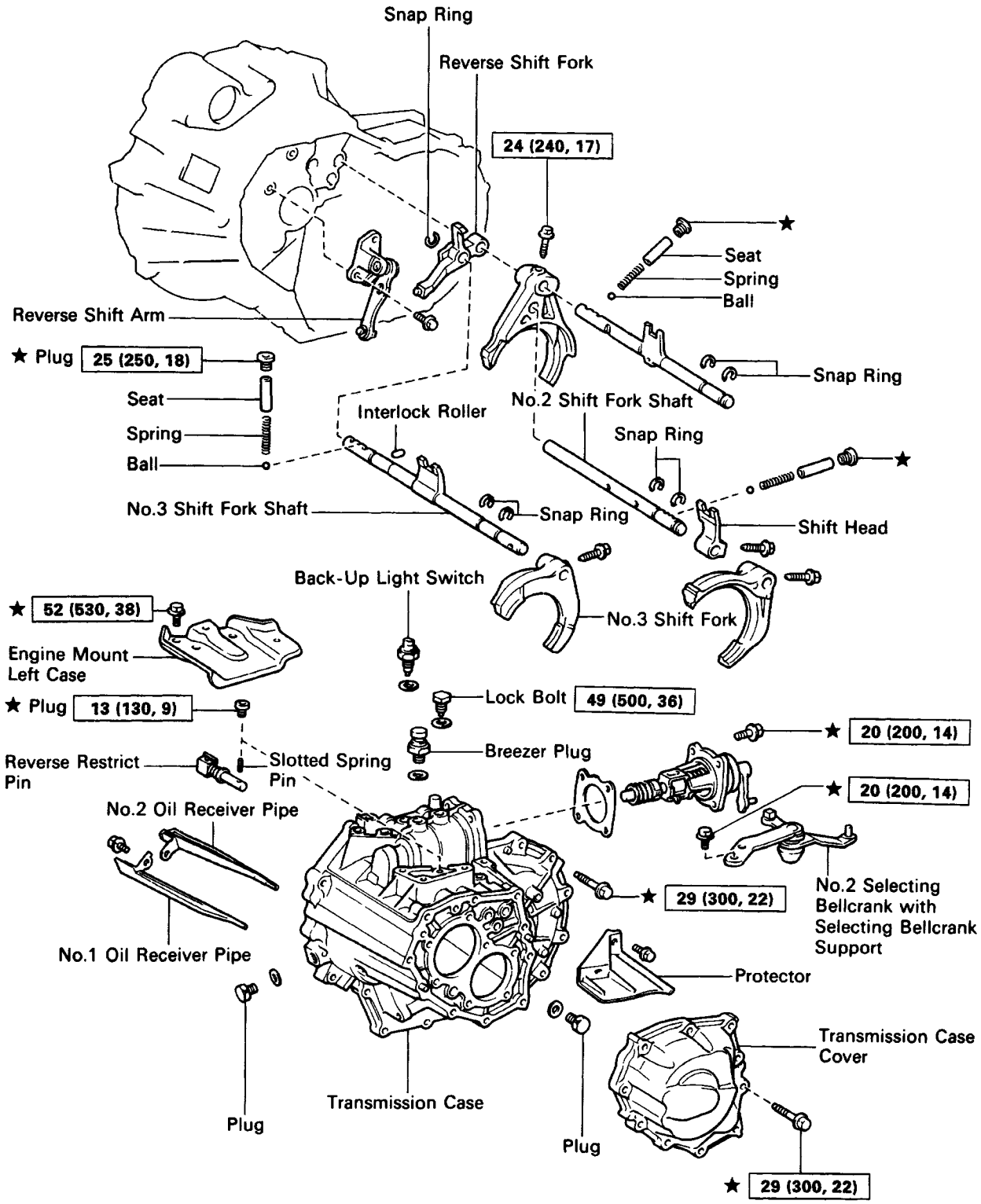
5. CONNECT OIL COOLER TUBE

REMOVAL OF COMPONENT PARTS

COMPONENTS



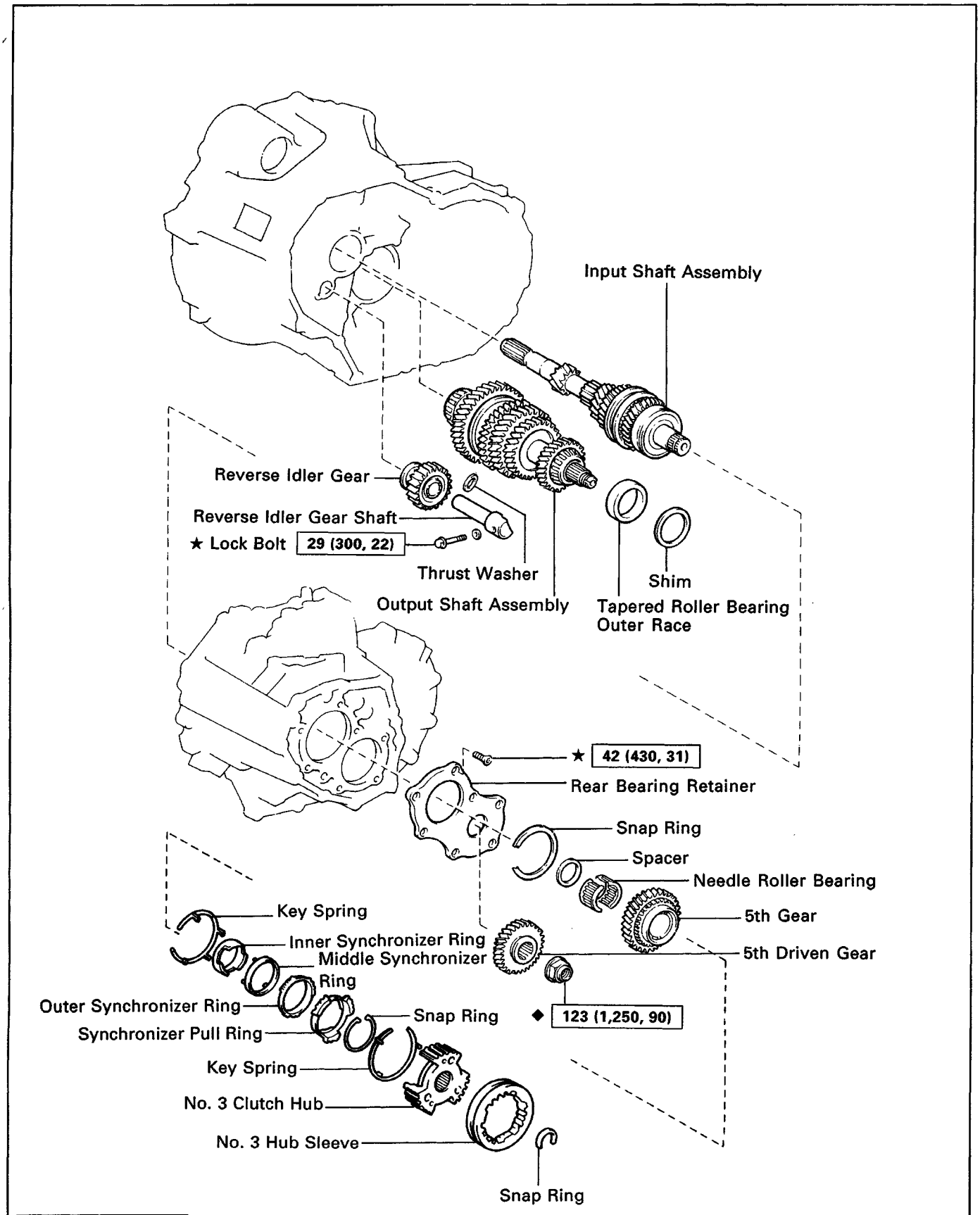
COMPONENTS (Cont'd)



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

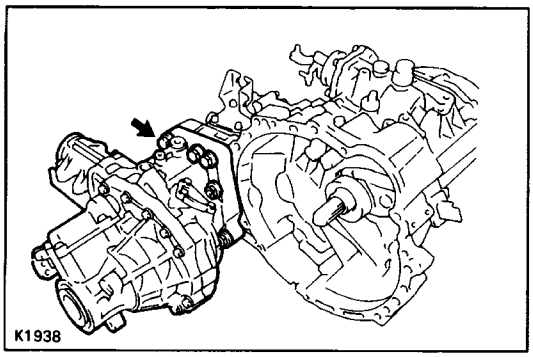
K2047

COMPONENTS (Cont'd)



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

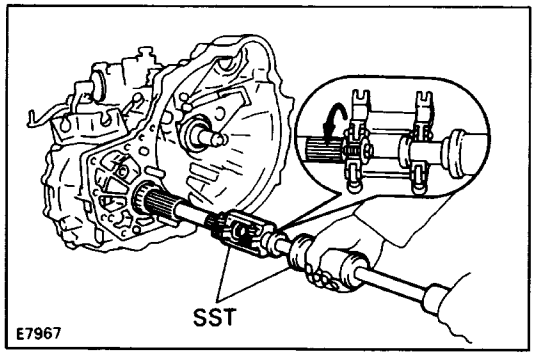
Q00694



1. REMOVE TRANSFER ASSEMBLY

(a) Remove the three bolts and five nuts.

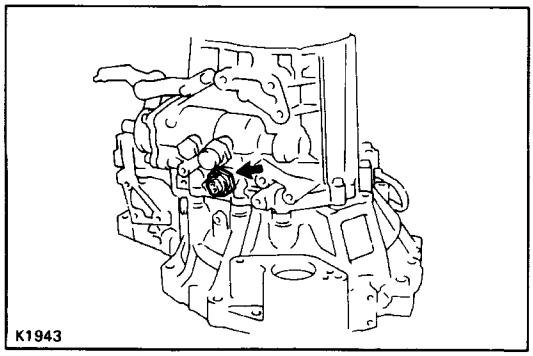
(b) Using a plastic hammer, remove the transfer assembly from the transaxle.



2. REMOVE DIFFERENTIAL SIDE GEAR INTERMEDIATE SHAFT

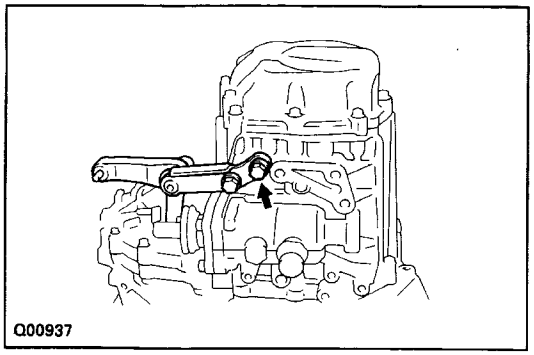
(a) Screw in a suitable bolt with washer into the side gear intermediate shaft.

(b) Using SST, remove the side gear intermediate shaft.
SST 09910–00015 (09911–00011, 09912–00010)



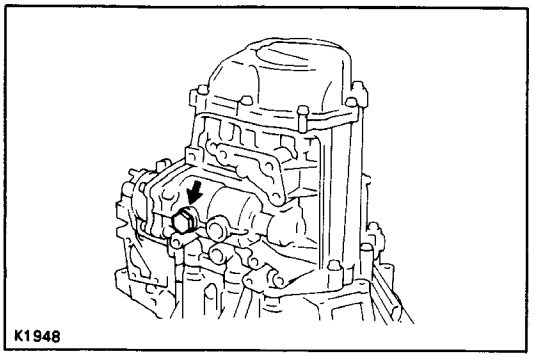
3. REMOVE RELEASE FORK AND BEARING

4. REMOVE BACK–UP LIGHT SWITCH

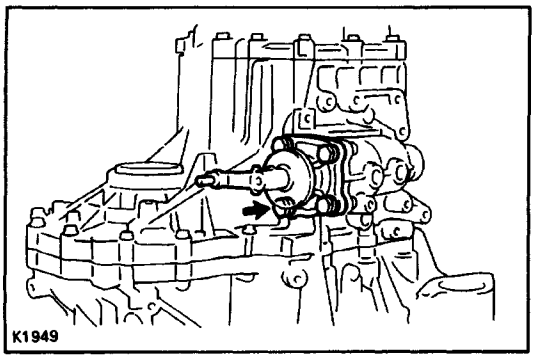


5. REMOVE SPEEDOMETER DRIVEN GEAR

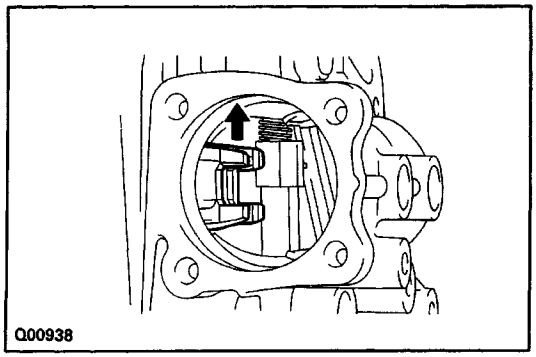
6. REMOVE NO.2 SELECTING BELLCRANK WITH SELECTING BELLCRANK SUPPORT



7. REMOVE SHIFT AND SELECT LEVER SHAFT LOCK BOLT



8. REMOVE SHIFT AND SELECTING LEVER ASSEMBLY

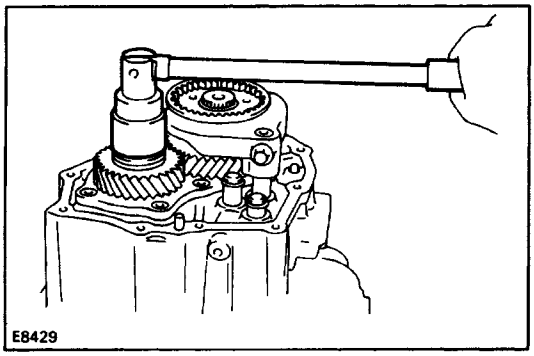


9. REMOVE TRANSMISSION CASE COVER

10. REMOVE OUTPUT SHAFT LOCK NUT

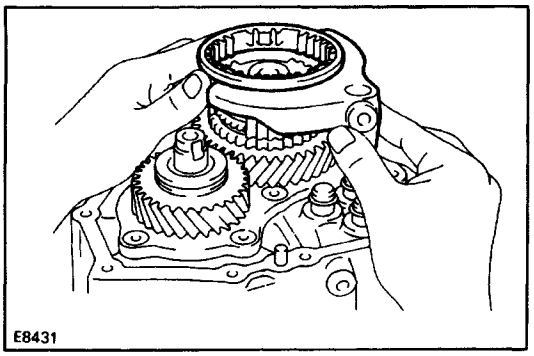
(a) Unstake the lock nut.

(b) Engage the gear double meshing.



(c) Remove the lock nut.

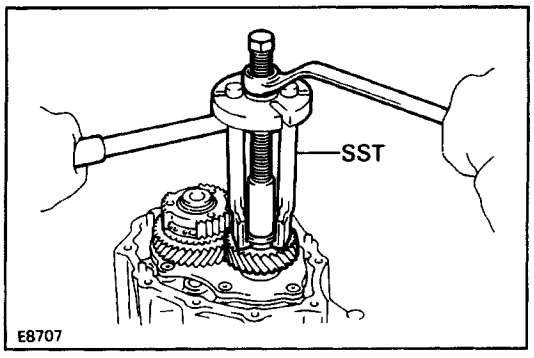
(d) Disengage the gear double meshing



11. REMOVE NO–3 HUB SLEEVE AND FIFTH SHIFT FORK

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

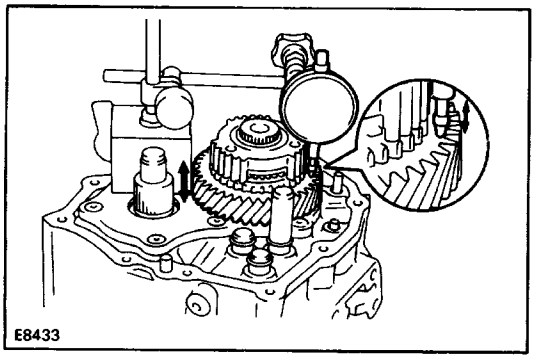
(b) Remove the No.3 hub sleeve and No.3 shift fork.



12. REMOVE FIFTH DRIVEN GEAR

Using SST, remove the 5th driven gear.

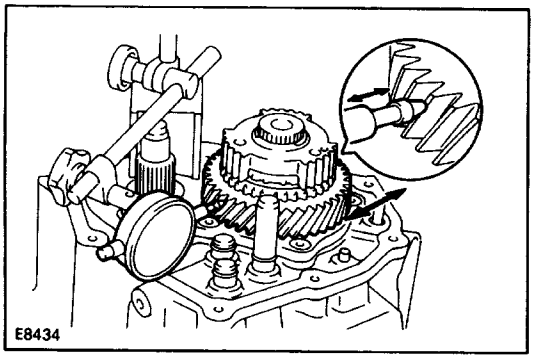
SST 09310–17010 (09310–07010, 09310–07020 09310–07040,09310–07050)



13. MEASURE FIFTH GEAR THRUST CLEARANCE

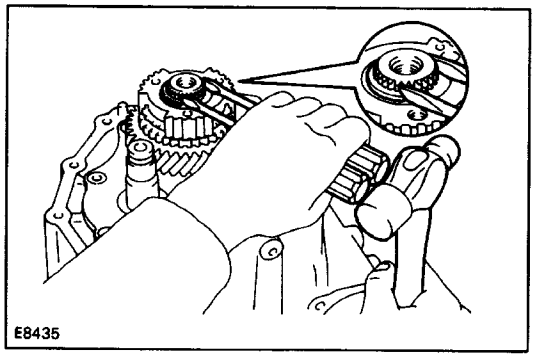
(a) Using a dial indicator, measure the thrust clearance.

Standard clearance: 0.10 – 0.57 mm
(0.0039 – 0.0224 in.)
Maximum clearance: 0.65 mm (0.0256 in.)



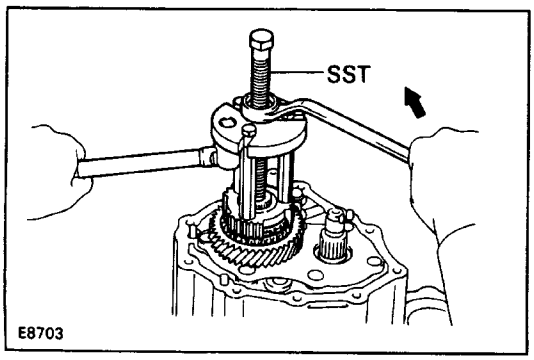
(b) Using a dial indicator, measure the oil clearance.

Standard clearance: 0.009 – 0.050 mm
(0.0004 – 0.0020 in.)
Maximum clearance: 0.070 mm (0.0028 in.)



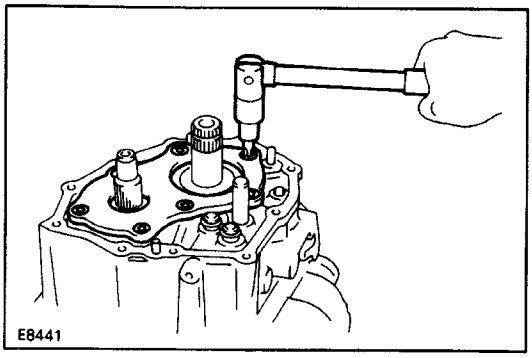
14. REMOVE NO–3 CLUTCH HUB AND FIFTH GEAR

(a) Using two screwdrivers and 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 09310–07030,09310–07050)

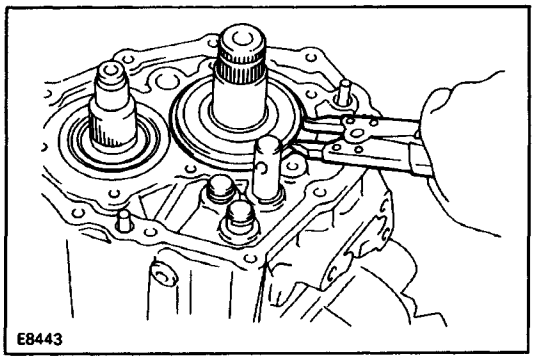
15. REMOVE NEEDLE ROLLER BEARING AND SPACER



16. REMOVE REAR BEARING RETAINER

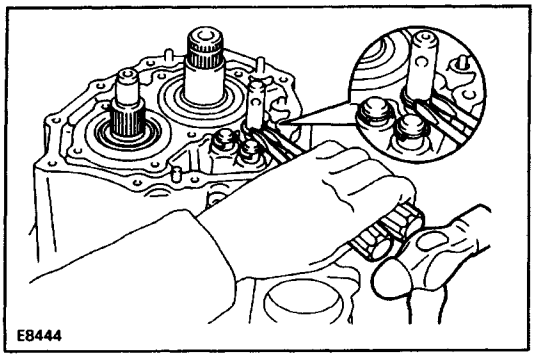
(a) Using a torx wrench, remove the seven torx screws and bearing retainer.

(b) Remove the adjust shim.

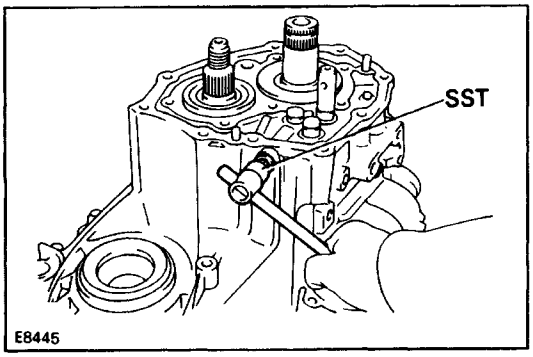


17. REMOVE SNAP RING

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



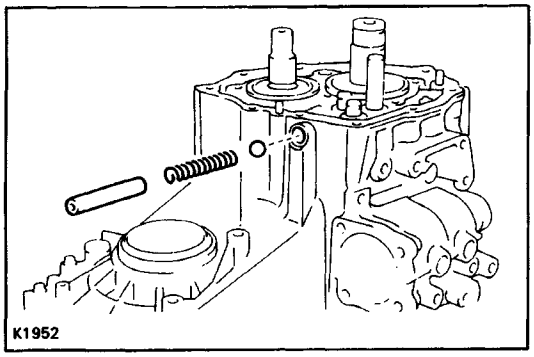
(b) Using two screwdrivers and a hammer, remove the three snap rings.



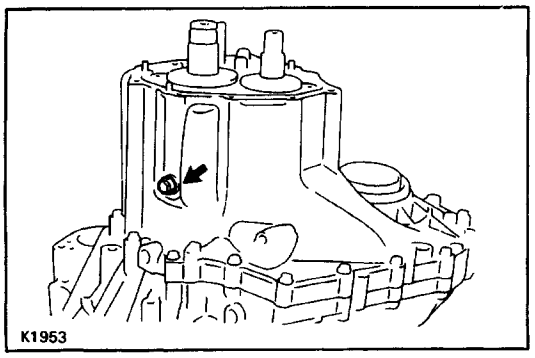
18. REMOVE PLUG, SEAT, SPRING AND LOCKING BALL

(a) Using SST, remove the plug.

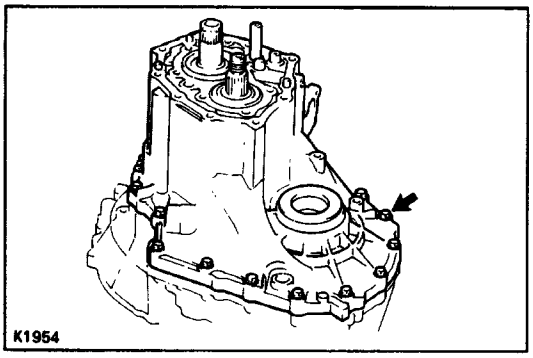
SST 09313–30021



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

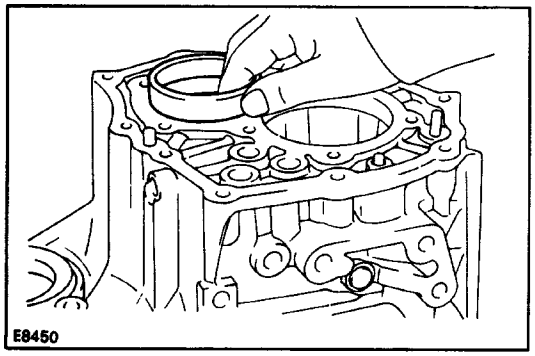


19. REMOVE REVERSE IDLER GEAR SHAFT RETAINING BOLT

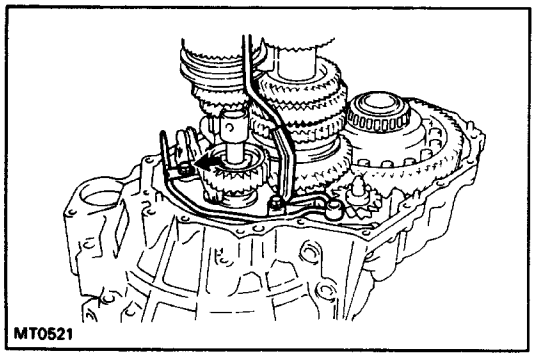


20. REMOVE TRANSMISSION CASE

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

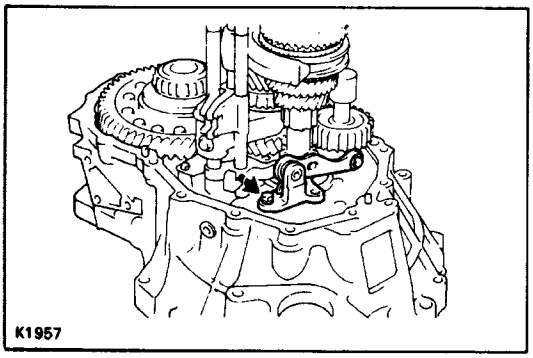


21. REMOVE OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE



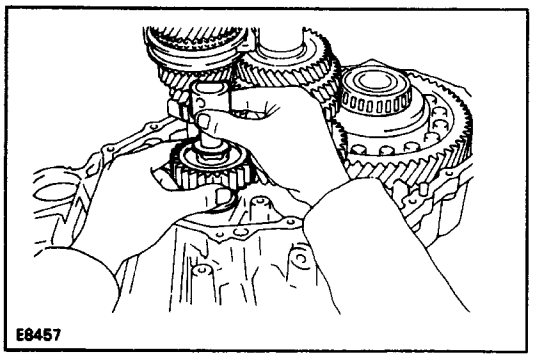
22. REMOVE NO.2 OIL PIPE

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



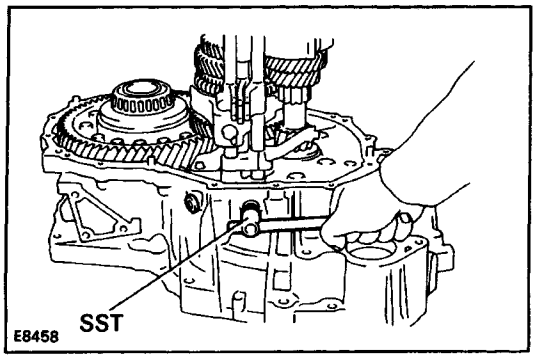
23. REMOVE REVERSE SHIFT ARM

Remove the bolt and pull off the bracket.



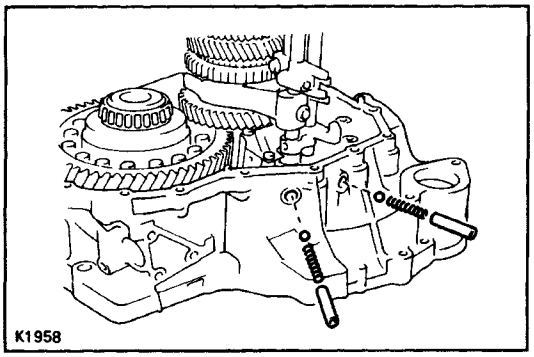
24. REMOVE REVERSE IDLER GEAR AND SHAFT

Pull out the shaft, remove th reverse idler gear.

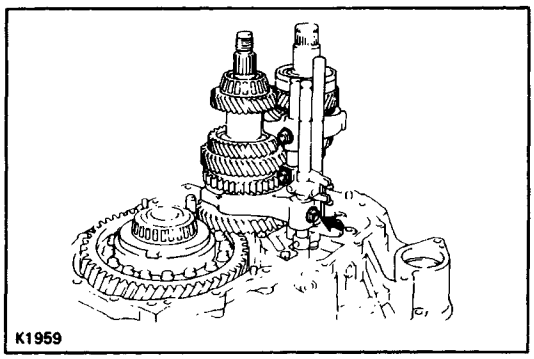


25. REMOVE PLUGS, SEATS, SPRINGS AND BALLS

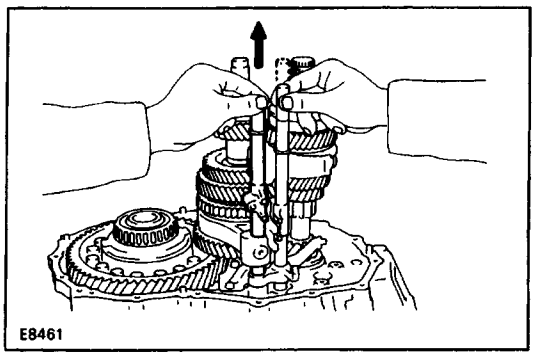
(a) Using SST, remove the two plugs.
SST 09313–30021



(b) Using a magnetic finger, remove the two seats, springs and balls.

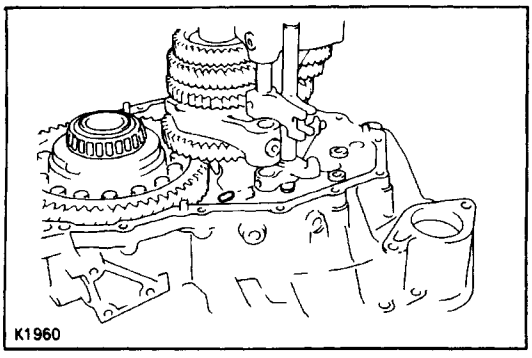


26. REMOVE SET BOLTS



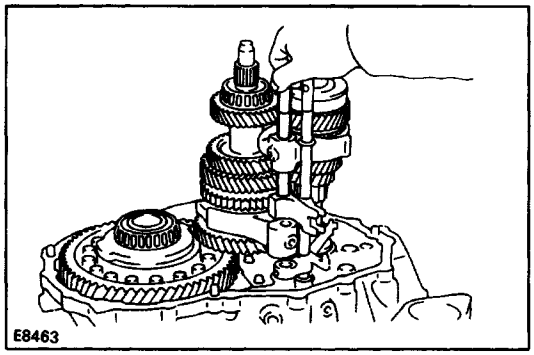
27. REMOVE NO.1 SHIFT FORK SHAFT

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



28. REMOVE INTERLOCK ROLLER

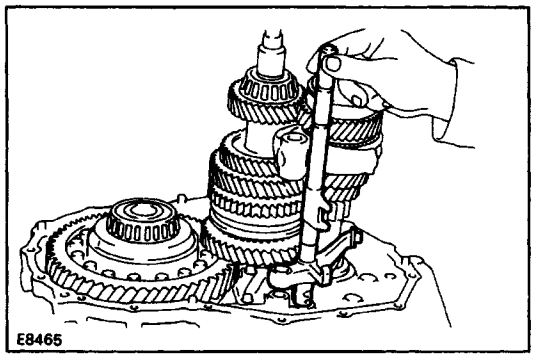
Using a magnetic finger, remove the interlock roller from the reverse shift fork.



29. REMOVE NO.2 SHIFT FORK SHAFT, SHIFT HEAD AND NO.1 SHIFT FORK

(a) Pull out the No–2 shift fork shaft.

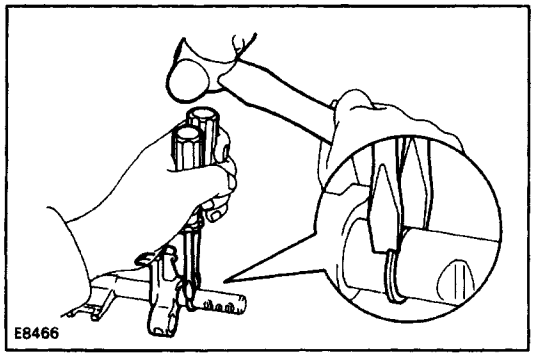
(b) Remove the shift head and No–1 shift fork.



30. REMOVE NO–3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK AND NO.2 SHIFT FORK

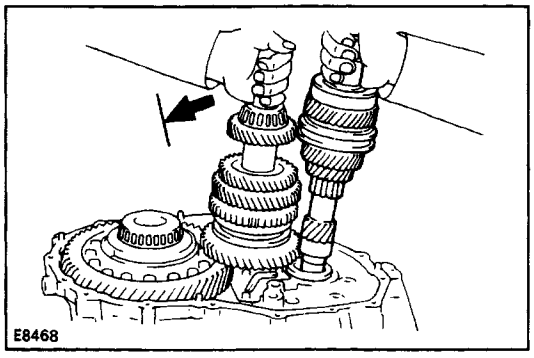
(a) Pull out the No.3 shift fork shaft with reverse shift fork.

(b) Remove the No.2 shift fork.



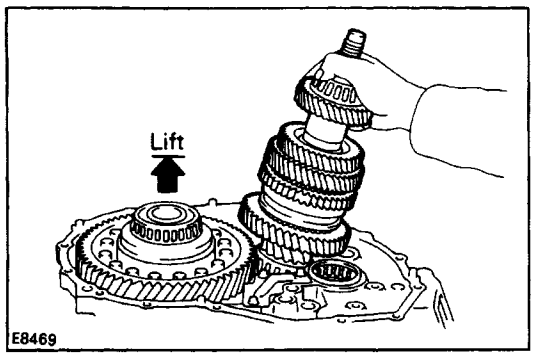
31. REMOVE REVERSE SHIFT FORK

Using two screwdrivers and a hammer, remove the snap ring and reverse shift fork from the No.3 shift fork shaft.

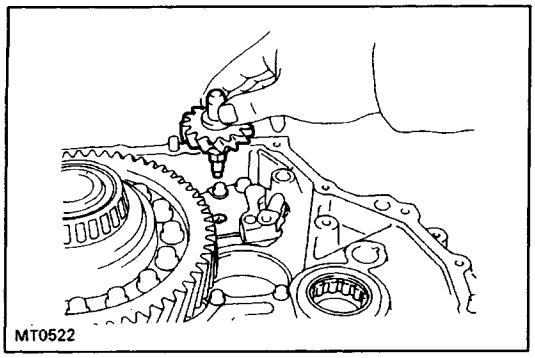


32. REMOVE INPUT AND OUTPUT SHAFT ASSEMBLY

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

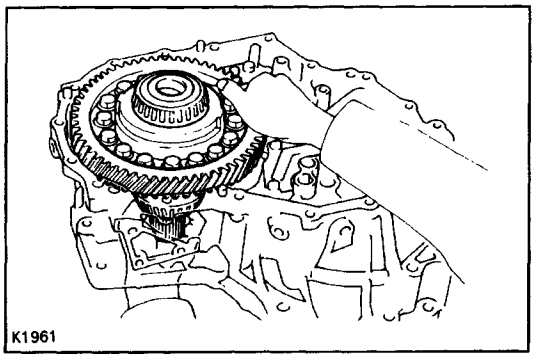


(b) Lift up the differential case assembly, remove output shaft assembly.

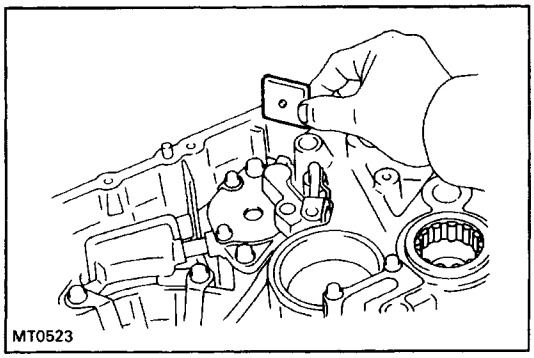


33. REMOVE DIFFERENTIAL ASSEMBLY

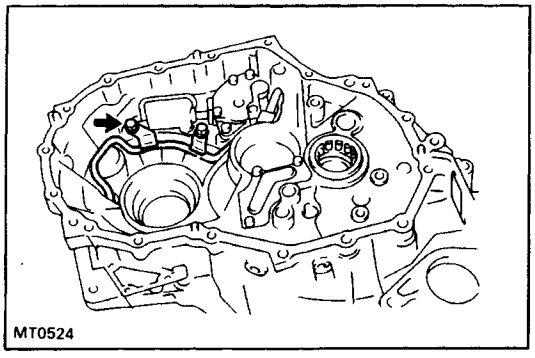
(a) Remove the oil pump drive gear.



(b) Remove the differential case assembly.

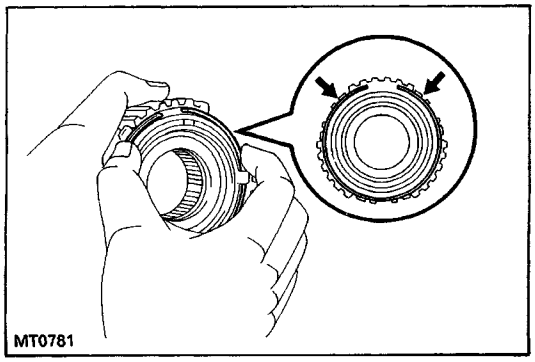


34. REMOVE MAGNET FROM TRANSAXLE CASE



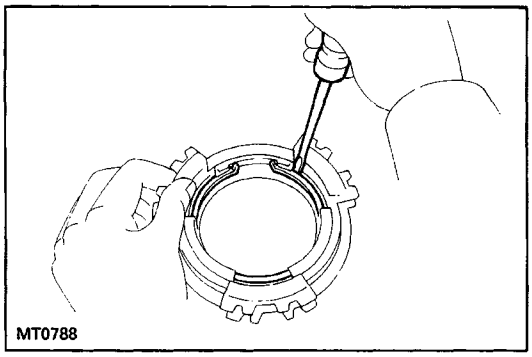
35. REMOVE OIL PUMP ASSEMBLY

Remove the four bolts, oil pipe and oil pump.

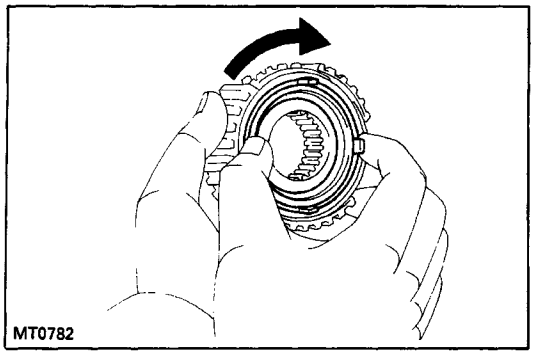


36. REMOVE NO. 5 SYNCHRONIZER RING WITH KEY SPRING FROM NO. 3 CLUTCH HUB

(a) Remove the No. 5 synchronizer ring with key spring from No. 3 clutch hub.



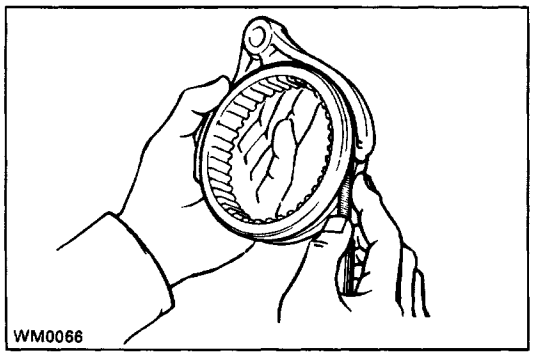
(b) Using a screwdriver, remove the snap ring.
HINT: Wrap vinyl tape on the screwdriver to preveni damaging the synchronizer ring.
(c) Remove the synchronizer rings.



INSPECTION OF COMPONENT PARTS

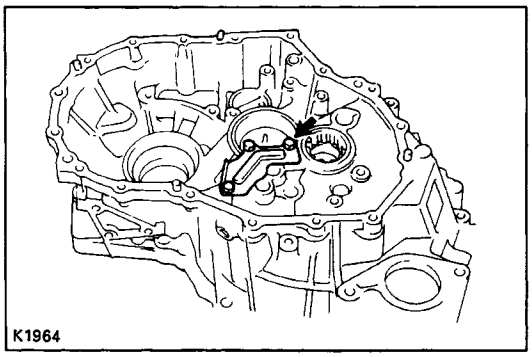
1. INSPECT NO. 5 SYNCHRONIZER RINGS

(a) Check for wear or damage.
(b) Check the braking effect of the synchronizer ring.
Turn the middle No. 5 synchronizer ring in one direction while pushing it to the outer No. 5 synchronizer ring and check that the ring is locked.
If the braking effect is insufficient, replace the synchronizer ring.



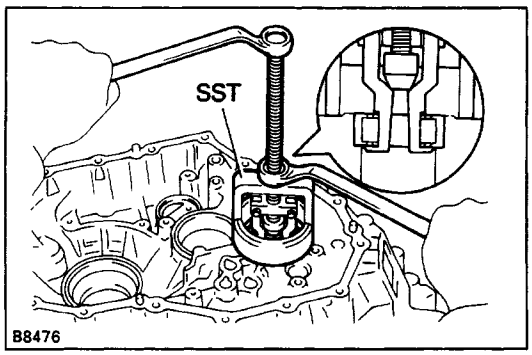
2. MEASURE CLEARANCE OF SHIFT FORK AND HUB SLEEVE

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.

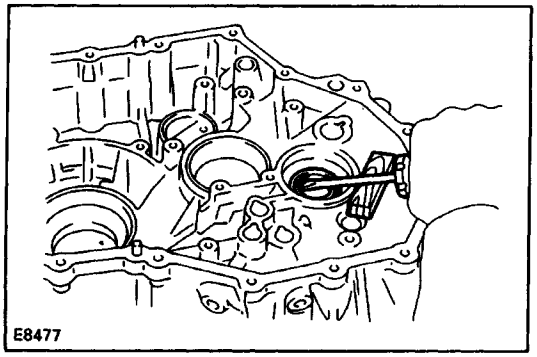


3. IF NECESSARY, REPLACE INPUT SHAFT BEARING AND OIL SEAL

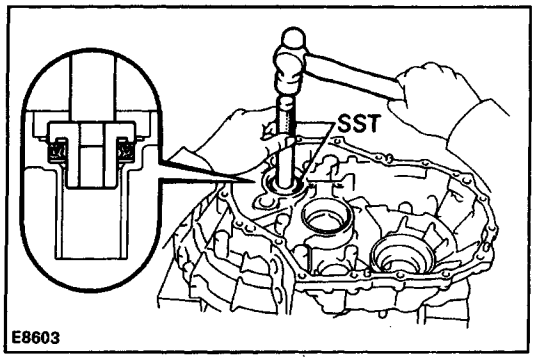
(a) Remove the three bolts and transaxle case receiver.



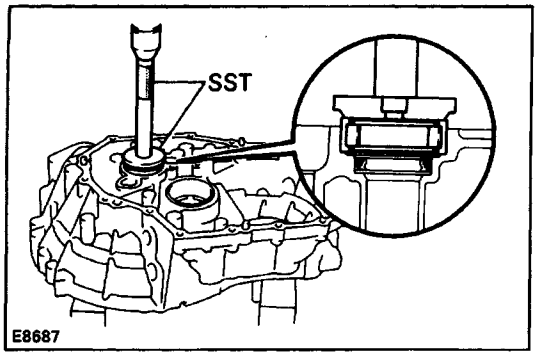
(b) Using SST, pull out the bearing.
SST 09612–65014



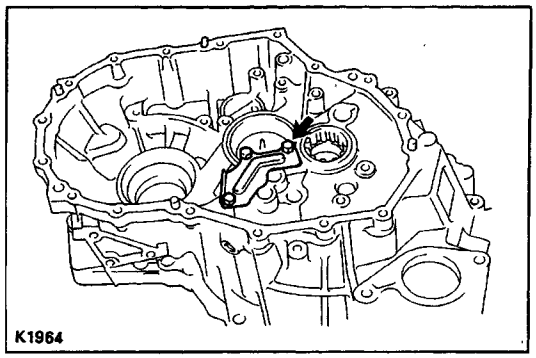
(c) Using a screwdriver, remove the oil seal.



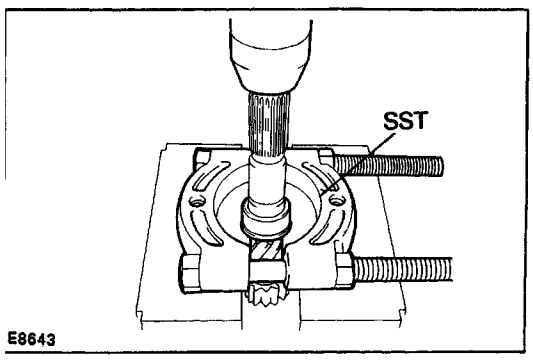
(d) Using SST, drive in a new oil seal.
– SST 09608–12010 (09608–00020, 09608–00080)
(e) Coat the lip of oil seal with MP grease.



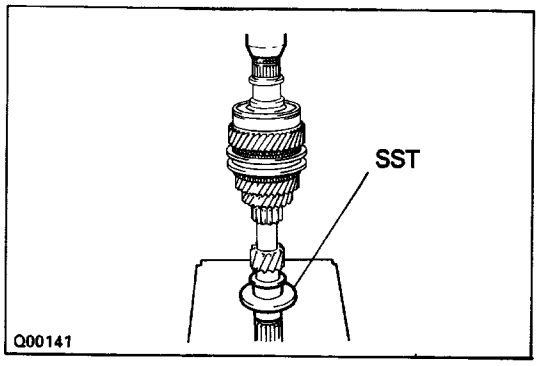
(f) Using SST, drive in a new bearing,
SST 09608–12010 (09608–00020, 09608–00060)



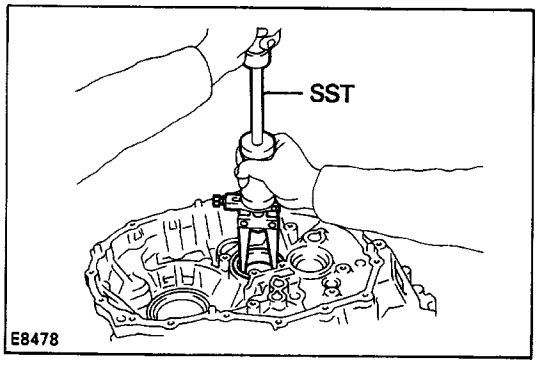
(g) Install the transaxle case receiver.
(h) Install and torque the three bolts.
Torque: 7.4 N–m (75 kgf–cm, 65 MAN)



(i) Using SST and a press, remove the inner race.
SST 09950–00020

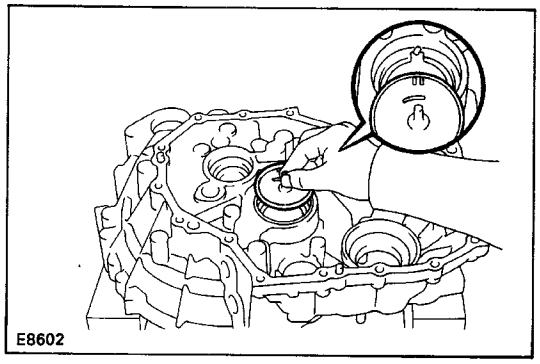


(j) Using SST and a press, install a new input shaft front bearing inner race.
SST 09316–60010 (09316–00020)

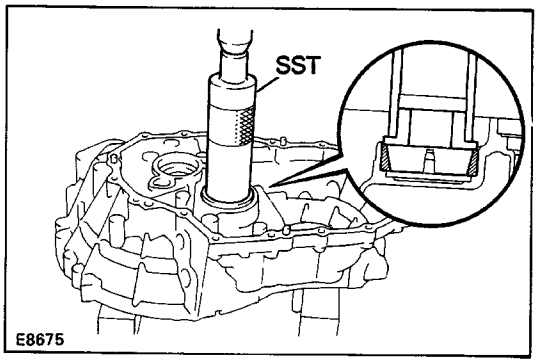


4. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT OUTER RACE AND OUTPUT SHAFT COVER

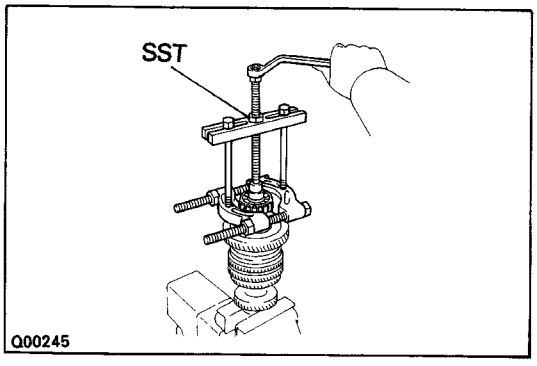
(a) Using SST, pull out the outer race.
SST 09308–00010
(b) Remove the output shaft front cover.



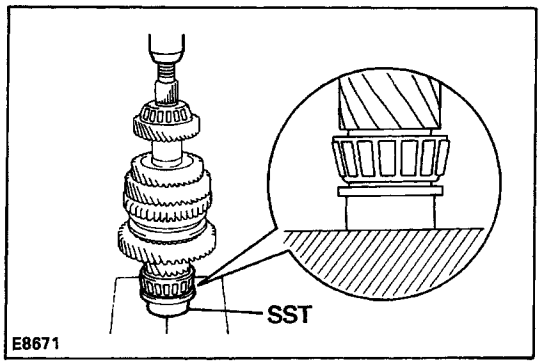
(c) Install the output shaft front cover.
HINT: Install the output shaft cover projection into the case side groove.



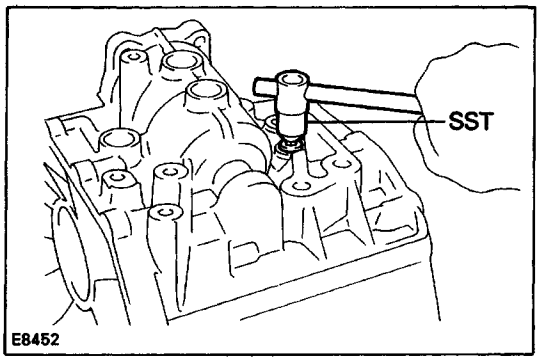
(d) Using SST and a press, press in a new outer race.
SST 09316–60010 (09316–00010, 09316–00020)



(e) Using SST and a socket wrench, remove the bearing.
SST 09950–00020, 09950–00030

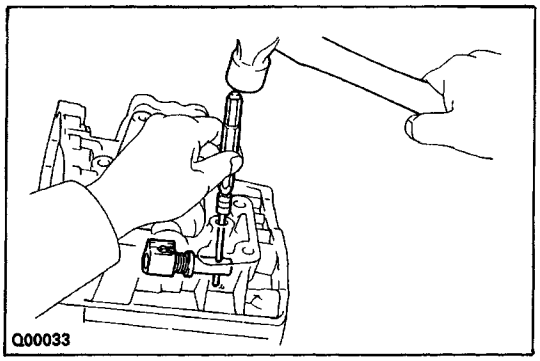


(f) Using SST and a press, install a new bearing.
SST 09316–60010 (09316–00070)

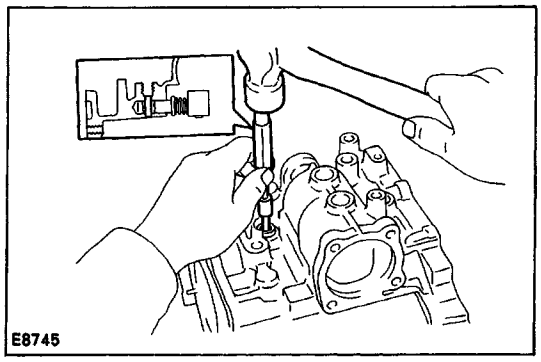


5. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

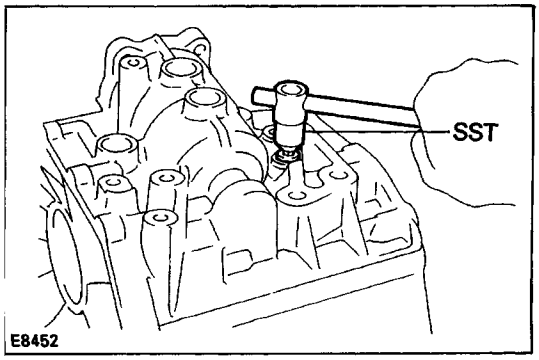
(a) Using SST, remove the screw plug.
SST 09313–30021



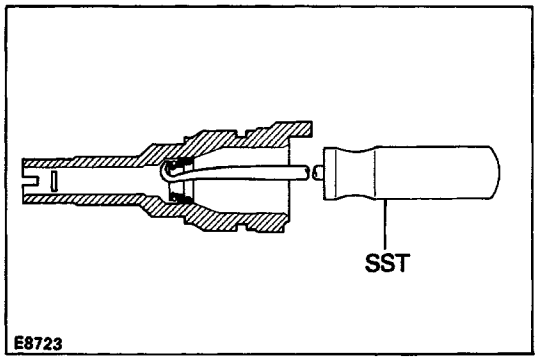
(b) Using a pin punch and hammer, drive out the slotted spring pin.



(c) Replace the reverse restrict pin.
(d) Using a pin punch, drive in the slotted spring pin.



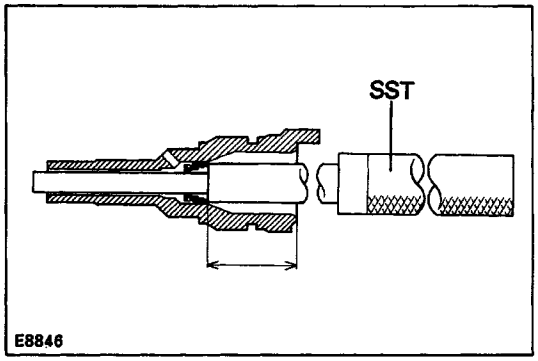
(e) Apply liquid sealant to the plug threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
(f) Using SST, install the screw plug.
SST 09313–30021



6. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL

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

SST 09921–00010



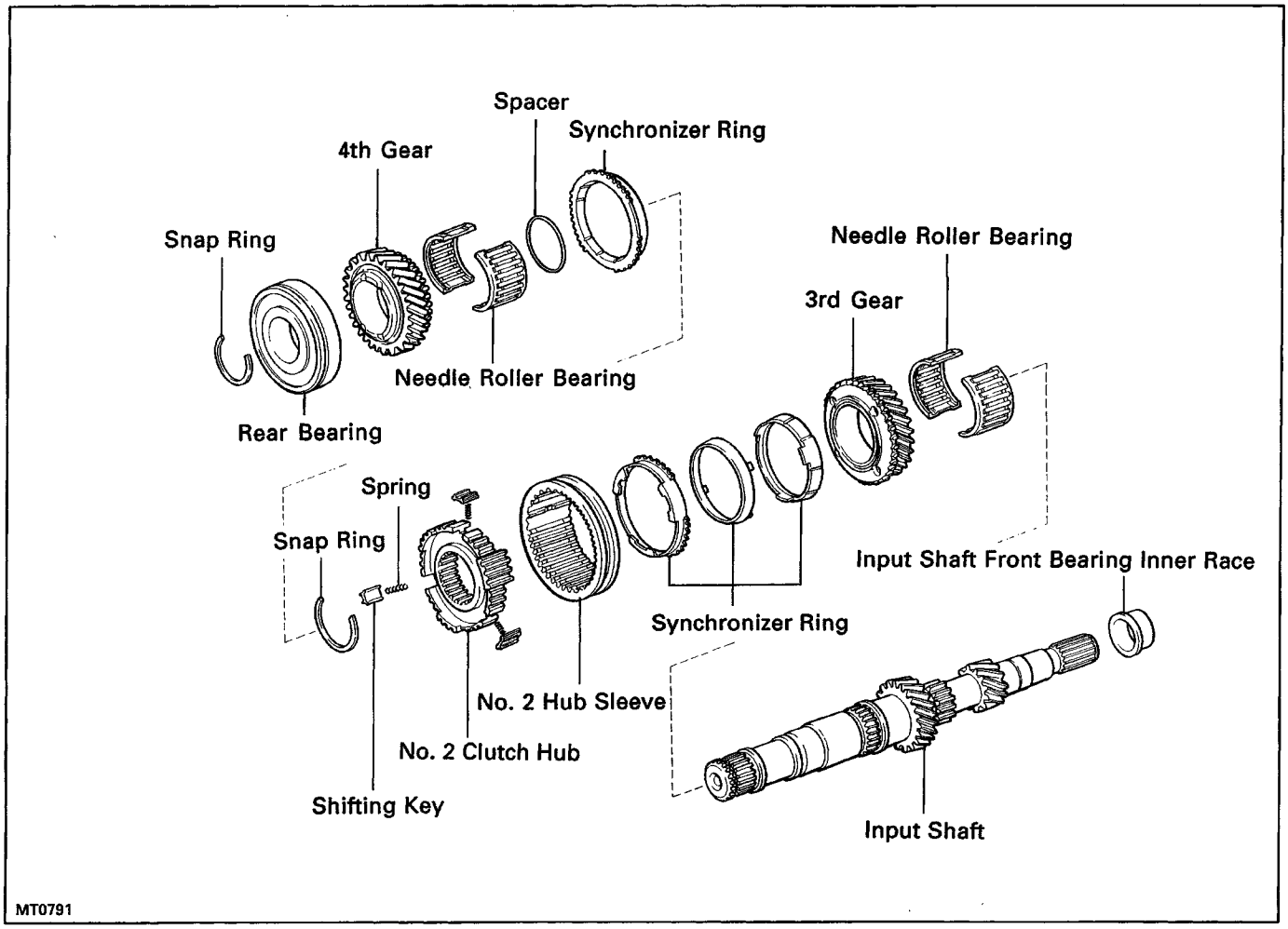
(b) Using SST, drive in a new oil seal.

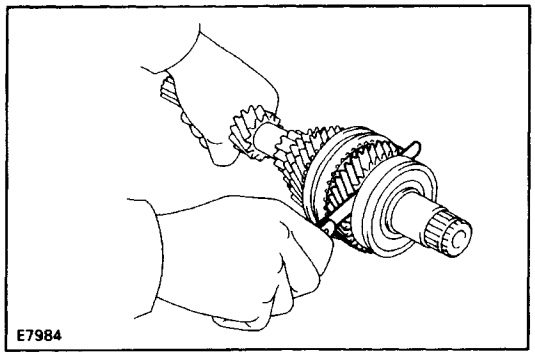
SST 09201–60011

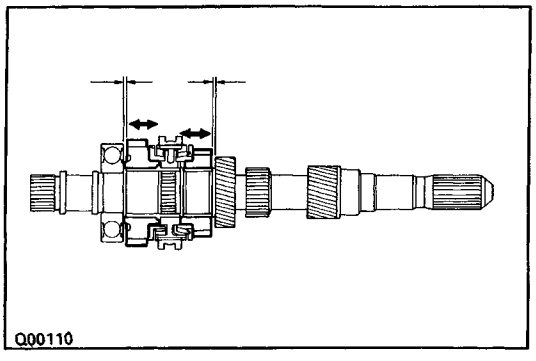
Drive in depth: 33 mm (1.30 in.)

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

COMPONENT PARTS
Input Shaft Assembly







DISASSEMBLY OFINPUT SHAFT ASSEMBLY

1. MEASURE THIRD AND FOURTH GEAR THRUST CLEARANCE

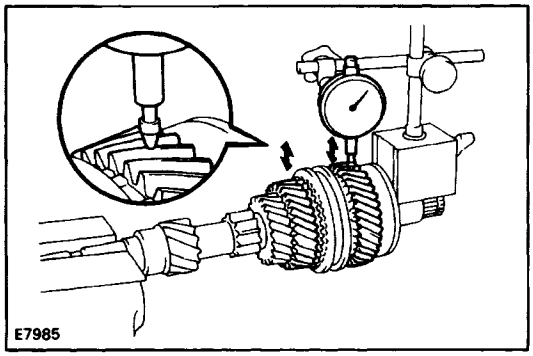
Using a feeler gauge, measure the thrust clearance.

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.)



2. CHECK OIL CLEARANCE OF THIRD AND FOURTH GEAR

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

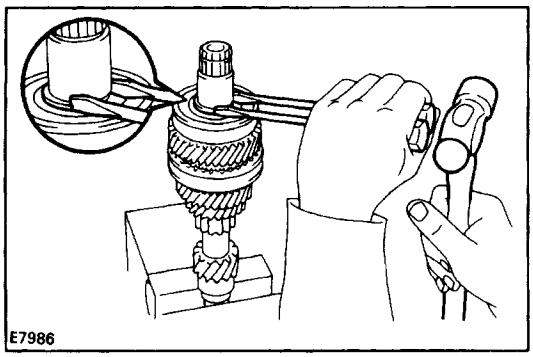
Standard clearance:

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

4th gear 0.009 – 0.051 mm (0. 0004 – 0.0020 in.)

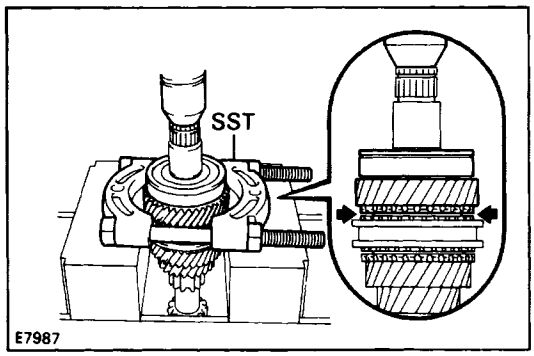
Maximum clearance: 0.080 mm (0.003 in.)

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.

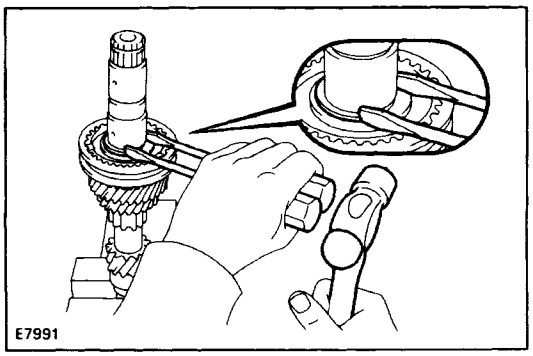


4. REMOVE INPUT SHAFT REAR BEARING AND FOURTH GEAR

Using SST and a press, remove the input shaft rear bearing.

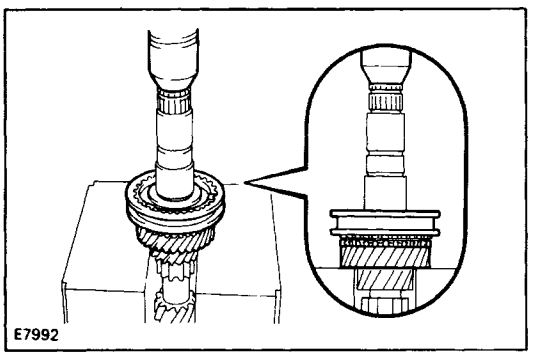
SST 09950–00020

5. REMOVE NEEDLE ROLLER BEARING, SPACER AND SYNCHRONIZER RING



6. REMOVE SNAP RING

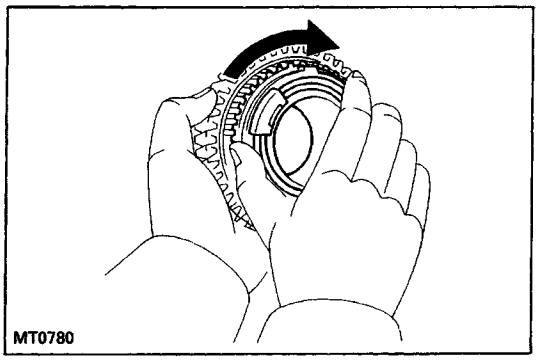
Using two screwdrivers and a hammer, tap out the snap ring.

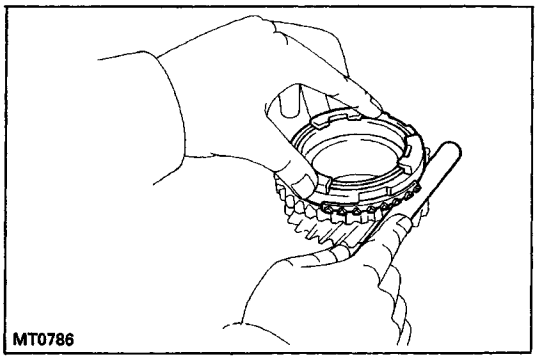


7. REMOVE NO.2 CLUTCH HUB ASSEMBLY, SYNCHRONIZER RING AND THIRD GEAR

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

8. REMOVE NEEDLE ROLLER BEARING





INSPECTION OF INPUT SHAFT COMPONENT PARTS

1. INSPECT SYNCHRONIZER RING FOR THIRD GEAR

(a) Check for wear damage.

(b) Check the braking effect of the synchronizer ring.

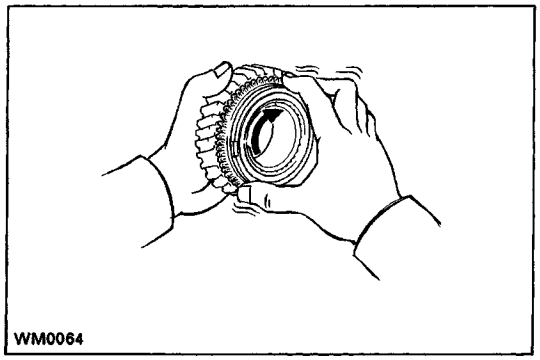
Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, replace the synchronizer ring.

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

Minimum clearance: 0.7 mm (0.028 in.)

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



2. INSPECT SYNCHRONIZER RING FOR FOURTH GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

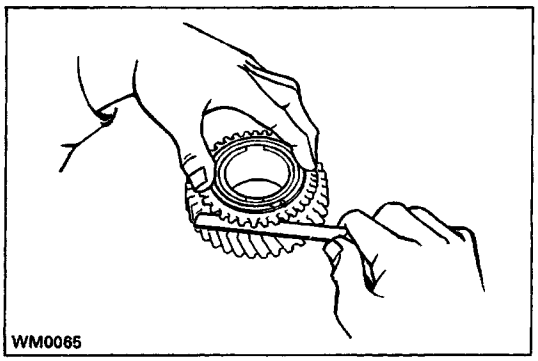
Check again the braking effect of the synchronizer ring.

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

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

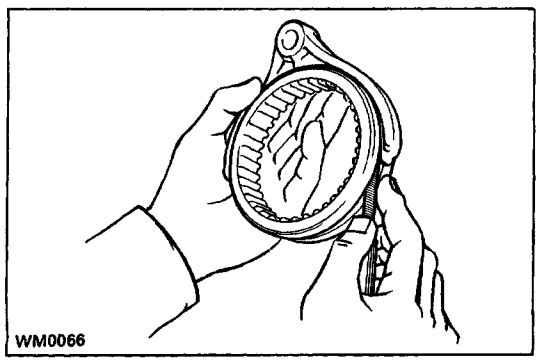


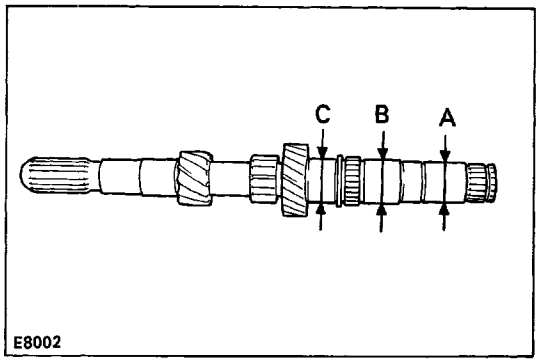
3. MEASURE CLEARANCE OF NO. 2 SHIFT FORK AND HUB SLEEVE

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.





4. INSPECT INPUT SHAFT

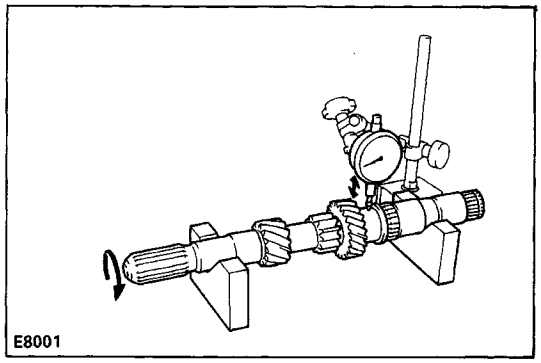
(a) Check the input shaft for– wear or damage.

(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

Minimum outer diameter:

Part A 32.930 mm (1.2964 in.)

B and C 35.950 mm (1.4154 in.)



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

Maximum runout: 0.060 mm (0.0024 in.)

ASSEMBLY OF INPUT SHAFT ASSEMBLY

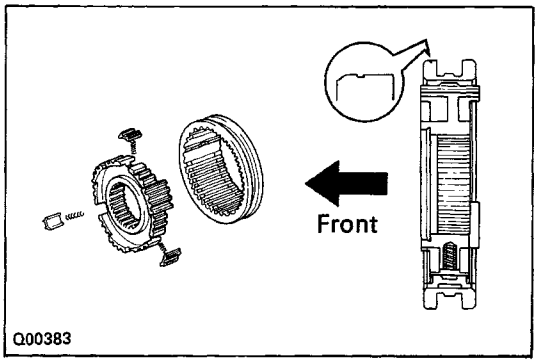
(See page MT–151)

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

1. INSPECT NO. 2 CLUTCH HUB INTO HUB SLEEVE

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

(b) Install the hub sleeve to the clutch hub.

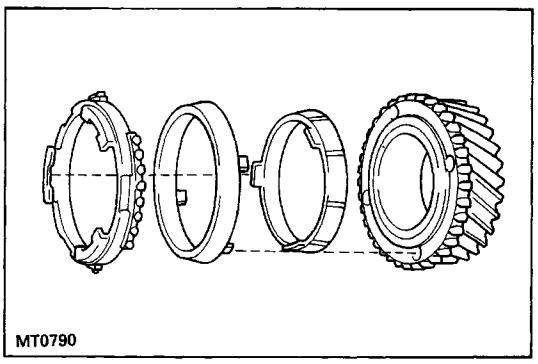


2. INSTALL NEEDLE ROLLER BEARING, THIRD GEAR, SYNCHRONIZER RINGS AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHAFT

(a) Apply MP grease to the needle roller bearing.

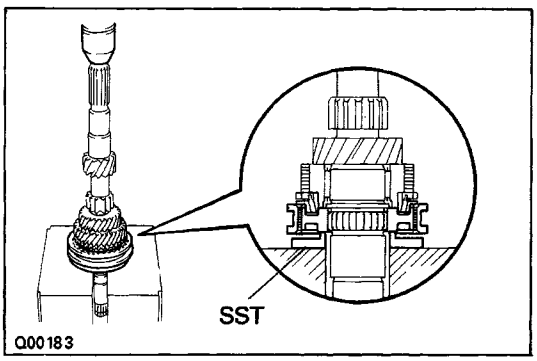
(b) Assembly the needle roller bearings into the 3rd gear.

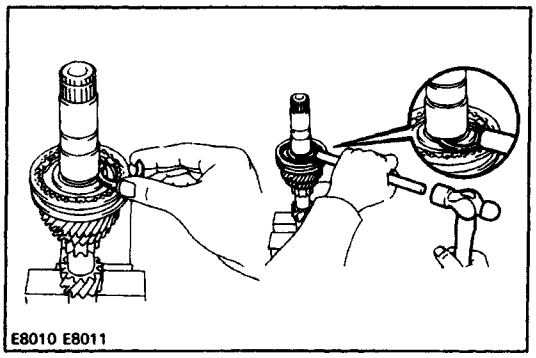
(c) Place the synchronizer rings on the gear and align the ring slots with the shifting keys.



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

SST 09506–35010

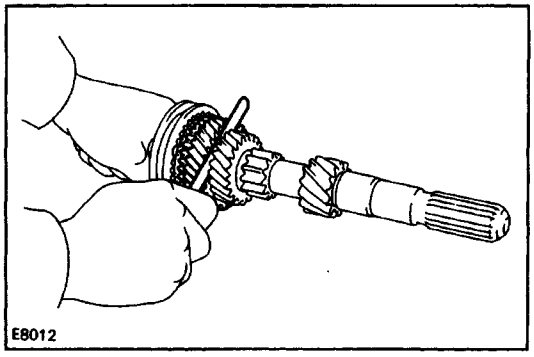




3. INSTALL SNAP RING

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

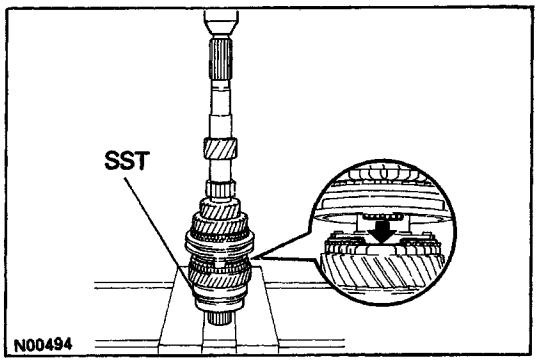
Mark	Thickness mm (in.)
	2.30 – 2.35 (0.0906 – 0.0925) 2.35–2.40 (0.0925 – 0.0945) 2.40–2.45 (0.0945 – 0.0965) 2.45–2–50 (0.0965 – 0.0984) 2.50–2–55 (0.0984 – 0.1004) 2.55–2.60 (0.1004 – 0.1024) 2.60–2.65 (0.1024 – 0.1043)



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.)

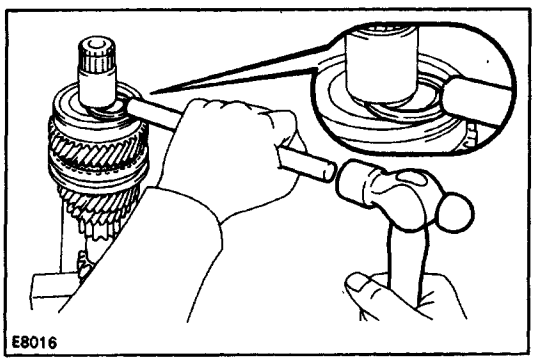


5. INSTALL SPACER, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS, FOURTH GEAR AND RADIAL BALL BEARING

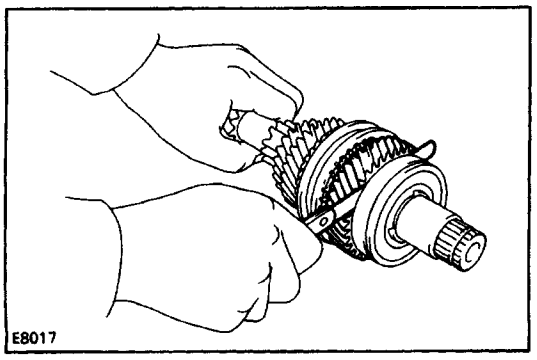
(a) Install the spacer.
(b) Apply MP grease to the needle roller bearings.
(c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
(d) Install the 4th gear.
(e) Using SST and a press, install the radial ball bearing.
SST 09506–35010

6. INSTALL SNAP RING

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



Mark	Thickness mm (in.)
1	2.35 – 2.40 (0.0925 – 0.0945)
2	2.40–2.45 (0.0945 – 0.0965)
3	2.45–2.50 (0.0965 – 0.0984)
4	2.50–2–55 (0.0984 – 0.1004)
5	2.55–2.60 (0.1004 – 0.1024)
6	2.60–2.65 (0.1024 – 0.1043)
7	2.65–2.70 (0.1043 – 0.1063)
8	2.70–2.75 (0.1063 – 0.1083)

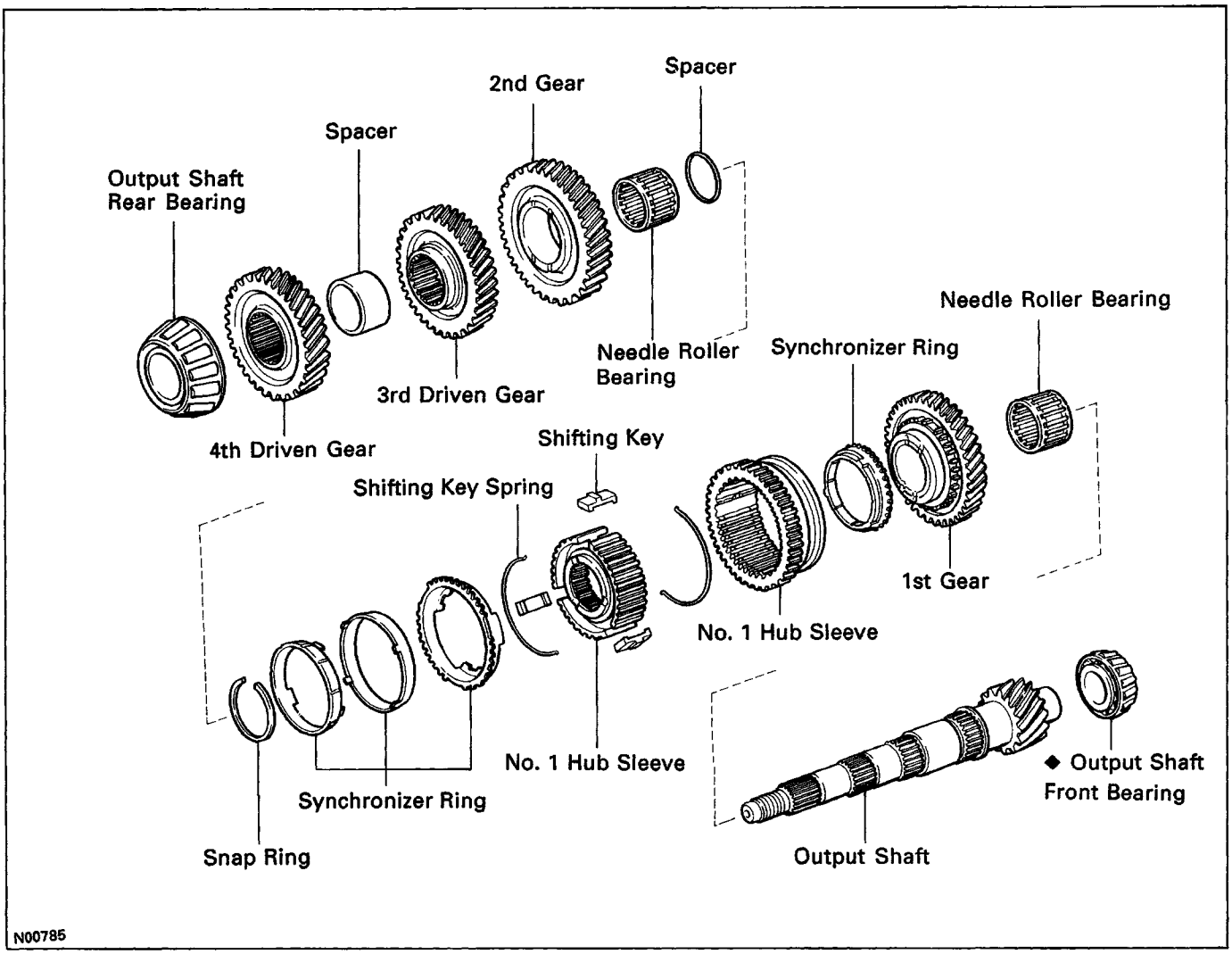


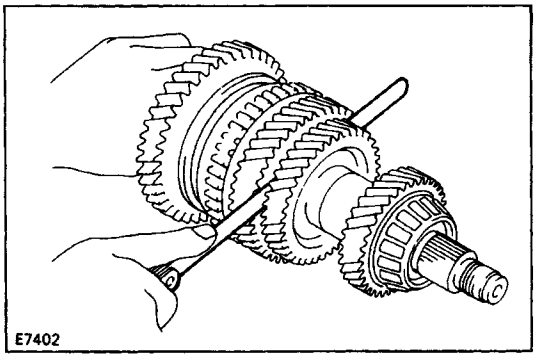
7. MEASURE FOURTH GEAR THRUST CLEARANCE

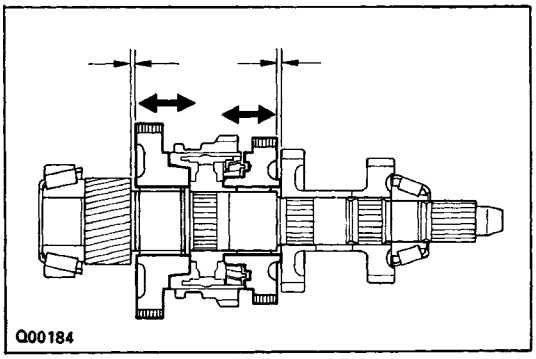
Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance: 0.10 – 0.55 mm
(0–0039 – 0.0217 in.)

Output Shaft Assembly







DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. MEASURE FIRST AND SECOND GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance.

Standard clearance:

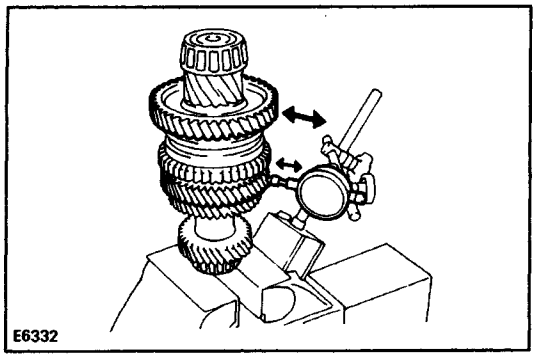
1st gear 0.10 – 0.35 mm (0.0039 – 0.0138 in.)

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.)



2. CHECK OIL CLEARANCE OF FIRST AND SECOND GEAR

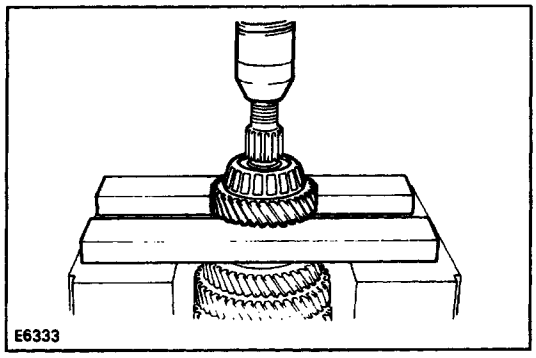
Using a dial indicator, measure the oil clearance between the gear and shaft.

Standard clearance:

1 st gear 0.009 – 0.051 mm
(0. 0004 – 0.0020 in.)
2nd gear 0.009 – 0.053 mm
(0.0004 – 0.0020 in.)

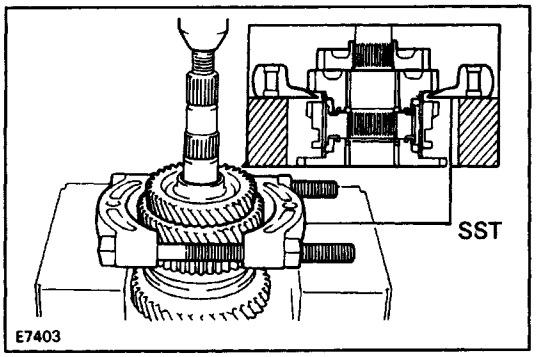
Maximum clearance: 0.080 mm (0.003 in.)

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



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

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

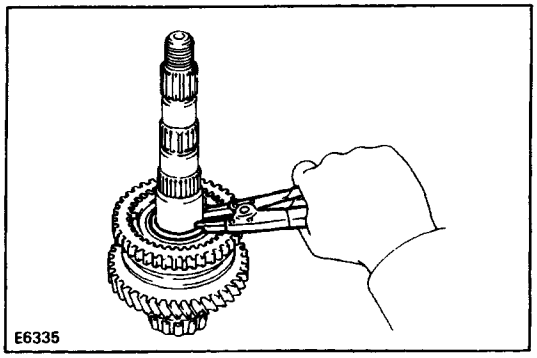


4. REMOVE THIRD DRIVEN GEAR AND SECOND GEAR

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

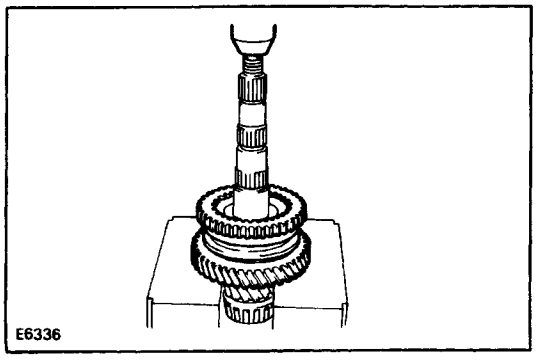
SST 09950–00020

5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING



6. REMOVE SNAP RING

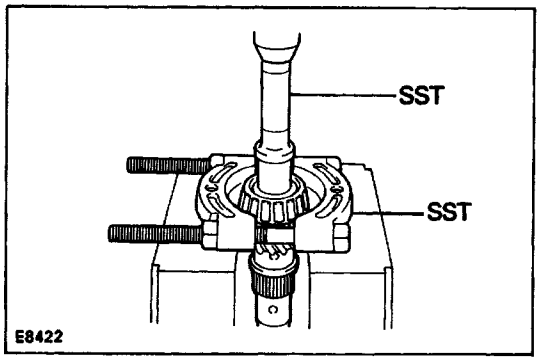
Using snap ring pliers, remove the snap ring.



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

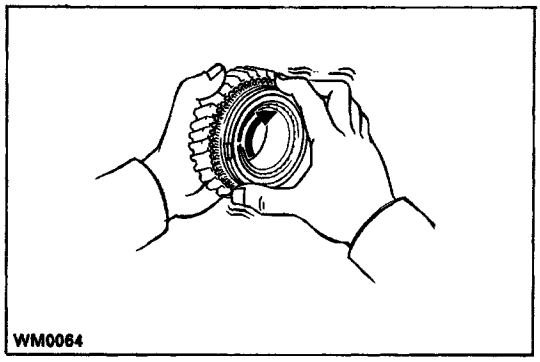
Using a press, remove No–1 hub sleeve and 1 st gear.

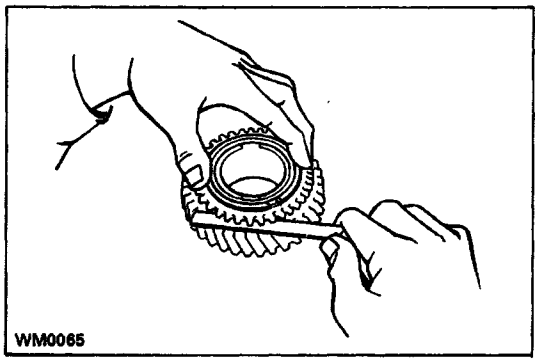
8. REMOVE SYNCHRONIZER RING AND NEEDLE ROLLER BEARING

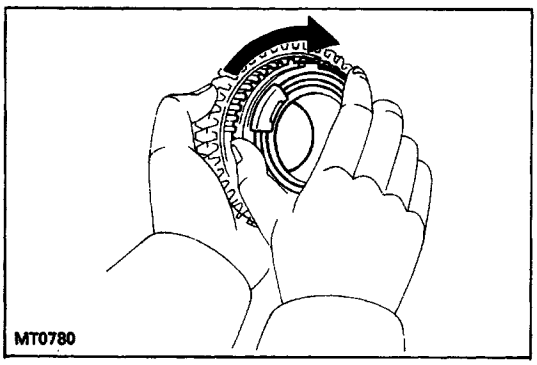


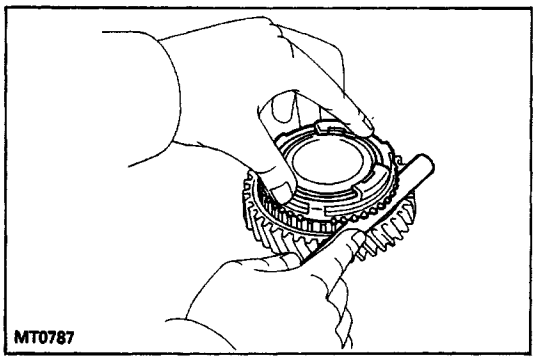
9. REMOVE OUTPUT FRONT BEARING

Using SST and a press, remove the bearing.
SST 09307–12010, 09950–00020









OUTPUT SHAFT COMPONENT PARTS INSPECTION

1. INSPECT SYNCHRONIZER RING FOR FIRST GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

Check again the braking effect of the synchronizer ring.

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

Minimum clearance: 0.6 mm (0.024 In.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

2. INSPECT SYNCHRONIZER RING FOR SECOND GEAR

(a) Check for wear or damage.

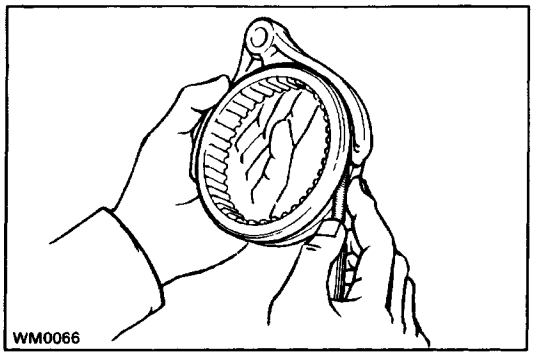
(b) Check the braking effect of the synchronizer direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, replace the synchronizer ring.

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

Minimum clearance: 0.7 mm(0.028 in.)

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

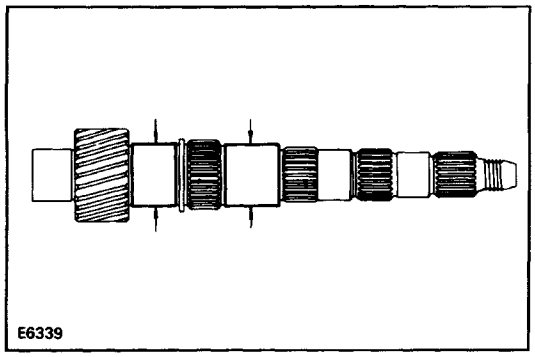


3. MEASURE CLEARANCE OF NO.1 SHIFT FORK AND HUB SLEEVE

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.

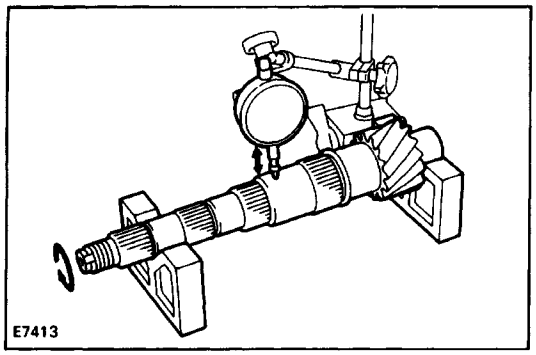


4. INSPECT OUTPUT SHAFT

(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 clearance: 0.060 mm (0.0024 in.)

ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

(See page MT–156)

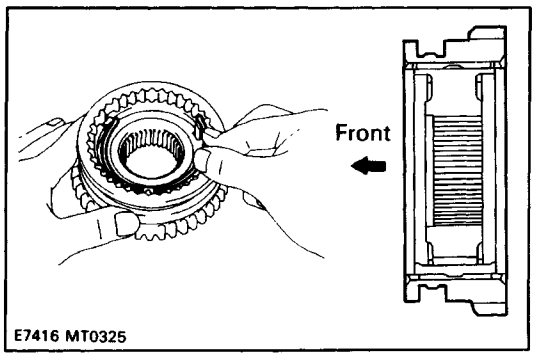
HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. 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.



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

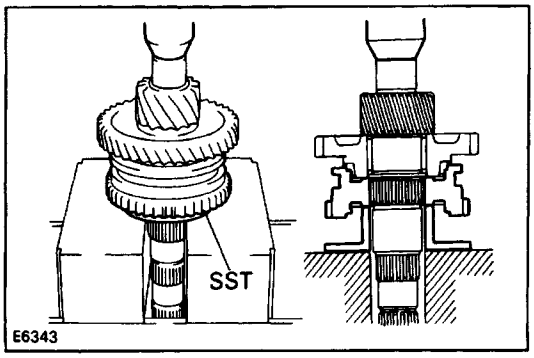
(a) Apply MP grease to the needle roller bearings.

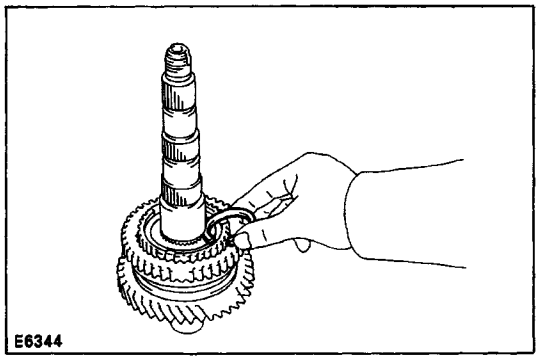
(b) Install the 1st gear.

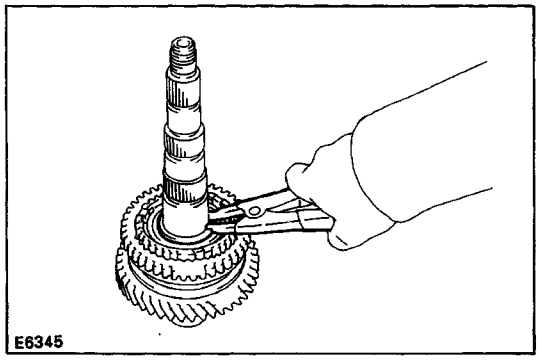
(c) Place the synchronizer ring (for 1 st gear)on the gear and align the ring slots with the shifting keys.

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

SST 09316–60010 (09316–00040)




E6344

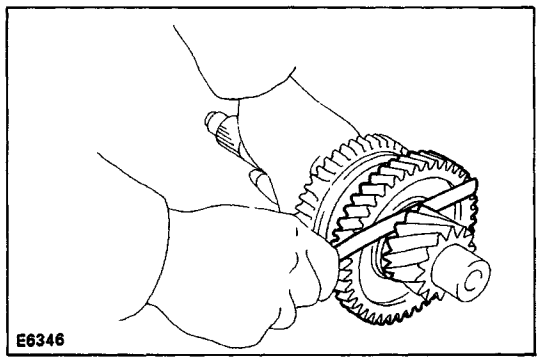

E6345

3. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)
A	2.80 – 2.85 (0.1102 – 0.1122)
B	2.85 – 2.90 (0.1122 – 0.1142)
C	2.90 – 2.95 (0.1142 – 0.1161)
D	2.95 – 3.00 (0.1161 – 0.1181)
E	3.00 – 3.05 (0.1181 – 0.1201)
F	3.05 – 3.10 (0.1201 – 0.1220)
G	3.10 – 3.15 (0.1220 – 0.1240)

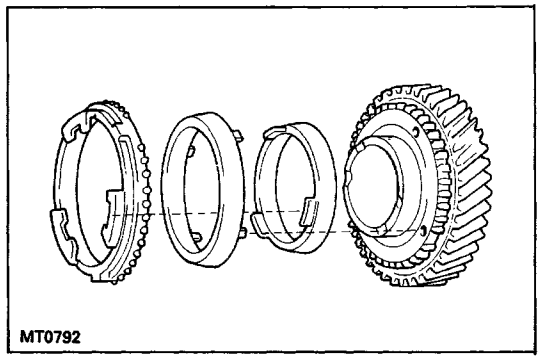
(b) Using a snap ring expander, install the snap ring.


E6346

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.)


MT0792

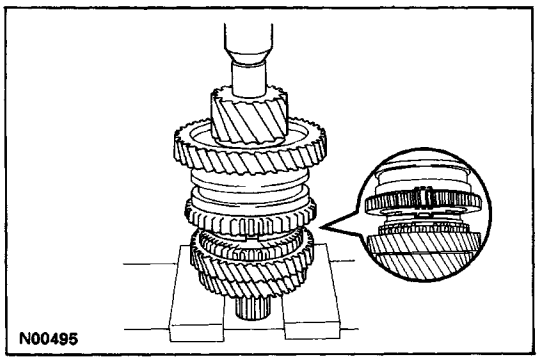
5. INSTALL SPACER, NEEDLE ROLLER BEARING, SYNCHRONIZER RINGS, SECOND GEAR AND THIRD DRIVEN GEAR

(a) Install the spacer.

(b) Apply MP grease to the needle roller bearing.

(c) Place the synchronizer rings (for 2nd gear) on the gear.

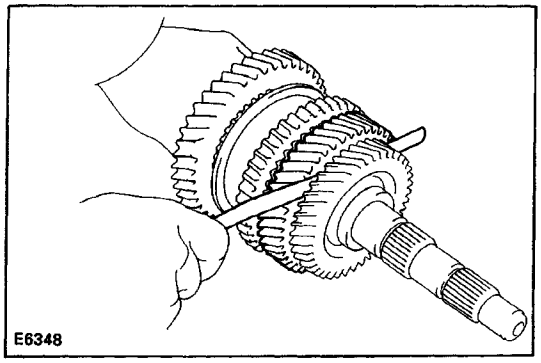
NOTICE: Do not install the synchronizer ring for 1st gear.


N00495

(d) Install the 2nd gear.

(e) Using a press, instal! the 3rd driven gear.

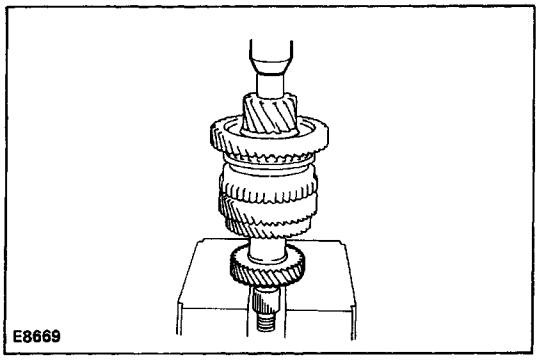
NOTICE: Align the ring slots with the shifting keys.



6. MEASURE SECOND GEAR THRUST CLEARANCE

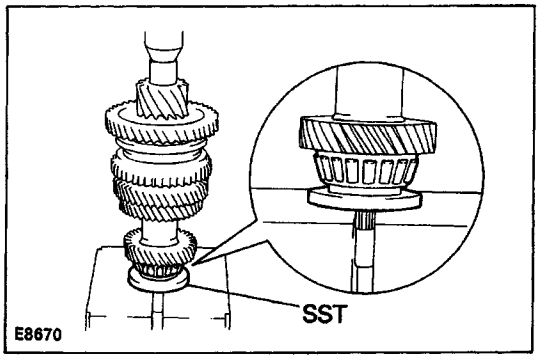
Using a feeler gauge, measure the 2nd gear thrust clearance.

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



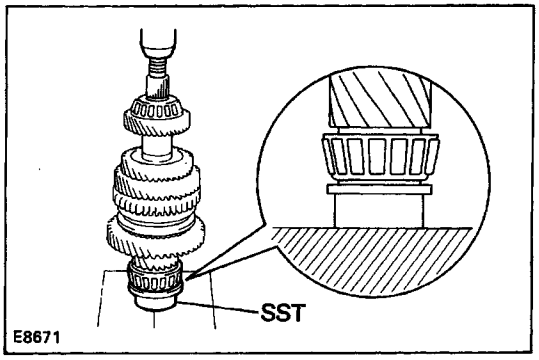
7. INSTALL SPACER AND FOURTH DRIVEN GEAR

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



8. INSTALL OUTPUT SHAFT REAR BEARING

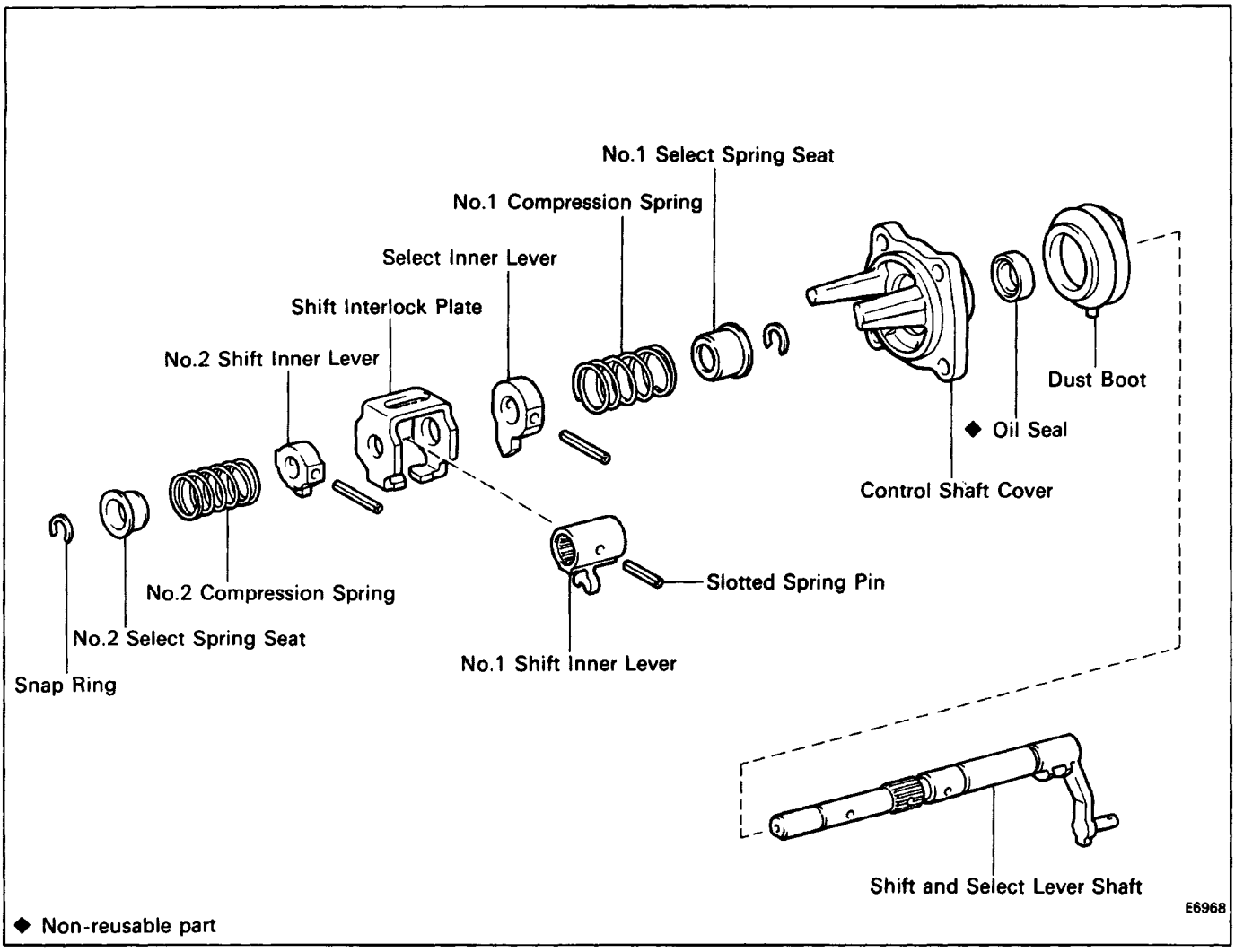
Using SST and a press, install the bearing.
SST 09506–30012

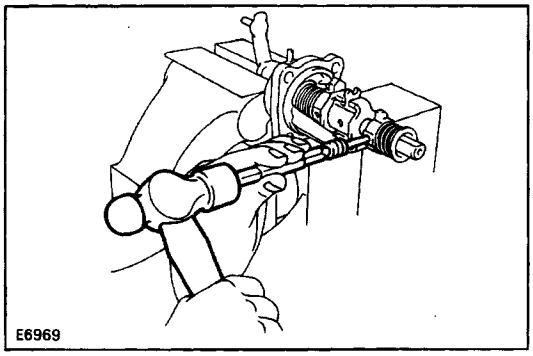


9. INSTALL OUTPUT SHAFT FRONT BEARING

Using SST and a press, install the output shaft front new bearing.
SST 09316–60010 (09316–00070)

Shift and Select Lever Shaft

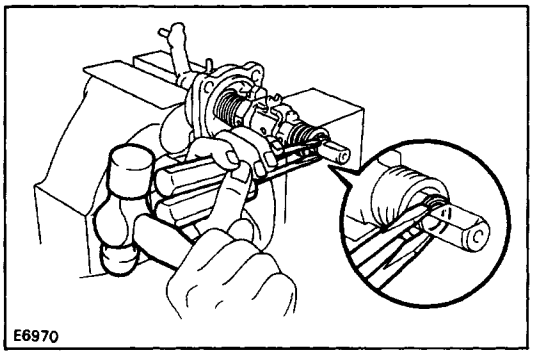




DISASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

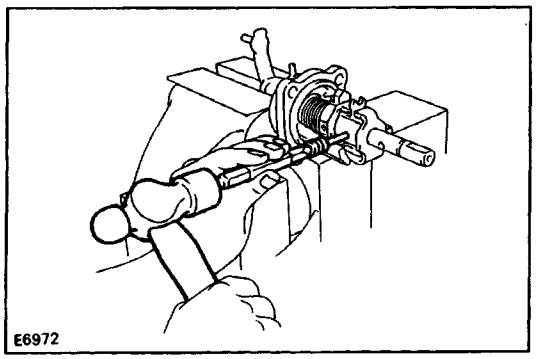
1. REMOVE NO.2 SHIFT INNER LEVER

(a) Using a pin punch and a hammer, drive out the slotted spring pin from No.2 shift inner lever.



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

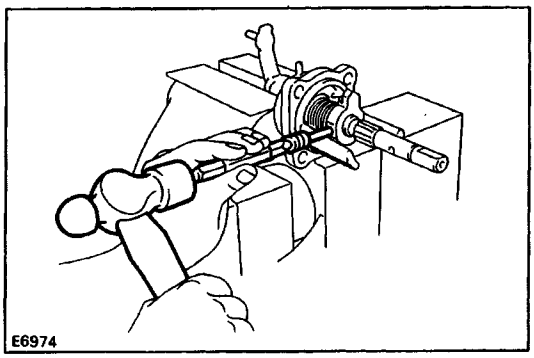
(c) Remove No.2 select spring seat, No.2 compression spring and No.2 shift inner lever.



2. REMOVE SHIFT INTERLOCK PLATE AND NO.1 SHAFT INNER LEVER

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

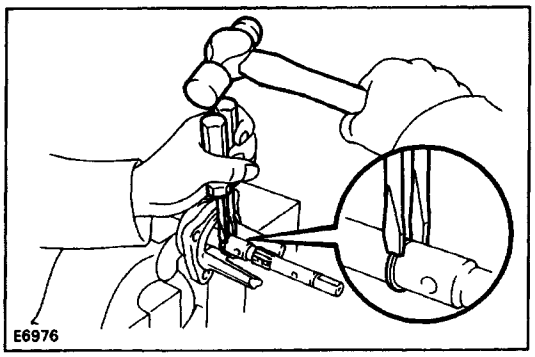
(b) Remove the shift interlock plate and No.1 shift inner lever.



3. REMOVE SELECT INNER LEVER

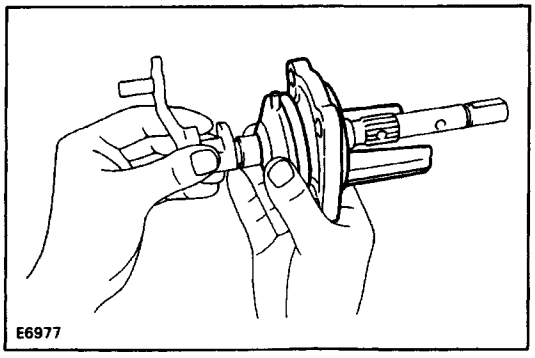
(a) Using a pin punch and hammer, drive out the slotted spring pin.

(b) Remove the select inner lever, No.1 compression spring and No.1 select spring seat.

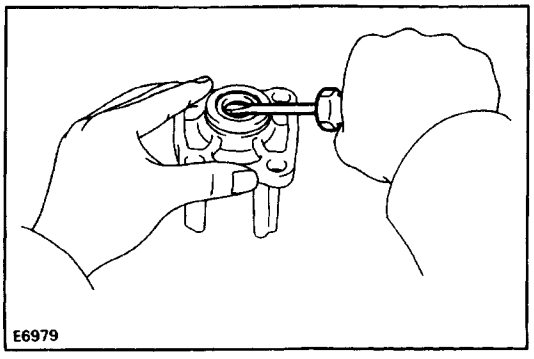


4. REMOVE SNAP RING

Using two screwdrivers and hammer, remove the snap ring.

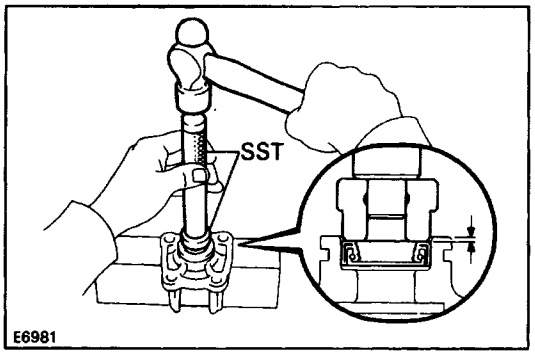


5. REMOVE CONTROL SHAFT COVER AND DUST BOOT



6. IF NECESSARY, REPLACE CONTROL SHAFT COVER OIL SEAL

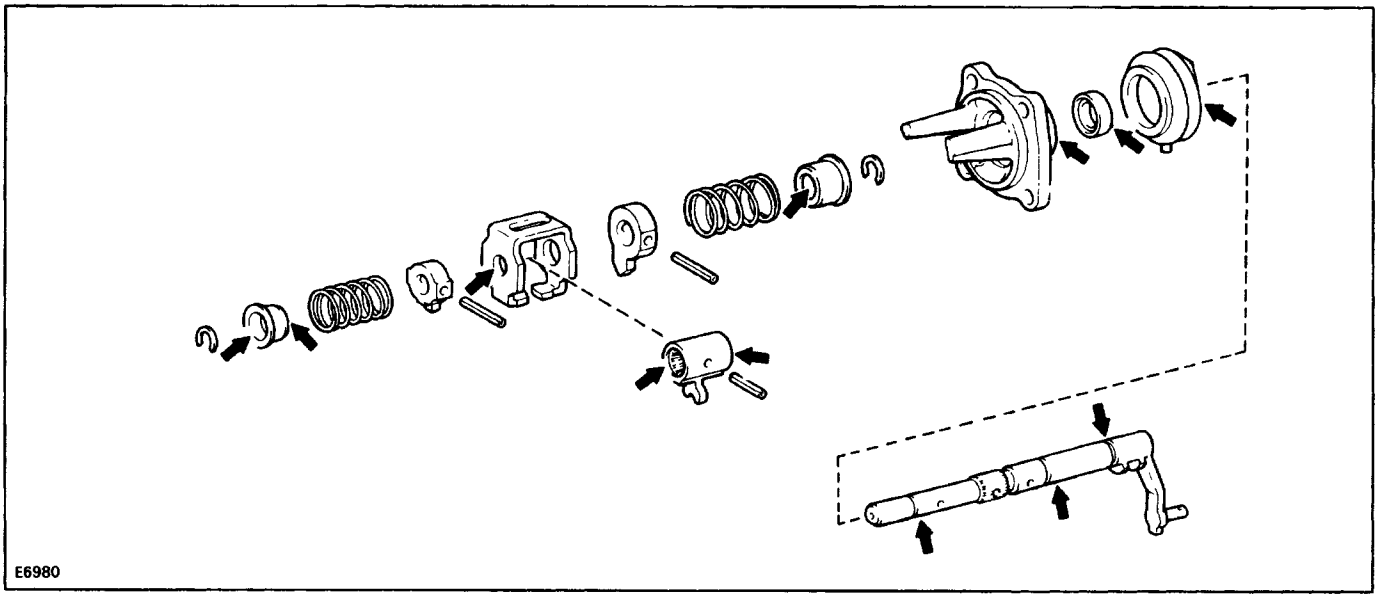
(a) Using a screwdriver, remove oil seal.

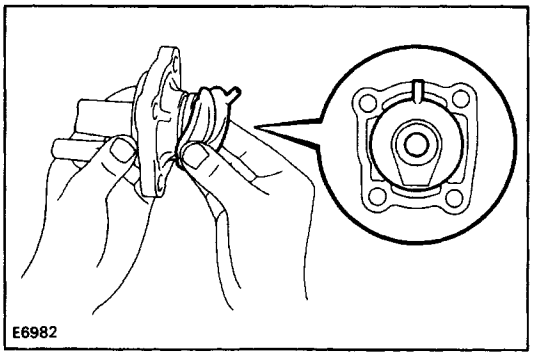


(b) Using SST and a hammer, drive in a new oil seal.
SST 09620–30010 (09627–30010, 09631–00020)
Oil seal depth: 0 –1.0 mm (0 – 0.039 in.)
(c) Apply MP grease to the oil seal lip.

ASSEMBLY OF SHIFT AND SELECT LEVER SHAFT

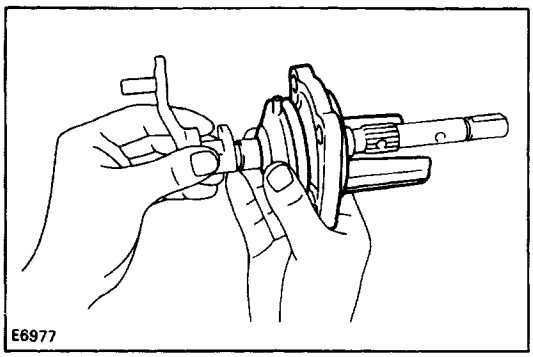
1. APPLY MP GREASE TO PARTS, AS SHOWN



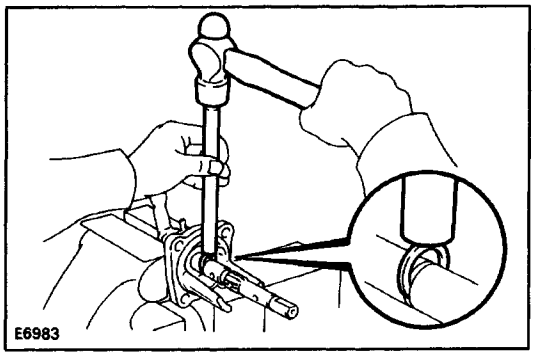


2. INSTALL SHIFT AND SELECT LEVER SHAFT

(a) Install the boot to the control shaft cover, as shown.

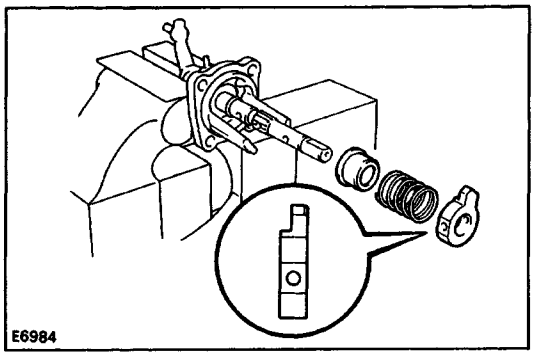


(b) Install the shift and select lever shaft to the control shaft cover.



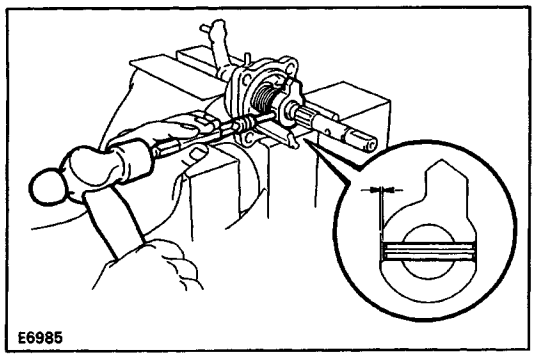
3. INSTALL SNAP RING

Using a brass bar and hammer, install the snap ring and spring seat.

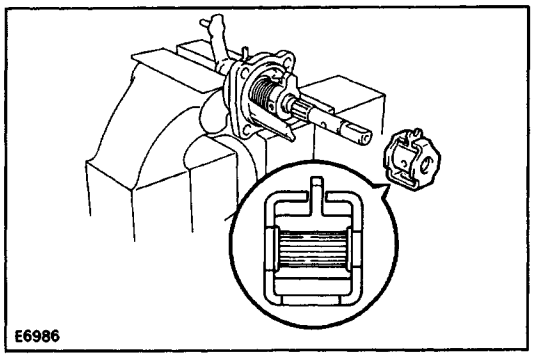


4. INSTALL SELECT INNER LEVER

(a) Install the No.1 spring seat, No.1 select spring and select inner lever, as shown.

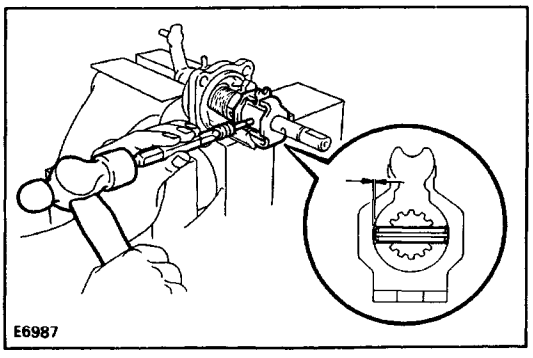


(b) Using a pin punch and hammer, drive in the slotted spring pin.



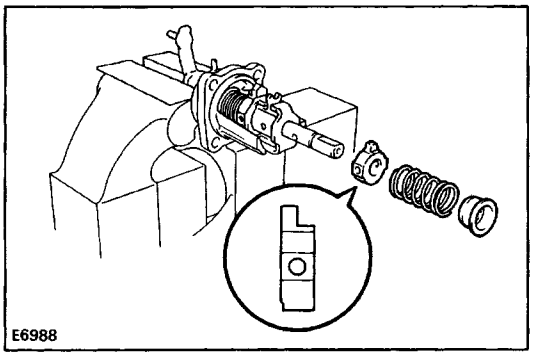
5. INSTALL SHIFT INTERLOCK PLATE AND NO.1 SHIFT INNER LEVER

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



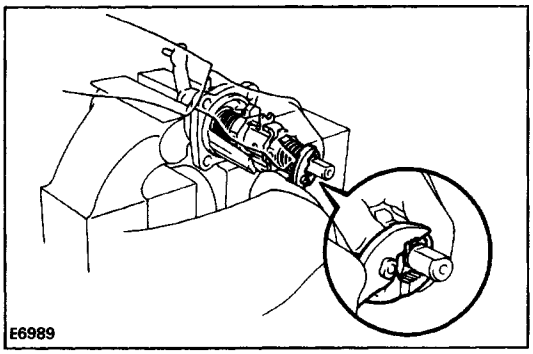
(b) Using a pin punch and hammer, drive in the slotted spring pin.

(c) Check that the shift interlock plate turns smoothly.

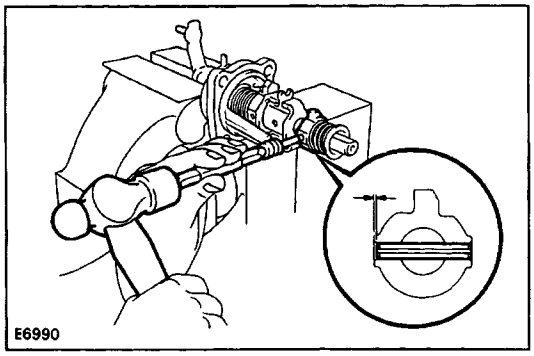


6. INSTALL NO.2 SHIFT INNER LEVER

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

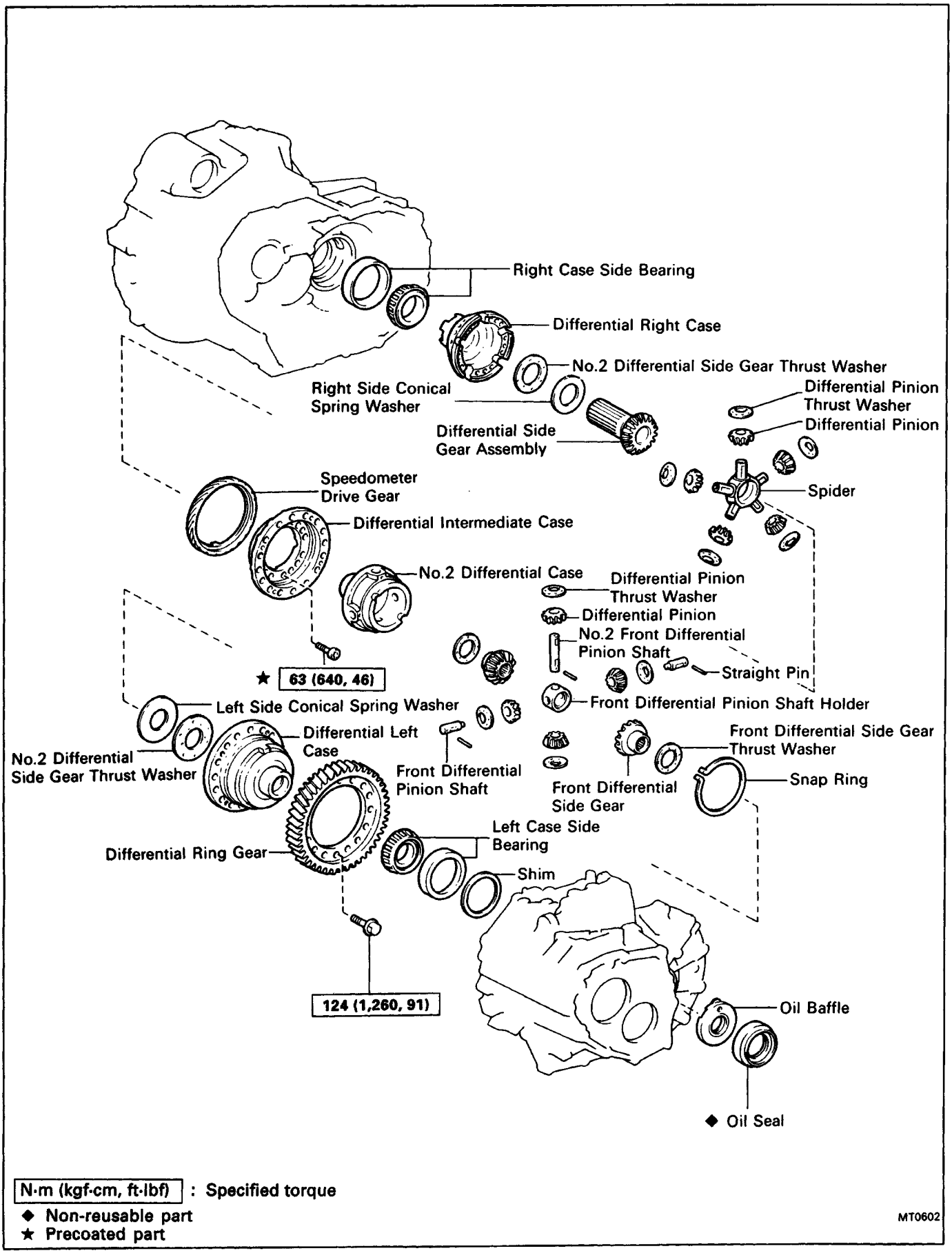


(b) Install the snap ring.



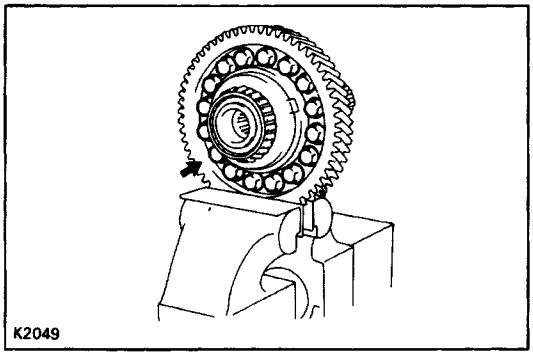
(c) Using a pin punch and hammer, drive in the slotted spring pin.

Differential Case



N·m (kgf-cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

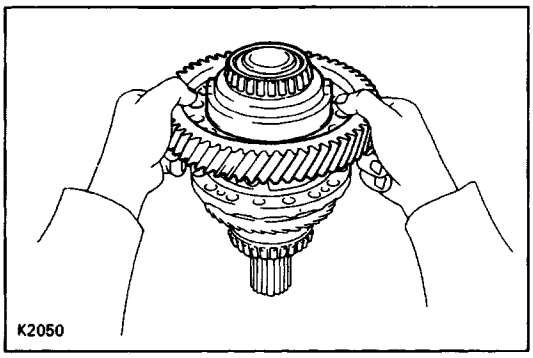
MT0602



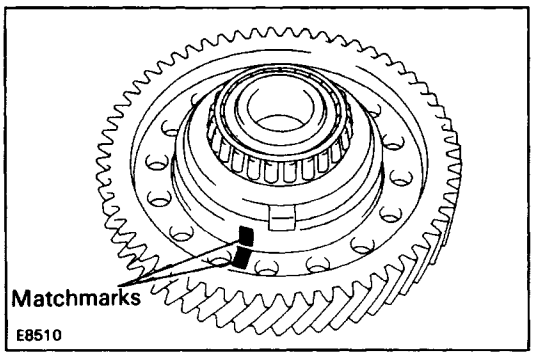
DISASSEMBLY OF DIFFERENTIAL CASE

1. REMOVE DIFFERENTIAL LEFT CASE

(a) Remove the sixteen bolts.

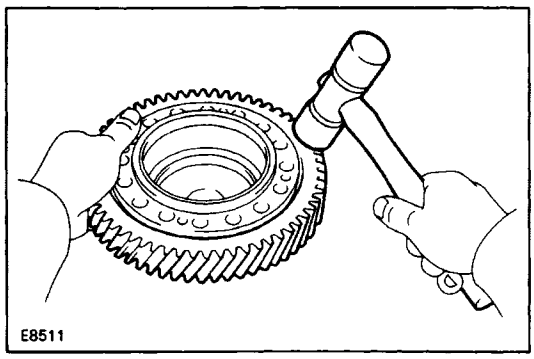


(b) Remove the differential left case up ward.

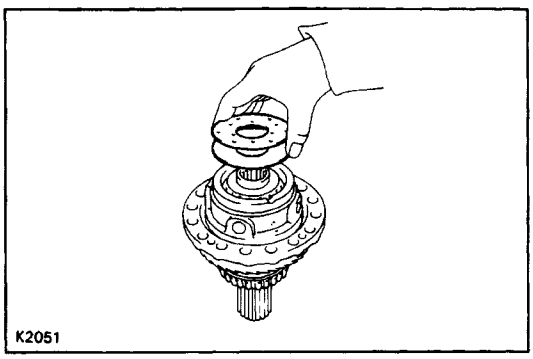


2. REMOVE RING GEAR

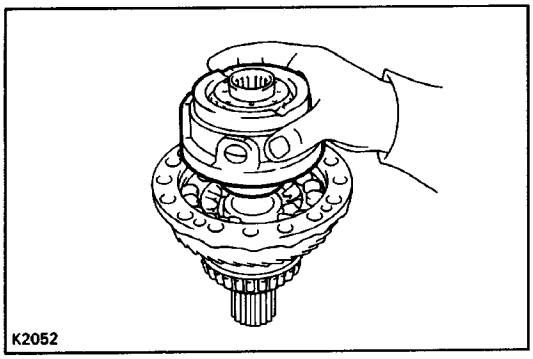
(a) Place the matchmarks on both the differential case and ring gear.



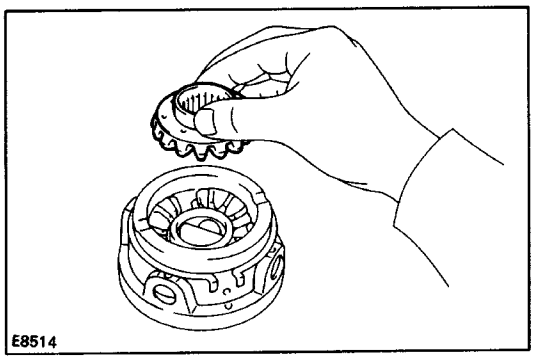
(b) Using a plastic hammer, tap out the ring gear.



3. REMOVE NO.2 DIFFERENTIAL SIDE GEAR THRUST WASHER AND CONICAL SPRING WASHER



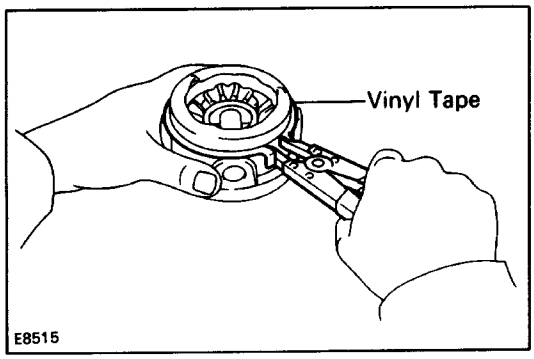
4. REMOVE DIFFERENTIAL NO.2 CASE ASSEMBLY



5. DISASSEMBLY DIFFERENTIAL NO.2 CASE

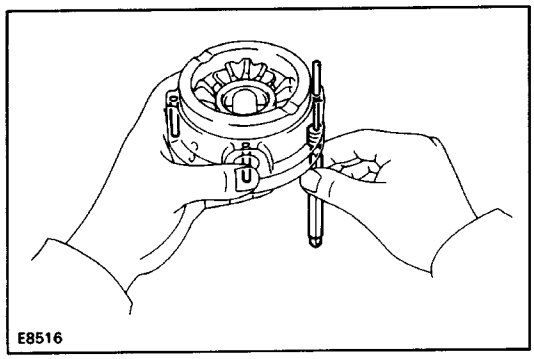
(a) Remove the front differential side gear together with thrust washer.

(b) Remove the front differential side gear thrust washer from the side gear.

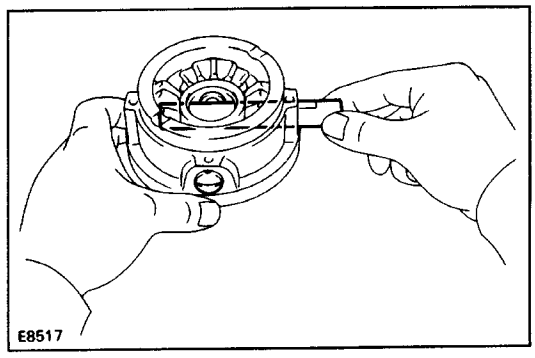


(c) Using snap ring pliers, remove the snap ring.

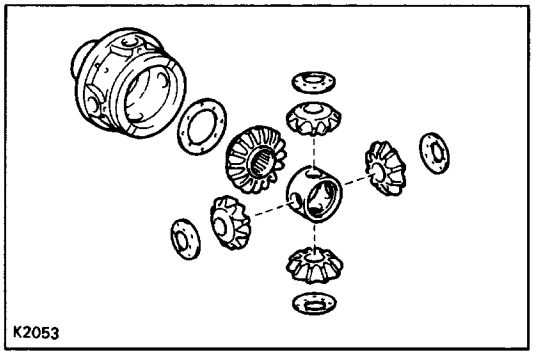
HINT: Before removing the shaft snap ring, wrap vinyl tape around the case prevent from damage.



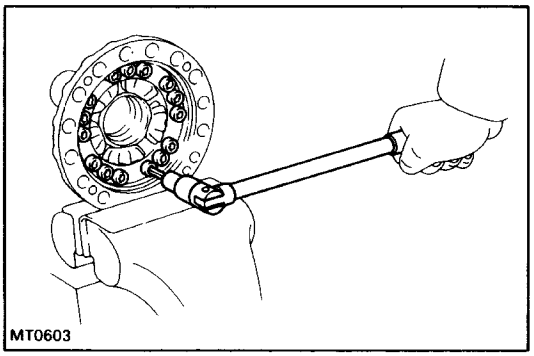
(d) Using a pin punch, push out the three straight pins.



(e) Remove the two front differential pinion shafts and No.2 front differential pinion shaft.

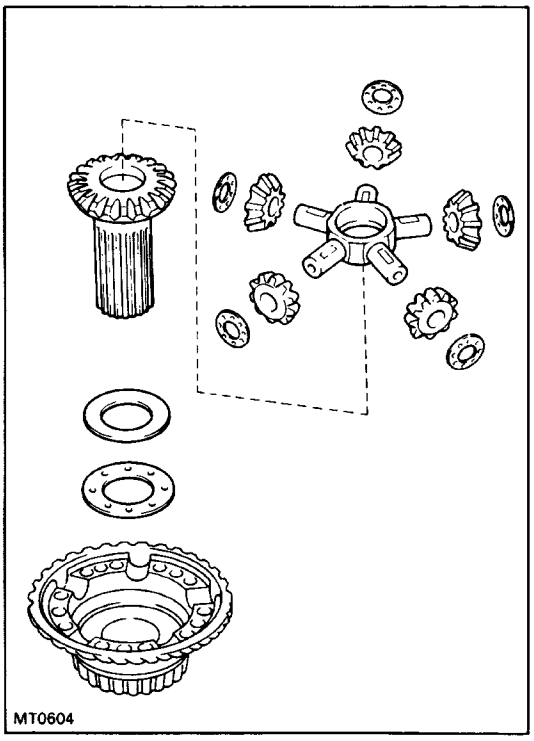


(f) Remove the pinion shaft holder, four differential pinions, pinion thrust washers, front side gear and thrust washer from the differential No.2 case.



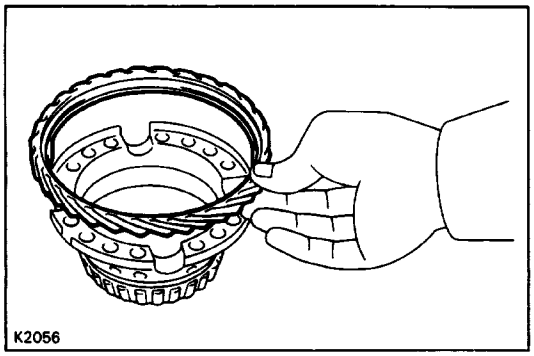
6. REMOVE DIFFERENTIAL INTERMEDIATE CASE

Using a torx wrench, remove the fifteen torx screws and differential intermediate case.

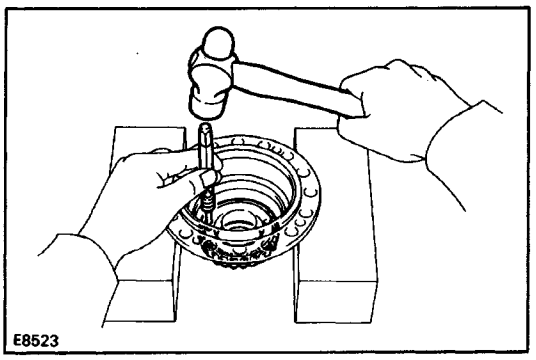


7. DISASSEMBLY DIFFERENTIAL RIGHT CASE

(a) Remove the differential spider, five pinions, pinion thrust washers, side gear subassembly, conical spring washer and No.2 side gear thrust washer.

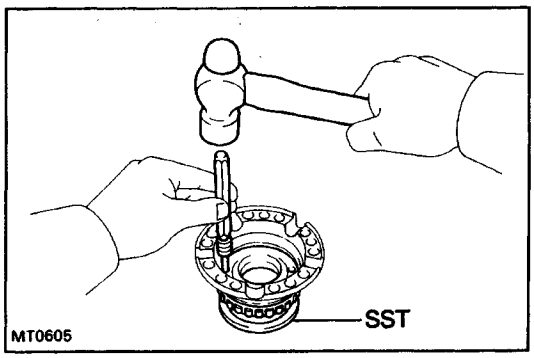


8. REMOVE SPEEDOMETER DRIVE GEAR



9. REMOVE SIDE BEARING

(a) Using a pin punch and hammer, drive out the side bearing evenly through two holes in the differential left case.



(b) Using a pin punch, hammer and SST, drive out the side bearing evenly through four holes in the differential right case.
SST 09316–60010 (09316–00020)

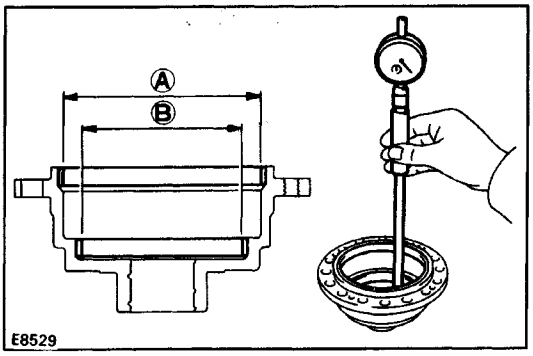
INSPECTION OF DIFFERENTIAL CASE

1. MEASURE DIFFERENTIAL LEFT CASE

Using a cylinder gauge, measure the inner diameter of the differential left case bushing.

Standard clearance: A 111.000 –111.035 mm
(4.3701 – 4.3714 in.)
B 90.500 – 90.535 m m
(3.5630 – 3.5644 in.)

Maximum diameter: A 110.060 mm (4.3331 in.)
B 90.560 mm, (3–5653 in.)



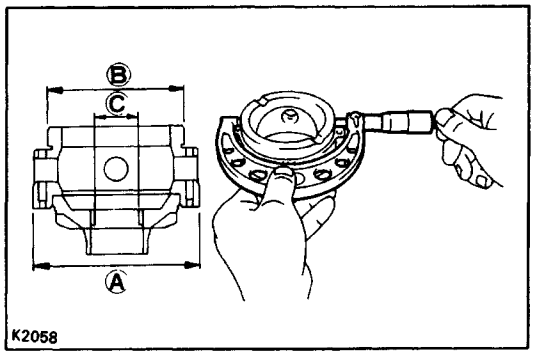
2. MEASURE DIFFERENTIAL NO.2 CASE

Using a micrometer, measure the outer diameter of differential No–2 case.

Standard clearance: A 110.929 –110.964 mm
(4.3673 – 4.3686 in.)
B 90.429 – 90.464 m m
(3.5606 – 3.5615 in.)
C 35.000 – 35.025 m m
(1.3778 – 1.3789 in.)

Minimum diameter: A 110.850 mm (4.3642 in.)
B 90.350 mm (3.5571 in.)

Maximum diameter: C 35.030 mm (1.3791 in.)

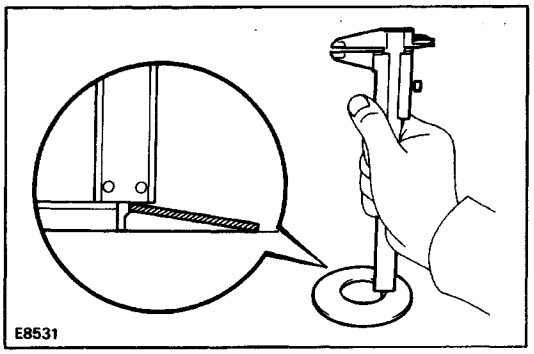


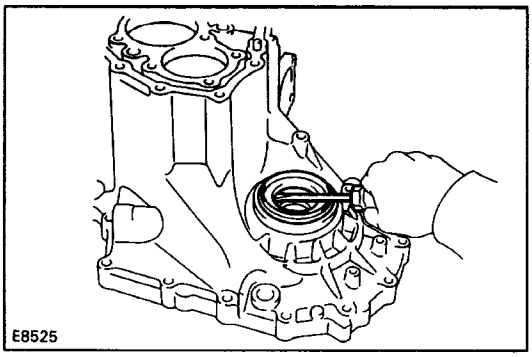
3. MEASURE CONICAL SPRING WASHER

Using a caliper, measure the height of the conical spring washer.

Standard height:
Left conical spring washer
2.60 – 2.80 m m (0.102 – 0.110 in.)
Right conical spring washer
1. 70 –1. 90 m m (0 .067 – 0.075 i n .)

Minimum height:
Left conical spring washer
2.50 mm (0.098 in.)
Right conical spring washer
1.60 mm (0.063 in.)

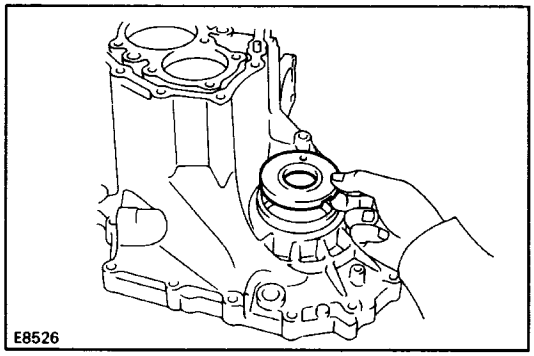




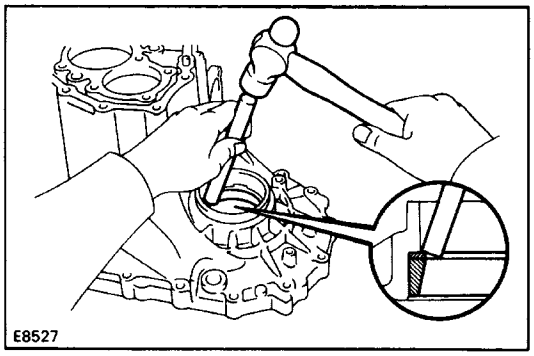
4. (Transmission Case Side)

IF NECESSARY, REPLACE OIL SEAL AND TAPERED ROLLER BEARING OUTER RACE

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

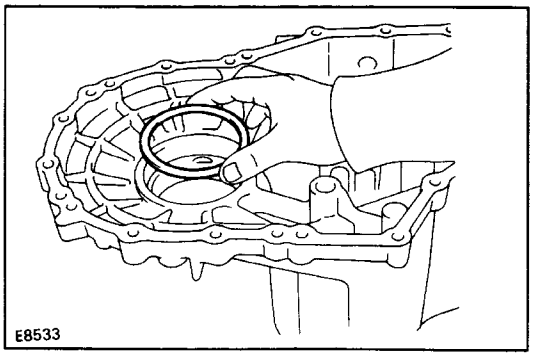


(b) Remove the transmission oil baffle.



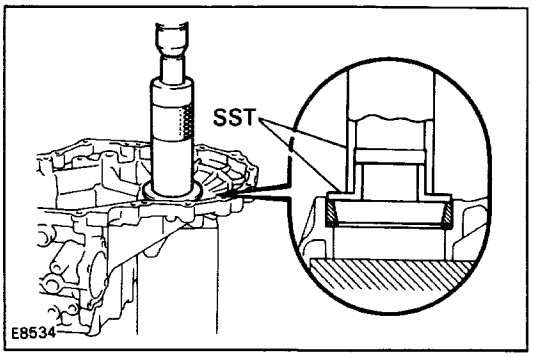
(c) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly.

(d) Remove the adjust shim.

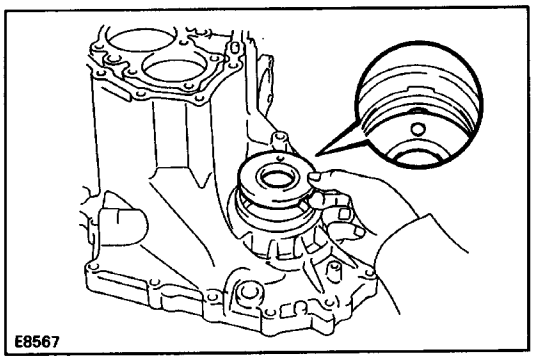


(e) Install the adjust shim.
(See page MT–207)

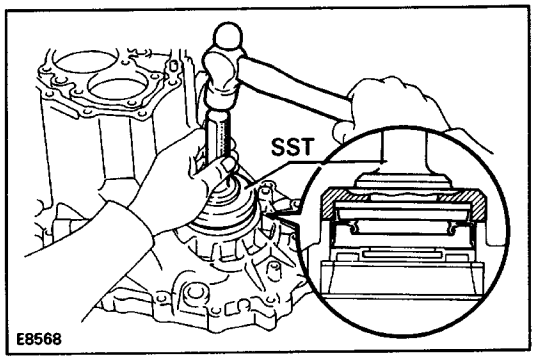
HINT: First select and install a shim of lesser thickness than before.



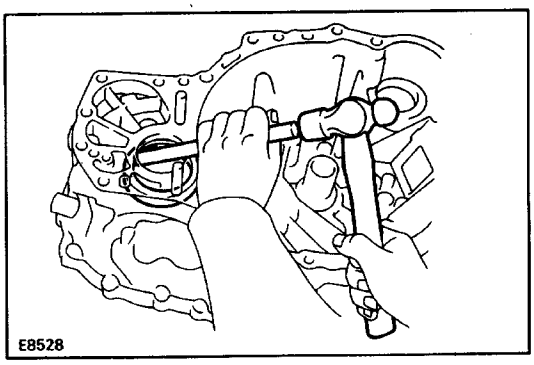
(f) Using SST and a press, install the tapered roller bearing outer race.
SST 09316–60010 (09316–00010,09316–00040)



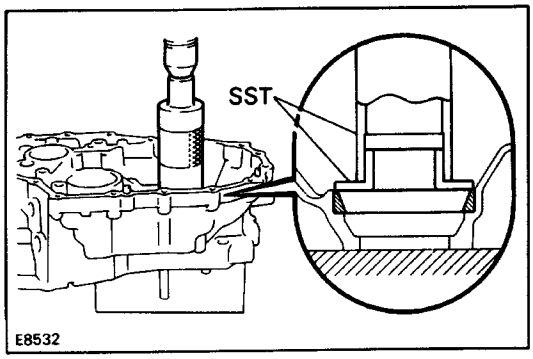
(g) Install the transmission oil baffle.
HINT: Install the transmission oil baffle projection into the case side cutout.



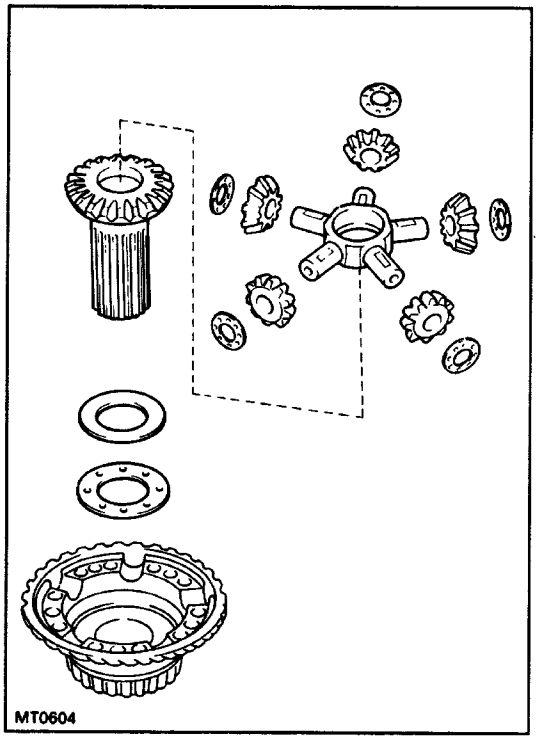
(h) Using SST and a hammer, drive in a new oil seal.
SST 09223–15010
(i) Coat the lip of the oil seal with MP grease.



5. (Transfer Case Side)
IF NECESSARY, REPLACE TAPERED ROLLER BEARING OUTER RACE
(a) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly through the cut–out portion on the transaxle case.



(b) Using SST and a press, install the tapered roller bearing outer race.
SST 09316–60010 (09316–00010, 09316–00040)



ASSEMBLY OF DIFFERENTIAL CASE

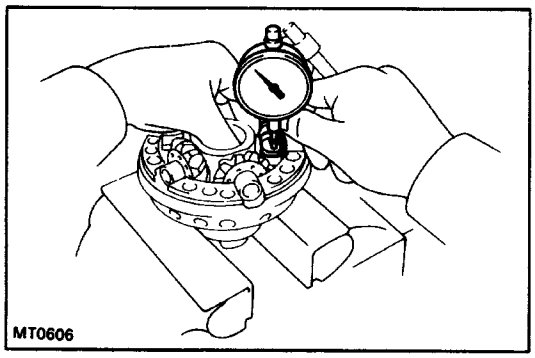
HINT: Coat all of the sliding surface with gear oil before assembly.

1. CHECK AND ADJUST CENTER DIFFERENTIAL SIDE GEAR BACKLASH

(Differential Side Gear Sub Assembly)

(a) Install the No.2 side gear thrust washer, (Temporarily install) 1.0 mm (0.039 in.) size thrust washer, differential side gear subassembly, spider, five pinions and pinion thrust washers to the differential right case.

HINT: Thrust washer 1.0 mm (0.039 in.) size is for check of backlash.



(b) Using a dial indicator, measure the backlash of one pinion gear while holding the differential side gear sub assembly toward the case.

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

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

Referring to the table below, select the No.2 thrust washer which will ensure that the backlash is within specification. Try to select a washer of the same size.

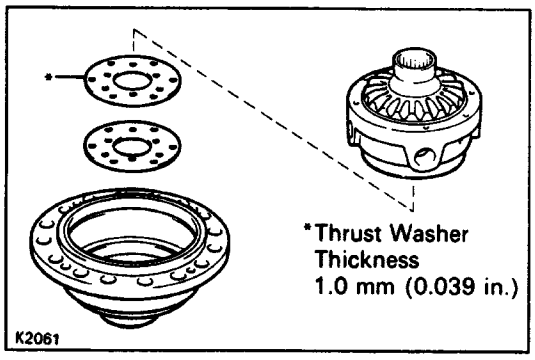
Mark	Thickness mm (in)	Mark	Thickness mm (in.)
–	0.80 (0.0315)	–	1.15 (0.0453)
–	0.85 (0.0335)	–	1.20 (0.0472)
–	0.90 (0.0354)	–	1.25 (0.0492)
–	0.95 (0.0374)	–	1.30 (0.0512)
–	1.00 (0.0394)	–	1.35 (0.0531)
–	1.05 (0.0413)	–	1.40 (0.0551)
–	1.10 (0.0433)		

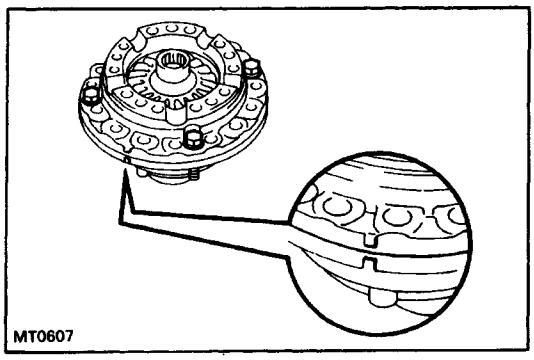
(c) Remove the differential right case.

(No.2 Differential Case)

(a) Install the No.2 side gear thrust washer, (Temporarily install) 1.0 mm (0.039 in.) size thrust washer and differential No.2 case to the differential left case.

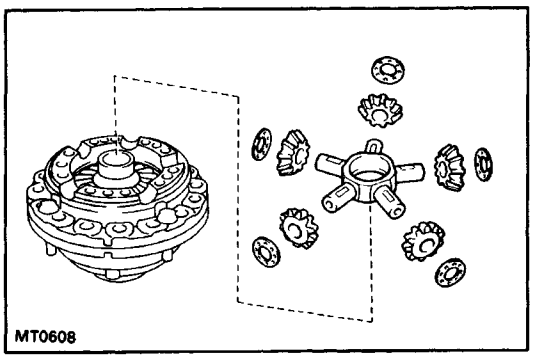
HINT: Thrust washer 1.0 mm (0.039 in.) size is for check of backlash.



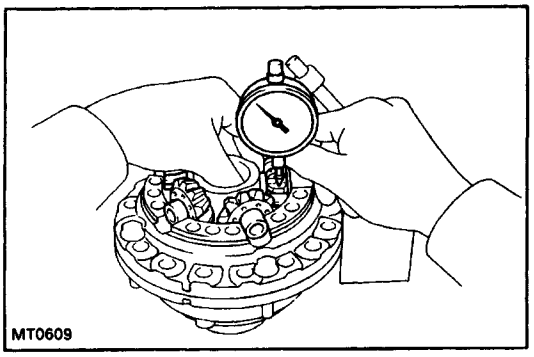


(b) Using four transmission case cover bolts, install the differential intermediate case to the left case.

HINT: Align the alignment marks on the differential left case and connect the intermediate case.



(c) Install the differential spider, five pinions and pinion thrust washers to the differential intermediate 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 differential intermediate case. 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.

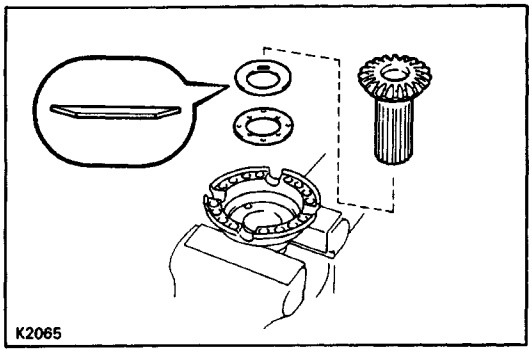
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
–	0.80 (0.0315)	–	1.15 (0.0453)
–	0.85 (0.0335)	–	1.20 (0.0472)
–	0.90 (0.0354)	–	1.25 (0.0492)
–	0.95 (0.0374)	–	1.30 (0.0512)
–	1.00 (0.0394)	–	1.35 (0.0531)
–	1.05 (0.0413)	–	1.40 (0.0551)
–	1.10 (0.0433)		

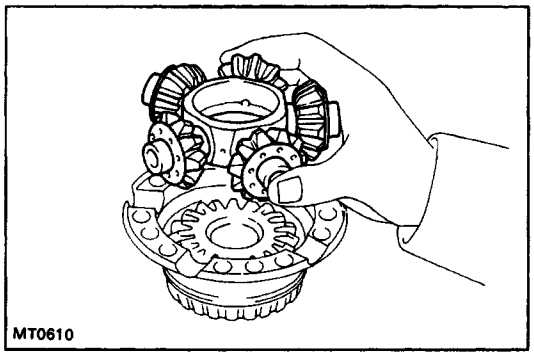
(e) Remove the differential case.

2. ASSEMBLY DIFFERENTIAL RIGHT CASE

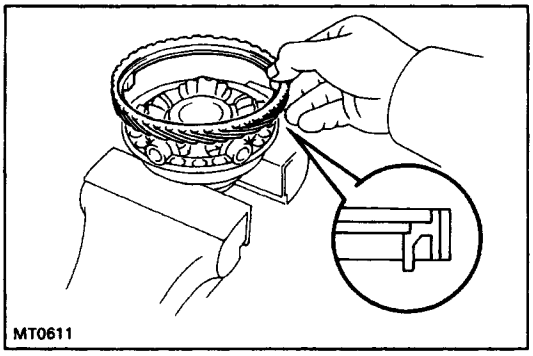
(a) Install the No.2 side gear thrust washer (previously selected), conical spring washer and differential side gear subassembly to the right case.

HINT: Be careful not to mistake the direction of conical spring washer.



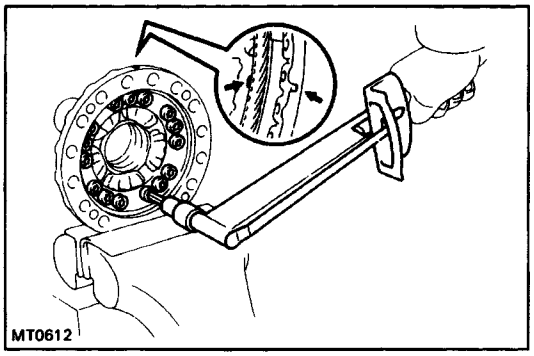


(b) Install the differential spider, five pinion and pinion thrust washers to the differential right case.



3. INSTALL SPEEDOMETER DRIVE GEAR

Install the speedometer drive gear to the differential right case.

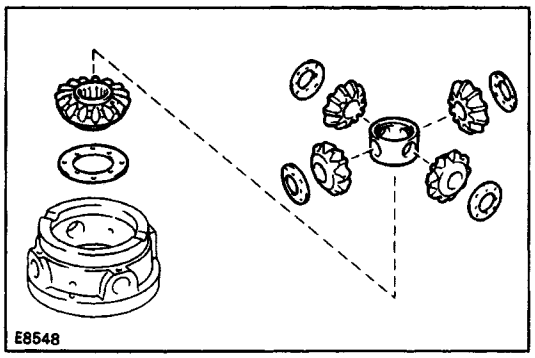


4. INSTALL DIFFERENTIAL INTERMEDIATE CASE

(a) Align the alignment marks on the right case and connect the intermediate case.

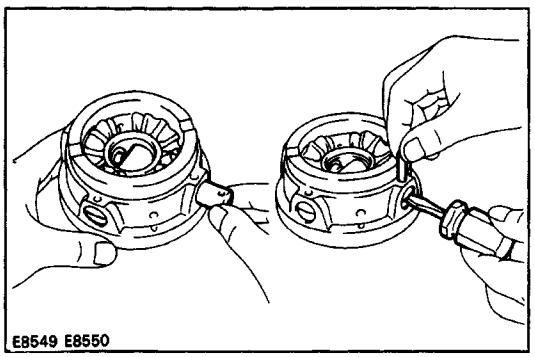
(b) Install the fifteen torx screws. Using a torx wrench, tighten the screws uniformly and a little at a time in succession. Torque the screws.

Torque: 63 N–m (640 kgf–cm, 46 ft–lbf)



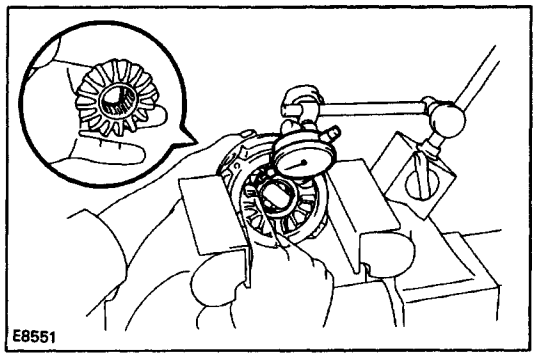
5. CHECK AND ADJUST FRONT SIDE GEAR BACKLASH (Differential No.2 Case)

(a) Install the front differential side gear thrust washer, side gear, pinion shaft holder, four pinions and thrust washers.



(b) Fit No.2 case pin hole and pinion shaft pin hole, install the No2 pinion shaft and two pinion shafts to the No.2 case.

(c) Install the three straight pins.



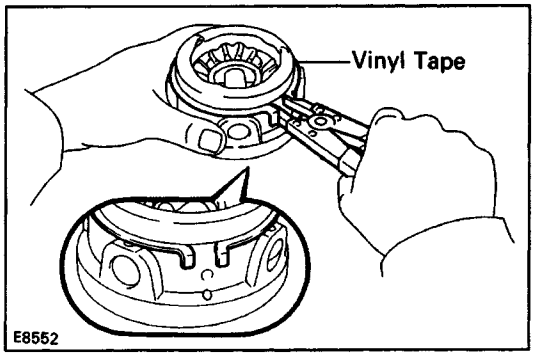
(d) Using a dial indicator, measure the backlash of one pinion gear while holding the front differential side gear toward the case.

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

HINT: Do not mount the surface of No.2 differential case which contacts with bushing in a vise.

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.

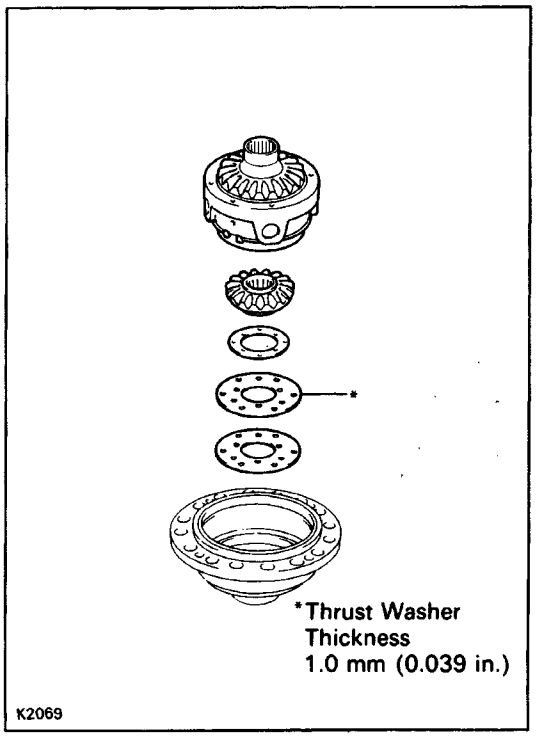
Mark	Thickness mm (in.)	
B	1.00	(0.0394)
C	1.05	(0.0413)
D	1.10	(0.0433)
E	1.15	(0.0453)
F	1.20	(0.0472)
G	1.25	(0.0492)



6. INSTALL SNAP RING

Using snap ring pliers, install the shaft snap ring toward as shown.

HINT: Before installing the shaft snap ring, wrap vinyl tape around the case prevent from damage.

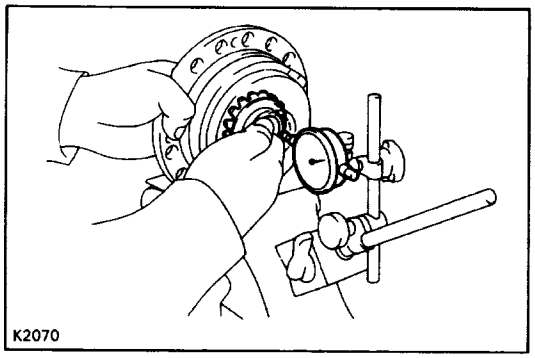


7. CHECK AND ADJUST FRONT DIFFERENTIAL SIDE GEAR THRUST CLEARANCE

(Differential Left Case)

(a) Install the No.2 side gear thrust washer, (Temporarily install) 1.0 mm (0.039 in.) size No.2 side gear thrust washer, front differential side gear thrust washer, side gear and No.2 case assembly.

HINT: Engage the front differential side gear and pinion gear of No.2 case.



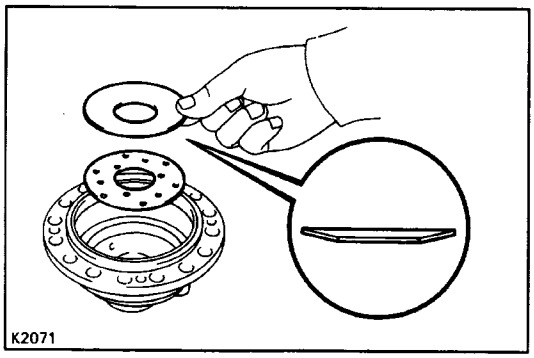
(b) Using a dial indicator, measure the thrust clearance of front differential side gear while holding the No.2 case on the left side.

Standard clearance: 0.14 – 0.21 mm (0–006 – 0.008 in.)

HINT: Turning the side gear a bit, check the maximum value of thrust clearance.
Referring to the table below, select the thrust washer which will ensure that the thrust clearance within specification. Try to select a washer of the same size.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	0.95 (0.0374)	F	1.20 (0.0472)
B	1.00 (0.0394)	G	1.25 (0.0492)
C	1.05 (0.0413)	H	1.30 (0.0512)
D	1.10 (0.0433)	J	1.35 (0.0531)
E	1.15 (0.0453)	K	1.40 (0.0551)

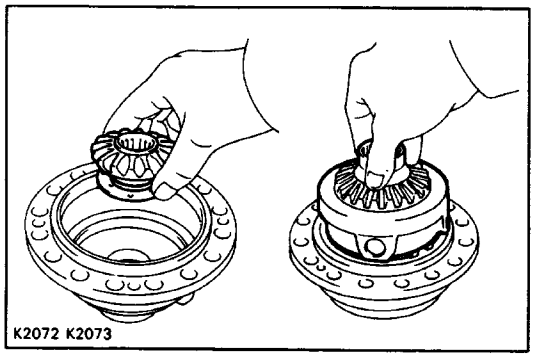
(c) Remove the differential left case.



8. ASSEMBLY DIFFERENTIAL LEFT CASE

(a) Install the No.2 side gear thrust washer (previously selected) and conical spring washer to the left case.

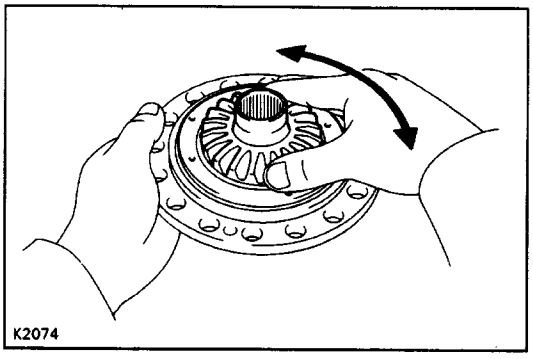
HINT: Be careful not to mistake the direction of conical spring washer.



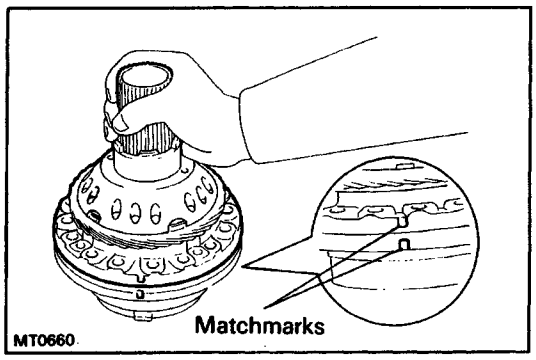
(b) Install the front differential side gear thrust washer and side gear to the left case.

(c) Install the differential No.2 case assembly.

HINT: Engage the front differential side gear and pinion gear of No.2 case.

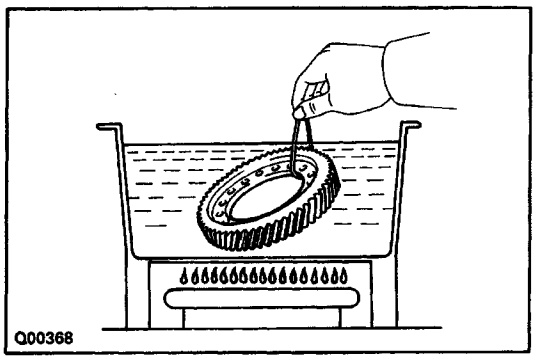


(d) Turning the differential No.2 case, check the turns smoothly.



(e) Install the intermediate case to the differential left case.

HINT: Align the match marks on the differential left case and connect the intermediate case.

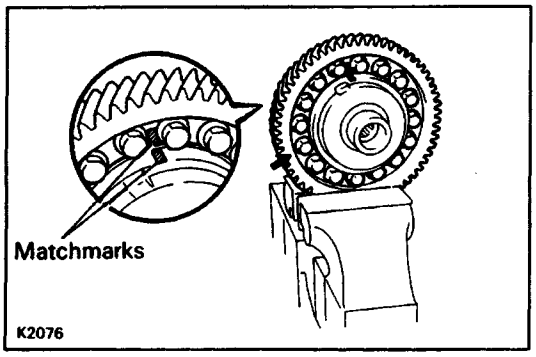


9. INSTALL RING GEAR

(a) Clean the contact surface of the differential case and the threads of the ring gear and differential case.

(b) Heat the ring gear in boiling water.

(c) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

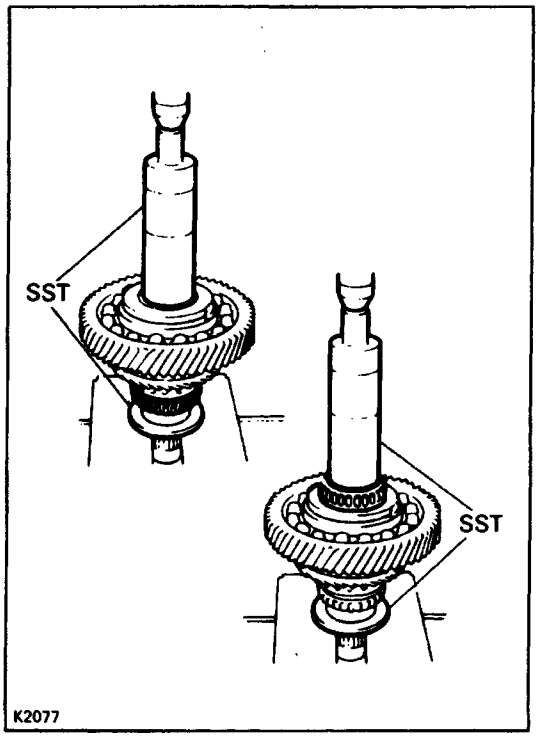


(d) Then quickly install the ring gear on the differential case.

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

(e) Install the sixteen set bolts. Tighten the set bolts uniformly and a little at a time in succession. Torque the bolts.

Torque: 124 N–m (1,260 kgf–cm, 91 ft–lbf)



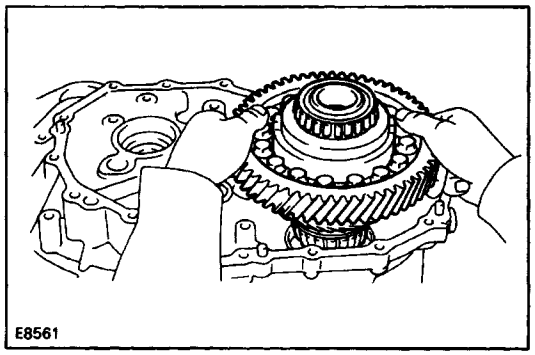
10. INSTALL SIDE BEARING

Using SST and a press, install the side bearing to the differential case.

SST 09316–20011 and 09316–60010 (09316–00010)

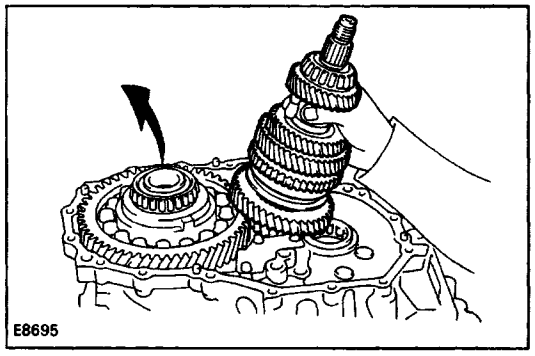
11. ADJUST OUTPUT SHAFT PRELOAD

(See page MT–208)



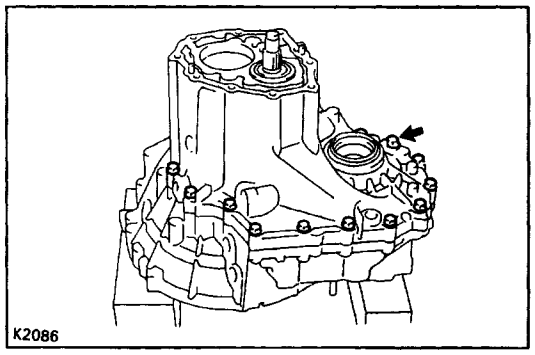
12. INSTALL DIFFERENTIAL CASE ASSEMBLY

Install the differential case assembly to the transaxle case.



13. INSTALL OUTPUT SHAFT ASSEMBLY

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



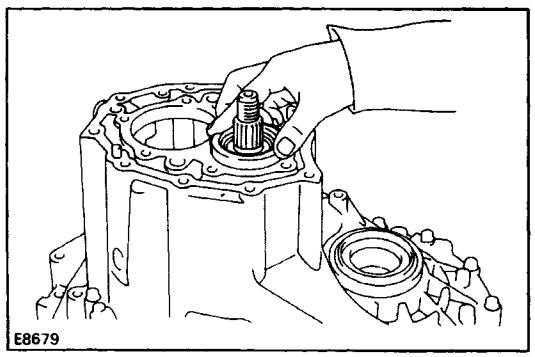
14. INSTALL TRANSMISSION CASE

(a) Install the transmission case.

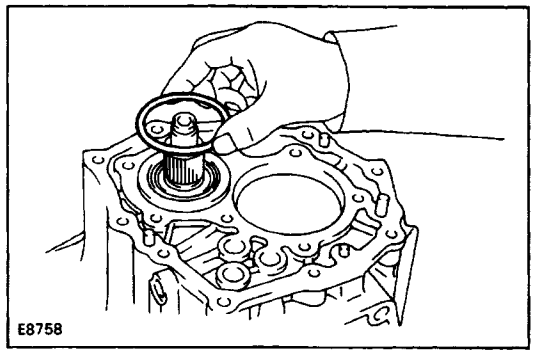
H I NT: If necessary, tap on the case with a plastic hammer.

(b) Install and torque the seventeen bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



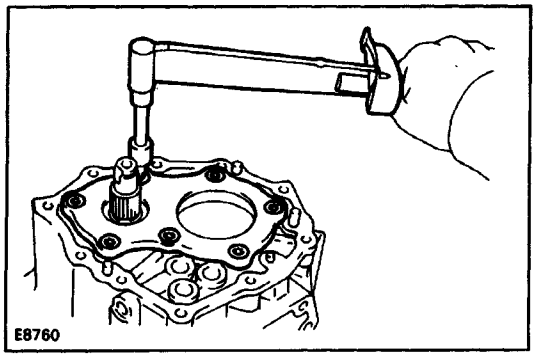
15. INSTALL OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE



16. INSTALL ADJUST SHIM

(See page MT–207)

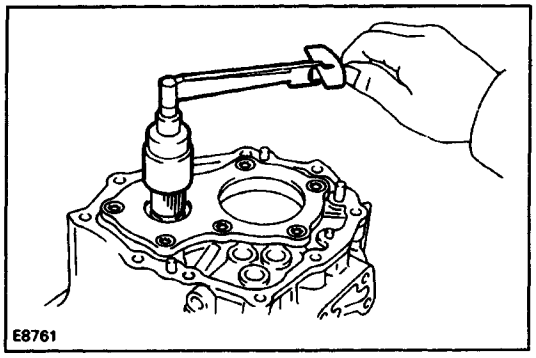
HINT: Install the previously selected shirr.



17. INSTALL REAR BEARING RETAINER

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

Torque: 42 N–m l430 kgf–cm, 31 ft–lbf)



18. 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

0.2 – 0.4 N–m

(1.9 – 3.7 kgf–cm, 1.6 – 3.2 in.–lbf)

Reused bearing

Add output shaft preload

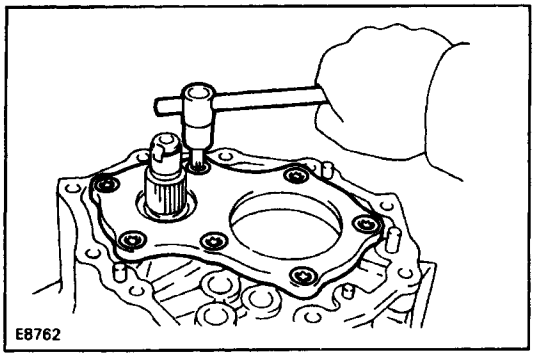
0.1 – 0.2 N–m

(1.2 – 2.3 kgf–cm, 1.0 – 2.0 in.–lbf)

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

HINT: The preload will change about 0.13 N–m (1.3 kgf–cm, 1.13 in.–lbf) 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)



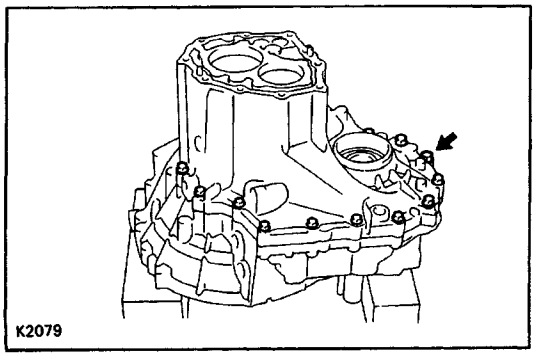
19. REMOVE REAR BEARING RETAINER

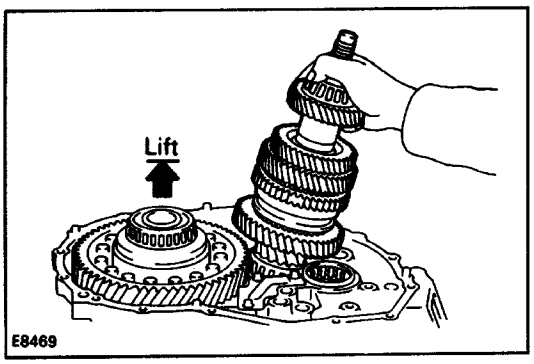
Using torx wrench, remove the seven torx screws and rear bearing retainer.

20. REMOVE ADJUST SHIM

21. REMOVE TRANSMISSION CASE

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

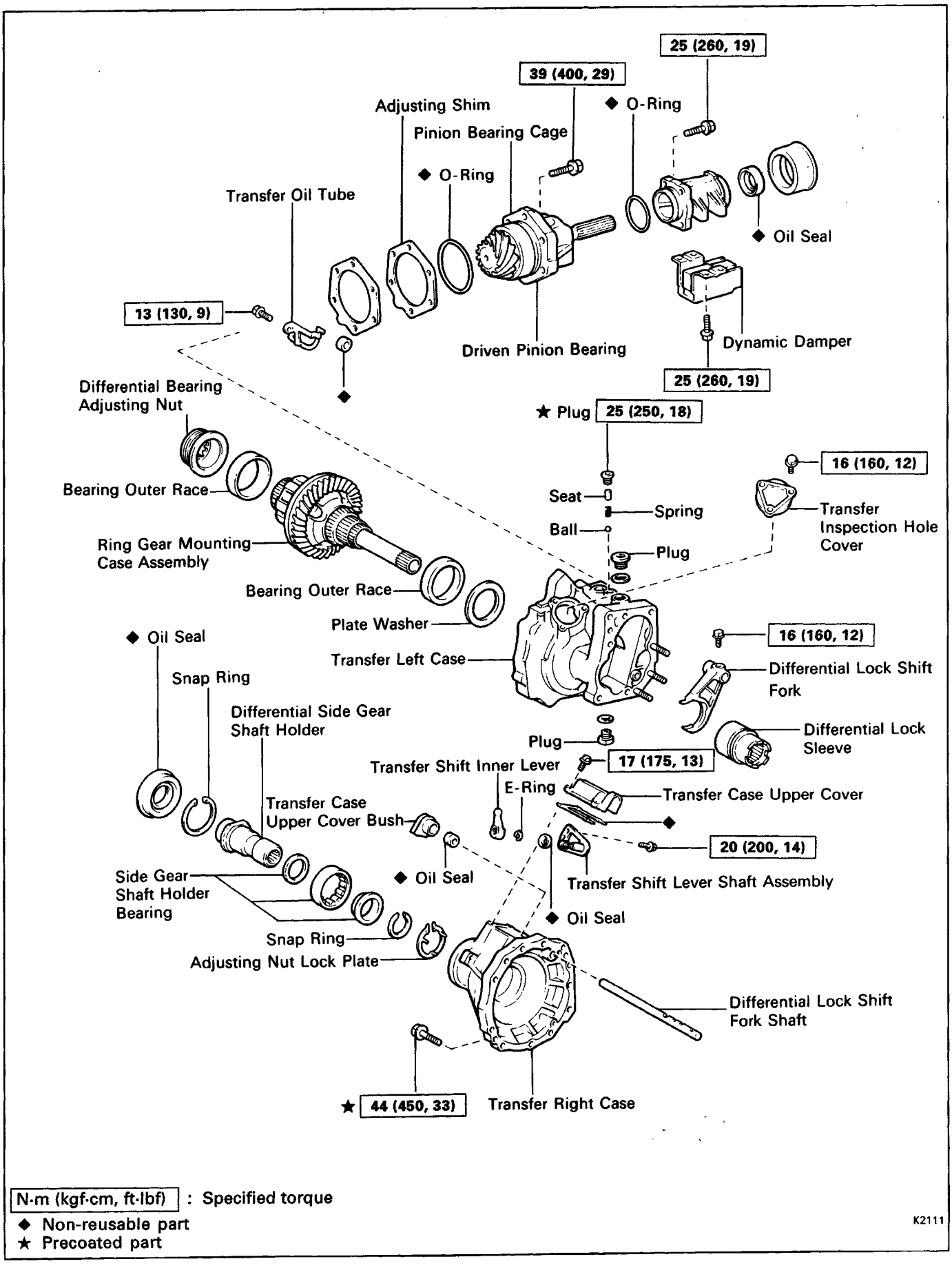




22. REMOVE OUTPUT SHAFT ASSEMBLY

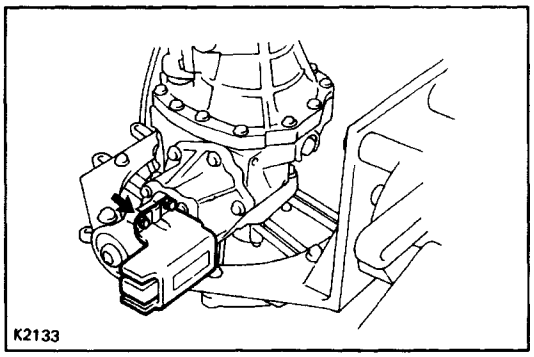
23. REMOVE DIFFERENTIAL CASE ASSEMBLY

Transfer



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

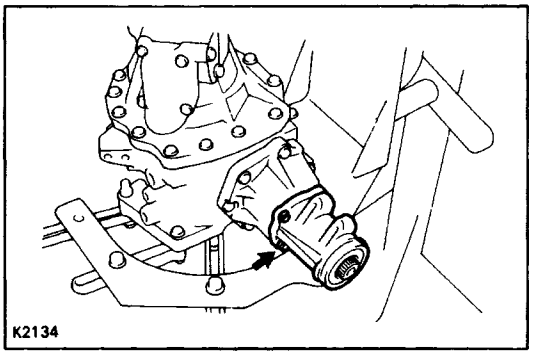
K2111



DISASSEMBLY OF TRANSFER COMPONENT PARTS

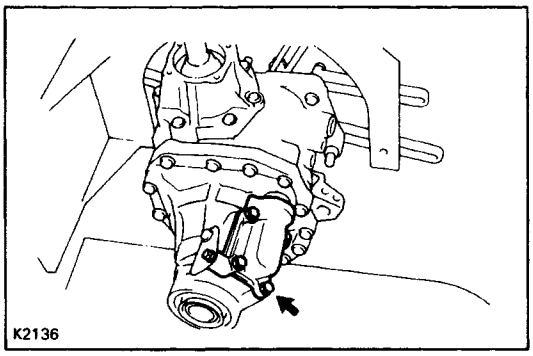
1. REMOVE DYNAMIC DAMPER

Remove the four bolts and dynamic damper.



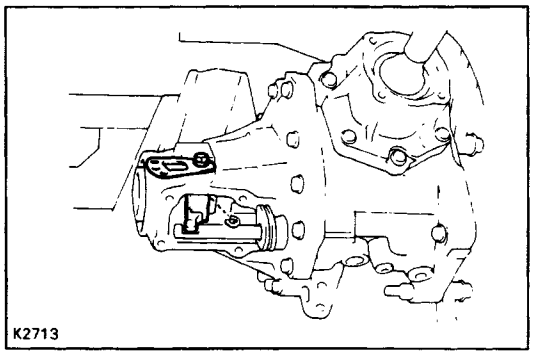
2. REMOVE EXTENSION HOUSING

(a) Remove the four bolts and tap off the housing with a plastic hammer.
(b) Remove the O–ring from the extension housing.



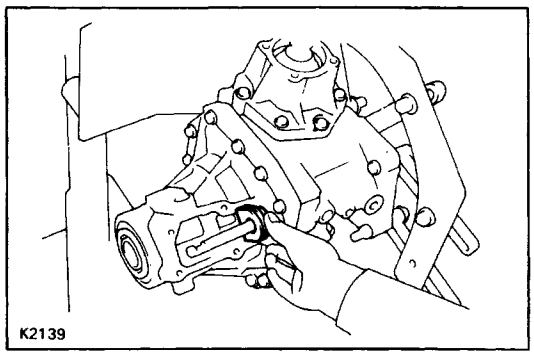
3. REMOVE TRANSFER CASE COVER

(a) Remove the five bolts.
(b) Remove the case cover and gasket.

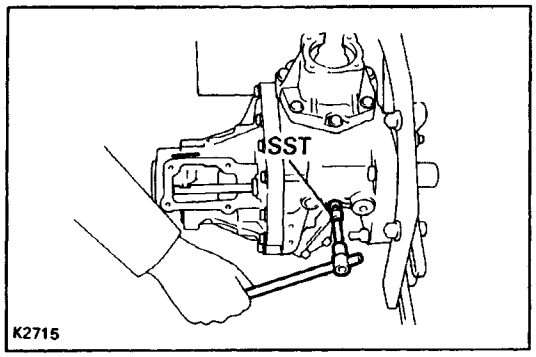


4. REMOVE SHIFT LEVER SHAFT AND INNER LEVER

(a) Remove the E–ring.
(b) Remove the shift lever shaft and inner lever.

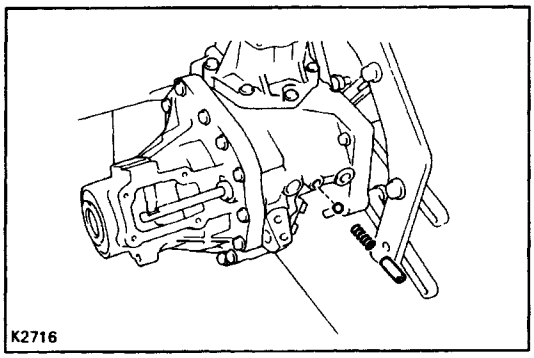


5. REMOVE TRANSFER CASE UPPER BUSHING

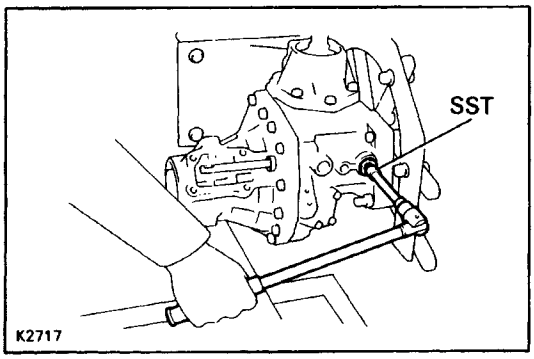


6. REMOVE PLUG, SEAT, SPRING AND LOCKING BALL

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

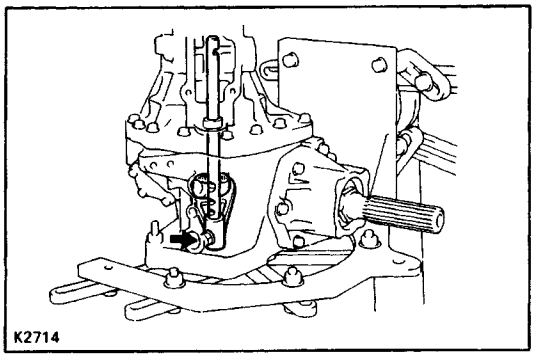


(b) Using a magnetic finger, remove the seat, spring and ball.

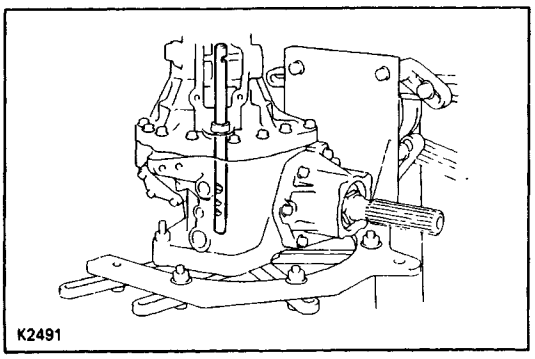


7. REMOVE DIFFERENTIAL LOCK SHIFT FORK AND SHIFT FORK SHAFT

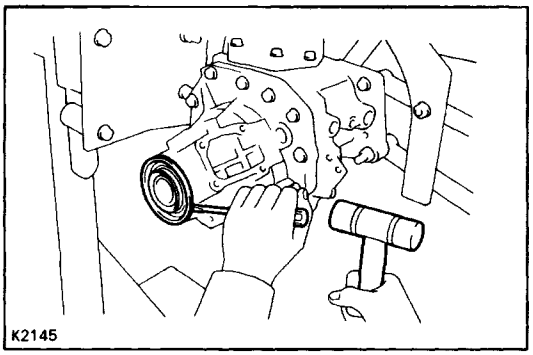
(a) Using SST, remove the plug.
SST 09043–38100



(b) Remove the set bolt.
(c) Remove the differential lock sleeve and shift fork.

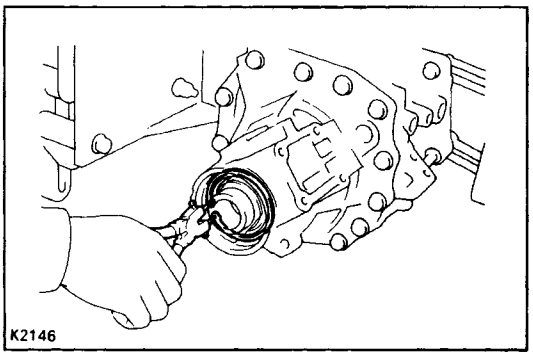


(d) Pull out the shift fork shaft.

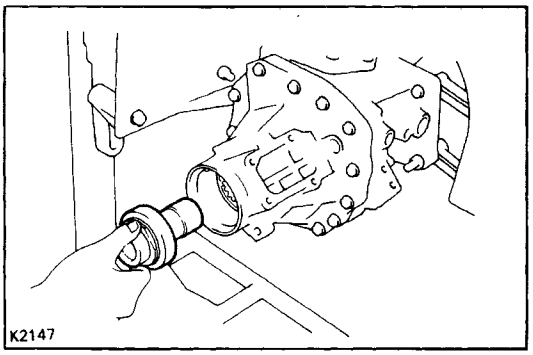


8. REMOVE SIDE GEAR SHAFT HOLDER

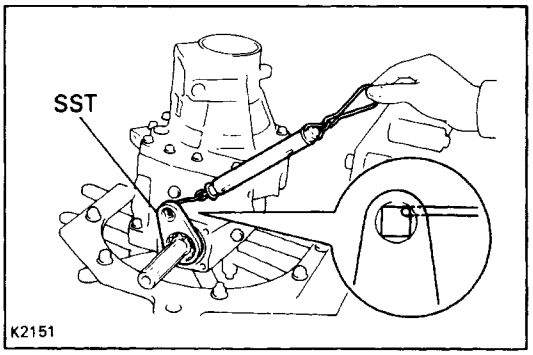
(a) Using a screwdriver and hammer, remove the oil seal.



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



(c) Remove the shaft holder.



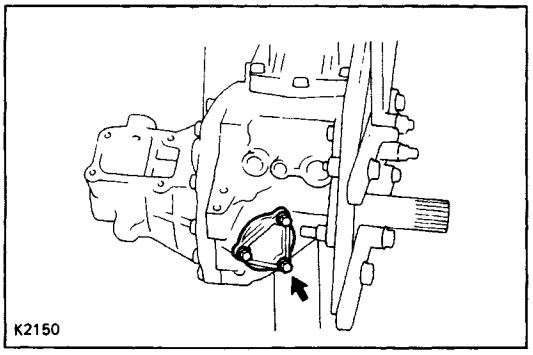
9. CHECK PRELOAD

(a) Using SST and a spring tension gauge, measure the driven pinion preload of the backlash between the driven pinion and ring gear.
SST 09326–20011

Preload (at starting): 9 – 14 N (0.9–1.4kgf,2–31bf)

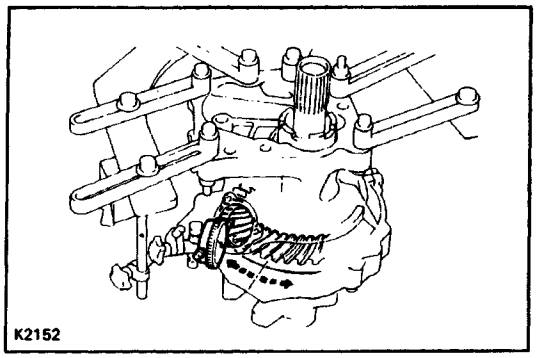
(b) Using SST and a spring tension gauge, measure the total preload.
SST 09326–20011

Total preload (at starting):
Add driven pinion preload
5–9 N (0.5–0.9 kgf,1 –2 lbf)



10. REMOVE TRANSFER INSPECTION HOLE COVER

Remove the three bolts and a cover.

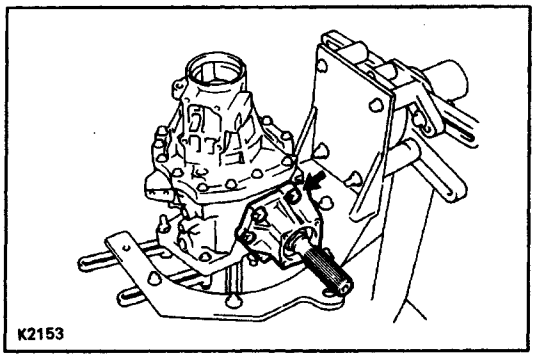


11. CHECK RING GEAR BACKLASH

Using a dial indicator, measure the ring gear backlash.

Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)

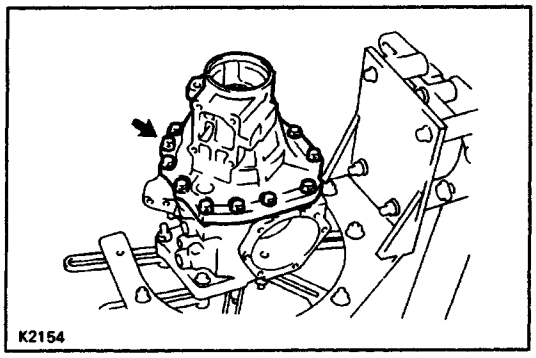
12. CHECK TOOTH CONTACT (See page MT–201)



13. REMOVE DRIVEN PINION BEARING CAGE ASSEMBLY

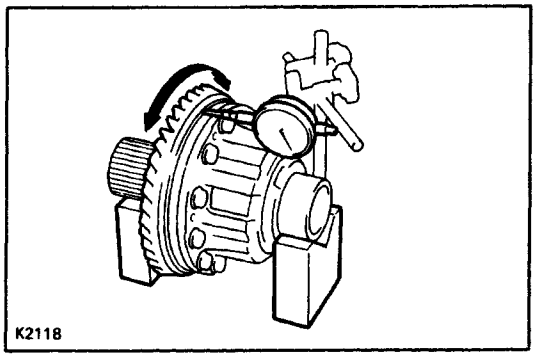
(a) Remove the six bolts and tap off the bearing cage assembly with a plastic hammer.

(b) Remove the O–ring from the driven pinion bearing cage.

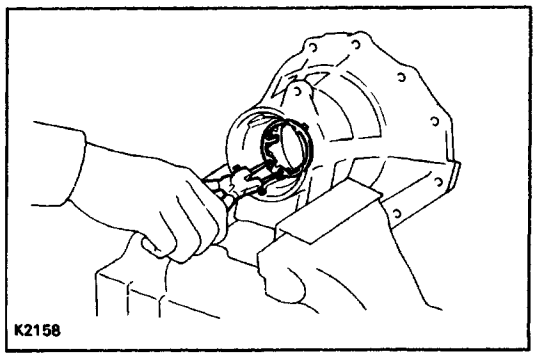


14. REMOVE TRANSFER RIGHT CASE

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



15. REMOVE RING GEAR MOUNTING CASE ASSEMBLY

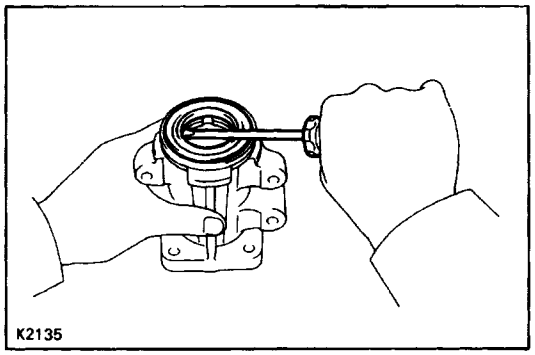


16. REMOVE ADJUSTING NUT LOCK PLATE

Using snap ring pliers, remove the lock plate from the transfer right case.

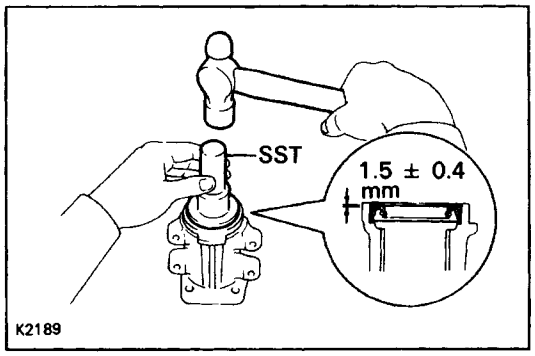
17. IF NECESSARY, REPLACE EXTENSION HOUSING OIL SEAL

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



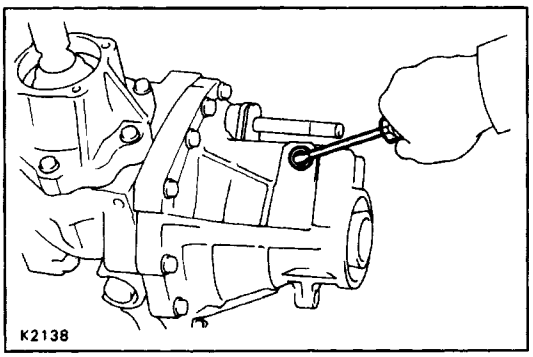
(b) Using SST and a hammer, drive in a new oil seal.
SST 09325–20010
Oil seal depth: 1.1 –1.9 mm (0.043 – 0.075 in.)

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



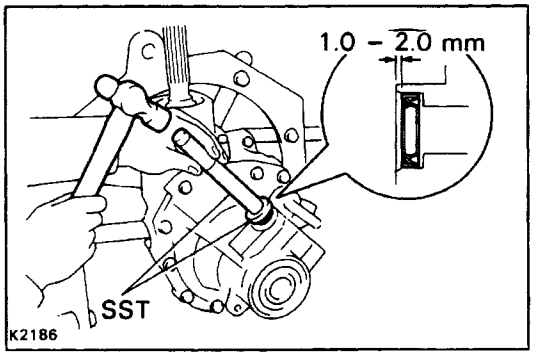
18. IF NECESSARY, REPLACE DIFFERENTIAL LOCK SHIFT LEVER SHAFT OIL SEAL

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



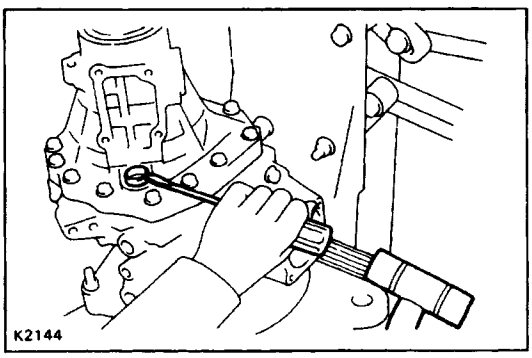
(b) Coat the lip of oil seal with MP grease.

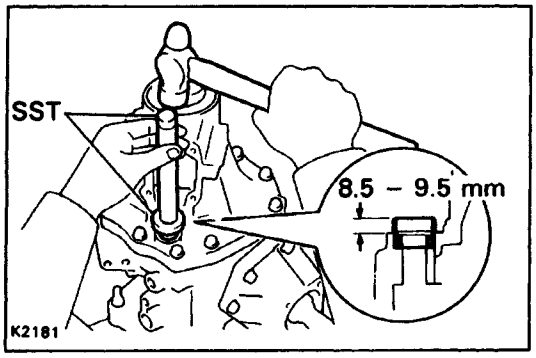
(c) Using SST and a hammer, drive in a new oil seal.
SST 09620–30010 (09625–30010, 09631–00020)
Oil seal depth: 1.0 – 2.0 mm (0.039 – 0.079 in.)



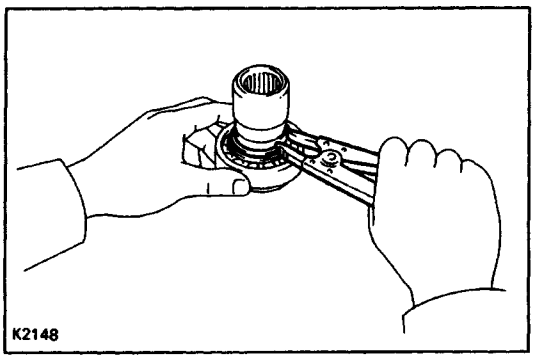
19. IF NECESSARY, REPLACE SHIFT FORK SHAFT OIL SEAL

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

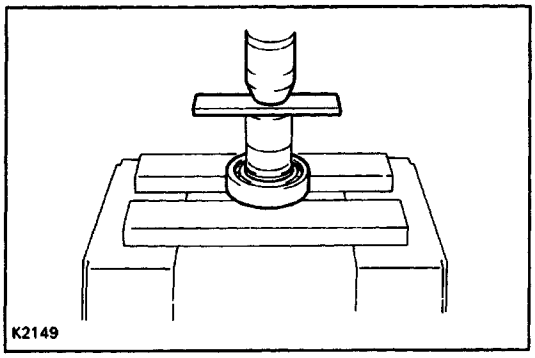




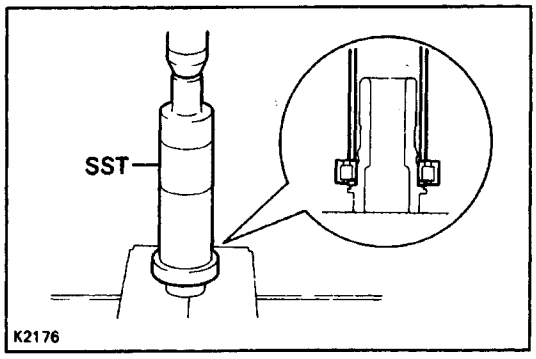
(b) Coat the lip of the oil seal with M P grease.
(c) Using SST and a hammer, drive in a new oil seal as shown.
SST 09620–30010 (09625–30010, 09631–00020)
Oil seal height: 8.5 – 9.5 mm (0.335 – 0.374 in.)



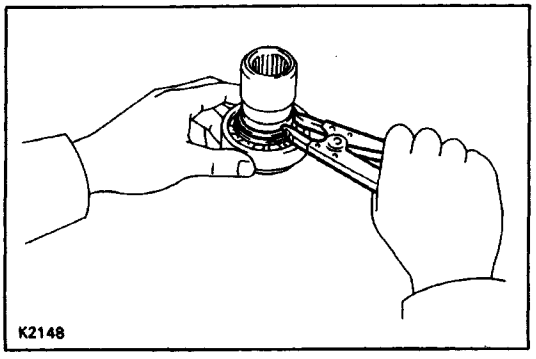
20. IF NECESSARY, REPLACE SIDE GEAR SHAFT HOLDER
BEARING
(a) Using snap ring pliers, remove the snap ring.



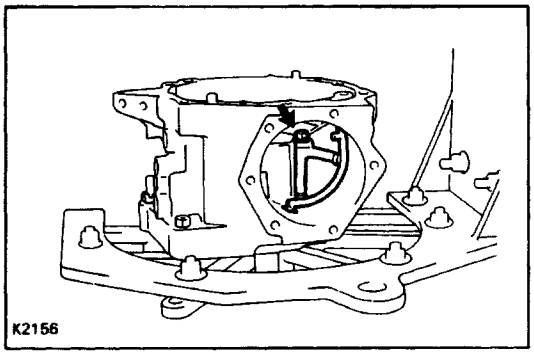
(b) Using a press, remove the bearing from the side gear shaft holder.



(c) Using SST and a press, install a new bearing as shown.
SST 09316–60010 (09316–00010)

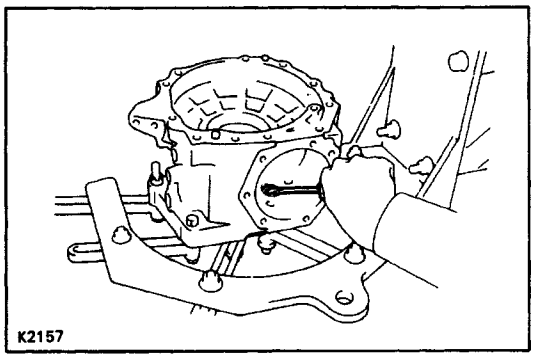


(d) Using snap ring pliers, install the snap ring.

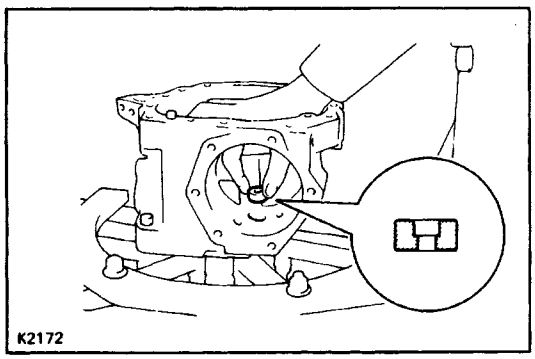


21. IF NECESSARY, REPLACE TRANSFER OIL TUBE

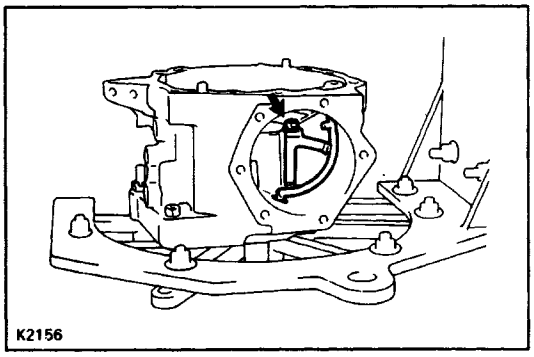
(a) Remove the bolt and oil tube.



(b) Using a screwdriver, remove the cushion.



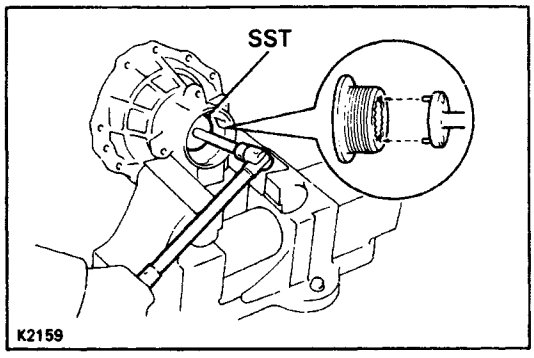
(c) Install a new cushion.



(d) install the oil tube.

(e) Install and torque the bolt.

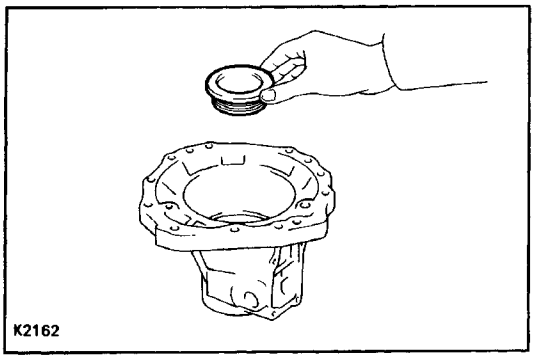
Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)



22. IF NECESSARY, REPLACE RING GEAR MOUNTING CASE SIDE BEARING OUTER RACE (Transfer Right Case)

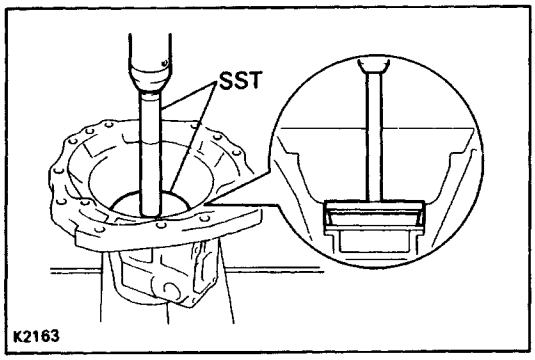
(a) Using SST, turn the bearing adjusting nut, remove the outer race and bearing adjusting nut.

SST 09318–20010


K2162

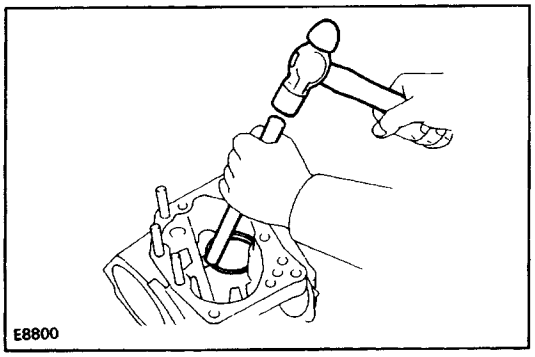
(b) Install the bearing adjusting nut until it touches the lip of the case.

HINT: If the nut is difficult to turn, use SST (09318–20010)



K2163

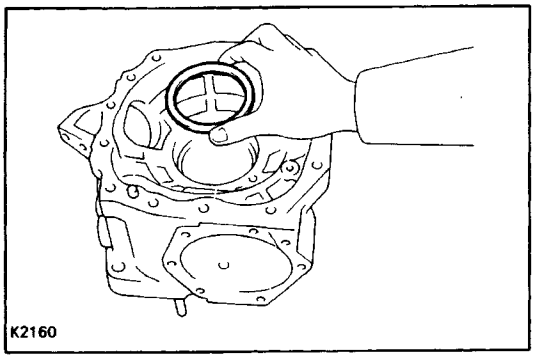
(c) Using SST and .q press, install the bearing outer race until it is almost touching the bearing adjusting nut.
SST 09608–35014 (09608–06020, 09608–06180)


E8800

(Transfer Left Case)

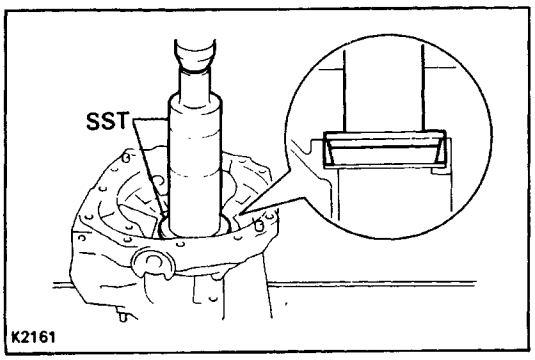
(a) Using a brass bar and hammer, drive out the bearing
outer race lightly and evenly.

(b) Remove the plate washer.


K2160

(c) Install the plate washer.

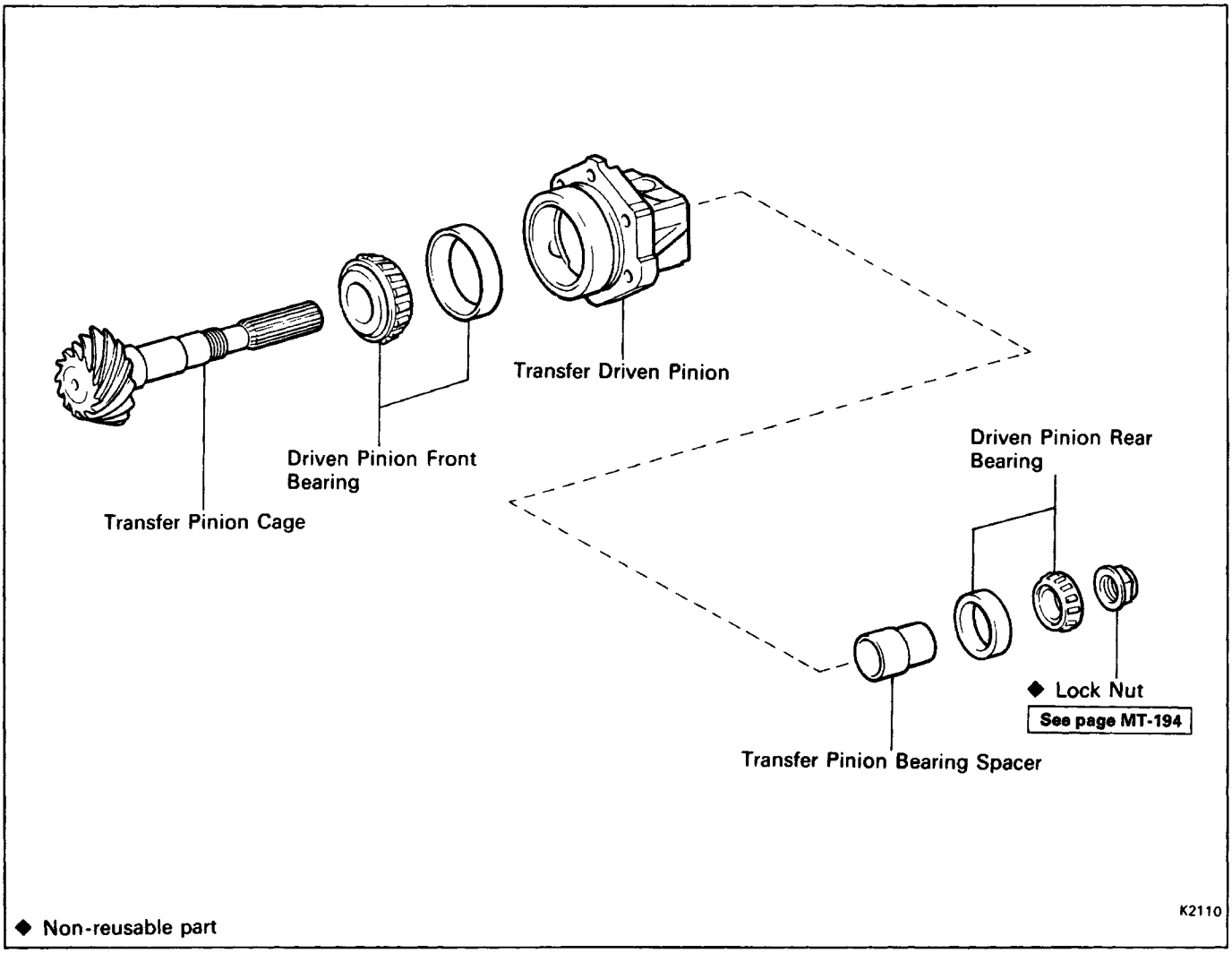
HINT: First install a washer of the same thickness as before.



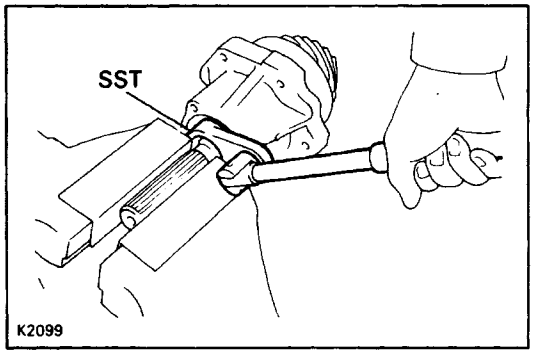
K2161

(d) Using SST and a press, install the outer race.
SST 09316–60010 (09316–00010, 09316–00060)

DRIVEN PINION BEARING CAGE ASSEMBLY



◆ Non-reusable part



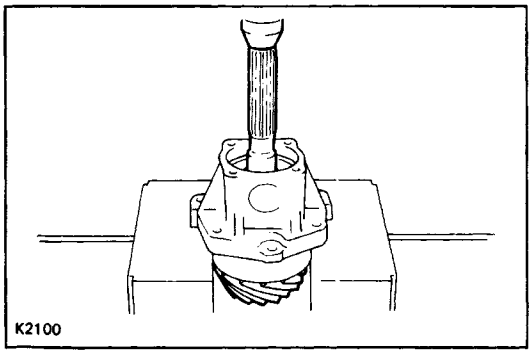
DISASSEMBLY OF DRIVEN PINION BEARING CAGE

1. REMOVE LOCK NUT

(a) Unstake the lock nut.

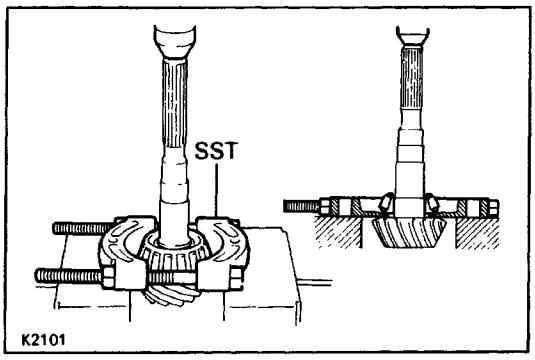
(b) Using SST, remove the lock nut.

SST 09326–20011



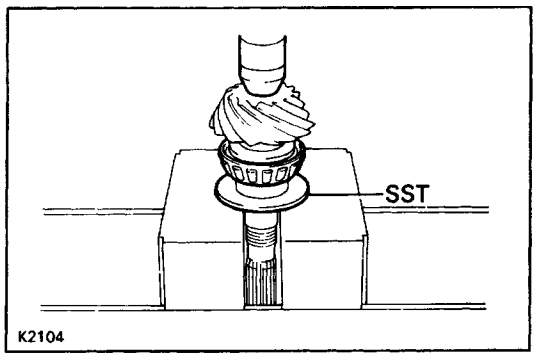
2. REMOVE DRIVEN PINION

Using a press, remove the driven pinion, rear bearing and spacer.

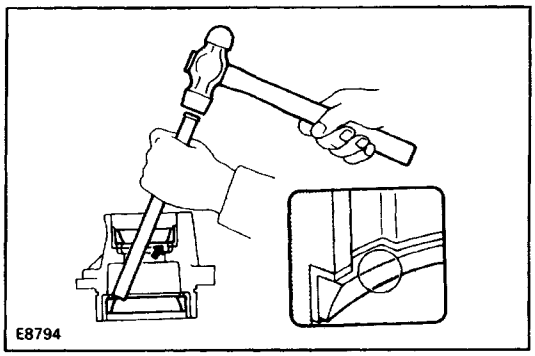


3. IF NECESSARY, REPLACE DRIVEN PINION FRONT BEARING

(a) Using SST and a press, remove the front bearing.
SST 09950–00020

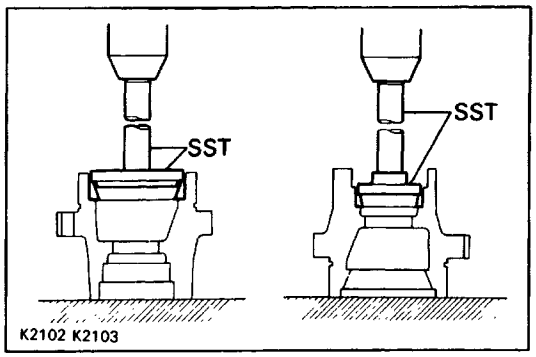


(b) Using SST and a press, install the front bearing.
SST 09316–60010 (09316–00050)



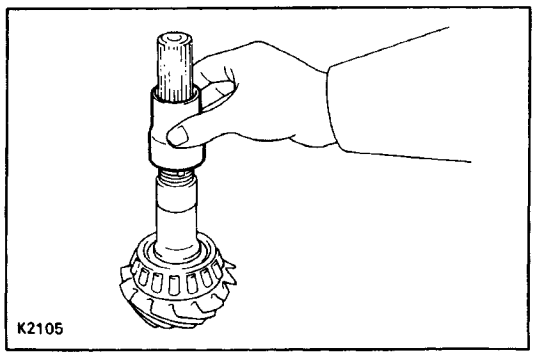
4. IF NECESSARY, REPLACE FRONT AND REAR BEARING OUTER RACE

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



(b) Using SST and a press, install the front bearing outer race.
SST 09608–35014 (09608–06020, 09608–06120)

(c) Using SST and a press, install the rear bearing outer race.
SST 09550–10012 (09252–10010, 09555–10010)



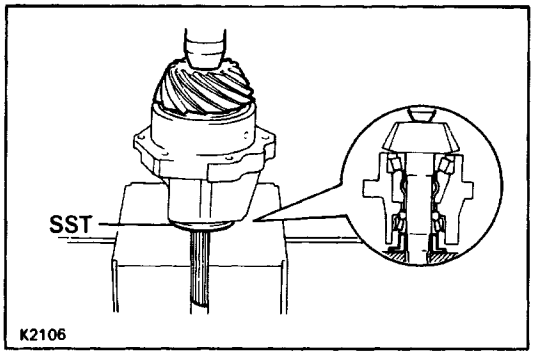
ASSEMBLY OF DRIVEN PINION BEARING CAGE

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

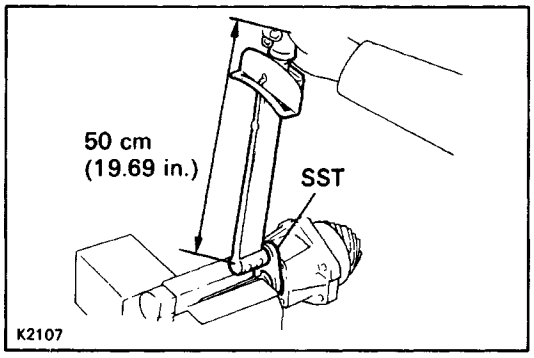
1. INSTALL DRIVEN PINION BEARING CAGE

(a) Install the new bearing spacer.

HINT: Insert the spacer with the smaller facing upwards.

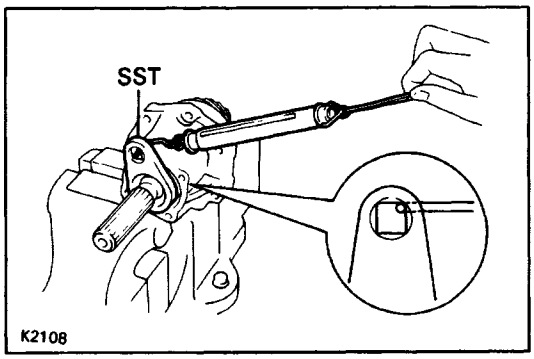


(b) Using SST and a press, install the rear bearing.
HINT: Press down until the pinion can just move slightly up and down.



2. ADJUST DRIVEN PINION PRELOAD

(a) Using SST, install and torque the new lock nut.
SST 09326–20011
Torque: 98 N–m (1,000 kgf–cm, 72 ft–lbf)
HINT: Use a torque wrench with a fulcrum length of 50 cm (19.69 in.).



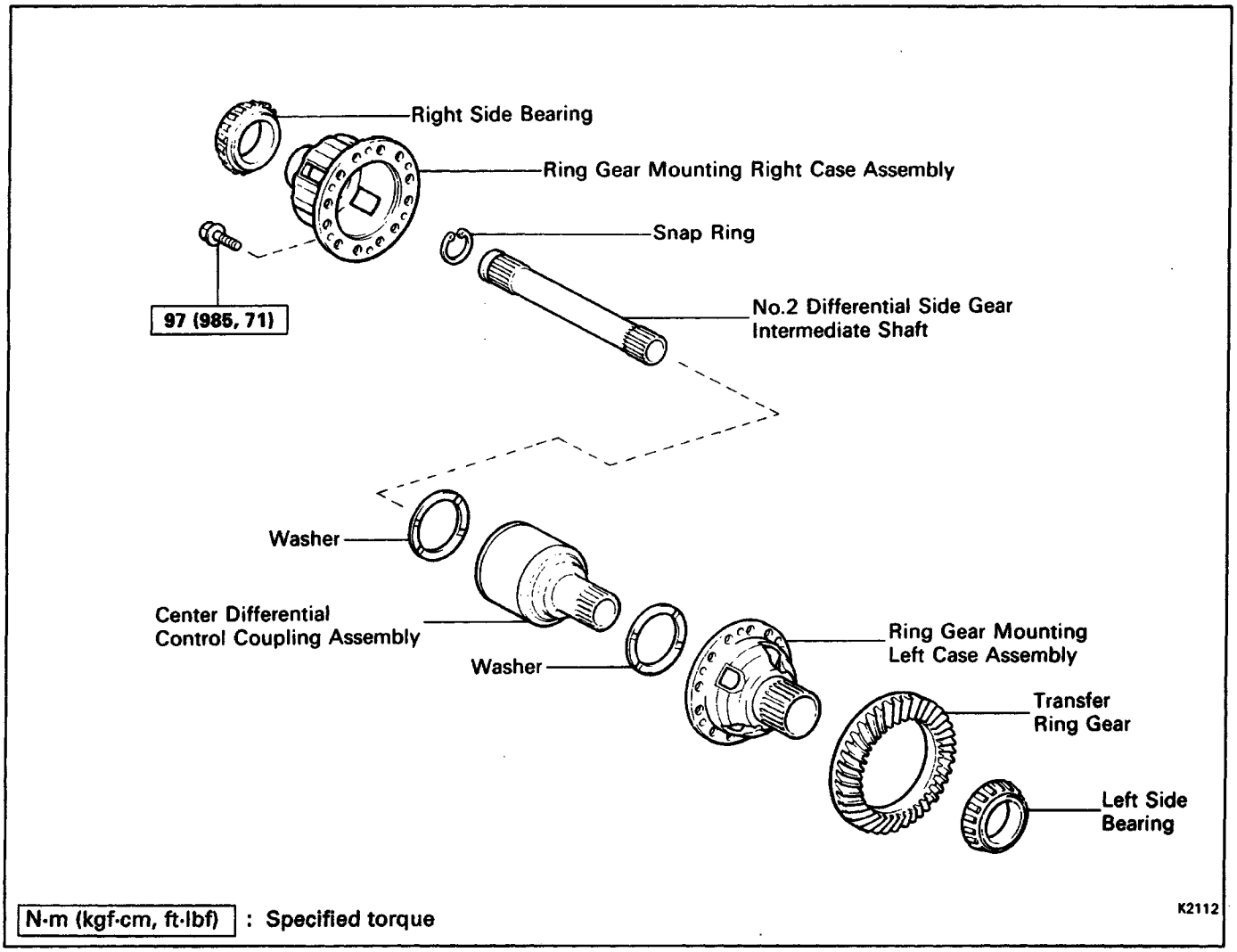
(b) Using SST and spring tension gauge, measure the driven pinion preload.
HINT: Turn the driven pinion right and left two or three times to allow the bearing to settle.
Preload (at starting):
New bearing 17.7 – 28.4 N
(1.8–2.9 kgf, 4.0–6.41bf)
Reused bearing 4.9 – 8.8 N
(0.9 – 1.4 kgf, 1.1 – 2.0 lbf)

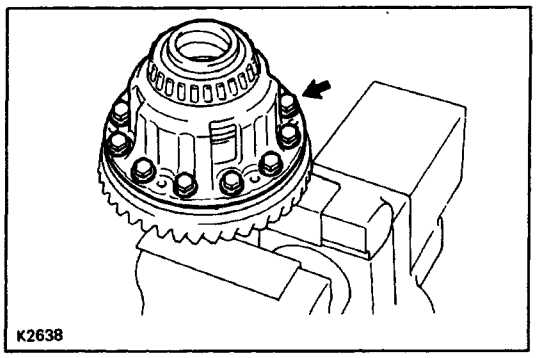
- If preload is greater than specification, replace the bearing spacer.
- If preload is less than specification, retighten the nut 5 – 10° at a time until the specified preload is reached. If the maximum torque is exceed while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

Maximum torque: 216 N–m (2,200 kgf–cm, 159 ft–lbf)

3. STAKE LOCK NUT

RING GEAR MOUNTING CASE ASSEMBLY

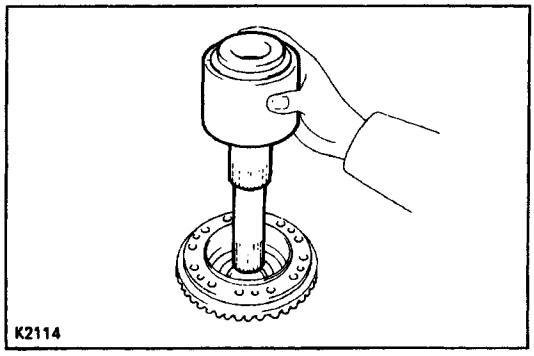




DISASSEMBLY OF RING GEAR MOUNTING CASE

1. REMOVE RING GEAR MOUNTING RIGHT CASE

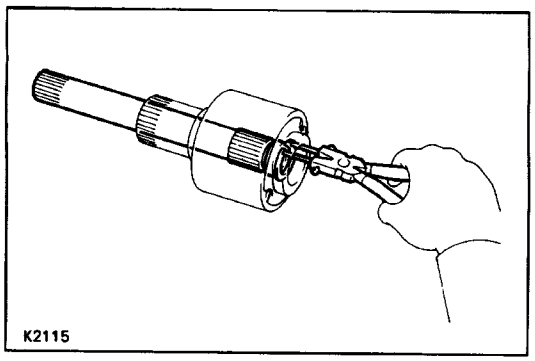
Remove twelve bolts and right case.



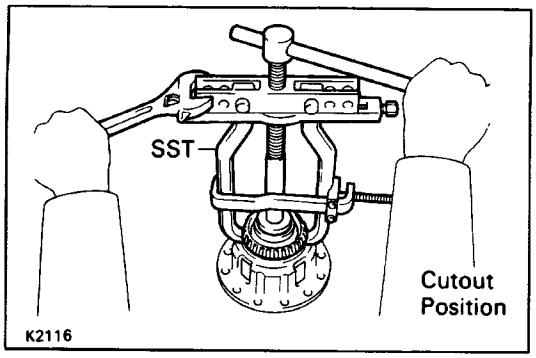
2. REMOVE CENTER DIFFERENTIAL CONTROL COUPLING

(a) Remove the control coupling form the left case.

(b) Remove the two washers from the control coupling.

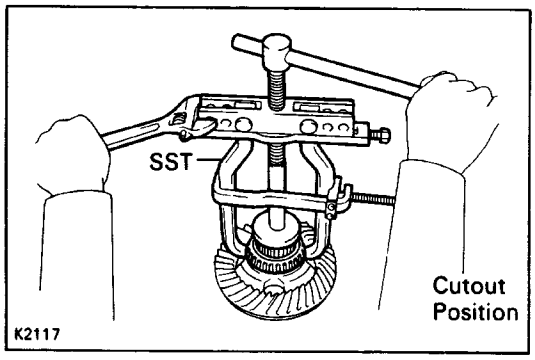


(c) Using snap ring pliers, remove the snap ring and No.2 intermediate shaft.



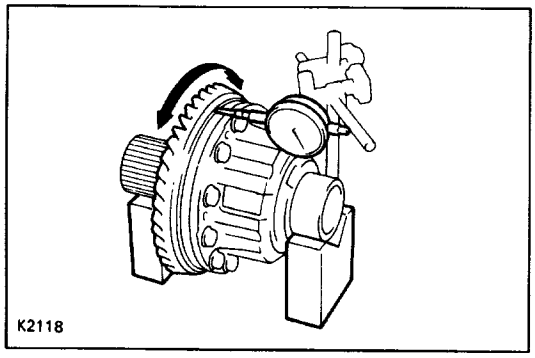
3. REMOVE MOUNTING CASE SIDE BEARING (Right Case Side)

Using SST, remove the side bearing.
SST 09950–20017



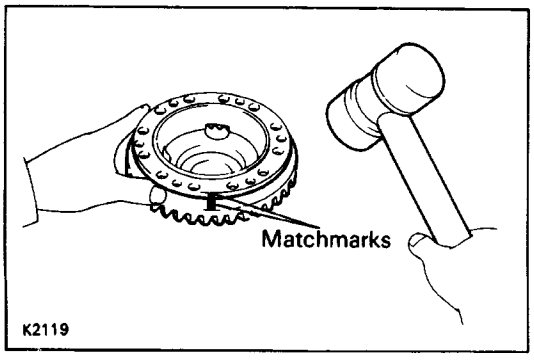
(Left Case Side)

Using SST, remove the side bearing.
SST 09950–20017



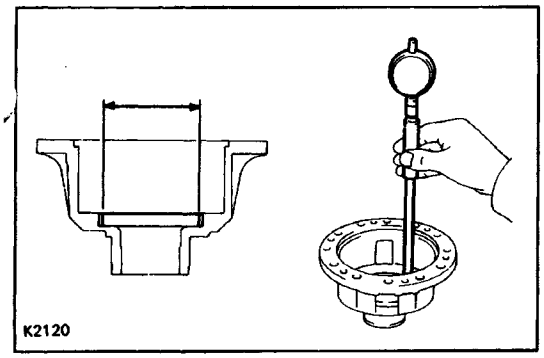
4. CHECK RING GEAR RUNOUT

(a) Install the mounting right case to the left case.
(b) Using a dial indicator, check the ring gear runout.
Maximum runout: 0.1 mm (0.004 in.)
(c) Remove the mounting right case from the left case.



5. REMOVE RING GEAR

(a) Place the matchmarks on both the mounting left case and ring gear.
(b) Using a plastic hammer, tap out the ring gear.



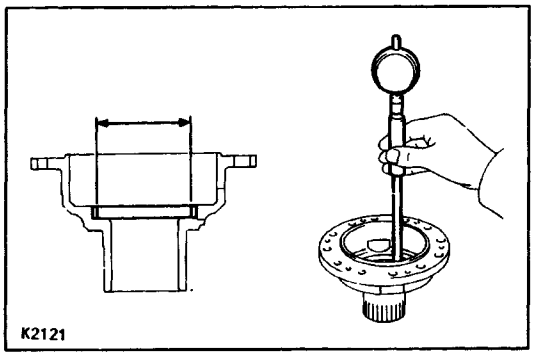
INSPECTION OF RING GEAR MOUNTING CASE

1. MEASURE RING GEAR MOUNTING CASE

(a) Using a cylinder gauge, measure the inner diameter of the mounting right case bushing.

Standard diameter: 69.000 – 69.035 mm (2.7165 – 2.7179 in.)

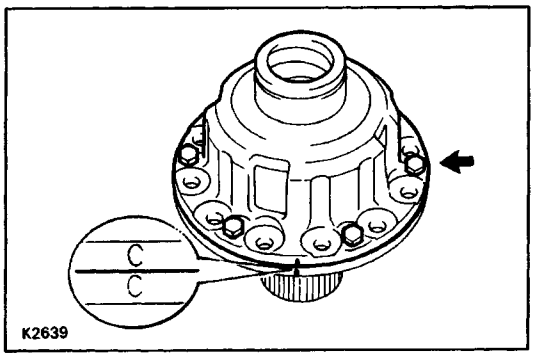
Maximum diameter: 69.060 mm (2.7189 in.)



(b) Using a cylinder gauge, measure the inner diameter of the mounting left case bushing.

Standard diameter: 69.000 – 69.035 mm (2.7165 – 2.7179 in.)

Maximum diameter: 69.060 mm (2.7189 in.)

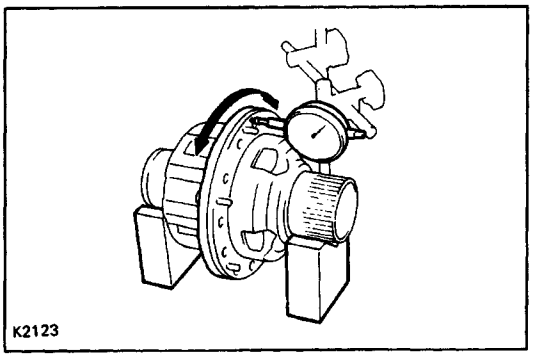


2. CHECK RING GEAR MOUNTING CASE RUNOUT

HINT: Perform only when the limit is exceeded in the ring gear runout inspection.

(a) Using six bolts (Diameter 8 mm, Pitch 1.25 mm), install the mounting right case to the left case.

HINT: Align the matchmarks on the right case and connect the left case.

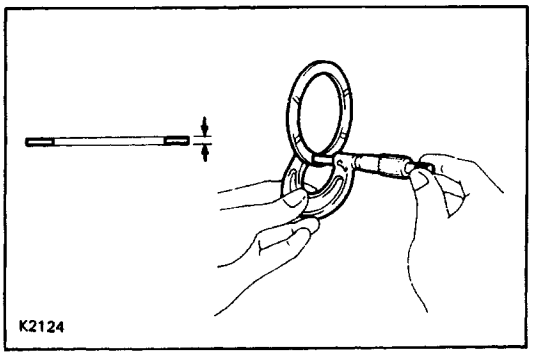


(b) Using a dial indicator, check the mounting case runout.

Maximum runout: 0.1 mm (0.004 in.)

(c) Remove the six bolts.

(d) Remove the mounting right case from the left case.

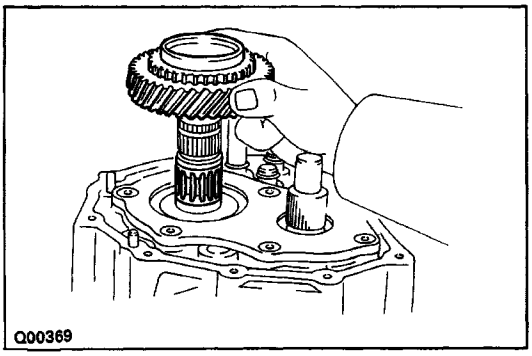


3. MEASURE WASHER

Using a micrometer, measure the two washers thickness.

Standard thickness: 1.49 – 1.51 mm (0.0587 – 0.0594 in.)

Minimum thickness: 1.45 mm (0.0571 in.)


Q00369

ASSEMBLY OF RING GEAR MOUNTING CASE

1. INSTALL RING GEAR ON DIFFERENTIAL CASE

(a) Clean the contact surface of the differential case.

(b) Heat the ring gear in boiling water.

(e) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

HINT: Align the matchmarks on the mounting left case and connect the ring gear.

2. CHECK RING GEAR RUNOUT

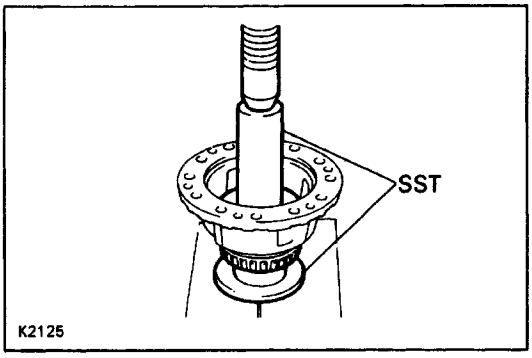
(See page MT–196)

3. INSTALL MOUNTING CASE SIDE BEARING

(Right Case Side)

Using SST and a press, install the side bearing.

SST 09309–36010, 09316–20011

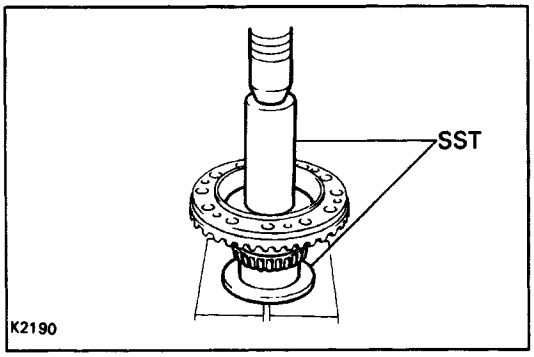


K2125

(left Case Side)

Using SST and a press, install the side bearing.

SST 09309–36010, 09316–20011

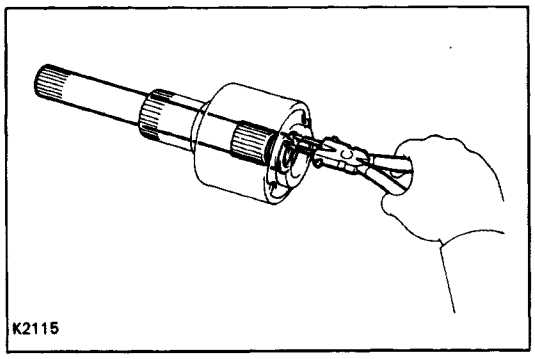


K2190

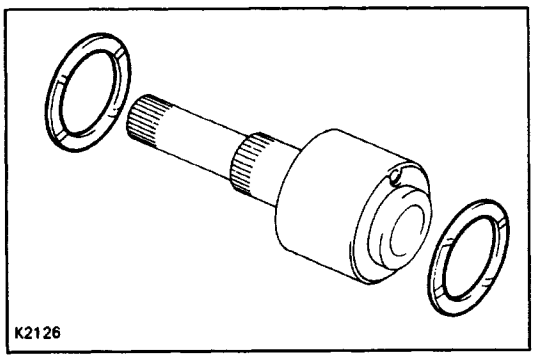
4. INSTALL CENTER DIFFERENTIAL CONTROL COUPLING

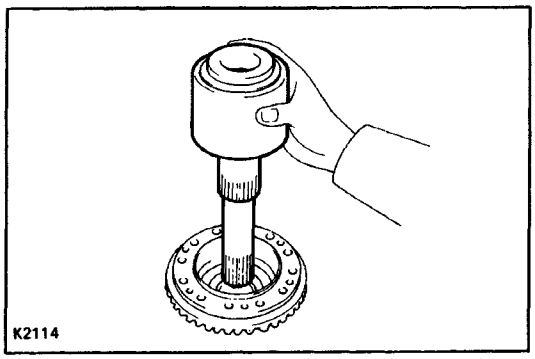
(a) Install the No.2 intermediate shaft to the center differential control coupling.

(b) Using snap ring pliers, install the snap ring.


K2115

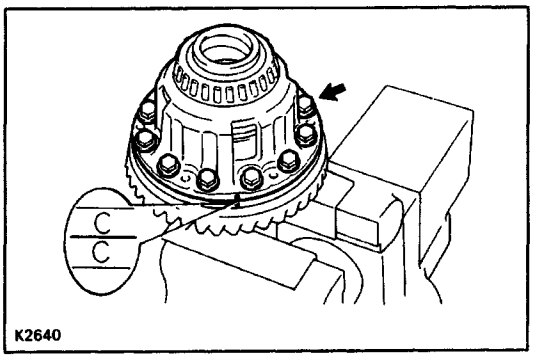
(c) Install the two washers to the center differential control coupling.


K2126



(d) Install the center differential control coupling to the left case.

HINT: Do not drop the washer.



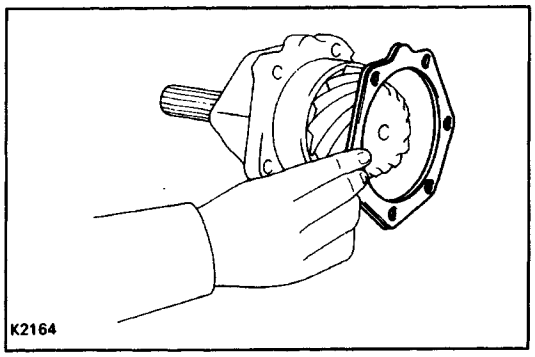
5. INSTALL RING GEAR MOUNTING RIGHT CASE

(a) Install the right case to the left case.

(b) Install and torque the twelve bolts.

Torque: 97 N–m (985 kgf–cm, 71 ft–lbf)

HINT: Align the matchmarks on the left case and connect the right case.



ASSEMBLY OF TRANSFER COMPONENT PARTS

(See page MT–183)

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

1. ADJUST RING GEAR BACKLASH

(a) Install the adjusting shim to the driven pinion bearing cage assembly.

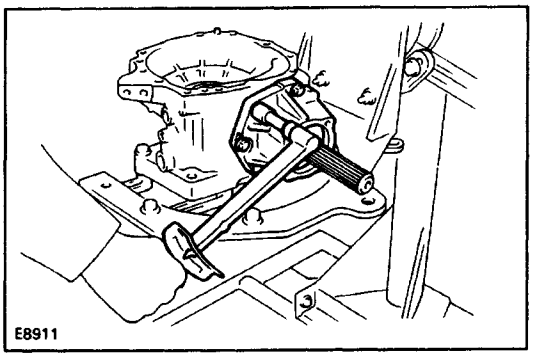
HINT: First install a shim of the same thickness as before.

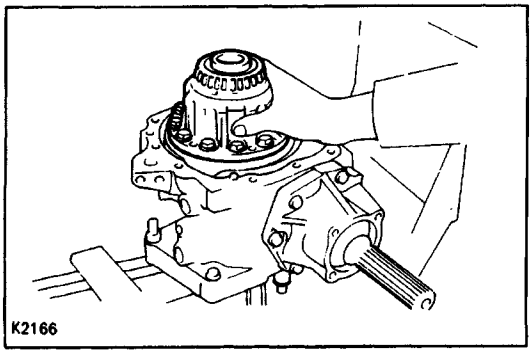
(b) Install the driven pinion bearing cage assembly to the transfer left case.

(c) Install and torque the six bolts.

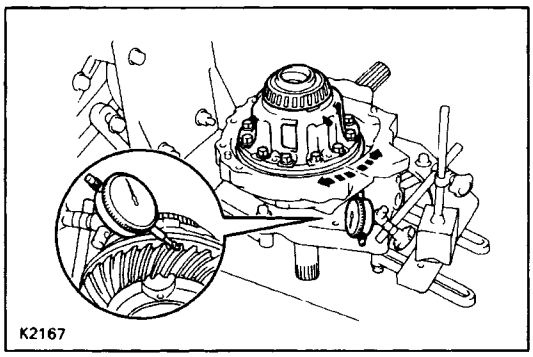
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)

HINT: Do not install the 0–ring.



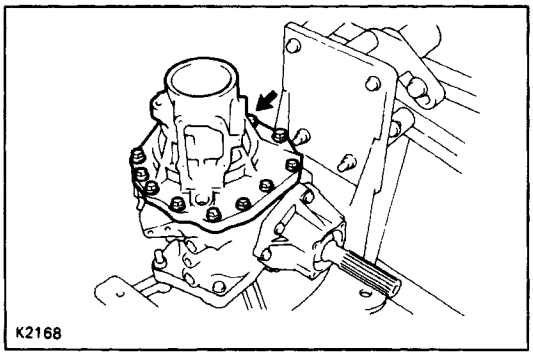


(d) Install the ring gear mounting case assembly to the transfer left case.

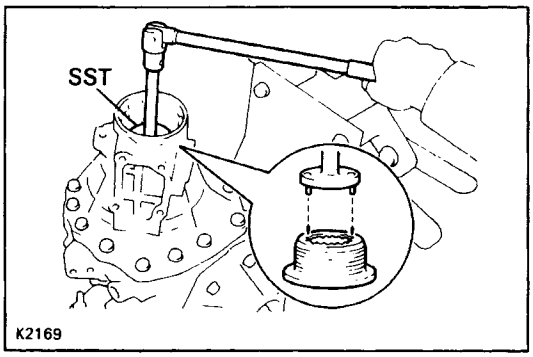


(e) Using a dial indicator, measure the ring gear backlash.
Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)
(f) Referring to the table below, select the plate washer which will ensure that the backlash is within specification. Try to select a washer of the same size.
HINT: The backlash will change about 0.02 mm (0.0008 in.) with each shim thickness.

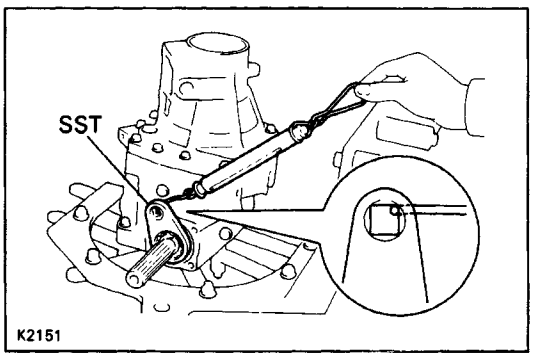
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
1	2.13 (0.0839)	13	2.49 (0.0980)
2	2.16 (0.0850)	14	2.52 (0.0992)
3	2.19 (0.0862)	15	2.55 (0.1004)
4	2.22 (0.0874)	16	2.58 (0.1016)
5	2.25 (0.0886)	17	2.61 (0.1028)
6	2.28 (0.0898)	18	2.64 (0.1039)
7	2.31 (0.0909)	19	2.67 (0.1051)
8	2.34 (0.0921)	20	2.70 (0.1063)
9	2.37 (0.0933)	21	2.73 (0.1075)
10	2.40 (0.0945)	22	2.76 (0.1087)
11	2.43 (0.0957)	23	2.79 (0.1098)
12	2.46 (0.0968)	24	2.82 (0.1110)



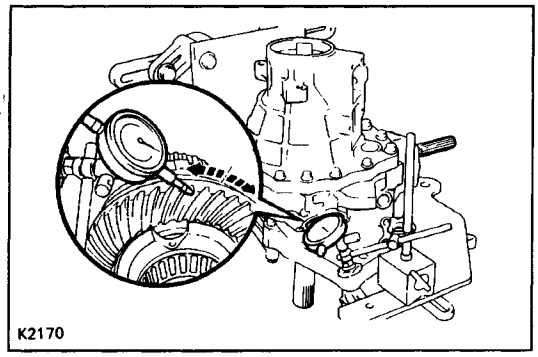
2. ADJUST TOTAL PRELOAD
(a) Install the transfer right case.
(b) Install and torque the twelve bolts.
Torque: 44 N–m (450 kgf–cm, 33 ft–lbf)



(c) Adjust the total preload by tightening the bearing adjusting nut.
Using SST, tightening the adjusting nut.
SST 09318–20010
HINT: Measure the preload while tightening the adjusting nut a little at a time.
(d) Using SST and a spring tension gauge, measure the
total preload.
SST 09326–20011
Preload (at starting):
New bearing
Add driven pinion preload 13 – 14 N
(1.3 – 1.4 kgf,
2.9 – 3.1 lbf)
Reused bearing
Add driven pinion preload 5 – 9 N
(0.5 – 0.9 kgf,
1 – 2 lbf)



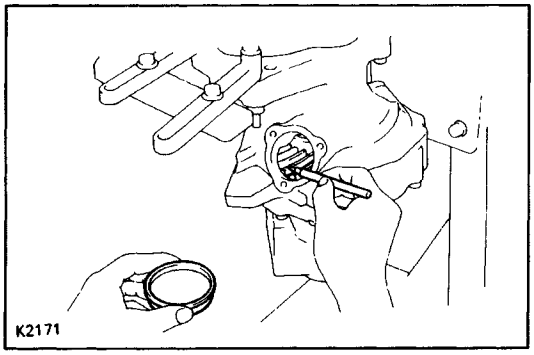
HINT: Turn the output shaft counterclockwise and clockwise several times.
(e) When the standard value for total preload is exceeded, remove the transfer right case, push in the adjusting nut and outer race. Again adjust the total



3. CHECK RING GEAR BACKLASH

(a) Using a dial indicator, measure the ring gear backlash.
Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)

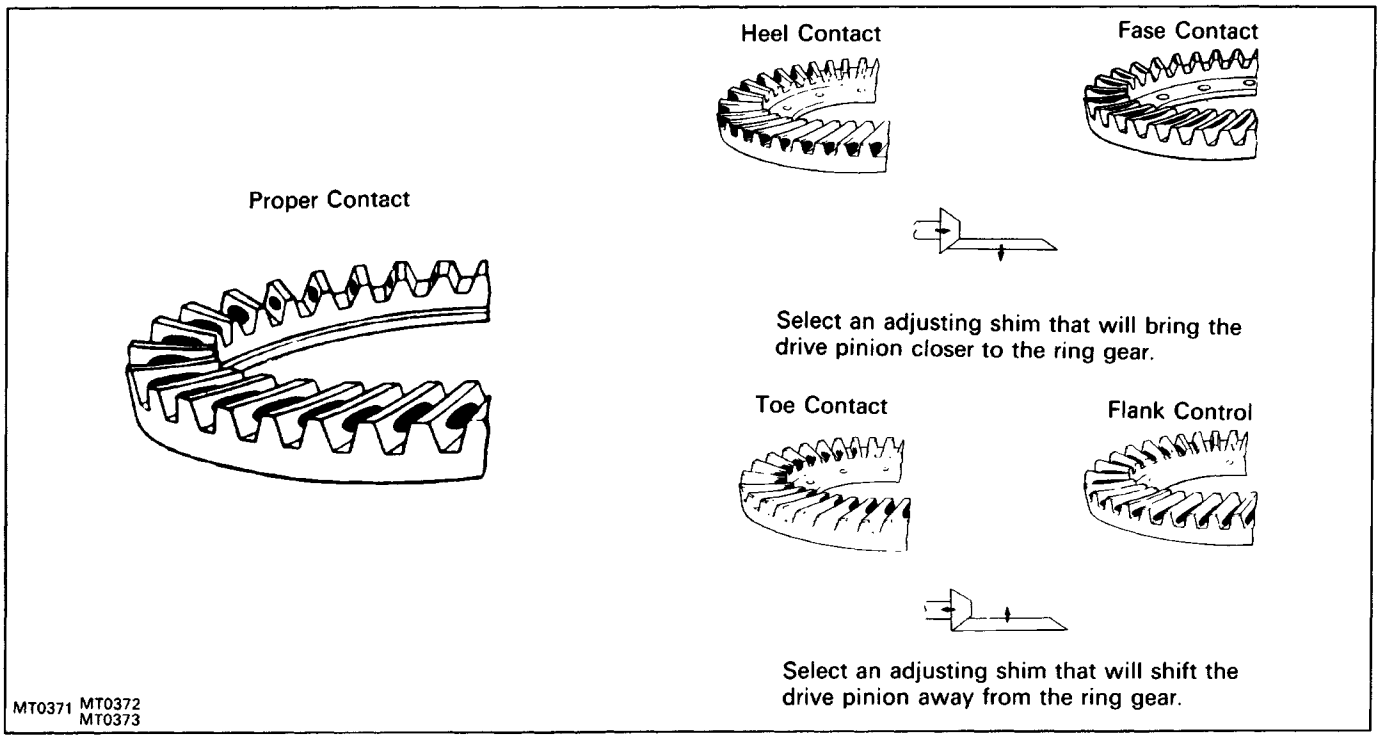
(b) When the backlash is outside the standard value, select a different plate washer to the one selected step 2. Again adjust the backlash and total preload.



4. CHECK TOOTH CONTACT

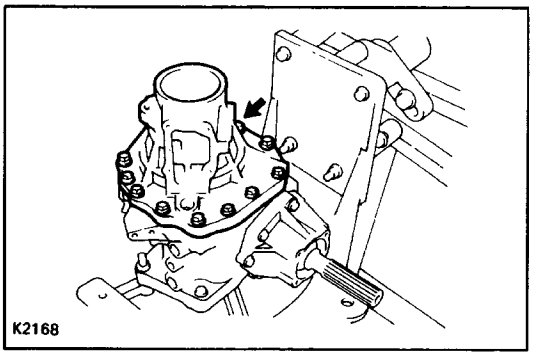
(a) Coat 3 or 4 teeth at four different position on the ring gear with red lead.

(b) Rotate the ring gear, inspect the teeth pattern.



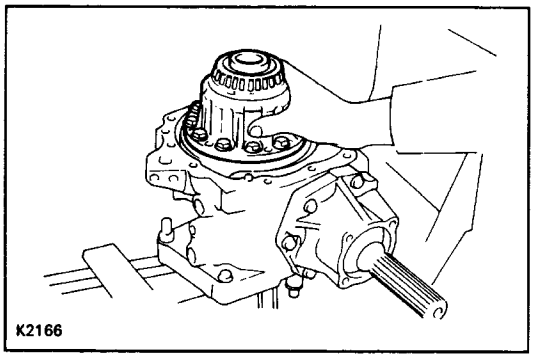
(c) If the teeth are not contacting properly, again select the proper shim and plate.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	0.30 (0.0118)	F	0.45 (0.0177)
B	0.33 (0.0130)	G	0.48 (0.0189)
C	0.36 (0.0142)	H	0.51 (0.0201)
D	0.39 (0.0154)	J	0.54 (0.0213)
E	0.42 (0.0165)	K	0.57 (0.0224)

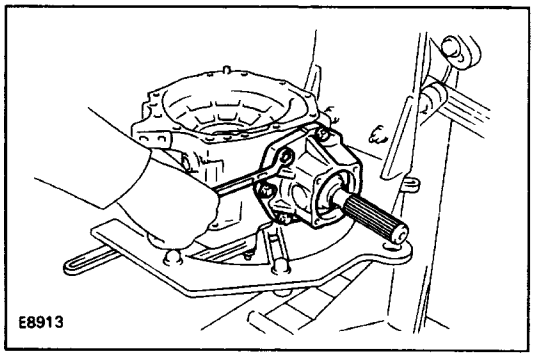


5. REMOVE RING GEAR MOUNTING CASE ASSEMBLY

(a) Remove the twelve bolts and transfer right case.

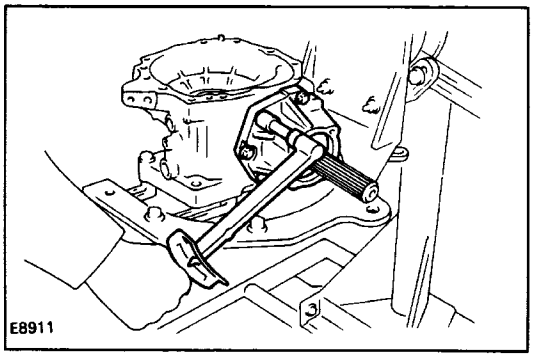


(b) Remove the ring gear mounting case assembly.



6. REMOVE DRIVEN PINION BEARING CAGE ASSEMBLY

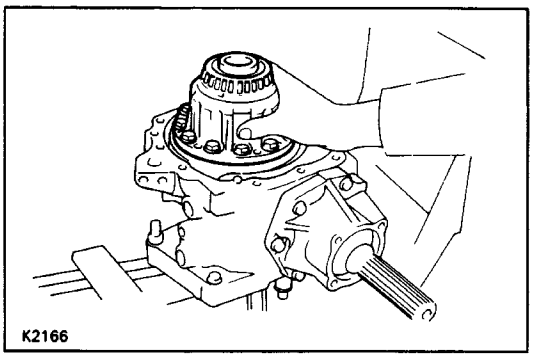
Remove the six bolts and bearing cage assembly.



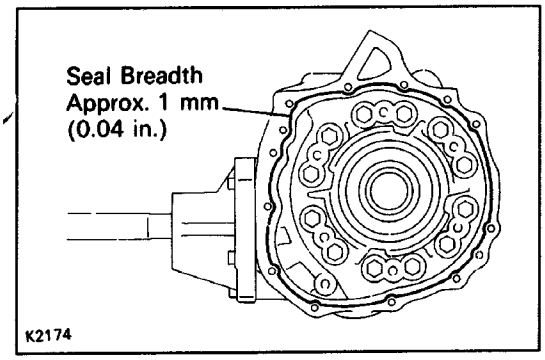
7. INSTALL DRIVEN PINION BEARING CAGE ASSEMBLY

(a) Coat the 0–ring with gear oil.
(b) Install the 0–ring to the driven pinion bearing cage.
(c) Install the driven pinion bearing cage with the adjusting shim (previously selected) to the transfer left case.
(d) Install and torque the six bolts.

Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)



8. INSTALL RING GEAR MOUNTING CASE ASSEMBLY



9. INSTALL TRANSFER RIGHT CASE

(a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transfer left case or right case.

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

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

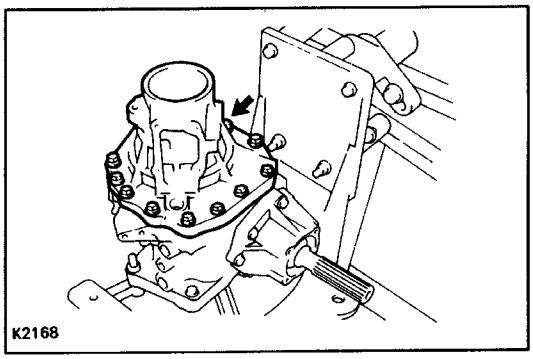
HINT: Install the transfer right case as soon as the seal packing is applied.

(c) Apply sealant to the bolt threads.

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

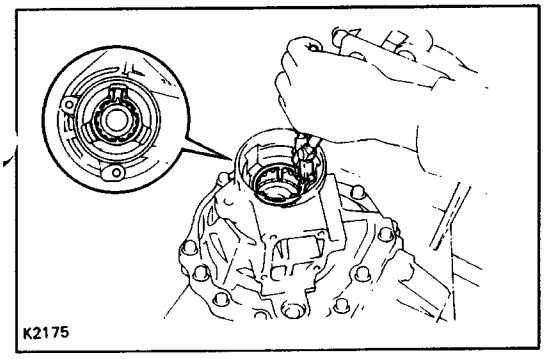
(d) Install and torque the twelve bolts.

Torque: 44 N–m (450 kgf–cm, 33 ft–lbf)



10. CHECK TOTAL PRELOAD

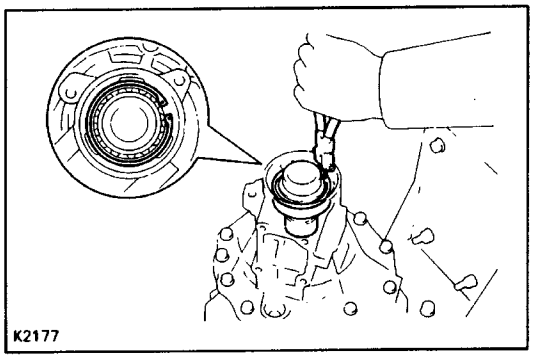
(See page MT–200)



11. INSTALL ADJUSTING NUT LOCK PLATE

Using snap ring pliers, install the lock plate so that the projection from the lock plate fits properly into the groove of the adjusting nut.

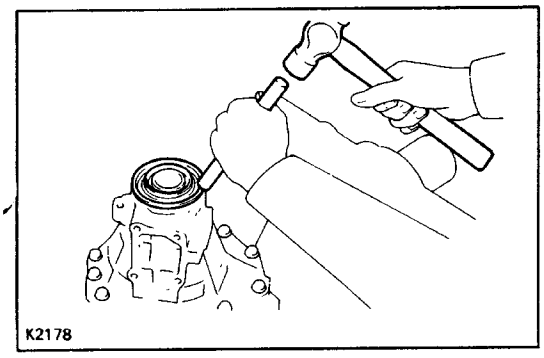
HINT: Choose one of the two types of lock plate can be installed, tighten the adjusting nut to the minimum limit.



12. INSTALL SIDE GEAR SHAFT HOLDER

(a) Install the side gear shaft holder to the transfer right case.

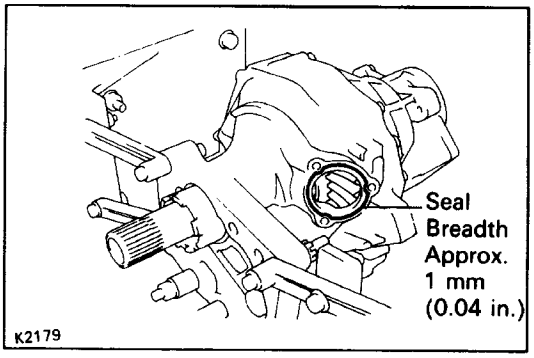
(b) Using snap ring pliers, install the snap ring.



13. INSTALL OIL SEAL

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

(b) Using a brass bar and hammer, drive in a new oil seal.



14. INSTALL TRANSFER INSPECTION HOLE COVER

(a) Remove any packing material and be careful not to drop oil on the contacting surfaces of transfer left case or transfer inspection hole cover.

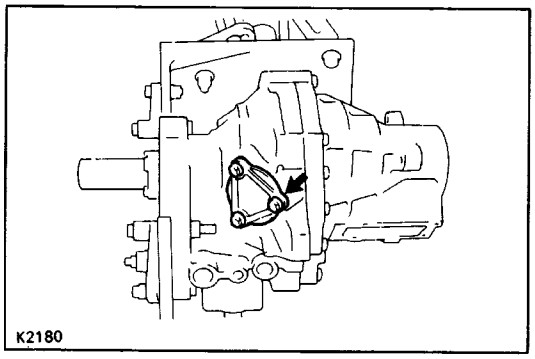
(b) Apply seal packing to the transfer left case as shown in the figure.

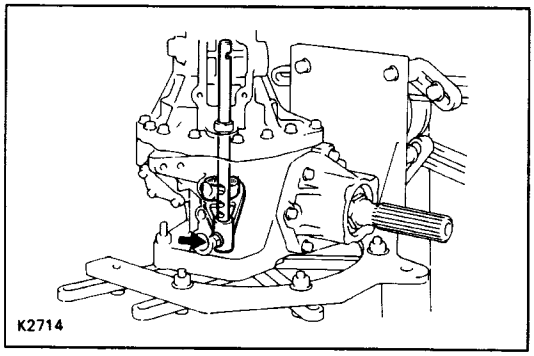
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent

HINT: Install the transfer inspection hole cover as soon as the seal packing is applied.

(c) Install and torque the three bolts.

Torque: 16 N–m (160 kgf–cm, 12 ft–lbf)





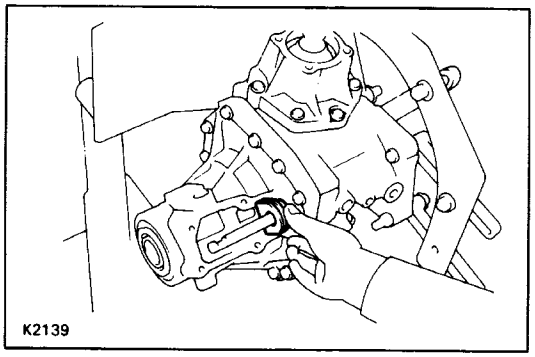
15. INSTALL DIFFERENTIAL LOCK SHIFT FORK SHAFT

(a) Install the differential lock sleeve with shift fork.

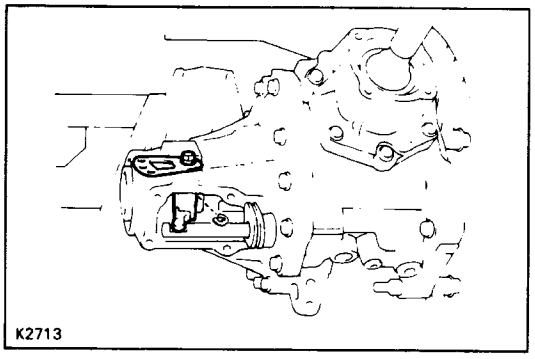
(b) Install the shift fork shaft to the transfer case.

(c) Install and torque the bolt.

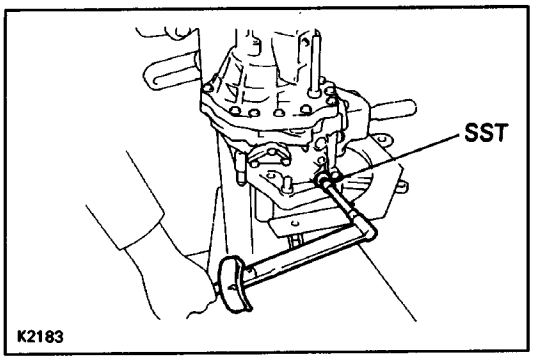
Torque: 16 N–m (160 kgf–cm, 12 ft–lbf)



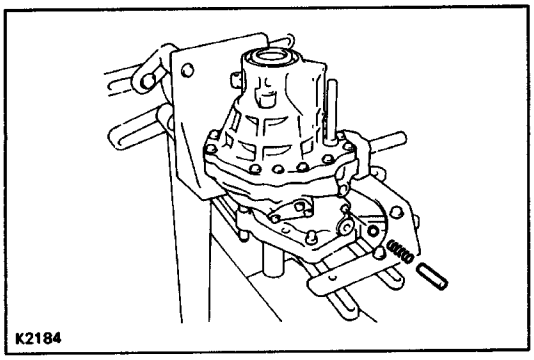
(d) Install the transfer case upper cover bushing.



(e) Install the inner lever in the shift fork shaft groove. Insert the shift lever shaft and install the E–ring.

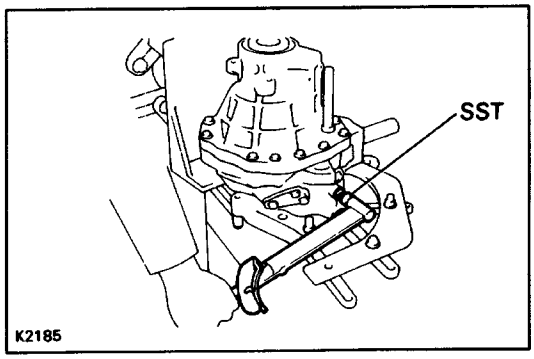


(f) Using SST, install and torque the plug.
SST 09043–38100
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)



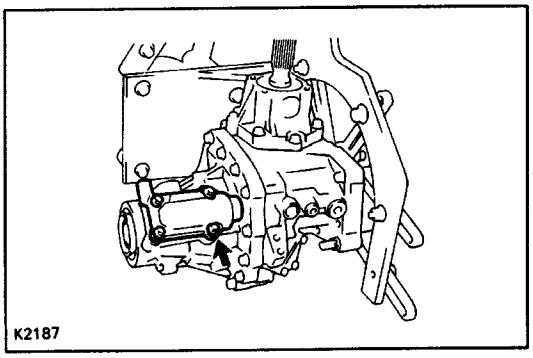
16. INSTALL LOCKING BALL, SPRING, SEAT AND PLUG

(a) Using magnetic finger, install the locking ball, spring and seat.



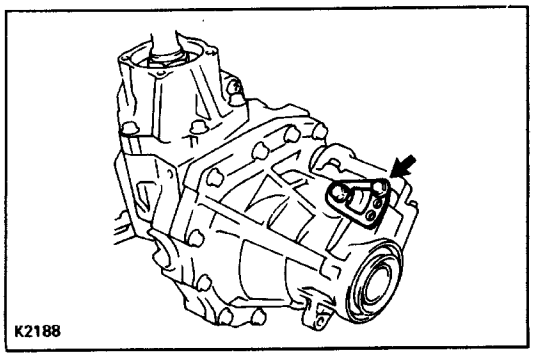
(b) Apply sealant to the plug threads.
Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(c) Using SST, install and torque the plug.
SST 09313–30021
Torque: 25 N–m (250 kgf–cm, 18 ft–lbf)

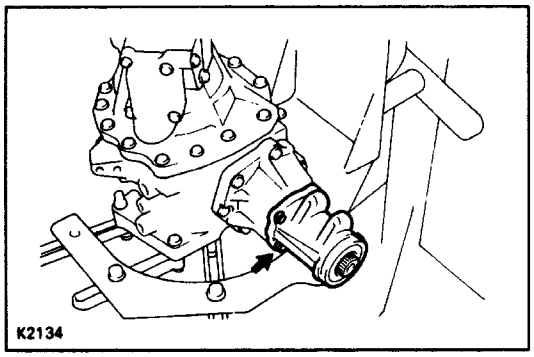


17. INSTALL TRANSFER CASE COVER

(a) Install the new gasket and case cover.
(b) Install and torque the four bolts.
Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)

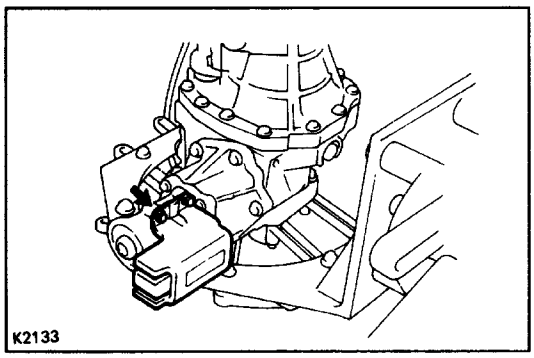


(c) Install the bolt to the shift lever shaft as shown.
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)



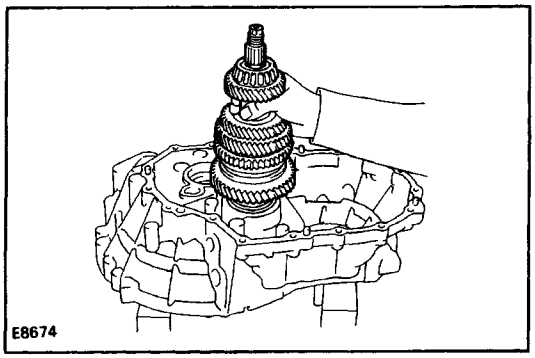
18. INSTALL EXTENSION HOUSING

(a) Coat the O–ring with gear oil.
(b) Install the O–ring to the extension housing.
(c) Install the extension housing to the driven pinion bearing cage.
(d) Install and torque the four bolts.
Torque: 25 N–m (260 kgf–cm, 19 ft–lbf)



19. INSTALL DYNAMIC DAMPER

Install and torque the four bolts.
Torque: 25 N–m (260 kgf–cm, 19 ft–lbf)



INSTALLATION OF COMPONENT PARTS

(See page MT–135 to MT–137)

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

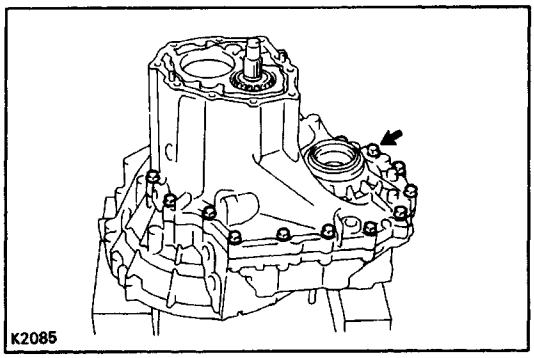
1. ADJUST OUTPUT SHAFT PRELOAD

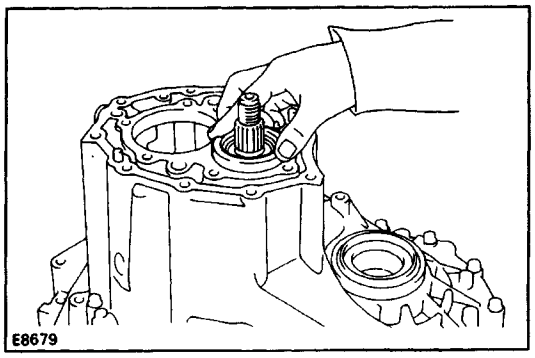
(a) Install the output shaft assembly to the transaxle case.

(b) Install the transmission case to the transaxle case. If necessary, tap on the case with a plastic hammer.

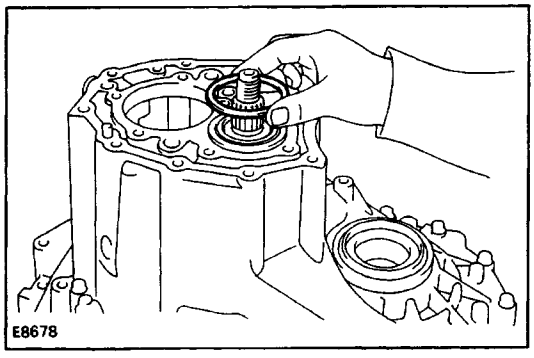
(c) Install and torque the seventeen bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–1160



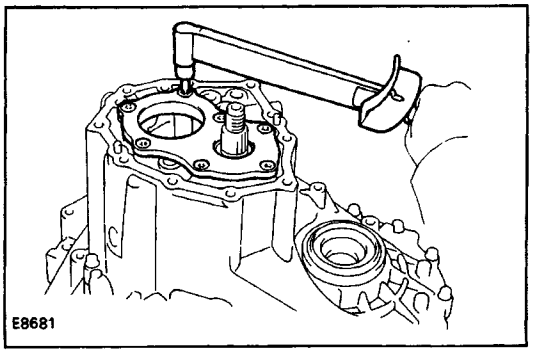


(d) Install the output shaft rear bearing outer race.



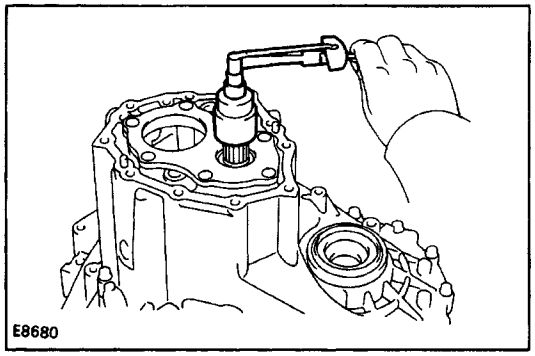
(e) Install the adjust shim.

HINT: When reusing 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.



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

Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)



(g) Install the new lock nut to the output shaft.
(h) Turn the output shaft counterclockwise and clockwise several times.
(i) Using a torque meter, measure the preload of the output shaft.

Preload (at starting)

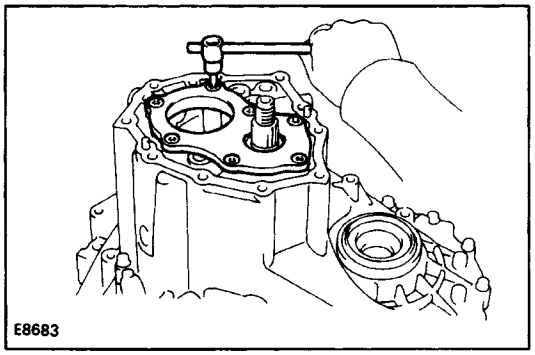
New bearing
0.78 – 1.57 N–m
(8.0 – 16.0 kgf–cm, 6.9 – 13.9 in.–lbf)

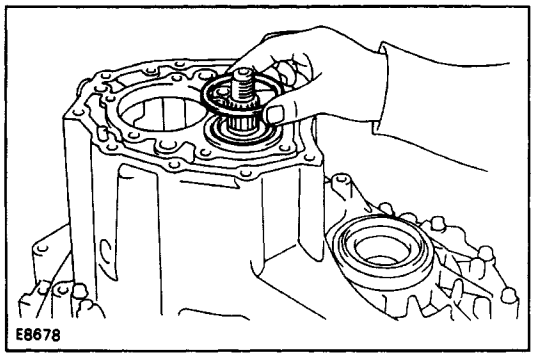
Reused bearing
0.49 – 0.98 N–m
(5.0 – 10.0 kgf–cm, 4.3 – 8.7 in.–lbf)

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

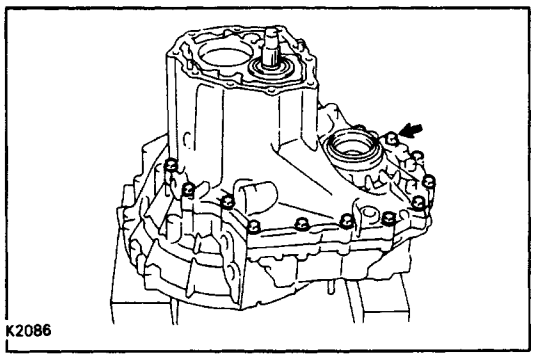
HINT: The preload will changed about 0.4 – 0.5 N–m (4 – 5 kgf–cm, 3.5 – 4.3 in.–lbf) with each shim thickness.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
0	0.40 (0.0157)	E	1.10 (0.0433)
1	0.45 (0.0177)	F	1.15 (0.0453)
2	0.50 (0.0197)	G	1.20 (0.0472)
3	0.55 (0.0217)	H	1.25 (0.0492)
4	0.60 (0.0236)	J	1.30 (0.0512)
5	0.65 (0.0256)	K	1.35 (0.0531)
6	0.70 (0.0276)	L	1.40 (0.0551)
7	0.75 (0.0295)	M	1.45 (0.0571)
8	0.80 (0.0315)	N	1.50 (0.0591)
9	0.85 (0.0335)	P	1.55 (0.0610)
A	0.90 (0.0354)	Q	1.60 (0.0630)
B	0.95 (0.0374)		
C	1.00 (0.0394)		
D	1.05 (0.0413)		

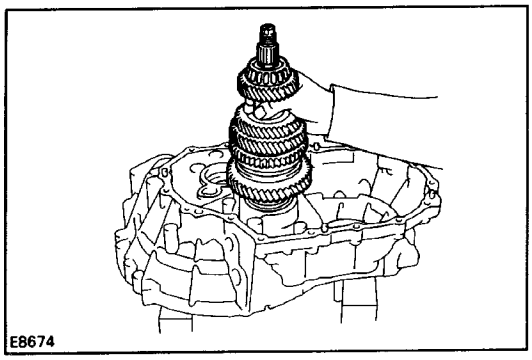




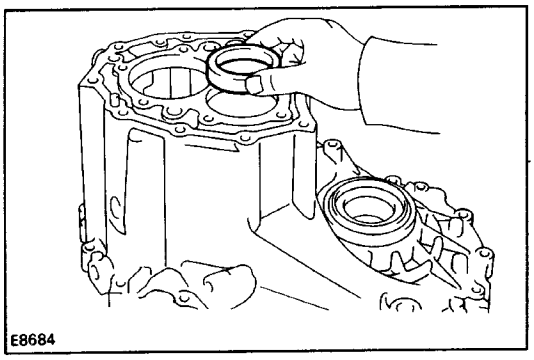
(j) Remove the lock nut.
(k) Using a torx wrench, remove the seven torx screws.
(l) Remove the adjusting shim.



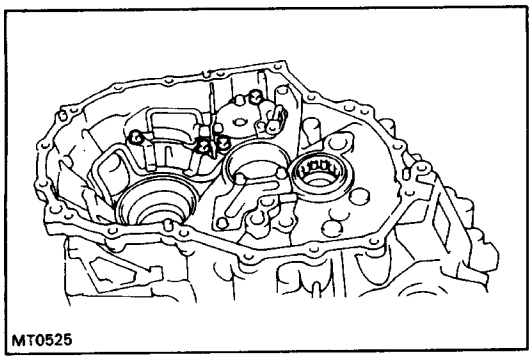
(m) Remove the seventeen bolts and tap off the case with a plastic hammer.



(n) Remove the output shaft rear bearing outer race.



(o) Remove the output shaft assembly.



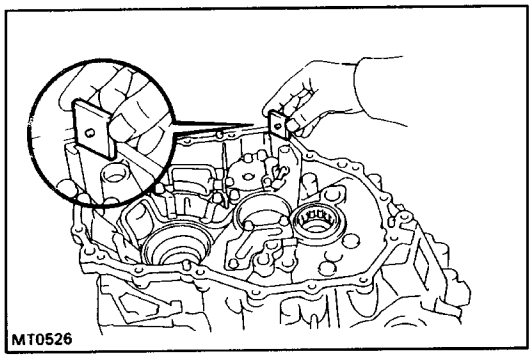
2. INSTALL OIL PUMP ASSEMBLY WITH OIL PIPE

(a) Install the oil pump assembly with oil pipe.

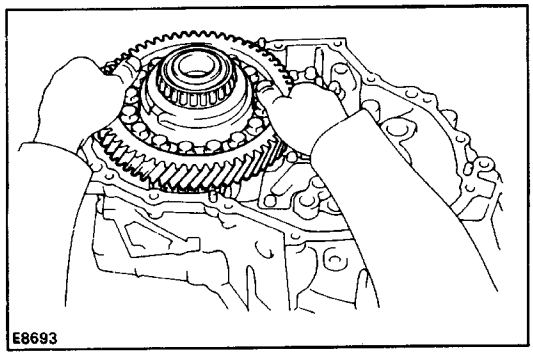
HINT: Do not drop the oil pump gasket.

(b) Install and torque the four bolts.

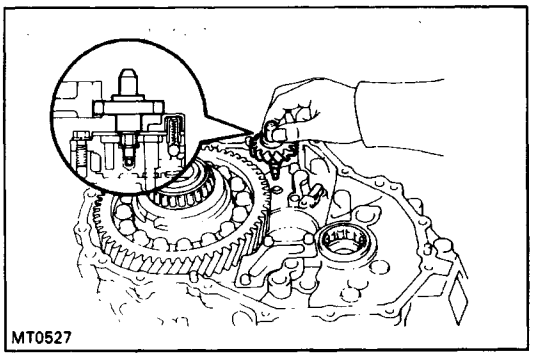
Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)



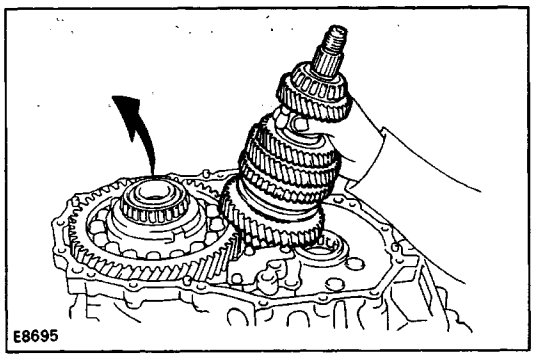
3. INSTALL MAGNET TO TRANSAXLE CASE



4. INSTALL DIFFERENTIAL CASE ASSEMBLY

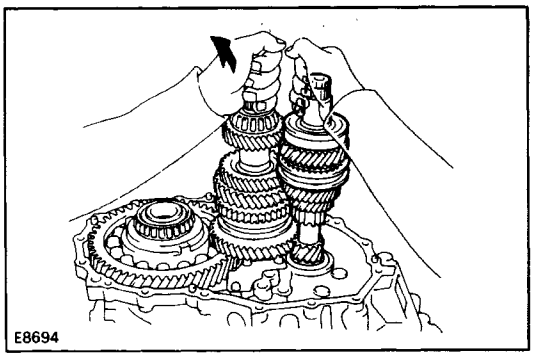


5. INSTALL OIL PUMP DRIVE GEAR



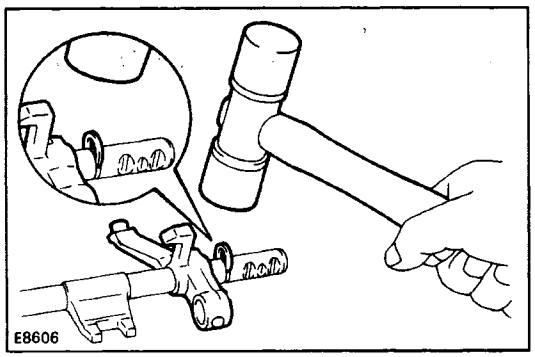
6. INSTALL OUTPUT SHAFT ASSEMBLY

Lift the differential case assembly, install the output shaft assembly.



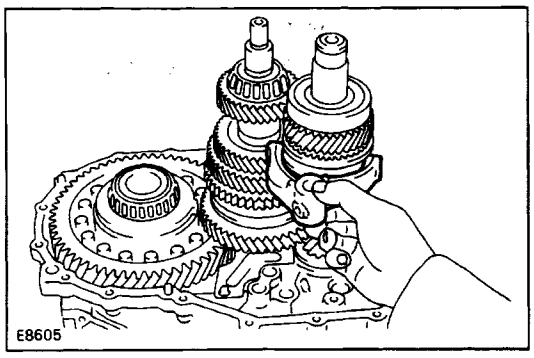
7. INSTALL INPUT SHAFT ASSEMBLY

Leaning the output shaft to the differential side, install the input shaft assembly.



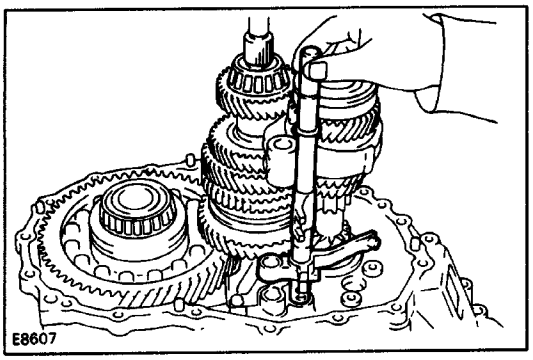
8. INSTALL SNAP RING

(a) Install the reverse shift fork to the No.3 shift fork.
(b) Using a hammer, install the snap ring.

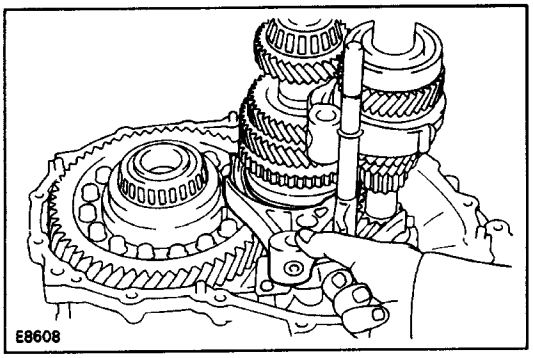


9. INSTALL NO.2 SHIFT FORK AND NO.3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK

(a) Place No.2 shift fork into the groove of No.2 hub sleeve.

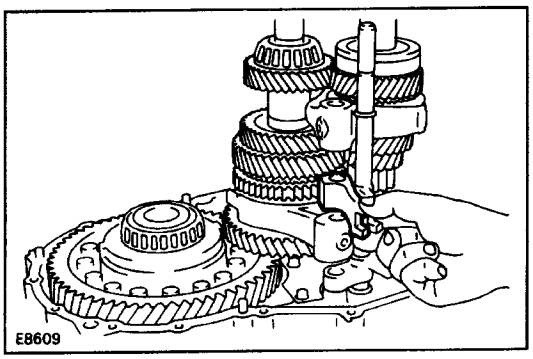


(b) Install the No.3 shift fork shaft with reverse shift fork to the case.

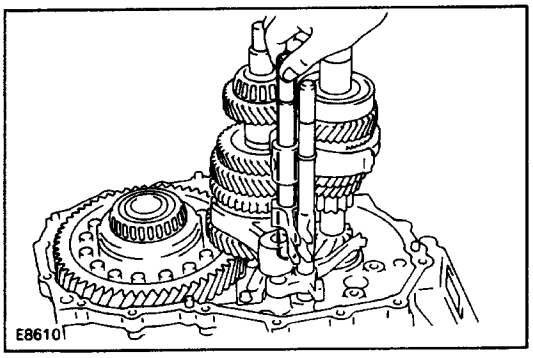


10. INSTALL NO.1 SHIFT FORK. SHIFT HEAD AND NO.2 SHIFT FORK SHAFT

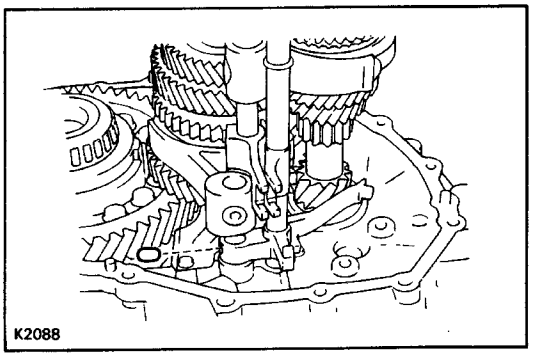
(a) Place No.1 shift fork into the groove of No.1 hub sleeve.



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

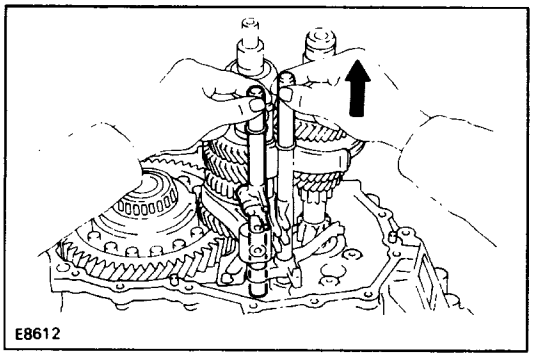


(c) Install the No.2 shift fork shaft to the case, through the No.2 shift fork, the shift head and the No.1 shift fork.



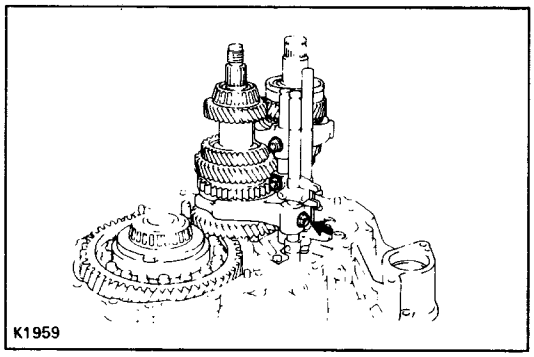
11. INSTALL NO.1 SHIFT FORK SHAFT

(a) Using a magnetic finger, install the interlock roller into the reverse shift fork.



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

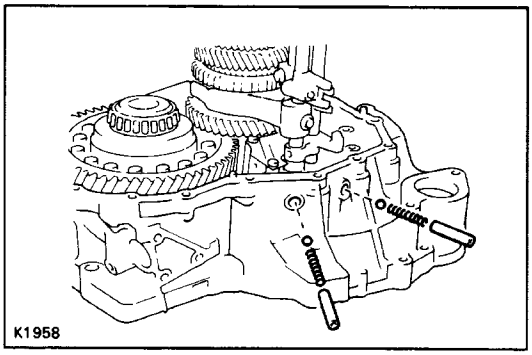
HINT: If it is difficult to put the fork shaft through the reverse shift fork, pull up the No.3 shift fork shaft.



12. INSTALL SET BOLTS

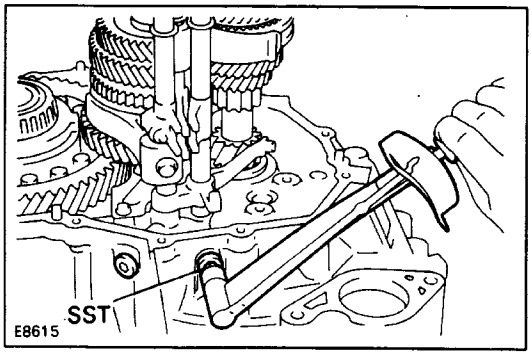
Install and torque the three bolts.

Torque: 24 N–m (240 kgf–cm, 17 ft–lbf)



13. INSTALL LOCKING BALLS, SPRINGS, SPRING SEATS AND SCREW PLUGS

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



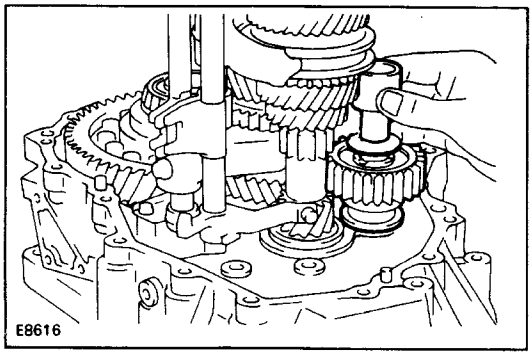
(b) Apply sealant to the screw plugs.

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

(c) Using SST, torque the screw plugs.

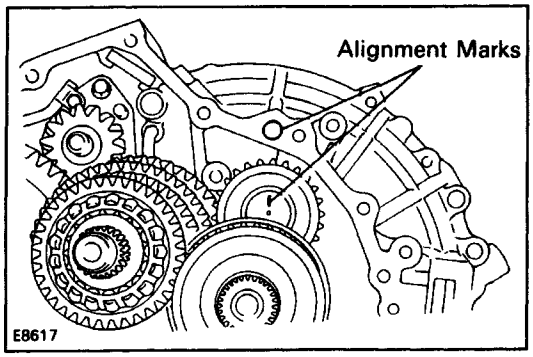
SST 09313–30021

Torque: 25 N–m (250 kgf–cm, 18 ft–lbf)

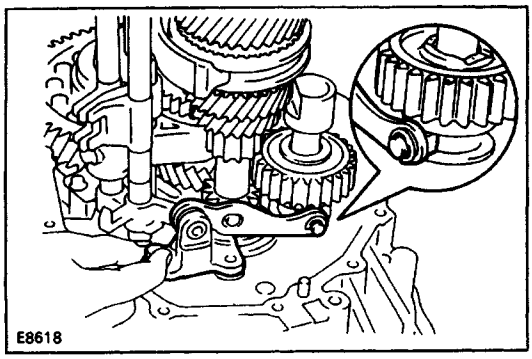


14. INSTALL REVERSE IDLER GEAR SHAFT AND GEAR

(a) Install the reverse idler gear shaft with gear to the case.



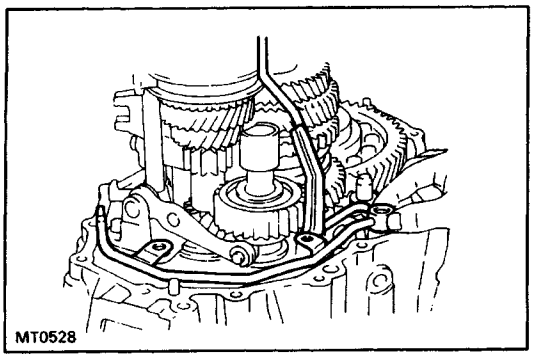
(b) Align the Alignment marks as shown.



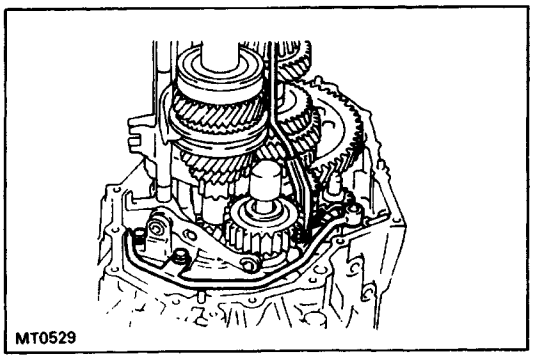
15. INSTALL REVERSE SHIFT ARM BRACKET ASSEMBLY AND NO.2 OIL PIPE

(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.

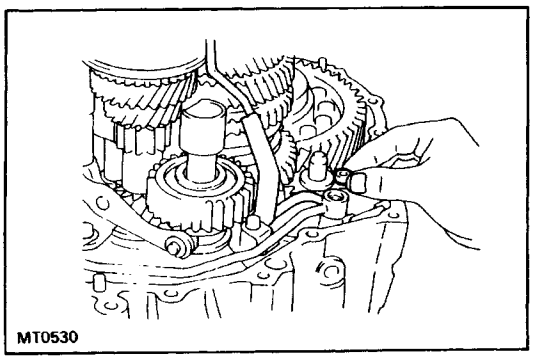


(c) Install the No2 oil pipe.

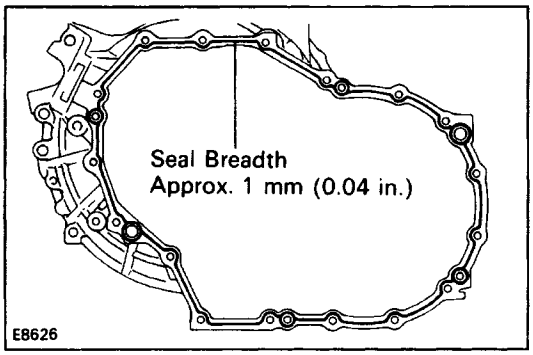


(d) Torque the two oil pipe bolts and shift arm bracket bolt.

Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)



(e) Install a new gasket to the oil pipe.



16. INSTALL TRANSMISSION CASE

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

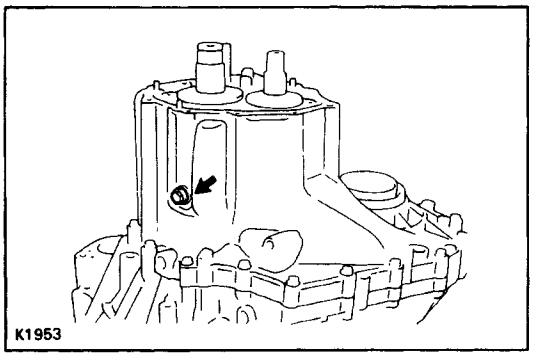
(b) Apply seal packing to the transmission case as shown in the figure.

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

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

(c) Install and torque the seventeen bolts.

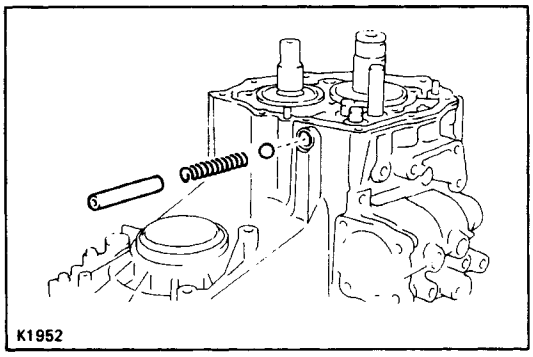
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



17. INSTALL AND TORQUE REVERSE IDLER GEAR SHAFT

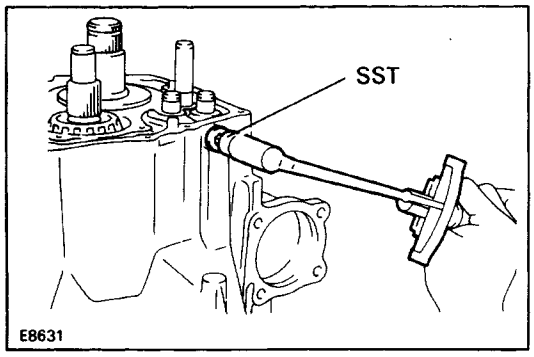
BOLT WITH GASKET

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



18. INSTALL LOCKING BALL, SPRING, SPRING SEAT AND SCREW PLUG

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



(b) Apply sealant to the screw plug.

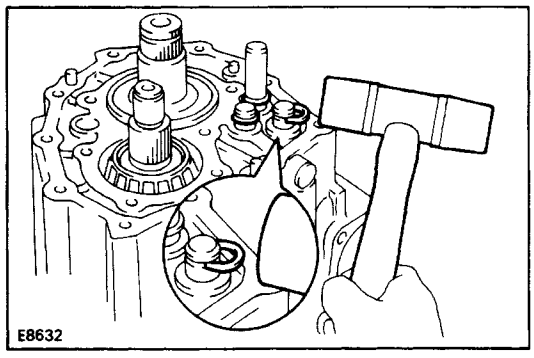
Sealant: Part No. 08833–00080, THREE BOND 1344,

LOCTITE 242 or equivalent

(c) Using SST, torque the screw plug.

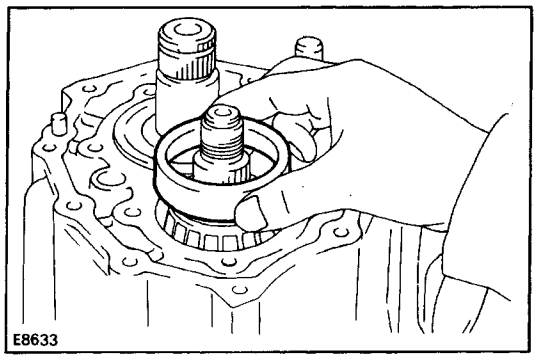
SST 09313–30021

Torque: 25 N–m (250 kgf–cm, 18 ft–lbf)



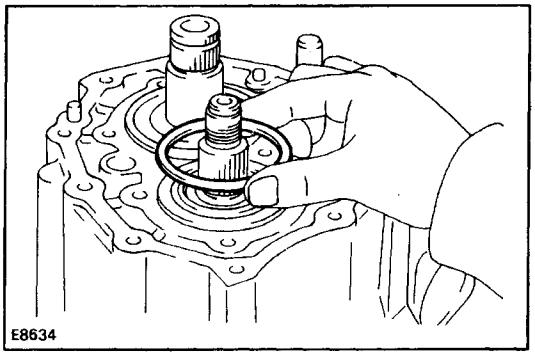
19. INSTALL SNAP RING

Using a plastic hammer, install the three snap rings.

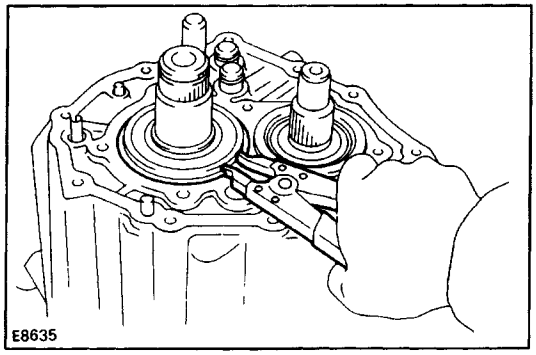


20. INSTALL REAR BEARING RETAINER

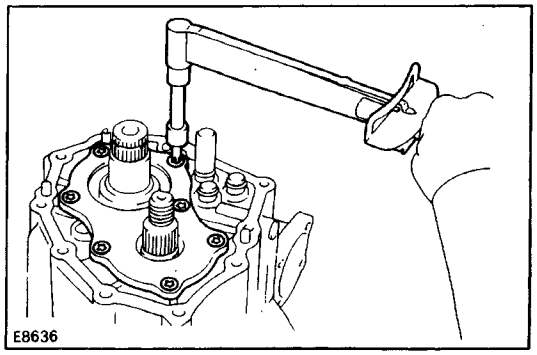
(a) Install the output shaft rear bearing outer race.



(b) Install the adjusting shim.



(c) Using snap ring pliers, install the snap ring to the input shaft rear bearing.

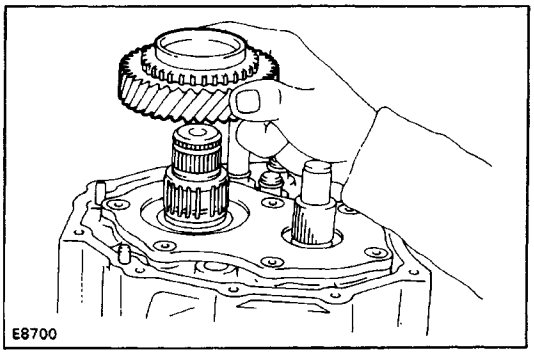


(d) Apply sealant to the screw plug.

Sealant: Part No. 08833–00070, THREE BOND 1324

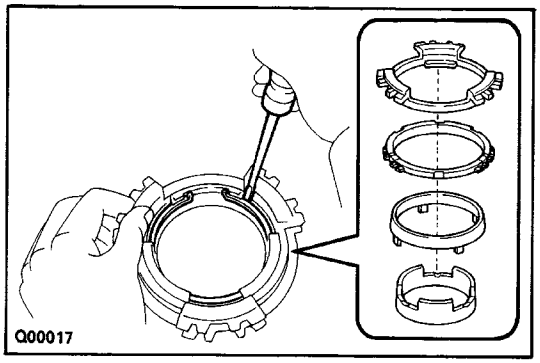
(e) Using a torx wrench, torque the seven screw plugs.

Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)



21. INSTALL FIFTH GEAR

Install the spacer, needle roller bearing and 5th gear.

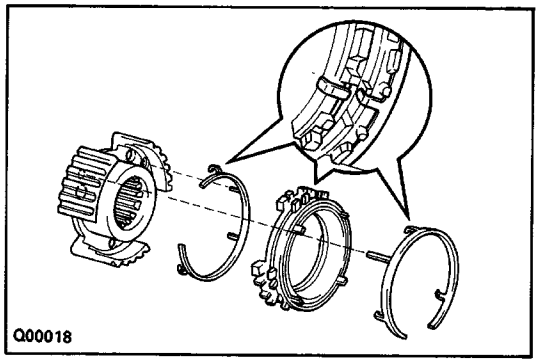


22. INSTALL NO. 5 SYNCHRONIZER RINGS WITH KEY SPRING TO NO. 3 CLUTCH HUB

(a) Assemble the No. 5 synchronizer rings.,

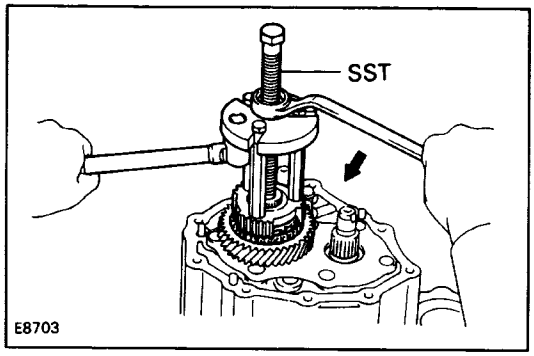
(b) Using a screwdriver, install the snap ring.

HINT: Wrap vinyl tape on the screwdriver to prevent damaging the synchronizer ring.



(c) Install the No. 5 synchronizer rings with key springs to the No. 3 clutch hub.

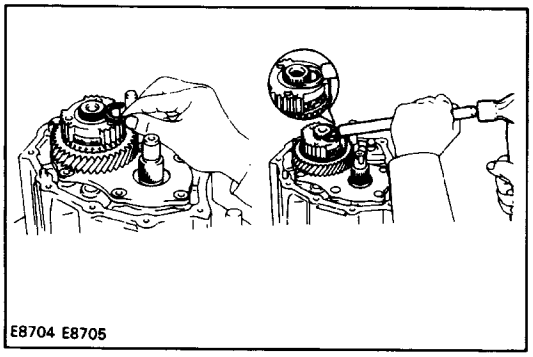
HINT: Align the holes of the clutch hub with key spring.



23. INSTALL NO. 3 CLUTCH HUB

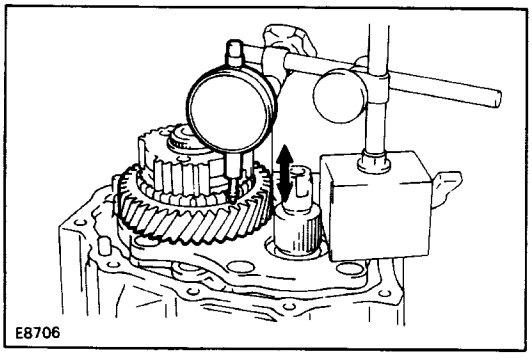
(a) Using SST, install the No. 3 clutch hub with synchronizer ring and key spring.

SST 09310–17010 (09310–07010, 09310–07020, 09310–07030



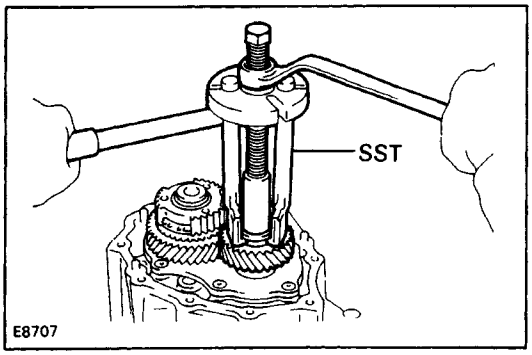
(b) Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness	mm (in.)
Q	2.25 – 2.30	(0.0886 – 0.0906)
R	2.30 – 2.35	(0.0906 – 0.0925)
S	2.35 – 2.40	(0.0925 – 0.0945)
T	2.40 – 2.45	(0.0945 – 0.0965)
U	2.45 – 2.50	(0.0965 – 0.0984)
V	2.50 – 2.55	(0.0984 – 0.1004)
W	2.55 – 2.60	(0.1004 – 0.1024)
X	2.60 – 2.65	(0.1024 – 0.1043)
Y	2.65 – 2.70	(0.1043 – 0.1063)



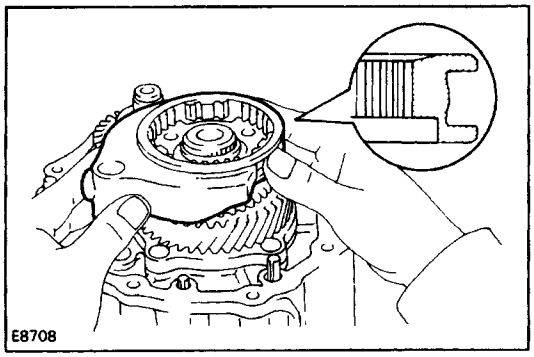
(c) Using a dial indicator, measure the 5th gear thrust clearance.

Standard clearance: 0.10 – 0.57 mm (0.004 – 0.022 in.)



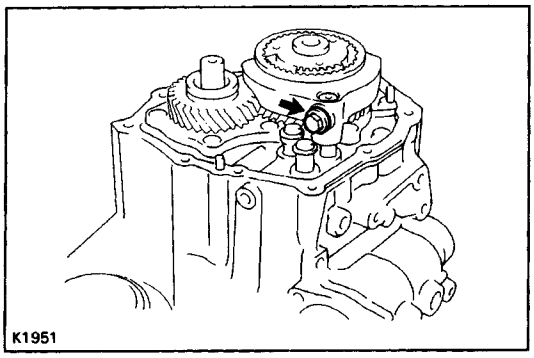
24. INSTALL FIFTH DRIVEN GEAR

Using SST, install the 5th driven gear.
SST 09310–17010 (09310–07010, 09310–07020
09310–07040,09310–07050)

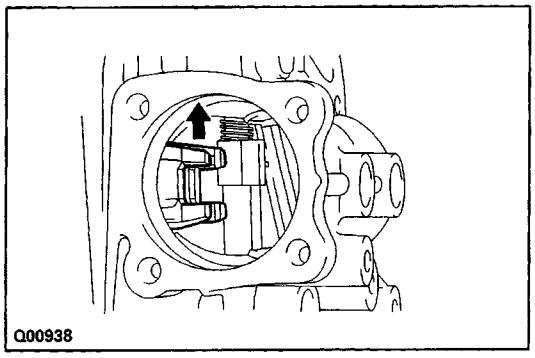


25. INSTALL NO.3 HUB SLEEVE AND FIFTH SHIFT FORK

(a) Install the No.3 hub sleeve and 5th shift fork.

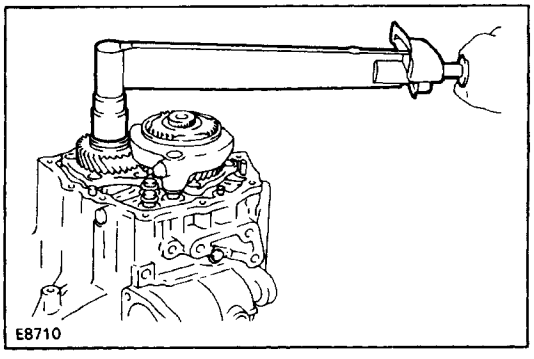


(b) Install and torque the set bolt.
Torque: 24 N–m (240 kgf–cm, 17 ft–lbf)

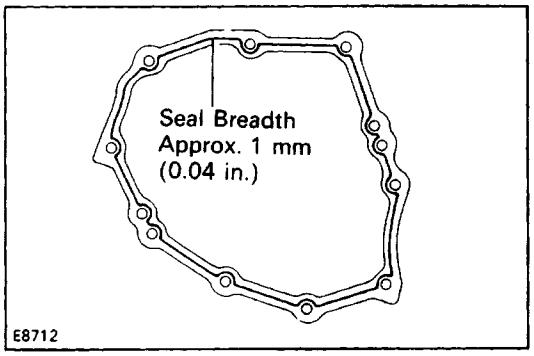


26. INSTALL LOCK NUT

(a) Engage the gear double meshing.



(b) Install and torque the nut.
Torque: 123 N–m (1,250 kgf–cm, 90 ft–lbf)
(c) Disengage the gear double meshing.
(d) Stake the lock nut.



27. 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.

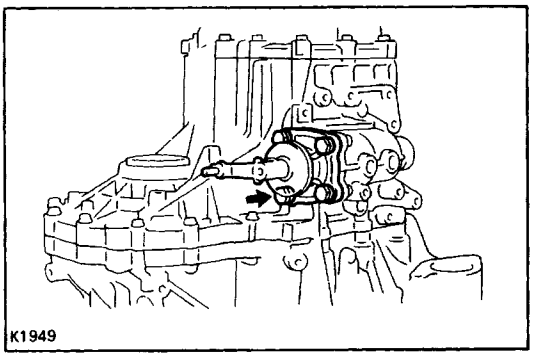
(b) Apply seal packing to the transmission case as shown in the figure.

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.

(c) Install and torque the ten bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



28. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY

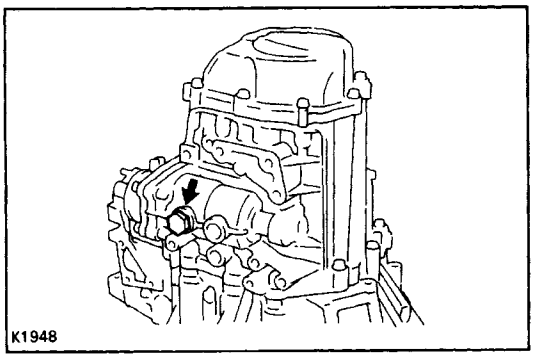
(a) Install the shift and select lever shaft assembly and new gasket.

(b) Apply sealant to the bolt threads.

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

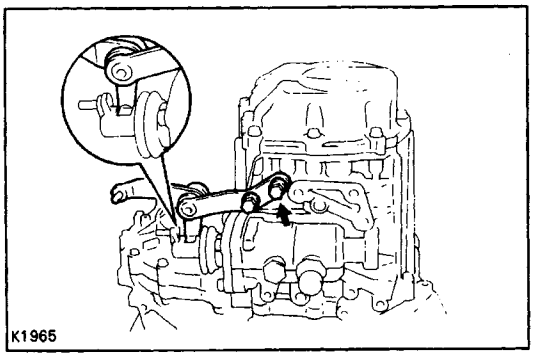
(c) Install and torque the four bolts.

Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)



(d) Install and torque the lock bolt with gasket.

Torque: 49 N–m i500 kgf–cm, 36 ft–lbf)



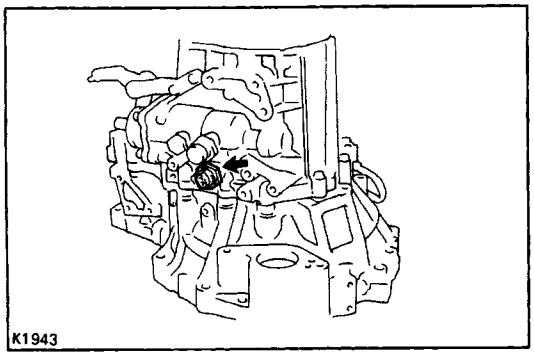
29. INSTALL NO.2 SELECTING BELLCRANK WITH SELECTING BELLCRANK SUPPORT

(a) Apply sealant to the bolt threads.

Sealant: Part No. 08833–00080, THREE BOND 7344, LOCTITE 242 or equivalent

(b) Install and torque the two bolts.

Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)

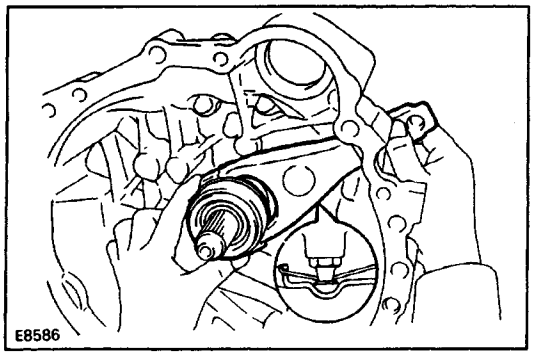


30. INSTALL BACK–UP LIGHT SWITCH

Install and torque the back–up light switch.

Torque: 40 N–m (410 kgf–cm, 30 ft–lbf)

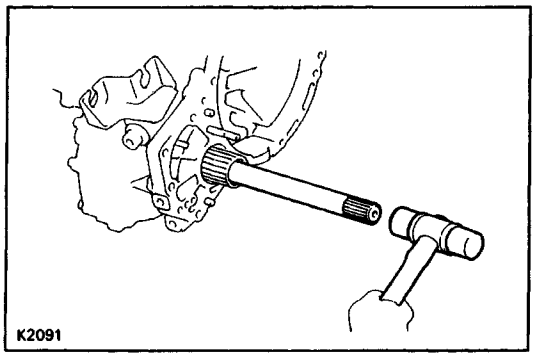
31. INSTALL SPEEDOMETER DRIVEN GEAR



32. INSTALL RELEASE FORK AND BEARING

Apply molybdenum disulphide lithium base grease to the following part:

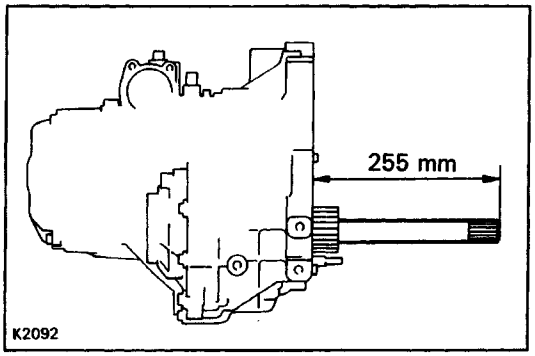
- Release bearing hub inside groove
- Input shaft spline
- Release fork contact surface



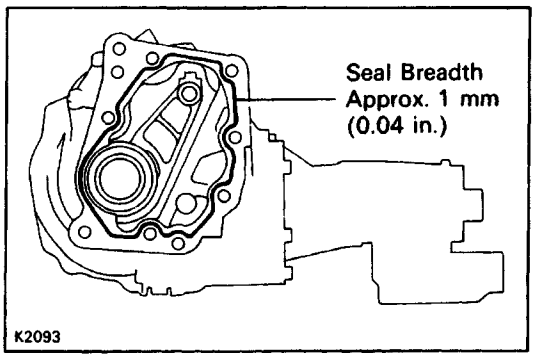
33. INSTALL DIFFERENTIAL SIDE GEAR INTERMEDIATE SHAFT

(a) Coat the MP grease to the intermediate shaft.

(b) Using a plastic hammer, correctly drive the intermediate shaft straight until the top of it touches the differential pinion shaft.



HINT: Keeping the intermediate shaft on the pinion shaft of differential, measure the point in the illustration.
Protrusion length: 255 mm (10.04 in.)



34. INSTALL TRANSFER ASSEMBLY

(a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transfer or transaxle.

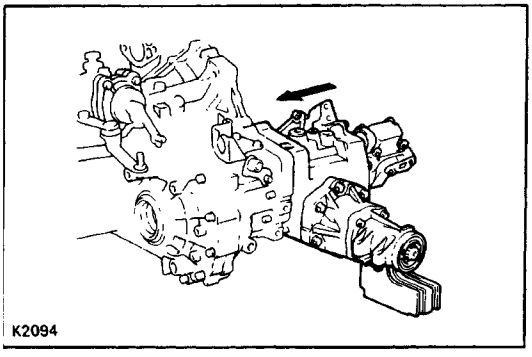
(b) Apply seal packing to the transfer as shown in the figure.

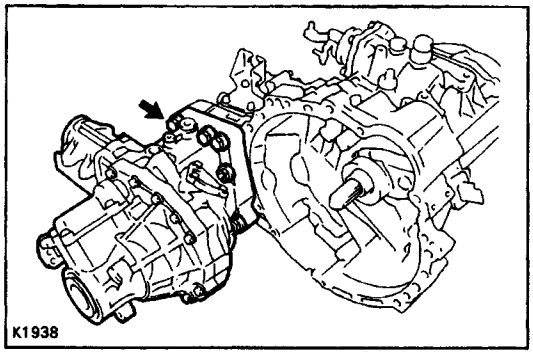
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent

HINT: Install the transfer as soon as the seal packing is applied.

(c) Install the transfer assembly to the transaxle assembly.

HINT: Shift into 4th gear, install the transfer assembly while turning the input shaft of the transaxle.





(d) Apply sealant to the bolt threads.

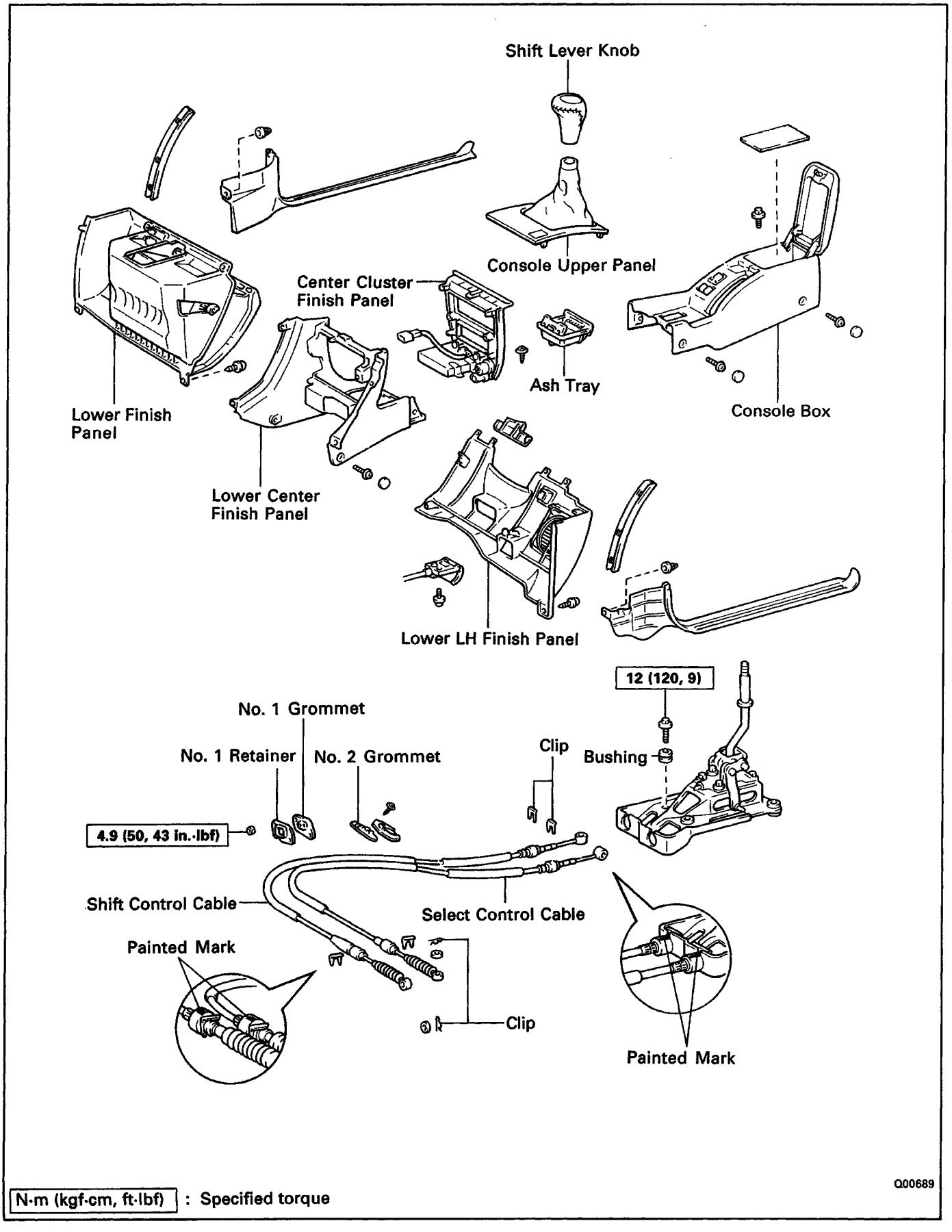
Sealant: Part No. 08833–00080, THREE BOND 1344,
LOCTITE 242 or equivalent

(e) Install and torque the three bolts and five nuts.

Torque: 69 N–m (700 kgf–cm, 51 ft–lbf)

SHIFT LEVER AND CONTROL CABLE

COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque