

SECTION : 5B

FIVE-SPEED MANUAL TRANSAXLE

CAUTION : *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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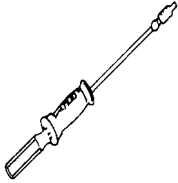
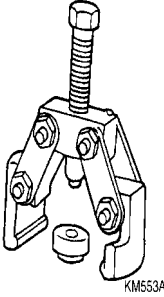
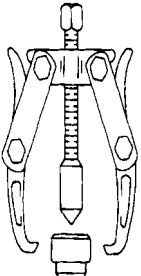
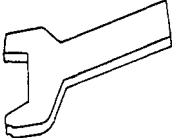
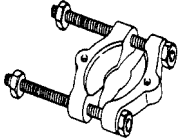
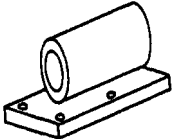
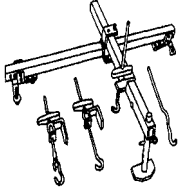
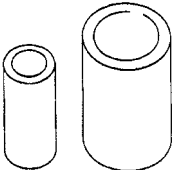
SPECIFICATIONS

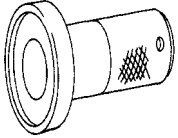
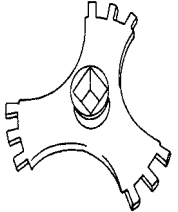
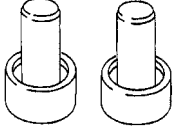
FASTENER TIGHTENING SPECIFICATIONS

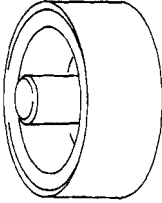
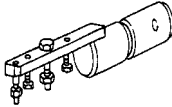
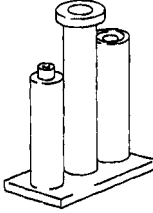
Application	N•m	Lb–Ft	Lb–In
Backup Lamp Switch	20	15	–
Bearing Plate Bolts	22	16	–
Bearing Retainer Bolts, Right Side	25	18	–
Bearing–Adjusting Ring–Retainer Plate Bolt	5	–	44
Clutch–Release Cylinder Retaining Bolts	20	15	–
Damping Block Connection Nut and Bolt	68	50	–
Differential Cover Bolts	40	30	–
Fifth–Gear Fork Bolts	22	16	–
Fifth–Gearshift Connector Bolts	7	–	62
Flywheel Inspection Cover Bolts	7	–	62
Gearshift Housing Bolts	7	–	62
Gearshift Lever Cover Bolts	22	16	–
Input Driveshaft Detent Screw	15	11	–
Rear Damping Block Retaining Bolts	68	50	–
Rear Mounting Bracket Bolts	90	66	–
Ring–Gear Bolts	70	52	–
Rod Clamp Bolt	14	–	124
Speedometer Housing Retaining Bolt	4	–	35
Speedometer–Driven Gear Bolt	5	–	44
Transaxle Cover Bolts	18	13	–
Transaxle Lower Retaining Bolts(a)	73	54	–
Transaxle Lower Retaining Bolt(b)	31	23	–
Transaxle Lower Retaining Bolts(c)	21	15	–
Transaxle Upper Retaining Bolts	73	54	–
Transaxle Upper Mounting Bracket Bolts	48	35	–

SPECIAL TOOLS

SPECIAL TOOLS TABLE

 J6125B	J-6125-B Slide Hammer	 KM553A	KM-553-A Fifth-Gear Puller
 J22888	J-22888-20-A Bearing Puller with J-22888-35 Puller Legs	 J36633	J-36633 Snap Ring Retainer
 J22912	J-22912-01 Universal Bearing Puller	 KM1132	KM-113-2 Base
 J28467B	J-28467-B Engine Support Fixture	 KM334	KM-334 Installer Sleeve

 J-42469	J-42469 Shift Rod Remover
 KM519	KM-519 Ring Installer
 KM520	KM-520 Remover/Installer
 KM522	KM-522 Installer

 KM525	KM-525 Installer
 KM552	KM-552 Fixture
 KM554	KM-554 Installer

DIAGNOSIS

ISOLATE NOISE

Identify the cause of any noise before attempting to repair the clutch, the transaxle, or their related link-ages.

Symptoms of trouble with the clutch or the manual transaxle include:

- A great effort required to shift gears.
- The sound of gears clashing and grinding.
- Gear blackout.

Any of these conditions requires a careful analysis. Make the following checks before disassembling the clutch or the transaxle for repairs.

Road Travel Noise

Many noises that appear to come from the transaxle may actually originate with other sources such as the:

- Tires.
- Road surfaces.
- Wheel bearings.
- Engine.
- Exhaust system.

These noises may vary according to the:

- Size of the vehicle.
- Type of the vehicle.
- Amount of insulation used in the body of the vehicle.

Transaxle Noise

Transaxle gears, like any mechanical device, are not absolutely quiet and will make some noise during normal operation.

To verify suspected transaxle noises:

1. Select a smooth, level asphalt road to reduce tire and resonant body noise.
2. Drive the vehicle far enough to warm up all the lubricants thoroughly.
3. Record the speed and the gear range of the transaxle when the noise occurs.
4. Check for noises with the vehicle stopped, but with the engine running.
5. Determine if the noise occurs while the vehicle operates in:
 - Drive – under a light acceleration or a heavy pull.
 - Float – maintaining a constant speed with a light throttle on a level road.
 - Coast – with the transaxle in gear and the throttle partly or fully closed.
 - All of the above.

Bearing Noise

Differential Side Bearing Noise

Differential side bearing noise and wheel bearing noise can be confused easily. Since side bearings are pre-loaded, a differential side bearing noise should not diminish much when the differential/transaxle is run with the wheels off the ground.

Wheel Bearing Noise

Wheel bearings produce a rough growl or grating sound that will continue when the vehicle is coasting and the transaxle is in NEUTRAL. Since wheel bearings are not pre-loaded, a wheel bearing noise should diminish considerably when the wheels are off the ground.

Other Noise

Brinelling

A brinelled bearing causes a "knock" or "click" approximately every second revolution of the wheel because the bearing rollers do not travel at the same speed as the wheel. In operation, the effect is characterized by a low-pitched noise.

A brinelled bearing is caused by excessive thrust which pushes the balls up on the pathway and creates a triangular-shaped spot in the bearing race. A brinelled bearing can also be caused from pressing one race into position by applying pressure on the other race.

A false indication of a brinelled bearing occurs as a result of vibration near the area where the bearing is mounted. Brinelling is identified by slight indentations, resulting in a washboard effect in the bearing race.

Lapping

Lapped bearing noise occurs when fine particles of abrasive materials such as scale, sand, or emery circulate through the oil in the vehicle, causing the surfaces of the roller and the race to wear away. Bearings that wear loose but remain smooth, without spalling or pitting, are the result of dirty oil.

Locking

Large particles of foreign material wedged between the roller and the race usually causes one of the races to turn, creating noise from a locked bearing. Pre-loading regular taper roller bearings to a value higher than that specified also can result in locked bearings.

Pitting

Pitting on the rolling surface comes from normal wear and the introduction of foreign materials.

Spalling

Spalled bearings have flaked or pitted rollers or races caused by an overload or an incorrect assembly that results in a misalignment, a cocking of bearings, or adjustments that are too tight.

After completing these checks, refer to the "Diagnosis Chart" in this section.

SYMPTOM DIAGNOSIS

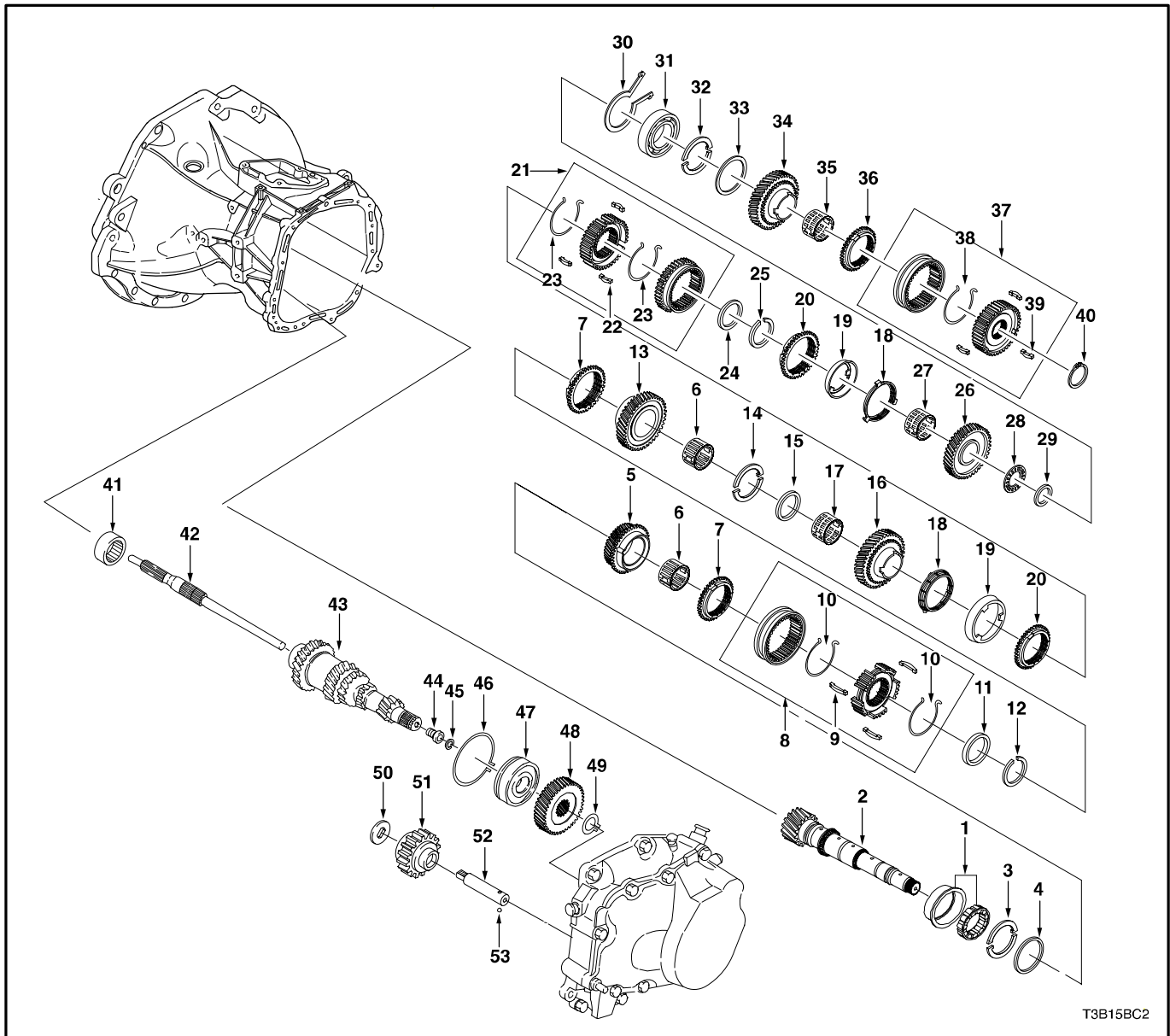
Checks	Action
Check for a knock at low speeds.	• Replace any worn drive axle CV joints. • Replace any worn side gear hub.
Check for a noise most pronounced on turns.	• Correct any abnormalities in the differential gear.
Check for a clunk upon acceleration or deceleration.	• Tighten any loose engine mounts. • Replace any worn drive axle inboard joints. • Replace any worn differential pinion shaft in the case. • Replace any worn side gear hub in the case.
Check for a clunking noise in turns.	• Replace any worn outboard CV joint.
Check for a vibration.	• Replace any rough wheel bearing. • Replace any bent drive axle shaft. • Replace any out-of-round tires. • Balance any unbalanced tire. • Replace any worn CV joint in the drive axle shaft. • Correct an excessive drive axle angle by adjusting the trim height.
Check for a noise in the NEUTRAL gear with the engine running.	• Replace any worn cluster bearing shaft. • Replace any worn clutch–release bearing. • Replace any worn input shaft cluster gears. • Replace any worn first–gear/bearing. • Replace any worn second–gear/bearing. • Replace any worn third–gear/bearing. • Replace any worn fourth–gear/bearing. • Replace any worn fifth–gear/bearing. • Replace any worn mainshaft bearings.
Check for a noise in the first gear (1) only.	• Replace any chipped, scored, or worn first–gear constant mesh gears. • Replace any worn first–second gear synchronizer. • Replace any worn first–gear/bearing. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear. • Adjust, repair, or replace the shift lever and the rods.
Check for a noise in the second gear (2) only.	• Replace any chipped, scored, or worn second–gear constant mesh gears. • Replace any worn first–second gear synchronizer. • Replace any worn second–gear/bearing. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear. • Adjust, repair, or replace the shift lever and the rods.
Check for a noise in the third gear (3) only.	• Replace any chipped, scored, or worn third–gear constant mesh gears. • Replace any worn third–fourth gear synchronizer. • Replace any worn third–gear/bearing. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear. • Adjust, repair, or replace the shift lever and the rods.

Checks	Action
Check for a noise in the fourth gear (4) only.	• Replace any chipped, scored, or worn fourth gear or output gear. • Replace any worn third–fourth gear synchronizer. • Replace any worn fourth–gear/bearing. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear. • Adjust, repair, or replace the shift lever and the rods.
Check for a noise in the fifth gear (5) only.	• Replace any chipped, scored, or worn fifth gear or output gear. • Repair any worn fifth–gear synchronizer. • Replace any worn fifth–gear/bearing. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear. • Adjust, repair, or replace the shift lever and the rods.
Check for a noise in the reverse (R) gear only.	• Replace any chipped, scored, or worn reverse idler gear, idler–gear bushing, input gear, or output gear. • Replace any worn first–second gear synchronizer. • Replace any worn output gear. • Replace any worn differential–gear/bearing. • Replace any worn–ring gear.
Check for a noise in all gears.	• Add sufficient lubricant. • Replace any worn bearings. • Replace any chipped, scored, or worn input–gear shaft or output–gear shaft.
Check for the transaxle slipping out of gear.	• Adjust or replace the linkage, as needed. • Adjust, repair, or replace any binding shift linkage. • Tighten or replace the input–gear bearing retainer, as needed. • Repair or replace any worn or bent shift fork.
Check for a leak in the area of the clutch.	• Repair the transaxle casing. • Replace any damaged release bearing guide.
Check for a leak at the center of the transaxle.	• Repair the transaxle casing. • Repair the shift mechanism. • Replace the damaged backup lamp switch.
Check for a leak at the differential.	• Adjust or replace the bearing retainers. • Tighten or replace the differential cover. • Adjust or replace the drive axle shaft seals.

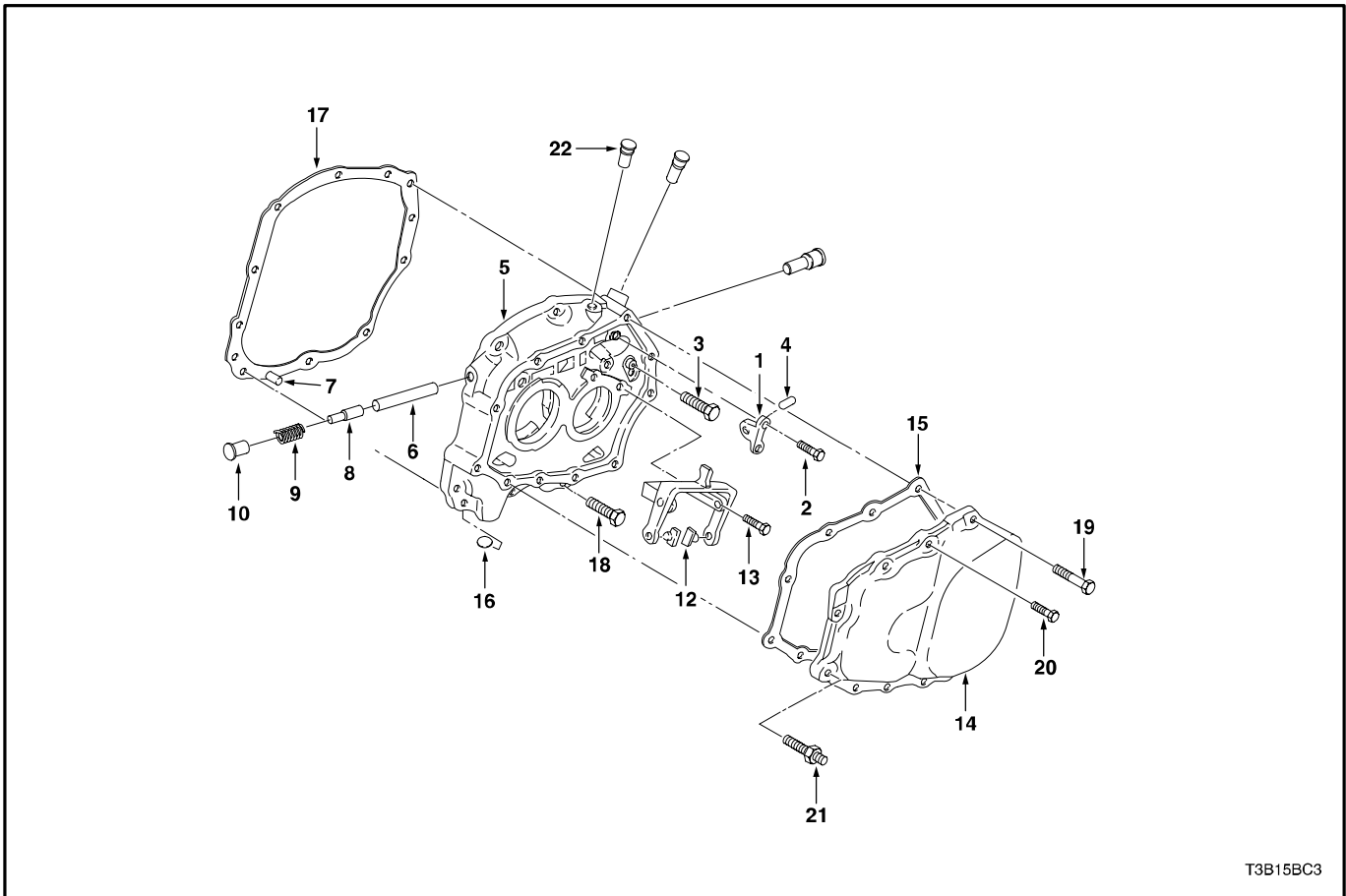
Checks	Action
Check for a hard shift.	• Replace any damaged release–bearing guide. • Adjust, repair, or replace the shift mechanism. • Adjust, repair, or replace the clutch–release system. • Replace any chipped, scored, or worn fifth–gear synchronizer. • Replace any chipped, scored, or worn first–second gear synchronizer. • Replace any worn third–fourth gear synchronizer. • Adjust, repair, or replace the shift lever and the rods.
Check for a clashing of gears.	• Replace any damaged release–bearing guide. • Adjust, repair, or replace the clutch–release system. • Replace the chipped, scored, or worn input shaft/gear–cluster gears. • Replace any worn fifth–gear synchronizer. • Replace any worn fifth–gear/bearing. • Replace any worn first–gear/bearing. • Replace any worn first–second gear synchronizer. • Replace any worn second–gear/bearing. • Replace any worn third–gear/bearing. • Replace any worn third–fourth synchronizer. • Replace any worn fourth–gear/bearing. • Replace any worn reverse–idler gear.

COMPONENT LOCATORS

GEARS AND CASE



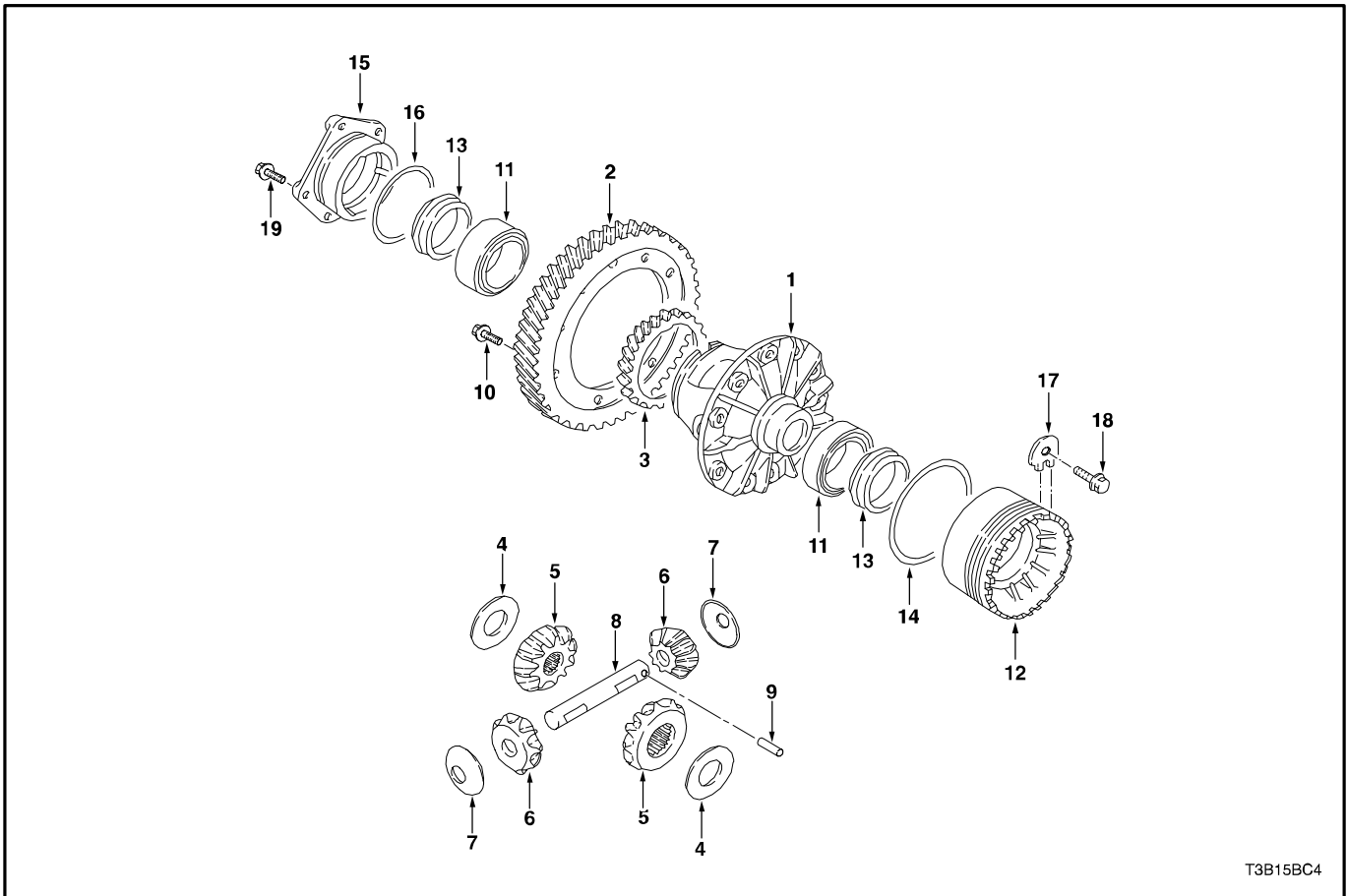
1. Roller Bearing
2. Transaxle Main Shaft
3. Washer
4. Washer Retaining Ring
5. 4th Speed Gear
6. Needle Cage
7. Synchronizer Ring
8. Shift Sleeve
9. Synchronizer Key
10. 3rd & 4th Synchronizer Spring
11. Washer
12. Circlip
13. 3rd Speed Gear
14. Washer
15. Washer Retaining Ring
16. 2nd Speed Gear
17. Needle Cage
18. Inside Synchronizer Ring
19. Intermediate Ring
20. Outside Synchronizer Ring
21. Sliding Gear
22. 1st & 2nd Synchronizer Key
23. 1st & 2nd Synchronizer Spring
24. Washer
25. Circlip
26. 1st Speed Gear
27. Needle Cage
28. Needle Cage
29. Main Shaft Disc
30. Retaining Ring
31. Groove Ball Bearing
32. Washer
33. Retaining Ring
34. 5th Speed Gear
35. Needle Cage
36. Synchronizer Ring
37. 5th Shift Sleeve
38. 5th Synchronizer Spring
39. 5th Synchronizer Key
40. Retaining Ring
41. Needle Sleeve
42. Input Drive Shift
43. Input Shaft Cluster Gear
44. Bolt
45. Retaining Ring
46. Cluster Bearing Ring
47. Groove Ball Bearing
48. Cluster 5th Speed Gear
49. Retaining Ring
50. Washer
51. Reverse Idler Gear
52. Reverse Idler Gear Shaft
53. Ball

BEARING PLATE

T3B15BC3

- | | |
|-----------------------------|----------------------------|
| 1. Strain Bolt Bridge | 12. GearShift Shoe |
| 2. Bolt | 13. Screw |
| 3. Bolt | 14. Transaxle Cover |
| 4. Bolt | 15. Transaxle Cover Gasket |
| 5. Bearing Plate | 16. Magnet |
| 6. Bolt | 17. Bearing Plate Gasket |
| 7. Pin | 18. Bolt |
| 8. Blocking Pin | 19. Bolt |
| 9. Compression Spring | 20. Bolt |
| 10. Plug | 21. Screw |
| 11. Gear Shift Sliding Fork | 22. Detent Sleeve |

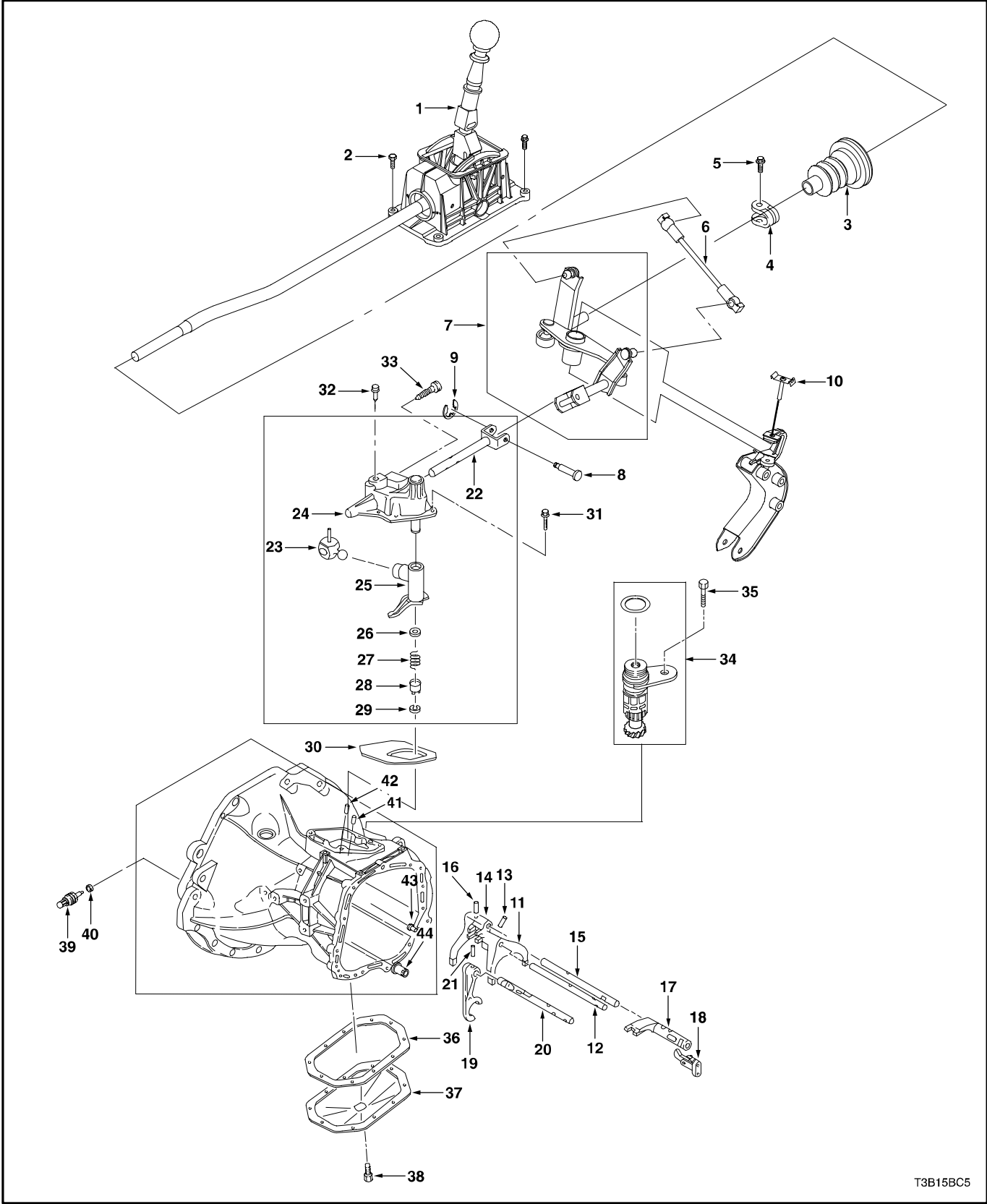
DIFFERENTIAL GEAR



T3B15BC4

- | | |
|------------------------------|--------------------------------------|
| 1. Differential Gear Housing | 11. Taper Roller Bearing |
| 2. Differential Gear | 12. Differential Bearing Ring |
| 3. Speedometer Drive Gear | 13. Shaft Seal Ring |
| 4. Washer | 14. O-Ring |
| 5. Side Gear | 15. Differential Gear Bearing Flange |
| 6. Bevel Differential Gear | 16. O-Ring |
| 7. Bevel Gear Disc | 17. Locking Plate |
| 8. Differential Gear Shaft | 18. Bolt |
| 9. Differential Spring Pin | 19. Bolt |
| 10. Bolt | |

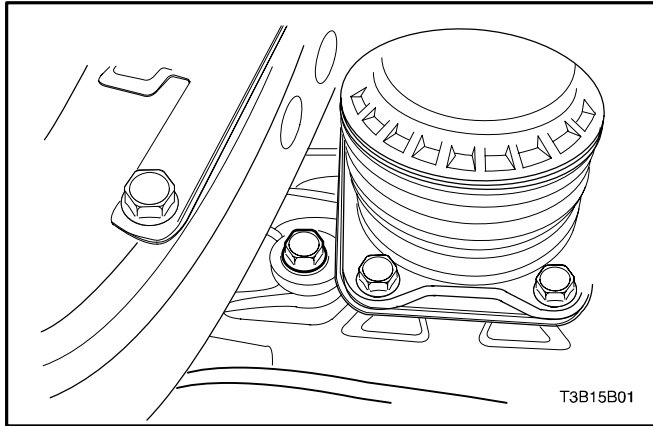
SHIFT LINKAGE



- | | |
|-------------------------------|------------------------------------|
| 1. Gear Shift Control | 24. Gear Shift Lever Cover |
| 2. Bolt | 25. Gear Shift Inter Lever |
| 3. Gear Shift Tube Bellows | 26. Plate |
| 4. Clamp | 27. Compression Spring |
| 5. Bolt | 28. Bush |
| 6. Gear Shift Control Mode | 29. Retaining Ring |
| 7. Gear Shift Guide Control | 30. Gear Shift Cover Gasket |
| 8. Pin | 31. Bolt |
| 9. Clip | 32. Plug |
| 10. Bolt | 33. Plug |
| 11. 1st & 2nd Gear Shift Fork | 34. Speedometer Driven Gear |
| 12. 1st & 2nd Gear Shift Rod | 35. Bolt |
| 13. Pin | 36. Differential Gear Cover Gasket |
| 14. 3rd & 4th Gear Shift Fork | 37. Differential Gear Cover |
| 15. 3rd & 4th Gear Shift Rod | 38. Screw |
| 16. Pin | 39. Backup Lamp Switch |
| 17. 5th Speed Engaging Piece | 40. O–ring |
| 18. Gear Shift Rod Pawl | 41. Pin |
| 19. Reverse Gear Shift Fork | 42. Pin |
| 20. Reverse Gear Shift Rod | 43. Sleeve |
| 21. Pin | 44. Bush |
| 22. Gear Shift Rod | |
| 23. Shift Finger | |

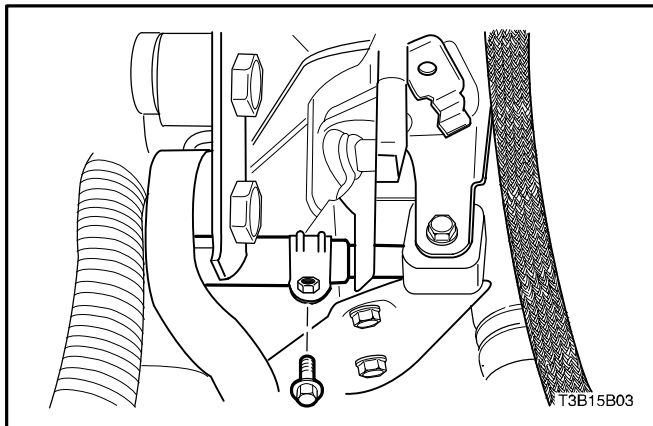
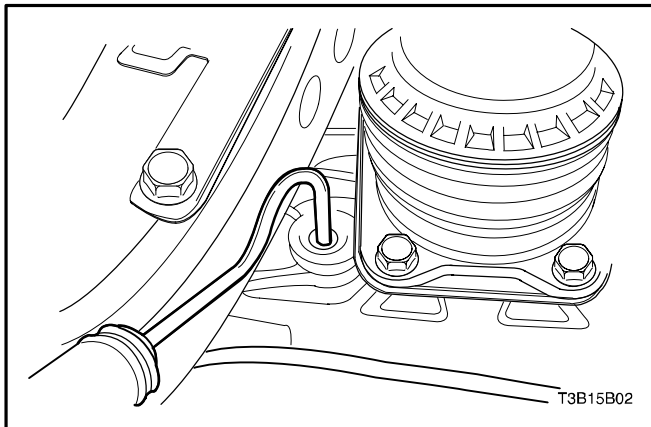
MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE



CHECKING FLUID LEVEL

1. With the vehicle on a level surface and the fluid in the transaxle cold, remove the filler plug and check the fluid level. The fluid should come to the bottom edge of the plug hole.
2. If the level is low, add SAE 80 manual transaxle fluid through the filler plug hole until the fluid begins to run out.
3. Reinstall the filler plug and tighten it securely.
4. If the fluid is contaminated, drain the oil after removing the differential gear cover.



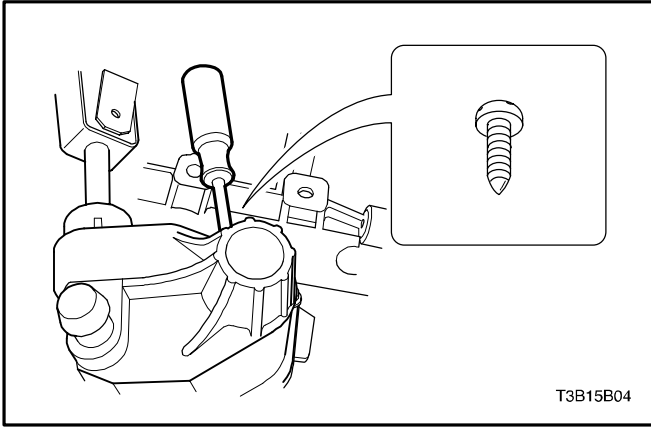
SHIFT LINKAGE ADJUSTMENT

(LEFT-HAND DRIVE SHOWN, RIGHT-HAND DRIVE SIMILAR)

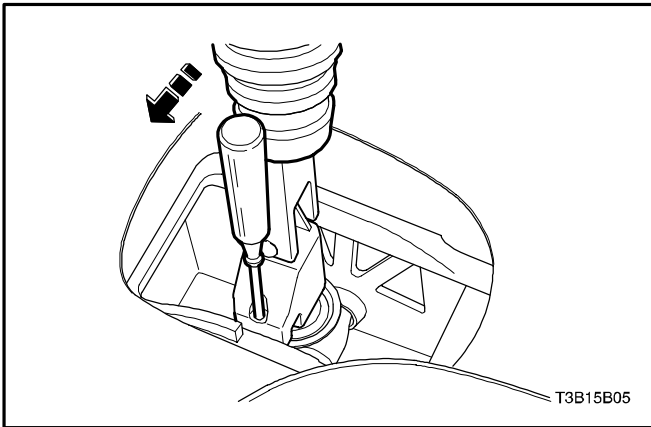
1. Disconnect the negative battery cable.
2. Position the gearshift lever into NEUTRAL.

Important : All the gears must be easy to engage when the vehicle is stationary, the engine is running, and the clutch is disengaged.

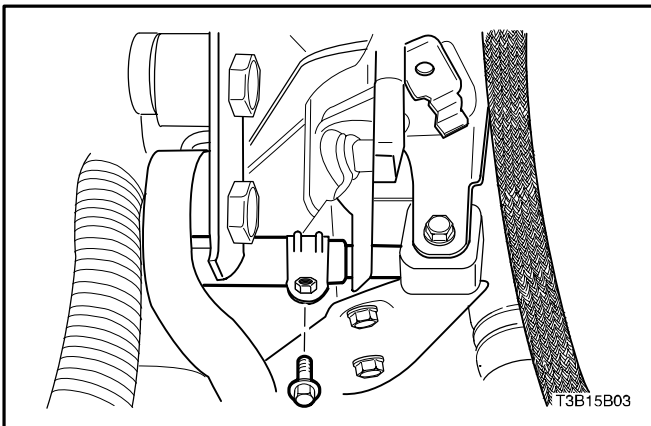
3. Loosen the rod clamp bolt.



4. Remove the adjustment hole plug from the shift lever cover.
5. Turn the gearshift rod and fully insert a 5 mm (0.2 inch) gauge pin into the adjustment hole.



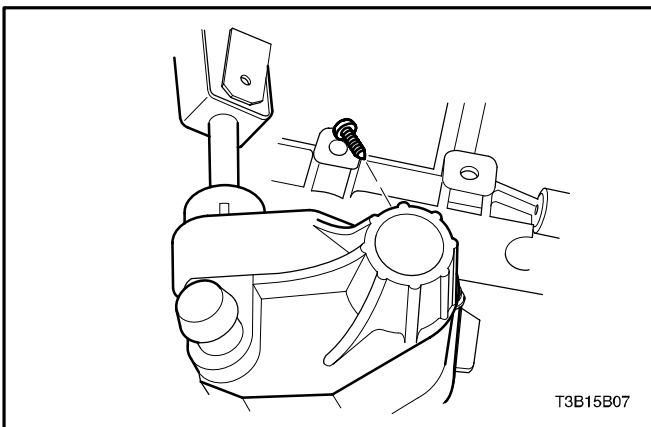
6. Remove the boot from the console.
7. Pull the boot upward to expose the shift control lever mechanism.
8. Position the gearshift lever close to left side of the NEUTRAL position.
9. Insert a 5 mm (0.2 inch) gauge pin into the holes to align the gearshift lever with the gearshift lever housing.



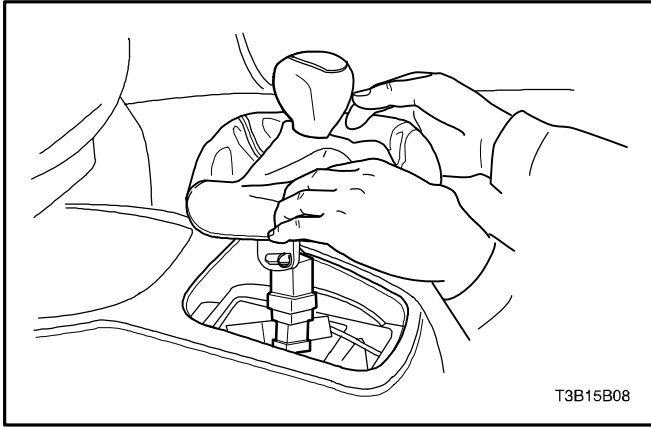
10. Tighten the rod clamp bolt.

Tighten

Tighten the rod clamp bolt to 14 N•m (124 lb-in).



11. Remove the 5 mm (0.2 inch) gauge pin from the adjustment hole.
12. Install the adjustment hole plug.
13. Remove the 5 mm (0.2 inch) gauge pin from the gearshift lever.
14. Install the boot to the console.
15. Connect the negative battery cable.

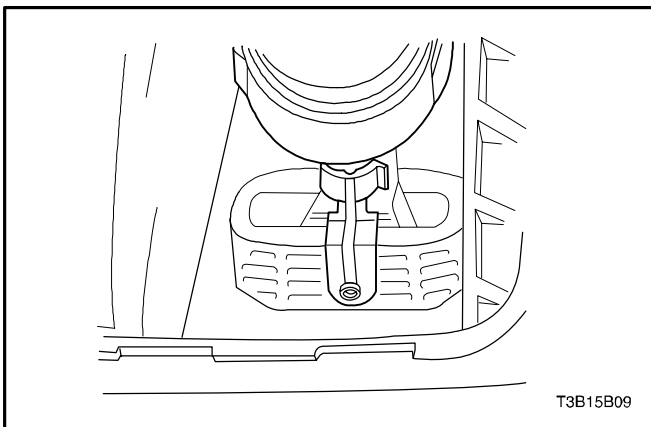
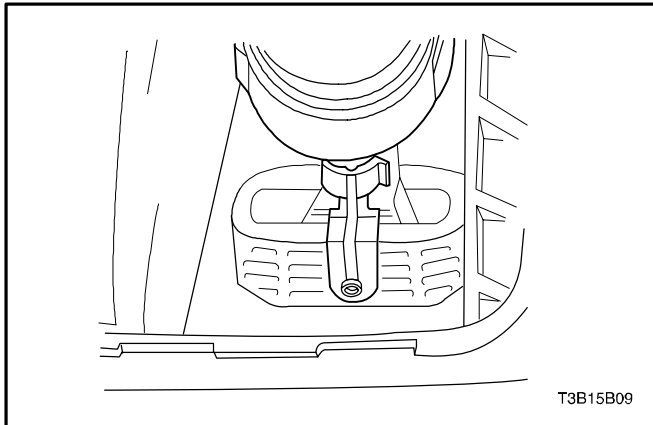


GEARSHIFT LEVER

**(LEFT-HAND DRIVE SHOWN,
RIGHT-HAND DRIVE SIMILAR)**

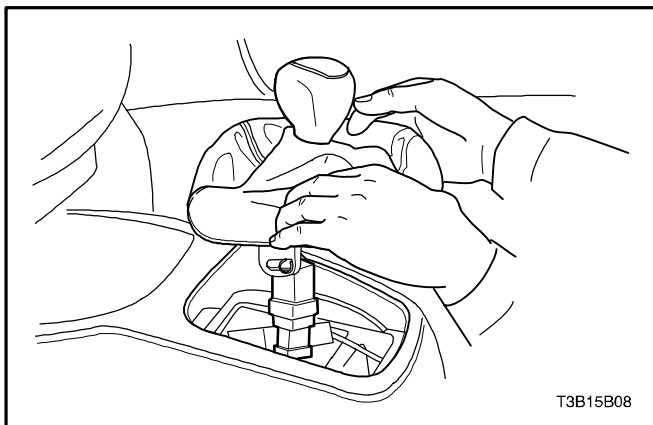
Removal Procedure

1. Disconnect the negative battery cable.
2. Position the gearshift lever into NEUTRAL.
3. Disconnect the boot from the console cover.
4. Lift the console cover upward to expose the shift control lever mechanism.
5. Rotate the gearshift lever stop clamp and remove it.
6. Remove the gearshift lever from the gearshift lever shaft.

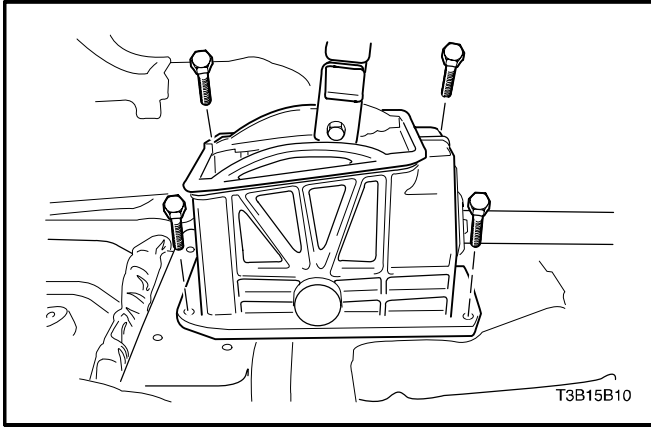


Installation Procedure

1. Install the gearshift lever into the gearshift lever shaft.
2. Install the gearshift lever stop clamp.
3. Rotate the gearshift lever stop clamp to secure it.



4. Lower the boot and connect it to the console cover.
5. Connect the negative battery cable.

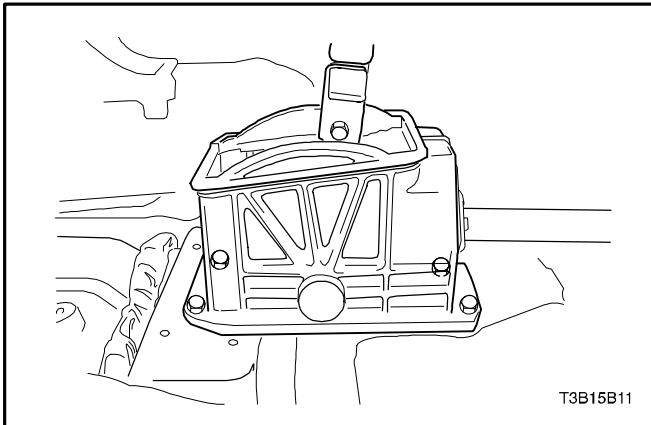


GEARSHIFT LEVER HOUSING

(LEFT-HAND DRIVE SHOWN,
RIGHT-HAND DRIVE SIMILAR)

Removal Procedure

1. Disconnect the negative battery cable.
2. Remove the rod clamp. Refer to "Shift Linkage Adjustment" in this section.
3. Remove the console.
4. Remove the gearshift lever housing bolts and the gearshift lever housing.



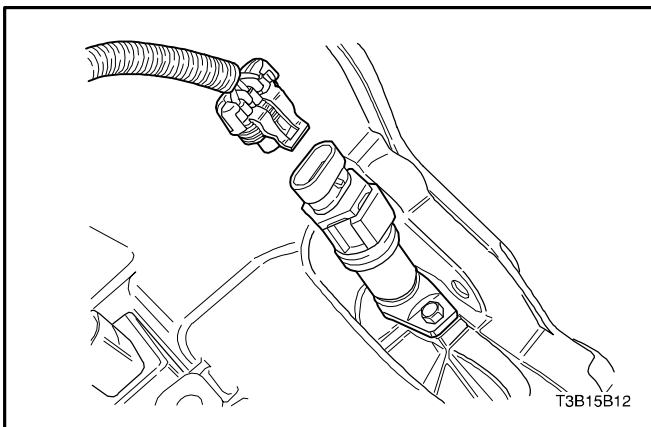
Installation Procedure

1. Install the gearshift lever housing and the gearshift lever housing bolts.

Tighten

Tighten the gearshift housing bolts to 7 N•m (62 lb-in).

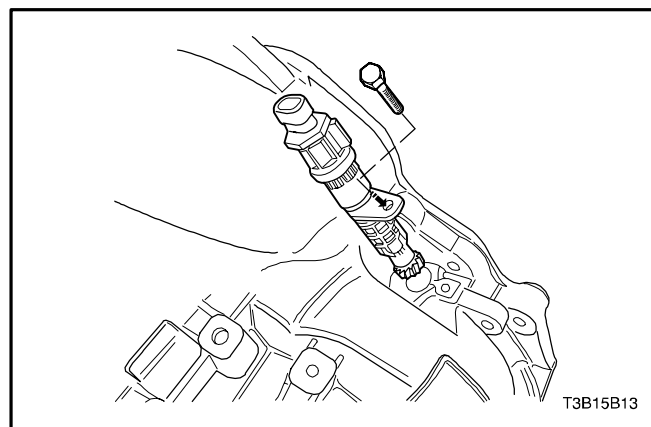
2. Adjust the shift linkage.
3. Install the console.
4. Connect the negative battery cable.



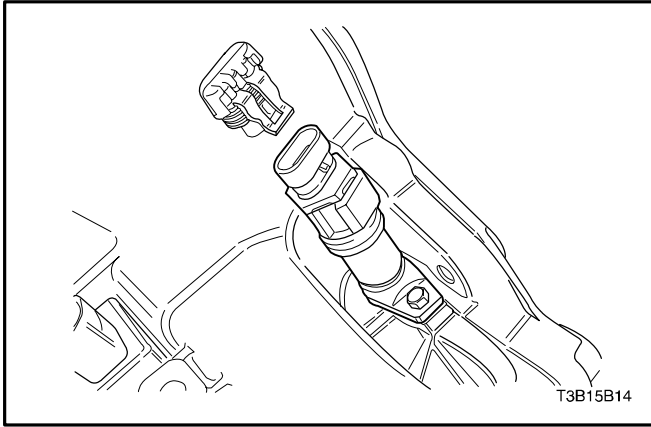
SPEEDOMETER DRIVEN GEAR

Removal Procedure

1. Disconnect the speedometer speed sensor electrical connector.



2. Remove the speedometer housing retaining bolt.
3. Remove the speedometer-driven gear and the speedometer housing.

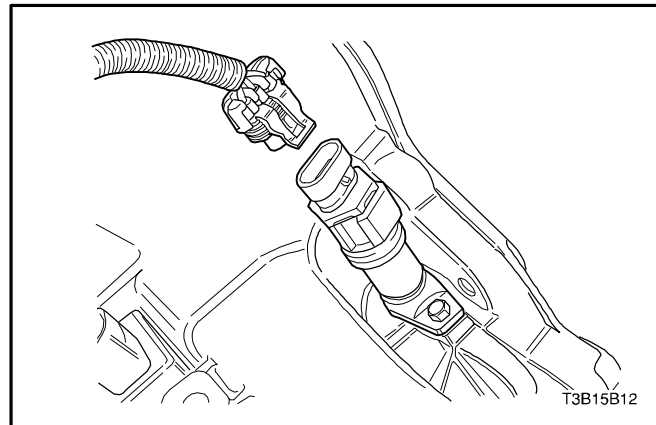


Installation Procedure

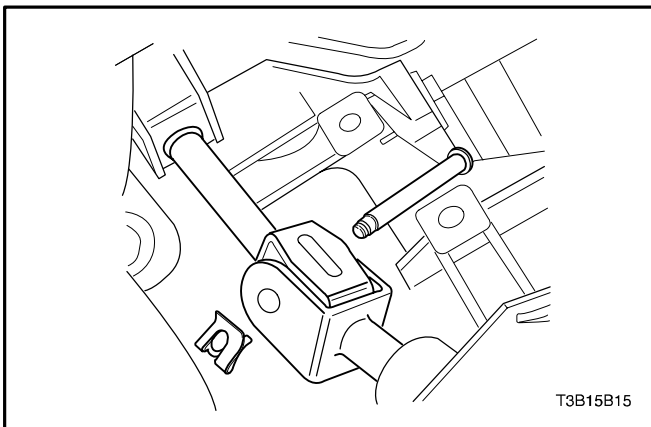
1. Coat the O-ring with petroleum jelly.
2. Install the speedometer-driven gear and the speedometer housing.
3. Install the speedometer housing retaining bolt.

Tighten

Tighten the speedometer housing retaining bolt to 4 N•m (35 lb-in).



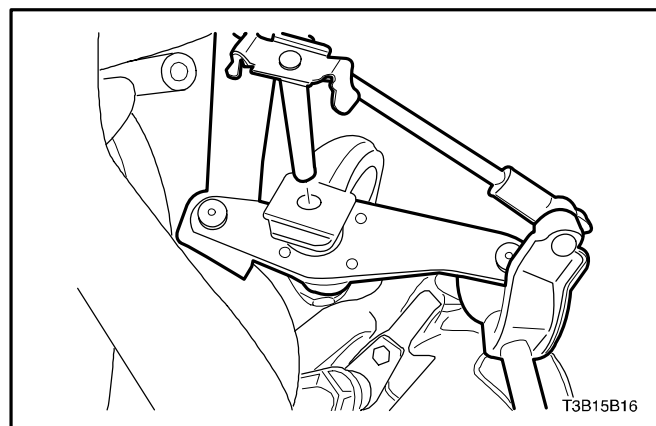
4. Connect the speedometer speed sensor electrical connector.



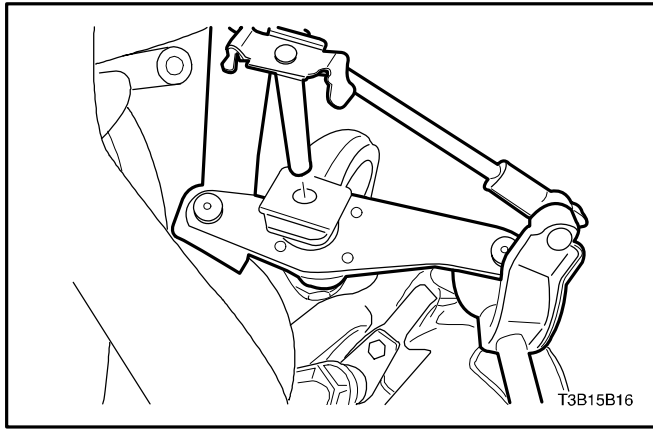
SHIFT LINKAGE ASSEMBLY

Removal Procedure

1. Disconnect the negative battery cable.
2. Remove the rod clamp. Refer to "Shift Linkage Adjustment" in this section.
3. Remove the clip and the bolt from universal joint.
4. Separate the universal joint from the transaxle.

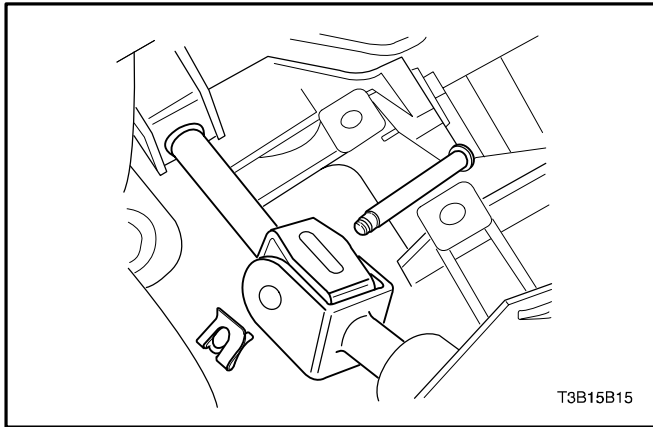


5. Remove the fixing shaft pin and separate the linkage connection part from the transaxle rear mounting bracket.
6. Remove the shift linkage assembly.

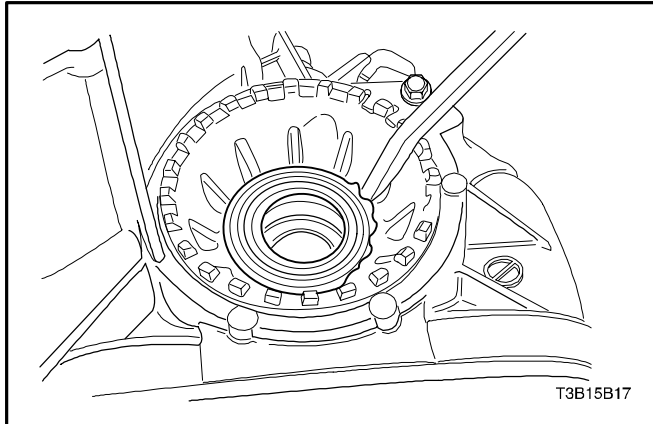


Installation Procedure

1. Install the shift linkage assembly.
2. Install the fixing shaft pin and connect the linkage connection part to the transaxle rear mounting bracket.



3. Install the universal joint to the transaxle.
4. Install the clip and the bolt from universal joint.
5. Install the rod clamp. Refer to "Shift Linkage Adjustment" in this section.
6. Adjust the shift linkage. Refer to "Shift Linkage Adjustment" in this section.
7. Connect the negative battery cable.



DRIVE AXLE SEAL

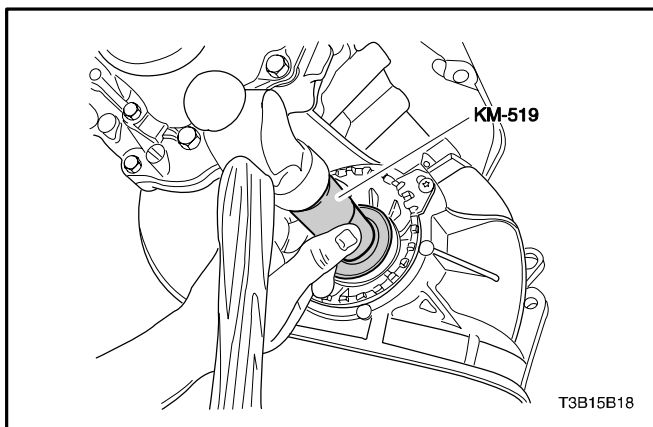
Tools Required

KM-519 Ring Installer

Removal Procedure

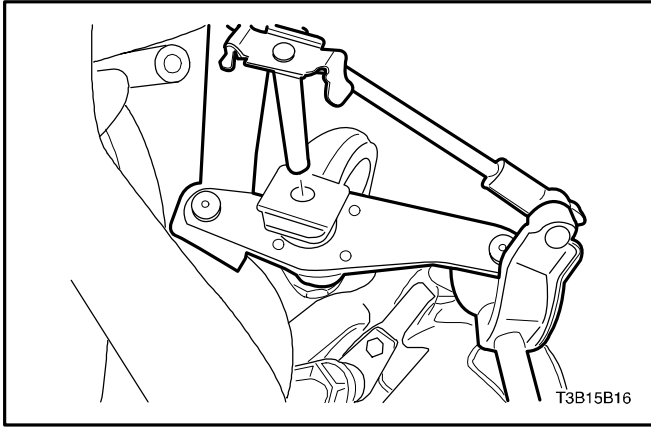
Notice : Do not damage the bearing adjusting ring with the pry bar.

1. Remove the drive axle from the transaxle. Refer to *Section 3B, Manual Transaxle Drive Axle*.
2. Remove the drive axle seal by lifting the outer lip of the seal with a pry bar.



Installation Procedure

1. Install the new drive axle seal using the ring installer KM-519 and a hammer.
2. Coat the seal lip with the transaxle fluid.
3. Install the drive. Refer to *Section 3B, Manual Transaxle Drive Axle*.



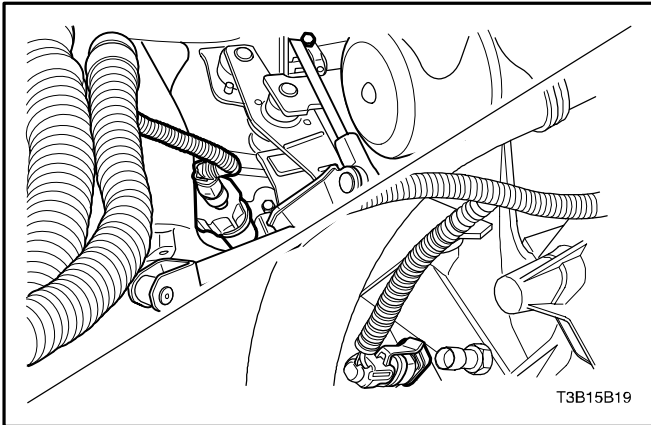
TRANSAXLE ASSEMBLY

Tools Required

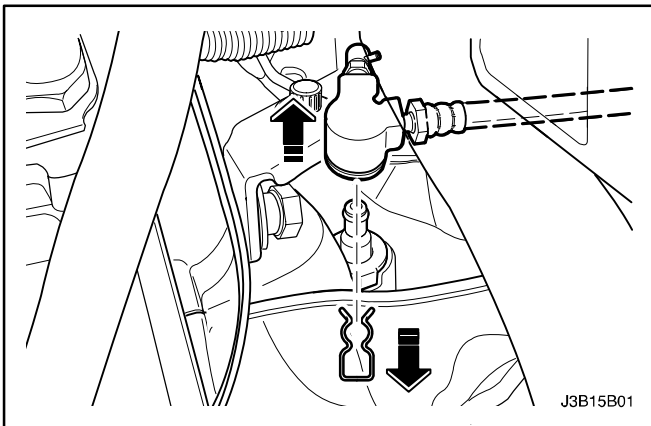
J-28467-B Engine Support Fixture

Removal Procedure

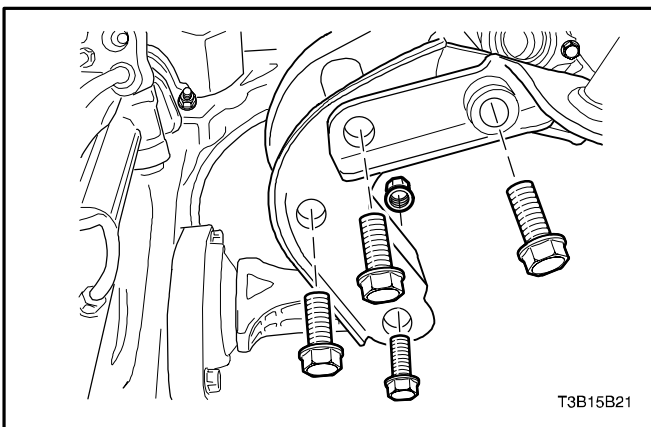
1. Install the engine support fixture J-28467-B.
2. Remove the battery and battery tray. Refer to *Section 1E, ENGINE ELECTRICAL*.
3. Remove the shift linkage assembly. Refer to "Shift Linkage Adjustment" in this section.
4. Remove the drive axle shaft. Refer to *Section 3B, Manual Transaxle Drive Axle*.
5. Disconnect the backup lamp switch electrical connector.
6. Disconnect the speedometer speed sensor electrical connector.

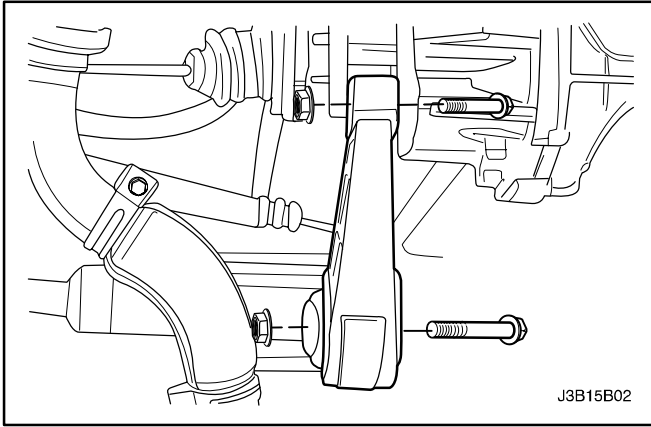


7. Remove the pin and the clutch release cylinder pipe.

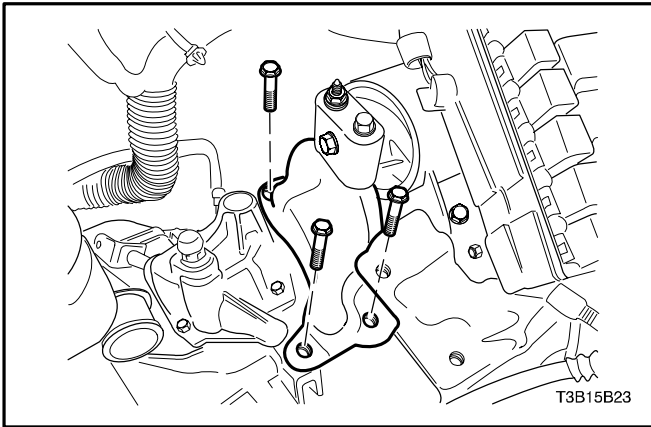


8. Remove the damping block connection nut and bolt.
9. Remove the three rear mounting bracket bolts.
10. Remove the rear mounting bracket from the transaxle.

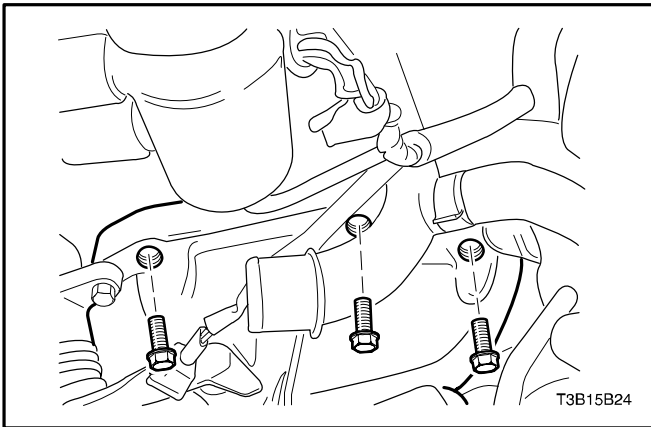




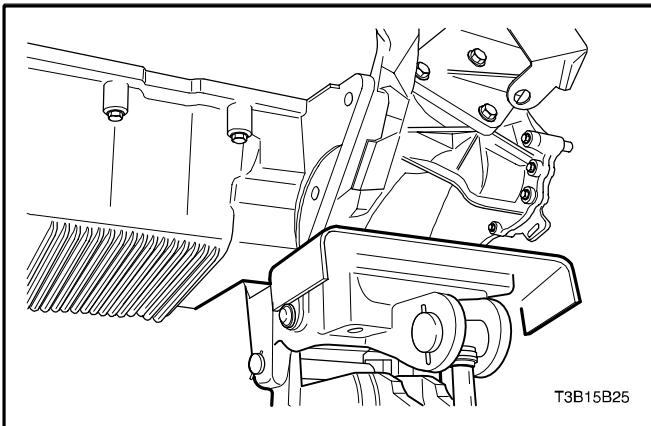
11. Remove the two rear damping block retaining bolts.
12. Remove the rear damping block from the front cross member.



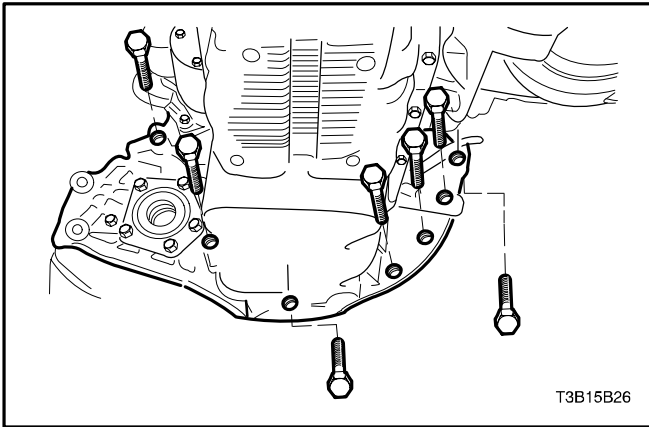
13. Remove the two cage retaining bolts.
14. Remove the three transaxle upper mounting bracket bolts.
15. Remove the upper mounting bracket and cage.



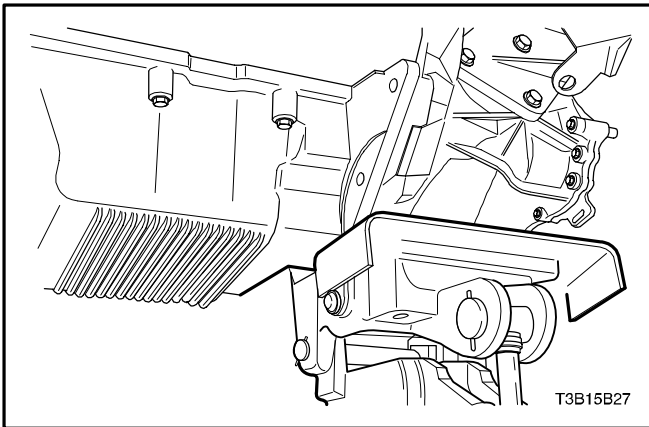
16. Remove the three transaxle upper retaining bolts.



17. Support the transaxle with a transaxle support jack.



18. Remove the seven transaxle lower retaining bolts.

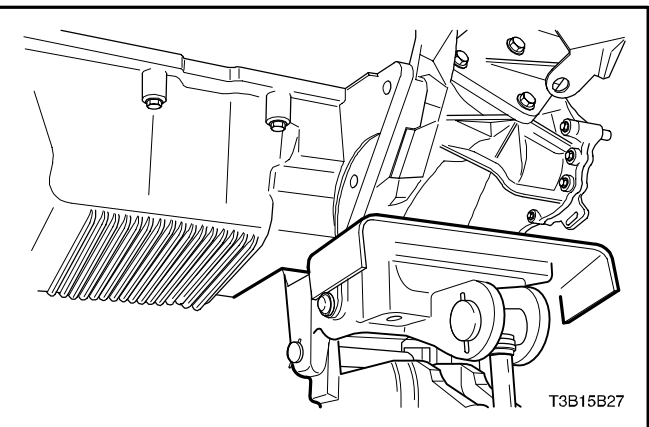


19. Remove the transaxle.

Notice : Rest the transaxle only in an upright position.

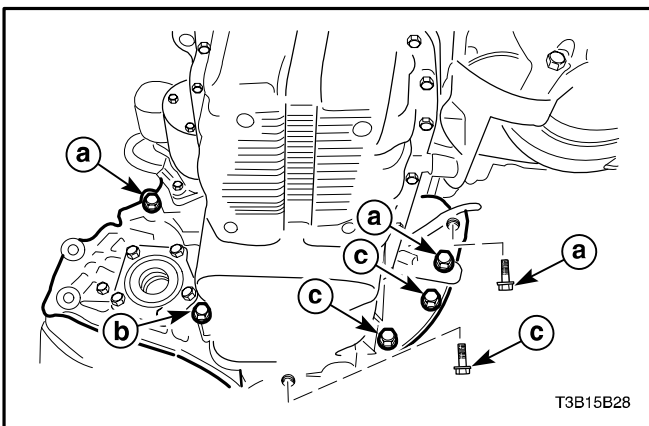
20. Slide the transaxle sideways away from the engine block.

21. Lower the transaxle.



Installation Procedure

1. Support the transaxle with a transaxle support jack.
2. Install the transaxle by inserting the transaxle input shaft into the clutch disc and sliding the transaxle sideways into the engine block.



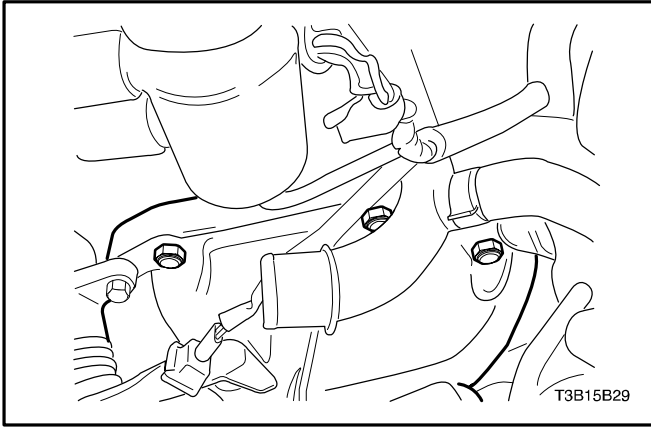
3. Install the seven transaxle lower retaining bolts.

Tighten

Tighten the transaxle lower retaining bolts(a) to 73 N•m (54 lb–ft).

Tighten the transaxle lower retaining bolt(b) to 31 N•m (23 lb–ft).

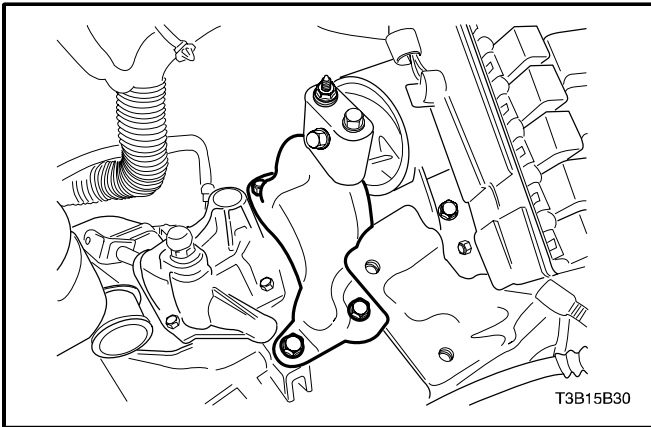
Tighten the transaxle lower retaining bolts(c) to 21 N•m (15 lb–ft).



4. Install the three transaxle upper retaining bolts.

Tighten

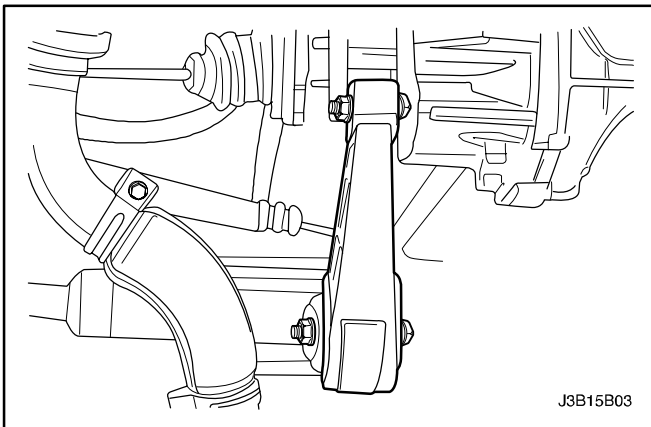
Tighten the transaxle upper retaining bolts to 73 N•m (54 lb–ft).



5. Install the cage retaining bolt and cage.
6. Install the three transaxle upper mounting bracket bolts and bracket.

Tighten

Tighten the transaxle upper mounting bracket bolts to 48 N•m (35 lb–ft).

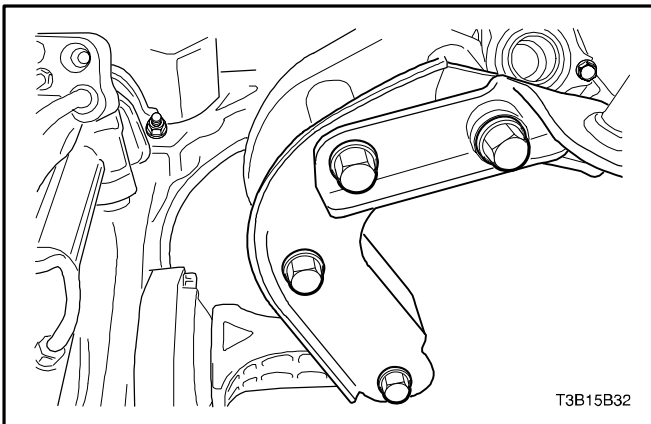


7. Install the two rear damping block retaining bolts.

Tighten

Tighten the rear damping block retaining bolts to 68 N•m (50 lb–ft).

8. Install the rear damping block from the front cross member.



9. Install the three rear mounting bracket bolts and the bracket.

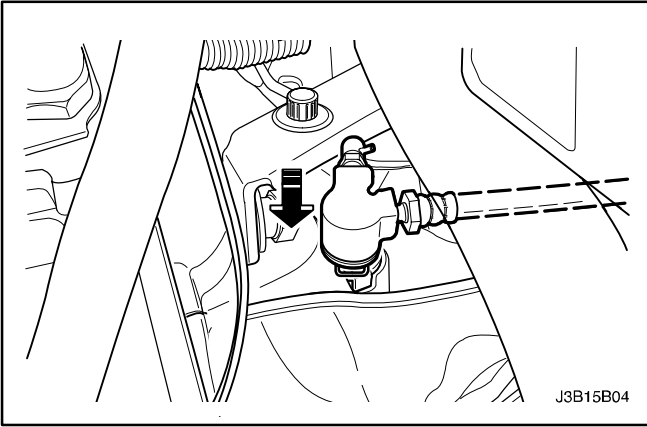
Tighten

Tighten the rear mounting bracket bolts to 90 N•m (66 lb–ft).

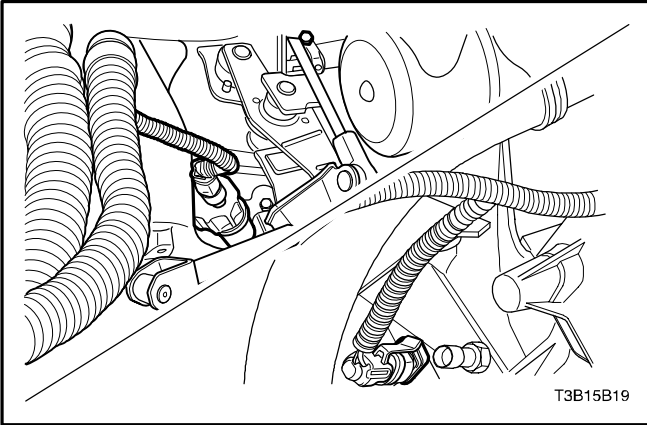
10. Install the damping block connection nut and bolt.

Tighten

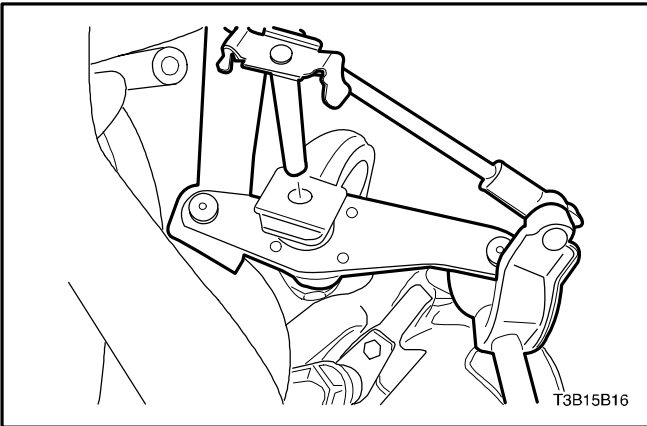
Tighten the damping block connection nut and bolt to 68 N•m (50 lb–ft).



11. Connect the clutch release cylinder pipe.



12. Connect the speedometer speed sensor electrical connector.
13. Connect the backup lamp switch electrical connector.



14. Remove the engine support fixture J-28467-B.
15. Install the drive axle shaft. Refer to *Section 3B, Manual Transaxle Drive Axle*.
16. Install the shift linkage assembly. Refer to "Shift Linkage Assembly" in this section.
17. Install the battery and battery tray. Refer to *Section 1E, ENGINE ELECTRICAL*.
18. Inspect the fluid level. Refer to "Checking Fluid Level" in this section.

UNIT REPAIR

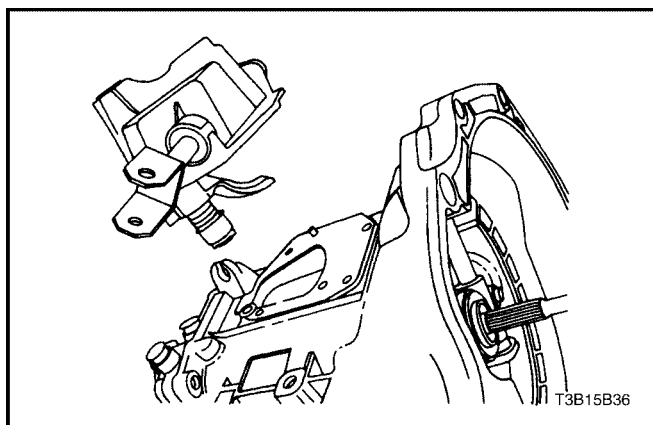
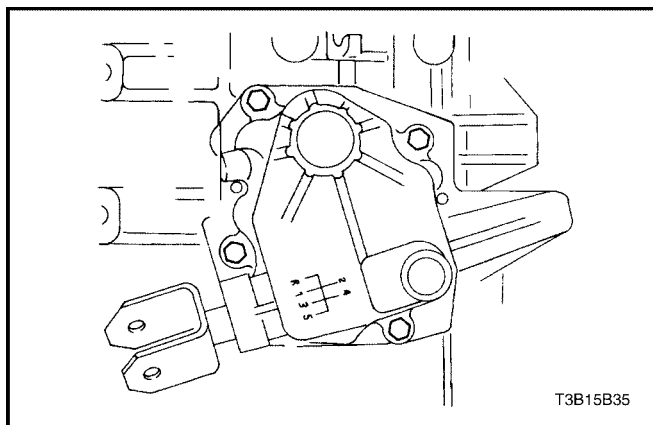
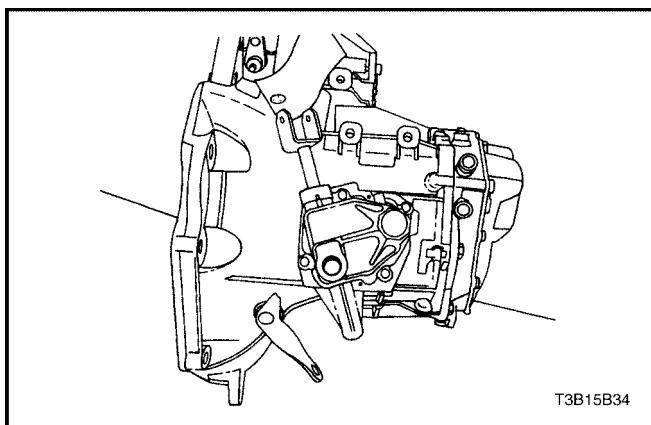
MAJOR COMPONENT DISASSEMBLY

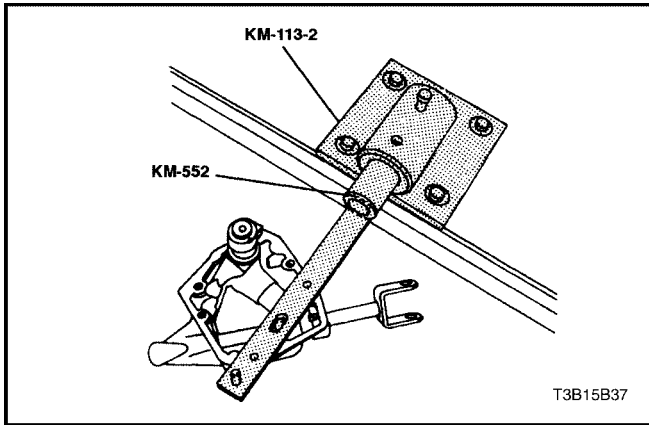
Tools Required

J-6125-B Slide Hammer
J-22888-20-A Bearing Puller with J-22888-35 Puller Legs
KM-553-A Fifth Gear Puller
J-36633 Snap Ring Retainer
KM-113-2 Base
J-42469 Shift Rod Remover
KM-552 Fixture

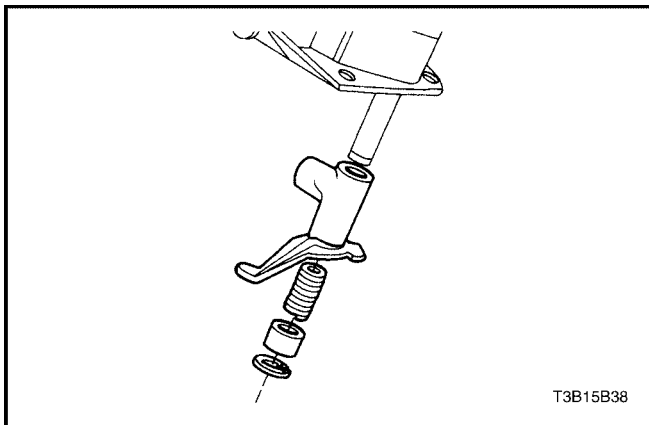
Disassembly Procedure

1. Remove the transaxle from the vehicle. Refer to "Transaxle Assembly" in this section.
2. Remove the filler plug at the cover.
3. Remove the bolts from the gearshift lever cover.
4. Remove the gearshift lever cover.

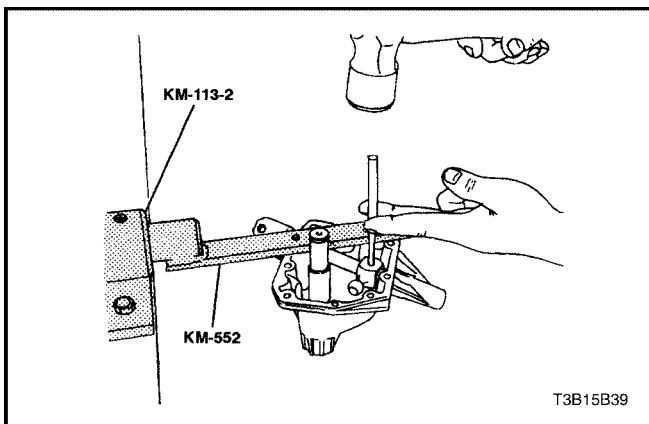




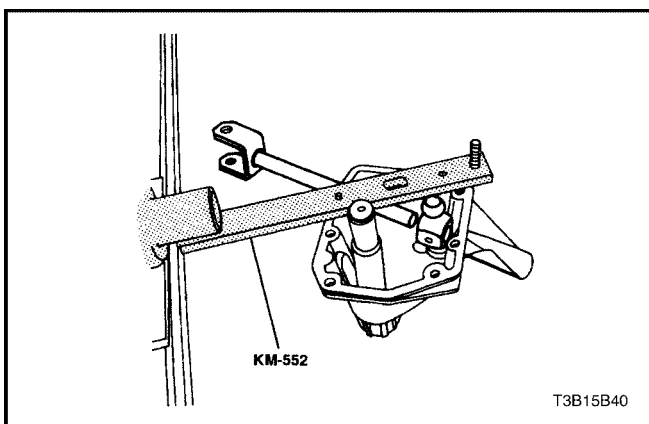
5. Bolt the gearshift lever cover to the fixture KM-552.
6. Position the fixture KM-552 into the base KM-113-2.



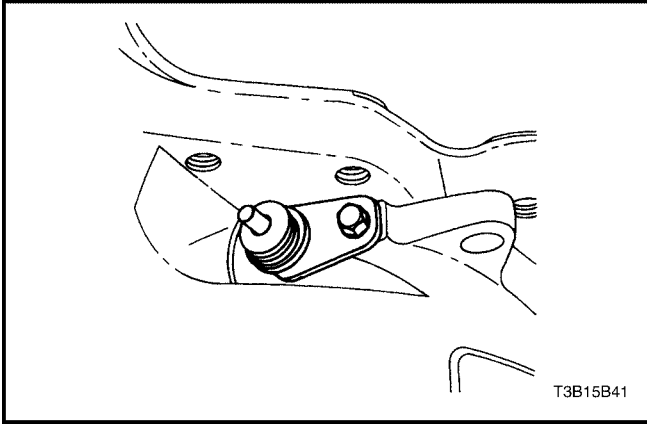
7. Remove the snap ring, the bushing, the spring, and the intermediate lever.



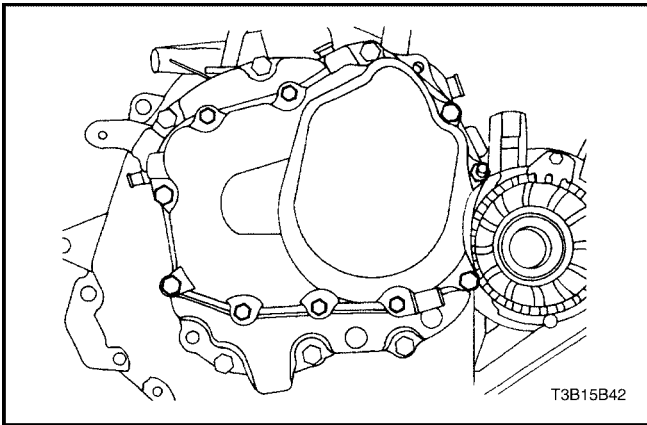
8. Remove the shift finger lever pin.



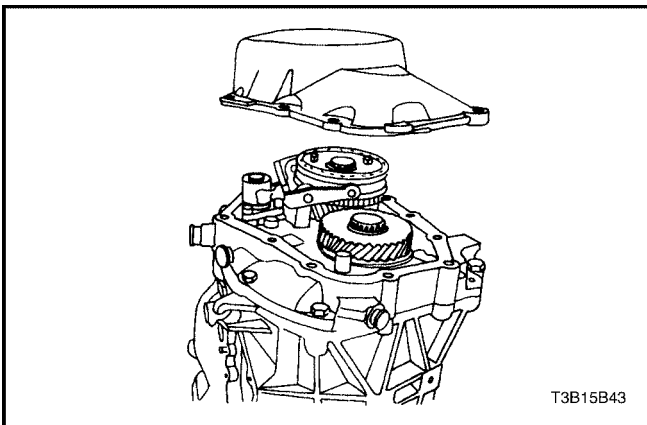
9. Remove the gearshift rod and the shift finger lever.



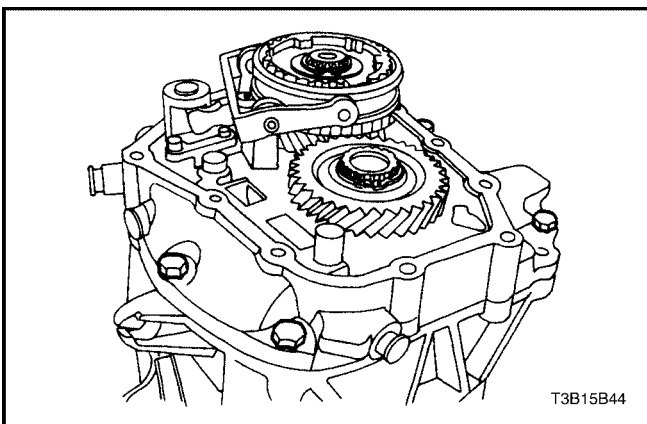
10. Remove the bolt and the speedometer-driven gear from the transaxle housing.



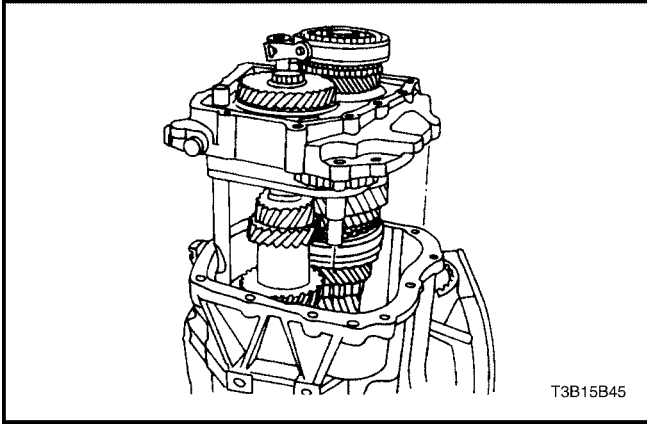
11. Remove the transaxle cover bolts.



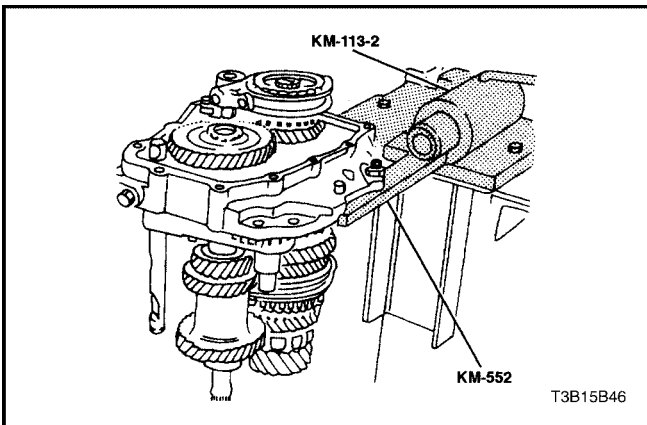
12. Remove the transaxle cover.



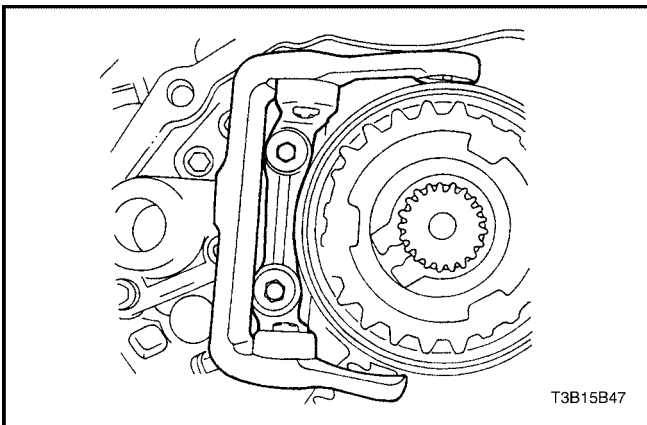
13. Shift the transaxle into second gear.
14. Remove the bearing plate bolts.



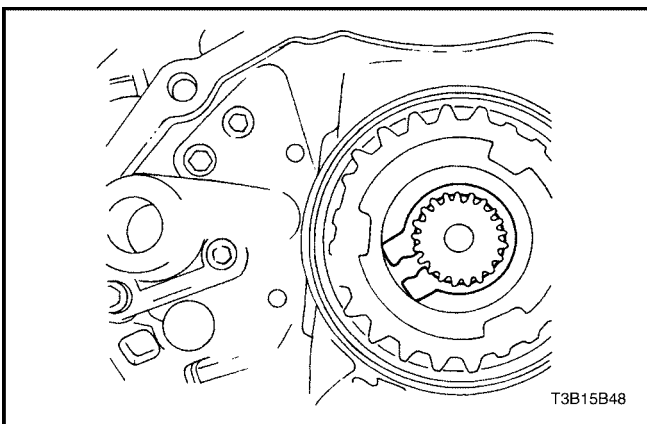
15. Remove the bearing plate from the case with the shafts attached.



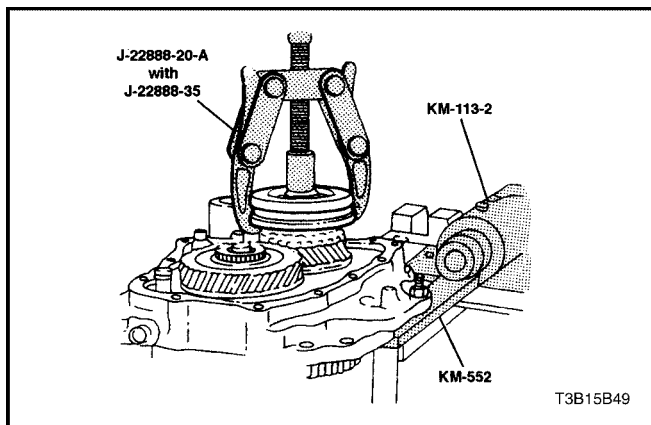
16. Shift the transaxle into reverse (R).
17. Bolt the bearing plate to the fixture KM-552 and install the fixture KM-552 into the base KM-113-2.



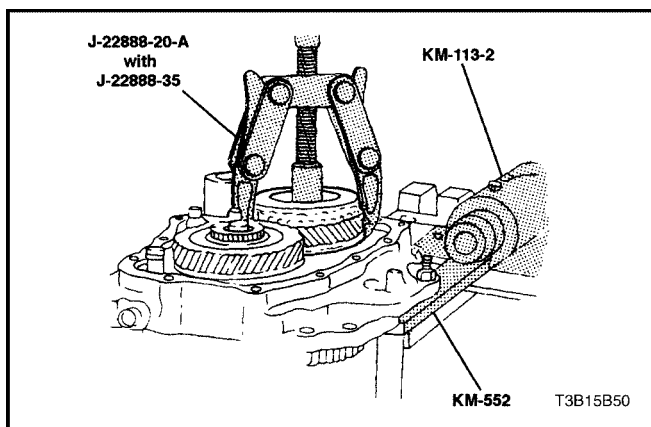
18. Remove the bolts and the fifth-gear fork from the bearing plate.



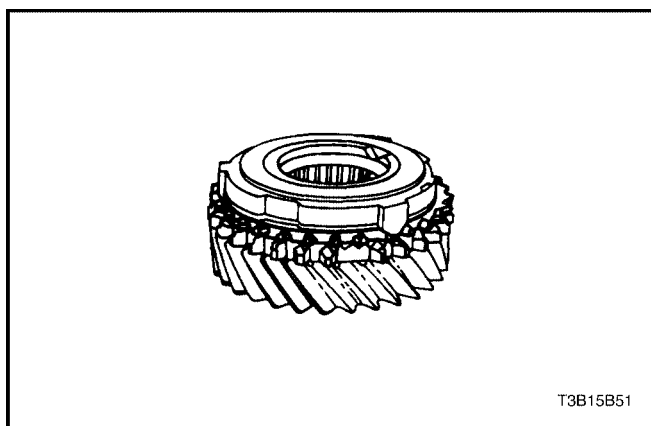
19. Remove the mainshaft-driven fifth-speed assembly snap ring.



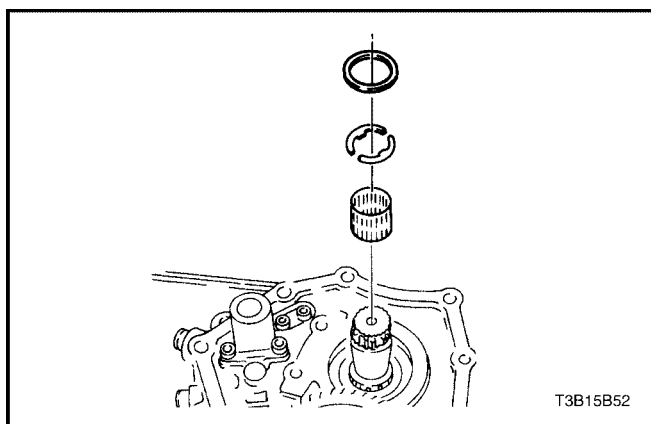
20. Remove the fifth driven gear synchronizer sleeve and the synchronizer gear using the bearing puller J-22888-20-A with the puller legs J-22888-35.



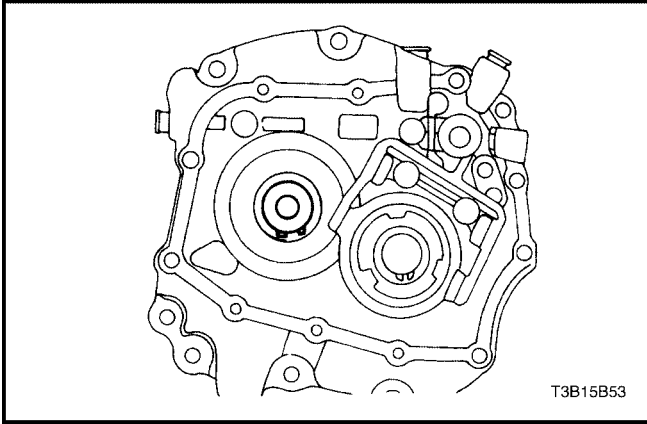
21. Remove the mainshaft-driven fifth-gear assembly.



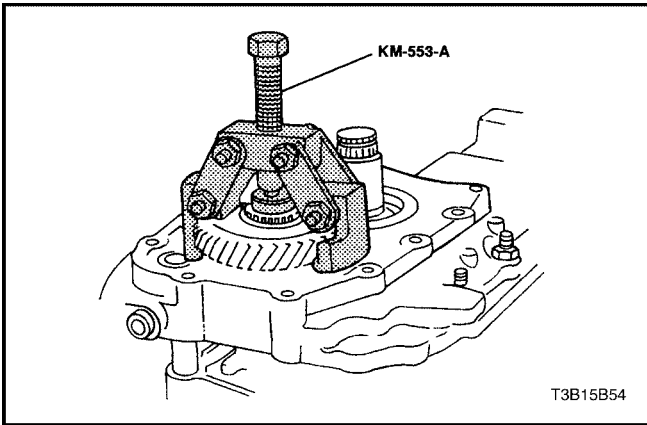
22. Remove the brass synchronizer ring.



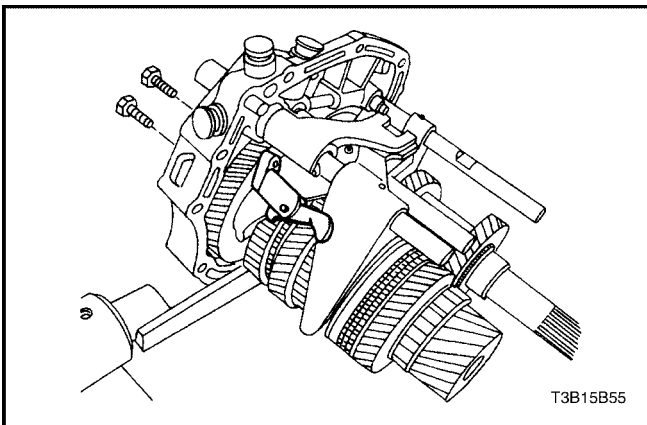
23. Remove the needle bearing, the retaining ring, and the thrust washers.



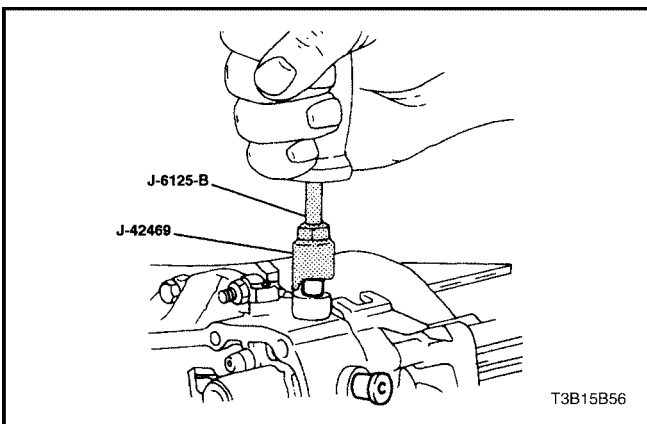
24. Remove the input drive fifth-gear snap ring.



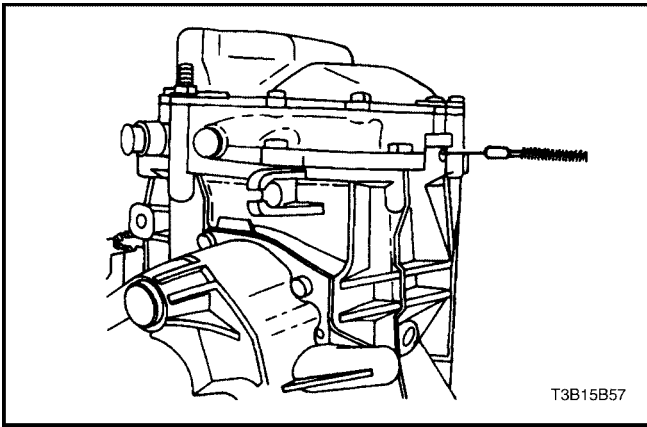
25. Remove the input drive fifth gear using the fifth-gear puller KM-553-A.



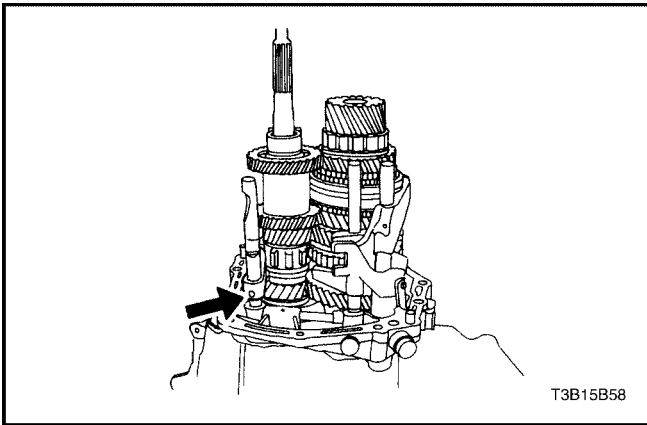
26. Remove the bolts and the fifth-gearshift connector from the bearing plate using the pawl.



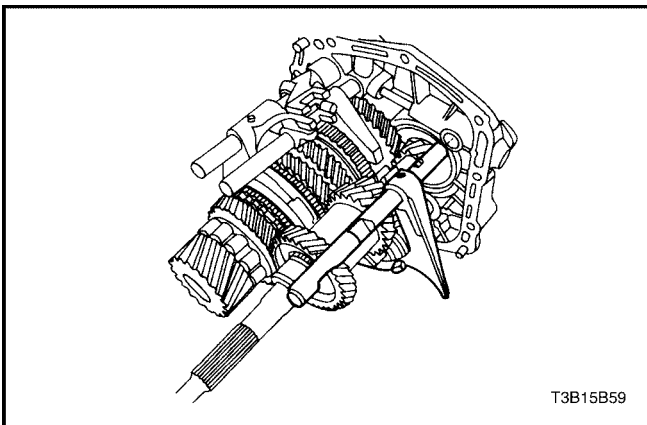
27. Remove the four shift-rod plugs using the shift rod remover J-42469 and the slide hammer J-6125-B.



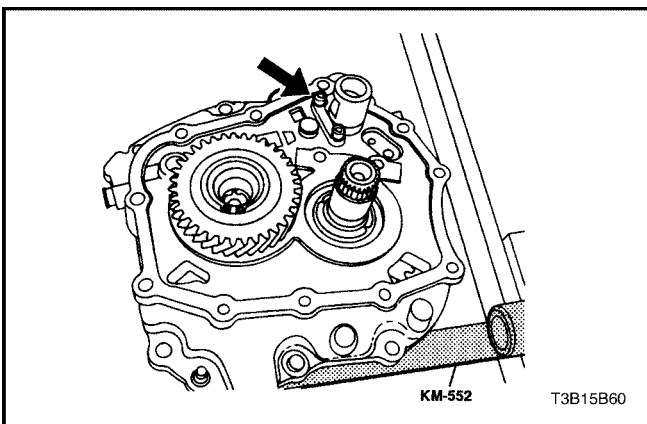
28. Remove the spring and the rod lock pin from the small plug hole.



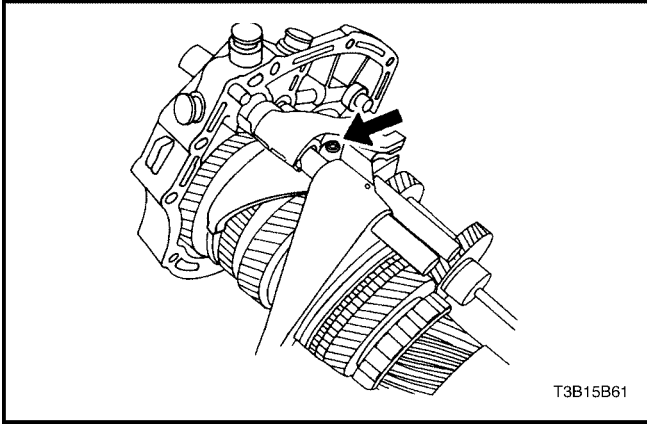
29. Remove the pin from the reverse gearshift rod/fork assembly.



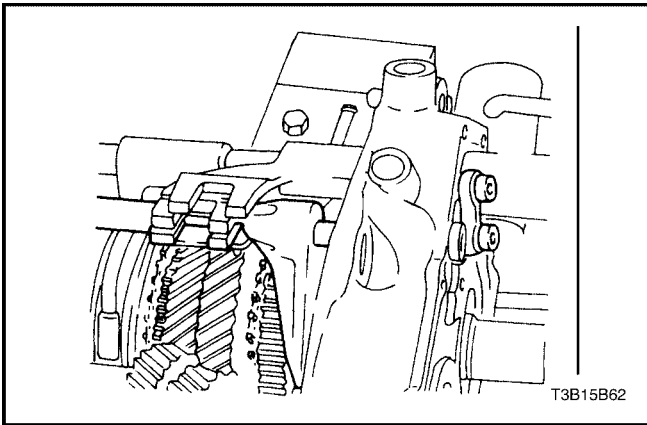
30. Remove the reverse gearshift rod/fork assembly from the bearing plate.



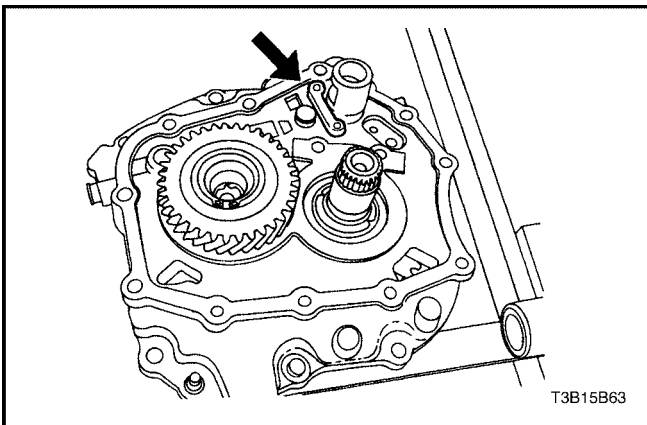
31. Remove the bolts from the support bracket.



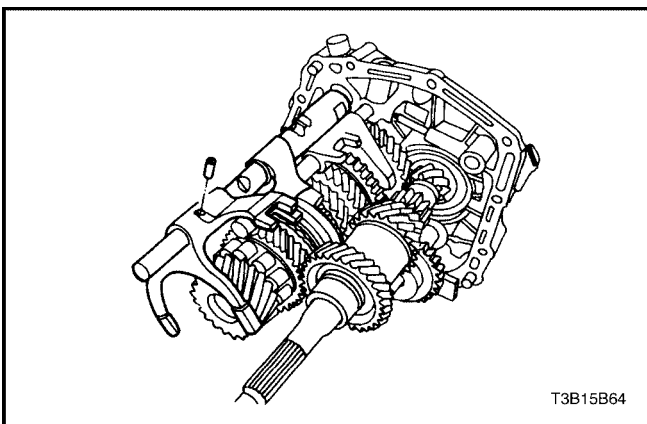
32. Remove the first-second gearshift fork holding pin.



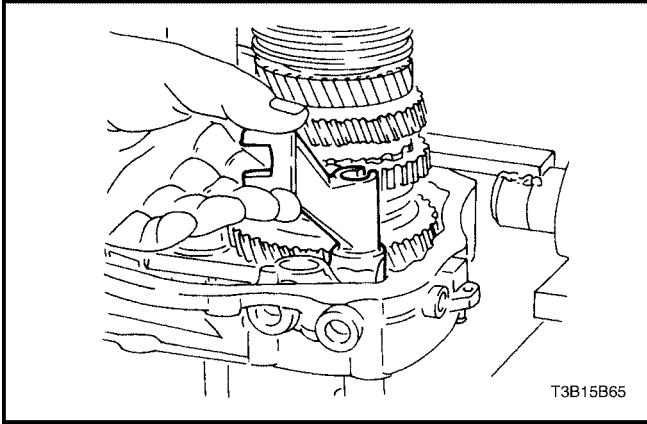
33. Drive the first-second gearshift rod out until it is just free of the bearing plate.



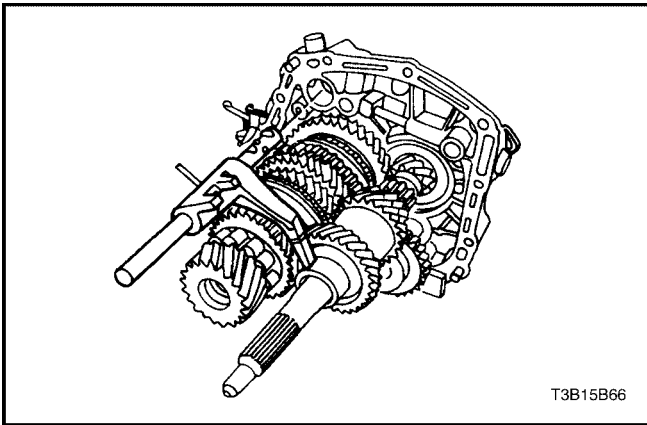
34. Remove the support bracket from the bearing plate.



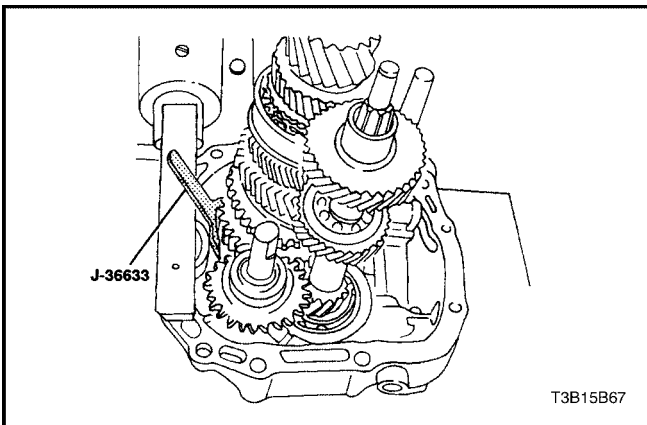
35. Remove the third-fourth gearshift fork holding pin and the third-fourth gearshift rod.



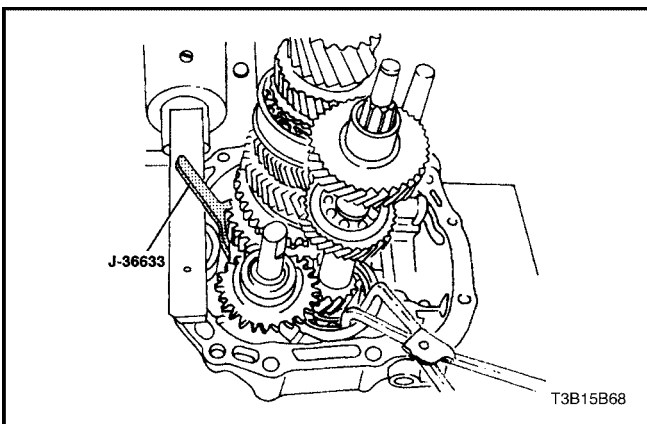
36. Remove the fifth gearshift lever from the bearing plate.



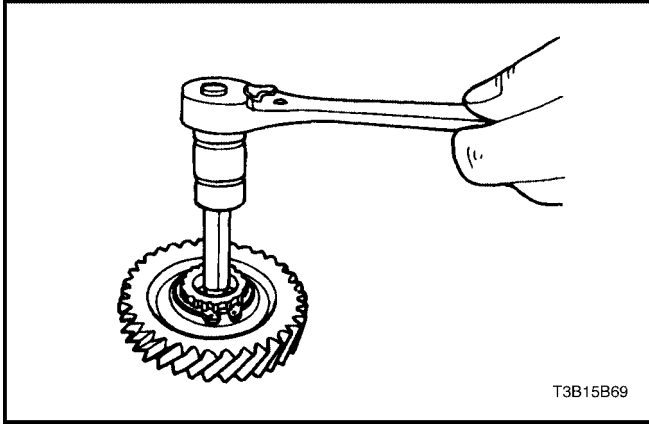
37. Remove the first-second gearshift rod.



38. Compress the snap ring holding the mainshaft and secure it with the snap ring retainer J-36633.



39. Hold the snap ring open at the base of the input shaft using the snap ring pliers.
40. Remove the mainshaft assembly and the input shaft assembly from the bearing plate.



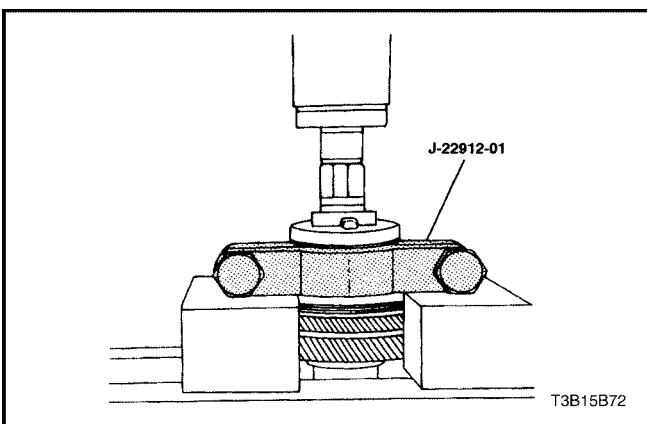
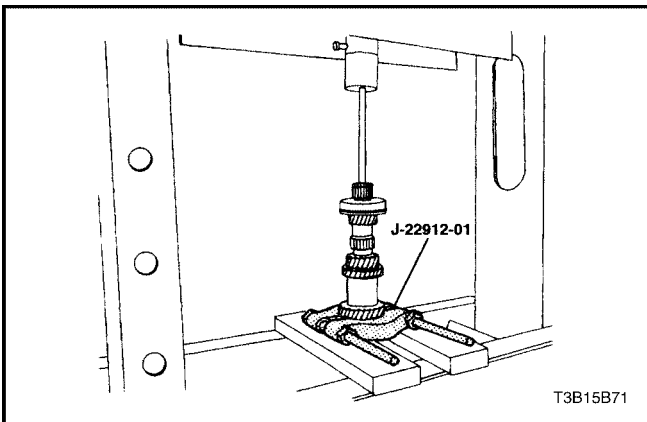
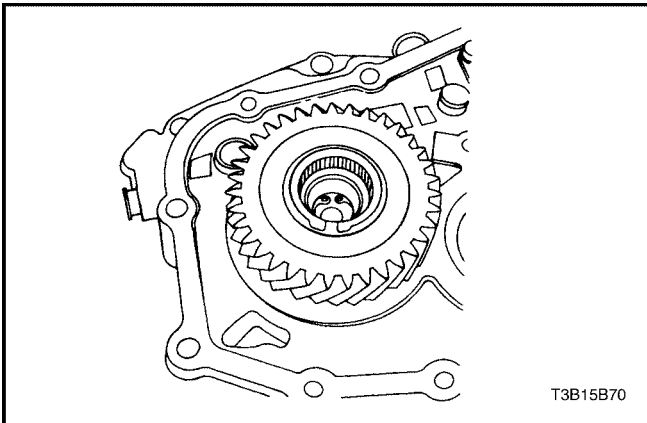
INPUT SHAFT AND CLUSTER GEAR

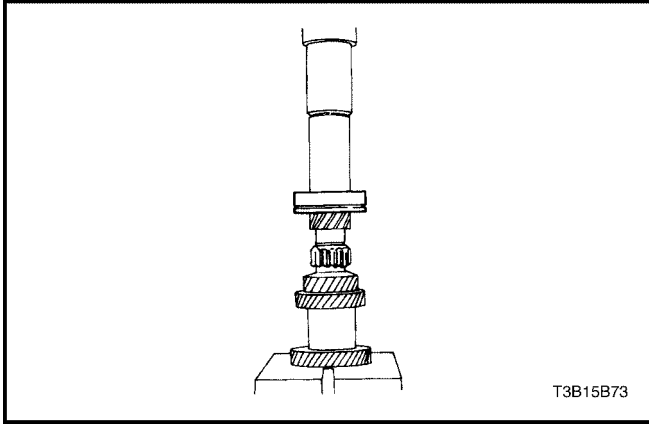
Tools Required

J-22912-01 Universal Bearing Puller

Disassembly Procedure

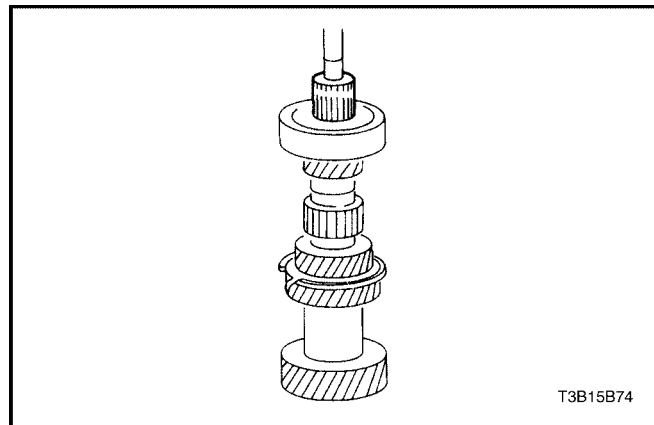
1. Remove the detent screw at the end of the input driveshaft.
2. Remove the snap ring at the base of the gear cluster.
3. Press the input driveshaft from the input shaft cluster gear using the universal bearing puller J-22912-01.
4. Remove the cluster shaft bearing from the input shaft gear cluster using universal bearing puller J-22912-01.



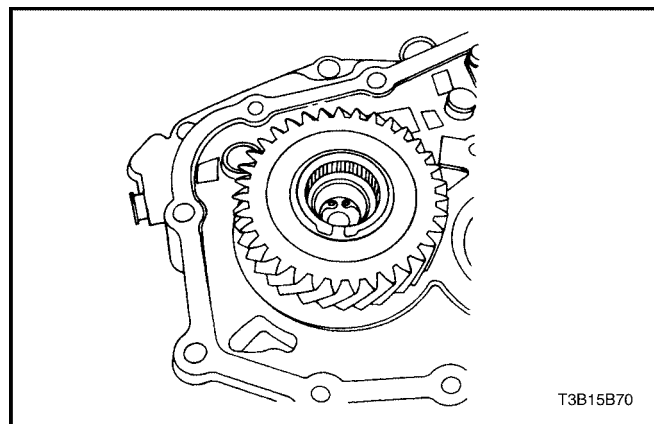


Assembly Procedure

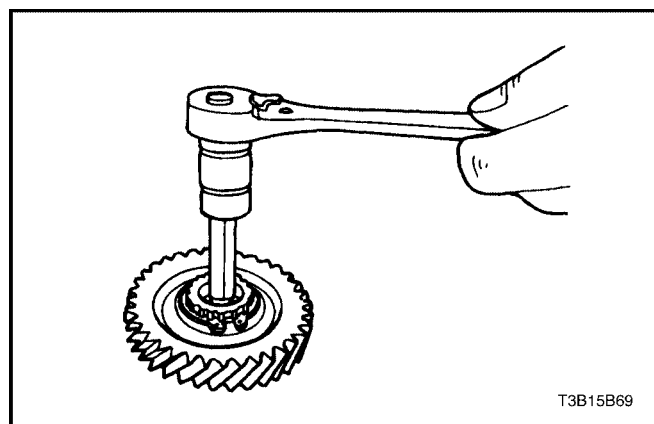
1. Press the cluster shaft bearing onto the input shaft gear cluster.



2. Press the input driveshaft into the input shaft gear cluster assembly.



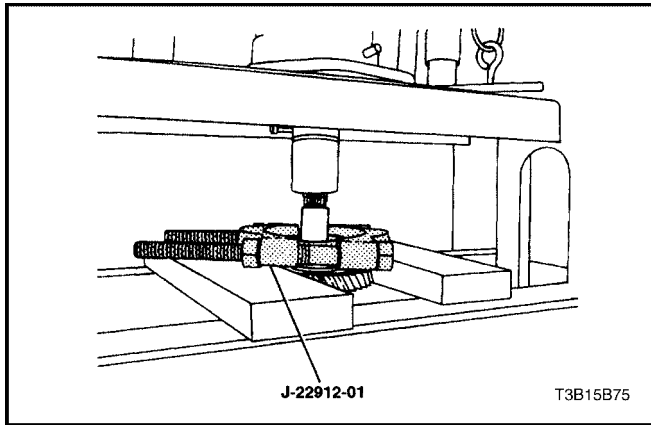
3. Install the snap ring at the base of the gear cluster.



4. Install the detent screw at the end of the input driveshaft.

Tighten

Tighten the input driveshaft detent screw to 15 N•m (11 lb–ft).



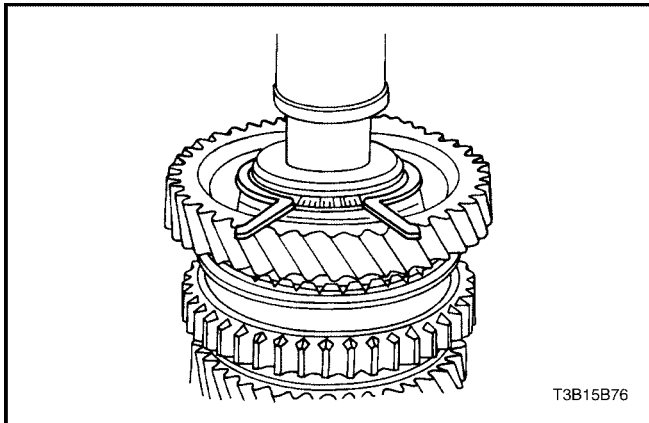
MAINSHAFT

Tools Required

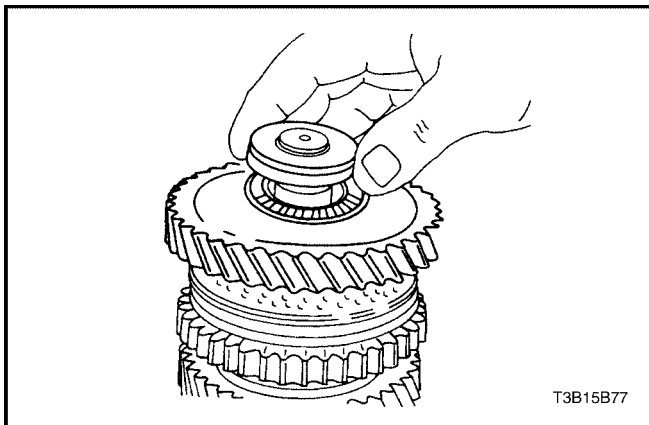
J-22912-01 Universal Bearing Puller

Disassembly Procedure

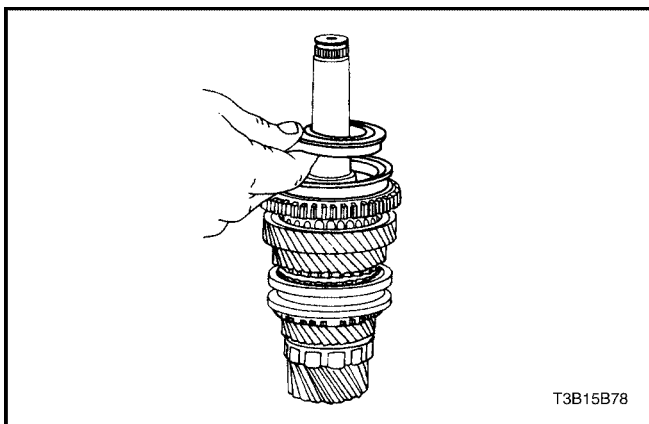
1. Remove the mainshaft bearing using the universal bearing puller J-22912-01.



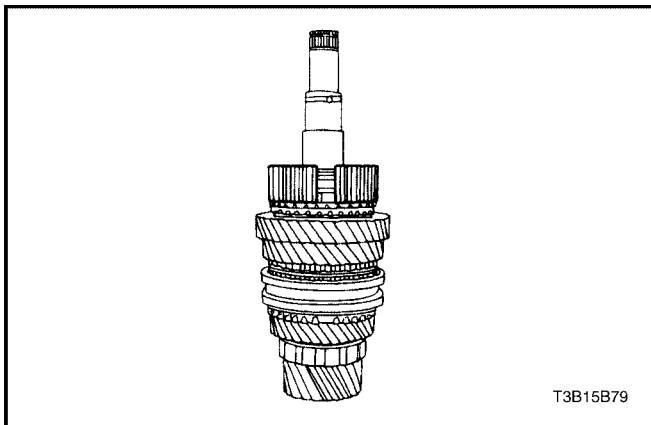
2. Remove the snap ring.



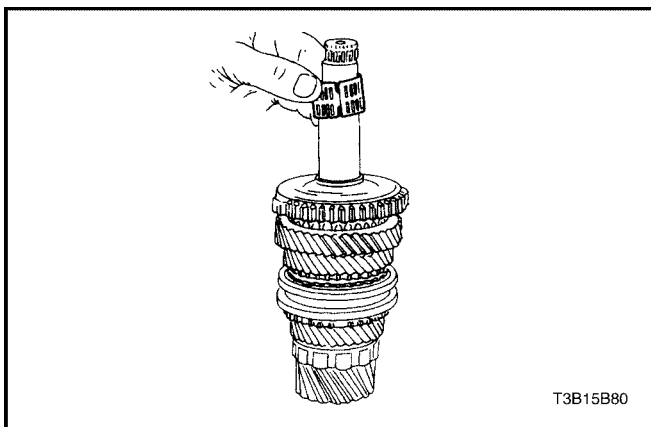
3. Remove the first gear, the flat-type first-gear needle bearing, and the mainshaft wear plate.



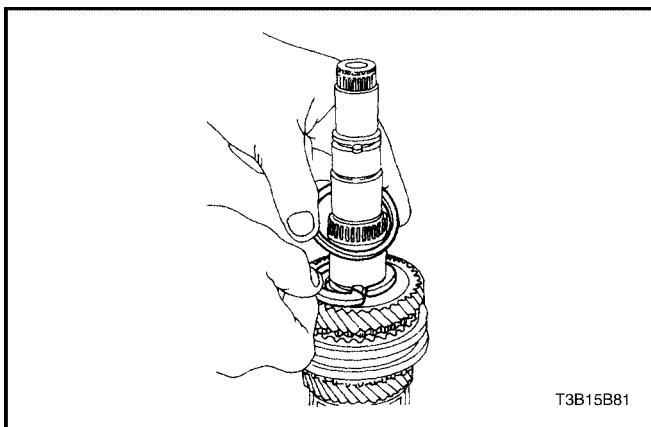
4. Remove the synchronizer hub sleeve that contains the synchronizer spring.
5. Remove the outer blocking ring.



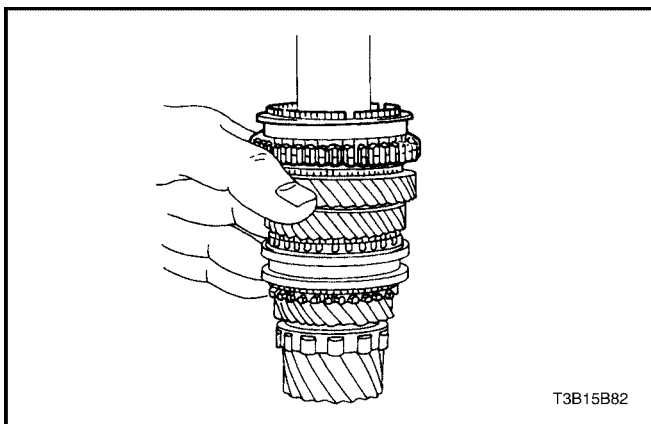
6. Remove the keys from the first-second synchronizer gear.



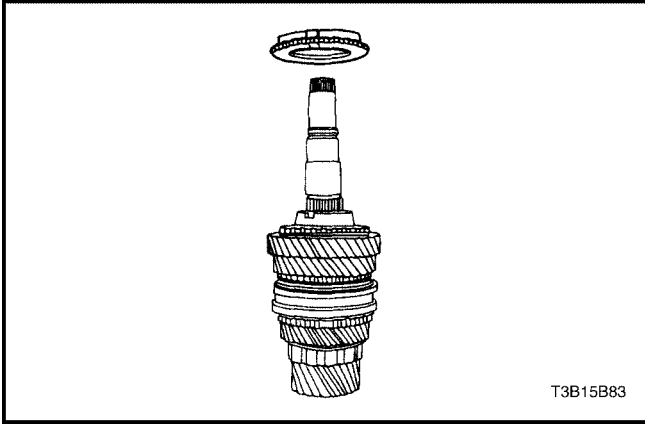
7. Remove the barrel-type first-gear needle bearing.



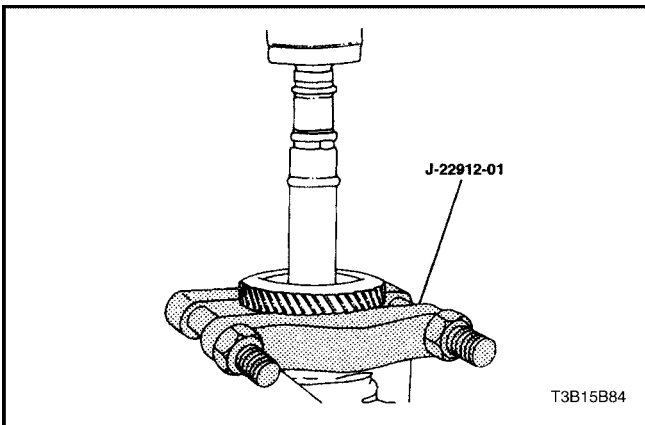
8. Remove the snap ring and the washer.



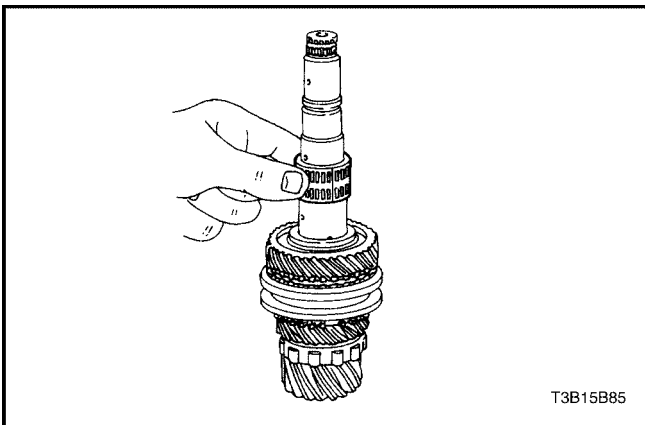
9. Remove the first-second synchronizer gear from the mainshaft.



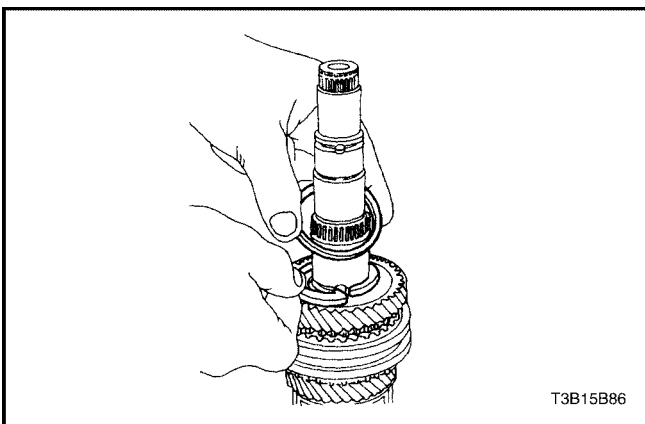
10. Remove the first-second gear blocking ring.



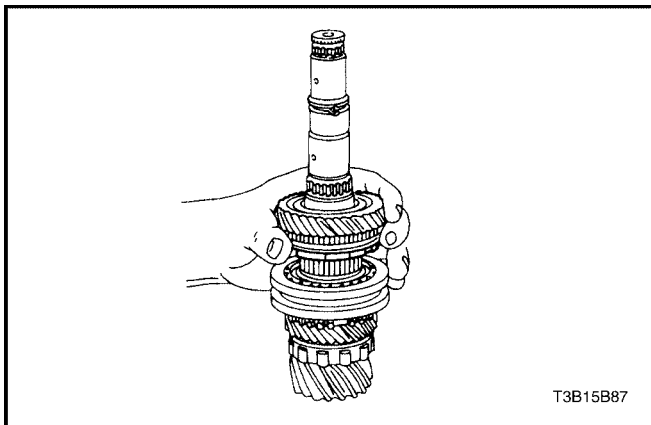
11. Remove the second gear using the universal bearing puller J-22912-01.



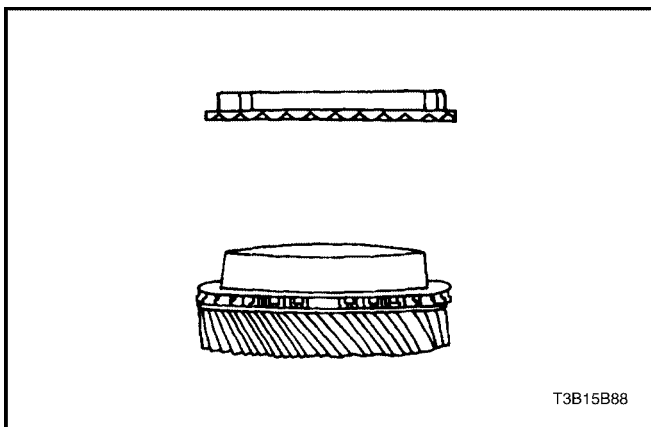
12. Remove the second-gear needle bearing.



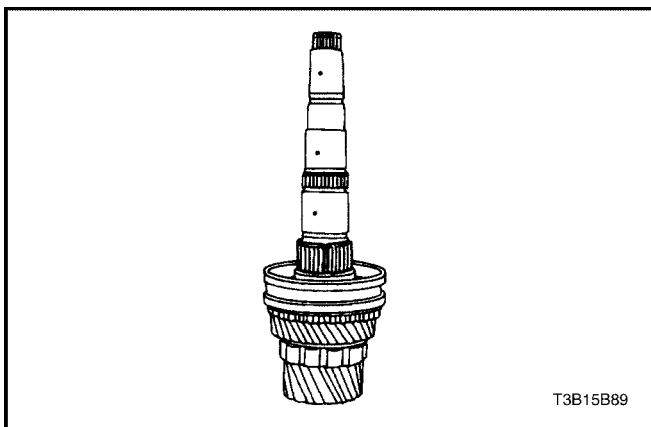
13. Remove the ring and the thrust washer.



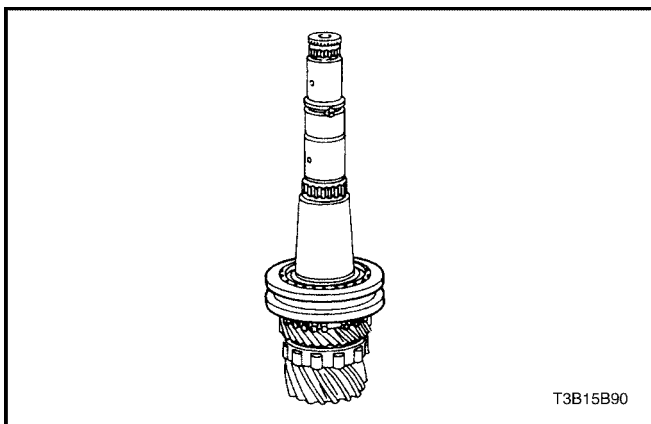
14. Remove the third gear and the synchronizer blocking ring.



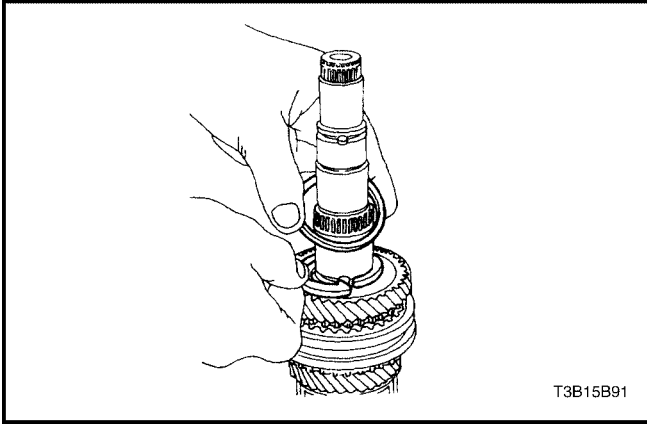
15. Separate the synchronizer blocking ring from the third gear.



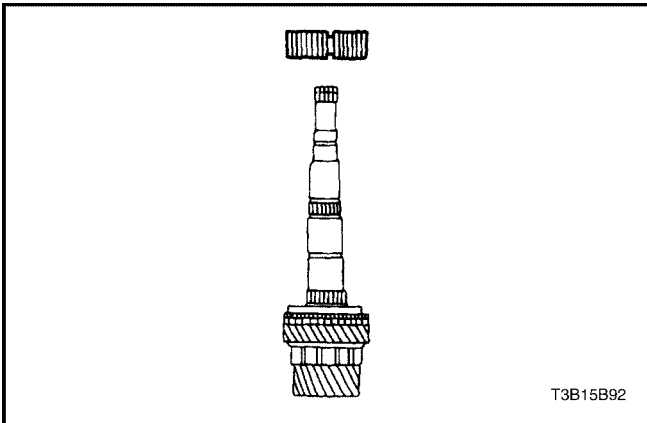
16. Remove the third-gear needle bearing from the mainshaft.



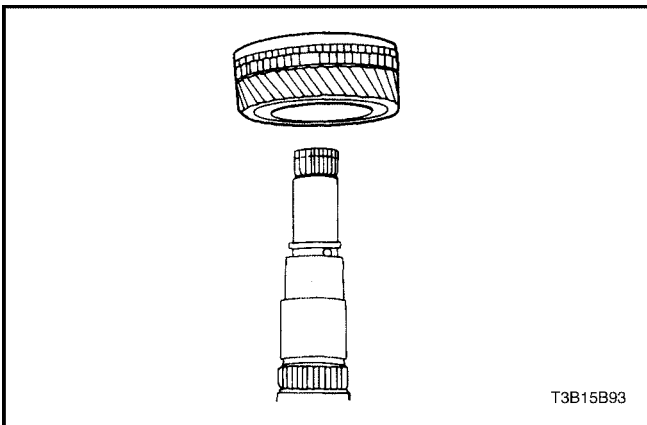
17. Remove the synchronizer sleeve containing the keys and the spring.



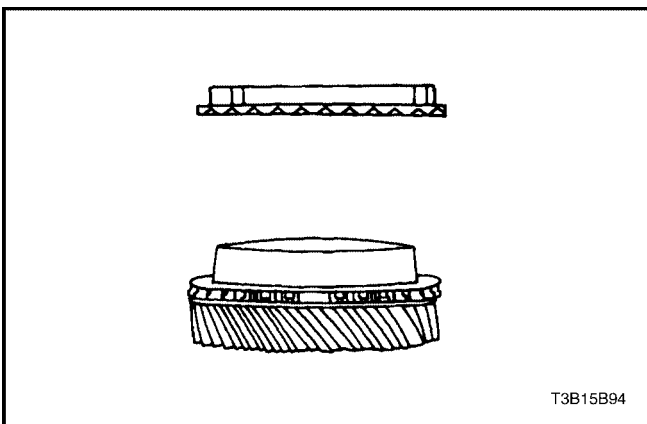
18. Remove the snap ring and the washer from the mainshaft.



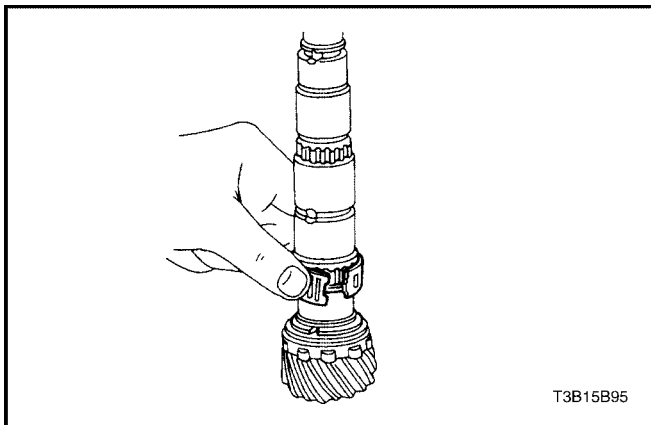
19. Remove the third-fourth synchronizer gear containing the synchronizer spring.



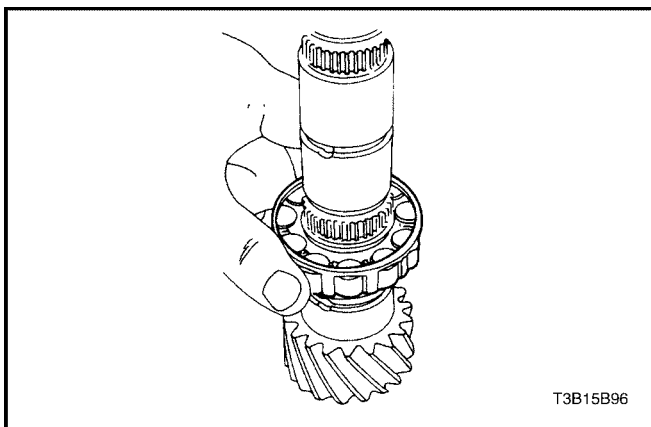
20. Remove the fourth-gear assembly.



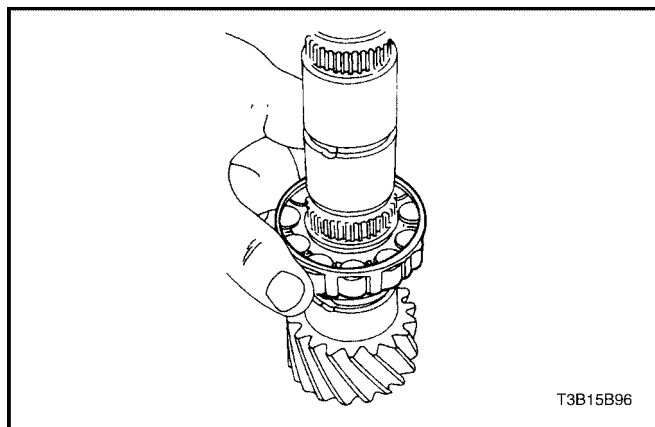
21. Separate the synchronizer blocking ring from the fourth gear.



22. Remove the fourth-gear needle bearing, the ring, and the thrust washer.

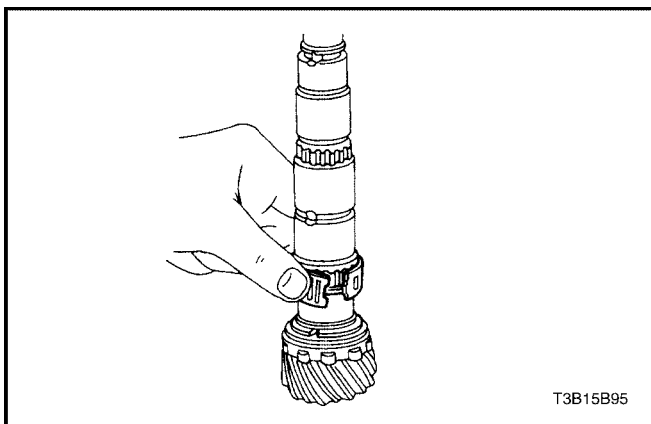


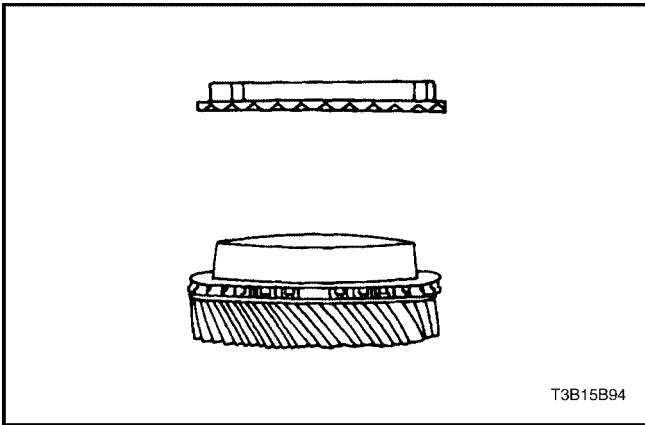
23. Remove the mainshaft bearing.



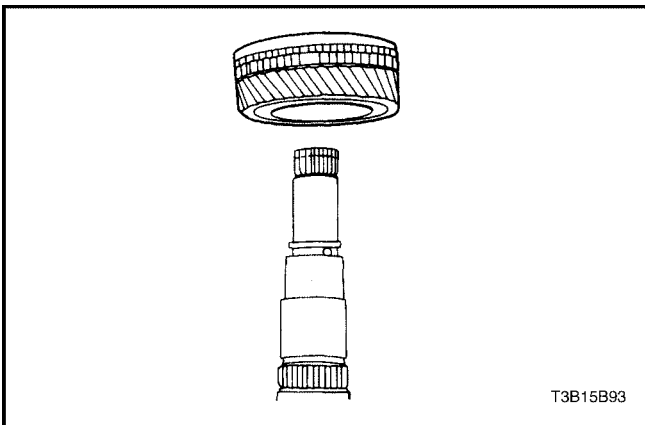
Assembly Procedure

1. Install the mainshaft bearing.
2. Install the ring, the thrust washer, and the fourth-gear needle bearing.

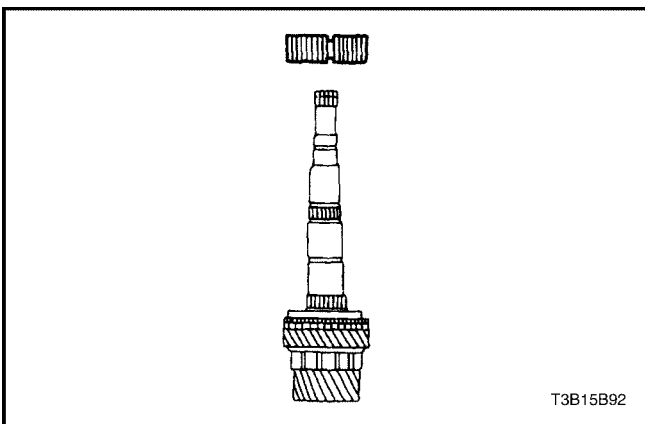




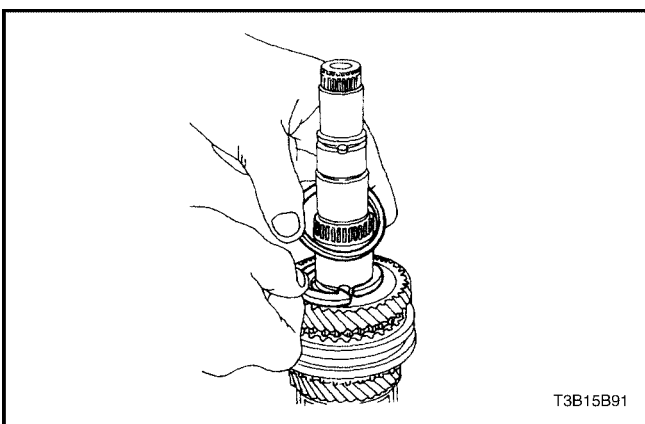
3. Attach the synchronizer blocking ring to the fourth gear.



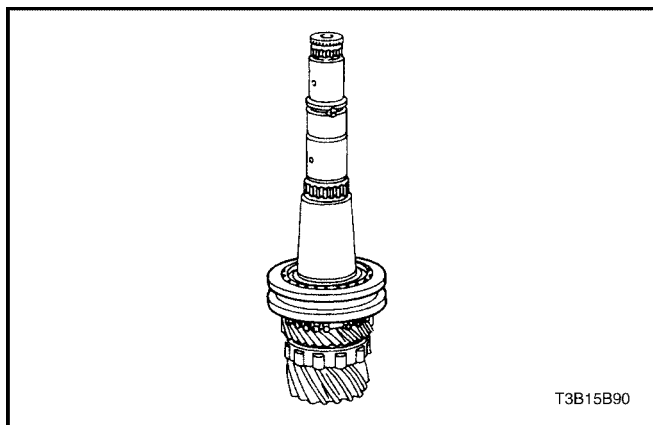
4. Install the fourth-gear assembly.



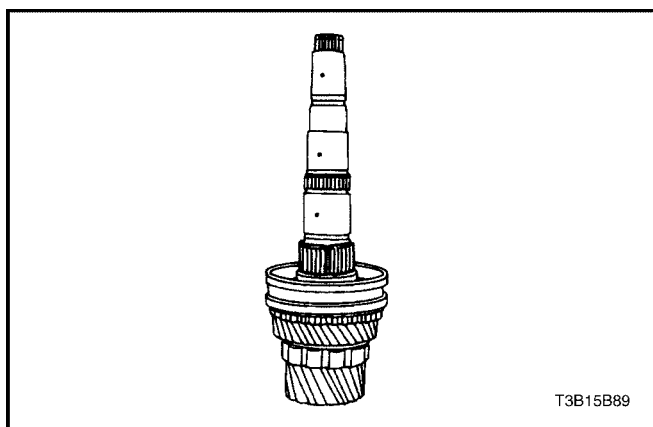
5. Install the third-fourth gear synchronizer containing the synchronizer spring.



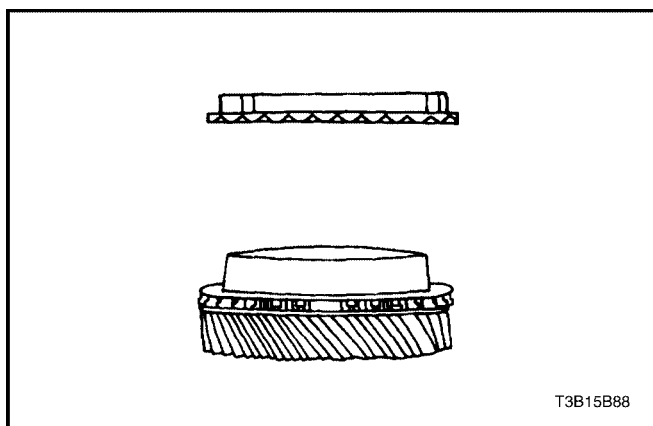
6. Install the snap ring and the washer around the mainshaft.



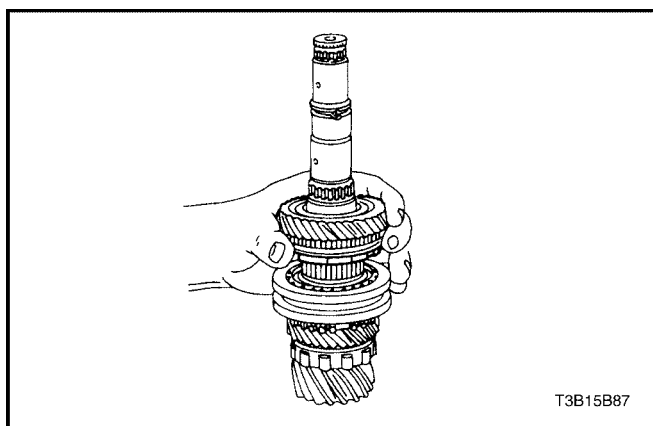
7. Install the synchronizer sleeve containing the keys and the spring.



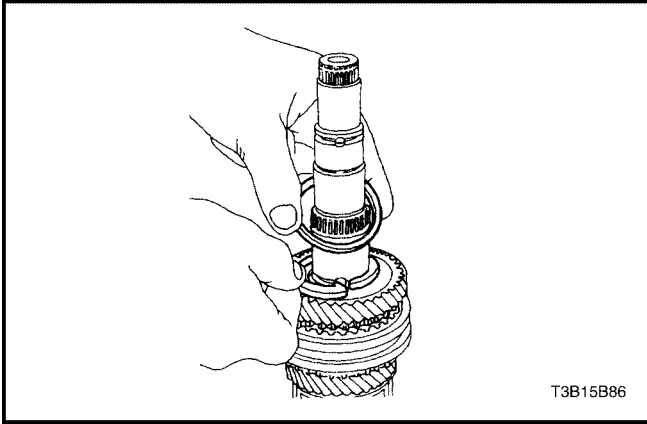
8. Install the third-gear needle bearing.



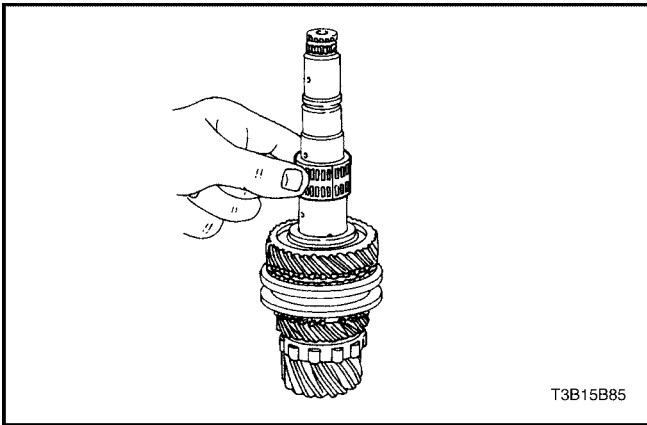
9. Attach the synchronizer blocking ring to the third gear.



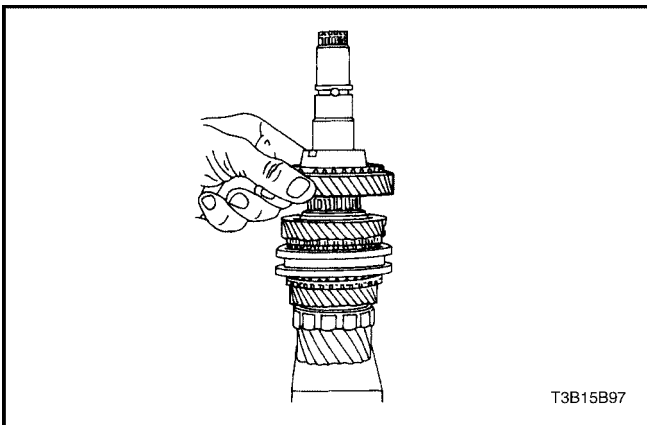
10. Install the third-gear assembly.



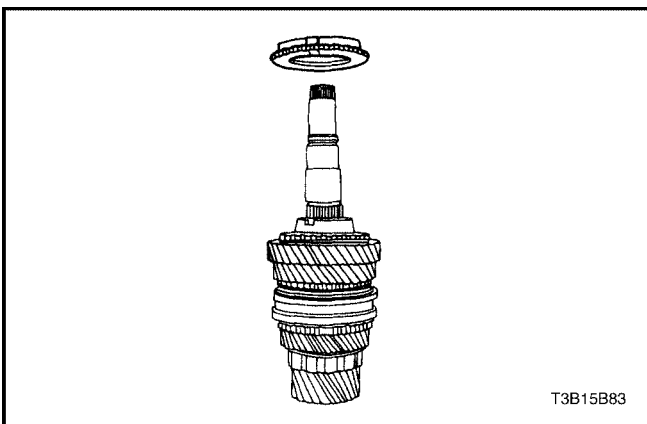
11. Install the thrust washer and the ring.



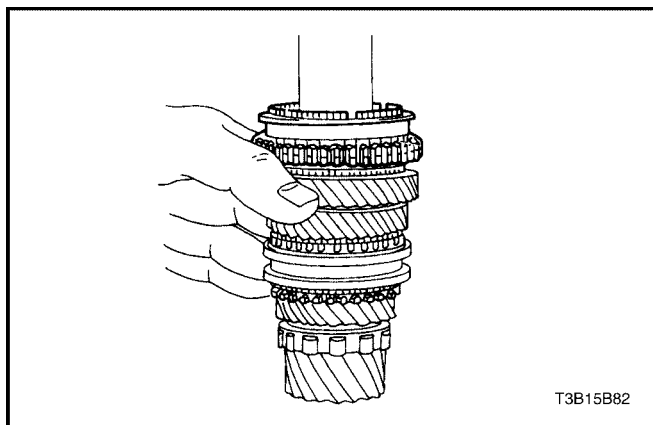
12. Install the second-gear needle bearing.



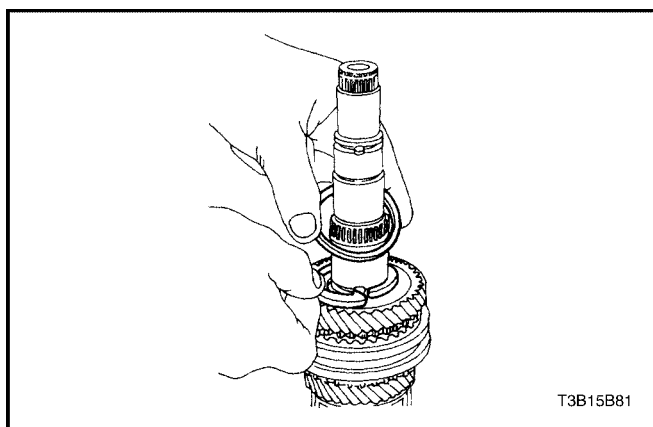
13. Install the second gear.



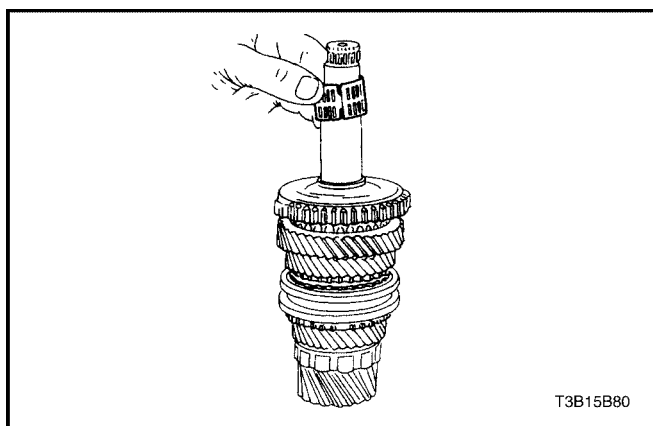
14. Install the first-second gear blocking ring.



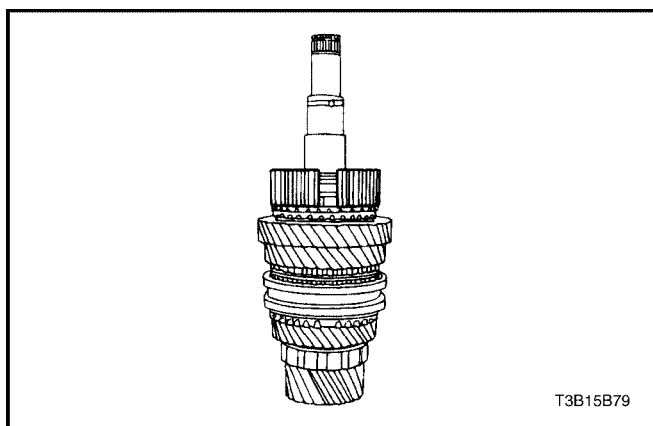
15. Install the first-second synchronizer gear.



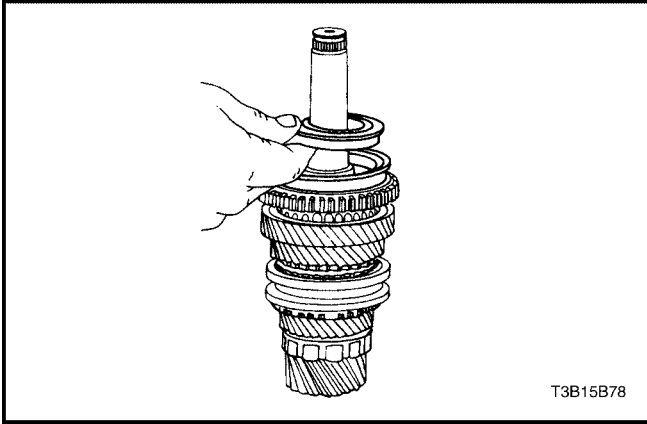
16. Install the washer and the snap ring.



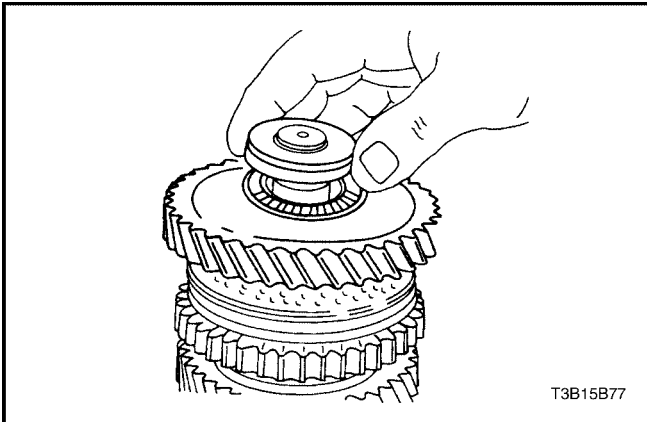
17. Install the first-gear needle bearing.



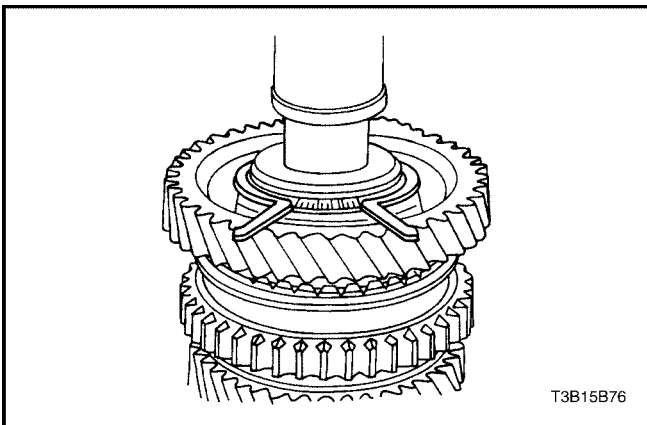
18. Install the keys onto the first-second synchronizer gear.



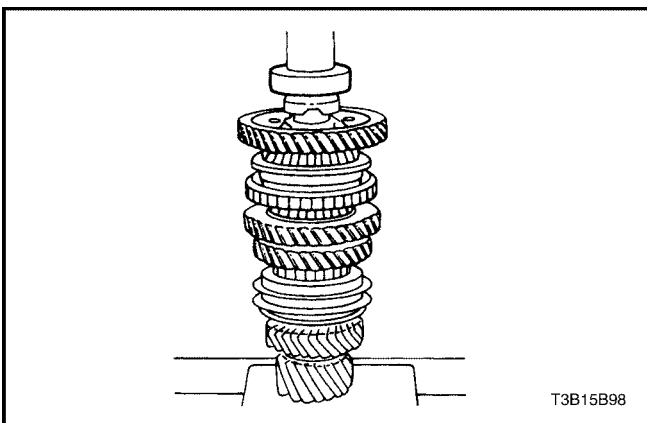
19. Install the synchronizer hub sleeve containing the synchronizer spring.



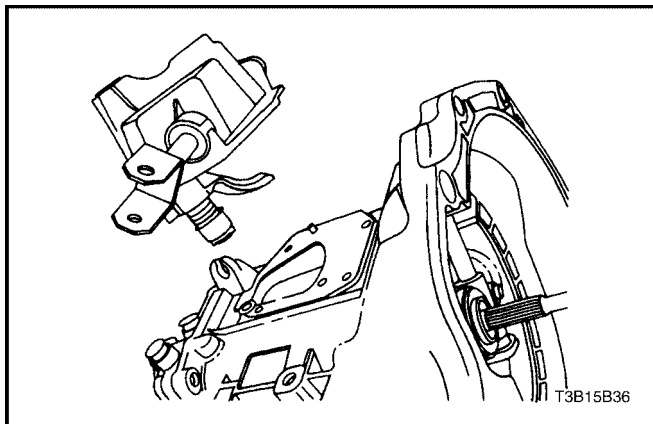
20. Install the outer blocking ring.
21. Install the mainshaft wear plate, the flat-type first-gear needle bearing, and the first gear.



22. Install the snap ring.



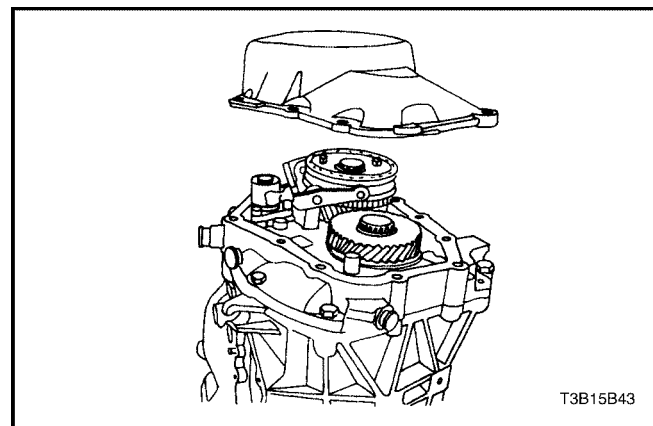
23. Press on the mainshaft bearing.



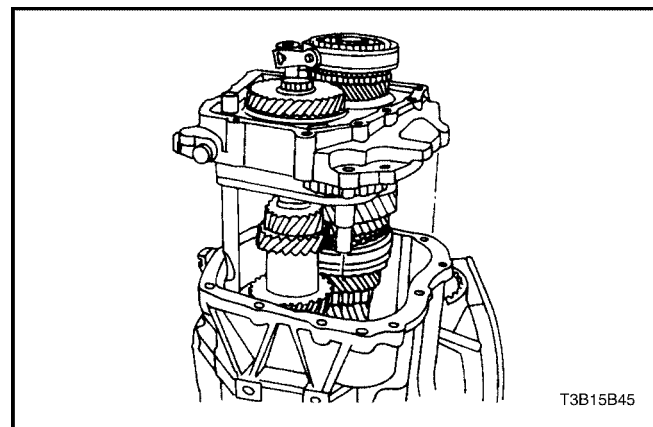
HOUSING CASE

Disassembly Procedure

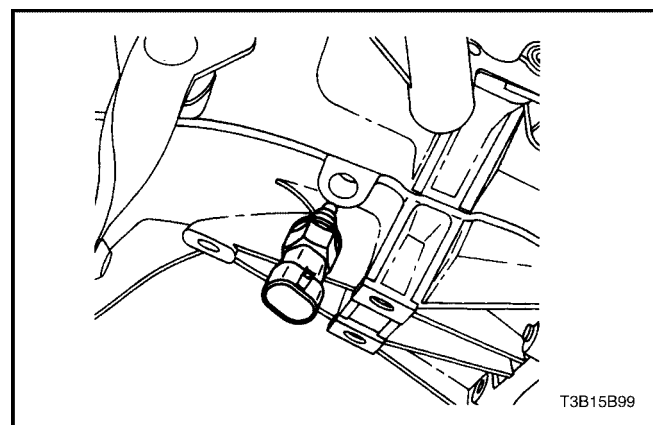
1. Remove the transaxle from the vehicle. Refer to "Transaxle Assembly" in this section.
2. Remove the shift lever cover bolts and the shift lever cover. Do not disassemble the shift lever cover.



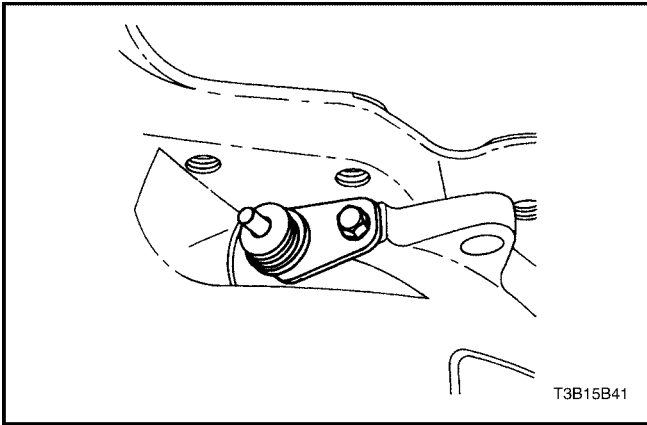
3. Remove the transaxle cover bolts and the transaxle cover.



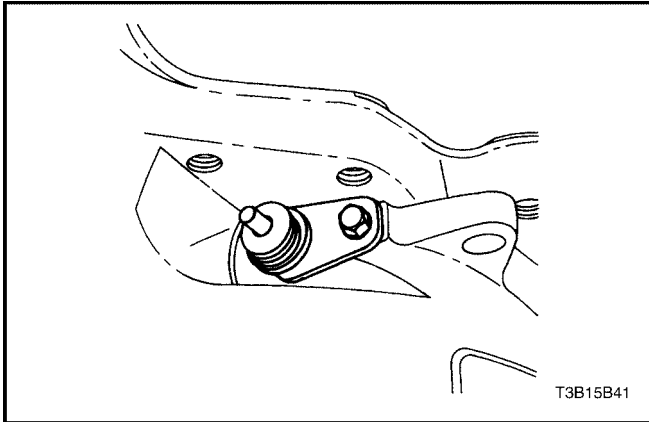
4. Remove the bearing plate bolts and the bearing plate, with the shafts attached. Do not disassemble the shafts.



5. Remove the differential from the transaxle housing. Do not disassemble the differential. Refer to "Differential" in this section.
6. Remove the backup lamp switch from the transaxle housing.



7. Remove the clutch-release bearing and the clutch-release bearing guide. Refer to *Section 5C, Clutch*.
8. Remove the speedometer-driven gear bolt and the speedometer-driven gear from the transaxle housing.

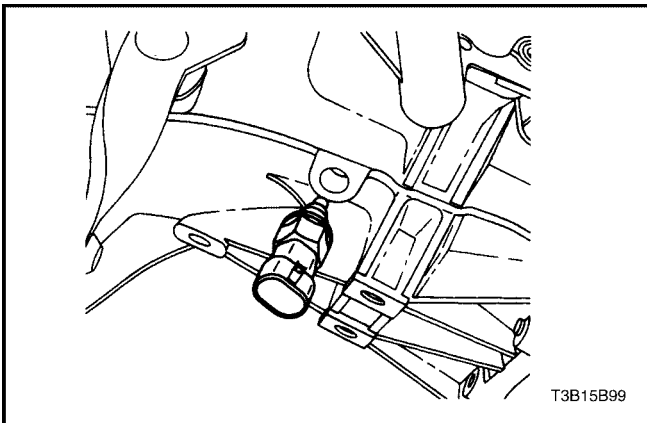


Assembly Procedure

1. Install the speedometer-driven gear bolt and the speedometer-driven gear into the transaxle housing.

Tighten

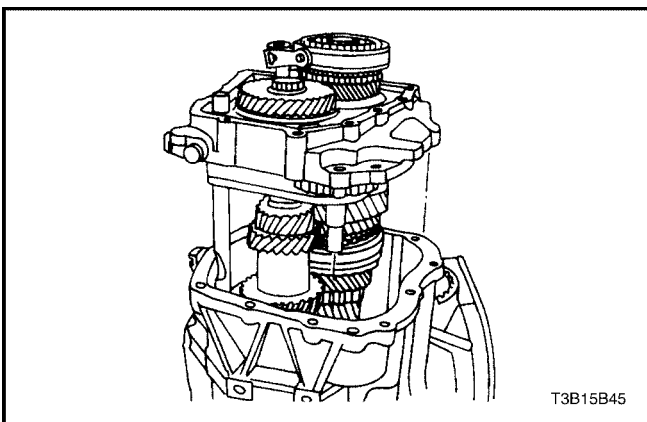
Tighten the speedometer-driven gear bolt to 5 N•m (44 lb-in)



2. Install the clutch-release bearing guide and the clutch-release bearing. Refer to *Section 5C, Clutch*.
3. Install the backup lamp switch into the transaxle housing.

Tighten

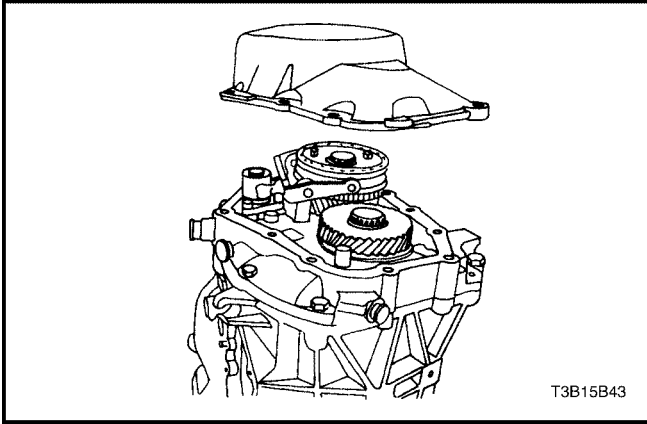
Tighten the backup lamp switch to 20 N•m (15 lb-ft).



4. Install the differential into the transaxle housing. Refer to "Differential" in this section.
5. Install the bearing plate, with the shafts attached.
6. Install the bearing plate bolts.

Tighten

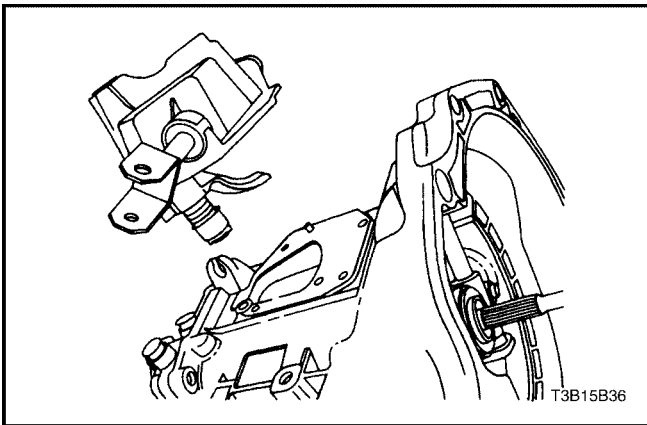
Tighten the bearing plate bolts to 22 N•m (16 lb-ft).



7. Install the transaxle cover and the transaxle cover bolts.

Tighten

Tighten the transaxle cover bolts to 18 N•m (13 lb–ft).

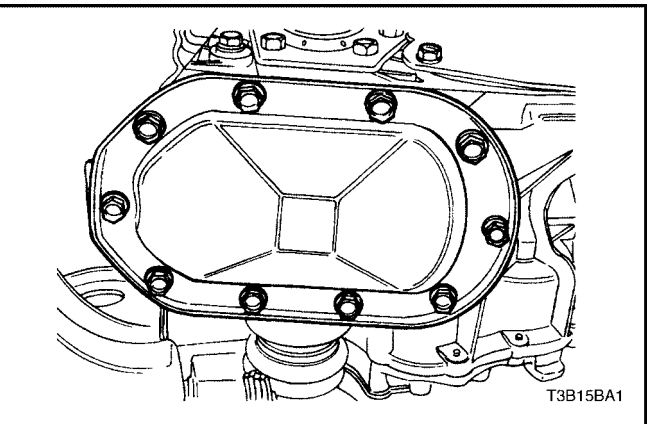


8. Install the gearshift lever cover and the gearshift lever cover bolts.

Tighten

Tighten the gearshift lever cover bolts to 22 N•m (16 lb–ft).

9. Install the transaxle into the vehicle. Refer to "Transaxle Assembly" in this section.



DIFFERENTIAL

Tools Required

KM-520 Remover/Installer

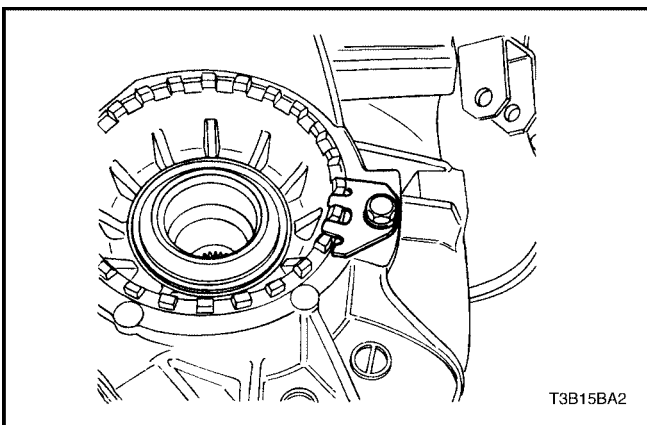
KM-525 Installer

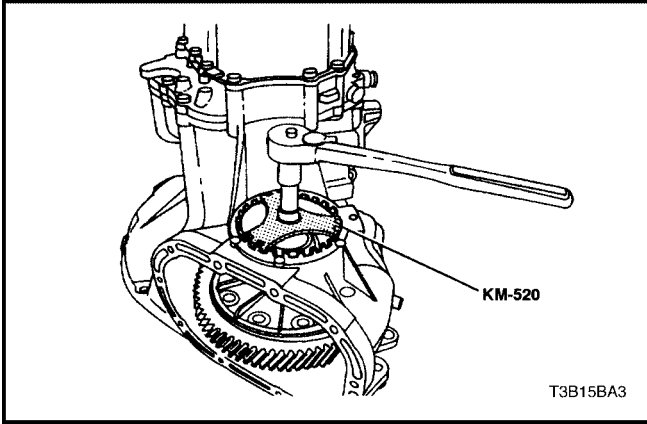
J-22888-20-A Bearing Puller with J-22888-35 Puller Legs

KM-522 Installer

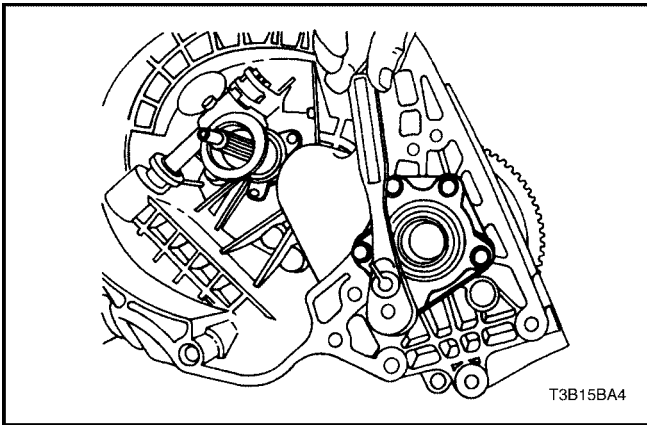
Disassembly Procedure

1. Remove the differential cover bolts, the differential cover, and the differential cover gasket.
2. Remove the bearing-adjusting ring retainer plate bolt and the bearing-adjusting ring retainer plate.

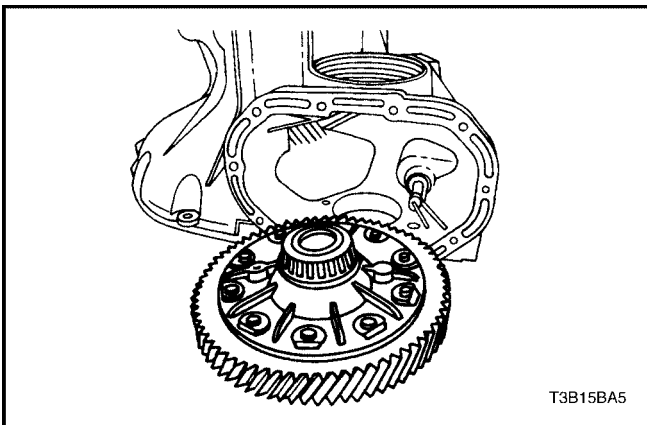




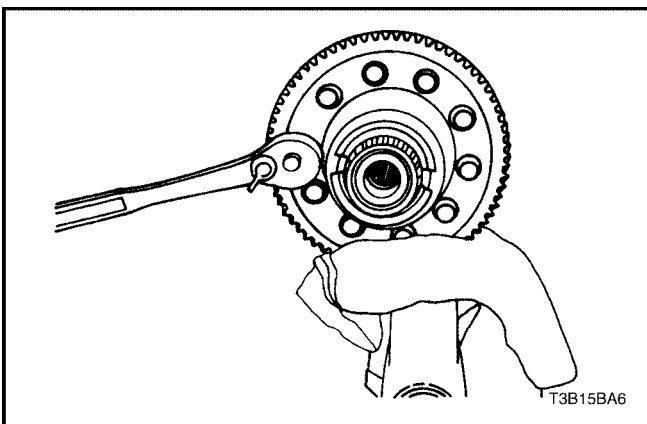
3. Remove the bearing-adjusting ring using the remover/ installer KM-520.



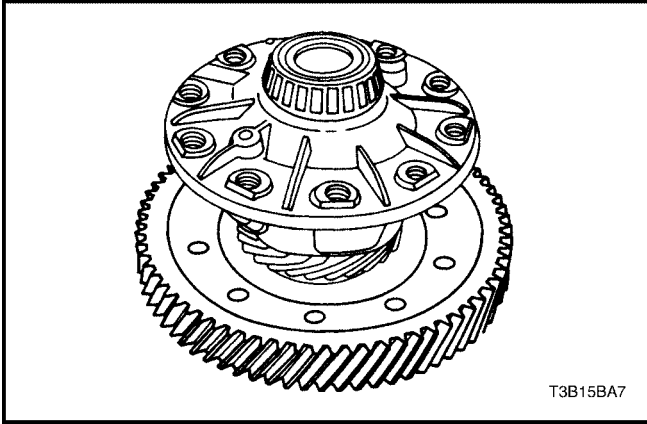
4. Remove the right-side bearing-retainer bolts and the right-side bearing retainer.



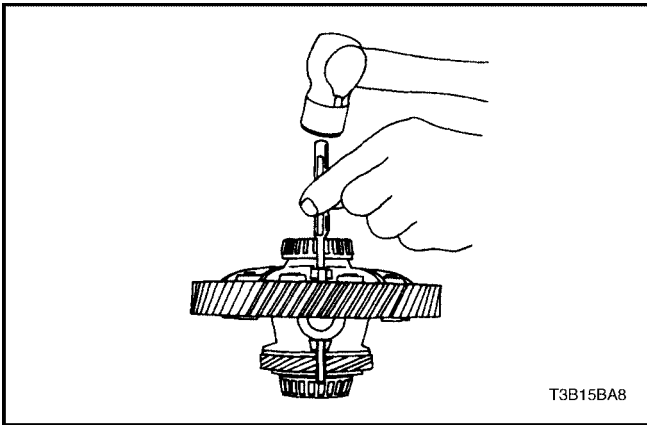
5. Remove the differential assembly from the trans-axle case.



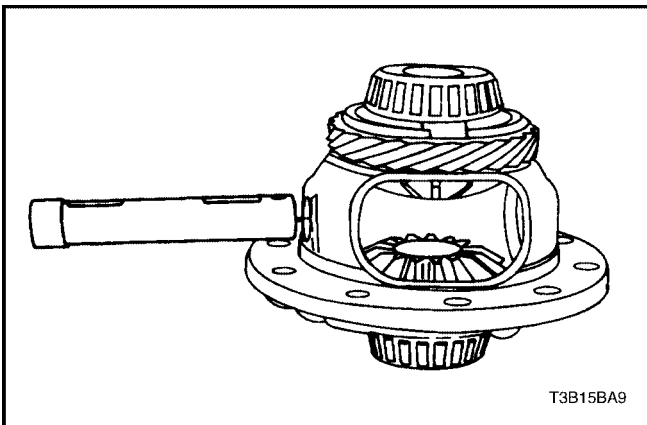
6. Remove the ring gear bolts.



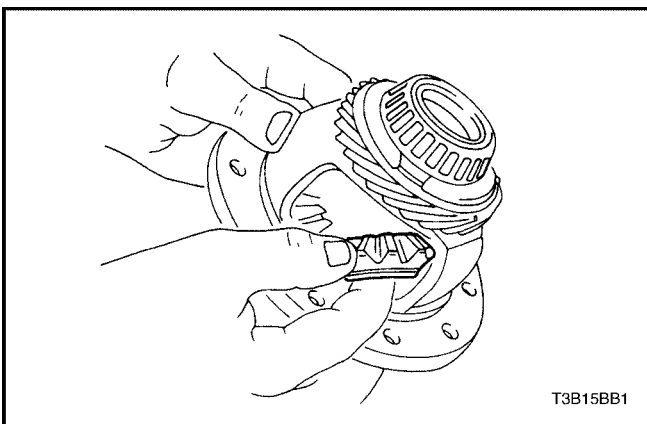
7. Separate the ring gear from the differential housing.



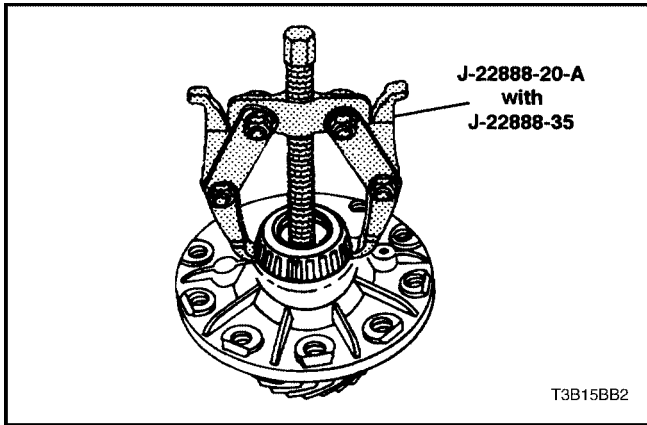
8. Drive the pinion gear shaft lock pin from the differential housing and the pinion gear shaft.



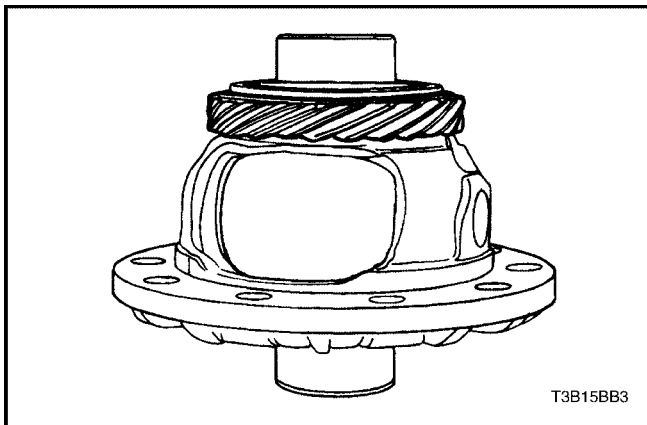
9. Remove the pinion gear shaft.



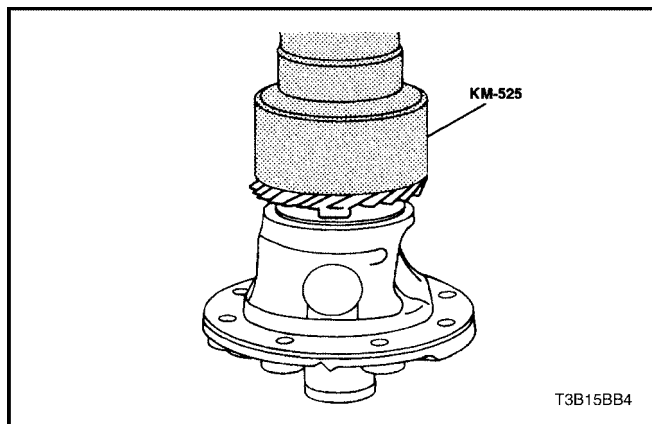
10. Remove the pinion gears and the washers.
11. Remove the side gears and the side thrust washers.



12. Remove both of the differential bearings using the bearing puller J-22888-20-A with the puller legs J-22888-35.

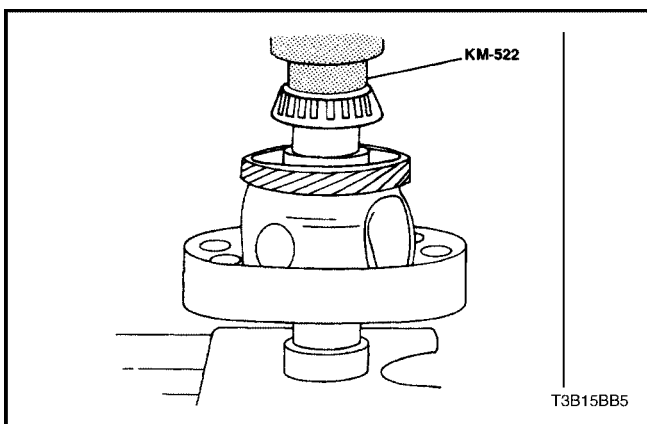


13. Remove the speedometer drive gear from the differential gear housing.

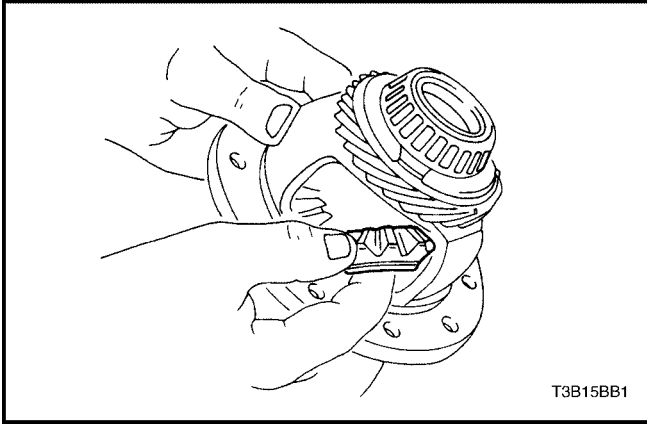


Assembly Procedure

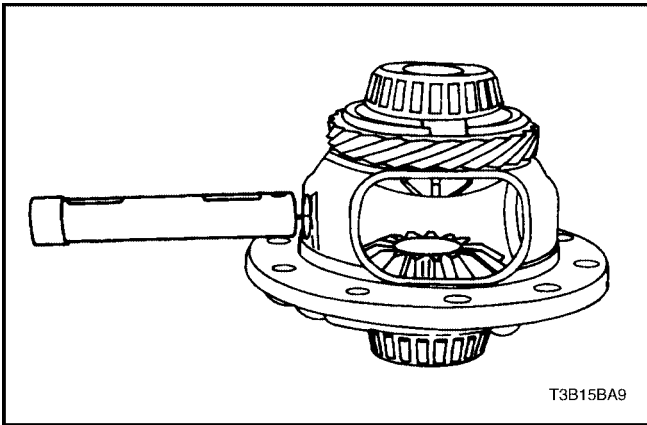
1. Install the speedometer drive gear onto the differential gear housing using the installer KM-525.



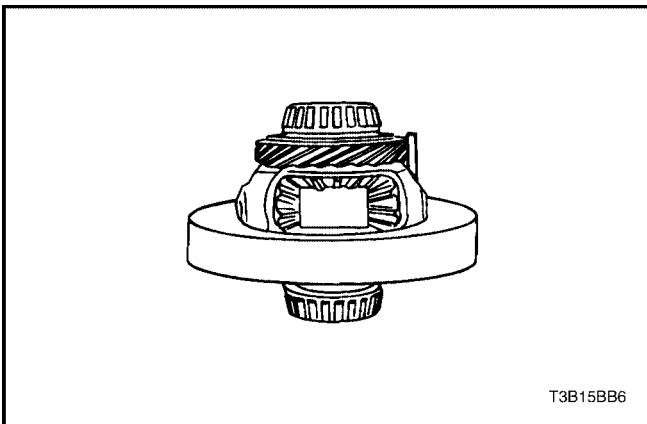
2. Install both of the differential bearings using the installer KM-522.



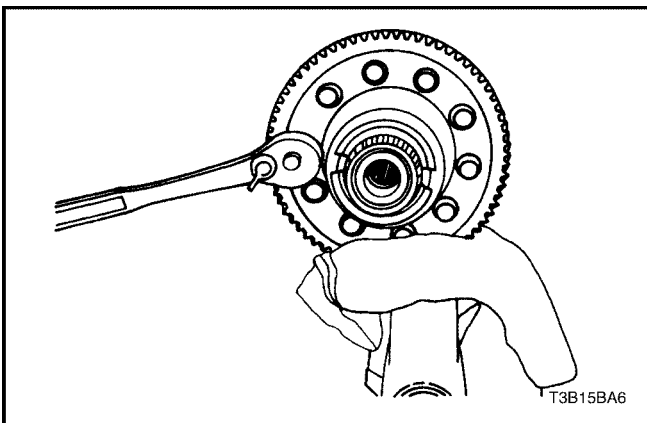
3. Install the side gears and the side thrust washers into the differential housing.
4. Install the differential pinion gears and the differential pinion gear washers into the differential housing.



5. Install the pinion gear shaft into the differential housing.



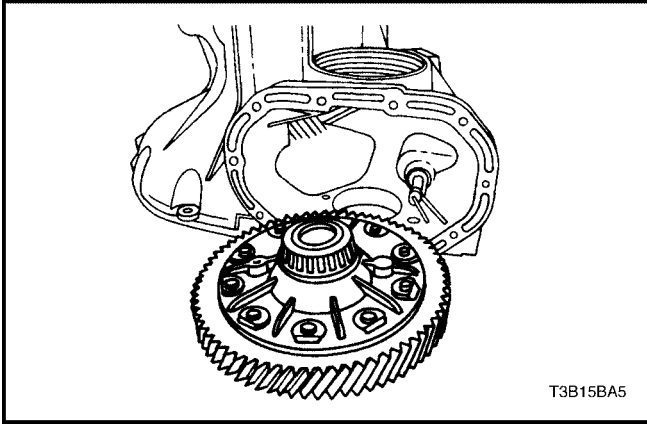
6. Install the pinion gear shaft lock pin into the differential housing and the pinion gear shaft.



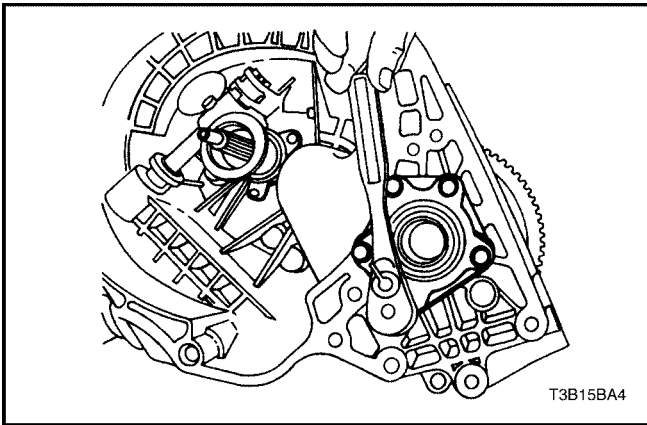
7. Install the ring gear and the ring-gear bolts.

Tighten

Tighten the ring-gear bolts to 70 N•m (52 lb–ft).



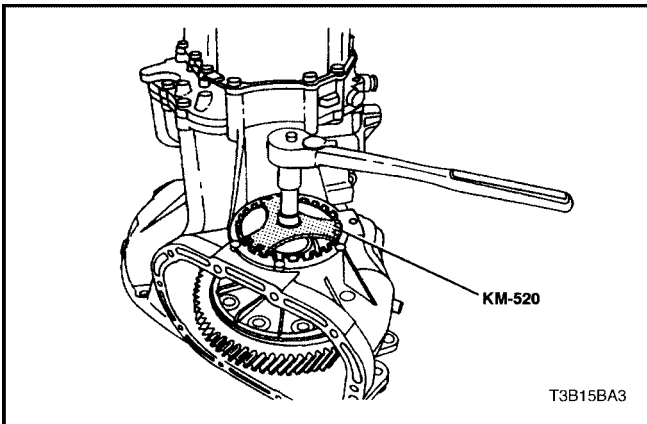
8. Install the differential assembly into the transaxle case.



9. Install the right-side bearing retainer and the right-side bearing retainer bolts.

Tighten

Tighten the right-side bearing retainer bolts to 25 N•m (18 lb–ft).



10. Install the bearing-adjusting ring.
11. Tighten the bearing-adjusting ring using the remover/ installer KM-520.

Tighten

Tighten the bearing adjusting ring until there is no end play with the differential.

Adjust the preload on the differential bearings.

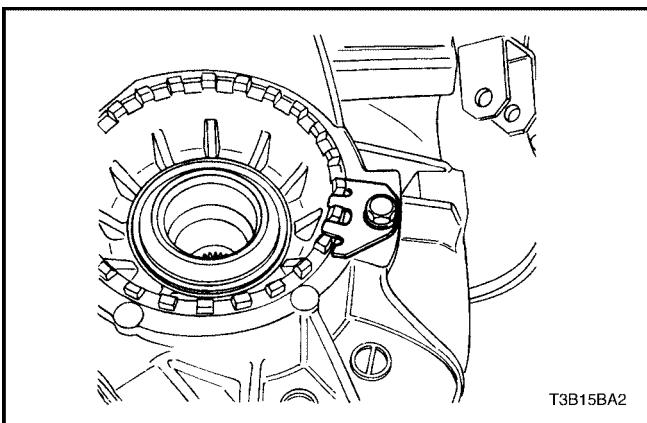
Used Bearings:

1 N•m (9 lb–in) required to rotate the differential one revolution per second.

New Bearings:

2 N•m (18 lb–in) required to rotate the differential one revolution per second.

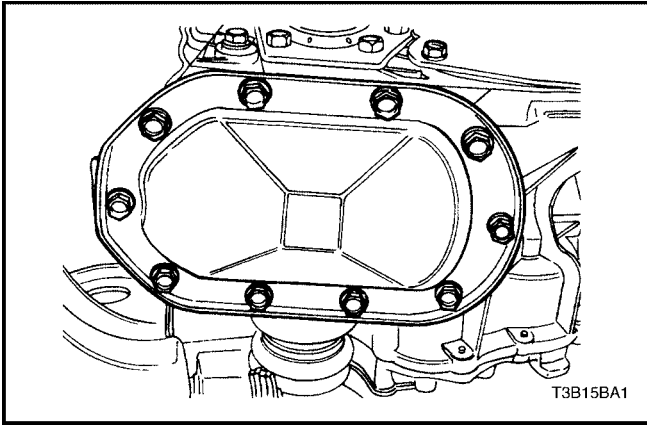
Tighten or loosen the bearing ring adjuster to get the required preload on the bearings.



12. Install the bearing-adjusting ring-retainer plate and the bearing-adjusting ring-retainer plate bolt.

Tighten

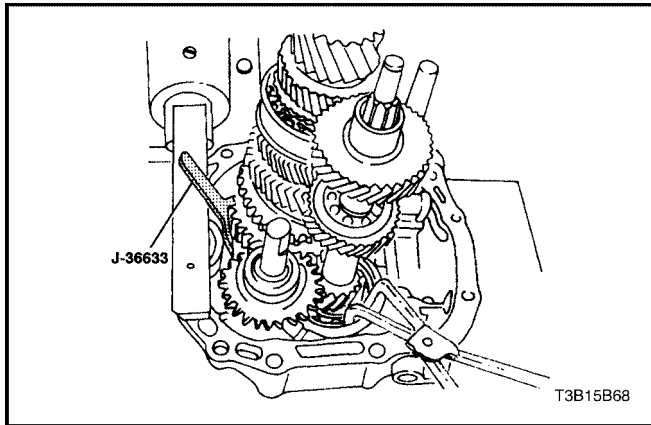
Tighten the bearing-adjusting ring-retainer plate bolt to 5 N•m (44 lb–in).



13. Install the differential cover gasket, the differential cover, and the differential cover bolts.

Tighten

Tighten the differential cover bolts to 40 N•m (30 lb-ft).



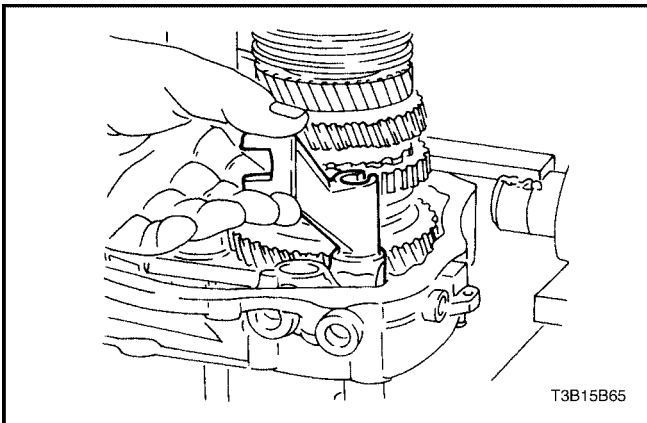
MAJOR COMPONENT ASSEMBLY

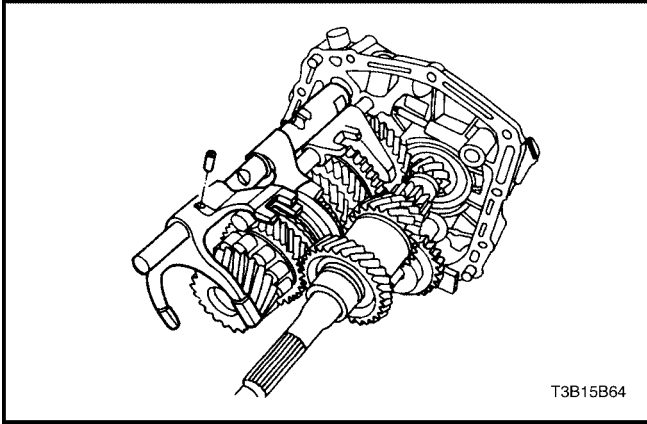
Tools Required

J-36633 Snap Ring Retainer
 KM-334 Installer Sleeve
 KM-552 Fixture
 KM-554 Installer
 KM-113-2 Base

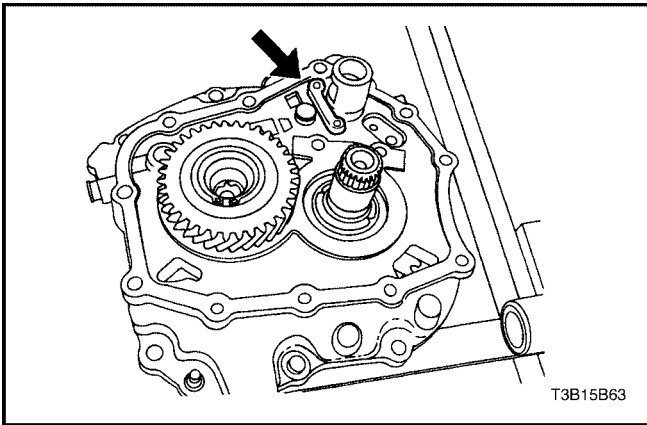
Assembly Procedure

1. Join the mainshaft and the input shaft.
2. Compress the snap ring at the base of the mainshaft and hold with the snap ring retainer J-36633.
3. Hold the snap ring at the base of the input drive-shaft with the snap ring pliers.
4. Install the mainshaft/input shaft assembly onto the bearing plate.
5. Release the mainshaft snap ring and the input shaft snap ring.
6. Position the first-second gearshift fork.
7. Install the fifth gearshift lever into the bearing plate.

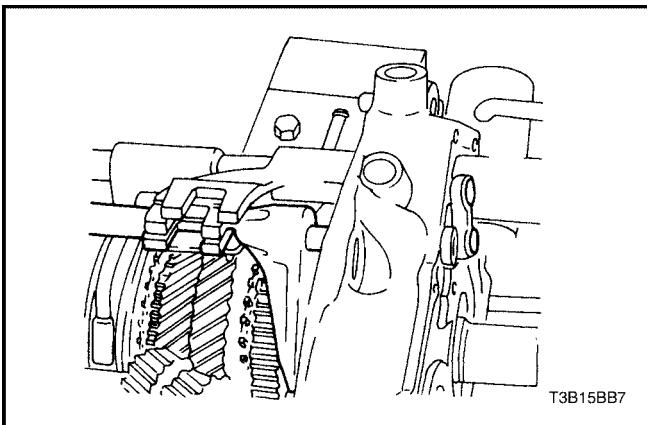




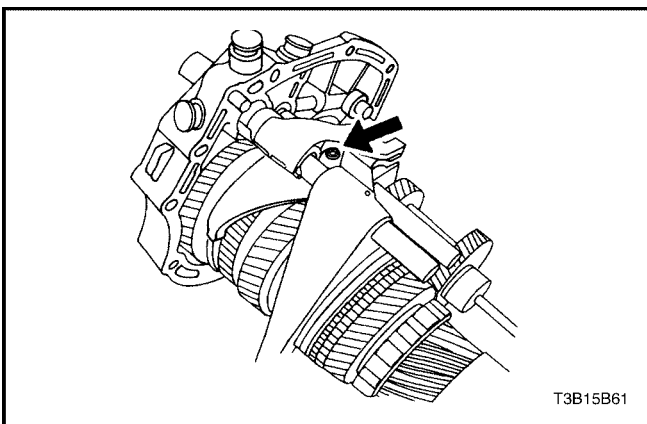
8. Install the third-fourth gearshift rod/fork holding pin.



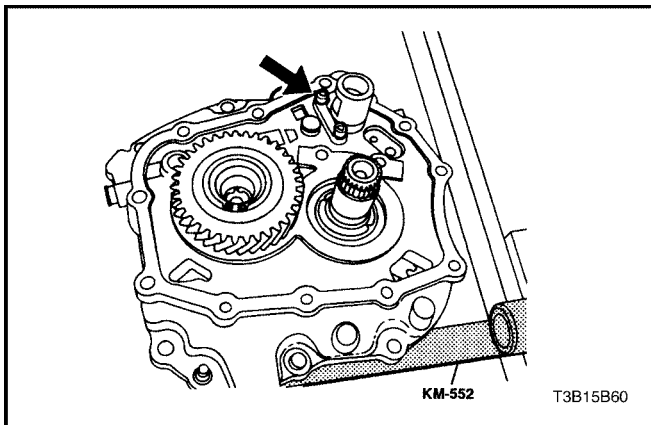
9. Install the support bracket onto the bearing plate.



10. Install the first-second gearshift rod/fork onto the bearing plate.



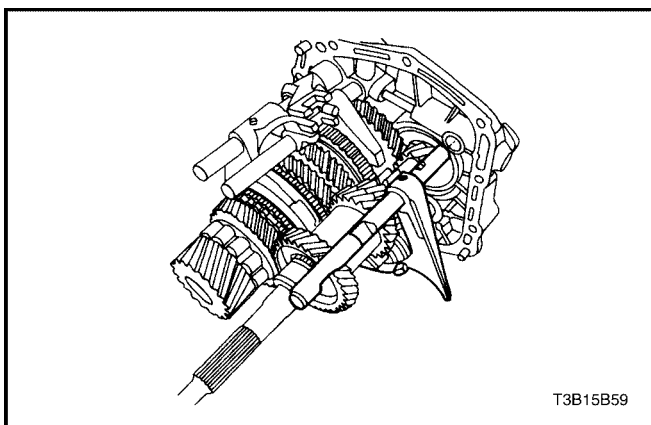
11. Install the first-second gearshift fork holding pin.



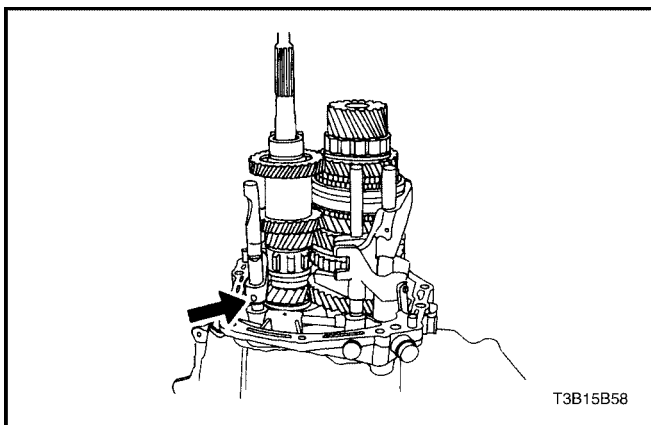
12. Install the support bracket bolts.

Tighten

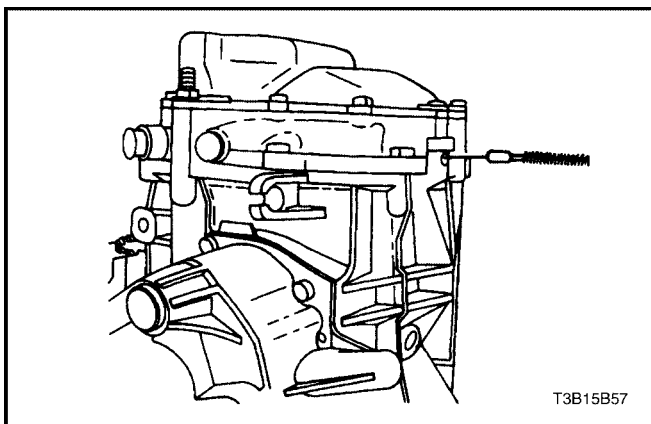
Tighten the support bracket bolts to 7 N•m (62 lb-in).



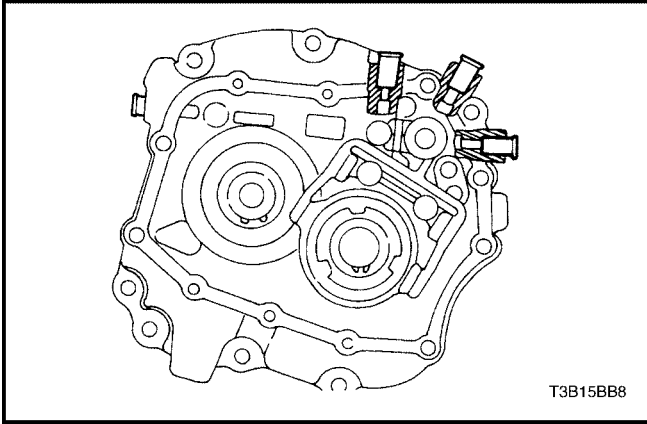
13. Install the reverse gearshift rod/fork onto the bearing plate.



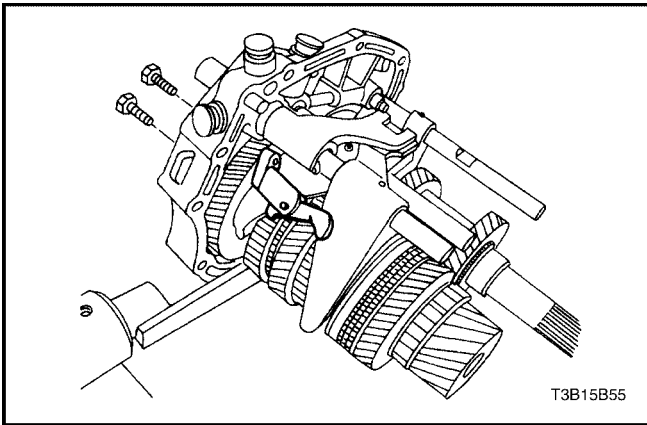
14. Install the reverse gearshift rod/fork holding pin.



15. Install the rod lock pin and spring into the small plug hole.



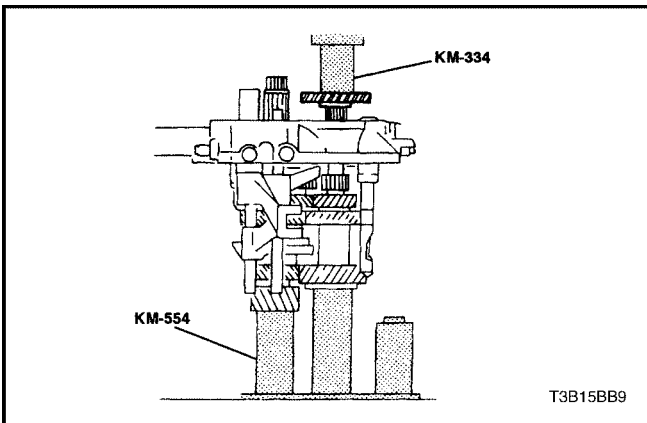
16. Install the fourth-gearshift rod plugs.



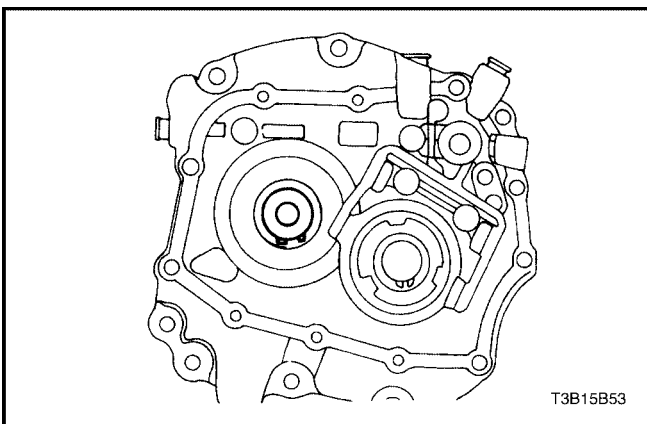
17. Install the bolts and the fifth-gearshift connector onto the bearing plate, using the pawl.

Tighten

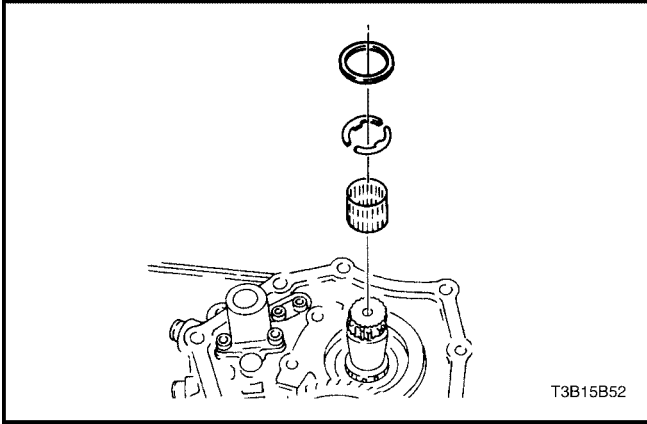
Tighten the fifth-gearshift connector bolts to 7 N•m (62 lb-in).



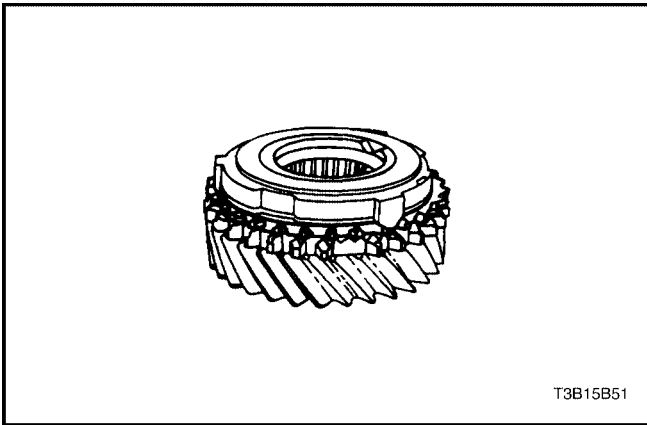
18. Install the input drive fifth gear using the installer KM-554 and the installer sleeve KM-334.



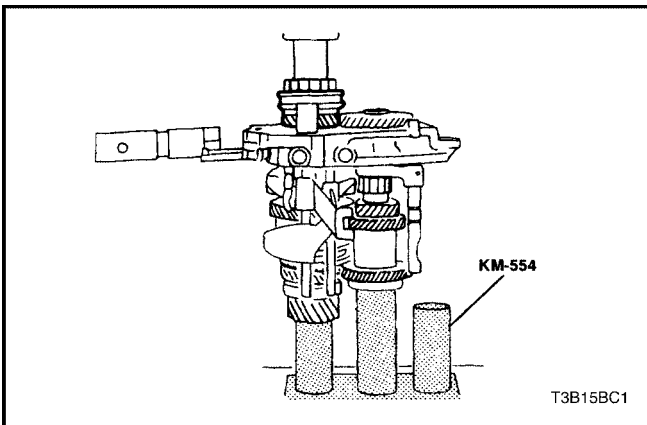
19. Install the snap rings securing the fifth-drive gear.



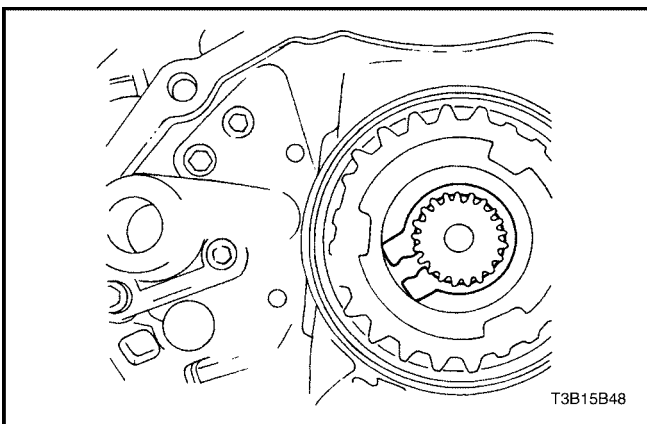
20. Install the thrust washers, the retaining ring, and the needle bearing into the mainshaft-driven fifth-gear assembly.



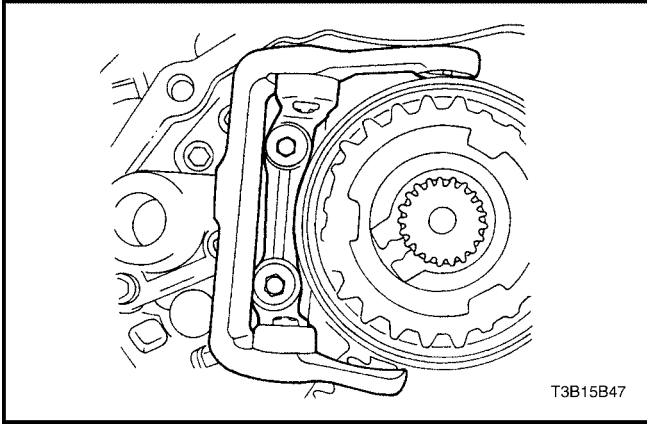
21. Install the brass synchronizer ring onto the mainshaft-driven fifth-gear assembly.



22. Install the mainshaft-driven fifth-gear assembly.
23. Install the fifth-drive gear synchronizer gear and the synchronizer sleeve using installer KM-554.



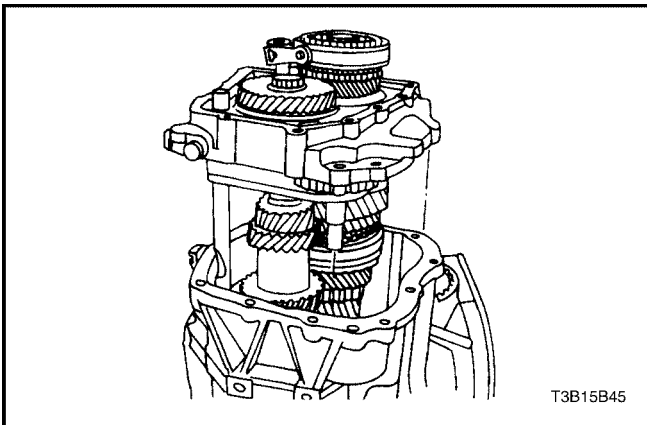
24. Install the snap ring holding the fifth speed-driven assembly.



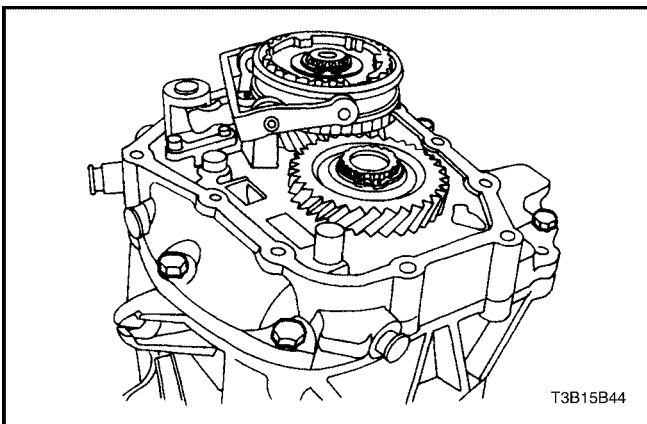
25. Install the bolts and the fifth-gear fork onto the bearing plate.

Tighten

Tighten the fifth-gear fork bolts to 22 N•m (16 lb–ft).



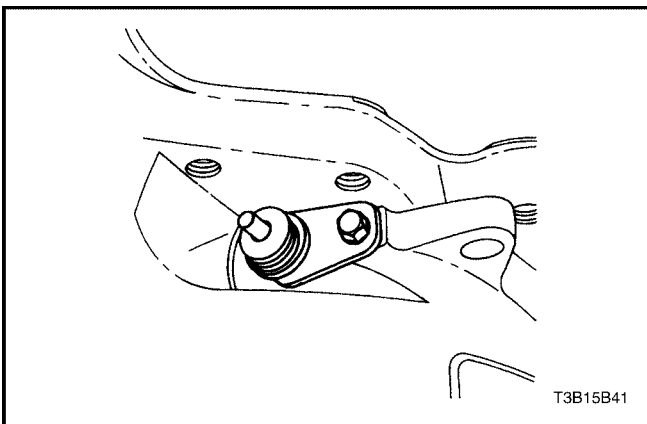
26. Remove the bearing plate from the fixture KM-552.
27. Shift the transaxle into second gear.
28. Install the bearing plate, with the shafts attached, into the case.



29. Install the bearing plate bolts.

Tighten

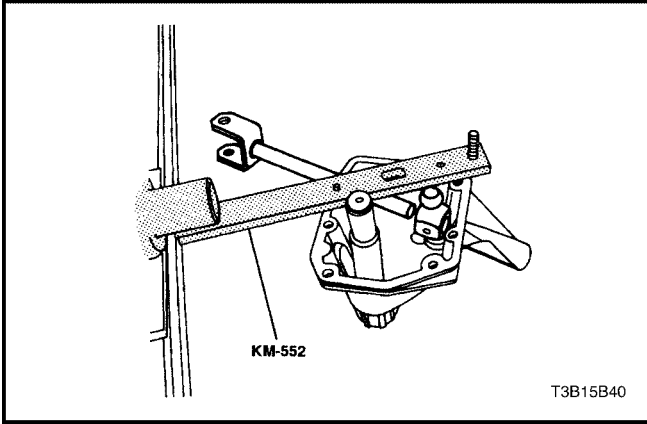
Tighten the bearing plate bolts to 22 N•m (16 lb–ft).



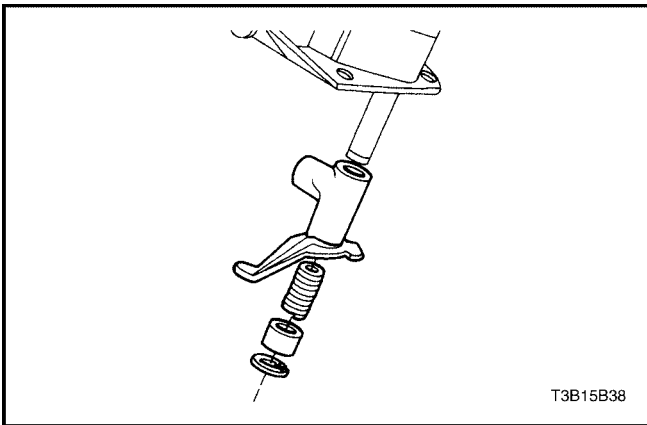
30. Install the speedometer-driven gear and the speedometer-housing retaining bolt into the trans-axle housing.

Tighten

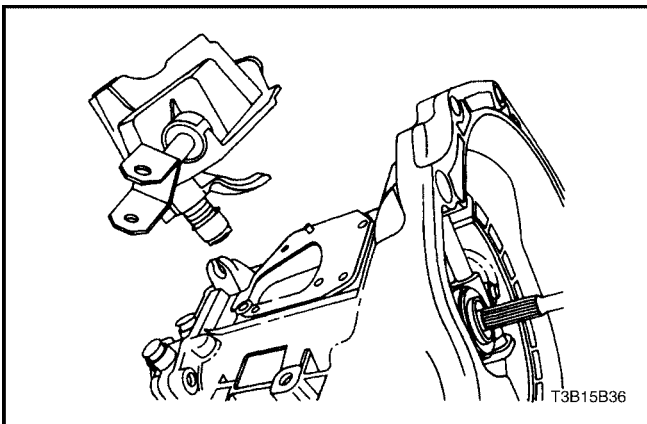
Tighten the speedometer housing retaining bolt to 4 N•m (35 lb–in).



31. Bolt the gearshift lever cover to the fixture KM-552.
32. Position the fixture into the base KM-113-2.
33. Install the gearshift rod, the shift finger lever, and the gearshift lever pin.



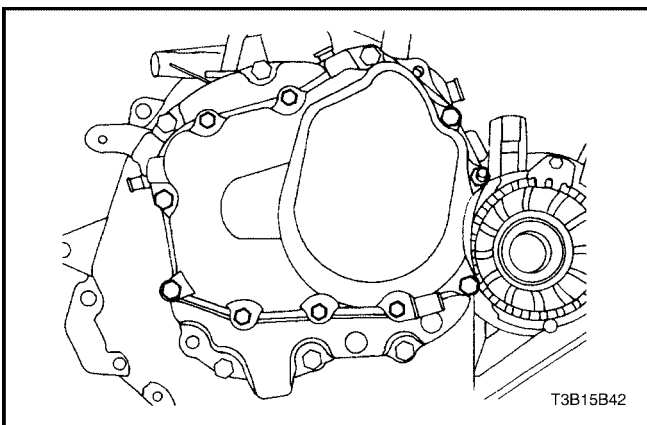
34. Install the snap ring, the bushing, the spring, and the intermediate lever.
35. Remove the gearshift lever cover from the base KM-113-2 and the fixture KM-552.
36. Shift the transaxle into NEUTRAL.



37. Install the gearshift lever cover and the gearshift lever cover bolts.

Tighten

Tighten the gearshift lever cover bolts to 22 N•m (16 lb–ft).



38. Install the transaxle cover and the transaxle cover bolts.

Tighten

Tighten the transaxle cover bolts to 18 N•m (13 lb–ft).

39. Install the transaxle into the vehicle. Refer to "Transaxle Assembly" in this section.

GENERAL DESCRIPTION AND SYSTEM OPERATION

FIVE-SPEED MANUAL TRANSAXLE

This five-speed transaxle assembly is a transmission of constant-mesh design.

Combined in the assembly are:

- All forward gears.
- The reverse gear.
- The differential output.

The basic components of the five-speed transaxle assembly units are the:

- Transaxle case.
- Input shaft.
- Input shaft gears.

- Output shaft.
- Output shaft gears.
- Ring gear and differential assembly.

Forward Gear

Shifting to a forward gear is accomplished through a combination of synchronizers with blocker rings controlled by sliding shift forks.

Reverse Gear

Reverse gear is not synchronized and uses a sliding idler gear arrangement.

Differential Assembly

The differential is a conventional arrangement of gears that is supported by tapered roller bearings. The final output gear turns the ring gear and differential assembly which turns the drive axle shafts.