

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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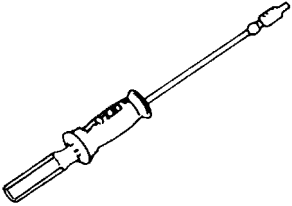
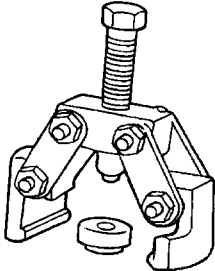
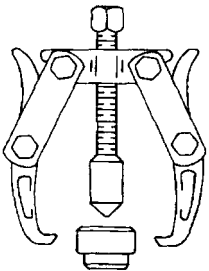
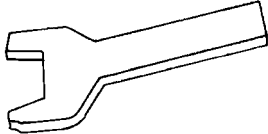
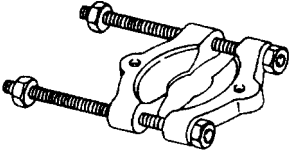
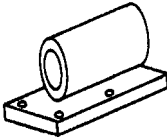
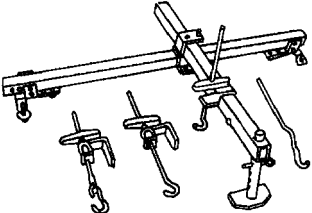
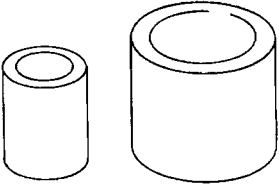
SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

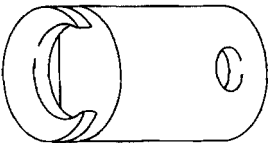
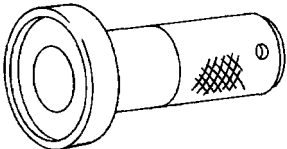
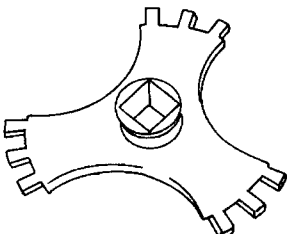
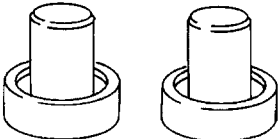
Application	N•m	Lb–Ft	Lb–In
Backup Lamp Switch	20	15	–
Bearing Plate Bolts	22	16	–
Bearing–Adjusting Ring–Retainer Plate Bolt	25	18	–
Bearing Retainer Bolts, Right Side	25	18	–
Center Rear Transaxle Support Bracket Bolts	90	66	–
Clutch–Release Cylinder Bracket Bolts	75	55	–
Differential Cover Bolts	40	30	–
Fifth–Gear Fork Bolts	22	16	–
Fifth–Gearshift Connector Bolts	7	–	62
Gearshift Housing Bolts	6	–	53
Gearshift Lever Cover Bolts	22	16	–
15Input Driveshaft Detent Screw	15	11	–
Left Front Transaxle Support Bracket Bolts	60	44	–
Left Rear Transaxle Support Bracket Bolts	60	44	–
Lower Transaxle–to–Engine Bolts	75	55	–
Ring–Gear Bolts	70	52	–
Rod Clamp Bolt	14	–	124
Speedometer–Driven Gear Bolt	4	–	35
Speedometer Housing Retaining Bolt	4	–	35
Support Bracket Bolt	7	–	62
Transaxle Bracket Mount–to–Center Member Bolts	65	48	–
Transaxle Bracket–to–Engine Bolt	90	66	–
Transaxle Bracket–to–Transaxle Bolts	90	66	–
Transaxle Cover Bolts, Bigger	20	15	–
Transaxle Cover Bolts, Smaller	15	11	–
Transaxle–to–Engine Upper Bolts	75	55	–
Transaxle Upper Brace Bolts	75	55	–

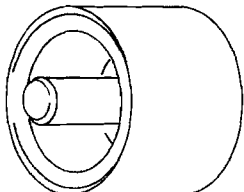
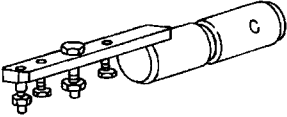
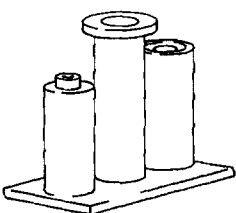
SPECIAL TOOLS

SPECIAL TOOLS TABLE

 <p>A103B110</p>	<p>J-6125-B Slide Hammer</p>	 <p>A103B163</p>	<p>KM-553-A Fifth-Gear Puller</p>
 <p>A103B003</p>	<p>J-22888-20-A Bearing Puller with J-22888-35 Puller Legs</p>	 <p>A103B028</p>	<p>J-36633 Snap Ring Retainer</p>
 <p>A103B112</p>	<p>J-22912-01 Universal Bearing Puller</p>	 <p>A103B002</p>	<p>KM-113-2 Base</p>
 <p>A102B152</p>	<p>J-28467-B Engine-Support Fixture</p>	 <p>A103B025</p>	<p>KM-334 Installer Sleeve</p>

5B – 4 FIVE-SPEED MANUAL TRANSAXLE

 <p>A103B013</p>	<p>J-42469 Shift Rod Remover</p>
 <p>A103B007</p>	<p>KM-519 Ring Installer</p>
 <p>A103B008</p>	<p>KM-520 Remover/Installer</p>
 <p>A103B009</p>	<p>KM-522 Installer</p>

 <p>A103B017</p>	<p>KM-525 Installer</p>
 <p>A103B019</p>	<p>KM-552 Fixture</p>
 <p>A103B021</p>	<p>KM-554 Installer</p>

DIAGNOSIS

ISOLATE NOISE

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

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 cause 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

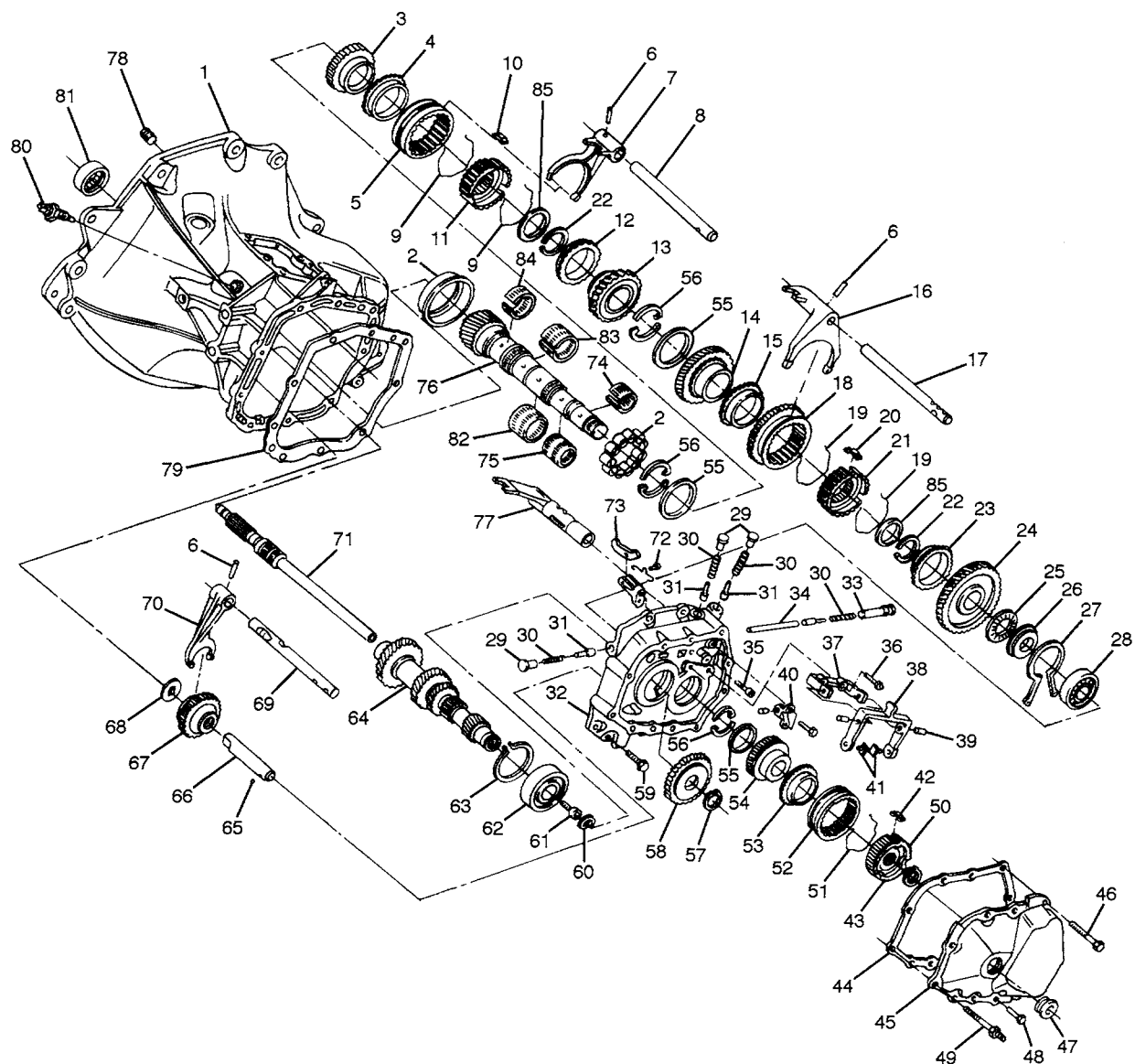
Checks	Action
Check for a knock at low speeds.	<ul style="list-style-type: none"> • Replace any worn drive axle CV joints. • Replace any worn side gear hub.
Check for a noise most pronounced on turns.	<ul style="list-style-type: none"> • Correct any abnormalities in the differential gear.
Check for a clunk upon acceleration or deceleration.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Replace any worn outboard CV joint.
Check for a vibration.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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/bearings. • Replace any worn ring gear.
Check for a noise in all gears.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Repair the transaxle casing. • Replace any damaged release bearing guide.
Check for a leak at the center of the transaxle.	<ul style="list-style-type: none"> • Repair the transaxle casing. • Repair the shift mechanism. • Replace the damaged backup lamp switch.
Check for a leak at the differential.	<ul style="list-style-type: none"> • Adjust or replace the bearing retainers. • Tighten or replace the differential cover. • Adjust or replace the drive axle shaft seals.
Check for a hard shift.	<ul style="list-style-type: none"> • 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.

Checks	Action
Check for a clashing of gears.	<ul style="list-style-type: none">• 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.

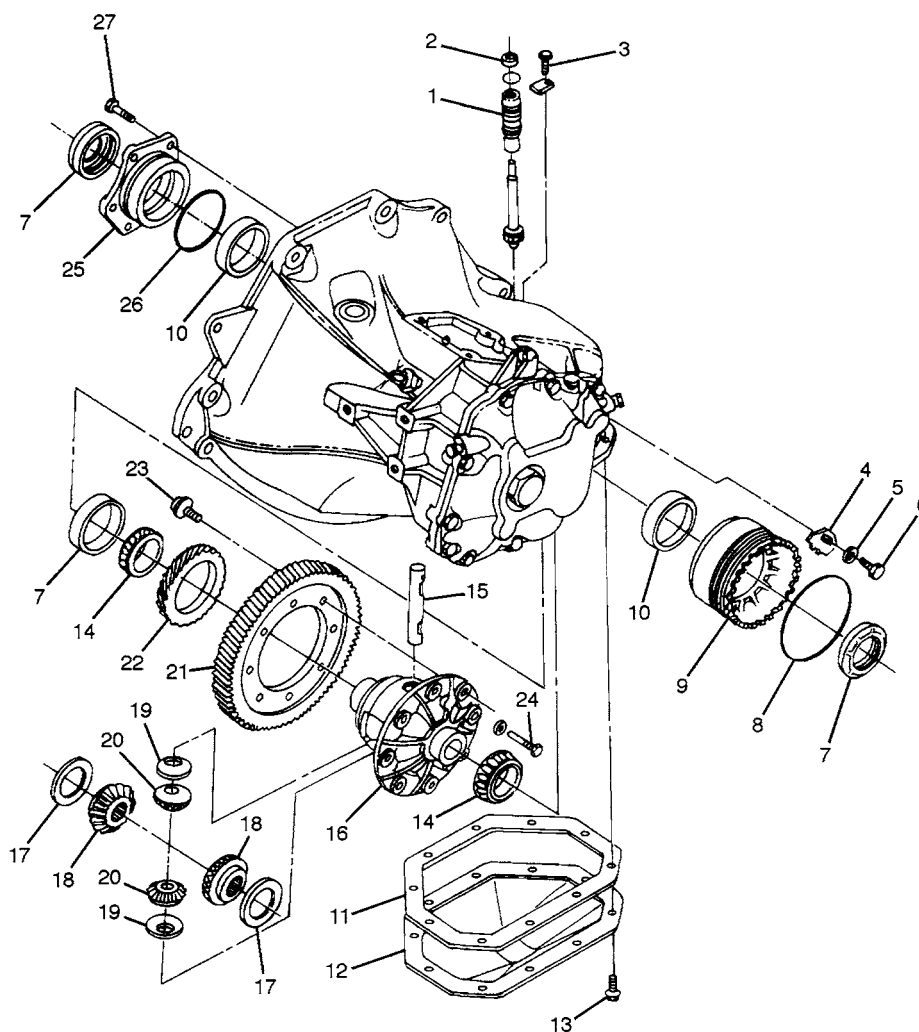
COMPONENT LOCATORS

GEARS AND CASE



- | | |
|-------------------------------------|-----------------------------------|
| 1. Case | 44. Gasket |
| 2. Mainshaft Bearing | 45. Cover |
| 3. Fourth Gear | 46. Bolt |
| 4. Synchronizer Blocking Ring | 47. Plug |
| 5. Synchronizer Sleeve | 48. Bolt |
| 6. Pin | 49. Screw |
| 7. Third–Fourth Gearshift Fork | 50. Synchronizer Gear |
| 8. Third–Fourth Gearshift Shaft | 51. Spring |
| 9. Spring | 52. Synchronizer Sleeve |
| 10. Key | 53. Synchronizer Blocking Ring |
| 11. Third–Fourth Synchronizer Gear | 54. Mainshaft Driven Fifth Gear |
| 12. Synchronizer Blocking Ring | 55. Ring |
| 13. Third Gear | 56. Thrust Washer |
| 14. Second Gear | 57. Ring |
| 15. First–Second Gear Blocking Ring | 58. Input Drive Fifth Gear |
| 16. First–Second Gearshift Fork | 59. Bolt |
| 17. First–Second Gearshift Shaft | 60. Cluster Gear Snap Ring |
| 18. Synchronizer Hub Sleeve | 61. Screw |
| 19. Synchronizer Spring | 62. Cluster Shaft Bearing |
| 20. Key | 63. Ring |
| 21. First–Second Synchronizer Gear | 64. Input Shaft Cluster Gear |
| 22. Snap Ring | 65. Ball |
| 23. Outer Blocking Ring | 66. Reverse Idler Gear Shaft |
| 24. First Gear | 67. Reverse Idler Gear |
| 25. First Gear Needle Bearing | 68. Washer |
| 26. Mainshaft Wear Plate | 69. WasherReverse Gear Fork Shaft |
| 27. Snap Ring | 70. Reverse Gearshift Fork |
| 28. Mainshaft Bearing | 71. Input Drive Shaft |
| 29. Shift Rod Plug (21.5 mm) | 72. Bolt |
| 30. Spring | 73. Fifth–Gear Pawl |
| 31. Shift Rod Lock Pin | 74. Fifth–Gear Needle Bearing |
| 32. Bearing Plate | 75. First–Gear Needle Bearing |
| 33. Shift Rod Plug (50.4 mm) | 76. Main Driven Shaft |
| 34. Detent Rod Bolt | 77. Fifth Gearshift Lever |
| 35. Bolt | 78. Hex Plug |
| 36. Bolt | 79. Gasket |
| 37. Support | 80. Reverse Lamp Switch |
| 38. Fifth Gearshift Fork | 81. Input Shaft Bearing |
| 39. Pin | 82. Second–Gear Needle Bearing |
| 40. Fifth Gear Connector | 83. Third–Gear Needle Bearing |
| 41. Shoe | 84. Fourth–Gear Needle Bearing |
| 42. Key | 85. Washer |
| 43. Snap Ring | |

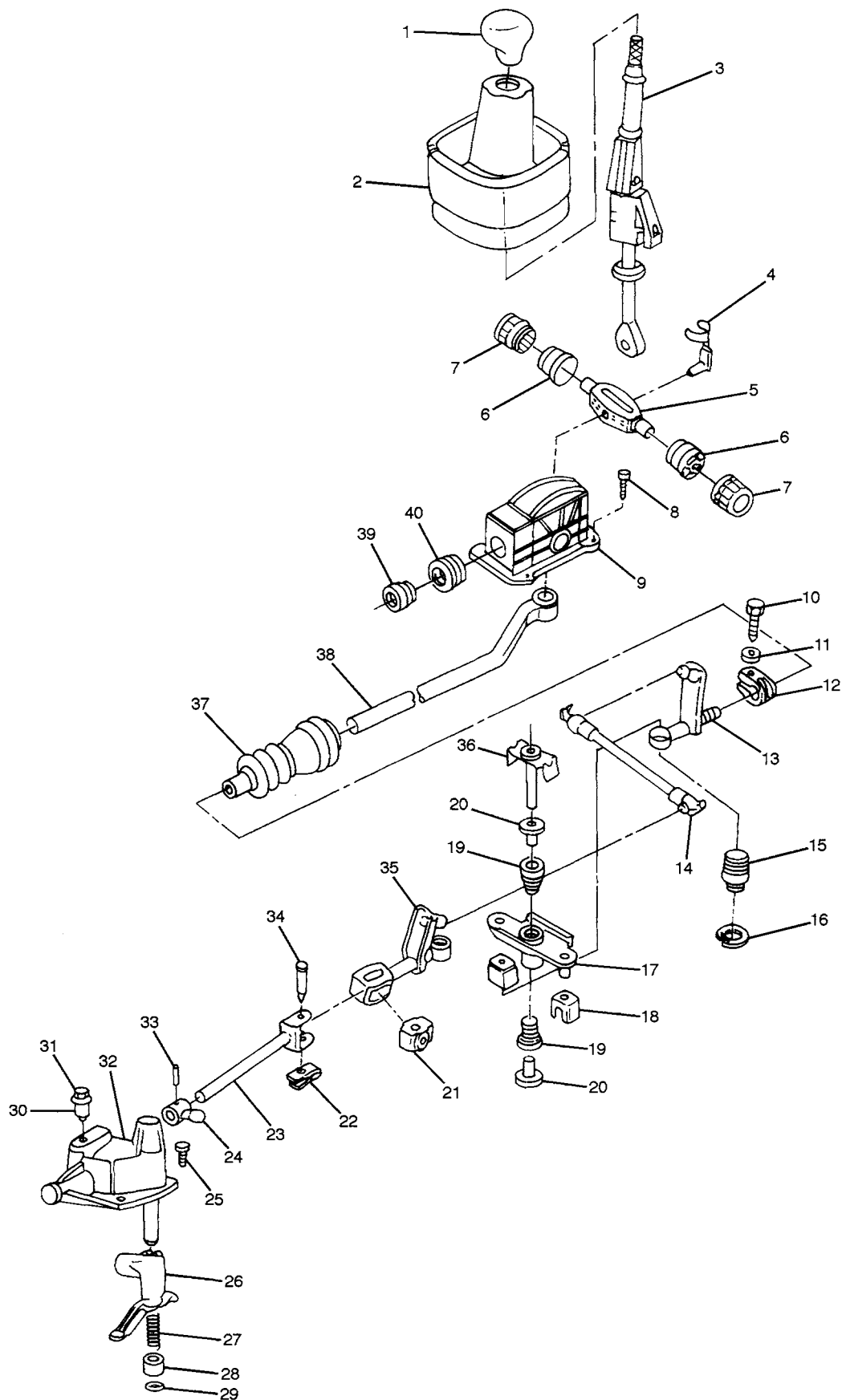
DIFFERENTIAL AND CASE



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- | | |
|----------------------------|---------------------------------|
| 1. Speedometer-Driven Gear | 15. Pinion Gear Shaft |
| 2. Seal | 16. Differential Housing |
| 3. Hex Bolt | 17. Thrust Washer |
| 4. Bearing Plate | 18. Side Gear |
| 5. Washer | 19. Washer |
| 6. Bolt | 20. Pinion Gear |
| 7. Seal | 21. Ring Gear |
| 8. Seal | 22. Speedometer Drive Gear |
| 9. Bearing Adjusting Ring | 23. Bolt |
| 10. Side Bearing Race | 24. Pinion Shaft Lock Pin |
| 11. Housing Cover Gasket | 25. Right Side Bearing Retainer |
| 12. Differential Cover | 26. Seal |
| 13. Bolt | 27. Retainer Bolt |
| 14. Differential Bearing | |

SHIFT LINKAGE



1. Gearshift Lever Knob
2. Gearshift Lever Boot
3. Gearshift Lever
4. Gearshift Lever Stop Clamp
5. Gearshift Lever Shaft
6. Gearshift Lever Stop Bushing
7. Gearshift Lever Stop Bushing
8. Bolt
9. Gearshift Housing
10. Shift Rod Clamp Bolt
11. Washer
12. Clamp
13. Linkage Adjuster Bolt
14. Gearshift Control Rod
15. Linkage Ball Socket
16. Circlip Ring
17. Linkage Reverse Lever
18. Gearshift Boot
19. Bushing
20. Bushing
21. Rod U-Joint Bushing
22. Clip
23. Gearshift Rod
24. Shift Finger Lever
25. Cover Bolt
26. Intermediate Lever
27. Shift Lever Thrust Spring
28. Bushing
29. Snap Ring
30. Oil Filler Plug
31. Oil Plug Cap
32. Gearshift Lever Cover
33. Pin
34. Bolt
35. Gearshift Adjuster Linkage
36. Shift Reverse Pivot Bolt
37. Boot
38. Gearshift Tube
39. Bushing
40. Gearshift Tube Bearing