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General

This section contains description and repair procedures for the differential. There is a Specifications section and a Troubleshooting section at the end of this section.

Description

This differential is fastened to the drive axle housing of the lift truck. The differential provides a single-speed reduction for an increase in torque to the drive wheels. There is a housing, a ring and pinion gear set, and the differential assembly. The ring gear

transfers power from the pinion through the differential assembly to the axles. The differential assembly permits the drive wheels to rotate at different speeds during a turn. See Figure 1.

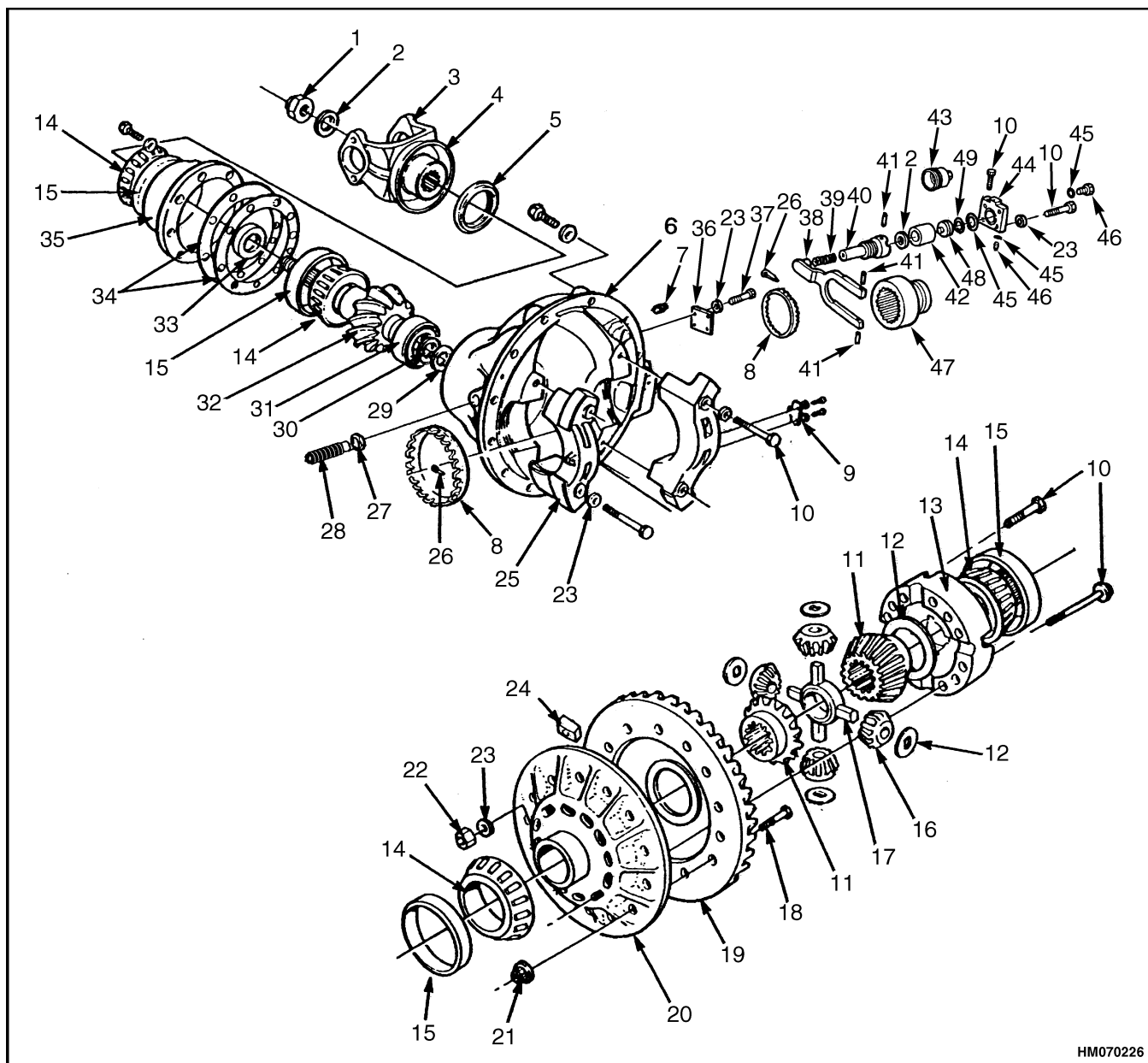


Figure 1. Typical Differential Assembly

Legend for Figure 1

NOTE: *SOME AXLES DO NOT HAVE THE PARTS DESCRIBED.

- | | | |
|-------------------------|----------------------------------|---|
| 1. PINION NUT | 18. CAPSCREW OR RIVET* | 34. SHIM |
| 2. WASHER* | 19. RING GEAR | 35. PINION CARRIER |
| 3. INPUT YOKE* | 20. CASE HALF, FLANGE | 36. COVER |
| 4. DEFLECTOR | 21. NUT* | 37. BOLT |
| 5. TRIPLE-LIP OIL SEAL | 22. NUT | 38. SHIFT FORK |
| 6. DIFFERENTIAL CARRIER | 23. WASHER | 39. SPRING |
| 7. FILL PLUG | 24. THRUST BLOCK* | 40. SHIFT SHAFT |
| 8. ADJUSTMENT RING | 25. BEARING CAP | 41. PIN |
| 9. LOCK PLATE | 26. COTTER PIN (ADJUSTING RING)* | 42. AIR CYLINDER TUBE |
| 10. CAPSCREW | 27. JAM NUT* | 43. SCREW IN DIFFERENTIAL LOCK CYLINDER |
| 11. SIDE GEAR | 28. THRUST SCREW* | 44. CYLINDER COVER |
| 12. THRUST WASHER | 29. RETAINING RING | 45. GASKET |
| 13. CASE HALF | 30. WASHER | 46. PLUG |
| 14. BEARING CONE | 31. SPIGOT BEARING | 47. SHIFT COLLAR |
| 15. BEARING CUP | 32. PINION | 48. PISTON |
| 16. PINION | 33. SPACER | 49. O-RING |

Differential Repair

REMOVE

NOTE: The repair procedures cover all units unless otherwise indicated.

Differential Carrier From Axle Housing, Remove

NOTE: The differential assembly can normally be removed without removing the drive axle. On some trucks, including the H7.00-12.50H (H150-275H), the drive axle must be removed to remove the differential assembly. If removal of the drive axle is necessary, see the **Drive Axle** service manual for your lift truck model.

1. Remove the mast. See the **Mast** section for your lift truck model for the removal procedures.
2. Raise the end of the vehicle where the axle is mounted. Use a jack or other lifting tool, and place safety stands under each side of the axle. See Figure 2.

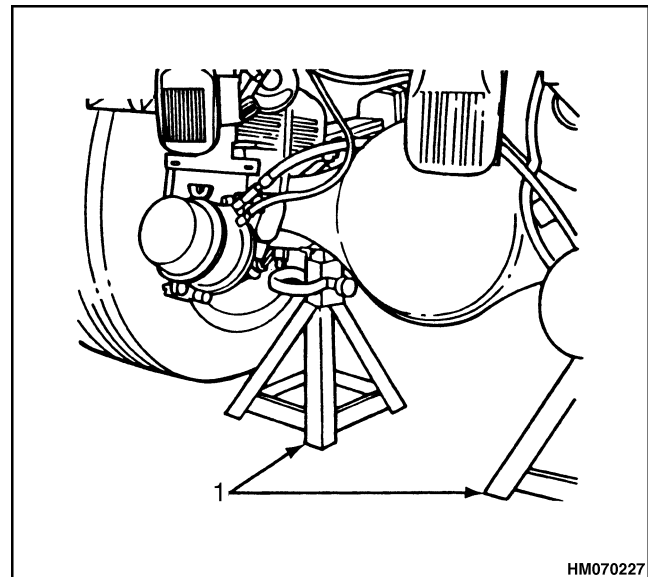


WARNING

Block the wheels to prevent the lift truck from moving. Support the lift truck with safety stands. DO NOT work under a lift truck

supported only by jacks. Jacks can slip and fall over. Serious personal injury can result.

3. Place jack stands under each spring seat of the axle, to hold the lift truck in the raised position.

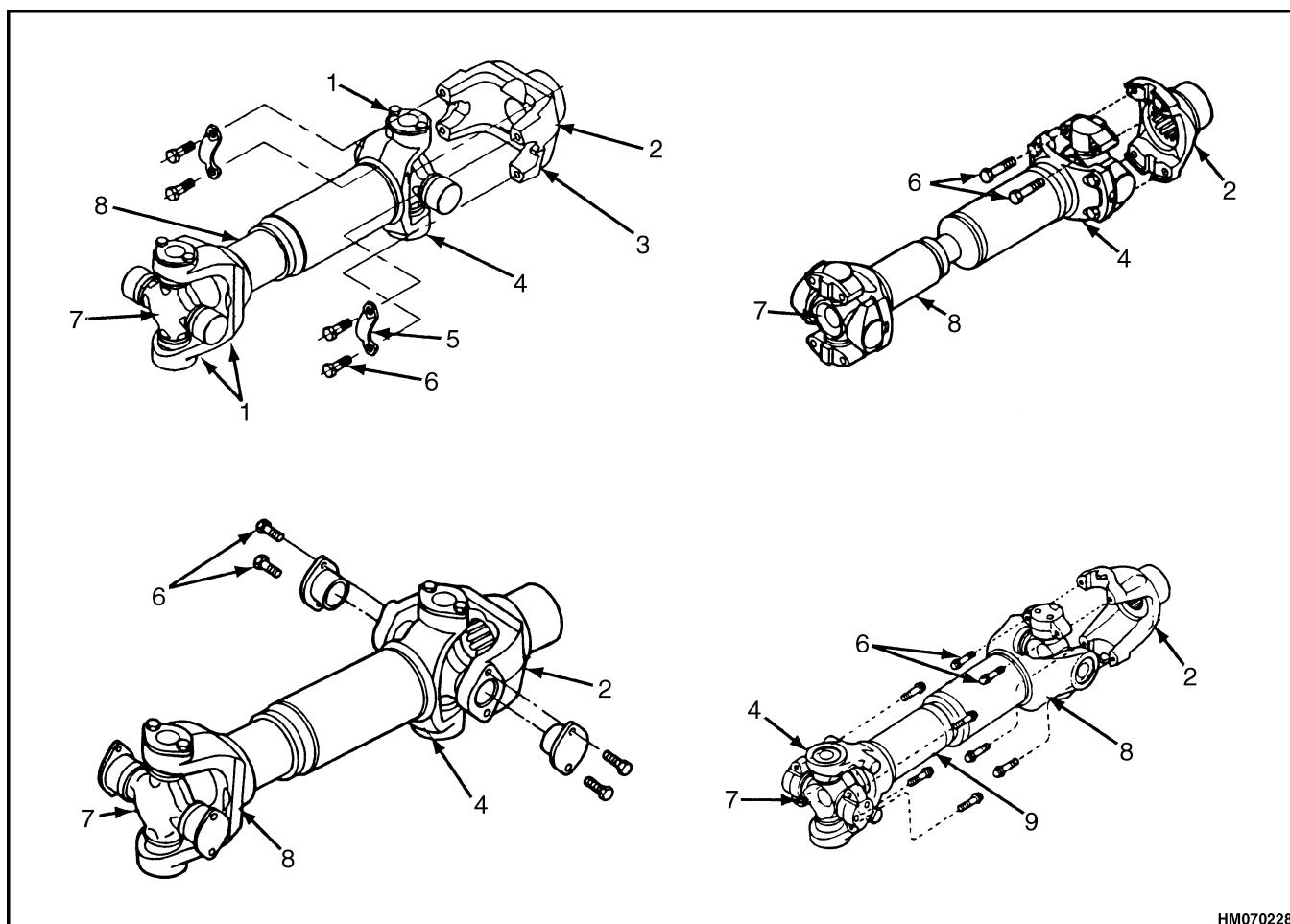


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1. SAFETY STANDS

Figure 2. Lift Truck Support

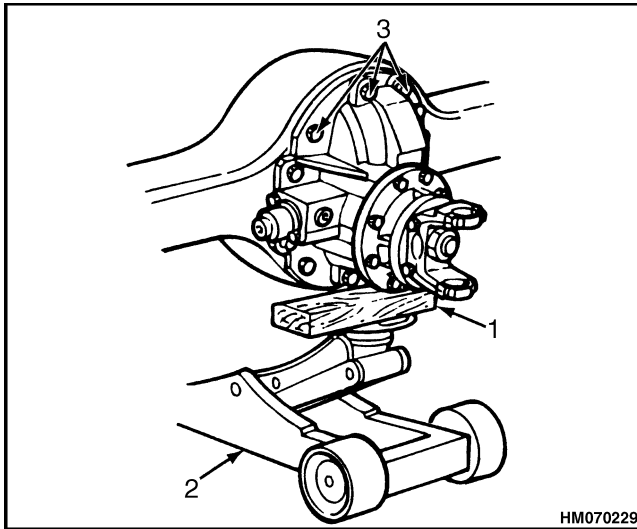
4. Remove plug from the bottom of the axle housing and drain the oil from the axle assembly.
5. Disconnect the drive shaft at the differential. If a speed reducer or gear box is installed, remove the speed reducer or gear box.
6. Some units have a drum or disc brake attached to the output yoke. Disconnect any brake linkage or brake lines. See the **Brake** section for your unit.
7. Disconnect the driveline universal joint from the pinion input yoke or flange on the differential carrier. See Figure 3.
8. Remove the axle shafts from the axle housing. See the **Drive Axle** section for your model of lift truck for the procedures.
 - a. On Straddle Trucks™, disconnect the drive axle universal joints at the differential yokes. Remove the capscrews that fasten the bearing retainers to the differential housing. Pull the yoke, stub shaft and bearing retainer from the housing.
9. Place a transmission jack under the differential carrier for support. See Figure 4.



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- | | | |
|-----------------|------------------|------------------|
| 1. BEARING CUPS | 4. WELD YOKE | 7. U-JOINT CROSS |
| 2. END YOKE | 5. BEARING STRAP | 8. SLIP YOKE |
| 3. YOKE SADDLE | 6. CAPSCREWS | 9. TUBING |

Figure 3. Typical Driveline Universal Joint



1. WOOD BLOCK
2. TRANSMISSION JACK
3. CAPSCREWS

Figure 4. Differential Carrier Support

10. Remove all but the top two differential carrier housing capscrews. See Figure 4.
11. Loosen the top two differential carrier housing capscrews and leave them attached to the assembly. The capscrews will hold the differential carrier in the housing.
12. Loosen the differential carrier in the axle housing. Use a leather mallet to hit the mounting flange of the differential carrier at several points.
13. After the differential carrier is loosened, remove the top two capscrews.

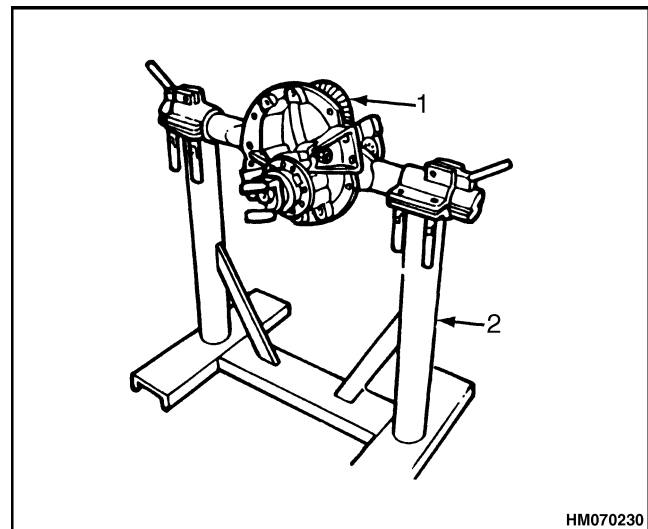


CAUTION

When using a pry bar, be careful not to damage the differential carrier or housing flange. Damage to these surfaces will cause oil leaks.

14. Remove the differential carrier from the axle housing. Use a pry bar with a round end, to help remove differential carrier from housing.
15. Remove the differential carrier assembly from under the lift truck.

16. Use a lifting device and lift the differential carrier by the input yoke or flange and place the assembly on a repair stand. See Figure 5.



1. DIFFERENTIAL CARRIER
2. REPAIR STAND

Figure 5. Differential Carrier Stand

Differential and Ring Gear From Differential Carrier, Remove

NOTE: Some of the parts described below are not found on some differential carrier models. See Figure 1.

NOTE: Before working on the differential carrier, inspect the hypoid gear set for damage. If inspection shows no damage, the same gear set can be used again. Measure the backlash of the gear set and make a record of the dimension. See the section Ring Gear Backlash, Adjust. During differential reassembly, adjust the backlash to the original recorded dimension when the gear set is installed into the differential carrier.

1. Loosen the jam nuts on the thrust screw.
2. Remove the thrust screw and jam nut from the differential carrier. See Figure 6.

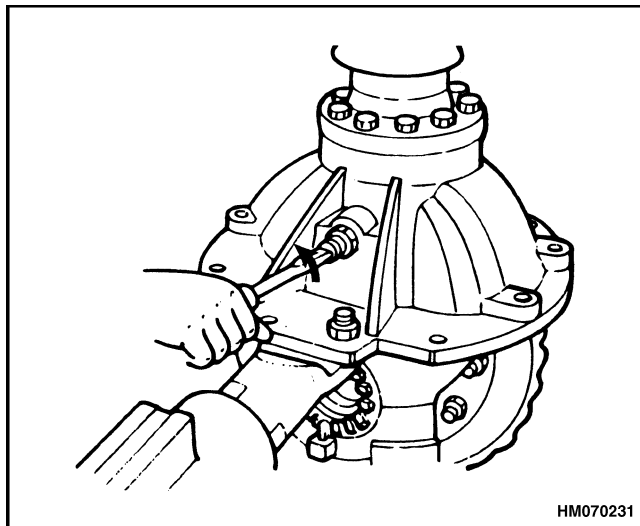
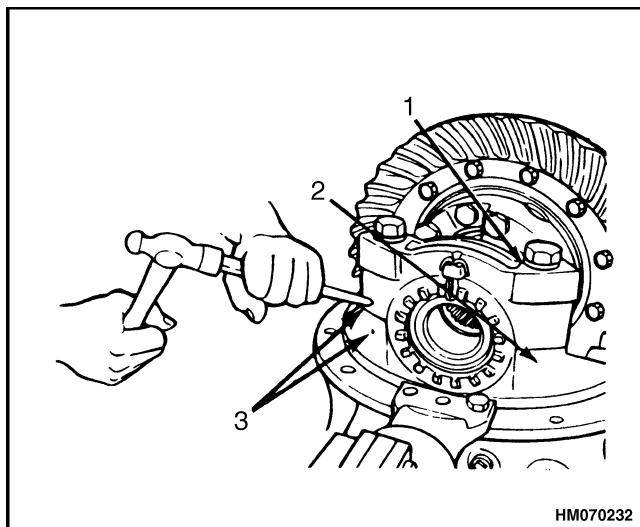


Figure 6. Thrust Screw and Jam Nut Removal

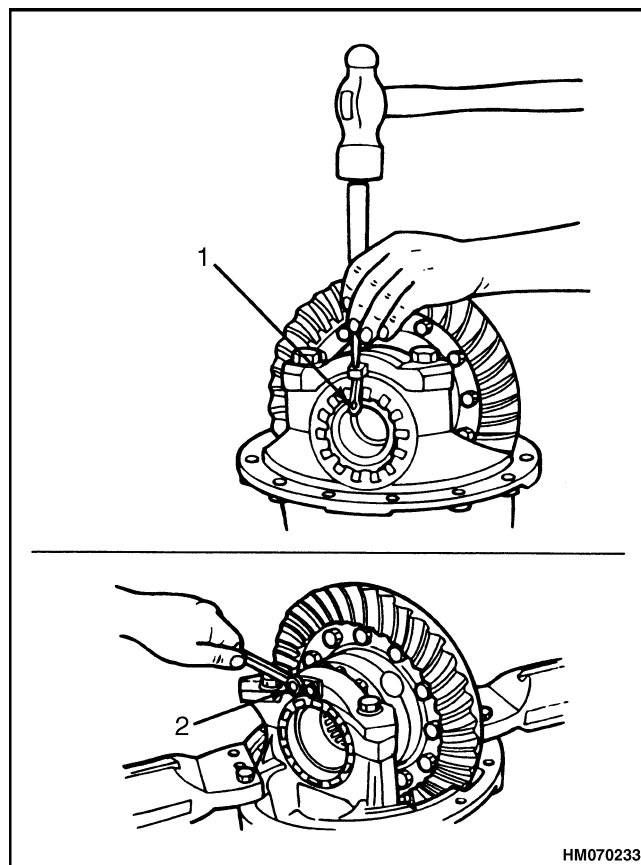
3. Rotate the differential carrier until the ring gear is at the top of the assembly.
4. Mark one differential carrier leg and bearing cap to correctly match the parts during differential carrier assembly. Mark the parts using a center punch and hammer. See Figure 7.



1. BEARING CAP
2. DIFFERENTIAL CARRIER LEG
3. MATCHMARKS

Figure 7. Mark Differential Carrier Leg and Bearing Cap

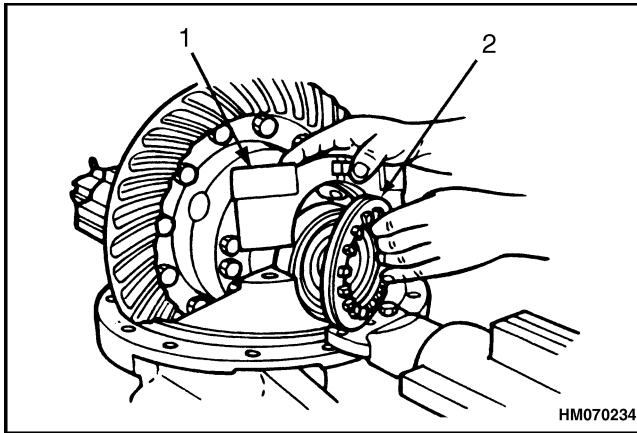
5. Remove the cotter pins that hold the bearing adjusting rings in position. Some differential carrier models have dowel pins or lock plates holding the bearing adjusting rings in position. Each lock plate is held in position by two capscrews. See Figure 8.
6. Remove capscrews and washers holding the two bearing caps on the differential carrier. See Figure 8.



1. COTTER PIN
2. LOCK PLATE

Figure 8. Bearing Adjusting Ring Removal

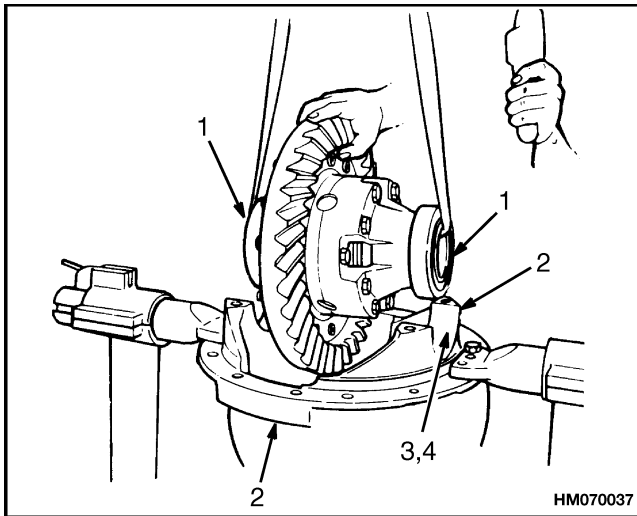
7. Remove the bearing caps and bearing adjusting rings from the differential carrier. See Figure 9.



1. BEARING CAP
2. BEARING ADJUSTING RING

Figure 9. Bearing Cap Removal

8. Use a lifting device and lift the main differential and ring gear assembly from the differential carrier. See Figure 10.



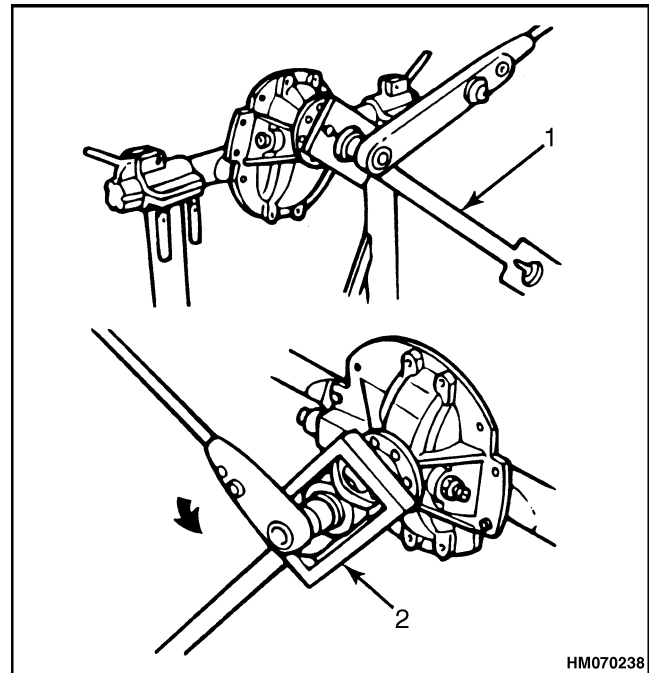
1. BEARING CUP
2. DIFFERENTIAL CARRIER
3. BEARING BORE
4. PUT ADHESIVE HERE (INSTALLATION ONLY)

Figure 10. Main Differential and Ring Gear Assembly Removal

Drive Pinion and Pinion Carrier From Differential Carrier, Remove

NOTE: Some of the parts described below are not found on some differential carrier models. See Figure 1.

1. Fasten a yoke or flange bar to the input yoke or flange. When the nut is removed, the bar will hold the drive pinion in position. See Figure 11.
2. Remove the nut and washer from the drive pinion.
3. Remove the yoke or flange bar.



1. FLANGE BAR
2. YOKE BAR

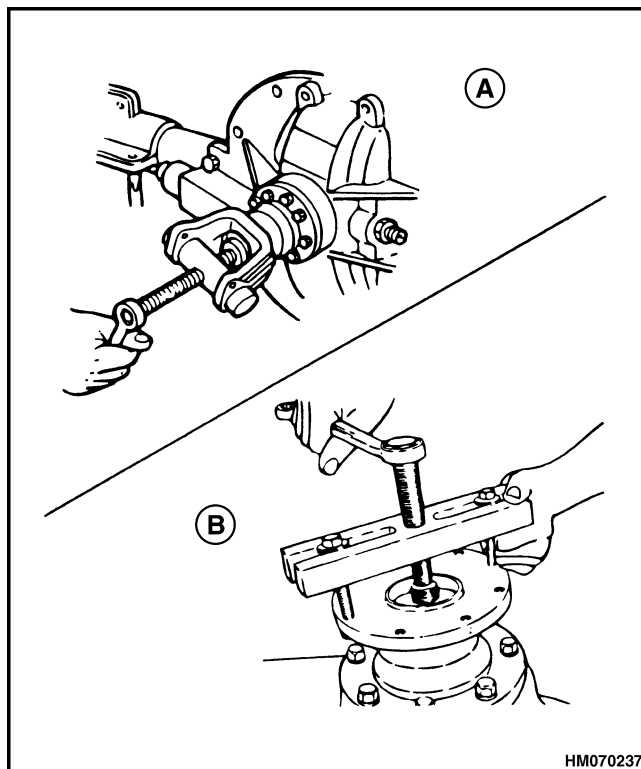
Figure 11. Flange and Yoke Bar



CAUTION

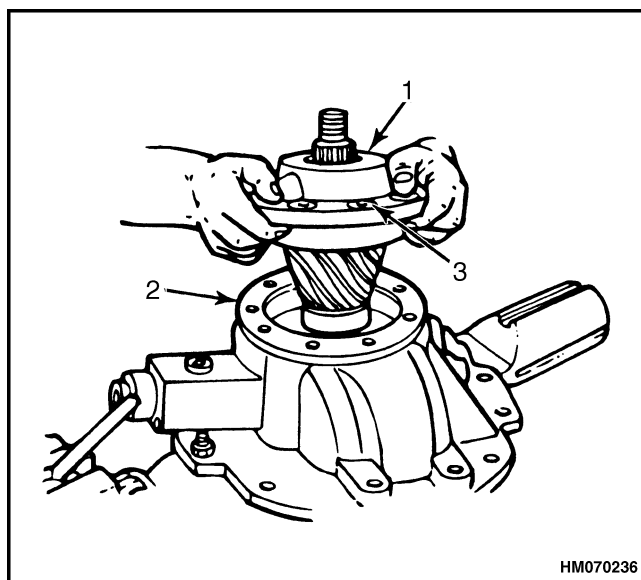
Do not use a hammer or mallet to loosen and remove the yoke or flange. A hammer or mallet can damage the parts and cause driveline runout or driveline imbalance problems after carrier to driveline assembly.

4. Remove the yoke or flange from the drive pinion. If the yoke or flange is tight on the pinion, use a puller for removal. See Figure 12.
5. Remove the capscrews and washers that hold the pinion carrier in the differential carrier. See Figure 13.



A. YOKE PULLER

B. FLANGE PULLER

Figure 12. Yoke and Flange Puller Tools

1. DRIVE PINION AND PINION CARRIER
2. SHIMS
3. CAPSCREWS

Figure 13. Pinion Carrier Removal**WARNING**

Use a brass or leather mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off and cause serious personal injury.

**CAUTION**

Do not use a pry bar to remove the pinion carrier from the carrier. A pry bar can damage the bearing case, shims, and differential carrier.

6. Remove the drive pinion, pinion carrier, and shims from the differential carrier. See Figure 13. If the pinion carrier is tight on the differential carrier, hit the pinion carrier at several points around the flange area with a leather, plastic or rubber mallet.
7. Inspect the shims. If they are in good condition, keep the shims together for use during differential carrier assembly.
8. If the shims are to be replaced, first measure the total thickness of the pack. Make a note of the dimension. The dimension will be needed to calculate the depth of the drive pinion in the differential carrier when the gear set is installed.

DISASSEMBLE**Differential and Ring Gear Assembly, Disassemble**

NOTE: Some of the parts described below are not found on some differential carrier models. See Figure 1.

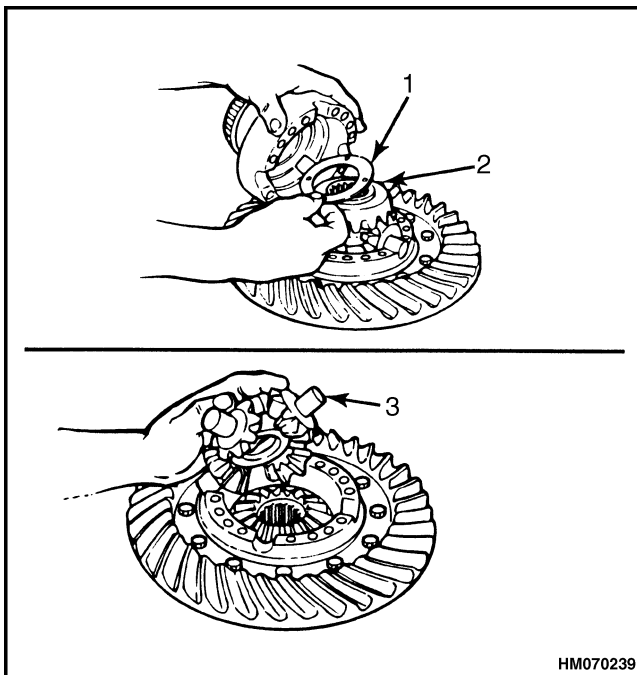
NOTE: Make sure there are matching marks on the case halves of the differential assembly. See Step 4 in the section Differential and Ring Gear From Differential Carrier, Remove. See Figure 7.

**WARNING**

Use a brass or leather mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off and cause serious personal injury.

1. Remove the capscrews and washers that hold the case halves together and separate the case halves. If necessary, use a brass, plastic, or leather mallet to loosen the parts.

2. Remove the differential spider, four pinion gears, two side gears, and six thrust washers from inside the case halves. See Figure 14.



1. THRUST WASHER
2. SIDE GEAR
3. SPIDER, PINIONS, AND THRUST WASHERS

Figure 14. Ring Gear Disassembly

3. If the ring gear needs to be replaced, remove bolts, nuts, and washers holding the ring gear to the flange case half.

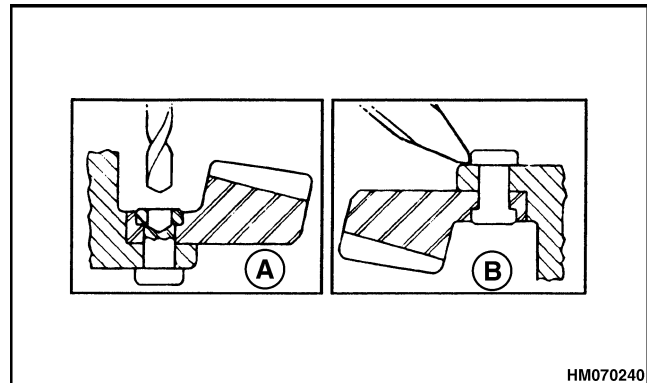


CAUTION

Do not remove the rivets or rivet heads with a chisel and hammer. Using a flat edge tool can cause damage to the flange case. See Figure 15.

4. If your differential model uses rivets to hold the ring gear to the flange case half, remove the rivets as follows:
 - a. Center punch each rivet head in the center, on the ring gear side of the assembly.
 - b. Drill each rivet head on the ring gear side of the assembly to a depth equal to the thickness of one rivet head. Use a drill bit that is 1/32 of an inch smaller than the body diameter of the rivets. See Figure 15.

- c. Press the rivets through holes in the ring gear and flange case half. Press from the drilled rivet head.



- A. CORRECT DRILLING RIVETS FROM HEAD
- B. WRONG CHISELING RIVETS FROM HEAD

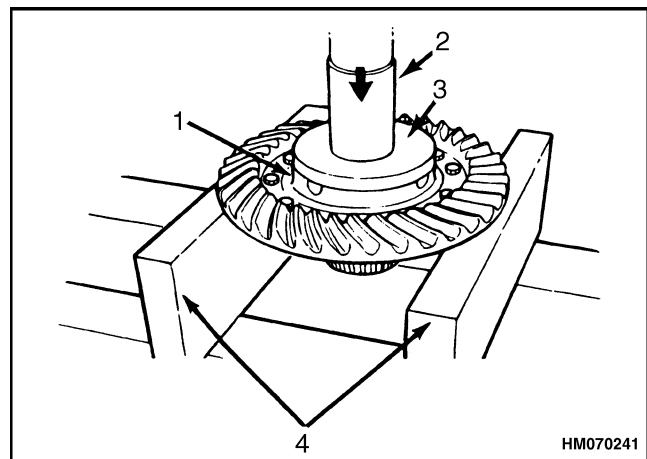
Figure 15. Rivet Removal



WARNING

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

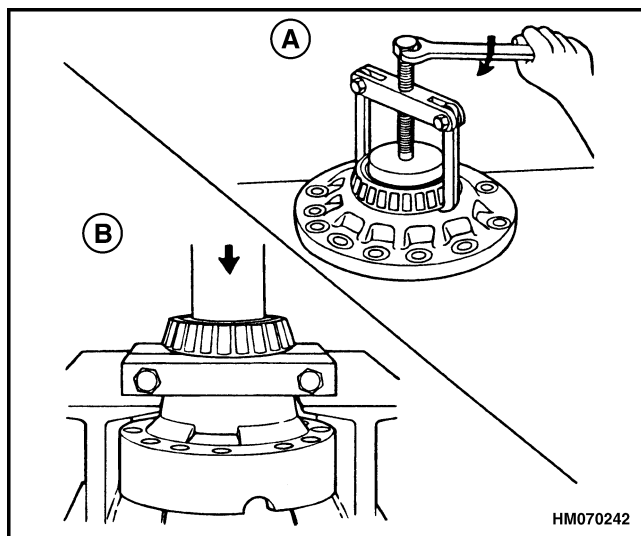
5. Separate the case half and ring gear using a press. Support the assembly under the ring gear with metal or wood blocks and press the case half through the gear. See Figure 16.



1. CASE HALF
2. PRESS
3. PLATE
4. SUPPORTS

Figure 16. Case Half and Ring Gear Separation

6. If the differential bearings need to be replaced, remove the bearing cones from the case halves. Use a bearing puller or press. See Figure 17.



A. PULLER

B. PRESS

Figure 17. Differential Bearings Replacement

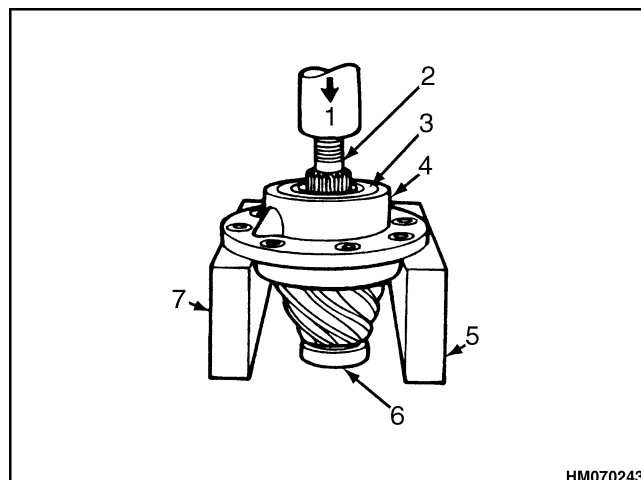
Drive Pinion and Pinion Carrier, Disassemble

WARNING

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

NOTE: Some of the parts described below are not found on some differential carrier models. See Figure 1.

1. Place drive pinion and pinion carrier in a press. The pinion shaft must be toward the top of the assembly. Add supports for the pinion carrier under the flange area. See Figure 18.
2. Press the drive pinion through the pinion carrier. See Figure 18.



- | | |
|-------------------|-------------------|
| 1. PRESS | 5. SUPPORT |
| 2. DRIVE PINION | 6. SPIGOT BEARING |
| 3. OIL SEAL | 7. FLANGE SUPPORT |
| 4. PINION CARRIER | |

Figure 18. Drive Pinion Disassembly

WARNING

Use a brass or leather mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off and cause serious personal injury.

NOTE: The inner bearing cone and bearing spacer will remain on the pinion shaft. See Figure 19.

3. If a press is not available, use a leather, plastic or rubber mallet to drive the pinion through the pinion carrier.

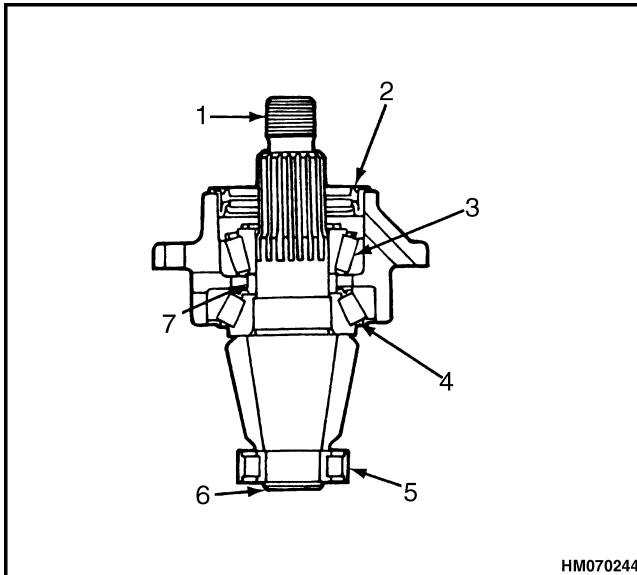


CAUTION

When removing the oil seal, Do not damage the wall of the bore. Damage to the bore wall can result in oil leaks.

NOTE: Always replace the oil seal with a new seal during reassembly.

4. Remove the oil seal from the pinion carrier. See Figure 19.



1. DRIVE PINION
2. OIL SEAL
3. OUTER BEARING (CUP AND CONE)
4. INNER BEARING (CUP AND CONE)
5. SPIGOT BEARING
6. SNAP RING
7. BEARING SPACER

Figure 19. Drive Pinion

5. Inspect the pinion bearings and replace if necessary. If the pinion bearings need to be replaced, perform the following:

- a. Remove the inner and outer bearing cups from the inside of the cage. Use either a press and sleeve, bearing puller, or a small drift pin. See Figure 17 and Figure 20. If a press is used, provide support for the pinion carrier under the flange area with metal or wood blocks.



CAUTION

The puller must fit under the inner race of the cone to remove the cone correctly without damage.

- b. Remove the inner bearing cone from the drive pinion with a press or bearing puller. See Figure 21.

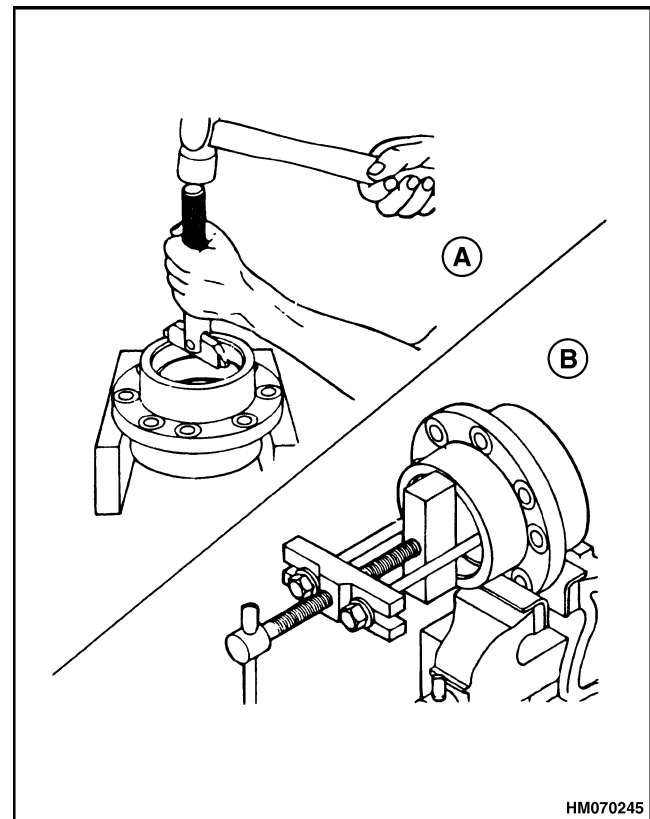
6. If the spigot bearing needs to be replaced, place the drive pinion in a vise. Install a soft metal cover over each vise jaw to protect the drive pinion.

7. Remove the snap ring from the end of the drive pinion. See Figure 22.

NOTE: Some spigot bearings are fastened to the drive pinion with a special peening tool. See Figure 23.

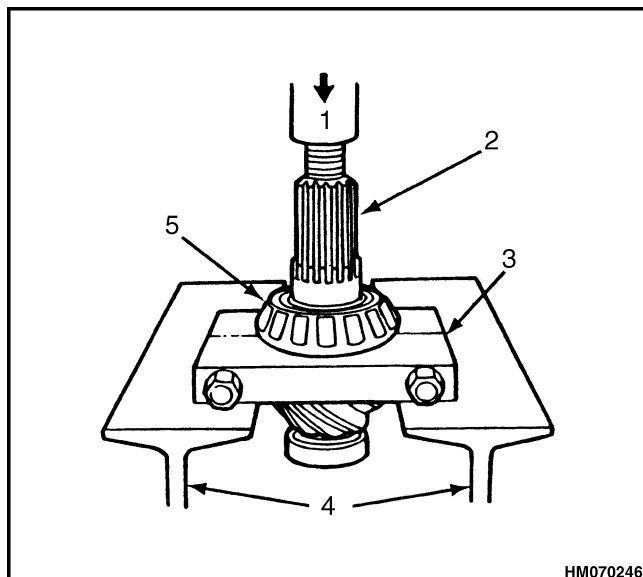
NOTE: Some spigot bearings are a two-piece assembly. Remove the inner race from the pinion with a bearing puller. Remove the outer race/roller assembly from the pinion carrier with a drift or a press. See Figure 24.

8. Remove the spigot bearing from the drive pinion with a bearing puller.



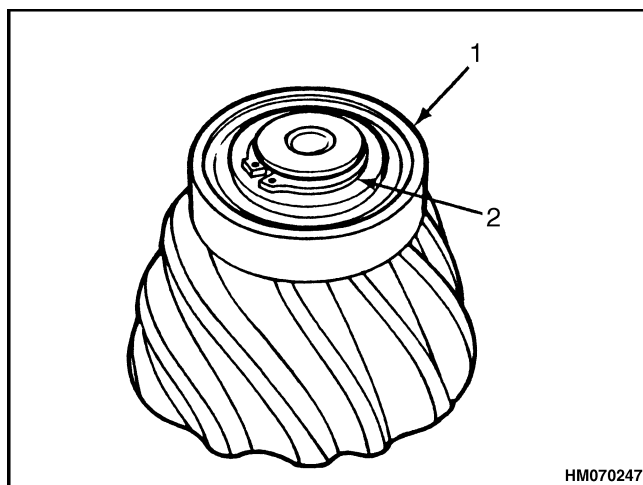
A. BEARING DRIVER B. BEARING PULLER

Figure 20. Pinion Bearing Replacement



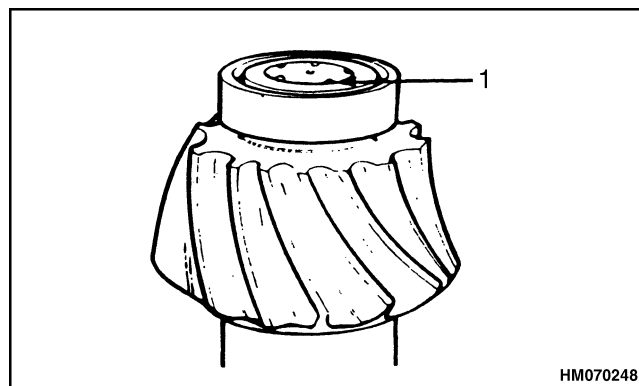
- | | |
|-------------------|-----------------------|
| 1. PRESS | 4. SUPPORTS |
| 2. DRIVE PINION | 5. INNER BEARING CONE |
| 3. BEARING PULLER | |

Figure 21. Pinion Bearing Replacement



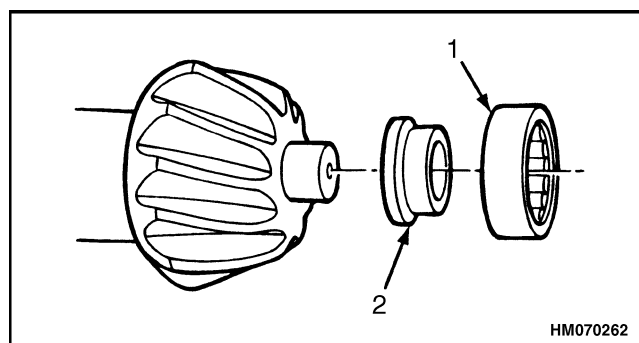
- | | |
|-------------------|--------------|
| 1. SPIGOT BEARING | 2. SNAP RING |
|-------------------|--------------|

Figure 22. Snap Ring Removal



1. PEENING POINTS

Figure 23. Spigot Bearing Peening Points



1. REMOVE OUTER RACE AND ROLLER ASSEMBLY FROM CARRIER
2. REMOVE INNER RACE FROM PINION

Figure 24. Two-Piece Spigot Bearing

CLEAN AND INSPECT

WARNING

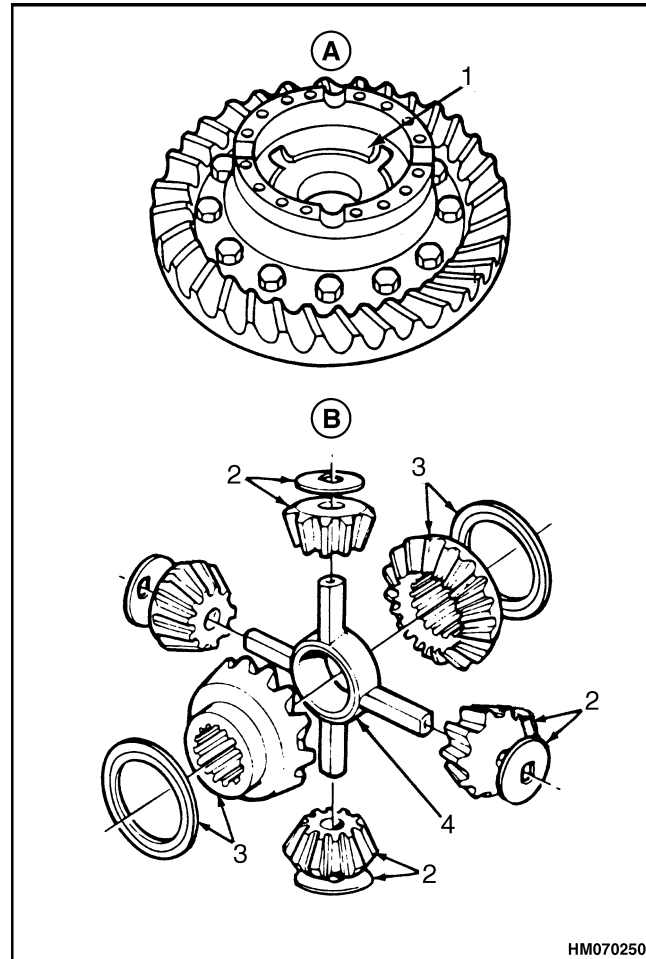
Cleaning solvents can be flammable and toxic and can cause skin irritation. When using cleaning solvents, always follow the recommendations of the manufacturer.

WARNING

Compressed air can move particles so that they cause injury to the user or to other personnel. Make sure that the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent injury to the eyes.

Clean and inspect the following parts of the differential:

- **Yoke-** Clean the surface of the yoke journal with a cleaning solvent and inspect the original yoke seal surface for any grooves.
- **Drive axle-** Clean the parts of the axle with solvent and dry with compressed air. Inspect all machined surfaces and bearings for wear and damage.
- **Tapered Roller Bearings-** Inspect the cup, cone, rollers, and cage of all tapered roller bearings in the assembly. If bearings show signs of wear, cracks, or damage, replace with new bearing.
- **Pinions and Gears-** Inspect the pinions and gears for wear or damage. Gears that are worn or damaged must be replaced.
- **Axle shafts-** Inspect the axle shafts for wear and cracks at the flange, shaft and splines. If axle shafts show signs of wear or damage, replace the axle shafts.
- **Main differential assembly-** Inspect all parts of the main differential assembly for wear or damage. Parts that are damaged must be replaced. See Figure 25 for parts to inspect.



- A.** DIFFERENTIAL CASE HALVES
B. DIFFERENTIAL GEAR NEST ASSEMBLY

1. INSPECT INSIDE SURFACES
2. PINION AND THRUST WASHER
3. SIDE GEAR AND THRUST WASHER
4. SPIDER

Figure 25. Main Differential Assembly Inspection

ASSEMBLE

Pinion, Bearings, and Pinion Carrier, Assemble

NOTE: Some of the parts described below are not found on some differential carrier models. See Figure 1.

1. Put differential oil on the bearings and cups. Install the cups in the pinion carrier. See Figure 1.
2. Install the inner bearing and spigot bearing against the pinion shoulders. Use a sleeve and press to push against the inner bearing race.



CAUTION

If a new pinion is installed, a new ring gear must also be installed. The pinion and ring gear are a set (see Figure 32) and must be installed together.

NOTE: During assembly at the factory, one spacer is used. Two thinner spacers are used if the pinion or bearings are replaced. These spacers are selected for correct bearing preload.

NOTE: Some spigot bearings are fastened to the pinion with a snap ring, and some are fastened with a punch. Others can have a two-piece bearing. See Figure 24.

3. Install the spigot bearing washer and snap ring. Put the pinion assembly in the pinion carrier. Install the spacers on the pinion. See Figure 19.
4. Use a press to install the outer bearing against the spacer. Rotate the carrier to make sure the bearings are installed correctly.
5. Use either the Press Method or the Yoke or Flange Method, and apply the correct preload. See Specifications, Table 6. Check the bearing preload as described in Pinion Bearings, Adjust Preload of this section.

Pinion Bearings, Adjust Preload

Press Method

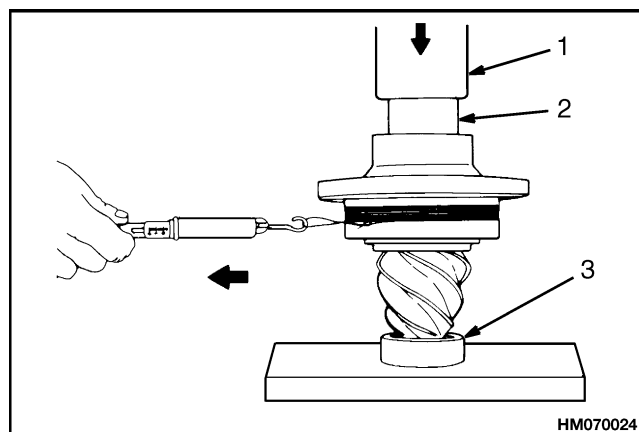


WARNING

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

NOTE: If a press is not available, or the press does not have a pressure gauge, use the Yoke or Flange Method to adjust pinion bearing preload.

1. Place the drive pinion and carrier assembly in a press with the gear head (teeth) toward the bottom.
2. Install a sleeve of the correct size against the inner race of the outer bearing. See Figure 19.
3. Apply and hold the correct amount of pressure to the pinion bearings. See Specifications, Table 6. As pressure is applied, rotate the pinion carrier several times so that the bearings make normal contact.
4. While pressure is held against the assembly, wrap a cord several times around the pinion carrier. Fasten a Newton or pound scale to the cord. See Figure 26.



1. PRESS
2. SLEEVE

3. PINION BEARING

Figure 26. Bearing Preload Check

5. Pull the scale to unwind the cord. Check the reading on the scale as the cord unwinds smoothly. Do not read starting torque. Read only the torque value after the pinion carrier starts to rotate. The starting torque will provide a false reading.

**CAUTION**

On H7.00-12.50H (H150-275H) trucks, DO NOT use the washer that is on the new pinion. Use the thicker spacer (Hyster PN 125277). The threads can be damaged or the nut can loosen if the washer is used.

6. The scale reading must indicate 2.2 to 7.0 kg (5 to 15 lb).

A pinion carrier that has a 76.2 mm (3 in.) radius and a 2.2 kg (5 lb) scale reading is equal to 1.70 N•m (15 lbf in). Select a bearing spacer set for the correct preload. A thinner set will increase the preload. A thicker bearing spacer set will decrease preload.

7. Use the following procedure to calculate the bearing preload (torque):
 - Pounds pulled $\times$ radius (inches) = lb-in preload.
- Preload $\times$ 0.113 = N•m preload.
 - Kilograms pulled $\times$ radius (cm) = kg-cm lb-in preload
- Preload $\times$ 0.098 = N•m preload.

OR

EXAMPLES:

- Reading from spring scale = 3.4 kg (7.5 lb).
- Diameter of pinion carrier = 16.8 cm (6.62 in.).
- Radius of pinion carrier = 8.4 cm (3.31 in.).
7.5 lb $\times$ 3.31 in = 24.8 in-lb preload.
Preload $\times$ 0.113 = 2.8 N•m preload.

OR

- 3.4 kg $\times$ 8.4 cm = 28.6 kg-cm preload.
Preload $\times$ 0.098 = 2.8 N•m preload.

Yoke or Flange Method**WARNING**

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

**CAUTION**

Do not install tight fit yokes or flanges on shafts using a hammer or mallet. A hammer or mallet will damage the yoke or flange.

NOTE: Use a press to install the yoke or flange.

1. Install the input yoke or flange, nut, and washer on the drive pinion. The yoke or flange must be seated against the outer bearing for proper preload.
2. Temporarily install the drive pinion and pinion carrier assembly into the differential carrier. Do not install shims under the pinion carrier. See Figure 34.
3. Install the pinion carrier to the differential carrier by installing the capscrews and tightening them by hand. Do not install the washers, they are not required.
4. Fasten a yoke or flange bar to the input yoke or flange. See Figure 11. The bar will hold the drive pinion in position when the nut is tightened.
5. Tighten the nut on the drive pinion to the correct torque value as shown in Specifications, Table 6. Remove the yoke or flange bar.
6. Attach a torque wrench on the drive pinion nut. Rotate the drive pinion and read the value indicated on the wrench. See Figure 27.

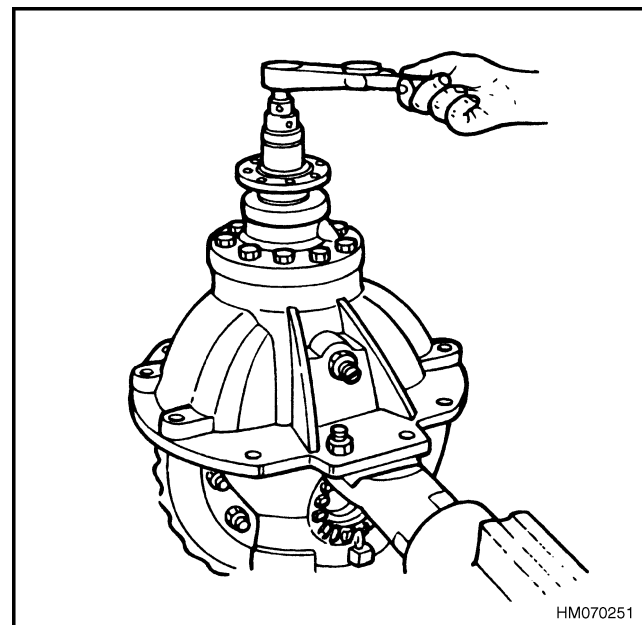


Figure 27. Torque Value Reading

7. If the preload (torque) of pinion bearings is not within specifications, remove the pinion and pinion carrier from the differential carrier. Perform Step a and Step b below, then repeat Step 1 through Step 6.

- a. To increase preload, install a thinner bearing spacer.
- b. To decrease preload, install a thicker bearing spacer.

Triple-Lip Seal, Install

Once the preload has been adjusted, remove the drive pinion and pinion carrier from the differential carrier as outlined in the first five steps in the section Drive Pinion and Pinion Carrier From Differential Carrier, Remove.

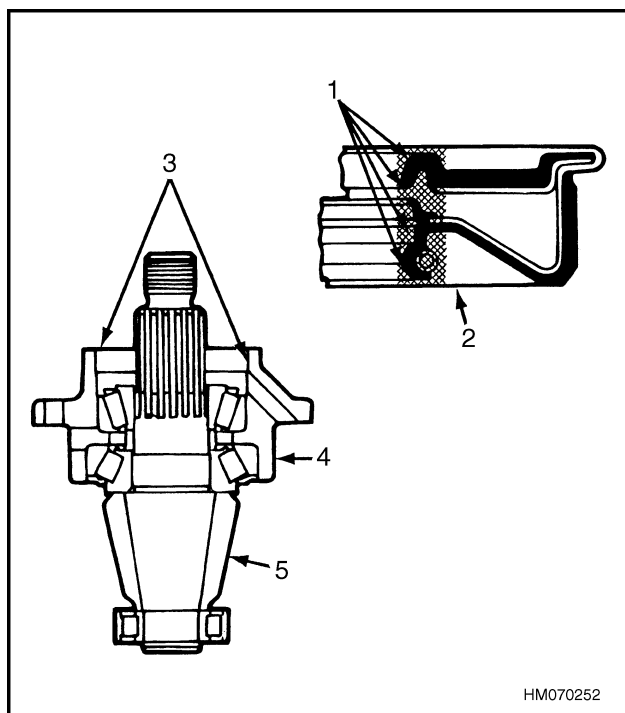


CAUTION

Make sure that the seal lips are clean and free from dirt and particles that will cause a leak between the yoke and the seal.

Install a new triple-lip oil seal as described below:

1. Apply lubricant to the outer surface of the seal and the seal bore in the pinion carrier. See Figure 28.

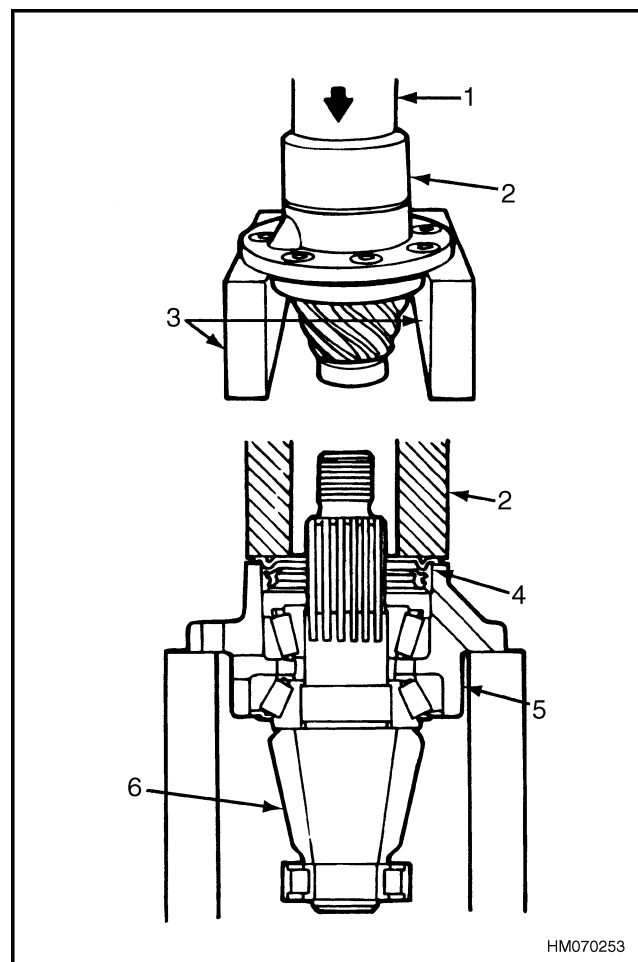


1. APPLY GREASE
2. TRIPLE-LIP OIL SEAL
3. APPLY LUBRICANT TO SEAL BORE
4. PINION CARRIER
5. DRIVE PINION

Figure 28. Triple-Lip Oil Seal Lubrication

NOTE: If a press is not available, use a mallet and a sleeve or driver to install the oil seal.

2. Place the drive pinion and carrier assembly in a press, with seal bore toward the top.
3. Press the seal into pinion carrier until flange of seal is flat against the top of pinion carrier. Use a sleeve or seal driver of the correct size that fits against the metal flange of oil seal. The diameter of the sleeve must be larger than the diameter of the flange. See Figure 29.



- | | |
|-------------|-------------------|
| 1. PRESS | 4. OIL SEAL |
| 2. SLEEVE | 5. PINION CARRIER |
| 3. SUPPORTS | 6. DRIVE PINION |

Figure 29. Triple-Lip Oil Seal Installation

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

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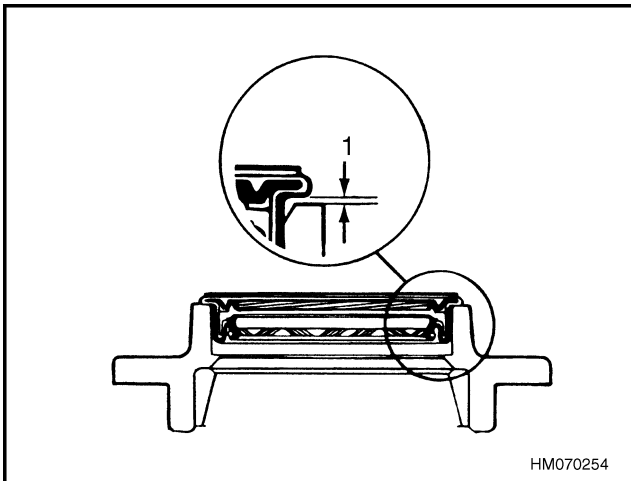
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**Thank you very
much.**

WARNING

Use a brass or leather mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off and cause serious personal injury.

- Once the triple-lip oil seal has been installed, check the gap between the flange and pinion carrier with a feeler gauge, at several points around the seal. See Figure 30. The gap must be within 0.38 to 0.76 mm (0.015 to 0.030 in.). The difference between the largest and smallest gap measurement must not exceed 0.0254 mm (0.010 in.).



NOTE: SHOWN WITHOUT BEARINGS AND PINION

- GAP MEASUREMENT = 0.38 to 0.76 mm (0.015 to 0.030 in.)

Figure 30. Oil Seal Gap Measurement

Pinion Carrier Shim Set, Adjust Thickness (Depth of Pinion)

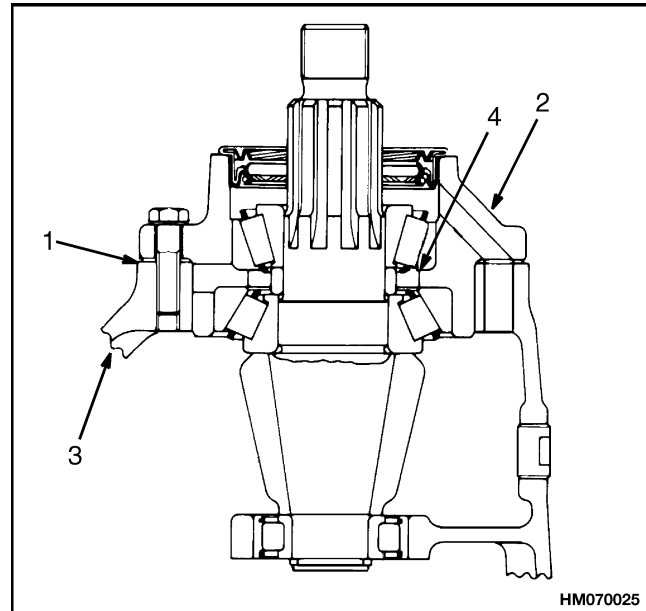
NOTE: Use this procedure if a new ring gear and pinion set is installed, or if the depth of the pinion has to be adjusted.

After the preload is correctly adjusted using the spacer set, adjust the pinion. The pinion is adjusted using shims on the pinion carrier assembly. If the same ring gear and pinion are used, use the old shim set. See Figure 31. If a new ring gear and pinion are used, adjust the pinion as described below.

CAUTION

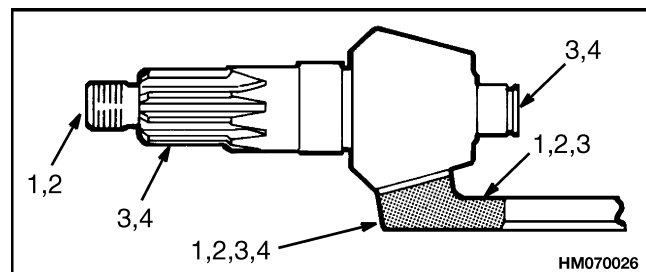
Always use a minimum of three shims for the shim set. Use the thinnest shims on the outside of the set for a better seal.

- The correct shim set thickness can be found by using the old and new parts. Use the old shim set thickness and the numbers on the old and new pinion and ring gear sets. For the location and identification of the numbers, see Figure 32.



- SHIM SET (CONTROLS DEPTH OF PINION)
- PINION CARRIER
- DIFFERENTIAL HOUSING
- SPACER(S) (CONTROLS BEARING PRELOAD)

Figure 31. Shim Set Location



- PART NUMBERS
- GEAR TEETH NUMBERS
- GEAR SET NUMBERS
- PINION CONE NUMBERS

Figure 32. Pinion Set Numbers