

SERVICE REPAIR

MANUAL

Hyster H006 (H135FT, H155FT) Forklift Service Repair
Manual

HYSTER

DRIVE AXLE AND DIFFERENTIAL ASSEMBLY REPAIR

(WET BRAKE)

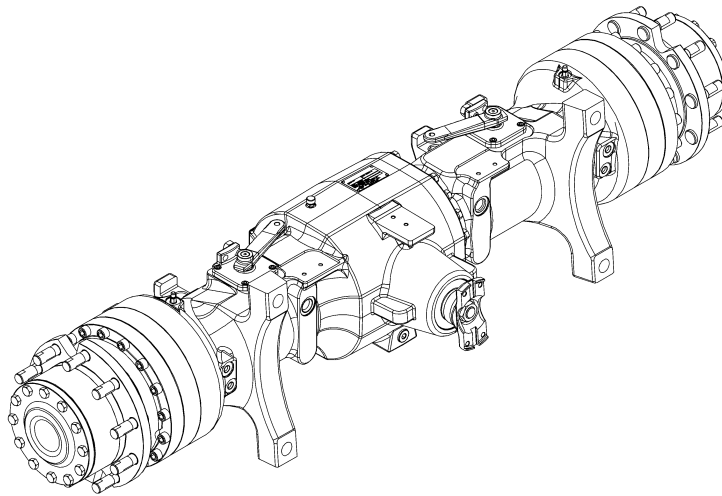
H6.0FT, H7.0FT (H135FT, H155FT)

[H006, J006, K006, L006];

H8.0FT, H8.0FT9, H9.0FT

(H170FT, H175FT36, H190FT)

[A299, B299, C299]



HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Hyster® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **HYSTER APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the **WARNING** symbol and word are on orange background. The **CAUTION** symbol and word are on yellow background.

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This section is for the following models:

H6.0FT, H7.0FT (H135FT, H155FT) [H006, J006, K006, L006];
H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) [A299, B299, C299]

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APPROVED
PARTS**

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manual**

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click on it.**

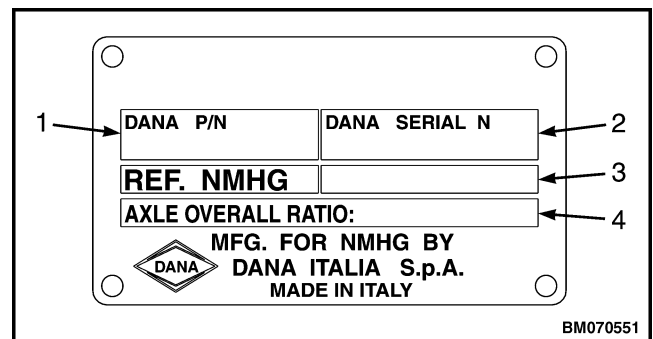
**Have any questions please write to me:
admin@servicemanualperfect.com**

General

This manual covers the repair of the drive axle, differential, and the wet disc brakes.

IDENTIFICATION PLATE

See Figure 1.



1. DANA PART NUMBER
2. DANA SERIAL NUMBER
3. HYSTER PART NUMBER
4. AXLE OVERALL RATIO

Figure 1. Identification Plate

Drive Axle Removal



WARNING

When putting the lift truck on blocks, make sure the surface is solid, even, and level. Any blocks used to support the lift truck must be solid, one-piece units.

1. Put blocks on each side (front and back) of the steering tires to prevent movement of the lift truck.
2. Raise the lift truck and put blocks under the frame so that the drive wheels do not touch the floor. Put blocks under the counterweight for stability.
3. Remove the mast assembly as described in the section

Mast Repairs, 2- and 3-Stage Masts (S/N A513, A514, A613, A614, A702, A703, A704, A705, A706, A707, A751, A752, B513, B514, B586, B587, B588, B589, B590, B591, B749, B750, B751, B752, B753, B754) 4000SRM1250 for lift truck models

- H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006)

Mast Repair (S/N A513, A514, A613, A614, A643, A644, A683, A684) 4000SRM1406 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299)

Mast Repair (S/N A613, A614, A643, A644, A683, A684) 4000SRM1956 for lift truck models

- H6.0FT, H7.0FT (H135FT, H155FT) (L006)

Mast Repair (S/N A613, A614, A643, A644, A683, A684) 4000SRM1956 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (C299)



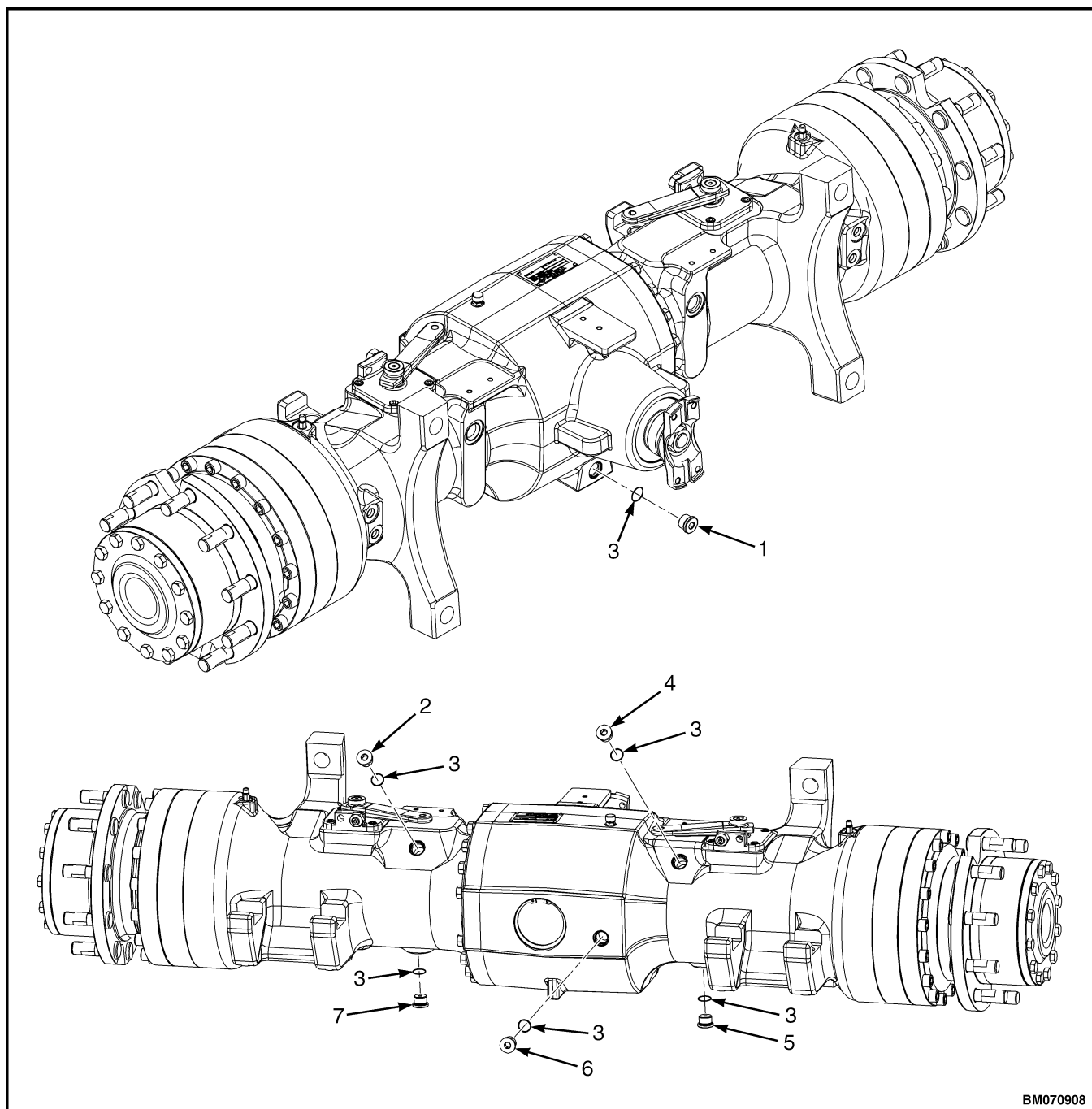
WARNING

Completely remove air from tires before removing them from lift truck. Air pressure in tires can cause tire and rim parts to explode, which can cause serious injury or death. Never loosen nuts that hold together inner and outer wheel halves when there is air pressure in tire.

4. Remove the air from the tires and remove the wheels.

NOTE: Perform Step 5 through Step 23 for lift truck models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006), .

5. Remove the drive axle main housing center fill/level plug and O-ring. See Figure 2.
6. Remove the oil fill plugs and O-rings on both sides of the drive axle. See Figure 2.
7. Remove the oil drain plugs on both sides of the drive axle. Drain the oil into a suitable container. See Figure 2.
8. Remove the drive axle main housing center drain plug. Drain the oil into a suitable container. See Figure 2.



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- | | |
|----------------------------------------------|---------------------------------------------------|
| 1. DRIVE AXLE MAIN HOUSING CENTER DRAIN PLUG | 5. OIL DRAIN PLUG, LEFT SIDE |
| 2. OIL FILL PLUG, RIGHT SIDE | 6. DRIVE AXLE MAIN HOUSING CENTER FILL/LEVEL PLUG |
| 3. O-RING | 7. OIL DRAIN PLUG, RIGHT SIDE |
| 4. OIL FILL PLUG, LEFT SIDE | |

Figure 2. Drive Axle Drain and Fill/Level Plugs for Lift Truck Models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006),

9. Remove the parking brake cables. Refer to the section

Brake System 1800SRM1247 for lift truck models

- H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006)

Brake System 1800SRM1247 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299)

Wet Brake System 1800SRM1977 for lift truck models

- H6.0FT, H7.0FT (H135FT, H155FT) (L006)

Wet Brake System 1800SRM1977 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (C299)

- .
10. Disconnect the brake supply line from the brake line cross fitting on the drive axle. See Figure 3.

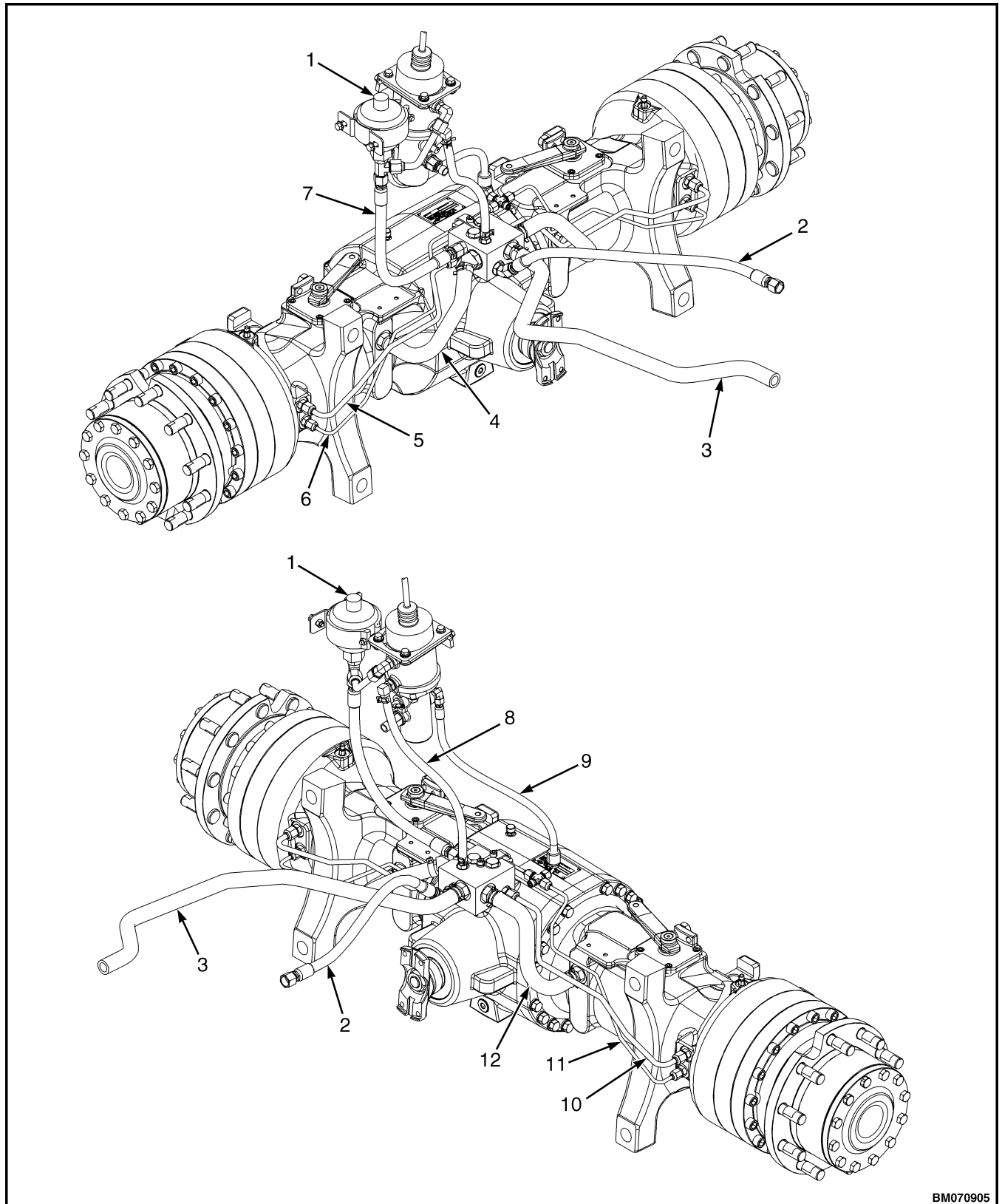
11. Disconnect the accumulator/brake booster supply line from the manifold on the drive axle. See Figure 3.

12. Disconnect the brake booster return line from the manifold on the drive axle. See Figure 3.

NOTE: Note placement of hose clamps prior to removal of hoses to aid in installation.

13. Disconnect the drive axle to transmission cooling return hose from the manifold on the drive axle. See Figure 3.

14. Disconnect the transmission to drive axle cooling supply hose from the manifold on the drive axle. See Figure 3.

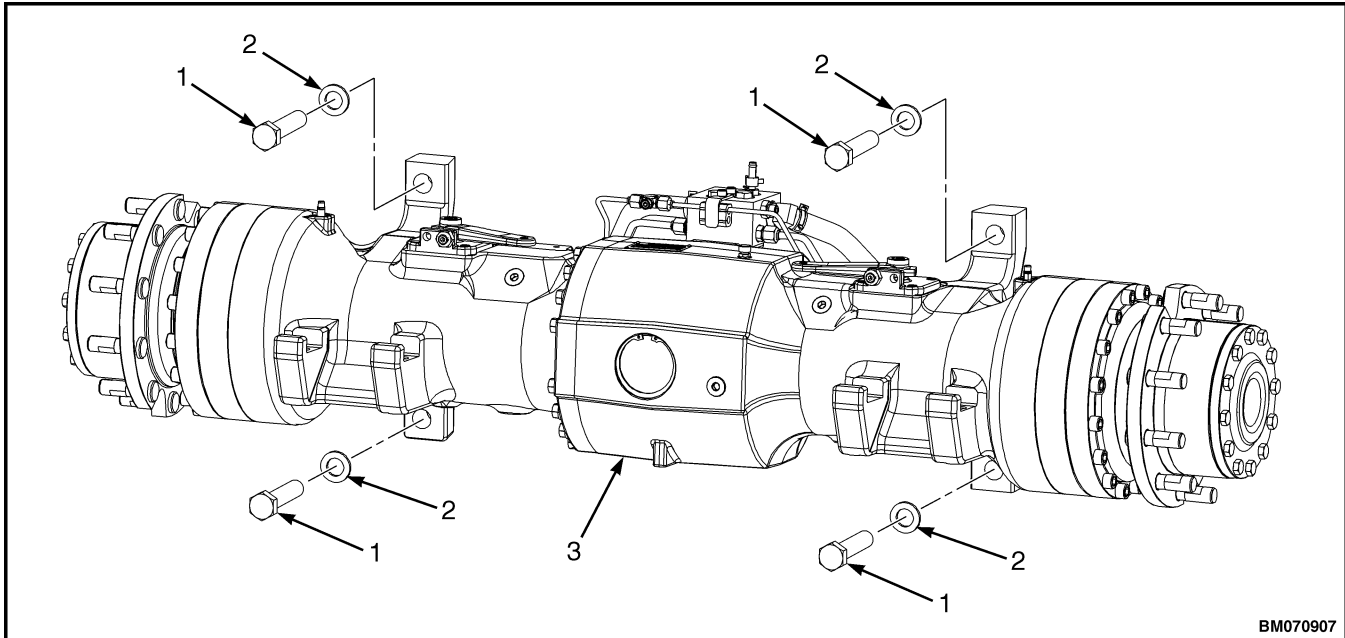


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Figure 3. Drive Axle and Brake Cooling Lines and Brake Lines for Lift Truck Models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006)

Legend for Figure 3

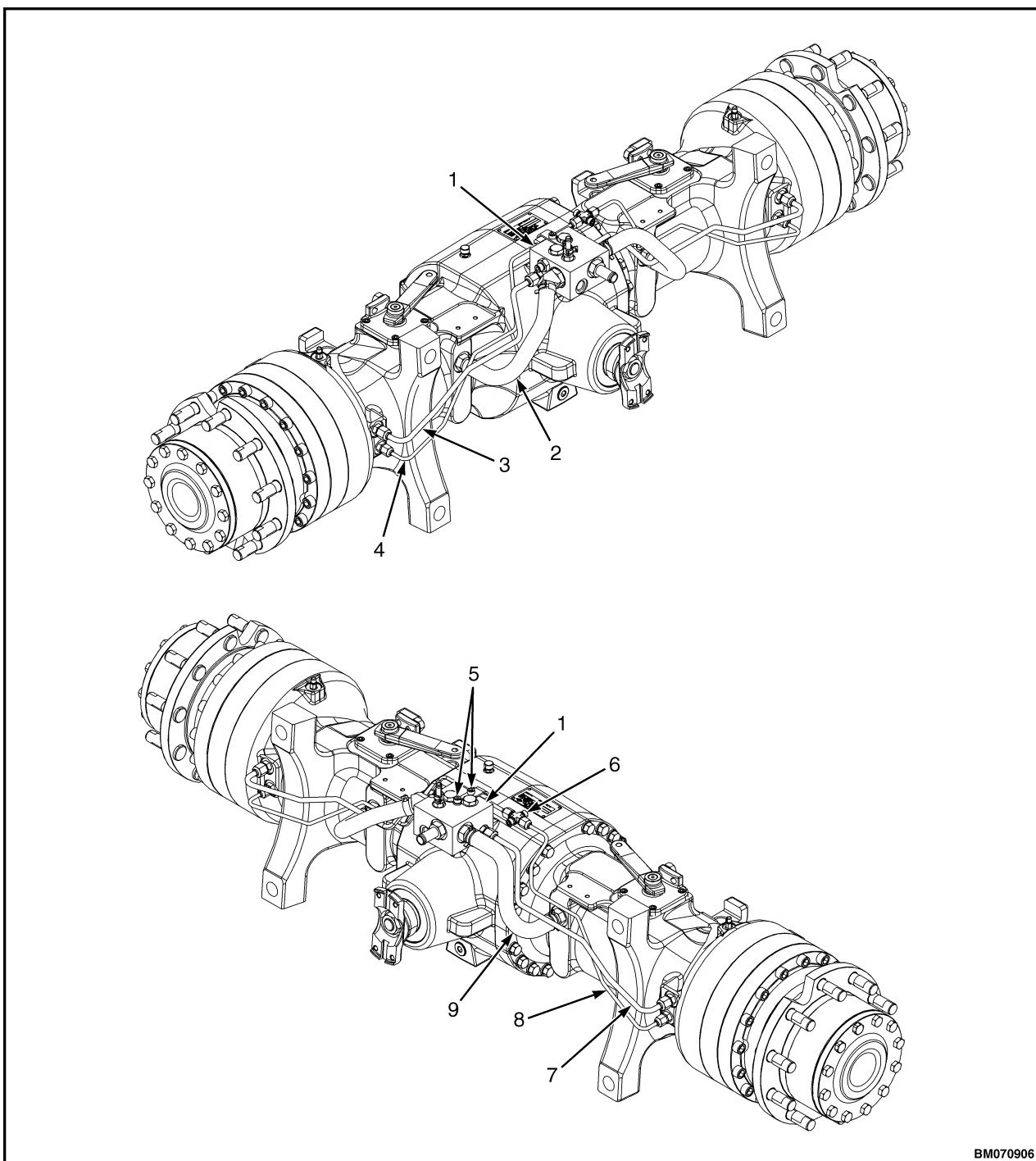
- | | |
|---------------------------------------------------|------------------------------------------------|
| 1. ACCUMULATOR | 7. ACCUMULATOR/BRAKE BOOSTER SUPPLY LINE |
| 2. TRANSMISSION TO DRIVE AXLE COOLING SUPPLY HOSE | 8. BRAKE BOOSTER RETURN LINE |
| 3. DRIVE AXLE TO TRANSMISSION COOLING RETURN HOSE | 9. BRAKE SUPPLY LINE |
| 4. DRIVE AXLE COOLING RETURN HOSE, LEFT SIDE | 10. BRAKE COOLING LINE, RIGHT SIDE |
| 5. BRAKE COOLING LINE, LEFT SIDE | 11. BRAKE LINE, RIGHT SIDE |
| 6. BRAKE LINE, LEFT SIDE | 12. DRIVE AXLE COOLING RETURN HOSE, RIGHT SIDE |
-
15. Place blocks under the axle assembly and connect slings and lifting device.
 16. Remove the capscrews retaining the drive shaft. Remove the drive shaft.
 17. Remove the four mounting capscrews and washers from the drive axle. See Figure 4.
 18. Remove blocks and lower the drive axle assembly. Pull axle forward and away from frame.
 19. Place blocks under the differential assembly.
 20. Disconnect the cooling hoses from the manifold and drive axle. Remove the cooling hoses. See Figure 5.
 21. Disconnect the brake cooling lines from the manifold and the drive axle. Remove the brake cooling lines. See Figure 5.
 22. Remove the socket head screws retaining the brake manifold to the drive axle. Remove the manifold. See Figure 5.
 23. Disconnect the brake lines from the drive axle. Remove the brake lines with cross fitting, as an assembly, from the drive axle. See Figure 5.



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- | | |
|-------------|---------------|
| 1. CAPSCREW | 3. DRIVE AXLE |
| 2. WASHER | |

Figure 4. Drive Axle Mounting Capscrews



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- | | |
|----------------------------------------------|-----------------------------------------------|
| 1. MANIFOLD | 6. CROSS FITTING |
| 2. DRIVE AXLE COOLING RETURN HOSE, LEFT SIDE | 7. BRAKE COOLING LINE, RIGHT SIDE |
| 3. BRAKE COOLING LINE, LEFT SIDE | 8. BRAKE LINE, RIGHT SIDE |
| 4. BRAKE LINE, LEFT SIDE | 9. DRIVE AXLE COOLING RETURN HOSE, RIGHT SIDE |
| 5. SOCKET HEAD SCREWS | |

Figure 5. Manifold and Cooling Hoses Removal for Lift Truck Models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006)

NOTE: Perform Step 24 through Step 43 for lift truck model H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299, C299), .

24. Remove drive axle main housing center fill plug from main housing. See Figure 6.
25. Remove right side and left side drain plugs from drive axle. Drain oil into suitable container. See Figure 6.
26. Remove drive axle main housing center drain plug from main housing, Drain oil into suitable container. See Figure 6.
27. Remove the parking brake cables. Refer to the section

Brake System 1800SRM1247 for lift truck models

- H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006)

Brake System 1800SRM1247 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299)

Wet Brake System 1800SRM1977 for lift truck models

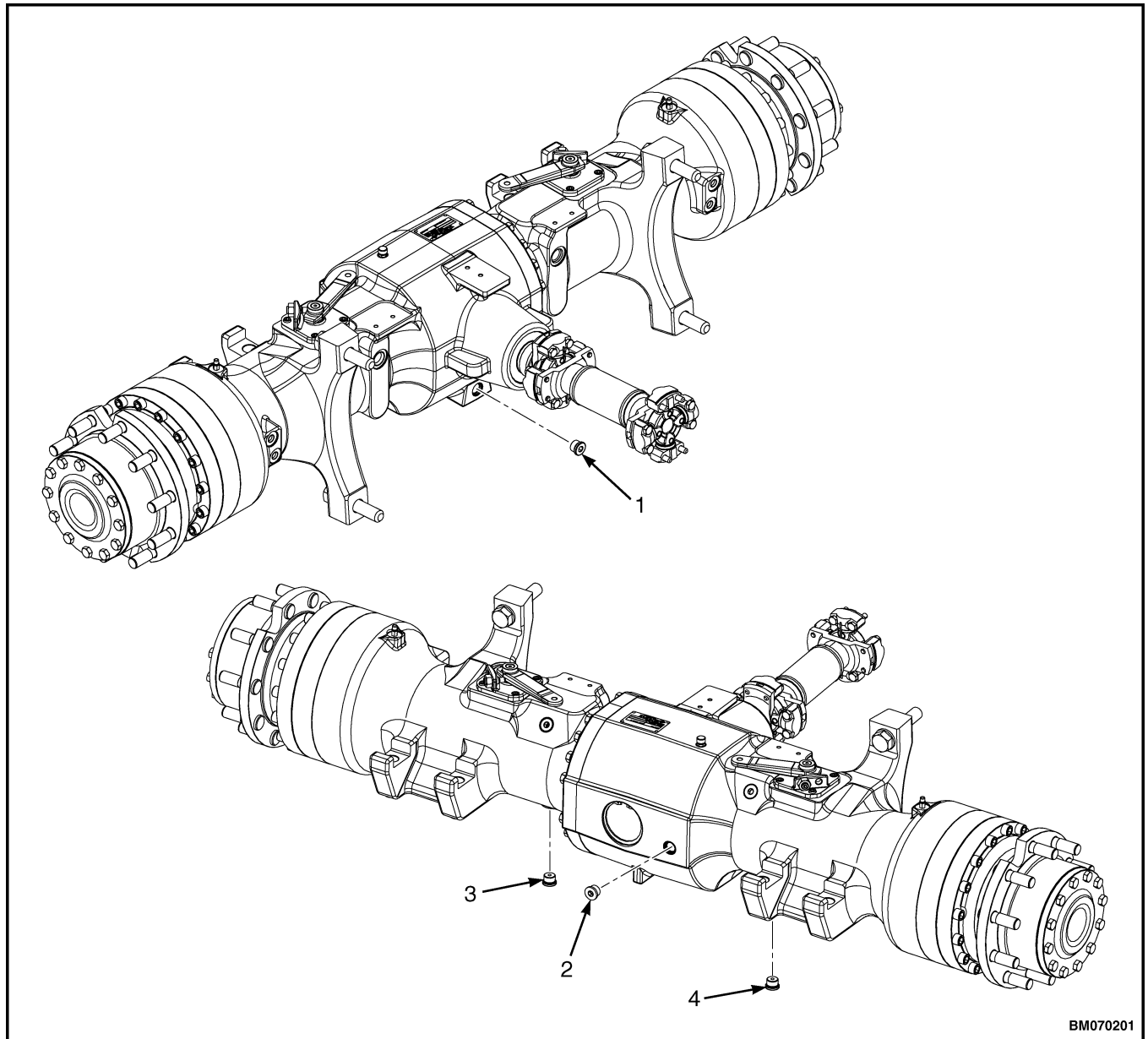
- H6.0FT, H7.0FT (H135FT, H155FT) (L006)

Wet Brake System 1800SRM1977 for lift truck models

- H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (C299)

NOTE: Note placement of hose clamps prior to removal of hoses to aid in installation.

28. Disconnect load sense in and load sense out hose assemblies from accumulator charge valve. See Figure 7.
29. Disconnect brake line from modulating brake valve. See Figure 7.
30. Disconnect hydraulic pressure supply hose from accumulator charge valve. See Figure 7.
31. Disconnect hydraulic return hose from accumulator charge valve and modulating brake valve. See Figure 7.



- | | |
|----------------------------------------------|--------------------------|
| 1. DRIVE AXLE MAIN HOUSING CENTER DRAIN PLUG | 3. RIGHT SIDE DRAIN PLUG |
| 2. DRIVE AXLE MAIN HOUSING CENTER FILL PLUG | 4. LEFT SIDE DRAIN PLUG |

Figure 6. Drive Axle Drain and Fill Plugs for Lift Truck Model H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299, C299),

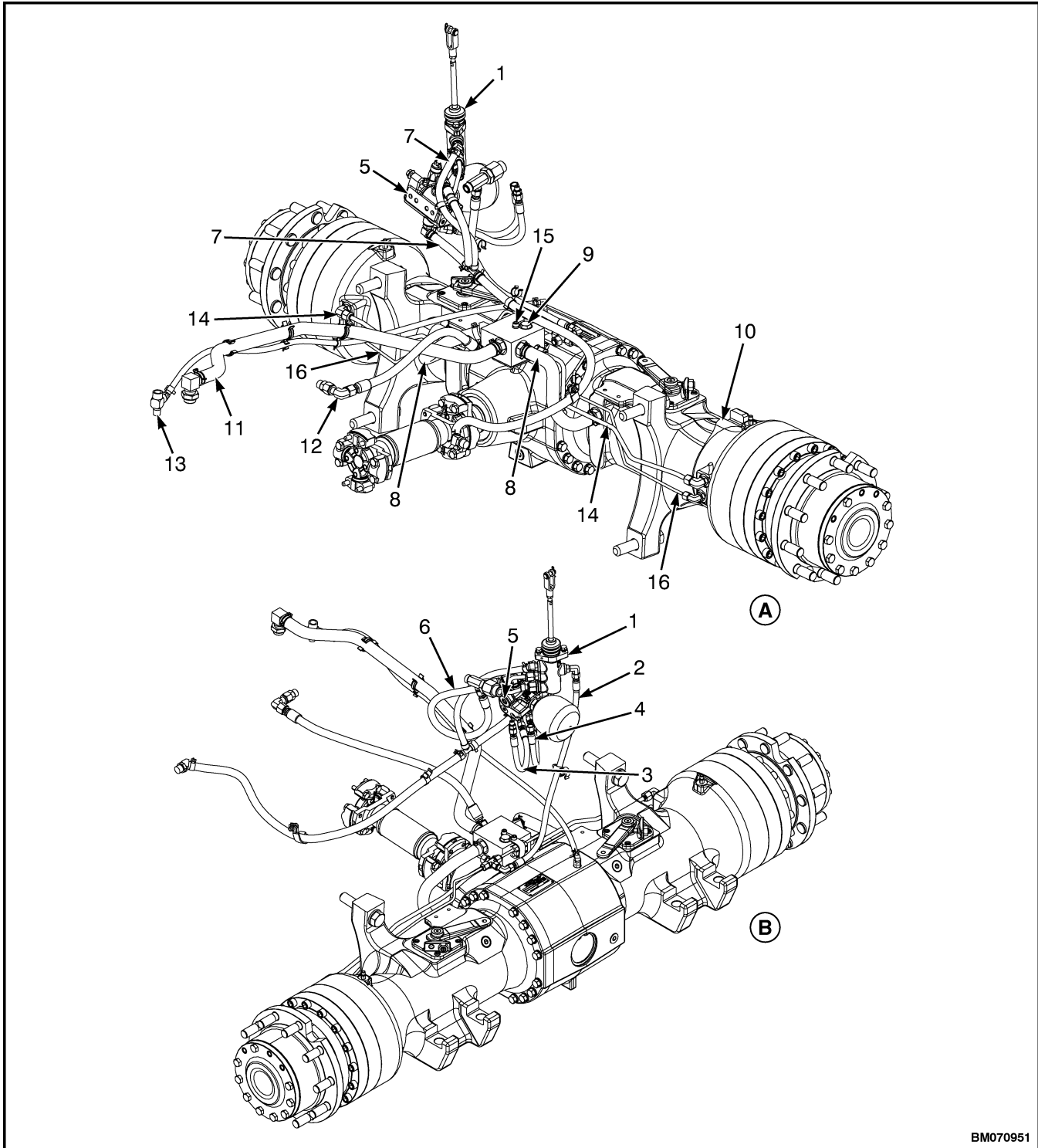


Figure 7. Drive Axle, Manifold, Cooling Hoses, and Brake Lines for Lift Truck Model H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299, C299)

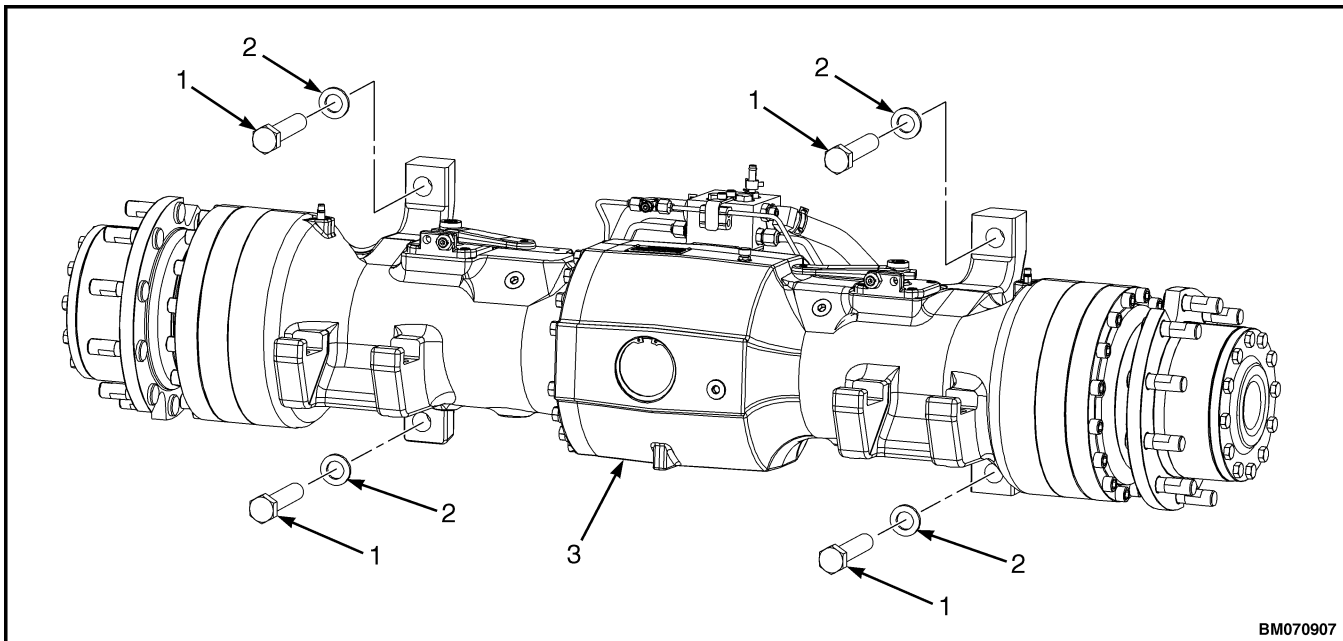
Legend for Figure 7**A. FRONT VIEW**

1. MODULATING BRAKE VALVE
2. BRAKE LINE
3. LOAD SENSE IN HOSE ASSEMBLY
4. LOAD SENSE OUT HOSE ASSEMBLY
5. ACCUMULATOR CHARGE VALVE
6. HYDRAULIC PRESSURE SUPPLY HOSE
7. HYDRAULIC RETURN HOSE
8. COOLING RETURN HOSE
9. MANIFOLD

B. REAR VIEW

10. DRIVE AXLE
11. COOLING RETURN TO TRANSMISSION HOSE
12. COOLING SUPPLY FROM TRANSMISSION HOSE
13. AXLE VENT LINE
14. COOLING SUPPLY LINES
15. SOCKET HEAD SCREW
16. BRAKE LINE

32. Place blocks under the axle assembly. Connect slings and lifting device to axle assembly.
33. Remove the capscrews and the drive shaft from the drive axle.
34. Remove the four mounting capscrews and washers from the drive axle. See Figure 8.
35. Remove blocks and lower the drive axle assembly. Pull axle forward and away from frame.
36. Place blocks under the differential assembly.
37. Remove cooling return hoses from manifold and drive axle. See Figure 7.
38. Disconnect cooling return to transmission hose from manifold. See Figure 7.
39. Disconnect cooling supply from transmission hose from manifold. See Figure 7.
40. Disconnect axle vent line from drive axle. See Figure 7.
41. Remove cooling supply lines from manifold and drive axle. See Figure 7.
42. Remove two socket head screws and manifold from drive axle. See Figure 7.
43. Disconnect brake lines from drive axle. Remove brake lines with cross fitting, as an assembly, from drive axle. See Figure 7.



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1. CAPSCREW
2. WASHER

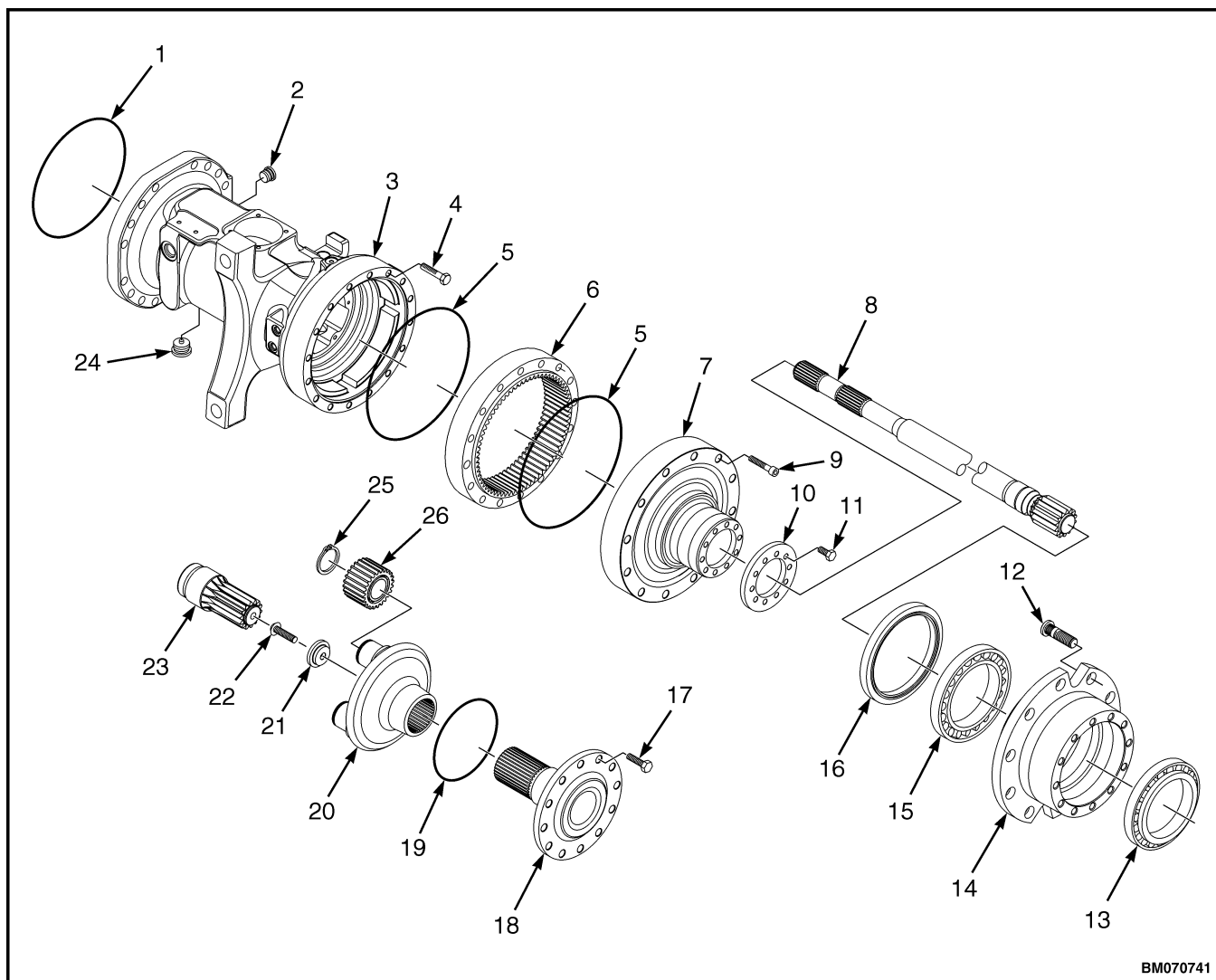
3. DRIVE AXLE

Figure 8. Drive Axle Mounting Capscrews

Planetary Reduction Gear Repair

REMOVE AND DISASSEMBLE

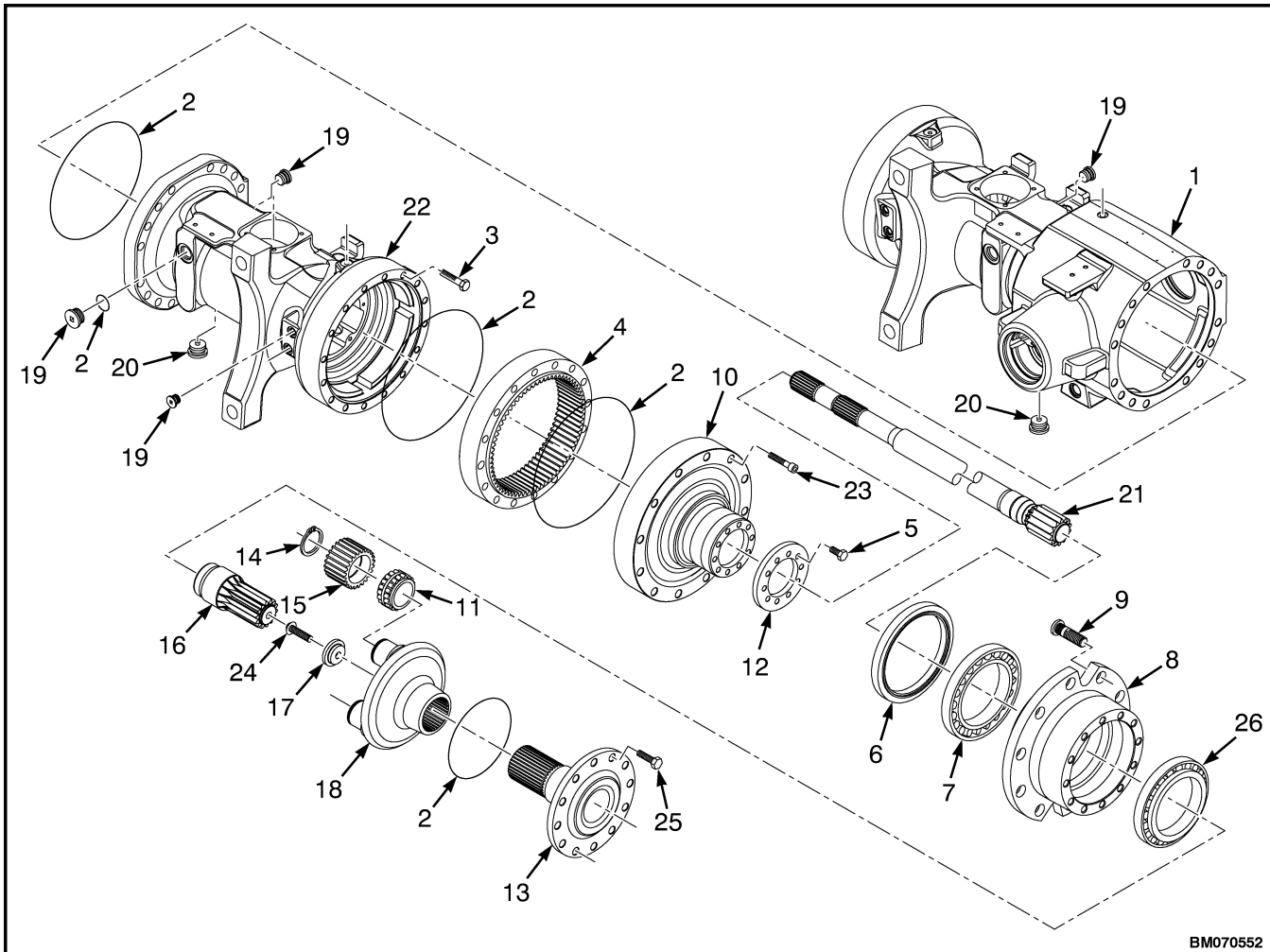
Refer to Figure 9 and Figure 10 for the following repair procedures.



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- | | |
|---------------------------|----------------------------|
| 1. O-RING | 14. WHEEL HUB |
| 2. OIL LEVEL PLUG | 15. BEARING |
| 3. DRIVE AXLE HOUSING ARM | 16. SEAL |
| 4. CAPSCREW | 17. CAPSCREW |
| 5. O-RING | 18. OUTER AXLE SHAFT |
| 6. RING GEAR | 19. O-RING |
| 7. WHEEL HUB SUPPORT | 20. PLANETARY GEAR CARRIER |
| 8. AXLE SHAFT | 21. CENTERING RING |
| 9. SOCKET HEAD SCREW | 22. RETAINING SCREW |
| 10. SHOULDER RING | 23. SUN GEAR |
| 11. CAPSCREW | 24. DRAIN PLUG |
| 12. WHEEL STUD | 25. RETAINING RING |
| 13. BEARING | 26. PLANETARY GEAR |

Figure 9. Planetary Reduction Gear Assembly for Lift Truck Models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006)



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- | | |
|-----------------------|--------------------------------|
| 1. AXLE CASE - LH | 14. RETAINING RING |
| 2. O-RING | 15. PLANETARY GEAR |
| 3. HEXAGON BOLT | 16. SUN GEAR |
| 4. RING GEAR | 17. CENTERING RING |
| 5. CAPSCREW | 18. PLANETARY GEAR CARRIER |
| 6. SEAL | 19. PLUG |
| 7. INNER BEARING | 20. MAGNET PLUG |
| 8. WHEEL HUB | 21. HALF SHAFT - SHORT OR LONG |
| 9. WHEEL STUD | 22. AXLE CASE - RH |
| 10. WHEEL HUB SUPPORT | 23. SOCKET HEAD SCREW |
| 11. BEARING | 24. RETAINING SCREW |
| 12. SHOULDER RING | 25. CAPSCREW |
| 13. OUTER AXLE SHAFT | 26. OUTER BEARING |

Figure 10. Planetary Reduction Gear Assembly for Lift Truck Model H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299, C299)

STEP 1.

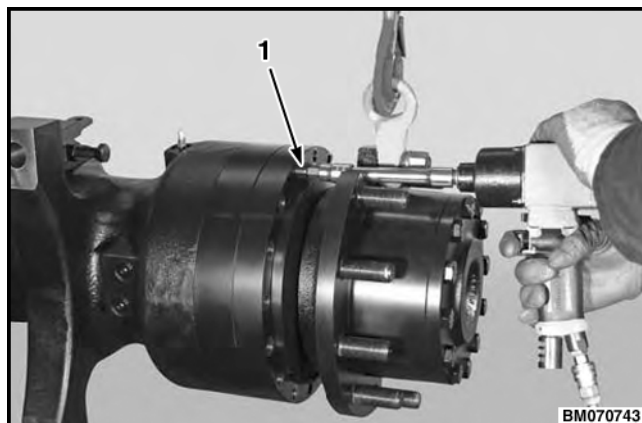
Connect an overhead lifting device to the planetary reduction gear assembly.



NOTE: Make an alignment mark on the axle housing and planetary carrier cover before removing the planetary carrier cover.

STEP 2.

Remove the socket head screws retaining the planetary carrier cover to the axle housing.

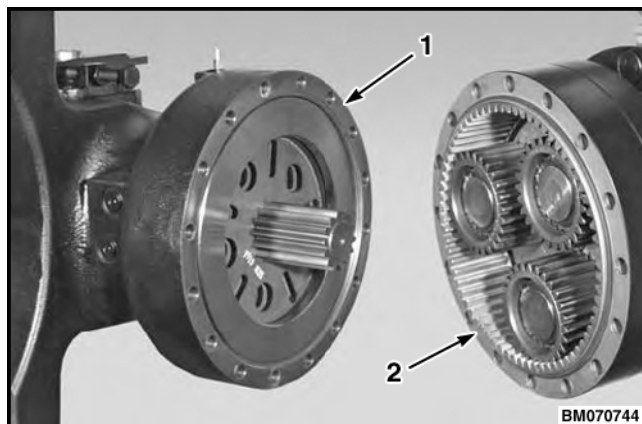


1. SOCKET HEAD SCREW

NOTE: Planetary gear images shown in STEP 3 through STEP 9 are for lift truck models H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006, K006, L006); lift truck model H8.0FT, H8.0FT9, H9.0FT (H170FT, H175FT36, H190FT) (A299, B299, C299), has four planetary gears, not shown.

STEP 3.

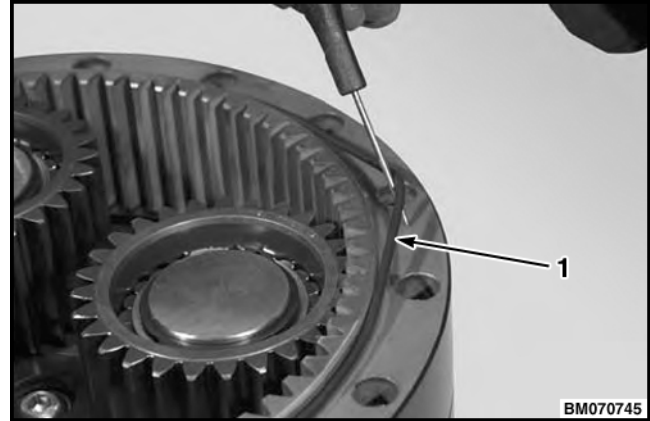
Remove the complete planetary carrier assembly from the axle housing.



1. AXLE HOUSING
2. PLANETARY CARRIER ASSEMBLY

STEP 4.

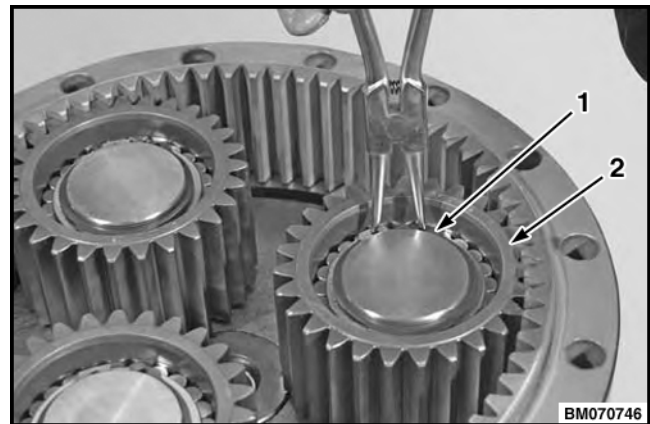
Remove and discard the O-ring from the planetary carrier assembly.



1. O-RING

STEP 5.

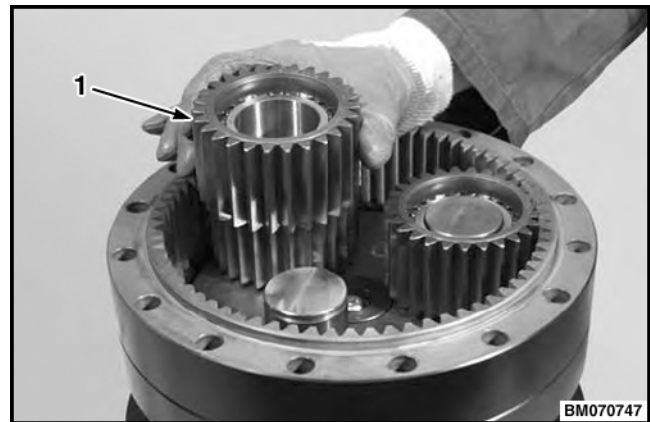
Remove the retaining rings retaining the planetary gears.



1. RETAINING RING
2. PLANETARY GEAR

STEP 6.

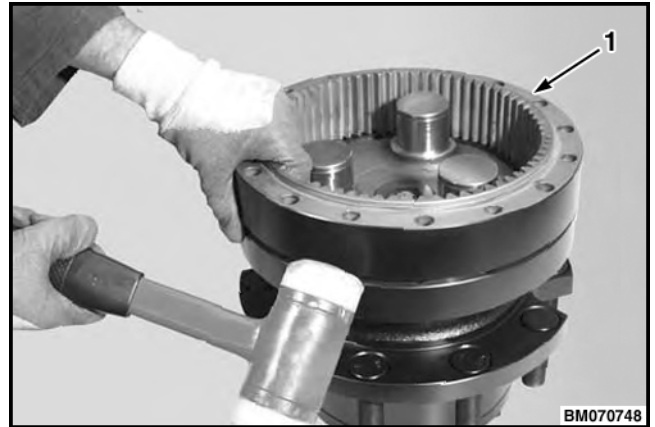
Remove the planetary gear and bearing assemblies.



1. PLANETARY GEAR AND BEARING ASSEMBLY

STEP 7.

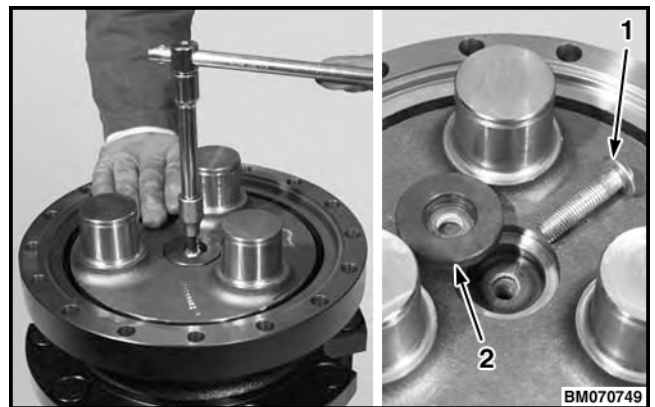
Remove the ring gear.



1. RING GEAR

STEP 8.

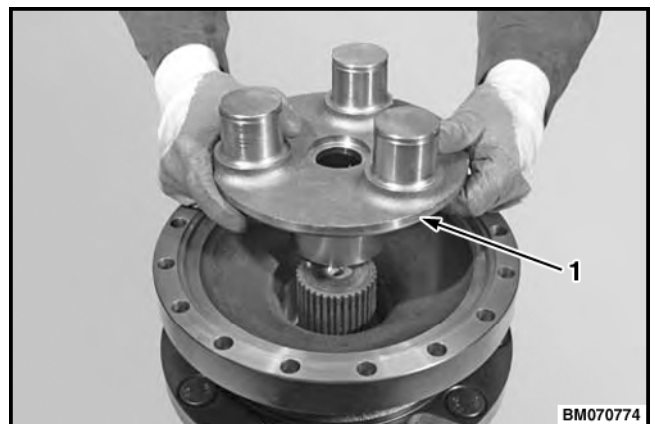
Remove the retaining screw and centering ring.



1. RETAINING SCREW
2. CENTERING RING

STEP 9.

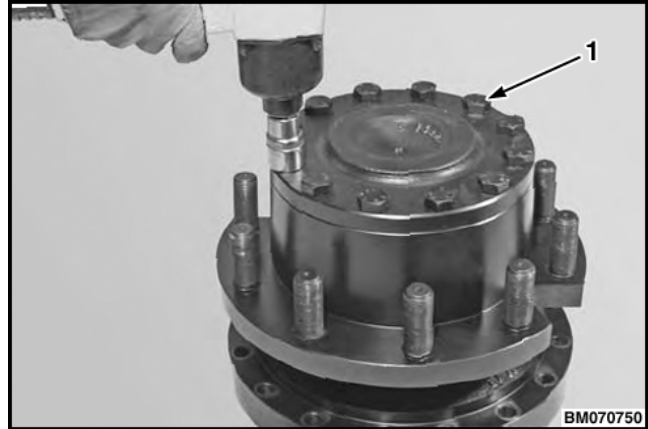
Remove the planetary gear carrier.



1. PLANETARY GEAR CARRIER

STEP 10.

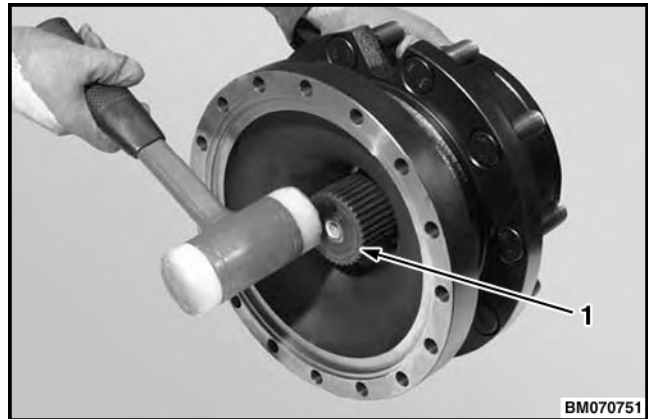
Place the reduction gear assembly upside down. Remove the capscrews retaining the outer axle shaft to the wheel hub.



1. CAPSCREW

STEP 11.

Using a plastic hammer, tap the outer axle shaft out of the wheel hub support and wheel hub.



1. OUTER AXLE SHAFT

STEP 12.

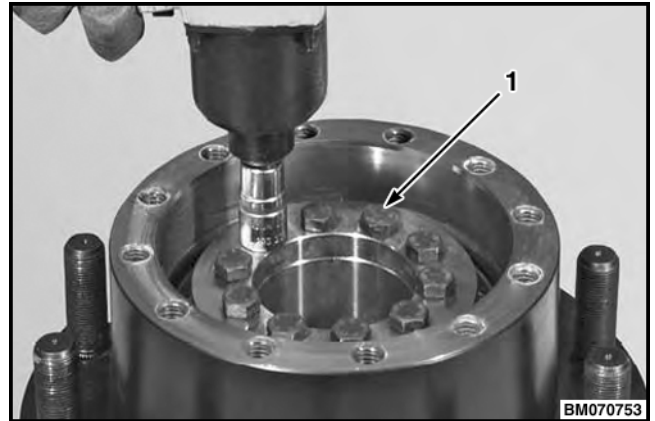
Remove and discard the O-ring from the outer axle shaft.



1. O-RING

STEP 13.

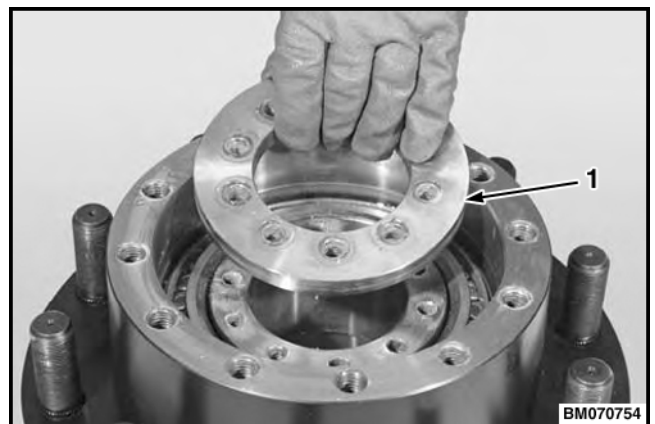
Remove the capscrews retaining the shoulder ring.



1. CAPSCREW

STEP 14.

Remove the shoulder ring.

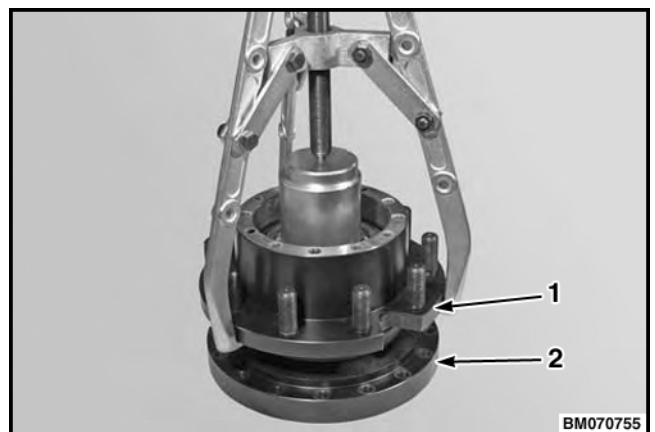


1. SHOULDER RING

NOTE: Use a cylindrical block, with a minimum outside diameter of 99 mm (3.90 in.) and maximum outside diameter of 118 mm (4.65 in.), for the puller to push against the end of the wheel hub support.

STEP 15.

Using a suitable puller and cylindrical block, disengage the wheel hub support from the wheel hub.



1. WHEEL HUB
2. WHEEL HUB SUPPORT