

SERVICE REPAIR

MANUAL

Hyster A227 (HR45-25, HR45-31, HR45-40LS,
HR45-40S, HR45-36L, HR45H) Forklift

HYSTER

**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**

JustClickHere 

NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

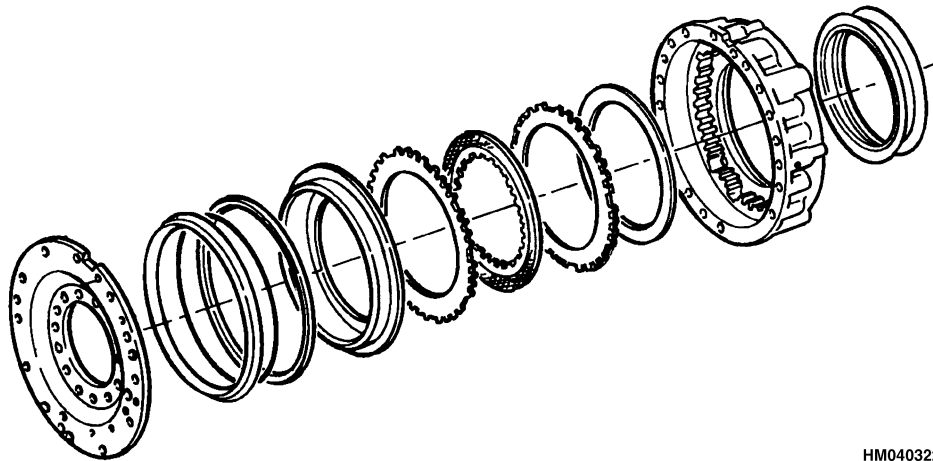
**Have any questions please write to me:
admin@servicemanualperfect.com**

SERVICE BRAKE

RS45-30CH, RS46-33CH, RS45-27IH,
RS46-60IH (RS45-30CH, RS46-33CH, RS45-27IH,
RS46-60IH) [A222];

HR45-25, HR45-27, HR45-31, HR45-40S,
HR45-36L, HR45-40LS, HR45-45LSX,
HR45H [A227, B227];

H36.00-48.00E (H800-1050E) [D117];
H36.00-48.00E-16CH (H800-1050E-16CH) [D117];
H20.00-32.00F (H440-700F/FS) [E008]



HM040322

HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- 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 condition that can cause immediate death or injury!



CAUTION

Indicates a condition that can cause property damage!

TABLE OF CONTENTS

General	1
Description and Operation	1
Repair	2
Remove	2
Brake Assembly.....	2
Spindle and Brake Cover	5
Disassemble	6
Clean	8
Ground and Polished Parts.....	8
Parts With Rough Finish	8
Wet Disc Brake and Axle Assembly	8
Inspect	8
Face Seals	8
Disc.....	9
Wear Limits	9
Replace	9
Parts	9
Assemble	9
Brake Housings	9
Install	12
Hub Oil Seals.....	12
Double Seals	12
Single Seal	12
Spindle and Brake Cover	13
Brake Housing.....	15
Specifications.....	18
Brake Coolant	21
Coolant Change Intervals.....	21
Break-In.....	21
Normal Maintenance	21
Hydraulic Fluid.....	21
Troubleshooting.....	21

This section is for the following models:

RS45-30CH, RS46-33CH, RS45-27IH, RS46-60IH (RS45-30CH,
 RS46-33CH, RS45-27IH, RS46-60IH) [A222];
 HR45-25, HR45-27, HR45-31, HR45-40S, HR45-36L, HR45-40LS,
 HR45-45LSX, HR45H [A227, B227];
 H36.00-48.00E (H800-1050E) [D117];
 H36.00-48.00E-16CH (H800-1050E-16CH) [D117];
 H20.00-32.00F (H440-700F/FS) [E008]

**"THE
QUALITY
KEEPERS"**

**HYSTER
APPROVED
PARTS**

General

For the service brake system, there are oil-cooled brakes at the drive wheels. This service manual has information on how to drain, fill, remove, disassemble, clean, check, assemble, and install the service

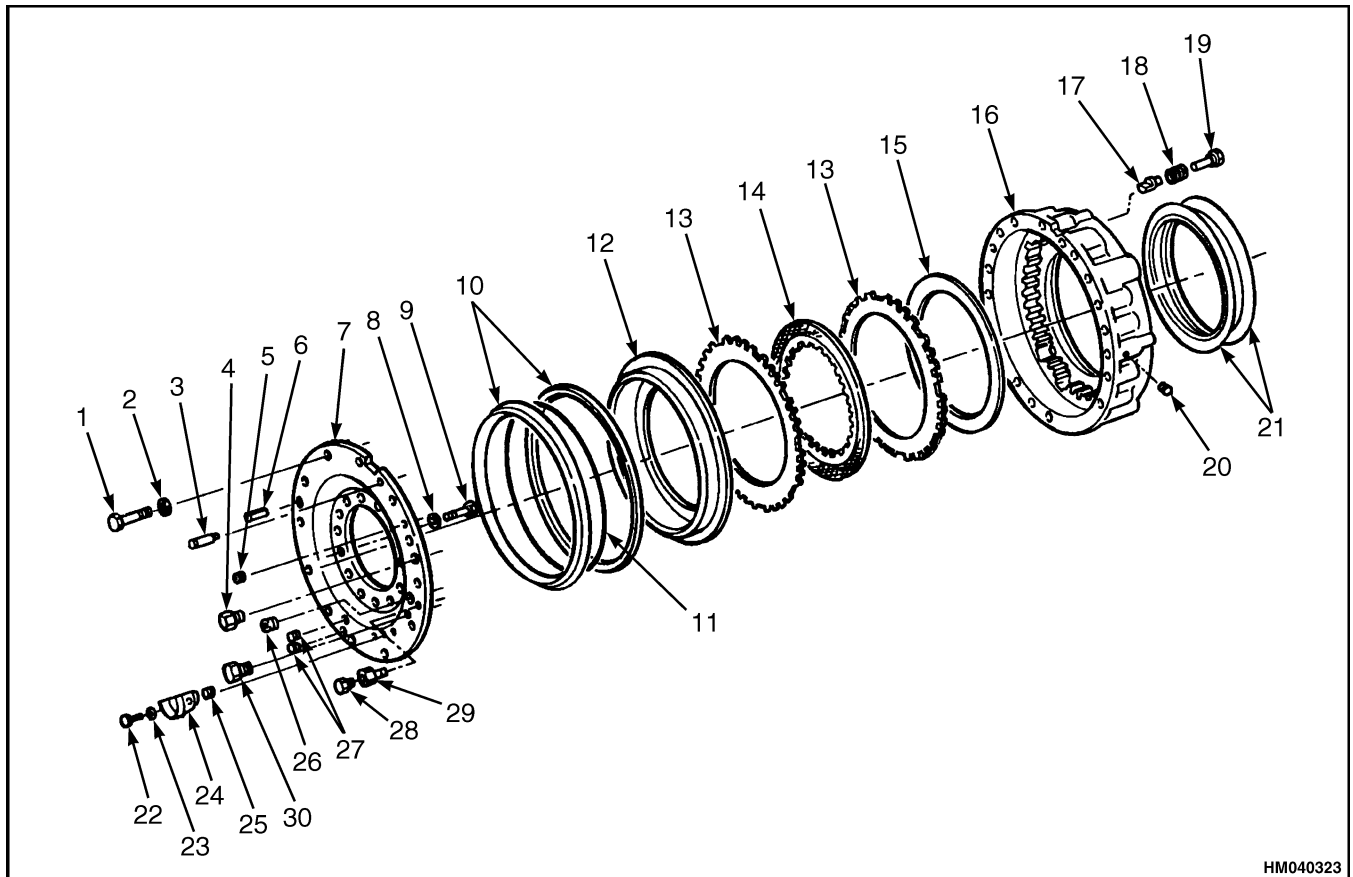
brake system. This service manual also includes troubleshooting and specifications.

Description and Operation

The service brake pedal (treadle valve) or the de-clutch/brake pedal, when operated by the driver, controls the flow of oil to the service brake piston at each drive wheel.

Two to ten friction discs are used in the housing depending on the requirements of the brake system.

Friction discs, each between stationary discs, rotate with the wheel hub. The stationary discs are locked to the brake housing. The disc brakes are installed on the drive wheels and are oil-cooled. See Figure 1 and the section **Planetary Gear Axle**.



HM040323

Figure 1. Wet Disc Brake Housing

Legend for Figure 1

- | | |
|--|--|
| 1. BRAKE HOUSING COVER CAPSCREW | 17. PISTON RETURN SPRING GUIDE |
| 2. BRAKE HOUSING COVER WASHER | 18. PISTON RETURN SPRING |
| 3. BLEEDER SCREW | 19. PISTON RETURN SPRING PLUG |
| 4. FORCED COOLING INLET PLUG | 20. BRAKE HOUSING PLUG |
| 5. BRAKE HOUSING COVER PLUG | 21. FACE SEAL ASSEMBLY |
| 6. INLET FITTING PLUG | 22. TEMPERATURE SENSOR BRACKET
CAPSCREW |
| 7. BRAKE HOUSING COVER | 23. TEMPERATURE SENSOR BRACKET WASHER |
| 8. AXLE COVER HOUSING WASHER | 24. TEMPERATURE SENSOR BRACKET |
| 9. AXLE COVER HOUSING CAPSCREW | 25. TEMPERATURE SENSOR PLUG |
| 10. PISTON SEAL | 26. FILL AND LEVEL PLUG |
| 11. PISTON SEAL SPACER | 27. MAGNETIC DRAIN PLUG |
| 12. PISTON | 28. INLET FITTING PLUG |
| 13. STATIONARY DISC | 29. BRAKE INLET FITTING |
| 14. FRICTION DISC | 30. FORCED COOLING OUTLET PLUG |
| 15. STATIONARY BRAKE HOUSING DISC SPACER | |
| 16. BRAKE HOUSING | |

Repair

REMOVE

Brake Assembly



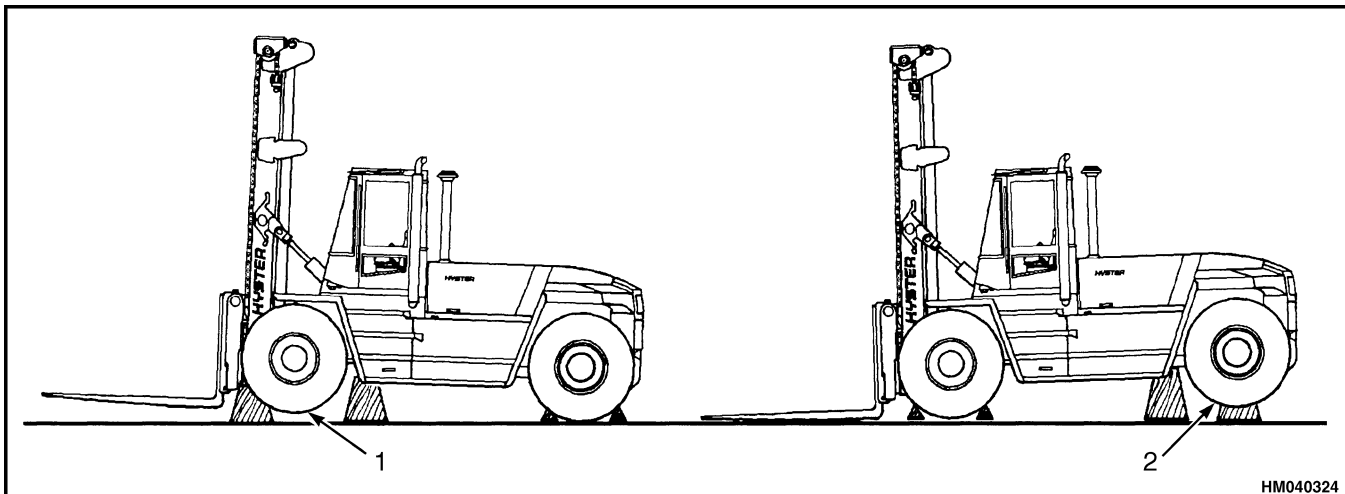
WARNING

Support the truck with safety stands. Do not work under a truck supported only by jacks.

Completely remove the air pressure from the tires before removing the wheels from the lift truck. Air pressure in the tires can cause the tire and rim parts to explode, causing serious injury or death.

Always wear safety glasses.

1. Place truck on level surfaces.
2. Lower the mast completely.
3. Shut down the engine.
4. Place blocks at front and rear of steer tires. See Figure 2.
5. Raise the drive wheels.
6. Put blocks under frame.



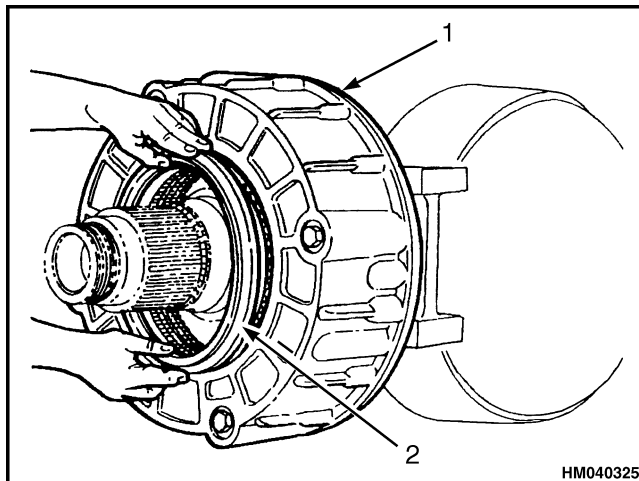
HM040324

1. DRIVE TIRES

2. STEER TIRES

Figure 2. Put Lift Truck on Blocks

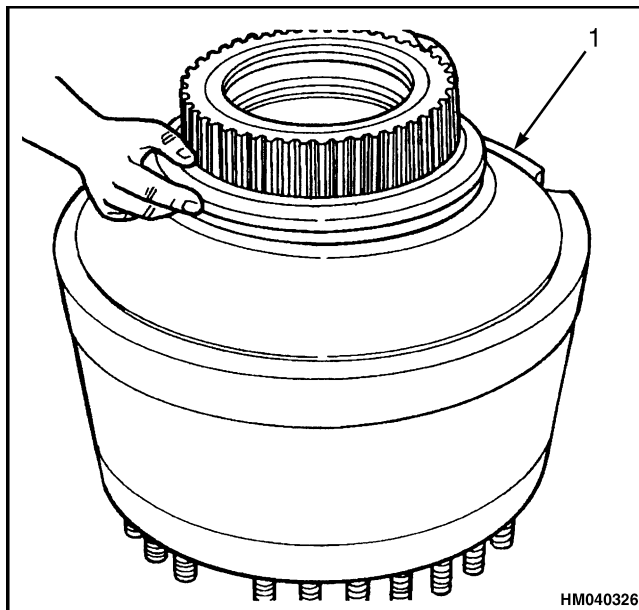
7. Apply brakes ten to twenty times until accumulated hydraulic brake pressure is removed.
8. Remove tire and rim assembly.
9. Remove end drive. See 1400 SRM 47.
10. Remove inner face seal from inside the brake housing. See Figure 3.



1. BRAKE HOUSING 2. FACE SEAL

Figure 3. Brake Housing

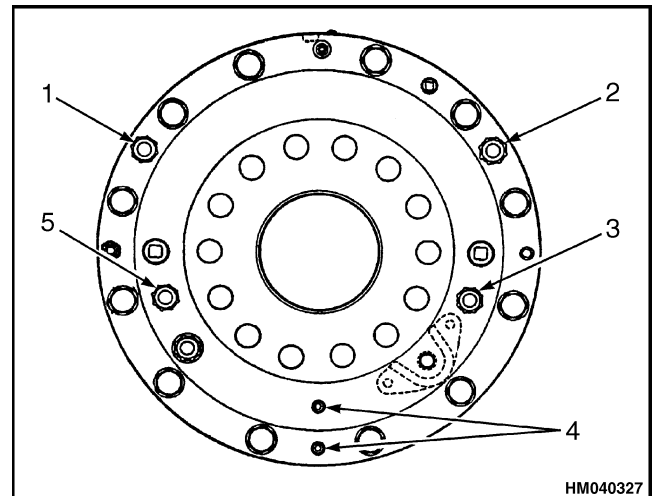
11. Remove the outer face seal from the wheel hub. See Figure 4.



1. WHEEL HUB

Figure 4. Wheel Hub

12. Place a container on inner side of the brake housing.
13. Disconnect the coolant input line.
14. Place cap on line.
15. Drain coolant until no oil flows from the input port. See Figure 5.

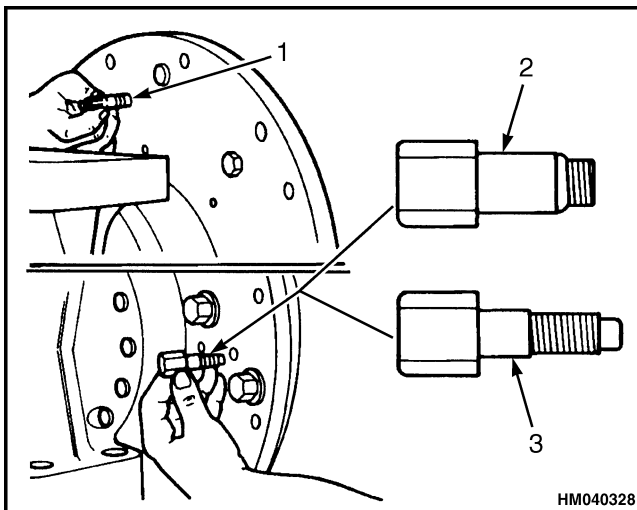


1. LH HOUSING COOLANT INPUT PORT
 2. RH HOUSING COOLANT INPUT PORT
 3. RH HOUSING COOLANT OUTPUT PORT
 4. MAGNETIC DRAIN PLUGS
 5. LH HOUSING COOLANT OUTPUT PORT

Figure 5. Coolant Input Port

16. Disconnect coolant output line.
17. Put cap on line.
18. Drain the coolant until no oil flows from the output port.
19. Remove the two magnetic drain plugs.
20. Drain all the oil that remains in the brake housing.
21. Record the amount of oil that is being drained from the brake housing.
22. Remove the brake lines from the brake housing.
23. Put caps on lines.
24. Clean the magnetic drain plugs.
25. Install and tighten the drain plugs to 27 N•m (20 lbf ft).

- 26. Remove temperature sensor, if fitted.
- 27. Remove bleeder screw and inlet fittings for the hydraulic lines. See Figure 6.



- 1. BLEEDER SCREW
- 2. HYDRAULIC INLET FITTING, O-RING TYPE
- 3. HYDRAULIC INLET FITTING, TAPERED SEAT TYPE

Figure 6. Bleeder Screw and Inlet Fittings

WARNING

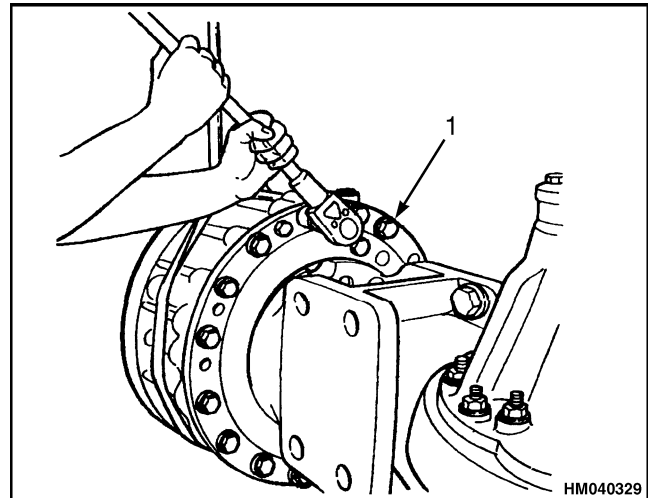
Verify the lifting device has the rated capacity to lift the brake assembly.

- 28. Support the brake assembly using a lifting device.
- 29. Remove the capscrews that fasten the cover to the brake housing. See Figure 7.

CAUTION

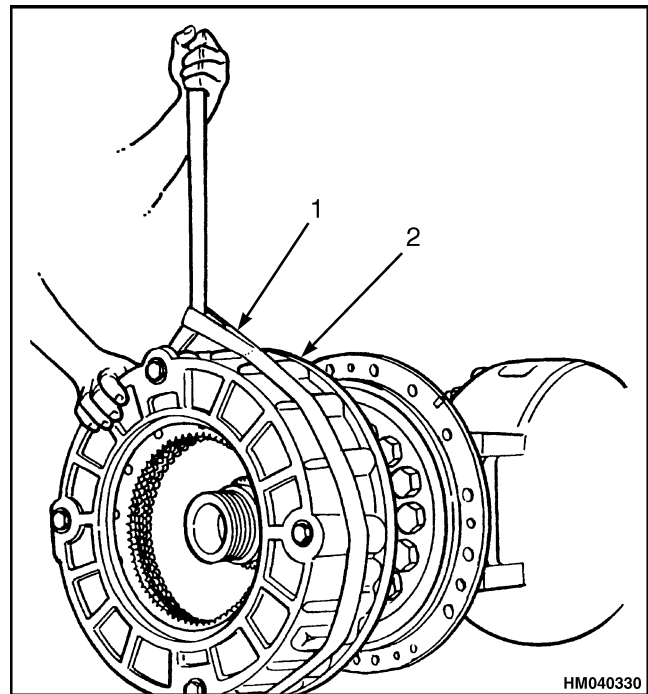
Do not damage spindle when removing the brake assembly.

- 30. Carefully slide the brake assembly away from the spindle using the lifting device. See Figure 8.
- 31. Remove all gasket material from surfaces.



- 1. CAPSCREW

Figure 7. Brake Housing Capscrews



- 1. LIFTING DEVICE
- 2. BRAKE HOUSING

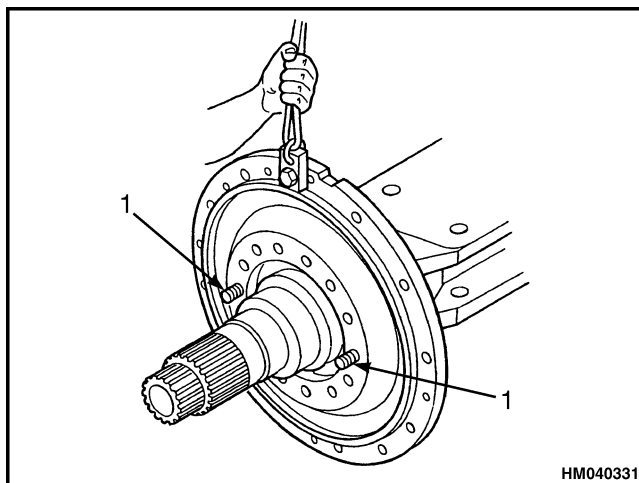
Figure 8. Brake Housing

Spindle and Brake Cover

NOTE: On some axle assemblies, the brake cover is mounted between the spindle and axle housing flanges. To remove the spindle and brake cover, use the following procedure.

Remove the spindle first followed by the brake cover.

1. Support the cover of the brake housing with a lifting device.
2. Remove two of the capscrews that fasten the brake cover and spindle to the axle housing. Replace them with two studs. See Figure 9.



1. STUD

Figure 9. Brake Housing Studs

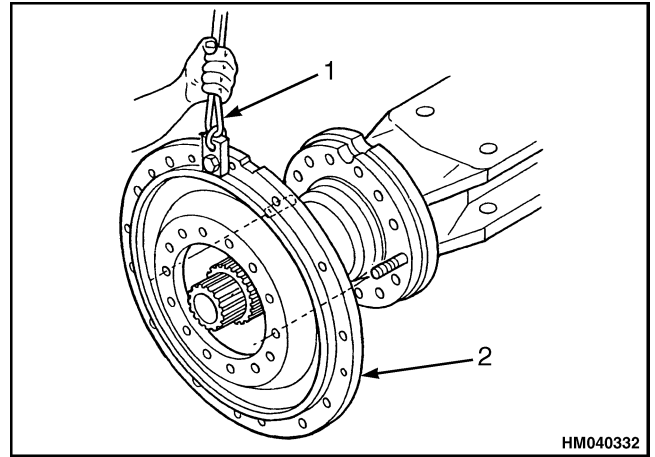
3. Remove the remaining capscrews.
4. Hold the spindle against the axle housing.

NOTE: If necessary, tap the brake cover with a rubber or plastic hammer to separate it from the spindle.

5. Use a lifting device to remove the brake cover. See Figure 10.

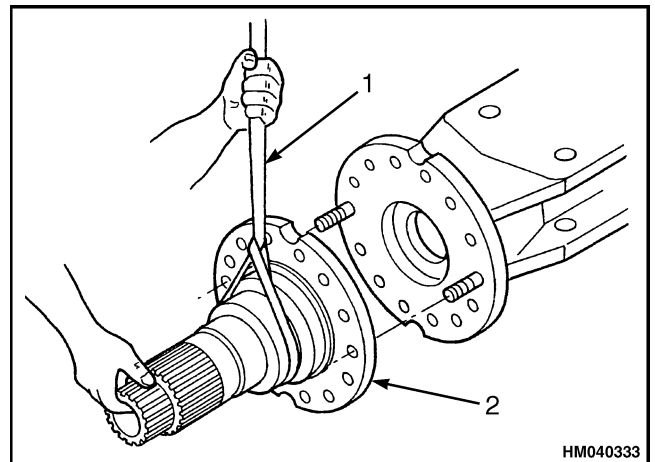
NOTE: If necessary, tap the brake cover with a rubber or plastic hammer to separate it from the axle housing.

6. Use a lifting device to remove the spindle. See Figure 11.
7. Remove all gasket material from the mounting surfaces of the cover, spindle, and axle housing.



1. LIFTING DEVICE
2. BRAKE COVER

Figure 10. Brake Cover



1. LIFTING DEVICE
2. SPINDLE

Figure 11. Spindle

DISASSEMBLE

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when doing maintenance or service.

1. Put the appropriate pry bars under the inner diameter of the piston to lift the piston out of the housing. The two piston seals and the seal spacer are removed when the piston is removed from the housing. See Figure 12.

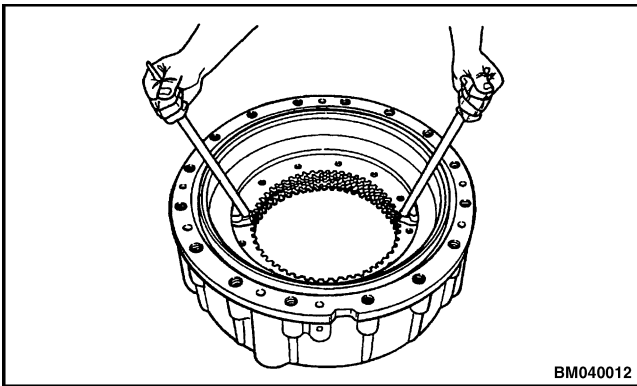
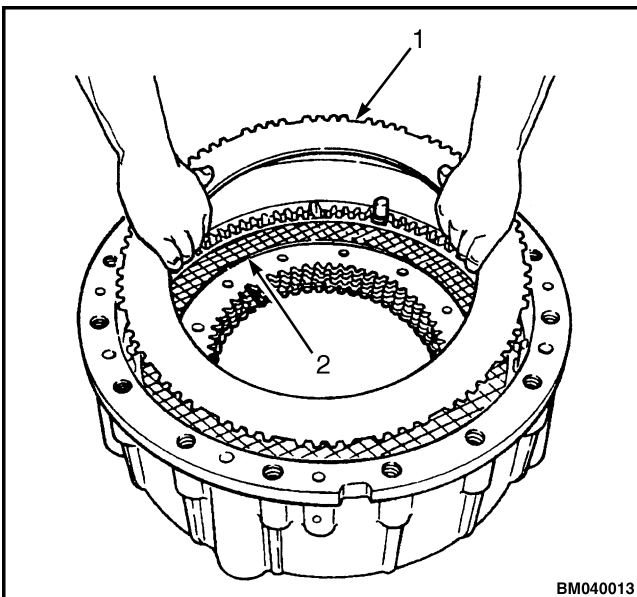


Figure 12. Piston, Piston Seals, and Seal Spacer

2. Remove the stationary discs and the friction discs from the brake housing. See Figure 13.

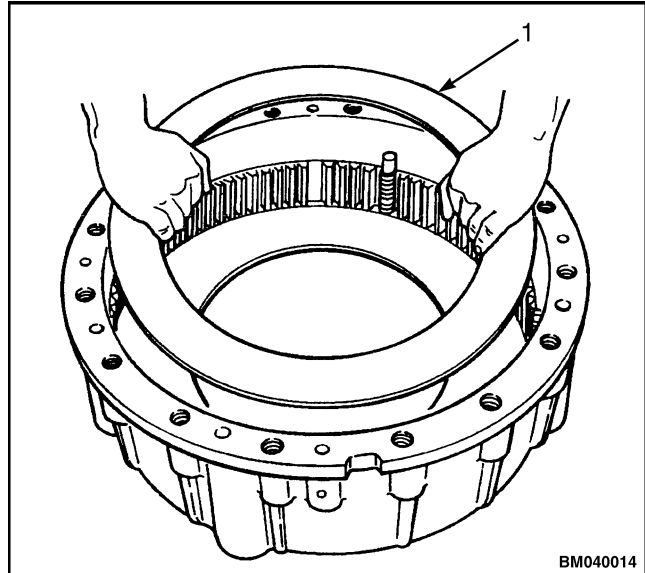


1. STATIONARY DISC
2. FRICTION DISC

Figure 13. Stationary and Friction Disc

NOTE: Some brake assemblies use a spacer and standard stationary disc. Some use a single thick-splined stationary disc as the first disc against the housing instead of a spacer and standard stationary disc combination. Brake housings are designed to use only one type of disc configuration. Do not interchange parts.

3. Remove the disc spacer from the bottom of the brake housing. See Figure 14.



1. DISC SPACER

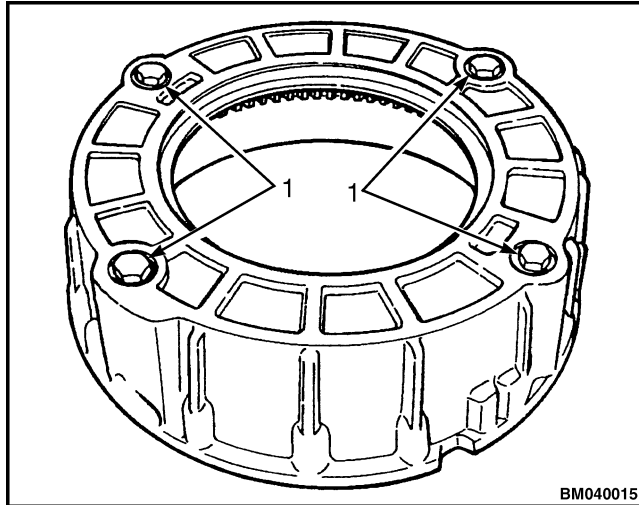
Figure 14. Disc Spacer

⚠ WARNING

The piston return spring applies pressure to the plug. Use the following procedure or the spring can push the plug out of the housing with enough force to cause serious personal injury.

NOTE: If necessary, remove the four piston return spring assemblies with the following procedure.

4. Put the brake housing on a bench so that the outboard side is toward you. See Figure 15.



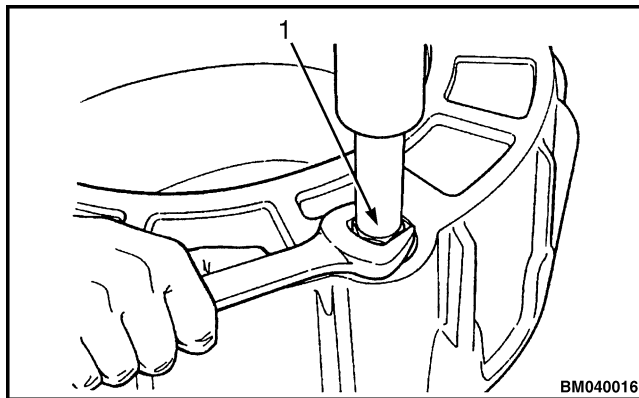
1. PISTON RETURN SPRING ASSEMBLY

Figure 15. Piston Return Spring

WARNING

Observe all WARNINGS and CAUTIONS provided by the press manufacturer concerning press operation to avoid serious personal injury and possible damage to components.

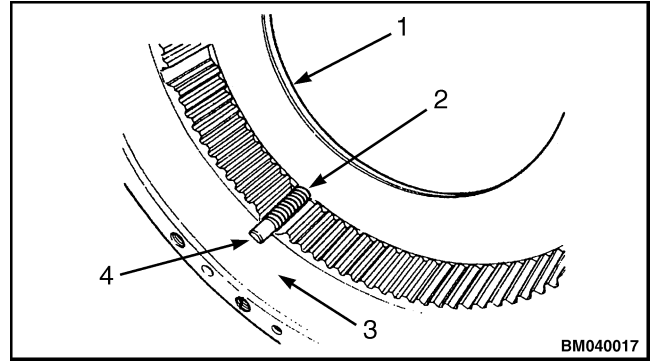
5. Use a press to apply and keep pressure on the plug. See Figure 16.



1. PRESS

Figure 16. Plug

6. Slowly release pressure while loosening the plug until the threads are completely disengaged and the spring is fully expanded. See Figure 17.



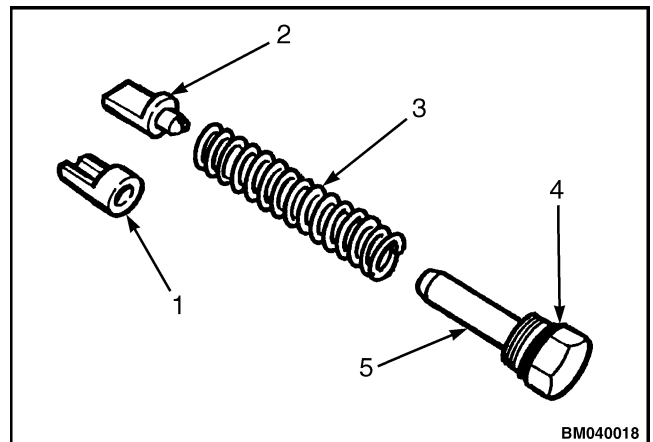
1. HOUSING
2. SPRING, FULLY EXPANDED
3. SHOULDER
4. SPRING GUIDE

Figure 17. Piston Return Spring

7. Remove the plug and pin assembly, the spring, and the spring guide from the housing.

NOTE: Two types of spring guides are used. One type of guide has a pin on the bottom that is installed inside the spring. The other type of guide has a hole in the bottom so that the end of the pin is installed inside the guide. See Figure 18.

8. Inspect the O-ring on the plug. If necessary, remove and replace the O-ring.



1. SPRING GUIDE, HOLE TYPE
2. SPRING GUIDE, PIN TYPE
3. SPRING
4. O-RING
5. PIN AND PLUG ASSEMBLY

Figure 18. Piston Return Spring Assembly

CLEAN**CAUTION**

The bearing cones can be damaged if the cones are dried by rotating with compressed air.

The parts, except the bearing cones, can be dried with compressed air.

NOTE: Dry the parts immediately after the parts are cleaned and washed.

Dry the parts with soft, clean paper or rags.

NOTE: Apply the fluid used in the brake housing to the cleaned and the dried parts that are not damaged and are to be assembled.

Apply a special material that prevents corrosion and rust to all surfaces. If parts are to be stored, put the parts in a special paper that prevents corrosion and rust.

Ground and Polished Parts**WARNING**

To prevent serious eye injury, always wear safe eye protection when doing maintenance or service.

If you use cleaning solvents, hot solution tanks, or alkaline solutions incorrectly, serious personal injury can occur. To prevent serious personal injury, follow the instructions supplied by the manufacturer of these products. Do NOT use gasoline to clean parts. Gasoline can explode and cause serious personal injury.

**CAUTION**

Use only solvent cleaners to clean ground or polished metal parts. Hot solution tanks or water and alkaline solutions will damage these parts. Isopropyl alcohol, kerosene, or diesel fuel can be used for this purpose.

1. Use solvent cleaner to clean surfaces.
2. If necessary, remove gasket material from parts.

Parts With Rough Finish

NOTE: Do not clean friction discs. Wipe off each disc with a clean rag before applying brake cooling fluid to their surfaces during assembly.

Parts must remain in hot solution tanks until completely cleaned and heated.

1. Clean with cleaning solvent or in a hot solution tank with a weak alkaline solution.
2. Remove parts from the hot solution and wash them with water until the hot solution is removed.

Wet Disc Brake and Axle Assembly

NOTE: Before the assembly is cleaned, close or put a cover over all openings. Breathers or vents in the axle assembly are some examples of openings.

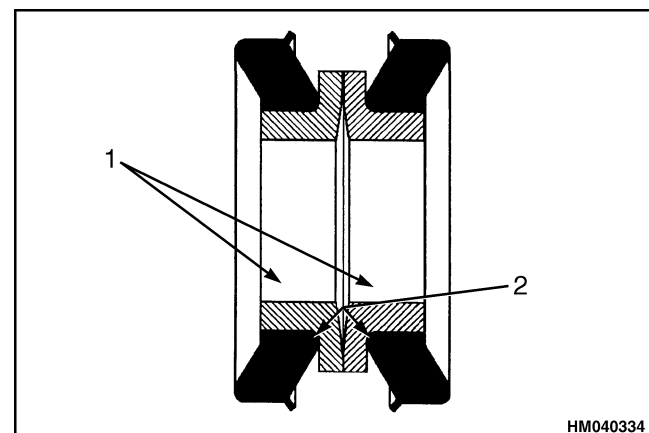
1. Use steam to clean the outside of the wet disc brake and axle assembly.

INSPECT

NOTE: Inspect all the parts before assembling the wet disc brake. Check all parts for wear and replace the damaged parts. Replacing worn or damaged parts prevents the failure of the assembly later.

Face Seals

Inspect the rubber elements and metal rings for wear, damage, or distortion. If there is a problem with either ring, always replace both rings with a matched pair of rings. A matched pair is two new rings or two used rings that have been run together. Do not use one new and one used ring or two used rings that were not run together or leaks may occur. See Figure 19.



1. METAL SEALING RINGS
2. RUBBER ELEMENTS

Figure 19. Face Seal Assembly

Disc

NOTE: If discs are reusable, maintain disc stack order.

If any of the following conditions exist with a friction or stationary disc, replace full disc stack:

- Thickness worn beyond limits
- Uneven wear
- Localized surface damage
- Warp
- Scoring
- Damaged splines

Wear Limits

NOTE: If thickness of any friction or stationary disc is less than or equal to overall thickness limits, replace full disc stack. See Table 1 and Table 2.

Remove the plug opposite the inlet fitting. The plug is at 9 o'clock on the right hand side and at 3 o'clock on the left hand side when viewed from the centerline of the truck. When removed a measurement can be made from the housing to the back of the piston. With the brakes not activated, the value measured from the edge of the housing to the piston should be slightly less than 127 mm (5 in.). If the brake stroke measurement is 13 mm (0.525 in.) or more, replace the brakes. The measurement of the new brakes stroke will be between 3 to 7 mm (0.134 to 0.269 in.).

Table 1. FRICTION DISC

Disc Size	Overall Thickness Limit
330 mm (13 in.)	4.25 mm (0.167 in.)
432 mm (17 in.)	4.87 mm (0.192 in.)
560 mm (22 in.)	5.56 mm (0.219 in.)

Table 2. STATIONARY DISC

Disc Size	Overall Thickness Limit
330 mm (13 in.)	2.76 mm (0.109 in.)
432 mm (17 in.)	3.07 mm (0.121 in.)
432 mm (17 in.)	4.44 mm (0.175 in.)
560 mm (22 in.)	5.41 mm (0.213 in.)

REPLACE

Parts

Replace worn or damaged parts of the wet disc brake assembly. The following are some examples to check:

- Replace any fasteners if the corners of the head are worn.
- Replace the washers, if damaged.
- Replace the oil seals, face seals, and gaskets when the components are separated from each other.
- Clean the parts before applying silicone gasket material.
- Remove small damage from the parts that have machined or ground surfaces. Use a fine-tooth file, india stone, emery cloth, or crocus cloth for this purpose.
- Clean and repair the threads of the fasteners and the holes. Use a tap or a die of the correct size or a fine-tooth file for this purpose.
- Tighten all fasteners to the correct torque value. See Specifications.

ASSEMBLE

Brake Housings



WARNING

To prevent serious eye injury, always wear safe eye protection when doing maintenance or service.

The piston return spring applies pressure to the plug. Use the following procedure or the spring can push the plug out of the housing with enough force to cause serious personal injury.

NOTE: If the piston return spring assemblies were removed, the assemblies must be installed in the housing.

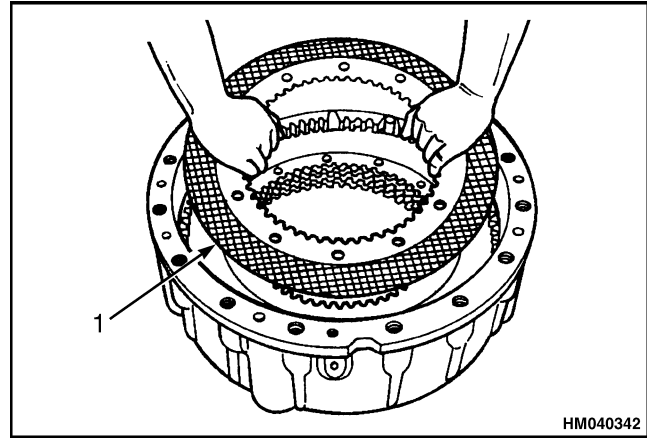
Two types of spring guides are used. One type of guide has a pin on the bottom that is installed inside the spring. The other type of guide has a hole in the bottom so that the end of the pin is installed in the guide. Use the correct parts for the piston return spring assembly. Do not mix parts of the different assemblies. Use only one type of spring guide on each brake housing assembly. See Figure 18.

1. Put the brake housing so that the wheel hub side of the housing is toward you.

2. Install the O-ring on the plug.
3. Put the spring guide inside the brake housing below the plug hole. Verify the flat area of the guide is against the housing.
4. Install the spring on top of the guide.
5. Put the plug and pin assembly in the hole in the brake housing and through the return spring.
6. Apply and hold pressure on the plug while the plug is installed into the housing. Verify that the pin is correctly installed in the spring guide and that the flat areas on the spring guide are against the housing. See Figure 15.
7. When the threads fully engage the housing, release the pressure on the plug. See Figure 17.
8. Tighten the plug to 60 to 75 N•m (44 to 55 lbf ft).
9. Put the brake housing on a bench. The cover side of the housing must be toward you.
10. Install the disc spacer in the bottom of the brake housing. See Figure 14.

NOTE: If a thick-splined stationary disc is used instead of the spacer and standard stationary disc, it must be installed against the housing. Next, install a friction disc followed by a standard stationary disc and continue to complete the stack. Brake housings are designed to use only one type of disc configuration. Do not interchange parts.

11. Install the disc pack.
 - a. Apply the same fluid used in the brake cooling system to the disc surfaces as the discs are installed.
 - b. Install a stationary disc in the housing. The first stationary disc must be against the disc spacer. Make sure the splines on the outer diameter of the stationary disc engage the splines in the brake housing. Verify the wide spaces on the outer diameter of the disc are over the return spring assemblies. See Figure 13.
 - c. Install a friction disc in the housing. See Figure 20.



1. FRICTION DISC

Figure 20. Friction Disc

- d. Complete the installation of the disc pack. Repeat steps Step b and Step c until the complete disc pack is installed.
12. Align all of the teeth on the inner diameter of the friction discs. When the discs are aligned, the wheel hub can be installed without damaging the discs.
13. Lubricate the outside diameter of the piston, the housing bore, and the seals with the same fluid used in the brake system.
14. Lower the piston into the housing until the piston is installed on the guides of the return springs. Verify the surfaces on the piston and the housing are not damaged when the piston is installed. See Figure 21.

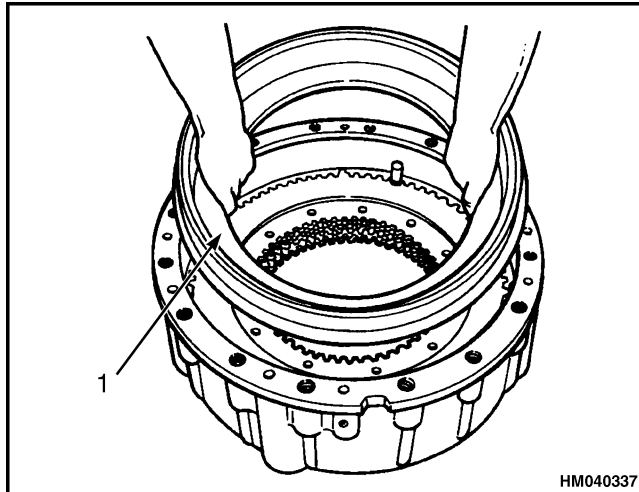


CAUTION

To prevent housing or piston damage, use fingers or a non-metallic object to install the seals and round spacer. Fluid can leak between the housing and the piston if the surfaces are damaged.

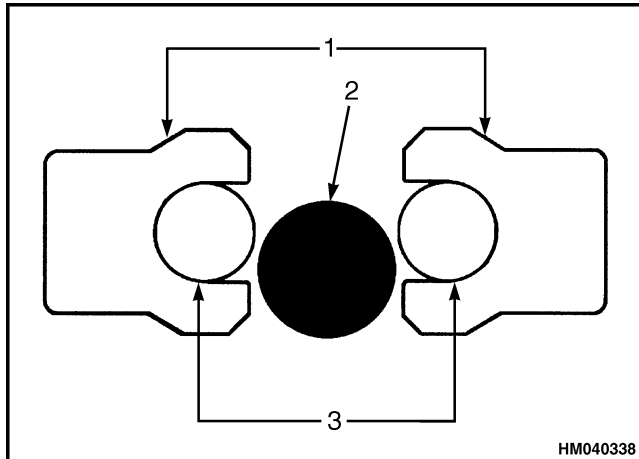
NOTE: The sealing arrangement between the piston and the housing consists of one spacer and two piston seals. See Figure 22.

15. Put the first seal in the space between the housing and the piston. The rubber part of the seal must be toward you. Push on the seal until the complete plastic bottom surface of the seal touches the shoulder of the piston. See Figure 23.



- 1. PISTON

Figure 21. Piston Installation

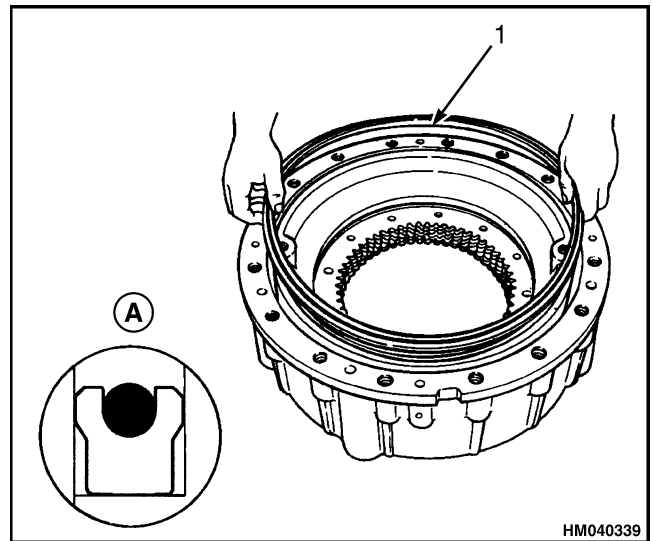


- 1. PLASTIC SEAL BODY
- 2. ROUND SPACER
- 3. RUBBER ELEMENT SEAL ENERGIZERS

Figure 22. Piston Seal Arrangement

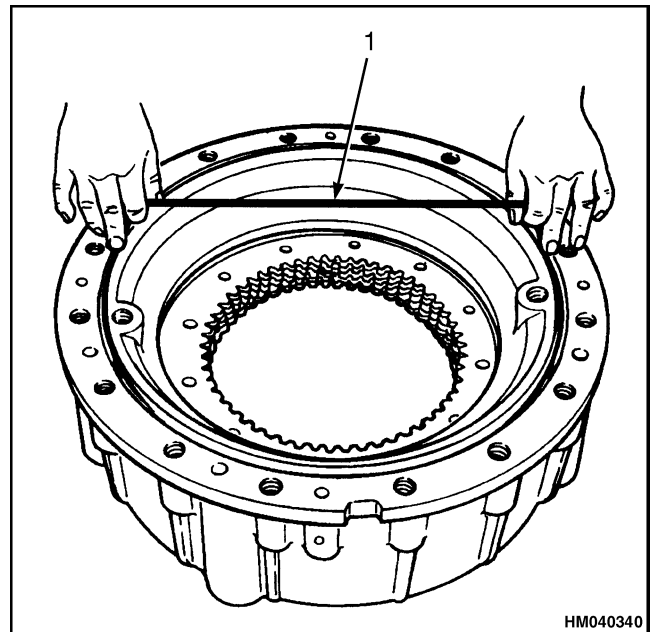
NOTE: An O-ring or garter spring seal spacer may be used. If the O-ring is damaged, replace it with a garter spring seal spacer.

- 16. Install the spacer around the outer diameter of the piston. Push on the spacer until the entire bottom surface of the spacer touches the top of the first seal. See Figure 22 and Figure 24.



- A. RUBBER PART OUT
- 1. INNER PISTON SEAL

Figure 23. Inner Piston Seals

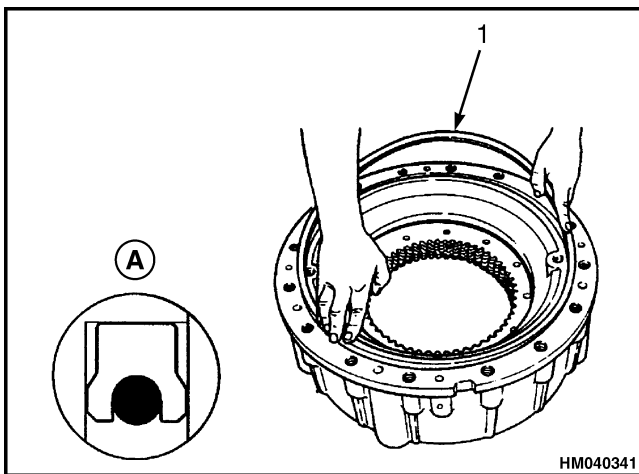


- 1. ROUND SPACER, O-RING, OR GARTER SPRING TYPE

Figure 24. O-ring or Garter Spring Seal Spacer

17. Put the second seal in the space between the housing and the piston on top of the first seal. The rubber part of the seal must be away from you. Install the second seal according to the following procedure:

- a. Push on the seal until the seal touches the spacer. Make sure the seal is correctly installed in the housing. The seals must be parallel to each other. Install the complete seal with this method. See Figure 22 and Figure 25.



- A. RUBBER PART AWAY
- 1. OUTER PISTON SEAL

Figure 25. Outer Piston Seal

INSTALL

Hub Oil Seals

NOTE: Single- or double-hub oil seals are used on all brake housings with forced cooling and most brake housings with sump cooling. See Figure 26.

Double Seals



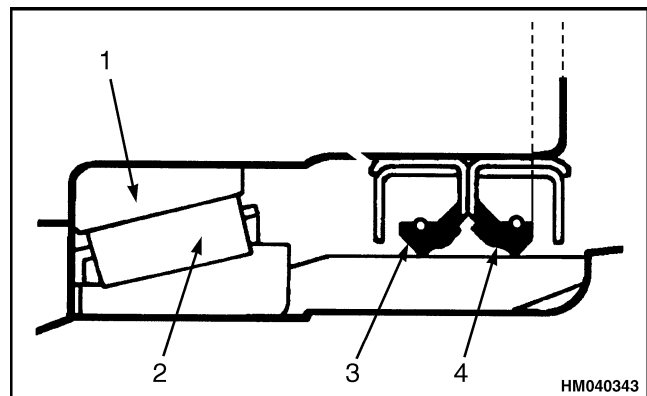
WARNING

To prevent serious eye injury, always wear safe eye protection when doing maintenance or service.

To avoid serious personal injury, be careful when using Permatex. Follow the manufacturer's instructions for safe use to prevent

irritation to eyes and skin. Wash after skin contact. If the Permatex gets in the eyes, flush your eyes with water for 15 minutes. Have eyes checked by doctor.

1. Position the wheel hub so that the wheel hub is flat on the floor.
2. Apply Permatex 51D or its equivalent to the outer diameter of the seal casing.
3. Put the outer seal into the bore so the stamping on the seal casing is toward you.
4. Use a suitable driver and a leather or plastic mallet to install the seal. Tap on the driver until the seal casing is even with the top of the bore.



1. INNER BEARING CUP
2. INNER BEARING CONE
3. OUTER SEAL
4. INNER SEAL

Figure 26. Double Seal

NOTE: When installed, the inner seal pushes the first or outer seal into the correct position.

5. Install the inner seal with the stamping on the bottom, over the outer seal.
6. Use a suitable driver and a leather or plastic mallet to install the seal. Tap on the driver until the seal casing is even with the top of the bore.

Single Seal

1. Position the wheel hub so that the wheel hub is flat on the floor.

2. Apply Permatex 51D or its equivalent to the outer diameter of the seal casing.
3. Position the seal over the bore so that the metal part of the seal is up.

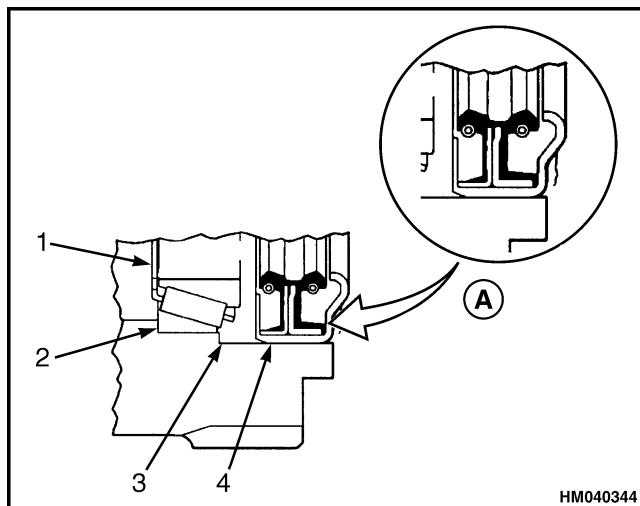
 **CAUTION**

Do not apply pressure to the inner metal part of the seal. Apply pressure only to the outer diameter of the ring on the seal. The application of pressure to the inner diameter of the ring damages the seal.

NOTE: On seals with flanges, tap on the sleeve until the flange touches the outer surface of the hub. See Figure 27.

NOTE: On seals without flanges, press the seal in the hub until the top of the seal is even with the outer surface of the hub. See Figure 28.

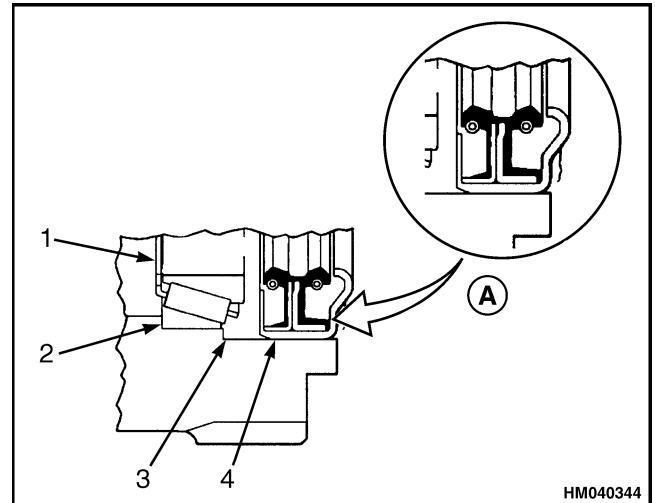
4. Use a sleeve that is installed on the outer metal flange of the seal and a leather or plastic mallet to install the seal.



A. APPLY PRESSURE HERE

1. INNER BEARING CONE
2. INNER BEARING CUP
3. SINGLE HUB
4. SEAL

Figure 27. Single-Hub Seal With Flanges



A. DO NOT STRIKE HERE

1. INNER BEARING CONE
2. INNER BEARING CUP
3. SINGLE HUB
4. SEAL

Figure 28. Single-Hub Seal Without Flanges

Spindle and Brake Cover

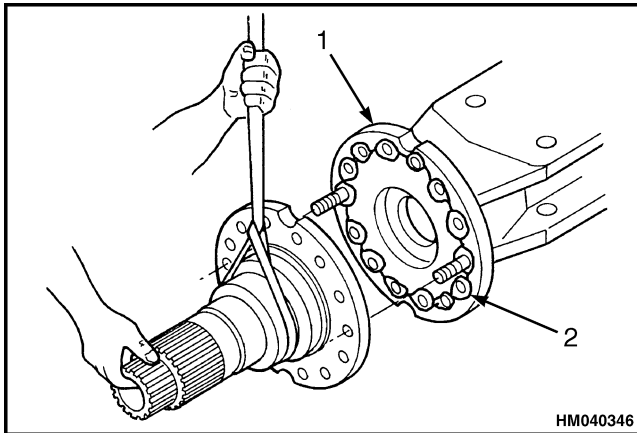
If necessary, install the spindle and the cover of the brake housing on the axle housing according to the following procedure:

 **WARNING**

Small amounts of acid vapor are present when applying some silicone gasket materials. To prevent possible serious personal injury, make sure there is good ventilation in the work area. If the silicone gasket material gets in your eyes, flush your eyes with water for 15 minutes. Have your eyes checked by a doctor.

NOTE: On some axle assemblies, the brake cover is mounted between the spindle and axle housing flanges. Use the following procedure to install the spindle and brake cover; but first, install the brake cover followed by the spindle.

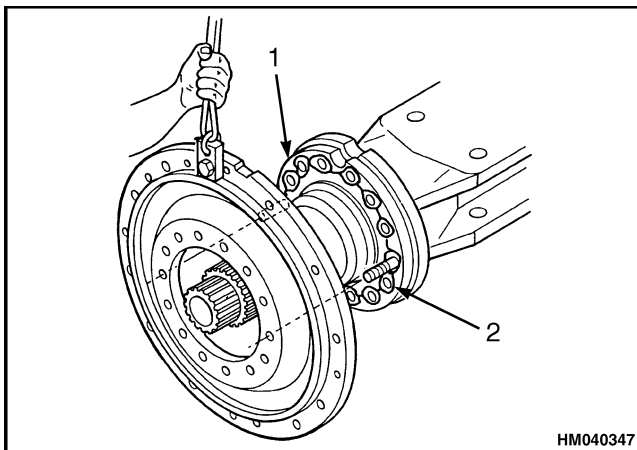
1. Install two studs opposite each other on the axle housing flange. Verify the studs are long enough to support the spindle and brake cover.
2. Apply a bead of silicone gasket material on the mounting surface of the axle housing flange. The bead must go around each capscrew hole. See Figure 29.



- 1. AXLE FLANGE
- 2. SILICONE BEAD

Figure 29. Axle Flange

- 3. Use a lifting device to install the spindle on the guide studs. Make sure the spindle cannot fall before removing the lifting device. See Figure 29.
- 4. Apply a bead of silicone gasket material on the spindle flange where the brake cover will mount. Make sure to go around each capscrew hole. See Figure 30.



- 1. SPINDLE FLANGE
- 2. SILICONE BEAD

Figure 30. Spindle Flange

- 5. Use a lifting device to install the brake cover over the spindle and onto the housing. Make sure the drain hole is located at the bottom of the cover when installed. See Figure 31.

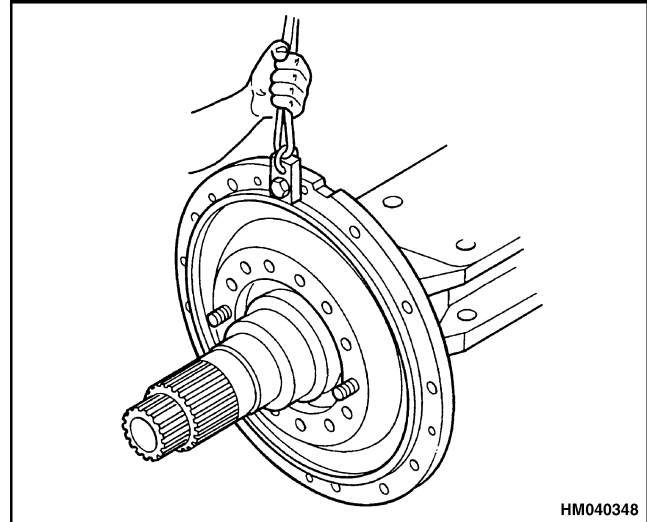
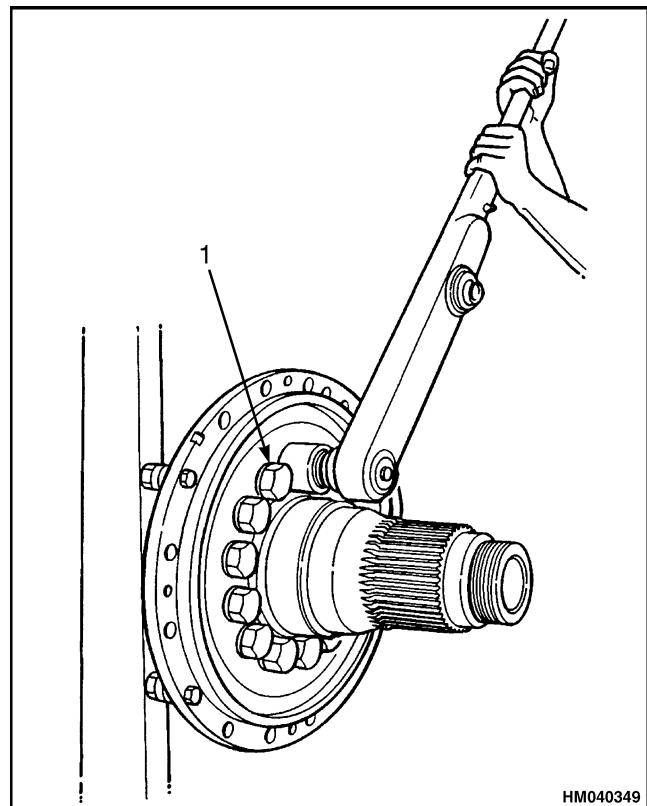


Figure 31. Spindle and Brake Cover

- 6. Install the capscrews and washers. See Figure 32. Remove the guide studs and install the remaining two capscrews and washers. Tighten the capscrews to the torque specified. See Specifications.



- 1. CAPSCREWS

Figure 32. Spindle and Brake Cover Capscrews

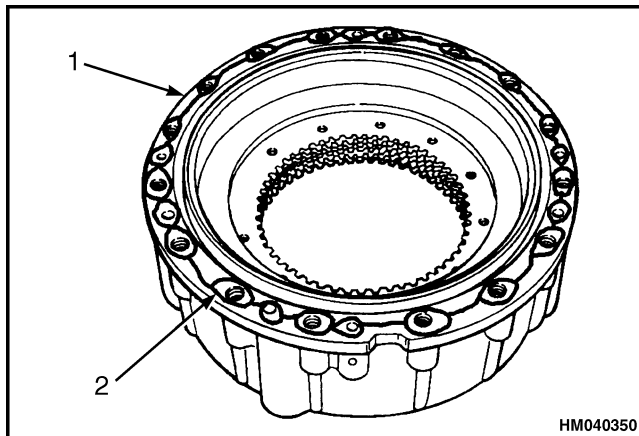
Brake Housing



CAUTION

Do not exceed a 3 mm (0.118 in.) diameter bead of silicone gasket material. Too much gasket material blocks the passages and damages the components.

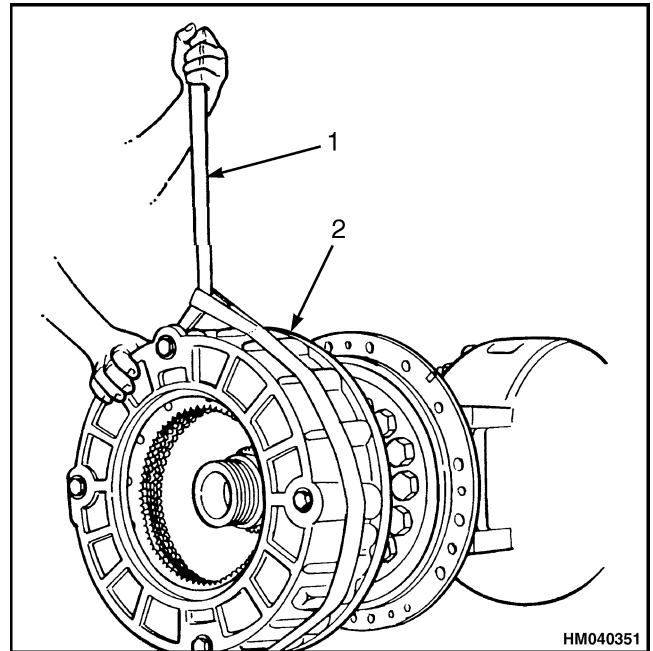
1. Apply a 3.0 mm (0.118 in.) diameter continuous bead of silicone gasket material on the mounting surface of the brake housing. The bead must go around each capscrew hole and port. Flatten or smear the bead of silicone around the ports. Be careful not to get silicone into the ports or brake housing bore. See Figure 33.



1. BRAKE HOUSING
2. SILICONE BEAD

Figure 33. Brake Housing

2. Connect a lifting device to the brake housing so that the bores for the bleeder screw and the inlet fitting in the housing are aligned with the correct holes in the cover.
3. Install two studs in the brake housing. The studs are installed opposite each other. Make the stud by removing the head of a housing-to-cover cap-screw. Cut a flat-bladed screwdriver slot in the end of the stud without the threads. The studs help install the housing correctly on to the cover.
4. Lift the housing on to the cover so that the studs go through the holes in the cover. Verify the bores for the bleeder screw and the inlet fitting are aligned with the holes in the cover. Push and hold the brake housing against the cover. See Figure 34.



1. LIFTING DEVICE
2. BRAKE HOUSING

Figure 34. Brake Housing

5. Install the capscrews and washers that fasten the brake housing to cover.
6. Remove the two assembly studs and install the last two capscrews and washers.
7. Tighten the capscrews to the specified torque. See Specifications.
8. Remove the lifting device from the brake housing.
9. Install and tighten the following components on the back (inboard) side of the cover of the brake housing. See Figure 6.
 - a. Bleeder screw: Tighten to 20 to 27 N•m (15 to 20 lbf ft).



CAUTION

Use the correct fitting. You cannot replace a tapered seat fitting with an O-ring fitting. You cannot replace an O-ring fitting with a tapered seat fitting. If the wrong fitting is used, the housing and the fitting will be damaged.

- b. Inlet fitting for the hydraulic line: A tapered seat fitting or an O-ring fitting.