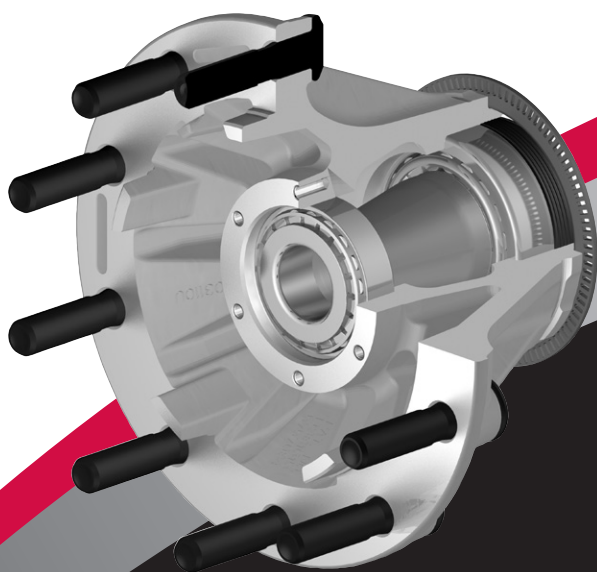


Service Manual

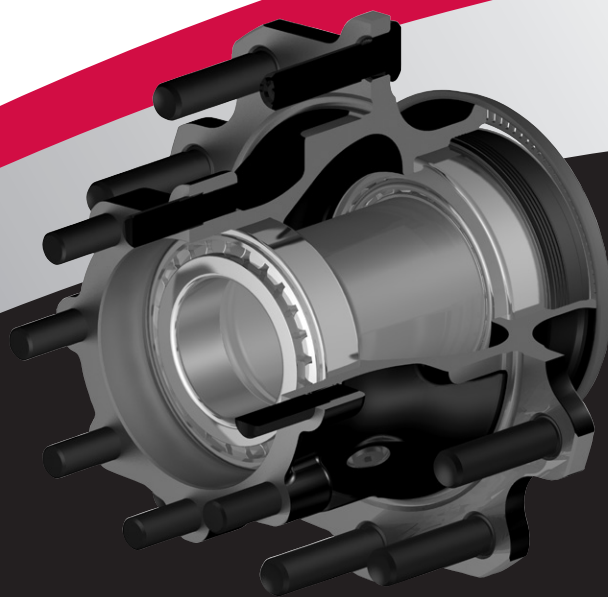
for PreSet® Hub Assemblies

HD
HEAVY DUTY

**PreSet® Hubs
for Drum
Brakes**



Aluminum PreSet®
Hub Assembly



Iron PreSet®
Hub Assembly

Pre-Adjusted Bearings

CON  **MET**
Pointing the Way®

ABOUT THIS MANUAL

- Read this manual carefully, providing extra attention to its explanations and instructions.
- To ensure safe, continuous, trouble-free operation, understand your wheel hub system, and keep all components in proper operating condition.
- Pay particular attention to all NOTES, CAUTIONS, WARNINGS, and DANGERS to avoid the risk of personal injury or property damage, and realize these statements are not exhaustive. ConMet cannot possibly know or evaluate all conceivable methods in which service may be performed or the possibly hazardous consequences of each method. Accordingly, those who use a procedure not recommended by ConMet must first satisfy themselves that neither their safety nor the safety of the product will be jeopardized by the service method selected.
- Use only ConMet approved replacement parts. Do not attempt to use damaged parts.
- DISC WHEEL INSTALLATION PROCEDURES (ConMet part number 103282), OIL DECALS (ConMet part number 106873), and SEMI-FLUID DECALS (ConMet part number 107383) are available upon request.

Before You Begin

1. Read and understand all instructions and procedures before you begin to service components.
2. Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.
3. Follow your company's maintenance and service, installation, and diagnostics guidelines.
4. Use special tools when required to help avoid serious personal injury and damage to components.

Hazard Alert Messages

DANGER

A danger note is associated with a hazard that will result in death or serious personal injury if the advisory is not followed. Serious personal injury may be equated to career-ending injury.

WARNING

A Warning alerts you to a hazard that will result in death or serious injury if not avoided.

CAUTION

A Caution alerts you to an instruction or procedure that you must follow exactly to avoid minor injury or damage to components.

NOTE

A note includes additional information that may assist the technician in service procedures.

How to Obtain Additional Maintenance and Service Information

On the Web

Visit www.conmet.com to access ConMet's product, sales, service and maintenance literature.

ConMet Customer Service

Call ConMet's Customer Service at 1-800-547-9473.

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1. INTRODUCTION

Consolidated Metco, Inc. is recognized as the leader in the design and manufacture of lightweight/low maintenance components for the commercial vehicle industry. ConMet PreSet wheel hub technology offers a better solution to prevent premature wheel hub failures.

PreSet Hub Assemblies

ConMet PreSet hub assemblies include precision-machined hubs, premium seals, specially toleranced roller bearings and unique precision-machined bearing spacers. This combination eliminates the need to manually adjust wheel end play. These components are delivered as a complete assembly, reducing the potential for premature failures due to incorrect end play settings and/or improper installation practices.

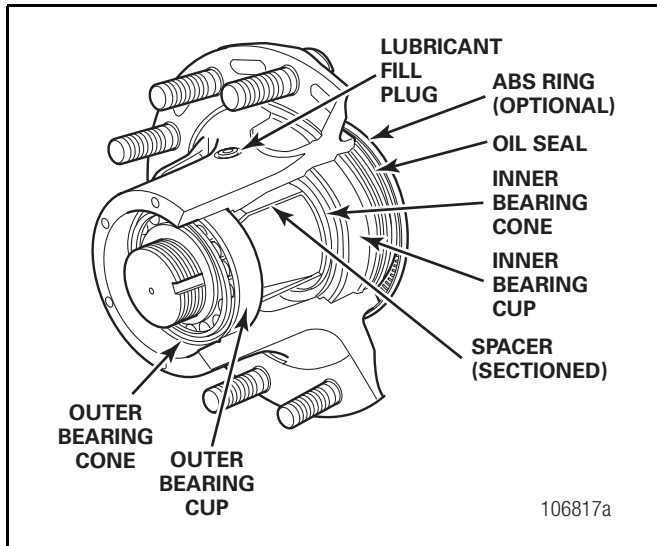
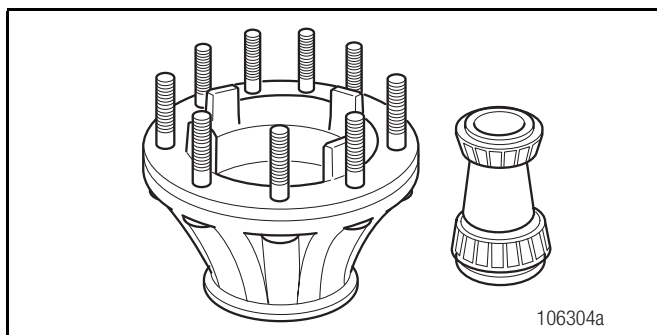
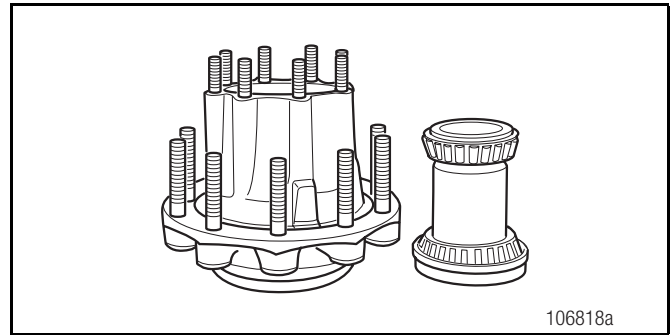


FIGURE 1

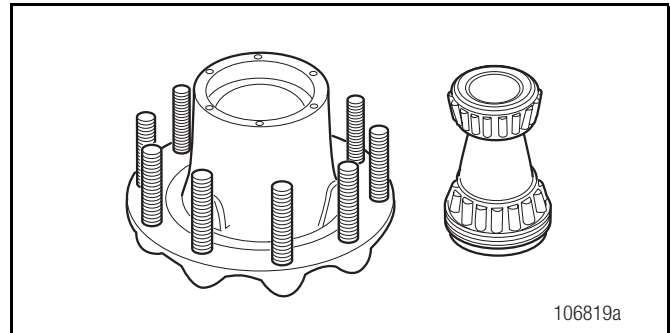
ConMet offers a complete family of aluminum and ductile iron PreSet wheel hub assemblies for steer, drive and trailer axles.



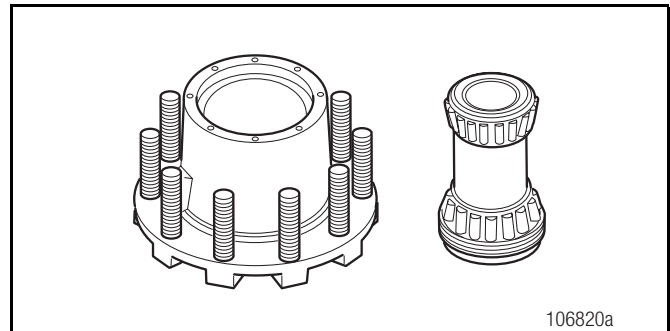
PreSet Steer Hub
FIGURE 2



PreSet Drive Hub
FIGURE 3



PreSet TN Trailer Hub
FIGURE 4



PreSet TP Trailer Hub
FIGURE 5

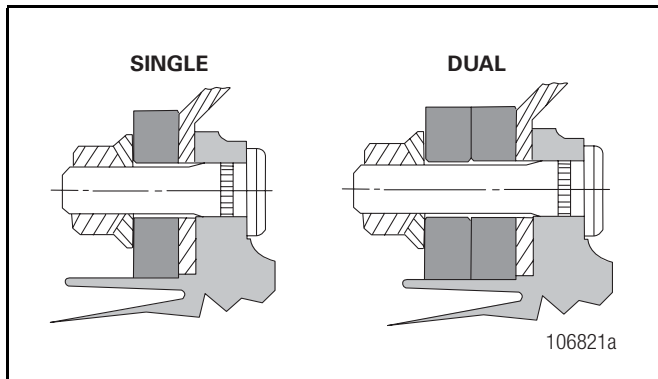
2. IDENTIFICATION

WHEEL MOUNTING SYSTEMS

ConMet PreSet wheel hubs are available in both hub pilot and ball seat nut configurations.

Hub Pilot Wheel Mounting

The hub pilot wheel mounting system makes use of a single two-piece flange nut on each wheel stud for both single and dual wheel applications (see figure 6). The hub pilot wheel mounting system is also known as the Uni-Mount-10™ (10 stud), WHD-10™ (10 stud), WHD-8™ (8 stud), and ISO system.

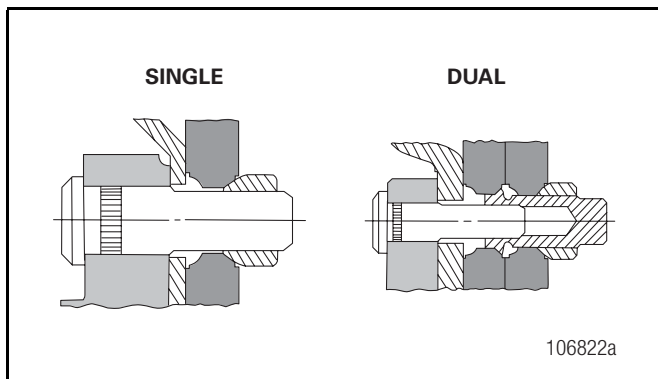


Hub Pilot Mounting Systems
FIGURE 6

Ball Seat Wheel Mounting System

The ball seat wheel mounting system makes use of the spherical contact area between the nut and wheel to both locate the wheel and hold the wheel tight against the brake drum (see figure 7).

The ball seat wheel mounting system is also known as the stud piloted, ball seat cap nut (BCN) and double cap nut (DCN) system.



Ball Seat Mounting Systems
FIGURE 7

IDENTIFYING CONMET HUB ASSEMBLIES

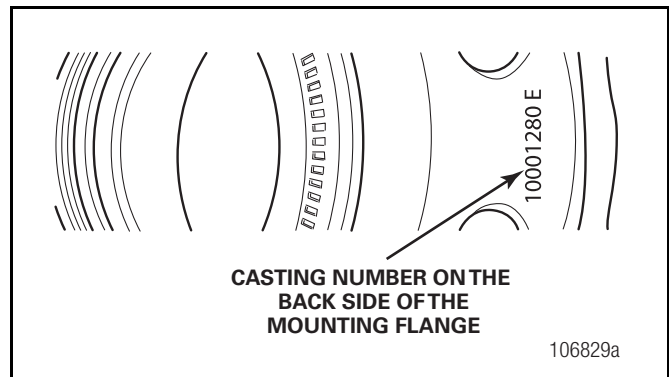
Identifying your hub assembly is important for many reasons. It will enable you to properly service the hub assembly and purchase the appropriate replacement parts if needed. Plus, if a warranty issue arises, you'll then be able to provide details on all aspects of the ConMet hub. This section is devoted to finding and understanding the different identification numbers associated with ConMet hubs.

Vehicle Identification Number (VIN)

The quickest and easiest method of identifying your hub assembly is to note the vehicle identification number (VIN) and call the truck dealership. The dealership can then tell you what hubs were installed on your vehicle. If this is not possible, there is a variety of identification numbers located on a ConMet hub assembly.

Casting Number

This number is physically cast into the hub and appears in large characters usually on the back side of the mounting flange near the stud head (see figure 8).



Casting Number on the Back Side of the Mounting Flange
FIGURE 8

Machining Assembly Number

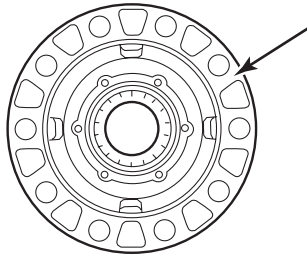
This number is stamped on one of the following:

- Mounting flange face (see figure 9)
- Diameter of the mounting flange (see figure 10)
- Back side of the mounting flange (see figure 11)
- Barrel of the hub (see figure 12)

The machining number represents the way the hub is machined (e.g., hub pilot vs. ball seat, 8.78" vs. 8.53" vs. 9" brake drum pilot diameter).

2. IDENTIFICATION (CONTINUED)

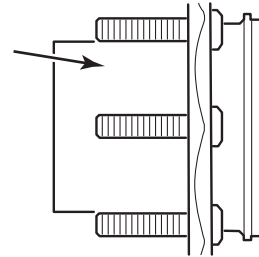
MOUNTING FLANGE FACE



106828a

Mounting Flange Face
FIGURE 9

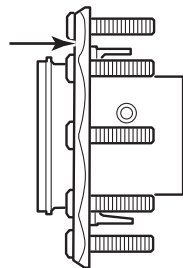
BARREL OF HUB



106827a

Barrel of Hub
FIGURE 12

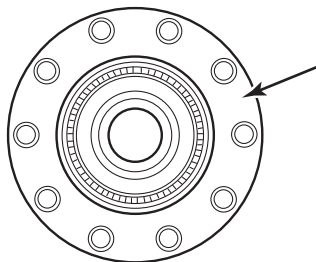
MOUNTING FLANGE DIAMETER



106825a

Mounting Flange Diameter
FIGURE 10

MOUNTING FLANGE BACKFACE



106826a

Mounting Flange Backface
FIGURE 11

Final Hub Assembly Number

This number is stamped on one of the following:

- Mounting flange face (see figure 9)
- Diameter of the mounting flange (see figure 10)
- Back side of the mounting flange (see figure 11)

The final hub assembly number identifies the hub assembly, hub machining, studs, bearings, spacer, seal and ABS ring.

Julian Date

Both the machining and the final assembly have Julian dates stamped into the hub assembly in the same location as the assembly numbers (see figures 9, 10, 11 and 12). A Julian date appears as the day of the year plus the last two digits of the calendar year (e.g., July 4 2008 would appear as 18508). This number provides the date when the hub was machined and assembled at the factory and may be used for warranty purposes.

3. INSPECTION

HAZARD ALERT MESSAGES

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.



Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands.

INSPECTION GUIDELINES

NOTE

Operating temperature can be checked as the vehicle enters the service area following a normal run. If the hub is running in excess of 150°F above the ambient in normal operating conditions, service is required.

There are three levels of inspection criteria for PreSet hub assemblies:

- Driver pre-trip
- In conjunction with preventative maintenance schedule
- Every 12 months or 100,000 miles (whichever comes first)

Follow this schedule of inspection and maintenance for PreSet hub assemblies.

1. Driver Pre-Trip Visual Inspection

(Each time prior to operating the vehicle on the road)

With vehicle parked on level ground and the parking brake set, walk around the vehicle and visually inspect each wheel assembly for the following items:

- Loose, damaged or missing fasteners
- Loose, damaged or missing hubcaps
- Oil leaks at hubcap, axle flange gasket or fill plug
- Lubricant on the hub, brake components or inside of wheel and tire
- Insufficient oil level and poor oil condition

If any of the above conditions are found, the vehicle should be placed out of service until the item can be repaired.

2. Preventative Maintenance Schedule

Wheel end inspections should be conducted during any routine preventative maintenance on the vehicle.

1. Check all items listed in the driver pre-trip visual inspection.
2. Lift and support the axle and rotate the wheel. Check that the wheel rotates freely. Listen and feel for any signs of rough bearing operation or vibration.
3. On oil-lubricated steer and trailer hubs, place a magnet through the hubcap fill plug into the lubricant. Check for any signs of metal picked up by the magnet.
4. Push and pull on top of the tire or use a pry bar to lift the bottom of the tire to check for loose bearings or “chucking”.

If any of the above conditions are found, the vehicle should be placed out of service until the item can be repaired.

3. Every 12 Months or 100,000 Miles (Whichever Occurs First)

Preparation



Vehicles on jacks can fall, causing serious personal injury or property damage.

Never work under a vehicle supported by a jack without supporting the vehicle with stands and blocking the wheels. Wear safe eye protection.

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
2. Raise the axle until the tires are off the floor.
3. Place safety stands under the trailer frame or under each axle spring seat (see figure 13).

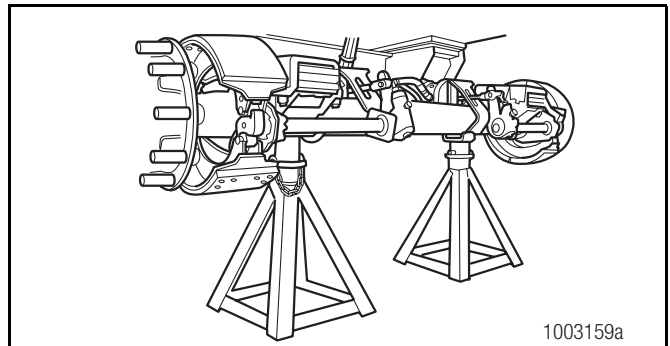


FIGURE 13

3. INSPECTION (CONTINUED)

4. Remove the tire and wheel assembly using procedures specified by the wheel manufacturer (see figure 14).

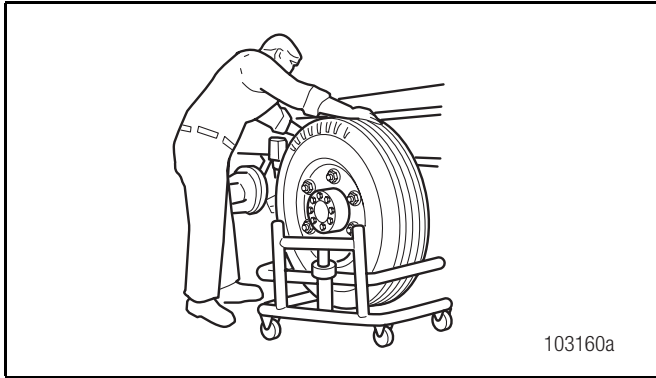


FIGURE 14

Inspect Components

Check for the following:

- Loose, damaged or missing fasteners
- Loose, damaged or missing hubcaps

Inspect for Leaks

1. Check that no lubricant is present around the hubcap or on the wheel.
 - If lubricant is present, investigate the cause and take corrective action.
2. Check that no lubricant is present on the hub, brake hardware or brake shoes.
 - If lubricant is present, check the inboard seal and replace as necessary.

Inspect for Proper Lubricant Level and Condition

1. Allow any air in the lubricant to escape prior to inspection. Visually inspect the lubricant for discoloration. Under normal conditions, the lubricant will darken. A white or milky appearance indicates water contamination.
2. Visually inspect the lubricant for foreign materials such as metal shavings, rust or other contaminants. A magnet can be used to detect any metallic materials that may be present in the lubricant.
3. If the inspection indicates contamination, service the wheel hub according to instructions outlined later in this manual.



Do not mix different types of lubricants. Only use lubricants approved by the seal manufacturer. For a complete list, refer to the Lubricant Compatibility Listing in the Literature section on www.conmet.com.

NOTE

On wheel ends filled with semi-fluid grease, remove the hubcap and verify that sufficient grease is flowing through the bearing rollers and that the ends of the bearing are lubricated. Check to be sure there are no signs of contamination present. If additional grease is required, use the fill hole in the barrel of the hub to add additional grease until grease flows from the outboard bearing. Use caution not to overfill the hub as it could lead to improper venting and seal leaks.

Functional Checks

Rotate the hub and check for free, smooth, and quiet rotation. If rotation is hampered, PreSet hubs should be serviced immediately.

Check End Play

1. Remove the hubcap or drive axle shaft. Use an appropriate container to catch the lubricant. Attach the magnetic base of the dial indicator to the spindle. Touch the dial indicator stem to the hubcap mounting surface (see figure 15).

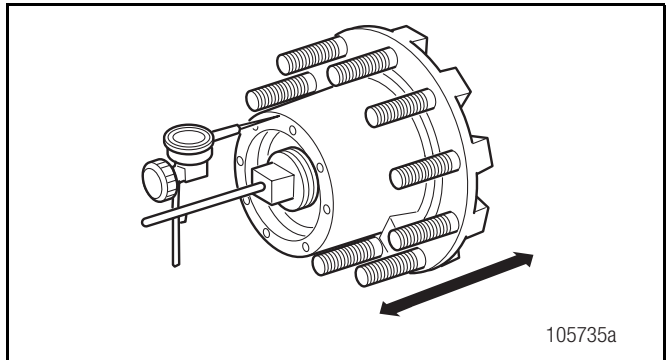


FIGURE 15

2. Grasp two wheel studs across from each other. Pull and push while oscillating the hub.
3. Measure the end play by calculating the difference between the minimum and maximum dial indicator readings. Unless the end play measurement exceeds .006", no additional service is necessary. If the spindle nut is correctly locked, do not adjust or retighten the spindle nut.



If end play exceeds 0.006-inch (0.15 mm), service the hub.

NOTE

All components replaced under warranty must be returned for consideration of reimbursement. Contact the OEM for their warranty return policy.

4. RECOMMENDED SERVICE

The recommended service interval is 5 years/ 500,000 miles or every second brake service for on-highway vocations. In more severe duty applications, this service may be required more often. Your 12 month inspection criteria will give you an indication whether this service is required.

In order to ensure optimum wheel hub performance, ConMet recommends that only approved PreSet service parts be used to replace all critical components of the system. Refer to the back of this manual for a listing of approved parts.

HUB REMOVAL AND DISASSEMBLY

1. Remove the tires and wheels by following steps 1-4 under the Inspection Guidelines section entitled "3. Every 12 Months or 100,000 Miles (Whichever Occurs First)" on page 4.

WARNING

Sudden release of compressed air can cause serious personal injury and damage to components.

Before you service a spring chamber, carefully follow the manufacturer's instructions to compress and lock the spring to completely release the brake. Verify that no air pressure remains in the service chamber before you proceed.

2. If the axle is equipped with spring brake chambers, carefully compress and lock the springs so that they cannot actuate (see figure 16).

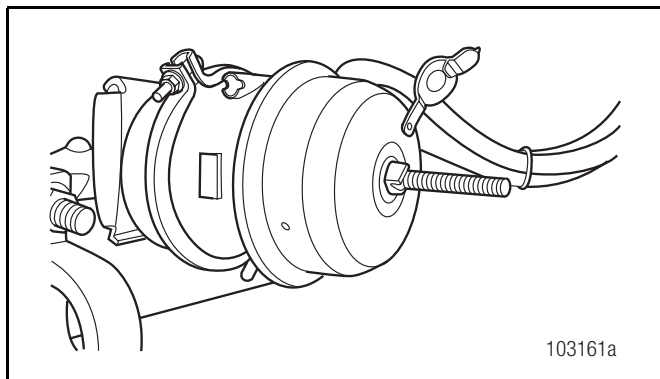
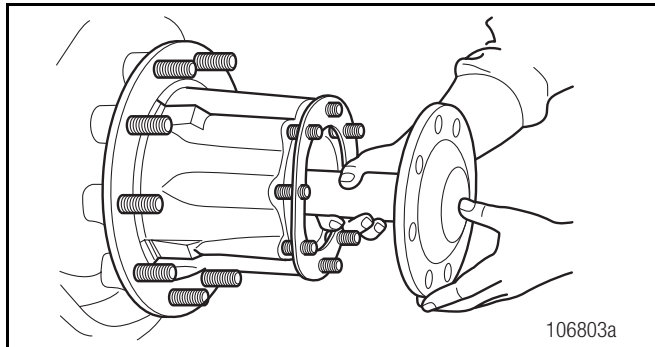


FIGURE 16

3. Remove the brake drum. Support the drum during the removal process to prevent damage to the axle spindle threads.

NOTE

If the hub to be disassembled is a drive hub, remove the drive axle shaft, and capture the oil (see figure 17).



Removing the Drive Axle Shaft
FIGURE 17

4. Place a container under the hubcap, or drive axle shaft for a drive hub, to receive the draining oil, then remove the hubcap or drive axle shaft. Do not reuse the oil. Correctly dispose of the lubricant.
5. Examine the spindle nut to determine the type of locking system. Disengage the locking device.

WARNING

Do not loosen the axle spindle nuts by either striking them directly with a hammer, or striking a drift or chisel placed against them. Damage to the parts will occur causing possible loss of axle wheel-end components and serious personal injury.

6. Remove the spindle nut system.

4. RECOMMENDED SERVICE (CONTINUED)

- Slide the hub off the spindle. Remove and save the outer bearing cone. Be careful when you remove the hub that you do not damage the outer bearing by dropping it on the floor.

- If the hub is difficult to remove because the seal is stuck on the spindle, use a mechanical puller to remove the hub (see figure 18).
- If part of the seal remains on the spindle, carefully remove the part of the seal that remains on the spindle.

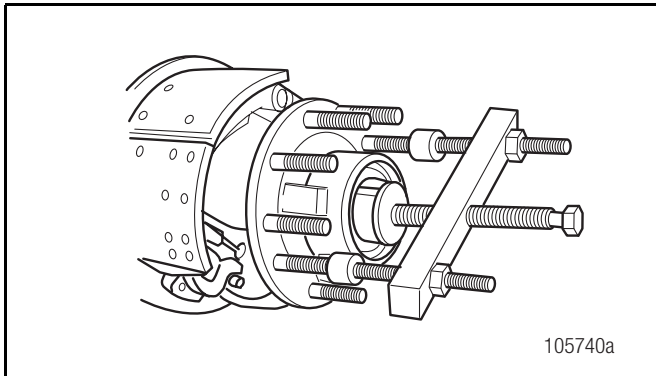
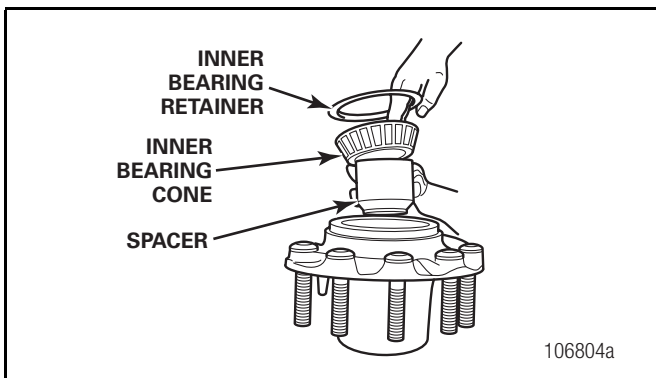


FIGURE 18

- Place the hub on its outboard end and remove and discard the seal.
- If present, remove and discard the inner bearing retainer. The stamped steel retainer secures the inner cone during shipment and has no purpose in service (see figure 19). Be careful not to damage the inner bearing and spacer during the removal process.
- Remove the inner bearing and spacer.



Hub Disassembly (Inner Bearing Retainer is not on Hubs equipped with CR Seals)
FIGURE 19

COMPONENT INSPECTION AND REPLACEMENT HAZARD ALERT MESSAGES

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

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

Do not hit steel parts with a steel hammer. Pieces of a part can break off. Serious personal injury and damage to components can result. Use a brass or synthetic mallet for assembly and disassembly procedures.

Solvent cleaners can be flammable, poisonous and cause burns. Examples of solvent cleaners are carbon tetrachloride, and emulsion-type and petroleum-base cleaners. Read the manufacturer's instructions before using a solvent cleaner, then carefully follow the instructions. Also follow the procedures below.

- Wear safe eye protection.
- Wear clothing that protects your skin.
- Work in a well-ventilated area.
- Do not use gasoline or solvents that contain gasoline. Gasoline can explode.
- You must use hot solution tanks or alkaline solutions correctly. Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

⚠ CAUTION

Do not use hot solution tanks or water and alkaline solutions to clean ground or polished parts. Damage to parts can result.

CLEAN AND DRY COMPONENTS

Worn or Damaged Components

⚠ WARNING

Do not repair or recondition wheel-end components. Replace damaged, worn or out-of-specification components. Do not mill or machine any components. Using repaired, reconditioned, damaged or worn components can cause wheel end failure, which can result in serious injury and property damage.

Hub and Component Cleaning

- Use a cleaning solvent to clean the ground or polished parts and surfaces. Kerosene or diesel fuel can be used for this purpose. **DO NOT USE GASOLINE.**

4. RECOMMENDED SERVICE (CONTINUED)

2. Do NOT clean ground or polished parts in a hot solution tank or with water, steam or alkaline solutions. These solutions will cause corrosion of the parts.
3. Thoroughly clean the hub cavity with spray degreaser. The cavity must be free of any contaminants.
4. To remove grease from a wheel end, use a stiff fiber brush, not steel, and kerosene or diesel fuel, not gasoline. Allow the parts to dry. Note that any solvent residue must be completely wiped dry since it may either dilute the grease or oil or prevent the lubricant from correctly adhering to the wheel-end components.
5. Clean and inspect the wheel bearings, race, spindle bearing and seal journals, and hub. Bearings should be cleaned in a suitable non-flammable solvent and dried with either compressed air or a lint-free rag.

If compressed air is used, do not spin dry the bearings as the rollers may score due to lack of lubricant. Ensure that the air line is moisture free.

6. Parts must be dried immediately after cleaning. Dry parts with clean paper towels or rags, or compressed air. Do not dry bearings by spinning with compressed air.
7. Apply a light oil to cleaned and dried parts that are not damaged and are to be immediately assembled. Use only the type of oil used by the manufacturer. Do NOT apply oil to the brake linings or the brake drums.
8. If the parts are to be stored, apply a good corrosion preventative to all surfaces. Do NOT apply the material to the brake linings or the brake drums. Store the parts inside special paper or other material that prevents corrosion.

INSPECTING BEARING CUPS, CONES AND SPACER

1. After components have been properly cleaned, visually inspect the cups and cones. Reference materials for proper inspection procedures are available from the bearing manufacturers. If removal or replacement is required, follow the steps outlined on the next page.

CAUTION

If you choose to reuse existing bearings at this service, they must be inspected in accordance with the bearing manufacturers recommended guidelines.

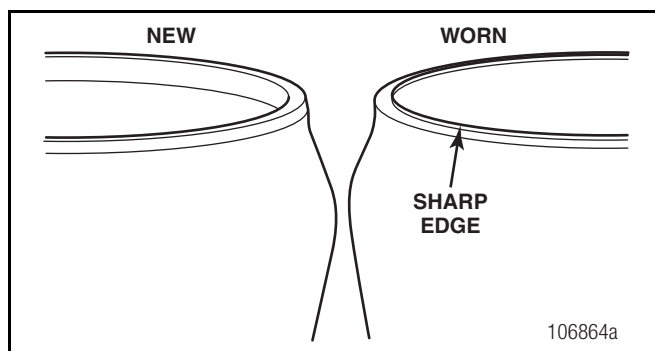
CAUTION

If this inspection indicates that existing bearing component(s) must be replaced, bearing cups and cones must be replaced as a set. Whenever new bearings are installed, replacement of the bearing spacer is also recommended.

2. After properly cleaning the components, visually inspect spacer for wear or damage. It can be difficult to determine if the spacer is worn and needs replacement. It is recommended that the spacer be replaced anytime the hub is disassembled and there is evidence of bearing cone rotation. Cone rotation can result in spacer wear. Therefore, if the spacer is reused, unsafe preload of the bearings could occur.

To inspect for cone rotation:

- Visually inspect spacers for signs of wear or damage. Carefully inspect the machined ends of the bearing spacer. Wear to the bearing spacer can appear as a sharp ring of standing metal at either edge of the machined surfaces (See figure 20).
- Inspect bearing cone ID for visual evidence of rotation and wear.
- Inspect spindle bearing journal for visual evidence of rotation and wear.



Bearing Spacer Wear
FIGURE 20

NOTE

If unsure of the condition of components, PreSet bearing kits can ensure bearing adjustment and optimum bearing life. The PreSet bearing kit consists of both bearing sets and a bearing spacer. The kits are available from both ConMet and approved bearing suppliers. Some kits also include a wheel seal.

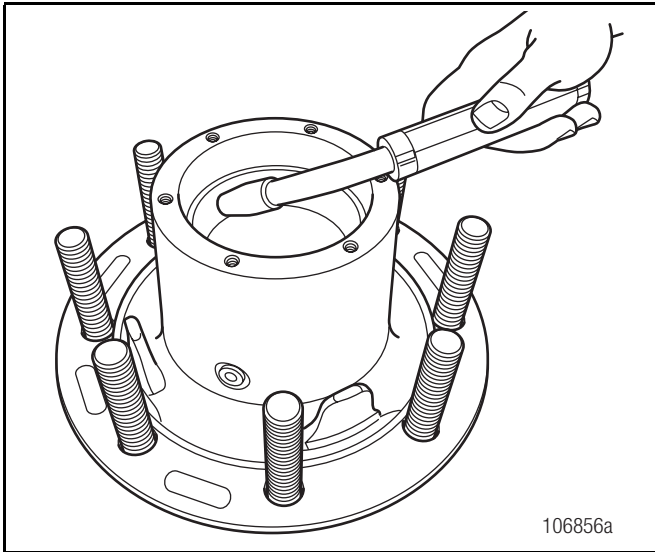
4. RECOMMENDED SERVICE (CONTINUED)

REMOVING CUPS IN ALUMINUM HUBS

1. If required on an aluminum hub, remove the bearing cup by welding a large bead around the bearing surface of the steel cup, letting the assembly cool, and removing the bearing cup (see figure 21).

NOTE

If a welder is not available, heat the hub in an oven to a temperature not to exceed 300°F and pound out the bearing cups with a hammer and drift, being careful not to damage the hub.



Welding Bead
FIGURE 21

2. Inspect the bearing cup bore for evidence of cup rotation or spun cups.
 - If cup rotation exists, replace the hub.

REMOVING CUPS IN IRON HUBS

1. On an iron hub, remove the bearing cup using a large hammer and a heavy drift or a hydraulic press. Take precaution to avoid damaging the bearing cup bore and shoulder.
2. Inspect the bearing cup bore for evidence of cup rotation or spun cups.
 - If cup rotation exists, replace the hub.

INSTALLING A NEW CUP IN ALUMINUM HUBS

To install a new cup in an aluminum hub, it is recommended that the hub be heated in boiling water (212°F) or in an oven at a temperature not to exceed 300°F. Cooling the cup in a freezer to 32°F or below will further ease the installation, if desired.

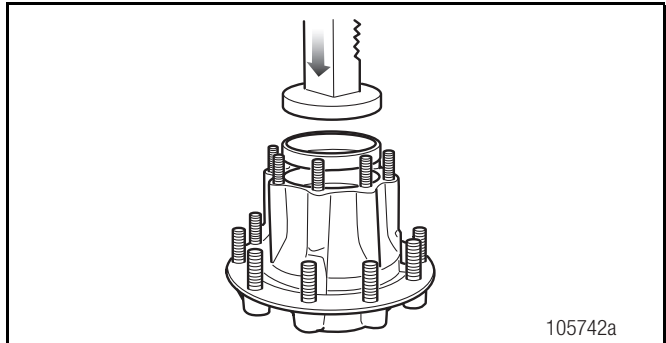
WARNING

Do not overheat the hub as it may degrade the heat-treated strength of the hub.

Remove the aluminum hub from the oven or water and carefully drop in the new bearing cup being certain it is fully seated. If the cup is loose, allow a few seconds for it to heat up and secure itself before moving the hub. Use a 0.001" to 0.002" feeler gauge to ensure the cup is fully seated against the shoulder of the bearing bore.

INSTALLING A NEW CUP IN IRON HUBS

Iron hubs do not need to be heated for bearing cup installation. Press the bearing cup into the hub, being certain that it is fully seated (see figure 22). Use a 0.001" to 0.002" feeler gauge to ensure the cup is fully seated against the shoulder of the bearing bore.



Bearing Cup Pressed into Hub
FIGURE 22

WHEEL STUDS

Replace all wheel studs that have damaged or distorted threads, are broken or bent, or are badly corroded. Also, replace both studs adjacent to the damaged stud. If two or more studs have damage, replace all the studs in the hub. Broken studs are usually an indication of excessive or inadequate wheel nut torque.

STUD REMOVAL

WARNING

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

1. Place the clean hub in a shop press with the hub supported evenly around and adjacent to the stud being removed.

4. RECOMMENDED SERVICE (CONTINUED)

WARNING

Failure to adequately support the hub can result in physical injury and/or damage to the hub.

Some hubs are configured so it is impractical to have supports to prevent the hub from tipping when force is applied to the stud. In this case, support the hub on wood blocks on the floor and use a heavy hammer to drive the studs out with several sharp blows. Be careful to avoid damaging the hub and components, particularly the seal bore and the ABS tone ring.

2. Press the stud out of the hub.

STUD REPLACEMENT

CAUTION

On the ball seat wheel mounting system, always use left-handed threaded studs on left-handed hubs, and use right-handed threaded studs on right-handed hubs.

The ConMet part number is located on the head of the stud. The same part number must be used for replacement unless changing the drum or wheel type.

1. To install a new stud, support the hub evenly around and adjacent to the stud being installed.
2. Press the new stud all the way into the hub. Be sure the stud is fully seated and that the stud head is not embedded into the hub.

WARNING

Excessive force can cause the stud head to be embedded into the hub, which can create a crack in the hub, resulting in serious injury and property damage. If a stud head is imbedded in a hub, replace the hub.

HUB, DRUM AND WHEEL INSPECTION

1. Inspect the drum pilots, wheel pilots, and mounting face on the hub for damage. A damaged drum pilot is usually caused by improper drum mounting. A damaged wheel pilot could be the result of inadequate wheel nut torque, allowing the wheels to slip in service. Also, inspect other surfaces of the hub for signs of cracks or damage.
2. Inspect the wheels and brake drum for damage.

WARNING

Do not repair or recondition wheel-end components. Replace damaged, worn or out-of-specification components. Do not mill or machine any components. Using repaired, reconditioned, damaged or worn components can cause wheel end failure, which can result in serious injury and property damage.

ABS TONE RING INSPECTION (AS APPLICABLE)

The Anti-Lock Braking System (ABS) signals acts like any signal generator where the magnet passes a coil and generates a current. On hubs, the toothed ring passes a sensor and generates a signal that is sent to the ABS computer. There are two types of ABS rings used on ConMet hubs — powdered metal and stamped steel (see figure 23).

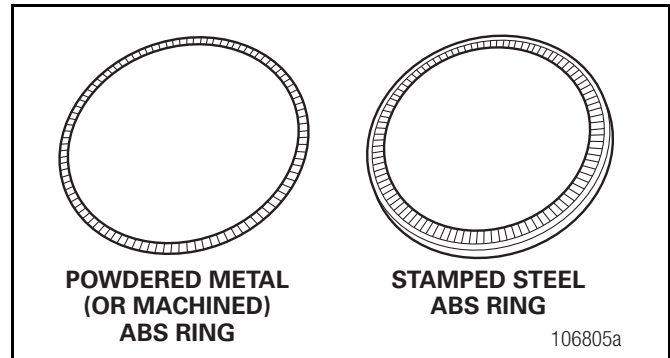
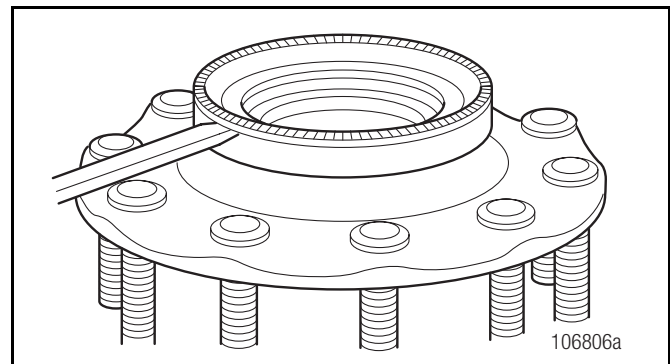


FIGURE 23

If the tone ring is damaged (for example, if it is dropped, bent, chipped or dinged), it must be replaced.

REMOVAL AND INSTALLATION OF POWDERED METAL ABS TONE RING

For a powdered metal ring, remove using a chisel, making sure not to damage the hub. Reinstall by heating the ring to 350°F in an oven and installing it on the hub (see figure 24).

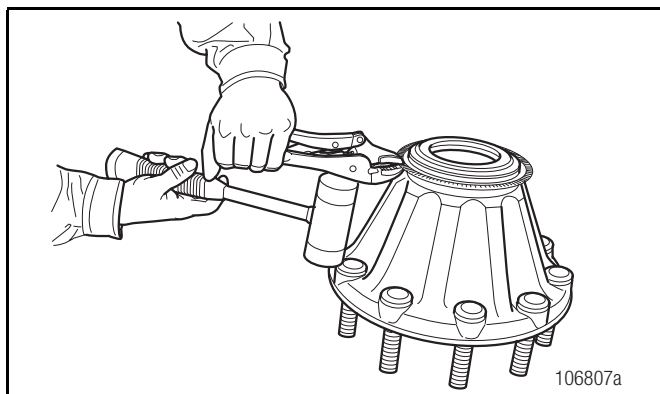


Powdered Metal ABS Ring
FIGURE 24

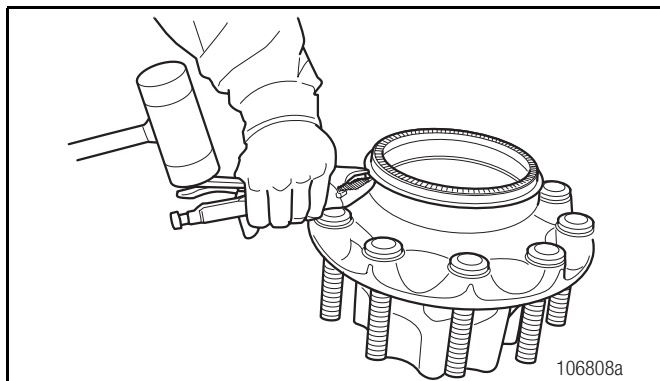
4. RECOMMENDED SERVICE (CONTINUED)

REMOVAL AND INSTALLATION OF STAMPED STEEL ABS TONE RING

1. The steer axle tone ring can be removed by gripping the ring with a pair of locking pliers and tapping the pliers upward with a rubber mallet. Work around the ring to keep the ring from cocking (see figure 25). Drive axle and trailer tone rings can be removed by gripping the ring with a pair of locking pliers and prying against the head of a wheel stud to lift the ring off the hub. Work around the ring to prevent cocking (see figure 26).



Stamped Steel ABS Ring on Steer Axle
FIGURE 25



Stamped Steel ABS Ring on Drive Axle
FIGURE 26

2. Thoroughly clean and degrease the ABS ring seat on the hub with a nonflammable solvent.

CAUTION

Replace the hub if the ABS ring seat is damaged.

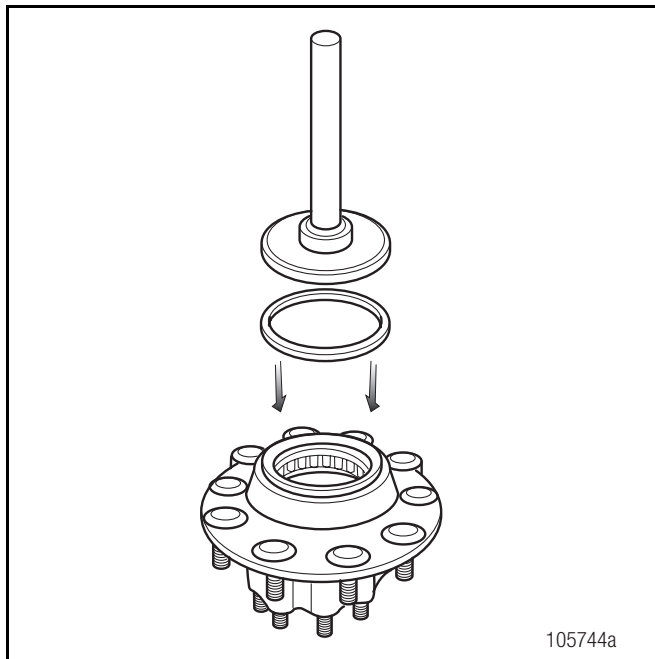
The ABS ring must be fully seated with a maximum of 0.008" axial runout to ensure the ABS system functions properly.

NOTE

For steer hubs, be certain the inside diameter flange is facing up.

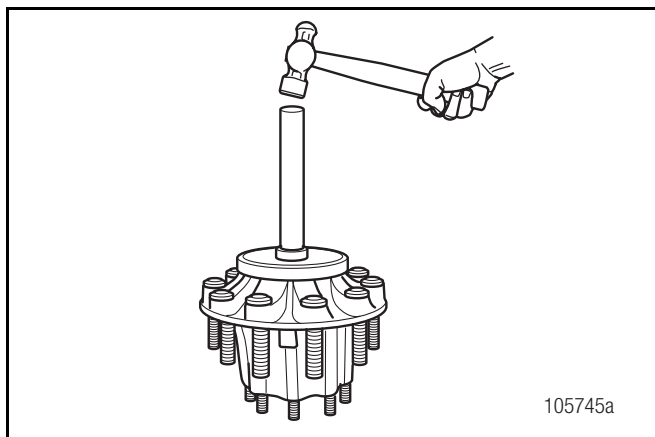
3. Place the hub in a press and place the ABS ring on the hub ring seat.

4. Using ConMet ring installation tool (part number 107119), center the tool over the ABS ring. Each type of ring fits a corresponding diameter on the tool (see figure 27).



Installing the ABS Tone Ring
FIGURE 27

5. Press the ring on the hub. If a press is not available, drive the ring on with a hammer or mallet until the ring seats on the hub (see figure 28). A swift initial blow with an 8-lb. hammer may be necessary to start the ring onto the hub.



Using a Hammer to Install the Ring
FIGURE 28

6. Inspect the ring to ensure proper seating. If the ring is not completely seated, continue to drive the ring with the ring installation tool until it is completely seated.

5. REASSEMBLY

PreSet WHEEL HUBS

CAUTION

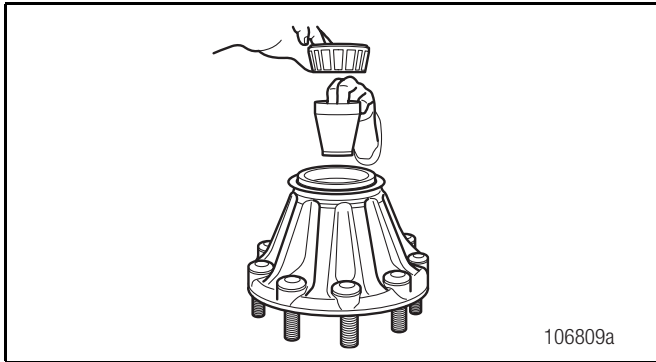
When using an oil bath system, do not pack the bearing with grease. Grease will prevent the proper circulation of axle lubricant and can cause premature wheel seal and bearing failure.

1. Place the hub, seal end up, on a clean work bench surface.

NOTE

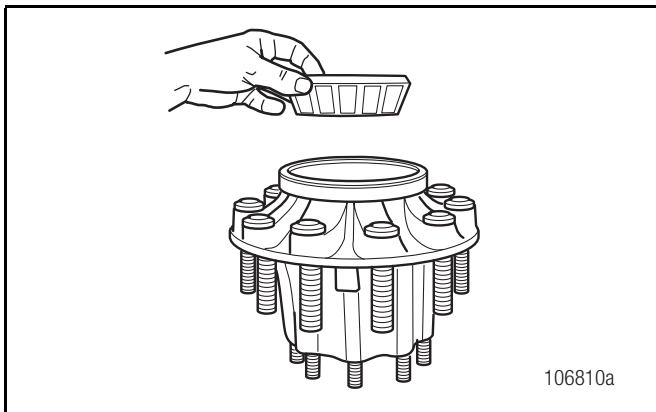
If you are working on a drive or trailer hub, go to step 3. If you are working on a steer hub, proceed as follows.

2. For steer hubs, install the tubular bearing spacer with the tapered end down (see figure 28).



Bearing Cone Assembly for Steer Hub
FIGURE 28

3. Lubricate the inner bearing cone with the same lubricant as will be used in the hub and install it into the inner bearing cup (see figure 29).



Bearing Cone Assembly for Drive Hub
FIGURE 29

NOTE

The seal must be replaced every time the hub is removed from the spindle.

Do not apply any gasket sealant to the seal outer or inner diameter.

Always use the seal installation tool specified by the seal manufacturer. Using an improper tool can distort or damage the seal and cause premature seal failure.

If using the Outrunner wheel seal, place the seal with the “air side” facing the adapter plate of the installation tool.

If using the SKF Scotseal Plus XL wheel seal, no special installation tools are required.

If using the Stemco Endeavor seal, be sure to use the Stemco installation tool.

4. When installing the SKF or Outrunner wheel seal, lubricate the seal outer diameter and the hub seal bore with the same lubricant as will be used in the hub. The Stemco Endeavor seal is installed dry and should not be lubricated.

5. Position the seal into the hub bore.

NOTE

The Outrunner and Stemco Endeavor seals require the proper tool for installation. Refer to the Service Parts List on page 20 of the manual to identify the correct installation tool.

6. When installing the Outrunner or Stemco Endeavor seal, tap the adapter plate of the installation tool around the outer edge to position the seal. Drive the wheel seal into place (see figure 30). Once the tool bottoms out, the seal is installed correctly.
7. When installing the SKF Scotseal Plus XL, press the seal evenly into the bore by hand (see figure 30). If additional force is needed, use a flat plate and a small mallet to install the seal. Install the seal.

5. REASSEMBLY (CONTINUED)

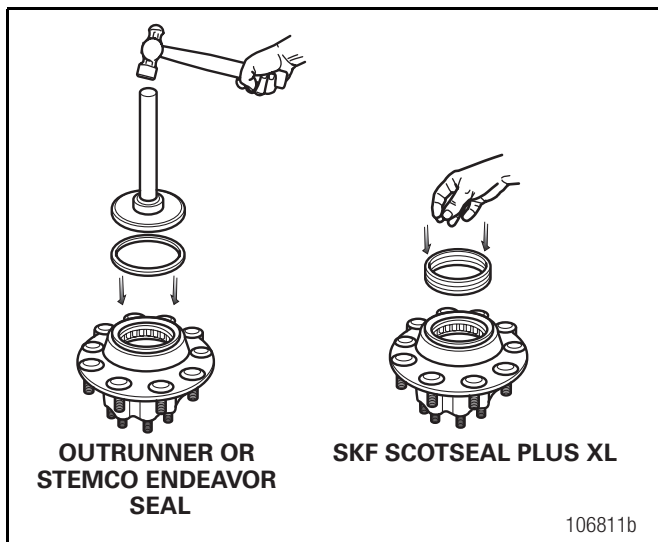


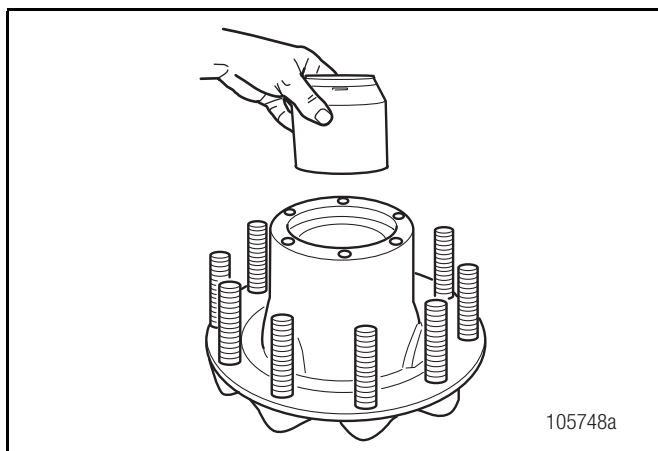
FIGURE 30

8. Check to be certain the seal is not cocked and that the seal inner diameter and the inner bearing turn freely.



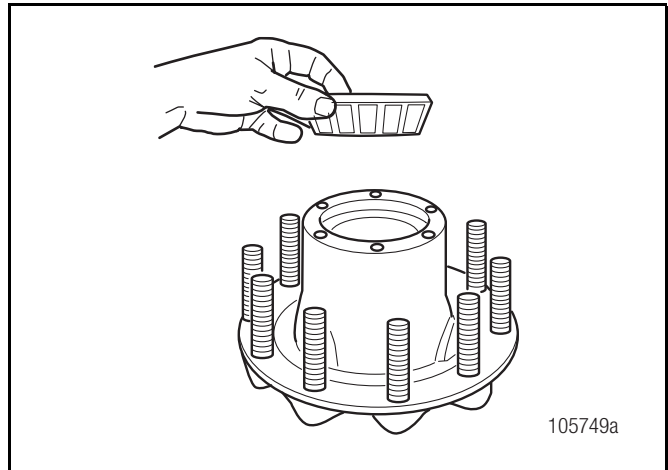
Failure to lubricate the inner diameter of the seal, and the seal journal, may result in premature seal failure.

9. Lubricate the inner diameter of the seal with a light film of the same lubricant as will be used in the hub.
10. Turn the hub over, and place it seal end down. For all drive and trailer hubs, install a bearing spacer. If the spacer has a tapered end, it should face towards the outboard end of the hub (see figure 31).



Installing the Spacer
FIGURE 31

11. Lubricate the outer bearing cone with the same lubricant as will be used in the hub and install it into the hub assembly (see figure 32).



Installing the Outer Bearing Cone
FIGURE 32

6. REINSTALLATION

INSTALLING THE PreSet WHEEL HUB ASSEMBLY

CAUTION

On the ball seat wheel mounting system, always use left-handed threaded studs, which are gold in color and have an "L" stamped on the end, in the hub on the driver's side of the equipment, and use right-handed threaded studs, which are silver in color and have an "R" stamped on the end, in the hub on the passenger's side of the equipment. The ConMet part number is located on the head of the stud. The same part number must be used for replacement unless changing the drum or wheel type.

Spindle Preparation

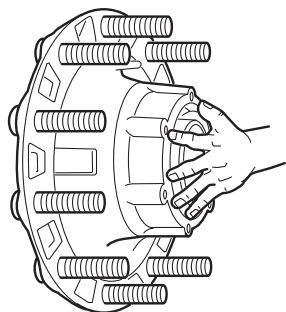
1. Light corrosion fretting that forms on spindles is normal and should be removed with a fine abrasive. When the residue is cleaned away, the bare spindle is again subject to corrosion and must be covered with a film of grease for corrosion protection, making sure both the bearing journals and the seal journals are well coated. Standard Grade 2 greases work well in normal environments. The lubricant being used in the wheel end may also be used. In severe environments, a Moly-grease may provide added protection.

CAUTION

Failure to apply grease to the bearing journals will result in fretting corrosion, which may result in difficulty removing the bearing. Never support the hub on the spindle with just the inner bearing and seal. This can damage the seal and cause premature failure, i.e., by cocking the seal in the bore.

Mounting the Hub

2. Mount the hub assembly onto the axle spindle with a smooth, firm motion while holding the outer bearing in place. Use care to maintain alignment between the bearing cones, spacer, and spindle and to avoid seal damage (see figure 33).



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Mounting the Assembly
FIGURE 33

CAUTION

Once the hub is on the spindle, do not remove the outer bearing. Removing the outer bearing may cause the seal to become misaligned, resulting in premature seal failure.

Spindle Nut Torque

3. a. One-Piece Spindle Nut System (Pro-Torq® and Axilok®)

For one-piece spindle nut systems like the Pro-Torq® or Axilok®, torque the nut to a minimum of 250 ft. lbs. **Do not back off the spindle nut.** Engage any locking device that is part of the spindle nut system. If the locking device cannot be engaged when the nut is at 250 ft. lbs., advance the nut until engagement takes place and the nut is locked.

- b. Double Nut or Jam Nut System

If a double nut or jam nut system is being used, torque the inner nut to 300 ft. lbs. **Do not back off the spindle nut.** Advance the inner nut as necessary to install the locking ring. Install the outer nut with 200 ft. lbs. of torque. **Be sure to engage any locking device.**

NOTE

ConMet does not recommend a one-piece "castellated" type nut system for use with PreSet hubs.

NOTE

The hubcap bolt holes must be free of debris, such as silicone gasket sealer to ensure the bolts will tighten properly to avoid leaks. Silicone trapped in the hubcap screw holes can create hydraulic pressures during hubcap screw installation, leading to premature hub failure through the hubcap holes. The vent should also be clean and free of debris. Remove any burrs or sharp edges. Always use new gaskets.

6. REINSTALLATION (CONTINUED)

4. Install the hubcap or drive axle. A ConMet PreSet hubcap is required for trailer hubs not equipped with tire inflation systems. Torque the hubcap bolts to 12-18 ft. lbs., using a star pattern. Torque the drive axle per the axle manufacturer's recommendations.

NOTE

Use SAE Grade 5 bolts or stronger. Do not use star washers. Use only flat washers or split washers.

DRIVE HUB LUBRICATION

Drive hubs can be lubricated by installing one quart of oil through the fill plug in the barrel of the hub.

CAUTION

The proper installation torque for the fill plug is 20-25 ft. lbs.

If no fill plug is present, the drive hub can be lubricated by lifting the opposite side of the axle 8" to allow the lubricant to run down the axle housing and into the hub assembly. Elevate the axle for two minutes to allow the lubricant time to fill the hub. Repeat the process for the opposite side of the vehicle. The rear axle carrier should be filled to the proper level to ensure adequate lubricant is available to fill the entire hub. Refill the carrier to the proper level after this procedure is completed.

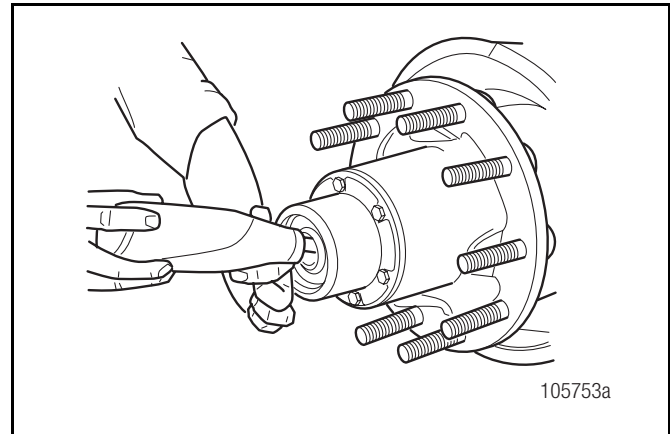
STEER AND TRAILER HUBS WITH OIL LUBRICANT

NOTE

Only use oil approved by the seal manufacturer (see approved list from the seal manufacturer or on www.conmet.com).

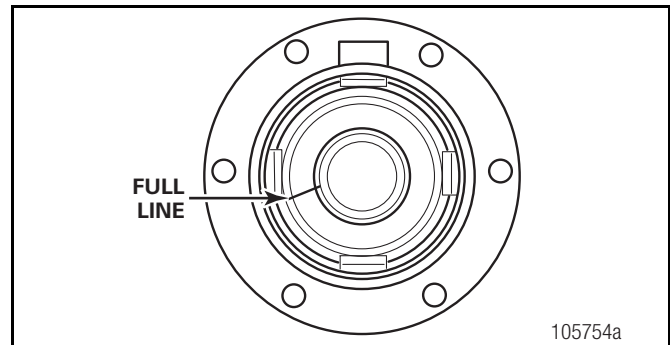
Some hubs are provided with a fill hole, located in the barrel and between the bearings for adding lubricant.

1. Fill the hub through the hubcap or the fill hole with oil. It may be necessary to add lubricant more than once to adequately fill the hub (see figure 34).



Filling the Hub with Oil
FIGURE 34

2. Be certain the hubcap is properly filled to the "oil level" mark on the face of the cap (see figure 35). Allow the initial fill amount to settle for 10 minutes. Repeat the fill procedure until the oil is at the fill line on the hubcap.



Fill to "Oil Level Line"
FIGURE 35

3. Be sure to put the fill hole plug back into the hubcap and that the vent is working properly.

TRAILER HUBS WITH SEMI-FLUID GREASE LUBRICANT

CAUTION

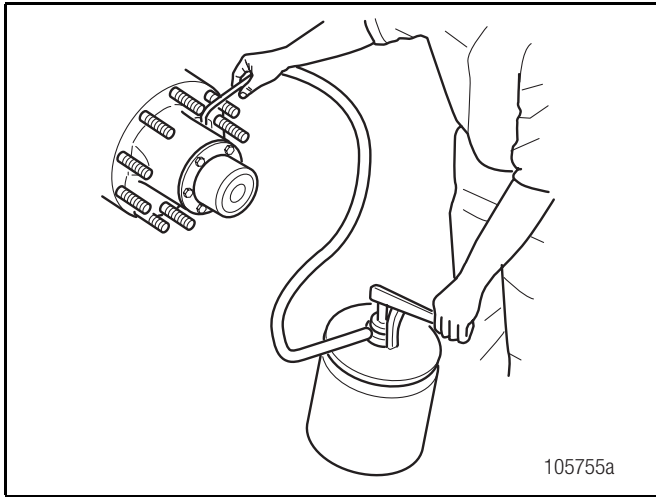
If you are using semi-fluid grease in trailer applications, special procedures must be followed as outlined in the "Semi-Fluid Grease Lubricant" section.

WARNING

Failure to fill and maintain the hub with the correct amount of semi-fluid grease may cause premature failure of the wheel hub system, bearing failure and possible loss of the wheel.

6. REINSTALLATION (CONTINUED)

1. Remove the fill hole plug.
2. Loosen the hubcap bolts to allow air to escape while the hub is filling.
3. Fill the hub with the OEM recommended amount of room temperature (60°F minimum) semi-fluid grease through the fill hole in the hub (see figure 36).



Filling Hub with Semi-Fluid Grease
FIGURE 36

4. Retorque the hubcap bolts to 12-18 ft. lbs.
5. Reinstall and tighten the fill plug to 20-25 ft. lbs.

Semi-Fluid Grease Volumes

HUB TYPE	CASTING NUMBERS**	VOLUME* (FL. OZ.)
TN	10017979, 102035, 102610, 10001896	19
TN	100164, 101143	23
TN	10020219, 10003636	27
TP	10001216, 100510, 101259, 10016225	42
TP	10016620	47
TP	10009758, 10003654	55

* These fill volumes were established with ConMet hubcaps and FNOK seals, and are to be used as reference only. Proper volumes are to the designated fill line of the hubcap used.

** Hub casting numbers can be found cast onto the flange of the hub.

REINSTALLING BRAKE DRUMS AND WHEELS

Hub Pilot Wheel Mounting System



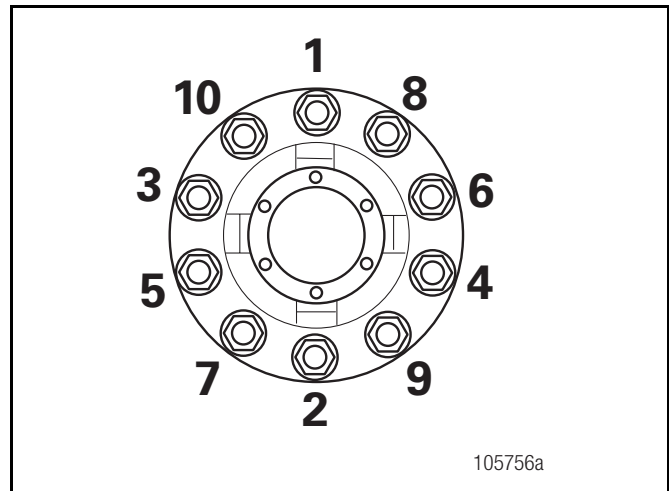
The brake drum must be fully seated on the drum pilot and against the hub face during and after installation of the wheel(s).

NOTE

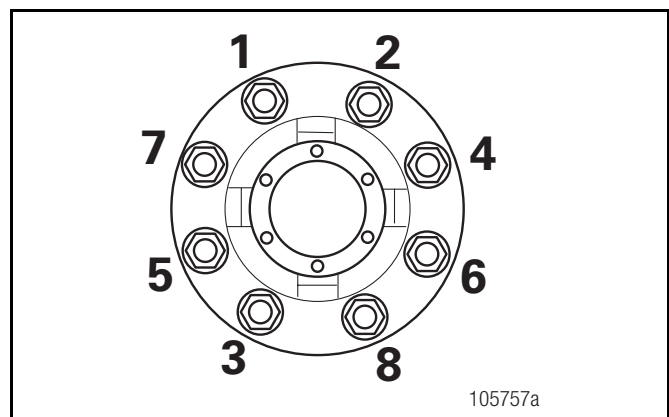
If your shop practice requires the use of lubricant or anticorrosion material to the threads and/or the drum pilot area, avoid getting lubricant on the flat mating surfaces of the hub, drum, and wheels.



Always snug the top nut first to fully seat the brake drum on the drum pilot and against the hub face. See the adjacent diagram for bolt tightening sequence, and tighten in order from 1 through 8 or 10, depending on the bolt pattern (see figure 37 and figure 38).



10 Stud Tightening Sequence
FIGURE 37



8 Stud Tightening Sequence
FIGURE 38

6. REINSTALLATION (CONTINUED)

1. Clean all mating surfaces on the hub, drum and nuts. Remove loose paint, scale, and any material building around the pilots of the drum, hub, and wheels. Be sure paint is fully cured on recently refurbished wheels.

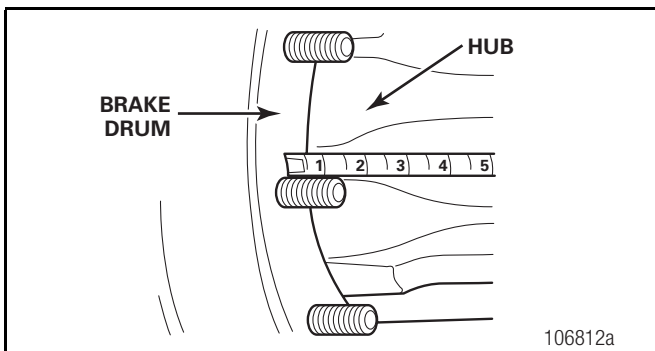
CAUTION

Care should be taken to avoid damaging the hub or other components.

NOTE

If you plan to replace the brake drum (i.e., cast in place of Centifuse™) or wheels (i.e., aluminum in place of steel), measure stud standout (see figure 39). In hub piloted mounting systems, the studs must be long enough for the threads to be exposed beyond the installed wheel nut. In the ball seat mounting system, the stud length beyond the brake drum should be from 1.31-1.44" as measured from the brake drum to the end of the stud. Call ConMet at 1-800-547-9473 for the correct stud part number for your application.

If you plan to replace the brake drum, verify the new drum has the same drum pilot diameter as the one that has been removed.



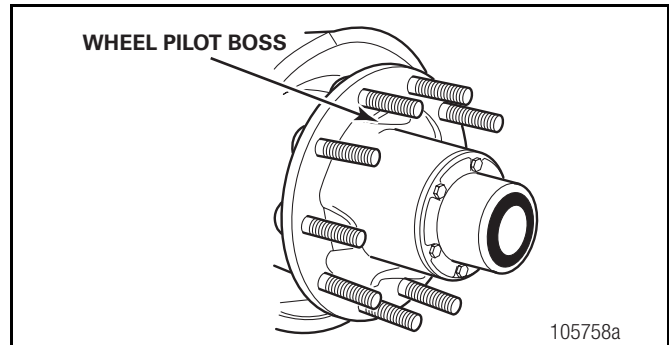
Measuring Stud Standout
FIGURE 39

2. In environments where a corrosion inhibitor is beneficial, ConMet recommends the use of Corrosion Block, a product of Lear Chemical Research, (905) 564-0018. In severely corrosive environments, a light coat of Corrosion Block on the drum and wheel pilots has proven beneficial.
3. In addition to the above preparation, apply two drops of oil to a point between the nuts and nut flange washer and two drops to the last two or three threads at the end of each stud. Also, lightly lubricate the pilots on the hub to ease wheel installation and removal.

CAUTION

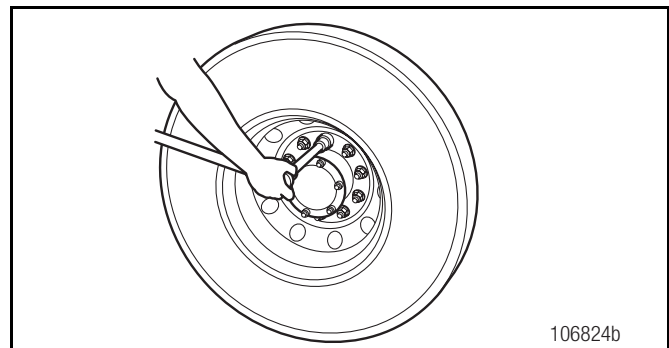
Do not get lubricant on the mounting face of the drum or wheel. Failure to clean lubricant from these surfaces may result in decreased clamping load.

4. Before installation of brake drums and wheels that utilize the hub piloted system, rotate the hub so one of the wheel pilot bosses is at the top (12 o'clock position) (see figure 40).



Rotating the Hub
FIGURE 40

5. Position the brake drum over the hub, so it seats on the drum pilot and against the hub face.
6. Place the wheel(s) into position. One or more nuts can be started in order to hold wheel(s) and drum into position.
7. Snug the top nut first. Apply 50 ft. lbs. torque to draw the brake drum up fully against the hub (see figure 41).



Reinstalling the Wheel
FIGURE 41

8. Install the remaining wheel nuts and using the sequence as shown, torque all the nuts to 50 ft. lbs., then retorque to 450-500 ft. lbs. (see figure 37 and figure 38). The last nut rotation must be with a calibrated torquing device.

6. REINSTALLATION (CONTINUED)

NOTE

Use the appropriate nuts with the above technique to install the front and outer dual wheels. Follow your shop practice to locate the valve stems.

- Inspect the brake and wheel installation by checking the seating of the wheel(s) and drum at the pilots, and by turning the wheel(s) and checking for any irregularity.

⚠ DANGER

Excessive or inadequate wheel nut torque can cause a failure of the wheel mounting system and a wheel separation resulting in severe personal injury or death and property damage. Always use a device that measures the torque being applied. After the first 50-100 miles, retorque all the nuts to 450-500 ft. lbs. Loosen the outer nuts to retorque the inner nuts.

Ball Seat Wheel Mounting System

- Clean all mating surfaces on the hub, drum, wheels and nuts. Remove loose paint, scale, and any material building around the pilots of the drum, hub, and wheels. Be sure paint is fully cured on recently refurbished wheels.

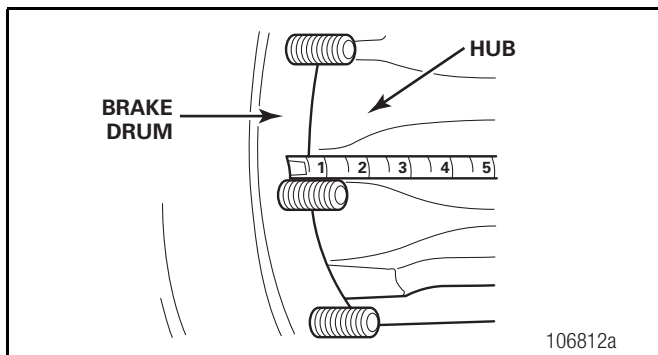
NOTE

When dual wheels are mounted, the stud length beyond the brake drum (standout) should be from 1.31-1.44" as measured from the brake drum to the end of the stud (see figure 42).

When mounting dual aluminum wheels, use ALCOA inner cap nuts 5978R and 5978L or the equivalent. These nuts can also be used with longer studs up to 1.88" standout.

For special single aluminum wheel applications on drive and trailer hubs, use ALCOA single cap nuts 5995R and 5995L, or 5554R and 5554L or the equivalent, depending on the stud thread length (see Table A).

For single steel wheel applications, use BATCO 13-3013R and 13-3013L or the equivalent (see Table B).



Stud Standout
FIGURE 42

Table A: Single Aluminum Wheel Applications

Aluminum Wheels	ALCOA Cap Nut Number
3/4-16" Threaded Studs	5995R and 5995L or 5554R and 5554L, depending on stud length

Table B: Single Steel Wheel Applications

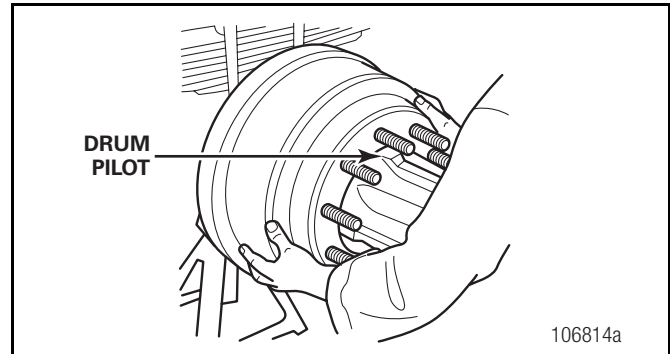
Steel Wheels	BATCO Cap Nut Number
3/4-16" Threaded Studs	13-3013R and 13-3013L

- When installing the inner wheel and tire assembly, verify the inner nuts being used are suitable for the application: aluminum wheels, steel wheels, brake drum thickness, etc.

⚠ CAUTION

Inner cap nuts must be deep enough to ensure the stud will not bottom inside the nut and must be of a configuration approved by wheel manufacturer.

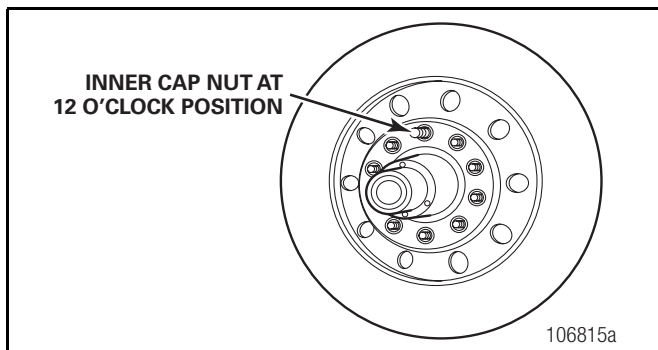
- Rotate the hub to bring a drum pilot to the top (12 o'clock) position (see figure 43). Position the inner wheel and tire assembly over the studs against the drum.



Rotating the Wheel Pilot to 12 O'Clock
FIGURE 43

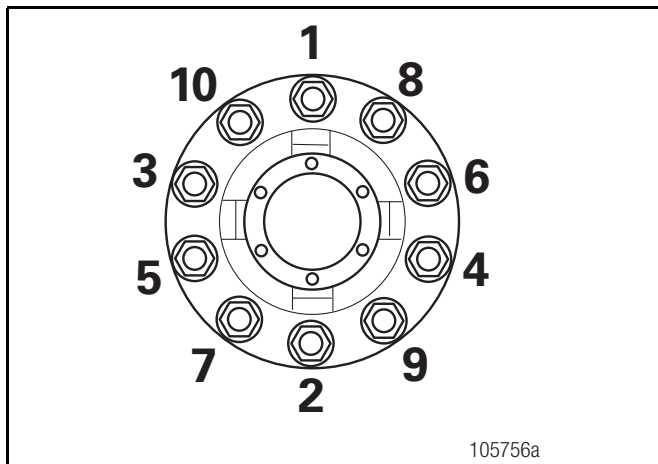
- Beginning in the 12 o'clock position, install the inner cap nuts by hand to ensure they are not cross-threaded. Do not tighten any nuts at this time.
- Apply sufficient torque (about 50 ft. lbs.) to the inner top cap nut to draw the brake drum up on the drum pilot and against the hub and seat the ball seat of the nut into the ball socket of the wheel (see figure 44).

6. REINSTALLATION (CONTINUED)



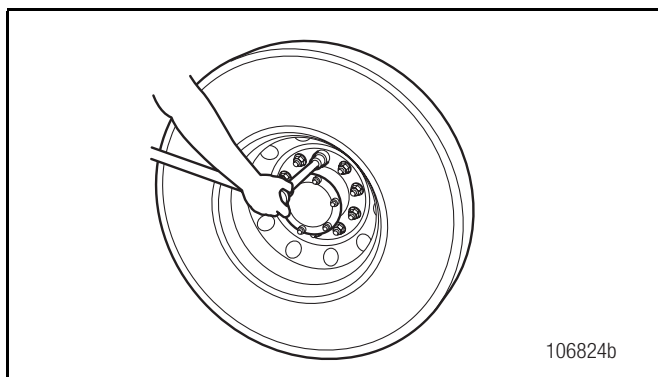
Tightening the Inner Cap Nuts
FIGURE 44

6. To properly center the wheel, snug the remaining wheel nuts. Verify the drum is in place over the drum pilots (see figure 45).



10 Stud Tightening Sequence
FIGURE 45

7. Starting with the top nut first and using a staggered pattern, torque the inner wheel nuts in stages to 450-500 ft. lbs. (see figure 46). The last nut rotation must be with a calibrated torquing device.

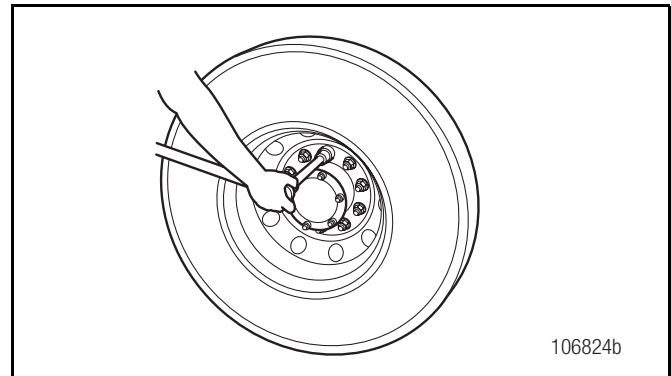


Torquing the Inner Wheel Nuts
FIGURE 46

NOTE

Use the appropriate nuts with the above technique to install the front and outer dual wheels. Follow your shop practice to locate the valve stems.

8. Install the outer wheel and nuts and tighten to 450-500 ft. lbs. (see figure 47). The last nut rotation must be with a calibrated torque device.



Torquing the Outer Wheel Nuts
FIGURE 47

9. Inspect the brake and wheel installation by checking the seating of the wheel(s) and drum at the pilots and by turning the wheel(s) and check for any irregularity.

⚠ DANGER

Excessive or inadequate wheel nut torque can cause a failure of the wheel mounting system and a wheel separation resulting in severe personal injury or death and property damage. Always use a device that measures the torque being applied. After the first 50-100 miles, retorque all the nuts to 450-500 ft. lbs. Loosen the outer nuts to retorque the inner nuts.

SERVICE PARTS LIST

PreSet Rebuild Kits

Part Number	
10005434	FF Steer Rebuild Kit
10009904	FL Steer Rebuild Kit
10005435	R-Drive Rebuild Kit
10005436	TN Trailer Rebuild Kit
10005437	TP Trailer Rebuild Kit

ConMet PreSet rebuild kits include both bearing sets, bearing spacer and oil seal.

PreSet Bearing Spacers

Part Number	
103592	FF Steer Bearing Spacer
10003807	FL Steer Bearing Spacer
103593	R-Drive Bearing Spacer
104144	TN Trailer Bearing Spacer
104412	TP Trailer Bearing Spacer

Approved PreSet Oil Seals — Cross Reference

Axle Designation	ConMet Number	SKF Scotseal Plus XL	Timken Outrunner	STEMCO Endeavor
FF Steer	107551	35058	847	383-0336
FL Steer	10008722	43671	N/A	N/A
R-Drive	10005431	47691	861	393-0373
TN Trailer	107553	46300	859	373-0343
TP Trailer	107554	42627	851	373-0323

Seal Installation Tools

Axle Designation	Outrunner		Stemco Endeavor		
	Bearing Centering Tool	Adapter Plate	Universal Tool Handle	Fleet Hub Tool	Bearing Guide
FF Steer	BCT-6	847T	551-0001	551-5346	570-0020
FL Steer	N/A	N/A	551-0001	551-5327	570-0022
R-Drive	BCT-15	861T	551-0001	551-5320	570-0028
TN Trailer	BCT-13	859T	551-0001	551-5412	570-0026
TP Trailer	BCT-12	851T	551-0001	551-5401	570-0025

SERVICE PARTS LIST (CONTINUED)

NOTE

Bearing cups and cones must be replaced as a set.

NOTE

When bearings are replaced in any PreSet hub, it is recommended that the bearing spacer be replaced as well.

Approved Aftermarket Bearing Sets

Description	ConMet Number	Bearing Set Number	Approved Suppliers
FF Steer Axle			
Inner Cup & Cone	107500	SET427	Timken / General / SKF
Outer Cup & Cone	107501	SET428	
FL Steer Axle			
Inner Cup & Cone	10009902	Not Available in Sets from Timken. Timken Cup & Cone Part Numbers Referenced Below.	
Outer Cup & Cone	10009903		
		Inner Cup	NP039695
		Inner Cone	NP294109
		Outer Cup	NP183330
		Outer Cone	NP107091
R-Drive Axle			
Inner Cup & Cone	107502	SET429	Timken / General / SKF
Outer Cup & Cone	107503	SET430	
TN Trailer Axle			
Inner Cup & Cone	107504	SET431	Timken / General / SKF
Outer Cup & Cone	107501	SET427	
TP Trailer Axle			
Inner Cup & Cone	107506	SET432	Timken / General / SKF
Outer Cup & Cone	107506	SET432	

SPECIFICATIONS

Wheel End Torque Specifications

Item	Measurement	Torque (ft-lbs)	Notes
Ball Seat Wheel Nut	3/4-16	450-500	Always tighten the top nut first. If lubricant is used, apply sparingly on threads only. Do not lubricate the faces of the hub, drum, wheel, or on the ball seats of the wheel nuts
Hub Pilot Wheel Nut	22 mm x 1.5 mm	450-500	Always tighten the top nut first. Apply two drops of oil between the nut and nut flange, and two or three drops to the outermost 2 or 3 threads of the wheel studs. Lightly lubricate the wheel pilots on the hub.
Drive Studs	3/4-16	70-90	Consult manufacturer's instructions for drive axle shaft installation for all drive studs.
Drive Studs	5/8-18	40-90	
Hubcap	5/16-18	12-18	Minimum SAE Grade 5 fasteners, flat washers only
Oil Fill Plug	1/4 NPT	20-25	—
Oil Fill Plug	3/8 NPT	20-25	—
Oil Fill Plug	9/16-18	20-25	O-ring style
Disc Brake Rotor Screw	M8 x 1.25	18-22	—
Disc Brake Rotor Screw	1/2-20	100-110	—
Disc Brake Rotor Screw	9/16-12	130-150	—
Disc Brake Rotor Screw	5/8-11	190-210	—
Disc Brake Rotor Screw	5/8-18	155-195	—
Disc Brake Rotor Nut	5/8-18	180-210	—
Disc Brake Rotor	M16 x 1.5	190-210	—



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