

# Hubs/Drums/Bearings

## Hub Removal

Whenever the hub equipment on your axle must be removed for inspection or maintenance the following procedure should be utilized.

1. Elevate and support the trailer unit per manufacturers' instructions.

### CAUTION

**Do not lift or support the trailer on any part of the axle or suspension system. Never go under any trailer unless it is properly supported on jack stands which have been rated for the load. Improperly supported vehicles can fall unexpectedly and cause serious injury or death.**

2. Remove the wheel(s).
3. Remove the grease or oil cap by unscrewing it counterclockwise while holding the hub stationary.
4. Bend the locking tang down from the outer spindle nut and remove spindle nut.
5. Remove the tang washer and unscrew the inner spindle nut (counterclockwise) and remove the spindle washer.
6. Remove the hub from the spindle, being careful not to allow the outer bearing cone to fall out. The inner bearing cone will be retained by the seal.

**Note:** A gear puller may be necessary to remove hub from spindle.

## Brake Drum Inspection

There are two areas of the brake drum that are subject to wear and require periodic inspection. These areas are the drum surface where the brake shoes make contact during stopping and the armature surface where the magnet contacts (only in electric brakes).





The drum surface should be inspected for excessive wear or heavy scoring. If worn more than .020" oversized, or the drum has worn out of round by more than .015", then the drum surface should be re-machined. If scoring or other wear is greater than .090" on the diameter, the drum must be replaced. When turning the drum surface, the maximum rebores diameter for a 12¼" brake drum is 12.340".

For electric brakes only, the machined inner surface of the brake drum that contacts the brake magnet is called the armature surface. If the armature surface is scored or worn unevenly, it should be refaced to a 120 micro inch finish by removing not more than .030" of material. To ensure proper contact between the armature face and the magnet face, the magnets should be replaced whenever the armature surface is refaced and the armature surface should be refaced whenever the magnets are replaced.

**Note:** It is important to protect the wheel bearing bores from metallic chips and contamination which result from drum turning or armature refacing operations. Make certain that the wheel bearing cavities are clean and free of contamination before reinstalling bearing and seals. The presence of these contaminants will cause premature wheel bearing failure.

### ***Bearing Inspection***

Wash all grease and oil from the bearing cone using a suitable solvent. Dry the bearing with a clean, lint-free cloth and inspect each roller completely. If any pitting, spalling, or corrosion is present, then the bearing must be replaced. The bearing cup inside the hub must be inspected.

**IMPORTANT:** Bearings must always be replaced in sets of a cone and a cup.

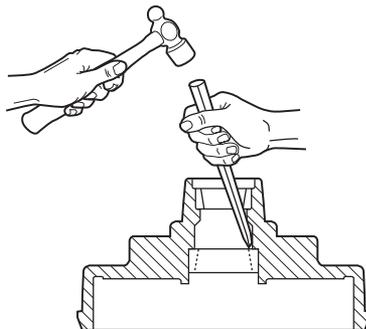


## **CAUTION**

**Be sure to wear safety glasses when removing or installing force fitted parts. Failure to comply may result in serious eye injury.**

When replacing the bearing cup proceed as follows:

1. Place the hub on a flat work surface with the cup to be replaced on the bottom side.
2. Using a brass drift punch, carefully tap around the small diameter end of the cup to drive out.
3. After cleaning the hub bore area, replace the cup by tapping in with the brass drift punch. Be sure the cup is seated all the way up against the retaining shoulder in the hub.



Replace only with bearings as specified in the Bearing Replacement Chart.

### ***Bearing Lubrication - Grease***

## **CAUTION**

**Do not mix Lithium, calcium, sodium or barium complex greases due to possible compatibility problems. When changing from one type of grease to another, it is necessary to ensure all the old grease has been removed.**

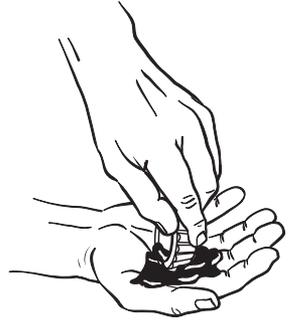
Grease should be replaced every 12,000 miles or 12 months. Prior to repacking bearings, all old grease should be removed from the wheel hub cavity and bearings. Bearings should be packed by machine if possible. If a machine is unavailable, packing by hand method is acceptable. The method to pack bearing cones is as follows:

1. Place a quantity of grease onto the palm of your hand.





2. Press a section of the widest end of bearing into the outer edge of the grease pile closest to the thumb forcing grease into the interior of the bearing between two adjacent rollers.
3. Repeat this while rotating the bearing from roller to roller.
4. Continue this process until you have the entire bearing completely filled with grease.
5. Before reinstalling, apply a light coat of grease onto the bearing cup mating surface.



### ***Bearing Lubrication - Oil***

If your axles are equipped with oil lubricated hubs, then your lubrication procedure is to periodically fill the hub with a high quality hypoid gear oil to the level indicated on the clear plastic oil cap. The oil can be filled through the rubber plug hole in the cap. Oil should be replaced every 12 months or 12,000 miles.

## **Recommended Wheel Bearing Lubrication Specifications**

### **Grease**

Thickener Type	Lithium Complex
Dropping Point	215°C (419°F) Minimum
Consistency	NLGI No. 2
Additives	EP, Corrosion & Oxidation Inhibitors
Viscosity Index	80 Minimum

### **Approved Grease Sources**

Chem Arrow	Arrow 2282
Chevron Texaco	Chevron Ulti-Plex Grease EP #2 Texaco Starplex Moly MPGM #2
Citgo	Lithoplex MP #2 Lithoplex CM #2 Mystik JT-6 Hi-Temp Grease #2
ConocoPhillips/ 76 Lubricants/Kendall	Multiplex RED #2 L427 Super Blu Grease
Dexter Company	Lithoplex Red MP #2
Exxon/Mobil Company	Ronex, MP Mobilith AW 2 Mobil I Synthetic Grease
Fuchs	Renolit Uniwrl 2
Great Plains Lubricants	Lithium Complex EP #2
Oil Center Research of Oklahoma	Liquid-O-Ring No, 167L
Pennzoil-Quaker State Company	Synthetic Red Grease
Royal Mfg. Company	Royal 98 Lithium Complex EP #2
Shell	Gadus S3 V220C Gadus S5 V220 Rotella Heavy Duty Lithium Complex #2
Valvoline	Valvoline Multi-Purpose GM Valvoline Durablend





**Oil**

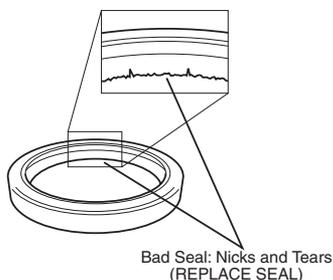
SAE 90, SAE 80W-90, SAE 75W-90

**Approved Oil Sources**

Ashland Oil	Valvoline Dura Blend Valvoline Power Lube
CITGO Petroleum Co.	CITGO Premium Gear Oil MP Mystik JT-7 Mystik Power Lube
Conoco	Universal Gear Lubricant 80W-90
Exxon Company USA	Gear Oil GX 80W-90
Industrial Oils Unlimited	Super MP Gear Oil 80W-90
Kendall Refining Co.	Kendall NS-MP Hypoid Gear Lube
Lubriplate Division/ Fiske Brothers Refining	Lubriplate APG 90
MFA Oil Company	Multi-Purpose Gear Oil 80W-90
Mobil Oil Corporation	Mobilube SHC Mobil 1 Synthetic Gear Lube
Phillips 66 Petroleum	Superior Multi-Purpose Gear Oil Philguard Gear Oil Philsyn Gear Oil
Pennzoil Products Co.	Gear Plus 80W-90 GL-5 Gear Plus Super 75W-90 Gear Plus Super EW 80W-90 Multi-Purpose 4092 Gear Lube
Oil Center Research	Liquid-O-Ring 750 GX
Sun Refining and Marketing Company	Sonoco Ultra Sonoco Dura Gear
Shell Oil Company	Spirax A Spirax G Spirax HD Spirax S
Texaco Oil Company	Multigear EP Multigear SS
Troco Division/ Royal Manufacturing	Multigear Select Gear Oil
Union Oil Company	Unocal MP Gear Lube 76 Triton Syn Lube EP

## Seal Inspection and Replacement

Whenever the hub is removed, inspect the seal to assure that it is not nicked or torn and is still capable of properly sealing the bearing cavity. If there is any question of condition, replace the seal. Use only the seals specified in the Seal Replacement Chart.



### To replace the seal:

1. Pry the seal out of the hub with a seal removal tool or a screwdriver. Never drive the seal out with the inner bearing as you may damage the bearing.
2. Apply a sealant similar to PERMATEX® High-Temp Red RTV Silicone Gasket to the outside of the seal. Use only enough to provide a thin coat to prevent any excess from contaminating the rubber lip(s) of the seal. It is okay to apply a slight amount of lube to the inner rubber lip(s) to aid with installing onto the spindle.

**Note:** No sealant should be used if the outside of the seal is rubber coated. For these type of seals it is recommended to apply a thin coat of oil to the outside rubber.

3. Clean the seal journal of the spindle to inspect for nicks or roughness. Use a file to remove any burrs from the leading edge or shoulder area. Clean the journal area with very fine emery cloth. Any presence of deep gouges or scratches in this area may cause seal failure allowing lubricant to leak out of the hub.
4. Clean the seal bore in the hub and inspect for any nicks, gouges, or scratches that may prevent the seal from retaining the bearing lubricant inside the hub.
5. Orient the seal properly. Many oil bath seals will be marked AIR SIDE on the side of the seal to facing out of the hub after installation.
6. Install new seal into place using a seal driver or seal installation tool of proper size. It is important that any seal





installation tool contact the outer ring of the seal casing. If no seal driver is available, use a clean block of wood. It is critical that the seal be driven in evenly and straight. NEVER hammer directly on the seal.

7. The seals will be pressed flush to the back surface of the hub in the 9K-10K General Duty axle product line. The seals in the 10K through 15K axles need to be installed so that the airside face of the seal is approximately  $1\frac{1}{16}$ " from the inner bearing cone. It is NEVER necessary to bottom out the seal for proper installation. Driving the seal in too deep may damage the seal and may come in contact with the inner bearing preventing it from rotating freely.
8. Proper installation will maintain the seal flatness in the hub within .010". A seal that is cocked too much inside the hub will be more likely to leak.

## ***Installation/Adjustment***

### ***For ABS installation:***

1. Assure that the ABS sensor is pushed fully into its retainer clip (sensor tip is as far outboard as possible).
2. Install hub and drum squarely to the spindle centerline so that the exciter ring inside the drum will contact the sensor tip and push it back to the proper sensor to exciter ring running clearance (gap should not exceed  $\frac{1}{16}$ " inch).

### ***For non-ABS installation, begin with step 3:***

3. Install the bearing and washer into the hub. Thread on the inner nut, rotate the hub and tighten the nut to **100 Ft. Lbs.** of torque.
4. Loosen the nut to remove preload torque, do not rotate hub.
5. Hand tighten the nut, then back it off  $\frac{1}{4}$  to  $\frac{3}{8}$  turn.
6. Place the tang washer on the spindle and bend two tangs inward over the nut. This will keep the inner nut from turning while torque is applied to the outer nut.
7. Install the outer nut and torque it to **100-175 Ft. Lbs.** Ensure that the inner nut does not turn. Bend two tangs from the tang washer over the outer nut flats to secure.

8. Install cap with the O-ring and plug installed. Rotate the hub and check the bearing adjustment. The allowable end play is .001"-.010".

 **CAUTION**

**FAILURE TO BACK OFF THE INNER ADJUSTING NUT COULD CAUSE BEARING AND AXLE SPINDLE OVERHEATING OR DAMAGE, WHICH COULD RESULT IN THE WHEEL LOCKING UP OR COMING OFF DURING VEHICLE OPERATION AND LEAD TO AN ACCIDENT, INJURIES OR DEATH.**

 **CAUTION**

**FAILURE TO TORQUE THE OUTER LOCKNUT PROPERLY COULD CAUSE THE WHEEL END TO COME OFF DURING VEHICLE OPERATION WHICH COULD RESULT IN AN ACCIDENT, INJURIES OR DEATH.**

