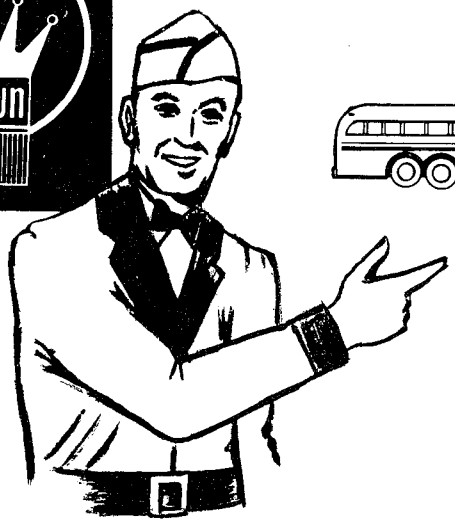
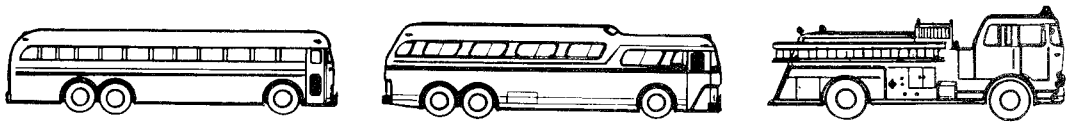
CROWN TIP SHEET





"YOUR CROWN COACH DESERVES THE BEST POSSIBLE CARE

MAY WE HELP YOU?"

PROPER MAINTENANCE OF WHEEL BEARINGS

by

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MANY operators and fleet owners could increase wheel bearing life and reduce spindle wear by correct and more frequent relubrication, and by a change in their bearing adjustment procedures.

The wheel bearing lubricant has two functions to perform. First, it has to lubricate the moving and wearing surfaces of the bearings along with the bearing journals and shoulder on the spindle and the inner face of the adjusting nut. In addition, it has to protect all these surfaces against exposure to and attack by moisture. The first function is quite easy to satisfy because the lubrication requirements of tapered roller bearings are relatively mild.

The second function is often much more difficult to satisfy, because once even a little moisture, exposure and attack takes place it starts a chain reaction which gets worse as it progresses.

Harmful amounts of water can, of course, enter the wheel bearing cavity past ineffective seals in wet or rainy regions. But this can be overcome with good seals. Even if this condition is successfully avoided, water will accumulate gradually by condensation of the vapor which is brought into the wheel bearing cavity by breathing. The breathing is caused by changes in barometric pressure or temperature which accompany weather changes. Temperature changes and breathing also occur at the beginning and end of each trip as well as during the trip. Thus, it is almost impossible to stop the gradual accumulation of water in the wheel bearing cavity.

At the start, the wheel bearing grease will either absorb the water or otherwise keep it from coming into contact with the bearings. As the amount of water increases, a point will be reached where there is too much water for the grease to handle. Even though the grease itself will not yet be appreciably affected and it may "look like new", the water will begin attacking the bearings.

The initial damage will consist of dark gray stains called "water etch". The metal in the affected areas is weakened drastically and it soon begins to pit and flake.

The liberated steel particles will get between the rollers and the mating parts and increase the rate of wear. The particles will also tend to retard or stall the rolling action and thereby increase the rate of creep of free fitted inner bearing races. This will increase the wear on the spindle journals and shoulder and adjusting nut face. By this time, the chain reaction is well underway.

Obviously it is necessary to remove the water and water contaminated grease before the "water etch" takes place. This is accomplished automatically if the wheels are disassembled and all parts thoroughly cleaned and relubricated at regular intervals. This means cleaning out and discarding all the old grease irrespective of its appearance. It is even necessary to practice proper storage of the new grease to minimize water absorption before use.

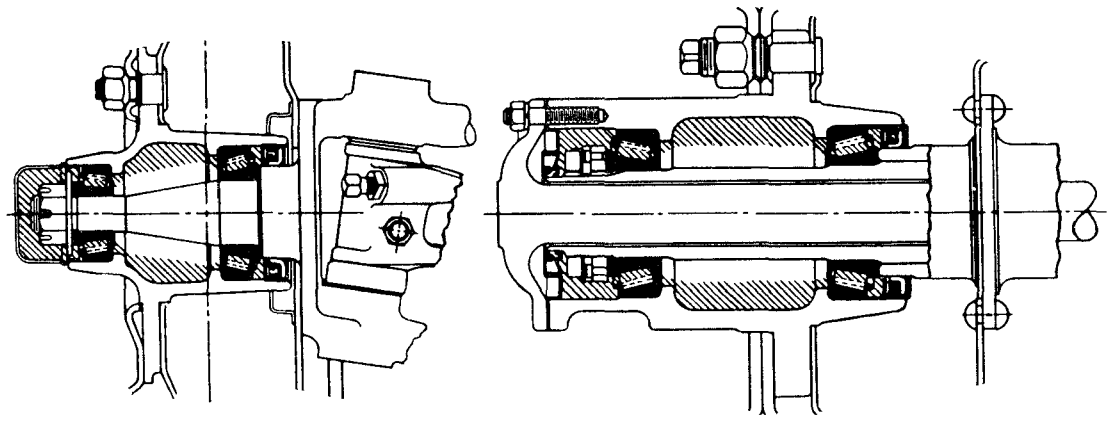
(over)

The actual frequency of wheel bearing lubricant changes can be tailored to individual operating conditions providing the period is short enough to avoid moisture exposure and attack. Changes are generally recommended at 10,000 to 15,000 mile intervals or at least twice a year (spring and fall). Wheel bearings are being lost by pitting and flaking, and if bearing journals are being unduly worn by excessive bearing creep, the lubricant change interval is too long.

When the lubricant is changed, all the old lubricant must be removed from all the components including the hub or wheel cavity. This is best accomplished by the use of a solvent such as kerosene or diesel fuel. Do not use gasoline or water-detergent solutions or steam.

After cleaning, dry the parts thoroughly with clean paper towels or wiping cloths. Do not spin the bearings with compressed air.

The bearings can be repacked by hand or with a pressure packer. The hub or wheel cavity must also be repacked flush or even with the inner diameter of the bearing cups (see illustration). Also pack the smaller cavities at the hub ends. An NLGI Grade #2 heavy-duty grease is recommended.



The diagonal shading lines show the correct amount of new grease which should be present after repacking.

ADJUSTMENTS

THE ADJUSTMENT of the wheel bearings at reassembly can also influence the life expectancy of the bearings. It is generally agreed that the ideal bearing adjustment is one where no preload or endplay is imposed on the bearings. However, both human and mechanical factors make it difficult to achieve this condition with any degree of regularity. Most assemblies would end up with either some preload or some endplay. In this regard, experience teaches us that bearings with a slight amount of endplay, .001" to .010", will have a longer life expectancy than ones that have a small amount of preload. The following adjustment procedure will produce consistent results and the bearings will have just a slight amount of endplay. You will note that this procedure does not involve the element of "feel" on the part of the mechanic.

1. Assemble bearings and hub on the axle sleeve, tube or steering knuckle spindle.
2. Install thrust washer if used.
3. Install the wheel bearing adjusting nut. Screw the nut against the bearing or thrust washer as the wheel is revolved. Be sure there is sufficient clearance between the brake shoe and drum so brake shoe drag will not interfere with the bearing adjustment.
4. Tighten the adjusting nut to 50 lbs. ft. torque while the wheel is being rotated. Rotate the wheel in both directions to correctly position the bearings.
5. Back off the adjusting nut for correct bearing adjustment, as noted below:
   A. For axles that have single nut construction, the nut should be backed off 1/6 to 1/4 turn and locked in place.
   B. For axles that have double nut and lock construction, back off the adjusting nut 1/4 to 1/3 turn.
6. Assemble wheel bearing nut lockwasher and jam nut. Tighten jam nut to specified torque noted below:
   A. For assemblies using a bending type lockwasher between the adjusting nut and jam nut, torque limits are as follows:

Nut size	Lbs. Foot torque Min.	Max.
1⅛" to 2⅝"	100	150
2⅝" and over	100	200

   B. For assemblies using a doweled adjusting nut and pierced wheel bearing nut lock, torque limits are as follows:

Nut size	Lbs. Foot torque Min.	Max.
1⅛" to 2⅝"	200	300
2⅝" and over	250	400

7. Cotter pin the nut or bend the wheel bearing nut lockwasher, where used, over both the adjusting and jam nuts to complete the adjusting procedure.