## CONTENTS

## ILLUSTRATIONS

## 1. WHEELS

The vehicle is equipped with hub-mounted wheels, all studs and nuts have right-hand threads. Steel wheels are installed on the vehicle and are mounted with radial tubeless tires.

All wheel dimensions are 22.50 X 9.0 inches (571.5 X 228.6 mm) for 315/80 R22.5 tires

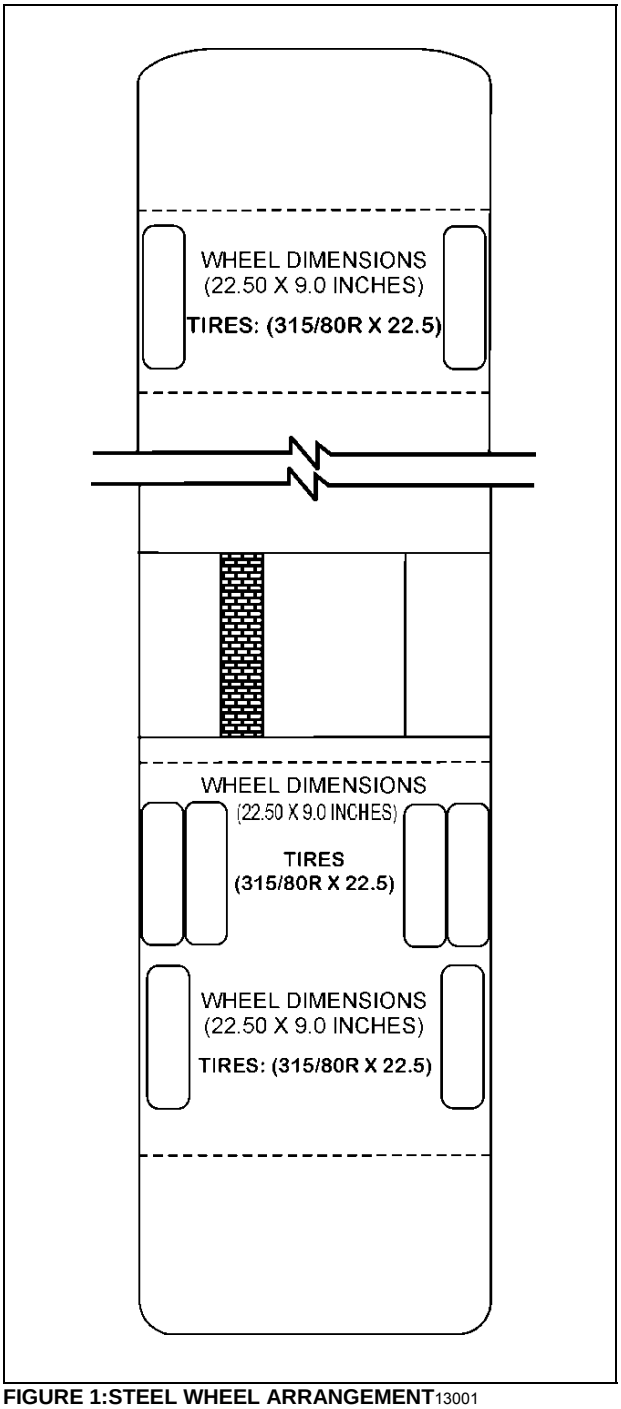


**FIGURE 1:STEEL WHEEL ARRANGEMENT** 13001

## 2. WHEEL MAINTENANCE

Wheel maintenance consists of periodic inspections. Check all parts for damage and make sure that wheel nuts are tightened to the proper torque. In the case of a new vehicle, or after a wheel installation, stud nuts should be tightened every 100 miles (160-km) for the first 500 miles (800-km) to allow setting in of clamping surfaces.

Wheel studs and nuts must be kept free from grease and oil. No lubricant whatsoever should be used. Cleanliness of the wheel and its rotor mating surfaces is important for proper wheel mounting.

However, for hub mounted wheels, it is recommended to add some rust protection lubricant on the pilot diameter of the hub (to facilitate future removal).

It is also important that wheel stud nuts be tightened alternately on opposite sides of the wheel. Refer to Figure 2 for the suggested tightening sequence.

### 2.1 INSPECTION

Tighten stud nuts progressively as shown in Figure 2. The final tightening should be done with a torque wrench. Tighten stud nuts to 450 - 500 lbf-ft (610 - 680 Nm) for steel wheels.

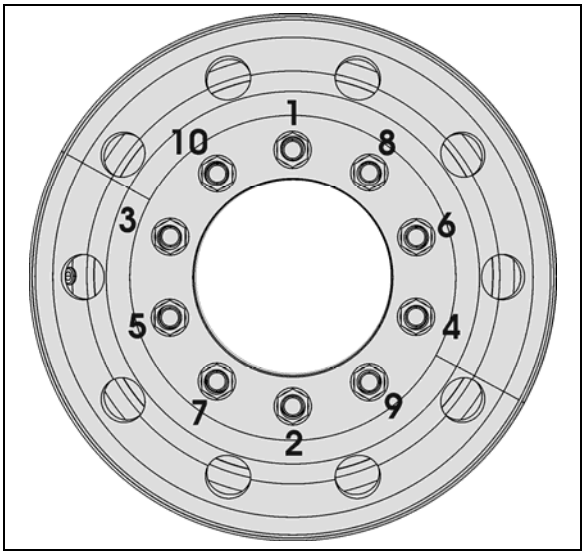


**FIGURE 2: TIGHTENING SEQUENCE** 13018

### 2.2 SINGLE WHEEL REMOVAL

1. Stop engine and apply parking brake.
2. Loosen wheel nuts about one turn (do not remove the nuts). This is not necessary if equipped with hydraulic powered gun.

3. Raise the vehicle by its jacking points on the body. See Section 18, *"Body"*, under heading *"Vehicle Jacking Points";*
4. Unscrew wheel hex stud nuts and remove the wheel;

**CAUTION**

Always mark position of the wheel on the axle prior to removal in order to replace wheel at the same location, thus avoiding a new wheel balancing.

2.3 SINGLE WHEEL INSTALLATION

1. Mount the wheel over studs, being careful not to damage stud threads;
2. Screw in the hex stud nuts (refer to Figure 2 for sequence) so that wheel will position itself concentrically with hub. This is important, otherwise wheel may be eccentric with hub and will not run straight. In this initial step, slightly tighten the nuts to correctly position the wheel;
3. Tighten stud nuts progressively as shown in Figure 2. The final tightening should be done with a torque wrench. Tighten stud nuts to 450 - 500 lbf-ft (610 - 680 Nm) for all steel wheel.

**CAUTION**

Insufficient mounting-torque can result in damage to parts. Excessive mounting torque can cause studs to break and the wheel to crack in stud hole area.

## 3. DUAL WHEELS

3.1 OUTER WHEEL REMOVAL

Same as described in *"Single Wheel Removal"* procedure described previously.

3.2 INNER WHEEL REMOVAL

1. Remove outer wheel;
2. Remove inner wheel.

3.3 INNER WHEEL INSTALLATION

Mount the wheel over studs, being careful not to damage stud threads;

3.4 OUTER WHEEL INSTALLATION

With inner and outer wheels installed, tighten the stud nuts progressively as shown in Figure 2. The final tightening should be done with a torque wrench. Tighten stud nuts to 450 - 500 lbf-ft (610 - 680 Nm) for all steel wheel.

**CAUTION**

Insufficient mounting-torque can result in damage to parts. Excessive mounting torque can cause studs to break and the wheel to crack in stud hole area.

*NOTE*

*On dual wheel assemblies, position the wheels with the tire valves 180º apart in order to have access to both the inner and outer valves.*

3.5 INSPECTION

1. Loosen a hex stud nut three turns (Figure 4);
2. Retighten the hex stud nut to 450 - 500 lbf-ft (610 - 680 Nm).

Repeat for each of the 10 *"hex stud nuts"* according to the tightening sequence in Figure 2.

**CAUTION**

The actual length of thread engagement present in an assembled wheel can not always be determined by visual inspection of measurement of a tightened assembly. The relationship of the wheel cap nut seat to the end of the stud may vary. If there is any doubt that enough thread engagement is present, the number of engaged threads may be counted. Tighten all nuts in the regular manner, then loosen one to hand-tightness. The number of turns to disengage a 1-1/8-inch nut should be at least five full turns.

At least seven full turns should be required to disengage a ¾-inch nut or a M22 nut. Ideally, when torqued to the proper load, the stud should be flush with the face of the nut. The face of the nut may be recessed in nuts that are taller for improved wrenching. With most of the nuts in present use, a few unengaged threads at the outer end will cause no problem provided at least 5-7 full turns are required to disengage the nut depending on thread size.

## 4. WHEEL STRAIGHTNESS TEST

1. Slightly raise axle to be checked and place a safety support underneath;

2. Check wheel lateral run-out. Install a dial gauge as shown in Figure 3, then rotate the wheel by hand one full turn. As the wheel turns, note any variation on the dial gauge;

> **CAUTION**
>
> Damage to the dial gauge could occur if it strikes a wheel balancing weight.

3. If the variation in lateral run-out exceeds 0.0625 inch (1,6 mm), the wheel must be replaced.

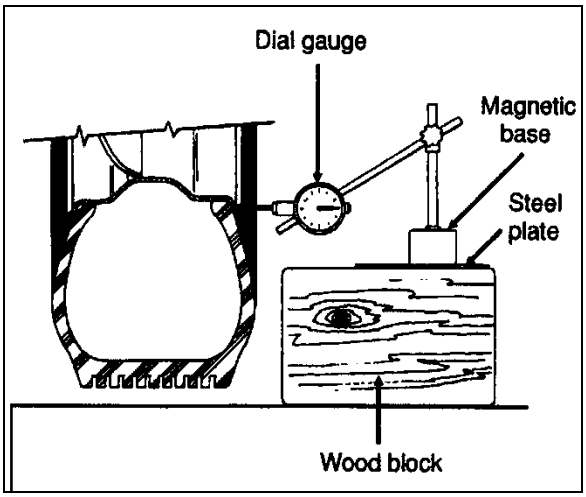


**FIGURE 3: DIAL GAUGE INSTALLATION** 13008

If doubt exists whether wheel or hub is distorted, hub may be checked as follows:

- Replace the existing wheel with a wheel known to be correct;
- Check wheel lateral run-out as outlined in step 2;
- If, within specifications, the hub is correct but the suspected wheel must be replaced.

## 5. WHEEL STUDS

Stripped threads may be the result of excessive torqueing or may have been damaged during wheel installation when placing the wheel over the studs. A stud having damaged threads must be replaced. Broken studs are a direct result of operating with loose stud nuts or improperly seated wheels. When a broken stud is replaced, the adjacent studs, on each side of the broken one must also be replaced since they could have been subjected to excessive strain and may be fatigued.

When installing wheel studs to hubs, check nuts retaining the wheel stud to wheel hub and replace if they are deformed, damaged or severely corroded. Install nut (and washer where applicable) to new stud. Torque to 450 - 500 Ft-lbs (610 - 680 Nm).

### 5.1 DRIVE AXLE WHEEL STUDS

Hub-mounted wheels are mounted with M22 x 1.5 studs and an M22 flange nut.

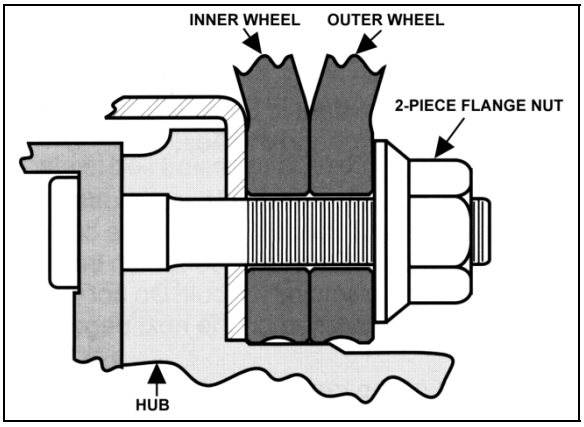


**FIGURE 4: DRIVE AXLE WHEELS** 13007

### 5.2 FRONT AND TAG AXLE WHEEL STUDS

Wheel is hub mounted on front and tag axle (M22 x 1.5 thread).

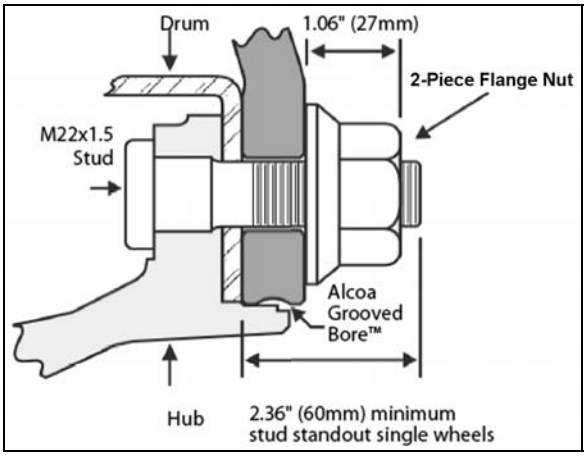


**FIGURE 5: SINGLE WHEEL** 13025

> *NOTE*
>
> *Wheel studs and nuts must be kept free from grease and oil. No lubricant whatsoever should be used.*

## 6. HUB MOUNTED WHEELS

Wheel surfaces in contact with hubs, nuts or other wheels should be kept free of all rust, grease and paint (except for initial "E" coat protection, applied to stop rusting and to facilitate wheel removal). The reason for this is to assure that all faces are clamped together

without buildup of any coating. The threads of the wheel studs and the wheel nuts should be clean and undamaged.

| *NOTE* |
| --- |
| *When painting wheels, make sure to mask all surfaces identified above.* |

Using a calibrated torque wrench, tighten wheel nuts to 450 - 500 lbf-ft (610 - 680 Nm) of torque. Do not use power tools or long bars for tightening. Tighten wheel nuts alternately as shown in Figure 2.

| *NOTE* |
| --- |
| *Tightening should not be done immediately after prolonged braking or when wheel ends are hot.* |

Check wheel nut torque at every 100 miles (160 km) for 500 miles (800 km) after fitting wheels. Let cool before checking. If any relaxation of the initial 450 - 500 lbf-ft (610 - 680 Nm) of torque has occurred, retighten. Relaxation of initial torque may occur because of the “bedding down” of the hub and wheel surfaces.

| *NOTE* |
| --- |
| *Torque relaxation occurs when wheel ends are hot but should revert to original setting when cool. Retightening when hot will produce a higher torque reading than recommended.* |

### 6.1 CARE OF WHEELS

Check for cracks in wheels, especially around the fixing holes, studs, nuts and washers. If in doubt, renew.

Do not simply retighten very loose wheel fixings or wheels that are continually becoming loose. Find out why they are loose and whether any damage has been caused.

Use trained personnel and keep records of all attention to wheels and fixings, including which parts were renewed and when.

## 7. TAG AXLE WHEEL HUBS

The FAG unitized hub bearings used on the tag axle are non-serviceable items. Bearings are pre-adjusted, lubricated and have seals fitted as part of the manufacturing process. The bearings are greased for life and there is no need or facility for re-lubrication.

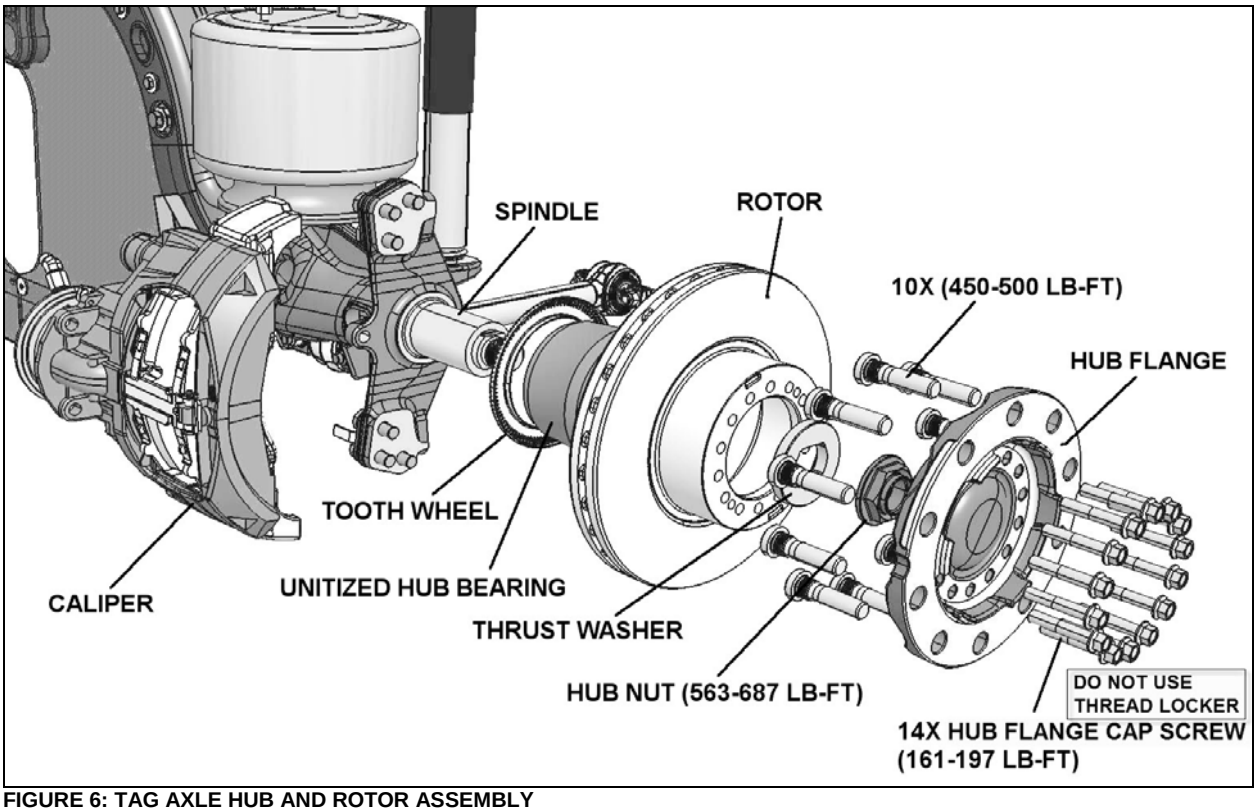


**FIGURE 6: TAG AXLE HUB AND ROTOR ASSEMBLY**

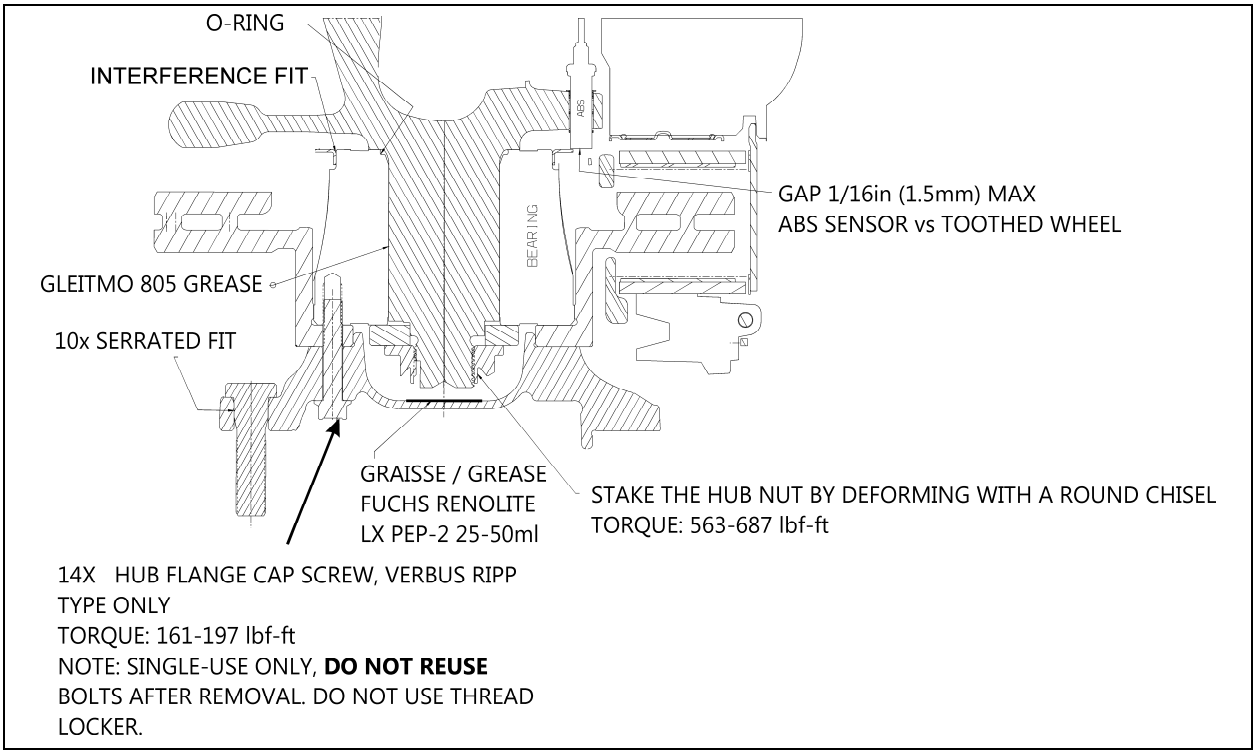


**FIGURE 7: TAG AXLE UNITIZED BEARING & WHEEL HUB** 13040

## 7.1 TAG AXLE HUB BEARING INSPECTION

**MAINTENANCE**

A bearing inspection should be made at intervals of 30,000 miles (48 000 km) or once a year whichever comes first.

1. Apply parking brake, raise wheels off the ground and support axle on stands.
2. When the wheels are raised, they should revolve quite freely without roughness.
3. Place magnetic base of a dial indicator on brake caliper and position dial indicator stem against a convenient marked spot on face of hub flange.
4. With dial indicator in position pull hard but steadily on hub flange and oscillate at same time until a steady reading is achieved.
5. Without releasing the pressure, turn bearing so that dial indicator stem contacts marked spot and note reading on indicator.
6. Push bearing flange hard and oscillate as before until a steady reading is achieved.
7. Without releasing the pressure, turn bearing so that indicator stem again contacts the marked spot and note new reading on indicator.
8. The difference between readings is the amount of mounted end play in bearing unit.
9. Refer to the following table for allowed end plays:

| **NewTag Axle Unitized Hub Bearing Axial Endplay** | |
|---|---|
| Maximum axial clearance/end play | 0.0024 inch (0.061mm) based on clamp load of 20000 lbf (90kN). |

**Tag Axle Unitized Hub Bearing Axial Endplay In Service**

- If the endplay is between 0 – 0.002 in (0 – 0.05 mm), the inspection is complete.
- If the endplay is greater than 0.002 in (0.05 mm), but less than 0.008 in (0.20mm), check and retighten the wheel bearing adjusting nut. Again check endplay to make sure that the clamping process is done properly.
- If the endplay is equal to or greater than 0.008 in (0.20mm), replace the unitized hub bearing as soon as possible since the hub assembly may not be safe to operate.

## 7.2 TAG AXLE HUB BEARING REMOVAL

1. Stop engine and apply parking brake.
2. Loosen wheel nuts about one turn (do not remove the nuts). This is not necessary if equipped with hydraulic powered gun.
3. Raise the vehicle by its jacking points on the body. See Section 18, *"Body"*, under heading *"Vehicle Jacking Points".*
4. Unscrew 10 wheel hex stud nuts and remove the wheel.
5. Unscrew 14 hub flange hex cap screws. **Discard hub flange cap screws (single-use only)**.
6. Remove hub flange and rotor.
7. Unscrew hub nut.
8. Remove hub nut and thrust washer.

## 7.3 TAG AXLE HUB BEARING INSTALLATION

1. Clean spindle using EFX degreaser (Prevost #685313)
2. Screw insertion tool onto spindle (FIGURE 8).

**FIGURE 8: INSERTION TOOL**

3. Apply a thin layer of antifriction/antifretting lubricant on spindle where bearing will be located (use Gleitmo 805 grease, Prevost #685274).

**FIGURE 9: APPLY GLEITMO 805 GREASE**

4. Slip unitized hub bearing over spindle.

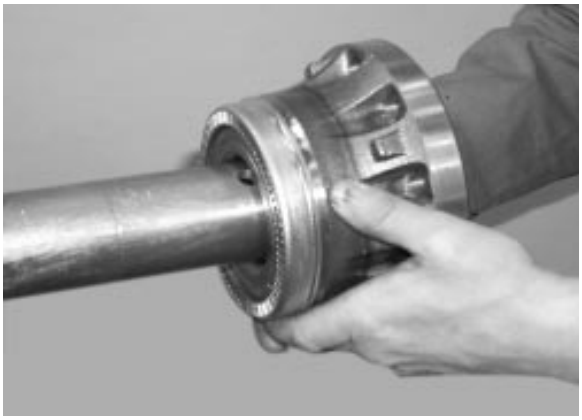

**FIGURE 10: SLIP UNITIZED HUB BEARING OVER SPINDLE**

*NOTE*

*If the inner rings are not properly guided (i.e. not in line to spindle) there may occur a seizing between inner ring and spindle before the assembly be completed. By pushing abruptly the hub unit back, there is a risk of separation of inner rings. The clip can be dislodged as per the two pictures below.*

5. Clean thrust washer both sides and hub nut using EFX degreaser.
6. Install thrust washer and hub nut then torque hub nut to **563-687 lbf-ft** (763-931 Nm)]. Rotate bearing, minimum 10 revolutions necessary (simultaneous rotation till final clamp torque is achieved.
7. Stake the hub nut by deforming with a round nosed chisel.

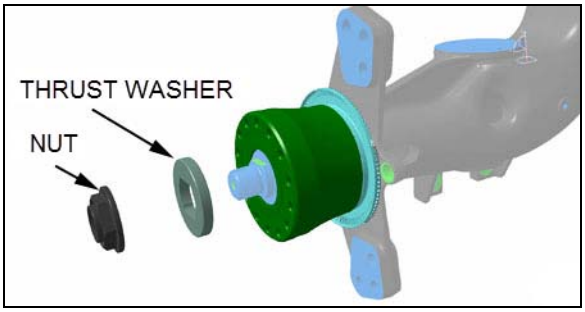


**FIGURE 11: INSTALL THRUST WASHER AND HUB NUT**

8. Clean hub bearing, rotor and hub flange clamping surfaces using EFX degreaser.

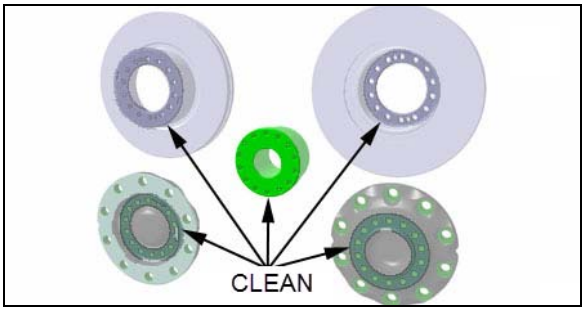


**FIGURE 12: CLEANING HUB BEARING, ROTOR AND HUB FLANGE CLAMPING SURFACES**

9. Install rotor onto hub bearing.

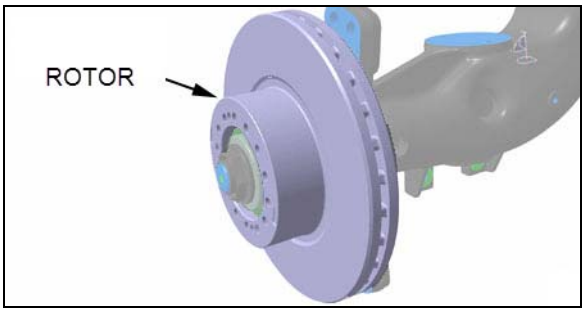


**FIGURE 13: ROTOR**

10. Add some grease (25-50 ml) (Fuchs Renolite LX PEP-2) (Prevost #685325) into the bottom of the hub flange cap. Mount hub flange onto rotor.
11. Secure hub flange and rotor to unitized hub bearing using 14 new cap screws (single-use only). Torque to 161-197 lbf-ft (Refer to FIGURE 15 for tightening sequence).
12. Once the hub flange has been correctly fitted; it is necessary to check the axial run out of the brake disc. *Refer to 7.1 tag axle Hub Bearing Inspection.*

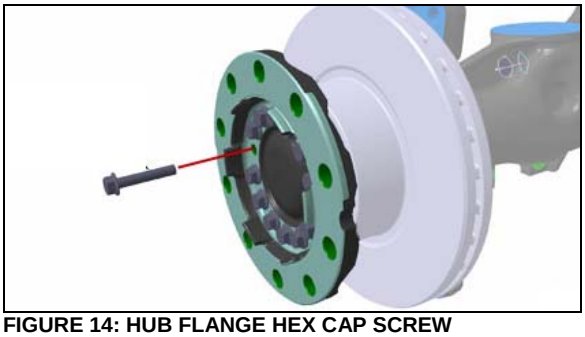

**FIGURE 14: HUB FLANGE HEX CAP SCREW**

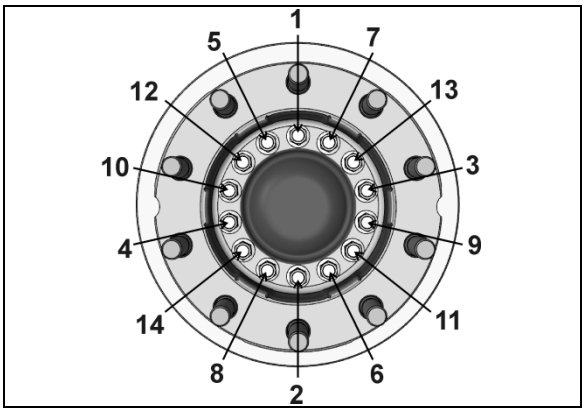


**FIGURE 15: HUB FLANGE HEX CAP SCREW TIGHTENING SEQUENCE**

13. Mount the wheel over studs, being careful not to damage stud threads.
14. Screw in the hex stud nuts (refer to Figure 2 for sequence) so that wheel will position itself concentrically with hub. This is important, otherwise wheel may be eccentric with hub and will not run straight. In this initial step, slightly tighten the nuts to correctly position the wheel.
15. Tighten stud nuts progressively as shown in Figure 2. The final tightening should be done with a torque wrench. Tighten stud nuts to [450 - 500 lbf-ft (610 - 680 Nm)] for aluminum as well as steel wheel.

## 8. FRONT AXLE WHEEL HUBS

The FAG unitized hub bearings used on the NDS range of axles, are non-serviceable items. Bearings are pre-adjusted, lubricated and have seals fitted as part of the manufacturing process. The bearings are greased for life and there is no need or facility for re-lubrication.

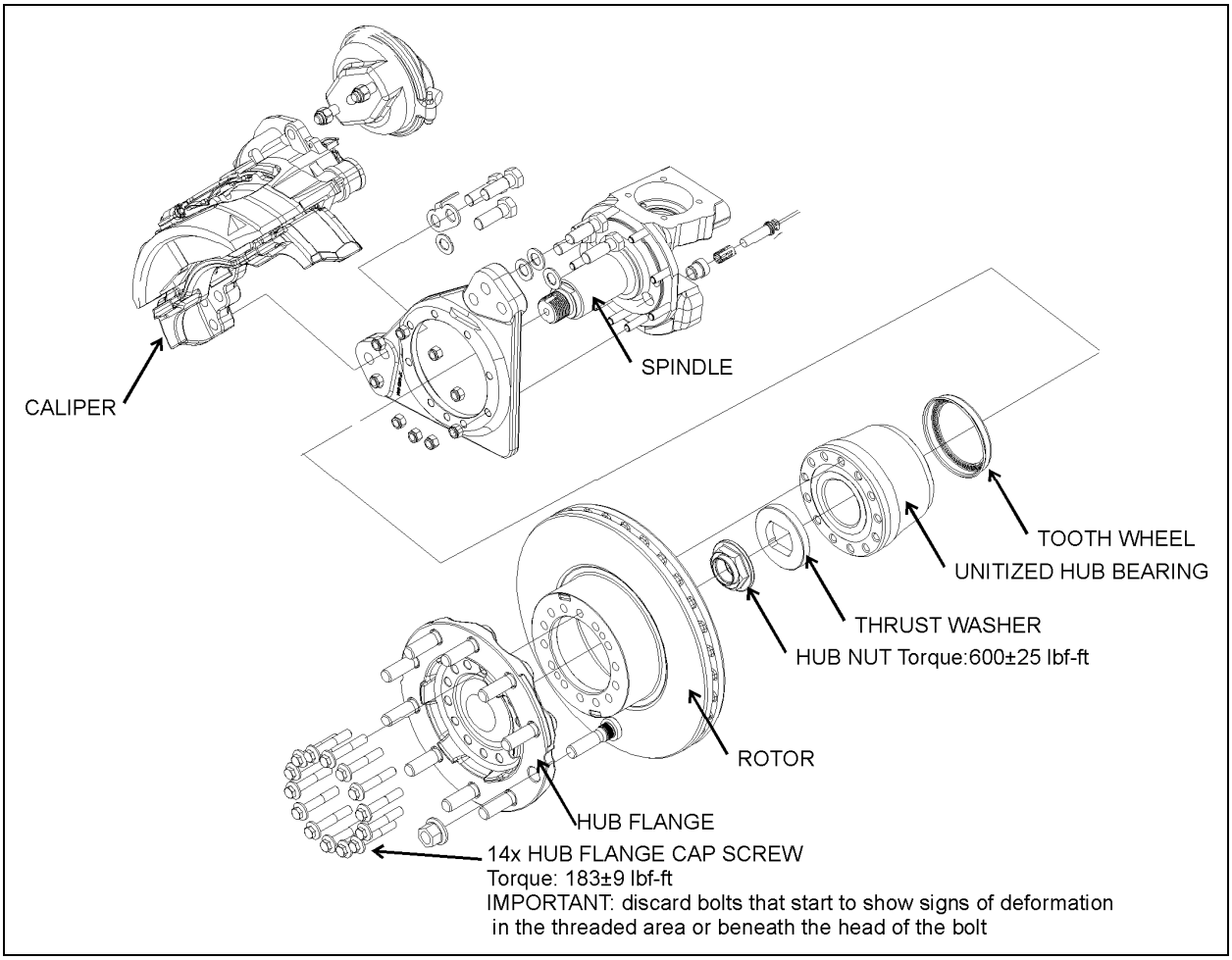


**FIGURE 16: FRONT AXLE HUB AND ROTOR ASSEMBLY** 13041

### 8.1 FRONT AXLE HUB BEARING INSPECTION

**MAINTENANCE**

An inspection should be made at intervals of 30,000 miles (48 000 km) or once a year whichever comes first.

1. Apply parking brake, raise wheels off the ground and support axle on stands.
2. When the wheels are raised, they should revolve quite freely without roughness.
3. Place magnetic base of a dial indicator on brake caliper and position dial indicator stem against a convenient marked spot on face of hub flange.
4. With dial indicator in position pull hard but steadily on hub flange and oscillate at same time until a steady reading is achieved.
5. Without releasing the pressure, turn bearing so that dial indicator stem contacts marked spot and note reading on indicator.
6. Push bearing flange hard and oscillate as before until a steady reading is achieved.
7. Without releasing the pressure, turn bearing so that indicator stem again contacts the marked spot and note new reading on indicator.

8. The difference between readings is the amount of mounted end play in bearing unit.
9. The mounted end play figure should not exceed:
   - **0.050 mm (0.002")** for a new bearing,
   - **0.20 mm (0.008")** for a bearing which has been in service.

| *NOTE* |
| --- |
| *If original bearing unit is re-fitted, and end-float is measured at 1 mm, with hub not fully tightened to correct torque 600±25 lbf-ft, then the retaining clip within the unit is damaged and a new unit must be fitted.* |

## 8.2 FRONT AXLE HUB BEARING REMOVAL

For detailed information on front axle wheel hub bearing removal, refer to the following manual included on your vehicle Technical Publications CD in PDF format:

***Dana Parts & Service Instructions S84U Steer Axle HUB BEARING REWORK_ Manual NO 1963 A+B iss A.***

See OVERHAUL PROCEDURES, HUB END DISASSEMBLY, pages No. B3, B4, B5 & B6.

## 8.3 FRONT AXLE HUB BEARING INSTALLATION

You can refer to the following manual included on your vehicle Technical Publications CD in PDF format:

***Dana Parts & Service Instructions S84U Steer Axle HUB BEARING REWORK_ Manual NO 1963 A+B iss A.***

See OVERHAUL PROCEDURES, HUB END REASSEMBLY, pages No. B23 up to B30.

1. Clean spindle using EFX degreaser (Prevost #685313).
2. Screw insertion tool onto spindle (FIGURE 17).

**FIGURE 17: INSERTION TOOL**

3. Apply a thin layer of lubricant on spindle where bearing will be located, use Gleitmo 805 grease (Prevost #685274).

**FIGURE 18: APPLY GLEITMO 805 GREASE**

4. Slide unitized hub bearing over spindle.

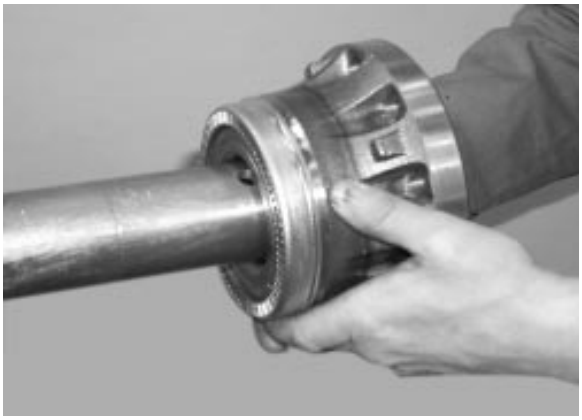

**FIGURE 19: SLIDE UNITIZED HUB BEARING OVER SPINDLE**

5. Clean thrust washer both sides and hub nut using EFX degreaser.
6. Install thrust washer and hub nut then tighten hub nut to specified torque **600±25 lbf-ft**. Rotate unitized hub bearing whilst tightening. Do not stake hub nut at this stage.

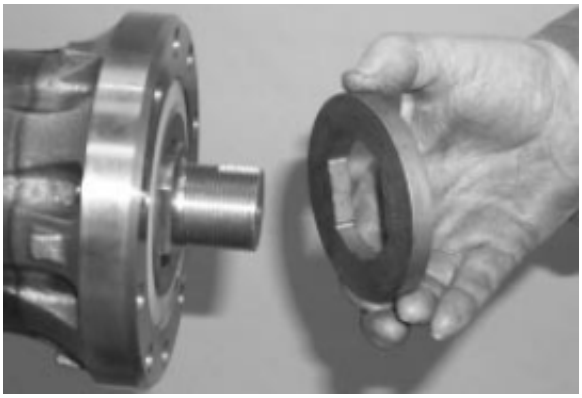

**FIGURE 20: INSTALL THRUST WASHER**

7. Check the bearing end play as described in *8.1 FRONT AXLE Hub Bearing Inspection*
8. Stake the hub nut by deforming with a round nosed chisel.
9. Clean hub bearing, rotor and hub flange clamping surfaces using EFX degreaser.

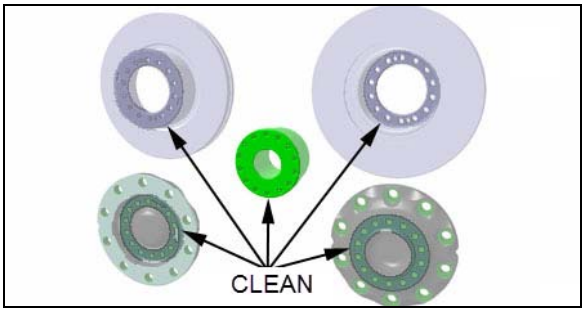


**FIGURE 21: CLEANING HUB BEARING, ROTOR AND HUB FLANGE CLAMPING SURFACES**

10. Install rotor onto hub bearing.
11. Add some grease (25-50 ml) (Fuchs Renolite LX PEP-2) (Prevost #685325) into the bottom of the hub flange cap. Mount hub flange onto rotor.
12. Secure hub flange and rotor to unitized hub bearing using 14 hub flange cap screws. Torque to 183±9 lbf-ft. Refer to FIGURE 23 for tightening sequence. **NOTE: discard bolts that start to show signs of deformation in the threaded area or beneath the head of the bolt.**
13. Once the hub flange has been correctly fitted; it is necessary to check the axial run out of the brake disc. Refer to page No.B29 of the following manual: included on your vehicle Technical Publications CD in PDF format to complete this step:

    **Dana Parts & Service Instructions S84U Steer Axle HUB BEARING REWORK_ Manual NO 1963 A+B iss A**

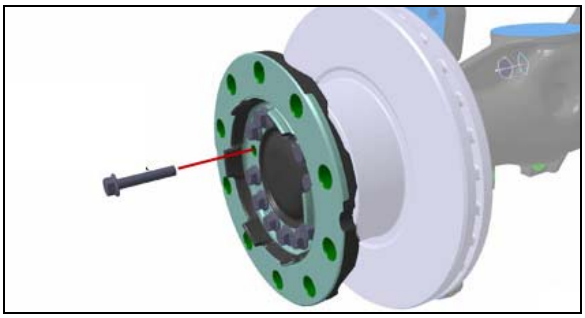

**FIGURE 22: HUB FLANGE HEX CAP SCREW**

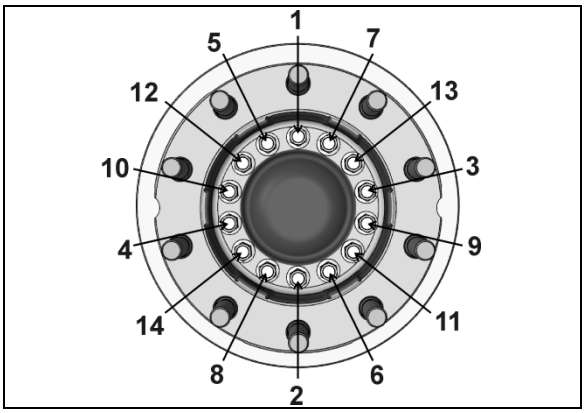


**FIGURE 23: HUB FLANGE HEX CAP SCREW TIGHTENING SEQUENCE**

14. Mount the wheel over studs, being careful not to damage stud threads.
15. Screw in the hex stud nuts (refer to Figure 2 for sequence) so that wheel will position itself concentrically with hub. This is important, otherwise wheel may be eccentric with hub and will not run straight. In this initial step, slightly tighten the nuts to correctly position the wheel.
16. Tighten stud nuts progressively as shown in **Erreur ! Source du renvoi introuvable.**. The final tightening should be done with a torque wrench. Tighten stud nuts to 450 - 500 lbf-ft (610 - 680 Nm) for aluminum as well as steel wheel.

## 9. DRIVE AXLE WHEEL HUBS

Drive axle wheels hubs feature a compact bearing design. (Figure 24)

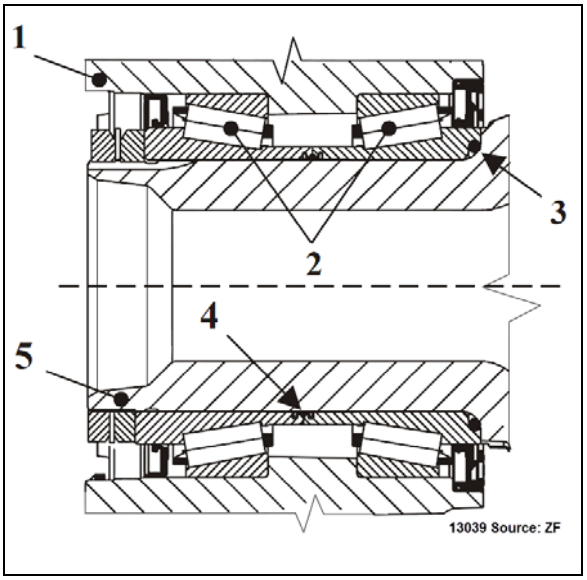


**FIGURE 24: COMPACT BEARING**

1 = Hub

2 = Compact bearing
3 = O-ring
4 = Retaining ring
5 = Hub carrier

9.1 COMPACT BEARING AXIAL PLAY AND GREASE CHANGE.

Bearing axial play verification and grease change must be performed periodically, refer to Section 11 “Rear Axles” for maintenance, removal and reinstallation instructions and Section 24a “Lubrication and service schedule “ for proper grease selection and service intervals.

## 10. TIRE MAINTENANCE

The most critical factor in tire maintenance is proper inflation (Figure 25). No tire is impervious to loss of air pressure. To avoid the hazards of under inflation, always maintain tires at their recommended inflation pressure. Improper inflation decreases tire life.

An under inflated tire builds up heat that can cause sudden tire destruction, resulting in improper vehicle handling and possible loss of vehicle control. At least once a week, before driving (when tires are cold), check inflation pressure on all the tires, including the spare tire. This is especially important in cases when different drivers operate the vehicle.

**WARNING**

Failure to maintain correct tire inflation pressure may result in sudden tire destruction, improper vehicle handling, and will cause rapid and irregular tire wear. Inflation pressure should be checked weekly and always before long distance trips.

10.1 INFLATION PRESSURE

The condition and pressure of the tires can greatly affect both useful tire life and road safety.

At regular intervals, verify the tire pressures. Use an accurate tire pressure gauge when checking inflation pressures. Never exceed the maximum inflation pressure specified on each tire.

*NOTE*

*Inflation pressure should be checked when tires are cold. Cold tire inflation pressure can be measured when a vehicle has not been driven for at least 3 hours or less than 1 mile (1.6 km). Driving, even for a short distance, causes tires to heat up and air pressure to increase. Check inflation pressure on all tires (including the spare tire) using an accurate tire gauge.*

*NOTE*

*The recommended tire inflation pressures are given in the applicable documents supplied with the vehicle. In addition, cold tire inflation pressures are listed on the Department of Transport's certification plate, affixed on the panel behind the driver’s seat. For special tire selection, a “PREVOST COACH SPECIAL SPECIFICATION” chart is supplied with the vehicle and is affixed on the left wall near the driver’s seat. Remember, tire inflation pressure must be adjusted according to vehicle loading - see table in "Coach Final Record"*

**CAUTION**

Never bleed air from hot tires as tires will then be under inflated. Use an accurate tire gauge to check pressures (Do not kick tires as an inflation check. This is an unreliable method).

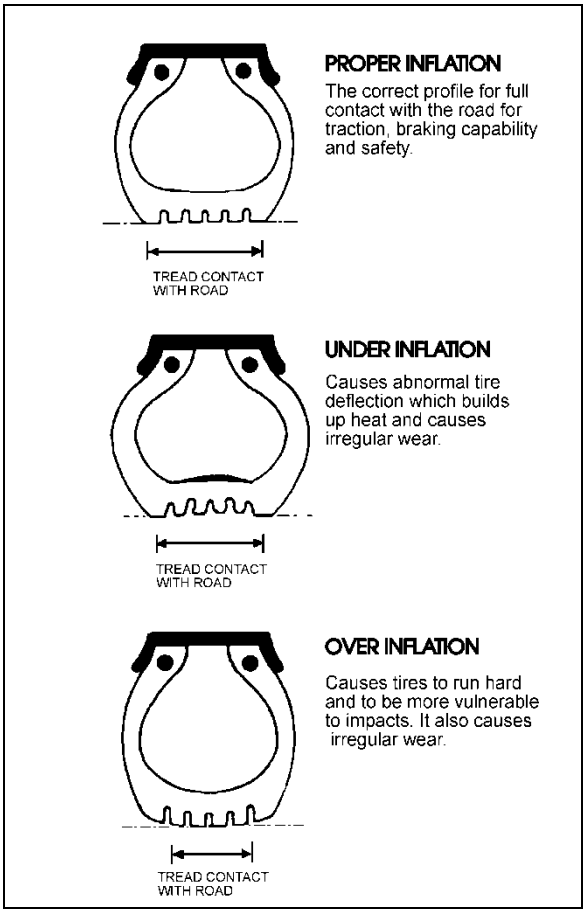


**FIGURE 25: TIRE INFLATION**

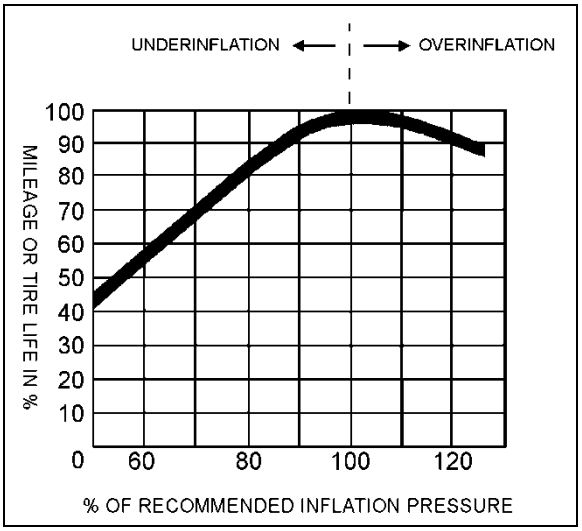


**FIGURE 26: TIRE LIFE / INFLATION PRESSURE** 13010

**CAUTION**

These tire pressures are established in accordance with the maximum allowable load on each axle. A lower pressure is recommended if the axle load is less than the above specifications. Weigh vehicle fully loaded and pressurize according to tire manufacturer's recommendations. For other tire and wheel specifications, see Prevost tire pressure tabulation in "Coach Final Record".

**WARNING**

Incorrect tire pressures cause increased tire wear and adversely affect road holding of the vehicle, which may lead to loss of vehicle control.

**WARNING**

Recommended tire inflation pressures and maximum allowable loads apply to speeds up to 65 mph (105 km/hr). Do not drive vehicle at a higher speed than 65 mph (105 km/h) or above the posted speed limit.

**WARNING**

All tires on the same axle should always be inflated to the same pressure. There should not be a difference in pressure between right and left tires on the same axle.

A 5-psi (35-kPa) under-inflation in one front tire can not only reduce vehicle maneuverability, but will create steering hazards which can lead to an accident.

## 10.2 TIRE MATCHING

Unmatched tires on drive axle will cause tire wear and scuffing, as well as possible damage to the drive unit. Consequently, we recommend that tires be matched within 1/8" (3 mm) of the same rolling radius.

*NOTE*

*It is recommended that all tires on coach be of the same type.*

## 10.3 WHEEL BALANCING

Before balancing, wheels must be clean and free from all foreign matter. The tires should be in good condition and properly mounted. An unbalanced wheel can be due to a bent wheel or improper mounting. Before removing the wheel from the vehicle, check for swaying movement and if necessary, check the wheel lateral runout as outlined under heading *"Wheel Straightness Check".*

**WARNING**

When balancing wheel and tire assemblies, it is strongly recommended to closely follow instructions covering the operation of wheel balancer.

**CAUTION**

A maximum of 16-oz (450 g) of balancing weight is recommended. If more weight is necessary, check and correct the cause.

## 10.4 TIRE ROTATION

Radial tires should be rotated only when necessary. If the tires are wearing evenly, there is no need to rotate. If irregular wear becomes apparent or if the wear rate on the tires is perceptively different (from axle to axle), then tires should be rotated in such a manner as to alleviate the condition.

*NOTE*

*There is no restriction on crisscross rotation.*

## 11. SPECIFICATIONS

STEEL WHEELS

Wheel size ..... 9.0" X 22.5"

Wheel nut torque ..... 450 - 500 lbf-ft (610 - 680 Nm)

Tire size ..... 315/80 R 22.5

RECOMMENDED TIRE INFLATION PRESSURE AT MAXIMUM LOAD (cold)

| *NOTE* |
|---|
| *Vehicle is delivered with the specific inflation pressure certification plate according to the tire selection.* |

**WARNING**

Special tire selection may lower maximum allowable speed limit, even below posted speed limit. For maximum safety, check with tire manufacturer.

**WARNING**

Recommended tire inflation pressures and maximum allowable loads apply to speeds up to 65 mph (105 km/hr). Do not drive vehicle at a higher speed than 65 mph (105 km/h) or above the posted speed limit.

## 12. SECTION CHANGE LOG

| | DESCRIPTION | DATE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |