PREVOST

MAINTENANCE INFORMATION

MI21-07A

DATE :	September 2021	SECTION : 13 WHEEL, HUB & TIRES
SUBJECT :	**FRONT & TAG AXLE – UNITIZED HUB BEARING END PLAY VERIFICATION AND REPLACEMENT**	

Revision: A	Step added about spindle thread repair	September 2021

APPLICATION

	H3 SERIES	X SERIES
FROM	2010 A-1656	2009 9-9952

Table of contents

MATERIAL

NOTE
Parts can be obtained through regular channels. Please, refer to your vehicle Parts Manual

Other material required:

Part No.	Description
685274	GLEITMO 805 GREASE
685325	FUCHS RENOLITE LX PEP 2

REQUIRED TOOLS

METRIC OPEN END WRENCH SET 	**SOFT FACED HAMMER** 
IMPACT WRENCH & APPROPRIATE HEX SOCKETS 	**RATCHET AND SOCKET SET** 
UNITIZED BEARING INSERTION TOOL FRONT & TAG AXLE Ø 70 mm SPINDLE **# 491115** 	**TRUCK LUG NUT TORQUE WRENCH AND APPLICABLE HEX SOCKETS** 
UNITIZED BEARING INSERTION TOOL TAG AXLE Ø 82 mm SPINDLE **# G32950** 	**SHOP TOWELS**  **#682384 CHIX CLOTH**

PROCEDURE

DANGER

Park vehicle safely, apply parking brake, stop the engine. Prior to working on the vehicle, set the ignition switch to the OFF position and trip the main circuit breakers equipped with a trip button. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.

Lockout & Tag out (LOTO) must be performed during set-up, maintenance or repair activities. Refer to your local procedure for detailed information regarding the control of hazardous energy.

The unitized hub bearings used on the tag axle and front 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.

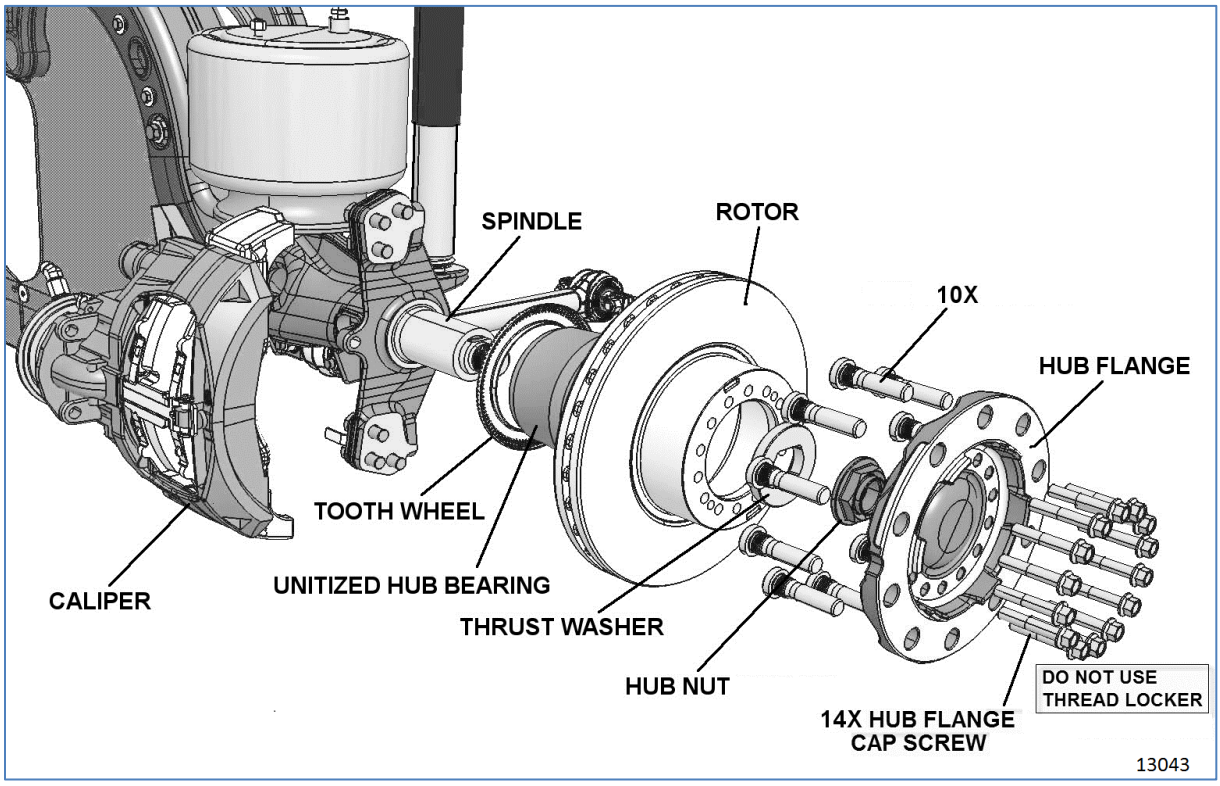


Figure 1: TYPICAL Ø82 mm SPINDLE TAG AXLE HUB AND ROTOR ASSEMBLY

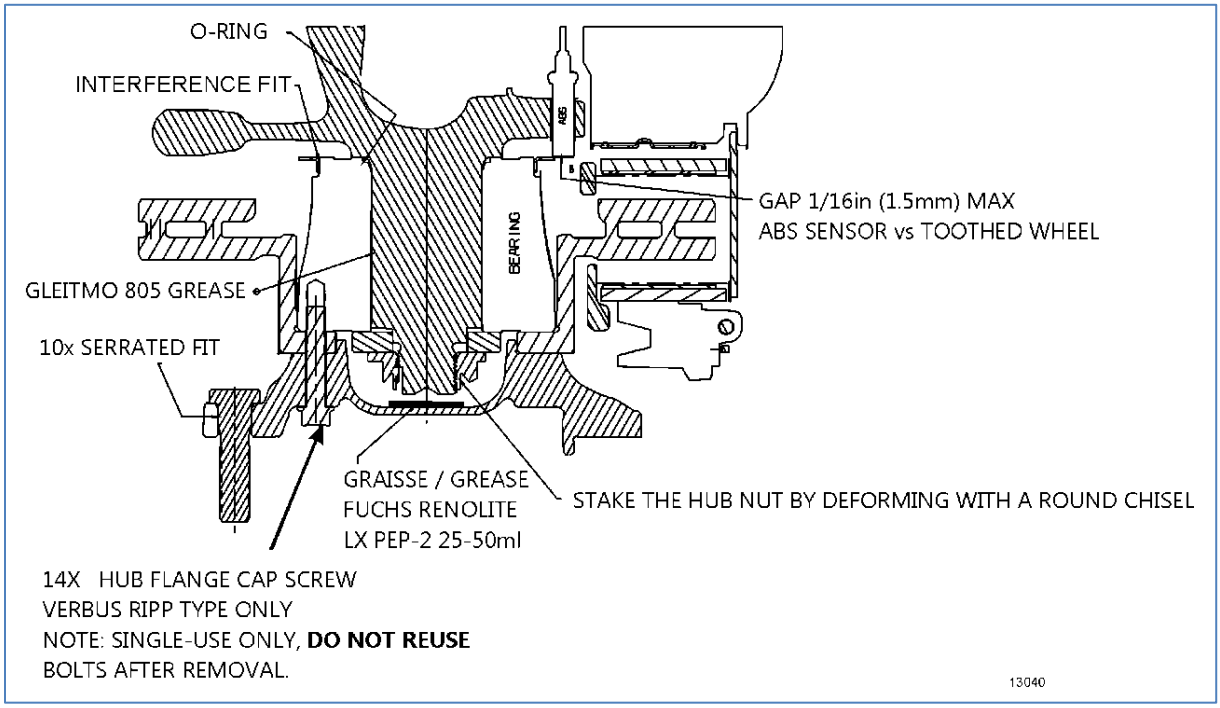


Figure 2: TYPICAL Ø82 mm SPINDLE TAG AXLE UNITIZED BEARING & WHEEL HUB. HUB FLANGE CAP SCREW SINGLE USE ONLY, DO NOT REUSE APPLICABLE TO TAG AXLE ONLY

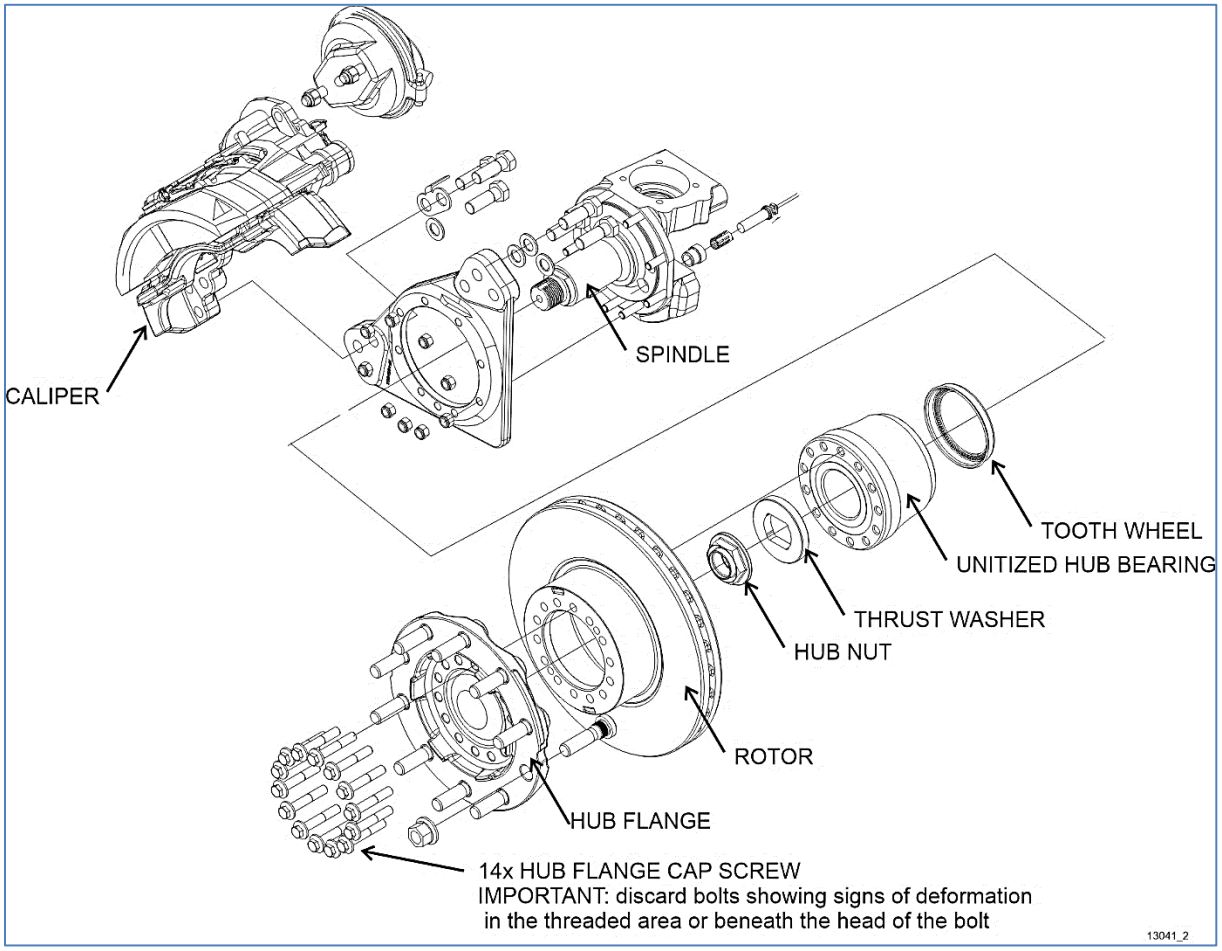


Figure 3: TYPICAL Ø70 mm SPINDLE FRONT AXLE HUB AND ROTOR ASSEMBLY

Unitized Bearing End Play Verification

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. Remove the wheels.
4. Place magnetic base of a dial indicator on the brake caliper and position dial indicator stem against a convenient marked spot on the face of the hub flange.

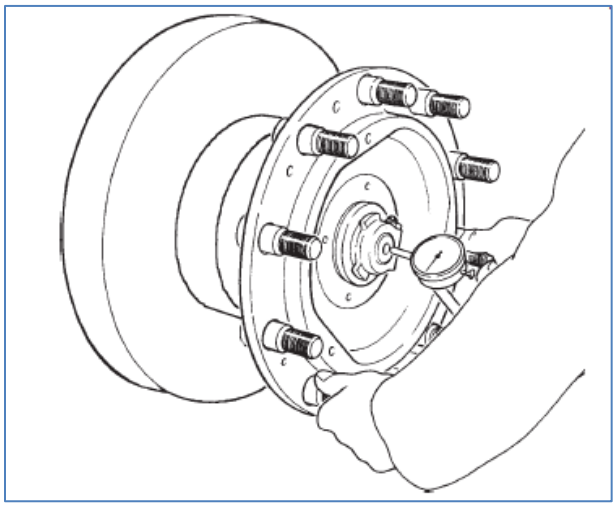


Figure 4

5. With dial indicator in position pull hard but steadily on hub flange and oscillate at same time until a steady reading is achieved.
6. Without releasing the pressure, turn bearing so that dial indicator stem contacts marked spot and note reading on indicator.
7. Push bearing flange hard and oscillate as before until a steady reading is achieved.
8. Without releasing the pressure, turn bearing so that indicator stem again contacts the marked spot and note new reading on indicator.
9. The difference between readings is the amount of mounted end play in bearing unit.
10. Refer to the following table for allowed end play:

New Tag Axle Unitized Hub Bearing Axial End play	
Maximum axial play	0.0024 inch (0.061mm) based on clamp load of 20000 lbf (90 kN).
Tag Axle Unitized Hub Bearing Axial Endplay in Service	
• If the end play is between 0 – 0.002 in (0 – 0.05 mm), the inspection is complete. • If the end play is greater than 0.002 in (0.05 mm), but less than 0.008 in (0.20 mm), check and retighten the wheel bearing adjusting nut. Again, check end play to make sure that the clamping process is done properly. • If the end play is equal to or greater than 0.008 in (0.20 mm), replace the unitized hub bearing as soon as possible since the hub assembly may not be safe to operate.	

New Front Axle Unitized Hub Bearing Axial Endplay	
Maximum axial play	0.002 inch (0.05 mm)
Front Axle Unitized Hub Bearing Axial Endplay in Service	
Maximum axial play	0.008 inch (0.2 mm)

Unitized Hub Bearing Removal

NOTE FOR FRONT AXLE: You can find detailed information on the front axle wheel hub bearing removal, refer to the following manual included on your vehicle Technical Publications USB flash drive 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.

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.

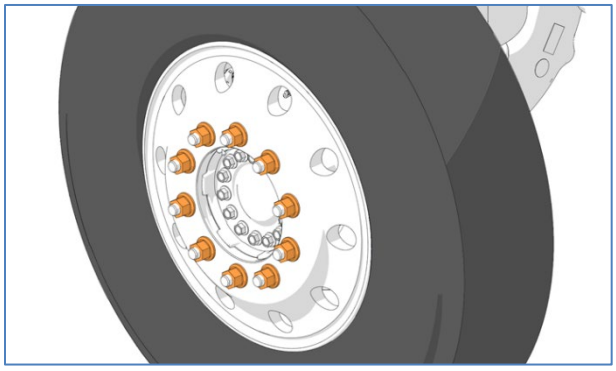


Figure 5

3. Raise the vehicle by its jacking points on the axles.
4. Unscrew 10 wheel hex stud nuts and remove the wheel.

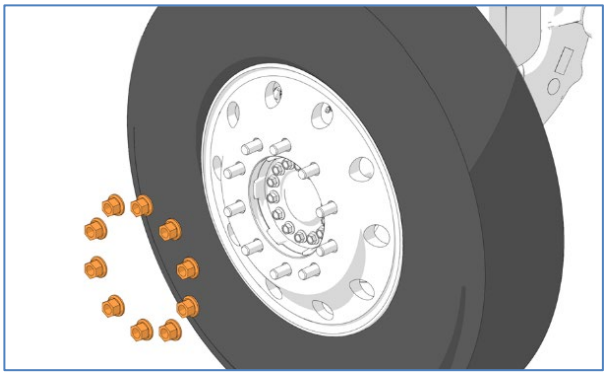


Figure 6

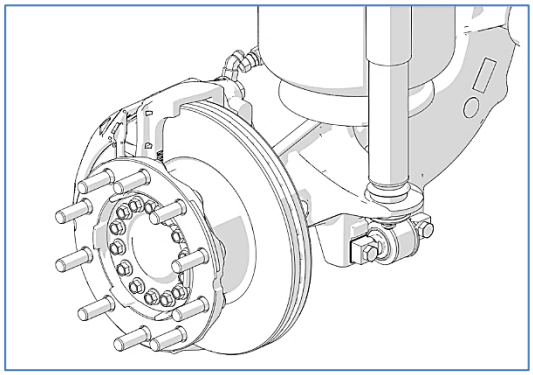


Figure 7

5. Remove the brake caliper/carrier assembly. Refer to ***Knorr-Bremse Pneumatic Disc Brake Y006471 Service Manual*** included on the Technical Publications USB flash drive and also available on Prevost Technical Publications site.

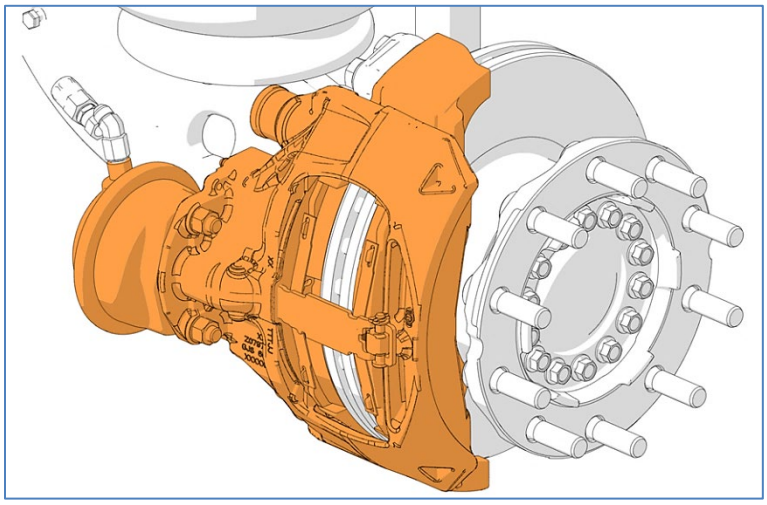


Figure 8

6. Loosen but do not remove the hub flange cap screws (Figure 9).
7. Remove 2 diametrically opposed hub flange cap screws (Figure 10).

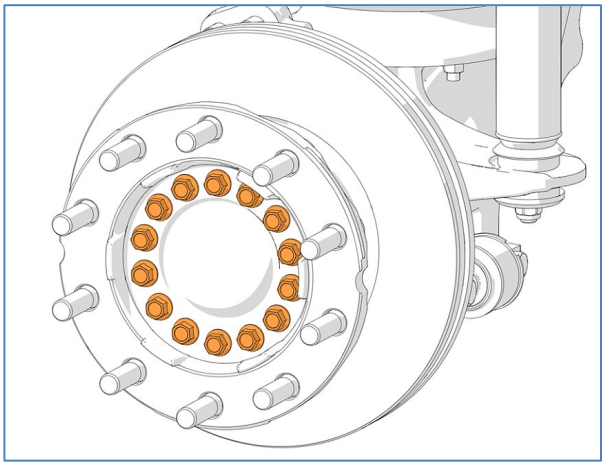


Figure 9

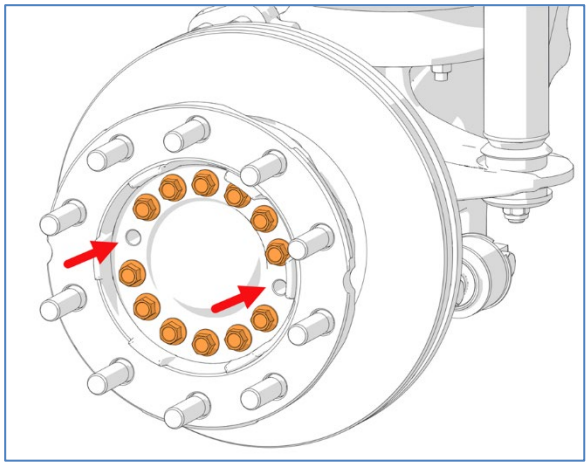


Figure 10

8. Replace the two diametrically opposed hub flange cap screws with 2 loosely fitted studs.

NOTE: Replacement studs should protrude beyond the front face of the hub flange to aid removal.

9. Unscrew 12 hub flange cap screws.

Applicable to the tag axle: discard hub flange serrated cap screws (single use only).

NOTE: The following images are generic images and do not show the actual tag or front axle hub but they remain representative of the following steps.

10. Gently tap hub flange outwards using a hide faced hammer.

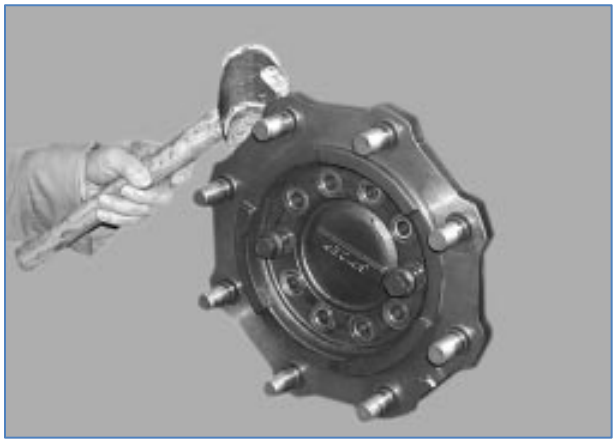


Figure 11

11. Support weight of hub flange. Remove the hub flange and place on a suitable workbench.

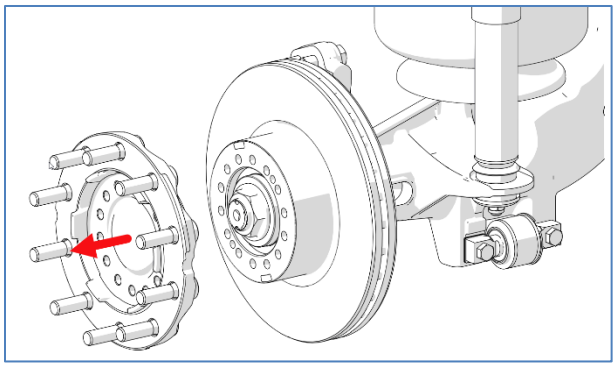


Figure 12

12. Inspect wheel stud and replace the ones that are found defective.

13. Once the hub flange has been removed, insert two guide studs.

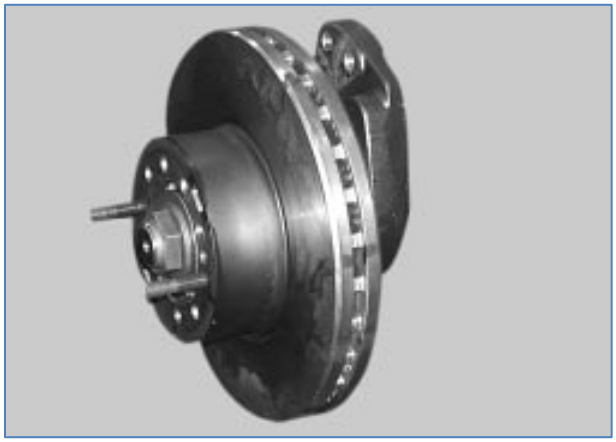


Figure 13

14. Insert two bolts into brake disc extraction holes.
15. Tighten to free brake disc from hub bearing.

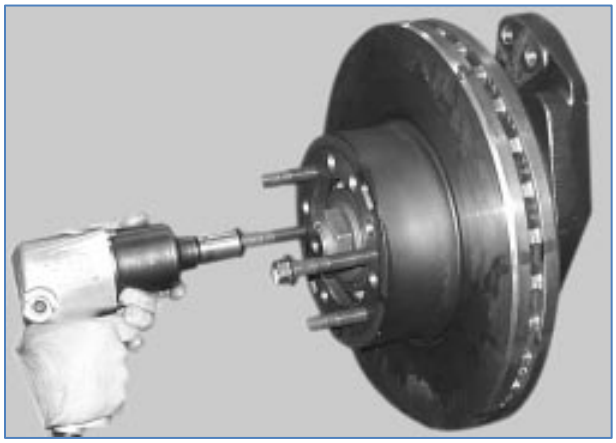


Figure 14

16. Support weight of brake disc and carefully slide along guide studs to remove.

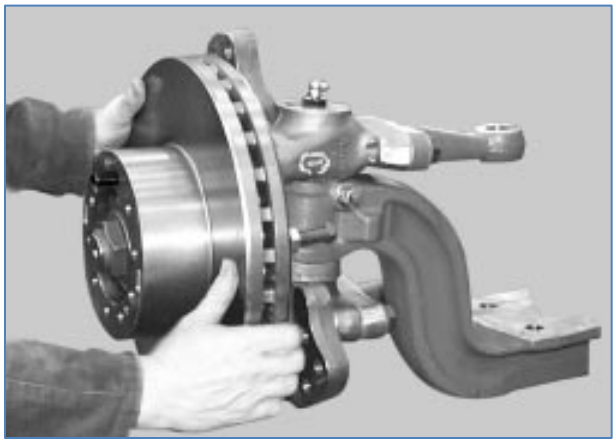


Figure 15

17. Using a small ended chisel, **pry off the staking** on the hub nut.

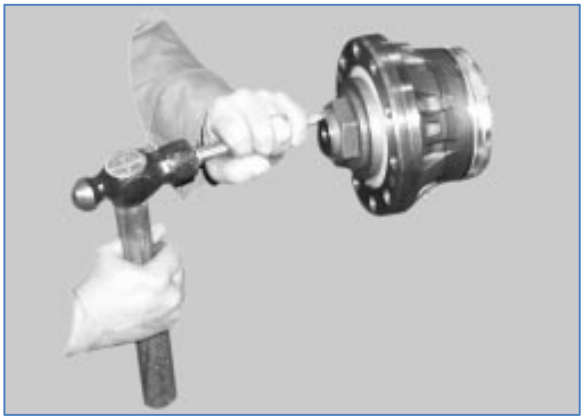


Figure 16

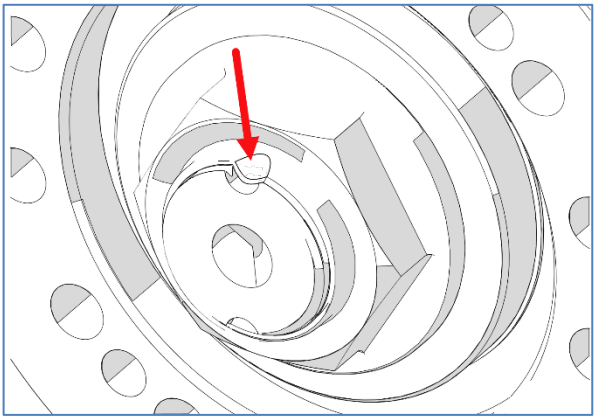


Figure 17

18. Unscrew hub nut and discard (Figure 18).

19. Remove the thrust washer (Figure 19).

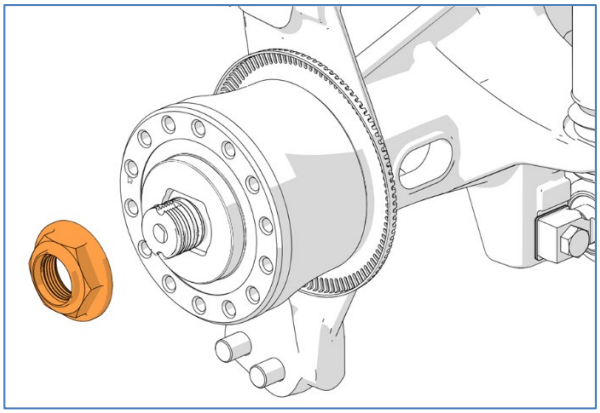


Figure 18

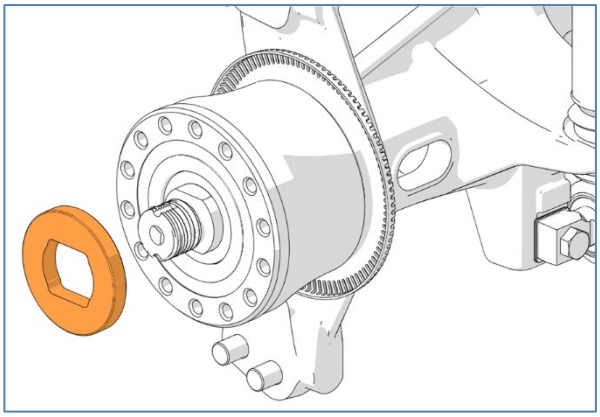


Figure 19

20. Screw insertion tool onto spindle (Figure 20) (front axle: 491115; tag axle G32950).

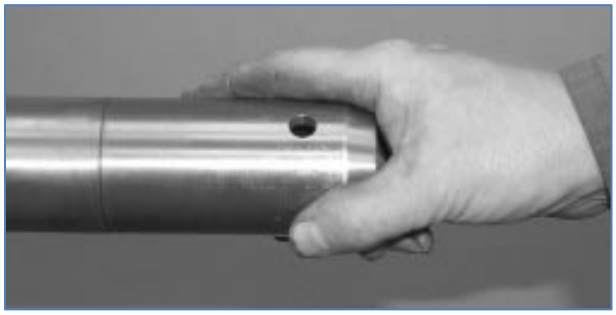


Figure 20

21. Carefully pull unitized bearing assembly and remove.

Unitized Hub Bearing Installation

1. If required, repair the first spindle threads using appropriate thread cutting die.

Front & Tag axle spindle thread: 1 ¾-8 UNR 3A

Independent Front Suspension spindle thread: M42-2.0

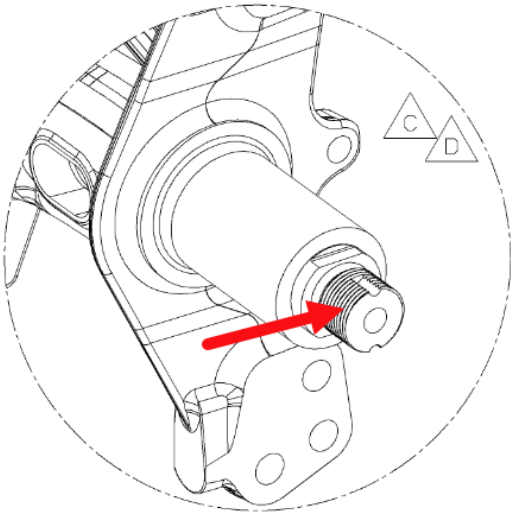


Figure 21

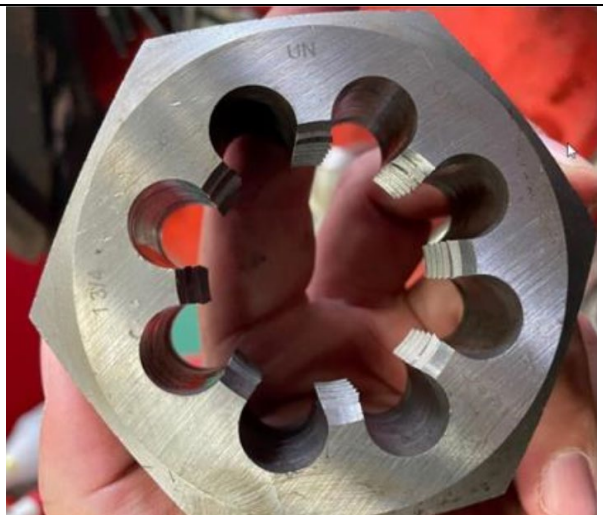


Figure 22

2. Thoroughly clean threads and spindle using EFX degreaser (Prevost #685313) or brake cleaner.

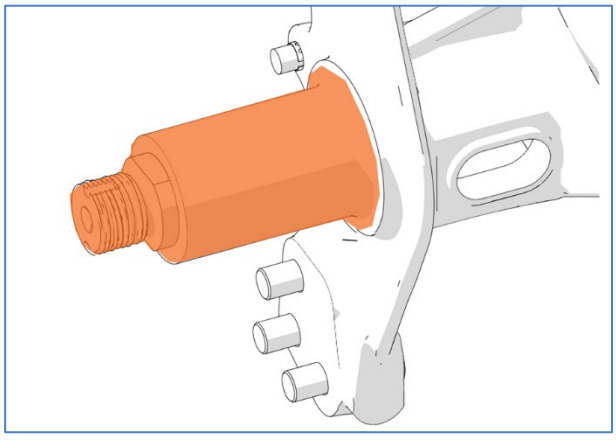


Figure 23

3. Screw insertion tool onto spindle (front axle: 491115; tag axle G32950).

Figure 24

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

Figure 25: APPLY GLEITMO 805 GREASE

5. Slip unitized hub bearing over spindle.
6. Make sure the O-ring is present, see Figure 2.

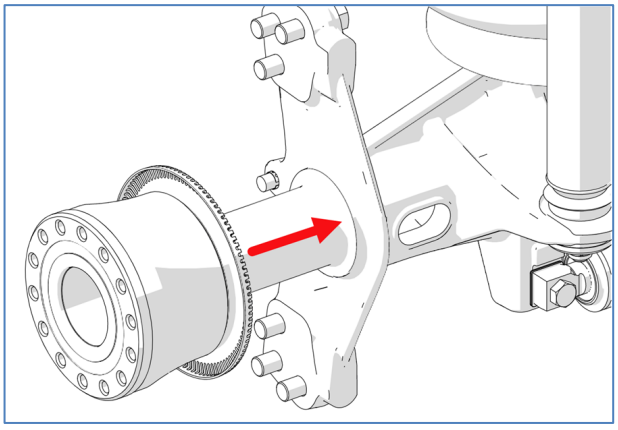
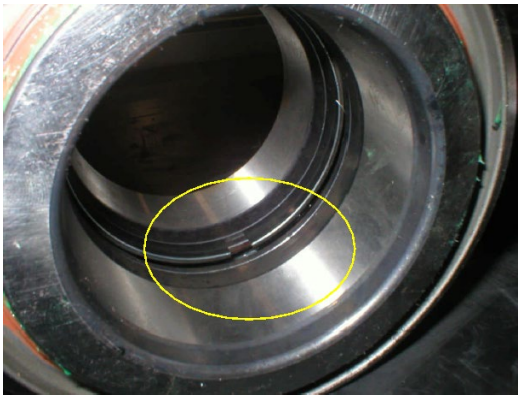


Figure 26: SLIP UNITIZED HUB BEARING OVER SPINDLE

NOTE

If the inner rings are not properly guided (i.e. not in line to the spindle) there may occur 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.

Always use an insertion tool



NOTE

If original bearing unit is refitted, and end float is measured at 1 mm, with hub not fully tightened to specified torque, then the retaining clip within the unit is damaged and a new unit must be fitted.

7. Remove the insertion tool.
8. Clean thrust washer both sides and hub nut using a good quality degreaser or brake cleaner.
9. Install thrust washer, hub nut then torque hub nut (Figure 27).

tag axle torque: 563-687 lb-ft (763-931 Nm)

front axle torque: 575-625 lb-ft (780-847 Nm)

NOTE: Rotate bearing, minimum 10 revolutions necessary (simultaneous rotation till final clamp torque is achieved).

10. Make sure there is no play between the bearing and the spindle shoulder (Figure 28).

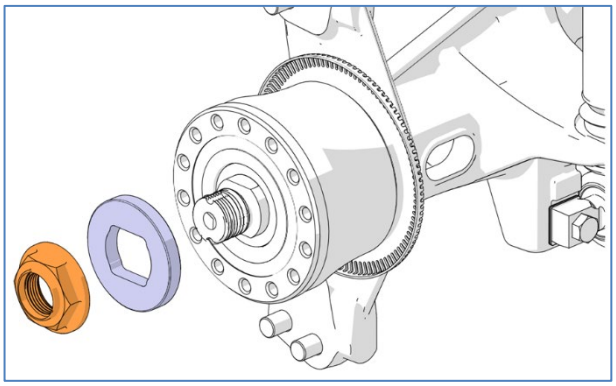


Figure 27: INSTALL THRUST WASHER AND HUB NUT

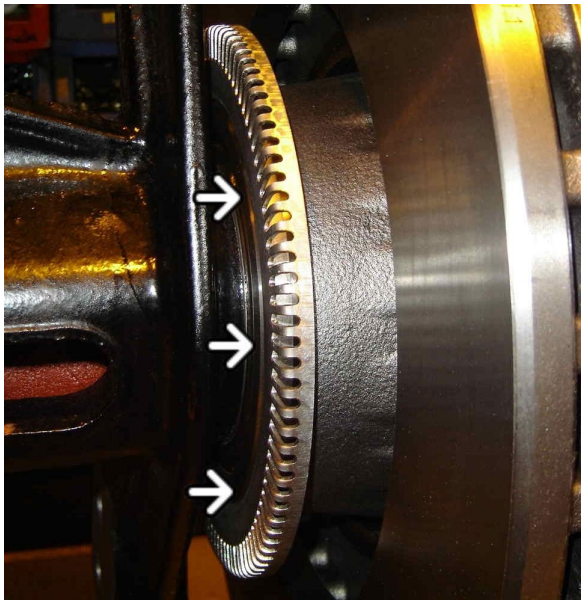


Figure 28: NO PLAY BETWEEN THE BEARING AND THE SPINDLE SHOULDER

11. Check the unitized bearing end play. Refer to **Unitized Bearing End Play Verification** in this document.

12. Stake the hub nut by deforming with a round nosed chisel.

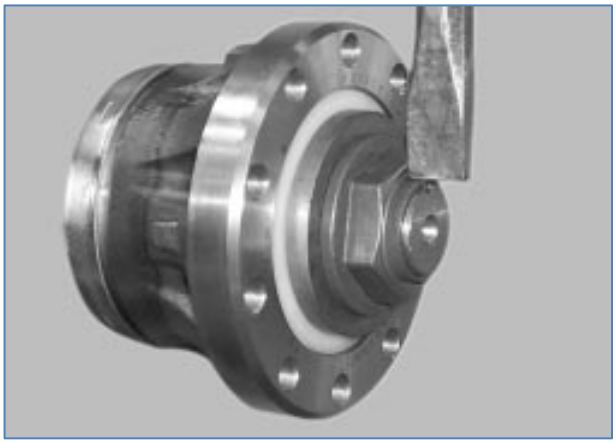


Figure 29

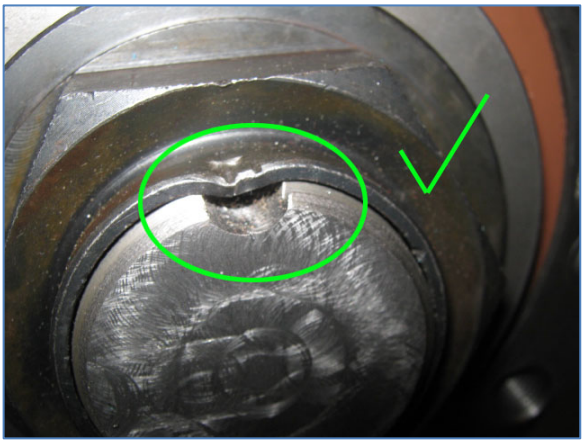


Figure 30: CORRECT - PREVENTS THE NUT FROM GETTING LOOSE

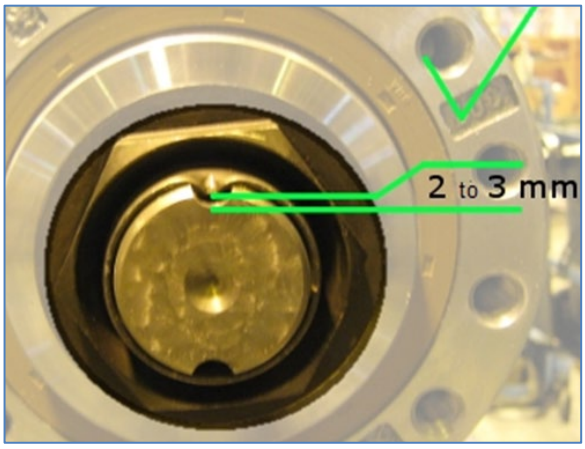


Figure 31: CORRECT – 2 to 3 mm / 0.078 to 0.118 in MAX GAP

Figure 32: BROCKEN OR TORN LIP – REJECTED

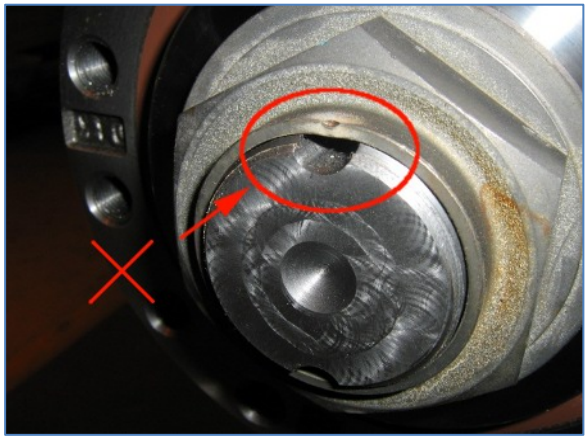


Figure 33: LIP INADEQUATELY PRESSED IN – REJECTED

13. Clean hub bearing, rotor and hub flange clamping surfaces using a good quality degreaser or brake cleaner.

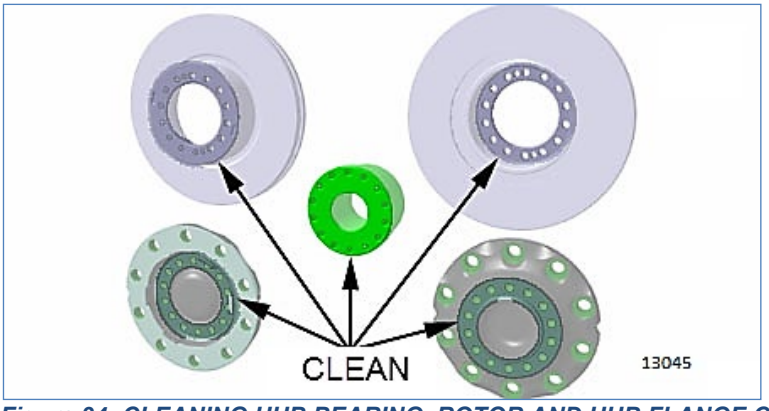


Figure 34: CLEANING HUB BEARING, ROTOR AND HUB FLANGE CLAMPING SURFACES

14. Install two guide studs on the unitized bearing (Figure 35).

15. Install rotor onto hub bearing (Figure 36).

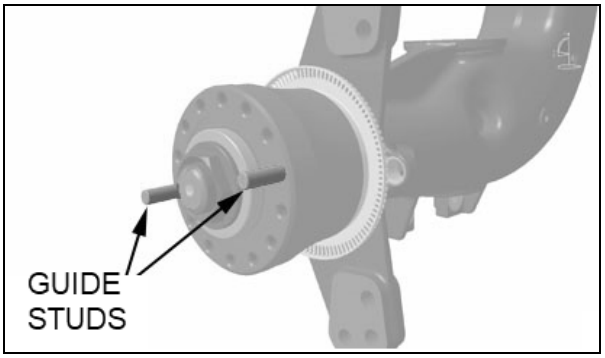


Figure 35

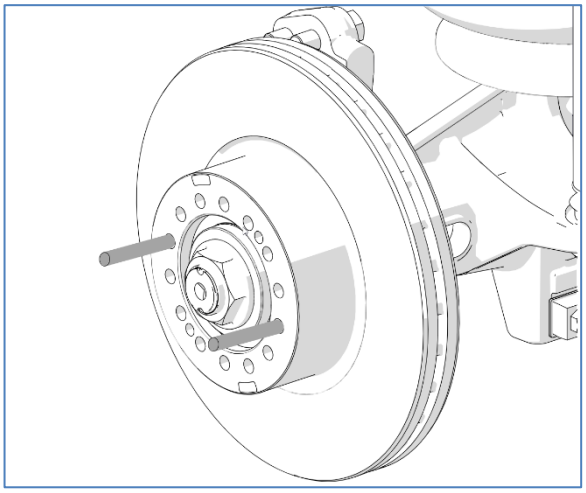


Figure 36

16. 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.

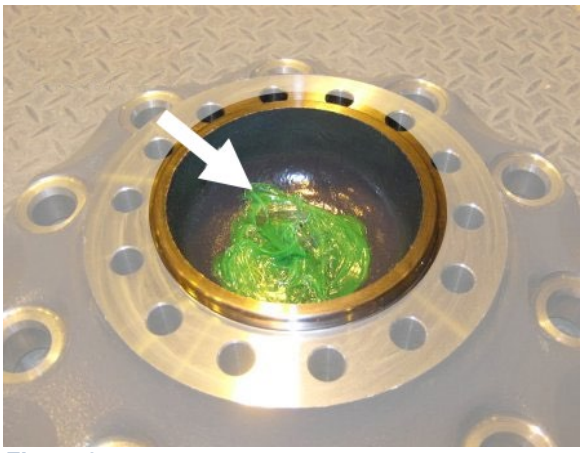


Figure 37

17. Secure hub flange and rotor to unitized hub bearing (Figure 38).

- **Tag axle: use 14 <u>new</u> cap screws (single-use only).**
- **Front axle: discard cap screws showing signs of deformation in the threads area and beneath the head of the bolt.**

Refer to Figure 39 for tightening sequence.

front axle torque: 174-192 lb-ft (236-260 Nm)

tag axle torque: 161-197 lb-ft (218-267 Nm)

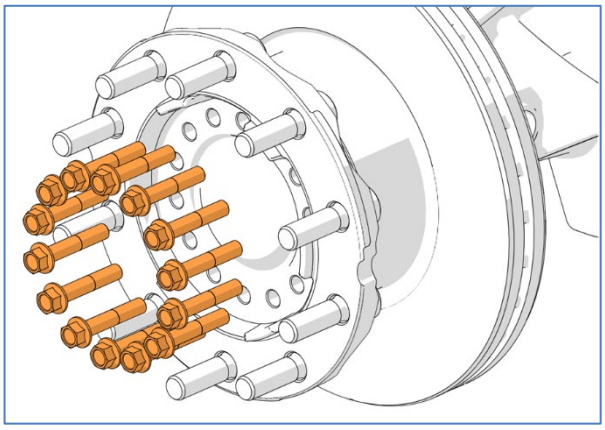


Figure 38: HUB FLANGE HEX CAP SCREWS

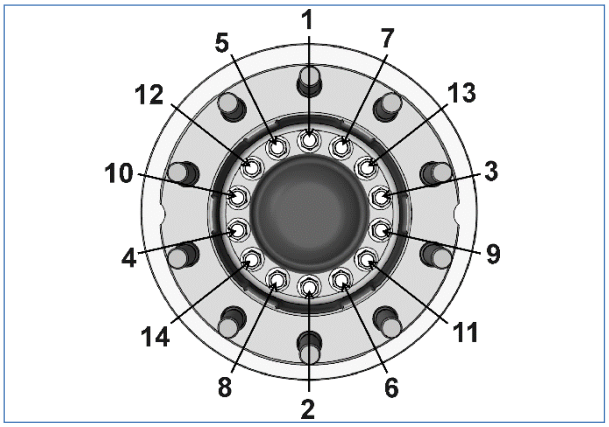


Figure 39: HUB FLANGE HEX CAP SCREW TIGHTENING SEQUENCE

18. Once the hub flange has been correctly fitted; it is necessary to check the axial run out of the brake disc.

19. Position a dial test indicator onto the axle in a suitable position.

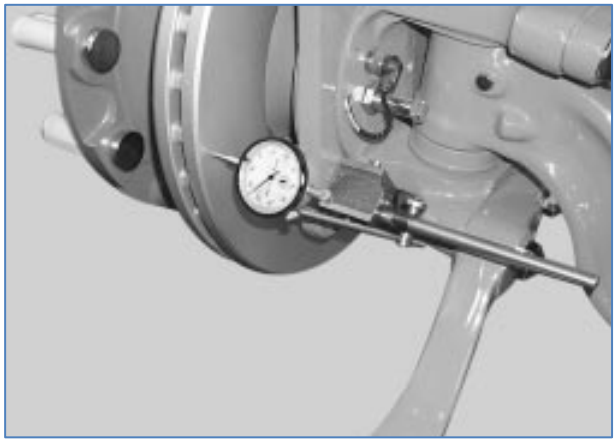


Figure 40

20. Position the stylus of dial test indicator onto brake disc as shown.

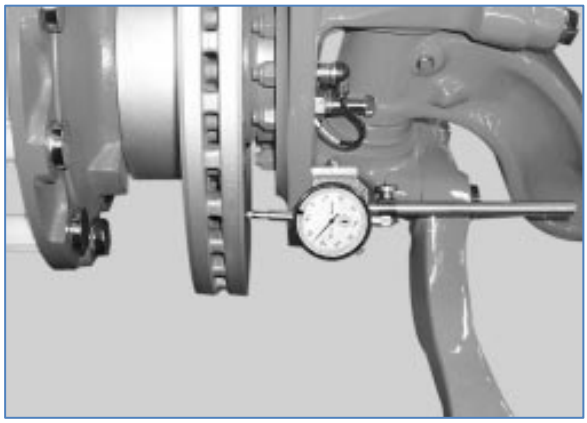


Figure 41

21. Rotate the hub through 360° and note any movement of the dial test indicator.

THE MAXIMUM RUNOUT IS 0.1 mm / 0.004 in

22. Remove and check out of specification disc to ensure no damage has occurred to the mounting faces, or that no dirt is present.
23. Remove any dirt found on the mounting faces and refit and recheck disc.
24. Should it be found that a cleaned and refitted disc is still out of specification; it must be replaced.
25. Mount the brake caliper. Refer to Knorr Bremse manual.

CALIPER MOUNTING BOLTS TORQUE

Tag Axle: 405-495 lbf-ft (549-671 N-m)

Front axle : 433-479 lb-ft (587-649 Nm)

26. Mount the wheel over wheel studs, being careful not to damage stud threads.
27. Screw in the hex stud nuts (refer to Figure 43 for sequence) so that the 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.

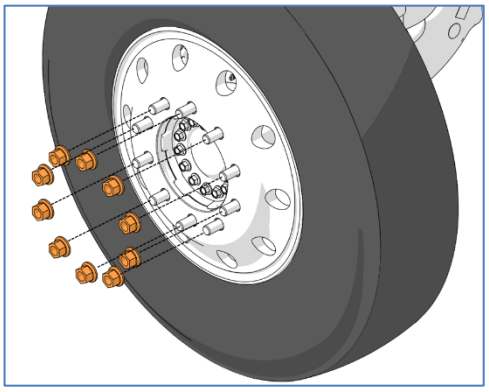


Figure 42

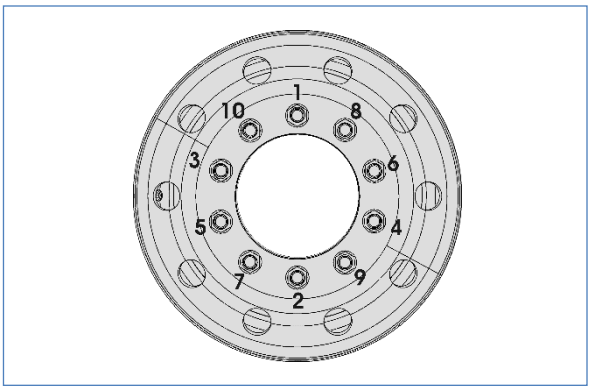


Figure 43

28. Tighten stud nuts progressively as shown in Figure 43. The final tightening should be done with a torque wrench. Tighten stud nuts.

TORQUE: 450-500 lb-ft (610-678 Nm)

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