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Revision: B kit modified. Screws 5001842 replaced by kit no. 7771836 09-28-2022

TAG AXLE HUB NUT TORQUE VERIFICATION

Prevost vehicles

DESCRIPTION

On the vehicles affected by this bulletin, inspect the hub nut for proper torque.

MODEL YEAR(S) and VEHICLES involved

NOTICE TO SERVICE CENTERS	
Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.	
Model	VIN
X3-45 Commuter Model Year: 2021	From 4RKJ33498 <u>M9737818</u> up to 4RKJ33492 <u>M9737829</u> incl. And 4RKJ33495 <u>M9737856</u> with the exception of 4RKJ33498 <u>M9737821</u>
This bulletin does not necessarily apply to all the above-mentioned vehicles, some vehicles may have been modified before delivery.	

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MATERIAL NEEDED

Order kit SP22-302 which includes the following parts:

Part No.	Description	Qty
7771836	KIT SCREW CAP AND WASHER (PACK OF 28)	1
621967	HUB NUT 1 3/4-8	2

Parts that may be required depending on vehicle condition

Part No.	Description	Qty
611300	BRAKE ROTOR, VENTED	A/R
621810	THRUST WASHER	A/R
621816P	HUB ASSY / UNITISED L.H. & R.H. "FAG" WITH TOOTH WHEEL	A/R
642182	CALIPER ASSY W/POTENTIOMETER / R.H	A/R
642183	CALIPER ASSY W/POTENTIOMETER / L.H	A/R

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WORKSHOP SUPPLIES

NOTE: The costs of workshop products are not covered under this bulletin

Part No.	Description	Qty
685325	Grease, Fuchs Renolite LX PEP-2	A/R
685274	Grease, Gleitmo 805	A/R
-	Brake Cleaner	A/R

TOOLS

TRUCK LUG NUT TORQUE WRENCH AND APPLICABLE HEX SOCKETS 	SOFT FACED HAMMER 
CHISELS - ROUND NOSED - SMALL END	G32950 INSERTION TOOL Ø 82 mm 
GUIDE STUD, M14-1.5 (2X) (Stock threaded rod) 	TORQUE SEAL 

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SAFETY PRECAUTIONS

- Eye protection should always be worn when working in a shop.
- Rules for Personal Protection Equipment should always be respected. Wear your PPE including but not limited to the following:



Safety First!



1. PART 1 - HUB NUT TORQUE VERIFICATION



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.

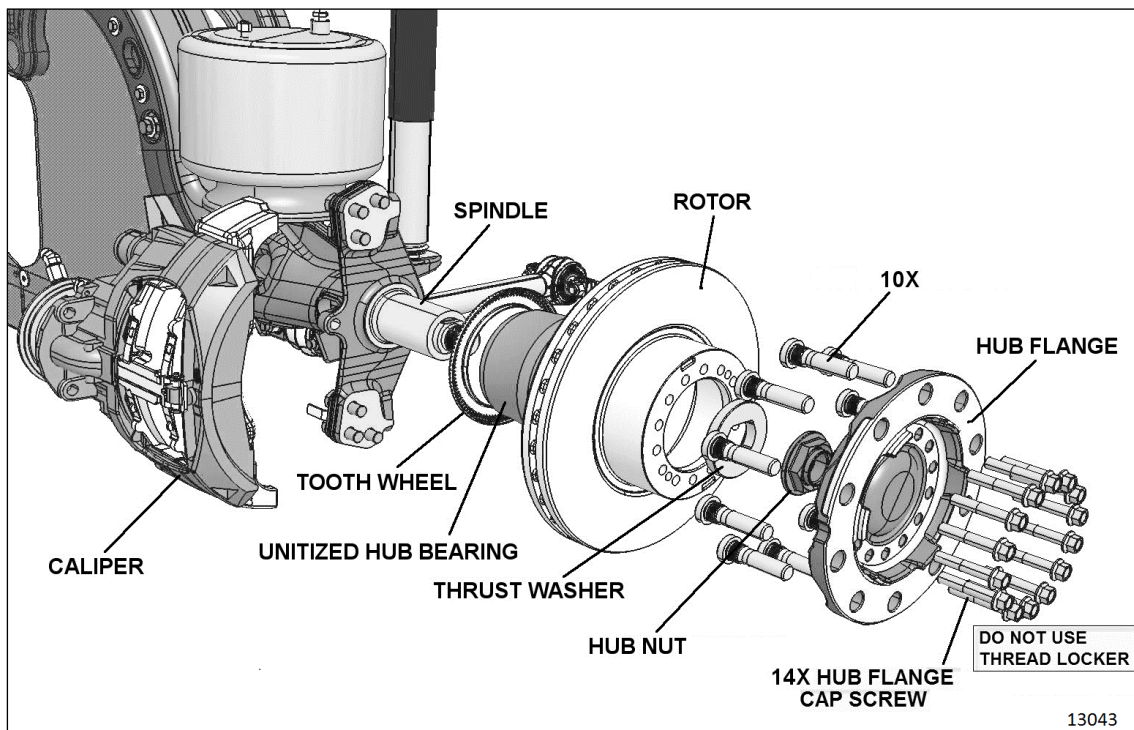


FIGURE 1: TAG AXLE HUB AND ROTOR ASSEMBLY

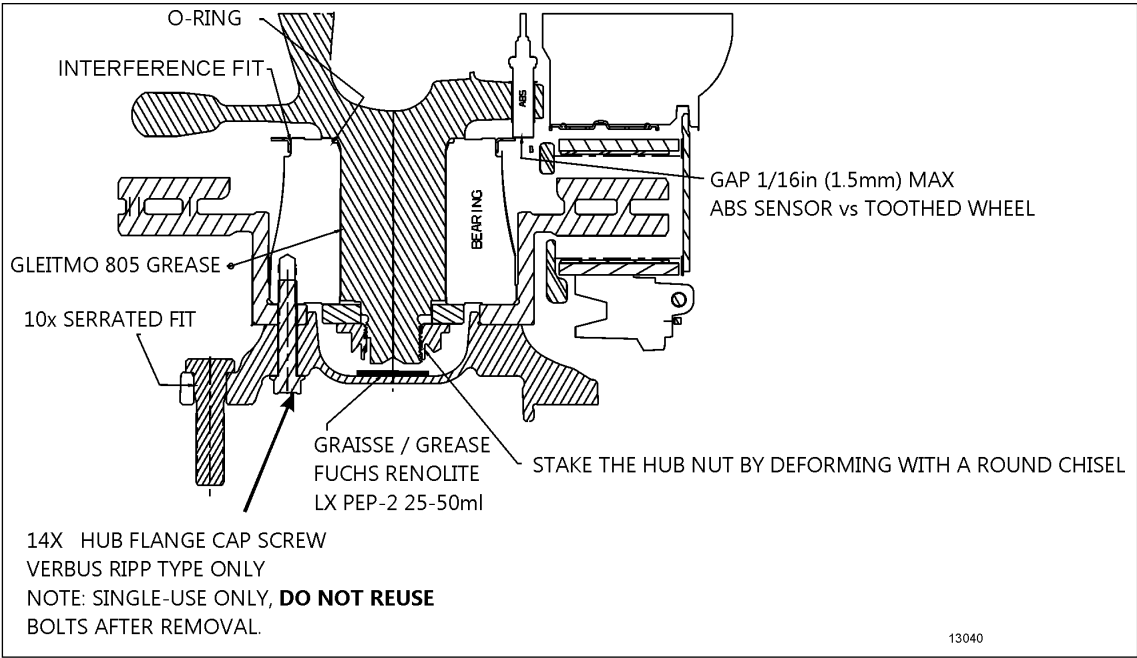


FIGURE 2: TAG AXLE UNITIZED BEARING & WHEEL HUB

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1.1. TAG AXLE WHEEL AND HUB FLANGE REMOVAL

1. Raise the vehicle by its jacking points on the body. See MI18-18, under heading "*HOISTING AND TOWING POINTS*".
2. Check tag axle wheels for any noticeable play.

If there is significant play, prepare a replacement disc **611300** and caliper **642182** RH / **642183** LH for possible replacement depending on disc and caliper condition.

-
3. Unscrew 10 hex stud nuts and remove the wheel.

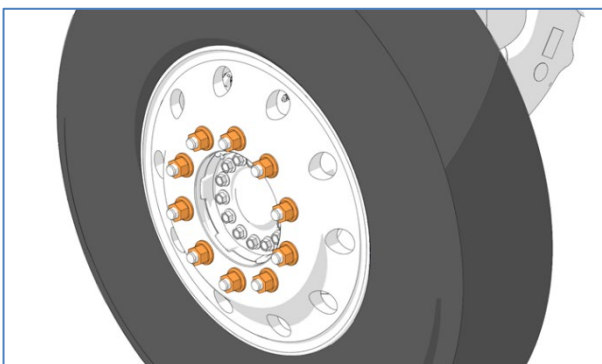


FIGURE 3

-
4. Loosen but do not remove the hub flange bolts.

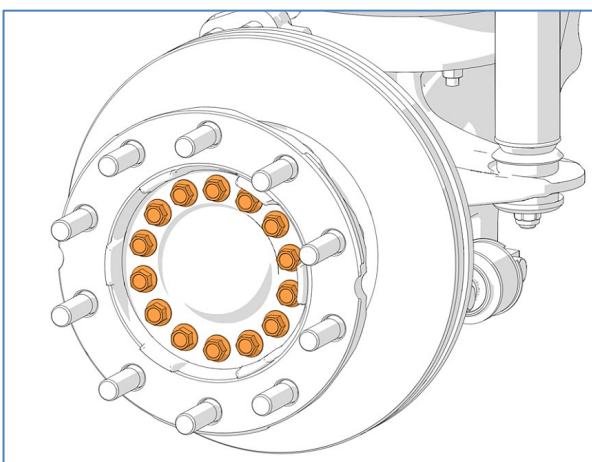


FIGURE 4

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5. Remove 2 diametrically opposed hub flange bolts.
6. Replace the two diametrically opposed hub flange cap screws with 2 loosely fitted M14x1.5 studs made from threaded rod.

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

7. Unscrew 12 hub flange cap screws. Single use. Discard screws.

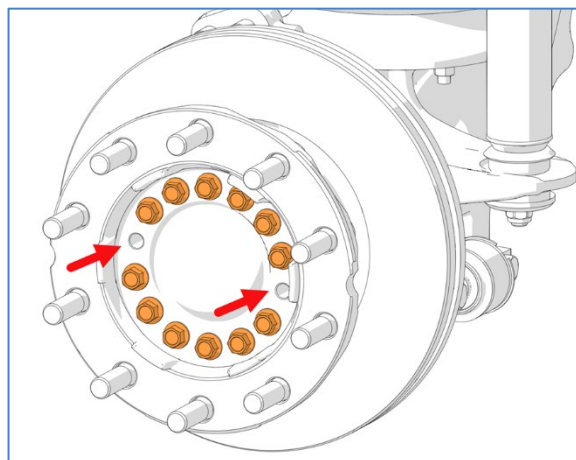


FIGURE 5

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

8. Gently tap hub flange outwards using a soft faced hammer.



FIGURE 6

9. Support weight of hub flange.
10. Remove hub flange and place on a suitable workbench.

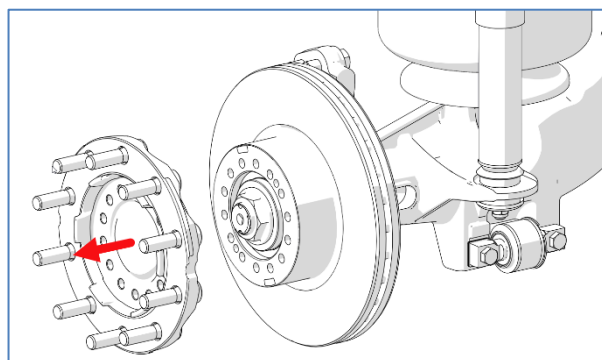


FIGURE 7

1.2. HUB NUT TORQUE CHECK

- Using a small end chisel, **pry off the staking on the hub nut**. The nut must be free to rotate



CAUTION

Stake must be completely removed before tightening or loosening hub nut. Failure to do so may damage spindle threads.

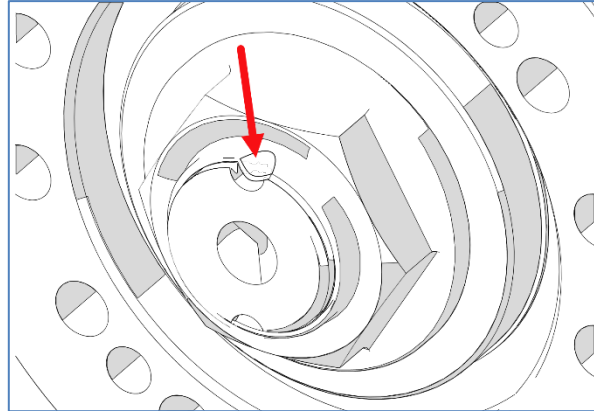


FIGURE 8: STAKING



FIGURE 9

- Apply torque of 563 lb-ft to the hub nut (this is the minimum torque to see if under torqued).



- If the hub nut does not turn**, this means the hub nut was properly torqued. Note unit number and report inspection result to NYCT and Prevost service representatives.

Continue with **1.3 HUB NUT REPLACEMENT & WHEEL REINSTALLATION** below to complete this bulletin.



- If the hut nut turns**, this means it was loose. Note unit number and report inspection result to NYCT and Prevost service representatives.

The Unitized bearing must be replaced. Go to **PART 2 – CORRECTIVE MEASURES** now to complete this bulletin.

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1.3. HUB NUT REPLACEMENT & WHEEL REINSTALLATION

1. Unscrew hub nut and discard.



CAUTION

Stake must be completely removed before loosening hub nut. Failure to do so may damage the threads.

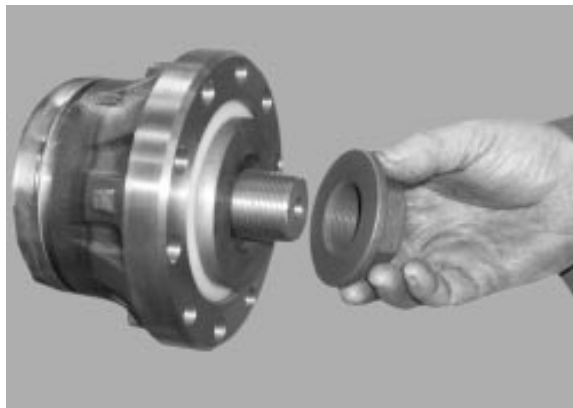


FIGURE 10

2. Install new hub nut then torque hub nut.

TORQUE: 563-687 lb-ft (763-931 Nm)

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

3. Stake the hub nut by deforming with a *round nosed chisel*. Refer to the proper staking criteria below.

Do not use a chisel with a sharp edge.



FIGURE 11

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FIGURE 12: **CORRECT** - PREVENTS THE NUT FROM GETTING LOOSE

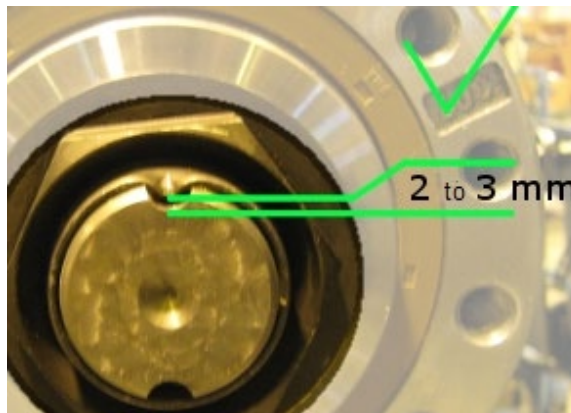


FIGURE 13: **CORRECT** – 2 to 3mm (0.078 to 0.118 IN)
MAXIMUM – BOTTOM OF GROOVE TO STAKING



FIGURE 14: BROKEN OR TORN LIP – **REJECTED**

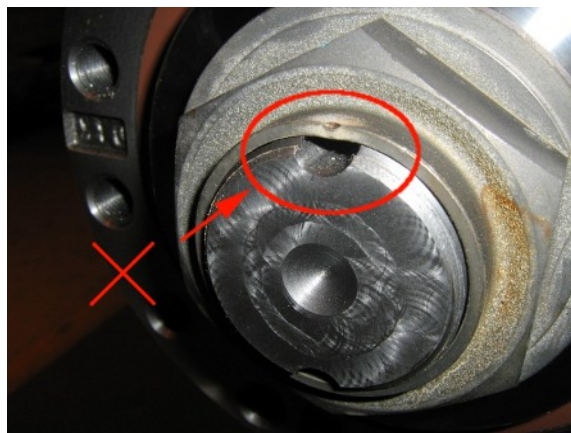


FIGURE 15: LIP INADEQUATELY PRESSED IN –
REJECTED

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4. Clean hub flange clamping surfaces (both side) using a good quality degreaser or brake cleaner.

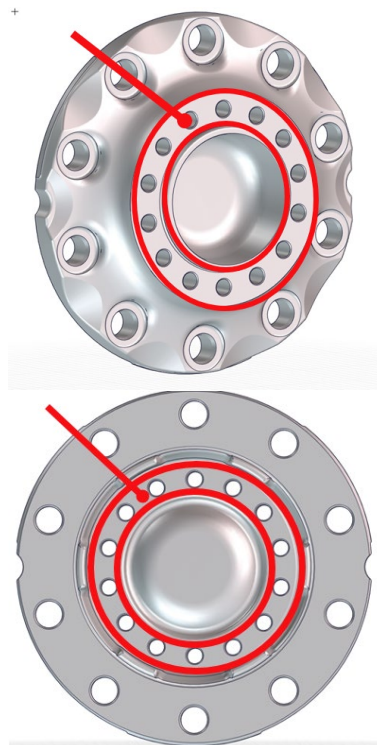


FIGURE 16

5. 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.

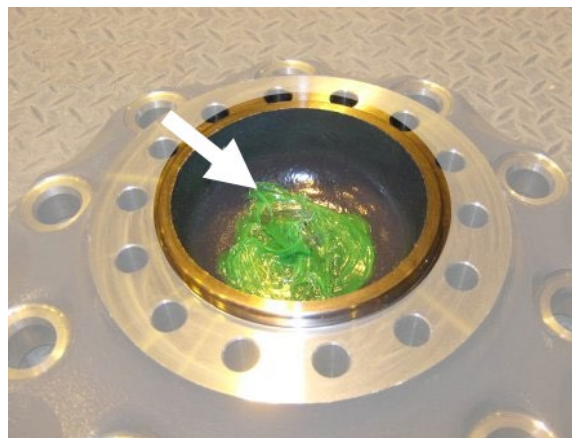


FIGURE 17

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6. Secure hub flange and rotor to unitized hub bearing.
7. Use 14 new M14 cap screws and washers from kit **7771836**.

Refer to Figure 19 for tightening sequence.

TORQUE: 161-197 lb-ft (218-267 Nm)

8. Apply torque seal marks.

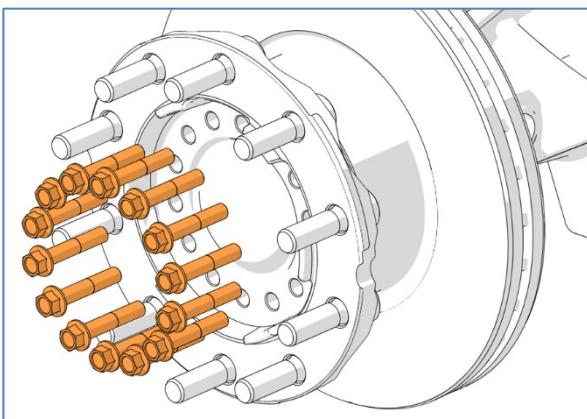


FIGURE 18: HUB FLANGE HEX CAP SCREW

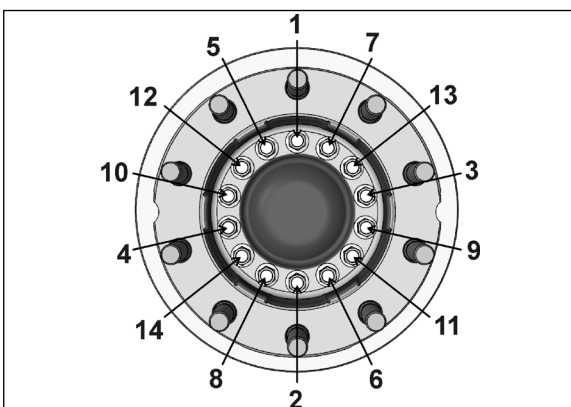


FIGURE 19 HUB FLANGE HEX CAP SCREW TIGHTENING SEQUENCE

9. Mount the wheel over studs, being careful not to damage stud threads.
10. Screw in the hex stud nuts 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.

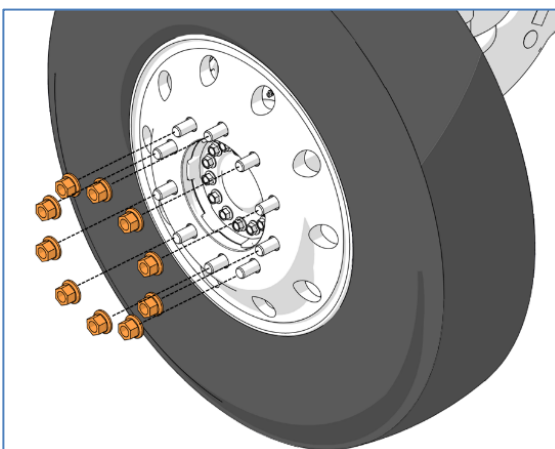


FIGURE 20

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11. Tighten stud nuts progressively as shown in FIGURE 21.

The final tightening should be done with a truck lug nut torque wrench. Tighten stud nuts.

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

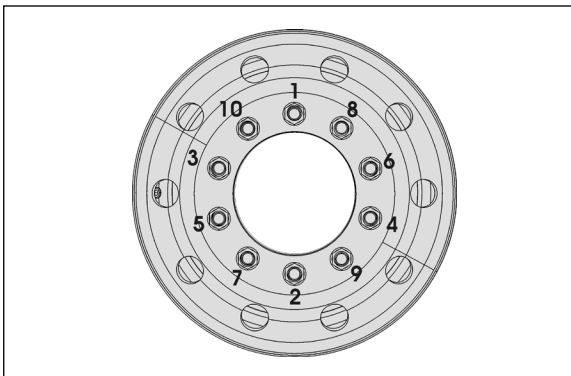


FIGURE 21: TIGHTENING SEQUENCE

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2. PART 2 – CORRECTIVE MEASURES

PART 2 to be performed only if the hub nut wasn't tightened to proper torque as checked in PART 1.

2.1.UNITIZED BEARING REMOVAL

1. Remove the brake caliper/carrier assembly.
2. **Inspect for any signs of rubbing / damage due to improperly torqued hub nut.**
3. **Discard if damaged.** Prepare a new caliper for reassembly.

Part numbers: **642182 RH / 642183 LH**



Refer to Knorr-Bremse Pneumatic Disc Brake Y006471 Service Manual included on the Technical Publications USB flash drive and available on Prevost Technical Publications site.

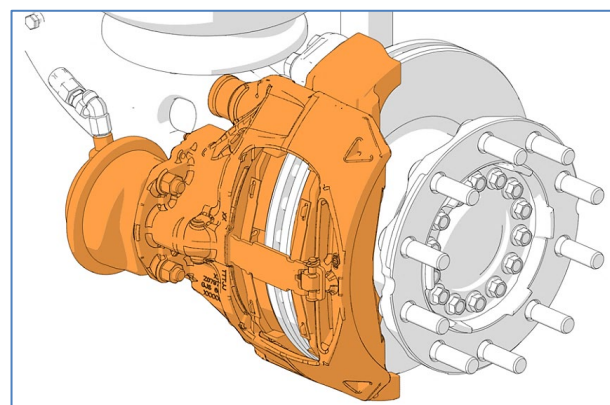


FIGURE 22

4. With the hub flange already removed in PART 1, insert two guide studs in the disc.



FIGURE 23

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5. Insert two bolts into brake disc extraction holes.
6. Tighten to free brake disc from hub bearing

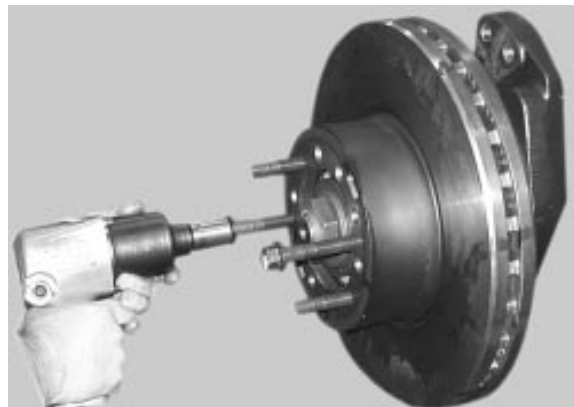


FIGURE 24

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

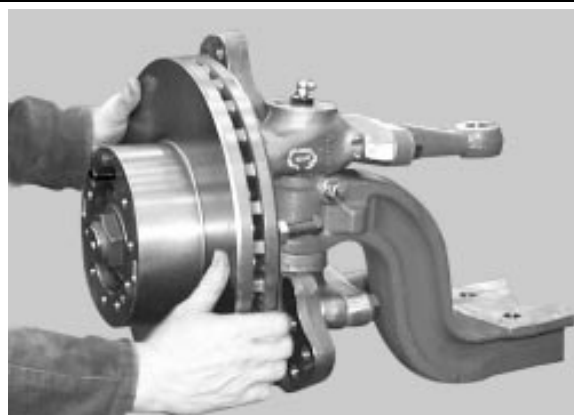


FIGURE 25

8. **Inspect disc for signs of damage caused by rubbing against the caliper carrier due to improperly torqued hub nut.**
9. **Discard damaged disc if applicable.**
10. If applicable, prepare a new disc for reassembly. Part number: **611300**
11. Unscrew hub nut and **discard**.



CAUTION

Stake must be completely removed before loosening hub nut. Failure to do so may damage the threads.

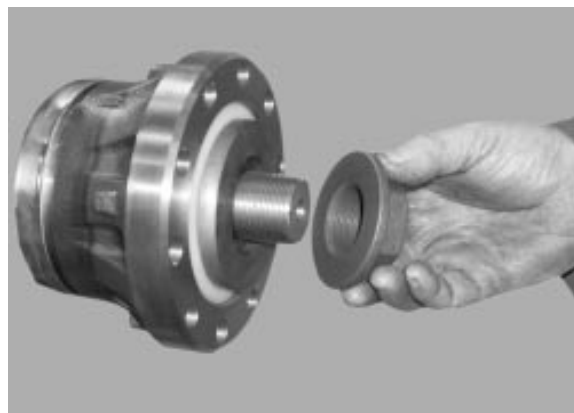


FIGURE 26

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12. Remove the thrust washer.
Keep for re-use.



FIGURE 27

13. Screw insertion tool onto spindle.

Insertion tool, tag axle	G32950
--------------------------	--------



FIGURE 28: INSERTION TOOL

14. Carefully pull unitized bearing assembly and remove.
15. **Discard** unitized bearing.

16. **If damaged**, repair the first spindle threads using appropriate thread cutting die.

Tag axle spindle thread: 1 3/4-8 UNR 3A

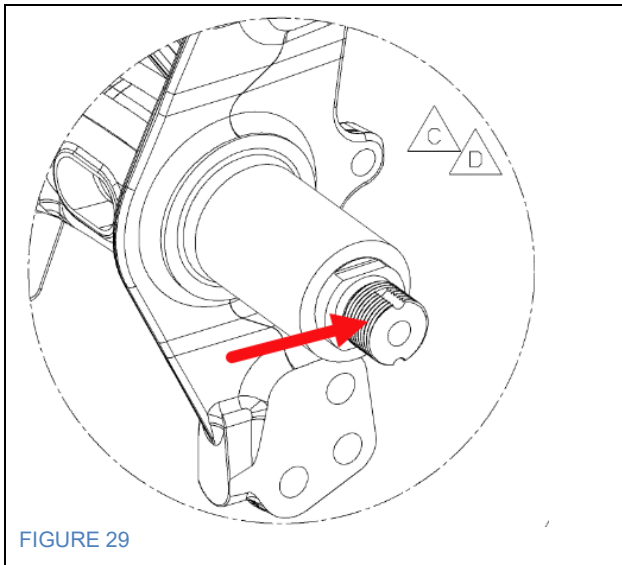


FIGURE 29



FIGURE 30

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2.2. UNITIZED BEARING INSTALLATION

1. Clean spindle using EFX degreaser (Prevost #685313) or brake cleaner.

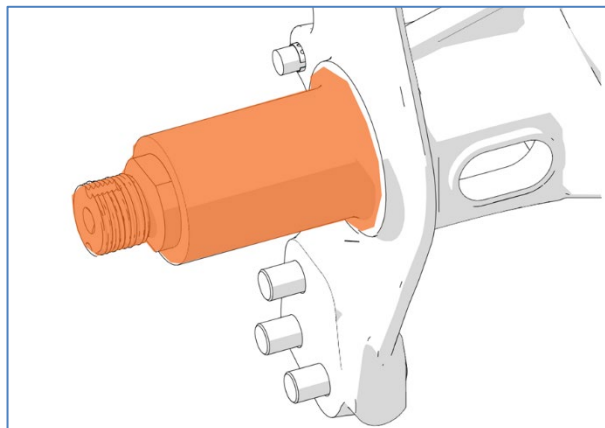


FIGURE 31

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



FIGURE 32: APPLY GLEITMO 805 GREASE

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

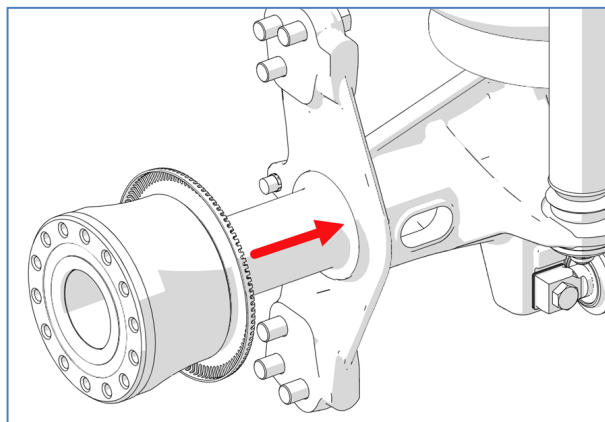


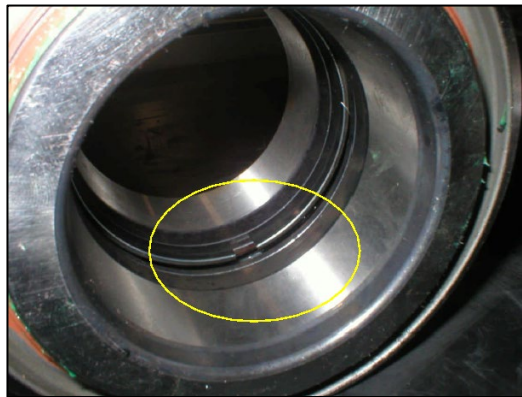
FIGURE 33: SLIP UNITIZED HUB BEARING OVER SPINDLE

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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.

Always use an insertion tool



5. Remove the insertion tool.
6. Clean thrust washer both sides and hub nut using a good quality degreaser or brake cleaner.
7. Install thrust washer and hub nut then torque hub nut.

TORQUE: 563-687 lb-ft (763-931 Nm)

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

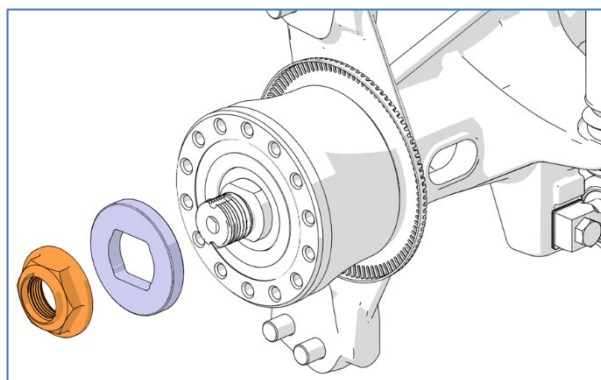


FIGURE 34: INSTALL THRUST WASHER AND HUB NUT

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8. Make sure there is no play between the bearing and the spindle shoulder.

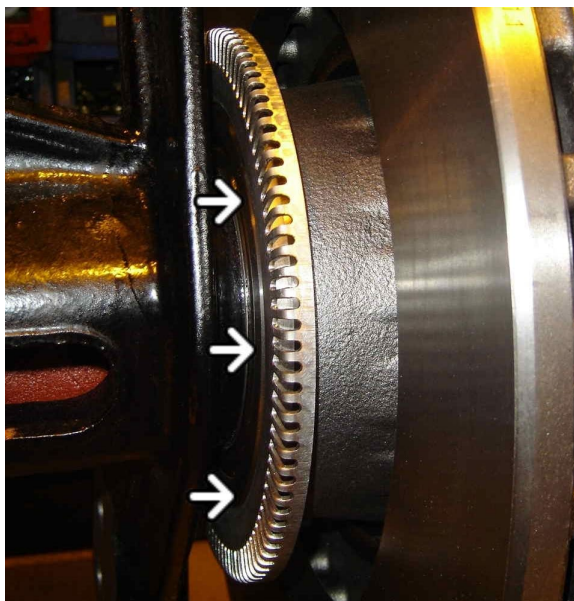


FIGURE 35: NO PLAY BETWEEN THE BEARING AND THE SPINDLE SHOULDER

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Check the unitized bearing end play. Refer to APPENDIX - UNITIZED BEARING END PLAY VERIFICATION at the end of this document.

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

Do not use a chisel with a sharp edge.



FIGURE 36: CORRECT - PREVENTS THE NUT FROM GETTING LOOSE

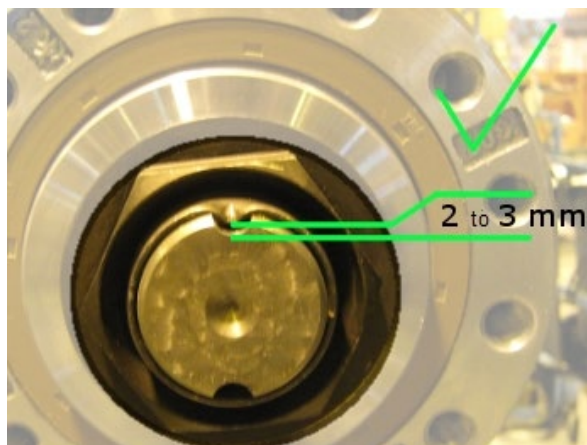


FIGURE 37: CORRECT – 2 TO 3 MM / 0.078 TO 0.118 IN

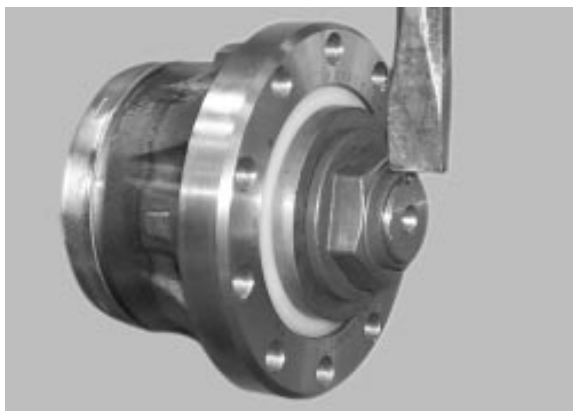


FIGURE 38



FIGURE 39: BROKEN OR TORN LIP – REJECTED

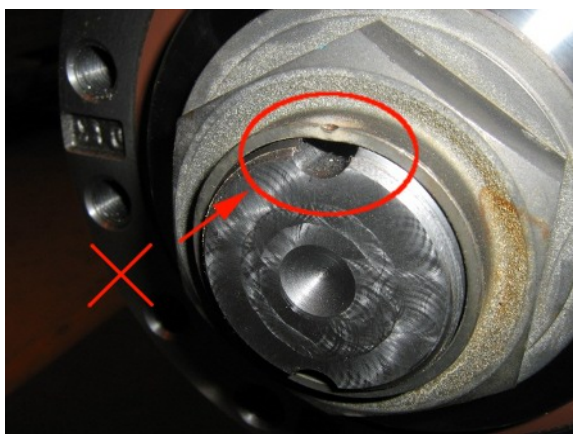


FIGURE 40: LIP INADEQUATELY PRESSED IN – REJECTED

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

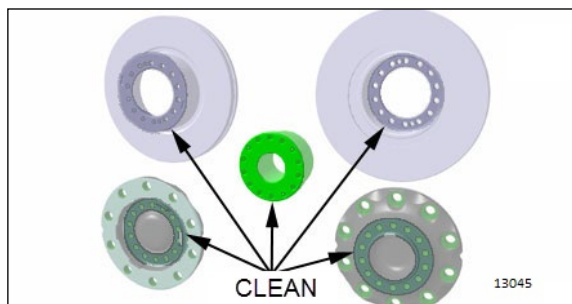


FIGURE 41: CLEANING HUB BEARING, ROTOR AND HUB FLANGE CLAMPING SURFACES

11. Install two guide studs on the unitized bearing.

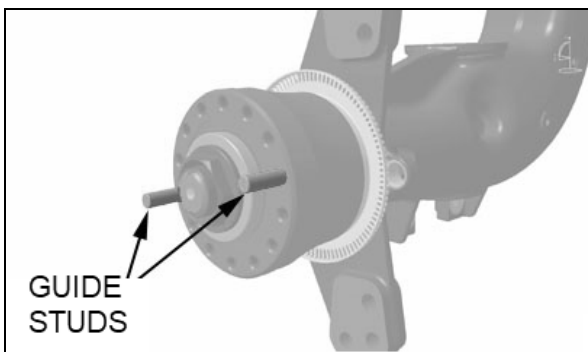


FIGURE 42

12. Install rotor onto hub bearing.

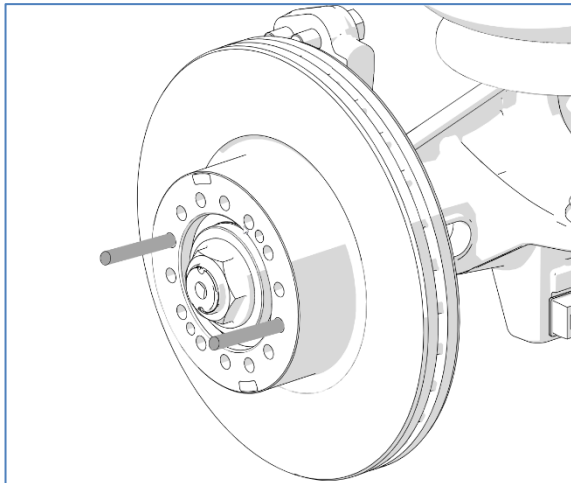


FIGURE 43: ROTOR

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13. 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.

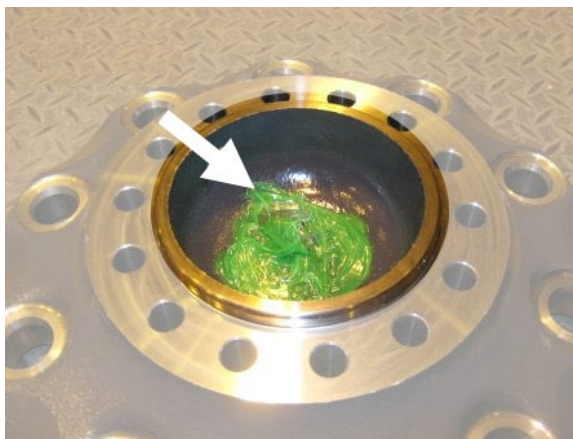


FIGURE 44

14. Secure hub flange and rotor to unitized hub bearing.
15. Use 14 new M14 cap screws and washers from kit **7771836** (single-use).

Refer to Figure 47 for tightening sequence.

TORQUE: 161-197 lb-ft (218-267 Nm)

16. Apply torque seal marks.

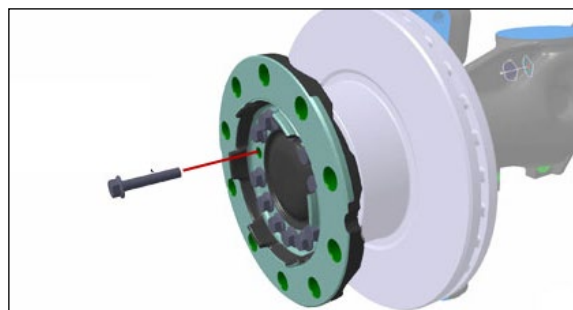


FIGURE 46: HUB FLANGE HEX CAP SCREW

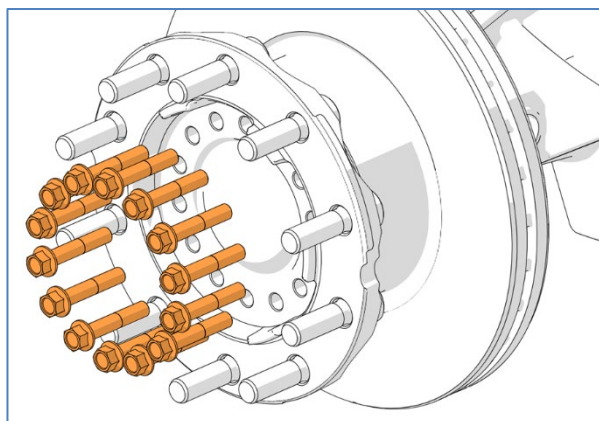


FIGURE 45

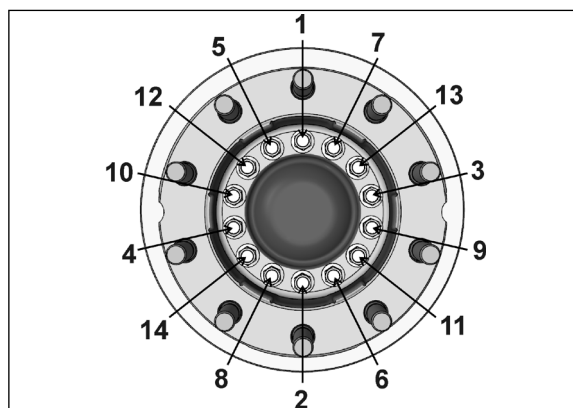


FIGURE 47 HUB FLANGE HEX CAP SCREW TIGHTENING SEQUENCE

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17. Mount the brake caliper. Refer to Knorr Bremse manual.

**CALIPER MOUNTING BOLTS TORQUE:
405-495 lbf-ft (549-671 N-m)**

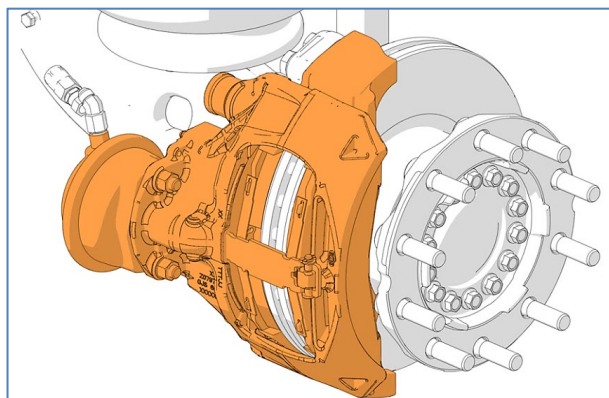


FIGURE 48

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

19. Screw in the hex stud nuts 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.

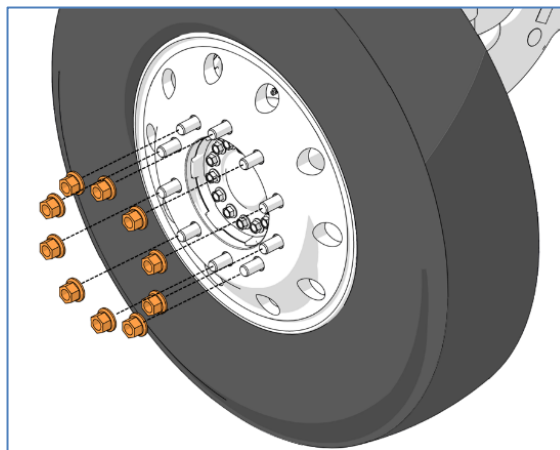


FIGURE 49

20. Tighten stud nuts progressively as shown.

The final tightening should be done with a torque wrench. Tighten stud nuts.

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

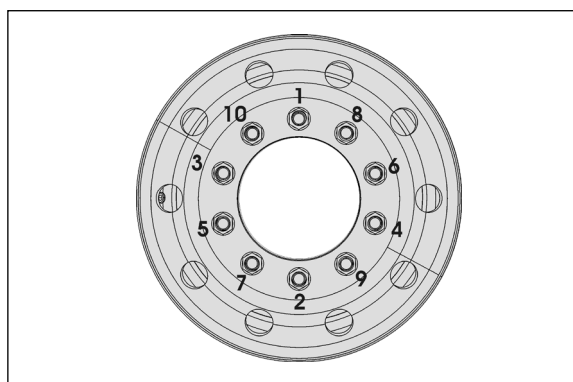


FIGURE 50: TIGHTENING SEQUENCE

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APPENDIX - 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.

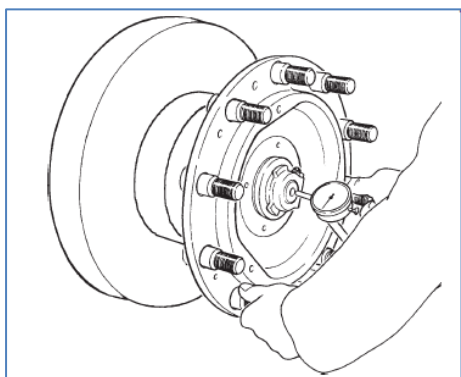


FIGURE 51

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:

<u>New Tag Axle Unitized Hub Bearing Axial End play</u>	
Maximum axial play	0.0024 inch (0.061mm) based on clamp load of 20000 lbf (90 kN).

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PARTS / WASTE DISPOSAL				

Discard waste according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)

ESTIMATED TIME

The time required to perform this special bulletin is:

PART 1 only: 2 h

PART 1 & PART 2: 4 h

Special Bulletin

SP22-302B

Date	Expiration	Release	Page
08.2022	08.2024	6	30(30)

OTHER

VBC Bulletin	N/A
Fail Code	09
Defect Code	13.02
Syst. Cond	B
Causal Part	621967

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