

Field Service Procedure

INSPECTING TEMPER-LOC® NUTS ON MERITOR AXLEPAK™ TRAILER HUBS

Hazard Alert Messages

Read and observe all hazard alert messages in this publication.

DANGER

Indicates imminent danger. Failure to follow this instruction will result in death or serious injury.

WARNING

Indicates a possibly impending danger. Failure to follow this instruction can result in death or serious injury.

CAUTION

Indicates a hazardous situation or unsafe practice which, if not avoided, could result in injury or damage to components.

How to Obtain Additional Maintenance, Service and Product Information

For service and maintenance information, refer to Maintenance Manual MM-2192, Meritor AxlePak™ Wheel-End System Maintenance Manual and Maintenance Manual MM-2192-PB, AxlePak™ Parts List. To access these publications, visit Literature on Demand at meritor.com.

For additional assistance, contact the Meritor OnTrac™ Customer Service Center at 866-668-7221 (US and Canada) between 7:30 AM and 10:00 PM ET Monday through Friday, and between 9:00 AM and 6:00 PM ET on Saturday; 001-800-889-1834 (Mexico); or visit our website: www.meritor.com/warranty#OnTracSC.

Purpose

This publication provides instructions for inspecting Meritor AxlePak™ trailer hubs to verify the Temper-Loc® spindle nut is installed correctly. If necessary, additional instructions are provided to correct any issues and return the hub to service.

These instructions are to be used in conjunction with Maintenance Manual MM-2192 and the AxlePak™ Parts List MM-2192-PB to assist with the inspection, and corrective action if needed.

Safety Precautions

Before performing the procedures in this publication, read and understand the following safety precautions.

DANGER

When performing any kind of service, always ensure the vehicle is on a level surface. Block the wheels to prevent the vehicle from moving. Failure to do so can result in death or serious personal injury.

WARNING

To prevent eye injury, always wear eye protection when performing vehicle maintenance or service.

WARNING

ASBESTOS AND NON-ASBESTOS FIBERS - Some brake linings contain asbestos fibers, a cancer and lung disease hazard. Some brake linings contain non-asbestos fibers, whose long-term effects to health are unknown. Use caution when handling both asbestos and non-asbestos materials.

Parts and Tools

The following tools are recommended to perform this procedure.

- ½" Hex socket
- ¼" Allen socket
- Spindle nut socket
 - TP spindle – 4.75"
 - TN spindle – 3.75"
- Torque wrench capable of measuring at least 200 lb-ft
- Hub seal driver (refer to the Part Numbers and Torque Specifications table)
- Bearing puller
- Dial indicator and magnetic base

What is Covered under this Field Program?

- Parts will be reimbursed at 50% of Meritor's Aftermarket list price.
- Allowable Repair Times:
 - 0.5 hours per axle for inspection (Corrective Action A) – Includes removing the hubcap, inspecting the retaining ring, reseating the retaining ring, reinstalling the hubcap, and documenting the inspection.
 - 1.5 hours per wheel end for detailed inspection (Corrective Action B) – Includes removing the hubcap, spindle nut, and hub; inspecting the components and replacing them, if necessary; cleaning all of the parts; replacing the hub seal; filling the hub seal with grease; setting the end play; and reinstalling the hubcap.
- Costs not covered under this program include, but are not limited to: towing, mobile repair service mileage or fees, downtime, lost productivity, cargo damage, taxes or any other losses or costs resulting from a defective covered component.

Before Inspection: Determine if the Axle is Included in This Field Program

1. Locate the metal axle model and serial number identification: the center of the axle beam for MTA or spring suspensions; the rear of the trailing arm on MTM trailing arm suspensions; the outside frame rail on MPA slider suspensions.
2. Find the axle serial number that begins with FRK on the tag. Compare this number with the serial numbers provided in the attached axle list.
3. If the FRK serial number is NOT in the list, STOP. No further action is required.

4. If the FRK serial number IS included in the list, check how long the axle has been in service.
5. If the axle has not been placed in service or has been in service for 30 days or less, proceed to the Inspection section.

If the axle has been in service for more than 30 days, the axle does not need to be inspected. No further action is required.

Inspection: Retaining Ring Installation (Approximately 30 minutes per axle)

1. Clean area at the hub-to-hubcap interface with a clean rag.
2. Remove the hubcap.
 - a. Remove five of the six hubcap bolts.
 - b. Hold the hubcap firmly against the hub while removing the last hubcap bolt.
 - c. Carefully tilt the hubcap down to catch any grease that may run out.
 - d. Set the hubcap and any contained grease aside in a clean area to avoid contamination. Grease will be reused when the hubcap is reinstalled.
3. Verify presence of the yellow retaining ring. Figure 1.
4. Verify the EasyView tabs and locking teeth of the key are fully seated in the nut as shown in Figure 1.

If the EasyView tabs and locking ring teeth are correctly installed, proceed to the next step to reinstall the hubcap.

If either of these are out of position as shown in Figure 2 or Figure 3, follow the corresponding CORRECTIVE ACTION steps.

5. Reinstall the hubcap.
 - a. If the hubcap gasket was damaged during removal, scrape off the remaining gasket material and install a new gasket. Otherwise, the existing gasket may be reused.

Gasket Part Numbers:
TP Axle – 2208P1212
TN Axle – 2208Q1213
 - b. Using care to not spill the grease in the hubcap, carefully line up the bottom holes of the hubcap to the threaded holes in the hub face.
 - c. Quickly tilt the hubcap up to the hub face and finish lining up the holes.
 - d. Hold the hubcap against the hub face while reinstalling the six hubcap bolts. Tighten the bolts to 15-30 lb-ft (20-41 Nm) using a criss-cross pattern.

6. Record the trailer information and findings from the inspection steps below in the data sheet.

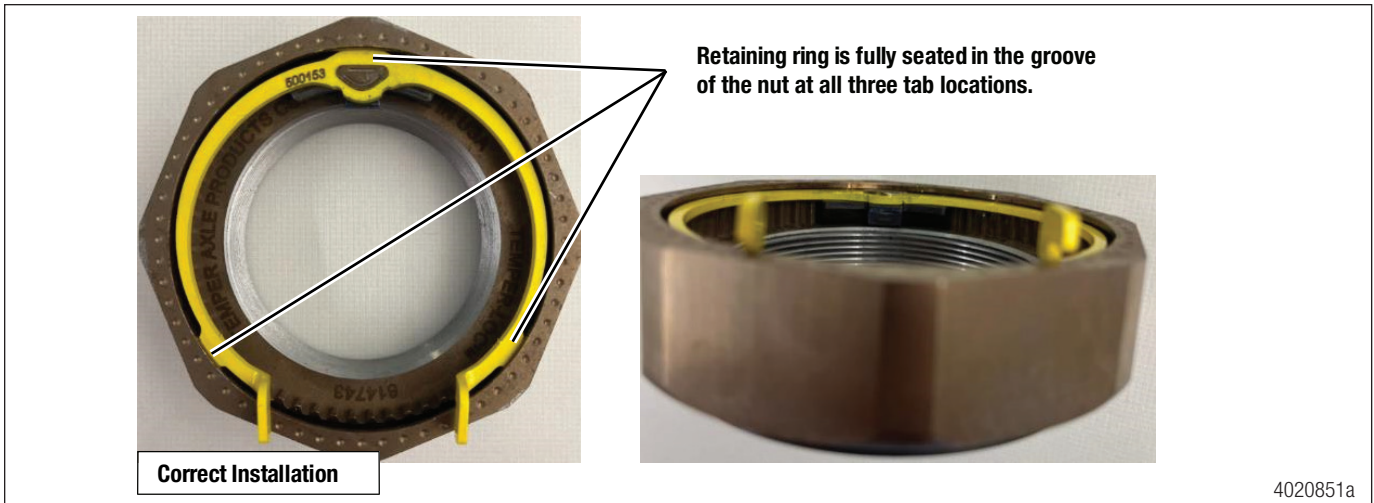


Figure 1: Retaining Ring Installed Correctly – No Action Needed

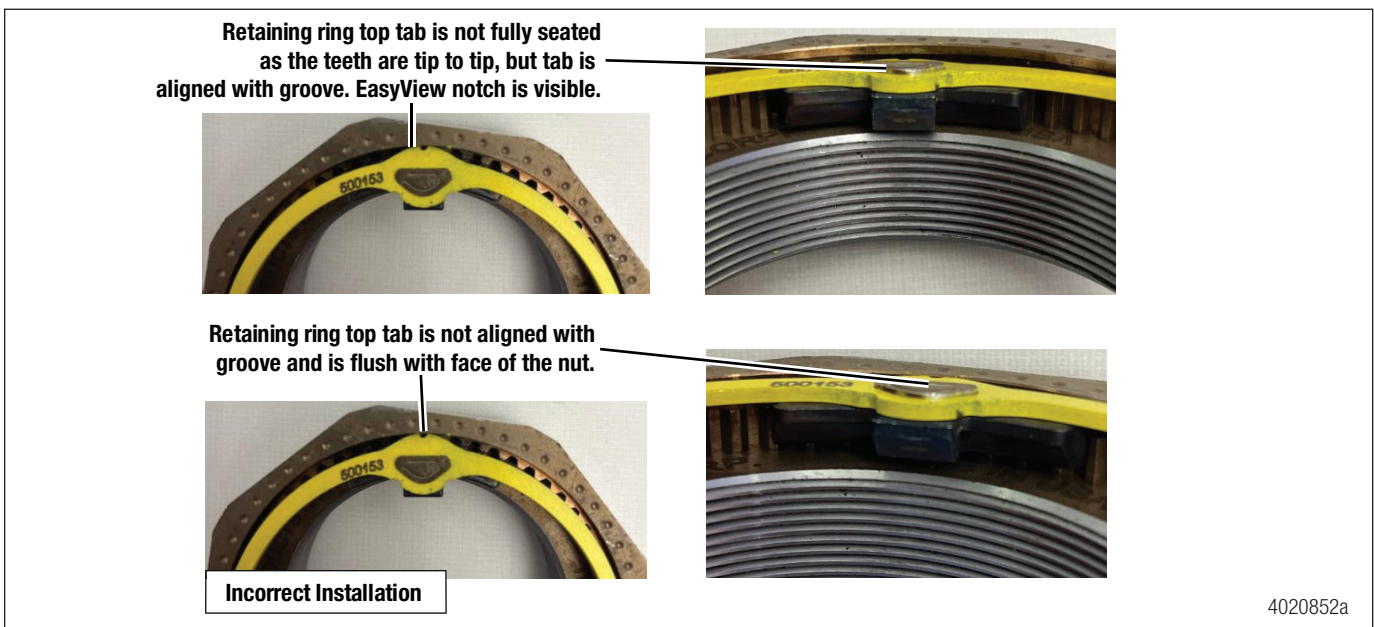


Figure 2: Retaining Ring Not Fully Seated but Not Outside of Nut – Go to CORRECTIVE ACTION A

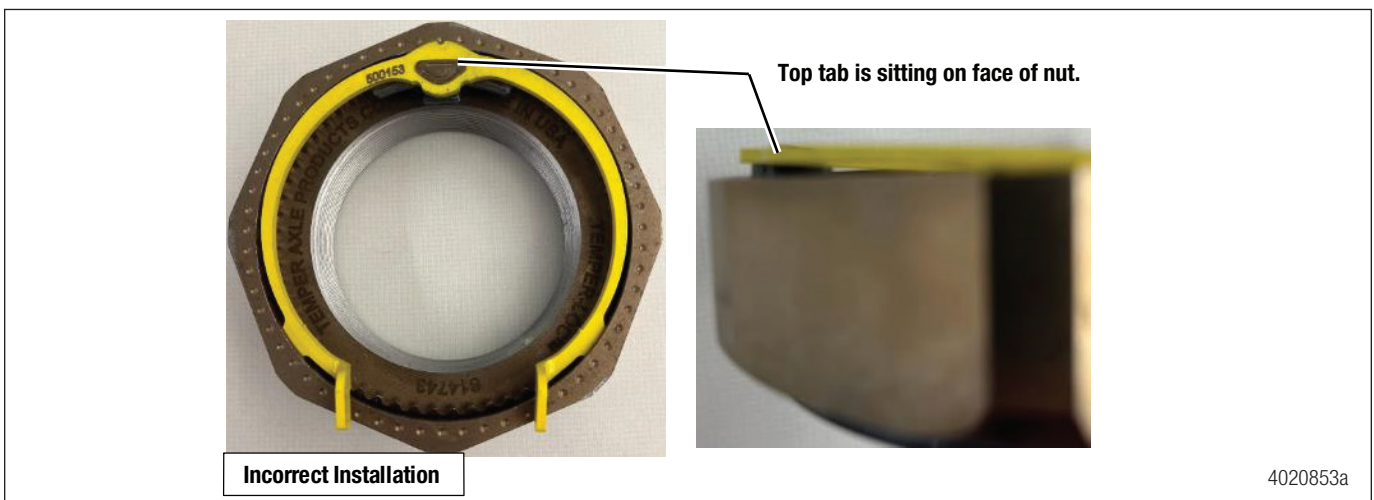


Figure 3: Retaining Ring Not Fully Seated and Outside of Nut – Go to CORRECTIVE ACTION B

Corrective Action A: Seat the Retaining Ring (Retaining ring found in condition shown in Figure 2)

1. Rotate the nut slightly in either direction by hand while pushing on the axle spindle “keyway” tab of the retaining ring with a small screwdriver. The retaining ring should snap into the groove on the nut with the teeth fully engaged to the nut. Proceed to Step 5 to reinstall the hubcap.
2. If the retaining ring does not snap into the groove, remove the retaining ring from the nut.
3. Rotate the nut in either direction until the next dot on the nut is aligned with the center of the keyway. DO NOT rotate more than one dot.

If the nut rotates more than one dot: Proceed to Step 13 of Corrective Action B to adjust the bearing for proper end play, then continue to Step 4 below.

4. Reinstall the retaining ring.
 - a. Insert the EasyView center tab into the groove of the nut by holding the retaining ring at an angle to the nut while engaging the key in the axle keyway.
 - b. Squeeze each end finger tab to engage the notched end tabs into the nut groove, one at a time.

NOTE: The EasyView notches of all three tabs must be completely hidden in the nut groove to be sure of correct retaining ring engagement. Figure 1.

 - c. Check that the EasyView tabs and the locking teeth of the key are fully seated in the nut.
5. Reinstall the hubcap.
 - a. If the hubcap gasket was damaged during removal, scrape off the remaining gasket material and install a new gasket. Otherwise, the existing gasket may be reused.

Gasket Part Numbers:
TP Axle – 2208P1212
TN Axle – 2208Q1213

 - b. Using care to not spill the grease in the hubcap, carefully line up the bottom holes of the hubcap to the threaded holes in the hub face.
 - c. Quickly tip the hubcap up to the hub face and finish lining up the holes.
 - d. Hold the hubcap against the hub face while reinstalling the six hubcap bolts. Tighten the bolts to 15-30 lb-ft (20-41 Nm) using a criss-cross pattern.

Corrective Action B: Detailed Inspection (Retaining ring found in condition shown in Figure 3) (Approximately 1.5 hours per wheel end)

1. Remove the retaining ring from the nut.
2. Remove the hub from the spindle.
3. Remove the seal from the hub.
4. Inspect the bearing cups and cones for any damage. Replace as necessary. Refer to MM-2192-PB for parts list.
5. Clean the parts.

DANGER

Solvent cleaners can be flammable and poisonous, and cause serious personal injury or death. Examples of solvent cleaners are carbon tetrachloride, and emulsion-type and petroleum-base cleaners. Read the manufacturer's instructions before using a solvent cleaner, then carefully follow the instructions. Also follow the procedures below.

- Wear eye protection.
- Wear clothing that protects the skin.
- Work in a well-ventilated area.
- NEVER use gasoline or solvents containing gasoline. Gasoline can explode.
- Hot solution tanks or alkaline solutions must be used correctly.
- Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

- a. Use a cleaning solvent to clean the ground or polished parts and surfaces. Kerosene or diesel fuel can be used for this purpose. DO NOT USE GASOLINE.
- b. Thoroughly clean the hub cavity with spray degreaser. The cavity must be free of any metal chips or dirt.
- c. To remove grease from a wheel end, use a stiff fiber brush, not steel, and kerosene or diesel fuel, not gasoline. Allow the parts to dry. Note that any solvent residue must be completely wiped dry since it may either dilute the grease or prevent the lubricant from correctly adhering to the wheel-end components.

WARNING

Dry bearings with clean paper or rags. NEVER use compressed air, which can cause abrasive particles to contaminate the bearings. Damage to components and reduced lining life can result. Using compressed air can also cause the rollers to be forced out of their cage and propelled into the air, causing injury.

- d. Clean bearings in a suitable non-flammable solvent and dry them with a lint-free rag.
6. Install the inner bearing cone and a new hub seal.
 7. Install the hub onto the spindle.
 8. Fill the hub cavity with Meritor-approved grease to the outer bearing cup's smallest diameter. DO NOT MIX GREASE TYPES. (See to Section 9 of MM-2192 for additional grease specification information.)

Grease Specifications

	Chevron Delo® Syn-Grease SFE EP	Shell Gadus S5® V460C 00
NLGI Grade	0	00
Thickener Type	Polyurea	Lithium Complex
Color	Gold	Red

NOTE: Chevron Delo grease is gold; Shell Gadus grease is red.

9. At the top of the spindle and as far back as possible, pump additional grease until it appears grease will run out. (See page 17 of MM-2192 for details and illustrations.)
10. Install the outer bearing cone onto the spindle.
11. Thread the nut onto the axle until hand tight against the bearing.
12. Seat the bearing:
 - a. Using a torque wrench, tighten the nut to 200 lb-ft (271 Nm).
 - b. Rotate the wheel at least one full revolution in either direction.
 - c. Back the nut off ½ turn.

13. Adjust the bearing:

- a. Using a torque wrench, tighten the nut to 100 lb-ft (135 Nm).
- b. Rotate the wheel at least one full revolution in either direction.
- c. Back the nut off:

TN axle – 1/6 turn (10 dots).
TP axle – 1/8 turn (8-9 dots).
- d. DO NOT rotate the wheel.

14. Reinstall the retaining ring.

- a. Insert the EasyView center tab into the groove of the nut by holding the retaining ring at an angle to the nut while engaging the key in the axle keyway.
- b. Squeeze each end finger tab to engage the notched end tabs into the nut groove, one at a time.
- c. The EasyView notches of all three tabs must be completely hidden in the nut groove to be sure of correct retaining ring engagement. Figure 1.
- d. Check that the EasyView tabs and the locking teeth of the key are fully seated in the nut.

15. Install a dial indicator with the magnetic base on the spindle and the tip on the hubcap gasket face. Check that the end play is 0.001-0.005-inch (0.0254-0.127 mm). (See page 19-20 of MM-2192 for details and illustrations.)

16. Reinstall the hubcap.

- a. Scrape off the remaining gasket material.
- b. Clean the hubcap of any old grease that remains.
- c. Install a new gasket and reinstall the hubcap using the six hubcap bolts. Tighten the bolts to 15-30 lb-ft (20-41 Nm) using a criss-cross pattern.

Gasket part number:

TN axle – 2208Q1213

TP axle – 2208P1212

