



Service Parts Instructions

FF/FE Series Steer Axle Bearing Adjustment Using Doctor Preload

Axles Equipped with Temper-Loc® Spindle
Nuts

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip or fall over. Serious personal injury and damage to components can result.

How to Obtain Additional Maintenance, Service and Product Information

Refer to Maintenance Manual 2, Front Non-Drive Steer Axles. To obtain this publication, visit Literature on Demand at meritor.com.

Adjusting Bearing Preload Using Doctor Preload

Doctor Preload is intended for use only with conventional hubs with Temper-Loc® spindle nuts. Remove all bearing spacers from pre-adjusted hub assemblies before adjusting with Doctor Preload. Do not attempt to adjust a unitized hub assembly using the Doctor Preload system. Figure 1.



Figure 1

Inspect the Components Before Starting Bearing Adjustment

Inspect all wheel end components. Repair any damage to the spindle threads so that the Temper-Loc spindle nut is able to thread completely onto the spindle.

Prepare the Wheel End for Bearing Adjustment

Always be sure the hub is fully seated before adjusting with Doctor Preload. Thread the correct size Temper-Loc nut onto the spindle. Using a bar and socket, tighten the Temper-Loc nut to drive the hub **solidly** against the axle. Loosen the nut one-half turn. Finally, hand-tighten the nut until it first touches the face of the outer bearing.

Adjust the Bearings Using Doctor Preload

1. To attach Doctor Preload, first adjust the yellow T-handle so that it is "loosened" to the point that it completely covers the threads on the shaft of the spindle adapter shaft as shown. Figure 2 and Figure 3.

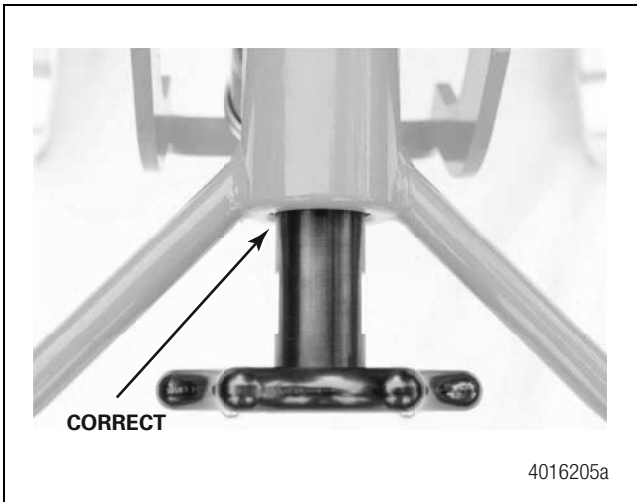


Figure 2

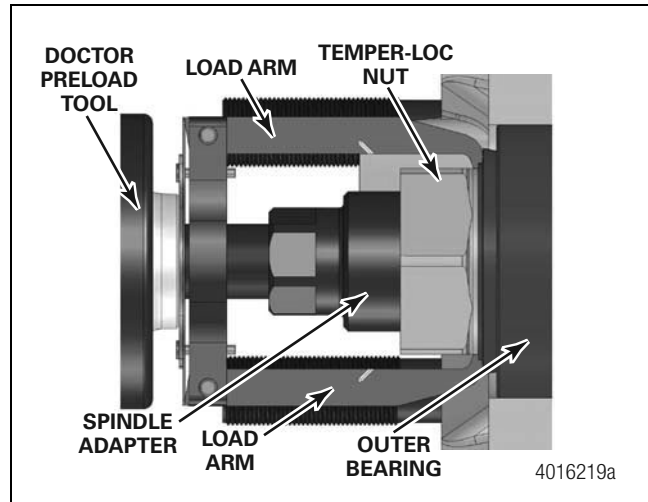


Figure 4

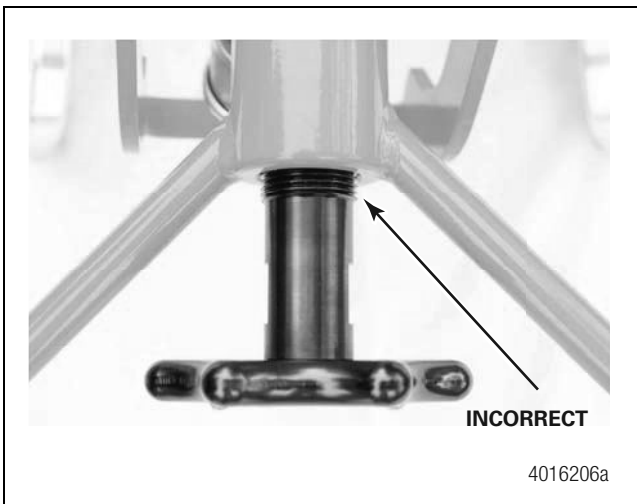


Figure 3

- Using a sweeping motion, guide the spring-loaded load arms around the nut. Carefully engage the spindle adapter thread on the spindle until the O-ring in the spindle adapter bottoms out against the spindle face. Figure 4.

NOTE: A two-thread turn is adequate to engage the adapter. Do not tighten the star-handle once the O-ring makes contact with the spindle. Over-tightening the spindle adapter against the spindle can damage the Doctor Preload Tool.

- Check to make sure the load arms are correctly located in the backface relief of the Temper-Loc nut and are making contact with the outer bearing cone. If one or both are skewed out of alignment, slowly push and pull the load arm assembly along the shaft until the tips of the load arms spring into their correct position behind the Temper-Loc nut. Figure 4.

CAUTION

Do NOT over-tighten the yellow T-handle to the point that the needle pointer exceeds the maximum value shown on the gauge. Allow the needle pointer to catch up while slowly tightening the T-handle.

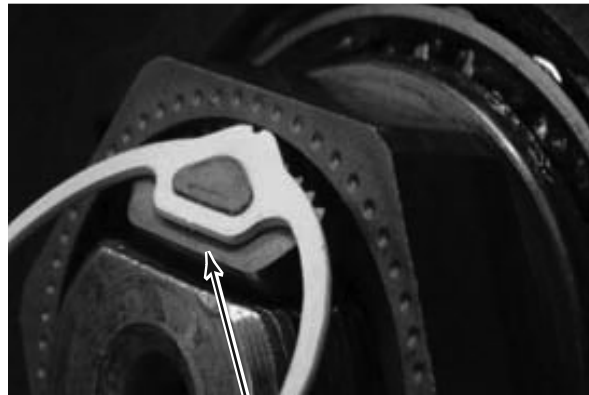
- Seat the bearing rollers by SLOWLY tightening the T-handle clockwise.

Turn the yellow T-handle to load the bearings until the needle pointer on the Doctor Preload gauge reaches the green “Roll-in Zone.” Spin the hub at least three full turns in any one direction to seat the bearing rollers. The load may drop slightly when rolling in the bearings – this is normal. If the needle pointer drops out of the “Roll-in Zone”, tighten the T-handle until it returns to the “Roll-in Zone” and spin the hub again. Repeat until the needle pointer stays in the “Roll-in Zone.” **Do NOT spin the hub again after this step.** If this occurs, remove Doctor Preload and start over by fully seating the hub as described in “Prepare the Wheel End for Bearing Adjustment” above. **Do NOT hand-tighten the Temper-Loc nut against the bearing while the needle pointer is in the green “Roll-In Zone.”** Figure 5.



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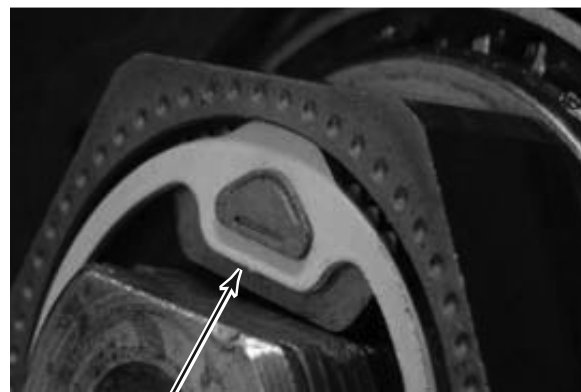
Figure 5



Retainer tab entering groove (FF Style).

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Figure 6



Retainer tab secured in groove (FF Style).

4016222a

Figure 7

5. Set the bearings as follows. Loosen the T-handle, turning it counterclockwise slowly until the needle pointer reaches the 500 lbs force hash mark. Do NOT go past the set point; if the set point is overshoot, go back to Step 2 and repeat in order to seat the bearing rollers.
6. Lock in the bearing setting. Rotate the Temper-Loc nut clockwise until the backface makes contact with the bearing face. Adjust slightly until dots on the front face of the nut align with one or both of the yellow hash marks on the load arms.
7. Remove the Doctor Preload tool from the spindle. Completely loosen the T-handle by turning it counterclockwise until the load shown on the gauge drops to ZERO and the threads on the shaft are completely covered. Hold the Gauge Guard Handle to support the weight of the tool, and then loosen the star-handle, turning it counterclockwise. When the tool is unattached from the spindle, gently pull straight back and the load arms will slide back around the nut.
8. Install the retainer ring. First, install the EasyView® center tab of the retainer ring in the Temper-Loc nut, aligning the key flat with the spindle flat (FF Style) or engaging the key in the keyway (FE Style) at the same time. Figure 6 and Figure 7. Push in on each end finger tab, one at a time, to fit each tab into the nut groove.

Inspect the Final Assembly of the Temper-Loc Nut

⚠ WARNING

You must inspect the retainer ring in the nut to ensure it has been correctly installed. Failure to inspect the installation thoroughly could result in component failure and serious personal injury.

Ensure that there is a yellow retainer ring inserted in the nut. Check that all three EasyView tabs and locking teeth of the key are fully seated in the nut. The EasyView notches of all three tabs must be completely hidden in the groove of the nut.



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Printed in USA

TP-1992
Issued 04-20
(16579)