Carrier-to-Housing Joint Reseal Procedure

Service procedure to be used any time a carrier is removed and reinstalled.
Includes tapered dowel installation information.
All Meritor 120, 145, 160, 170, 180, 380, 13X and MT-14X Series Axles

- 1/2” Drill Motor
- Straight Edge
- Feeler Gauge
- 5/8” x 11 Bottoming Tap
- Spray Cutting Oil
- Rotary Tool for use with Roloc™ bristle disc in kit
- 1” Roloc Disc Pad Holder, 3M Part Number 051144-45101, for use with Roloc™ bristle disc
- 1/4” Threaded Shaft, 3M Part Number 051144-45102, for use with Roloc™ bristle disc

Product Design Variations
Certain Meritor axle models utilize tapered dowels at the carrier-to-housing joint location. Tapered dowels provide structural improvement and greater long-term durability not needed with older vehicles. Figure 1.

- All 160 series tandem axles, including 164’s, utilize tapered dowels in both the forward and rear positions.
- 14X series tandems utilize tapered dowels within the forward axle only.
- 13X series axles utilize tapered dowels within the rear axle.

**Figure 1**

The following models utilize tapered dowels.
Tapered dowels may be added to older vintage pre-tapered dowel carriers. This technical bulletin provides instructions and tooling details needed to retrofit older vintage carriers with tapered dowels.

The tapered dowel retrofit should only be performed if leakage is present and the correct tooling is on hand.

Note that the retrofit procedure should not be done solely as an update and is not covered under warranty. This procedure, if performed during an “authorized” leak repair, will be included in that repair and additional labor time paid. Tooling required to perform this update is not covered under warranty.

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 and fall over. Serious personal injury and damage to components can result.

Solvent cleaners can be flammable, poisonous and cause burns. 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 safe eye protection.
- Wear clothing that protects your skin.
- Work in a well-ventilated area.
- Do not use gasoline or solvents that contain gasoline. Gasoline can explode.
- You must use hot solution tanks or alkaline solutions correctly. Read the manufacturer’s instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

When you apply some silicone gasket materials, a small amount of acid vapor is present. To prevent serious personal injury, ensure that the work area is well-ventilated. Read the manufacturer’s instructions before using a silicone gasket material, then carefully follow the instructions. If a silicone gasket material gets into your eyes, follow the manufacturer’s emergency procedures. Have your eyes checked by a physician as soon as possible.

Take care when you use Loctite® adhesive to avoid serious personal injury. Read the manufacturer’s instructions before using this product. Follow the instructions carefully to prevent irritation to the eyes and skin. If Loctite® adhesive material gets into your eyes, follow the manufacturer’s emergency procedures. Have your eyes checked by a physician as soon as possible.

Procedures

This process consists of a Cleaning and Preparation Procedure, Sealing Procedure, and Reassembly Procedure. There are two different sealing methods provided in this publication: RTV Sealing Method and Gasket Sealing Method. Either method can be used to form an acceptable seal. The key, however, to achieving a strong, long-lasting seal is to closely follow the Cleaning and Preparation Procedure to create an ideal bonding surface.

Meritor highly recommends that you retrofit the carrier to tapered dowels if not already equipped. Refer to the retrofit procedures at the end of this technical bulletin for complete instructions and tooling information.

Before You Begin

1. You must follow the procedures in this bulletin to reseal the carrier-to-housing joints on the axles specified in this bulletin. Otherwise, you will void Meritor’s warranty.

2. Complete all welding procedures before you apply sealants. Heat produced by welding can damage sealants.

IMPORTANT! You MUST REMOVE THE CARRIER FROM THE AXLE HOUSING to perform these procedures correctly. Loosening the carrier-to-axle housing bolts and sliding it out on studs is not a suitable method and may result in a poor quality repair. The carrier must be out from under the vehicle to perform correct cleaning and housing flatness checks.

IMPORTANT! This procedure requires you to use a new fastener kit with new bolts and correct sealant. Refer to the parts table for the correct kit to use.
Cleaning and Preparation Procedure

1. Wear safe eye protection.

2. Park the vehicle on a level surface. Set the parking brake. Block the wheels to prevent the vehicle from moving.

3. Completely remove the carrier from the housing. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer’s instructions.

4. Remove all debris from inside the housing.

⚠️ CAUTION
Use a rotary tool with a 3M™ brand Roloc™ green bristle disc to clean the sealant from the housing and carrier face. Use of other types of discs may damage the mating surfaces.

⚠️ CAUTION
When cleaning, take care not to remove the base housing flange material. Removal of flange material, especially near the 6 o'clock position, may make the axle more susceptible to leaks. Without sufficient lubricant, damage to components can occur.

⚠️ CAUTION
When cleaning, take care not to remove milling marks on the carrier and housing mating surfaces. Removal of these milling marks may affect the adhesion of the sealant to the mating surface and the bond strength of the adhesive, making the axle more susceptible to leaks. Removal of these milling marks may also affect flatness of the interface surfaces which can affect the seal between the housing and carrier, making the axle more susceptible to leaks. Without sufficient lubricant, damage to components can occur.

5. Use a rotary tool with a 3M™ brand Roloc™ green bristle disc provided in the kit to clean all sealant residue from the housing and carrier faces. Figure 2 and Figure 3. Use of other types of discs may damage the mating surfaces. After cleaning, surfaces must be clean, dry and free of foreign matter. The surfaces must not be oily to the touch. Figure 4.

IMPORTANT! Do not remove the milling marks on the carrier and housing mating surfaces. The milling marks provide a textured surface necessary for the sealant to adhere to the parts. Removal of the milling marks may also affect the flatness of the mating surfaces. Figure 5.

NOTE: The use of other types of discs with a rotary tool is not recommended for cleaning. Other types of discs may remove component material and may reduce flatness on the mating surfaces which can make the axle more susceptible to leaks.
6. Check the flatness of the carrier and axle housing mating surfaces as follows. Place a good machined straight edge against the carrier or housing mating surface and try to insert a feeler gauge to check for a gap of 0.003” (0.076 mm) or greater. Figure 6.

7. Remove metal filings from the magnets inside the housing.

8. Clean the mounting face of the axle housing using Loctite® ODC Free cleaner, CRC Insta-solv®, Gumout Carb/Choke and Parts Cleaner or other suitable solvent that will air dry.

   **NOTE:** Do NOT use CRC Brakleen® or similar brake cleaning products.

9. Use Loctite® ODC Free cleaner, CRC Insta-solv®, Gumout Carb/Choke and Parts Cleaner or other suitable solvent to clean the carrier faces. Also, spray the cleaner on the lower internal carrier casting area at the 6 o’clock position near the carrier flange and clean this area in order to prevent an oil drip from leaking down/across the carrier flange during assembly. An oil drip at this position may prevent correct adhesion of sealant and may result in a leak.

10. Dry the housing and carrier faces.

11. Use a 5/8” x 11 bottoming tap to clean all old Dri-Loc® from the threaded holes in the axle housing.

12. If you are working on a pre-tapered dowel carrier (14X or 160 series models) to repair a leak, Meritor recommends that you retrofit the carrier to accommodate tapered dowels at this time. Refer to the retrofit procedures at the end of this technical bulletin for complete instructions and tooling information.

   **NOTE:** Retrofitting the carrier for tapered dowels is not covered under warranty unless it is performed during an authorized repair of a leak.

### Sealing Procedure

There are two methods provided for sealing the carrier to the housing: **RTV Sealing Method** and **Gasket Sealing Method**. Before you begin either method, make sure to follow the Cleaning and Preparation Procedure in it’s entirety to ensure a good bonding surface for the sealing material.

#### RTV Sealing Method

**NOTE:** Meritor highly recommends that you retrofit the carrier for tapered dowels if not already equipped. Refer to the retrofit procedures at the end of this technical bulletin for complete instructions and tooling information.

**CAUTION**
Apply RTV sealant in a continuous 0.25-inch (6 mm) bead. If you use more than this amount, sealant can break off and plug lubrication passages. Damage to components can result.

1. Apply a 0.25-inch (6 mm) bead of Loctite® 5699 RTV sealant to the housing face. ONLY Loctite® 5699, which is included in the fastener kit, can be used. You must circle each bolt hole for correct sealing. Figure 7.

   **NOTE:** Applying excessive RTV sealant is NOT BETTER for achieving correct sealing. Sealant in excess of a 0.25-inch (6 mm) bead will take longer to cure and will plug lubricant passages.

   **NOTE:** Use care to prevent any lubricant from leaking down on the cleaned flanges prior to applying the sealant. Oil will prevent correct sealing and weaken the bond.
CAUTION
Do not allow oil to drip onto the new cleaned flanges. Oil will prevent correct bonding of the joint and will result in a leak.

2. Use care to prevent any lubricant from leaking down on the new applied RTV sealant or cleaned flanges during installation. A previously oiled or "wet" carrier will retain oil in the IAD/input shaft area. To prevent oil from leaking in this area, you may create a lubricant "dam" at the bottom of the carrier casting using chassis grease. This dam will help capture oil that may drip as the "wet" carrier is maneuvered into the housing. Leaking lubricant will not be a concern with a new/dry carrier as the new part has not been oiled and will not be "wet". Figure 8.

Figure 7

Figure 8

3. Install two, 4-inch long studs into the housing to guide the carrier into the housing.

4. Immediately install the carrier into the housing to permit the RTV sealant to compress evenly between the faces.

Gasket Sealing Method

NOTE: Meritor highly recommends that you retrofit the carrier for tapered dowels if not already equipped. Refer to the retrofit procedures at the end of this technical bulletin for complete instructions and tooling information.

Obtain the correct gasket for the axle model you are servicing.

Table A: Gaskets, 10 per Package

<table>
<thead>
<tr>
<th>Axle Model</th>
<th>Axle Position</th>
<th>Gasket Part Number</th>
<th>Direction of Label/Markings on Gasket When Installed</th>
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<tbody>
<tr>
<td>MT14X/145</td>
<td>Forward</td>
<td>2208-L-1208</td>
<td>Towards Carrier Flange</td>
</tr>
<tr>
<td>MT14X/145</td>
<td>Rear</td>
<td>2208-L-1208</td>
<td>Towards Housing Flange</td>
</tr>
<tr>
<td>160</td>
<td>Forward</td>
<td>2208-A-1197</td>
<td>Towards Carrier Flange</td>
</tr>
<tr>
<td>160</td>
<td>Rear</td>
<td>2208-B-1198</td>
<td>Towards Carrier Flange</td>
</tr>
</tbody>
</table>

1. Install four, 4-inch long studs into the housing to assist with the gasket placement.

2. Temporarily install the gasket in the correct position on the housing. One side of the gasket has a label and the other side is plain. The label should be facing outwards for all carriers EXCEPT 14X/145 rear carriers. On 14X/145 rear carriers, the gasket label should be facing the housing with the label not visible. This dry fit is to help ensure you identify which side of the gasket will face the housing before you start applying spray. Figure 9.

Figure 9
WARNING
Apply the Permatex® only in a well-ventilated area to avoid inhaling the spray. Serious personal injury can result.

3. Remove the gasket and place the gasket onto a piece of cardboard with the housing side facing UP. Evenly spray the gasket with a coat of Permatex® High Tack “Spray-A-Gasket”, part number 80065. Figure 10.

4. Spray the housing flange with an even coat of Permatex® High Tack “Spray-A-Gasket”, part number 80065. Figure 11.

5. Wait one to two minutes until the surfaces are slightly tacky. Carefully place the gasket with the side coated with “Spray-A-Gasket” over the studs and against the housing, making sure the gasket holes line up with the housing holes. Figure 12.

NOTE: If the previous steps were followed correctly, there will not be any “Spray-A-Gasket” on the carrier side of the gasket. If the carrier side was mistakenly sprayed, dispose of the gasket and re-start with a new one.

6. Carefully install carrier over the housing studs. Ensure the gasket is flat, free of folds and air bubbles, and is not torn or damaged. Visually inspect around the exterior to ensure correct gasket seating. Figure 13.

Reassembly Procedure

CAUTION
New capscrew kits have blue Dri-Loc® STS threadlocker, an equivalent to Loctite® 242 threadlocker, applied to the capscrews. Do not remove the blue Dri-Loc® STS threadlocker from the capscrews. Damage to components can result.

NOTE: Use the fasteners provided in the kit for installation. Do NOT reuse the old fasteners.
NOTE: Use the 1/4” longer, 2” 10X1595 capscrews at standard carrier flange thickness tapered dowel locations. The 10X1595 and 10X1594 capscrews are interchangeable at non-tapered dowel locations.

1. For tapered dowel carriers (13X rear, 14X forward, 160 forward and rear carriers), use the following procedure to install the dowels, washers and capscrews. If tapered dowels are not being used, proceed to Step 2.

A. Install the tapered dowels and washers and use the longest bolts (2.75” or 3.5”) in the high-boss tapered dowel locations and the second longest bolts (2.0”) in the standard carrier thickness tapered dowel locations. Use a crisscross pattern to tighten the tapered dowel bolts to a target torque of 225 lb-ft (range 210-240 lb-ft (285-325 N·m)). Figure 14, Figure 15, Figure 16 and Figure 17.

NOTE: The fasteners at the tapered dowel locations must be tighten to specification FIRST before the other fasteners in order to seat the carrier on the housing correctly.

B. Install the remaining washers and capscrews (1.75” length, part number 10X1594, shortest bolts in the kit, unless otherwise noted). Using a crisscross pattern, tighten the 1.75” capscrews to 100 lb-ft. Then, angle tighten the capscrew 40 degrees. Use a torque wrench for this process. Use of an impact gun is not recommended. For the other size capscrews, use a crisscross pattern to tighten the fasteners to a target torque of 225 lb-ft (range 210-240 lb-ft (285-325 N·m)). Figure 18, Figure 19, Figure 20 and Figure 21.
2. On non-tapered dowel carriers, use the following procedure to install the washers and capscrews.

   A. Install the washers and capscrews according to the height of the bolt hole on the carrier with the longest capscrews in the highest boss holes and the shortest capscrews in the standard flange thickness holes.

   B. Using a crisscross pattern, tighten the 1.75” capscrews to 100 lb-ft. Then, angle tighten the capscrews 40 degrees. Use a torque wrench for this process. Use of an impact gun is not recommended. For the other size capscrews, use a crisscross pattern to tighten the capscrews to a target torque of 225 lb-ft (range 210-240 lb-ft (285-325 N•m)).

3. Fill the assembly with lubricant per the following guidelines. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer’s information for instructions.

   - If you used a gasket: The axle can be filled immediately.
   - If you used RTV sealant: Wait a minimum of 60 minutes before filling the assembly. To allow the RTV sealant to completely cure, Meritor recommends a longer wait time of 8 hours or overnight, if possible.

   NOTE: If you used a gasket, you must retorque the carrier-to-housing fasteners again at 5,000 miles (8046 km).

Tapered Dowel Retrofit Procedure

If you are performing an authorized leak repair on a pre-tapered dowel carrier, either 14X or 160 series, Meritor recommends that you retrofit the carrier to accommodate tapered dowels. Use the following procedure to modify the carrier bolt holes, then follow the rest of the sealing procedures to prepare and install the carrier.

The tapered dowel retrofit procedure requires you to obtain the reamer tools in KIT 164 Reamer Tool. Call Meritor’s Commercial Vehicle Aftermarket at Florence, Kentucky (888-725-9355); or Brampton, Ontario, Canada (905-454-7070).

Table B: KIT 164 Reamer Tool

<table>
<thead>
<tr>
<th>Contents</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit 164 Reamer</td>
<td>To replace the reamer only</td>
<td>1</td>
</tr>
<tr>
<td>Jig 164 Bit Tool</td>
<td>To replace the jig only</td>
<td>1</td>
</tr>
</tbody>
</table>

1. Verify that the tapered reamer bit pilot fits in the carrier flange holes. Figure 22, Figure 23 and Figure 24.

   - If the pilot does not fit: Use the reamer bit to drill the carrier flange holes.
2. Slide the tapered reamer bit into the jig hole. Attach the jig to the adjacent bolt hole. Figure 25 and Figure 26.

- If the carrier is equipped with a driver-controlled differential lock (DCDL): You must use a 5/8-inch nut to secure the jig to the carrier housing. Figure 27 and Figure 28.

3. Align the tapered reamer bit pilot in the carrier hole. The bit must fit at a 90-degree angle to the carrier flange surface. Figure 26.

4. Tighten the jig bolts in the order shown. Figure 25. The tapered reamer bit pilot must be all the way in the carrier hole and positioned 90 degrees to the carrier flange.

5. Lubricate the carrier hole and the reamer bit shaft that contacts the jig.
6. Drill slowly until the reamer bit stop reaches the carrier flange surface.

7. Clean any debris from the drilled hole. Insert the tapered dowel into the hole. The dowel must fit tight in the hole and must not move back and forth or side to side.

- **If you can move the tapered dowel back and forth or side to side in the hole:** The tapered dowel does not fit tight enough. Remove the dowel. Use the drill bit and jig to drill the hole slightly deeper. Clean any debris from the hole. Insert the tapered dowel.

8. Repeat Steps 2–7 for the remaining holes.

9. Return to the sealing procedure to continue the installation.

### Table C: Part Numbers and Kits

<table>
<thead>
<tr>
<th>Axle Series</th>
<th>Note: Series is based on the 5th and 6th character of the model. For instance, an RR23160 is a 16* series.</th>
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<tbody>
<tr>
<td>13X</td>
<td>143/145</td>
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<tr>
<td>Single</td>
<td>Forward</td>
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<tr>
<td></td>
<td>with Dowels</td>
</tr>
<tr>
<td></td>
<td>KIT 4313</td>
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<td></td>
<td>KIT 4302</td>
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<td></td>
<td>KIT 4305</td>
</tr>
<tr>
<td>Part Number</td>
<td>Description</td>
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<tr>
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<td>10X1595</td>
<td>Capscrew (2.0&quot;)</td>
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<tr>
<td>10X1597</td>
<td>Capscrew (2.75&quot;)</td>
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<td>N-110P-1</td>
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<tr>
<td>2297A7021</td>
<td>Sealant</td>
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<tr>
<td>MER0820475</td>
<td>Roloc Bristle Disc</td>
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<td>TP-0753</td>
<td>Instructions</td>
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### Table D: Gaskets

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<tr>
<th>Axle Model</th>
<th>Gasket Part Number</th>
<th>Quantity per Package</th>
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<tbody>
<tr>
<td>14X/145 Forward and Rear</td>
<td>2208-L-1208</td>
<td>10</td>
</tr>
<tr>
<td>160 Forward</td>
<td>2208-A-1197</td>
<td>10</td>
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<tr>
<td>160 Rear</td>
<td>2208-B-1198</td>
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