



Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

- DATE:** 3/30/2022
- APPLIES TO:** This Recall service bulletin applies to certain 2020 through 2022 model year, Gladiator, Metro Star and FC-94 model emergency response chassis cabs built between August 2020 and February 2022.
- NHTSA/TC Id:** 21V-899 / TC2021-737
- CONDITION:** Drive Axle Pinion Shaft May Fracture at Splines
- CORRECTION:** Replace Differential Carrier Assembly
- LABOR ALLOCATION:** 5 hours
- CLASSIFICATION:** V3
- PARTS NEEDED:** Parts to be provided direct from Meritor

GENERAL INSTRUCTIONS:

Thoroughly review entire service bulletin before starting work. If there are questions or concerns with steps defined in this service bulletin, contact Spartan Fire, LLC. Customer & Product Support Group.

All applicable industry safety standards must be followed when performing work identified in this procedure.

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Recall Service Bulletin



**Recall Service Bulletin
RSB21-340-001**

STEP-BY-STEP INSTRUCTIONS:

- 1) Repair facility to record the following information and submit with claim to Meritor Ontrac.
 - Full VIN number
 - In Service Date
 - Vehicle Mileage
 - Axle Model Number
 - Axle Serial Number
- 2) The repair facility will open a case with Meritor's Ontrac Technical Call Center at 1-866-668-7221
- 3) The Ontrac Technical Call Center will verify the VIN is part of the campaign population.
- 4) Meritor will order the replacement parts (carrier with driveline yoke, carrier to housing kit, and replacement driveline fastener kits) to be shipped to the repair facility free of charge.
- 5) Once the repair facility receives the parts to complete the carrier replacement, they can schedule the replacement with the customer.

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

6) Remove carrier per instructions starting below.

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 can result.

Use a brass or synthetic mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off. Serious personal injury and damage to components can result.

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

Removal

Axle Shafts

Before the axle shafts and differential carrier can be removed or installed, the driver-controlled differential lock (DCDL), if equipped, must be shifted into and held in the locked or engaged position. The locked position gives enough clearance between the shift collar and the axle housing to permit the removal or installation of the axle shafts and carrier. Refer to Section 6 for service information on the DCDL. If the drive axle is not equipped with DCDL, continue on with axle shaft removal in this section.

Axle Shaft Removal Methods

Use Special Tools Recommended by Meritor

To help prevent serious personal injury and damage to components when you remove the axle shaft from the housing, Meritor recommends that you use the following tools in the table below. Refer to the Service Notes page at the front inside cover of this manual for information on how to contact the manufacturers to obtain the tools.

- If the tools are not available when you remove the axle shaft: Follow procedures for using the Brass Drift Method or the Air Vibration Method.

| Tool | Part Number | Manufacturer |
|----------------------|-------------|--------------------------------|
| Axle Shaft Remover | K-1280 | Kiene Diesel Accessories, Inc. |
| Axle Stud Cone Plier | 7077 | SPX OTC |

Brass Drift Method

⚠ WARNING

Do not strike the round driving lugs on the flange of an axle shaft. Pieces can break off and cause serious personal injury.

1. Hold a 1-1/2-inch diameter brass drift or brass hammer against the center of the axle shaft, inside the round driving lugs. Figure 3.1.

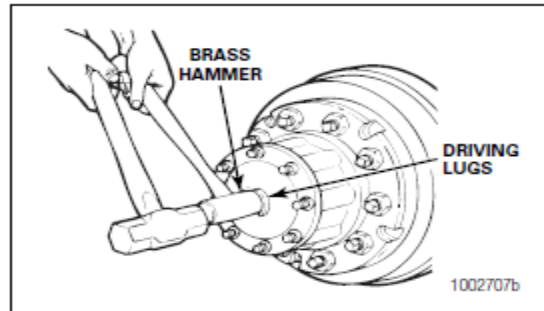


Figure 3.1

2. Strike the end of the drift with a large hammer, five to six pounds, and the axle shaft and tapered dowels will loosen.
3. Mark each axle shaft before it is removed from the axle assembly.
4. Remove the tapered dowels and separate the axle shafts from the main axle hub assembly. Figure 3.2.

(Reference: Meritor's Maintenance Manual MM5a page 7)

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

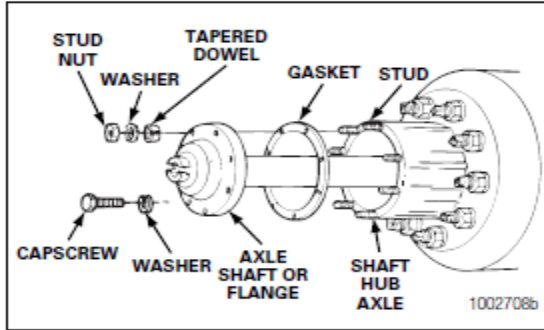


Figure 3.2

5. Install a cover over the open end of each axle assembly hub where an axle shaft was removed.

Air Hammer Vibration Method

WARNING

Wear safe eye protection when using an air hammer. When using power tools, axle components can loosen and break off causing serious personal injury.

CAUTION

Do not use a chisel or wedge to loosen the axle shaft and tapered dowels. Using a chisel or wedge can result in damage to the axle shaft, the gasket and seal, and the axle hub.

1. Use a round hammer bit and an air hammer to loosen the tapered dowels and axle shaft.
2. Place the round hammer bit against the axle shaft or flange between the hub studs. Operate the air hammer at alternate locations between the studs to loosen the tapered dowels and axle shaft from the hub. Figure 3.3.

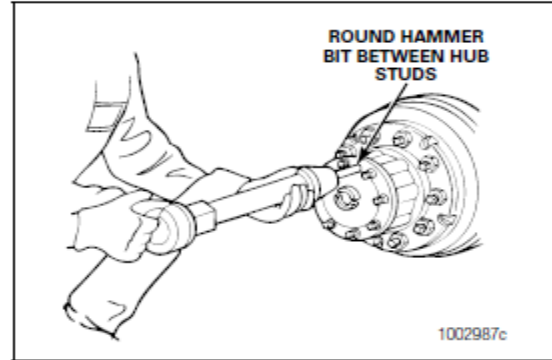


Figure 3.3

3. Mark each axle shaft before it is removed from the axle assembly.
4. Remove the tapered dowels and separate the axle shaft from the main axle hub assembly. Figure 3.2.

Axle Shafts from the Axle Housing

NOTE: If the vehicle is equipped with a driver-controlled main differential lock, the DCDL collar must be engaged before removing the axle shafts. Refer to Section 6.

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Figure 3.4.

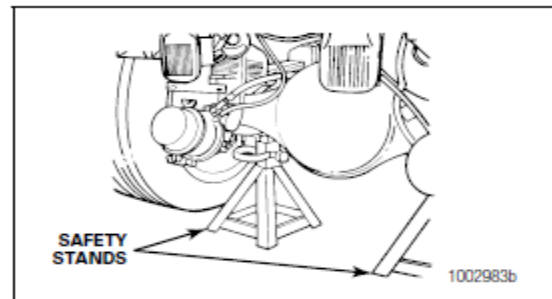


Figure 3.4

2. Use a jack or other lifting tool to raise the vehicle so that the wheels to be serviced are off the ground. Support the vehicle with safety stands. Figure 3.4.

(Reference: Meritor's Maintenance Manual MM5a page 8)

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

- Place a drain pan under the rear axle.
- Remove the plug from the bottom of the axle housing. Drain the lubricant from the assembly.
- Disconnect the driveline universal joint from the pinion input yoke or flange on the carrier. Figure 3.5.

- Remove the capscrews and washers or stud nuts and washers, if equipped, from the flanges of both axle shafts.
- Loosen the tapered dowels, if equipped, in the axle flanges of both axle shafts. Refer to the procedures in this section.

Differential Carrier from the Axle Housing

- Place a hydraulic roller jack under the differential carrier to support the assembly. Figure 3.6.

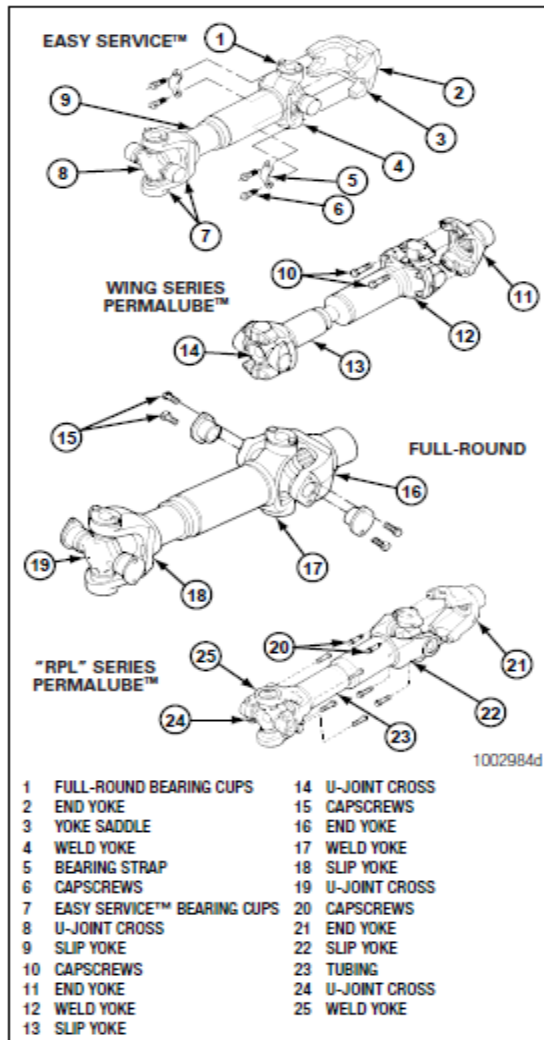


Figure 3.5

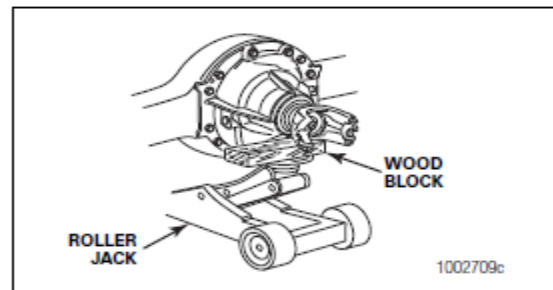


Figure 3.6

- Remove all but the top two carrier-to-housing capscrews or stud nuts and washers.
- Loosen the top two carrier-to-housing fasteners and leave attached to the assembly. The fasteners will hold the carrier in the housing.
- Loosen the differential carrier in the axle housing. Use a leather mallet to hit the mounting flange of the carrier at several points.
- After the carrier is loosened, remove the top two fasteners.

CAUTION

When you use a pry bar, be careful not to damage the carrier or housing flange. Damage to these surfaces will cause oil leaks.

- Use the hydraulic roller jack to remove the carrier from the axle housing. Use a pry bar that has a round end to help remove the carrier from the housing.

NOTE: A carrier stand is available from SPX Kent-Moore. Refer to the Service Notes page on the front inside cover of this manual to obtain the stand.

(Reference: Meritor's Maintenance Manual MM5a page 9)

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

7) Begin installation of replacement carrier using instructions below

Differential Carrier into the Axle Housing

⚠ WARNING

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.

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.

1. Use a cleaning solvent and rags to clean the inside of the axle housing and the carrier mounting surface.
2. Inspect the axle housing for damage. Repair or replace the axle housing.
3. Check for loose studs, if equipped, in the mounting surface of the housing where the carrier fastens. Remove and clean the studs that are loose.
4. Apply liquid adhesive to the threaded holes. Install the studs into the axle housing. Tighten the studs until there are no threads exposed.

⚠ CAUTION

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

5. Apply a 0.25-inch (6 mm) continuous bead of silicone gasket material to the mounting surface of the housing where the carrier fastens. Figure 5.81.

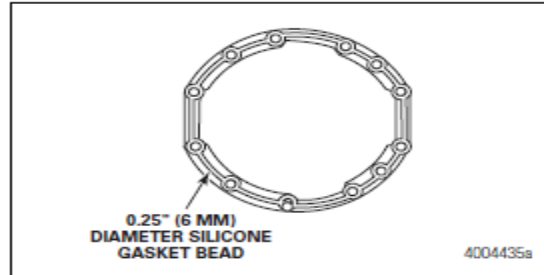


Figure 5.81

⚠ CAUTION

Do not use a hammer or mallet to install the carriers. A hammer or mallet will damage the mounting flange of the carrier and cause oil leaks.

6. Use a hydraulic roller jack or a lifting tool to install the carrier into the axle housing.
7. Install nuts and washers or capscrews and washers, if equipped, into the four corner locations around the carrier and axle housing. Hand-tighten the fasteners. Figure 5.82.

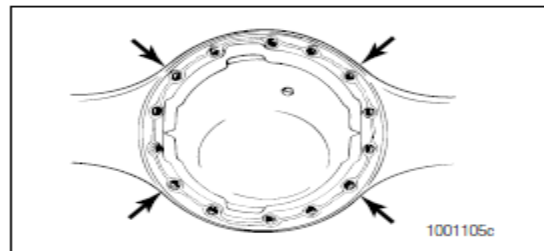


Figure 5.82

8. Carefully push the carrier into position. Tighten the four fasteners two or three turns each in a pattern opposite each other. Figure 5.82.
9. Repeat Step 8 until the four fasteners are tightened to the correct torque value. Refer to Section 8.

(Reference: Meritor's Maintenance Manual MM5a page 53)

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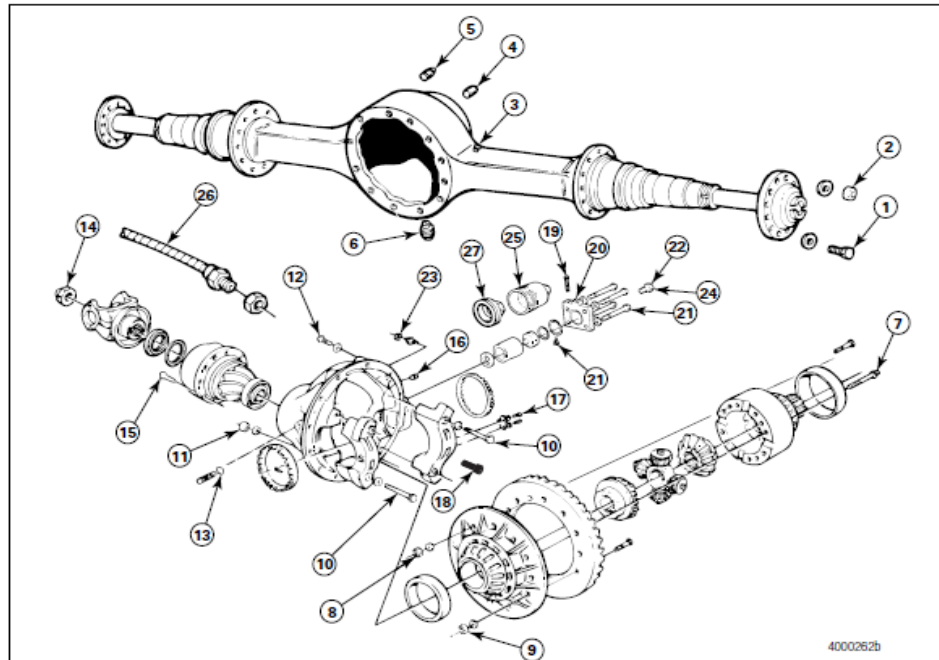
Recall Service Bulletin



Recall Service Bulletin
RSB21-340-001

Section 8

Torque Specifications



| Fastener # | Desc | Thread Size | Torque | |
|------------|-----------------------------|-------------|---------|---------|
| | | | lb-ft | NM |
| 11 | Housing-to-Carrier Stud Nut | 0.44-20 | 50-75 | 68-102 |
| | | 0.50-20 | 75-115 | 102-156 |
| | | 0.56-18 | 110-165 | 149-224 |
| | | 0.62-18 | 150-230 | 203-312 |
| 12 | Carrier-to-Housing Capscrew | 0.44-14 | 50-75 | 68-102 |
| | | 0.50-13 | 75-115 | 102-156 |
| | | 0.56-12 | 110-165 | 149-224 |
| | | 0.62-11 | 150-230 | 203-312 |
| | | 0.75-10 | 270-400 | 366-542 |
| | | M12 x 1.75 | 74-89 | 100-120 |
| | | M16 x 2 | 181-221 | 245-300 |

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

10. Install the other fasteners and washers that hold the carrier in the axle housing. Tighten fasteners to the correct torque value. Refer to Section 8.
11. If equipped with studs, apply Loctite® 242 threadlocker to the stud threads. Install the stud nuts and tighten to the correct torque value. Refer to Section 8.
12. Connect the driveline universal joint to the pinion input yoke or flange on the carrier.
13. Install the gaskets and axle shafts into the axle housing and carrier. The gasket and flange of the axle shafts must fit flat against the wheel hub. Figure 5.83.

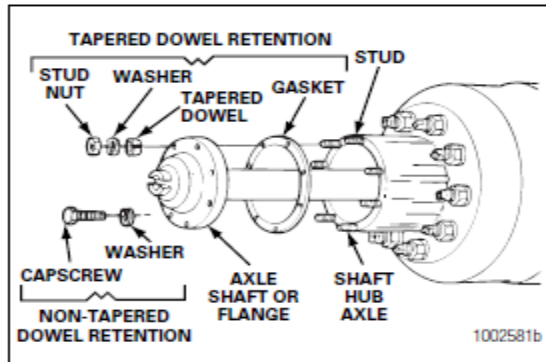


Figure 5.83

Straight Holes, Nuts and Hardened Washers

1. Clean the mating surfaces of the axle shaft and the wheel hub.
2. If silicone gasket material is used, apply a 0.125-inch (3 mm) diameter bead of the gasket material around the mating surface of the hub and around the edge of each fastener hole.
3. Install the gasket and the axle shaft into the housing. The gasket and the flange of the axle shaft must fit flat against the wheel hub. Figure 5.83.
4. Install the Grade 8 nuts and hardened washers onto the stud. Lock washers are an acceptable alternative. Tighten the stud nuts to the torque specified in Table P.

Table P: Shaft-to-Hub Torque Fastener Chart — Non-Tapered Dowel Applications

| Fastener | Thread Size | Torque Value — Grade 8 Nuts lb-ft (N·m) | |
|----------------------|-------------|--|----------------------|
| | | Plain Nut | Locknut |
| Stud Nut, Axle Shaft | 0.62-18 | 150-230 (244-312) | 130-190 (203-258) |
| | 0.75-16 | 310-400 (420-542) | 270-350 (366-475) |
| Studs | All | Install the coarse thread end of the stud into the hub and tighten to the last thread. | |

Tapered Dowel, Hardened Washer and Hardened Nut

1. Clean the mating surfaces of the axle shaft and the wheel hub.
2. If silicone gasket material is used, apply a 0.125-inch (3 mm) diameter bead of the gasket material around the mating surface of the hub and around the edge of each fastener hole.
3. Install the gasket and the axle shaft into the housing. The gasket and the flange of the axle shaft must fit flat against the wheel hub. Figure 5.83.
4. Install solid tapered dowels over each stud and into the flange of the axle shaft. Use a punch or a drift and hammer, if necessary.
5. Install the Grade 8 nuts and hardened washers onto the stud. Lock washers are an acceptable alternative. Tighten the stud nuts to the torque specified in Table Q.

Table Q: Shaft-to-Hub Torque Fastener Chart — Tapered Dowel Applications

| Fastener | Thread Size | Torque Value — Grade 8 Nuts lb-ft (N·m) | |
|----------------------|-------------|--|----------------------|
| | | Plain Nut | Locknut |
| Stud Nut, Axle Shaft | 0.44-20 | 50-75 (81-102) | 40-65 (67-88) |
| | 0.50-20 | 75-115 (115-156) | 65-100 (102-136) |
| | 0.56-18 | 110-165 (176-224) | 100-145 (149-197) |
| | 0.62-18 | 150-230 (244-312) | 130-190 (203-258) |
| Studs | All | Install the coarse thread end of the stud into the hub and tighten to the last thread. | |

(Reference: Meritor's Maintenance Manual MM5a page 54)

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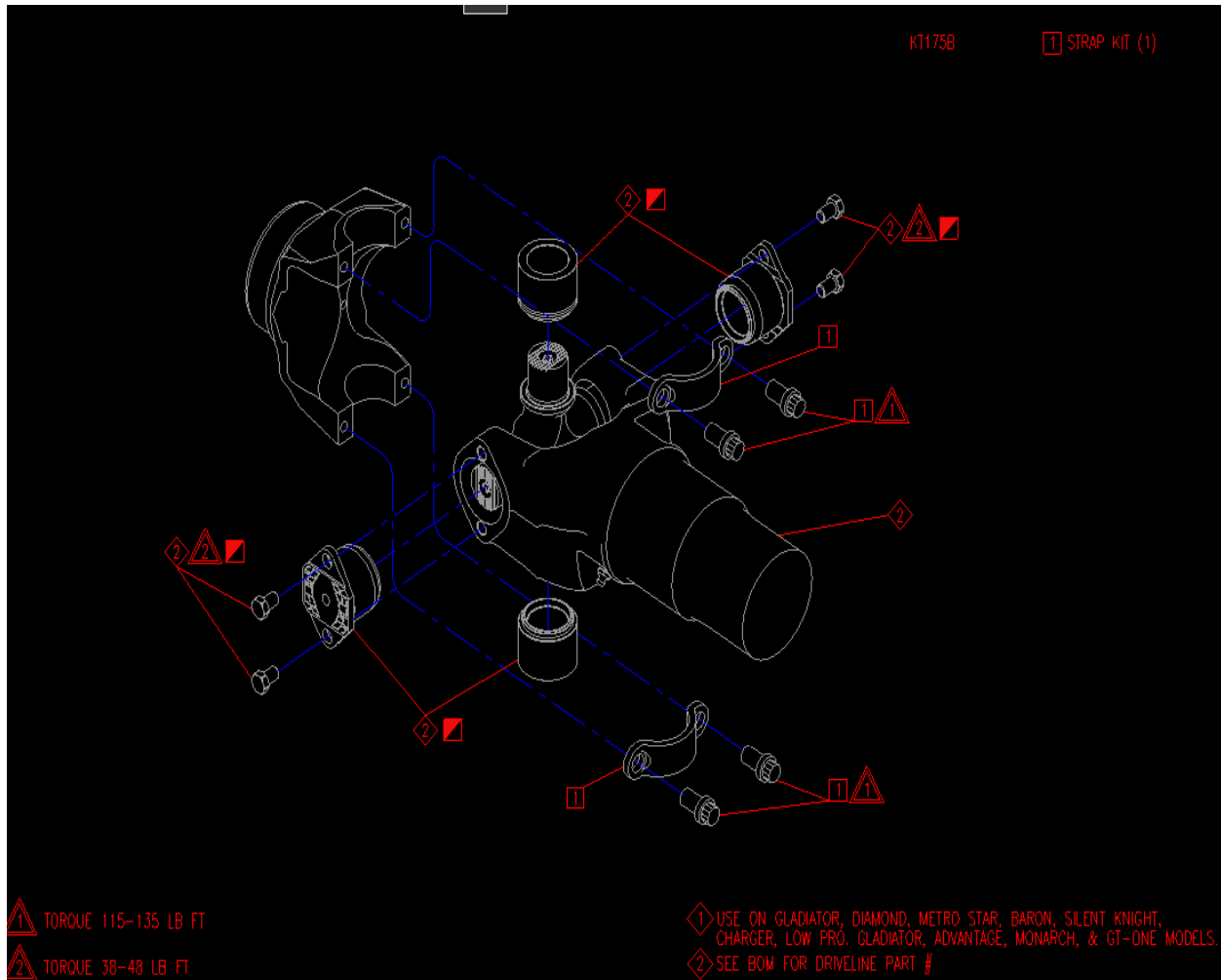


Recall Service Bulletin



Recall Service Bulletin
RSB21-340-001

Driveshaft U-Joint Torque Specifications



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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

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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.

Description

Some Meritor drive axle models have a driver-controlled main differential lock (DCDL). This differential lock is operated by a carrier-mounted, air-actuated shift unit. When activated, the shift unit moves a sliding collar that is installed on the splines of the axle shaft. When engaged, the collar locks the axle shafts together with a second set of splines on the differential case. When the DCDL is engaged, there is no differential action. Figure 6.1.

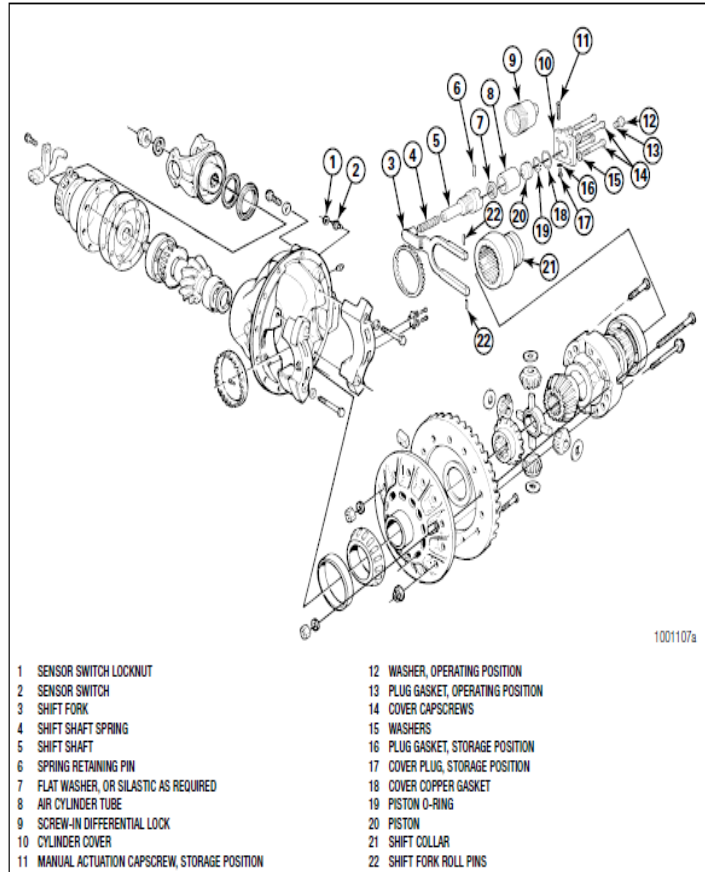


Figure 6.1

(Reference: Meritor's Maintenance Manual MM5a page 55)

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Recall Service Bulletin



Recall Service Bulletin RSB21-340-001

- 8) When the replacement is completed, the repair facility will need to call back to the Ontrac Technical Call center @ 1-866-668-7221 to complete the open case.
- 9) Meritor will complete the case for labor and other materials that were used in the replacement and reimburse the repair facility.
- 10) Meritor will setup a return shipment of the removed carrier to be shipped back to Meritor.

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