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Newmar Corporation
Warranty Department

Technical Service Bulletin

Date Issued	Model Year(s) Affected	Model(s) Affected	TSB #
10/20/2006	**3/7/05 - Present**	**All Chassis with applicable axles**	**273**

Brand

All	■	American Star	☐	Mountain Aire	☐
		Dutch Star	☐	Kountry Aire	☐
		Kountry Star	☐	Essex	☐
Scottsdale	☐	Northern Star	☐	London Aire	☐

Type

All	☐	T T	☐
F W	☐	C A	☐
D P	■	D B	■

- ☐ Air Conditioning & Heating
- ☐ Appliances & Accessories
- ☐ Cabinets & Furniture
- ■ Chassis Components
- ☐ Construction Components
- ☐ Electrical Components
- ☐ Exterior Components
- ☐ Interior Components
- ☐ Plumbing & Bath Components
- ☐ Windows, Awnings, Vents, & Doors

Description of Problem

Installing a Multiple-Lip Seal (MLS) onto Meritor Single and Tandem Drive Axles
Models: 140,160, and 180, Series Single Drive Axles Models:140,160, and 380 Series Tandem Drive Axles

Recommended Solution

This technical bulletin provides the recommended procedure for installing Meritor multiple-lip seals (MLS) on Meritor 140, 160 and 180 single and 140,160,180, and 380 tandem drive axles. See Manufacturers attached repair directions. Contact manufacturer directly for additional information or instructions.

If you have any questions regarding this T.S.B., please contact a Warranty Service Representative at Newmar Corporation.

SPARTAN CHASSIS, INC.

Spartan Chassis Customer Service
Contact Information

Customer Service:

Motorhome Service Centers/**Dealers ONLY**:	800-393-8861
Motorhome Owners	800-543-4277
Fire Truck	800-543-5008
Fax	517-543-9264

Service Development:	800-393-8861 (Option 3)

Billing:

All Claim Disputes	800-543-5008 (Option # 3)
Fax	517-543-9264

OEM Service: (RV)	800-393-8861 (Option # 1, Option 3)
Coach Net *(Road Side Service Provider):*	888-890-1741

Service Parts:

Service Parts	800-722-3025
Shipping Information	800-722-3025 (Option # 5)
Fax	888-879-5671

Mailing Address:	Spartan Chassis, Inc. 1165 Reynolds Road Charlotte, MI 48813
Shipping Address:	Spartan Chassis, Inc. 1549 Mikesell Road Charlotte, MI 48813

Email Addresses:

Motorhome Dealer and Service Centers	Dealerservice@spartanmotors.com
Motorhome Retail Customers	Rvcustservice@spartanmotors.com
Fire Truck Customer Service	Firetruckservice@spartanmotors.com

12/16/05

MERITOR®

Technical Bulletin

Installing a Multiple-Lip Seal (MLS) onto Meritor Single and Tandem Drive Axles

140, 160 and 180 Series Single Drive Axles

140, 160, 180 and 380 Series Tandem Drive Axles

Does Not Apply to Meritor Front Drive Steer Axles, Transfer Cases or Other Drive Axles Not Listed in This Bulletin

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.

How to Obtain Additional Maintenance and Service Information

Refer to the Multiple-Lip Seal (MLS) Installation CD (order TP-0531); Maintenance Manual 5A, Single-Reduction Rear Differential Carriers: Single Rear Drive Axles, Rear-Rear Tandem Drive Axles and Front Drive Steer Axles; and Maintenance Manual 5L, Single-Reduction Forward Differential Carriers on Tandem and Tridem Axles. To obtain these publications, call ArvinMeritor's Customer Service Center at 800-535-5560, or visit the Tech Library on our website at arvinmeritor.com.

Important Information

This technical bulletin provides the recommended procedure for installing Meritor multiple-lip seals (MLS) on Meritor 140, 160 and 180 single and 140, 160, 180 and 380 tandem drive axles. These instructions do not apply to front drive steer axles, transfer cases or other drive axles not listed in this publication.

Meritor multiple-lip seals feature a separable sleeve installed onto the yokes at the tandem forward-rear input and forward-rear output positions. No sleeve is used on the rear-rear input.

Installation of the new seals requires a set of four seal drivers and two sleeve drivers. Refer to the following table for part numbers.

Driver and Sleeve Part Numbers

Axle Model and Position	Seal Service Part Number	Previous Seal Part Number	Seal Drivers	Sleeve Drivers
140, 160, 180 and 380 Forward-Rear Unit Input (FUI)	A1-1205X2728	A-1205R2592	2728T1	2728T2
140 and 160 Forward-Rear Unit Output (FUO)	A1-1205Y2729	A-1205P2590	2729T1	2729T2
140 Rear-Rear Unit Input (RUI)	A1-1205Z2730	A-1205N2588	2730T1	Not Required — Sleeve is unitized
160 and 180 Rear-Rear Unit Input (RUI)	A1-1205A2731	A-1205Q2591	2731T1	Not Required — Sleeve is unitized

Forward input and output seals must be serviced with the seal and sleeve. The service part number provides both when required. Check your application carefully before installing the multiple-lip seal.

Special Tools

There are six new installation drivers required for replacement of the multiple-lip axle yoke seals. Figure 1. To obtain these sleeves, seals and drivers, call ArvinMeritor's Commercial Vehicle Aftermarket at 888-725-9355.

- A sleeve driver and seal driver for the forward-rear input
- A sleeve driver and seal driver for the forward-rear output
- Two model specific seal drivers for the rear-rear input

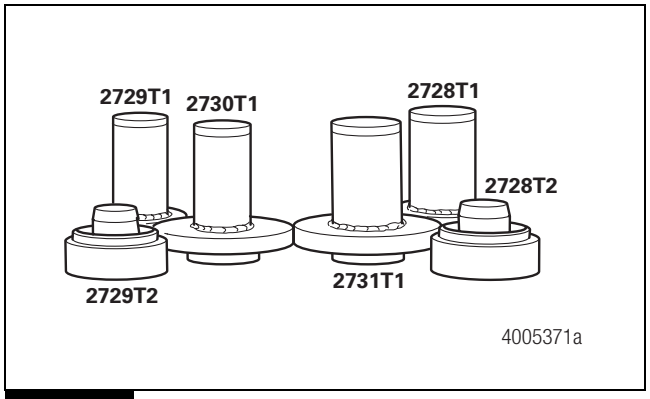

Figure 1

Removal

⚠ 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.

⚠ CAUTION

On a rear-rear input, if you partially or fully install a yoke and then remove it for any reason, remove, discard and replace the seal with a new seal. If a seal or sleeve is removed after partial or full installation, discard the seal or sleeve and replace it with a new seal or sleeve. Damage to components can result.

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. Use a jack to raise the vehicle so that the wheels to be serviced are off the ground. Support the vehicle with safety stands.
4. Disconnect the drive shafts.
5. Attach a flange bar or place a yoke bar over the input or output yoke to hold the yoke or flange while you remove the nut. Always use a flange or yoke bar during removal and installation of the flange yoke nut to prevent damage to the gearing. Figure 2.

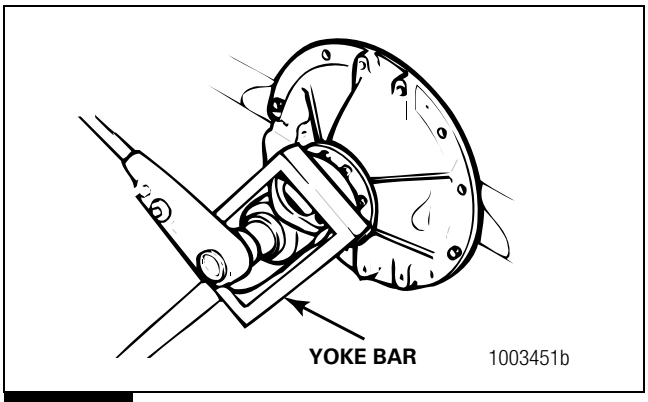

Figure 2

⚠ WARNING

Use a puller tool to remove the yoke or flange from the shaft. Do not use a hammer or mallet, which can damage components and cause vibration in the driveline. If this occurs, the driveline can separate from the vehicle during operation. Serious personal injury and damage to components can result.

6. Remove the yoke nut and washer. Use a puller tool to remove the yoke or flange from the shaft. Do not use a hammer or mallet, which can damage components. Figure 3.

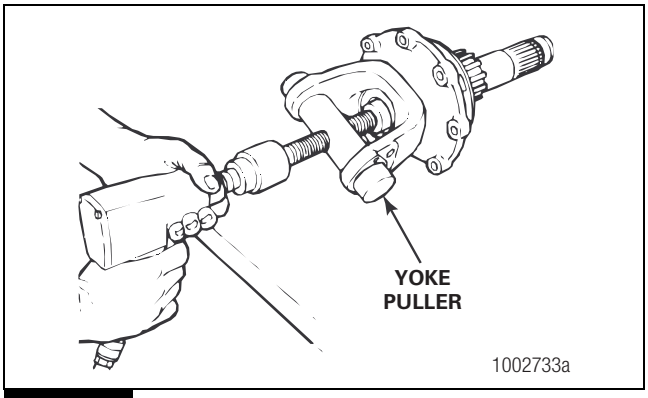

Figure 3

⚠ CAUTION

On axles that have the bolt-on deflector on the forward-rear output shaft bearing cage, the deflector must be removed and discarded. The new forward output sleeve will not assemble correctly to the new output seal with the bolt-on deflector in place. Remove the deflector from the output shaft bearing cage and reassemble the output cage hex-head capscrews and washers according to the appropriate maintenance manual instructions. Damage to components can result.

7. Carefully remove the pinion seal from the yoke or carrier. Do not damage the seal bore when you remove the seal. Do not allow dirt or grease to contaminate the seal bore or adjacent bearings.
8. If a seal sleeve is installed onto a yoke, remove the sleeve using a bearing puller. Do not reuse the seal sleeves.
9. Inspect the yoke seal area for damage that could cause lubricant leaks after you install the seal. Use emery paper or an equivalent product to remove scratches, nicks or burrs only.

Installation

⚠ WARNING

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. Clean the ground and polished surface of the yoke journal using a clean shop towel and a safe cleaning solvent. Do not use abrasive cleaners, towels or scrubbers to clean the yoke or flange surface. Do not use gasoline.
2. Inspect the yoke seal area for damage that could cause lubricant leaks after you install the seal. Use emery paper or an equivalent product to remove scratches, nicks or burrs only.
3. Install the deflector, if equipped, onto the yoke. You must install the deflector before you install the sleeve into the yoke. Figure 4.

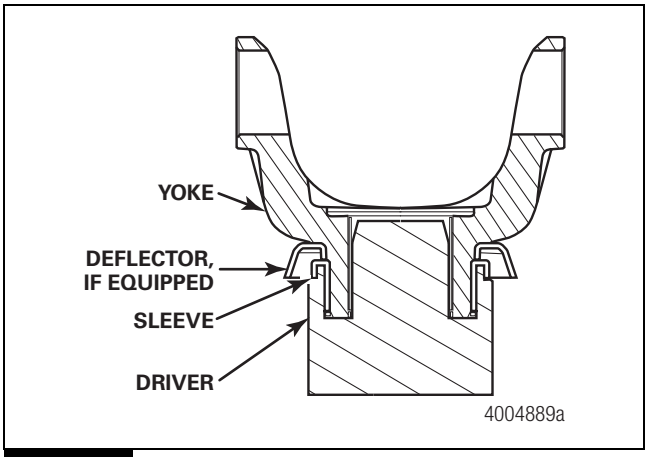

Figure 4

⚠ WARNING

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

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.

4. Apply a light coat of axle oil to the yoke seal journal. Position the sleeve into the forward-rear axle output yoke sleeve driver. Do not touch the greased areas of the sleeve. The sleeve must be kept clean prior to assembly into the seal. Use an arbor press and the appropriate driver to install the sleeve into the yoke. Verify that the sleeve is fully-seated in the yoke to prevent damage to components. Figure 5.

   The yoke must be fully pressed into the sleeve driver until the end of the yoke bottoms out in the sleeve driver. This will correctly position the sleeve on the yoke. When correctly seated, the forward-rear output sleeve is positioned 0.200-inch ± 0.030-inch (5 mm ± 0.75 mm) from the end of the yoke. Figure 6.

   - **If you do not have a press:** Position the yoke on a five-inch (127 mm) spacer on a workbench. Use a dead-blow hammer and the appropriate driver to install the sleeve into the yoke. Figure 7.

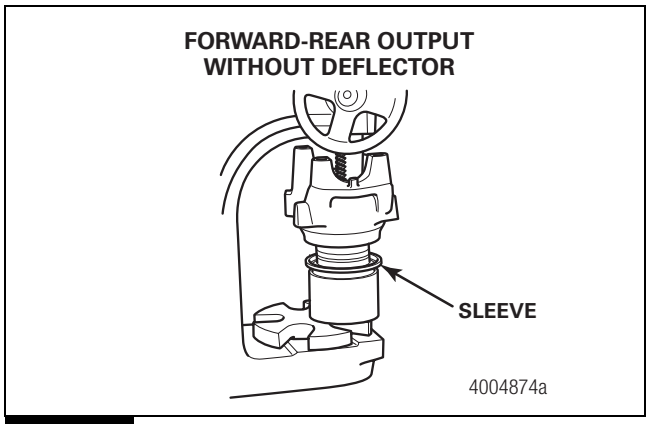

Figure 5

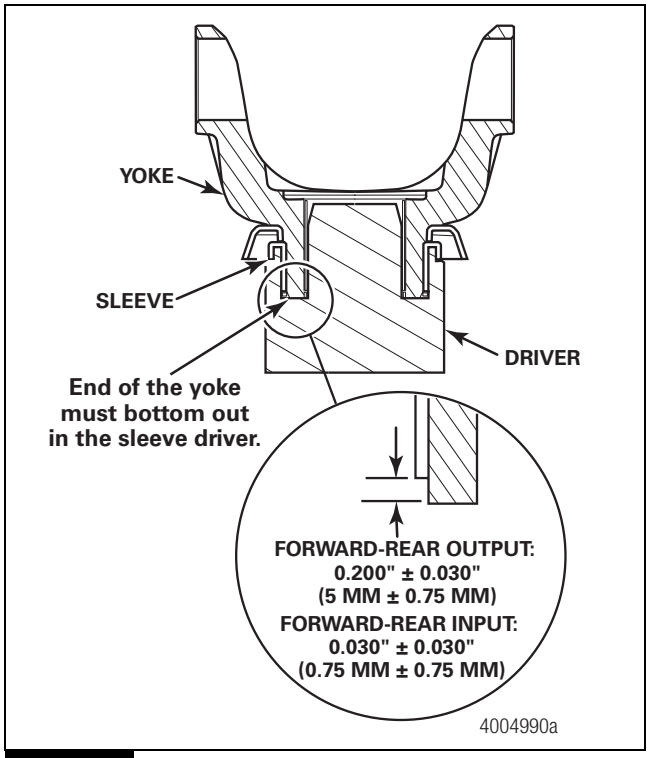

Figure 6

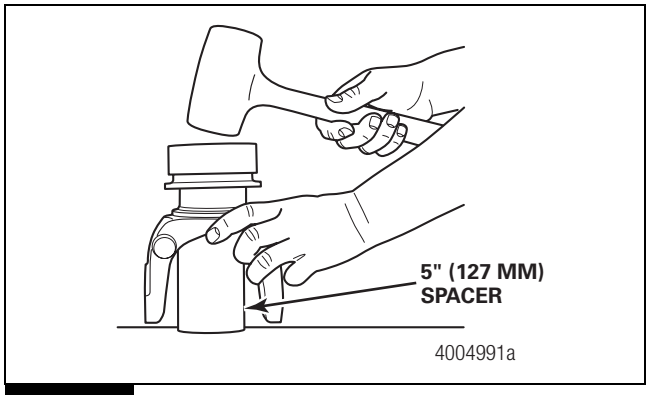

Figure 7

5. Apply a light coat of axle oil to the yoke seal journal. Position the sleeve into the forward-rear axle input yoke sleeve driver. Do not touch the greased areas of the sleeve. The sleeve must be kept clean prior to assembly into the seal. Use an arbor press and the appropriate driver to install the sleeve into the yoke. Verify that the sleeve is fully-seated in the yoke. Figure 8.

   The yoke must be fully pressed into the sleeve driver until the end of the yoke bottoms out in the sleeve driver. This will correctly position the sleeve on the yoke. When correctly seated, the forward-rear input sleeve is positioned 0.030-inch ± 0.030-inch (0.75 mm ± 0.75 mm) from the end of the yoke. Figure 6.

   - **If you do not have a press:** Position the yoke on a five-inch (127 mm) spacer on a workbench. Use a dead-blow hammer and the appropriate driver to install the sleeve into the yoke. Figure 7.

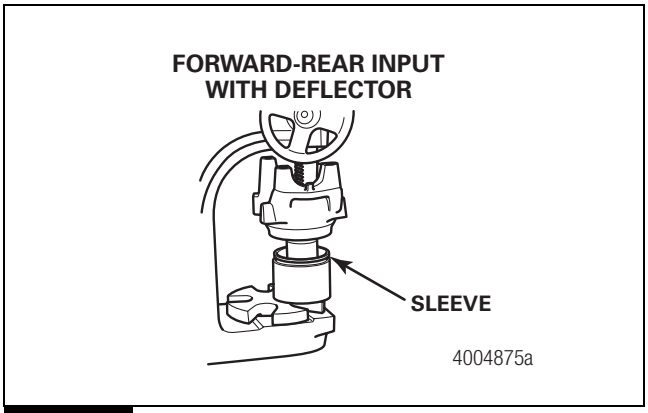

Figure 8

⚠ CAUTION

Hold the sleeve and seal only on the outer diameter. Do not touch the greased inner diameter of the seal and the greased area of the sleeve. This can contaminate the seal and cause a leak between the shaft and the seal. Damage to components can result.

6. Install the forward-rear axle input seal. Hold the sleeve and seal only on the outer diameter. Position the seal into the seal driver and align it with the forward-rear axle input bearing cage. Do not touch the lips in the inner diameter of the seal. Use a dead-blow hammer and the appropriate driver to install the seal into the bearing cage. Figure 9.

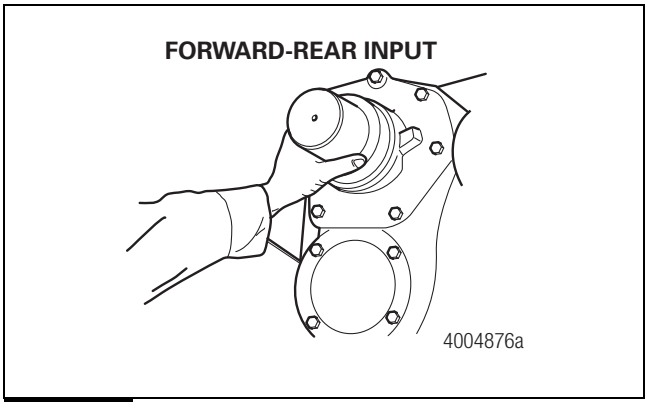

Figure 9

⚠ CAUTION

On axles that have the bolt-on deflector on the forward-rear output shaft bearing cage, the deflector must be removed and discarded. The new forward output sleeve will not assemble correctly to the new output seal with the bolt-on deflector in place. Remove the deflector from the output shaft bearing cage and reassemble the output cage hex-head capscrews and washers according to the appropriate maintenance manual instructions. Damage to components can result.

7. Install the forward-rear axle output seal. Hold the sleeve and seal only on the outer diameter. Position the seal onto the seal driver and align it with the forward-rear axle output shaft. Do not touch the lips in the inner diameter of the seal. Use a dead-blow hammer and the appropriate driver to install the seal onto the output shaft. Figure 10.

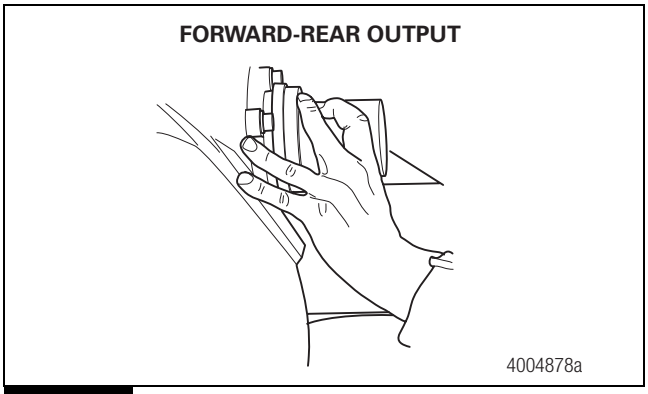

Figure 10

8. Install the rear-rear axle input seal. Hold the seal only on the outer diameter. Position the seal into the seal driver and align it with the rear-rear axle input bearing cage. Use a dead-blow hammer and the appropriate driver to install the seal into the bearing cage. Figure 11.

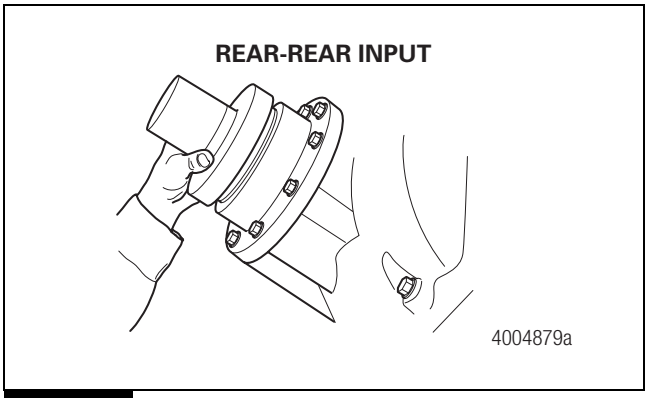

Figure 11

9. Use a feeler gauge to check the seal gap at all three axle positions. The seal is correctly installed if the gap is less than 0.005-inch (0.127 mm) around the circumference of the seal flange. Figure 12.
   - **If the gap is more than 0.005-inch (0.127 mm):** Use a dead-blow hammer and the appropriate driver to completely install the seal.

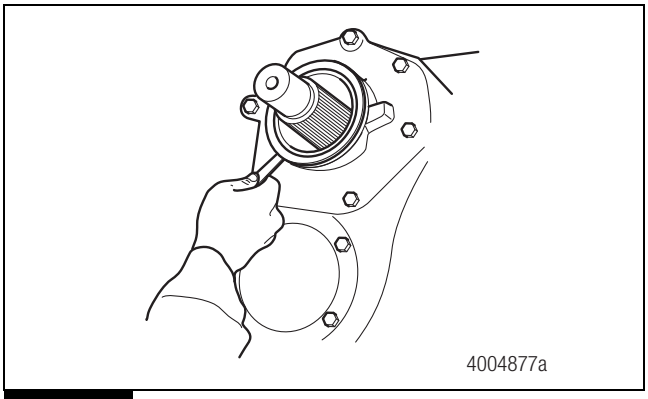

Figure 12

10. Apply a light coat of axle oil to the yoke seal journal. Install the yokes and connect the drive shafts. Refer to the manuals specified in this bulletin for the correct procedures.

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Printed in USA

TP-0446
Revised 03-05
(16579/22882)