PACCAR Inc
Law Department

June 20, 2003

SENT VIA FACSIMILE (202) 366-7882 & E-Mail

George Person, Chief
Recall Management Division
Office of Defects Investigation (NEF-111)
Safety Assurance
National Highway Traffic Safety Administration
400 Seventh Street SW, Room 5319
Washington, D.C. 20590

Re: ArvinMeritor FF981 series non-drive steer axle hubs
NHTSA Recall No.: 03V-125
Peterbilt Recall No.: 303-A

Dear Mr. Person:

Enclosed is the notification letter that was sent by Peterbilt to its dealers/service managers on June 6, 2003. Also enclosed is the owner notification letter that was mailed on June 13, 2003.

Very truly yours,

Kenneth R. Brownstein
Senior Counsel

Enclosures
KRB:ptg

E-mail: ken.brownstein@paccar.com

P.O. Box 1518 Bellevue, Washington 98009 Telephone 425-468-
PACCAR Building 777-106th Avenue N.E. Bellevue, Washington 98004 Facsimile 425-468-8228

June 6, 2003

TO: DEALER PRINCIPALS
SERVICE MANAGERS
WARRANTY MANAGERS

SUBJECT: **SAFETY RECALL #303-A**
ARVIN MERITOR FRONT AXLE MODEL FF981 with SKF UNITIZED HUBS
EXPIRATION DATE: NONE

Peterbilt Motors Company has decided that a defect which relates to motor vehicle safety exists in certain Peterbilt vehicles which were manufactured with certain ArvinMeritor FF981 front axles during three time periods: August 1-15, 1998; April 16-May 15, 1999; and February 16-18, 2001. Forty four vehicles are affected and are identified by their VIN's on the attached list. Also attached is a copy of Peterbilt's letter to the owners of the affected vehicles which will be mailed to them in approximately one week.

The front axle hub assemblies on these vehicles are at risk of premature failure due to possible bearing spalling. Spalling of the affected bearings will eventually lead to a breakdown of the bearing. The operator should have ample forewarning of an impending failure by one or more of the following: activation of the ABS warning light, pronounced steering wheel vibration, brake drag, pulling and a noisy front-end. Spalling can also be detected prior to failure by inspection per ArvinMeritor's procedure TP-0251 (enclosed). If inspections are not performed, and forewarning is ignored, a hub fire and/or wheel/hub separation is possible, which may result in a crash.

Peterbilt has initiated a recall campaign to correct this condition by having the hub assemblies replaced. Parts necessary to facilitate this repair will be available on September 1, 2003. In the interim, customers are being urged to perform the enclosed inspection and to contact you so you can order parts and schedule them for this repair.

It is a violation of Federal law for a dealer to sell or lease new vehicles covered by this recall until the defect or noncompliance has been corrected.

REPAIR PROCEDURE:

Refer to TB-0251 which is on ServiceNet. This is available by accessing Service Information and Service Manual Search.

LABOR:

Peterbilt will pay 2.4 hours per vehicle.

PARTS:

Part Number	Description	Dealer Net	Qty/Trk	Source Code
K1TSKFLS	Long stud kit	$211.31	2	P

You should submit a warranty claim per the attached example.

Please advise your customers that repairs must be performed ONLY at an authorized Peterbilt dealership. Under no circumstances are you to charge the customer for any portion of this repair.

If you have any questions regarding this safety recall, please contact Peterbilt Division Customer Service at 940/591-4171.

Sincerely,

Mike Conroy
Quality Services Manager

June 13, 2003

SUBJECT: **SAFETY RECALL #303-A**
ARVIN MERITOR FRONT AXLE MODEL FF981 with SKF UNITIZED HUBS
EXPIRATION DATE: NONE

Dear Peterbilt Customer:

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

Peterbilt Motors Company has decided that a defect which relates to motor vehicle safety exists in certain Peterbilt vehicles which were manufactured with certain ArvinMeritor FF981 front axles. Your vehicle has been identified as being manufactured with one of the identified front axle serial numbers with the possible defect.

The front axle hub assemblies on your vehicle are at risk of premature failure due to possible bearing spalling. Spalling of the affected bearings will eventually lead to a break down of the bearing. The operator should have ample forewarning of an impending failure by one or more of the following: activation of the ABS warning light, pronounced steering wheel vibration, brake drag, pulling and a noisy front end. Spalling can also be detected prior to failure by inspection per ArvinMeritor's procedure TP-0251 (enclosed). If inspections are not performed, and forewarning is ignored, a hub fire and/or wheel/hub separation is possible, which may result in a crash.

Peterbilt has initiated a recall campaign to correct this condition by having the hub assemblies replaced. Parts necessary to facilitate this repair will be available on September 1, 2003. Please contact the nearest Peterbilt dealership immediately to have them order parts and schedule you for this repair. The dealer can then notify you as soon as parts are received and set up an appointment to perform the repair. This procedure should take no more than 2.4 hours and will be performed at no charge to you. In the interim you are urged to perform the enclosed inspection.

If you require further information about this recall, or experience any difficulty in making arrangements for the repair, please contact: Peterbilt Motors Company, 1700 Woodbrook Street, Denton, Texas 76205-7864, attention: Customer Service Department, phone: 940/591-4171.

If you conclude that Peterbilt Motors Company has not enabled you to remedy this defect in reasonable time and without charge, you may submit a complaint to: Administrator for Safety Assurance, National Highway Traffic Safety Administration, 400 Seventh Street SW, Washington DC 20590, or call the toll free safety hotline at 1-888-327-4236.

If you no longer own this truck, we would appreciate your advising us of the new owner, if the name is known to you. The enclosed postage-paid envelope may be used for this purpose.

If you paid to have this service done prior to receiving this letter, Peterbilt is offering a full refund. For information required to submit a claim for reimbursement, please call TruckCare 1-800-473-8372 and press 8 for TTY access.

We regret any inconvenience this may cause you and appreciate your cooperation in this matter.

Sincerely,

Mike Conroy
Quality Services Manager

TP-0251
Revised 10-24-02

MERITOR.

Technical Bulletin

Unitized Wheel-End Assembly Inspection with a Dial Indicator
Replacement Hub Inspection
Spindle and O-Ring Installation
Hubcap Installation
All Meritor Front Non-Drive Steer Axles with Unitized Wheel Ends

⚠ WARNING

YOU MUST FOLLOW THE UNITIZED WHEEL-END MAINTENANCE AND INSPECTION PROCEDURES PROVIDED IN THIS BULLETIN TO PREVENT SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS.

- **UNITIZED WHEEL ENDS ARE NOT ADJUSTABLE.**
- **DO NOT ATTEMPT TO SET OR ADJUST END PLAY.**

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.

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.

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.

For Complete Maintenance and Service Information on Meritor Front Non-Drive Steer Axles

Refer to Maintenance Manual 2, Front Non-Drive Steer Axles. To obtain this publication, call ArvinMeritor's Customer Service Center at 800-535-5560, or visit the Tech Library on our website at arvinmeritor.com.

To Order Meritor Parts Specified in This Bulletin

Call ArvinMeritor's Commercial Vehicle Aftermarket at 866-726-9355.

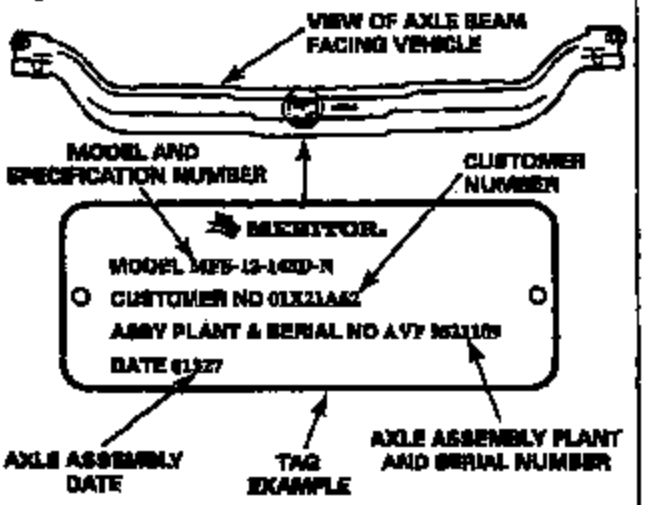
Determine if the Vehicle's Front Non-Drive Steer Axle is Equipped with Unitized Wheel Ends

A unitized wheel end has "half moons" embossed on the center of the hubcap. **Figure 1.**

Figure 1

If the hubcaps are missing, you can use the axle model number to determine if the axle is equipped with unitized wheel ends. To identify the model number, refer to the axle identification plate on the front of the beam. **Figure 2.**

Figure 2



Meritor Axle Models Equipped with Unitized Wheel Ends

MFS-10-143D-N	MFS-12-144D-N	FF-983
MFS-10-144D-N	MFS-13-144D-N	FF-984
MFS-12-122D-N	FF-981	FF-986
MFS-12-143D-N	FF-982	FF-987

A unitized wheel end also has been referred to as a truck hub unit, Easy-Steer Plus™, and a unitized hub.

Inspection Intervals

This bulletin provides inspection and maintenance procedures for Meritor axles equipped with unitized wheel ends on front non-drive steer axles. You must perform detailed and basic inspections at the following intervals.

Detailed Inspections

Refer to Detailed Inspection in this bulletin for procedures.

- After the initial 200,000 miles (321 800 km) of operation.
- After every additional 200,000 miles (321 800 km) of operation thereafter.

Basic Inspections

After the initial 200,000-mile (321 800 km) detailed inspection, perform a basic inspection at each scheduled preventive maintenance interval, not to exceed 50,000-mile (80 467 km) intervals. Refer to Basic Inspection in this bulletin for procedures.

If the Vehicle is Equipped with ABS on the Steer Axle

In addition to scheduled preventive maintenance, if driver reports indicate the ABS light has been coming ON, and ABS diagnostics indicate the sensor gap is out-of-adjustment, check for possible wheel-end looseness as the cause.

Tools Required

Basic Inspection

A jack, wheel blocks and safety stands

Detailed Inspection

A dial indicator and a torque wrench with 700 lb-ft (949 N-m) capability

Procedures

The unitized wheel end is sealed and greased for life and does not require lubrication. If you disassemble, or attempt to repair or lubricate a unitized wheel-end assembly, you will void Meritor's warranty. The basic and detailed inspection procedures provided in this bulletin do not instruct you to disassemble the unitized wheel end.

- Unitized wheel ends are not adjustable.
- Do not attempt to set or adjust end play.

Basic Inspection

1. Park the vehicle on a level surface. Block the rear wheels to prevent the vehicle from moving.
2. Raise the vehicle so that the front wheels are off the ground. Support the vehicle with safety stands. Do not use a jack to support the vehicle.

NOTE: If a ticking sound is detected during rotation, this does not indicate a hub problem. It is a normal occurrence.

3. Visually inspect the unitized wheel end as you rotate the tire and unitized wheel-end assembly. Verify that it rotates smoothly and without noise. While rotating the wheel, grasp the brake chamber to feel for unitized wheel-end hub vibration.
   - **If the tire and unitized wheel-end assembly does not rotate smoothly, or you hear noise (such as wheel bearing grind) or feel wheel-end hub vibration during rotation:** Perform a detailed inspection. Refer to Detailed Inspection in this bulletin.
   - **If the wheel end rotates smoothly:** Proceed to Step 4.
4. Grasp the tire and wheel-end assembly at the nine and three o'clock positions. Check for vertical and horizontal movement. With your hands, apply approximately 50 lb (23 kg) of force to the assembly. You should not feel or see any looseness or movement.
   - **If you feel or see any movement or looseness in the tire and wheel-end assembly:** Perform a detailed inspection to determine the cause of the movement, such as worn king pin bushings or pins; wheel-to-hub-mounting end play; unitized wheel-end hub end play; or a combination of them all. To determine unitized wheel-end hub end play, refer to Detailed Inspection which follows.

     If other front axle components, such as king pin bushings, require inspection or service, refer to Maintenance Manual 2, Front Non-Drive Steer Axles.

To Help Determine the Cause of Wheel-End Assembly Looseness or Movement

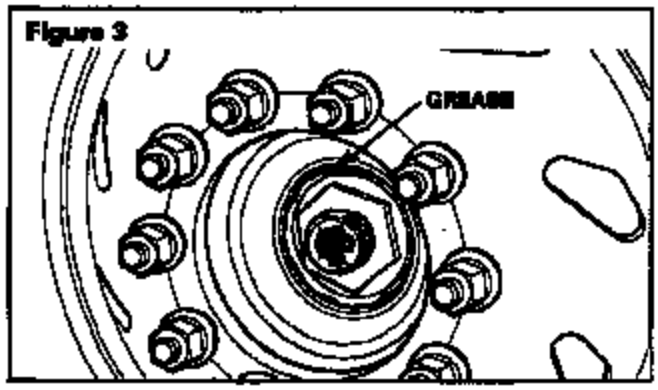
1. Check the wheel-to-hub mounting. Verify that the wheel is mounted correctly and all wheel-end fasteners and hardware are tightened to the correct specification.
2. Apply the service brake to lock the hub and spindle assembly together.
   - **If you detect movement or looseness:** The king pin or king pin bushings should be inspected. Refer to Maintenance Manual 2, Front Non-Drive Steer Axles.
   - **If applying the service brake eliminates movement or looseness:** Proceed to Detailed Inspection to determine the unitized wheel-end hub end play.

Detailed Inspection

1. Park the vehicle on a level surface. Block the rear wheels to prevent the vehicle from moving.
2. Remove the hubcap.
3. Raise the vehicle so that the front wheels are off the ground. Support the vehicle with safety stands. Do not use a jack to support the vehicle.

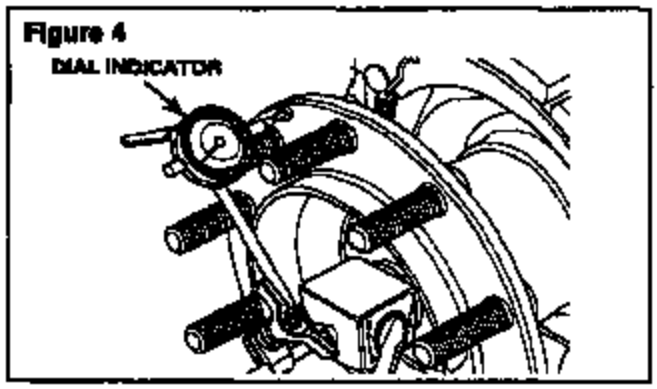
NOTE: The outboard and inboard seals may purge small amounts of grease that are visible during inspection. **Figure 3.** This is a normal occurrence.

Figure 3



4. Remove the wheel and drum. Attach the magnetic base of a dial indicator to the end of the spindle. **Figure 4.** Touch the indicator stem perpendicular against the unitized wheel-end's mounting face.

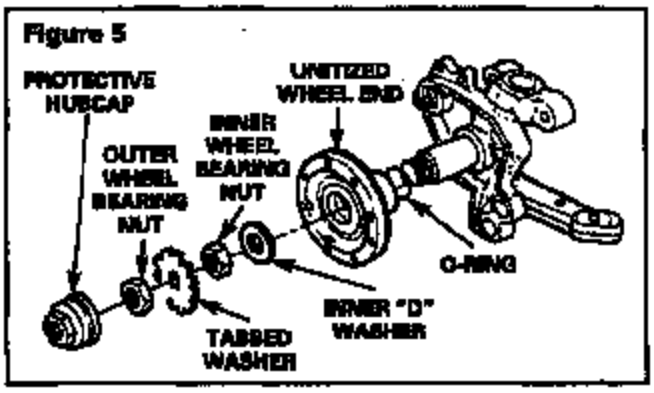
Figure 4



5. Set the dial indicator to ZERO. Do not rotate the wheel end. Place your hands at the nine and three o'clock positions.

6. Push the unitized wheel end straight IN. Note the reading. Pull the unitized wheel end straight OUT. Note the reading.
   - **If the total movement of the dial indicator is less than 0.003-inch (0.08 mm):** Inspection is complete. No adjustment is required.
   - **If the total movement of the dial indicator is 0.003-inch (0.08 mm) or greater:** Remove the OUTER bearing nut and tabbed washer. Tighten the INNER wheel bearing nut to 500-700 lb-ft (679-949 N•m) while rotating the unitized wheel end a minimum of five rotations. **Figure 5.** ❶

Figure 5



7. Install the tabbed washer and OUTER wheel bearing nut onto the spindle. Tighten the OUTER wheel bearing nut to 200-300 lb-ft (271-476 N•m). ❶

NOTE: The inner wheel bearing nut and the outer wheel bearing nut are identical, but the torque values are different.

8. Reattach the dial indicator. Set the dial indicator to ZERO. Do not rotate the wheel end. Place your hands at the nine and three o'clock positions.
9. Push the unitized wheel end straight IN. Note the reading. Pull the unitized wheel end straight OUT. Note the reading.
   - **If the total movement of the dial indicator is greater than 0.003-inch (0.08 mm) but less than 0.006-inch (0.15 mm):** Record the measurement in a maintenance log, and perform a basic inspection at the next regularly-scheduled maintenance interval, or not to exceed 50,000 miles (80 467 km), whichever comes first.
   - **If the total movement of the dial indicator is 0.006-inch (0.015 mm) or greater:** Replace the unitized wheel-end hub. You must inspect a replacement hub before you install it. Refer to Replacement Hub Inspection in this bulletin.
10. After you've taken the measurement, bend the parts of the tabbed washer that protrude over the flats of the outer wheel bearing nut and the inner wheel bearing nut. Bend the washer a minimum of one flat edge to each nut.

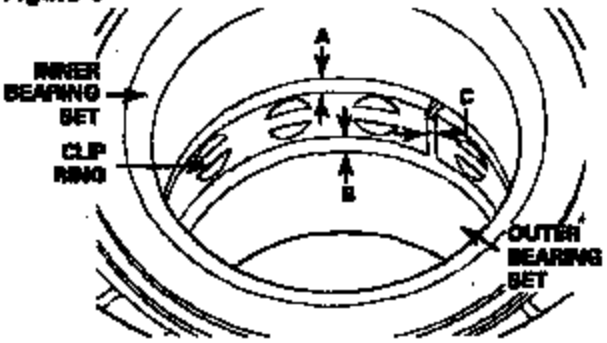
NOTE: If a ticking sound is detected during rotation, this does not indicate a hub problem. It is a normal occurrence.

11. Verify that the unitized wheel end rotates smoothly and without noise. While rotating the wheel, grasp the brake chamber to feel for unitized wheel-end hub vibration.
    - **If the unitized wheel-end assembly does not rotate smoothly, or you hear noise (such as wheel bearing grind) or feel wheel-end hub vibration during rotation:** Replace the unitized wheel-end hub. You must inspect a replacement hub before you install it. Refer to Replacement Hub Inspection in this bulletin.
    - **If the wheel end rotates smoothly:** Inspection is complete. Reinstall wheel-end equipment. Return the vehicle to service.

Replacement Hub Inspection

1. Remove the replacement hub from the box and place it on a clean surface.
2. Examine the interior of the hub to verify the following.
   A. The inner clip ring has not become dislodged in shipment and is in correct alignment with the inner and outer bearings. The gap between the inner and outer bearing sets and the clip ring must be equal. **Figure 6.**
   B. The gap between the ends of the clip ring must be equal and not exceed 0.25-inch (6 mm). If necessary, adjust by hand. **Figure 6.**
   C. The bearing face must be clean with no seal coating, dirt or dust.

Figure 6



A AND B MUST BE EQUAL
C MUST NOT EXCEED 0.25" (6 MM)

3. Examine the exterior of the hub to verify the following.
   A. There is no visible damage to the inboard or outboard seals and the bearings have not become unseated. **Figures 7 and 8.**
   B. The tone ring teeth are not damaged and there are no broken or missing teeth on the tone ring. **Figure 8.**

Figure 7

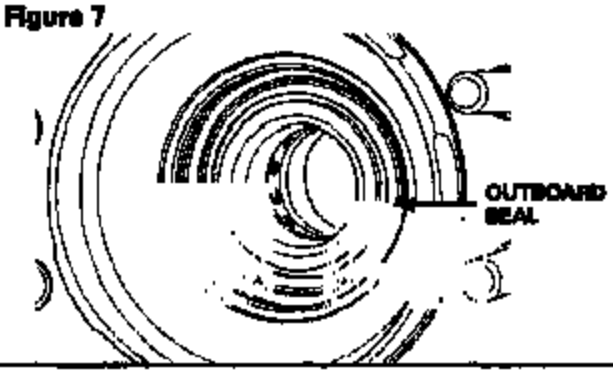
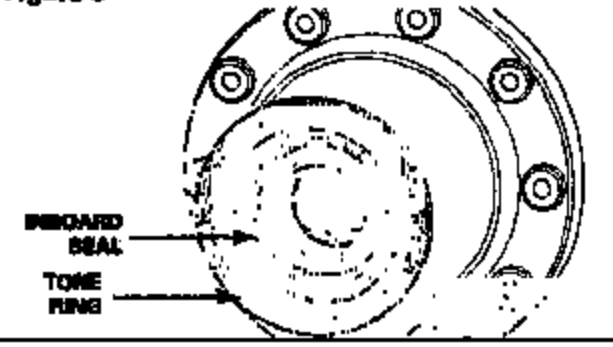


Figure 8



Install the Spindle O-Ring

The spindle O-ring, Meritor part number 5X-1301 contained in Kit 1433, enables you to remove the unitized wheel-end hub from the spindle more easily, because it helps to prevent contaminants from entering the assembly.

When you remove the unitized wheel-end hub, install a new O-ring.

1. Clean the unitized wheel-end inner bore and spindle with a clean dry rag. DO NOT apply any solvent.
2. Check the bore of the unitized wheel end for any obstructions and check the spindle for any nicks or burrs.
3. Coat the new O-ring with a thin coat of Meritor part number 2297-C-8297 or Dow Corning Molykote D to assist in installing the O-ring.

⚠ WARNING

Do not apply anti-seize or anti-fretting compound to spindle threads. These compounds decrease a fastener assembly's capability to maintain clamp load, which can cause wheels to loosen and separate from the vehicle. Serious personal injury and damage to components can result.

4. Coat the inside of the unitized wheel end with anti-seize compound. Make certain to cover inner and outer bearing races. Do not apply anti-seize or anti-fretting compound to spindle or threads. Remove any anti-seize or anti-fretting compound that may have dripped onto the spindle threads.
5. Slide a new O-ring, Meritor part number 5X-1301, onto the spindle. The O-ring must be positioned against the knuckle journal.

⚠ CAUTION

Align the unitized wheel end STRAIGHT onto the spindle. Do not allow the assembly to misalign and contact the spindle threads. Bearing damage can occur that requires replacement of the entire unitized wheel end.

6. Carefully align the unitized wheel-end bore with the spindle and slide the unitized wheel end STRAIGHT onto the spindle.
   - **If the unitized wheel end does not slide on easily:** Do not force it onto the spindle. The unitized wheel end can become jammed on the spindle if it is not aligned correctly with the spindle.
   - **If the unitized wheel end becomes jammed on the spindle:** Carefully remove the unitized wheel end from the spindle so that the inner bearings do not disassemble or loosen from the unitized wheel end.
7. Install the INNER "D" washer and the INNER wheel bearing nut. Tighten the INNER wheel bearing nut to 500-700 lb-ft (679-949 N•m) while rotating the unitized wheel end a minimum of five rotations. **Figure 8.** (T)
8. Install the tabbed washer and OUTER wheel bearing nut onto the spindle. Tighten the OUTER wheel bearing nut to 200-300 lb-ft (271-476 N•m). (T)

NOTE: The inner wheel bearing nut and the outer wheel bearing nut are identical, but the torque values are different.

9. Bend the parts of the tabbed washer that protrude over the flats of the outer wheel bearing nut and the inner wheel bearing nut. Bend the washer a minimum of one flat edge to each nut.

Install the Hubcaps

Threaded Plastic Hubcaps

NOTE: It is not necessary to remove residual Loctite® sealant from the original hubcap installation.

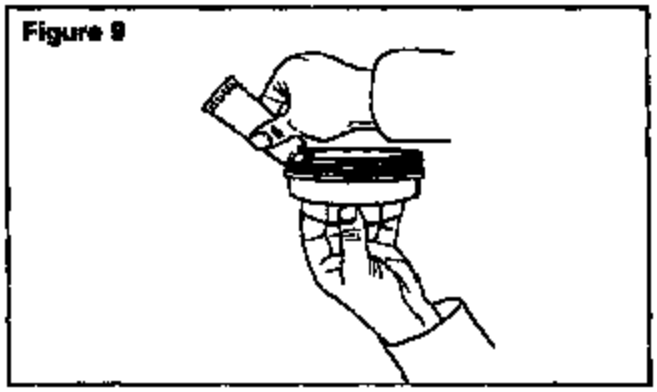
1. Wipe the inner truck hub unit threads with a clean shop cloth. Do not use compressed air, solvents or power washers to clean the hub unit threads.
   - **To remove grease or mud from the exposed inner threads:** Use a wire brush to remove grease or mud from the inner hub unit threads. Wipe the inner threads with a clean shop cloth.

⚠ WARNING

Only use RTV sealant (Meritor part number 2297-Z-7098, Loctite® Adhesive Sealant number 5699) when you service a unitized wheel-end assembly. Do not use any other brand of RTV sealant, which can cause corrosion, damage and incompatibility between unitized wheel-end components. Serious personal injury and damage to components can result.

2. Apply a continuous 1/8-3/16-inch (3-5 mm) bead of RTV sealant to the outside first thread around the entire circumference of the hubcap. You must use Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699. **Figure 9.**

Figure 9



3. Install the plastic hubcap into the unitized wheel end by hand.
4. Use a torque wrench with the correct size socket to tighten plastic hubcaps to 50-100 lb-ft (67-135 N•m). Disregard the torque value embossed on the hubcap. (T)

Metal (Aluminum) Hubcaps

1. Clean the INNER unitized wheel-end threads and threaded hubcap external threads with a wire brush. Apply Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699, to the hubcap threads.
2. Turn the hubcap by hand, until it's seated.
3. Use a torque wrench with the correct size socket to tighten the hubcap to 325-375 lb-ft (440-508 N•m). (T)

Threaded plastic hubcap	RTV sealant (Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699)	50-100 lb-ft (67-136 N•m)
Metal (aluminum) hubcap		325-375 lb-ft (440-508 N•m)

NOTE: Threaded plastic and metal hubcaps are interchangeable. For non-threaded hubcaps, refer to TP-0254, Removing and Installing Hubcaps with Snap Rings.

Reusing Hubcaps

If you observe any of the following conditions while tightening a used hubcap, replace the hubcap with a new one. Refer to Install the Hubcaps in this bulletin.

- The hubcap "jumps" threads and makes a popping sound while you're tightening it.
- The hubcap begins to yield because threads are stripped.
- You cannot achieve the correct torque specification of 50-100 lb-ft (67-135 N•m) for plastic hubcaps or 325-375 lb-ft (440-508 N•m) for metal hubcaps.

ArvinMeritor™

Meritor Heavy Vehicle Systems, LLC
2135 West Maple Road
Troy, MI 48084 USA
800-535-5560
arvinmeritor.com

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16579/24240

PACCAR Inc
Law Department

July 14, 2003

SENT VIA FACSIMILE (202) 366-7882 & E-Mail

George Person, Chief
Recall Management Division
Office of Defects Investigation (NEF-111)
Safety Assurance
National Highway Traffic Safety Administration
400 Seventh Street SW, Room 5319
Washington, D.C. 20590

Re: ArvinMeritor FF981 series non-drive steer axle hubs
NHTSA Recall No.: 03V-125
Kenworth Recall No.: 03KW2

Dear Mr. Person:

Enclosed is the notification letter that was sent by Kenworth to its dealers/service managers on July 7, 2003. Also enclosed is the owner notification letter that will be mailed on July 17, 2003.

Very truly yours,

Kenneth R. Brownstein
Senior Counsel

Enclosures
KRB:ptg

E-mail: ken.brownstein@paccar.com

P.O. Box 1518 Bellevue, Washington 98009 Telephone 425-468-7356
PACCAR Building 777-106th Avenue N.E. Bellevue, Washington 98004 Facsimile 425-468-8228

KENWORTH
A DIVISION OF PACCAR

Department	Customer Service	
Category	Product Recall	
Title	ArvinMeritor/SKF FF981 Steer Axle Hubs	
Number	03KW2	
Initial Release Date	05/09/03	Page 1 of 2
Revision Date		

Recall

FEDERAL RECALL CAMPAIGN 03KW2

T600, T800, T2000 & W900 MODELS MANUFACTURED SEPTEMBER 2, 1998 THROUGH DECEMBER 6, 2001 WITH ARVINMERITOR/SKF FF981 NON-DRIVEN STEER AXLE UNITIZED HUBS

Kenworth Truck Company was notified by ArvinMeritor that a defect, which relates to motor vehicle safety, could exist in certain FF98x family of non-driven steer axles with unitized hubs installed on trucks manufactured from September 2, 1998 through December 6, 2001. A total of 115 U.S. and 2 Canadian trucks are involved in the campaign. The Chassis List, Dealer/Chassis List, and a copy of the customer letter (USA, Canada) are attached. The DWC and SIR online systems indicate chassis involved in this recall with the designator of "03KW2" in the campaign field.

SITUATION

SKF supplies hub units to ArvinMeritor for assembly into the unitized FF98x family steer axles. SKF has identified units with an improperly honed component, and units with surface irregularities on the sealing surface, which may cause premature spalling of the affected bearings and could eventually lead to break down of the bearing. This defect could eventually cause the wheel to fall off or lead to fire.

RESOLUTION

Kenworth initiated a recall to replace both the affected hubs on chassis listed in this recall.

- Long Studs for aluminum wheels: order Part No. K1TSKFLS2.
- Short Studs for steel wheels: order Part No. K1TSKFSS2.

Each kit contains a full set of (2) axle hubs.

NOTE: Replacement hubs are currently being built. The full supply of hubs to support the affected population will be built up by September 1, 2003. If parts are not available at the time you have the customer at your dealership, perform the "Basic Inspection" per Meritor's TP-0251 bulletin and reschedule the customer to perform the recall repair. There should be no more inspections performed after September 1, 2003.

NOTE: The inspection is only an interim measure and should NOT be mistaken for the actual recall repair. The hubs must be replaced. When hubs are available, do not perform the inspection. Simply replace the hubs.

It is a violation of Federal law for a dealer to sell or lease new vehicles covered by this recall until the defect or noncompliance has been corrected.

WARRANTY

REPAIR

- Hubs with long studs:
  File Quick Claim 03K2A for reimbursement for Kit P/N K1TSKFLS2 and 2.3 hours per truck to changeout both hubs for this repair.
- Hubs with short studs:
  File Quick Claim 03K2B for reimbursement for Kit P/N K1TSKFSS2 for the and 2.3 hours per truck to changeout both hubs for this repair.

INSPECTION

Until parts are available, you are allowed 0.3 hour per truck (use Quick Claim Code 03K2C) to perform the "Basic Inspection" per Meritor's *TP-0251* bulletin.

NOTE: If parts are available, there is no need for the inspection and will not be covered by warranty. Simply replace the hubs.

KENWORTH

May 15, 2003

Dear Kenworth Owner,

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

Kenworth Truck Company has decided that a defect which relates to motor vehicle safety exists in certain ArvinMeritor FF961 steer axles installed on trucks manufactured from September 2, 1998 through December 8, 2001. Your truck was manufactured with this configuration.

Kenworth Truck Company determined that hub units supplied by ArvinMeritor for assembly into the unitized FF961 steer axles may have an improperly honed component. These units with surface irregularities on the sealing surface may develop premature spalling of the affected bearings and could eventually lead to break down of the bearing. This defect could eventually cause the wheel to fall off or lead to fire, which may result in a crash.

Kenworth initiated a recall to correct this condition by replacing the affected hubs. As of the date of this letter, Kenworth urges you to immediately contact your nearest authorized Kenworth dealer to have this work completed. Replacement hubs are currently being built. The full supply of hubs to support the affected population will be built up by September 1, 2003. The dealer will order the hubs (if they are not in stock), notify you as soon as they are received, and will schedule an appointment for the hub replacement. This work may take up to 4 hours and will be performed at no charge to you. In the interim, Kenworth urges you to immediately contact your nearest authorized Kenworth dealer to inspect for spalling of the bearings. This work may take up to 2 hours and will be performed at no charge to you.

If you believe you had this repair made prior to receiving this notification, please contact your nearest dealership for possible reimbursement.

If you require further information about this recall or experience any difficulty in making arrangements for the inspection or correction, please contact: Kenworth Truck Company, P.O. Box 1000, Kirkland, WA 98083-1000, Attn: Customer Service Department, phone 425-828-5000.

If you conclude that Kenworth Truck Company has not enabled you to remedy this defect in reasonable time and without charge, you may submit a complaint to: Administrator for Safety Assurance, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, DC 20590, or call the toll free auto safety hotline at 1-888-327-4236.

Federal law requires that any vehicle lessor receiving this recall notice must forward a copy of this notice to the lessee within ten days.

Please advise Kenworth Truck Company if you no longer own this vehicle and know the new owner's name. The enclosed card may be used for this purpose.

We regret any inconvenience that this work may cause.

Sincerely,

Mike Kalkoske

Director of Customer Service

TP-02251
Revised 10-24-02

MERITOR.

Technical Bulletin

Unitized Wheel-End Assembly Inspection with a Dial Indicator
Replacement Hub Inspection
Spindle and O-Ring Installation
Hubcap Installation
All Meritor Front Non-Drive Steer Axles with Unitized Wheel Ends

⚠ WARNING

YOU MUST FOLLOW THE UNITIZED WHEEL-END MAINTENANCE AND INSPECTION PROCEDURES PROVIDED IN THIS BULLETIN TO PREVENT SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS.

- **UNITIZED WHEEL ENDS ARE NOT ADJUSTABLE.**
- **DO NOT ATTEMPT TO SET OR ADJUST END PLAY.**

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.

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.

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.

For Complete Maintenance and Service Information on Meritor Front Non-Drive Steer Axles

Refer to Maintenance Manual 2, Front Non-Drive Steer Axles. To obtain this publication, call ArvinMeritor's Customer Service Center at 800-535-5560, or visit the Tech Library on our website at arvinmeritor.com.

To Order Meritor Parts Specified in This Bulletin

Call ArvinMeritor's Commercial Vehicle Aftermarket at 888-725-9355.

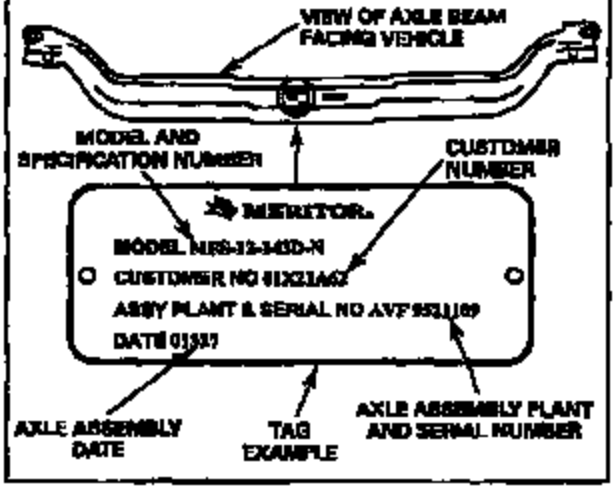
Determine If the Vehicle's Front Non-Drive Steer Axle is Equipped with Unitized Wheel Ends

A unitized wheel end has "half moons" embossed on the center of the hubcap. Figure 1.

Figure 1

If the hubcaps are missing, you can use the axle model number to determine if the axle is equipped with unitized wheel ends. To identify the model number, refer to the axle identification plate on the front of the beam. **Figure 2.**

Figure 2



Meritor Axle Models Equipped with Unitized Wheel Ends

MFS-10-143D-N	MFS-12-144D-N	FF-983
MFS-10-144D-N	MFS-13-144D-N	FF-984
MFS-12-122D-N	FF-981	FF-986
MFS-12-143D-N	FF-982	FF-987

A unitized wheel end also has been referred to as a truck hub unit, Easy-Steer Plus™, and a unitized hub.

Inspection Intervals

This bulletin provides inspection and maintenance procedures for Meritor axles equipped with unitized wheel ends on front non-drive steer axles. You must perform detailed and basic inspections at the following intervals.

Detailed Inspections

Refer to Detailed Inspection in this bulletin for procedures.

- After the initial 200,000 miles (321 800 km) of operation.
- After every additional 200,000 miles (321 800 km) of operation thereafter.

Basic Inspections

After the initial 200,000-mile (321 800 km) detailed inspection, perform a basic inspection at each scheduled preventive maintenance interval, not to exceed 50,000-mile (80 467 km) intervals. Refer to Basic Inspection in this bulletin for procedures.

If the Vehicle is Equipped with ABS on the Steer Axle

In addition to scheduled preventive maintenance, if driver reports indicate the ABS light has been coming ON, and ABS diagnostics indicate the sensor gap is out-of-adjustment, check for possible wheel-end looseness as the cause.

Tools Required

Basic Inspection

A jack, wheel blocks and safety stands

Detailed Inspection

A dial indicator and a torque wrench with 700 lb-ft (948 N•m) capability

Procedures

The unitized wheel end is sealed and greased for life and does not require lubrication. If you disassemble, or attempt to repair or lubricate a unitized wheel-end assembly, you will void Meritor's warranty. The basic and detailed inspection procedures provided in this bulletin do not instruct you to disassemble the unitized wheel end.

- Unitized wheel ends are not adjustable.
- Do not attempt to set or adjust end play.

Basic Inspection

1. Park the vehicle on a level surface. Block the rear wheels to prevent the vehicle from moving.
2. Raise the vehicle so that the front wheels are off the ground. Support the vehicle with safety stands. Do not use a jack to support the vehicle.

NOTE: If a ticking sound is detected during rotation, this does not indicate a hub problem. It is a normal occurrence.

3. Visually inspect the unitized wheel end as you rotate the tire and unitized wheel-end assembly. Verify that it rotates smoothly and without noise. While rotating the wheel, grasp the brake chamber to feel for unitized wheel-end hub vibration.
   - **If the tire and unitized wheel-end assembly does not rotate smoothly, or you hear noise (such as wheel bearing grind) or feel wheel-end hub vibration during rotation:** Perform a detailed inspection. Refer to Detailed Inspection in this bulletin.
   - **If the wheel end rotates smoothly:** Proceed to Step 4.
4. Grasp the tire and wheel-end assembly at the nine and three o'clock positions. Check for vertical and horizontal movement. With your hands, apply approximately 50 lb (23 kg) of force to the assembly. You should not feel or see any looseness or movement.
   - **If you feel or see any movement or looseness in the tire and wheel-end assembly:** Perform a detailed inspection to determine the cause of the movement, such as worn king pin bushings or pins; wheel-to-hub-mounting end play; unitized wheel-end hub end play; or a combination of them all. To determine unitized wheel-end hub end play, refer to Detailed Inspection which follows.

     If other front axle components, such as king pin bushings, require inspection or service, refer to Maintenance Manual 2, Front Non-Drive Steer Axles.

To Help Determine the Cause of Wheel-End Assembly Looseness or Movement

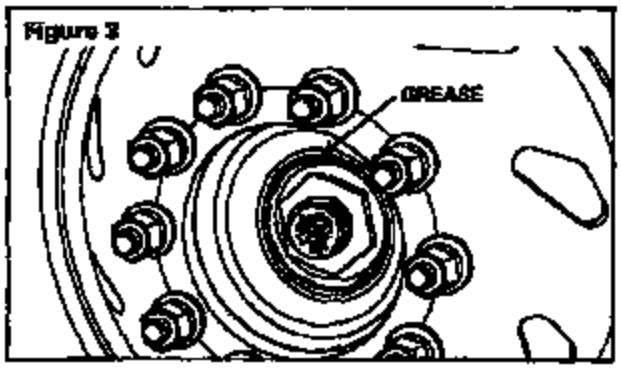
1. Check the wheel-to-hub mounting. Verify that the wheel is mounted correctly and all wheel-end fasteners and hardware are tightened to the correct specification.
2. Apply the service brake to lock the hub and spindle assembly together.
   - **If you detect movement or looseness:** The king pin or king pin bushings should be inspected. Refer to Maintenance Manual 2, Front Non-Drive Steer Axles.
   - **If applying the service brake eliminates movement or looseness:** Proceed to Detailed Inspection to determine the unitized wheel-end hub end play.

Detailed Inspection

1. Park the vehicle on a level surface. Block the rear wheels to prevent the vehicle from moving.
2. Remove the hubcap.
3. Raise the vehicle so that the front wheels are off the ground. Support the vehicle with safety stands. Do not use a jack to support the vehicle.

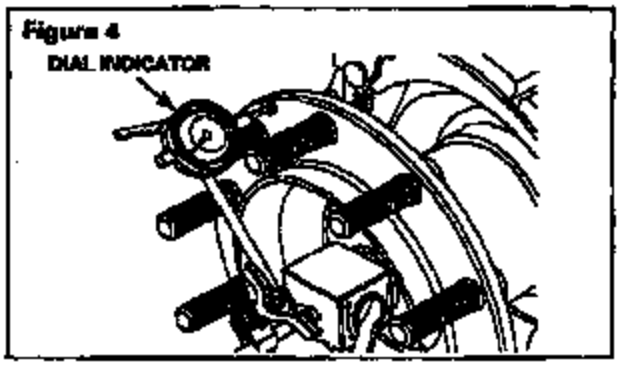
NOTE: The outboard and inboard seals may purge small amounts of grease that are visible during inspection. **Figure 3.** This is a normal occurrence.

Figure 3



4. Remove the wheel and drum. Attach the magnetic base of a dial indicator to the end of the spindle. **Figure 4.** Touch the indicator stem perpendicular against the unitized wheel-end's mounting face.

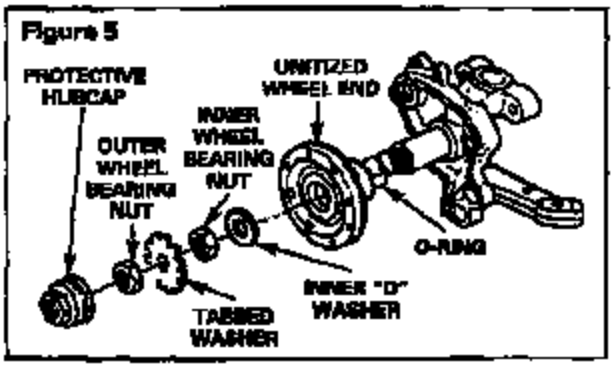
Figure 4



5. Set the dial indicator to ZERO. Do not rotate the wheel end. Place your hands at the nine and three o'clock positions.

6. Push the unitized wheel end straight IN. Note the reading. Pull the unitized wheel end straight OUT. Note the reading.
   - **If the total movement of the dial indicator is less than 0.003-inch (0.08 mm):** Inspection is complete. No adjustment is required.
   - **If the total movement of the dial indicator is 0.003-inch (0.08 mm) or greater:** Remove the OUTER bearing nut and tabbed washer. Tighten the INNER wheel bearing nut to 500-700 lb-ft (679-949 N•m) while rotating the unitized wheel end a minimum of five rotations. **Figure 5.** ❶

Figure 5



7. Install the tabbed washer and OUTER wheel bearing nut onto the spindle. Tighten the OUTER wheel bearing nut to 200-300 lb-ft (271-476 N•m). ❶

NOTE: The inner wheel bearing nut and the outer wheel bearing nut are identical, but the torque values are different.

8. Reattach the dial indicator. Set the dial indicator to ZERO. Do not rotate the wheel end. Place your hands at the nine and three o'clock positions.
9. Push the unitized wheel end straight IN. Note the reading. Pull the unitized wheel end straight OUT. Note the reading.
   - **If the total movement of the dial indicator is greater than 0.003-inch (0.08 mm) but less than 0.006-inch (0.15 mm):** Record the measurement in a maintenance log, and perform a basic inspection at the next regularly-scheduled maintenance interval, or not to exceed 50,000 miles (80 467 km), whichever comes first.
   - **If the total movement of the dial indicator is 0.006-inch (0.015 mm) or greater:** Replace the unitized wheel-end hub. You must inspect a replacement hub before you install it. Refer to Replacement Hub Inspection in this bulletin.
10. After you've taken the measurement, bend the parts of the tabbed washer that protrude over the flats of the outer wheel bearing nut and the inner wheel bearing nut. Bend the washer a minimum of one flat edge to each nut.

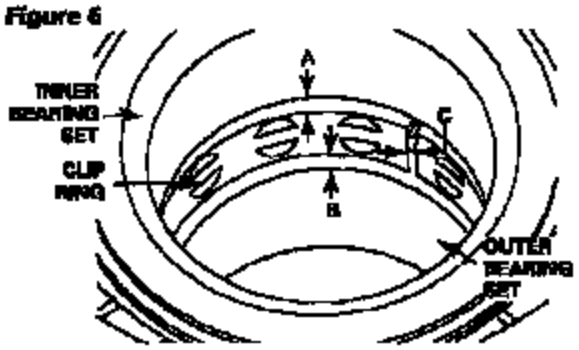
NOTE: If a ticking sound is detected during rotation, this does not indicate a hub problem. It is a normal occurrence.

11. Verify that the unitized wheel end rotates smoothly and without noise. While rotating the wheel, grasp the brake chamber to feel for unitized wheel-end hub vibration.
    - **If the unitized wheel-end assembly does not rotate smoothly, or you hear noise (such as wheel bearing grind) or feel wheel-end hub vibration during rotation:** Replace the unitized wheel-end hub. You must inspect a replacement hub before you install it. Refer to Replacement Hub Inspection in this bulletin.
    - **If the wheel end rotates smoothly:** Inspection is complete. Reinstall wheel-end equipment. Return the vehicle to service.

Replacement Hub Inspection

1. Remove the replacement hub from the box and place it on a clean surface.
2. Examine the interior of the hub to verify the following.
   A. The inner clip ring has not become dislodged in shipment and is in correct alignment with the inner and outer bearings. The gap between the inner and outer bearing sets and the clip ring must be equal. **Figure 6.**
   B. The gap between the ends of the clip ring must be equal and not exceed 0.25-inch (6 mm). If necessary, adjust by hand. **Figure 6.**
   C. The bearing face must be clean with no seal coating, dirt or dust.

Figure 6



A AND B MUST BE EQUAL
C MUST NOT EXCEED 0.25" (6 MM)

3. Examine the exterior of the hub to verify the following.
   A. There is no visible damage to the inboard or outboard seals and the bearings have not become unseated. Figures 7 and 8.
   B. The tone ring teeth are not damaged and there are no broken or missing teeth on the tone ring. Figure 8.

Figure 7

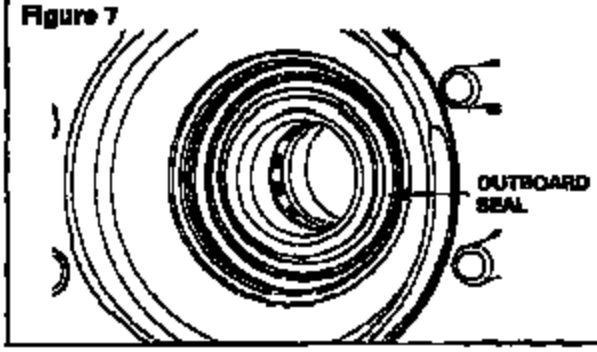
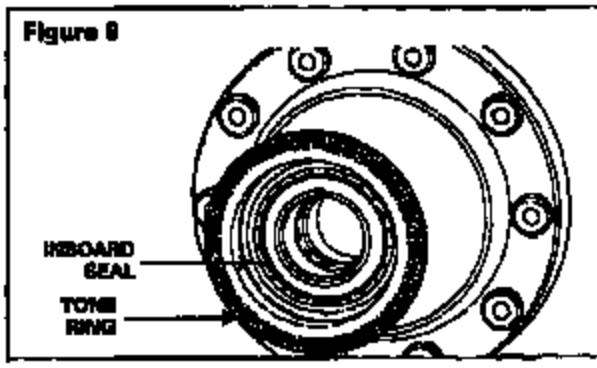


Figure 8



Install the Spindle O-Ring

The spindle O-ring, Meritor part number 5X-1301 contained in Kit 1433, enables you to remove the unitized wheel-end hub from the spindle more easily, because it helps to prevent contaminants from entering the assembly.

When you remove the unitized wheel-end hub, install a new O-ring.

1. Clean the unitized wheel-end inner bore and spindle with a clean dry rag. DO NOT apply any solvent.
2. Check the bore of the unitized wheel end for any obstructions and check the spindle for any nicks or burrs.
3. Coat the new O-ring with a thin coat of Meritor part number 2297-C-6297 or Dow Corning Molykote D to assist in installing the O-ring.

⚠ WARNING

Do not apply anti-seize or anti-fretting compound to spindle threads. These compounds decrease a fastener assembly's capability to maintain clamp load, which can cause wheels to loosen and separate from the vehicle. Serious personal injury and damage to components can result.

4. Coat the inside of the unitized wheel end with anti-seize compound. Make certain to cover inner and outer bearing races. Do not apply anti-seize or anti-fretting compound to spindle or threads. Remove any anti-seize or anti-fretting compound that may have dripped onto the spindle threads.
5. Slide a new O-ring, Meritor part number 5X-1301, onto the spindle. The O-ring must be positioned against the knuckle journal.

⚠ CAUTION

Align the unitized wheel end STRAIGHT onto the spindle. Do not allow the assembly to misalign and contact the spindle threads. Bearing damage can occur that requires replacement of the entire unitized wheel end.

6. Carefully align the unitized wheel-end bore with the spindle and slide the unitized wheel end STRAIGHT onto the spindle.
   - **If the unitized wheel end does not slide on easily:** Do not force it onto the spindle. The unitized wheel end can become jammed on the spindle if it is not aligned correctly with the spindle.
   - **If the unitized wheel end becomes jammed on the spindle:** Carefully remove the unitized wheel end from the spindle so that the inner bearings do not disassemble or loosen from the unitized wheel end.
7. Install the INNER "D" washer and the INNER wheel bearing nut. Tighten the INNER wheel bearing nut to 500-700 lb-ft (679-949 N•m) while rotating the unitized wheel end a minimum of five rotations. **Figure 5.** ⓣ
8. Install the tabbed washer and OUTER wheel bearing nut onto the spindle. Tighten the OUTER wheel bearing nut to 200-300 lb-ft (271-476 N•m). ⓣ

NOTE: The inner wheel bearing nut and the outer wheel bearing nut are identical, but the torque values are different.

9. Bend the parts of the tabbed washer that protrude over the flats of the outer wheel bearing nut and the inner wheel bearing nut. Bend the washer a minimum of one flat edge to each nut.

Install the Hubcaps

Threaded Plastic Hubcaps

NOTE: It is not necessary to remove residual Loctite® sealant from the original hubcap installation.

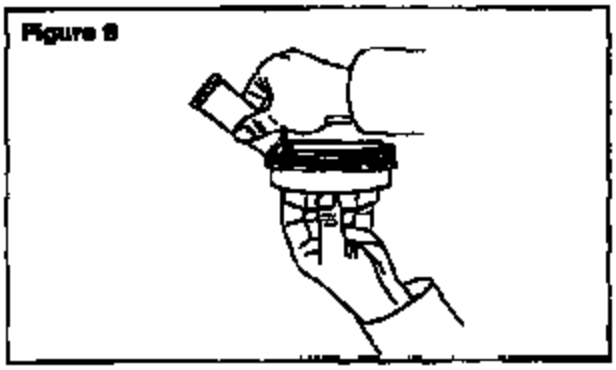
1. Wipe the inner truck hub unit threads with a clean shop cloth. Do not use compressed air, solvents or power washers to clean the hub unit threads.
   - **To remove grease or mud from the exposed inner threads:** Use a wire brush to remove grease or mud from the inner hub unit threads. Wipe the inner threads with a clean shop cloth.

⚠ WARNING

Only use RTV sealant (Meritor part number 2297-Z-7098, Loctite® Adhesive Sealant number 5699) when you service a unitized wheel-end assembly. Do not use any other brand of RTV sealant, which can cause corrosion, damage and incompatibility between unitized wheel-end components. Serious personal injury and damage to components can result.

2. Apply a continuous 1/8-3/16-inch (3-5 mm) bead of RTV sealant to the outside first thread around the entire circumference of the hubcap. You must use Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699. **Figure 6.**

Figure 6



3. Install the plastic hubcap into the unitized wheel end by hand.
4. Use a torque wrench with the correct size socket to tighten plastic hubcaps to 50-100 lb-ft (67-135 N•m). Disregard the torque value embossed on the hubcap. ⓣ

Metal (Aluminum) Hubcaps

1. Clean the INNER unitized wheel-end threads and threaded hubcap external threads with a wire brush. Apply Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699, to the hubcap threads.
2. Turn the hubcap by hand, until it's seated.
3. Use a torque wrench with the correct size socket to tighten the hubcap to 325-375 lb-ft (440-508 N•m). ⓣ

Threaded plastic hubcap	RTV sealant (Meritor part number 2297-Z-7098 RTV sealant, Loctite® Adhesive Sealant number 5699)	50-100 lb-ft (67-135 N•m)
Metal (aluminum) hubcap		325-375 lb-ft (440-508 N•m)

NOTE: Threaded plastic and metal hubcaps are interchangeable. For non-threaded hubcaps, refer to TP-0254, Removing and Installing Hubcaps with Snap Rings.

Reusing Hubcaps

If you observe any of the following conditions while tightening a used hubcap, replace the hubcap with a new one. Refer to Install the Hubcaps in this bulletin.

- The hubcap "jumps" threads and makes a popping sound while you're tightening it.
- The hubcap begins to yield because threads are stripped.
- You cannot achieve the correct torque specification of 60-100 lb-ft (67-135 N•m) for plastic hubcaps or 325-375 lb-ft (440-508 N•m) for metal hubcaps.

ArvinMeritor™

Meritor Heavy Vehicle Systems, LLC
2135 West Maple Road
Troy, MI 48084 USA
800-535-5560
arvinmeritor.com

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