DAIMLER

Daimler Trucks North America
Nasser Zamani
Senior Manager
Compliance and Regulatory Affairs

June 29, 2012

Nancy Lewis
Associate Administrator for Enforcement
National Highway Traffic Safety Administration
Attention: Recall Management Division (NVS-215, Rm. W45-206)
1200 New Jersey Avenue S.E.
Washington D.C. 20590

RE: Defect Information Report – Supplemental Report No. 4
11V-514, FL-614, Rack and Pinion Steering Pinion Bearings
Dealer Notice

Ms. Lewis,

In accordance with Part 573 of Title 49 of the Code of Federal Regulations, Daimler Trucks North America LLC herewith submits supplemental defect information and copies of documents distributed to dealers.

(c)(3) Total number of vehicles potentially affected: 9,689

(c)(8)(ii) Dealer and distributor notification: Began and ended: June 29, 2012

(c)(10) A copy of communications sent to dealers is attached.

Please contact me if you have any questions, or concerns.

Sincerely yours,

Nasser Zamani

Nasser Zamani

Cc: Amy Martin, CAL-OSHA
Attachment

Daimler Trucks North America LLC
4747 N. Channel Avenue
Portland OR 97217-7699
503-745-6910 Phone
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Daimler Trucks
North America LLC

Recall Campaign

June 2012
FL614AB
NHTSA #11V-514
Transport Canada #11-367

Subject: Rack and Pinion Steering Pinion Bearings

Models Affected: Specific Freightliner Cascadia, Century Class S/T, Classic XL, Columbia, and Coronado vehicles manufactured November 1, 2004, through June 15, 2010, with a ThyssenKrupp rack and pinion steering system.

General Information

Daimler Trucks North America LLC (DTNA), on behalf of its Freightliner Trucks Division, has decided that a defect that relates to motor vehicle safety exists on the vehicles mentioned above.

There are approximately 11,500 vehicles involved in this campaign.

The lower pinion bearing of the rack and pinion steering system may corrode and fail, allowing possible axial and radial movement of the pinion valve assembly. This movement may cause an unexpected steering condition, making the vehicle more difficult to control and increasing the risk of a vehicle crash.

The interim recall repair has been validated and is now the final repair. **If a vehicle has had an interim repair or rack and pinion gear replacement with a current style gear, no further work is needed.** Rack and pinion gears will be inspected. Those that pass the inspection will have new bellows installed and grease added to the bottom pinion bearing. Gears that fail the inspection will be replaced.

Important Additional Information

- **FL614 covers replacement of a rack and pinion gear when corrosion is found in the ball bearing.** The rack and pinion ball bearing is the **only** inspection point on the steering gear. If a rack and pinion gear requires replacement for any other reason, claim the replacement under warranty. If warranty coverage is not available, contact your District Service Manager for assistance. See Freightliner Service Bulletin 46-53, *Inspection Procedure for Rack and Pinion Steering Gear*, for additional information.
- **All rack and pinion gear replacements covered by FL614 require pre-approval in order to provide a consistent process for determining gear replacement.** Submit a WSC Campaign Pre-Approval inquiry (locations using both OWL and QuickClaim). Attach photos clearly showing corrosion on a clean ball bearing. Photos should be of the ball bearing only. When completing the claim for approved replacements, include the Technician ID number of the individual who performed the Recall and the serial number of both the old and new rack and pinion gear (if the serial number of the new gear is not yet available, it must be added before a claim can be paid). Ensure pictures and serial numbers provided are of the actual gear being replaced. Replaced gears will be returned and audited.
- Discolored grease on the ball bearing does not indicate a corroded bearing.
- Use compressed air as necessary to fully clean the ball bearing once the majority of grease has been wiped away.
- A Tiger Tool Slack Adjuster Puller, part number 10406, is available and may assist with outer tie rod removal.
- Apply Terostat MS 939 sealant **only** on the gear where the large end of the bellows seats. Sealant applied to the small end of the bellows will not allow for correct toe alignment.
- If your location does not have access to the required computerized alignment tool, the toe-in adjustment may be sublet. When subletting the toe-in adjustment is required, in the Outside Charges field, enter the sublet amount. Up to $100 may be claimed without authorization with the invoice attached to the claim (or available upon request if using QuickClaim). The recall requires and will cover a toe-in adjustment. A full front end alignment is not required or covered.

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Additional Repairs

Dealers must complete all outstanding Recall and Field Service campaigns prior to the sale or delivery of a vehicle. A Dealer will be liable for any progressive damage that results from its failure to complete campaigns before sale or delivery of a vehicle.

Owners may be liable for any progressive damage that results from failure to complete campaigns within a reasonable time after receiving notification.

Work Instructions

Please refer to the attached work instructions. Prior to performing the campaign, check the vehicle for a completion sticker (Form WAR260).

Replacement Parts

Replacement parts are now available and can be obtained by ordering the kit number(s) listed below from your facing Parts Distribution Center.

If our records show your dealership has ordered any vehicles involved in campaign number FL614AB, a list of the customers and vehicle identification numbers will be available on AccessFreightliner.com. Please refer to this list when ordering parts for this recall.

Table 1 - Replacement Parts for FL614

Campaign Number	Part Description	Part Number	Qty. per Vehicle	Suggested Wholesale
FL614AB	Bellows Kit	THY 749980	1 ea	$73.47 U.S. $74.94 CAN
	Grease and Cap Kit	THY 750004	1 ea	$85.97 U.S. $87.69 CAN
FL614AB	Gear-Strg, R&P, LZS5, MWB (**FL614A**)	A14-18907-001	1 ea	$1,796.61 U.S. $1,832.54 CAN
	Gear-Strg, R&P, LZS5, SWB (**FL614B**)	A14-18907-000	1 ea	$1,804.09 U.S. $1,840.17 CAN
	Nut Castle M27 X1.5, Class 4	N000979027000 (Also MBT N000979027000)	2 ea	$7.24 U.S. $7.38 CAN
	Bolt-Pinch,Strg U-Joint, M10x1.25	14-15639-000	1 ea	$5.00 U.S. $5.10 CAN
	Nut-Hex,Prevailing Torque, M10x1.25	14-15640-000	1 ea	$1.36 U.S. $1.39 CAN
	Cotter Pin, 1-3/4x3/16	23-00800-607 Or Equivalent	2 ea	$.46 U.S. $.47 CAN
	Connector-3/4 to M16x1.5	23-13324-108	1 ea	$19.29 U.S. $26.23 CAN
	Connector-7/8 to M18x1.5	23-13324-110	1 ea	$6.74 U.S. $25.04 CAN
	Screw-Hex Flange, M18x1.5110	N910105018030 (Also MBT N910105018030)	4 ea	$9.67 U.S. $9.86 CAN
	Nut-Hex, Flange, M18x1.5, Class 10	N913023018002 (Also MBT N913023018002)	4 ea	$2.41 U.S. $2.46 CAN

Table 1

Removed Parts

U. S. and Canadian Dealers, please follow Warranty Failed Parts Tracking shipping instructions for the disposition of all removed parts. Export distributors, please destroy removed parts unless otherwise advised.

Labor Allowance

Table 2 - Labor Allowance

Campaign Number	Procedure	Time Allowed (hours)	SRT Code	Damage Code
FL614AB	Inspect and install service kits (in-house toe-in adjustment)	2.6	996-0867C	000-Modifiedx
	Inspect and install service kits (sublet toe-in adjustment)	1.8	996-0867E	000-Modifiedx
	Inspect and replace rack and pinion gear (in-house toe-in adjustment)	3.6	996-086D	000-Modifiedx
	Inspect and replace rack and pinion gear (sublet toe-in adjustment)	2.8	996-0867F	000-Modifiedx
	Inspect only, replace rack and pinion gear outside recall or interim repair already completed	0.5	996-0867G	000-Inspected

Table 2

IMPORTANT: When the Recall has been completed, locate the base completion label in the appropriate location on the vehicle, and attach the red completion sticker provided in the recall kit (Form WAR260). If the vehicle does not have a base completion label, clean a spot on the appropriate location of the vehicle and first attach the base completion label (Form WAR259). If a recall kit is not required or there is no completion sticker in the kit, write the recall number on a blank sticker and attach it to the base completion label.

Claims for Credit

Important Additional Information

- **FL614 covers replacement of a rack and pinion gear when corrosion is found in the ball bearing.** The rack and pinion ball bearing is the **only** inspection point on the steering gear. If a rack and pinion gear requires replacement for any other reason, claim the replacement under warranty. If warranty coverage is not available, contact your District Service Manager for assistance. See Freightliner Service Bulletin 46-53, *Inspection Procedure for Rack and Pinion Steering Gear*, for additional information.
- **Replacement of a rack and pinion gear requires authorization before replacing the gear.** Submit a WSC Campaign Pre-Approval inquiry (locations using both OWL and QuickClaim). Attach photos clearly showing corrosion on a clean ball bearing. Photos should be of the ball bearing only.When completing the claim for approved replacements, include the Technician ID number of the individual who performed the Recall and the serial number of both the old and new rack and pinion gear (if the serial number of the new gear is not yet available, it must be added before a claim can be paid). Ensure pictures and serial numbers provided are of the actual gear being replaced. Replaced gears will be returned and audited.
- Discolored grease on the ball bearing does not indicate a corroded bearing.

You will be reimbursed for your parts, labor, and handling (landed cost for Export Distributors) by submitting your claim through the Warranty system within 30 days of completing this campaign. Please reference the following information in QuickClaim or OWL:

- Be sure to refer to the Important Additional Information above when completing claims for FL614.
- Claim type is **Recall**.
- In the FTL Authorization field, enter the campaign number and appropriate condition code (**FL614A or FL614B**).

- In the Primary Failed Part Number field, enter **25-FL614-000**.
- In the Parts field, enter the appropriate part number(s) as shown in the Replacement Parts Table.
- In the Labor field, first enter the appropriate SRT from the Labor Allowance Table. For administrative time, enter SRT 939-0010A for 0.3 hours.
- If your location does not have access to the required computerized alignment tool and subletting the toe-in adjustment is required, in the Outside Charges field, enter the sublet amount with the invoice attached to the claim (or available upon request if using QuickClaim). Up to $100 may be claimed without authorization. The recall requires and will cover a toe-in adjustment. A full front end alignment is not required or covered.
- For OWL, the VMRS Component Code is 015-013-001 and the Cause Code is A1 - Campaign.
- **U.S. and Canada – Reimbursement for Prior Repairs.** When a customer asks about reimbursement, please do the following:
    - Accept the documentation of the previous repair.
    - Make a brief check of the customer's paperwork to see if the repair may be eligible for reimbursement. (See the "Copy of Owner Letter" section of this bulletin for reimbursement guidelines for this recall.)
    - Submit a Campaign Pre-Approval inquiry to the Warranty Campaigns Department for a decision and authorization number.
    - Include the approved amount on your claim in sublet/outside purchases.
    - In the claim story, first note the authorization number and that the claim includes a reimbursement request.
    - Retain the documentation and provide it to Warranty Campaigns or Claims Processing if requested.
    - When your claim is paid, reimburse the customer the appropriate amount.

IMPORTANT: ServicePro or OWL must be viewed prior to performing the recall to ensure the vehicle is involved and the campaign has not been previously completed. Also, check for a completion sticker prior to beginning work.

U.S. and Canadian dealers, contact the Warranty Campaigns Department from 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday, via Web inquiry at AccessFreightliner.com / Support / My Tickets and Submit an Inquiry, or the Customer Assistance Center at (800) 385-4357, after normal business hours, if you have any questions or need additional information. Export distributors, submit a Web inquiry or contact your International Service Manager.

U.S. and Canadian Dealers: To return excess kit inventory related to this campaign, U.S. dealers must submit a Parts Authorization Return (PAR) to the Memphis PDC. Canadian dealers must submit a PAR to their facing PDC. All kits must be in resalable condition. PAR requests must include the original purchase invoice number. Export Distributors: Excess inventory is not returnable.

The letter notifying U.S. and Canadian vehicle owners is included for your reference.

Please note that the National Traffic and Motor Vehicle Safety Act, as amended (Title 49, United States Code, Chapter 301), requires the owner's vehicle(s) be corrected within a reasonable time after parts are available to you. The Act states that failure to repair a vehicle within 60 days after tender for repair shall be prima facie evidence of an unreasonable time. However, circumstances of a particular situation may reduce the 60 day period. Failure to repair a vehicle within a reasonable time can result in either the obligation to (a) replace the vehicle with an identical or reasonably equivalent vehicle, without charge, or (b) refund the purchase price in full, less a reasonable allowance for depreciation. The Act further prohibits dealers from selling a vehicle unless all outstanding recalls are performed. Any lessor is required to send a copy of the recall notification to the lessee within 10 days. Any subsequent stage manufacturer is required to forward this notice to its distributors and retail outlets within five working days.

Copy of Notice to Owners

Subject: Rack and Pinion Steering Pinion Bearings

For the Notice to U.S. Customers: This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

For the Notice to Canadian Customers: This notice is sent to you in accordance with the Canadian Motor Vehicles Safety Act.

Daimler Trucks North America LLC, on behalf of its Freightliner Trucks Division, has decided that a defect which relates to motor vehicle safety exists on specific Freightliner Cascadia, Century Class S/T, Classic XL, Columbia, and Coronado vehicles manufactured November 1, 2004, through June 15, 2010, with a ThyssenKrupp rack and pinion steering system.

The lower pinion bearing of the rack and pinion steering system may corrode and fail, allowing possible axial and radial movement of the pinion valve assembly. This movement may cause an unexpected steering condition, making the vehicle more difficult to control and increasing the risk of a vehicle crash.

The interim recall repair has been validated and is now the final repair. **If a vehicle has had an interim repair or rack and pinion gear replacement with a current style gear, no further work is needed.** Rack and pinion gears will be inspected. Those that pass the inspection will have new bellows installed and grease added to the bottom pinion bearing. Gears that fail the inspection will be replaced.

Please contact an authorized Daimler Trucks North America dealer to arrange to have the recall performed and to ensure that parts are available at the dealership. To locate an authorized dealer, search online at www.Daimler-TrucksNorthAmerica.com. The Recall will take approximately three to four hours and will be performed at no charge to you.

You may be liable for any progressive damage that results from your failure to complete the Recall within a reasonable time after receiving notification.

If you do not own the vehicle that corresponds to the identification number(s) which appears on the Recall Notification, please return the notification to the Warranty Campaigns Department with any information you can furnish that will assist us in locating the present owner. If you have leased this vehicle, Federal law requires that you forward this notice to the lessee within 10 days. If you are a subsequent stage manufacturer, Federal law requires that you forward this notice to your distributors and retail outlets within five working days. If you have paid to have this recall condition corrected prior to this notice, you may be eligible to receive reimbursement. Please see the reverse side of this notice for details.

For the Notice to U.S. Customers: If you have questions about this Recall, please contact the Warranty Campaigns Department at (800) 547-0712, 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday, e-mail address DTNA.Warranty.Campaigns@Daimler.com, or the Customer Assistance Center at (800) 385-4357 after normal business hours. If you are not able to have the defect remedied without charge and within a reasonable time, you may wish to submit a complaint to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590; or call the Vehicle Safety Hotline at (888) 327-4236 (TTY: 800-424-9153); or to http://www.safercar.gov.

For the Notice to Canadian Customers: If you have questions about this Recall, please contact the Warranty Campaigns Department at (800) 547-0712, 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday, e-mail address DTNA.Warranty.Campaigns@Daimler.com, or the Customer Assistance Center at (800) 385-4357 after normal business hours.

We regret any inconvenience this action may cause but feel certain you understand our interest in motor vehicle safety.

WARRANTY CAMPAIGNS DEPARTMENT

Enclosure

June 2012
FL614AB
NHTSA #11V-514
Transport Canada #11-367

Reimbursement to Customers for Repairs Performed Prior to Recall

If you have already **paid** to have this recall condition corrected you may be eligible to receive reimbursement.

Requests for reimbursement may include parts and labor. Reimbursement may be limited to the amount the repair would have cost if completed by an authorized Daimler Trucks North America LLC dealer. The following documentation must be presented to your dealer for consideration for reimbursement.

Please provide original or clear copies of all receipts, invoices, and repair orders that show

- The name and address of the person who paid for the repair
- The Vehicle Identification Number (VIN) of the vehicle that was repaired
- What problem occurred, what repair was done, when the repair was done
- Who repaired the vehicle
- The total cost of the repair expense that is being claimed
- Proof of payment for the repair (such as the front and back of a cancelled check or a credit card receipt)

Reimbursement will be made by check from your Daimler Trucks North America LLC dealer.

Please speak with your Daimler Trucks North America LLC authorized dealer concerning this matter.

Work Instructions

Subject: Rack and Pinion Steering Pinion Bearings

Models Affected: Specific Freightliner Cascadia, Century Class S/T, Classic XL, Columbia, and Coronado vehicles manufactured November 1, 2004, through June 15, 2010, with a ThyssenKrupp rack and pinion steering system.

Key Points for Completing the Work Instructions Correctly

Ensure all steps are followed exactly according to the work instructions.

- **FL614 covers steering gear replacements resulting from corrosion in the ball bearing.**

  The rack and pinion ball bearing is the **only** inspection point on the steering gear. If a rack and pinion gear requires replacement for any other reason, claim the replacement under warranty. If warranty coverage is not available, contact your District Service Manager for assistance. See Freightliner Service Bulletin 46-53, *Inspection Procedure for Rack and Pinion Steering Gear*, for additional information.

- **All rack and pinion gear replacements covered by FL614 require pre-approval in order to provide a consistent process for determining gear replacement.**

  Submit a WSC Campaign Pre-Approval inquiry (locations using both OWL and QuickClaim). Attach photos clearly showing corrosion on a clean ball bearing. Photos should be of the ball bearing only.When completing the claim for approved replacements, include the Technician ID number of the individual who performed the Recall and the serial number of both the old and new rack and pinion gear (if the serial number of the new gear is not yet available, it must be added before a claim can be paid). Ensure pictures and serial numbers provided are of the actual gear being replaced. Replaced gears will be returned and audited.

- The rack and pinion ball bearing is the **only** inspection point on the steering gear.
- Discolored grease on the ball bearing does not indicate a corroded bearing.
- Use compressed air as necessary to fully clean the ball bearing once the majority of grease has been wiped away.
- A Tiger Tool Slack Adjuster Puller, part number 10406, is available and may assist with outer tie rod removal.
- Apply Terostat MS 939 sealant **only** on the gear where the large end of the bellows seats. Sealant applied to the small end of the bellows will not allow for correct toe alignment.
- If your location does not have access to the required computerized alignment tool, the toe-in adjustment may be sublet. When subletting the toe-in adjustment is required, in the Outside Charges field, enter the sublet amount. Up to $100 may be claimed without authorization with the invoice attached to the claim (or available upon request if using QuickClaim). The Recall requires and will cover a toe-in adjustment. A full front end alignment is not required or covered.

Ball Bearing Inspection

1. Confirm that FL614 needs to be performed.
   - Check for an Interim FL614 claim, indicating this work has been done. If a claim exists, no work is needed. The dealership Service Advisor should check this when the customer arrives or contacts your location by phone.
   - Check the base label (Form WAR 259) for a completion sticker for FL614 indicating this work has been done. The base label is usually located on the passenger-side door about 12 inches (30 cm) below the door latch. If a completion sticker for this campaign is present, no work is needed.

- Check the ball bearing access cover for indications that the cover has been staked at three equidistant points, See **Fig. 1**. If the ball bearing access cover has been staked, no work is needed.
- Check the part number of the rack and pinion gear. If the part number is either A14-18907-000 or A14-18907-001, no work is needed.
- If the repair has not been previously completed, proceed to the next step.

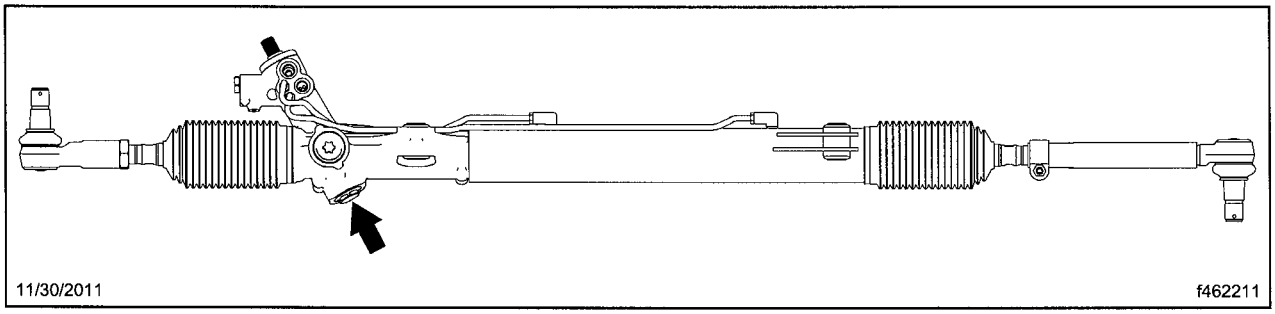


Fig. 1, Ball Bearing Access Cover Location

2. Place the front tires in the straight-ahead position on a level indoor surface.
3. Shut down the engine, apply the parking brakes, and chock the tires.
4. Raise the front wheels off the ground and support the vehicle with jack stands.

NOTICE

Use brake cleaner only to remove dirt and debris from the ball bearing access cover and surrounding areas. The use of harsh cleansers or chemicals may damage the steering gear. Do not clean the gear with a pressure washer.

5. Use brake cleaner to loosen debris and dirt build-up from the ball bearing access cover and surrounding areas, then wipe the area with a cloth. For hard to remove dirt, spray brake cleaner on the access cover and allow it to sit for a short time before wiping the dirt away.

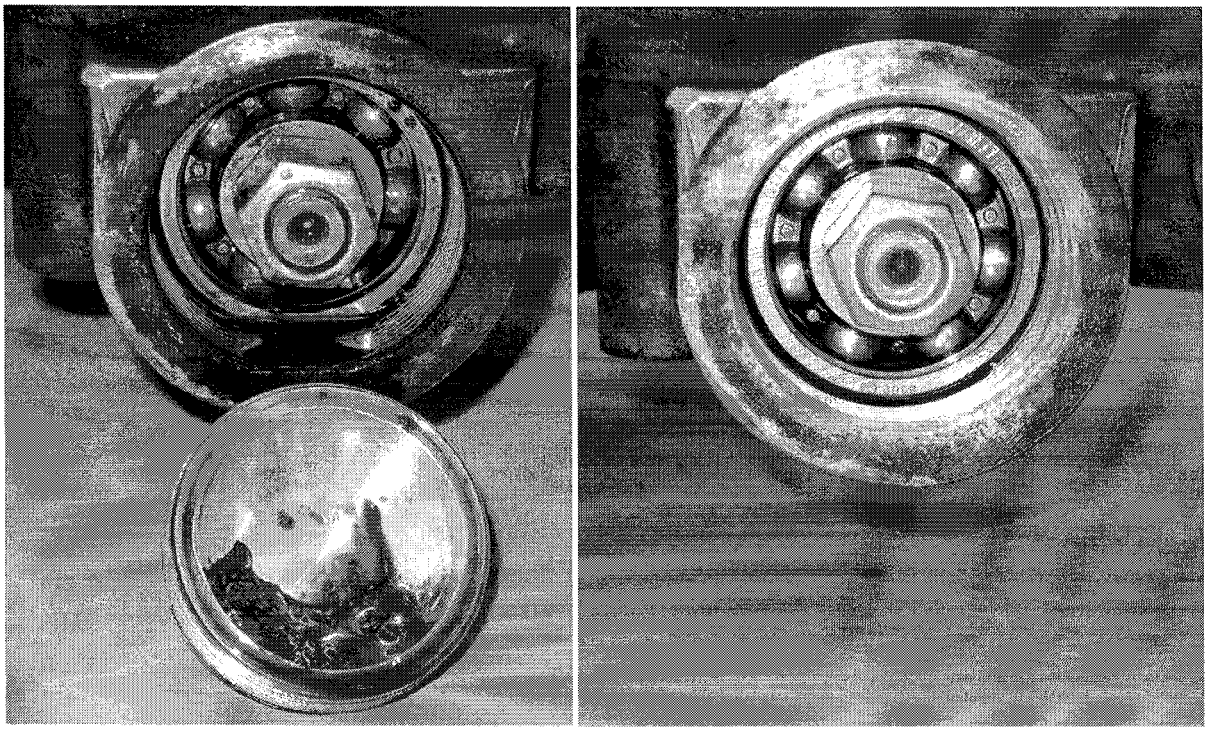
NOTICE

Do not allow dirt or debris to enter the ball bearing and hex-nut assembly when the bearing access cover is removed. Contamination from dirt or debris could damage the gear.

6. Using a 1-1/4 inch (32mm) socket wrench, remove the bearing access cover.

NOTE: Wipe all grease away before inspecting for corrosion. The presence of orange/brown grease is not an indicator of corrosion.

7. Using a clean cloth, remove all liquid and grease from the ball bearing. If necessary, use compressed air to remove excessive grease. See **Fig. 2** for an example of a sufficiently clean ball bearing.



A B

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NOTE: The gear in this photo was removed from the vehicle for demonstration purposes only.

A. Orange/brown grease does not indicate the presence of corrosion. Clean all grease off using a clean cloth and compressed air, if necessary

B. Ball bearing is now clean and corrosion-free.

Fig. 2, Grease Removal from Ball Bearing

8. Inspect the bearing access cover and ball bearing for corrosion. See **Fig. 3**.

   If corrosion is not found, complete the steps below under **Greasing the Ball Bearing**.

   If any corrosion is found, request pre-approval to replace the steering gear.

   Submit a WSC Campaign Pre-Approval inquiry (locations using both OWL and QuickClaim). Attach photos clearly showing corrosion on a clean ball bearing. Photos should be of the ball bearing only. Include the VIN, Technician ID number of the individual who performed the Recall, and the serial number of both the old and new rack and pinion gear (if the serial number of the new gear is not yet available, it must be added before a claim can be paid). Ensure pictures and serial numbers provided are of the actual gear being replaced. Replaced gears will be returned and audited.

9. When pre-approval to replace the steering gear is received, install the bearing access cover back on the gear, then replace the rack and pinion gear. Go to **Rack and Pinion Steering Gear Replacement** below for instructions.

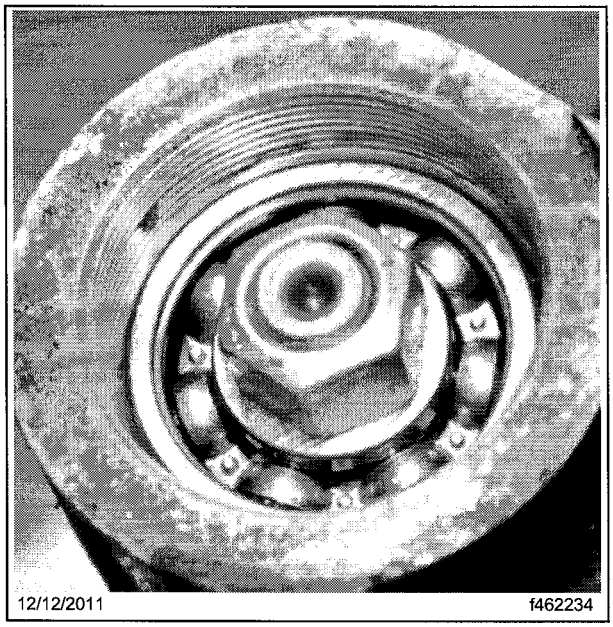


Fig. 3, Acceptable—Ball Bearing and Hexnut

Greasing the Ball Bearing

NOTICE

One syringe of Renolit CX-FO 20 grease is included in the Grease and Cap Service Kit. Ensure only grease, which is brown in color, is applied to the ball bearing and cover. Accidental application of Terostat sealant, which is white in color, could damage the gear.

1. Fill the ball bearing and hexnut to slightly above flush with Renolit CX-FO 20 grease. See **Fig. 4**.

NOTICE

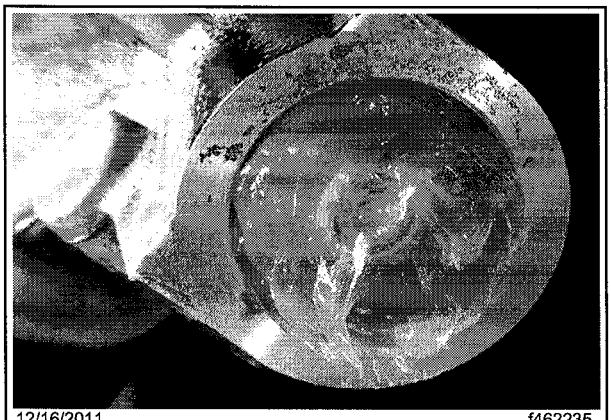
When pre-marking the three stake marks on the bearing access cover, lightly tap the cover with the center punch. Heavy punch marks may deform the threads of the cover, which could lead to steering gear damage.

IMPORTANT: Marking the bearing access cover allows for easier installation and staking of the cover later in this procedure.

2. Place the new ball bearing access cover on a bench or table. Using a center punch, lightly tap three small equidistant punch marks on the outside of the cap. See **Fig. 5**. Each mark should be approximately 0.08 in (2 mm) from the outer edge of the cover.
3. Fill the inside of the new bearing access cover to slightly above flush with Renolit CX-FO 20 grease. See **Fig. 6**.

NOTICE

Do not cross-thread the bearing access cover. Improper installation of the bearing access cover can damage the gear.



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Apply Renolit CX-FO 20 grease to the bearing.

Fig. 4, Greased Bearing

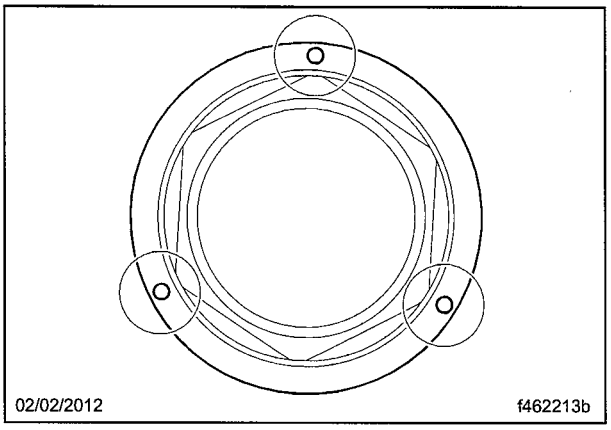

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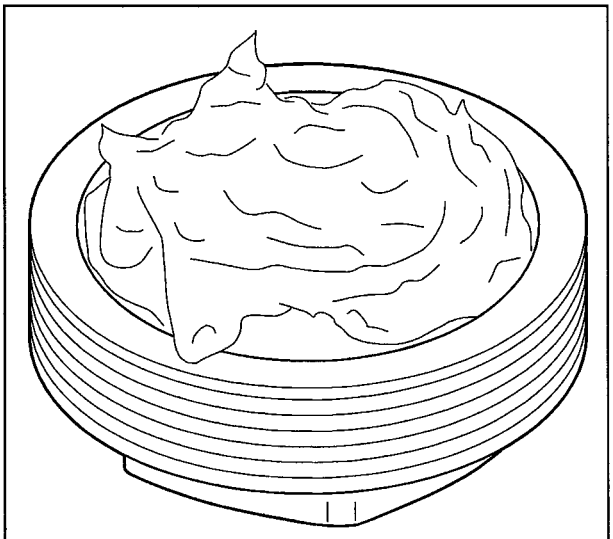
Fig. 5, Pre-Punch the Bearing Access Cover



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Apply Renolit CX-FO 20 grease to the inside of the new bearing access cover.

Fig. 6, Greased Bearing Access Cover

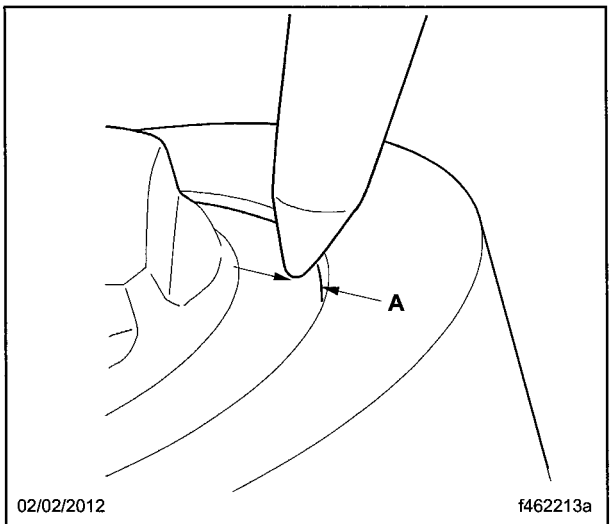
4. Using a 1-5/16 inch (33.3mm) socket wrench, install the new bearing access cover. Tighten the cover 63 to 71 lbf·ft (85 to 95 N·m).
5. Wipe excess grease from the exterior of the bearing access cover and the gear housing.

NOTICE

Stake marks should be approximately 0.08 in (2 mm) in diameter. Punching larger marks may damage the bearing access cover.

Use caution when using the center punch near the gear housing, to prevent damage to the gear.

6. Using a center punch, stake each punch mark that was made previously. See **Fig. 7**.
7. Go to **Replacing the Bellows**.



A Apply the punch 0.08 in (2 mm) from the edge of the access cover at three equidistant points.

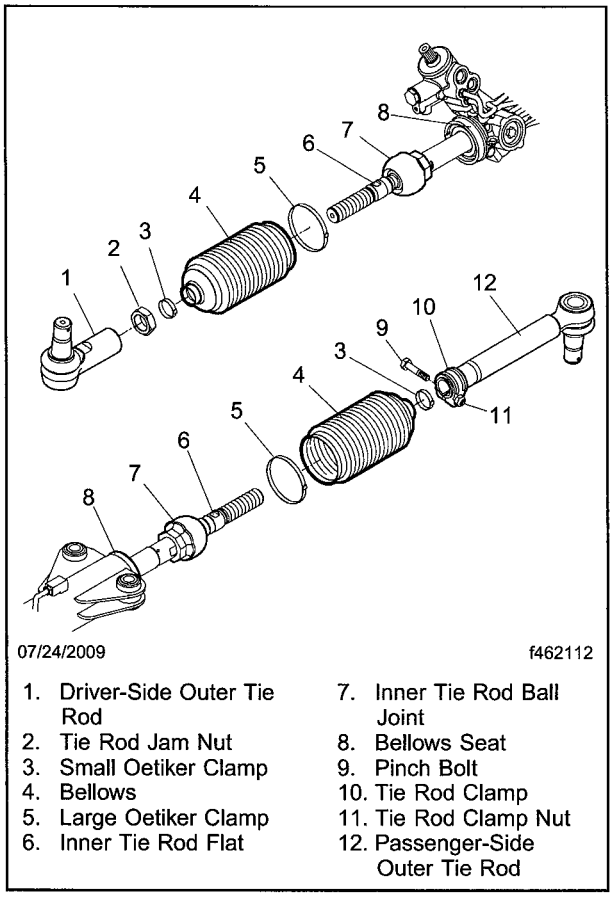
Fig. 7, Stake the Bearing Access Cover

Replacing the Bellows

1. Remove both wheels from the steer axle.

NOTE: A Tiger Tool Slack Adjuster Puller, part number 10406, may be used to assist with removal of the outer tie rods.

2. Disconnect the outer tie rods from the steering arms, as follows.
   - 2.1 Remove the cotter pins and castellated nuts.
   - 2.2 On the driver's side, loosen the jam nut. See **Fig. 8**, Item 2. Note the number of exposed threads and the position of the outer tie rod to ease installation.
   - 2.3 Disconnect the outer tie rods from the steering arms.
3. Use brake cleaner to remove dirt and debris from both bellows and surrounding areas.
4. Remove the small and large Oetiker clamps from both bellows. Discard the clamps.
5. Disconnect the outer tie rods from the inner tie rods. If necessary, use a backup wrench on the inner tie rod flat to turn the inner tie rod. See **Fig. 8**, Item 6.
6. Remove the bellows from both sides of the gear.



1. Driver-Side Outer Tie Rod
2. Tie Rod Jam Nut
3. Small Oetiker Clamp
4. Bellows
5. Large Oetiker Clamp
6. Inner Tie Rod Flat
7. Inner Tie Rod Ball Joint
8. Bellows Seat
9. Pinch Bolt
10. Tie Rod Clamp
11. Tie Rod Clamp Nut
12. Passenger-Side Outer Tie Rod

Fig. 8, Tie Rod and Bellows Assembly

IMPORTANT: Only apply grease to the rack shaft on the driver side. Do not apply grease to the teeth of the rack shaft. Do not apply grease to the shaft on the passenger side.

7. Turn the wheels all the way to the right to fully expose the driver-side rack. Without applying grease to the teeth of the rack shaft, evenly apply a light film of Renolit CX-FO 20 grease to the metal surfaces covered by the driver-side bellows.

8. Evenly apply a light film of Renolit CX-FO 20 grease to the inner tie rods where the small end of the bellows seat on both sides. Ensure the grease covers the entire circumference of the inner tie rods.

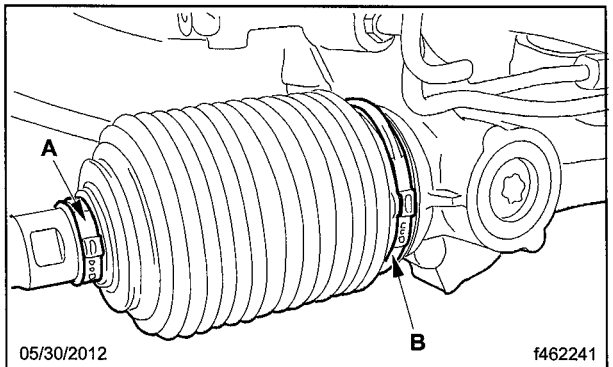
NOTICE

Two syringes of the Terostat MS 939 are included in the Bellows Service Kit. Ensure only Terostat, which is white in color, is applied to the rack housing. Accidental application of grease, which is brown in color, could damage the gear.

Do not allow Terostat MS 939 sealant to come into contact with the inner tie rods. Mistakenly applying sealant to the inner tie rods may cause damage to the bellows and the gear. See Fig. 9.

IMPORTANT: Terostat MS 939 sealant must be applied at a temperature between 59 and 77°F (15 and 25°C) to effectively seal steering gear components. Because Terostat sealant sets within ten minutes of application, the bellows should be installed within ten minutes of sealant application.

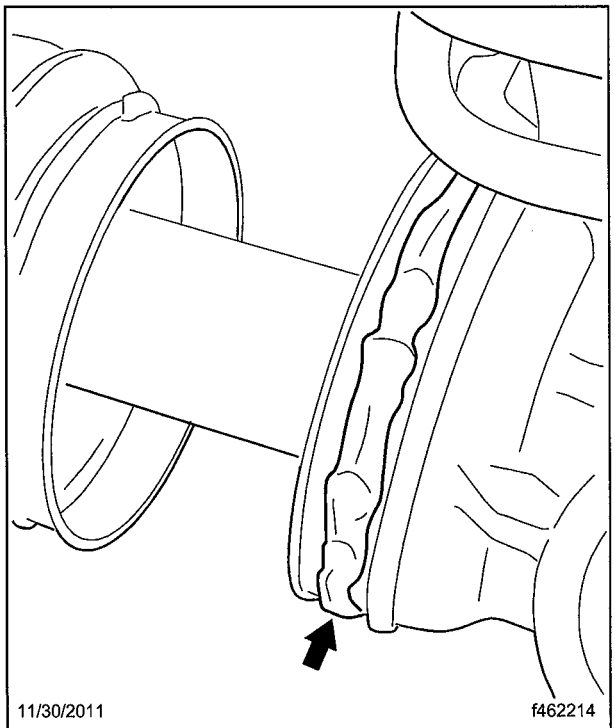
9. Evenly apply Terostat MS 939 sealant to the outer diameter of the rack housing where the large ends of the bellows seat on the gear housing. See **Fig. 10**



A. Do **not** apply Terostat near small end of the bellows.

B. **Only** apply Terostat to the gear where the large end of the bellows seats.

Fig. 9, Apply Terostat To Large End of Bellows



Evenly apply a bead of Terostat MS 939 sealant where the large ends of the bellows seat on the gear housing.

Fig. 10, Terostat MS 939 Sealant Application

NOTICE

Improper installation may cause moisture and contaminants to enter the gear, which may result in severe damage.

10. Install the new bellows on the gear. Ensure the bellows are seated properly on the gear housing and inner tie rods.
11. Rotate the bellows back and forth approximately 15 degrees in order to evenly disperse the sealant between the bellows and the gear housing.
12. Install new Oetiker clamps on each of the bellows as follows.

NOTICE

Fully opening an Oetiker clamp may cause permanent damage and render it ineffective.

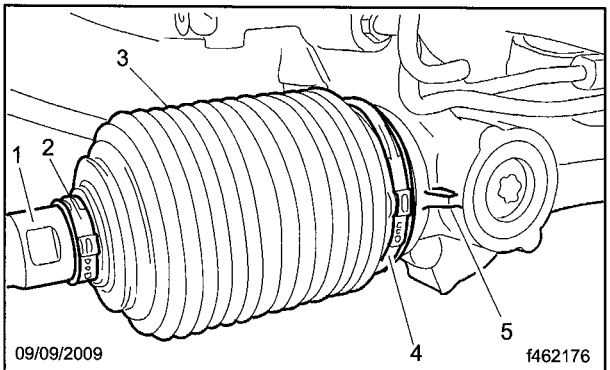
12.1 Ensure the large Oetiker clamp is properly seated in the clamp groove on the bellows. Align the large Oetiker clamp ear with the small clamp ear. Both clamp ears should be aligned with the rack housing casting rib. See **Fig. 11**.

NOTICE

Do not over-tighten the Oetiker clamps. Over-tightening may lead to stretching of the clamp, which could allow moisture intrusion and corrosion. If an Oetiker clamp stretches, remove and discard the clamp and install a new clamp.

All three barbs on the clamp must be engaged: If all three barbs are not engaged after crimping, remove and discard the clamp and install a new clamp. Oetiker clamps must be adequately crimped and the bellows must be tightly secured to the gear housing to prevent moisture intrusion and corrosion.

12.2 Using an Oetiker clamp tool (**Fig. 12**), crimp the small and large Oetiker bellows clamp ears until the ear width is 0.08 to 0.16 in (2 to 4 mm). See **Fig. 13** and **Fig. 14**.



1. Inner Tie Rod
2. Small Oetiker Clamp
3. Bellows
4. Large Oetiker Clamp
5. Housing Casting Rib

Fig. 11, Oetiker Clamp Alignment

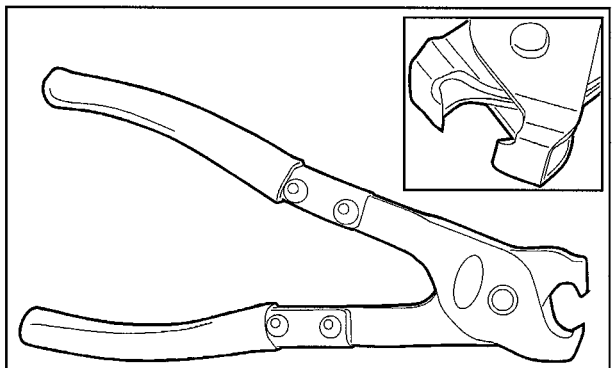
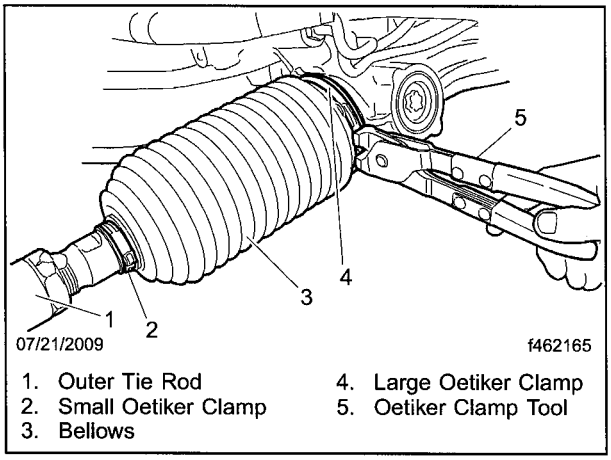


Fig. 12, Oetiker Clamp Tool, P/N 14100037 or 14100082

13. Install the jam nut on the driver-side inner tie rod, or the tie rod clamp on the passenger-side inner tie rod.
14. Thread the inner tie rods into the outer tie rods.
15. Attach the outer tie rods of the rack and pinion gear to the tie rod steering arms. Tighten the castellated nuts 240 lbf·ft (325 N·m). Continue to tighten until the next castellated nut slot aligns with the hole in the ball stud and insert the new cotter pin.
16. Tighten the jam nut on the driver side, or the tie rod clamp nut on the passenger side.
17. Align the steering gear.

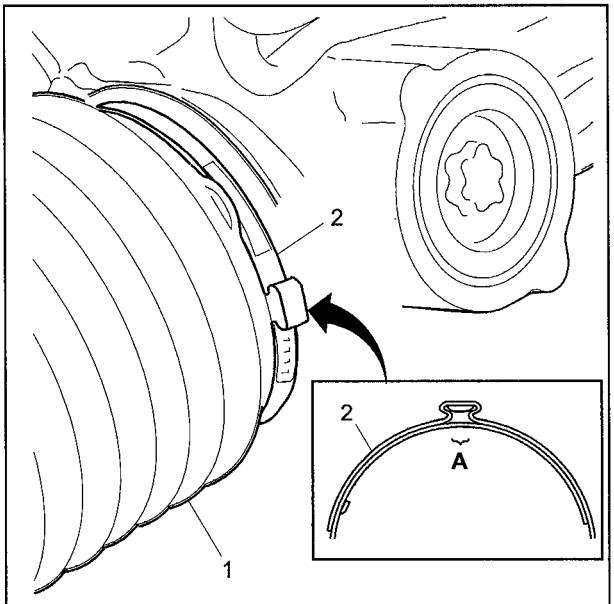
    NOTE: Use a calibrated, computerized, multi-wheel alignment tool, operated by a certified service technician to complete the following steps. If you do not have access to this type of tool, the alignment procedure must be done by a facility that does. When subletting the toe-in adjustment is required, in the Outside Charges field, enter the sublet amount. Up to $100 may be claimed without authorization. The recall requires and will cover a toe-in adjustment. A full front end alignment is not required or covered.

    When the alignment process requires that the steering wheel be pointed straight ahead, align the steering rack on-center pointers instead. See **Fig. 15**



1. Outer Tie Rod
2. Small Oetiker Clamp
3. Bellows
4. Large Oetiker Clamp
5. Oetiker Clamp Tool

Fig. 13, Oetiker Clamp Installation



A. Crimp the clamp ears until the ear width is 0.08 to 0.16 inch (2 to 4 mm).

1. Bellows
2. Large Oetiker Clamp

Fig. 14, Oetiker Clamp Ear Width

17.1 Loosen the driver-side tie rod jam nut. If necessary, hold the inner tie rod in place with a backup wrench on the inner tie rod flat. See **Fig. 8**, Item 6.

17.2 Align the steering rack on-center pointers.

17.3 Place a wrench on the driver-side inner tie rod flat and align the left tire by rotating the inner tie rod.

17.4 Tighten the tie rod jam nut 285 to 305 lbf·ft (386 to 413 N·m).

17.5 Loosen the passenger-side tie rod clamp nut.

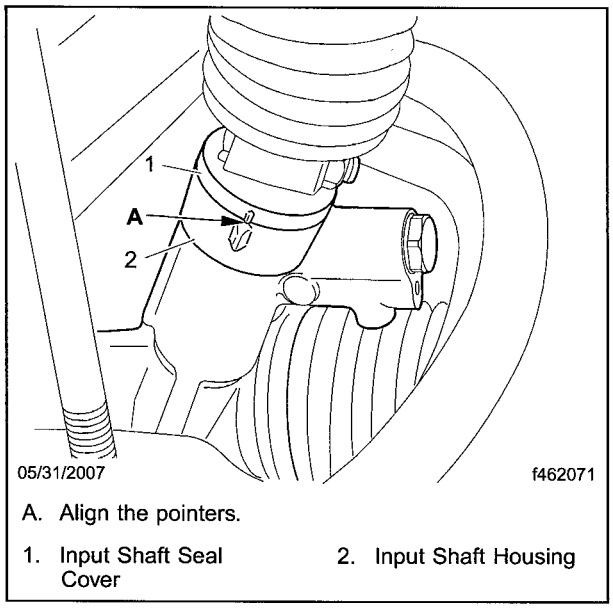
17.6 With the gear on center, place a wrench on the passenger-side inner tie rod flat and align the right tire by rotating the inner tie rod.

17.7 Tighten the tie rod clamp nut 30 to 36 lbf·ft (41 to 48 N·m).

IMPORTANT: Total toe-in should be between 0 and 1/8 inch (3.18 mm), and the target is 1/16 inch (1.58 mm).

17.8 Check the clearance of the front wheels. With the tires on turnplates, and the wheels turned all the way to the right and left, there must be at least 1/2-inch (13 mm) clearance between the wheels and stationary components, and at least 3/4-inch (19 mm) clearance between the wheels/tires and moving components. If this is not the case, back out the stop bolts and adjust the jam nuts to limit the turning angles and to prevent possible contact with components.

17.9 Tighten the stop-bolt jam nuts 80 to 120 lbf ft (108 to 163 N m).



A. Align the pointers.

1. Input Shaft Seal Cover
2. Input Shaft Housing

Fig. 15, Rack and Pinion Pointer Alignment

NOTICE

Maximum wheel cut is not to exceed 46 degrees. Excessive wheel cut may damage the inner tie rod.

17.10 Verify that wheel cut does not exceed 46 degrees. Adjust wheel cut if needed.

18. Install both wheels on the steer axle.
19. Remove the jack stands and lower the vehicle.
20. Clean a spot on the base label (Form WAR259). Attach a completion sticker for FL614 (Form WAR260) to the base label.

Rack and Pinion Steering Gear Replacement

IMPORTANT: The gear being removed must be protected from further corrosion or damage during shipping. Ensure that all components are properly installed on the gear being removed. If one or both bellows are removed or damaged to the point that they do not protect internal gear components, wrap the entire gear in plastic or otherwise protect it before shipping.

1. **If corrosion was found on the ball bearing, request pre-approval before replacing the steering gear.**

   Submit a WSC Campaign Pre-Approval inquiry (locations using both OWL and QuickClaim). Attach photos clearly showing corrosion on a clean ball bearing. Include the VIN, Technician ID number of the individual who performed the Recall, and the serial number of the old rack and pinion gear and the new gear if available. Ensure pictures and serial numbers provided are of the actual gear being replaced. Replaced gears will be returned and audited. Photos are required to receive approval to replace the gear.

2. Once approval to replace the steering gear is received, record the 15-character serial number of BOTH the rack and pinion gear being removed and the new gear and the ID of the technician doing the work. The serial numbers and ID are required on the claim.
3. Clean all fittings and hose connections on the steering gear until they are free of dirt.

4. While holding the power steering fluid line fittings in place with a backup wrench, disconnect the fluid lines from the steering gear. Plug the lines and the fittings to keep out dirt and prevent fluid leakage.
5. Remove and discard the cotter pins and castellated nuts from the outer tie rods.
6. Disconnect the outer tie rods from the tie rod arms.
7. Disconnect the end yoke of the steering intermediate shaft from the rack and pinion input shaft. Discard the pinch bolt and nut.
8. Remove and discard the steering gear mounting fasteners that connect the rack and pinion to the axle steering gear brackets, then remove the gear.
9. Install the steering gear on the axle steering gear brackets, using new mounting bolts and nuts. Tighten the fasteners 202 to 256 lbf·ft (274 to 347 N·m).
10. Attach the outer tie rods of the rack and pinion gear to the tie rod arms, using new castellated nuts. Tighten the castellated nuts 240 lbf·ft (325 N·m). Continue to tighten until the next castellated nut slot aligns with the hole in the ball stud and insert the new cotter pin.
11. Center the rack travel and align the timing pointers on the input shaft seal cover and the input shaft housing. See **Fig. 15**.
12. Using a new pinch bolt and nut, attach the steering intermediate shaft to the steering gear input shaft. Tighten the nut 30 to 35 lbf·ft (41 to 47 N·m).
13. Apply torque seal, OGP F900WHITE, to the exposed pinch bolt threads and nut.
14. If needed, install power steering fluid line fittings on the steering gear and tighten 30 to 35 lbf·ft (41 to 47 N·m). See **Fig. 16**, Item 5.

NOTICE

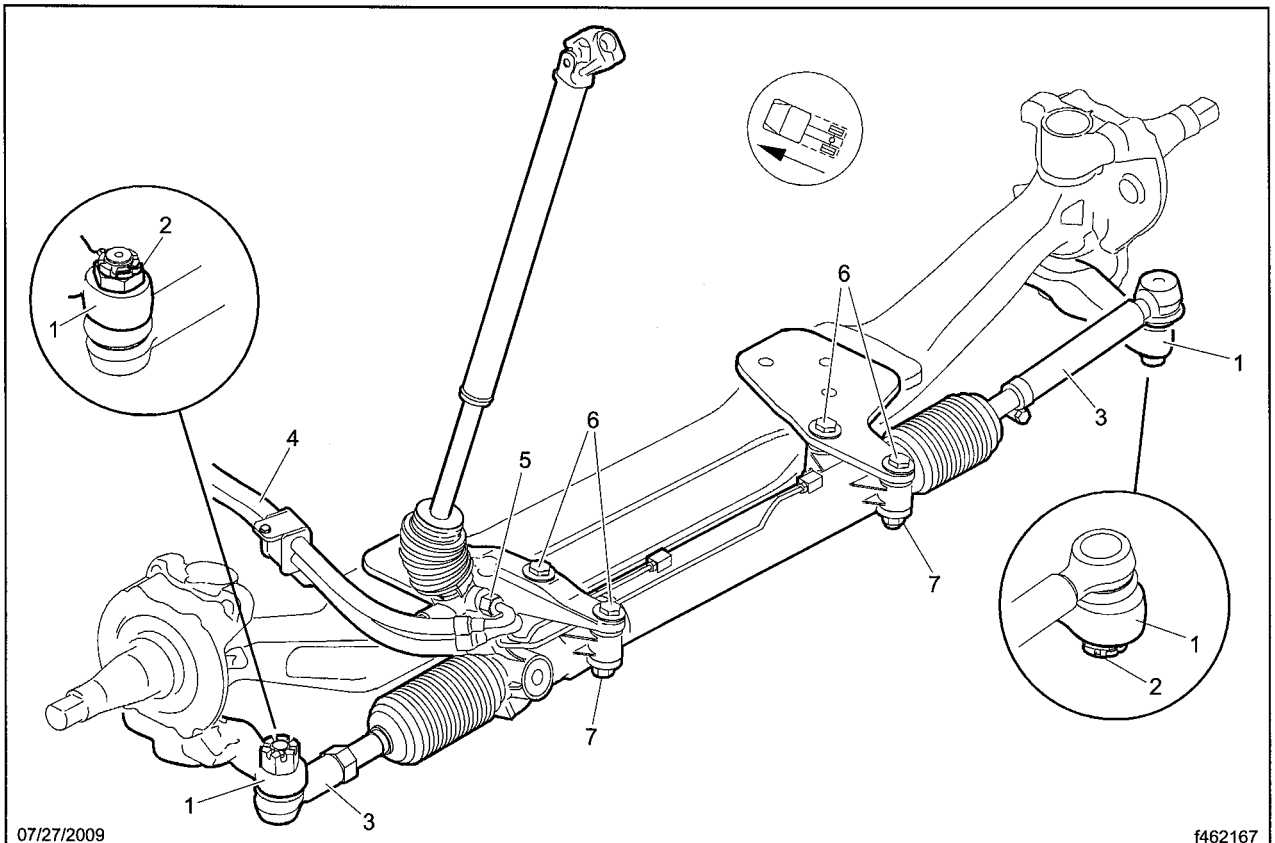
Failure to use a backup wrench to tighten the power steering fluid lines may strip the fitting threads and damage the steering gear. Stripped threads are not covered under warranty or this Recall

15. Connect the power steering fluid lines to the fittings, ensuring that the hoses do not touch the axle or each other. Hold the fittings in place with a backup wrench, and tighten the hoses as follows.
    - Pressure hose: 43 to 47 lbf·ft (58 to 64 N·m)
    - Return hose: 55 to 61 lbf·ft (75 to 83 N·m)

NOTICE

Do not loosen or tighten the hard transfer line tube fittings. Tightening the tube fittings can cause the O-ring seal to leak.

16. Fill and bleed the power steering system.
    - 16.1 Raise the front wheels off the ground and support the vehicle with jack stands.
    - 16.2 Fill the power steering reservoir with automatic transmission fluid that meets Dexron III or TES-389 specifications.
    - 16.3 With the engine off, turn the wheel fully left and right five times to bleed the air from the rack.
    - 16.4 Start the engine and turn the steering wheel fully left and right several times to bleed the remaining air from the system.



1. Steering Tie Rod Arm
2. Castellated Nut
3. Outer Tie Rod
4. Power Steering Fluid Lines
5. Power Steering Fluid Line Fittings
6. Steering Gear Mounting Bolts
7. Steering Gear Mounting Nuts

Fig. 16, Rack and Pinion Steering Gear Assembly

16.5 If the steering system needs additional bleeding, repeat the previous substep after the fluid in the reservoir has had time to release any air.

16.6 Remove the jack stands and lower the vehicle.

17. With the wheels on turnplates, center the rack travel by aligning the timing pointers on the input shaft seal cover and the input shaft housing. See **Fig. 15**.

18. Align the steering gear.

NOTE: Use a calibrated, computerized, multi-wheel alignment tool, operated by a certified service technician to complete the following steps. If you do not have access to this type of tool, the alignment procedure must be done by a facility that does. When subletting the toe-in adjustment is required, in the Outside Charges field, enter the sublet amount. Up to $100 may be claimed without authorization. The recall requires and will cover a toe-in adjustment. A full front end alignment is not required or covered.

When the alignment process requires that the steering wheel be pointed straight ahead, align the steering rack on-center pointers instead.

18.1 Loosen the driver-side tie rod jam nut. If necessary, hold the inner tie rod in place with a backup wrench on the inner tie rod flat. See **Fig. 8**, Item 6.

18.2 With the gear on center, place a wrench on the driver-side inner tie rod flat and align the left tire by rotating the inner tie rod.

18.3 Tighten the tie rod jam nut 285 to 305 lbf·ft (386 to 413 N·m).

18.4 Loosen the passenger-side tie rod clamp nut.

18.5 With the gear on center, place a wrench on the passenger-side inner tie rod flat and align the right tire by rotating the inner tie rod.

18.6 Tighten the tie rod clamp nut 30 to 36 lbf·ft (41 to 48 N·m).

IMPORTANT: Total toe-in should be between 0 and 1/8 inch (3.18 mm), and the target is 1/16 inch (1.58 mm).

18.7 Check the clearance of the front wheels. With the tires on turnplates, and the wheels turned all the way to the right and left, there must be at least 1/2-inch (13 mm) clearance between the wheels and stationary components, and at least 3/4-inch (19 mm) clearance between the wheels/tires and moving components. If this is not the case, back out the stop bolts and adjust the jam nuts to limit the turning angles and to prevent possible contact with components.

18.8 Tighten the stop-bolt jam nuts 80 to 120 lbf·ft (108 to 163 N·m).

NOTICE

Maximum wheel cut is not to exceed 46 degrees. Excessive wheel cut may damage the inner tie rod.

18.9 Verify that wheel cut does not exceed 46 degrees. Adjust wheel cut if needed.

19. Turn the wheels as far right and left as possible to check for interference between the wheels/tires and other components. There must be at least 1/2-inch (13 mm) clearance from any fixed object, and 3/4-inch (19 mm) from any moving object.

20. Clean a spot on the base label (Form WAR259). Attach a completion sticker for FL614 (Form WAR260) to the base label.

IMPORTANT CAMPAIGN INFORMATION

ATTENTION: Dealer Principal, Warranty Manager, Service Manager, Parts Manager
Freightliner Dealers – U.S. and Canada
Western Star and Sterling Dealers – U.S. and Canada
FCCC Dealers – U.S. and Canada
Direct Warranty Customers – U.S. and Canada

Daimler Trucks North America LLC

WARRANTY CAMPAIGNS DEPARTMENT
P.O. Box 4090 800-547-0712
Portland, Oregon 97208-4090 FAX 503-745-9009

If you have questions about this Letter, please submit your inquiry on the Web at:
AccessFreightliner.com / Support / My Tickets and Submit an Inquiry

REF #: ICI12-015
Effective: 06/28/12
Release: 06/28/12

SUBJECT: Interim FL614 Ending – Final Recall to Begin

This letter is to inform you that the interim phase of Recall FL614, *Rack and Pinion Steering Pinion Bearings*, is ending and the final Recall repair begins today, 06/28/12. Please note the important dates below and schedule work under FL614 accordingly. The final Recall bulletin will be available to dealers on 06/27/12.

It is very important for dealers to review the final Recall bulletin. Dealers will also want to review related Service Bulletin 46-53 FTL, *Inspection Procedure for Rack and Pinion Gear*, when it is available. The Service Bulletin is expected to be released at the same time or shortly after FL614.

Last Repair Date for Interim Repairs/Claims: 06/29/12

First Repair Date for Final Recall Repairs/Claims: 06/2812

If the repair date on your claim will be *after* 06/29/12, do not peform or try to claim for the interim repair. All FL614 repairs that will have a repair date on the claim of 06/29/12 or later must be for the final repair and the first repair date for FL614 is 06/28/12. There is a one day overlap to help with the transition.

Please review any current work being done under the interim instructions. When possible (repair date of 06/28/12 or later), please claim it under the final Recall.

All customers are being sent a notice to inform them the final Recall repair is available and that **any vehicle that has already had the interim repair completed or the gear replaced with the current design rack and pinion gear (part numbers A14-18907-001 or A14-18907-000) does not need any further work.**

If you have questions or need further information, contact the Warranty Campaigns Department by submitting an inquiry through www.AccessFreightliner.com / Support / My Tickets and Submit an Inquiry from 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday.

IMPORTANT CAMPAIGN INFORMATION

ATTENTION: Dealer Principal, Warranty Manager, Service Manager, Parts Manager
Freightliner Dealers – U.S. and Canada
Western Star and Sterling Dealers – U.S. and Canada
FCCC Dealers – U.S. and Canada
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Export Distributors

Daimler Trucks North America LLC

WARRANTY CAMPAIGNS DEPARTMENT
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Portland, Oregon 97208-4090 FAX 503-745-9009

If you have questions about this Letter, please submit your inquiry on the Web at:
AccessFreightliner.com / Support / My Tickets and Submit an Inquiry

REF #: ICI12-016
Effective: 06/29/12
Release: 06/29/12

SUBJECT: FL614 – Take Care When Using Compressed Air

This letter is a supplement to the final Recall bulletin for Recall FL614, *Rack and Pinion Steering Pinion Bearings.*

When inspecting the ball bearing for corrosion, see step 7 (on page 8) under "Ball Bearing Inspection," compressed air may be needed to fully clean the ball bearing once the majority of grease has been wiped away. *When using compressed air, use care to avoid forcing debris back through the bearing cage into the pinion area.*

If you have questions or need further information, contact the Warranty Campaigns Department by submitting an inquiry through www.AccessFreightliner.com / Support / My Tickets and Submit an Inquiry from 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday.