Daimler Trucks North America LLC

Recall Campaign

March 2018
FL751A
NHTSA #17V-628
Transport Canada #17-488

Subject: Dana Front Steer Axles

Models Affected: Specific Freightliner Cascadia and Western Star 4900 model vehicles manufactured March 17, 2015, through September 29, 2015, and built with Dana steer axles.

General Information

Daimler Trucks North America LLC (DTNA), on behalf of its Freightliner Trucks Division and wholly owned subsidiary, Western Star Truck Sales, has decided that a defect that relates to motor vehicle safety exists on the vehicles mentioned above.

There are approximately 52 vehicles involved in this campaign.

In affected steer axles the castellated nut, that is used to connect the tie rod taper joint to the knuckle, may not have been torqued to the expected torque value. As a result, the tie rod may become loose in the steer axle and cause auditory warning and/or looseness in the steering. If a vehicle operator continues to operate the vehicle in spite of this advance warning, the tie rod may become disconnected from the knuckle. If the tie rod disconnects from the steering knuckle, the driver may lose full control of a vehicle wheel (normally the right front tire), which could increase the risk of a crash.

The castle nuts will be inspected and re-torqued where required. The tie rod stud will be inspected for movement after proper nut torque and alignment. If movement is found that knuckle and tie rod will be replaced.

IMPORTANT: Knuckle and tie rod end replacements require an approved DAN# from Dana's Real Time Warranty and is required on the recall claim.

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 and/or part number(s) listed below from your facing Parts Distribution Center.

If our records show your dealership has ordered any vehicles involved in campaign number FL751, a list of the customers and vehicle identification numbers will be available in OWL. Please refer to this list when ordering parts for this recall.

NOTE: If knuckle and tie rod end replacements are required, they will be shipped directly to the dealership from Dana Corporation. Obtaining these parts requires completion of the Recall 17E041 Inspection Form on page 18 of this bulletin, along with completion of steps 11 through 14 on page 9.

Table 1 - Replacement Parts for FL751

Campaign Number	Kit Number	Part Description	Part Number	Qty. per VIN
FL751A	N/A	PIN-COTTER,1 3/4 X 1/8	23-00800-407 (Use during nut torque inspection)	2 to 4 ea
		SEAL-OIL,FR STEER,SCOTSEAL PLUS XL	CHR 35058 (Use only if knuckle is replaced)	1 to 2 ea
		BLANK COMPLETION STICKER	WAR260	1 ea

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	Corrective Action
FL751A	Inspect for proper nut torque	0.5	996-0914A	06-Inspect
	Inspect; replace 1 knuckle w/alignment	4.8	996-0914B	12-Repair Recall/Campaign
	Inspect; replace 2 knuckles w/alignment	9.3	996-0914C	

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

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 OWL:

IMPORTANT: Knuckle and tie rod end replacements require an approved DAN# from Dana's Real Time Warranty and is required on the recall claim.

NOTE: If knuckle and tie rod end replacements are required, they will be shipped directly to the dealership from Dana Corporation. Obtaining these parts requires completion of the Recall 17E041 Inspection Form on page 18 of this bulletin, along with completion of steps 11 through 14 on page 9.

- Claim type is **Recall Campaign**.
- In the FTL Authorization field, enter the campaign number and appropriate condition code (FL751-A).

- In the Primary Failed Part Number field, enter **25-FL751-000**.
- Enter the DAN# from Dana Real Time Warranty in the Repair Details field when claiming a knuckle and tie rod end replacement.
- In the Parts field, enter the appropriate kit(s) and/or part number(s) as shown in the Replacement Parts Table.

  An allowance for the normal handling amount will be included on your claim in the Other Charges section.
- In the Labor field, first enter the appropriate SRT from the Labor Allowance Table. Administrative time will be included automatically as SRT 939-0010A for 0.3 hours .
- The VMRS Component Code is **015-004-045** 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.)
  - Submit an OWL Recall Pre-Approval Request for a decision.
  - Include the approved amount on your claim in the Other Charges section.
  - Attach the documentation to the pre-approval request.
  - If approved, submit a based on claim for the pre-approval.
  - Reimburse the customer the appropriate amount.

IMPORTANT: 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 via Web inquiry at DTNAConnect.com / WSC, 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 may be returned as noted for U.S. and Canadian dealers. Export locations will pay freight to return kits. 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.

Daimler Trucks North America LLC

Recall Campaign

March 2018
FL751A
NHTSA #17V-628
Transport Canada #17-488

Copy of Notice to Owners

Subject: Dana Front Steer Axles

For the Notice to U.S. Customers: This notice is sent to you in accordance with 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 Vehicle Safety Act.

Daimler Trucks North America LLC (DTNA), on behalf of its Freightliner Trucks Division and wholly owned subsidiary, Western Star Truck Sales, has decided that a defect that relates to motor vehicle safety exists on specific Freightliner Cascadia and Western Star 4900 model vehicles manufactured March 17, 2015, through September 29, 2015, and built with Dana steer axles.

In affected steer axles the castellated nut, that is used to connect the tie rod taper joint to the knuckle, may not have been torqued to the expected torque value. As a result, the tie rod may become loose in the steer axle and cause auditory warning and/or looseness in the steering. If a vehicle operator continues to operate the vehicle in spite of this advance warning, the tie rod may become disconnected from the knuckle. If the tie rod disconnects from the steering knuckle, the driver may lose full control of a vehicle wheel (normally the right front tire) which could increase the risk of a crash.

The castle nuts will be inspected and re-torqued where required. The tie rod stud will be inspected for movement after proper nut torque and alignment. If movement is found that knuckle and tie rod will be replaced.

This is the second of two notices mailed regarding the subject campaign FL751. The final repair is ready and parts have been secured. 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, go to www.Daimler-TrucksNorthAmerica.com. On the menu tab, select “Contact,” scroll down to “Find a Dealer,” and select the appropriate brand. The Recall will take approximately one to ten hours, depending on the repair, 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

March 2018
FL751A
NHTSA #17V-628
Transport Canada #17-488

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.

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Work Instructions

Subject: Dana Front Steer Axles

Models Affected: Specific Freightliner Cascadia and Western Star 4900 model vehicles manufactured March 17, 2015, through September 29, 2015, and built with Dana steer axles.

IMPORTANT: Knuckle and tie rod end replacements require an approved DAN# from Dana's Real Time Warranty and is required on the recall claim.

NOTE: If knuckle and tie rod end replacements are required, they will be shipped directly to the dealership from Dana Corporation. Obtaining these parts requires completion of the Recall 17E041 Inspection Form on page 18 of this bulletin, along with completion of steps 11 through 14 on page 9.

Torque Inspection

1. Check the base label (Form WAR259) for a completion sticker for FL751 (Form WAR260) indicating this work has been completed. The base label is usually located on the passenger-side door, about 12 inches (30 cm) below the door latch. If a completion sticker is present, no work is needed. If a completion sticker is not present, proceed to the next step.
2. Shut off the engine, set the parking brake, and chock the tires. Open the hood.
3. Locate Dana's Recall 17E041 Inspection form on the last page of this bulletin and document the findings of steps 5 and 6.
4. With a flexible, magnetic base dial indicator, mount the base of the indicator on the tie-rod arm so that the indicator tip can be centered on the threads of the stud just above the nut. See **Fig. 1** and **Fig. 2**.

11/16/2017 f330312

Fig. 1, Dial Indicator Mounting Position

11/16/2017 f330313

The dial indicator tip must be placed on the stud.

Fig. 2, Dial Indicator Tip Positioning

5. With someone in the cab of the truck turning the steering wheel (with the engine off) just enough to cause movement in the wheels, document how much movement is found on each side of the steer axle. Record results in Step 1 of the Recall 17E041 Inspection form.

IMPORTANT: When tightening the nut, do not exceed 170 lbf·ft (230 N·m).

6. Remove the cotter pins and check for proper nut torque. Put a paint mark across one side of the nut and the top of the stud. With a torque wrench and a 1-1/4-inch socket, torque the nut in a clockwise (tighten) direction until the nut just starts to rotate or you reach 130 lbf·ft (175 N·m). Record your findings in Step 2 of the inspection form. See **Fig. 3** and **Fig. 4**.

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Fig. 3, Paint Mark to Identify Nut Rotation

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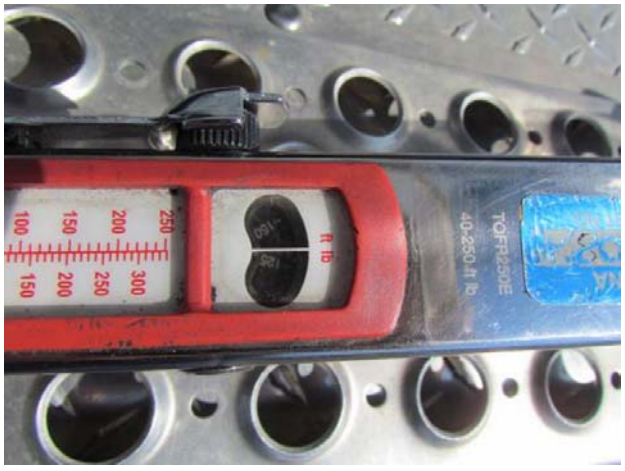
IMPORTANT: Do not exceed 170 lbf·ft (230 N·m).

Fig. 4, Check Nut Torque

7. If there is no rotation of the nut at 130 lbf·ft (175 N·m), install a new cotter pin and the repair is complete. Clean a spot on the base label (Form WAR259). Write the campaign number, FL751, on a blank red completion sticker (Form WAR260) to indicate the work has been completed and attach it to the base label.

   If there is rotation, continue with the next step.

8. If you found rotation of the nut before you reached 130 lbf·ft (175 N·m), now tighten the nut to 130 lbf·ft (175 N·m). Using the paint mark, record the rotation of the nut in Step 2 of the inspection form. Example: Using the paint mark as the 12:00 position, if the nut rotates 1/4 turn to reach 130 lbf·ft (175 N·m), document the nut rotation at the 3:00 position. See **Fig. 5** and **Fig. 6**.



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Tighten the nut to 130 lbf·ft (175 N·m).

Fig. 5, Tightening the Nut

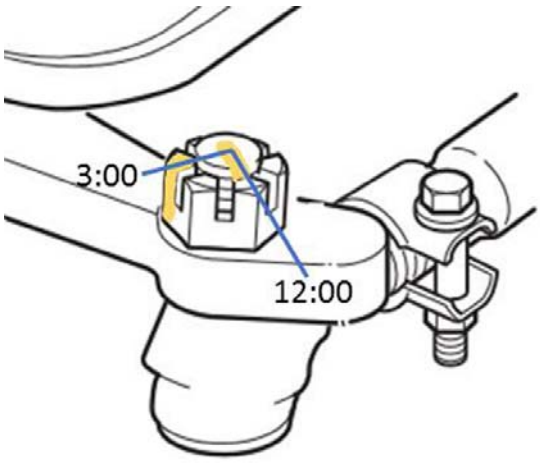

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Fig. 6, Example of Nut Rotation Amount

9. With the nut torqued to 130 lbf·ft (175 N·m), advance the nut so that the cotter pin hole is aligned with a slot in the nut. Using the dial indicator, check for tie-rod stud movement once again.

   IMPORTANT: Never back the nut off to align the cotter pin hole to the nut slot. Torque may reach 170 lbf·ft (230 N·m) to obtain proper alignment. After the nut has been aligned with a slot in the nut, the cotter pin hole CAN NOT be above the top of the nut as shown below. Any cotter pin hole that is above the top of the nut surface will require the replacement of the knuckle and tie-rod end. See **Fig. 7** and **Fig. 8**.

   If there is NO movement, install a new cotter pin and the repair is complete. Clean a spot on the base label (Form WAR259). Write the campaign number, FL751, on a blank red completion sticker (Form WAR260) to indicate the work has been completed and attach it to the base label.

   If there IS movement, record the results in Step 3 of the inspection form and proceed to the next step.

NOTE: Any tie-rod stud with movement after proper nut torque and alignment will require the replacement of that knuckle and tie rod.

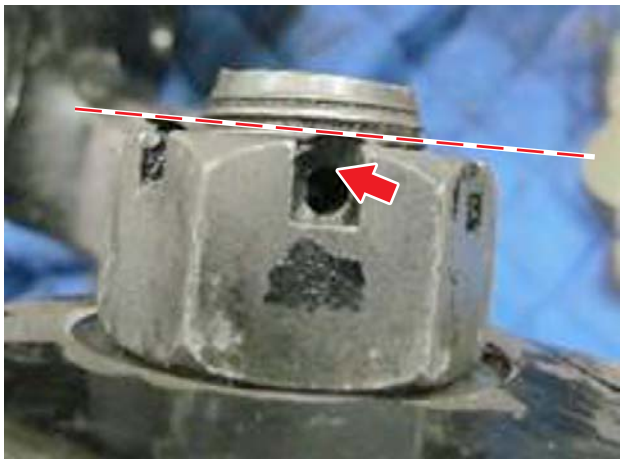


Fig. 7, Good Cotter Pin Hole Position

Fig. 8, Cotter Pin Hole at Maximum Height

NOTE: The following steps prepare you to contact Dana's Real Time Warranty (RTW). Dana will review your info while you are on the phone and provide direction regarding knuckle and tie rod end replacement.

10. Locate the identification tags on the front of the steer axle and record everything on the tag. See **Fig. 9**.

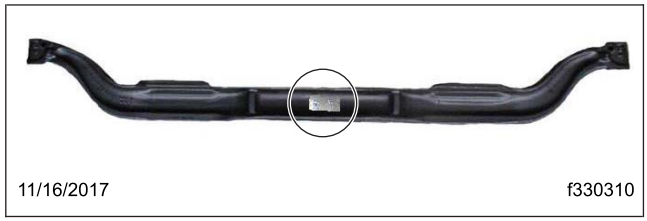


Fig. 9, Front Axle Identification Tag Location

11. Fill in the following information on the Recall 17E041 Inspection form:
    - Repair Order Number
    - Dealer Code
    - Complete 17 digit Vehicle Identification Number (VIN) located on truck door jam, drivers side
    - Axle model (Example: E1202I)
    - Axle serial number (Example: MY01778644) Tag located on the carrier assembly
    - In-service date of the vehicle
    - Vehicle mileage
    - Inspection data
12. Take clear photos of the damaged parts and the position of the cotter pin.

If the photos are out of focus, too light, too dark, too far away, or too close up, the process will be delayed until new photos are submitted. Use the examples in **Fig. 10** as a guide.

13. Email the Recall 17E041 Inspection form and photos to Spicer.rtw@dana.com. Enter the repair order number in the subject line of your email.
14. After emailing the inspection form, call Real Time Warranty at 877-777-5360 and press option #3. If components need to be replaced RTW will order the parts and have them shipped to you.
15. Follow the instructions from Dana.

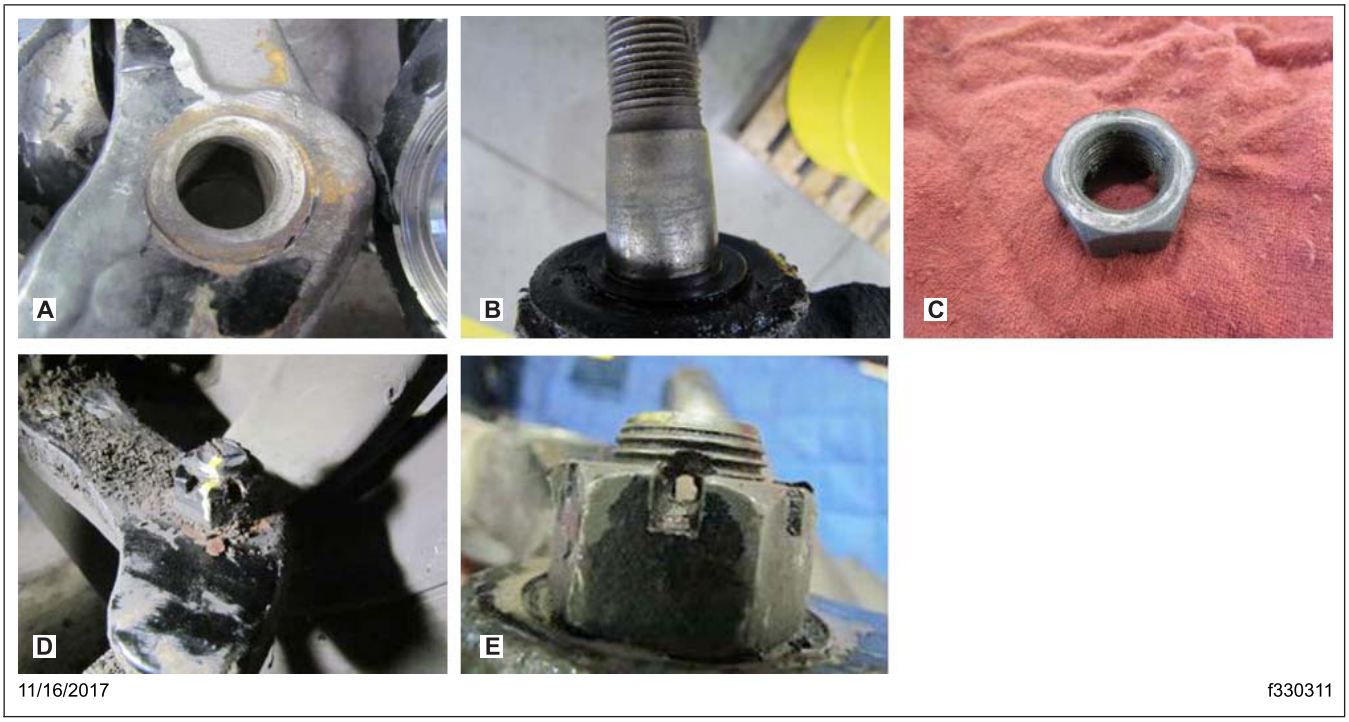


Fig. 10, Sample Photos

Steering Knuckle and Tie-Rod End Replacement

NOTE: These instructions are to help with replacement once Dana has approved.

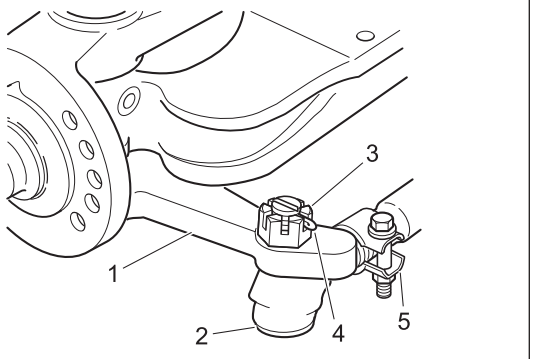
1. Make sure the rear tires are chocked, then lift the front of the vehicle.
2. Loosen the slack adjuster to return the brake shoes to the released position and clear the drum.
3. Remove the wheel and tire assembly.
4. For vehicles with drum brakes, remove the brake drum. See **Group 33** of the applicable workshop manual.

   For vehicles with disc brakes, remove the brake caliper. See **Group 42** of the applicable workshop manual.
5. Remove the cotter pin and castle nut. See **Fig. 11**.

NOTICE

Do not use heat on any axle parts or fasteners.

6. Disconnect the tie-rod end from the tie-rod arm using a suitable tool such as a pickle fork. See **Fig. 12**.



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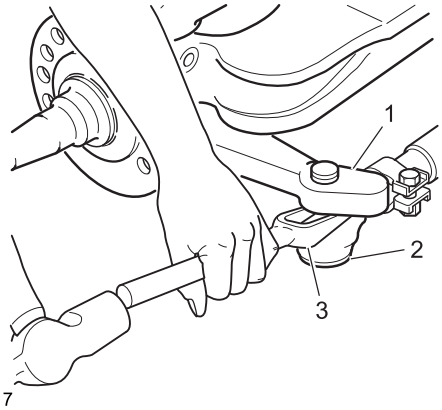
NOTE: Position the clamp fastener away from the beam.

1. Tie-Rod Arm
2. Tie-Rod End
3. Castle Nut
4. Cotter Pin
5. Clamp Fastener

Fig. 11, Castle Nut and Clamp Installation



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1. Tie-Rod Arm
2. Tie-Rod End
3. Pickle Fork

Fig. 12, Disconnecting Tie-Rod End

7. If the cross tube is being replaced, count the number of exposed threads on the tie-rod end.
8. Loosen the clamp nut and unscrew the tie-rod end.
9. Remove the hub cap, cotter pin, nut, washer, and outer bearing cone assembly.
10. Remove the hub assembly. See **Group 33** of the applicable workshop manual.
11. Disconnect the air or hydraulic line from the brake assembly. Plug or cap the line to prevent brake system contamination.
12. Remove the brake assembly. See **Group 42** of the applicable workshop manual.
13. Disconnect the drag link from the steering arm by removing the cotter pin and castle nut.

14. Remove the top and bottom knuckle caps.

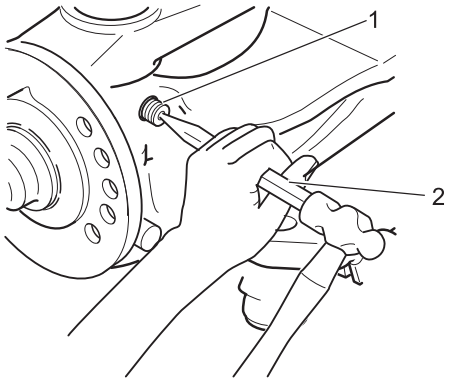
NOTICE

Never strike hardened metal parts with a steel hammer or tool.

15. *For single draw key,* remove the nut from the draw key, then drive the key out using a brass hammer and drift. See **Fig. 13**.

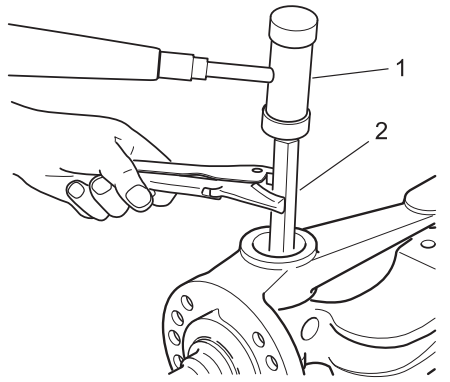
    For dual draw keys, remove both draw key nuts. Then drive the key out using a brass hammer and drift.

16. Drive the kingpin out with a brass hammer and drift. See **Fig. 14**.



1. Single Draw Key
2. Brass Drift

Fig. 13, Removing the Draw Key



1. Brass Hammer
2. Brass Drift

Fig. 14, Driving Out the Kingpin

17. Remove the steering knuckle from the axle beam.

⚠ WARNING

Gasoline is not an acceptable cleaning solvent because of its extreme combustibility. It is unsafe in the workshop environment.

18. After disassembly and before attempting inspection, clean the parts.

    18.1 Clean steel parts with ground or polished surfaces, as follows:

    - Wash in suitable cleaning solvent.
    - Rinse thoroughly to remove cleaning solution.
    - Dry parts with clean rags.

    18.2 Clean castings, forgings and other rough-surface parts, as follows:

    - Wire brush or steam-clean areas that are susceptible to accumulation of mud, road dirt, salt.

NOTE: Always replace the kingpin, thrust bearing and bushings if any component is faulty.

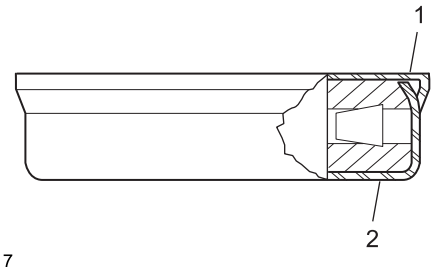
19. Before installing the kingpins, lubricate inside of the bushing and outside of the kingpins with Fleetrite EP2 Moly Grease or equivalent NLGI No. 2 multipurpose lithium grease to provide initial lubrication.

20. Make certain that the kingpin hole in the axle center is clean and dry.

NOTE: There are two styles of thrust bearings:

One style is installed on the thrust bearing with the seal on top, as shown in **Fig. 15** ; position and support the steering knuckle assembly on the axle end.

The second style thrust bearing is a one piece design with the seal LIP installed TOWARDS the bottom of the knuckles as shown in **Fig. 16**.



1. Seal Cap
2. Thrust Bearing

Fig. 15, Thrust Bearing with Seal on Top

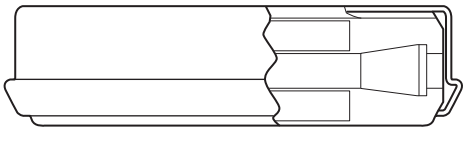


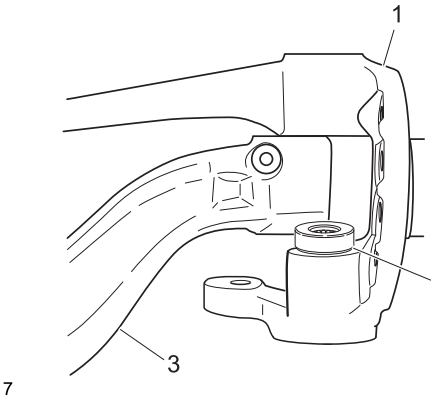
Fig. 16, Thrust Bearing with Seal Lip Installed Towards the Bottom of the Knuckles

21. Slide the thrust bearing between the lower face of axle center and lower steering knuckle yoke. See **Fig. 17**.
22. Align the steering knuckle yoke holes with the axle and thrust bearing holes.

NOTICE

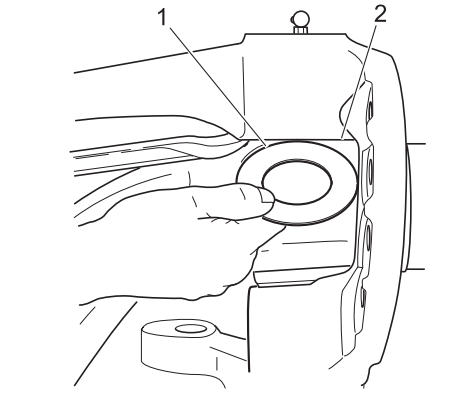
Never shim on the bottom side of the beam.

23. Pre-adjust knuckle vertical play by wedging the steering knuckle up and filling the gap at the top side of the knuckle with shim(s). See **Fig. 18**.



1. Steering Knuckle
2. Thrust Bearing
3. Axle Beam

Fig. 17, Thrust Bearing Installation



1. Install shims as needed.
2. Install shims only on top of the knuckle.

Fig. 18, Installing Shims

NOTE: A floor jack can be used to wedge up the steering knuckle.

24. Install the kingpin from the top with the notch and draw key hole aligned. Hand start the pin in the bushing. See **Fig. 19**.

NOTICE

Protect the kingpins with a suitable material such as shim stock.

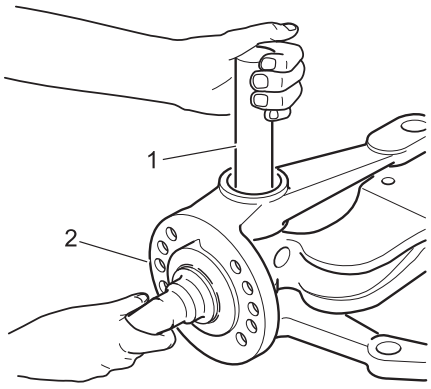
25. Install the kingpin in the knuckle and axle beam. Tap the kingpin in place using a hammer and brass drift if necessary. See **Fig. 20**.

NOTE: At this point in reassembly, check knuckle vertical play and adjust if necessary.

26. Center the steering components.
27. Mount the dial indicator on the steer beam and reference the top of the knuckle. Zero the dial indicator. See **Fig. 21**.
28. Simulate axle loading with a jack and note the dial indicator reading. See **Fig. 22**.

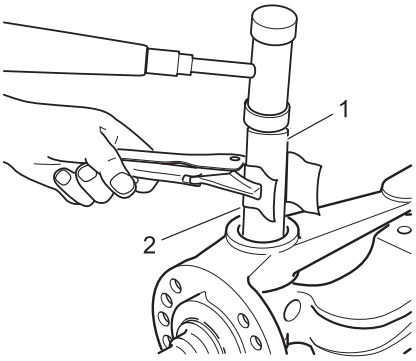
NOTE: A floor jack can be used to wedge up the steering knuckle.

29. Knuckle vertical play should be 0.002 to 0.012 inch (0.051 to 0.305 mm). Add or remove shims as necessary to obtain correct end play. Center the shims to prevent damage during assembly.
30. When vertical play adjustment is correct, align the draw key opening and pin flat alignment. See **Fig. 23**.



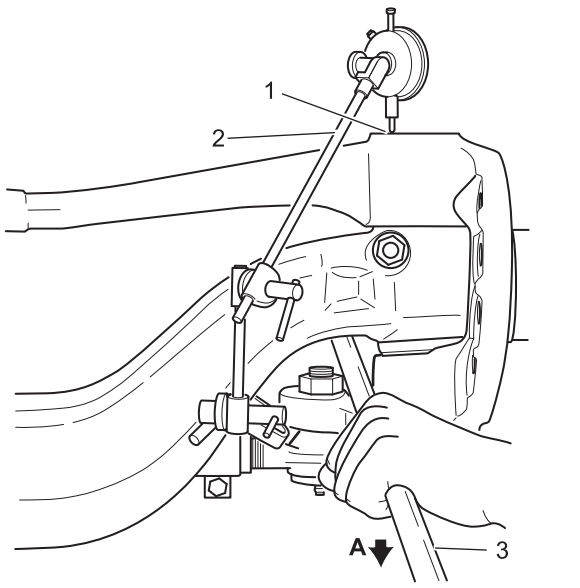
1. Kingpin
2. Steering Knuckle

Fig. 19, Installing the Kingpin



1. Kingpin
2. Protect the kingpin with shim stock.

Fig. 20, Tapping the Kingpin in Position



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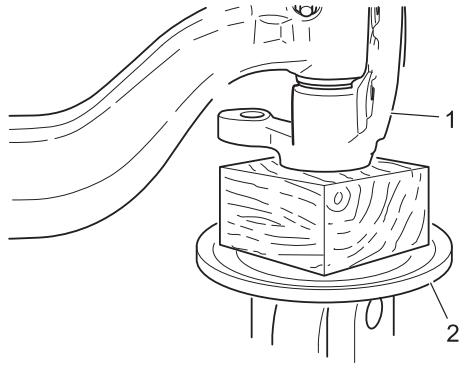
A. Pry the knuckle downward.

1. Reference on Top of Knuckle
2. Dial Indicator
3. Pry Bar

Fig. 21, Dial Indicator Mounted



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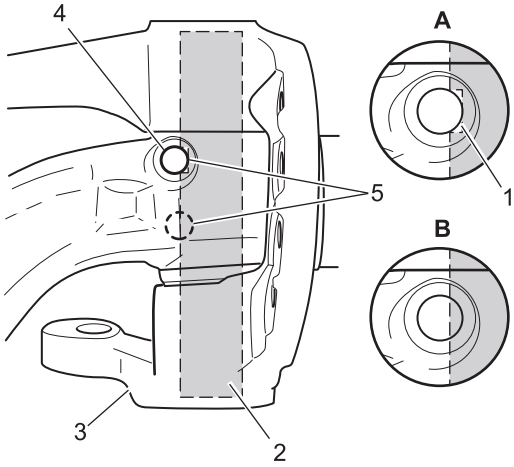
1. Steering Knuckle
2. Jack

Fig. 22, Using a Jack to Simulate Axle Loading



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A. Correct
B. Incorrect
1. Kingpin Notch
2. Kingpin
3. Steer Knuckle
4. Single Draw Key
5. Dual Draw Keys

Fig. 23, Knuckle Vertical Play

31. Install the new draw keys. Before the draw keys are seated, verify the bushing end-play is between 0.001 to 0.008 inch.
32. Verify the new bushing end-play. Refer to the appropriate section in "New Bushing End-play Verification".
33. Install the drag link, as follows:

    33.1 Install the castle nut.

    IMPORTANT: Do not back off the castle nut to align it with the cotter pin hole.

    33.2 Tighten the castle nut 120 lbf·ft (165 N·m).

    33.3 Install and lock a new cotter pin.

34. Install new tie-rod ends or a new cross tube.

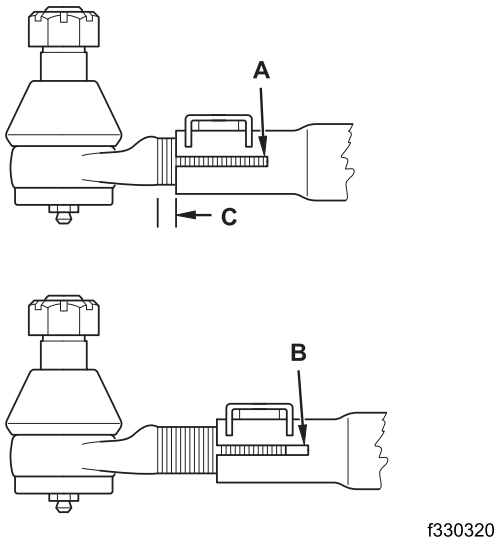
NOTE: The cross tube has right-hand and left-hand threads for corresponding sides of the vehicle.

35. Thread the tie-rod end into the cross tube past the tube split. The number of threads exposed from the tube should be equal on both left and right tie-rod ends. See **Fig. 24**.
36. For straight socket tie-rod ends, tighten the clamp nut as shown in **Table 3**. Make sure the tab on the clamp holds the end of the cross tube.

    For drop socket tie-rod ends (see **Fig. 25**), tighten as shown in **Table 3**.

NOTE: On tie rods with a rotating clamp, position the clamp with the fastener away from beam.

37. Install the tie-rod end into the knuckle tie-rod arm. Secure with the slotted nut and tighten to 120 to 160 lbf·ft (163 to 217 N·m).
38. Install the cotter pin in the castle nut and bend the ends to secure. See **Fig. 11**. If necessary, tighten the nut until the holes align.
39. Install the brake assembly. See **Group 42** of the applicable workshop manual.
40. Install the hub assembly. See **Group 33** of the applicable workshop manual.



A. Correct: The threaded portions of both tie-rod ends must be completely inserted in the cross tube split.
B. Incorrect: Threaded end is not completely inserted in the cross tube split.
C. Equal threads exposed on left and right tie-rod ends.

Fig. 24, Tie-Rod End Installation

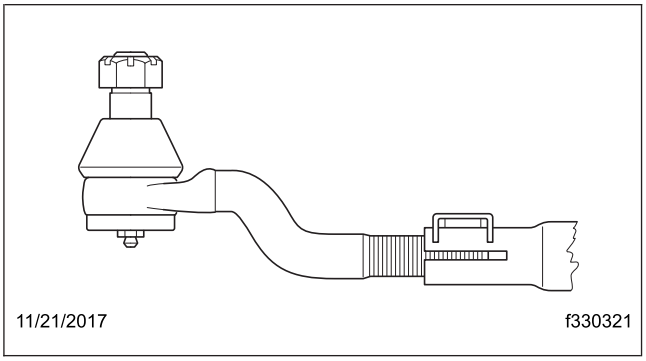


Fig. 25, Drop Socket Tie-Rod End

Clamp Bolt Torque Specifications		
Steer Axle Model	**Torque: lbf·ft (N·m)**	
	Straight Socket End	**Drop Socket End**
E Family	45–60 (61–81)	150–180 (203–244)

Table 3, Clamp Bolt Torque Specifications

41. For vehicles with drum brakes, install the brake drum. See **Group 33** of the applicable workshop manual.

    For vehicles with disc brakes, install the brake caliper. See **Group 42** of the applicable workshop manual.
42. Install the wheel and tire. See **Group 40** of the applicable workshop manual.
43. Lower the front of the vehicle.
44. Tighten the wheel nuts. See **Group 40** of the applicable workshop manual.
45. Adjust toe-in.
46. Go to "Steering Stop Adjustment."

New Bushing Endplay Verification

1. For the **upper** bushing endplay verification, mount a dial indicator on the axle as shown in **Fig. 26**.

NOTE: Locate the dial indicator on a smooth, flat surface for the most accurate readings.

2. Move the tire and wheel assembly in and out with a push/pull motion and have an assistant record the dial indicator reading.

NOTE: To avoid inaccurate measurements, use care not to let the knuckle turn while moving the assembly in and out. Applying the brakes will help lock the wheel assembly.

3. Replace the upper bushing if readings are in excess of 0.008 inch (0.20 mm).
4. For the **lower** bushing endplay verification, mount a dial indicator on the axle as shown in **Fig. 27**.

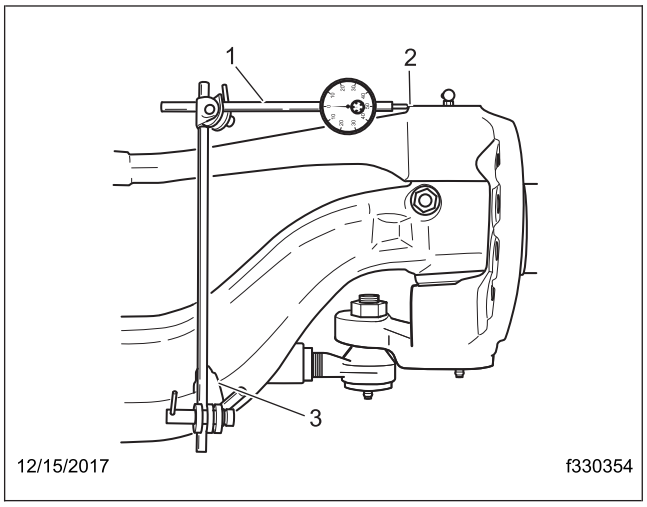


Fig. 26, Upper Bushing Inspection

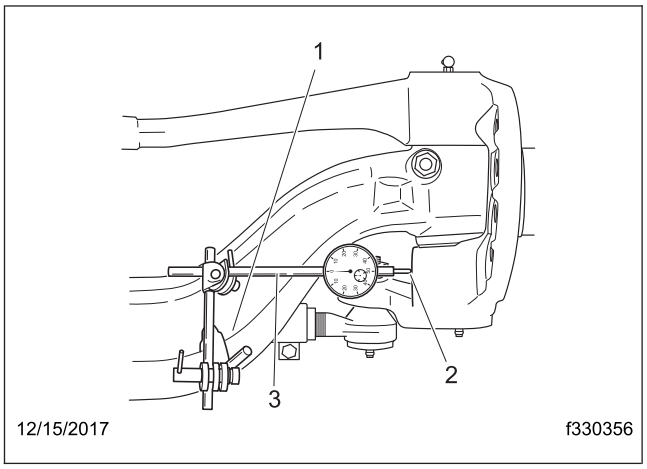
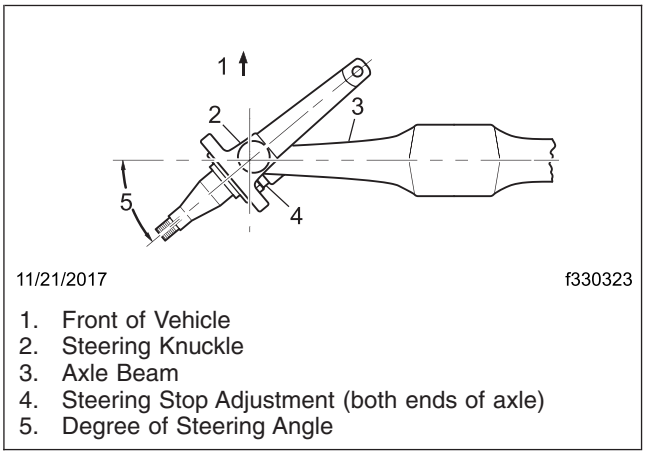


Fig. 27, Lower Bushing Inspection

5. Move the tire and wheel assembly in and out with a push/pull motion and have an assistant record the dial indicator reading.
6. Replace the lower bushing if readings are in excess of 0.008 inch (0.20 mm).

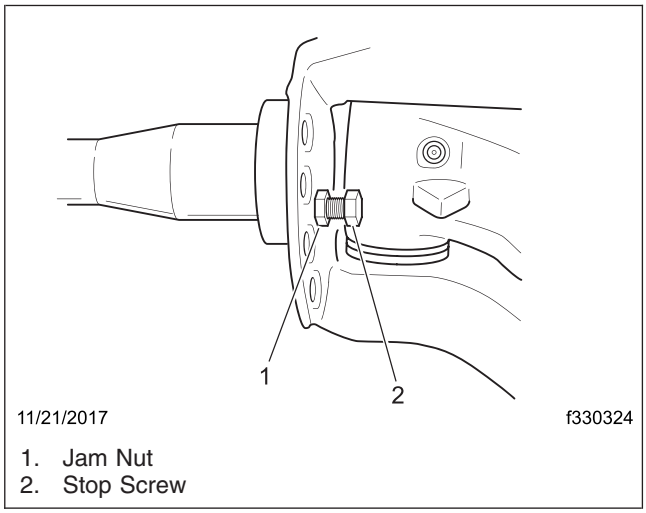
Steering Stop Adjustment

1. Check the vehicle workshop manual to determine the correct steering stop angle. See **Fig. 28**.
2. Check the steering angle with an alignment turntable set.
3. If adjustment is required, loosen the jam nut and turn the stop screw as necessary. See **Fig. 29**.



1. Front of Vehicle
2. Steering Knuckle
3. Axle Beam
4. Steering Stop Adjustment (both ends of axle)
5. Degree of Steering Angle

Fig. 28, Steering Stop Adjustment



1. Jam Nut
2. Stop Screw

Fig. 29, Jam Nut Installation

4. After adjustment, tighten the stop screw jam nut to 90 to 120 lbf·ft (122 to 163 N·m), except for axle models E-1203I and E-1462I, tighten the stop screw jam nut to 30 to 45 lbf·ft (41 to 61 N·m).

NOTE: Adjust the power steering unit so that power assist stops approximately 3 degrees or 1/8 inch (3.175 mm) before touching the stop screws. Follow the vehicle workshop manual recommendations when making this adjustment.

NOTICE

The steering gear must be functioning properly or steering linkage damage may occur. Poppet relief must be checked after adjusting the stop screw setting.

5. Check the poppet relief.
6. Clean a spot on the base label (Form WAR259). Write the campaign number, FL751, on a blank red completion sticker (Form WAR260) to indicate the work has been completed and attach it to the base label.

Dana Recall 17E041 Inspection Form
(DTNA FL751)

Date: _____

Repair Order Number: _____

Dealer Code:_____

Complete 17 Digit Vehicle Identification Number: _____

Axle model: _____

Axle serial number: _____

In-service date of the vehicle:_____

Vehicle mileage: _____

1. Document the amount of total movement on the dial indicator. (Example: .002")

Left Hand Tie Rod Movement Reading	Amount of Movement
Right Hand Tie Rod Movement Reading	Amount of Movement

2. Using the images below mark the amount of rotation on the nut after the nuts where torqued to 130 ft. lbs.

Left Side

Right Side

3. Document the amount of movement between the tie rod end and the tie rod arm after you retorqued the nut to 130 ft. lbs. If there is no movement answer "NONE"

Left Hand Movement After Retorque	Amount of Movement
Right Hand Movement After Retorque	Amount of Movement