

Recall Campaign

Daimler Trucks
North America LLC

July 2009
FL531A
NHTSA #08V-270

Work Instructions

Subject: Lowering the Height of the Headlights

Models Affected: Specific Freightliner All-Wheel Drive Business Class M2 vehicles and All-Wheel Drive Business Class M2 Sportchassis vehicles built with Cummins ISC engines manufactured August 15, 2007 through March 25, 2009.

IMPORTANT: Kits must be ordered with the vehicle serial number and must be received prior to the arrival of a vehicle at your dealership (expedited freight for kits may not be included on claims). Customers are being asked to contact dealerships before arriving to have the recall performed.

Procedure

1. Shut down the engine, set the parking brakes, and chock the tires.
2. Check the base label (Form WAR259) for a completion sticker for FL531 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 sticker for FL531 is present, nothing further needs to be done. If no sticker is present, go to the next step.
3. Check the height of the headlights. Measure from the ground to the center of the highest headlight lens. See **Fig. 1** and **Fig. 2**. If this distance is 54 inches (137 cm) or less, nothing more needs to be done. Clean a spot on the base label (Form WAR259). Attach a completion sticker (Form WAR260) for recall FL531 to the base label.

If the distance is more than 54 inches (137 cm), go to the next step.

4. Drain the oil from the engine.

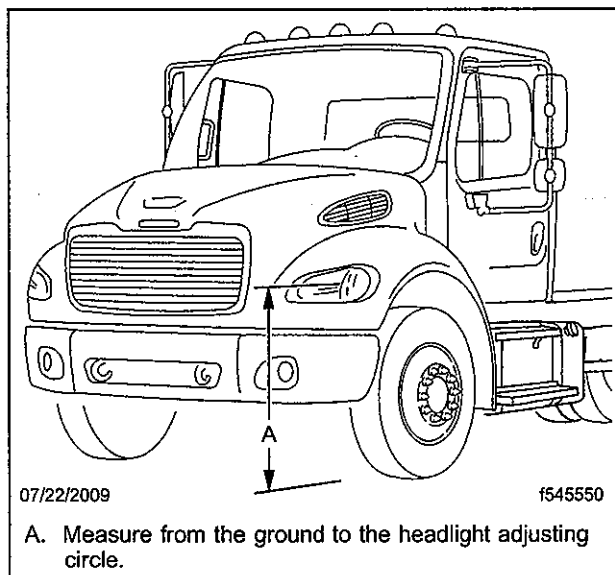


Fig. 1, Headlight Measurement

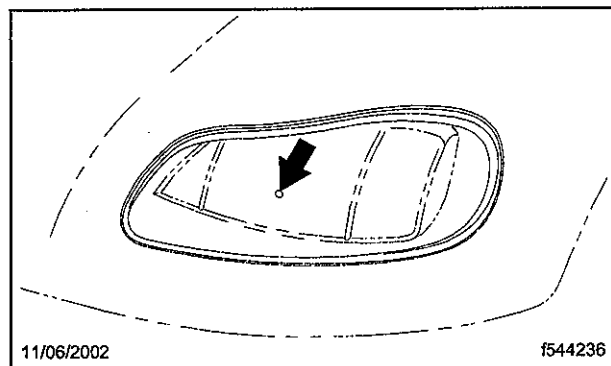


Fig. 2, Headlight Adjusting Circle

WARNING

Never work under a vehicle that is supported only by jacks. Jacks can slip, causing the the vehicle to fall, which can result in serious injury or death. Always support the vehicle with safety stands.

5. Raise the vehicle, then support the frame rails with safety stands.

WARNING

When draining the air system, don't look into the air jets or direct them toward another person, as dirt or sludge particles may be in the airstream. Don't disconnect pressurized hoses because they may whip as air escapes from the line. Failure to take all necessary precautions while working on the air brake system can cause personal injury.

6. Drain the air system.
7. If so equipped, disconnect the ABS sensors from the axle knuckles. Pull the sensors straight out.
8. Disconnect the air lines from the front brake chambers.
9. Disconnect the driveline from the front axle. For instructions, see **Group 41** in the *Business Class M2 Workshop Manual*.
10. Leaving the drag link attached to it, remove the pitman arm from the steering gear as follows.
 - 10.1 Remove the pinch bolt and nut that attach the pitman arm to the steering gear sector shaft.
 - 10.2 Using a suitable puller, remove the pitman arm from the steering gear sector shaft.
11. Disconnect the drag link from the axle steering arm by removing the cotter pin and castle nut.
12. Remove the drag link and the pitman arm as a unit from the vehicle.
13. Remove the front axle from the vehicle as follows. See **Fig. 3**.
 - 13.1 Disconnect the lower ends of the front shock absorbers from the axle stops on top of the leaf springs.
 - 13.2 Take the weight off the leaf springs by supporting the axle.
 - 13.3 On one side of the vehicle, remove the U-bolt nuts and washers, then remove the two U-bolts.
 - 13.4 Repeat the procedure on the other side of the vehicle.
 - 13.5 Remove the axle stops from the tops of the leaf springs.
 - 13.6 On one side of the vehicle, remove and discard the centerbolt and hexnut that hold the the axle spacers to the leaf spring. Remove and discard the axle spacers.
 - 13.7 Repeat the procedure on the other side of the vehicle.
 - 13.8 Remove the axle from underneath the vehicle.
14. Remove the oil pan from the engine block, and set it and the capscrews and washers aside.
15. Remove any remaining parts of the oil-pan gasket from the bottom of the engine block.
16. Remove the oil dipstick from the engine and discard it.
17. Install the new oil dipstick.
18. Install the new oil pan and gasket on the engine block as follows.

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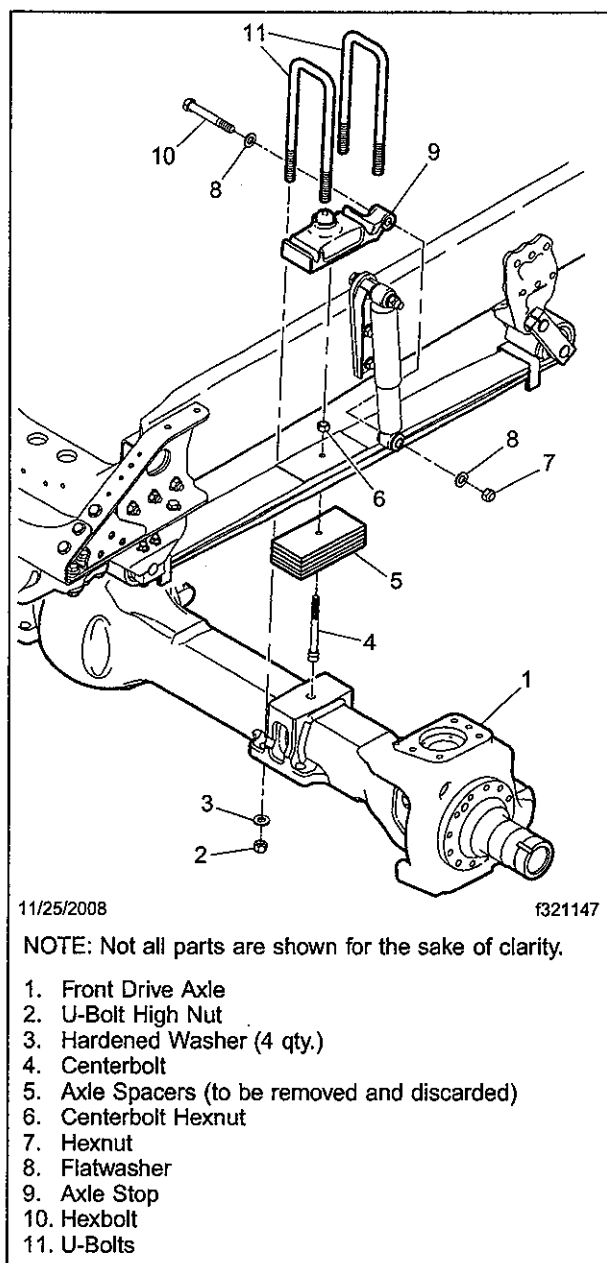


Fig. 3, Front Axle Removal (driveline disconnected)

- 18.1 If not already done, remove all old gasket material from the engine block
- 18.2 Apply RTV sealant to fill the joints between the oil pan rail, the gear housing, and the rear seal housing.
- 18.3 Using a new gasket and the existing capscrews and washers, install the new oil pan. Tighten the capscrews 248 lbf-in (28 N-m) in the sequence shown in **Fig. 4**.
- 18.4 Remove the drain plug from the old oil pan and install it in the new oil pan. Tighten the plug to 60 lbf-ft (80 N-m).

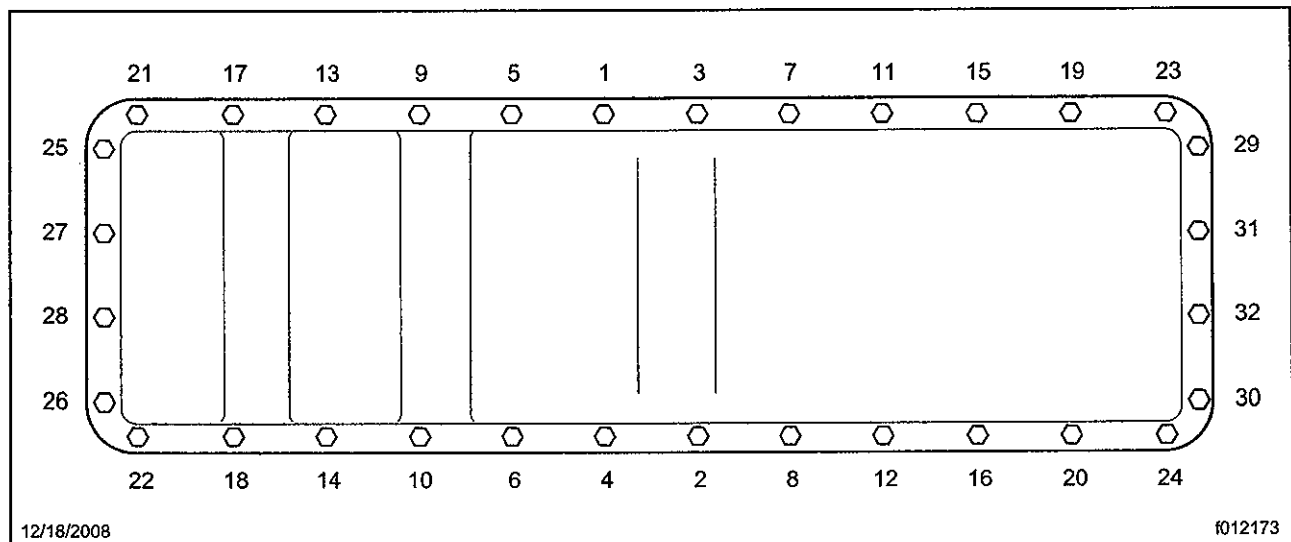


Fig. 4, Oil Pan Fastener Tightening Sequence

19. Install the front axle as follows.
 - 19.1 Position the axle under the vehicle, then raise it into place under the leaf springs.
 - 19.2 On one side of the vehicle, install the new centerbolt and hexnut to hold the leaf springs together. Tighten the centerbolt hexnut 120 lbf·ft (163 N·m). NOTE: Center spring bolts for 12K and 14.6K / 16K suspensions are included in the kit. Please use the appropriate length bolts for the vehicle. You will only use one set of bolts for this repair. The other set will not be used.

Repeat the procedure on the other side of the vehicle.
 - 19.3 Install the axle stops on the tops of the leaf springs.
 - 19.4 Using a suitable clamp (such as a large C-clamp) compress one of the new U-bolts, then install it on one side of the axle. Do the same for the second U-bolt.

Install the U-bolt nuts and washers. Tighten the nuts finger-tight. Repeat the procedure on the other side of the vehicle.
 - 19.5 In a diagonal pattern, tighten each set of U-bolt nuts successively to 60 lbf·ft (81 N·m), 200 lbf·ft (270 N·m), then to 460 lbf·ft (624 N·m).
 - 19.6 Connect the driveline to the front axle. For instructions, see **Group 41** in the *Business Class M2 Workshop Manual*.
20. Connect the shock absorbers to the lower mounting brackets on the axle stops. Tighten the fasteners 140 lbf·ft (190 N·m).
21. If so equipped, install the ABS sensors in the axle knuckles.
22. Connect the air lines to the brake chambers.
23. Install the pitman arm on the steering gear, aligning the timing marks on the pitman arm with the timing marks on the sector shaft. See **Fig. 5**.

The pitman arm may not fit over the splines on the sector shaft without spreading the slot in the pitman arm. To wedge the slot open, clamp the new pitman arm in a vise with the slot at the top. Use a ball-peen hammer to drive a chisel into the slot. Hold the chisel in place, remove the pitman arm from the vise, and install it on the sector shaft. Remove the chisel from the slot.

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WARNING

Never leave a chisel wedged in the pitman arm slot. When using a chisel to spread the slot in the pitman arm, maintain a firm grip on the chisel at all times, otherwise the chisel may fly loose, which could cause an injury.

24. Using a new pinch bolt and nut, attach the pitman arm to the steering gear. Tighten the nut 130 to 155 lbf-ft (177 to 211 N·m).
25. Using castle nuts, attach the new drag link to the pitman arm and the steering arm. Tighten the castle nuts 160 to 300 lbf-ft (217 to 407 N·m). If necessary, continue tightening each castle nut until a slot on the nut aligns with a hole in the ball stud. **Do not** back off the nut.

WARNING

Failure to install and lock a new cotter pin in the ball stud and nut could result in disengagement of the parts and loss of steering control.

26. Install new cotter pins through the ball studs and the castle nuts and lock the cotter pins in place.
27. Clean the grease fittings and apply chassis grease to the fittings until all the old grease is forced out.
28. Check that the steering gear is centered. The gear is centered when the timing mark on the sector shaft is aligned with the timing mark on the housing trunnion. See Fig. 6.

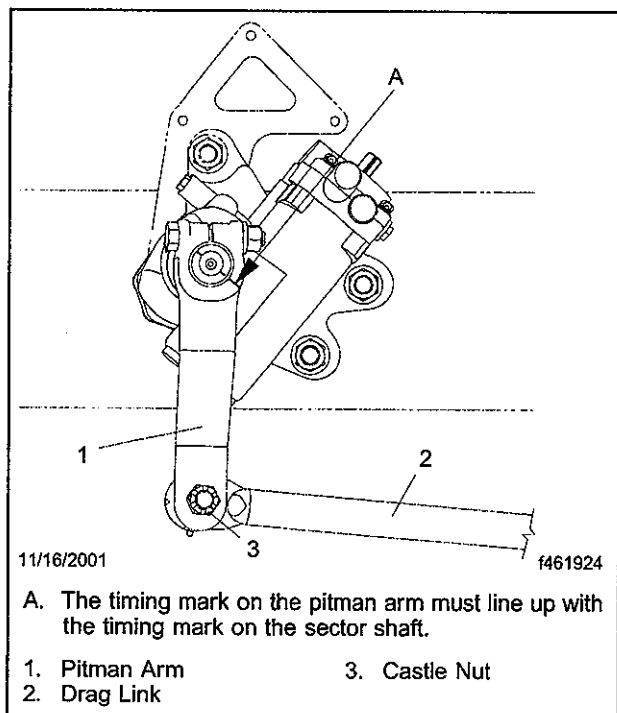


Fig. 5, Pitman Arm

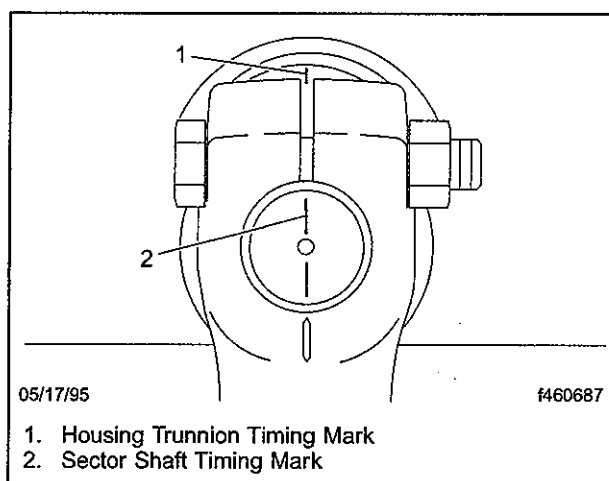


Fig. 6, Steering Gear Centered

29. Make sure that the steering wheel spokes are within 10 degrees of the 3 o'clock and 9 o'clock positions on the steering wheel. See Fig. 7.
- If necessary, remove the steering wheel and reposition it. For instructions, see **Group 46** in the *Business Class M2 Workshop Manual*.
30. Adjust the axle stops on the axle steering knuckles as follows.
- 30.1 With the brakes fully applied, turn the steering wheel clockwise to the end of travel. Have someone check both sides of the vehicle for interference at the tires and wheels. There must be at least 1/2-inch (13-mm) clearance from any fixed object, and 3/4-inch (19-mm) clearance from any moving object.
- 30.2 If necessary, loosen the stopscrew locknut; adjust the stopscrew to contact the axle when the maximum turning angle of the wheels is determined. See Fig. 8.
- 30.3 Tighten the locknut 50 to 65 lbf-ft (68 to 88 N·m).
- 30.4 Repeat the above step with the steering wheel turned counterclockwise. Adjust the axle stop as needed.
31. With the steering gear centered, adjust the steering gear poppet valves. For instructions, see **Group 46** in the *Business Class M2 Workshop Manual*.
32. When the steering gear poppet valves have been adjusted, raise the vehicle, remove the safety stands, then lower the vehicle.
33. Check the alignment of the headlights. If necessary, align them correctly. For instructions, see **Group 54** in the *Business Class M2 Workshop Manual*.

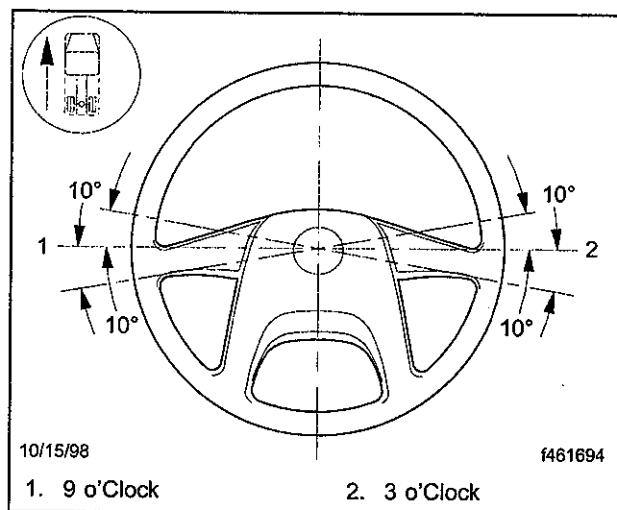


Fig. 7, Centering the Steering Wheel

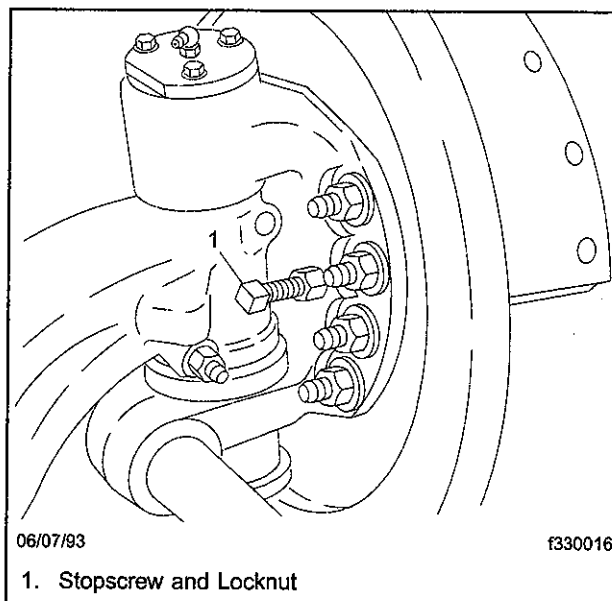


Fig. 8, Axle Stop

34. Clean a spot on the base label (Form WAR259). Attach a completion sticker (Form WAR260) for recall FL531 to the base label.