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FLB COE  
FLD Conventional  
Business Class  
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Century Class Conventional  
Argosy COE  
Cargo  
Columbia  
122SD and Coronado

Business Class M2  
Cascadia  
108SD/114SD  
> New Cascadia

**Freightliner  
Service Bulletin**

**Description of Revisions** *This bulletin replaces the version titled "Detroit Drive Axle Lubrication" dated January 2017. The scope of the bulletin has been expanded. Information on filling NFD Top Performance hubs is added.*

## Detroit New Final Drive Top Performance Axles with Active Lube Management

DTNA has launched its New Final Drive Axles. There are two versions of this axle, Top Performance, with Active Lube Management (ALM), and Standard Performance, without ALM. The Top Performance axle requires a different amount and type of oil than the Standard Performance or Classic Detroit axles.

The oil fill and check hole location for the Top Performance axle is located in the carrier on the front of the axle, and not on the back of the axle housing like Standard Performance and Classic Detroit axles. The standard performance axle has the same fill and check locations as Classic Detroit axles. The Top Performance axles have a purple air line that goes to the carrier to control the active lube management inside the axle. Hub oil level is critical in the Top Performance axles, as there is limited transfer of oil between the differential and the hubs.

### NOTICE

**Standard and Top Performance axles use the same axle housing, however, on Top Performance axles the plug in the back of the center section of the axle housing is factory-installed from the inside to prevent using it as a check and fill point. Changing this configuration may lead to improper lubrication of the axle, axle damage, or loss of performance.**

## Identifying Detroit Performance Axles

There are several ways to identify with which axle a vehicle is equipped.

1. Use the Vehicle Info icon on DTNA Connect or PartsPro by VIN to get the correct axle model for the vehicle being serviced. **Table 1** lists the model number designation for standard and top performance axles.

Detroit Performance Axle Identification	
Axle Designation	Model Number Example
Standard Performance	DART400-4S
Top Performance	DART400-4T

**Table 1, Detroit Performance Axle Identification**

2. Inspect the axle. Go to "Oil Fill Location, Top Performance Axles with ALM System" below.
3. Check the axle data tag attached to the carrier housing. Refer to **Table 2** for model (MOD) information.
4. To help differentiate between the Top Performance and standard performance axles look for a purple air line to the lower part of the carrier on the passenger side of the forward carrier and the driver's side of the rear carrier. These air lines activate the Active Lube Management system on the Top Performance axles. Standard performance axles will not have these air lines. Standard Performance axles will also not have the fill plugs in the carrier; they will be in the back of the housing the same as Classic Detroit axles. Also look for the new fill and check locations shown in **Fig. 1** and **Fig. 2**.

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**Fig. 1, Lube Management Air Line, Forward Rear Axle**



04/19/2017

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**Fig. 2, Lube Management Air Line, Rear Rear Axle**

Axle Tag "MOD." Number Breakdown			
		04/19/2017	f350628
Code	Description		
DA	Detroit Diesel		
RX	Configuration	RT	Tandem
		RS	Single
XX.X	Weight Rating (times 1000 lbs)		
XX	Model Designation	1st Character	Basic model number (4 or 6)
		2nd Character	S - Standard NFD T - Top Performance NFD Blank - Classic Detroit Axle
_XX	Pinion Orientation	HT	Topoid
		HH	Hypoid

**Table 2, Axle Tag "MOD." Number Breakdown**

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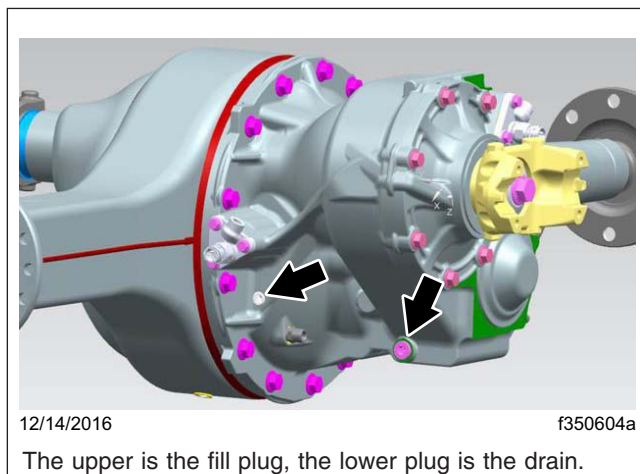
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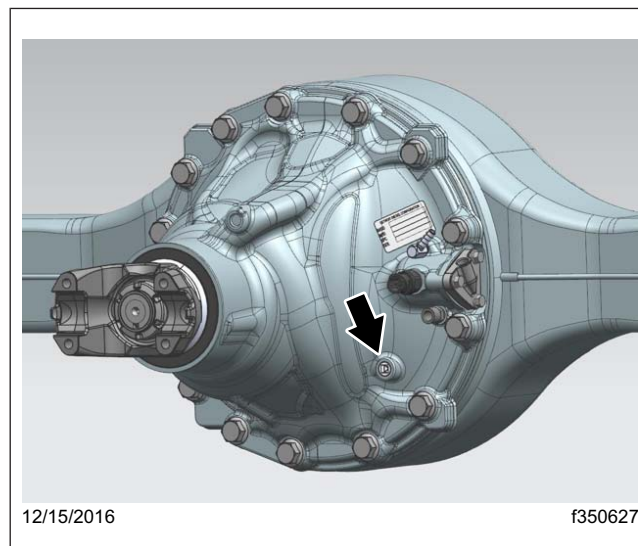
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## Oil Fill Location, Top Performance Axles with ALM System

The oil fill location for Detroit New Final Drive Top Performance Axles with Active Lube Management is located on the axle carrier. The forward drive axle fill and check location is on the right hand side of the carrier. See **Fig. 3**. The rear drive axle oil fill and check location is on the left hand side of the carrier. See **Fig. 4**.



**Fig. 3, Forward Detroit New Final Drive Top Performance Axles with ALM — Oil Check and Fill Location**



**Fig. 4, Rear Detroit New Final Drive Top Performance Axles with ALM — Oil Check and Fill Location**

## Where NOT to Check and Fill Top Performance Axles

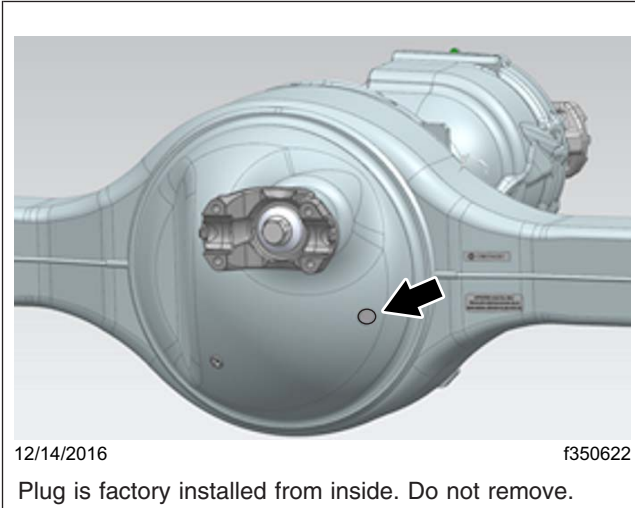
On Detroit New Final Drive Top Performance Axles with ALM, the plug in the back of the center section of the axle housing is factory-installed from the inside to prevent using it as a check and fill point. Do not remove this plug. The plug location is shown in **Fig. 5** and **Fig. 6**.

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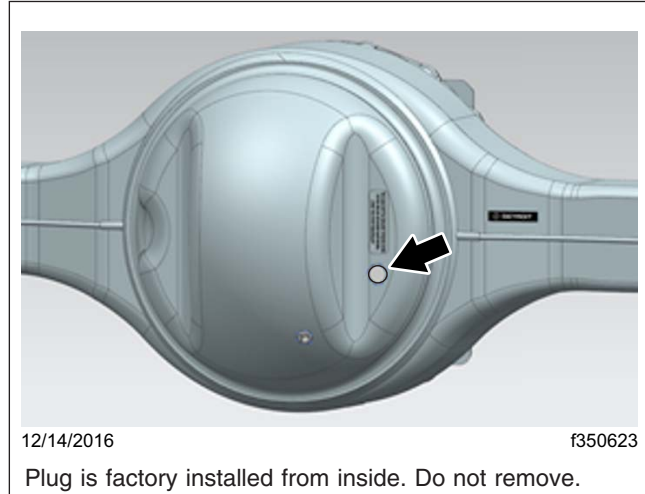
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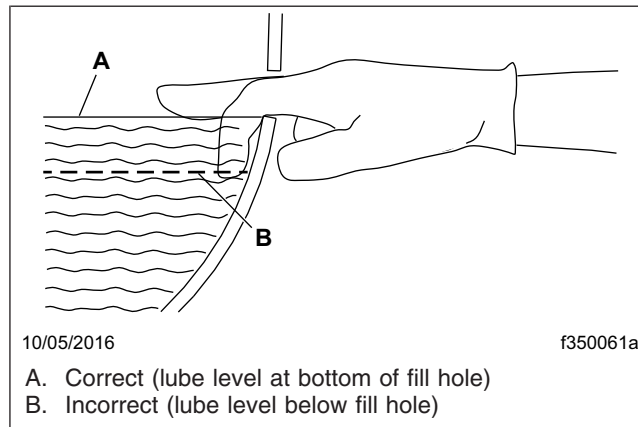
**Fig. 5, Non-Removable Plug on the Back of Forward Axle Housing (axles with ALM system)**



**Fig. 6, Non-Removable Plug on the Back of Rear Axle Housing (axles with ALM system)**

## Oil Fill Procedure

The oil check and fill procedure is the same for all axles. See [Fig. 7](#). Only the check and fill location is different for Detroit Top Performance Axles. It is now located on the axle carrier for those axle equipped with the ALM system.



**Fig. 7, Axle Lubricant Level Check**

Axle oil volumes for Detroit New Final Drive Top Performance Axles with ALM system are shown in [Table 3](#). The oil volume must be checked after filling the axle. The correct oil volume is when oil is level with fill hole as seen in [Fig. 3](#) or [Fig. 4](#). Only approved 75W-85 oil can be used in Top Performance Axles with ALM system. See the guidelines below for the appropriate oil specification.

- **New Final Drive Top Performance Axles**—Both DFS93K219.01 and DFS93K219.03 are approved, but it is highly recommended to use DFS93K219.03 to attain optimal fuel economy.
- **New Final Drive Standard Performance Axles**—Both DFS93K219.01 and DFS93K219.03 are approved.

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- **Model 2, 4, and 6 Classic Axles**—Only DFS93K219.01 is approved.

For more information, go to: [Detroit Fluids Specification \(DFS\) Axle Gear Oil Approval List](#).

Oil Fill Volumes for Detroit Top Performance Axles with ALM System		
Axle Type	Oil in Hubs (2 hubs)	Oil in Axle
NFD Model 4 Forward Axle TP	1.8 L	9 L
NFD Model 4 Rear Rear Axle TP	1.8 L	7.5 L
NFD Model 4 Forward Axle SP	1.8 L	14 L
NFD Model 4 Rear Rear Axle SP	1.8 L	11 L
NFD Model 6 TP	1.8 L	9.5 L
NFD Model 6 SP	1.8 L	11 L

**Table 3, Oil Fill Volumes for Detroit Axles with ALM System**

NOTE: Refer to Group 35 in the *New Cascadia Workshop Manual* and *Maintenance Manual* for information on Classic Model 2, 4, and 6 axles.

## New Final Drive Top Performance Hub Filling

1. Rotate wheel assembly so the hub fill plug is at the 4 o'clock position. See [Fig. 8](#).
2. Remove the drain plug. See [Fig. 9](#).



**Fig. 8, Hub at 4 O'clock Position**



**Fig. 9, Fill Plug Removed**

3. Using a tube, add oil to the hub until the oil pours out of the fill hole. See [Fig. 10](#).
4. Install the fill plug and tighten 20 lbf-ft (27 N·m).

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**Fig. 10, Using a Tube to Fill Hub**

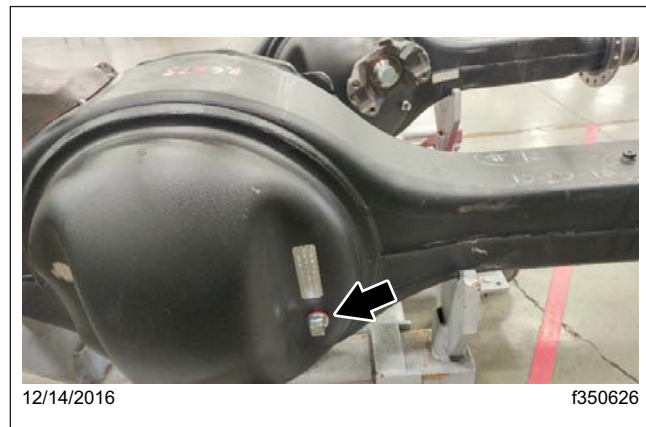
## All Other Detroit Axles

The following Detroit axles have the same check and fill locations as shown in [Fig. 11](#) and [Fig. 12](#).

- New Final Drive Standard Performance
- Classic Detroit Axle Model 2
- Classic Detroit Axle Model 4
- Classic Detroit Axle Model 6



**Fig. 11, Forward Rear Axle Fill Location**



**Fig. 12, Rear Rear Axle Fill Location**

Follow the instructions in the vehicle's maintenance manual when servicing these axles.

## Warranty

This bulletin is informational only. Warranty does not apply.