

# 35-032 Detroit Drive Axle Identification and Lubrication

## TSB-35-032-FTL

Creation Date:2017-07-28

### Engine or Vehicle Affected:

► New Cascadia

**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.

This is an informational bulletin only. The described condition is a product improvement or is not warrantable.

### 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.  Park the vehicle on a level surface, shut down the engine, and apply the parking brake. Chock the tires.

2.  Use the Vehicle Info icon on DTNA Connect or Exceleator 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.

Table 1, Detroit Performance Axle Identification

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

Table 1, Detroit Performance Axle Identification

3.  Inspect the axle. Go to "Oil Fill Location, Top Performance Axles with ALM System" below.
4.  Check the axle data tag attached to the carrier housing. Refer to Table 2 for model (MOD) information.
5.  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.

Table 2, Axle Tag "MOD." Number Breakdown

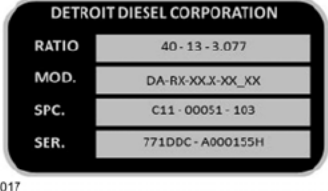
Axle Tag "MOD." Number Breakdown			
			
Code	Description		
DA	Detroit Diesel		
RX	Configuration	RT	Tandem
		RS	Single
XX.X	Weight Rating (times 1000 lbs)		
XX	Model Designation	1st Character	Basic model number (4 or 6)
		2nd Character	S - Standard NFD T - Top Performance NFD Blank - Classic Detroit Axle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

Table 2, Axle Tag "MOD." Number Breakdown



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



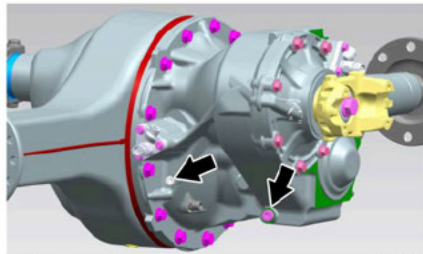
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Fig. 2, Lube Management Air Line, Rear Rear Axle

### 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.

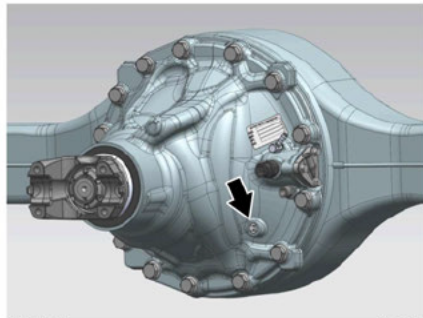


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➤ **Note:** The upper is the fill plug, the lower plug is the drain.

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



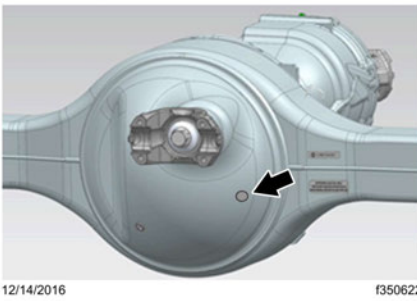
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Fig. 4, Rear Detroit New Final Drive Top Performance Axles with ALM – Oil Check and Fill Location

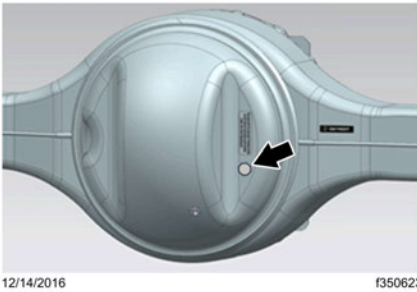
### Where NOT to Check and Fill Top Performance Axles

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.



⚠ **Note:** Plug is factory installed from inside. Do not remove.

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

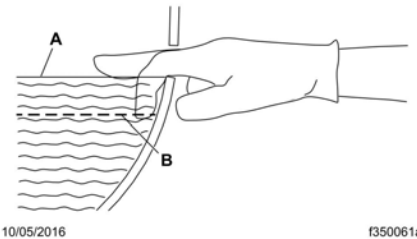


⚠ **Note:** Plug is factory installed from inside. Do not remove.

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.



A. Correct (lube level at bottom of fill hole) B. Incorrect (lube level below fill hole)

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. 1 or Fig. 4. Only approved 75W-90 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**—Only DFS93K219.01 is approved.
- **New Final Drive Standard Performance Axles**—Only DFS93K219.01 is approved.
- **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](#).

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

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.
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. 8, Hub at 4 O'clock Position



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Fig. 9, Fill Plug Removed



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**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



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Fig. 11, Forward Rear Axle Fill Location



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Fig. 12, Rear Rear Axle Fill Location

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

**Warranty**

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**Note:**

INSTALL  
REMOVE  
F16  
F26  
F35  
F36

**CONTACT INFORMATION**

For questions, please create a Service Technical Request using the DTTS Application on the DTNA Portal.

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