



*Run Smart™*

## **108SD AND 114SD MAINTENANCE MANUAL**

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**Models: 108SD  
114SD**

## Foreword

Performing scheduled maintenance operations is important in obtaining safe, reliable operation of your vehicle. A proper maintenance program will also help to minimize downtime and safeguard warranties.

**IMPORTANT:** The maintenance operations in this manual are **not all-inclusive**. Also refer to other component and body manufacturers' instructions for specific inspection and maintenance instructions.

Perform the operations in this maintenance manual at scheduled intervals. Perform the pretrip and post-trip inspections, and daily/weekly/monthly maintenance, as outlined in the vehicle driver's manual. Major components, such as engines, transmissions, and rear axles, are covered in their own maintenance and operation manuals, that are provided with the vehicle. Perform any maintenance operations listed at the intervals scheduled in those manuals. Your Freightliner Dealership has the qualified technicians and equipment to perform this maintenance for you. They can also set up a scheduled maintenance program tailored specifically to your needs. Optionally, they can assist you in learning how to perform these maintenance procedures.

**IMPORTANT:** Descriptions and specifications in this manual were in effect at the time of printing. Freightliner Trucks reserves the right to discontinue models and to change specifications or design at any time without notice and without incurring obligation. Descriptions and specifications contained in this publication provide no warranty, expressed or implied, and are subject to revision and editions without notice.

Refer to [www.Daimler-TrucksNorthAmerica.com](http://www.Daimler-TrucksNorthAmerica.com) and [www.FreightlinerTrucks.com](http://www.FreightlinerTrucks.com) for more information, or contact Daimler Trucks North America LLC at the address below.

## Environmental Concerns and Recommendations

Whenever you see instructions in this manual to discard materials, you should attempt to reclaim and recycle them. To preserve our environment, follow appropriate environmental rules and regulations when disposing of materials.

## NOTICE: Parts Replacement Considerations

Do not replace suspension, axle, or steering parts (such as springs, wheels, hubs, and steering gears) with used parts. Used parts may have been subjected to collisions or improper use and have undetected structural damage.

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**Daimler Trucks North America LLC  
Service Systems and Documentation (CVI-SSD)  
P.O. Box 3849  
Portland, Oregon 97208-3849**

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## Descriptions of Service Publications

Daimler Trucks North America LLC distributes the following major service publications in paper and electronic (via ServicePro®) formats.

<b>Workshop/Service Manual</b>	Workshop/service manuals contain service and repair information for all vehicle systems and components, except for major components such as engines, transmissions, and rear axles. Each workshop/service manual section is divided into subjects that can include general information, principles of operation, removal, disassembly, assembly, installation, and specifications.
<b>Maintenance Manual</b>	Maintenance manuals contain routine maintenance procedures and intervals for vehicle components and systems. They have information such as lubrication procedures and tables, fluid replacement procedures, fluid capacities, specifications, and procedures for adjustments and for checking the tightness of fasteners. Maintenance manuals do not contain detailed repair or service information.
<b>Driver's/Operator's Manual</b>	Driver's/operator's manuals contain information needed to enhance the driver's understanding of how to operate and care for the vehicle and its components. Each manual contains a chapter that covers pretrip and post-trip inspections, and daily, weekly, and monthly maintenance of vehicle components. Driver's/operator's manuals do not contain detailed repair or service information.
<b>Service Bulletins</b>	Service bulletins provide the latest service tips, field repairs, product improvements, and related information. Some service bulletins are updates to information in the workshop/service manual. These bulletins take precedence over workshop/service manual information, until the latter is updated; at that time, the bulletin is usually canceled. The service bulletins manual is available only to dealers. When doing service work on a vehicle system or part, check for a valid service bulletin for the latest information on the subject.  <b>IMPORTANT:</b> Before using a particular service bulletin, check the current service bulletin validity list to be sure the bulletin is valid.
<b>Parts Technical Bulletins</b>	Parts technical bulletins provide information on parts. These bulletins contain lists of parts and BOMs needed to do replacement and upgrade procedures.
Web-based repair, service, and parts documentation can be accessed using the following applications on the AccessFreightliner.com website.	
<b>ServicePro</b>	ServicePro® provides Web-based access to the most up-to-date versions of the publications listed above. In addition, the Service Solutions feature provides diagnostic assistance with Symptoms Search, by connecting to a large knowledge base gathered from technicians and service personnel. Search results for both documents and service solutions can be narrowed by initially entering vehicle identification data.
<b>PartsPro</b>	PartsPro® is an electronic parts catalog system, showing the specified vehicle's build record.
<b>EZWiring</b>	EZWiring™ makes Freightliner, Sterling, Western Star, Thomas Built Buses, and Freightliner Custom Chassis Corporation products' wiring drawings and floating pin lists available online for viewing and printing. EZWiring can also be accessed from within PartsPro.

## Descriptions of Service Publications

Warranty-related service information available on the AccessFreightliner.com website includes the following documentation.

### **Recall Campaigns**

Recall campaigns cover situations that involve service work or replacement of parts in connection with a recall notice. These campaigns pertain to matters of vehicle safety. All recall campaigns are distributed to dealers; customers receive notices that apply to their vehicles.

### **Field Service Campaigns**

Field service campaigns are concerned with non-safety-related service work or replacement of parts. All field service campaigns are distributed to dealers; customers receive notices that apply to their vehicles.

Page Description

For an example of a 108SD and 114SD Maintenance Manual page, see Fig. 1.

A
B
C

Transmission

**26**

**26-01 Transmission Fluid Level Check**

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**NOTICE**

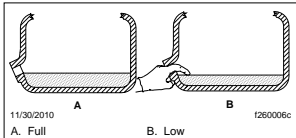
Operating a transmission with the fluid level higher or lower than recommended can result in transmission damage. Do not overfill the transmission.

Do not mix types and brands of fluid, because of possible incompatibility. Do not use fluid additives, friction modifiers, extreme-pressure gear fluids, or multiviscosity lubricants.

**Eaton Fuller**

NOTE: Check the transmission fluid level with the transmission at operating temperature.

1. Park the vehicle on a level surface, apply the parking brakes, and chock the tires.
2. Clean the area around the fill plug, then remove the plug from the side of the gear case.
3. Using your gloved finger or a bent pipe cleaner, check if the fluid is level with the fill opening. See Fig. 1.



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A. Full B. Low

**Fig. 1. Checking Transmission Fluid Level**

4. If the fluid level is low, check the transmission for leaks, and correct as needed.
5. If needed, add Eaton-approved fluid until it is level with the lower edge of the fill opening. Eaton-approved fluid, such as the Roadranger SAE 50 product, meets the requirements of the PS-164 Rev. 7 lubricant specification. For more information about Eaton lubricant specifications and suppliers, call 1-800-826-4357 or see [www.roadranger.com](http://www.roadranger.com).

6. Clean the fill plug, then install it. Tighten the plug as follows:
  - 25 to 35 lb-ft (34 to 48 N-m) for transmissions with 3/4-inch pipe threads.
  - 60 to 75 lb-ft (81 to 102 N-m) for transmissions with 3/4-inch pipe threads.

**Allison**

NOTE: For Allison transmissions equipped with an oil level sensor, the transmission fluid level can be checked electronically. For more information, refer to the Allison Transmission website, [www.allisontransmission.com](http://www.allisontransmission.com).

**Cold Check**

Clean all dirt from around the end of the fluid fill tube before removing the dipstick. Do not allow foreign matter to enter the transmission. Dirt or foreign matter in the hydraulic system may cause undue wear of transmission parts, make valves stick, and clog passages.

It is important to check the fluid level cold to determine if the transmission has a sufficient amount of fluid to be safely operated until a hot check can be performed.

1. Park the vehicle on a level surface, apply the parking brakes, and chock the tires.
2. Run the engine for at least one minute.
3. Shift from DRIVE to NEUTRAL, and then shift to REVERSE to fill the hydraulic system.
4. Shift to NEUTRAL and allow the engine to idle at 500 to 800 rpm.
5. With the engine running at idle, remove the dipstick from the tube and wipe it clean.
6. Insert the dipstick into the tube, then remove it.
7. Check the fluid level reading, then repeat the check procedure to verify the reading.

If the fluid level is within the COLD RUN band, the transmission may be operated until the fluid is hot enough to perform a hot check.

If the fluid level is not within the COLD RUN band, add or drain fluid as needed to adjust the fluid level to the middle of the COLD RUN band. See Fig. 2.

D
E
F

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02/04/2011 f020176

A. Maintenance Operation Number consists of the Group Number followed by the Sequence Number  
 B. Group Title  
 C. Group Number  
 D. Vehicle Name  
 E. Release Date  
 F. Group Number/Page Number

Fig. 1, Example of a 108SD and 114SD Maintenance Manual Page

<b>Group No.</b>	<b>Group Title</b>
00 .....	General Information
01 .....	Engine
09 .....	Air Intake
13 .....	Air Compressor
15 .....	Alternators and Starters
20 .....	Engine Cooling/Radiator
25 .....	Clutch
26 .....	Transmission
31 .....	Frame and Frame Components
32 .....	Suspension
33 .....	Front Axle
35 .....	Rear Axle
40 .....	Wheels and Tires
41 .....	Driveline
42 .....	Brakes
46 .....	Steering
47 .....	Fuel
49 .....	Exhaust
60 .....	Cab
72 .....	Doors
83 .....	Heater and Air Conditioner
88 .....	Hood, Grille, and Cab Fenders

<b>Title of Maintenance Operation (MOP)</b>	<b>MOP Number</b>
00-01 Determining Scheduled Maintenance Intervals . . . . .	00-01
00-02 Initial Maintenance (IM) Operations. . . . .	00-02
00-03 M1 Maintenance Interval Operations. . . . .	00-03
00-04 M2 Maintenance Interval Operations. . . . .	00-04
00-05 M3 Maintenance Interval Operations. . . . .	00-05
00-06 M4 Maintenance Interval Operations. . . . .	00-06
00-07 M5 Maintenance Interval Operations. . . . .	00-07
00-08 Maintenance Sequence and Log . . . . .	00-08
00-09 Noise Emission Controls . . . . .	00-09
00-10 Verification of Inspections Log . . . . .	00-10
00-11 Metric/U.S. Customary Conversion Tables. . . . .	00-11
00-12 Torque Specifications. . . . .	00-12

00–01 Determining Scheduled Maintenance Intervals

## Determining Scheduled Maintenance Intervals

Performing regular maintenance will help ensure that your vehicle delivers safe, reliable service and optimum performance. A proper maintenance program will also help to minimize downtime and safeguard warranties.

To determine the correct maintenance intervals for your vehicle, you must first determine the type of service or conditions the vehicle will be operating in. Most vehicles operate in conditions that fall within one of two schedules. Before placing your vehicle in service, determine which schedule applies to your vehicle.

### Schedules

**Schedule I** (severe service) applies to vehicles that travel up to 6000 miles (10 000 kilometers) annually or that operate under severe conditions. Examples of Schedule I usage are:

- operation on extremely poor roads or where there is heavy dust accumulation
- constant exposure to extreme hot, cold, salt air, or other extreme climates
- frequent short-distance travel
- construction-site operation
- city operation such as fire truck and garbage truck.

- farm operation

**Schedule II** (short-haul transport) applies to vehicles that travel 6000 miles (10 000 kilometers) or more annually and operate under normal conditions. Examples of Schedule II usage are:

- operation primarily in cities and densely populated areas
- local transport with infrequent freeway travel
- high percentage of stop-and-go travel

### Maintenance Intervals

After determining the schedule appropriate to your vehicle, refer to **Table 1** to determine when to perform the Initial Maintenance (IM) and the frequency of performing subsequent maintenance intervals for each schedule.

### Maintenance Operations

This manual has an index at the beginning of each Group that lists the title and number of each maintenance operation (MOP) for that Group. Follow the instructions under the MOP number to perform the required maintenance.

In addition to the maintenance operations required for the maintenance interval, perform all daily, weekly, and monthly maintenance operations listed in Chapter 21, "Pretrip and Post-Trip Inspections and Maintenance", of the *108SD and 114SD Driver's Manual*.

Maintenance Schedules					
Schedule	Maintenance Intervals				
	Maintenance Interval	Frequency	Mileage	km	Hours
<b>Schedule I*</b> (severe service) for vehicles that travel up to 6000 miles (10 000 km) annually	Initial Maintenance (IM)	first	1000	1600	100
	Maintenance 1 (M1)	every	1000	1600	100
	Maintenance 2 (M2)	every	4000	6400	400
	Maintenance 3 (M3)	every	8000	12 800	800
	Maintenance 4 (M4)	every	16,000	25 600	1600
	Maintenance 5 (M5)	every	32,000	51 200	3200



00-01 Determining Scheduled Maintenance Intervals

Maintenance Schedules					
Schedule	Maintenance Intervals				
	Maintenance Interval	Frequency	Mileage	km	Hours
<b>Schedule II</b> (short-haul transport) for vehicles that travel 6000 miles (10 000 km) or more annually	Initial Maintenance (IM)	first	8000	12 000	—
	Maintenance 1 (M1)	every	8000	12 000	
	Maintenance 2 (M2)	every	16,000	24 000	
	Maintenance 3 (M3)	every	32,000	48 000	
	Maintenance 4 (M4)	every	64,000	96 000	
	Maintenance 5 (M5)	every	128,000	192 000	

\* For Schedule I vehicles equipped with an hourmeter, use maintenance intervals based on hours of operation rather than mileage.

**Table 1, Maintenance Schedules**

## 00–02 Initial Maintenance (IM) Operations

**Table 2** lists all maintenance operations that are to be performed at the initial maintenance (IM) interval. Maintenance operation numbers are reference numbers used to help you find detailed instructions in this manual on the maintenance operations to be per-

formed. All operations listed in **Table 2**, along with the operations listed in the M1 Maintenance Interval Operations table (**Table 3**) must be performed to complete the initial maintenance (IM).

Initial Maintenance (IM) Operations	
Number	Title
<b>00-03</b>	Perform All M1 Maintenance Interval Operations
<b>31-01</b>	Frame Fastener Torque Check
<b>32-03</b>	Suspension U-Bolt Torque Check
<b>33-04</b>	Alignment Check
<b>47-01</b>	Fuel Tank Band Nut Tightening

**Table 2, Initial Maintenance (IM) Operations**