



Run Smart™

HEAVY-DUTY TRUCKS MAINTENANCE MANUAL

**Models: FLA COE
FLB COE
FLC 112 Conventional
FLD Conventional
FLL COE**

Foreword

When performed on a regular basis, lubricating the parts of your vehicle is the least costly way of obtaining safe and reliable vehicle operation. Added benefits and savings occur when you check that the engine, undercarriage, and noise emission control parts are in good working order during lubrication.

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 and 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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Descriptions of Service Publications

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

Workshop/Service Manual	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.
Maintenance Manual	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.
Driver's/Operator's Manual	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.
Service Bulletins	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. IMPORTANT: Before using a particular service bulletin, check the current service bulletin validity list to be sure the bulletin is valid.
Parts Technical Bulletins	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.	
ServicePro	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.
PartsPro	PartsPro® is an electronic parts catalog system, showing the specified vehicle's build record.
EZWiring	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 *Heavy-Duty Trucks Maintenance Manual* page, see [Fig. 1](#).

The diagram shows a page from a maintenance manual with the following structure:

- Header:** "Frame and Fifth Wheel" (Group Title) and "31" (Group Number).
- Section 1:** "31-01 Frame Fastener Torque Checking" (Maintenance Operation Number).
 - Text: "Because of 'bedding in' (or seating), frame fasteners must be torqued at recommended intervals. When tightening fasteners, check the frame for cracks and other damage."
 - CAUTION:** Continued vehicle operation with loose fasteners could result in bracket or frame damage.
 - Text: "Frame fasteners are used on front frame brackets, axle stops, equalizer stops, suspension brackets, fuel tank brackets, exhaust and air-intake brackets, engine trunion supports, rear engine supports, frame crossmembers and gussets, fifth wheel mounting angles, and fifth wheel legs."
 - Text: "Refer to the frame section in the vehicle service manual for additional information on frame fasteners, and to the general information section in the vehicle service manual for fastener information and torque values."
- Section 2:** "31-02 Fifth Wheel Inspecting and Lubricating" (Maintenance Operation Number).
 - WARNING:** All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in a possible disengagement of the trailer from the tractor, which could result in personal injury or property damage.
 - Text: "Parts are under spring compression. Wear safety goggles during removal, installation, and rebuilding. Failure to do so can result in personal injury, due to parts ejecting with force."
 - FONTAINE**
 - Disconnect the tractor from the trailer. For instructions, refer to the vehicle driver's manual.
 - Thoroughly steam-clean the fifth wheel.
 - Look for cracks in the fifth wheel assembly, mounting brackets, and mounting parts.
 - HOLLAND**
 - Disconnect the tractor from the trailer. For instructions, refer to the vehicle driver's manual.
 - Thoroughly steam-clean the fifth wheel.
 - Check for loose nuts or broken bolts on the fifth wheel assembly.
 - Inspect for cracks or wear on the mounting bolts.
 - Check for improper locking action and for cracks or wear on the jaw locking mechanism.
- Footnote:** "Heavy Trucks Maintenance Manual, November 1993" (Release Date) and "31/1" (Group/Page Number).

Callouts A through E point to the following elements:

- A:** Maintenance Operation Number (31-01)
- B:** Group Title (Frame and Fifth Wheel)
- C:** Group Number (31)
- D:** Release Date (November 1993)
- E:** Group/Page Number (31/1)

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

Fig. 1, Example of a Heavy-Duty Trucks Maintenance Manual Page

Group No.	Group Title
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
54	Electrical, Instruments, and Controls
60	Cab
72	Doors
83	Heater and Air Conditioner

Title of Maintenance Operation (MOP)	MOP Number
COE Cab Tilting, FLA/FLB	00-11
Determining Scheduled Maintenance Intervals.	00-01
Initial Maintenance (IM) Operations.	00-06
Lubrication and Fluid Level Check	00-04
M1 Maintenance Interval Operations Table: 00-07.	00-07
M2 Maintenance Interval Operations Table: 00-08.	00-08
M3 Maintenance Interval Operations Table	00-09
M4 Maintenance Interval Operations Table: 00-10.	00-10
Maintenance Operation Sets Table	00-05
Maintenance Service Table.	00-02
Metric/U.S. Customary Conversion Tables.	00-14
Noise Emission Controls Maintenance.	00-12
Torque Specifications Tables.	00-15
Vehicle Maintenance Schedule Tables.	00-03
Verification of Inspections Log.	00-13

Determining Scheduled Maintenance Intervals

Performing regular maintenance on your Freightliner vehicle will help ensure that your vehicle delivers safe reliable service and optimum performance for years to come. Failure to follow a regular maintenance program can result in inefficient operation and unscheduled down time.

To determine the correct maintenance intervals for your vehicle you must first determine the type of service or conditions in which the vehicle will operate. Generally, most vehicles operate under conditions that fall within one of the three types of service described. Before placing your new vehicle in service, determine the type of service (Service Schedule I, II, or III) that applies to the intended use of the vehicle. After determining the vehicle's type of service, refer to the Maintenance Service Table or the Vehicle Maintenance Schedule Tables, to determine how often maintenance should be performed.

When the vehicle reaches the distance given for a maintenance interval, see the applicable Maintenance Interval Operations Table for a list of the maintenance operations to be performed at that maintenance interval. Use the maintenance operation numbers to find detailed instructions in the manual on each operation.

Types of Service

Service Schedule I (severe service) applies to vehicles that annually travel less than 6000 miles (10 000 kilometers) *or* that operate under severe conditions. Examples of severe service, Schedule I usage include: 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 (fire truck); or farm operation.

Service Schedule II (short-haul transport) applies to vehicles that annually travel less than 60,000 miles (100 000 kilometers) 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; or high percentage of stop-and-go travel.

Service Schedule III (long-haul transport) is for vehicles that annually travel *more than* 60,000 miles

(100 000 kilometers) with minimal city or stop-and-go operation. Examples of Schedule III usage are: regional delivery that is mostly freeway miles; interstate transport; or any road operation with high annual mileage.

NOTE: Maintenance instructions in this manual are based on average vehicle use and normal operating conditions. Unusual vehicle operating conditions may require service at more frequent intervals.

Maintenance Service Table: 00–02

Maintenance Service Table

Service Schedule	Maintenance Interval Operation	Maintenance Intervals			
		Frequency	Miles	km	Hours
Schedule I* (Severe Service) vehicles that annually travel less than 6000 miles (10 000 km)	Initial Maintenance (IM)	first	1000	1600	100
	Maintenance 1 (M1)	every	1000	1600	100
	Maintenance 2 (M2)	every	5000	8000	500
	Maintenance 3 (M3)	every	10,000	16 000	1000
	Maintenance 4 (M4)	every	20,000	32 000	2000
Schedule II† (Short-Haul Transport) vehicles that annually travel less than 60,000 miles (100 000 km)	Initial Maintenance (IM)	first	9000 to 10,000	15 000	—
	Maintenance 1 (M1)	every	9000 to 10,000	15 000	
	Maintenance 2 (M2)	every	37,000 to 38,000	60 000	
	Maintenance 3 (M3)	every	75,000	120 000	
	Maintenance 4 (M4)	every	150,000	240 000	
Schedule III† (Long-Haul Transport) vehicles that annually travel over 60,000 miles (100 000 km)	Initial Maintenance (IM)	first	12,500	20 000	—
	Maintenance 1 (M1)	every	12,500	20 000	
	Maintenance 2 (M2)	every	50,000	80 000	
	Maintenance 3 (M3)	every	100,000	160 000	
	Maintenance 4 (M4)	every	300,000	480 000	

* For Schedule I (severe service) vehicles equipped with an hourmeter, use maintenance intervals based on hours of operation rather than distance traveled.

† Use Schedule I (severe service) maintenance intervals for vehicles that operate under severe conditions, such as extremely poor roads, heavy dust accumulation, extreme climate, frequent short distance travel, construction-site operation, city operation (garbage truck), or farm operation.

General Information

00

Vehicle Maintenance Schedule Tables: 00–03

1st through 20th Maintenance for Service Schedule I Vehicles

Maint. No.	Required Maintenance Operation Interval	Service Date	Service I		
			Miles	km	Hours
1st	Initial Maintenance (IM)/M1		1000	1600	100
2nd	M1		2000	3200	200
3rd	M1		3000	4800	300
4th	M1		4000	6400	400
5th	M1 and M2		5000	8000	500
6th	M1		6000	9600	600
7th	M1		7000	11 200	700
8th	M1		8000	12 800	800
9th	M1		9000	14 400	900
10th	M1, M2, and M3		10,000	16 000	1000
11th	M1		11,000	17 600	1100
12th	M1		12,000	19 200	1200
13th	M1		13,000	20 800	1300
14th	M1		14,000	22 400	1400
15th	M1 and M2		15,000	24 000	1500
16th	M1		16,000	25 600	1600
17th	M1		17,000	27 200	1700
18th	M1		18,000	28 800	1800
19th	M1		19,000	30 400	1900
20th	M1, M2, M3, and M4		20,000	32 000	2000

21st through 40th Maintenance for Service Schedule I Vehicles

Maint. No.	Required Maintenance Operation Interval	Service Date	Service I		
			Miles	km	Hours
21st	M1		21,000	33 600	2100
22nd	M1		22,000	35 200	2200
23rd	M1		23,000	36 800	2300
24th	M1		24,000	38 400	2400
25th	M1 and M2		25,000	40 000	2500
26th	M1		26,000	41 600	2600
27th	M1		27,000	43 200	2700
28th	M1		28,000	44 800	2800
29th	M1		29,000	46 400	2900
30th	M1, M2, and M3		30,000	48 000	3000
31st	M1		31,000	49 600	3100