



*Run Smart™*

# BUSINESS CLASS® M2



## Maintenance Manual

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*Run Smart™*

## **BUSINESS CLASS M2 MAINTENANCE MANUAL**

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**Models: M2 100  
M2 106  
M2 106V  
M2 112  
M2 112V**

## 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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## 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 *Business Class M2 Maintenance Manual* page, see [Fig. 1](#).

The diagram shows a page from a maintenance manual. At the top left, 'A' points to the maintenance operation number '20-01'. At the top center, 'B' points to the group title 'Cooling'. At the top right, 'C' points to the group number '20'. At the bottom left, 'D' points to the release date '12/06/2001'. At the bottom right, 'E' points to the group number/page number '20/1'.

**20-01 Coolant Replacement**

**WARNING** Never remove the radiator cap while the engine is operating or while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if the cap is taken off too soon. Failure to follow these precautions could result in serious personal injury from heated coolant spray.

At the intervals specified in the Maintenance Schedule, or whenever the coolant becomes dirty, flush and refill the cooling system as follows:

- 1 When the engine is cool, remove the radiator cap. Turn the cap slowly to the left until it reaches a "stop." Do not press down while turning the cap. Wait until any remaining pressure (indicated by a hissing sound) is relieved, then press down on the cap and continue turning it to the left.
- 2 When the cap is removed, run the engine until the upper radiator hose is hot. (This shows that the thermostat is open and the coolant is flowing through the system.)
- 3 Stop the engine. Open the radiator drain valve to drain the coolant. Drainage may be speeded by removing the plug in the bottom of the water inlet.

**CAUTION** During filling, air must be vented from the engine coolant passages. Any air trapped in the system can cause severe engine damage.

- 4 Close the radiator drain valve and replace the plug in the bottom of the water inlet. Open the engine venting petcock. Add water until the system is filled and run the engine until the upper radiator hose is hot again. The system must be filled slowly to prevent air locks. Wait 2 to 3 minutes to allow air to be vented, then add the water to bring the level to the top.
- 5 Repeat the last two steps several times until the drained liquid is nearly colorless.
- 6 Drain the system, then close the radiator and block drain valves.
- 7 If equipped, disconnect all hoses from the coolant recovery tank. Remove the recovery tank and pour out any fluid. Scrub and clean the inside of the recovery tank with soap and water. Flush it well with clean water, then drain it. Reinstall the recovery tank and hoses.

**20-02 Cooling Fan Inspection**

**WARNING** Never pull or pry on the fan. This can damage the fan blade(s) and cause fan failure. Fan failure can cause personal injury.

A visual inspection of the cooling fan is required daily. Check for cracks, loose rivets, and bent or loose blades. Check the fan to make sure it is securely mounted. Tighten the capscrews if necessary. Replace any fan that is damaged.

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12/06/2001

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

**Fig. 1, Example of a Business Class M2 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>
Determining Scheduled Maintenance Intervals. . . . .	00-01
Initial Maintenance (IM) Operations. . . . .	00-06
M1 Lubrication and Fluid Level Check. . . . .	00-12
M1 Maintenance Operations. . . . .	00-07
M2 Lubrication and Fluid Level Check. . . . .	00-13
M2 Maintenance Operations. . . . .	00-08
M3 Maintenance Operations. . . . .	00-09
M4 Maintenance Operations. . . . .	00-10
M5 Maintenance Operations. . . . .	00-11
Maintenance Intervals for Schedule I. . . . .	00-03
Maintenance Intervals for Schedules II and III. . . . .	00-04
Maintenance Schedules. . . . .	00-02
Metric/U.S. Customary and Temperature Conversions . . . . .	00-17
Noise Emission Controls. . . . .	00-15
Overview of Maintenance Operations . . . . .	00-05
Torque Specifications. . . . .	00-18
Verification of Inspections Log. . . . .	00-16



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**Determining Scheduled Maintenance Intervals: 00–01**

## Determining Scheduled Maintenance Intervals

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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 the three schedules. Before placing your vehicle in service, determine whether Schedule I, II, or III applies to your vehicle.

### Schedules I-III

**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 up to 60,000 miles (100 000 kilometers) 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

**Schedule III** (long-haul transport) is for vehicles that travel more than 60,000 miles (100 000 kilometers) annually with minimal city or stop-and-go operation. Examples of Schedule III usage are:

- regional delivery that is mostly freeway miles
- interstate transport

- any road operation with high annual mileage

## Maintenance Schedules

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

## Maintenance Intervals

Refer to Maintenance Intervals for Schedule I, Schedule II, and Schedule III to determine which maintenance interval(s) should be performed when your vehicle reaches the mileage or hours of operation listed in these tables.

## Maintenance Operations

Groups 01 through 83 in this manual have an index at the beginning of each Group. The index lists the Title of Maintenance Operations and the maintenance Operation (MOP) Numbers 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 the daily maintenance procedures in **Chapter 11**, "Pretrip Inspection and Daily Maintenance," in the *Business Class® M2 Driver's Manual*.

Maintenance Schedules: 00–02

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
<b>Schedule II</b> (short-haul transport) for vehicles that travel up to 60,000 miles (100 000 km) 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	
<b>Schedule III</b> (long-haul transport) for vehicles that travel over 60,000 miles (100 000 km) annually	Initial Maintenance (IM)	first	10,000	16 000	—
	Maintenance 1 (M1)	every	10,000	16 000	
	Maintenance 2 (M2)	every	20,000	32 000	
	Maintenance 3 (M3)	every	40,000	64 000	
	Maintenance 4 (M4)	every	80,000	128 000	
	Maintenance 5 (M5)	every	160,000	256 000	

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

Table 1, Maintenance Schedules