



*Run Smart™*

# BUSINESS CLASS® M2



## Maintenance Manual

# **BUSINESS CLASS M2 MAINTENANCE MANUAL**

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

## 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, the operation number '20-01' is highlighted with an arrow labeled 'A'. To its right, the group title 'Cooling' is highlighted with an arrow labeled 'B'. Further right, the group number '20' is highlighted with an arrow labeled 'C'. At the bottom left, the release date 'December 2001' is highlighted with an arrow labeled 'D'. At the bottom right, the page number '20/1' is highlighted with an arrow labeled 'E'.

**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**

## Maintenance Intervals for Schedule I: 00–03

Maintenance Intervals for Schedule I					
Maintenance Sequence	Maintenance Interval	Service Date	Miles	km	Hours
1st	IM and M1		1000	1600	100
2nd	M1		2000	3200	200
3rd	M1		3000	4800	300
4th	M1 and M2		4000	6400	400
5th	M1		5000	8000	500
6th	M1		6000	9600	600
7th	M1		7000	11 200	700
8th	M1, M2, and M3		8000	12 800	800
9th	M1		9000	14 400	900
10th	M1		10,000	16 000	1000
11th	M1		11,000	17 600	1100
12th	M1 and M2		12,000	19 200	1200
13th	M1		13,000	20 800	1300
14th	M1		14,000	22 400	1400
15th	M1		15,000	24 000	1500
16th	M1, M2, M3, and M4		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 and M2		20,000	32 000	2000
21st	M1		21,000	33 600	2100
22nd	M1		22,000	35 200	2200
23rd	M1		23,000	36 800	2300
24th	M1, M2, and M3		24,000	38 400	2400
25th	M1		25,000	40 000	2500
26th	M1		26,000	41 600	2600
27th	M1		27,000	43 200	2700
28th	M1 and M2		28,000	44 800	2800
29th	M1		29,000	46 400	2900
30th	M1		30,000	48 000	3000
31st	M1		31,000	49 600	3100
32nd	M1, M2, M3, M4, and M5		32,000	51 200	3200

Table 2, Maintenance Intervals for Schedule I



## Maintenance Intervals for Schedules II and III: 00–04

Maintenance Intervals for Schedules II and III						
Maintenance Sequence	Maintenance Interval	Service Date	Schedule II		Schedule III	
			Miles	km	Miles	km
1st	IM and M1		8000	12 000	10,000	16 000
2nd	M1 and M2		16,000	24 000	20,000	32 000
3rd	M1		24,000	36 000	30,000	48 000
4th	M1, M2, and M3		32,000	48 000	40,000	64 000
5th	M1		40,000	60 000	50,000	80 000
6th	M1 and M2		48,000	72 000	60,000	96 000
7th	M1		56,000	84 000	70,000	112 000
8th	M1, M2, M3, and M4		64,000	96 000	80,000	128 000
9th	M1		72,000	108 000	90,000	144 000
10th	M1 and M2		80,000	120 000	100,000	160 000
11th	M1		88,000	132 000	110,000	176 000
12th	M1, M2, and M3		96,000	144 000	120,000	192 000
13th	M1		104,000	156 000	130,000	208 000
14th	M1, and M2		112,000	168 000	140,000	224 000
15th	M1		120,000	180 000	150,000	240 000
16th	M1, M2, M3, M4, and M5		128,000	192 000	160,000	256 000
17th	M1		136,000	204 000	170,000	272 000
18th	M1 and M2		144,000	216 000	180,000	288 000
19th	M1		152,000	228 000	190,000	304 000
20th	M1, M2, and M3		160,000	240 000	200,000	320 000
21st	M1		168,000	252 000	210,000	336 000
22nd	M1 and M2		176,000	264 000	220,000	352 000
23rd	M1		184,000	276 000	230,000	368 000
24th	M1, M2, M3, and M4		192,000	288 000	240,000	384 000
25th	M1		200,000	300 000	250,000	400 000
26th	M1 and M2		208,000	312 000	260,000	416 000
27th	M1		216,000	324 000	270,000	432 000
28th	M1, M2, and M3		224,000	336,000	280,000	448 000
29th	M1		232,000	348 000	290,000	464 000
30th	M1 and M2		240,000	360 000	300,000	480 000
31st	M1		248,000	372 000	310,000	496 000
32nd	M1, M2, M3, M4, and M5		256,000	384 000	320,000	512 000

Table 3, Maintenance Intervals for Schedules II and III

Overview of Maintenance Operations: 00–05

Maintenance Operations for Groups 00 through 88							
Maintenance Operation No.	Title of Maintenance Operation	Maintenance Intervals					
		IM	M1	M2	M3	M4	M5
01-01	Engine Drive Belt Inspecting				•	•	•
01-02	Engine Support Fastener Checking					•	•
09-01	Air Cleaner Element Inspecting and Replacing					•	•
13-01	Air Compressor Inspecting			•	•	•	•
15-01	Alternator, Battery, and Starter Checking					•	•
20-01	Radiator Cap Inspecting			•	•	•	•
20-02	Radiator Pressure Flushing and Coolant Changing					•	•
20-03	Fan Drive Inspecting (Noise Emission Control)			•	•	•	•
20-04	Hybrid Electric System Coolant Changing					•	•
25-01	Eaton Fuller Clutch Release Bearing Lubricating	•	•	•	•	•	•
25-02	Eaton Fuller Clutch Release Cross-Shaft Lubricating	•	•	•	•	•	•
25-03	Clutch Hydraulic Fluid Level Checking	•	•	•	•	•	
25-04	Clutch Hydraulic Fluid Changing						•
25-05	Clutch Adjusting, Manually Adjusted Clutches	•	•	•	•	•	•
26-01	Manual Transmission Fluid Level Checking	•	•	•	•		
26-02	Eaton Fuller Transmission Fluid Changing and Magnetic Plug Cleaning*			•	•	•	•
26-03	Allison and Eaton Fuller Transmission Breather Checking	•	•	•	•	•	•
26-04	Eaton Fuller Transmission Air Filter/Regulator Element Cleaning			•	•	•	•
26-05	Allison Transmission Fluid and Filter Changing				•	•	•
26-06	Mercedes-Benz Transmission Fluid Changing and Magnetic Plug Cleaning						•
26-07	Mercedes-Benz Transmission Leak Checking						•
31-01	Frame Fastener Torque Checking	•				•	•
31-02	Fifth Wheel Inspecting	•	•	•	•	•	•
31-03	Fifth Wheel Lubricating	•	•	•	•	•	•
31-04	Trailer Electrical Connector Lubricating	•	•	•	•	•	•
32-01	Suspension Inspecting	•	•	•	•	•	•
32-02	Suspension Lubricating	•	•	•	•	•	•
32-03	Suspension U-Bolt Torque Checking	•			•	•	•
33-01	Kingpin Lubricating†	•	•	•	•	•	•
33-02	Tie Rod End Lubricating†	•	•	•	•	•	•
33-03	Draw Key Nut Torque Checking	•			•	•	•
33-04	Tie Rod End Inspecting	•	•	•	•	•	•

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