
Business Class Trucks Maintenance Manual Contents

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BUSINESS CLASS TRUCKS MAINTENANCE MANUAL

**Models: FL50
FL60
FL70
FL80
FL106
FL112
MB50
MB60
MB70
MB80**

For a page example of the printed manual, see Fig. 1.

The diagram shows a page from a manual with the following layout:

- Top Left:** Callout A points to the top margin.
- Top Center:** Callout B points to the title "Frame and Fifth Wheel".
- Top Right:** Callout C points to the page number "31".
- Left Column:**
 - Section 1:** "31-01 Frame Fastener Torque Checking"
 - 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"
 - 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**
 1. Disconnect the tractor from the trailer. For instructions, refer to the vehicle driver's manual.
 2. Thoroughly steam-clean the fifth wheel.
 3. Look for cracks in the fifth wheel assembly, mounting brackets, and mounting parts.
- Right Column:**
 4. Check moving parts for wear or damage.
 5. Test the safety lock latch for free operation.
 6. Check for loose nuts or bolts in the fifth wheel and in the mounting.
 7. Check all springs to see if they are securely fastened and not deformed.
 8. Check wedge adjustment.
 - 8.1 Open the kingpin lock and vertically insert a 2-inch diameter shaft.
 - 8.2 Release the lock by tripping the release latch at the bottom of the throat.
 - 8.3 Adjust the wedge stop at the end of the wedge to approximately 1/4-inch (6-mm) clearance.
 9. If you observe any problems when doing the above steps, correct them immediately. For instructions, refer to the fifth wheel section in the vehicle service manual.
 10. Oil all moving parts on the fifth wheel, and grease the top plate and the two zerk fittings for the bracket bearing area.
 11. Replace cracked, worn, or damaged parts with new parts. Replace loose mounting bolts with 5/8-11 SAE grade 8 bolts, grade C locknuts, and hardened washers. Do not re-use bolts, nuts, and washers on fifth wheel mountings.
- Bottom Section:**
 - HOLLAND**
 1. Disconnect the tractor from the trailer. For instructions, refer to the vehicle driver's manual.
 2. Thoroughly steam-clean the fifth wheel.
 3. Check for loose nuts or broken bolts on the fifth wheel assembly.
 4. Inspect for cracks or wear on the mounting bolts.
 5. Check for improper locking action and for cracks or wear on the jaw locking mechanism.

At the bottom of the page, there is a footer: "Heavy Trucks Maintenance Manual, November 1993" on the left and "31/1" on the right. Callout D points to the footer on the left, and callout E points to the footer on the right.

11/28/2001 f020034

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, Page Example of the Printed Manual

Title of Maintenance Operation (MOP)	MOP Number
Initial Maintenance (IM) Operations Table	00-09
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Lubrication and Fluid Level Check (M1, all models but FL112).	00-15
Lubrication and Fluid Level Check (M2, all models but FL112).	00-16
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General Information

Federal Law, Part 205: Transportation Equipment Noise Emission Controls

Part 205, Transportation Equipment Noise Emission Controls, requires the vehicle manufacturer to furnish, with each new vehicle, such written instructions for the proper maintenance, use, and repair of the vehicle by the ultimate purchaser to provide reasonable assurance of the elimination or minimization of noise emission degradation throughout the life of the vehicle. In compliance with the law, the Noise Emission Control Systems maintenance located in each applicable group within this manual, in conjunction with the vehicle service manual, provides these instructions to owners.

Normal Vehicle Use

The maintenance instructions contained in this manual are based on average vehicle use and normal operating conditions. Unusual vehicle operating conditions may require service at more frequent intervals.

Recommendations for Replacement Parts

Replacement parts used for maintenance or for the repair of noise emission control systems should be genuine Freightliner parts. If other than genuine Freightliner parts are used for replacements or for the repair of components affecting noise emission control, the owner should be sure that such parts are warranted by their manufacturer to be equivalent to genuine Freightliner parts in performance and durability.

Freightliner Noise Emissions Warranty

Refer to the vehicle owner's warranty information book for warranty information concerning noise emission control systems.

Tampering With the Noise Control System is Prohibited

Federal law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or ele-

ment of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person. Among those acts presumed to constitute tampering are the acts listed below:

- A. Removal of engine noise-deadening panels.
- B. Removal of or rendering the engine speed governor inoperative so as to allow engine speed to exceed manufacturer's specifications.
- C. Removal of or rendering inoperative the fan clutch, including by-passing the control on any thermostatic fan drive to cause it to operate continuously.
- D. Removal of the fan shroud.
- E. Removal of or rendering inoperative exhaust system components, including exhaust pipe clamping.
- F. Removal of air intake system components.
- G. Removal of hood liners (noise-deadening panels).

Maintenance Instructions

Scheduled intervals are in the maintenance tables in Group 00 of this manual. A "Verification of Inspections Log" is contained in the following table, and should be filled in each time the noise emission controls on the vehicle are maintained or repaired.

Verification of Inspections Log: 00–02

Verification of Inspections Log

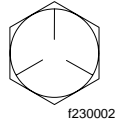
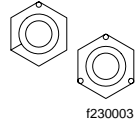
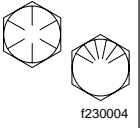
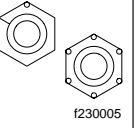
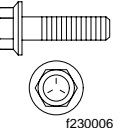
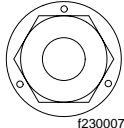
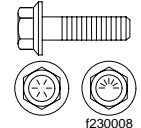
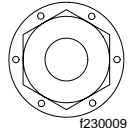
Verification of Inspections Log — Group 20

Verification of Inspections Log — Group 20 — Engine Cooling/Radiator				
Date	Mileage	Repair Description	Cost	Repair Facility

Verification of Inspections Log — Group 49

Verification of Inspections Log — Group 49 — Exhaust				
Date	Mileage	Repair Description	Cost	Repair Facility

Torque Specifications Tables: 00–03

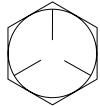
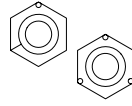
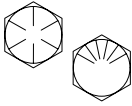
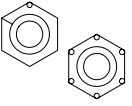
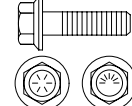
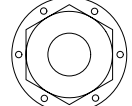
Torque Values for U.S. Customary Thread Fasteners with Lubricated * or Plated Threads †								
Thread Diameter–Pitch	Regular Hex				Flanged			
	Grade 5 Bolt	Grade 5 or B Nut	Grade 8 or 8.2 Bolt	Grade 8 or C Nut	Grade 5 Bolt	Grade B Nut	Grade 8 or 8.2 Bolt	Grade G Nut
	Torque: lbf-ft (N-m)		Torque: lbf-ft (N-m)		Torque: lbf-ft (N-m)		Torque: lbf-ft (N-m)	
	 f230002	 f230003	 f230004	 f230005	 f230006	 f230007	 f230008	 f230009
1/4–20	7 (9)		8 (11)		6 (8)		10 (14)	
1/4–28	8 (11)		9 (12)		7 (9)		12 (16)	
5/16–18	15 (20)		16 (22)		13 (18)		21 (28)	
5/16–24	16 (22)		17 (23)		14 (19)		23 (31)	
3/8–16	26 (35)		28 (38)		23 (31)		37 (50)	
3/8–24	30 (41)		32 (43)		25 (34)		42 (57)	
7/16–14	42 (57)		45 (61)		35 (47)		60 (81)	
7/16–20	47 (64)		50 (68)		40 (54)		66 (89)	
1/2–13	64 (87)		68 (92)		55 (75)		91 (123)	
1/2–20	72 (98)		77 (104)		65 (88)		102 (138)	
9/16–12	92 (125)		98 (133)		80 (108)		130 (176)	
9/16–18	103 (140)		110 (149)		90 (122)		146 (198)	
5/8–11	128 (173)		136 (184)		110 (149)		180 (244)	
5/8–18	145 (197)		154 (209)		130 (176)		204 (277)	
3/4–10	226 (306)		241 (327)		200 (271)		320 (434)	
3/4–16	253 (343)		269 (365)		220 (298)		357 (484)	
7/8–9	365 (495)		388 (526)		320 (434)		515 (698)	
7/8–14	402 (545)		427 (579)		350 (475)		568 (770)	
1–8	—		582 (789)		—		—	
1–12	—		637 (863)		—		—	
1–14	—		652 (884)		—		—	

* Freightliner recommends that all plated and unplated fasteners be coated with oil before installation.

† Use these torque values if either the bolt or nut is lubricated or plated (zinc-phosphate conversion-coated, cadmium-plated, or waxed).

Table 1, Torque Values for U.S. Customary Thread Fasteners with Lubricated or Plated Threads

Torque Specifications Tables: 00–03

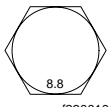
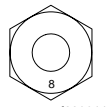
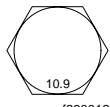
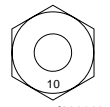
Torque Values for U.S. Customary Thread Fasteners with Dry (Unlubricated) * Plain (Unplated) Threads †						
Thread Diameter–Pitch	Regular Hex				Flanged	
	Grade 5 Bolt	Grade 5 or B Nut	Grade 8 or 8.2 Bolt	Grade 8 or C Nut	Grade 8 or 8.2 Bolt	Grade G Nut
	Torque: lbf-ft (N·m)		Torque: lbf-ft (N·m)		Torque: lbf-ft (N·m)	
	 f230002	 f230003	 f230004	 f230005	 f230008	 f230009
1/4–20	8 (11)		10 (14)		—	
1/4–28	9 (12)		12 (16)		—	
5/16–18	15 (20)		22 (30)		22 (30)	
5/16–24	17 (23)		25 (34)		—	
3/8–16	28 (38)		40 (54)		40 (54)	
3/8–24	31 (42)		45 (61)		—	
7/16–14	45 (61)		65 (88)		65 (88)	
7/16–20	50 (68)		70 (95)		—	
1/2–13	70 (95)		95 (129)		95 (129)	
1/2–20	75 (102)		110 (149)		—	
9/16–12	100 (136)		140 (190)		140 (190)	
9/16–18	110 (149)		155 (210)		—	
5/8–11	135 (183)		190 (258)		190 (258)	
5/8–18	155 (210)		215 (292)		—	
3/4–10	240 (325)		340 (461)		340 (461)	
3/4–16	270 (366)		380 (515)		—	
7/8–9	385 (522)		540 (732)		—	
7/8–14	425 (576)		600 (813)		—	
1–8	580 (786)		820 (1112)		—	
1–12	635 (861)		900 (1220)		—	
1–14	650 (881)		915 (1241)		—	

* Threads may have residual oil, but will be dry to the touch.

† Male and female threads (bolt and nut) must both be unlubricated and unplated; if either is plated or lubricated, use [Table 1](#). Freightliner recommends that all plated and unplated fasteners be coated with oil before installation.

Table 2, Torque Values for U.S. Customary Thread Fasteners with Dry (Unlubricated) Plain (Unplated) Threads

Torque Specifications Tables: 00-03

Torque Values for Metric Thread Fasteners with Lubricated * or Plated Threads †				
Thread Diameter-Pitch	Class 8.8 Bolt	Class 8 Nut	Class 10.9 Bolt	Class 10 Nut
	Torque: lbf-ft (N-m)		Torque: lbf-ft (N-m)	
	 f230010	 f230011	 f230012	 f230013
M6	5 (7)		7 (9)	
M8	12 (16)		17 (23)	
M8 x 1	13 (18)		18 (24)	
M10	24 (33)		34 (46)	
M10 x 1.25	27 (37)		38 (52)	
M12	42 (57)		60 (81)	
M12 x 1.5	43 (58)		62 (84)	
M14	66 (89)		95 (129)	
M14 x 1.5	72 (98)		103 (140)	
M16	103 (140)		148 (201)	
M16 x 1.5	110 (149)		157 (213)	
M18	147 (199)		203 (275)	
M18 x 1.5	165 (224)		229 (310)	
M20	208 (282)		288 (390)	
M20 x 1.5	213 (313)		320 (434)	
M22	283 (384)		392 (531)	
M22 x 1.5	315 (427)		431 (584)	
M24	360 (488)		498 (675)	
M24 x 2	392 (531)		542 (735)	
M27	527 (715)		729 (988)	
M27 x 2	569 (771)		788 (1068)	
M30	715 (969)		990 (1342)	
M30 x 2	792 (1074)		1096 (1486)	

* Freightliner recommends that all plated and unplated fasteners be coated with oil before installation.
 † Use these torque values if either the bolt or nut is lubricated or plated (zinc-phosphate conversion-coated, cadmium-plated, or waxed).

Table 3, Torque Values for Metric Thread Fasteners with Lubricated or Plated Threads

Metric/U.S. Customary Conversion Tables: 00–04

When You Know U.S. Customary	Multiply By	To Get Metric	When You Know Metric	Multiply By	To Get U.S. Customary
Length					
inches (in)	25.4	millimeters (mm)		0.03937	inches (in)
inches (in)	2.54	centimeters (cm)		0.3937	inches (in)
feet (ft)	0.3048	meters (m)		3.281	feet (ft)
yards (yd)	0.9144	meters (m)		1.094	yards (yd)
miles (mi)	1.609	kilometers (km)		0.6215	miles (mi)
Area					
square inches (in ²)	645.16	square millimeters (mm ²)		0.00155	square inches (in ²)
square inches (in ²)	6.452	square centimeters (cm ²)		0.155	square inches (in ²)
square feet (ft ²)	0.0929	square meters (m ²)		10.764	square feet (ft ²)
Volume					
cubic inches (in ³)	16387.0	cubic millimeter (mm ³)		0.000061	cubic inches (in ³)
cubic inches (in ³)	16.387	cubic centimeters (cm ³)		0.06102	cubic inches (in ³)
cubic inches (in ³)	0.01639	liters (L)		61.024	cubic inches (in ³)
fluid ounces (fl oz)	29.54	milliliters (mL)		0.03381	fluid ounces (fl oz)
pints (pt)	0.47318	liters (L)		2.1134	pints (pt)
quarts (qt)	0.94635	liters (L)		1.0567	quarts (qt)
gallons (gal)	3.7854	liters (L)		0.2642	gallons (gal)
cubic feet (ft ³)	28.317	liters (L)		0.03531	cubic feet (ft ³)
cubic feet (ft ³)	0.02832	cubic meters (m ³)		35.315	cubic feet (ft ³)
Weight/Force					
ounces (av) (oz)	28.35	grams (g)		0.03527	ounces (av) (oz)
pounds (av) (lb)	0.454	kilograms (kg)		2.205	pounds (av) (lb)
U.S. tons (t)	907.18	kilograms (kg)		0.001102	U.S. tons (t)
U.S. tons (t)	0.90718	metric tons (t)		1.1023	U.S. tons (t)
Torque/Work Force					
inch–pounds (lbf-in)	11.298	Newton–centimeters (N-cm)		0.08851	inch–pounds (lbf-in)
foot–pounds (lbf-ft)	1.3558	Newton–meters (N-m)		0.7376	foot–pounds (lbf-ft)
Pressure/Vacuum					
inches of mercury (inHg)	3.37685	kilo Pascals (kPa)		0.29613	inches of mercury (inHg)
pounds per square inch (psi)	6.895	kilo Pascals (kPa)		0.14503	pounds per square inch (psi)

Table 4, Metric/U.S. Customary Conversion

When You Know	Subtract	Then Divide By	To Get	When You Know	Multiply By	Then Add	To Get
degrees Fahrenheit (°F)	32	1.8	degrees Celsius (°C)	degrees Celsius (°C)	1.8	32	degrees Fahrenheit (°F)

Table 5, Temperature Conversion

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