



Run Smart™

COLUMBIA



Maintenance Manual



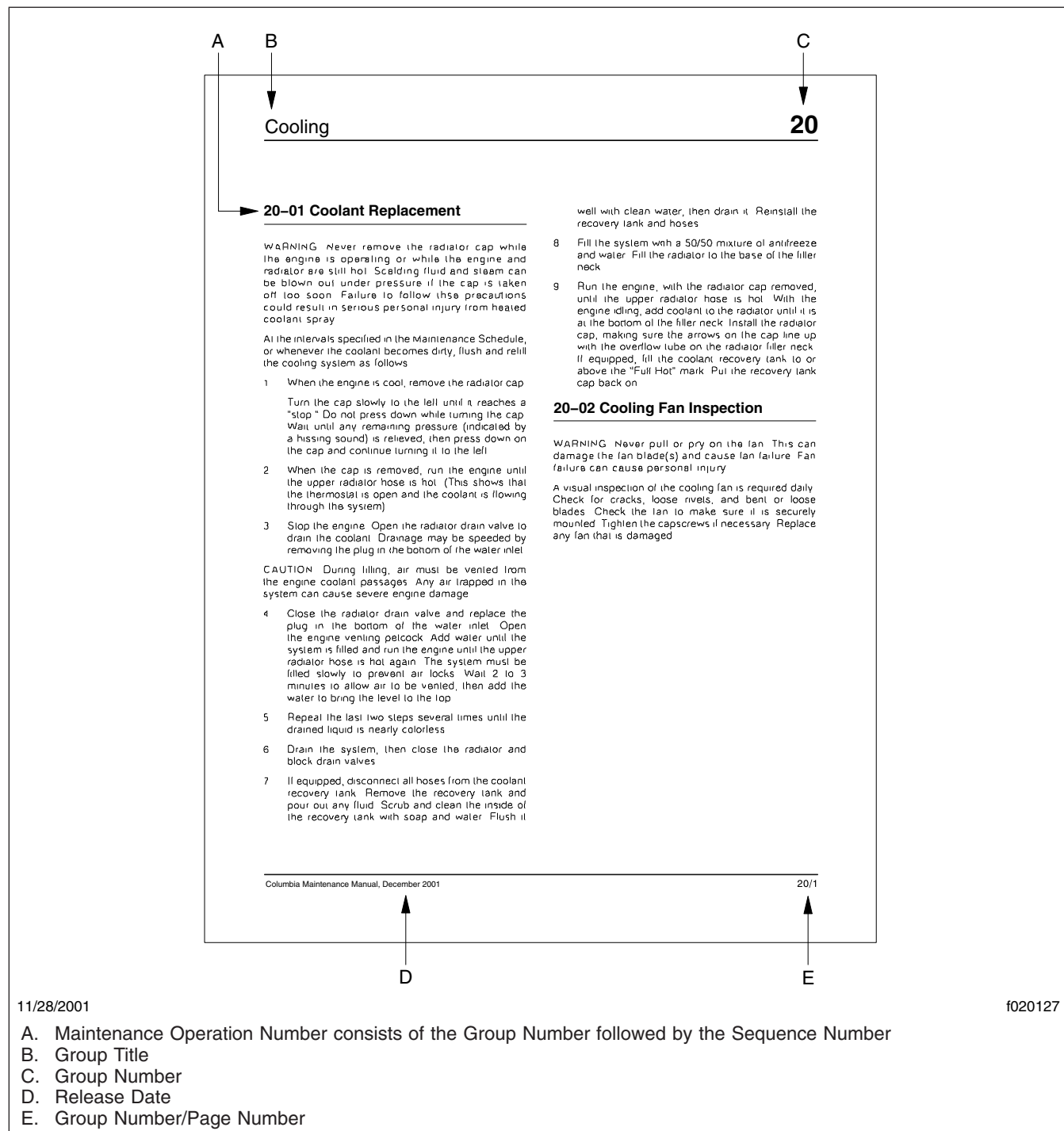
Run Smart™

COLUMBIA MAINTENANCE MANUAL

**Models: CL112
CL120**

Page Description

For an example of a *Columbia Maintenance Manual* page, see **Fig. 1**.



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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 Columbia 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
60	Cab
72	Doors
83	Heater and Air Conditioner
88	Hood, Grille, and Cab Fenders

Title of Maintenance Operation (MOP)	MOP Number
Determining Scheduled Maintenance Intervals.	00-01
Initial Maintenance (IM) Operations.	00-05
Lubrication and Fluid Level Check	00-04
M1 Maintenance Interval Operations.	00-06
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Determining Scheduled Maintenance Intervals: 00–01

Determining Scheduled Maintenance Intervals

Performing regular maintenance on your Freightliner will help ensure that your Freightliner 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 the vehicle will be operating in. Generally, most vehicles operate under conditions that fall within one of the four types of service described. Before placing your new vehicle in service, determine the type of service (Service Schedule I, II, III, or IV) that applies to the intended use of the vehicle. After determining the vehicle's type of service, refer to the service schedule table or the vehicle maintenance schedule table, to determine how often maintenance should be performed.

When the vehicle reaches the distance given for a maintenance interval, see the Maintenance Interval Operation Table for a list of the maintenance operations to be performed at that maintenance interval. Use the maintenance operation reference 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.

Service Schedule IV (long haul transport for Optimized Vehicle Configuration) is for vehicles that annually travel **over** 60,000 miles (100 000 km) **and** meet the following qualifications:

- Meritor 15-1/2 inch dampened/ceramic Lite Pedal LTD clutch with sealed release bearing.
- Synthetic transmission fluid used in transmission.
- Meritor FF-961 or FF-981 front axle (12,000 lb. capacity) with synthetic lubricant.
- Front suspension with maintenance-free rubber bushings for 12,000 lb. capacity suspension.
- Meritor RPL series, or Dana Spicer SPL series driveline U-joints.
- Synthetic lubricant used in rear axle.
- Equipped with any Freightliner AirLiner suspension.
- Equipped with Meritor Q-Plus extended-lube cam brakes and automatic slack adjusters, front and rear.
- Standard brake system package including Bendix AD-9 air dryer—mounted on the right-hand frame rail, located directly behind the front bumper—with heater, and a Bendix air compressor.
- TRW TAS65 power steering.

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.

Service Schedule Table: 00–02

Service Schedule	Maintenance Interval Operation	Maintenance Interval			
		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	50
	Maintenance 1 (M1)	every	1000	1600	50
	Maintenance 2 (M2)	every	5000	8000	500
	Maintenance 3 (M3)	every	15,000	24 000	1500
Schedule II† (Short-Haul Transport) vehicles that annually travel less than 60,000 miles (100 000 km)	Initial Maintenance (IM)	first	10,000	16 000	—
	Maintenance 1 (M1)	every	10,000	16 000	
	Maintenance 2 (M2)	every	50,000	80 000	
	Maintenance 3 (M3)	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	25,000	40 000	—
	Maintenance 1 (M1)	every	25,000	40 000	
	Maintenance 2 (M2)	every	100,000	161 000	
	Maintenance 3 (M3)	every	300,000	483 000	
Schedule IV† (Long-Haul Transport for Optimized Vehicle Configuration) vehicles that annually travel over 60,000 miles (100 000 km)	Initial Maintenance (IM)	first	25,000	40 000	—
	Maintenance 1 (M1)	every	25,000	40 000	
	Maintenance 2 (M2)	every	100,000	161 000	
	Maintenance 3 (M3)	every	300,000	483 000	

* 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.

Table 1, Service Schedule

Vehicle Maintenance Schedule Tables: 00–03

1st through 30th Maintenance for Service Schedules I and II							
Maint. No.	Maintenance Interval	Service Date	Service Schedule I			Service Schedule II	
			Miles	km	Hours	Miles	km
1st	IM and M1		1000	1600	100	10,000	16 000
2nd	M1		2000	3200	200	20,000	32 000
3rd	M1		3000	4800	300	30,000	48 000
4th	M1		4000	6400	400	40,000	64 000
5th	M1 and M2		5000	8000	500	50,000	80 000
6th	M1		6000	9600	600	60,000	96 000
7th	M1		7000	11 200	700	70,000	112 000
8th	M1		8000	12 800	800	80,000	128 000
9th	M1		9000	14 400	900	90,000	144 000
10th	M1 and M2		10,000	16 000	1000	100,000	160 000
11th	M1		11,000	17 600	1100	110,000	176 000
12th	M1		12,000	19 200	1200	120,000	192 000
13th	M1		13,000	20 800	1300	130,000	208 000
14th	M1		14,000	22 400	1400	140,000	224 000
15th	M1, M2, and M3		15,000	24 000	1500	150,000	240 000
16th	M1		16,000	25 600	1600	160,000	256 000
17th	M1		17,000	27 200	1700	170,000	272 000
18th	M1		18,000	28 800	1800	180,000	288 000
19th	M1		19,000	30 400	1900	190,000	304 000
20th	M1 and M2		20,000	32 000	2000	200,000	320 000
21st	M1		21,000	33 600	2100	210,000	336 000
22nd	M1		22,000	35 200	2200	220,000	352 000
23rd	M1		23,000	36 800	2300	230,000	368 000
24th	M1		24,000	38 400	2400	240,000	384 000
25th	M1 and M2		25,000	40 000	2500	250,000	400 000
26th	M1		26,000	41 600	2600	260,000	416 000
27th	M1		27,000	43 200	2700	270,000	432 000
28th	M1		28,000	44 800	2800	280,000	448 000
29th	M1		29,000	46 400	2900	290,000	464 000
30th	M1, M2, and M3		30,000	48 000	3000	300,000	480 000

Table 2, 1st through 30th Maintenance for Service Schedules I and II

Vehicle Maintenance Schedule Tables: 00–03

31st through 60th Maintenance for Service Schedules I and II							
Maint. No.	Maintenance Interval	Service Date	Service Schedule I			Service Schedule II	
			Miles	km	Hours	Miles	km
31st	M1		31,000	49 600	3100	310,000	496 000
32nd	M1		32,000	51 200	3200	320,000	512 000
33rd	M1		33,000	52 800	3300	330,000	528 000
34th	M1		34,000	54 400	3400	340,000	544 000
35th	M1 and M2		35,000	56 000	3500	350,000	560 000
36th	M1		36,000	57 600	3600	360,000	576 000
37th	M1		37,000	59 200	3700	370,000	592 000
38th	M1		38,000	60 800	3800	380,000	608 000
39th	M1		39,000	62 400	3900	390,000	624 000
40th	M1 and M2		40,000	64 000	4000	400,000	640 000
41st	M1		41,000	65 600	4100	410,000	656 000
42nd	M1		42,000	67 200	4200	420,000	672 000
43rd	M1		43,000	68 800	4300	430,000	688 000
44th	M1		44,000	70 400	4400	440,000	704 000
45th	M1, M2, and M3		45,000	72 000	4500	450,000	720 000
46th	M1		46,000	73 600	4600	460,000	736 000
47th	M1		47,000	75 200	4700	470,000	752 000
48th	M1		48,000	76 800	4800	480,000	768 000
49th	M1		49,000	78 400	4900	490,000	784 000
50th	M1 and M2		50,000	80 000	5000	500,000	800 000
51st	M1		51,000	82 000	5100	510,000	820 000
52nd	M1		52,000	83 700	5200	520,000	837 000
53rd	M1		53,000	85 300	5300	530,000	853 000
54th	M1		54,000	86 900	5400	540,000	869 000
55th	M1 and M2		55,000	88 500	5500	550,000	885 000
56th	M1		56,000	90 100	5600	560,000	901 000
57th	M1		57,000	91 700	5700	570,000	917 000
58th	M1		58,000	93 300	5800	580,000	933 000
59th	M1		59,000	94 900	5900	590,000	949 000
60th	M1, M2, and M3		60,000	96 500	6000	600,000	965 000

Table 3, 31st through 60th Maintenance for Service Schedules I and II

Vehicle Maintenance Schedule Tables: 00–03

61st through 90th Maintenance for Service Schedules I and II							
Maint. No.	Maintenance Interval	Service Date	Service Schedule I			Service Schedule II	
			Miles	km	Hours	Miles	km
61st	M1		61,000	98 200	6100	610,000	982 000
62nd	M1		62,000	99 800	6200	620,000	998 000
63rd	M1		63,000	101 400	6300	630,000	1 014 000
64th	M1		64,000	103 000	6400	640,000	1 030 000
65th	M1 and M2		65,000	104 600	6500	650,000	1 046 000
66th	M1		66,000	106 200	6600	660,000	1 062 000
67th	M1		67,000	107 800	6700	670,000	1 078 000
68th	M1		68,000	109 400	6800	680,000	1 094 000
69th	M1		69,000	111 000	6900	690,000	1 110 000
70th	M1 and M2		70,000	112 700	7000	700,000	1 127 000
71st	M1		71,000	114 300	7100	710,000	1 143 000
72nd	M1		72,000	115 900	7200	720,000	1 159 000
73rd	M1		73,000	117 500	7300	730,000	1 175 000
74th	M1		74,000	119 100	7400	740,000	1 191 000
75th	M1, M2, and M3		75,000	120 700	7500	750,000	1 207 000
76th	M1		76,000	122 300	7600	760,000	1 223 000
77th	M1		77,000	123 900	7700	770,000	1 239 000
78th	M1		78,000	125 500	7800	780,000	1 255 000
79th	M1		79,000	127 100	7900	790,000	1 271 000
80th	M1 and M2		80,000	128 700	8000	800,000	1 287 000
81st	M1		81,000	130 400	8100	810,000	1 304 000
82nd	M1		82,000	132 000	8200	820,000	1 320 000
83rd	M1		83,000	134 000	8300	830,000	1 340 000
84th	M1		84,000	135 200	8400	840,000	1 352 000
85th	M1 and M2		85,000	137 000	8500	850,000	1 370 000
86th	M1		86,000	138 400	8600	860,000	1 384 000
87th	M1		87,000	140 000	8700	870,000	1 400 000
88th	M1		88,000	141 600	8800	880,000	1 416 000
89th	M1		89,000	143 200	8900	890,000	1 432 000
90th	M1, M2, and M3		90,000	144 800	9000	900,000	1 448 000

Table 4, 61st through 90th Maintenance for Service Schedules I and II

Vehicle Maintenance Schedule Tables: 00–03

91st through 100th Maintenance for Service Schedules I and II							
Maint. No.	Maintenance Interval	Service Date	Service Schedule I			Service Schedule II	
			Miles	km	Hours	Miles	km
91st	M1		91,000	146 500	9100	910,000	1 465 000
92nd	M1		92,000	148 100	9200	920,000	1 481 000
93rd	M1		93,000	150 000	9300	930,000	1 500 000
94th	M1		94,000	151 300	9400	940,000	1 513 000
95th	M1 and M2		95,000	153 000	9500	950,000	1 530 000
96th	M1		96,000	155 000	9600	960,000	1 550 000
97th	M1		97,000	156 100	9700	970,000	1 561 000
98th	M1		98,000	157 700	9800	980,000	1 577 000
99th	M1		99,000	159 300	9900	990,000	1 593 000
100th	M1 and M2		100,000	160 900	10,000	1,000,000	1 609 000

Table 5, 91st through 100th Maintenance for Service Schedules I and II

1st through 20th Maintenance for Service Schedules III and IV				
Maint. No.	Maintenance Interval	Service Date	Service Schedules III and IV	
			Miles	km
1	IM and M1		25,000	40 000
2	M1		50,000	80 000
3	M1		75,000	121 000
4	M1 and M2		100,000	161 000
5	M1		125,000	201 000
6	M1		150,000	241 000
7	M1		175,000	281 000
8	M1 and M2		200,000	322 000
9	M1		225,000	362 000
10	M1		250,000	402 000
11	M1		275,000	443 000
12	M1, M2, and M3		300,000	483 000
13	M1		325,000	523 000
14	M1		350,000	563 000
15	M1		375,000	604 000
16	M1 and M2		400,000	644 000
17	M1		425,000	684 000
18	M1		450,000	724 000
19	M1		475,000	764 000

Vehicle Maintenance Schedule Tables: 00–03

1st through 20th Maintenance for Service Schedules III and IV				
Maint. No.	Maintenance Interval	Service Date	Service Schedules III and IV	
			Miles	km
20	M1 and M2		500,000	805 000

Table 6, 1st through 20th Maintenance for Service Schedules III and IV

21st through 40th Maintenance for Service Schedules III and IV				
Maint. No.	Maintenance Interval	Service Date	Service Schedules III and IV	
			Miles	km
21	M1		525,000	845 000
22	M1		550,000	885 000
23	M1		575,000	925 000
24	M1, M2, and M3		600,000	966 000
25	M1		625,000	1 005 800
26	M1		650,000	1 046 000
27	M1		675,000	1 086 000
28	M1 and M2		700,000	1 127 000
29	M1		725,000	1 167 000
30	M1		750,000	1 207 000
31	M1		775,000	1 248 000
32	M1 and M2		800,000	1 287 000
33	M1		825,000	1 328 000
34	M1		850,000	1 368 000
35	M1		875,000	1 408 000
36	M1, M2, and M3		900,000	1 448 000
37	M1		925,000	1 490 000
38	M1		950,000	1 529 000
39	M1		975,000	1 569 000
40	M1 and M2		1,000,000	1 609 000

Table 7, 21st through 40th Maintenance for Service Schedules III and IV

Lubrication and Fluid Level Check: 00–04

Maintenance Operation 00–04, Lubrication and Fluid Level Check Operation **Table 8** summarizes all operations that must be performed to complete the Lubrication and Fluid Level Check operation 00–04 called for as an M1 maintenance interval for Service Schedule I, II, and III vehicles, and as an M2 maintenance interval for Service Schedule IV vehicles.

Maintenance operation numbers given in the table are reference numbers used to help you find detailed instructions in the manual on the lubrication or fluid check.

Maintenance Operation 00–04 Lubrication and Fluid Level Check for Service Schedules I, II, III, and IV				
Maint. Operation Number	Operation Description	Service Schedules I, II, and III (at M1)	Service Schedule IV (at M2)	Check
25–01	Eaton Fuller Clutch Release Bearing Lubrication	•		
25–02	Clutch Release Cross-Shaft Lubrication		•	
25–03	Sleeve Assembly Bronze Bushing Lubrication		•	
26–02	Transmission Fluid Level Inspection		•	
31–02	Fifth Wheel Lubrication	•		
31–04	Trailer Electrical Connector Lubrication	•		
32–02	Suspension Lubrication	•		
33–01	Knuckle Pin Lubrication, Meritor Axles		•	
33–03	Tie Rod Lubrication, Meritor Axles		•	
33–05	Knuckle Pin Lubrication, Dana Spicer Axles	•		
33–06	Tie Rod Lubrication, Dana Spicer Axles	•		
33–09	Kingpin Lubrication, Detroit™ Axles*		•	
33–10	Tie Rod Lubrication, Detroit™ Axles*		•	
35–02	Axle Breather and Axle Lubricant Level Inspection		•	
41–02	Driveline Lubrication	•	•	
42–05	Dana Spicer Camshaft Bracket Lubrication	•		
42–06	Dana Spicer, Haldex, and Gunite Slack Adjuster Lubrication	•		
42–07	Meritor Camshaft Bracket Lubrication	•	•	
46–03	Power Steering Fluid Level Inspection		•	
46–04	Power Steering Gear Lubrication		•	
46–05	Drag Link Lubrication		•	
46–06	Rack and Pinion Inspection		•	
72–01	Door Seal, Door Latch, and Door Hinge Lubrication	•		
88–01	Hood Rear Support Lubrication	•		

* For Schedule II vehicles with Detroit axles, complete this procedure once a year or every 25,000 miles (40 000 km), whichever comes first.

Table 8, Maintenance Operation 00-04, Lubrication and Fluid Level Check for Service Schedules I, II, III, and IV

Initial Maintenance (IM) Operations: 00–05

The Initial Maintenance table 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 main-

tenance operations to be performed. All operations listed in the table, along with the operations listed in the applicable M1 maintenance interval table, must be performed to complete the initial maintenance (IM).

Maintenance Operation Number	Initial Maintenance (IM) Operations for Service Schedules I, II, III, and IV	Check
00–06	Perform all M1 Operations	
31–03	Frame Fastener Torque Check	
31–05	Premier 690 Coupling Inspection	
32–03	Suspension U-Bolt Torque Check	
33–04	All-Axle Alignment Check	
40–01	Wheel Nut Check	
47–03	Fuel Tank Band-Nut Tightening	

Table 9, Initial Maintenance (IM) Operations for Service Schedules I, II, III, and IV

M1 Maintenance Interval Operations: 00–06

The M1 Maintenance Interval Operations tables list all maintenance operations that are to be performed at the M1 maintenance interval. Maintenance operation numbers are reference numbers used to help you find detailed instructions in this manual on the maintenance operations to be performed.

IMPORTANT: After performing all operations listed in this table, perform all daily, weekly, and monthly maintenance operations listed in the "Pretrip and Post-Trip Inspections and Maintenance" chapter of the *Columbia® Driver's Manual*.

Maintenance Operation Number	M1 Maintenance Interval Operations for Service Schedules I, II, and III	Check
00–04	Lubrication and Fluid Level Check (includes the following) <ul style="list-style-type: none"> • Eaton Fuller Clutch Release Bearing Lubrication • Fifth Wheel Lubrication • Trailer Electrical Connector Lubrication • Suspension Lubrication • Knuckle Pin Lubrication, Dana Spicer Axles • Tie Rod Lubrication, Dana Spicer Axles • Driveline Lubrication • Dana Spicer Camshaft Bracket Lubrication • Dana Spicer, Haldex, and Gunite Slack Adjuster Lubrication • Door Seal, Door Latch, and Door Hinge Lubrication • Hood Rear Support Lubrication 	
13–01	Bendix Air Compressor Inspection	
20–03	Fan Clutch Check (noise emission control)	
31–01	Fifth Wheel Inspection	
31–05	Premier 690 Coupling Inspection	
41–01	Driveline Inspection	
42–07	Meritor Camshaft Bracket Lubrication	
42–10	Brake Inspection	
49–01	Exhaust System Inspection (noise emission control)	

Table 10, M1 Maintenance Interval Operations for Service Schedules I, II, and III

Maintenance Operation Number	M1 Maintenance Interval Operations for Service Schedule IV	Check
13–01	Bendix Air Compressor Inspection	
20–03	Fan Clutch Check (noise emission control)	
31–01	Fifth Wheel Inspection	
31–02	Fifth Wheel Lubrication	
31–04	Trailer Electrical Connector Lubrication	
31–05	Premier 690 Coupling Inspection	
42–07	Meritor Camshaft Bracket Lubrication	
42–10	Brake Inspection	

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