"M" Series Loader Backhoe Family

Service Manual

6-41490

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CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Bur 6-41500

Reprinted

Printed in U.S.A.
March, 2001

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NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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CASE CORPORATION
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Section

1001

STANDARD TORQUE SPECIFICATIONS

CASE CORPORATION
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Rac 8-71601

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphities, Molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs

Size	Pound-Inches	Newton metres
1/4 inch	108 to 132	12 to 15
5/16 inch	204 to 252	23 to 28
3/8 inch	420 to 504	48 to 57
Size	**Pound-Feet**	**Newton metres**
7/16 inch	54 to 64	73 to 87
1/2 inch	80 to 96	109 to 130
9/16 inch	110 to 132	149 to 179
5/8 inch	150 to 180	203 to 244
3/4 inch	270 to 324	366 to 439
7/8 inch	400 to 480	542 to 651
1.0 inch	580 to 696	787 to 944
1-1/8 inch	800 to 880	1085 to 1193
1-1/4 inch	1120 to 1240	1519 to 1681
1-3/8 inch	1460 to 1680	1980 to 2278
1-1/2 inch	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts, and Studs

Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	**Pound-Feet**	**Newton metres**
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618
7/8 inch	600 to 720	814 to 976
1.0 inch	900 to 1080	1220 to 1465
1-1/8 inch	1280 to 1440	1736 to 1953
1-1/4 inch	1820 to 2000	2468 to 2712
1-3/8 inch	2380 to 2720	3227 to 3688
1-1/2 inch	3160 to 3560	4285 to 4827

NOTE: *Use thick nuts with Grade 8 bolts.*

Retyped November,

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TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when specifications are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used.

Grade 8.8 Bolts, Nuts, and Studs

Size	Pound-Inches	Newton metres
M4	24 to 36	3 to 4
M5	60 to 72	7 to 8
M6	96 to 108	11 to 12
M8	228 to 276	26 to 31
M10	456 to 540	52 to 61
Size	**Pound-Feet**	**Newton metres**
M12	66 to 79	90 to 107
M14	106 to 127	144 to 172
M16	160 to 200	217 to 271
M20	320 to 380	434 to 515
M24	500 to 600	675 to 815
M30	920 to 1100	1250 to 1500
M36	1600 to 1950	2175 to 2600

Grade 10.9 Bolts, Nuts, and Studs

Size	Pound-Inches	Newton metres
M4	36 to 48	4 to 5
M5	84 to 96	9 to 11
M6	132 to 156	15 to 18
M8	324 to 384	37 to 43
Size	**Pound-Feet**	**Newton metres**
M10	54 to 64	73 to 87
M12	93 to 112	125 to 150
M14	149 to 179	200 to 245
M16	230 to 280	310 to 380
M20	450 to 540	610 to 730
M24	780 to 940	1050 to 1275
M30	1470 to 1770	2000 to 2400
M36	2580 to 3090	3500 to 4200

Grade 12.9 Bolts, Nuts, and Studs

Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
37 Degree Flare Fitting			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
3/4 inch 19.0 mm	1-1/16-12	40 to 80	54 to 108
7/8 inch 22.2 mm	1-3/16-12	60 to 100	81 to 135
1.0 inch 25.4 mm	1-5/16-12	75 to 117	102 to 158
1-1/4 inch 31.8 mm	1-5/8-12	125 to 165	169 to 223
1-1/2 inch 38.1 mm	1-7/8-12	210 to 250	285 to 338

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
Straight Threads with O-ring			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

Split Flange Mounting Bolts		
Size	Pound-Inches	Newton metres
5/16-18	180 to 240	20 to 27
3/8-16	240 to 300	27 to 34
7/16-14	420 to 540	47 to 61
Size	Pound-Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Inches	Newton metres	Thread Size	Pound-Inches	Newton metres
O-ring Face Seal End					**O-ring Boss End Fitting or Lock Nut**		
-4	1/4 inch 6.4 mm	9/16-18	120 to 144	14 to 16	7/16-20	204 to 240	23 to 27
-6	3/8 inch 9.5 mm	11/16-16	216 to 240	24 to 27	9/16-18	300 to 360	34 to 41
-8	1/2 inch 12.7 mm	13/16-16	384 to 480	43 to 54	3/4-16	540 to 600	61 to 68
					Thread Size	Pound-Inches	Newton metres
-10	5/8 inch 15.9 mm	1-14	552 to 672	62 to 76	7/8-14	60 to 65	81 to 88
Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Inches	Newton metres	1-1/16-12	85 to 90	115 to 122
					1-3/16-12	95 to 100	129 to 136
-12	3/4 inch 19.0 mm	1-3/16-12	65 to 80	90 to 110	1-5/16-12	115 to 125	156 to 169
-14	7/8 inch 22.2 mm	1-3/16-12	65 to 80	90 to 110	1-5/8-12	150 to 160	203 to 217
-16	1.0 inch 25.4 mm	1-7/16-12	92 to 105	125 to 140	1-7/8-12	190 to 200	258 to 271
-20	1-1/4 inch 31.8 mm	1-11/16-12	125 to 140	170 to 190			
-24	1-1/2 inch 38.1 mm	2-12	150 to 180	200 to 254			

NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Section 1002

FLUID AND LUBRICANTS

CASE CORPORATION
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Burlington, ON L7N 3M6 CANADA

Bur 7-19891

December, 2000 (Revised March, 2001)

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CAPACITIES AND LUBRICANTS

Engine Crankcase
- Capacity with filter change
  - 580M machines prior to PIN JJG0306521, 580 Super M machines prior to PIN JJG0278537, and 590 Super M machines prior to PIN JJG0286604 ..... 11 litres (11.6 U.S. quarts)
  - 580M machines PIN JJG0306521 and after, 580 Super M machines PIN JJG0278537 and after, and 590 Super M machines PIN JJG0286604 and after ..... 10 litres (10.6 U.S. quarts)
- Specifications ..... Case No. 1 15W-40 API CG-4 or CF-4

Fuel Tank
- Capacity, usable (580M and 580SM) ..... 117 litres (31.0 U.S. gallons)
- Capacity, usable (590SM) ..... 159 litres (42.0 U.S. gallons)
- Optional tank (580M and 580SM only) ..... 151 litres (40 U.S. gallons) usable
- Specifications ..... See page 6

Cooling System
- Capacity with heater ..... 16.5 litres (17.4 U.S. quarts)
- Capacity without heater ..... 15.8 litres (16.7 U.S. quarts)
- Specifications ..... 50% water and 50% ethylene glycol

Hydraulic System
- Total System
  - 580M ..... 106 litres (112 U.S. quarts) add 5.7 litres (6 U.S. qts) for extendahoe
  - 580SM ..... 119 litres (126 U.S. quarts) add 5.7 litres (6 U.S. qts) for extendahoe
  - 590SM ..... 130 litres (137 U.S. quarts) add 5.7 litres (6 U.S. qts) for extendahoe
- Capacity with filter change ..... 54.5 litres (14.4 U.S. gallons)
- Capacity without filter change ..... 52.6 litres (13.9 U.S. gallons)
- Specifications ..... MS-1209, Hy-Tran® Ultra

Transmission
- Standard Transmission
  - 2 Wheel Drive
    - Total system capacity ..... 18.5 litres (19.5 U.S. quarts)
    - Refill capacity with or without filter change ..... 11.9 litres (12.6 U.S. quarts)
    - Type of Fluid ..... MS-1209, Hy-Tran® Ultra
  - 4 Wheel Drive
    - Total system capacity ..... 21.0 litres (22.2 U.S. quarts)
    - Refill capacity with or without filter change ..... 14.4 litres (15.2 U.S. quarts)
    - Type of Fluid ..... MS-1209, Hy-Tran® Ultra
- Powershift Transmission
  - 4 Wheel Drive
    - Total system capacity ..... 21.0 litres (22.2 U.S. quarts)
    - Refill capacity with filter change ..... 14.4 litres (15.2 U.S. quarts)
    - Refill capacity without filter change ..... 13.4 litres (14.2 U.S. quarts)
    - Type of Fluid ..... Case MS-1214, Trans-XHD (Sold by Case Dealers) or Shell Donax TA (331-335), Elfmatic G-3 (331-334), or Pennzoil ATF)

Front Drive Axle - 4 Wheel Drive
- 580M and 580 Super M
  - Capacity - center bowl ..... 5.5 litres (5.8 U.S. quarts)
  - Capacity - each wheel end ..... 0.7 litres (0.75 U.S. quarts)
  - Type of Fluid ..... MS-1209, Hy-Tran® Ultra
- 590 Super M
  - Capacity - center bowl ..... 6.5 litres (6.9 U.S. quarts)
  - Capacity - each wheel end ..... 1.0 litres (1.1 U.S. quarts)
  - Type of Fluid ..... MS-1209, Hy-Tran® Ultra

Rear Axle

580M and 580 Super M

Capacity - center bowl ..... 14.0 litres (15 U.S. quarts)
Capacity - each wheel end ..... 1.5 litres (1.6 U.S. quarts)
Type of Fluid ..... MS-1209, Hy-Tran® Ultra

590 Super M

Capacity - center bowl ..... 14 litres (15 U.S. quarts)
Capacity - each wheel end ..... 2.0 litres (2.1 U.S. quarts)
Type of Fluid ..... MS-1209, Hy-Tran® Ultra

Brake Master Cylinder ..... (Brake fluid supplied by hydraulic reservoir, see Hydraulic System.)

ENGINE OIL RECOMMENDATIONS

Case IH No.1 Engine Oil is recommended for use in your Case IH Engine. Case IH No.1 Engine Oil will lubricate your engine correctly under all operating conditions. If Case IH No. 1 Multi-Viscosity Engine Oil is not available, Case IH No. 1 Single Grade Engine Oil can be used.

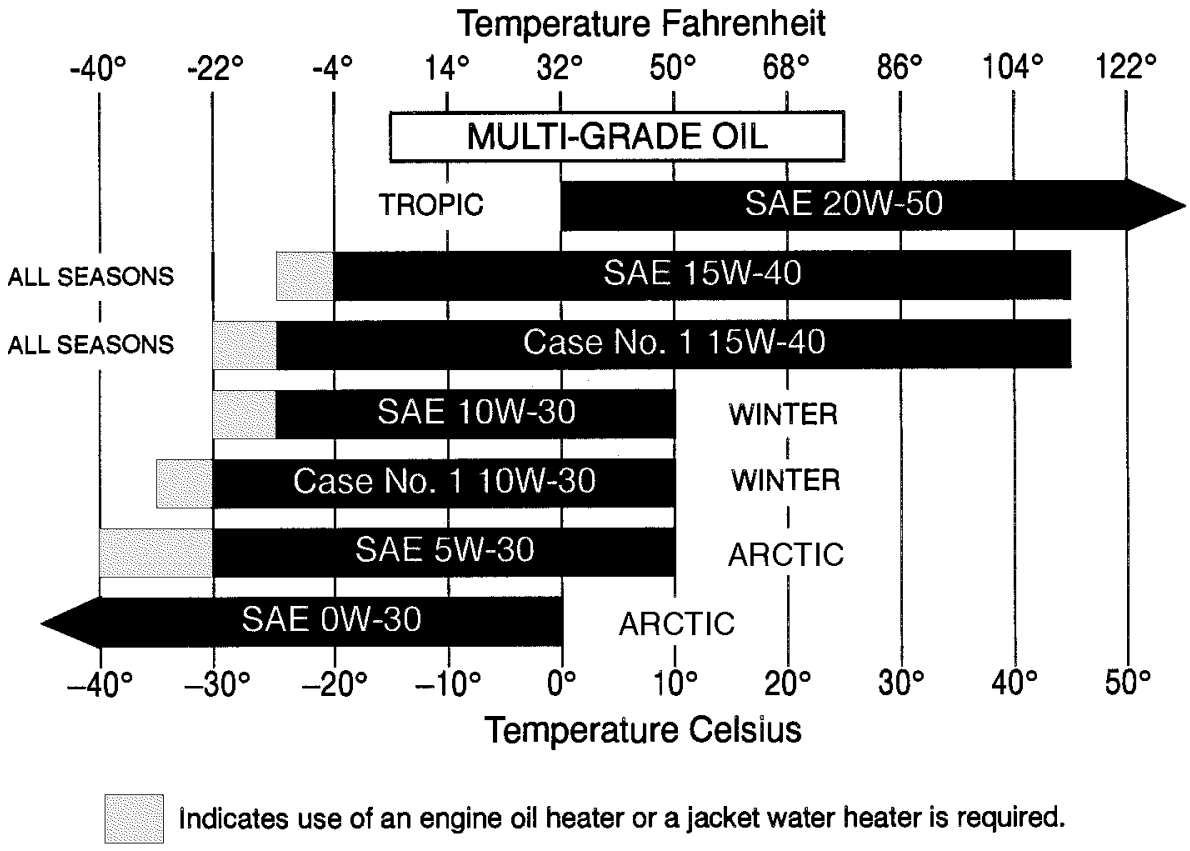
RH99K130

If Case IH No.1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CE.

See the chart below for recommended viscosity at ambient air temperature ranges.

BP97H064

NOTE: *Do not put Performance Additives or other oil additive products in the engine crankcase. The oil intervals given in this manual are according to tests with Case IH lubricants.*



BS99N019

DIESEL FUEL

Use No. 2 diesel fuel in the engine of this machine. The use of other fuels can cause the loss of engine power and high fuel consumption.

In very cold temperatures, a mixture of No. 1 and No. 2 diesel fuels is temporarily permitted. See the following Note.

NOTE: *See your fuel dealer for winter fuel requirements in your area. If the temperature of the fuel is below the cloud point (wax appearance point), wax crystals in the fuel will cause the engine to lose power or not start.*

The diesel fuel used in this machine must meet the specifications in the chart below or Specification D975-81 of the American Society for Testing and Materials.

Fuel Storage

If you keep fuel in storage for a period of time, you can get foreign material or water in the fuel storage tank. Many engine problems are caused by water in the fuel.

Keep the fuel storage tank outside and keep the fuel as cool as possible. Remove water from the storage container at regular periods of time.

Specifications for Acceptable No. 2 Diesel Fuel

API gravity, minimum	34
Flash Point, Minimum	60° C (140° F)
Cloud point (wax appearance point), maximum	-20° C (-5° F) See Note above
Pour point, maximum	-26° C (-15° F) See Note above
Viscosity, at 100° F (88° C)	
Centistokes	2.0 to 4.3
Saybolt Seconds Universal	32 to 40

Section

1003

METRIC CONVERSION CHART

CNH AMERICA LLC
700 State Street
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Bur 7-52950

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CONVERSION FACTORS
Metric to U.S.

	MULTIPLY	BY	TO OBTAIN
Area:	sq. meter hectare	10.763 91 2.471 05	square foot acre
Force:	newton newton	3.596 942 0.224 809	ounce force pound force
Length:	millimeter meter kilometer	0.039 370 3.280 840 0.621 371	inch foot mile
Mass:	kilogram	2.204 622	pound
Mass/Area:	kilogram/hectare	0.000 466	ton/acre
Mass/Energy:	gr/kW/hr.	0.001 644	lbs/hp/hr.
Mass/Volume:	kg/cubic meter	1.685 555	lb/cubic yd.
Power:	kilowatt	1.341 02	horsepower
Pressure:	kilopascal bar	0.145 038 14.50385	lb/sq. inch lb/sq. inch
Temperature:	degree C	1.8 x C +32	degree F
Torque:	newton meter newton meter	8.850 748 0.737 562	lb/inch lb/foot
Velocity:	kilometer/hr.	0.621 371	miles/hr.
Volume:	cubic centimeter cubic meter cubic meter milliliter litre litre litre litre	0.061 024 35.314 66 1.307 950 0.033 814 1.056 814 0.879 877 0.264 172 0.219 969	cubic inch cubic foot cubic yd. ounce (US fluid) quart (US liquid) quart (Imperial) gallon (US liquid) gallon (Imperial)
Volume/Time:	litre/min. litre/min.	0.264 172 0.219 969	gallon/min. (US liquid) gallon/min. (Imperial)