

# “L” Series 2 Loader Backhoe Family Service Manual 7-10402

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Printed in U.S.A.  
Issued March, 1999 (Revised March, 2000)

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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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March, 1999



# Section 1001

## STANDARD TORQUE SPECIFICATIONS

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Issued November, 1991



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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.

<b>Grade 5 Bolts, Nuts, and Studs</b>		
		
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


<b>Grade 8 Bolts, Nuts, and Studs</b>		
		
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.

## 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.

<b>Grade 8.8 Bolts, Nuts, and Studs</b>		
		
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

<b>Grade 10.9 Bolts, Nuts, and Studs</b>		
		
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
<b>37 Degree Flare Fitting</b>			
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
<b>Straight Threads with O-ring</b>			
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

<b>Split Flange Mounting Bolts</b>		
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
<b>O-ring Face Seal End</b>					<b>O-ring Boss End Fitting or Lock Nut</b>		
-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

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## FLUIDS AND LUBRICANTS

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December, 1998

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## CONVERSION FORMULAS

Imperial quart = litres x 0.879877

Imperial gallon = litres x 0.219969

## CAPACITIES AND LUBRICANTS

### Engine Oil

Capacity with Filter Change .....	11 litres (11.6 U.S. quarts)
Type of oil .....	See Engine Oil Recommendations on page 4

### Engine Cooling System

Capacity without heater .....	15.8 litres (16.7 U.S. quarts)
Capacity with heater .....	16.5 litres (17.4 U.S. quarts)
Type of coolant .....	Ethylene glycol and water mixed for the lowest ambient temperature At least 50/50 mix

### Fuel Tank - 580L and 580 Super L

Usable Capacity .....	119 litres (31.4 U.S. gallons)
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### Fuel Tank - 590 Super L

Usable Capacity .....	159 litres (42 U.S. gallons)
Type of fuel .....	See diesel fuel specifications on page 5

### Hydraulic System

Hydraulic reservoir refill capacity with filter change .....	55 litres (14.5 U.S. gallons)
Hydraulic reservoir refill capacity without filter change .....	53 litres (14 U.S. gallons)
Type of oil .....	Case TCH Fluid

### Transmission, Standard

#### 2 Wheel Drive

Total System .....	18.5 litres (19.5 U.S. quarts)
Refill with or without filter .....	16 litres (16.9 U.S. quarts)
Type of oil .....	Case Hy Tran Plus® (MS1207)

#### 4 Wheel Drive

Total System .....	20.8 litres (22 U.S. quarts)
Refill with or without filter .....	18.5 litres (19.5 U.S. quarts)
Type of oil .....	Case Hy Tran Plus® (MS1207)

### Transmission, Power Shift - 580 Super L and 590 Super L

#### 4 Wheel Drive

Total System .....	21 litres (22 U.S. quarts)
Refill with or without filter .....	18.5 litres (19.5 U.S. quarts)
Type of oil .....	Case MS 1214 Trans-XHD (Sold by Case Dealers)

### Front Axle - Four Wheel Drive - 580L and 580 Super L

Capacity of center bowl .....	5.5 litres (5.8 U.S. quarts)
Capacity of planetary (each) .....	0.7 litres (0.75 U.S. quart)
Type of oil .....	Case Hy-Tran Plus® (MS 1207)

### Front Axle - Four Wheel Drive - 590 Super L

Capacity of center bowl .....	6.5 litres (6.9 U.S. quarts)
Capacity of planetary (each) .....	1.0 litres (1.05 U.S. quarts)
Type of oil .....	Case Hy-Tran Plus® (MS 1207)

### Rear Axle - 580L and 580 Super L

Capacity of center bowl .....	14.2 litres (15 U.S. quarts)
Capacity of planetary (each) .....	1.5 litres (1.6 U.S. quarts)
Type of oil.....	Case Hy-Tran Plus® (MS 1207)

### Rear Axle - 590 Super L

Capacity of center bowl .....	14.2 litres (15 U.S. quarts)
Capacity of planetary (each) .....	2.0 litres (2.1 U.S. quarts)
Type of oil.....	Case Hy-Tran Plus® (MS 1207)

Brake Reservoir ..... (Gets fluid automatically from the 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.

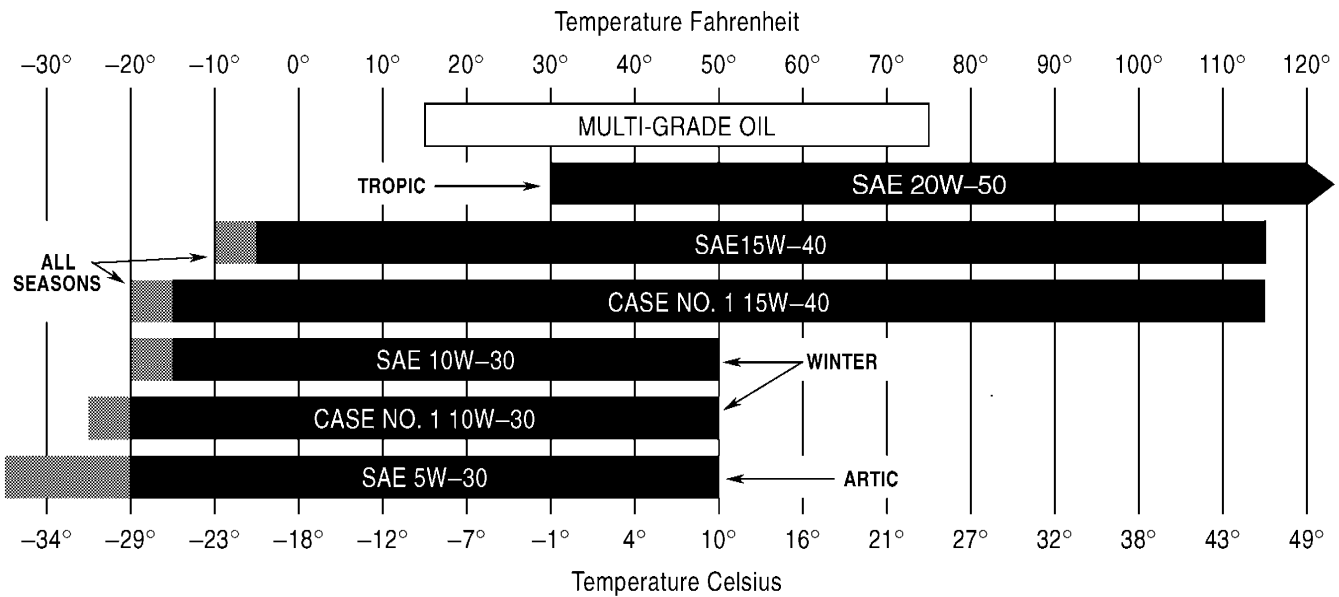
If Case IH No.1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CE.



BP97H064

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

**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.



■ Indicates use of an engine oil heater or a jacket water heater is required.

## 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



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March, 1999 (Revised March, 2000)



# Section 2000

## ENGINE AND RADIATOR REMOVAL AND INSTALLATION

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Issued May, 1995 (Revised March, 2000)