

“M” Series Loader Backhoe Family

Service Manual

6-41490

Table of Contents

Description	Section No.	Publication Form No.
General		
	Tab 1	
Section Index - General		6-41890
Standard Torque Specifications	1001	8-71601
Fluids and Lubricants	1002	7-19891
Metric Conversion Chart	1003	7-52950
Loctite Product Chart		8-98900
Engine		
	Tab 2	
Section Index - Engine		6-41900
Engine and Radiator Removal and Installation	2000	6-41910
Stall Tests	2002	7-19900
For Engine Repair, see the Engine Service Manual.		
Fuel System		
	Tab 3	
Section Index - Fuel System		6-41960
For Fuel System Repair, see the Engine Service Manual.		
Electrical		
	Tab 4	
Section Index - Electrical		6-41920
Removal and Installation of Electrical Components	4000	6-41930
Electrical Specifications and Troubleshooting	4001	7-19570
Batteries	4003	7-49440
Starter Motor - Denso	4004	7-11450
Instrument Cluster	4005	6-41880
Alternator	4007	7-49250
Steering		
	Tab 5	
Section Index - Electrical		6-41940
Removal and Installation of Steering Components	5000	6-41950
580M - Steering Specifications, Pressure Checks and Troubleshooting	5001	6-40680
580 Super M and 590 Super M - Steering Specifications, Pressure Checks and Troubleshooting	5001	6-40690
Steering Control Valve	5002	7-11920
Steering Cylinders	5003	7-11930
Front Axle - Two Wheel Drive	5005	7-10470
Front Axle - Four Wheel Drive - 580M and 580 Super M	5006	6-41700
Front Axle - Four Wheel Drive - 590 Super M	5006	6-41710

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Table of Contents

Description	Section No.	Publication Form No.
Power Train	Tab 6	
Section Index - Power Train		6-41990
Removal and Installation of Power Train Components and Standard (Carraro) Transmission	6000	6-42000
Removal and Installation of Powershift (Clark) Transmission	6001	6-42010
Standard (Carraro) Transmission Specifications, Pressure Checks and Troubleshooting	6002	6-40700
Powershift (Clark) Transmission Specifications, Pressure Checks and Troubleshooting	6002	6-41370
Wheels and Tires	6003	6-42020
Rear Axle and Planetaries - 580M	6004	6-41510
Rear Axle and Planetaries - 580 Super M	6004	6-41520
Rear Axle and Planetaries - 590 Super M	6004	6-41530
Standard (Carraro) Transmission	6007	6-41730
Powershift (Clark) Transmission	6007	7-10440
Brakes	Tab 7	
Section Index - Brakes		6-42030
Removal and Installation of Brake Components	7000	6-42040
Master Cylinder	7003	7-49490
For parking brake and brake pedal adjustments, see Section 9001.		
Hydraulics	Tab 8	
Section Index - Hydraulics		6-42050
Removal and Installation of Hydraulic Components	8001	6-41740
580M - Hydraulic Specifications, Troubleshooting, and Pressure Checks	8002	7-19591
580 Super M and 590 Super M Hydraulic Specifications, Troubleshooting, and Pressure Checks	8002	7-19911
Cleaning the Hydraulic System	8003	7-49640
Hydraulic Pump - 580M	8004	6-42060
Hydraulic Pump - 580 Super M and 590 Super M	8004	6-42070
Loader Control Valve	8005	7-11220
Cylinders	8006	6-41750
Backhoe Control Valve	8007	6-42080
Auxiliary Control Valve	8008	7-14550
Accumulator for Machines with Optional Ride Control	8009	7-52450
Solenoid Valve for Machines with Optional Ride Control	8010	7-14560
Boom Lock Solenoid Valve	8011	7-14571
For Backhoe Quick Coupler, see Section 8006.		
For Swing Cushion Valve, see Section 8007.		

Table of Contents

Description	Section No.	Publication Form No.
Mounted Equipment	Tab 9	
Section Index - Mounted Equipment		6-42100
Pedals and Levers	9001	7-19870
Air Conditioning Troubleshooting For Systems With R-134a Refrigerant	9002	7-50091
Air Conditioning System Gauges and Testing For Systems With R-134a Refrigerant	9003	7-50901
Air Conditioning System Service For Systems With R-134a Refrigerant	9004	7-51030
Air Conditioning Components Service For Systems With R-134a Refrigerant	9005	7-51050
Loader	9006	6-42110
ROPS Cab and Canopy	9007	6-42120
Backhoe	9008	6-42130
Standard and Mechanical Suspension Seat	9009	6-42140
Air Suspension Seat	9010	6-42150
Schematics		
Electric Schematic and Hydraulic Schematic Foldout (580M)	In Rear Pocket	7-19840
Electric Schematic Hydraulic Schematic Foldout (580 Super M and 590 Super M)	In Rear Pocket	7-19850

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.

NOTES

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click on it.**

**Have any questions please write to me:
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SECTION INDEX

GENERAL

Section Title	Section Number
Standard Torque Specifications	1001
Fluid and Lubricants	1002
Metric Conversion Chart	1003
Loctite Product Chart	

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Section 1001

STANDARD TORQUE SPECIFICATIONS

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TABLE OF CONTENTS

TORQUE SPECIFICATIONS - DECIMAL HARDWARE 2


TORQUE SPECIFICATIONS - METRIC HARDWARE 3


TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS 4

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS 5

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.

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			

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Section 1002

FLUID AND LUBRICANTS

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TABLE OF CONTENTS

CAPACITIES AND LUBRICANTS	3
ENGINE OIL RECOMMENDATIONS	5
DIESEL FUEL	6
Fuel Storage	6
Specifications for Acceptable No. 2 Diesel Fuel	6

CAPACITIES AND LUBRICANTS

Engine Crankcase

Capacity with filter change

580M machines prior to PIN JYG0306521, 580 Super M machines prior to PIN JYG0278537, and 590 Super M machines prior to PIN JYG0286604 11 litres (11.6 U.S. quarts)

580M machines PIN JYG0306521 and after, 580 Super M machines PIN JYG0278537 and after, and 590 Super M machines PIN JYG0286604 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

1002-4

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

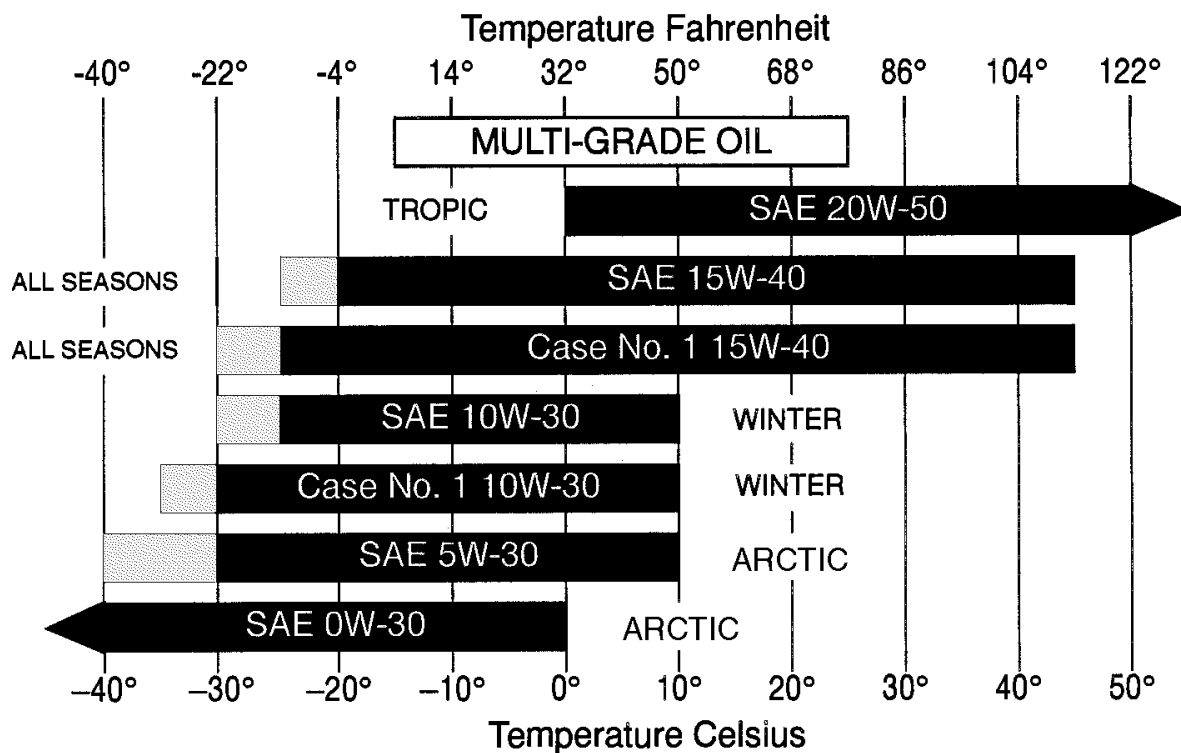
If Case IH No.1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CE.

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.



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

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.

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

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.

Section 1003

1003

METRIC CONVERSION CHART

TABLE OF CONTENTS

CONVERSION FACTORS	3
Metric to U.S.	3
U.S. to Metric	4

CONVERSION FACTORS Metric to U.S.

	<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
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)