SERVICE MANUAL

Loader Backhoe

580K

8-12790

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

SERVICE MANUAL

Loader Backhoe

580K

8-12790

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

SERVICE MANUAL

Loader Backhoe

580K

8-12790

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

SERVICE MANUAL

Loader Backhoe

580K

8-12790

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

580K Loader Backhoe

Table of Contents

SECTION INDEX - GENERAL

1001

STANDARD TORQUE SPECIFICATIONS

TABLE OF CONTENTS

CASE CORPORATION

Bur 8-71600

Printed in U.S.A.
Issued May 1988

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 graphites, molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres
1/4 in	9-11	12-15
5/16 in	17-21	23-28
3/8 in	35-42	48-57
7/16 in	54-64	73-87
1/2 in	80-96	109-130
9/16 in	110-132	149-179
5/8 in	150-180	203-244
3/4 in	270-324	366-439
7/8 in	400-480	542-651
1.0 in	580-696	787-944
1-1/8 in	800-880	1085-1193
1-1/4 in	1120-1240	1519-1681
1-3/8 in	1460-1680	1980-2278
1-1/2 in	1940-2200	2631-2983

Grade 8 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres
1/4 in	12-15	16-20
5/16 in	24-29	33-39
3/8 in	45-54	61-73
7/16 in	70-84	95-114
1/2 in	110-132	149-179
9/16 in	160-192	217-260
5/8 in	220-264	298-358
3/4 in	380-456	515-618
7/8 in	600-720	814-976
1.0 in	900-1080	1220-1465
1-1/8 in	1280-1440	1736-1953
1-1/4 in	1820-2000	2468-2712
1-3/8 in	2380-2720	3227-3688
1-1/2 in	3160-3560	4285-4827

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

811360B

TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following toques when special torques 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 if used.

Grade 8.8 Bolts, Nuts, and Studs

8.8

Size	Pound-Feet	Newton metres
M4	2-3	3-4
M5	5-6	6.5-8
M6	8-9	10.5-12
M8	19-23	26-31
M10	38-45	52-61
M12	66-79	90-107
M14	106-127	144-172
M16	160-200	217-271
M20	320-380	434-515
M24	500-600	675-815
M30	920-1100	1250-1500
M36	1600-1950	2175-2600

Grade 10.9 Bolts, Nuts, and Studs

10.9

Size	Pound-Feet	Newton metres
M4	3-4	4-5
M5	7-8	9.5-11
M6	11-13	15-17.5
M8	27-32	37-43
M10	54-64	73-87
M12	93-112	125-15
M14	149-179	200-245
M16	230-280	310-380
M20	450-540	610-730
M24	780-940	1050-1275
M30	1470-1770	2000-2400
M36	2580-3090	3500-4200

Grade 12.9 Bolts, Nuts, and Studs

12.9

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

TORQUE SPECIFICATIONS - O-RING FACE SEAL FITTING

Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Feet	Newton Metres	Thread Size	Pound-Feet	Newton Metres
		O-ring Face Seal End			**O-ring Boss End Fitting or Locknut**		
-4	**1/4 In** 6.4 mm	9/16-18	10-12	14-16	7/16-20	17-20	23-27
-6	**3/8 in** 9.5 mm	11/16-16	18-20	24-27	9/16-18	25-30	33-40
-8	**1/2 in** 12.7 mm	13/16-16	32-40	43-54	3/4-16	45-50	61-68
-10	**5/8 in** 15.9 mm	1-14	46-56	60-75	7/8-14	60-65	81-88
-12	**3/4 in** 19.0 mm	1-3/16-12	65-80	90-110	1-1/16-12	85-90	115-122
-14	**7/8 in** 22.2 mm	1-3/16-12	65-80	90-110	1-3/16-12	95-100	129-136
-16	**1.0 in** 25.4 mm	1-7/16-12	92-105	125-140	1-5/16-12	115-125	156-169
-20	**1-1/4 in** 31.8 mm	1-11/16-12	125-140	170-190	1-5/8-12	150-160	203-217
-24	**1-1/2 in** 38.1 mm	2-12	150-180	200-254	1-7/8-12	190-200	258-271

B871553

Section

1002

FLUIDS AND LUBRICANTS

CASE CORPORATION

Bur 8-12270

Printed in U.S.A.
Issued August 1989

TABLE OF CONTENTS

CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with Filter Change ..... 11.6 U.S. quarts (11 litres)
- Type of oil ..... See Engine Oil Recommendations on page 1002-3

Engine Cooling System
- Capacity without heater ..... 17.2 U.S. quarts (16.3 litres)
- Capacity with heater ..... 17.9 U.S. quarts (16.9 litres)
- Type of coolant ..... Ethylene glycol and water mixed for lowest ambient temperature At least 50/50 mix

Fuel Tank
- Capacity ..... 25 U.S. gallons (94.6 litres)
- Type of fuel ..... See Diesel fuel specifications on page 1002-4

Hydraulic System
- Hydraulic reservoir refill capacity ..... 21.5 U.S. gallons (81.4 litres)
- Type of oil ..... Case TCH Fluid

Transmission
- Capacity ..... 47.6 U.S. quarts (45 litres)
- Total System Capacity ..... 57.1 U.S. quarts (54 litres)
- Type of oil ..... Case Hy-Trans Plus (MS 1207)

Front Axle - Four Wheel Drive
- Capacity of center bowl ..... 7.4 quarts (7 litres)
- Capacity of planetary (each) ..... 1.1 U.S. quarts (1 litre)
- Type of oil ..... CaseIH 135-H EP gear lube

Brake Reservoir
- Type of fluid ..... Case TCH Fluid

Section

1024

SPECIFICATION DETAILS

Written In *C*lear
*A*nd
*S*imple
*E*nglish

IMPORTANT: *This engine was made using the metric measurement system. All measurements and checks must be made with metric tools to make sure of an accurate reading when inspecting parts.*

CASE CORPORATION

Rac 8-24161

Printed in U.S.A
June, 1983 (Revised June, 1984)

TABLE OF CONTENTS

RUN-IN INSTRUCTIONS

Engine Lubrication

Fill the engine crankcase with CC or CD service classification oil that has the correct viscosity rating for the ambient air temperature. Install new oil filters, after the engine has been rebuilt.

Run-In Procedure For Rebuilt Engine

Step 1 Disconnect the wire to the electric shut-off on the injection pump so that the engine will not start. Crank the engine for 30 seconds until there is oil pressure, then reconnect the wire.

Step 2 Remove the air from the cooling system at the temperature sending unit.

Step 3 Run the engine at 1000 RPM minimum load for 5 minutes and check for oil leaks.

Step 4 During the Run-In, continue to check the oil pressure, coolant level, and coolant temperature.

Run-In Procedure For Rebuilt Engines (With A Dynamometer)

The following procedure must be followed when using a PTO dynamometer to Run-In the engine. The dynamometer will control the engine load at each speed and will remove stress on new parts during Run-In.

During the Run-In, continue to check the oil pressure, coolant level and coolant temperature.

STEP	TIME	ENGINE SPEED	DYNAMOMETER SCALE LOAD
1	5 Minutes	1000 RPM	50
2	5 Minutes	1100 RPM	1/2
3	5 Minutes	2200 RPM	Full

Run-In Procedure for Rebuilt Engines (Without A Dynamometer)

STEP	TIME	ENGINE SPEED	LOAD
1	5 Minutes	1000 RPM	No Load
2	5 Minutes	1100 RPM	Light Load
3	5 Minutes	2200 RPM	Light Load

Run-In Procedure (Agriculture Tractors)

For the first 8 hours of field operation stay one gear lower than normal. For the next 12 hours DO NOT "lug" the engine. Prevent "lugging" by moving the lever to a lower gear. The engine must not be "lugged" below the rated engine RPM during early hours of life.

Run-In Procedure (Construction Equipment)

For the first 8 hours, operate the engine at full throttle maintaining a normal load. DO NOT "baby" the engine, but avoid converter or hydraulic stall. The engine must not be "lugged" below the Rated Engine RPM (Do not stall the engine more than 10 seconds).

ENGINE SPECIFICATION DETAILS

Cylinder Block

	Metric Value
Type	Non-Sleeved
Material	Cast Iron
ID of Cylinder	102.00 to 102.04 mm
Maximum Service Limit	102.116 mm
Cylinder Out of Round (Maximum)	0.038 mm
Cylinder Taper (Maximum)	0.076 mm
0.5 mm Oversize Piston	
Machine Cylinder Bore to	102.50 to 102.54 mm
1.00 mm Oversize Piston	
Machine Cylinder Bore to	103.00 to 103.04 mm

Service Cylinder Sleeve

Type	Dry, Can Be Replaced
Material	Cast Iron
Machine Cylinder Block Bore to	104.500 to 104.515 mm
Installation	Press Fit
Machine Sleeve Bore to:	
Standard Size Piston	102.00 to 102.04 mm
0.5 mm Oversize Piston	102.50 to 102.54 mm
1.0 mm Oversize Piston	103.00 to 103.04 mm

Piston

Type	Cam Ground
Material	Aluminum alloy
OD at 12 mm From the Bottom, 90 Degrees Piston Pin	
Standard Size Piston	101.873 to 101.887 mm
Minimum Service Limit	101.823 mm
0.5 mm Oversize Piston	102.373 to 102.387 mm
Minimum Service Limit	101.323 mm
1.0 mm Oversize Piston	102.873 to 102.887 mm
Minimum Service Limit	102.823 mm
ID of Piston Pin Bore	40.006 to 40.012 mm
Maximum Service Limit	40.025 mm
Width of 1st Ring Groove (Top)	2.465 to 2.485 mm
Width of 2nd Ring Groove (Intermediate)	2.425 to 2.445 mm
Width of 3rd Ring Groove (Oil Ring)	4.040 to 4.060 mm
Protrusion Above Cylinder Block (Maximum)	0.660 mm

Piston Pin

Type	Full Float
OD of Pin	39.997 to 40.003 mm
Minimum Service Limit	39.990 mm

Piston Rings

No. 1 Compression 4T-390 Engine ..... Key Stone Type (Barrel Face)
End Gap in 102.02 ID ..... 0.4 to 0.70 mm
No. 1 Compression 4-390 Engine ..... Rectangular Type (Barrel Face)
End Gap in 102.02 ID ..... 0.25 to 0.55 mm
Maximum Service Limit ..... 0.806 mm
Side Clearance ..... 0.075 to 0.120 mm
Maximum Service Limit ..... 0.15 mm
No. 2 Compression ..... Rectangular Type (Tapper Face)
End Gap in 102.02 ID ..... 0.25 to 0.55 mm
Maximum Service Limit ..... 0.806 mm
Side Clearance ..... 0.075 to 0.120 mm
Maximum Service Limit ..... 0.15 mm
No. 3 Oil Control Rings ..... Two Piece
End Gap in 102.02 ID ..... 0.25 to 0.55 mm
Maximum Service Limit ..... 0.806 mm
Side Clearance ..... 0.130 mm

Cylinder Head

Warpage (Maximum) ..... 0.20 mm

Lifters

Material ..... Hardened Iron
OD of Lifter ..... 15.961 to 15.977 mm
Minimum Service Limit ..... 15.960 mm
Bore Diameter in Block ..... 16.000 to 16.030 mm
Maximum Service Limit ..... 16.055 mm

Connecting Rod

Bushing ..... Steel Backed Leaded Bronze
Bushing ID Installed (Ream to Size) ..... 40.053 to 40.067 mm
Maximum Service Limit ..... 40.092 mm
Bearing Liners ..... Replaceable
Journal ID Without Bearing Liners ..... 72.987 to 73.013 mm
Bearing Oil Clearance ..... 0.038 to 0.116 mm
Maximum Service Limit ..... 0.129 mm
Side Clearance ..... 0.100 to 0.300 mm
Maximum Service Limit ..... 0.330 mm
Connecting Rod Bend (Maximum)
Without Bushing ..... 0.200 mm
With Bushing ..... 0.150 mm
Connecting Rod Twist (Maximum)
Without Bushing ..... 0.500 mm
With Bushing ..... 0.300 mm

Crankshaft

Type	Hardened Steel, Balanced
Main Bearing Liners	Replaceable
End Clearance, Center Main Bearing Cap	0.041 to 0.119 mm
Center Main Bearing Thrust Surface Thickness	2.50 mm
Connecting Rod Journal	
OD, Standard	68.987 to 69.013 mm
Minimum Service Limit	68.962 mm
0.25 mm OD Undersize, Grind to	68.737 to 68.763 mm
Minimum Service Limit	68.712 mm
0.50 mm OD Undersize, Grind to	68.487 to 68.513 mm
Minimum Service Limit	68.462 mm
0.75 mm OD Undersize, Grind to	68.237 to 68.263 mm
Minimum Service Limit	68.212 mm
1.00 mm OD Undersize, Grind to	67.987 to 68.013 mm
Minimum Service Limit	67.962 mm
Connecting Rod Journal Maximum Taper	0.013 mm
Journals Out of Round Maximum	0.050 mm
Undersize Main Bearing Liners For Service	0.25, 0.50, 0.75 and 1.00 mm
Main Bearing Oil Clearance	0.041 to 0.119 mm
Maximum Service Limit	0.140 mm
Main Bearing Journal	
OD, Standard	82.987 to 83.013 mm
Minimum Service Limit	82.962 mm
0.25 mm OD Undersize, Grind to	82.737 to 82.763 mm
Minimum Service Limit	82.712 mm
0.50 mm OD Undersize, Grind to	82.487 to 82.513 mm
Minimum Service Limit	82.462 mm
0.75 mm OD Undersize, Grind to	82.237 to 82.263 mm
Minimum Service Limit	82.212 mm
1.00 mm OD Undersize, Grind to	81.987 to 82.013 mm
Minimum Service Limit	81.962 mm
Main Bearing Journal Bore ID No Liners	87.982 to 88.018 mm
Maximum Service Limit	88.031 mm
Main Journal Width:	
1st, 2nd, 3rd, 5th	37.424 to 37.576 mm
4th	37.475 to 37.525 mm
Connect Rod Journals Width	38.950 to 39.050 mm