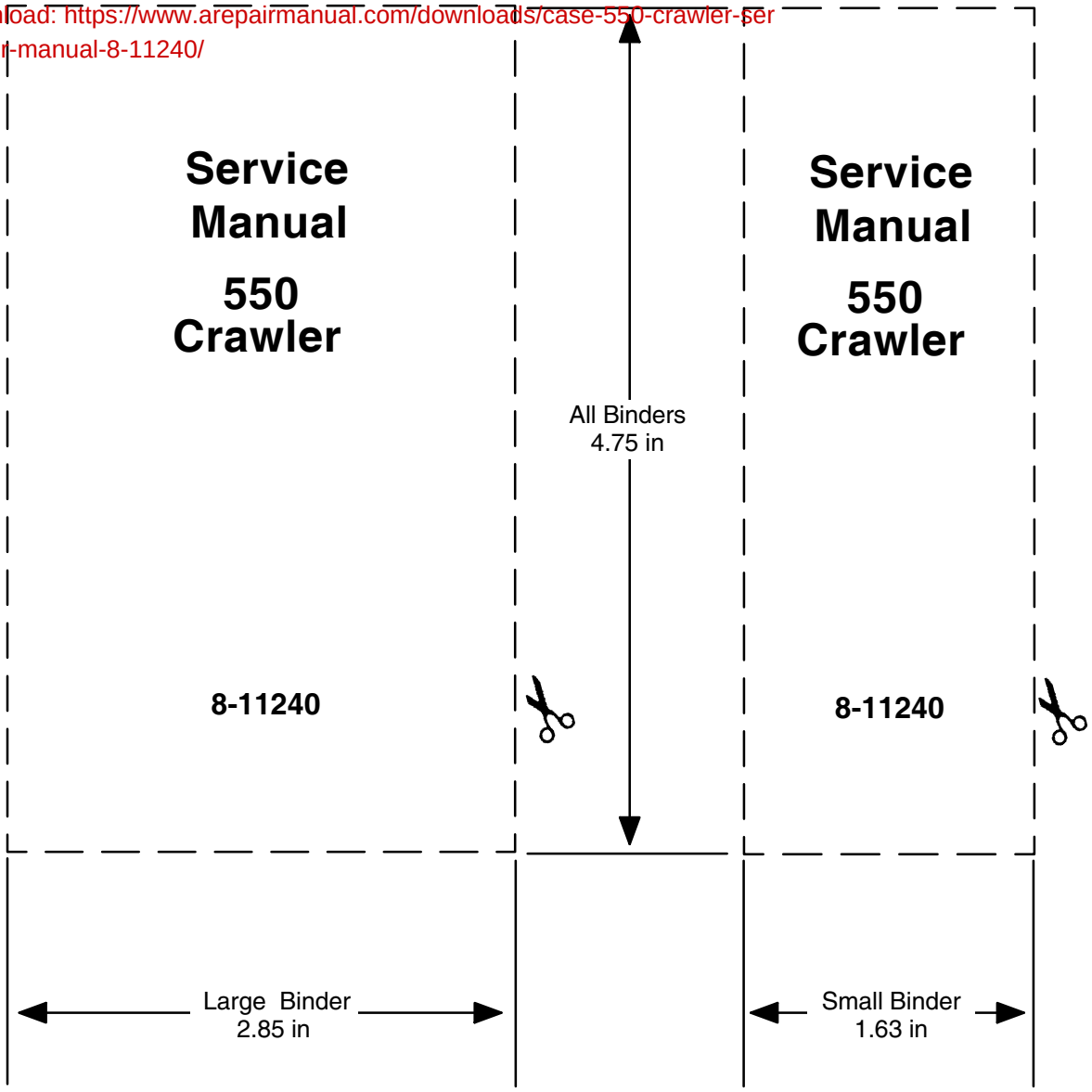

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1001

STANDARD TORQUE SPECIFICATIONS

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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 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 - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres
37 Degree Flare Fittings			
1/4 in 6.4 mm	7/16-20	6-12	8-16
5/16 in 7.9 mm	1/2-20	8-16	11-21
3/8 in 9.5 mm	9/16-18	10-25	14-33
1/2 in 12.7 mm	3/4-16	15-42	20-56
5/8 in 15.9 mm	7/8-14	25-58	34-78
3/4 in 19.0 mm	1-1/16-12	40-80	54-108
7/8 in 22.2 mm	1-3/16-12	60-100	81-135
1.0 in 25.4 mm	1-5/16-12	75-117	102-158
1-1/4 in 31.8 mm	1-5/8-12	125-165	169-223
1-1/2 in 38.1 mm	1-7/8-12	210-250	285-338

Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres
Straight Threads with O-ring			
1/4 in 6.4 mm	7/16-20	12-19	16-25
5/16 in 7.9 mm	1/2-20	16-25	22-23
3/8 in 9.5 mm	9/16-18	25-40	34-54
1/2 in 12.7 mm	3/4-16	42-67	57-90
5/8 in 15.9 mm	7/8-14	58-92	79-124
3/4 in 19.0 mm	1-1/16-12	80-128	108-174
7/8 in 22.2 mm	1-3/16-12	100-160	136-216
1.0 in 25.4 mm	1-5/16-12	117-187	159-253
1-1/4 in 31.8 mm	1-5/8-12	165-264	224-357
1-1/2 in 38.1 mm	1-7/8-12	250-400	339-542

Split Flange Mounting Bolts		
Size	Pound-Feet	Newton metres
5/16-18	15-20	20-27
3/8-16	20-25	26-33
7/16-14	35-45	47-61
1/2-13	55-65	74-88
5/8-11	140-150	190-203

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

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Section

1002

FLUIDS AND LUBRICANTS

CASE CORPORATION

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Capacities and Lubricants 2

Engine Oil Recommendations 3

Diesel Fuel 4

CAPACITIES AND LUBRICANTS

Engine Oil
Capacity with Filter Change ..... 11 U.S. quarts (10.4 litres)

Type of oil ..... See Engine Oil Recommendations on page 1002-3

Engine Cooling System
Capacity ..... 16.5 U.S. quarts (15.6 litres)

Type of coolant ..... Ethylene glycol and water mixed for lowest ambient temperature
At least 50/50 mix

Fuel Tank
Capacity ..... 27.5 U.S. gallons (104 litres)

Type of fuel ..... See Diesel fuel specifications on page 1002-4

Hydraulic System
Hydraulic reservoir refill capacity ..... 8.5 U.S. gallons (32.2 litres)

Type of oil ..... Case TCH Fluid

Transmission
Capacity ..... 8 U.S. gallons (30.3 litres)

Type of oil ..... Case TCH Fluid

Final Drives
Refill capacity (each side) ..... 6 U.S. quarts (5.7 litres)

Type of oil ..... CaseIH 135-H EP gear lube

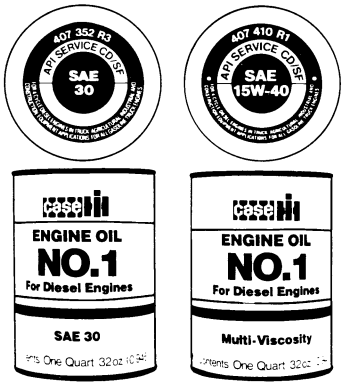
Brake Reservoir
Type of fluid ..... Case TCH Fluid

Engine Oil Recommendations

CaseIH No. 1 Multi-Viscosity Engine Oil is recommended for use in your Case engine. The ambient temperature range for multi-viscosity oil is much larger than the ambient temperature range for single viscosity oil. See the Engine Oil Viscosity Chart below.

Single viscosity lubricants can be used in this engine if the ambient temperature range between oil changes remains within the limits for that oil.

Only use lubricants with API classification of CC/CD, CD/SF, CD, or CE.



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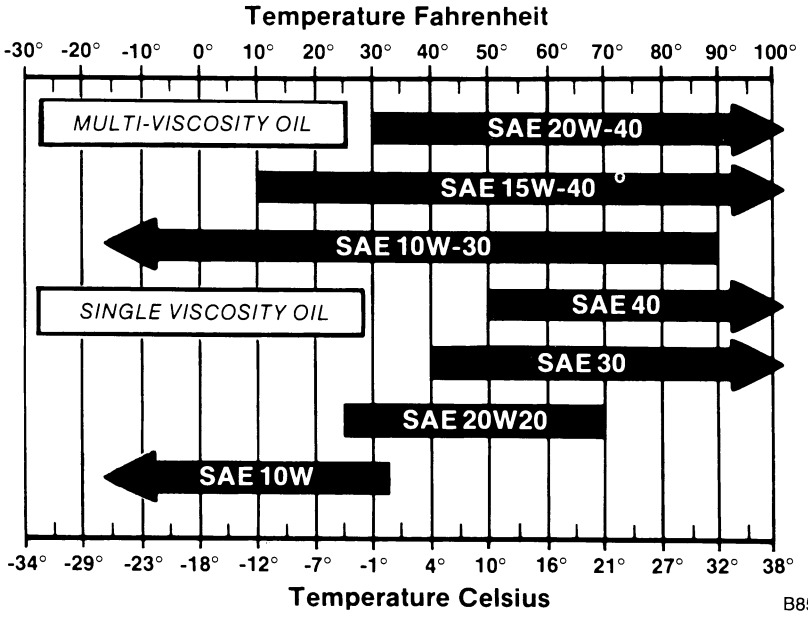
NOTE: *Do not put "Performance Additives" or other oil additive products in the engine crankcase. The oil change interval given in this manual is according to tests with Case lubricants.*

Engine Oil Viscosity



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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	140°F (60°C)
Cloud point (wax appearance point), maximum	-5°F (-20°C) See Note above
Pour point, maximum	-15°F (-26°C) See Note above
Distillation temperature, 90% point	540 to 640°F (282 to 338°C)
Viscosity, at 100°F (88°C)	
Centistokes	2 0 to 4 3
Saybolt Seconds Universal	32 to 40
Cetane number, minimum	43 (45 to 55 for winter or high altitudes)
Water and sediment, by volume, maximum	0 05 of 1%
Sulfur, by weight, maximum	0 5 of 1%
Copper strips corrosion, maximum	No 2
Ash, by weight, maximum	0 01 of 1%

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.*

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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

Camshaft

Type	Hardened Iron
Bushing (Front Only)	1, Replaceable
Bushing Lubrication:	
Front Bushing	Pressure Lubricated
Intermediate	Pressure Lubricated
Rear	Pressure Lubricated
Oil Clearance	0.076 to 0.152 mm
ID of No. 1 Bushing	54.107 to 54.133 mm
Maximum Service Limit	54.146 mm
ID of No. 1 Oversize (57.24 mm OD) Service Bushing	54.089 to 54.139 mm
Maximum Service Limit	54.146 mm
ID of No. 2, 3, 4 and 5 Service Bushing	54.089 to 54.139 mm
Maximum Service Limit	54.146 mm
Width of No. 1 Bushing	25.15 to 25.65 mm
Width of No. 2, 3, 4 and 5 Service Bushing	17.75 to 18.25 mm
Camshaft Bushing Journal OD	53.987 to 54.013 mm
Camshaft Bore Diameter in Block	
No. 1 Bushing	57.222 to 57.258 mm
No. 1 Oversize Bushing, Machine to	57.722 to 57.758 mm
No. 2, 3, 4 and 5, Less Bushings	54.089 to 54.139 mm
No. 2, 3, 4 and 5 Oversize for Bushings, Machine to	57.222 to 57.258 mm
Camshaft Thrust Thickness	9.42 to 9.58 mm
Minimum Service Limit	9.34 mm
Camshaft Thrust Clearance	0.130 to 0.340 mm
Maximum Service Limit	0.470 mm

Turbocharger

Horizontal Travel of Turbine Shaft	0.10 to 0.16 mm

Gear Train

Backlash:	
Crankshaft Gear to Camshaft Gear	0.08 to 0.33 mm
Crankshaft Gear to Idler Gear	0.08 to 0.33 mm
Camshaft to Fuel Pump Gear	0.08 to 0.33 mm
Idler Gear to Oil Pump	0.08 to 0.33 mm
Camshaft to Auxiliary	0.08 to 0.33 mm
Maximum Service Limit (All Gears)	0.45 mm

Rocker Arm Assembly

OD of Shaft	18.963 to 18.975 mm
Minimum Service Limit	18.938 mm
ID of Arm Bore	19.000 to 19.026 mm
Maximum Service Limit	19.051 mm
Lubrication	Pressure From Oil Gallery

Intake Valve

Tappet Clearance (Cold)	0.254 mm
Face Angle	29 Degrees
Face Run-Out	0.038 mm
Valve Head Edge Thickness, Minimum	1.50 mm
Length	128.84 to 129.46 mm
OD of Stem	7.960 to 7.980 mm
Minimum Service Limit	7.940 mm
OD of Head	44.870 to 45.130 mm
Seat Angle	30 Degrees
Seat Contact Width	1.32 to 1.92 mm
Seat Run-Out	0.10 mm
Insert Height	6.84 to 6.96 mm
OD of Insert	47.063 to 47.089 mm
ID of Insert	Tapered
Valve Recession Below Head Surface	0.99 to 1.52 mm
Maximum Service Limit	1.52 mm
ID of Valve Guide Bore	8.019 to 8.039 mm
Maximum Service Limit	8.089 mm

Exhaust Valve

Tappet Clearance (Cold)	0.508 mm
Face Angle	44 Degrees
Face Run-Out	0.038 mm
Valve Head Edge Thickness, Minimum	1.50 mm
OD of Head	41.870 to 42.130 mm
OD of Stem	7.960 to 7.980 mm
Minimum Service Limit	7.940 mm
Length	128.74 to 129.36 mm
Insert Seat Angle	45 Degrees
Seat Contact Width	1.47 to 2.07 mm
Seat Run-Out	0.10 mm
Insert Height	6.65 to 6.77 mm
OD of Insert	43.713 to 43.739 mm
ID of Insert	Tapered
Valve Recession Below Head Surface	0.99 to 1.52 mm
Maximum Service Limit	1.52 mm
ID of Valve Guide Bore	8.019 to 8.039 mm
Maximum Service Limit	8.089 mm

Valve Springs

Free Length	55.63 mm
Total Coils	7.25
Wire Diameter	4.830 to 4.930 mm
Compressed to 38.53 mm	(Valve Open) 785 to 839 N
Minimum Service Limit	765 N
Compressed to 49.25 mm	(Valve Closed) 285 to 321 N
Minimum Service Limit	270 N

SPECIAL TORQUES

	U.S. Value	Metric Value
Alternator Bracket Bolts (Lower)	18 lb ft	24 Nm (2.4 kgm)
Alternator Bracket Bolts (Upper)	18 lb ft	24 Nm (2.4 kgm)
Alternator Retaining Bolt	18 lb ft	24 Nm (2.4 kgm)
Belt Tensioner Bracket Bolts	18 lb ft	24 Nm (2.4 kgm)
Belt Tensioner Retaining Bolt	32 lb ft	43 Nm (4.3 kgm)
Camshaft Retaining Bolts	18 lb ft	24 Nm (2.4 kgm)
Connecting Rod Bolts (Lubricate Threads With Engine Oil)	74 lb ft	100 Nm (10.0 kgm)
Exhaust Manifold Bolts	32 lb ft	43 Nm (4.3 kgm)
Fan Pulley Bracket Bolts	18 lb ft	24 Nm (2.4 kgm)
Fan Pulley Bolts	18 lb ft	24 Nm (2.4 kgm)
Flywheel Housing Bolts	44 lb ft	60 Nm (6.0 kgm)
Flywheel Retaining Bolts	101 lb ft	137 Nm (13.7 kgm)
Flywheel Housing Cover Bolts	18 lb ft	24 Nm (2.4 kgm)
Fuel Filter Inlet Bolt	24 lb ft	32 Nm (3.2 kgm)
Fuel Air Removal Bolt	4 lb ft	6 Nm (0.6 kgm)
Fuel Filter Inlet Nut	24 lb ft	32 Nm (3.2 kgm)
Fuel Line Fitting (High Pressure)	18 lb ft	24 Nm (2.4 kgm)
Fuel Line Fitting (Low Pressure)	18 lb ft	24 Nm (2.4 kgm)
Front Cover Bolts	18 lb ft	24 Nm (2.4 kgm)
Front Housing Bolts	18 lb ft	24 Nm (2.4 kgm)
Cylinder Head Bolts	93 lb ft	126 Nm (12.6 kgm)
Injection Pump Drive Gear Nut	48 lb ft	65 Nm (6.5 kgm)
Injection Pump Lock Bolt	22 lb ft	30 Nm (3.0 kgm)

SPECIAL TORQUES (CONT'D)

	U.S. Value	Metric Value
Injection Pump Retaining Nuts	18 lb ft	24 Nm (2.4 kgm)
Injection Pump Bracket Bolts	18 lb ft	24 Nm (2.4 kgm)
Injector Leak off Bolt	6 lb ft	8 Nm (0.8 kgm)
Injector Retaining Nut	44 lb ft	60 Nm (6.0 kgm)
Intake Manifold Bolts	18 lb ft	24 Nm (2.4 kgm)
Intake Manifold Plug	92 lb ft	125 Nm (12.5 kgm)
Engine Lift Bracket Bolts (Rear)	57 lb ft	77 Nm (7.7 kgm)
Main Bearing Bolts (Lubricate The Threads With Engine Oil)	129 lb ft	175 Nm (17.5 kgm)
Oil Fill Tube Bolts	32 lb ft	43 Nm (4.3 kgm)
Oil Pan Drain Plug	55 lb ft	75 Nm (7.5 kgm)
Oil Pan Heater Plug	90 lb ft	122 Nm (12.2 kgm)
Oil Pan Retaining Bolts	18 lb ft	24 Nm (2.4 kgm)
Oil Pump Retaining Bolts	18 lb ft	24 Nm (2.4 kgm)
Oil Inlet Tube Bolts	18 lb ft	24 Nm (2.4 kgm)
Oil Inlet Tube Brace	18 lb ft	24 Nm (2.4 kgm)
Oil Filter Housing Bolts	18 lb ft	24 Nm (2.4 kgm)
Rear Seal Retaining Bolts	7 lb ft	9 Nm (0.9 kgm)
Rocker Arm Bolts	18 lb ft	24 Nm (2.4 kgm)
Starter Retaining Bolts	32 lb ft	43 Nm (4.3 kgm)
Tachometer Drive Retaining Bolts	2 lb ft	3 Nm (0.3 kgm)
Lifter Cover Bolts	18 lb ft	24 Nm (2.4 kgm)
Thermostat Housing Bolts	18 lb ft	24 Nm (2.4 kgm)
Timing Pin Retaining Bolts	4 lb ft	5 Nm (0.5 kgm)
Fuel Shutoff Solenoid	10 lb ft	15 Nm (1.5 kgm)

SPECIAL TORQUES (CONT'D)

	U.S. Value	Metric Value
Turbocharger Mounting Bolts	24 lb ft	32 Nm (3.2 kgm)
Turbocharger Drain Tube Bolts	18 lb ft	24 Nm (2.4 kgm)
Turbine Housing Bolts	96 lb inch	11Nm (1.1 kgm)
Center Housing to Back Plate Bolts	48 lb inch	6 Nm (0.6 kgm)
Compressor Housing Bolts	48 lb inch	6Nm (0.6 kgm)
Compressor Lock Nut	120 lb inch	14 Nm (1.4 kgm)
Thrust Bearing Screws (Torx Head)	36 lb inch	5Nm (0.5 kgm)
Water Pump Mounting Bolts	18 lb ft	24 Nm (2.4 kgm)
Coolant Inlet Bolts	32 lb ft	43 Nm (4.3 kgm)
Valve Cover Bolts	18 lb ft	24 Nm (2.4 kgm)

NOTE: The 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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Section

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