

1080/1080B EXCAVATOR TABLE OF CONTENTS

DIVISION/SECTION	SECTION NO.	FORM NO.
1 GENERAL		
Safety Rules, Service Manual Introduction, and Torque Specifications	1001	8-42680
Maintenance and Lubrication	1002	8-42680
General Engine Specifications (Case Engine) - 1080	1010	8-25780
General Engine Specifications (Case Engine) - 1080B	1010	8-27550
Detailed Engine Specifications (Case Engine) - 1080B	1020	8-22760
Detailed Engine Specifications (Case Engine) - 1080	1320	8-20040
2 ENGINE		
Engine and Radiator Removal and Installation	2000	8-42680
Engine Accessories (Air Cleaner, Ether Injection System, Turbocharger, Pump Drive Plate, Exhaust System)	2001	8-42680
Engine Tune-Up	2002	9-76379
Cylinder Head, Valve Train, and Camshaft	2015	8-22560
Cylinder Block, Sleeves, Pistons and Rods	2025	9-76176
Crankshaft, Main Bearings, Flywheel, and Oil Seals	2035	9-76187
Lubrication System (1080B)	2045	9-78046
Lubrication System (1080)	2046	8-22780
Cooling System	2055	9-76337
Engine Troubleshooting	2201	8-20111
Reconditioning Large Bore Case Engine Blocks	2290	8-21170
Turbocharger Failure Analysis	2565	9-78235
Detroit Diesel Engine Manual - In Line 71		6-SE-250
3 FUEL SYSTEM		
Fuel Lines, Fuel Tank, and Engine Controls	3001	8-42680
Fuel System and Filters	3010	9-75297
Robert Bosch Fuel Injection Pump	3012	9-74937
17 mm Fuel Injectors	3213	8-20240
4 ELECTRICAL		
Electrical System Specifications and Troubleshooting	4002	8-42681
Wiring Schematics	4003	8-42681
Batteries	4005	8-42680
Starter	4006	8-41430
Alternator	4007	8-42680
5 TRACK AND SUSPENSION		
Troubleshooting the Track System	5502	8-42680
Track Chain and Shoes	5503	8-42681
Track Rollers, Carriers Rollers, Idlers, Track Adjuster Cylinders, and Sprockets	5506	8-42681
6 POWER TRAIN		
Troubleshooting	6302	8-38240
Drive Motor Circuit and Lines	6311	8-42680
Drive Motor	6312	8-42680
Final Drive Transmission (1080)	6317	8-42681
Final Drive Transmission (1080B)	6318	8-42680

DIVISION/SECTION	SECTION NO.	FORM NO.
7 BRAKES		
House Brakes	7011	8-38240
Drive Brakes	7012	8-42680
8 HYDRAULICS		
Maintenance and Service	8201	8-42680
Hydraulic System Specifications, Schematics, Troubleshooting, Pressure Checks, and Flowmeter Tests	8202	8-42681
Hydraulic Pump	8205	8-42680
Control Valves	8207	8-42680
Swing Hydraulic Circuit, Swing Motor, and Swing Relief Valve	8210	8-42681
Boom Hydraulic Circuit	8211	8-42681
Dipper Hydraulic Circuit	8212	8-42681
Bucket Hydraulic Circuit	8213	8-42681
Leveler Hydraulic Circuit	8215	8-42681
Hydraulic Swivel	8218	8-42681
Pilot Control System	8220	8-42681
Power Sensing Valve	8221	8-38240
Cylinders	8290	8-42681
9 MOUNTED EQUIPMENT		
Troubleshooting (Swing Mechanism)	9202	8-38240
Swing Gearbox	9210	8-42681
Boom	9211	8-42681
Attachments (Wrist-O-Twist, Buckets)	9213	8-42681
Turntable Leveler	9215	8-38230
Turntable Bearing and Related Parts	9216	8-42681
Decals and Painting	9221	8-42681
REAR POCKET		
Electrical Schematic (1080)		830882A
Electrical Schematic (1080B)		860505
Hydraulic Schematic (Pilot Controls Two Speed Drive Motor) - 1080 and 1080B		840970
Hydraulic Schematic (Pilot Controls Single Speed Drive Motor) - 1080		840971
Hydraulic Schematic (Hydraulic Circuits) - 1080 and 1080B		840972

1001

SAFETY RULES, SERVICE MANUAL INTRODUCTION, AND TORQUE SPECIFICATIONS

TABLE OF CONTENTS

Safety Rules	1001-2
Service Manual Introduction	1001-4
Torque Specifications - U.S. Hardware	1001-5
Torque Specifications - Metric Hardware	1001-6
Torque Specifications - Steel Hydraulic Fittings	1001-7

Written In *Clear
And
Simple
English*

**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**


JustClickHere 

NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

**Have any questions please write to me:
admin@servicemanualperfect.com**

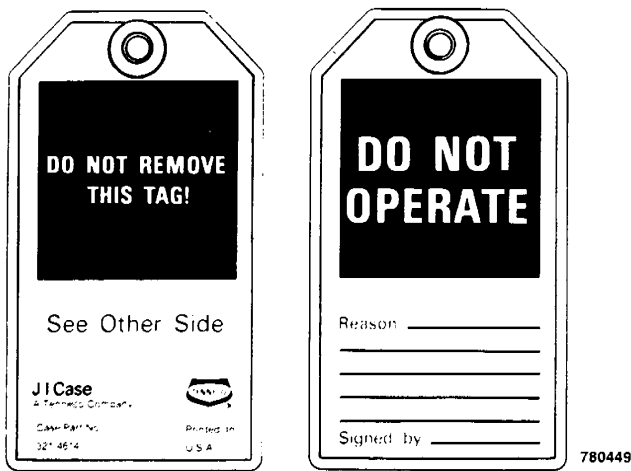
SAFETY RULES


 This symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.** The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death. 1-1-C


NOTE: To prevent injury on job, follow the Warning, Caution, and Danger notes in this section and other sections throughout this manual. Follow the instructions carefully.


The procedures recommended and shown in this manual are good, effective service methods. However, all possible procedures and service hazards may not be covered. Therefore, if you use a tool or procedure not recommended, you must make sure that the method you select is a safe method.


Put the warning tag shown below on the key for the key switch when you are servicing or repairing this machine. One warning tag is on every new machine. You can buy additional warning tags, part number 331-4614, from Service Parts Supply.




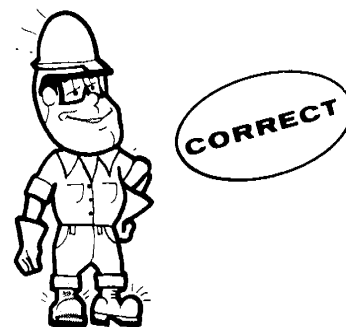
 **WARNING:** Read operator's manual to familiarize yourself with control lever functions. 46-27


 **WARNING:** Operate tractor and equipment controls from the seat position only. Any other method could result in serious injury. 48-55

 **WARNING:** This is a one man machine, no riders allowed. 35-8

 **WARNING:** Before starting engine, study operator's manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operator's and service manuals may be obtained from your J I Case dealer. 45-2

 **WARNING:** If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing. 45-3-A



 **WARNING:** When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution. 35-4



WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. **DO NOT** change the procedure. 47-44



WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way. 47-45



WARNING: Use insulated gloves or mittens when working with hot parts. 47-41A



CAUTION: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service. 49-11



CAUTION: Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. **DO NOT** use your hand to check for leaks; use a piece of cardboard or wood. 40-6-A



CAUTION: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer. 46-17



CAUTION: When using a hammer to remove and install pivot pins or separate parts, using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors). 46-13



CAUTION: When servicing or repairing the machine, keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and/or shop cloths as required. Use safe practices at all times. 40-8



CAUTION: Use suitable floor (service) jacks or chain hoists to raise wheels or track off the floor. Always block machine in place with suitable safety stands. 40-7-A



CAUTION: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this service manual. 40-10



DANGER: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, open the doors and get outside air into the area. 48-56

SERVICE MANUAL INTRODUCTION

This service manual has been prepared with the latest service information available. Troubleshooting, removal, disassembly, inspection and installation procedures, and complete specifications and tightening references can be found in most sections. Some sections have drawings but no written procedure because the job is so easily done. This service manual is one of the most important tools available to the service technician.

Right, Left, Front, and Rear

The terms right-hand and left-hand and front and rear as used in this manual indicate the right and left sides, and front and rear of the machine as seen from the operator's seat for correct operation of the machine or attachment.

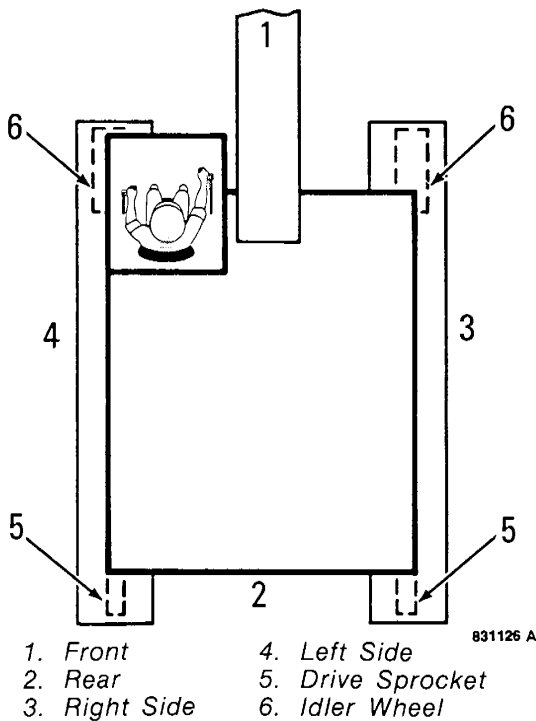


Table of Contents

A Table of Contents is in the front of this manual. The Table of Contents shows the main divisions and the sections that are in each division. The individual sections, where necessary, also have a Table of Contents.

Page Numbers

All page numbers are made of two numbers separated by a dash, such as 4002-9. The number before the dash is the section number. The number following the dash is the page number in that section. Page numbers will be found at the upper right or left of each page.

Illustrations

Illustrations are put as near as possible to the text and are to be used as part of the text.

Clear and Simple English

This manual is written in C.A.S.E. (Clear and Simple English). C.A.S.E. is easier to read than "regular" English because C.A.S.E. uses a small number of common words and has special rules for writing.

All sections written in C.A.S.E. are indicated by the symbol below.



Special Tools

Special tools are needed to remove and install, disassemble and assemble, check and adjust some component parts of this machine. Some special tools can be easily made locally and the necessary information to make the tool is in this service manual. Other special tools are more difficult to make locally and are available from Service Tools in the U.S. and from Jobborn Manufacturing in Canada. Use these tools according to the instructions in this service manual for your personal safety and to do the job correctly.


Order special tools from either of the following companies.


Service Tools
 P.O. Box 314
 Owatonna, Minnesota 55060

Jobborn Manufacturing Co.
 97 Frid Street
 Hamilton, Ontario L8P 4M3
 Canada

TORQUE SPECIFICATIONS - U.S. 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, moly-disulfide greases, or other extreme pressure lubricants are used.


Grade 5 Bolts, Nuts, and Studs			
			
Size	Pound-Feet	Newton metres	Kilogram metres
1/4 in 6.4 mm	9-11	12-15	1.2-1.5
5/16 in 7.9 mm	17-21	23-28	2.4-2.9
3/8 in 9.5 mm	35-42	48-57	4.8-5.8
7/16 in 11.1 mm	54-64	73-87	7.5-8.8
1/2 in 12.7 mm	80-96	109-130	11.1-13.3
9/16 in 14.3 mm	110-132	149-179	15.2-18.2
5/8 in 15.9 mm	150-180	203-244	20.8-24.9
3/4 in 19.0 mm	270-324	366-439	37.3-44.8
7/8 in 22.2 mm	400-480	542-651	55.3-66.4
1.0 in 25.4 mm	580-696	787-944	80.2-96.2
1-1/8 in 28.6 mm	800-880	1085-1193	111-122
1-1/4 in 31.8 mm	1120-1240	1519-1681	155-171
1-3/8 in 34.9 mm	1460-1680	1980-2278	202-232
1-1/2 in 38.1 mm	1940-2200	2631-2983	268-304


Grade 6 Bolts, Nuts, and Studs			
			
Size	Pound-Feet	Newton metres	Kilogram metres
1/4 in 6.4 mm	12-15	16-20	1.7-2.1
5/16 in 7.9 mm	24-29	33-39	3.3-4.0
3/8 in 9.5 mm	45-54	61-73	6.2-7.5
7/16 in 11.1 mm	70-84	95-114	9.7-11.6
1/2 in 12.7 mm	110-132	149-179	15.2-18.2
9/16 in 14.3 mm	160-192	217-260	22.1-26.5
5/8 in 15.9 mm	220-264	298-358	30.4-36.5
3/4 in 19.0 mm	380-456	515-618	52.5-63.0
7/8 in 22.2 mm	600-720	814-976	83.0-99.5
1.0 in 25.4 mm	900-1080	1220-1465	124-149
1-1/8 in 28.6 mm	1280-1440	1736-1953	177-199
1-1/4 in 31.8 mm	1820-2000	2468-2712	252-277
1-3/8 in 34.9 mm	2380-2720	3227-3688	329-376
1-1/2 in 38.1 mm	3160-3560	4285-4827	437-492

TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques 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 moly-disulfide grease or oil is used.

Grade 8.8 Bolts, Nuts, and Studs			
			
Size	Pound-Feet	Newton metres	Kilogram metres
M4 0.15 in	2-3	3-4	0.3-0.4
M5 0.19 in	5-6	6.5-8	0.7-0.8
M6 0.23 in	8-9	10.5-12	1.1-1.2
M8 0.31 in	19-23	26-31	2.6-3.2
M10 0.39 in	38-45	52-61	5.3-6.2
M12 0.46 in	66-79	90-107	9.1-10.9
M14 0.55 in	106-127	144-172	14.7-17.6
M16 0.62 in	160-200	217-271	22.1-27.7
M20 0.78 in	320-380	434-515	44.2-52.5
M24 0.94 in	500-600	675-815	69.1-83.0
M30 1.17 in	920-1100	1250-1500	127-152
M36 1.40 in	1600-1950	2175-2600	221-270

Grade 10.9 Bolts, Nuts, and Studs			
			
Size	Pound-Feet	Newton metres	Kilogram metres
M4 0.15 in	3-4	4-5	0.4-0.5
M5 0.19 in	7-8	9.5-11	1.0-1.1
M6 0.23 in	11-13	15-17.5	1.5-1.8
M8 0.31 in	27-32	37-43	3.7-4.4
M10 0.39 in	54-64	73-87	7.5-8.8
M12 0.46 in	93-112	125-150	12.9-15.5
M14 0.55 in	149-179	200-245	20.6-24.7
M16 0.62 in	230-280	310-380	31.8-38.7
M20 0.78 in	450-540	610-730	62.2-74.7
M24 0.94 in	780-940	1050-1275	108-130
M30 1.17 in	1470-1770	2000-2400	203-245
M36 1.40 in	2580-3090	3500-4200	357-427

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- Feet	Newton metres	Kilogram metres
37 Degree Flare Fittings				
1/4 in 6.4 mm	7/16-20	6-12	8-16	0.8-1.7
5/16 in 7.9 mm	1/2-20	8-16	11-21	1.1-2.2
3/8 in 9.5 mm	9/16-18	10-25	14-33	1.4-3.5
1/2 in 12.7 mm	3/4-16	15-42	20-56	2.1-5.8
5/8 in 15.9 mm	7/8-14	25-58	34-78	3.5-8.0
3/4 in 19.0 mm	1-1/16-12	40-80	54-108	5.5-11.1
7/8 in 22.2 mm	1-3/16-12	60-100	81-135	8.3-13.9
1.0 in 25.4 mm	1-5/16-12	75-117	102-158	10.4-16.2
1-1/4 in 31.8 mm	1-5/8-12	125-165	169-223	17.3-22.8
1-1/2 in 38.1 mm	1-7/8-12	210-250	285-338	29.0-34.6

Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres	Kilogram metres
Straight Threads with O-ring				
1/4 in 6.4 mm	7/16-20	12-19	16-25	1.7-2.6
5/16 in 7.9 mm	1/2-20	16-25	22-33	2.2-3.5
3/8 in 9.5 mm	9/16-18	25-40	34-54	3.5-5.5
1/2 in 12.7 mm	3/4-16	42-67	57-90	5.8-9.3
5/8 in 15.9 mm	7/8-14	58-92	79-124	8.0-12.7
3/4 in 19.0 mm	1-1/16-12	80-128	108-174	11.1-17.8
7/8 in 22.2 mm	1-3/16-12	100-160	136-216	13.8-22.1
1.0 in 25.4 mm	1-5/16-12	117-187	159-253	16.2-25.9
1-1/4 in 31.8 mm	1-5/8-12	165-264	224-357	22.8-36.5
1-1/2 in 38.1 mm	1-7/8-12	250-400	339-542	34.6-55.3

Split Flange Mounting Bolts			
Size	Pound- Feet	Newton metres	Kilogram metres
5/16-18	15-20	20-27	2.1-2.8
3/8-16	20-25	26-33	2.8-3.5
7/16-14	35-45	47-61	4.7-6.2
1/2-13	55-65	74-88	7.6-9.0
5/8-11	140-150	190-203	19.4-20.7

1002

MAINTENANCE AND LUBRICATION

TABLE OF CONTENTS

Systemgard™ Testing Schedule	1002-2	Maintenance Schedule	1002-3
Run-in Period	1002-2	Fluids and Lubricants Chart	1002-5
Run-in Maintenance Schedule	1002-2		

Written In *Clear
And
Simple
English*

SYSTEMGARD™ TESTING SCHEDULE

Get samples of lubricants for Systemgard™ analysis at the intervals shown below. Follow the instructions with the Systemgard™ kits.

	Every 100 hours of operation	Every 500 hours of operation (at least three times yearly)
Engine	X	
Hydraulic System		X
Swing Gearbox		X
Final Drive Transmission		X

RUN-IN PERIOD

During the first 20 hours of operation for a new machine, or a machine with a rebuilt engine, make sure you do the following:

1. Operate the machine with normal loads for the first 8 hours.
2. Keep the engine at normal operating temperatures.
3. Do not run the engine at idle speeds for long periods of times.
4. See the Run-In Maintenance Schedule on this page for additional information.

RUN-IN MAINTENANCE SCHEDULE

The following items are to be done during the Run-In Period and are in addition to the items in the Maintenance Schedule on the following page.

After First 20 Hours of Operation

Do the After Delivery Check See the Operators Manual

WARNING: *When you adjust or service the machine, always follow the instructions in the operator's or service manual. If the engine must be running, always have an extra person help you. Do not leave the operator's seat while the engine is running. Failure to follow these instructions can cause injury.*

47-51-A

MAINTENANCE SCHEDULE

The items in this maintenance schedule are at maximum intervals. If you are operating the machine under severe conditions (high temperatures, mud, dust, water, etc.), shorten the intervals.

Every 10 Hours of Operation or Each Day Whichever Occurs First

Clean and replace all safety decals and instruction decals that cannot be read	Section 9221.
Check the restriction indicator for the air cleaner	See Operators Manual
Check the engine oil level	See Operators Manual
Check the fuel sediment bowl for water or sediment (Case engine)	See Operators Manual
Check the radiator coolant level	See Operators Manual
Check the hydraulic reservoir oil level	Section 8201
Check the swing gearbox oil level	Section 9210
Check the drive brakes for correct operation	See Operators Manual
Check the swing brake for correct operation	See Operators Manual
Lubricate the turntable ring gear	Section 9216
Lubricate the boom, arm, and bucket pivots	See Operators Manual
Lubricate the Wrist-O-Twist pivot points (If equipped)	See Operators Manual

Every 50 Hours of Operation

Drain water from the fuel tank	See Operators Manual
Clean the air cleaner dust valve	See Operators Manual
Clean the remote reservoir breather for the swing gearbox	See Operators Manual
Lubricate the drive sprocket pillow blocks	See Operators Manual
Lubricate the turntable pivot pins and cylinder pivot pins	See Operators Manual
Lubricate the turntable bearing	See Operators Manual
Lubricate the fan belt pulley hub (Detroit Diesel only)	See Operators Manual

Every 100 Hours of Operation

Change the engine oil and replace the engine oil filter/s See Operators Manual

Every 250 Hours of Operation

Check the drive belt tension See Operators Manual

Check the torque of the turntable bearing mounting bolts Section 9216

Check the battery fluid level Section 4005

Check the final drive oil level (each side) See Operators Manual

Lubricate the center swivel See Operators Manual

Lubricate the control lever pivots See Operators Manual

Every 500 Hours of Operation

Replace the fuel filters See Operators Manual

Clean the hydraulic reservoir breather See Operators Manual

Replace the hydraulic filters Section 8201

Clean the 140 mesh screen or change the 25 micron filter Section 8201

Every 1000 Hours of Operation

Change the oil of each final drive transmission Section 6317

Change the swing gearbox oil Section 9210

Clean the batteries and the battery area Section 4005

Every 2000 Hours of Operation or Each Year

Drain, flush, and fill the cooling system See Operators Manual

Change the hydraulic oil and clean the screens Section 8201

Check the blower screen and clean if required (Detroit Diesel engine only) See Detroit Diesel operators manual.

As Required

Check the radiator for leaks and trash. Clean as required ---

Service the air cleaner if the red band in the restriction indicator is in full view See Operators Manual

Replace the hydraulic oil filters if the warning lamp illuminates Section 8201

Check the track tension Section 5503

Fill windshield washer (if equipped) ---

FLUIDS AND LUBRICANTS CHART

ITEM	CAPACITY	SPECIFICATIONS
Fuel tank	75 gallons (284 litres)	See Operators Manual.
Cooling system	8.5 gallons (32 litres)	Mix ethylene glycol antifreeze and water according to manufacturers instructions.
Engine crankcase:		Enginergard (Case HDM oil)
Case engine Without filter change	19 quarts (18 litres)	SAE 30 CC/CD 32° F and above (0° F and above)
With filter change	23 quarts (21.8 litres)	SAE 20W20 CC/CD 10° to 50° F (-12° to 10° C)
Engine crankcase Detroit Diesel Without filter change	14 quarts (13.3 litres)	SAE 30 CD/SF, SAE 40 CD/SF, or SAE 15W40 CD/SF
With filter change	16 quarts (15 litres)	See Detroit Diesel service manual for additional information.
Hydraulic system System total	55 gallons (208 litres)	Powergard TCH (Case TCH Fluid) Alternate oil: C3 Hydraulic fluid
Reservoir refill	25 gallons (95 litres)	
Swing Gearbox	17 quarts (16.1 litres)	Loadgard GL-5 (Case FDL) or SAE 85W-140 API-GL-5 Gear Lubricant
Transmission Final drives (each)	12 quarts (11.4 litres)	
Turntable Ring Gear	As required	Symquip Spray Lube for Open gears (OGLD-20) Case Part No. 331-437
Batteries	As required	Add drinking or distilled water.
Grease fittings	As required	Weargard molydisulfide grease.

Section 1010

GENERAL ENGINE SPECIFICATIONS 1080 Crawler Excavator (504 DIESEL TURBOCHARGED ENGINE)

Written In *Clear
And
Simple
English*

504 DIESEL TURBOCHARGED ENGINE

General

Type	6 Cylinder, 4 Stroke Cycle, Valve-In-Head, Turbocharged
Firing Order	1-5-3-6-2-4
Bore	4-5/8 Inch (117.48 mm)
Stroke	5 Inch (127.00 mm)
Piston Displacement	504 Cubic Inch (8 259 cm ³)
Compression Ratio	15.8 to 1
No Load Governed Speed	2280 to 2320 RPM
Rated Engine Speed	2100 RPM
Engine Idle Speed	700 to 750 RPM
Valve Tappet Clearance (Exhaust)	(Cold) 0.025 Inch (0.635 mm)
(Intake)	(Cold) 0.015 Inch (0.381 mm)
Intake and Exhaust Valve Rotators	Positive Type
Thermostat Operating Range	175°F to 202°F (79°C to 94°C)

Piston and Connecting Rods

Rings Per Piston	3
Number of Compression Rings	2
Number of Oil Rings	1
Type Pins	Full Floating
Type Bearing	Replaceable, Precision Steel Back Liners

Main Bearings

Number of Bearings	7
Type Bearings	Replaceable, Precision Steel Back Liners

Engine Lubricating System

Oil Pressure	45 to 60 PSI (310 to 414 kPa)(3.10 to 4.14 bar) with Engine Warm and Operating at Rated Engine Speed
Type System	Pressure and Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow Turn On Type
Oil Capacity (With Filter)	23 Quarts (21.77 Litres)
(Without Filter)	19 Quarts (17.98 Litres)

Fuel System

Fuel Injection Pump	Robert Bosch
Pump Timing	27 Degrees Before Top Center
Fuel Injectors	Pencil Type, Opening Pressure (New) 3950 to 4100 PSI (27 235 to 28 270 kPa)(272 to 283 bar)
Fuel Transfer Pump	Plunger Type, Integral Part of Injection Pump
Governor	Variable Speed, Fly-Weight Centrifugal Type, Integral Part of Injection Pump
First Stage Fuel Filter	Full Flow Turn On Type
Second Stage Fuel Filter	Full Flow Turn On Type

Section

1010

GENERAL ENGINE SPECIFICATIONS 1080B EXCAVATOR

504BDT DIESEL ENGINE

General

Type	6 Cylinder, 4 Stroke Cycle, Valve-In-Head
Firing Order	1-5-3-6-2-4
Bore	4-5/8 Inches (117.48 mm)
Stroke	5 Inches (127 mm)
Piston Displacement	504 Cubic Inches (8 259 cm ³)
Compression Ratio	15.8 to 1
No Load Governed Speed	2335 to 2365 RPM
Rated Engine Speed	2100 RPM
Engine Idling Speed	725 to 775 RPM
Exhaust Valve Rotators	Positive Type
Valve Tappet Clearance (Exhaust)	(Cold) 0.025 Inch (0.635 mm)
(Intake)	(Cold) 0.015 Inch (0.381 mm)
Thermostat Operating Range	175°F to 202°F (79°C to 94°C)

Piston And Connecting Rods

Rings Per Piston	3
Number of Compression Rings	2
Number of Oil Rings	1
Type Pins	Full Floating Type
Type Bearing	Replaceable Precision, Steel Back, Copper-Lead Liners

Main Bearings

Number of Bearings	7
Type Bearings	Replaceable Precision, Steel Back, Copper-Lead Liners

Engine Lubricating System

Crankcase Capacity (Without Filter Change)	19 Quarts (18.0 Litres)
(With Filter Change)	23 Quarts (21.8 Litres)
Oil Pressure	45 to 60 PSI (310 to 414 kPa)(3.10 to 4.14 bar)
	With Engine Warm and Operating At Rated Engine Speed
Type System	Pressure And Spray Circulation
Oil Pump	Gear Type
Oil Filters	Full Flow Turn On Type

Fuel System

Fuel Injection Pump	Robert Bosch, Type PES Multiple Plunger
Pump Timing	27 Degrees Before Top Center
Fuel Injectors	17 mm Type, Opening Pressure (New)
	3950 to 4100 PSI (27 235 to 28 270 kPa)
Fuel Transfer Pump	Plunger Type, Integral Part Of Injection Pump
Governor	Variable Speed, Fly-Weight Centrifugal Type, Integral Part Of Injection Pump
1st Stage Fuel Filter	Full Flow Turn On Type
2nd Stage Fuel Filter	Full Flow Turn On Type