

W30 LOADER

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Reprinted

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1001

SAFETY RULES SERVICE MANUAL INTRODUCTION AND TORQUE SPECIFICATIONS

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Written In *Clear
And
Simple
English*

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


IMPORTANT: 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.




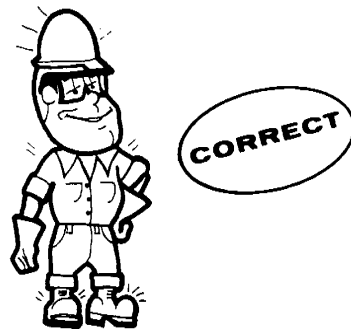
780449

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





750143


 **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



750213A

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

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

JustClickHere 

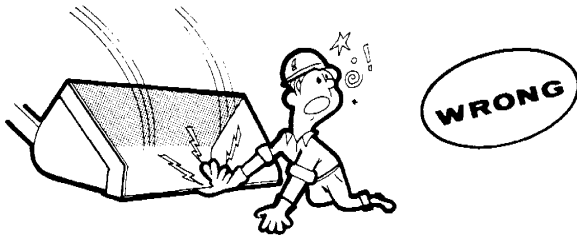
NOTE:

**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**

WARNING: If the bucket must be raised during servicing or repairs, use an acceptable stand to hold the loader frame in place. 48-94

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



742679

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

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

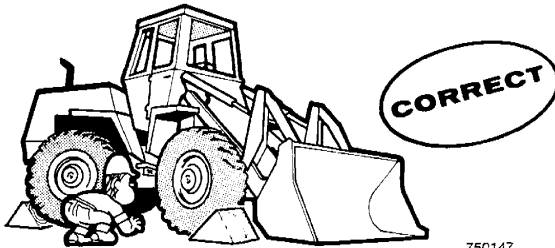
CAUTION: When using a hammer to remove and install pivot pins or separate parts, using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors). 46-13

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

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

WARNING: Locate the machine on level ground and block the wheels securely before working under the machine. Failure to follow the above procedure can result in personal injury. 46-77

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



750147

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

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

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



750149

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.

Text

If the service manual is for more than one machine or different models of components (planetary axles, gear boxes, control valves, etc.) the procedures have the steps necessary to service each model.

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, have a Table of Contents on the cover or second page of that section.

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 and understand 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.

<p>Written In <i>Clear And Simple English</i></p>

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.

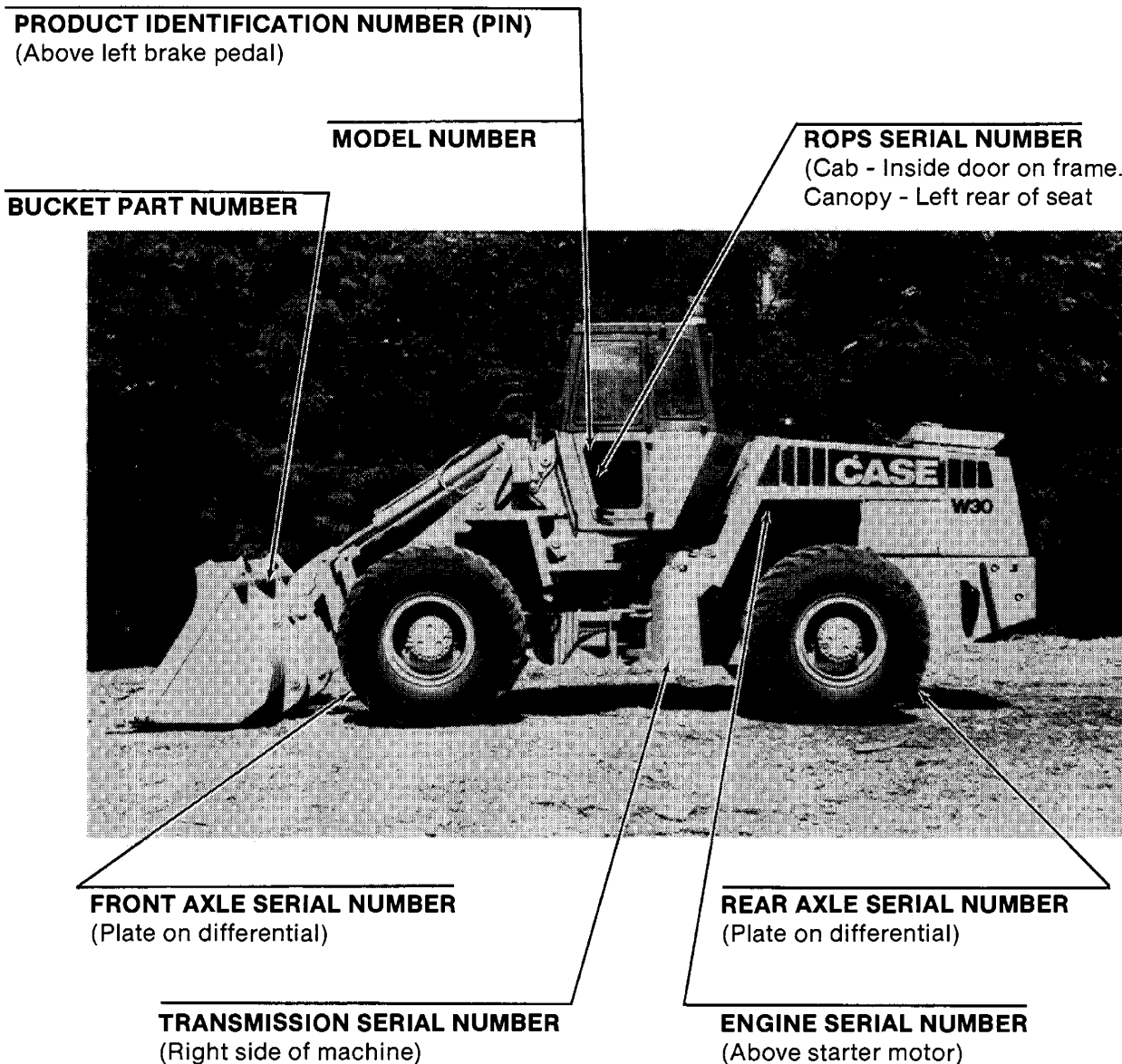
Order special tools from either of the following companies:

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

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


PRODUCT IDENTIFICATION NUMBER (PIN) AND SERIAL NUMBERS


NOTE: A serial number plate is also on many components such as the starter, alternator, pumps, etc.



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 8 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 - 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	34-45	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

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FLUIDS AND LUBRICANTS CHART

COMPONENT	CAPACITY	SPECIFICATIONS
Fuel tank	80 gallons (302.8 litres)	See Operators Manual
Cooling system	14.8 gallons (56 litres)	A mixture of half ethylene glycol and water must be used at all times. If the coldest outside temperature will be less than -34°F (-36°C) add antifreeze.
Crankcase: Without filter change	24 quarts (22.7 litres)	Case IH No. 1 Engine Oil Above 32°F (0°C) SAE 30 SF/CD Above 15°F (9.5°C) SAE 15W40 SF/CD Below 32°F (0°C) SAE 10W SF/CD
With filter change	28 quarts (26.5 litres)	
Hydraulic System		Powergard TCH (Case TCH) Alternate hydraulic oil: Type C3 Fluid Above 32°F (0°C) SAE 20 SC Below 32°F (0°C) SAE 10W SC
System	48 gallons (181.7 litres)	
Reservoir	28 gallons (106.4 litres)	
Axles		Case IH 135H EP Gear Lubricant Alternate gear lubricant SAE 85W - 140 API-GL-5
Center bowl	13 quarts (12.3 litres)	
Wheel end, each	4 quarts (3.8 litres)	
Transmission (Allison or Twin Disc) Before P.I.N. 9165563 System	*See note below 8 gallons (30 litres)	Case TCH Fluid Alternate oil: Type C-3 transmission oil
Transmission	6.5 gallons (25 litres)	
Transmission (ZF) P.I.N. 9165563 and after except 9165564 System	7 gallons (26.5 litres)	API CC, CD or SC, SD, SE, SF Engine oil Above 14°F (-10°C) SAE 20W20 -4 to 14°F (-20 to -10°C) SAE 10W Below -4°F (-20°C) ATF
Transmission	5.5 gallons (20.8 litres)	
Alcohol evaporator	1 pint (0.5 litre)	Clean methyl alcohol
Batteries	As required	Add drinking or distilled water.
Master cylinders	As required	DOT-3 Brake Fluid
Grease fittings	As required	Molydisulfide multipurpose grease.

*NOTE: Machines with P.I.N. 9163365, 9163366, 9163367, and 9163368 also have a ZF transmission.

MAINTENANCE SCHEDULE

This schedule shows the maximum service intervals for the correct maintenance of the machine. Shorten the intervals when the operating conditions are severe.

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	X
Hydraulic System		X
Transmission		X
Differential		X
Final drive/planetary		X
Power shuttle		X

Run-In Period

After the first 100 hours of operation on a new machine or a machine with a new or repaired transmission, replace the transmission oil filter and change the transmission oil Section 6101

———— EVERY 10 HOURS OF OPERATION OR EACH DAY, WHICHEVER OCCURS FIRST ————

Check level of engine oil	See Operators Manual
Check level of hydraulic oil	Section 8002
Check level of coolant in radiator	See Operators Manual
Check the tires for damage, rocks in tire(s), and correct air pressure	Section 6129
Check level of alcohol in alcohol evaporator	See Operators Manual
Check condition of drive belts (wear, damage, etc.)	See Operators Manual
Clean or replace all decals that cannot be read	Section 9201
Drain water from the air reservoir	See Operators Manual

EVERY 50 HOURS OF OPERATION

Check sediment bowl on transfer pump for water and sediment	See Operators Manual
Check level of transmission oil	Section 6012
Check level of fluid in batteries	Section 4005
Clean air filters for ROPS cab	Section 9061
Lubricate pivot points for the bucket	See Operators Manual
Lubricate chassis pivot points	See Operators Manual
Lubricate pivot points for steering cylinder rod ends	See Operators Manual
Lubricate center drive shaft slip joints	See Operators Manual
Lubricate rear axle trunnion pivots	See Operators Manual

EVERY 100 HOURS OF OPERATION

Change engine oil	See Operators Manual
Lubricate pivot points for loader, bucket, and clam control levers	See Operators Manual
Lubricate pivot points for steering cylinders closed ends	See Operators Manual

EVERY 200 HOURS OF OPERATION

Change engine oil filters	See Operators Manual
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EVERY 250 HOURS OF OPERATION

Check level of gear lubricant in axles	Section 6126
Lubricate hinges for ROPS cab door	See Operators Manual
Lubricate pivot points for suspension seat	Section 9064
Actuate air conditioning system to lubricate compressor	See Operators Manual

EVERY 500 HOURS OF OPERATION

Check level of brake fluid in reservoir for master cylinders	See Operators Manual
Check tension of drive belts	Section 4007, 7103 and 9003
Replace fuel filters	Section 3010
Replace filter for transmission oil (Allison transmission)	Section 6101
Drain water and sediment from fuel tank	See Operators Manual
Lubricate universal joints and slip joints	See Operators Manual
Lubricate center bearing for center drive shaft	See Operators Manual
Inspect ROPS cab of ROPS canopy	Section 9061

EVERY 1000 HOURS OF OPERATION

Change gear lubricant in each axle	Section 6126
Clean the breather for each differential	Section 6126
Change transmission oil	Section 6101
Replace filter for transmission oil (ZF transmission)	Section 6101
Clean suction screen in transmission	Section 6101
Clean breather for transmission	Section 6101
Replace filters for hydraulic oil	Section 8002
Clean cylinder head for air compressor	Section 7103

EVERY 2000 HOURS OF OPERATION OR EACH YEAR

Clean the cooling system. Fill cooling system with new coolant	See Fluids and Lubricants Chart
Change hydraulic oil	Section 8002
Clean suction screen in reservoir for hydraulic oil	Section 8002
Check refrigerant charge in air conditioning system	Section 9003
Disassemble and clean alcohol evaporator	Section 7111

AS REQUIRED

Service the air cleaner	Section 2001
Replace filters for hydraulic oil when warning lamp is illuminated	Section 8002
Tighten wheel nuts to correct torque value after wheel is removed and installed	Section 6129

Section 1010

GENERAL ENGINE SPECIFICATIONS

W30 Loader

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	2330 to 2370 RPM
Rated Engine Speed	2200 RPM
Engine Idle Speed	725 to 775 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 202TF (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)	28 Quarts (21.77 Litres)
(Without Filter)	24 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 1320

SPECIFICATION DETAILS

504BDT ENGINE

Written In *Clear
And
Simple
English*

FRACTION to DECIMAL to MILLIMETER CONVERSION TABLE

Fraction	Decimal	MM	Fraction	Decimal	MM	Fraction	Decimal	MM
1/64	.0156	0.397	23/64	.3593	9.128	45/64	.7031	17.859
1/32	.0312	0.794	3/8	.3750	9.525	23/32	.7187	18.256
3/64	.0468	1.191	25/64	.3906	9.922	47/64	.7343	18.653
1/16	.0625	1.587	13/32	.4062	10.319	3/4	.7500	19.050
5/64	.0781	1.984	27/64	.4218	10.716	49/64	.7656	19.447
3/32	.0937	2.381	7/16	.4375	11.113	25/32	.7812	19.844
7/64	.1093	2.778	29/64	.4531	11.509	51/64	.7968	20.240
1/8	.1250	3.175	15/32	.4687	11.906	13/16	.8125	20.637
9/64	.1406	3.572	31/64	.4843	12.303	53/64	.8281	21.034
5/32	.1562	3.969	1/2	.5000	12.700	27/32	.8437	21.431
11/64	.1718	4.366	33/64	.5156	13.097	55/64	.8593	21.828
3/16	.1875	4.762	17/32	.5312	13.494	7/8	.8750	22.225
13/64	.2031	5.159	35/64	.5468	13.890	57/64	.8906	22.622
7/32	.2187	5.556	9/16	.5625	14.287	29/32	.9062	23.019
15/64	.2343	5.953	37/64	.5781	14.684	59/64	.9218	23.415
1/4	.2500	6.350	19/32	.5937	15.081	15/16	.9375	23.812
17/64	.2656	6.747	39/64	.6093	15.478	61/64	.9531	24.209
9/32	.2812	7.144	5/8	.6250	15.875	31/32	.9687	24.606
19/64	.2968	7.541	41/64	.6406	16.272	63/64	.9843	25.003
5/16	.3125	7.937	21/32	.6562	16.669	1	1.0000	25.400
21/64	.3281	8.334	43/64	.6718	17.065			
11/32	.3437	8.731	11/16	.6875	17.462			

INCH to MILLIMETER CONVERSION TABLE

Inch	MM	Inch	MM	Inch	MM	Inch	MM
1	25.400	6	152.000	10	254.000	60	1,524.000
2	50.800	7	177.800	20	508.000	70	1,778.000
3	76.200	8	203.200	30	762.000	80	2,032.000
4	101.600	9	228.600	40	1,016.000	90	2,286.000
5	127.000	10	254.000	50	1,270.000	100	2,540.000

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