

# 580 SUPER E LOADER BACKHOE

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# 1001

## **SAFETY RULES SERVICE MANUAL INTRODUCTION AND TORQUE SPECIFICATIONS**

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## SAFETY RULES

This Symbol Shows Important Information About Safety In This Manual. When You See This Symbol, Carefully Read The Information That Follows and Understand The Possible Causes of Injury Or Death. 1-1-A

**IMPORTANT:** To prevent injury on the 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.



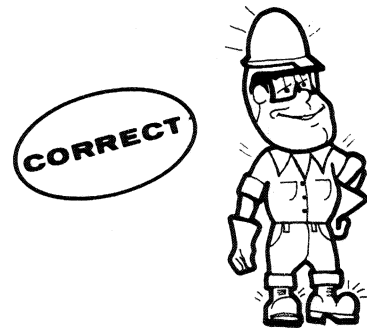
780449

**WARNING:** 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:** 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

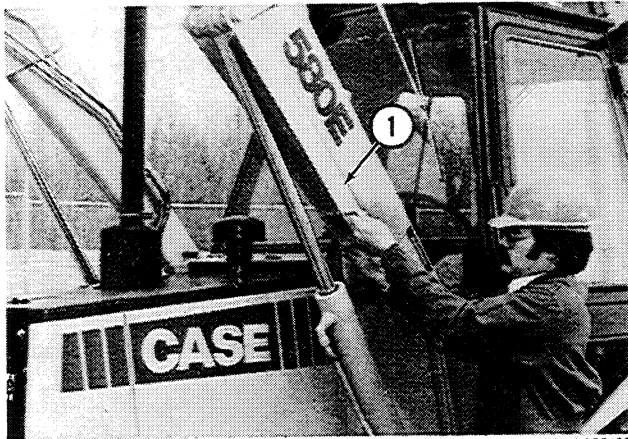


**DANGER:** Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, open the doors and get outside air into the area. 48-56


**WARNING:** Operate controls from the operator's seat only. 35-7


**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:** Whenever the bucket must be raised to aid in servicing, block the loader arms in place with lift cylinder support strut or a suitable safety stand. 23-7-B





1. Lift Cylinder Support Strut 835102


 **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


 **WARNING:** DO NOT, for any reason, weld the cast front axle. Welding will cause failure of the cast front axle and result in personal injury. 49-19


 **WARNING:** DO NOT, for any reason, weld the following parts.  
 Cast front axle  
 Swing tower  
 Support for swing cylinders  
 Stabilizer leg  
 Cast stabilizer foot  
 Bucket links, loader or backhoe  
 Welding will cause failure of the part and result in personal injury. 49-20


 **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

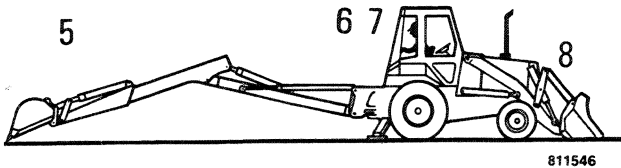
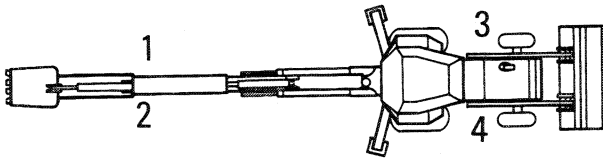
 **CAUTION:** Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this service manual. 40-10

## 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.



- |                              |                         |
|------------------------------|-------------------------|
| 1. <i>Right Side-Backhoe</i> | 5. <i>Front-Backhoe</i> |
| 2. <i>Left Side-Backhoe</i>  | 6. <i>Rear-Backhoe</i>  |
| 3. <i>Left Side-Machine</i>  | 7. <i>Rear-Machine</i>  |
| 4. <i>Right Side-Machine</i> | 8. <i>Front-Machine</i> |

### 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.

### Special Tools

Special tools are needed to remove and install, disassemble and assemble, check, and adjust some components 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.

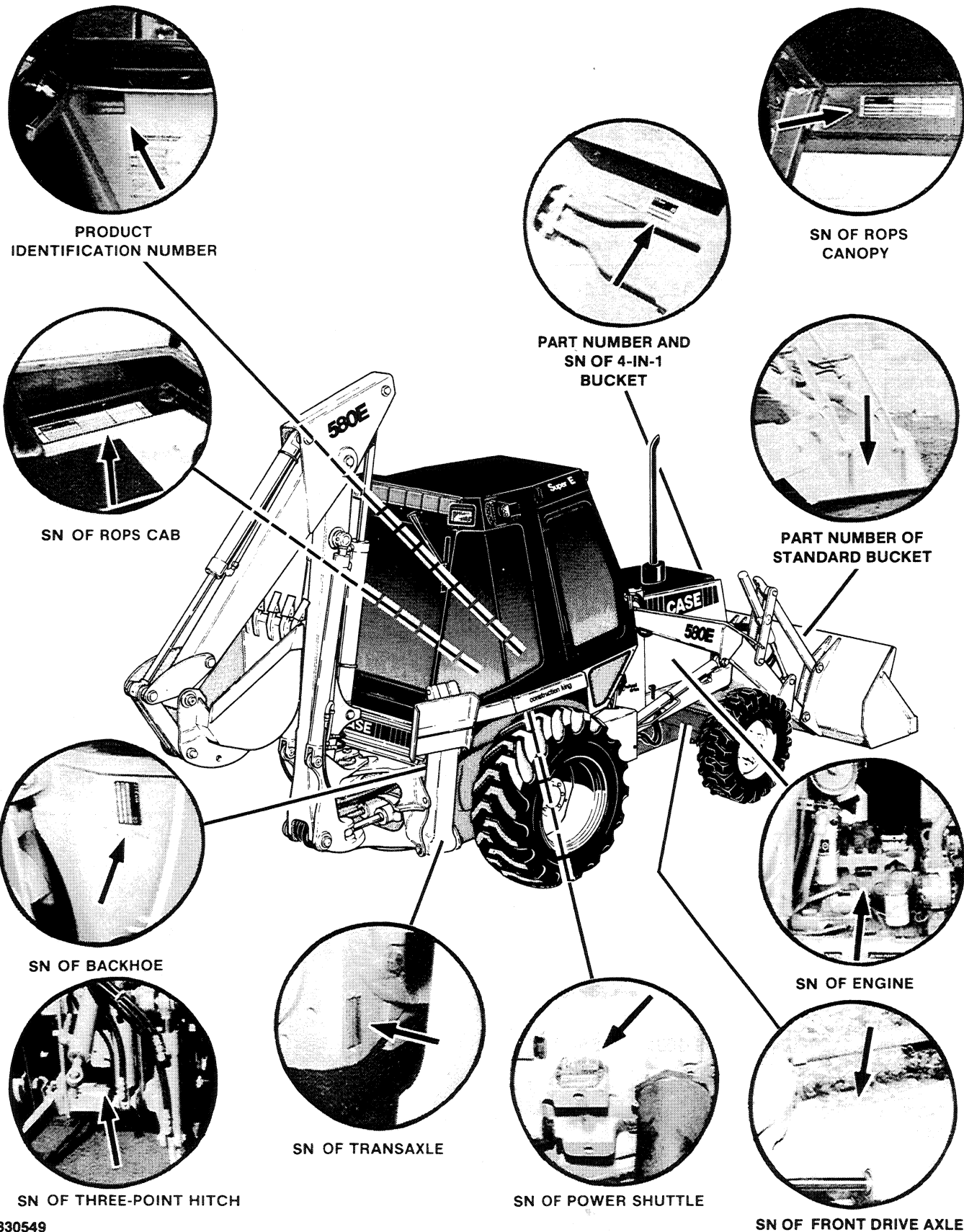
Order special tools from either of the following companies:

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 some 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.

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

<b>Grade 8 Bolts, Nuts, and Studs</b>			
  			
Size	Pound-Feet	Newton metres	Kilogram metres
<b>1/4 in</b> 6.4 mm	12-15	16-20	1.7-2.1
<b>5/16 in</b> 7.9 mm	24-29	33-39	3.3-4.0
<b>3/8 in</b> 9.5 mm	45-54	61-73	6.2-7.5
<b>7/16 in</b> 11.1 mm	70-84	95-114	9.7-11.6
<b>1/2 in</b> 12.7 mm	110-132	149-179	15.2-18.2
<b>9/16 in</b> 14.3 mm	160-192	217-260	22.1-26.5
<b>5/8 in</b> 15.9 mm	220-264	298-358	30.4-36.5
<b>3/4 in</b> 19.0 mm	380-456	515-618	52.5-63.0
<b>7/8 in</b> 22.2 mm	600-720	814-976	83.0-99.5
<b>1.0 in</b> 25.4 mm	900-1080	1220-1465	124-149
<b>1-1/8 in</b> 28.6 mm	1280-1440	1736-1953	177-199
<b>1-1/4 in</b> 31.8 mm	1820-2000	2468-2712	252-277
<b>1-3/8 in</b> 34.9 mm	2380-2720	3227-3688	329-376
<b>1-1/2 in</b> 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
<b>37 Degree Flare Fittings</b>				
<b>1/4 in</b> 6.4 mm	7/16-20	6-12	8-16	0.8-1.7
<b>5/16 in</b> 7.9 mm	1/2-20	8-16	11-21	1.1-2.2
<b>3/8 in</b> 9.5 mm	9/16-18	10-25	14-33	1.4-3.5
<b>1/2 in</b> 12.7 mm	3/4-16	15-42	20-56	2.1-5.8
<b>5/8 in</b> 15.9 mm	7/8-14	25-58	34-78	3.5-8.0
<b>3/4 in</b> 19.0 mm	1-1/16-12	40-80	54-108	5.5-11.1
<b>7/8 in</b> 22.2 mm	1-3/16-12	60-100	81-135	8.3-13.9
<b>1.0 in</b> 25.4 mm	1-5/16-12	75-117	102-158	10.4-16.2
<b>1-1/4 in</b> 31.8 mm	1-5/8-12	125-165	169-223	17.3-22.8
<b>1-1/2 in</b> 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
<b>Straight Threads with O-ring</b>				
<b>1/4 in</b> 6.4 mm	7/16-20	12-19	16-25	1.7-2.6
<b>5/16 in</b> 7.9 mm	1/2-20	16-25	22-33	2.2-3.5
<b>3/8 in</b> 9.5 mm	9/16-18	25-40	34-54	3.5-5.5
<b>1/2 in</b> 12.7 mm	3/4-16	42-67	57-90	5.8-9.3
<b>5/8 in</b> 15.9 mm	7/8-14	58-92	79-124	8.0-12.7
<b>3/4 in</b> 19.0 mm	1-1/16-12	80-128	108-174	11.1-17.8
<b>7/8 in</b> 22.2 mm	1-3/16-12	100-160	136-216	13.8-22.1
<b>1.0 in</b> 25.4 mm	1-5/16-12	117-187	159-253	16.2-25.9
<b>1-1/4 in</b> 31.8 mm	1-5/8-12	165-264	224-357	22.8-36.5
<b>1-1/2 in</b> 38.1 mm	1-7/8-12	250-400	339-542	34.6-55.3

<b>Split Flange Mounting Bolts</b>			
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

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Coolant Recovery System .....	1002-6

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## FLUIDS AND LUBRICANTS

COMPONENT	CAPACITY		SPECIFICATIONS
	U.S.	METRIC	
Fuel tank	26.5 gallons	100 litres	See Operators Manual
Engine crankcase With filter change	11 quarts	10.4 litres	<p>Recommended Engine Oil:</p> <p>Above 30° F (-1° C) ... SAE 20W-40 CC, CD</p> <p>Above 10° F (-12° C) .. SAE 15W-40 CC, CD</p> <p>Below 90° F (32° C) .. SAE 10W-30 CC, CD</p> <p>Alternate Engine Oil:</p> <p>Above 50° F (10° C) ..... SAE 40 CC, CD</p> <p>Above 39° F (4° C) ..... SAE 30 CC, CD</p> <p>23° to 68° F (-5° to 20° C) ..... SAE 20W20 CC, CD</p> <p>Below 32° F (0° C) ..... SAE 10W CC, CD</p>
Cooling system With heater Without heater	18.9 quarts 18.2 quarts	17.9 litres 17.2 litres	Mix ethylene glycol with water for the lowest ambient temperature expected. The mixture must be half ethylene glycol and half water.
Hydraulic reservoir System capacity with loader/backhoe	12.5 gallons 23.75 gallons	47.3 litres 89.9 litres	Case TCH Fluid
Power shuttle	8 quarts	7.6 litres	Case TCH Fluid
Transaxle	20 quarts	18.9 litres	<p>Case FDL Fluid</p> <p>Alternate oil:</p> <p>Gear Lubricant (API-GL-4)</p> <p>Above 0° F (-18° C) ..... SAE 90</p> <p>Below 0° F (-18° C) ..... SAE 80</p>
Front drive axle Center bowl Planetary ends (each)	7 quarts 1.5 quarts	6.6 litres 1.4 litre	Case FDL Fluid
Transfer case (Four wheel drive)	1 pint	0.5 litre	Case FDL Fluid
Brake master cylinders	as required		Case TCH Fluid
	<p><b>NOTE:</b> Late production machines have master cylinders that are connected to the hydraulic system. See Section 7106.</p>		<p><b>WARNING:</b> DO NOT use DOT 3 brake fluid. DOT 3 brake fluid will damage the cups in the master cylinders and brake cylinders. Damage to the brake system can cause personal injury or death.</p> <p style="text-align: right;">49-13</p>
Parking Brake cable	as required		Lubriplate 105 grease.
Battery	as required		Add drinking water or distilled water.
Grease fittings	as required		No. 2 Molydisulfide grease.
Wheel bearings	as required		Wheel Bearing Grease.

## MAINTENANCE CHART

This chart shows maximum service intervals for the correct maintenance of the machine. Some operating conditions will make it necessary to shorten the service intervals.

INTERVAL	SERVICE	INSTRUCTIONS
After the first 2 hours of operation, new machine only	Tighten the wheel bolts.	Section 6229.
After the first 10, 20, 50, 100, and 200 hours of operation, new machine only	Tighten the tension rod nuts for the backhoe.	Section 9100.
	Tighten the lower swing pivot nut for the backhoe.	Section 9100.
After the first 20 hours of operation, new machine only	Do the After Delivery Check.	Operators Manual.
Every 10 hours of operation or each day, whichever occurs first	Lubricate the loader and backhoe pivot points.	Operators Manual.
	Lubricate the dipper extension, if equipped.	Operators Manual.
	Check the level of the engine oil.	
Every 50 hours of operation	Lubricate the three point hitch pivot points, if equipped.	Operators Manual.
	Check the first stage fuel filter for water or sediment.	Operators Manual.
	Check the level of the oil in the power shuttle.	Operators Manual.
	Check the level of the coolant in the coolant reservoir.	Page 1002-6.
	Check the level of the oil in the reservoir.	Section 8002.
	Lubricate the front axle king pins.	Operators Manual.
	Lubricate the front axle pivot.	Operators Manual.
Every 100 hours of Operation	Lubricate the parking brake cross shaft.	Operators Manual.
	Lubricate the tie rod ends.	Operators Manual.
	Lubricate the rear axle bearings.	Operators Manual.
	Check the air pressure and condition of the tires.	Section 6229.
	Check the level of the oil in the transaxle.	Section 6212.

INTERVAL	SERVICE	INSTRUCTIONS
Every 100 hours of operation(Con't.)	<p>Check the level of the oil in the transfer case, if equipped.</p> <p>Clean the spark arrester muffler, if equipped.</p>	<p>Operators Manual.</p> <p>Section 2002.</p>
Every 250 hours of operation	<p>Lubricate the seat post.</p> <p>Lubricate the cable for the parking brake.</p> <p>Lubricate the pivots for the brake pedals.</p> <p>Lubricate the front and rear pivots for the front drive axle, if equipped.</p> <p>Check the level of the oil in the center bowl and planetaries of the front drive axle, if equipped.</p> <p>Clean the breather for the front drive axle, if equipped.</p> <p>Clean the breather for the transfer case, if equipped.</p> <p>Clean the battery.</p> <p>Check the level of the fluid in the low maintenance battery.</p> <p>Check the tension of the drive belt for the air conditioner compressor.</p> <p>Check the operation of the air conditioning system.</p> <p>Tighten the nuts on the backhoe tension rods.</p> <p>Change the engine oil.</p> <p>Replace the filter for the engine oil.</p> <p>Check the level of the fluid in the brake master cylinders. (Not necessary for master cylinders with clamp retainers.</p> <p>Check the level of the coolant in the radiator.</p>	<p>Operators Manual.</p> <p>Operators Manual.</p> <p>Operators Manual.</p> <p>Operators Manual.</p> <p>Operators Manual.</p> <p>Operators Manual.</p> <p>Section 4005.</p> <p>Section 4005.</p> <p>Section 9003.</p> <p>Section 9002.</p> <p>Section 9100.</p> <p>Operators Manual.</p> <p>Operators Manual.</p> <p>See WARNING on page 1002-2.</p> <p>Page 1002-6.</p>
Every 500 hours of operation	<p>Lubricate the universal joints and the slip joint on the front and rear drive shaft.</p> <p>Lubricate the pivot for the transfer case control lever, if equipped.</p>	<p>Operators Manual.</p> <p>Operators Manual.</p>

INTERVAL	SERVICE	INSTRUCTIONS
Every 500 hours of operation (Con't.)	Lubricate the coupling for the pump drive shaft. Lubricate the pivots for the loader control lever. Lubricate the pivots for the backhoe control levers. Lubricate the front wheel bearings. Lubricate the king pins (4) for the front drive axle, if equipped. Replace the fuel filters. Replace the filter for the hydraulic system.	Operators Manual. Operators Manual. Operators Manual. Section 5021. Operators Manual. Section 3410. Section 8002.
Every 1000 hours of operation	Check the level of the fluid in the maintenance free battery. Service the ROPS cab air filter. Drain water and sediment from the fuel tank. Change the oil in the power shuttle. Clean the screen in the power shuttle. Change the hydraulic oil. Change the gear lubricant in the transaxle. Change the gear lubricant in the front drive axle, if equipped. Change the gear lubricant in the transfer case, if equipped.	Section 4005. Section 9061. Operators Manual. Section 6202. Section 6202. Section 8002. Section 6212. Operators Manual. Operators Manual.
Every 2000 hours of operation or each year whichever occurs first	Flush the cooling system.	Fluids and Lubricants chart.
Every 4000 hours of operation	Replace the drive belt for the fan and the alternator. Inspect the fuel injection pump. Inspect the fuel injection nozzles.	Section 3412. Section 3413.
As required	Service the air cleaner when the warning lamp for the air cleaner stays illuminated during operation. Replace the filter for the hydraulic system when the warning lamp for the filter stays illuminated during operation.	Section 2002. Section 8002.

INTERVAL	SERVICE	INSTRUCTIONS
As required	<p>Tighten the wheel bolts every two hours until the wheel bolts stay tight or whenever a wheel is removed and installed.</p> <p>Tighten the nuts on the tension rods for the backhoe every two hours until the nuts stay tight, and when installing the backhoe or new mounting parts.</p> <p>Adjust the parking brake.</p>	<p>Section 6229.</p> <p>Section 9100.</p> <p>Section 7106.</p>

## COOLANT RECOVERY SYSTEM

### 50 Hour Check

Check the level of the coolant in the reservoir when the engine is cold. If the coolant is below the ADD mark, add a mixture that is half ethylene glycol and half water. If protection against freezing below -34° F (-37° C) is required, use more ethylene glycol.

### 250 Hour Check

Check the level of the coolant in the radiator when the engine is cold. If the coolant is not even with the opening in the radiator, add a mixture of coolant according to instructions for the 50 Hour Check.

If the level of the coolant in the radiator is low, the reservoir has not been kept full, there is a leak in the coolant recovery system, or a leak in the cooling system.



# Section 1010

## FLUIDS AND LUBRICANTS

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## ENGINE

Oil Type.....	Case No. 1 Engine Oil
Oil Capacity - Without Filter Change	
2144 Combine .....	15 U.S. Quarts (14.3 Litres)
2166 Combine .....	20 U.S. Quarts (19 Litres)
2188 Combine .....	20 U.S. Quarts (19 Litres)
Oil Capacity - With Filter Change	
2144 Combine .....	16 U.S. Quarts (15 Litres)
2166 Combine .....	22 U.S. Quarts (21 Litres)
2188 Combine .....	22 U.S. Quarts (21 Litres)

**NOTE:** DO NOT put Performance Additives or other oil additive products in the engine crankcase.

## COOLING SYSTEM

Coolant Type.....	50 Percent Mixture of Water and Ethylene Glycol Solution
Coolant Capacity	
2144 Combine .....	36 U.S. Quarts (34 Litres)
2166 Combine .....	40 U.S. Quarts (37.8 Litres)
2188 Combine .....	40 U.S. Quarts (37.8 Litres)

**IMPORTANT:** Use only heavy duty low silicate coolant. Automotive antifreeze purchased at local supply store outlets most likely is not low silicate and must not be used in Case engines.

## FUEL SYSTEM

Fuel Type .....	ASTM D975 Grade 2-D Number 2 Diesel Fuel
Fuel Capacity	
2144 Combine .....	92.5 U.S. Gallons (350 Litres)
2166 Combine .....	92.5 U.S. Gallons (350 Litres)
2188 Combine .....	123 U.S. Gallons (466 Litres)

## TRANSMISSION

Oil Type.....	Case Hy-Tran Plus®
Oil Capacity.....	17 U.S. Quarts (16 Litres)

**NOTE:** If brakes are removed from the transmission for service, an additional 1 U.S. Quart (0.95 Litre) per brake assembly must be added to the transmission.

## FINAL DRIVE

Oil Type.....	Case Hy-Tran Plus®
Oil Capacity.....	13 U.S. Quarts (12.3 Litres)

### HYDRAULIC RESERVOIR

Oil Type ..... Case Hy-Tran Plus®  
Reservoir Capacity..... 10 U.S. Gallons (38 Litres)

### PTO HOUSING

Oil Type ..... Case Hy-Tran Plus®  
Oil Capacity ..... 14 U.S. Quarts (13.2 Litres)

### FEEDER AND CLEANING FAN GEAR CASE

Oil Type ..... Case 135H EP 85W-140 Gear Lubricant  
Oil Capacity ..... 2.75 U.S. Quarts (2.6 Litres)

### LOWER UNLOADER GEAR CASE

Oil Type ..... Case 135H EP 85W-140 Gear Lubricant  
Oil Capacity ..... 0.875 to 0.938 U.S. Quart (0.83 to 0.89 Litre)

### ROTOR GEAR CASE

Oil Type ..... Case Hy-Tran Plus®  
Oil Capacity ..... 4 U.S. Quarts (3.8 Litres)

### STRAW CHOPPER (IF EQUIPPED)

Oil Type ..... Case Hy-Tran Plus®  
Oil Capacity ..... 3.3 U.S. Quarts (3.1 Litres)