1187/1187B FELLER BUNCHER
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SAFETY RULES
SERVICE MANUAL INTRODUCTION
AND
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Written In *Clear And Simple English*

8-42210

Printed in U.S.A.
Issued March 1984

CASE CORPORATION

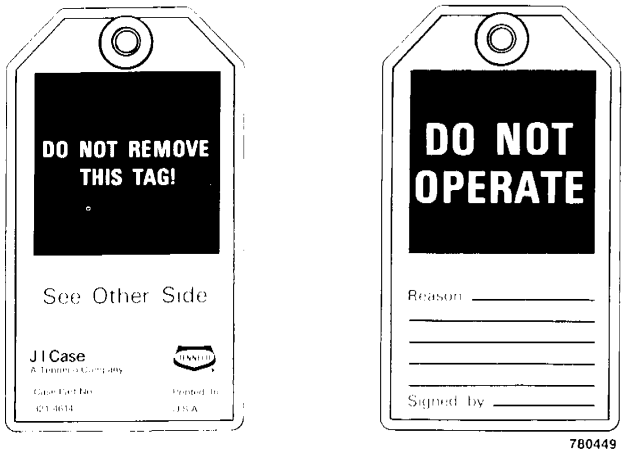
SAFETY RULES

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.



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

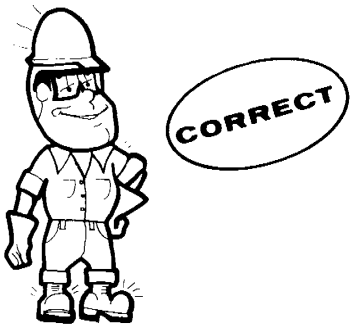
WARNING: *Operate tractor and equipment controls from the seat position only. Any other method could result in serious injury.* 48-55

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

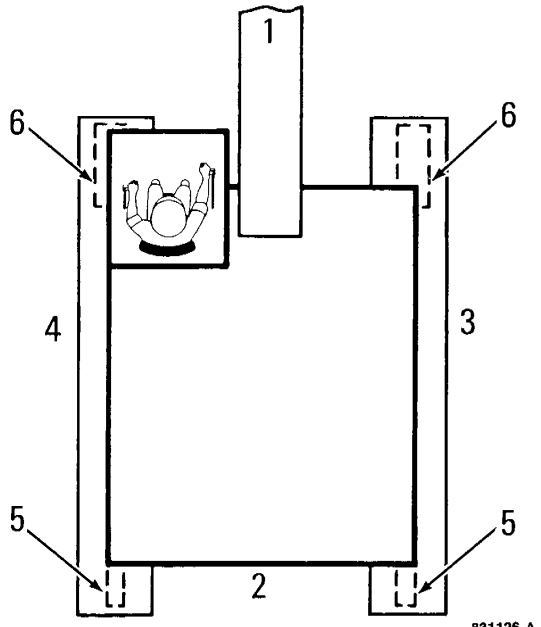
DANGER: *Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, open the doors and get outside air into the area.* 48-56

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.

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. *Front*
2. *Rear*
3. *Right Side*
4. *Left Side*
5. *Drive Sprocket*
6. *Idler Wheel*

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 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 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.

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

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 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	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

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MAINTENANCE AND LUBRICATION

TABLE OF CONTENTS

Written In *Clear And Simple English*

CASE CORPORATION

8-42211

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FLUIDS AND LUBRICANTS

Fuel tank

Capacity ..... 122 U.S. gallons (462 litres)
Specifications ..... See Operators Manual

Cooling system

Capacity ..... 8.5 U.S. gallons (32.2 litres)
Specifications ..... Mix ethylene glycol antifreeze and water according to the antifreeze manufacturers instructions.

Engine crankcase (1187 Machines)

Capacity (Case engine)
Without filter change ..... 19 U.S. quarts (18 litres)
With filter change ..... 23 U.S. quarts (21.8 litres)

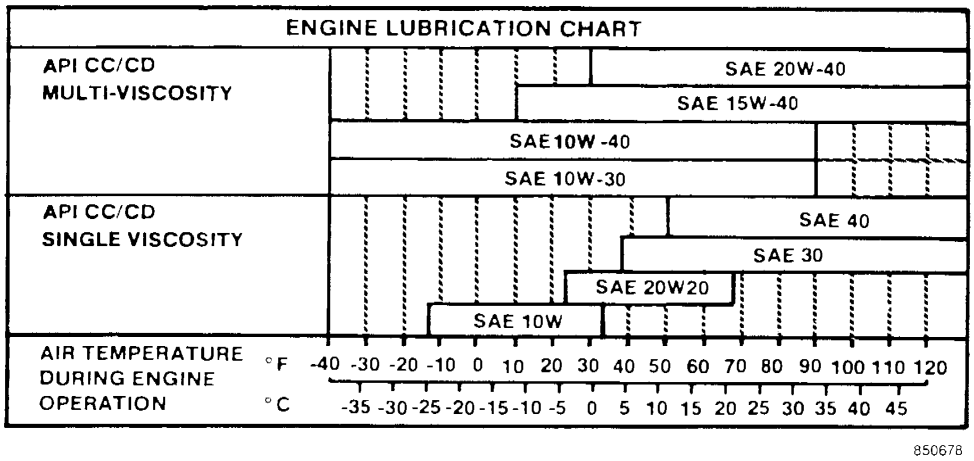
Capacity (Detroit Diesel)
Without filter change ..... 14 U.S. quarts (13.2 litres)
With filter change ..... 16 U.S. quarts (15.1 litres)

Engine crankcase (1187B Machines)

Capacity (Case engine)
Without filter change ..... 24 U.S. quarts (22.7 litres)
With filter change ..... 28 U.S. quarts (26.5 litres)

Capacity (Detroit Diesel)
Without filter change ..... 18 U.S. quarts (17 litres)
With filter change ..... 20 U.S. quarts (19 litres)

Specifications (Case engine) ..... Case HDM oil



Specifications (Detroit Diesel) ..... See the Detroit Diesel Service Manual

Hydraulic system

Capacity
Total system ..... 55 U.S. gallons (208 litres)
Reservoir ..... 25.3 U.S. gallons (95.7 litres)
Specifications ..... Case TCH Fluid
Alternate oil ..... C3 hydraulic fluid

Final drive transmission

Capacity
1187 machine (each) ..... 12 U.S. quarts (11.4 litres)
1187B machine (each) ..... 16.5 quarts (15.6 litres)
Specifications ..... Case FDL Fluid
Alternate oil ..... SAE 80 to 90 API-GL-5

Swing gearbox

Capacity ..... 17 U.S. quarts (16.1 litres)
Specifications ..... Case FDL Fluid
Alternate oil ..... SAE 80 to 90 API-GL-5

Rotary cutter flywheel housing

Capacity ..... 3 U.S. pints (1.4 litres)
Specifications ..... Case FDL Fluid
Alternate oil ..... SAE 80 to 90 API-GL-5

Turntable ring gear

Specifications ..... Symquip Spray Lube for Open Gears (OGLD-20)
Case part number 331-437

Batteries

Specifications ..... Clean or distilled water

Grease fittings

Specifications ..... Case molydisulfide grease

SYSTEMGARD LUBRICANT ANALYSIS SERVICE

830752

Through this service your machine lubricants are tested in a laboratory. The results of these tests show lubricant contamination and component wear rates. You will get service recommendations to increase the lift of your machine. See your Case dealer for more information.

Systemgard Testing Schedule

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

NOTE: *Get your sample before you drain the lubricant.*

Engine oil ..... Every 250 hours of operation or every oil change

Hydraulic fluid ..... Every 500 hours of operation or 3 times each year

Final Drive transmission fluid ..... Every 500 hours of operation or 3 times each year

Swing gearbox oil ..... Every 500 hours of operation or 3 times each year

RUN-IN PERIOD

During the first 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 bucket 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 time.
4. See the Run-In Maintenance Chart on this page for additional information.
5. After the first 20 hours of machine operation, do the After Delivery Check in the Operators Manual.

RUN-IN MAINTENANCE SCHEDULE

The items listed in this maintenance chart are to be done during the run-in-period and are in addition to the items listed under the Maintenance Schedule.

After First 20 Hours of Operation

Change the engine oil ..... See Operators Manual

Change the engine oil filter(s) ..... See Operators Manual

Check the drive belt tension ..... See Section 4007

Change the hydraulic oil filters ..... See Section 8201

Check the torque for the turntable bearing mounting bolts ..... See Section 9216

After First 250 Hours of Operation

Check the torque for the turntable bearing mounting bolts ..... See Section 9216

MAINTENANCE SCHEDULE

The items listed below are separated into maximum hourly intevals. These intervals are based on "average" oprating conditions. When operating under "severe" conditions, such as excessive heat, cold, dust, mud or water, shorten the intervals.

As Required

Check and adjust track tension ..... See Section 5503

Service the air cleaner if the service indicator red band is in full view ..... See Section 2001

Replace hydraulic filters elements if warning lamp illuminates ..... See Section 8201

Clean debris from muffler area ..... See Operators Manual

Clean debris from shear or rotary cutter ..... See Operators Manual

Every 10 Hours of Operation or Each Day Whichever Occurs First

Check the air cleaner restriction indicator ..... See Section 2001

Check the radiator coolant level ..... See Operators Manual

Check the fuel sediment bowl for contamination (Case engine only) ..... See Operators Manual

Check the engine oil level ..... See Operators Manual

Check feller buncher shear for correct knife alignment ..... See Section 9212

Check the hydraulic reservoir fluid level ..... See Section 8201

Every 10 Hours of Operation or Each Day Whichever Occurs First

Check swing geabox reservoir oil level ..... See Section 9210

Check the drive brakes for correct operation ..... See Operators Manual

Check swing brake for proper operation ..... See Operators Manual

Lubricate the turntable ring gear ..... See Section 9216

Lubricate the boom, arm, and attachments ..... See Operators Manual

Every 50 Hours of Operation

Check oil level for the rotary cutter (if equipped) ..... See Operators Manual

Drain water from the fuel tank and sediment bowl ..... See Operators Manual

Clean swing gearbox reservoir breather ..... See Operators Manual

Clean the air cleaner dust valve ..... See Section 2001

Lubricate the turntable pivot pins ..... See Operators Manual

Lubricate the pivot pins for the leveler (tilt) cylinders ..... See Operators Manual

Lubricate the turntable bearing raceway ..... See Operators Manual

Lubricate the drive belt pulley (Detroit Diesel only) ..... See Operators Manual

Every 100 Hours of Operation

Change engine oil and filters ..... See Operators Manual

Every 250 Hours of Operation

Clean debris from cooler and radiator ..... See Operators Manual

Check the fluid level for each battery ..... See Section 4005

Check the oil level for each final drive transmission ..... See Section 6317 or 6318

Check the drive belt tension ..... See Section 4007

Check the torque of the turntable bearing mounting bolts ..... See Section 9216

Lubricate hydraulic swivel grease fitting ..... See Operators Manual

Lubricate conrol lever pivot points ..... See Operators Manual

Check the torque of pivot pin bolt on rotary cutter (if equipped) ..... See Section 9213

Every 500 Hours of Operation

Replace fuel filters ..... See Section 3010

Replace the hydraulic filters ..... See Section 8201

Replace the 25 micron inline filter element ..... See Section 8201

Clean the hydraulic reservoir breather ..... See Operators Manual

Every 1000 Hours of Operation or 6 Months

Clean battery case, posts and connections ..... See Section 4005

Change the oil for the rotary cutter (if equipped) ..... See Operators Manual

Change the oil of each final drive transmission ..... See Section 6317 or 6318

Change the oil in the swing gearbox ..... See Section 9210

Check blower screen and clean if required
(Detroit Diesel) ..... See Detroit Diesel Operators Manual

Every 2000 Hours of Operation or Each Year

Change the hydraulic oil and clean the screens ..... See Section 8201

Drain engine coolant, flush and refill ..... See Operators Manual

Section

1010

GENERAL ENGINE SPECIFICATIONS

1187 Logger Crawler

(504 DIESEL TURBOCHARGED ENGINE)

Written In *Clear And Simple English*

CASE CORPORATION

Rac 8-25770

Printed in U.S.A.
May, 1984

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 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)	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

NOTE: The J I Case Company 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.

Section 1055

GENERAL CLEANING INSTRUCTIONS

Written In *Clear And Simple English*

CASE CORPORATION

CE Div. 8-38240 - Aug. 1981

Printed in U.S.A.

GENERAL CLEANING INSTRUCTIONS

Complete Assemblies

Completely assembled components can be steam cleaned on the OUTSIDE only, before removal or disassembly. All openings and breathers must be closed before steam cleaning to prevent water or moisture entering the component.

Rough Parts

Rough parts, for example — housings, castings, etc., can be cleaned in hot solution tanks with mild alkali solutions ONLY IF these parts do not have ground or machined surfaces. Leave the parts in the hot solution tank long enough to be completely cleaned and heated. Flush the parts completely with clear water after cleaning to remove all residue of the cleaning solution.

Finished or Machined Parts

Parts which have ground or machined surfaces, for example — gears, bearings, shafts and collars, can be cleaned in a solvent that is not flammable.

IMPORTANT: DO NOT clean machined parts in hot solution tanks with water and alkaline solutions.

WARNING: To prevent injury from burns, always use a solvent that is not flammable for cleaning component parts. DO NOT use gasoline or other flammable substances.

Rubber Parts

Clean rubber parts by washing in clean denatured alcohol. DO NOT use cleaning solvents with a mineral base, for example — acetone or paint thinner. If a mineral base solvent is used, the rubber will start to wear away and continue to wear away after the part is put back into service. This rapid wearing away of the rubber part can cause failure of the component in service.

Drying

After cleaning, all parts must be dried immediately. Use compressed air free of moisture, and a soft cloth free of lint and abrasive materials.

Bearings can be dried with compressed air, but make sure the air is moved across the bearings in a direction which prevents spinning. DO NOT let bearings spin when drying. Bearings can be turned slowly by hand to shorten the drying time.

Corrosion Prevention

Parts that have been cleaned, dried, inspected and are to be immediately assembled into the component — Apply a light oil to prevent corrosion. If these parts are to be put in storage for any length of time, apply a good RUST PREVENTIVE then put the parts in special paper or other material to prevent corrosion.

Section

1320

SPECIFICATION DETAILS

504BDT ENGINE

Written In *Clear And Simple English*

CASE CORPORATION

Rac 8-20040

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August, 1978