1835B UNI-LOADER

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CASE CORPORATION

8-42080-R1

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Revised January 1986

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AND
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Written In *Clear And Simple English*

CASE CORPORATION

8-42080

Printed in U.S.A.
Issued January 1984

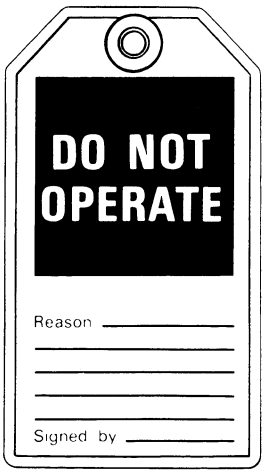
SAFETY RULES

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.



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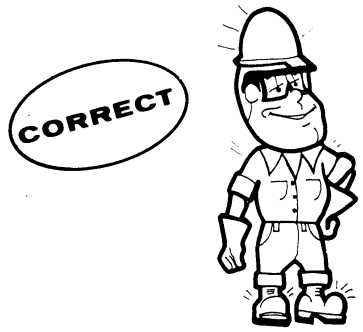
DANGER: *Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, open the doors and get outside air into the area.* *48-56*

WARNING: *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*

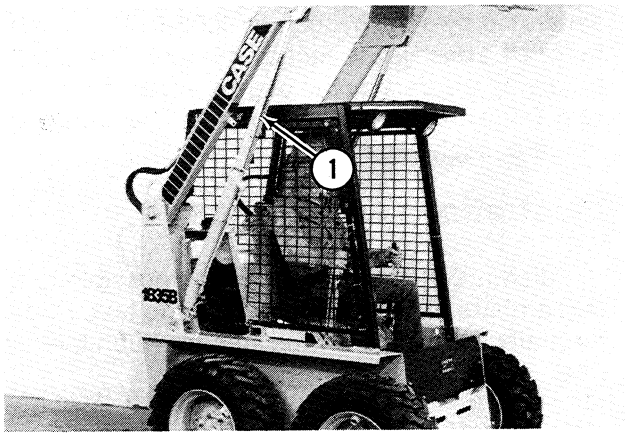


750213

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* 825815

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: *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*

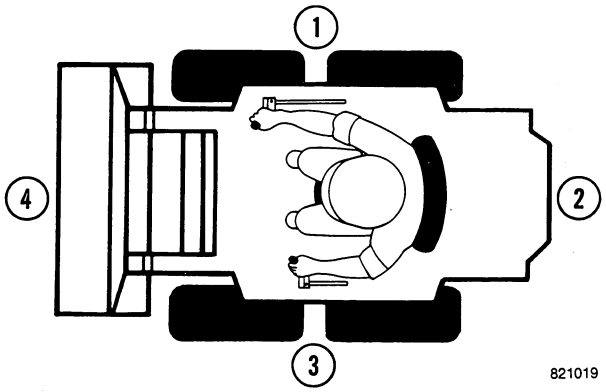
CAUTION: *Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this service manual.* *40-10*

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. *Right Side*
2. *Rear*
3. *Left Side*
4. *Front*

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 and Photos

Illustrations are put as near as possible to the text and are to be used as part of the text. Photos normally are put below the step to which they apply.

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.

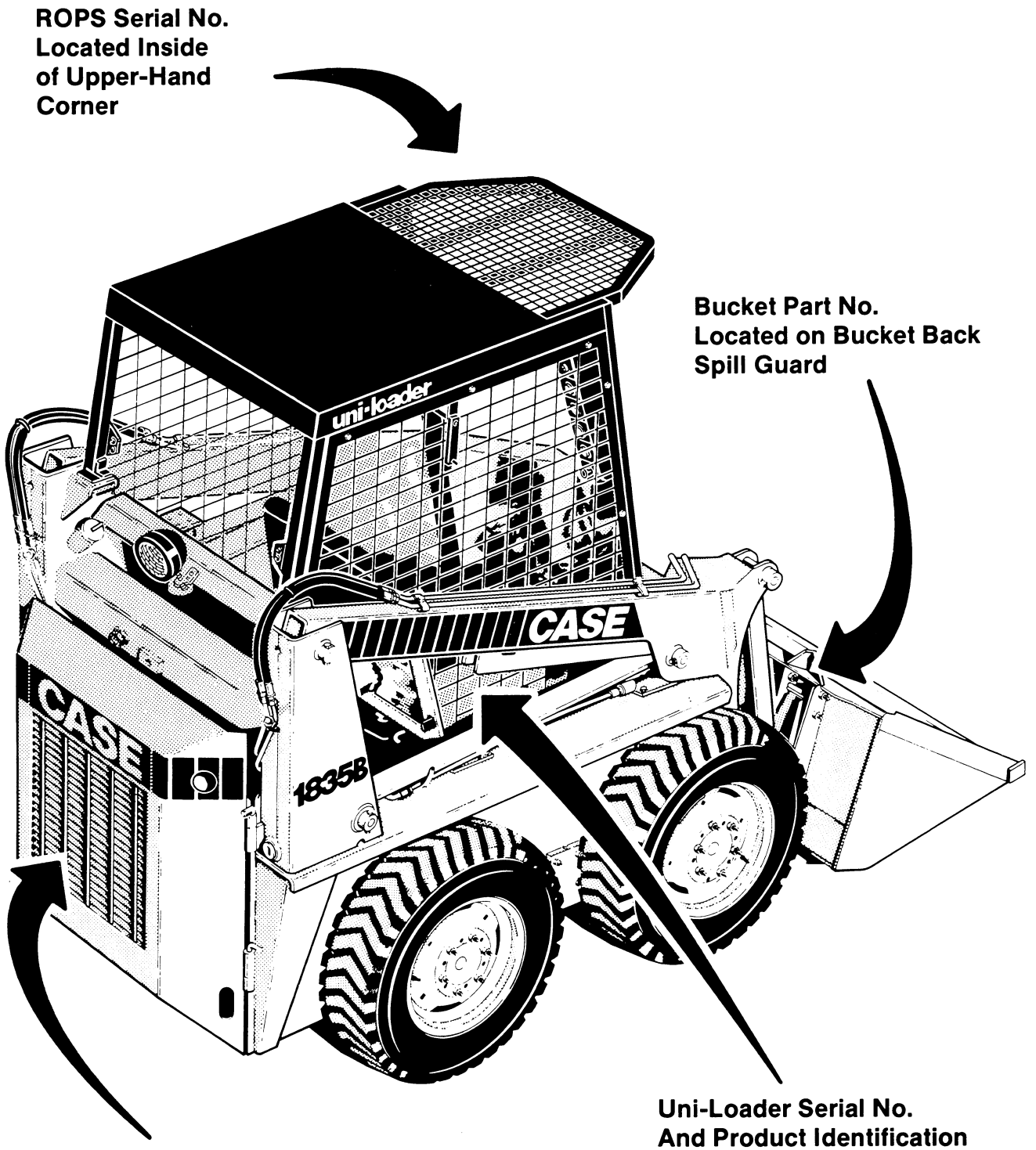
Order special tools from either of the following companies:

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

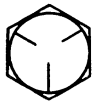
NOTE: *A serial number plate is also on some components such as the starter, alternator, pumps, etc.*



TORQUE SPECIFICATIONS

(Use the following torques when special torques are not given.)

Grade 5 Bolts, Nuts and Studs (Dry Threads)

Thread size	Pound-Feet	Newton metres	Kilogram metres		Thread size	Pound-Feet	Newton metres	Kilogram metres
1/4-20 NC	5-10	7-14	0.7-1.4		3/4-10 NC	235-285	319-386	32.5-39.4
1/4-28 NF	10-15	14-20	1.4-2.1		3/4-16 NF	270-330	366-447	37.3-45.6
5/16-18 NC	15-20	20-27	2.1-2.8		7/8-9 NC	360-440	488-597	49.8-60.8
5/16-24 NF	15-20	20-27	2.1-2.8		7/8-14 NF	395-490	536-664	54.6-67.7
3/8-16 NC	25-35	34-47	3.5-4.8		1-8 NC	520-640	705-868	71.9-88.5
3/8-24 NF	30-40	41-54	4.1-5.5		1-12 NF	575-705	780-955	79.5-97.5
7/16-14 NC	45-55	61-75	6.2-7.6		1-1/8-7 NC	720-820	966-1112	99.5-113
7/16-20 NF	50-60	68-81	6.9-8.3		1-1/8-12 NF	790-970	1071-1315	109-134
1/2-13 NC	65-85	88-115	9.0-11.8		1-1/4-7 NC	1010-1240	1370-1681	140-171
1/2-20 NF	80-100	108-136	11.1-13.8		1-1/4-12 NF	1115-1365	1512-1851	154-189
9/16-12 NC	100-120	136-163	13.8-16.6		1-3/8-6 NC	1315-1610	1783-2183	182-223
9/16-18 NF	110-130	149-176	15.2-18.0		1-3/8-12 NF	1510-1850	2048-2509	209-256
5/8-11 NC	135-165	183-224	18.7-22.8		1-1/2-6 NC	1745-2135	2366-2895	241-295
5/8-18 NF	160-200	216-271	22.1-27.7		1-1/2-12 NF	1880-2420	2549-3282	260-335

Grade 8 Bolts, Nuts and Studs (Dry Threads)

Thread size	Pound-Feet	Newton metres	Kilogram metres		Thread size	Pound-Feet	Newton metres	Kilogram metres
1/4-20 NC	10-15	14-20	1.4-2.1		3/4-10 NC	340-420	461-570	47.0-58.1
1/4-28 NF	15-20	20-27	2.1-2.8		3/4-16 NF	380-460	515-623	52.5-63.6
5/16-18 NC	20-30	27-41	2.8-4.1		7/8-9 NC	540-660	732-895	74.7-91.2
5/16-24 NF	25-30	34-41	3.5-4.1		7/8-14 NF	595-725	807-983	82.3-100
3/8-16 NC	40-50	54-68	5.5-6.9		1-8 NC	810-990	1098-1342	112-137
3/8-24 NF	45-55	61-75	6.2-7.6		1-12 NF	900-1100	1220-1491	124-152
7/16-14 NC	60-80	81-108	8.3-11.1		1-1/8-7 NC	1150-1400	1559-1898	159-194
7/16-20 NF	70-90	95-122	9.7-12.4		1-1/8-12 NF	1295-1585	1756-2149	179-219
1/2-13 NC	100-120	136-163	13.8-16.6		1-1/4-7 NC	1640-2000	2224-2712	227-277
1/2-20 NF	110-130	149-176	15.2-18.0		1-1/4-12 NF	1800-2200	2441-2983	249-304
9/16-12 NC	135-165	183-224	18.7-22.8		1-3/8-6 NC	2140-2620	2902-3553	296-362
9/16-18 NF	155-190	210-258	21.4-26.3		1-3/8-12 NF	2450-3000	3322-4068	339-415
5/8-11 NC	200-240	271-235	27.7-33.2		1-1/2-6 NC	2845-3475	3858-4712	393-480
5/8-18 NF	215-265	292-359	29.7-36.6		1-1/2-12 NF	3200-3900	4339-5288	442-539

TORQUE SPECIFICATIONS FOR STEEL HYDRAULIC FITTINGS

Dash Size	Tube O.D. Hose I.D.	Thread Size	37 Degree Flare			Straight Thread With O-ring		
			Pound-Feet	Newton metres	Kilogram metres	Pound-Feet	Newton metres	Kilogram metres
4	1/4 in (6.4 mm)	7/16-20	6-12	8-16	0.8-1.6	12-19	16-26	1.6-2.6
5	5/16 in (7.9 mm)	1/2-20	8-16	11-22	1.1-2.2	16-25	22-34	2.2-3.4
6	3/8 in (9.5 mm)	9/16-18	10-25	14-34	1.4-3.4	25-40	34-54	3.4-5.5
8	1/2 in (12.7 mm)	3/4-16	15-42	20-57	2.1-5.8	42-67	57-91	5.8-9.3
10	5/8 in (15.9 mm)	7/8-14	25-58	34-79	3.4-8.0	58-92	79-125	8.0-12.7
12	3/4 in (19.0 mm)	1-1/16-12	40-80	54-108	5.5-11.0	80-128	108-174	11.0-17.7
14	7/8 in (22.2 mm)	1-3/16-12	60-100	81-136	8.3-13.8	100-160	136-217	13.8-22.1
16	1.0 in (25.4 mm)	1-5/16-12	75-117	102-159	10.4-16.2	117-187	159-254	16.2-25.9
20	1-1/4 in (31.8 mm)	1-5/8-12	125-165	169-224	17.3-22.8	165-264	224-358	22.8-36.4
24	1-1/2 in (38.1 mm)	1-7/8-12	210-250	285-339	29.0-34.6	250-400	339-542	34.6-55.3

Split Flange Mounting Bolts (Grade 5, Dry Threads)

Thread Size	Pound-Feet	Newton metres	Kilogram metres
5/16-18 NC	15-20	20-27	2.1-2.8
3/8-16 NC	20-25	27-34	2.8-3.5
7/16-14 NC	34-45	46-61	4.7-6.2
1/2-13 NC	55-65	75-88	7.6-9.0
5/8-11 NC	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

8-42080

Printed in U.S.A.
Issued January 1984

FLUIDS AND LUBRICANTS CHART

COMPONENT	CAPACITY		SPECIFICATIONS
	U.S.	Metric	
Fuel tank	14.5 gallons	55 litres	See Operators Manual
Crankcase (all engines) Without filter change With filter change	 6 quarts 7 quarts	 5.7 litres 6.6 litres	Case HDM engine oil Alternate engine oil: Gasoline engine - SE, SF Diesel engine - CD Above 32° F (0° C) ..... SAE30 10 to 50° F (-12 to 10° C) ..... SAE20W Below 32° F (0° C) SAE10W
Hydraulic system Reservoir	8 gallons 6 gallons	30 litres 23 litres	SAE 10W40 Engine oil with Hydrostatic Transmission Oil Additive, Part No. B17508. Mixture ratio is 20 to 1. Example: 20 U.S. quarts (18.9 litres) of SAE 10W40 engine oil to 1 U.S. quart (0.9 litres) of additive.
Chain compartment (ea)	4 quarts	3.8 litres	Engine oil - SAE30SD
Cooling system	16 quarts	15 litres	A mixture of half ethylene glycol (antifreeze) must be used at all times. If the coldest outside temperature will be less than -34° F (-36° C) add antifreeze.
Battery	As required		Add drinking water or distilled water.
Grease fittings	As required		Molydisulfide multipurpose grease.

MAINTENANCE CHART

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

INTERVAL	SERVICE	INSTRUCTIONS
After first 2 hours of operation	Check drive belt tension.	Section 4007
After every 2 hours of operation until there is no change	Tighten wheel nuts to 80 to 90 pound-feet (108 to 122 N m, 11 to 12 kg/m).	
After first 20 hours of operation	Do the After Delivery Check.	Operators Manual
After first 100 hours of operation	Check adjustment of chains.	Section 6007
After 10 hours of operation or daily, whichever occurs first	Check level of engine oil. Check level of hydraulic oil. Check level of coolant in radiator. Check warning lamps. Clean dust cup in air cleaner. Lubricate pivot points for loader. If equipped, lubricate pivot points for backhoe or grapple. Clean or replace decals that cannot be read.	Section 8002 Operators Manual Section 2000
After 50 hours of operation	Check level of fluid in battery. Check for water and sediment in fuel system. Check pressure in tires. Lubricate pivot points for cross shaft for control levers. Lubricate shaft for control lever for parking latch.	Operators Manual Section 6011 Operators Manual Operators Manual
After 100 hours of operation	Change the engine oil. Check drive belt tension. If equipped, clean spark arrester muffler.	Section 4007 Section 2000

INTERVAL	SERVICE	INSTRUCTIONS
After 200 hours of operation	Replace the filter for engine oil.	
	Check adjustment of chains.	Section 6007
	If equipped with gasoline engine, remove spark plugs and clean and adjust gap.	Section 4008
	Lubricate axle bearings.	Operators Manual
After 500 hours of operation	If equipped with diesel engine, replace the fuel filters.	Operators Manual
	Check and adjust clearance of valves.	Section 2015 or 2115
	Clean outside of radiator and check for leaks.	
	Inspect the ROPS canopy.	Section 9003
	Drain, flush, and fill chain compartments.	Section 6007
	Replace hydraulic system and charge circuit filters.	Section 8002
After 1000 hours of operation	Change the hydraulic oil.	Section 8002
	If equipped with gasoline engine, replace the fuel filter.	Operators Manual
	Drain water and sediment from fuel tank.	Operators Manual
After 2000 hours of operation or yearly, whichever occurs first	Clean the cooling system. Fill the cooling system with new coolant.	See Fluids and Lubricants Chart
As required	Service the air cleaner.	Section 2000
	Replace hydraulic oil and charge circuit filters.	Section 8002
	After wheels have been removed and installed, tighten wheel nuts to the specified torque after every 2 hours of operation until there is no change.	Section 6011

Section

1010

GENERAL ENGINE SPECIFICATIONS

1835B UNI-LOADER
(188 Diesel Engine)

Written In *Clear And Simple English*

CASE CORPORATION

Rac 8-24290

Printed in U.S.A.
July, 1983

188 DIESEL ENGINES

General

Type	Case Open Chamber, 4 Cylinder, 4 Stroke Cycle, Valve-in-Head
Firing Order	1-3-4-2
Bore	3-13/16 Inches (96.8 mm)
Stroke	4-1/8 Inches (104.8 mm)
Piston Displacement	188 Cubic Inches (3 081 cm^3)
Compression Ratio	17 to 1
No Load Governed Speed	2285 to 2315 RPM
Rated Engine Speed	2100 RPM
Engine Idling Speed	825 to 875 RPM
Valve Tappet Clearance (Exhaust)	(Cold) 0.014 Inch (0.356 mm)
(Intake)	(Cold) 0.012 Inch (0.305 mm)

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 Alloy Liners

Main Bearings

Number of Bearings	5
Type Bearings	Replaceable Precision, Steel Back, Copper-Lead Alloy Liners

Engine Lubricating System

Crankcase Capacity	6 Quarts (5.7 litres)
With Filter Change	7 Quarts (6.7 litres)
Oil Pressure	50 to 70 PSI (345 to 483 kPa)(3.45 to 4.83 bar) with Engine Warm and Operating at Rated Engine Speed
Type System	Pressure and Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow Spin on Type

Fuel System

Fuel Injection Pump	Roosa-Master
Pump Timing	4 Degrees Before Top Center
Fuel Injectors	Pencil Type Opening Pressure 3200 PSI (22 063 kPa)
Fuel Transfer Pump	Vane Type, Integral Part of Injection Pump
Governor	Variable Speed, Fly-Weight Centrifugal Type, Integral Part of Injection Pump
1st Stage Fuel Filter	Spin on Type
2nd Stage Fuel Filter	Spin on Type

NOTE: The CASE CORPORATION **reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.**

Section
1027

DETAILED SPECIFICATIONS

188 Diesel Engines

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

Rac. 9-78675

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RUN-IN-INSTRUCTIONS

Engine Lubrication

When the engine rebuild is complete, fill the engine crankcase with Case HDM oil and install new engine oil filter. **NOTE:** If Case HDM oil is not used, use only a Series 3 DS or CD Service Classification oil that has the proper viscosity rating for prevailing air temperature. Refer to vehicle Operators Manual.

After the first 20 hours of operation, change the engine oil while the engine is hot and replace the the engine oil filter. DO NOT DRAIN OIL UNTIL THE ENGINE HAS BEEN OPERATED 20 HOURS.

Change the engine oil and filter at the recommended intervals thereafter as outlined in the Operator's Manual.

Break-In Procedure for Rebuilt Engines (With a Dynamometer)

The following procedure must be implemented when using a PTO dynamometer to break-in the engine. The dynamometer will insure control of the engine load at each speed and will eliminate over stressing new parts during break-in.

During the break-in, continually check the oil pressure, coolant level, and coolant temperature.

STEP	TIME	ENGINE SPEED	DYNAMOMETER SCALE LOAD*
1	**10 Minutes	1000 RPM	None
2	**10 Minutes	1800 RPM	None
3	20 Minutes	1800 RPM	1/3
4	20 Minutes	1800 RPM	1/2
5	***30 Minutes	100 RPM below rated speed	3/4
6	Retorque the cylinder head bolts using the procedure described in Section 2015 of this service manual.		

*Based upon normal dynamometer scale load at rated speed for the particular vehicle model. Reduce this scale load as indicated.

**The most ideal break-in procedure would be to constantly vary the throttle between 750 to 1000 RPM for the first 10 minutes and from 1000 RPM to 1800 RPM for the next 10 minutes. The purpose of this changing RPM is to vary the lubrication and coolant flow.

***30 minutes at 3/4 load is a minimum amount of time the engine should be run. It is recommended that whenever possible the engine (especially turbocharged diesels) should be run for four (4) hours or more at the above speed and load before checking the full engine horsepower or before using the engine for heavy field work.

Break-In Procedure for Rebuilt Engines (Without a Dynamometer)

STEP	TIME	ENGINE SPEED	LOAD
1	*10 Minutes	1000 RPM	None
2	*10 Minutes	1800 RPM	None
3	30 Minutes	2/3 Rated RPM	Light Load
4	1 Hour	Full RPM (not over 2000 RPM)	80 to 90%
5	Retorque the cylinder head bolts using the procedure described in Section 2015 of this service manual.		

*If engine must then run at or near full load to operate the machine - for first hour remove load and run at high idle for a few minutes at 15 minute intervals.

Run-In Procedure (Agricultural Tractors)

For the first 8 hours of field operation stay one gear lower than normal. For the next 12 hours DO NOT "lug" the engine. Prevent "lugging" by shifting to a lower gear. The engine must not be "lugged" below its Rated Engine RPM during the early hours of life.

Run-In Procedure (Construction Equipment)

For the first 8 hours, operate the engine at full throttle maintaining a normal load. DO NOT baby the engine, but avoid prolonged converter or hydraulic stall. Engine must not be "lugged" below its Rated Engine RPM (Do not exceed 10 seconds of stall).

Run-In Procedure (Power Units)

For the first 1/2 hour, operate engine at 2/3 rated RPM with a light load or no load. For the next (1) hour, run engine at 80 to 90% load at rated RPM (but not over 2000 RPM). Then full load and rated RPM as required in application.