

INSTRUCTION MANUAL AND REPAIR  
PARTS LIST FOR M38E HIGH PRESSURE PUMP

Nov./84

GENERAL OPERATING INSTRUCTIONS

1. Never run the pump dry.
2. Do not use rusty supply barrels.
3. Make sure suction strainer is always clean.
4. Maximum operating pressure is 850 P.S.I.

FLOW RATES AND HORSEPOWER REQUIREMENTS

The M38E is a positive displacement pump; therefore, the pump delivery is directly proportional to the speed regardless of pressure. Pump output is 3.1 U.S.G.P.M. per 100 R.P.M.

<u>ELECTRICAL HORSEPOWER REQUIREMENTS @ P.S.I.</u>							
<u>R.P.M.</u>	<u>G.P.M.</u>	<u>100</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>	<u>600</u>
200	6.2	0.687	1.235	1.670	2.050	2.375	2.860
300	9.3	1.030	1.850	2.540	3.080	3.560	4.300
400	12.4	1.370	2.470	3.340	4.100	4.750	5.730
500	15.5	1.720	3.090	4.180	5.130	5.930	7.170
600	18.6	2.060	3.700	5.020	6.150	7.120	8.590

LUBRICATION-OIL

New pumps are lubricated prior to shipping but are shipped without oil. Prior to running fill crankcase with oil to halfway mark. Generally the following instructions should be followed:

1. Change the oil in crankcase as required.
2. Use only a non-foaming, non-detergent #1 compressor oil, not a heavy duty detergent oil

LUBRICATION-GREASE

Proper greasing is most important for proper pump operation and maintenance of pressure. This is especially important if hot water is used. Use a good high temperature water pump grease.

PRIMING

The pump is self priming with suction heads up to 10 feet. If difficulty is experienced in priming remove the suction line and hold a water hose under pressure to the suction inlet so that the piston chamber receives some water.

PIPING

SUCTION PLUMBING MUST BE AIR TIGHT

The suction connection is located at the centre of the pump just beneath the air chamber. A suction strainer should always be used with the pump.

### PRESSURE PIPING

There are 3 pressure outlets. Two of them have 1/2 inch outlets, the other has a 1 inch outlet.

Pipe dope or teflon tape should be used on all high pressure joints.

A good high pressure hose is recommended for use at high pressure.

### INLET AND OUTLET THREADS

All threads are N.P.T.

### BY-PASS AND PRESSURE REGULATING VALVE

The pump comes equipped with a by-pass and pressure regulating valve (unless specifically ordered without it). This valve is located at the side of the suction chamber and has a lever (3843D) for removing the pressure entirely and a screw top (3843A) for regulating the pressure. Turning the screw top down increases output pressure - turning the screw top up reduces output pressure.

This valve also acts as a by-pass valve and if desired the hose which is connected to the outlet side of this valve may be returned to the supply tank so that excess fluids may be reused. When used in this manner, the gun must be opened and pressure released every few minutes or the pump will become overheated and ruin packings and seals.

NOTE: When using an unloader valve the regulator top (3843A) should be screwed down so that no water flows through the regulating valve. The pressure is then regulated by the unloader valve.

### ADJUSTMENT OF V PACKING

The V packings into which the pistons operate are made of BUNA-N and Duck and will normally have a long life. To stop a minor leak past these packings remove the chromed piston cover (387) which will expose the adjustable gland nuts (3830). With the tool provided, turn the gland nut in carefully. Do not overtighten. This operation may be performed even while the pump is running and will normally stop any leak. If this fails, new packings may be required.

NOTE: At all times, when replacing V packings, the condition of the pistons should be checked. If in good condition, with only minor surface scratches, they should be hand repolished. If badly scratched or worn they should be repolished on a lathe.. Worn pistons will cause a loss of pressure. Deeply grooved pistons will leak and cut the V packings.

### MATERIALS HANDLED

As the pump has stainless steel pistons, stainless steel valves and an all bronze body it will normally handle a very wide range of abrasive, acidic or caustic materials. However, after running any material which might attack the above metals or the V packing the pump should be flushed immediately with clear water for 5 to 10 minutes.

### PUMP DISASSEMBLY & REPAIR

#### REPLACEMENT OF PACKINGS

Remove crankcase nuts (3827) and pull entire fluid end of pump forward over the pistons. With fluid end free, remove old packings and wash head thoroughly. Insert new packings in proper order and screw gland nut into piston chamber firmly (but do not overtighten) to hold packings in place. Replace head over pistons and work it into place by moving pistons back and forth, with a pulley on the crankshaft. Once in place tighten the crankcase nuts and tighten the gland nuts with the tool provided so that there are no leaks. It is a good idea to run grease over the pistons and packings before reassembling the head to the crankcase.

#### REPLACEMENT OF VALVES (3837)

Remove chamber bolts (3844). Entire suction chamber can now be lifted off and valves serviced.

NOTE: 3 back valves face downward  
3 front valves are face upward

NOTE: It is essential that the proper size O-rings be used in the 2 grooves on each valve. They must also be well seated in the groove so that on tightening the piston chamber bolts, they are not squeezed out of the grooves.

#### REPAIR TO VALVES (3837)

The entire valve can be disassembled by tapping down on the valve disc and forcing the valve cover (3837B) off the valve seat (3837F). All parts are available for replacement. To reassemble place parts in order and squeeze together gently in a vise.

#### NOTE:

Do not hold valve seat (3837F) in a vise so as to burr or distort this part as sealing depends upon this part being free of all burrs and distortion.

#### REPAIR TO BY-PASS AND PRESSURE CONTROL VALVE

The entire valve can be disassembled for service by removing the two retaining bolts (3837F). Make sure all parts are placed back in same order on reassembly.

DISASSEMBLY OF POWER END FOR REPLACEMENT OF BEARINGS, CRANKSHAFT,  
CONNECTING RODS AND PISTONS

Remove back cover (388) exposing connecting rods. Remove connecting rod bolts (3820) and push connecting rods forward through oil seals so that crankshaft is free. Do not mix up con rod caps. They must be replaced in exact order that they were removed. Remove bearing cover screws and tap crankshaft through oil seal at one end so entire crankshaft can be removed. Make appropriate repairs and reassemble.

WINTER STORAGE:

If the pump is to be exposed to freezing weather the entire pump should be drained or a mixture of anti freeze run through the pump.

IMPORTANT: TO OBTAIN MAXIMUM PERFORMANCE, DRIVE BELTS MUST BE  
TIGHT AT ALL TIMES.

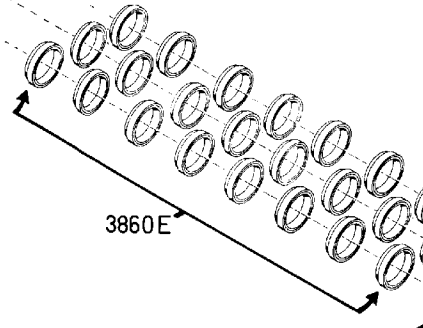
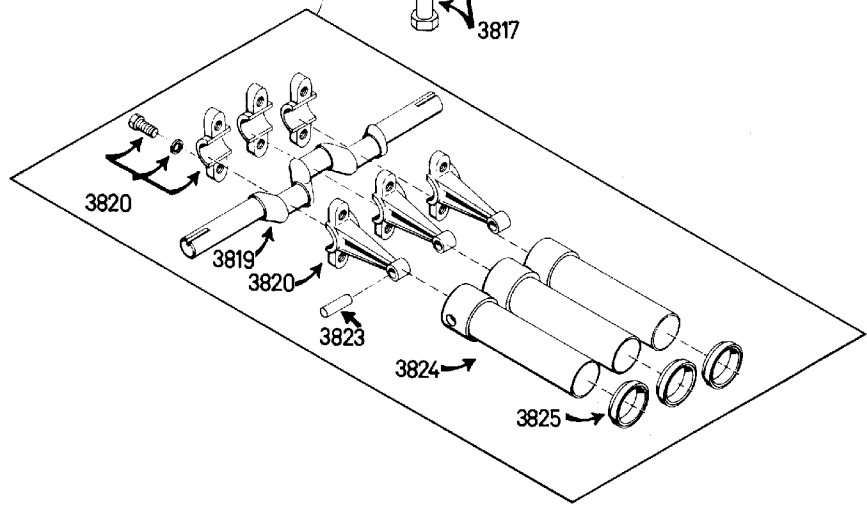
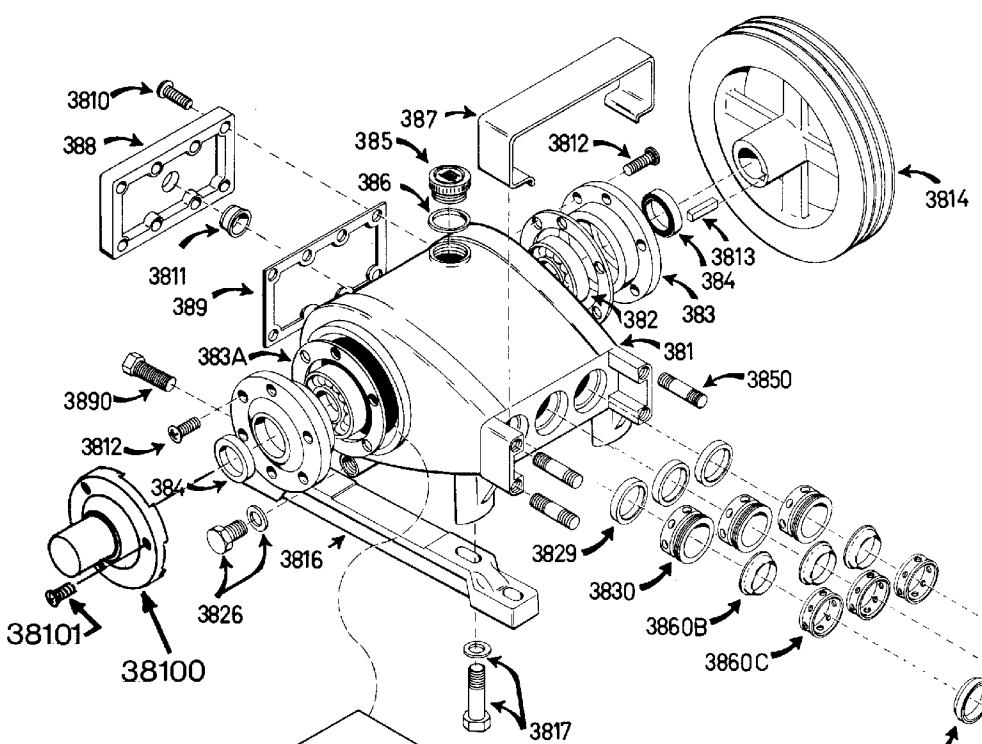
REPAIR PARTS - M38E PUMP

Nov./84

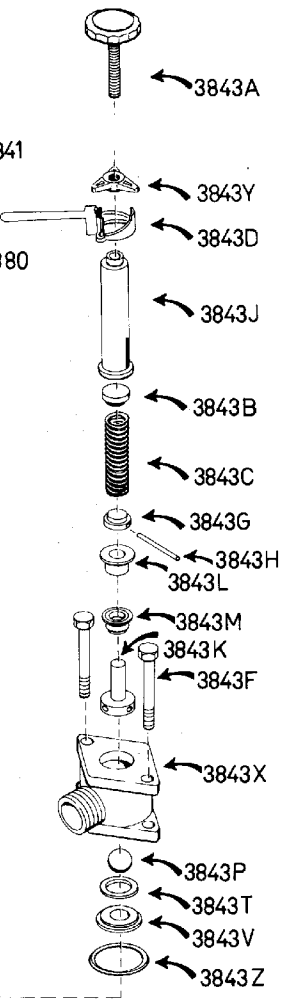
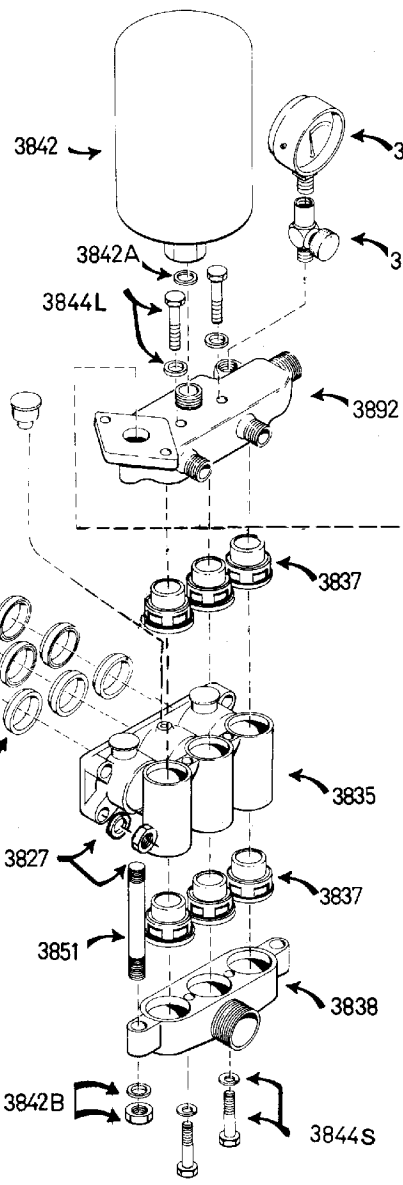
<u>PART #</u>	<u>DESCRIPTION</u>	<u>NO. OF PARTS</u>
381	Crankcase	1
382	Ball Bearing	2
383	Bearing Cover	2
383A	Gasket	2
384	Crankshaft Oil Seal	2
385	Oil Filler Cap	1
386	Oil Cap Gasket	1
387	Piston Cover	1
388	Back Cover	1
389	Back Cover Gasket	1
3810	Back Cover Screws	8
3811	Oil Gauge Window	1
3812	Bearing Cover Screws	12
3813	Pulley Key	1
3814	12" Pulley	1
3815	Set Screw	2
3816	Pump Rail	2
3817	Bolt & Washer	4
3819	Crankshaft	1
3820	Connecting Rod Complete	3
3823	Piston Pin	3
3824	Piston	3
3825	Piston Wiper	3
3826	Oil Plug & Washer	2
3827	Crankcase Nut & Washer	4
3829	Piston Seal	3
3830	Gland Nut	3
3835	Piston Chamber	1
3836	Grease Cup	3
3837	Complete Valve	6
3837A	Valve O Ring	12
3837B	Valve Cover	6
3837C	Valve Spring Seat	6
3837D	Valve Spring	6
3837E	Valve Disc	6
3837F	Valve Seat	6
3838	Suction Chamber	1
3841	Gauge 0 to 1000 PSI	1
3842	Air Chamber	1
3842A	Air Chamber Gasket	1
3842B	Chamber Nut & Washer	2
3843	Complete Control Valve	1
3843A	Pressure Adjusting Cap	1
3843B	Upper Spring Seat	1
3843C	Spring	1
3843D	Lever	1
3843F	Retaining Bolts - S.S.	2

<u>PART #</u>	<u>DESCRIPTION</u>	<u>NO. OF PARTS</u>
3843G	Lower Spring Seat	1
3843H	Seat Pin	1
3843J	Spring Case	1
3843K	Control Spindle	1
3843L	Spindle Cage	1
3843M	Diaphragm	1
3843P	Control Ball	1
3843T	Seat Packing	1
3843V	Control Seat	1
3843X	Control Seat Case	1
3843Y	Control Stop	1
3843Z	Control Case O Ring	1
3844L	Chamber Bolt & Washer (long)	2
3844S	Chamber Bolt & Washer (short)	2
3850	Crankcase Studs	4
3851	Chamber Studs (long)	2
3860	Packing Kit	1
3860B	Buna-N Flange	3
3860C	Grease Ring	3
3860E	Buna-N V-Packing	24
3860G	Bottom Adaptor	3
3880	Needle Valve	1
3890	Belt Tension Bolt	2
3892	Discharge Chamber	1
38100	Crankshaft Protector	1
38101	Crankshaft Protector Screws	3

\* \* \* \* \*  
 \* WARRANTY \*  
 \*  
 \* Based on the logical assumption that manufacturing and \*  
 \* material deficiencies will manifest themselves within 90 \*  
 \* days time, all M38E power sprayers are guaranteed 90 days \*  
 \* from date of purchase, by the original purchaser, against \*  
 \* defective material and workmanship (but not against dam- \*  
 \* age or wear caused by misuse, abrasion, negligence, \*  
 \* accident, faulty installation, or tampering in a manner \*  
 \* to impair its normal operation) when the equipment is in- \*  
 \* stalled and operated in accordance with factory recommen- \*  
 \* dations and instructions. \*  
 \*  
 \* All such defective parts will be repaired or replaced \*  
 \* free of charge if returned prepaid to the factory or \*  
 \* authorized service depot. In all cases within the guar- \*  
 \* antee period where examination indicates damage due to \*  
 \* causes other than defectiveness repairs will be made at a \*  
 \* reasonable charge. \*  
 \* \* \* \* \*



- 3837A
- 3837B
- 3837C
- 3837D
- 3837E
- 3837F
- 3837A



**M-38E**