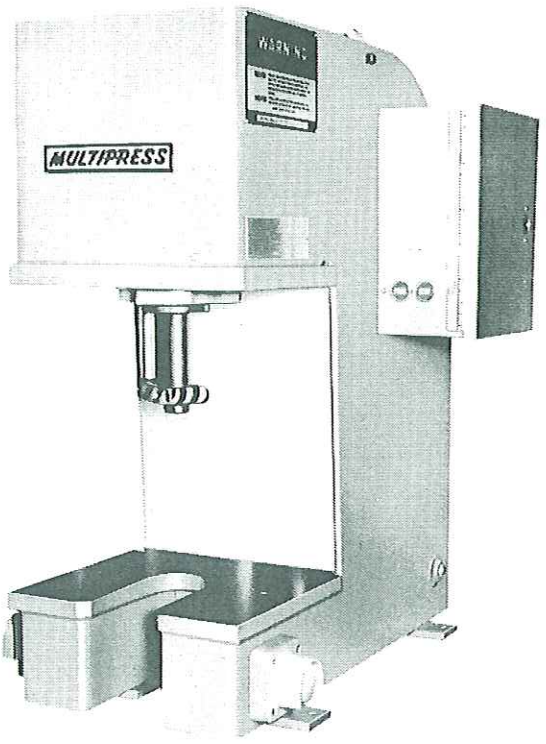
Bulletin 320-R

MULTIPRESS®

HYDRAULIC EQUIPMENT

operation instructions and service manual



SERIES WUA-TR 1- and 2- TON

MULTIPRESS®

(614) 228-0185

560 Dublin Avenue; Columbus, Ohio 43215

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INTRODUCTION

SERVICE POLICY

The simplicity of Multipress® Equipment, the unitized construction of its major components and observance of the instructions in this manual assure ease of servicing by the user.

All field service requested by the user and rendered by our factory representatives will be charged for at the established rate per day plus expenses. Multipress equipment sent to our factory for inspection and service will be rendered only upon receipt of purchase order for such service.

Current characteristics, dictated by the characteristics of the users' current are required at time of order.

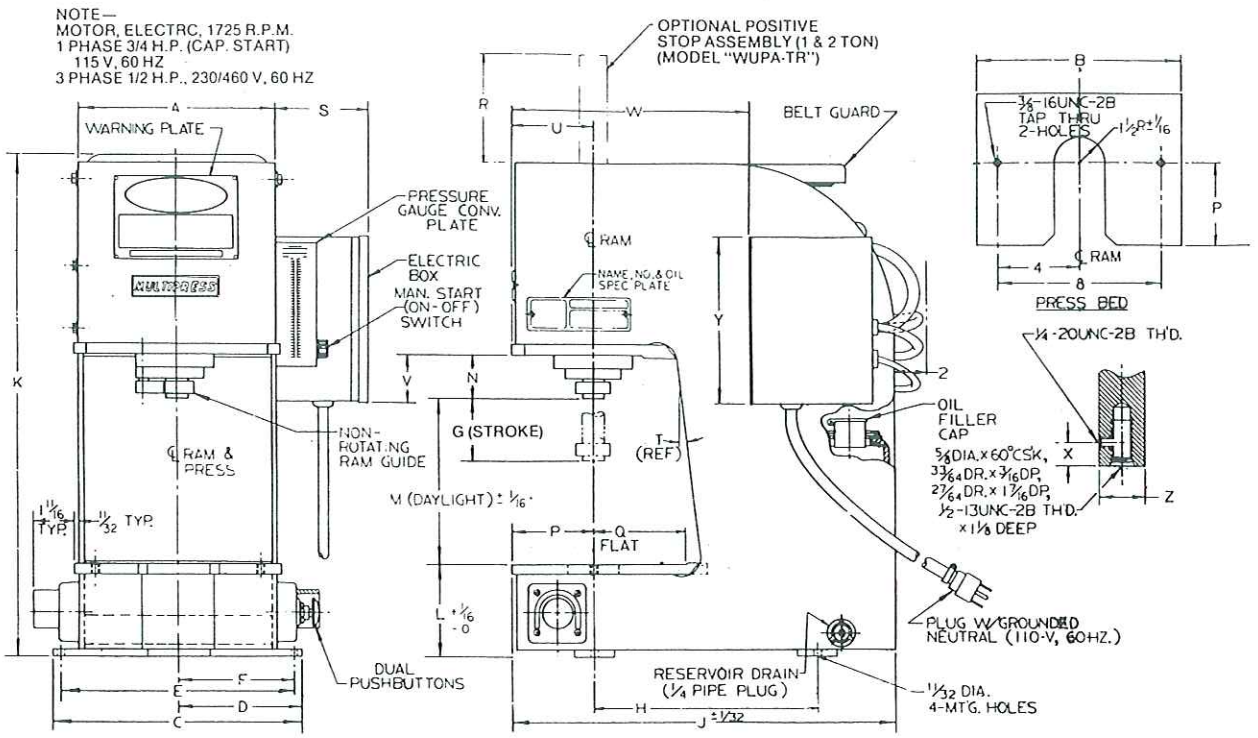
MULTIPRESS® EQUIPMENT WARRANTY

If any multipress equipment part of our manufacture which, after prepaid shipment to our factory and upon inspection at our factory or by a qualified factory representative, is proven defective in workmanship or material, it will be replaced free of charge providing that, within a period of six months from date of shipment from our factory it it still owned by the original purchaser and being used in recommended service and using an oil meeting our recommended specifications.

Parts other than of our manufacture bear only such warranties as their manufacturers allow. When upon inspection by a qualified representative, it is indicated that these parts are defective, we will endeavor to secure from the manufacturer the benefits of such warranties for our customers.

INSTALLATION

DIMENSIONS																								
PRESS	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
1-TON	9-9/16	10-1/4	12-1/2	6-1/4	11-3/4	5-7/8	3	12	18-15/16	23-7/8	4-3/8	8-15/64	2-1/64	4-1/16	4-1/2	5-1/4	4-1/2	6-1/2"	4-1/16	2-5/16	11-13/16	9/16	8	1.1245
2-TON	10-7/16	11-1/8	13-1/2	6-3/4	12-3/4	6-3/8	3	14-1/2	22-9/16	28	5	10-17/64	2-23/64	4-9/16	4-1/2	5-3/4	4-1/2	3-1/2"	4-9/16	5/16	14-15/16	3/4	8	1.1240



INSTALLATION DRAWING NO. 23-7337-D

DIMENSIONAL DATA

SPECIFICATIONS

	1-TON	2-TON
Reservoir Capacity	12 QTS	22 QTS
Ram Speed Approach	600 IPM	600 IPM
Pressing	100 IPM	50 IPM
Return	600 IPM	200 IPM
Piston Diameter	1-19/32"	2¼"
Min. Operating Pressure	500 PSI	500 PSI
Max. Operating Pressure	1000 PSI	1000 PSI
Differential Pressure (Ram Enters Pressing Speed)	500 PSI	500 PSI
Ram Effort (With Positive Stop)		
Minimum	900 LBS.	2018 LBS.
Maximum	1780 LBS	3800 LBS
Shipping Weight	200 LBS	300 LBS

MACHINE RAM CYCLE RATES

STROKE LENGTH (INCHES)	STROKES (PER MINUTE)	
	1-TON	2-TON
3	82	45
2½	94	53
2	111	63
1½	136	80
1⅛	161	98
1	172	107
½	235	161

SAFETY COLOR CODE

CODE	COLOR	KEY
Y	Yellow	Hazardous Area
YB	Yellow With Black Diagonal Stripes	Moving Hazard
O	Orange	Electrical Area

CURRENT INPUT (1 & 2 TON)

(60 HERTZ)

SINGLE PHASE	THREE PHASE
115 volts - - - 10.8 amps	230 volts - - - 2.8 amps
	460 volts - - -1.4 amps

Figure 1

INSTALLATION

GENERAL

This manual is intended for reference when installing and preparing Multipress® Equipment for operation and is for normal maintenance, repair and upkeep of the equipment.

INSTALLATION INSTRUCTIONS

After removing press from shipping crate, stand the press upright near the area where it will be anchored to the floor.

Care should be taken to avoid twisting or dropping of the press during the uncrating and transportation to the area of operation.

BENCH

If your press is to be mounted on an bench, uncrate the bench and assemble per instructions in crate. Bolt bench firmly to the floor.

Position press on bench and bolt firmly in place using shims to compensate for any uneveness between top of bench and press.

ELECTRIC

Your standard press is wired to be connected to current characteristics as specified when ordered.

Connection of press to users' power source should be accomplished by qualified personnel.

CAUTION

Do not permit electric motor to operate before press reservoir is filled with oil or to operate in the wrong direction of rotation (See STARTING PUMP & MOTOR instructions and direction of rotation arrow plate on pump-motor assembly.)

RECOMMENDED OIL SPECIFICATIONS

Warranty for Multipress® equipment applies only when the proper hydraulic fluid has been used and oil contamination level is equal to or better than "NAS . . . 1638 . . . CLASS No. 8 OR BETTER. NO PARTICLES OVER 200 MICRON."

Certain basic physical and chemical properties are necessary for proper operation of the multipress.

The following basic properties should be presented to the fluid supplier* for his recommendation of a product for use in this multipress:

Viscosity @ 100°F	300 SUS/plus or minus 15 SUS
Viscosity Index	90 or higher
Rust and oxidation inhibitors	yes
Anti-foam additive	yes

Specific gravity; 0.882—0.887 at 60°F/60°F (API Gravity; 29-31)

*It is suggested that the fluid supplier provide the user with certification that this product meets the above requirements.

FILLING THE OIL RESERVOIR

CLEANLINESS is the most important requisite in proper maintenance of oil hydraulic equipment. Of the few maintenance difficulties encountered in the operation of oil hydraulic equipment, many of them are directly traceable to dirt or foreign matter in the oil.

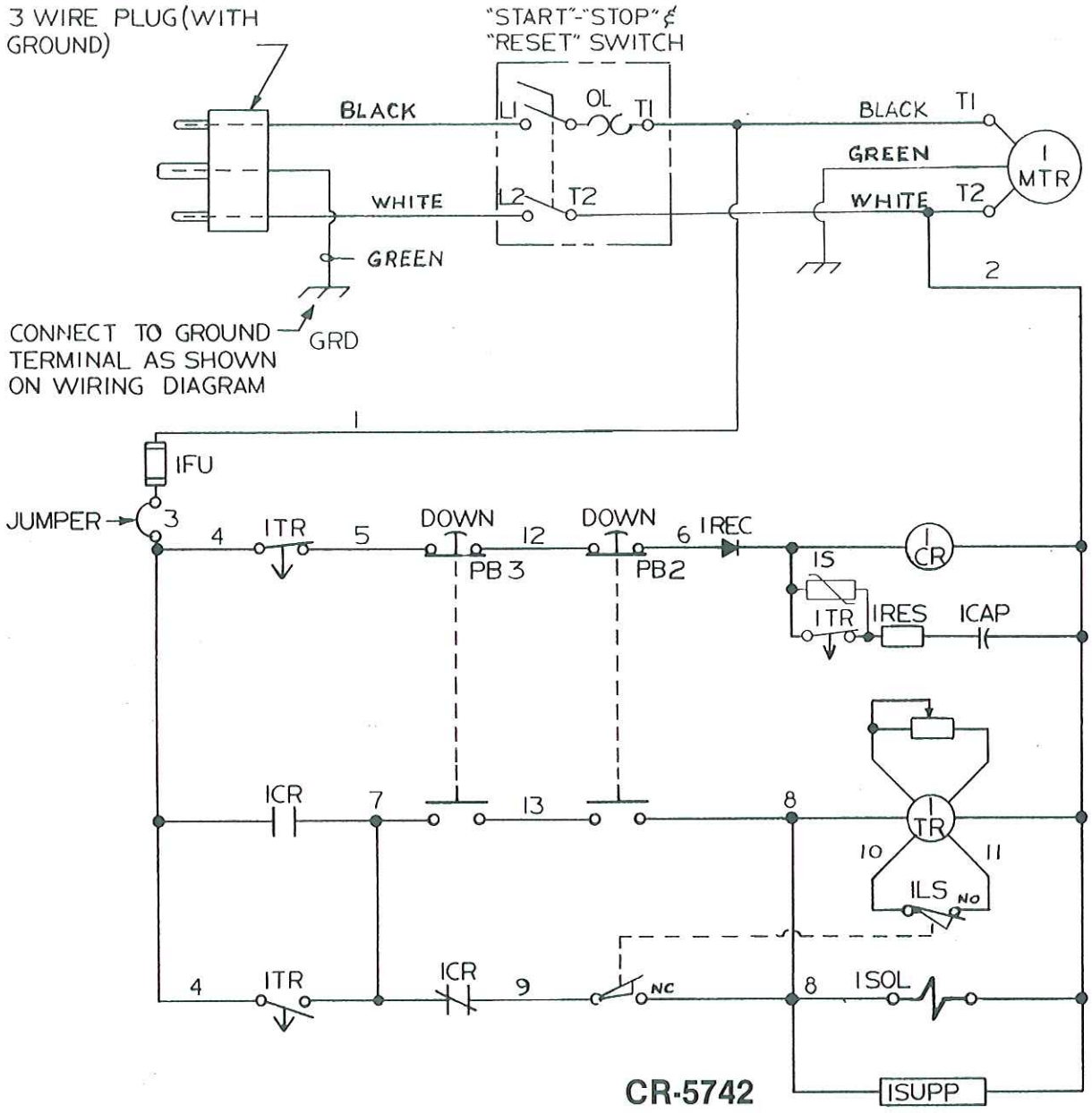
EXTREME CARE should be exercised in maintaining a clean supply of oil in the reservoir and hydraulic system of your Multipress® Equipment at all times. Make certain that no lint, dirt, abrasive scale or other foreign matter enters the hydraulic system. Trouble free operation over a long period of time may be obtained from the press by taking these precautions with the oil in the press (See Multipress® Equipment Warranty on page 3.)

The oil reservoir is filled through the oil filler cap which is located on top of the reservoir. Lift the filler cap and fill the reservoir with any clean oil meeting our recommended oil specifications above. Fill reservoir of the 1 ton with 12 quarts of hydraulic oil, the 2 ton press with 22 quarts. Keep oil level 1" from the top of the reservoir. Damage can result by running the press with insufficient oil in the reservoir.

CAUTION

Never operate press if oil level is low, or if the oil temperature is greater than 150°F. The use of coolers is recommended when fluid temperatures are expected to exceed 130°F.

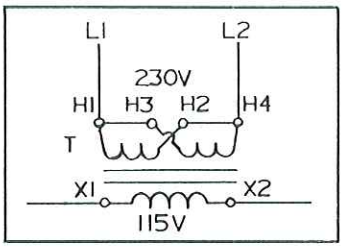
ELECTRIC CIRCUIT (SINGLE PHASE)
STANDARD: (115 VOLT 1 PHASE 60 HERTZ)



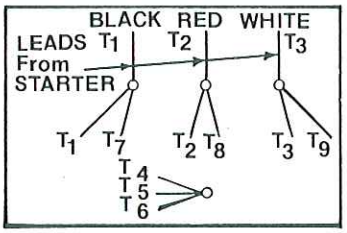
SYMBOL	DESCRIPTION	PART NUMBER	QUANTITY
MC	Starter - Manual, 115V	142-10000	1
PB2-PB3	Pushbutton - Assembly	010-14172	1
1TR	Timer	766-60015	1
1S	Varistor	764-30004	1
1CR	Relay - 110VDC	766-40009	1
1CAP	Capacitor - 10 MFD, 250 Volt	704-51002	1
1SUPP	Varistor	764-30004	1
1RES	Resistor - 100 - 3W, Fuse cutout 3A, 3B	769-21006	1
1FU	Fuse - Slo, Blo	764-20006	1
1LS	Switch - Limit	114-20023	1
1REC	Rectifier-Diode	772-00019	1
1MTR	Motor - Electric, ¾ HP @ 1725 RPM, 115V. 1 PH. 60 HZ.	135-70001	1
	Complete Circuit Board	010-24780	1

Figure 2

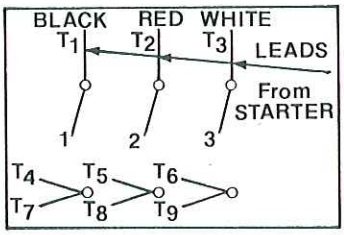
ELECTRIC CIRCUIT (THREE PHASE)
STANDARD: (230 VOLT 3 PHASE 60 HERTZ)
(460 VOLT 3 PHASE 60 HERTZ)



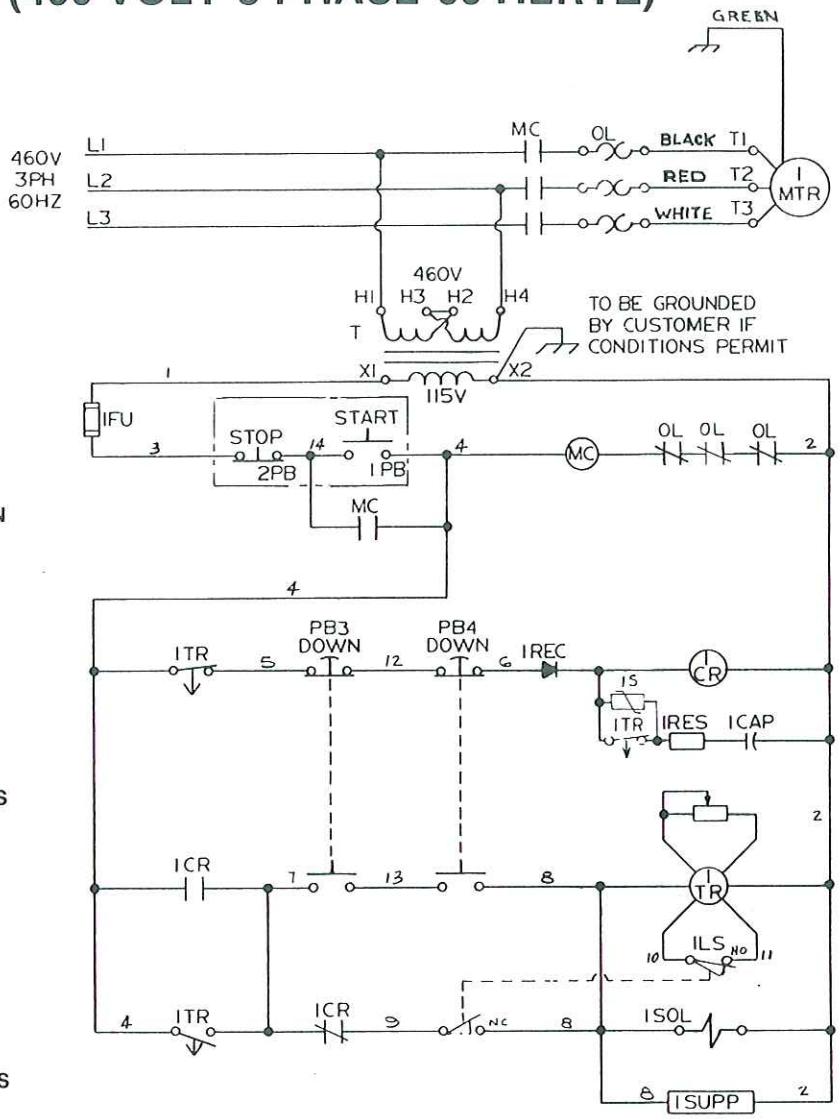
ALTERNATE TRANSFORMER CONNECTION



MOTOR LEAD CONNECTIONS —230 VOLTS



MOTOR LEAD CONNECTIONS —460 VOLTS



CR-5739

SYMBOL	DESCRIPTION	PART NUMBER	QUANTITY
MC	Starter, Size 00, 3 Pole	101-45008	1
1S	Varistor	764-30004	1
1TR	Relay-Time Delay, 10 AMP, 120V.	766-60015	1
T	Transformer-(50VA, 230/460-115V.-60 HZ)	105-05006	1
1CR	Relay-DPDT, 110 VDC	766-40009	1
1SUPP	Varistor	764-30004	1
1RES	Resistor	769-21006	1
1FU	Fuse-Slo,Blo 6/10 AMP	764-20006	1
1PB-2PB	Switch - Start, Stop	152-15050	1
1LS	Switch - Limit	114-20023	1
1REC	Rectifier - Diode	772-00019	1
PB3-PB4	Pushbutton Assembly	010-14172	1
1MTR	Motor - Electric, ½ HP @ 1725 RPM, 230/460V, 3 PH., 60 HZ.	135-70000	1
	Complete Circuit Board	010-24780	1

Figure 3

SEQUENCE OF OPERATION

STARTING THE PUMP AND MOTOR

IMPORTANT: Prior to start-up, remove the protective belt cover, start and stop the electric motor in order to check for proper rotation. There are arrows clearly marked on the pump indicating the correct rotation. If this is incorrect, reverse the wiring of the motor leads.

CAUTION

If the motor is permitted to operate in the wrong direction of rotation, the pump will be damaged after only a few seconds due to lack of oil to lubricate its precision machined internal parts. When the oil in the reservoir is at the proper level and the pump is operating in the correct direction of rotation, the pump will prime itself and provide adequate lubrication.

CAUTION

If the press has been shipped to you with the press ram extended, the ram will retract and stop against the stroke adjustment limit switch arm as soon as the motor is started, if the motor and pump are operating in the correct direction of rotation.

When it is determined that the pump and motor are operating in the correct direction, with the power on, actuate the "start" switch. This allows the electric motor to start and energizes the control circuit. Allow the motor to run a few minutes to remove air from the hydraulic system. Check tubing and hose lines for any leakage which may have developed since leaving the factory.

CYCLING

A. With motor running, simultaneously actuate and maintain actuation of both "cycle start" push-buttons.
   1. 1 TR timer contacts are actuated.
   2. 1 SOL solenoid is energized, causing the press ram to extend.
   3. 1 CR relay is de-energized.

B. Near the end of the press ram extension, 1 LS limit switch is released, and the "cycle start" push buttons may now be released.

C. The press ram contacts work, exerts force, and reverses when timer times out.

RAM PRESSURE ADJUSTMENT

The press ram pressure was set for maximum tonnage when it was shipped from the factory.

A. To adjust ram pressure:

   Open the needle valve slightly. Loosen locknut (45, figure 5) located at the top of the power head assembly.

   Actuate both "cycle start" buttons simultaneously allowing ram to exert full pressure against part or block.

   Turn adjusting screw with Allen wrench clockwise to increase pressure; counter clockwise to decrease pressure.

NOTE

Never adjust this screw too fast as the pressure may exceed or drop below recommended pressure levels. After ram pressure is set tighten the locknut, and close needle valve to prevent damage to gauge.

CAUTION

Do not set pressure below 550 psi or in excess of 1000 psi.

LIMIT SWITCH ADJUSTMENT

Set 1 LS limit switch to release near end of ram extension.

WARNING

1 LS limit switch must remain held until dies close for operator protection.

POSITIVE STOP ADJUSTMENT (OPTIONAL EQUIPMENT)

Virtual micromatic adjustment of the ram travel is accomplished with the positive stop assembly.

To adjust, remove protective cap (32 figure 5) and loosen locknut (37). Adjust limit of ram travel from 0" to 3" with stop nut (36). After all adjustments are made retighten locknut (37) and install protective cover (32).

MAINTENANCE

GENERAL

The establishment and implementation of maintenance schedules is essential for the reliable operation of hydraulic press equipment. The elapsed time for periodic maintenance and inspection is based upon environmental and operating conditions (including hours of operation) which are known only to the user of the equipment. Therefore it is the responsibility of the user to insure that the instructions outlined in this manual are carried out on a time table which will insure reliable and efficient operation of the equipment.

It is the responsibility of the user to maintain the Multipress® Equipment at all times in day-to-day operation. The manufacturer suggests that the following maintenance and service procedures be implemented and regularly practiced by the user.

WARNING

When malfunction in any Multipress® Equipment is encountered during the operation or inspection of the equipment, operator(s) should immediately stop the equipment, have qualified personnel interrupt the electric power to the equipment and conspicuously tag it, indicating the malfunction, and then report it to the proper authorities. Do not run the equipment until the malfunction has been eliminated.

MAINTENANCE AND INSPECTION

The following chart is provided to point out specific check points and the schedule that should be applied for each point. Any ITEM or ROUTINE or PERIODIC inspection points not included in this list but considered to be pertinent to the maintenance of the equipment should be included. If in doubt, consult the factory.

	SCHED. INSPECT.		MALFUNCTIONS							
						Loose Conn. of Elec. Short				
ITEM TO BE INSPECTED	Routine (Daily)	Periodic	Damaged Kinked or Dented	Worn	Broken or Cracked	Hyd.	Mech.	Elec.	Mis-alignment	Out of Adj.
Frame		✓			✓					
Electric Motor		✓	✓					✓	✓	
Starter		✓						✓		
Pumps		✓				✓	✓		✓	
Valves		✓				✓	✓			✓
Gauges		✓	✓		✓					
Switches		✓	✓	✓	✓		✓	✓		
Operating Controls	✓	✓	✓	✓	✓		✓			✓
Tooling	✓	✓	✓	✓	✓		✓		✓	
Feed and/or Ejection Mech.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Oil Leaks	✓	✓								
Hydraulic Lines { Pipe, Tube / Hose }		✓	✓		✓		✓			
Hydraulic Fittings		✓			✓		✓			
Electrical Lines { Wire, Cable / Conduit }		✓	✓	✓	✓		✓	✓		
Gaskets, Seals & O-Rings		✓		✓		✓	✓			
Ram Packing		✓	✓	✓		✓	✓			
Oil Level Too Low or Too High	✓	✓								
Oil Contamination Too High		✓								

MAINTENANCE

ROUTINE (DAILY) MAINTENANCE AND INSPECTION

Before operating Multipress® equipment each operator should make the inspection checks indicated in chart on page 9. These checks should be made after each shift change.

In addition, the following inspection checks should be made by each operator before operating equipment after any break time.

1. Make sure that each equipment component is the proper condition and position for start up and be aware of any movement which will occur during start up procedure.
2. Check for loose items foreign to the operation or function of the machine which might cause damage or injury and clear such items from the equipment before start up.
3. Check for oil leaks.
4. Connect electric power to starter box and then actuate MOTOR START push button. With the motor running and driving the hydraulic pump make the following inspection checks:
   a. Check for oil leaks.
   b. Make sure that each equipment component is in the proper position to start cycling.
   c. Make sure that press operates in manner prescribed in sequence of operations.

SAMPLE ROUTINE LOG

If any check points are found to be malfunctions or could lead to a malfunction, a written report should be made, indicating the problem and what was done to correct it and then made a part of the history of this equipment.

			MALFUNCTION CHECK POINTS						
Date of Inspect.	Oper-Press. (PSI)	Total No. of Cycles	Oil Leaks	Oil Level	Oil Temp.	Hyd. Comp's.	Elec. Comp's.	Mech. Comp's.	Remarks

PERIODIC MAINTENANCE AND INSPECTION

At regularly scheduled intervals the users' maintenance department should check each piece of the Multipress® Equipment for those items listed on page 9 and 10 and record in PERIODIC LOG on page 11.

In addition, each component of the equipment should be checked for proper performance as follows:

1. When equipped with an electrical circuit, make sure that all devices function in accordance with the schematic diagram, and sequence of operations. Repair or replace any faulty device; see electric circuit service manual or circuit drawing for identification of parts.
2. Check all mechanical linkage and adjustments; adjust, repair or replace as necessary to comply with operating and/or adjustment instructions in this manual or manual of the operating control.
3. Check the hydraulic system as follows:
   a. Check pressure setting of pressure control valve; adjust if necessary.
   b. Check operational cycle to insure that all valves function in accordance with the schematic diagram and sequence of operations; repair or replace faulty valves.
   c. Check the entire system for leaks; repair as required to eliminate problem.

SAMPLE PERIODIC LOG

If any check points are found to be malfunctions or could lead to a malfunction, a written report should be made, indicating the problem and what was done to correct it and then made a part of the history of this equipment.

			MALFUNCTION CHECK POINTS							
Date of Inspect.	Oper. Press. (PSI)	Total No. of Cycles	Oil Contam Level	Oil Leaks	Oil Level	Oil Temp.	Hyd. Comp's.	Elec. Comp's.	Mech. Comp's.	Remarks

PRESS ASSEMBLY

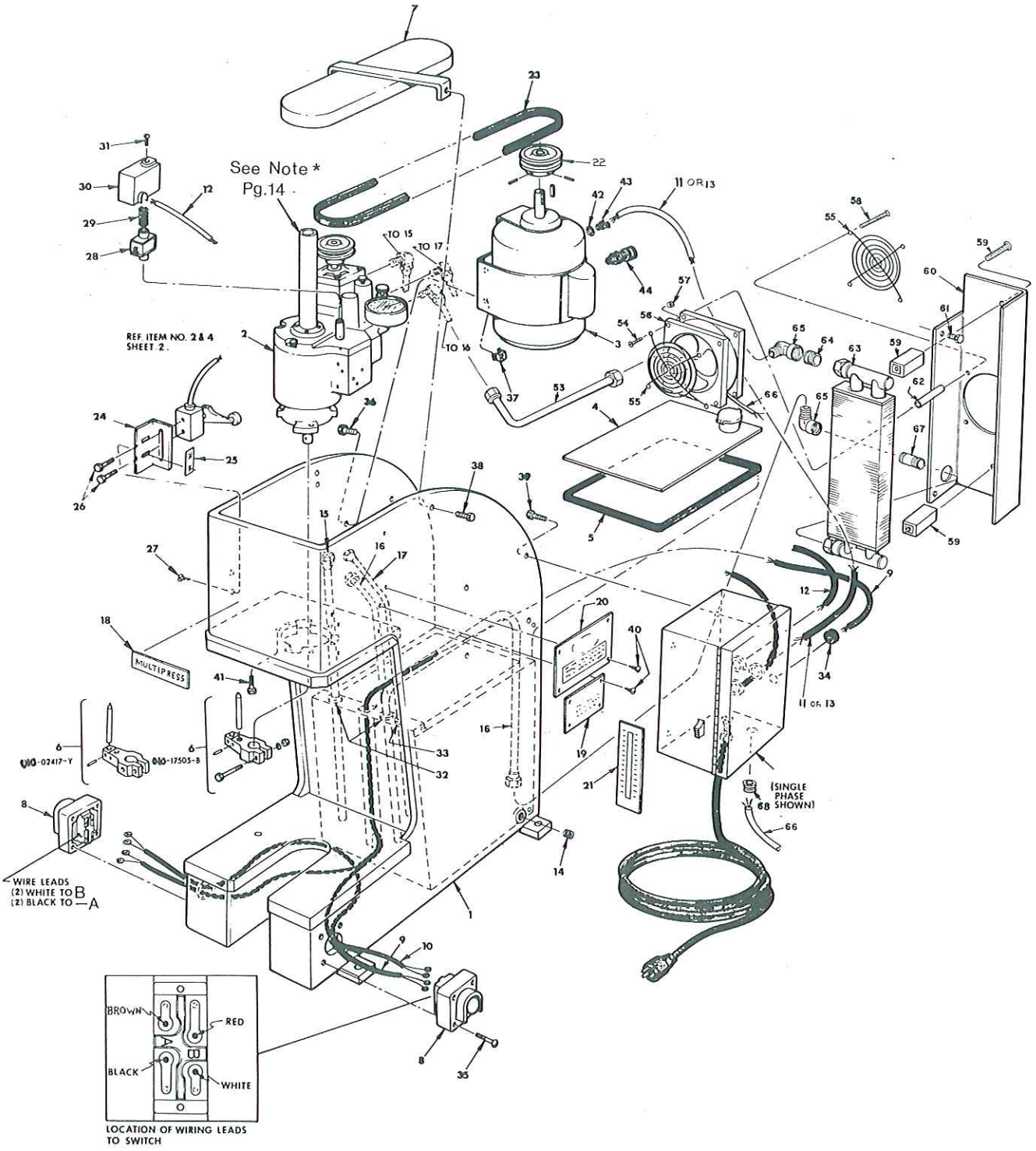


Figure 4

SD-00925

PRESS ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	1 TON QUANTITY	2 TON QUANTITY
1	030-46781	Frame-Press	1	
	030-46782	Frame-Press		1
2	010-24816	Powerhead Assembly (With Positive Stop)	1	
	010-24817	Powerhead Assembly (Without Postive Stop)	1	
	010-24818	Powerhead Assembly (Without Positive Stop)		1
	010-24819	Powerhead Assembly (With Positive Stop)		1
3	135-70001	Motor-Elect. ¾ H.P. @ 1725 RPM, 115 V - 1Ph.-60Hz.	1	1
	135-70000	Motor-Elect. ½ H.P. @ 1725 RPM, 230/460V-3Ph.-60Hz.	1	1
4	010-13574	Reservoir Cover Assembly	1	1
5	606-20391	Reservoir Cover Mounting Strip	1	1
6	010-17505	Ram Guide Assembly	1	
	010-02417	Ram Guide Assembly		1
7	010-17500	Belt Guird Assembly	1	
	010-17503	Belt Guird Assembly		1
8	010-14172	Pushbutton Assembly	2	2
9	010-14178	Pushbutton Cable Assembly	1	1
10	010-24779	Pushbutton Cable Assembly	1	1
11	010-49117	Motor Cable Assembly (Single Phase)	1	1
12	030-90735	Solenoid Cable Assembly	1	1
13	030-49035	Motor Cable Assembly (3 Phase)	1	1
14	431-90400	Plug-Soc. Pipe, ¼" NPTF	1	1
15	030-20067	Tube-Pump Suction	1	1
16	030-20068	Tube-Tank Return		1
	010-48589	Assy, Tube (Cooler to Reservoir)	1	
17	030-21532	Tube-Drain	1	1
18	030-18823	Plate-Insigna	1	1
19	030-10131	Name Plate	1	1
20	030-48097	Warning Plate	1	1
21	030-43166	Pressure Gauge Conversion Plate	1	
	030-42873	Pressure Gauge Conversion Plate		1
22	030-21242	Pulley-Motor	1	1
	219-60001	Belt-"V" Type, "A" Section	1	1
23	219-65004	Belt-"V", "A" Section (50Hz Elect)	1	1
24	030-49458	Limit Switch Mounting Bracket	1	1
25	340-00032	Fasterner	1	1
26	359-09080	Screw-S.H.C. #10-32 UNF x ½" Lg.	2	2
27	357-00003	Screw-S.H.M. #10 x 1" Lg.	2	2
28	120-08116	Solenoid	1	1
29	030-18817	Solenoid Spring	1	1
30	030-18821	Solenoid Cover	1	1
31	310-08060	Screw-R.H.M. #8-32 UNC x ⅜" Lg.	1	1
32	606-20559	Grommet	2	2
33	606-20614	Grommet	1	1
34	129-25009	Gable Grip	1	1
35	320-65014	Screw-O.H.P.H. #8-32 x 1¼" Lg.	8	8
36	306-12120	Screw-H.H.C. ¼"-2 UNC x ¾" Lg.	4	4
37	341-12005	Nut-Retainer, ¼"-20 UNC	4	4
38	306-14120	Screw-H.H.C. 5/16-18 UNC x ¾" Lg.	3	3
39	306-12080	Screw-H.H.C. ¼-20 UNC x ½" Lg.	4	4
40	320-10204	Screw-Drive #2 x ¼" Lg.	8	8
41	358-14160	Screw-H.H.C. 5/16-18 UNC x 1" Lg.	3	
	358-16160	Screw-S.H.C. ⅜-16 UNC x 1" Lg.		3

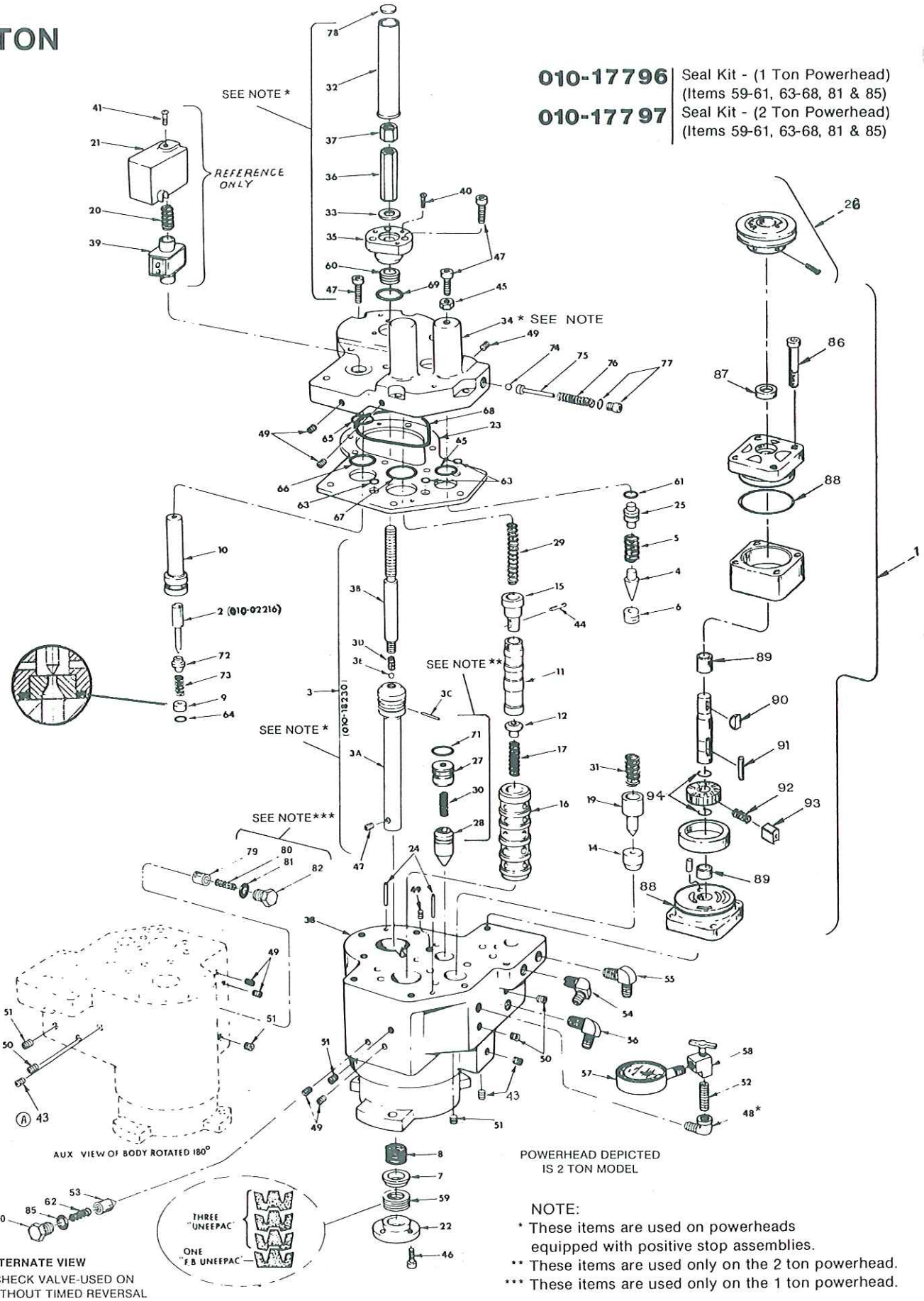
ITEM	PART NO.	DESCRIPTION	1 TON QUANTITY	2 TON QUANTITY
42	128-09051	Fitting-Flex. Conduit	1	1
43	129-25008	Fitting-Cable Grip	1	1
44	129-25006	Fitting-Straight Cord	1	1
45	010-24821	Control Electric (3 Phase)	1	1
		(Main Parts Included in 010-24821)		
	101-45008	Starter-Across the Line (3PH-60Hz)	1	1
	105-05006	Transformer-Control 50VA	1	1
	114-20023	Switch-Limit	1	1
	152-15050	Kit-Pushbutton "Stop-Start"	1	1
	123-75013	Terminal	1	1
46	010-24820	Control Electric (1 Phase)	1	1
		(Main Parts Included in 010-24820)		
	142-10000	Starter-Manual Single Phase	1	1
	114-20023	Switch-Limit	1	1
	123-75013	Terminal	1	1
	010-24780	P.C. Board Electric Control	1	1
	766-40009	Relay-Control	1	1
	766-60008	Timer-Relay	1	1
	010-24778	Cable-Limit Switch, Assembly	1	1
		(Alternate Thermal Overload Units)		
47	106-81019	460V 3 Phase, 60 Hz	Set of 3	3
	106-81018	230V 3 Phase, 60 Hz	Set of 3	3
	106-81002	115V 1 Phase, 60 Hz	1	1
48	010-13467	Cable-Extension, Assembly (1 Phase)	1	1
49	129-25011	Cable Grip	1	1
50	030-13139	Grommet	2	2
51	320-20808	Screw-Self Tap., Phillips Hd.	2	2
52	129-12506	Clamp	2	2
53	010-48590	Assy, Tube (Powerhead to Cooler)	1	1
54	310-08120	Screw, RD. HD. Mach. #8-32 x ¾" Lg. (Guard to Fan)	4	4
55	229-10103	Fingerguard "Grainger" #4C551	2	2
56	229-10104	Fan, Axial; 100 CFM @ 3000 RPM 115V; 60/50 Hz "Grainger" #4C549	1	1
57	333-08001	Nut #8-32 (Fan to Bracket)	8	8
58	310-08260	Screw, RD. HD. Mach. #8-32 x 2¼ Lg. (Fan & Guard to (Bracket)	4	4
59	505-65015	Kit, Cooler to Bracket MTG, "Hayden" #K223	1	1
60	030-53338	Bracket, Cooler and Fan Mounting	1	1
61	306-12080	Screw, HHC ¼-20 UNC x ⅜ LG (Cooler Bracket to Frame)	2	2
62	030-53339	Stand-Off-Fan	4	4
63	505-65014	Cooler, Oil "Hayden" Model #10215S1	1	1
64	442-08010	Nipple - X-Hvy. ½ x 1" Lg. (Cooler Inlet)	1	1
65	474-11008	Elbow, Fem; "Parker" 10DBTX-S (Cooler Outlet & Inlet)	2	2
66	229-10102	Cord, Fan "Grainger" #4C552	1	1
67	442-08080	Nipple - X-Hvy. ½ x 2 Lg. (Cooler Outlet)	1	1
68	129-25021	Fitting, Strain Relief, Straight "Heyco" #SR5M-3 (Bott. Elec. Encl.)	1	1

POWERHEAD ASSEMBLY

1 & 2 TON

010-17796 Seal Kit - (1 Ton Powerhead) (Items 59-61, 63-68, 81 & 85)

010-17797 Seal Kit - (2 Ton Powerhead) (Items 59-61, 63-68, 81 & 85)



ALTERNATE VIEW
SHUTTLE CHECK VALVE-USED ON "A" PRESS WITHOUT TIMED REVERSAL OR QUALITY CONTROL CIRCUIT

NOTE:
* These items are used on powerheads equipped with positive stop assemblies.
** These items are used only on the 2 ton powerhead.
*** These items are used only on the 1 ton powerhead.

Figure 5 O10-24819

POWERHEAD ASSEMBLY PARTS LISTS

ITEM	PART NO.	DESCRIPTION	QTY. 1 TON	QTY. 2 TON
1	010-01260	Pump Assembly	1	1
2	010-02216	Valve - Solenoid	1	1
3	*010-18229	Ram	1	
	010-14579	Ram - (WO/POS. Stop)	1	
	*010-18230	Ram		1
	010-14173	Ram - (WO/POS. Stop)		1
4	030-12288	Cone - (Relief Valve)	1	1
5	036-13244	Spring - (Relief Valve)	1	1
6	036-17034	Seat - Control	1	1
7	030-18795	Ring - Male Support	1	1
8	030-18796	Spring	1	1
9	030-18798	Seat	1	1
10	030-18799	Sleeve	1	1
11	030-18803	Shuttle	1	1
12	030-18804	Seat-Shuttle	1	1
13	030-18805	Seat - (Check Valve)	1	1
14	030-18807	Seat - (Relief Valve)	1	1
15	030-18808	Spool - Unloader	1	1
16	030-18809	Sleeve - Shuttle	1	1
17	030-69236	Spring - Shuttle	1	1
19	030-18815	Spool (Relief Valve)	1	1
20	030-18817	Spring - Solenoid Valve	1	1
21	030-18821	Cover - Solenoid Valve	1	1
22	030-42308	Cap - Stuffing Box	1	
	030-21113	Cap - Stuffing Box		1
23	030-18810	Plate - Seal Retainer	1	
	030-21118	Plate - Seal Retainer		1
24	030-21119	Stud		2
25	030-21120	Follower Spring	1	1
26	030-21241	Pulley - Pump (60 Hz. Elect.)	1	1
	219-65002	Pulley - Pump (50 Hz. Elect.)	1	1
27	030-21462	Plug - Retainer		1
28	030-21463	Poppet		1
29	030-18812	Spring, Unloader	1	1
30	030-22014	Spring (Diff'l. Check Valve)		1
31	030-22142	Spring (Relief Valve)	1	1
32	*030-28501	Cap - Protective	1	1
33	*030-28502	Insert - Stop	1	1
34	*030-28562	Cap - Powerhead		1
	030-21112	Cap - Powerhead (WO/POS. Stop)		1
	*030-28505	Cap - Powerhead	1	
	030-18792	Cap - Powerhead (WO/POS. Stop)	1	
35	*030-28503	Gland Packing	1	
	*030-28565	Gland Packing		1
36	*030-28504	Nut - Ram Stop	1	
	*030-28566	Nut - Ram Stop		1
37	*030-28606	Nut - Ex. Heavy	1	
	*030-28626	Nut - Ex. Heavy		1
38	030-18791	Body - Valve & Cylinder	1	
	030-41686	Body - Valve & Cylinder		1
39	120-08116	Solenoid, 110V 60 HZ	1	1
40	*316-10120	Screw-Flat Hd. S.H.C., 10-24 UNC x ¾" Lg.	3	3
41	310-08060	Screw - Rd. Hd. Mach., 8-32 UNC x ⅜" Lg.	1	1
42	311-12060	Screw - S.S. Cup Pt., ¼-20 UNC x ⅜" Lg.	1	
	311-12100	Screw - S.S. Cup Pt., ¼-20 UNC x ⅝" Lg.		1
43	431-90604	Plug - ⅜ Soc. Pipe (Flush)		3
44	325-08120	Roll Pin - ⅛ Dia. x ¾" Lg.	1	1
45	333-14001	Nut - Hex 5/16 - 18 UNC	1	1
46	358-12100	Screw - S.H.C. ¼-20 UNC x ⅝ Lg.	4	
	358-12080	Screw - S.H.C. ¼-20 UNC x ½" Lg.		4
47	358-14160	Screw - S.H.C. 5/16 - 18 UNC x 1" Lg.	8	13
48	*426-30200	Elbow - St. Pipe, ⅛ x 90°	1	1
49	431-90104	Plug - Soc. Pipe, 1/16 NPTF	7	8
50	431-90204	Plug - Soc. Pipe, ⅛ NPTF	10	4
51	431-90404	Plug - Soc. Pipe, ¼ NPTF	3	4
52	441-02090	Nipple - Std. Pipe, ⅛ Dia. x 2-¼" Lg.	1	1
	441-02040	Nipple - Std. Pipe, ⅛ Dia. x 1" lg. (WO/POS. Stop)	1	1
53	030-18805	Poppet (Shuttle Check Valve)	1	1
54	492-15000	Fitting - 90° Tube	1	1
55	492-15001	Fitting - 90° Tube	1	1
56	492-15002	Fitting - 90° Tube	1	
	492-15001	Fitting - 90° Tube		1
57	501-99684	Gauge - Pressure	1	1
58	514-16002	Valve - ⅛" Angle, Needle	1	1
59	633-00001	Packing	1	1
60	*633-00011	Packing	1	
	*633-00010	Packing		1
61	671-00011	"O" Ring	1	1
62	030-18813	Spring (Shuttle Check Valve)	1	1
63	671-00110	"O" Ring	1	1
64	671-00113	"O" RING	1	1
65	671-00117	"O" Ring	2	2
66	671-00121	"O" Ring	1	1
67	671-00125	"O" Ring	1	1
68	*671-00135	"O" Ring	1	
	671-00149	"O" Ring		1
69	*671-00215	"O" Ring	1	
	*671-00217	"O" Ring		1
70	488-14080	Plug - Bleeder	1	1
71	671-00113	"O" Ring		1
72	030-69237	Follower - Spring	1	1
73	225-92028	Spring	1	1
74	201-10001	Ball - 5/16 Dia.	1	1
75	030-69607	Support - Ball	1	1
76	030-22117	Spring	1	1
77	488-35021	Plug - Hex. Soc. & "O" Ring	1	1
78	*447-00015	Expansion Plug 1-¼"	1	1
79	030-18806	Poppet (Diff'l. Check Valve)	1	
80	030-18814	Spring (Diff'l. Check Valve)	1	
81	671-00910	"O" Ring	1	
82	488-14100	Plug	1	
83	*358-14120	Screw - S.H.C. 5/16-18 UNC x ¾" Lg.	1	
84	*358-14220	Screw - S.H.C. 5/16-18 UNC x 1-¾" Lg.	1	
85	671-00908	"O" Ring	1	1
86	358-16320	Screw-SHC	2	2
87	620-50067	Seal-Shaft	1	1
88	671-00145	"O" Ring	2	2
89	230-00910	Bearing-Needle	2	2
90	221-10003	Key-#3 Woodruff	1	1
91	324-20808	Key-Round	1	1
92	030-18837	Spring-Compression	8	8
93	030-18840	Vane	8	8
94	356-33056	Ring-Retaining, External	2	2

TROUBLE SHOOTING CHART

TROUBLE	POSSIBLE CAUSE	SUGESTED REMEDY
Motor stops or will not start.	Thermal cut out or faulty control circuit fuse	Disconnect press from power source, reset starter and replace FRN 1 fuse if necessary.
Press will not hold pressure.	1. Low voltage. 2. Belt not tight enough. 3. Oil may not be 300 SSU. 4. Cap screws on top of pump loose.	1. Check line voltage. 2. Tighten belt. 3. Drain reservoir and refill with 300 SSU oil. 4. Tighten cap screws.
Ram will not start down.	1. Solenoid not energizing. 2. Solenoid coil burned out.	1. Check fuses and switch and replace if defective. Check all connections for looseness. 2. Replace coil.
Ram will cycle once and then stall in idle.	1. Die set or tooling may not be allowing the ram to return to the extreme retracted position which it must do on EVERY STROKE.	1. Die set or tooling must be provided to allow full retraction on every stroke.
Press is noisy.	1. Defective pump. 2. Pump cavitation caused by air leak in suction line. 3. Tension too tight on "V" belt. 4. Loose Belt Guard.	1 Replace pump. 2. Check tube fitting and replace if necessary. 3. Loosen belt. 4 Tighten belt guard.

WARNING

Before taking any corrective action block the ram to prevent movement and disconnect the press from the power supply.

MULTIPRESS®

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