MODEL

ELECTRIC SERIES

POWER UNIT

[redacted]

OPERATION,

MAINTENANCE,

AND REPAIR MANUAL

[redacted]

4079 Pepin Ave., Unit 4 ● Red Wing, MN 55066
Toll Free: 800-328-1488 ● Office: 651-388-7117 ● Fax: 651-388-0337 ● www.mactechonsite.com

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Warranty: Mactech, Inc. warrants, to the original purchaser all products manufactured by it to be free from defects, in material and workmanship under normal operation conditions and proper application, for a period of one year from the date of shipment of such products or for a period of 500 hours of operation by the original purchaser, whichever occurs first.

The term “original purchaser” as used herein, means the person or firm who first purchases the product for his own use and not for resale.
Our obligation on this warranty shall be limited to the repair or exchange of warranted products, at our option F.O.B. our factory.

The above warranty does not cover conditions over which we have no control, including, without limitation, foreign materials in the oil systems, pressure in excess of recommended maximum, products damaged or subjected to accident, abuse or misuse after shipment from out factory, nor to products altered or repaired by anyone other than authorized personnel.

No products shell be returned without prior written authorization from Mactech, Inc. There will be no acceptance of any charges of labor and/or parts incidental to the removal and remounting of products repaired or replaced under this warranty. Mactech, Inc. will in no event be liable for any special or consequential damage whatsoever.

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1.0 INTRODUCTION

1.1 General Information

The Mactech Power Unit provides power for operation of Type I, Type II or Type III open-center tools (5-10 gpm/19-38 1pm at 2000 psi/140 bar).

The Electric Unit is equipped with a 5-15 hp Baldor electric motor. The unit has an enclosed hydraulic and cooling system. The unit should never be operated with this enclosure open. It may also have a hood over the motor.

The power units are all equipped with air-to-oil coolers with suction fan mounted to the power shaft on the motor.

The hydraulic system is self-contained with the required reservoir, filtration, and level indicators.

Mactech, Inc. reserves the right to make changes at anytime without notice and without incurring any obligation.

1.2 Features

The main features of the Mactech electric series are as follows:

Standard unit is a mobile unit frame:
Length 69.85cm (27.5 in.)
Width 62.23 cm (24.5 in.)
Height 80.1 cm (31.5 in.)
Weight 90.72 kg (200 lbs.)

Optional unit is a skid style frame:
Length 69.85 cm (27.5 in.)
Width 38.10 cm (15.0 in.)
Height 55.88 cm (22.0 in.)
Weight 83.92 kg (185 lbs.)

Operate the unit with fluid temperature at 50º F to 140º F (10º C to 60º C) for improved seal and hose life, maximum efficiency and operator comfort.

1.3 Options

The electric units maybe equipped with one or more of the following options if ordered or add after base model purchase:

- #11-2850-OOK Handle and wheel kit
- Single phase motor
- With or without starter kit
- 15 HP motor
- 20 HP motor
- Lifting eye
- Manual valve flow control assy. included

1.4 Safety Summary

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hoses. These safety precautions are given for your safety. Review them carefully before operating the power unit and before performing maintenance or repairs. Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations.

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1.5 General Safety Precautions

The Mactech Power Unit is designed to provide safe and dependable service if operated according to the instructions provided in this manual. Read and understand this manual and any stickers attached to the power unit before operating. Failure to do so could result in personal injury or equipment damage. Check the rules and regulations at your location. The rules may include and employer's work safety program. Regulations may identify hazards such as working around utility supply lines or hazardous slopes.

1.6 Warning and Caution Precautions

Warning and Caution statements have been strategically placed throughout the text prior to operating or maintenance procedures, practices, or conditions considered essential to protection of personnel or equipment and property.

WARNING: HIGHLIGHTS AN ESSENTIAL OPERATING OR MAINTENANCE PROCEDURE, PRACTICE, CONDITION STATEMENT, ETC. WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN INJURY TO, OR DEATH OF, PERSONNEL OR LONG TERM HEALTH HAZARDS.

CAUTION: **HIGHLIGHTS AN ESSENTIAL OPERATING OR MAINTENANCE PROCEDURE, PRACTICE, CONDITION STATEMENT, ETC. WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN DAMAGE TO, OR DESTRUCTION OF, EQUIPMENT OR LOSS OF MISSION EFFECTIVENESS.**

1.7 Training Requirements

Operator training must consist of a demonstration and verbal instruction. This training is given by a person who is familiar with the operation of this power unit before the power unit is put into service.

The new operator must start in an area without bystanders and use all controls until able to fully operate the electric unit under the conditions for the work area.

2.0 INSTALLATION INSTRUCTIONS

2.1 Unpacking Instructions

Upon receiving your electric power unit promptly remove it from the shipping container. Always keep top side of container up. Inspect unit for damage which may have incurred during shipping and report it to carrier for claim.

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2.2 MOTOR WIRING

CAUTION: READ AND UNDERSTAND MOTOR MANUAL WHICH IS PROVIDED IN ADDITION TO THE MACTECH MANUAL BEFORE STARTING THE POWER UNIT.

Connect the machine in accordance with furnished connection diagram. The wiring, fusing, and grounding must be in accordance to the national Electrical Code and any local codes. When the machine is connected to the load for proper direction of rotation and started, it should start quickly and run smoothly. If this is not the case, immediately shut motor off. Investigate the cause. The cause could be: low voltage, the motor is misconnected, or the load is too great, etc. It is recommended that the motor current be checked after it has been operating a short time and compared against the nameplate current.

Many motor manufactures have their Installation and Operating Manual available at their web sights. If a copy of the motor's manual is required please see the manufactures web sight for a down loadable manual.

2.3 Electric Power Unit Preparation

CAUTION: DO NOT OPERATE POWER UNIT WITH BELOW RECOMMENDED HYDRAULIC OIL LEVEL. PUMP DAMAMAGE MAY ACURE.

Tires Check the air pressure in the tires. See recommended pressures on the side wall of the tire.

***Important- When using couplers, oil should always flow from the male coupler to the female coupler.**

Viscosity (Fluid Thickness)

METRIC	U.S.A.
10 C 95 Centistokes	50 F 450 SSU Max
38 C 27-42 C.S.	100 F 130-200 SSU
60 C 16.5 C.S, Min.	140 F 85 SSU Min.

Pour Point-10 F/23 C Minimum (for cold startup)
Viscosity Index (ASTM D 2220) 140 Minimum
Demulsibility (ASTM D-1401) 30 Minutes Maximum
Flash Point (ASTM D-92) 340 F/171 C Minimum
Rust Inhibition (ASTM D-665 A & B) Pass
Oxidation (ASTM D943) 1000 Hours Minimum
Pump Wear Test (ASTM D2882) 60 mg Maximum

The following fluids work well over a wide temperature range at startup, allow moisture to settle out, and resist biological growth likely in cool operating hydraulic circuits. These fluids are recommended by Mactech, Inc. Other fluids that meet or exceed the specifications of these fluids may also be used.

Type	Hydraulic fluid
Chevron	"Clarity" AW 15032
Exxon	"Univis" J 32
Mobil	D.T.E. 13 M
Gulf	"Harmony" AW-HVI-150-32
Shell	"Tellus T" 32
Texaco	"Rando" HDZ 32
Union	"Unax" AW-WR-32
Amsoil	AWH 15032
Sunvis	Low Pour H/032-product code 19300

Fill the fuel reservoir to a level just below the bottom of the filter tube.

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2.4 Testing

All power units are tested at the factory and their flows and pressures are recorded on the test report, which is shipped with the power unit. Testing of the power unit is not required unless it is damaged during shipping.

Always perform “before startup procedures” found in section 3.3 before testing. PortaCo Hydraulic Tester, Part Number T-00016-XX-0 is recommended for all tests.

a. Set the engine circuit to “OFF.”
b. Connect hydraulic hoses to the power unit. Connect the PortaCo Hydraulic Tester to the opposite end of the hoses. Make sure flow direction is correct.
c. Start the motor and allow the hydraulic fluid to warm to about 100° F/38 C°.
d. Open the tester restrictor valve (fully open.) This represents minimum load.
e. Set the flow control to “ON.
f. Check the flow rate and pressure on the tester gauges. The back pressure reading should be under 17.3 bar (250 PSI). The flow readings should match those listed in section 1.1 General Information of this manual.
g. As the hydraulic system relief valve begins to crack (open) and bypass fluid through the valve, the flow rate will begin to drop. At this time, the pressure in the system should be between 145-155 BAR (2100-2250 PSI).
h. If the pressure is not as specified, the hydraulic circuit relief valve must be adjusted or replaced. (See section 4.2 for procedure.)

- If the flow rate drops below the specified range, the pump or control valve may be worn.

- If the flow remains constant, but pressure does not increase, the relief valve may be defective.

2.5 Adjustments

The hydraulic system flow and pressure relief are set at the factory and must not be readjusted. DO NOT change motor speed.

WARNING: OPERATING THE POWER UNIT AT EXCESSIVE SPEEDS INCREASE THE DANGER OF PERSONAL INJURY.

2.6 Hose Requirements

The Electric series are easily moved close to the job site. It is not often necessary or advisable to use long hoses. All hoses must have an oil resistant inner surface and an abrasion resistant outer surface. Each hose must have male pipe ends for most application. Longer hoses can be used when necessary, but can affect the operation of the engine due to resistance in the hose.

If small diameter or long hoses are used, or if restrictive fittings are connected to the supply and return ports, the pressure required, to push the fluid through the system and back to the tank will be higher. This will reduce tool power.(Fig 2.6A)

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The pressure and return hose are connected to the control block. A 1/2-inch male pipe hose end can be connected, to H.T.M.A. flat-nosed quick-disconnect couplings (available through Mactech, Inc.) can be used. (see fig. 2.6B)

The upper port of the control block is the pressure (oil out) fitting. A male H.T.M.A. quick-disconnect coupling (without lock ring) must be connected to the tool end of the hose, which is connected to this port.

***Important – Oil should always flow from the male coupler through the female coupler.**

The lower port is the return port. A female H.T.M.A. quick-disconnect coupling should be connected to this port.

NOTE: The pressure increase in uncoupled hoses left in the sun may make them difficult to connect.

When possible after use, connect the free ends of the operating hoses together.

HOSE TYPES

Hydraulic hose types authorized for use by Mactech, Inc. is as follows:

1. Labeled and certified non-conductive
2. Wire braided (conductive)
3. Fabric braided (not certified or labeled non-conductive)

Hose 1: Listed above is the only hose authorized for use near electrical conductors.

Hoses 2 and 3: Listed above are conductive and must never be used near electrical conductors.

HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose must be at least 175 bar (2500 PSI.)

HYDRAULIC HOSE RECOMMENDATIONS
Table 2.6A

FLOW PER CIRCUIT		LENGTH EACH HOSE		USE	INSIDE DIAMETER		SAE SPEC HOSE (WIRE BRAID)	SAE SPEC HOSE (FIBER BRAID)
GPM	LPM	FEET	METERS		INCH	MM		
5 to 8	19 to 30	To 50	To 15	Both	1/2	13	SAE 100R1-8	100R7-8
5 to 8	19 to 30	51-100	15 to 30	Both	5/8	16	SAE 100R2-10	SAE 100R8-10
5 to 8	19 to 30	100-300	30 to 90	Pressure Return	5/8 3/4	16 19	SAE 100R2-10 SAE 100R1-12	SAE 100R8-10 SAE 100R7-12
9 to 12	34 to 45	To 50	To 15	Both	5/8	16	SAE 100R2-10	SAE 100R8-10
9 to 12	34 to 45	51-100	15 to 30	Pressure Return	5/8 3/4	16 19	SAE 100R2-10 SAE 100R3-12	SAE 100R8-10 SAE 100R7-12
9 to 12	34 to 45	100-200	30 to 60	Pressure Return	3/4 1	19 25.4	SAE 100R2-12 SAE 100R1-16	SAE 100R8-12 SAE 100R7-16

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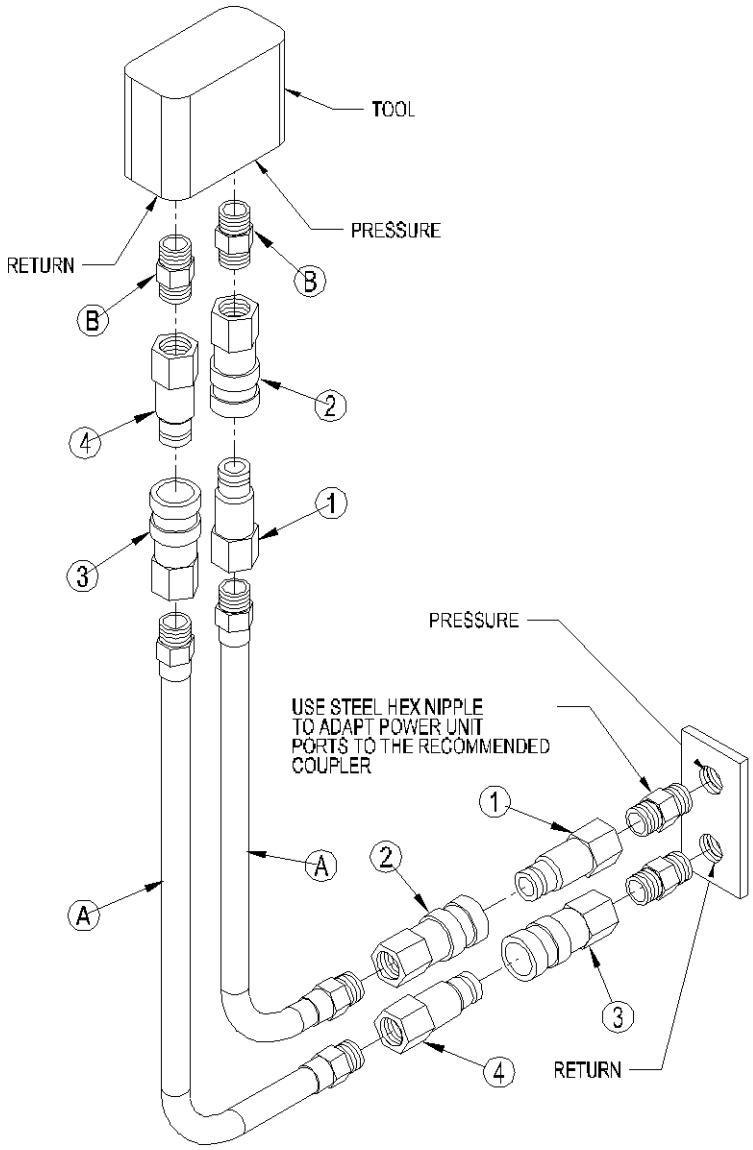

FIGURE 2.6B

FOR SINGLE CIRCUIT FLOWS UP TO 10 GPM plumb hose and tool as illustrated in fig. 1. Numbers are represented below as paragraph numbers.

1. H.T.M.A. 3/4-inch Male Quick Acting Coupler with ½-inch NPT thread.

2. H.T.M.A. 3/4-inch Female Quick Acting Coupler with ½-inch NPT thread.

   At the tool this may be H.T.M.A. 3/4-inch Female Quick Acting Coupler with 3/4-inch NPT thread.

3. H.T.M.A. 3/4-INCH Female Quick Acting Coupler with ½-inch NPT thread.

4. H.T.M.A. 3/4-inch Male Quick Acting Coupler with ½-inch NPT thread.

   At the tool this may be 3/4-inch Male Quick Acting Coupler with 3/4-inch NPT thread.

A. Refer to Table 2.6A for hose recommendations

B. Use adapters with threads that match tool port.

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2.7 Tool Connecting Procedures.

Inspect hose for cuts, crushing, leaks, or abrasion which maybe a safety hazard or reduce fluid flows.

WARNING: DO NOT ATTEMPT TO LOCATE HYDRAULIC LEAKS BY FEELING AROUND HOSES AND FITTING WITH HANDS.“PIN-HOLE” LEAKS CAN PENETRATE THE SKIN.

Stop the motor before connecting the tool and, or hoses to the off power unit, and when switching hoses or tools. Turn the hydraulic on/off valve to the off position before starting the engine. Make sure all hose are connected for correct flow direction to and from the tool being used. When routing hose in the work area, position them where personnel will not be at risk of tripping over them or where vehicles can run over the hoses. Do not lay hose over sharp projects.

WARNING: PRESSURIZED FLUID ESCAPING FROM A DAMAGED HOSE CAN PENETRATE THE SKIN AND BE INJECTED IN THE BODY CAUSING INJURY ORDEATH.

CAUTION: **DO NOT PULL ON HOSES TO DRAG POWER UNIT.**

2.8 Work Area Safety Precautions

- Do not use Mactech hydraulic power units in potentially explosive atmospheres such as near wastewater drains or landfill sites unless unit is equipped with an explosion proof motor.
- Do not operate if flammable gases or vapors are present.
- Mactech hydraulic power units must not be located below overhead gantries, power lines, or walkways where there might be a risk of falling objects.
- Provide ambient light intensity of 200 Lux for working indoors or outdoors particularly if working at night.
- Always wear appropriate safety equipment such as goggles, ear protection, and foot protection.
- Operate only tools which fit into the specifications prescribed in section 1.1. of this manual.
-Do not stand on power unit.

3.0 OPERATING INSTRUCTIONS

3.1 Description of Power Unit

The Mactech electric series Hydraulic Power Unit has been designed for the purpose of supplying hydraulic fluid under pressure to power hydraulic hand tools. Mactech power units produce a maximum pressure of 148 BAR (2150 PSI) and a maximum flow rate of 40 LPM (10 GPM) at 3500 RPMS. See section 1.2 features of this manual for specifications. See the technical manuals supplied by the motor manufacture included with this power unit for detailed technical specifications.

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Mactech Hydraulic Power Units have been designed for use indoors and outdoors. Mactech power units should not be operated under wet conditions, or at ambient operating temperatures, outside the recommended temperature range of -28° C to 43° C. (-20° F to 110° F).

CAUTION: DO NOT USE CLOSED-CENTER TOOLS WITH THIS POWER UNIT.

Tools with higher flow and, or pressure requirements will not operate at their full potential if used with the Mactech Hydraulic Power Unit. Tool with lower flow and, or pressure requirements may be damaged if used with this power unit.

The hydraulic system relief value are preset at the factory and must not be altered for any reason without consulting Mactech, Inc. Any alterations approved by Mactech, Inc., can only be preformed by personnel qualified to maintain hydraulic systems.

Do not use the electric series power unit with close-center tools, tools which do not allow the oil to return to the power unit when not activated. Do not use in jacking operations. Do not use to activate cylinders without an inline open-center control system. Do not operate without a return oil hose.

If there are any doubts whether your tool can be used with the electric series unit please contact the service department at Mactech, Inc. (800-328-1488) for advice. Mactech, Inc. accepts NO responsibility for machines that are used for any purpose other than the intended purpose as specified in the operating instructions or approved directly by Mactech, Inc.

3.2 Controls and Graphics

WARNING: FAILURE TO FOLLOW THE PROCEDURES LISTED IN THE MOTOR OWNER'S MANUAL COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Refer to the motor owner's manual for explanation of symbols located on the engine.

The following decals are placed on the power unit to aid in its operation and maintenance. The operator should locate and understand them before using this power unit.

The hydraulic oil reservoir is marked with a hydraulic oil decal (Fig 3.2A) (Fig 3.2H Arrow A) and a hydraulic oil drain decal (Fig 3.2B) (4.3A Arrow A) indicating the tank's drain plug.

Figure 3.2A

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Figure 3.2B

The hydraulic fluid reservoir decal instructs the operator on fluid level requirements, filter changing intervals, and recommended fluids to be used. (Fig 3.2C).
This decal is located next to the sight tube on the top side of the hydraulic tank. (Fig. 3.2H Arrow B).

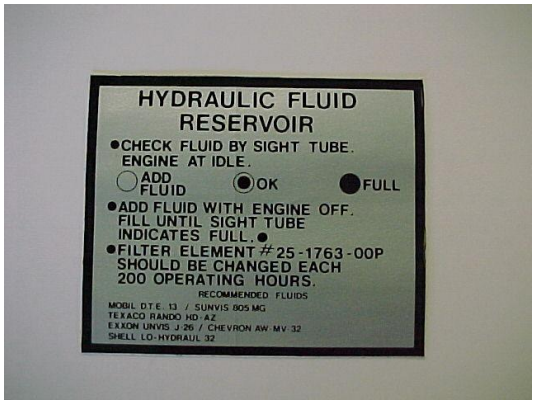

Figure 3.2C

The hydraulic work ports are labeled respectively as to their function with the decal (Fig 3.2D) (Fig 3.2I Arrow D). The upper port is pressure and is equipped with a male quick coupler. The lower port is return and is equipped with a female quick coupler.

Figure 3.2D

A caution fan decal (Fig 3.2E) advises operators of an area, which contains a potential hazard if guards are not properly in position.

Figure 3.2E

A Mactech serial number decal is attached to the power unit on the oil tank. The serial number tag displays Mactech's address and phone number in addition to the units model number, serial number, and other technical specifications.

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The hydraulic circuit is controlled with a rotary on-off knob. The rotation directions for the on and off positions are indicated by the decal on the knob (Fig. 3.2G) (Fig 3.2 Arrow G).

Figure 3.2G

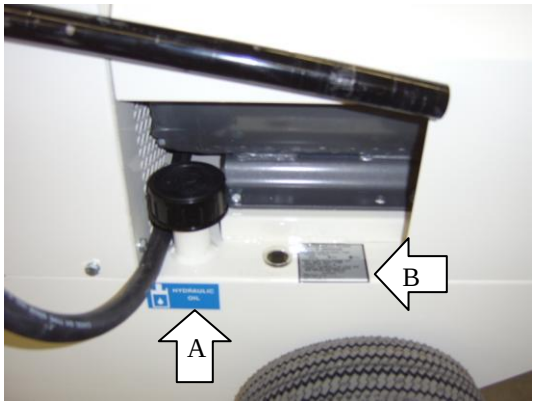

Figure 3.2H

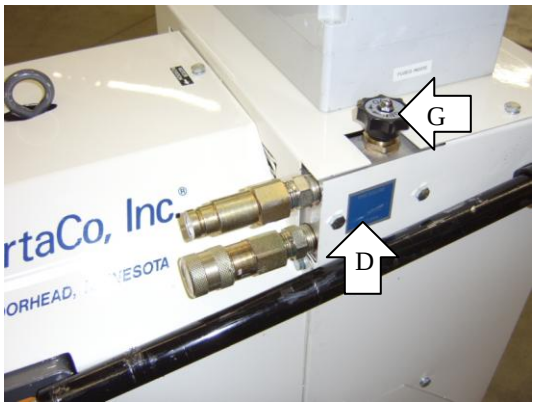

Figure 3.2I

The safety tag Fig 3.2J and Fig 3.2K is attached to the power unit when shipped from the factory. Read and understand the safety instructions listed on this tag before removal. We suggest you retain this tag and attach it to the power unit when not in use.

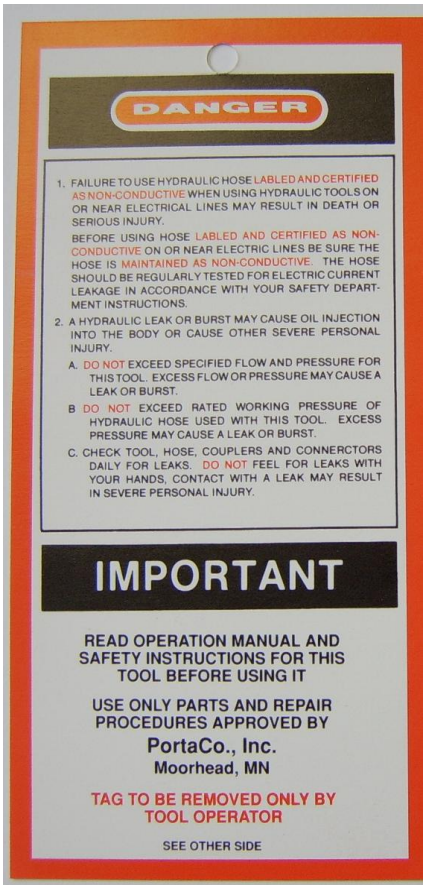

Figure 3.2J

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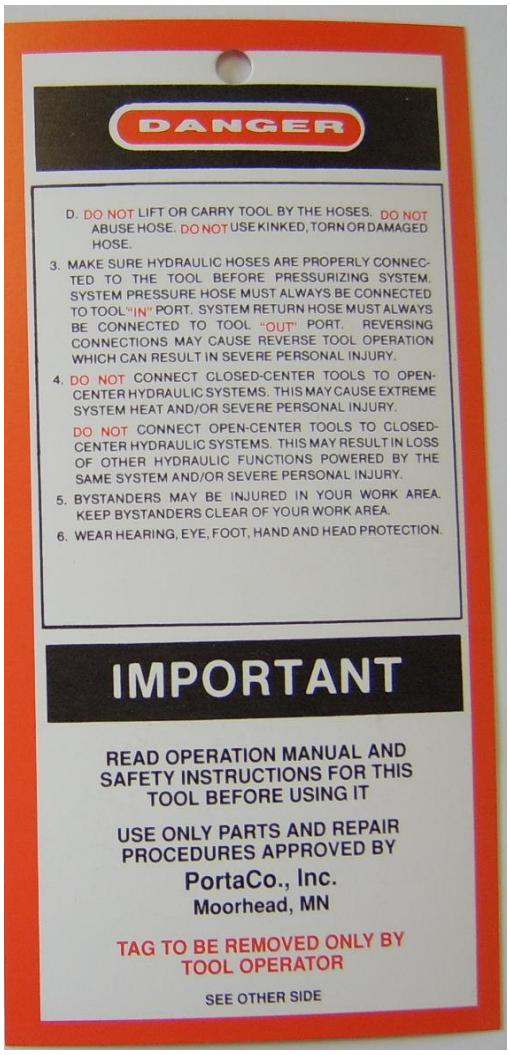

Figure 3.2K

3.3 Before Start Up

Perform the checks specified in Section 2 before operating the unit. Make certain the following conditions are met.

Check the hydraulic oil reservoir level by removing the fill cap and checking the oil level. Add oils as required to raise level to full mark. Use only hydraulic fluids recommended in section 2.3 of this manual. Drain reservoir and change the filter every 300 hrs. or yearly which ever is more frequent. Hydraulic reservoir holds 15.4 Liter (4 Gallons) and is drained by removing a plug under the tank. See section 4.3 for procedures.

CAUTION: ALWAYS ENSURE THAT HOSES ARE FULL WITH HYDRAULIC OIL AND THAT POWER SUPPLY RESEVOIR IS FULL.

Before using the electric power unit inspect the oil cooler grill for blocking or contamination. The power units must be free of leaves, dirt, oil, and other contaminants, which may inhibit cooling or create a fire hazard. Use compressed air or a pressure washer to keep unit clean.

Check that fasteners and fittings are tight, and tighten any fittings, which may develop a leak or fasteners that may become loose immediately. Hydraulic hoses and couples should be inspected for wear, cracking, or fatigue prior to starting the engine.

WARNING: NEVER INSPECT PRESSUREIZED HOSES, COUPLERS, OR FITTINGS WITH HANDS OR AT CLOSE DISTANCES. PRESSURIZE FLUID CAN PUNCTURE THE SKIN AND INJECT OIL INTO THE BODY RESULTING IN DEATH.

Do not use hoses, couples, or fittings which are damaged, replace immediately.

See section 2.8 of this manual for additional safety procedures.

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3.4 Positioning the Power Unit

The electric power unit can be pushed around the work sight and be positioned close to the work being done.

The electric unit can also be position by using a crane. The power unit has a lifting point so it can be loaded easily or positioned at the work sight with a crane. (fig 1.2B)

Place the Mactech hydraulic Power Unit on a level surface with no greater than a 20 degree slope to prevent power unit movement.

WARNING: PLACING THE MACTECH HYDRAULIC POWER UNIT ON EXCESSIVE SLOPES OR UNSTABLE GROUND COULD CAUSE THE UNIT TO ROLL OR TIP DAMAGING THE POWER UNIT OR ENDANGERING WORKERS.

Locate hydraulic power unit in well lit area with a minimum ambient light intensity of 200 lux whether indoors or outdoors, particularly at night. Keep the power unit at least 1 meter (3.3ft) away from buildings, obstructions, and flammable objects.

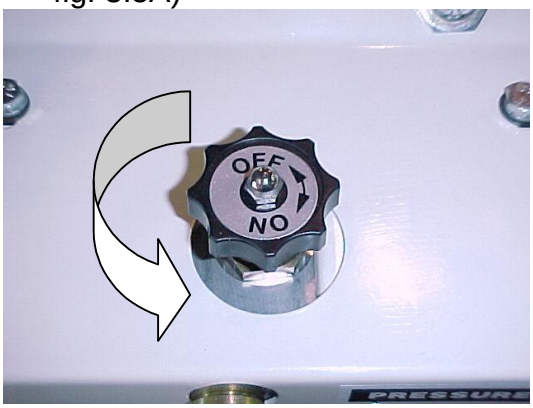
3.5 Start Up

(A) Observe all safety precautions found through out this manual and the included motor manual.

(B) Connect hydraulic hose to the applicable coupler on the control panel. Male couplers are pressure ports. Female couplers are return ports.

NOTE: Clean ends of couplers before connecting to prevent system contamination.

(C) For model E-10S08-11-0 turn the control value fully counterclockwise (OFF). (See fig. 3.5A)



(Fig. 3.5A)

(D) Turn motor switch ON or plug unit into power source. Allow the motor to run without activating the tool, until hydraulic circuits are warm.

***Important – Make sure the control value is in the full counter-clockwise position before connecting or disconnecting hoses to the tool.**

Tools used with the electric power unit must be designed for operation with open-center systems.

Tool Operation

a. Start the motor as specified in paragraph 2.
b. Turn the hydraulic circuit to the ON position or a flow setting to start fluid flowing to the tool.

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3.6 Shutdown

A. NORMAL SHUTDOWN

1) Observe all safety precautions
2) Rotate hydraulic control valves to the “OFF” position.
3) Shut motor off.
4) Disconnect the hoses from the power unit pressure hose first. Then disconnect hoses from the tool. When possible after use, connect the free ends of the operating hoses together. The pressure increase in uncoupled hoses left in the sun may make them difficult to connect.
3) Allow the hydraulic power unit to cool down before enclosing in a small area for transportation or storage.
***Important- Do not store hoses in direct sunlight or any hot location. Expansion of fluids can cause pressure back up.**

When storing hoses the couplers at the hose ends should be connected together to prevent contamination from entering the hydraulic system.

B. EMERGENCY SHUTDOWN

In the event of an emergency, immediately turn the motor off.

Cold Weather Operation

Hydraulic fluids are thicker in cold weather; therefore, run the motor with the flow valve off long enough to bring the fluid temperature up to minimum of 10°C/50 F or until the hydraulic tank feels warm.

In cold weather, a cover over the cooler will allow faster warm-up.

3.8 Storage Preparation

To prepare the hydraulic system for storage fill the hydraulic oil reservoir to the full mark, and check that the fill cap and filter are tight.

When removing from storage during a 3 month or longer period, drain the water from the hydraulic oil reservoir, if any condensation has occurred, and replace the hydraulic oil filter. (See section 4) This will remove any water which, may have condensed in the hydraulic oil reservoir during storage.

Store the Mactech electric hydraulic power unit on a smooth level surface. The power unit should be stored in a cool, dry environment which is not subjected to rapid temperature changes.

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4.0 MAINTENANCE INSTRUCTIONS

4.1 Routine Servicing and Inspections Schedule

Maintenance Schedule (Preformed at every indicated month or operating interval, whichever comes first.)

Motor **Hours of Service Per Year**	**Suggested Relube Interval**		
	NEMA Frame Size		
	42 to 215T	254 to 326T	364 to 447T
5000 Hrs	5 yrs	3 yrs	1 yr
Continuous Normal Application	2 yrs	1 yr	9 months
Seasonal Service Motor is idle for 6 months or more.	1 yr (beginning of season)	1 yr	1 yr
Continuous high ambient, dirty of moist locations, high vibrations, or where shaft end is hot (pump/fans)	6 months	6 months	6 months

Hydraulic **Regular Service Period**	Each Use or 8 Hrs.	First Month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 6 months or 100 Hrs	Every year or 300 Hrs.
Check fluid level	o				
Check oil and filter					o
Remove condensation from fluid			o		
Inspect hydraulic system for leaks	o				
Pump coupling Check (Replace if necessary)	Every 2 years (2)				
Hose Assemblies (Internal) Check (Replace if necessary)	Every 2 years (2)				
Test Hydraulic Flows and Pressures Check (Service as required)	Every 2 years (2) (see section 2.4 for testing)				

NOTE:

1) Service more frequently when used in dusty areas
2) These items should be serviced by a qualified Hydraulics Technician.

Service Replacements Parts

Description	Part Number	Source
Filter Hydraulic Oil	1083-OOP	Mactech Inc.
10 micron twist on	SPE-15-10	LHA

CAUTION: USE ONLY GENUINE MACTECH INC PARTS OR EQUIVALENT. THE USE OF REPLACEMENT PARTS WHICH ARE NOT OF EQUIVALENT QUALITY MAY DAMAGE THE HYDRAULIC POWER UNIT.

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4.2 Assembly View and Parts List
Parts List
Electric Series
E-10S08-11-0

ITEM NO.	PART NO.	DESCRIPTION	QTY
1.	1013-OOP	FILTER	1
2.	1041-OOP	NUT JAM	22
3.	1047-OOP	FITTING	1
4.	1061-OOP	NUT 3/8	2
5.	1062-OOP	NUT 1/4	19
6.	1063-OOP	LOCK WASHER 3/8	6
7.	1064-OOP	LOCK WASHER 1/4	37
8.	1085-OOP	CLAMP	4
9.	1087-OOP	FITTING 3/4	1
10.	1088-OOP	FITTING 90º	1
11.	1099-OOP	WASHER 1/4	8
12.	1146-OOP	VALVE, RELIEF	1
13.	1176-OOP	WASHER, FLAT	2
14.	1211-OOP	COOLER	1
15.	1212-OOP	FITTING	1
16.	1044-OOP	BOLT 1/4	23
17.	1266-OOP	FITTING	2
18.	1871-OOP	BOLT 3/8 X $1^{1/2}$	4
19.	1383-OOP	FITTING 3/4	1
20.	2414-OOP	PUMP HYD.	1
21.	1505-OOP	FITTING	1
22.	1510-OOP	FITTING	1
23.	1769-OOP	GAUGE, SIGHT	1
24.	1929-OOP	CLAMP, HOSE IDEAL	6
25.	1940-OOP	VALVE	1
26.	1958-OOD	MANIFOLD	1
27.	1969-OOP	FITTING	1
28.	2057-OOP	BOLT 1/4	4
29.	2082-OOP	FOOT	2
30.	2187-OOP	CAP	1
31.	2766-OOP	HOSE RETURN 29”	1
32.	2820-OOD	FAN 12” OD	1
33.	2853-OOP	MOTOR	1
34.	2854-OOW	TANK HYD/ FRAME	1
35.	3855-OOP	HOSE PRES.	1
36.	2856-OOW	GRILL	1
37.	2862-OOW	HOOD	1

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38.	3863-OOD	COUPLER PUMP/ MOTOR	1
39.	2865-OOW	GRILL REAR	6
40.	2865-OOD	BRACKET PUMP MTG	1
41.	2866-OOS	GRAPHIC SET E-10 MACTECH	1
42..	2881-OOD	HOSE RETURN 5 ½	1
43.	1083-OOP	FILTER ELEMENT	1
44.	1144-OOP	PLUG 1/4 NPT	1
45.	1167-OOP	BOLT 1/4 NC X 2.00	2
46.	2882-OOD	HOSE SUCTION 7”	1
47.	1733-OOP	BOLT	7
48.	2883-OOD	TAB	1
58.	1871-OOP	BOLT 3/8 X 1 1/4	2

BREAK DOWN OF
WHEEL KIT 11-2850-OOD

49.	1080-OOP	PIN, COTTER 1/8	2
50.	2365-OOP	GRIP HANDLE	2
51.	2443-OOP	WHEEL	2
52.	2867-OOP	PIN SPRING	2
53.	2868-OOD	SPACER	2
54.	2869-OOD	FOOT	1
55.	2871-OOW	BRACKET HANDLE	2
56.	2872-OOD	AXLE	1
57.	2873-OOD	HANDLE	1

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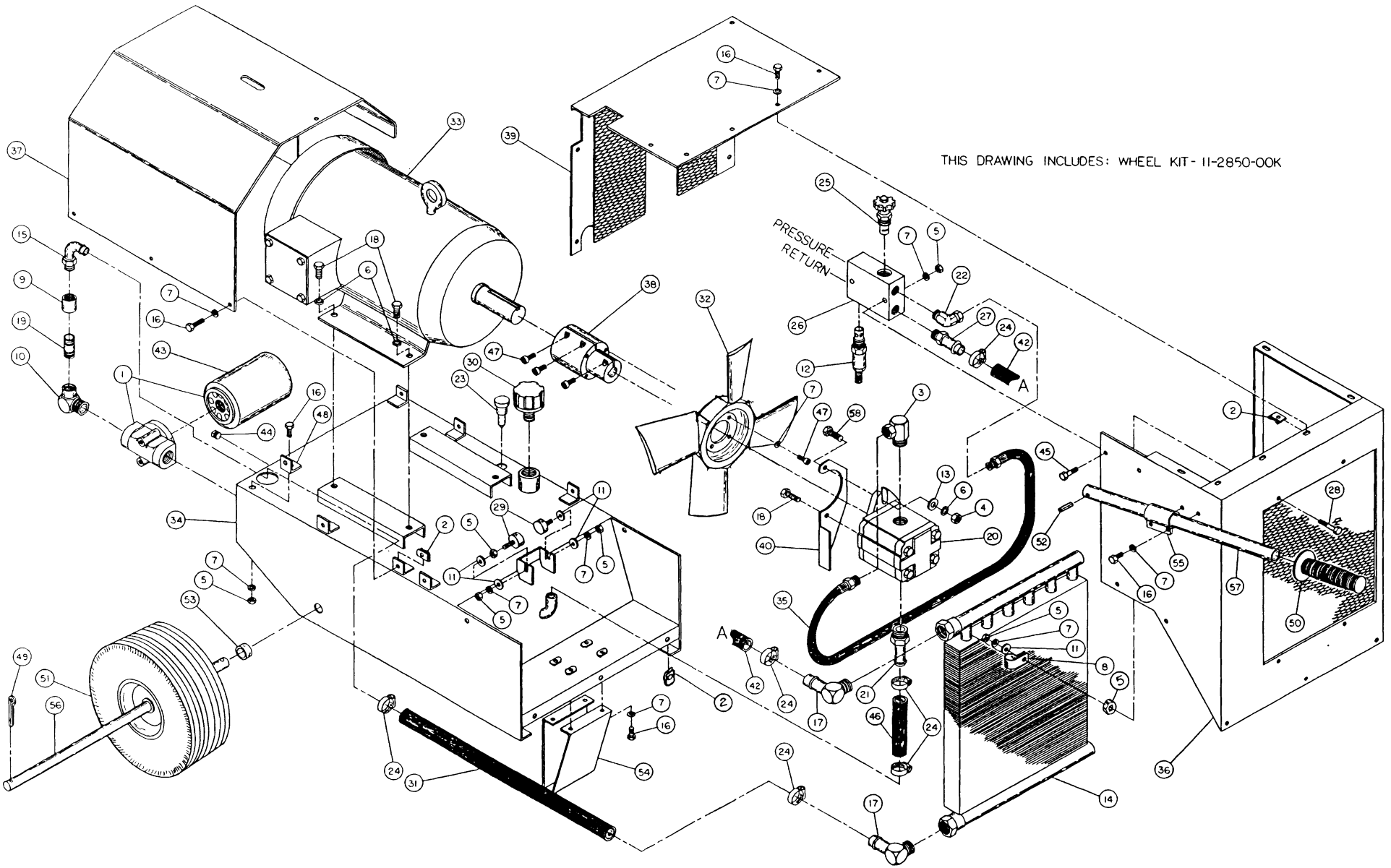
THIS DRAWING INCLUDES: WHEEL KIT - 11-2850-00K
PRESSURE
RETURN
A
A

4.3 MOTOR AND HYDRAULIC FLUID MAINTENANCE

WARNING: SHUT OFF MOTOR BEFORE DOING ANY MAINTENANCE. TO PREVENT ACCIDENTAL UNPLUG POWER SOURCE.

Motor Maintenance

***Important- Remove all power services and allow machine to reach stand still prior to servicing.**

On single phase motor discharge start and/ or run capacitors prior to servicing.

a. **Lubrication** this is a ball bearing motor. The bearings have been given initial lubrication at the factory. Motors without regreasing capability are factory lubricated for normal bearing life.

b. **Relubrication Intervals (Motors having regreasing capability).** New motors having been in storage for over a year should be relubricated by the procedure noted below. The following relubrication intervals are suggested as a guide for long operating life.

c. **Lubricant** Baldor motors are pregreased normally with Shell Oil Company's "Dolium R". Several equivalent greases with the Baldor furnished greases are Chevron Oil's "SRI No. 2." And Texaco Inc. "Premium RB".

d. **Procedure** over-greasing bearings can cause premature bearing failure. If motor is equipped with Alemite fittings, clean tip of fitting, and apply grease gun.

   Use 1 or 2 full strokes on motors in NEMA 215 frame and smaller. Use 2 to 3 strokes on NEMA 365 frame. Use 3 to 4 strokes on NEMA 404 frames and larger. On motors having drain plugs operate motor for 20 minutes before replacing drain plug.

   On motors equipped with slotted head grease screw, remove screw, and apply grease tube to hole. Insert 2 to 3 inch length of grease string into each hole on motors in NEMA 215 frame and smaller. Insert 3 to 5 inch length on larger motors. Motors having grease drain plugs remove plugs and operate motor for 20 minutes before placing drain plug.

Hydraulic Fluid Servicing

Removing Condensation

Once a week (Less often in hot dry weather) take a small sample from the bottom of the hydraulic tank by removing the ½" N.P.T. drain plug. If clear water appears, drain the tank

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until clean oil starts to show. Always drain tank into a suitable container. If fluid is milky, allow unit to settle for 48 hours before draining.

NOTE: Water in the fluid reduces lubrication and causes premature wear. 1% water in a 140 BAR (2000 PSI) system can cause a 2.5% increases in wear rate.

Replace Filter and Fluid

CAUTION: ALWAYS FOLLOW ANY HANDLING PRECAUTIONS PUBLISHED BY THE MANUFACTURES OF THE LUBRICANTS OR HYDRAULIC FLUIDS USED.

- Remove the drain plug on the underside of the hydraulic tank (Fig. 4.3A Arrow A) and drain oil into a suitable container. Let reservoir completely drain and reinstall the plug.
- Place the drain pan under the hydraulic oil filter and remove filter. (Fig. 4.3A Arrow B))
- Apply a film of clean oil to the gasket surface of a new hydraulic oil filter. PortaCo part number 1083-OOP (LHA# SPE-15-10).
- Install new filter element and tighten one-half turn after initial gasket contact.
- Fill hydraulic oil reservoir with a fluid recommended in section 3.2 of this manual. Fill tank until oil level is just below filler tube. Reservoir capacity is 15.4 liters (4.0 gal.)
- Dispose of oil and filters in a responsible manor.

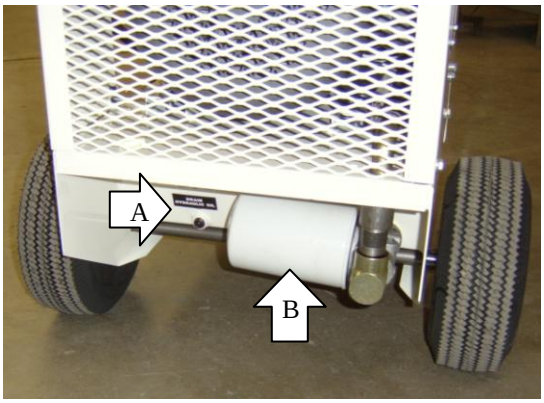

Figure 4.3A

CAUTION: ALWAYS CLEAN UP ANY FLUID SPILLS IMMEDIATELY.

- Start motor and allow to run for 3 minutes
- Shut motor off, check oil level and add fluid if required. Do not overfill or fluid may be forced out of hydraulic fill cap when operating unit. To maximize life of the Mactech, Inc. Hydraulic Power Unit all maintenance must be preformed in accordance with the manual.

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4.4 Trouble Shooting

PROBLEM	CAUSE	REMEDY
Motor will not start	Usually caused by line trouble, such as, single phasing at the starter.	Check source of power. Check overloads, fuses, controls, ect.
Excessive humming	High Voltage.	Check input line connection.
Motor Over Heating	Overload. Compare actual amps (measured) with nameplate ratings.	Locate and remove source of excessive friction in motor or load. Reduce load or replace with motor of greater capacity.
	Single Phasing.	Check current at all phases (should be approximately equal) to isolate and correct the problem.
	Improper ventilation.	Check external cooling fan to be sure air is moving properly across cooling fans. Excessive dirt build-up on motor. Clean motor.
	Unbalanced voltage.	Check voltage at all phases (should be approximately equal) to isolate and correct the problem.
	Rotor rubbing on stator.	Check air gap clearance and bearings.
		Tighten “Thru Bolts.”
	Over voltage or under voltage.	Check input voltage at each phase to motor.
	Open stator winding.	Check stator resistance at all three phases for balance.
	Grounded winding.	Perform dielectric test and repair as required.
	Improper connections.	Inspect all electric connections for proper termination, clearance, mechanical strength and electrical continuity. Refer to motor lead connection diagram.
Bearing Over Heating.	Excessive grease in bearing.	Remove grease until cavity is approximately ¾ filled.
	Insufficient grease in	Add grease until cavity is

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	bearing.	approximately ¾ filled.
	Dirt in bearing.	Clean bearing cavity and bearings. Repack with correct grease until cavity is approximately ¾ filled.
Vibration.	Rubbing between rotating parts and stationary parts.	Isolate and eliminate cause of rubbing.
	Rotor out of balance.	Have rotor balance checked or repaired.
	Resonance.	Tune system or contact Baldor Service Center for assistance.
Noise.	Foreign material in air gap or ventilation openings.	Remove rotor and foreign material. Reinstall rotor. Check insulation integrity. Clean ventilation openings.
Growling or whining.	Bad bearings.	Replace bearings. Clean all grease from cavity and new bearing. Repack with correct grease until cavity is approximately ¾ filled.
Motor runs but hydraulic circuit will not drive tools.	Tool not connected to power units.	Connect tool. Check coupler.
	Hydraulic fluid reservoir low.	Check and fill as required.
	Tool hoses blocked.	Remove obstruction.
	Tool hoses incorrectly connected to circuit fittings.	Check that tool hose goes from top port and from tool return or out port to lower port, both ports on the same side of the manifold.
	Relief valve(s) stuck open.	Adjust or replace valve(s).
	Tool is defective.	Repair as necessary.
Tool runs too hot.	Relief valve set too low.	Adjust for 2100 psi/ 148 bar cracking pressure.
	Hoses too small.	Increase hose diameter. (refer to section 2.6)
	Improper fluid.	Replace fluid. (refer to section 1)
	Cooler clogged, blocked air flow.	Clean cooler, straighten fins as necessary.
	Hydraulic pump damaged.	Replace.
	Flow control valves or priority valves have been added to circuit.	Some rotary tools must have flow controls. Adjust flow to match tool gpm to avoid forcing excess flow over relief.
	Closed center tools in use.	Use only open center tools.

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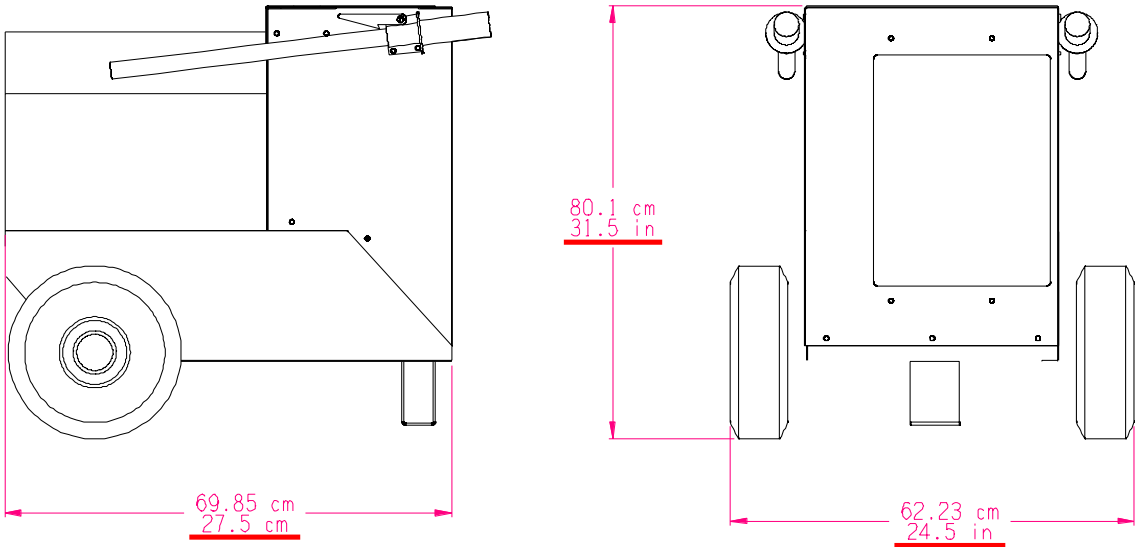
4.5 Technical Specifications



Hydraulic Power Unit Dry Weight		99.7 kg (200 lbs)
Motor Weight		
Max Pressure		148 BAR (2150 PSI)
Max Flow	E-10S08-11-O	30 LPM (8GPM)
Relief valve settings		148 BAR (2150 PSI)
Motor PRM Max.		3600 RPM
Hydraulic Reservoir Capacity		15.4 Liters (4 Gallons)

Consumable Items List

Description	Part Number	Sources
Filter Hydraulic Oil 10 micron twist on	1083-oop	PortaCo, Inc
	SPE-15-10	LHA

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Hydraulic Fluid Requirements

Viscosity (Fluid Thickness)

METRIC	U.S.A.
10 C 95 Centistokes	50 F 450 SSU Max
38 C 27-42 C.S.	100 F 130-200 SSU
60 C 16.5 C.S., Min.	140 F 85 SSU Min.

Pour Point – 10 F/-23 C Minimum (for cold startup)
Viscosity Index (ASTM D 2220) 140 Minimum
Demulsibility (ASTM D-1401) 30 Minutes Maximum
Flash Point (ASTM D-92) 340 F/171 C Minimum
Rust Inhibition (ASTM D-665 A & B) Pass
Oxidation (ASTM D943) 1000 Hours Minimum
Pump West Test (ASTM D2882) 60 mg Maximum

Recommend Hydraulic Fluids

Type	Hydraulic fluid
Chevron	"Clarity" AW ISO 32
Exxon	"Univis" J 32
Mobil	D.T.E. 13 M
Gulf	"Harmony" AW-HVI-150-32
Shell	"Tellus T" 32
Texaco	"Rando" HDZ 32
Union	"Unax" AW-WR-32
Amsoil	AWH ISO 32
Sunvis	Low Pour H/032-product code 193000

Coupler recommendation: 3/4- inch FLAT FACE HTMA couplers rated at 2500 psi working pressure. Threads are to match fittings used of on hoses or fittings used as adapters.

Operate Mactech Hydraulic Power Unit in well-ventilated areas only. **DO NOT** operate hydraulic power unit in combustible atmospheres. Remove flammable materials from work area. Operate only within temperature range of –20˚C to 40˚C (-4˚F to 104˚F)

Bolt Tightening Torque

Bolt Size	Torque
#10-32	38 in. lbs.
¼-20	76 in. lbs.
5/16-18	13 ft. lbs.
3/8-16	23 ft. lbs.

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SERVICE AND REPAIR NOTES

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