

Alcoa  
Fastening  
Systems



## INSTRUCTION MANUAL

# 918 SERIES

## POWERIG<sup>®</sup> HYDRAULIC UNITS



Makers of Huck<sup>®</sup>, Marson<sup>®</sup>, Recoil<sup>®</sup>  
Brand Fasteners, Tools & Accessories



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## SAFETY


*This instruction manual must be read, with particular attention to the following safety guidelines, by any person servicing or operating this tool.*

### 1. Glossary


 — Product complies with requirements set forth by the relevant European directives.

 — Read manual prior to using this equipment.

 — Eye protection is required while using this equipment.

 — Hearing protection is required while using this equipment.

 **WARNINGS: Must be understood to avoid severe personal injury.**

 **CAUTIONS: show conditions that will damage equipment and or structure.**

**Notes:** are reminders of required procedures.

**Bold, Italic type and underlining:** emphasizes a specific instruction.

2. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.
3. Huck equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.
4. Repairman and Operator must read manual prior to using equipment. Warning and Caution stickers/labels supplied with equipment must be understood before connecting equipment to any primary power supply. As applicable, each of the sections in this manual have specific safety and other information.
5. Read MSDS Specifications before servicing the tool. MSDS Specifications are available from the product manufacturer or your Huck representative.
6. When repairing or operating Huck installation equipment, always wear approved eye protection. Where applicable, refer to ANSI Z87.1 - 2003
7. Disconnect primary power source before performing maintenance on Huck equipment or changing Nose Assembly.
8. Tools and hoses should be inspected for leaks at the beginning of each shift/day. If any equipment shows signs of damage, wear, or leakage, do not connect it to the primary power supply.
9. Mounting hardware should be checked at the beginning of each shift/day.
10. Make sure proper power source is used at all times.
11. Release tool trigger if power supply is interrupted.
12. Tools are not to be used in an explosive environment unless specifically designed to do so.
13. Never remove any safety guards or pintail deflectors.
14. Where applicable, ensure deflector or pintail collector is installed and operating prior to use.
15. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
16. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
17. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.
18. If there is a pinch point between trigger and work piece, use remote trigger. (Remote triggers are available for all tooling).
19. Unsuitable postures may not allow counteracting of normal expected movement of tool.
20. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and in preventing an accident which may cause severe personal injury.
21. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
22. There is a risk of crushing if tool is cycled without Nose Assembly installed.
23. Tools with ejector rods should never be cycled with out nose assembly installed.
24. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet of correct positioning.
25. Tool is only to be used as stated in this manual. Any other use is prohibited.
26. There is a risk of whipping compressed air hose if tool is pneudraulic or pneumatic.
27. Release the trigger in case of failure of air supply or hydraulic supply.
28. Use only fluids or lubricants recommended.
29. Disposal instruction: Disassemble and recycle steel, aluminum and plastic parts, and drain and dispose of hydraulic fluid in accordance with local lawful and safe practices.
30. If tool is fixed to a suspension device, ensure that the device is secure prior to operating the tool.



## PRINCIPLE OF OPERATION

Refer to Figures 3 & 4, ELECTRICAL SCHEMATICS and Figure 5, HYDRAULIC DIAGRAM.

With the disconnect switch ON, input power is supplied to open motor contactors and to the transformer which develops 110 volts AC across its secondary.

When the START button is depressed momentarily, the circuit is completed through the motor contactor, closing the contacts and starting the motor. The START button is now bypassed by a closed motor contactor and the motor continues to run when the START button is released, unless the STOP button is depressed or the overload relay in the motor contactor opens due to motor overload.

After the START button is depressed, 24 volts AC is developed across the secondary of transformer for the tool control circuits.

When tool trigger 1 is depressed, relay 1CR energizes closing its contacts in the operating solenoid circuit. This action energizes the solenoid, changing the position of the directional valve spool so that high-pressure hydraulic fluid is directed out the PULL pressure port and hose to tool 1.

When the tool trigger is released, the solenoid de-energizes and the valve spool returns to its original position, directing the hydraulic fluid out the RETURN pressure port and hose to the tool.

Each tool has a control circuit which allows it to operate simultaneously and independently.

**SPECIFICATIONS****CSA CERTIFIED**

	<b><u>918</u></b>	<b><u>918-5</u></b>
<b><u>Width</u></b>	25.0 (63.5 mm)	29.0 inches (73.7 mm)
<b><u>Length</u></b>	44.0(111.8 mm)	44.0 (111.8 mm)
<b><u>Height</u></b>	30.0 (76.2 mm)	30.0 (76.2 mm)
<b><u>Weight</u></b> (Operational)	585 lbs. (265 kg) 708 lbs. (321 kg)	601 lbs. (272 kg) 724 lbs. (328kg)

**Model 918 system** Two open center circuits with 8,400 psi max. (582 BAR) operating pressure.

**Model 918-5 system** Three open center circuits with 8,400 psi max. operating pressure.

**Pump** Dynex/Rivet constant displacement hydraulic piston pump direct mounted to motor. Pump has six axial pistons. Flow is split; three pistons per circuit in the 918, and two pistons per circuit in the 918-5.

**Oil Control** Four way solenoid operated directional valve, pressure, relief valve, and idler valve on each circuit.

**Reservoir Capacity** 22 gallons (83.28 liters) - *Center of sight gauge.*

**Cooler** Fan and radiator air/oil heat exchanger.

**Remote Control** 24 volt AC control circuit.

**Power Source** 10 HP (7.46 kw) Reuland electric motor 220 VAC (27.6A), 440 VAC (13.8A), or 550 VAC (10.8A), 3 phase; 60 Hertz, or 8.3 HP (6.19 kw) Reuland electric motor 380 VAC (13A), 3 phase; 50 hertz. *FOR OTHER VOLTAGES AND FREQUENCIES:* Contact Alcoa Fastening Systems, Industrial Products, Kingston Operations.

**Hose Kits** Use only genuine HUCK Hose Kits rated @ 10,000 psi working pressure.

**Hydraulic Fluid** ATF meeting DEXRON III, DEXRON IV, MERCON, Allison C-4 or equivalent specifications.

Fire resistant hydraulic fluid may also be used, and is required to comply with OSHA regulation 1926.302 paragraph (d): "the fluid used in hydraulic power tools shall be fire resistant fluid approved under schedule 30 of the US Bureau of Mines, Department of Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed."

**Output Pressure**      **PULL** range:            5,800 psi (400 bar) - 8,400 psi (648 bar).  
                                 **RETURN** range:        800 psi (55 bar) - 7,000 psi (482 bar).

**Max Operating Temp** 125 ° F ( 51.7 ° C)

**Max Flow Rate** 918: 2 gpm per circuit ( 7.6 l/m), 918-5: 1.33 gpm per circuit

## SPECIFICATIONS (continued)

### GENERAL

The Models 918 and 918-5 POWERIG® Hydraulic Units are electrically operated hydraulic power sources designed to operate Huck Installation Equipment. Model 918 is designed to operate two pieces of equipment simultaneously and independently of each other. The units are semi-portable and can be moved with a fork-lift truck. **Note: The units are shipped WITHOUT hydraulic fluid.**

Model 918-5 operates three tools simultaneously and independently of each other. The Model 918-5 is the basic Model 918 with an additional combination valve bracket assembly mounted to the reservoir.

Figures 1, 2, & 3 show features of Model 918 and 918-5 POWERIG Hydraulic Units and identify main components. Hydraulic pressure is developed by an axial piston pump driven by an electric motor. Hydraulic pressure from the pump is directed to PULL and RETURN ports by combination valves controlled from the installation equipment by relays and solenoids.

Hydraulic fluid is stored in the 22 gallon reservoir which serves as a base for motor and pump. A 70 micron strainer in the suction line, and a 10 micron filter in the RETURN line, assure clean, filtered hydraulic fluid for the hydraulic system. A filler-strainer is provided for adding hydraulic fluid. However, any hydraulic fluid which is added to the reservoir must be filtered by a 10 micron (or better) filter.

Before returning to reservoir, circulating hydraulic fluid passes through the cooler where temperature of fluid is lowered to proper operating level. Fan attached to the rear shaft extension of the electric motor aids in dissipating heat from the cooler.

### ELECTRICAL CONTROL PANEL

The electrical control panel contains two compartments: The **Disconnect Compartment** and the **Control/Transformer Compartment**.

The **Disconnect Compartment** contains a three-pole main disconnect switch, three main line fuses, two transformer fuses, and terminals for power cable connection.

The **Control/Transformer Compartment** contains two transformers (one is to convert to 110 and the other is to convert to 24 volt current), motor contactor with three overload relays (heaters), multi-contact relays for control circuit, START and STOP buttons, 24 volt and 110 volt circuit breakers, bases (sockets) for plugging in the tool control cords, and power cable entrance connector.

### INPUT POWER CABLE

A four-conductor power cable, including ground conductor, is used to connect the POWERIG® Hydraulic Unit to the electrical power source. The cable is NOT shipped with unit. User must furnish power cable in accordance with his particular requirements. Only a qualified electrician should install power cable (See **First Time Start-up** procedure in the **PREPARATION FOR USE** section). The 440 volt standard unit may be converted to 220 volt operation. (Use conversion kit, 918-220KIT). Also, the 220 volt unit may be converted to 440 volt operation (use conversion kit. 918-440KIT).

### COMBINATION VALVE

Each combination valve contains a **Four-way solenoid operated directional valve, Pressure Relief Valve** and **Idler Valve**. (See Figure 7)

The **Four-way Valve**, which is controlled by a tool trigger through a relay and solenoid, directs hydraulic fluid under pressure to PULL or RETURN hoses connected to installation tool, or other equipment.

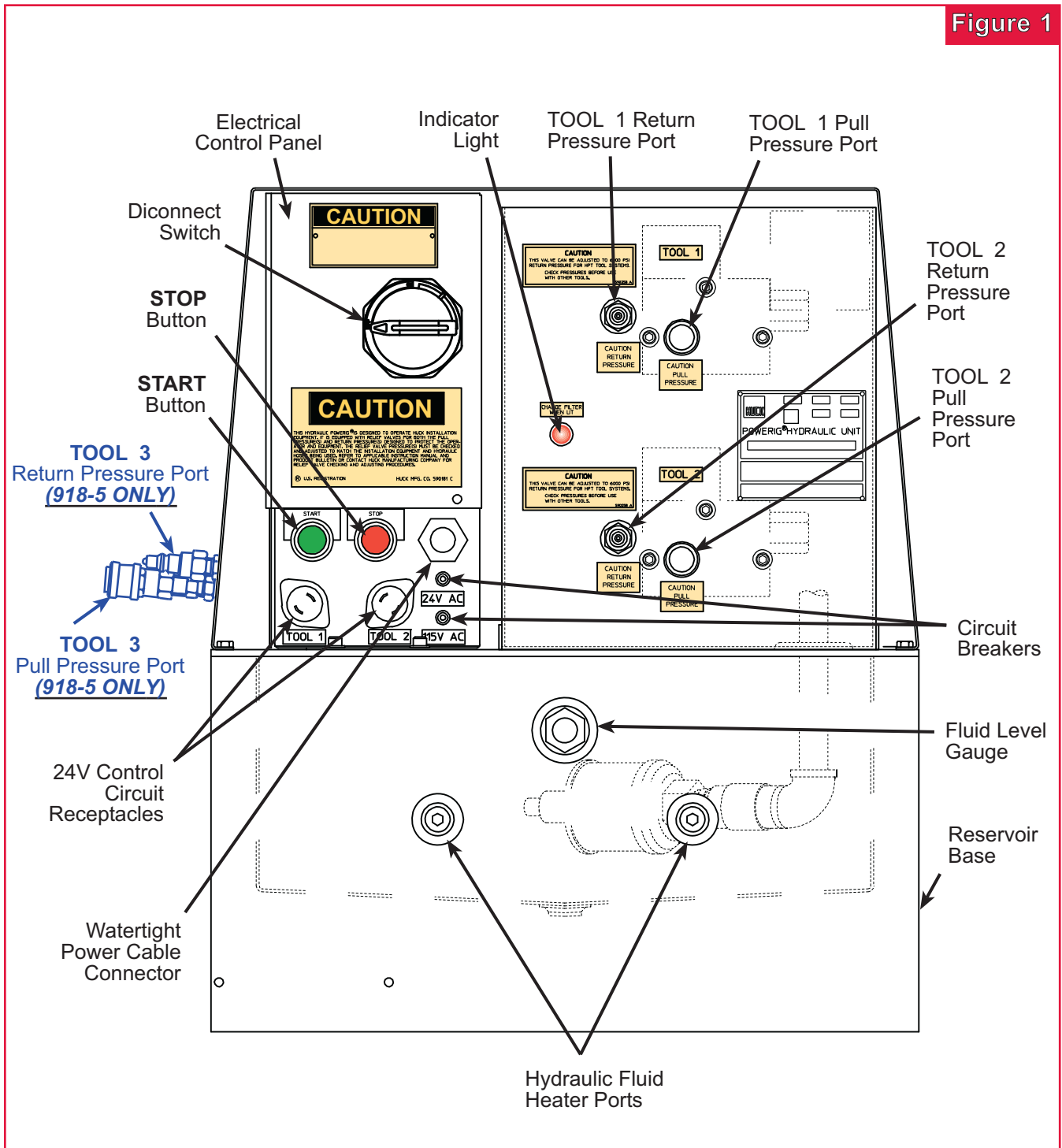
The **Pressure Relief Valve** is designed to protect POWERIG Hydraulic Unit and installation tools from excessive pressure during the pull cycle. Valve is factory preset to 5400psi (372 bar).

The **Idler Valve** is designed to protect unit and installation tools from excessive pressure during the return cycle. Idler valve is preset at factory to provide 2800 psi (193 bar) return pressure and approximately 200 psi (14 bar) idling pressure. Various systems require different output pressures. See **CHECKING & ADJUSTING PRESSURES** before using the POWERIG Hydraulic Unit.

\* *DEXRON is a registered trademark of General Motors Corp.  
Quintolubric is a registered trademark of Quaker Chemical Corp.  
Slic-Tite is a registered trademark of LA-CO Industries, Inc.  
TEFLON is a registered trademark of DuPont Corp.  
LUBRIPLATE is a registered trademark of Fiske Brothers Refining Co.*

# 918 & 918-5 FRONT VIEW

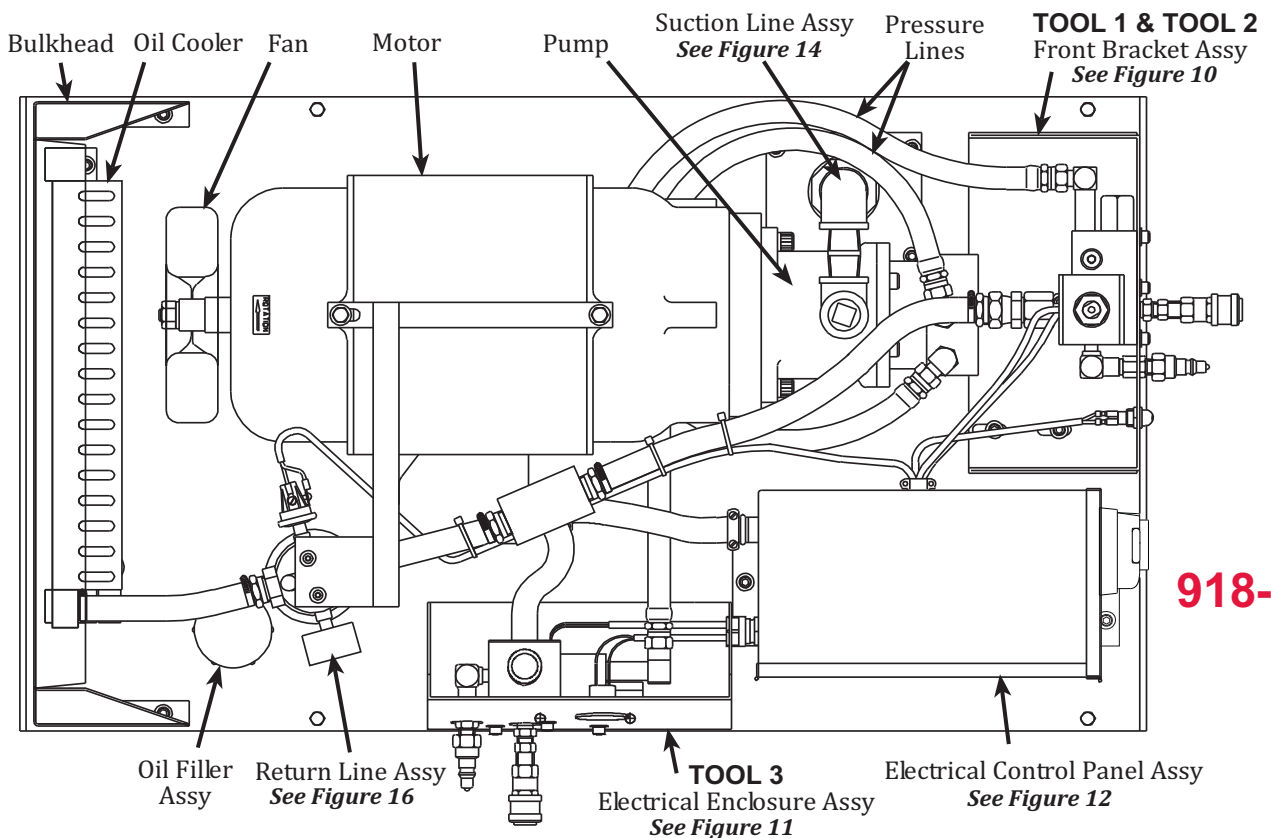
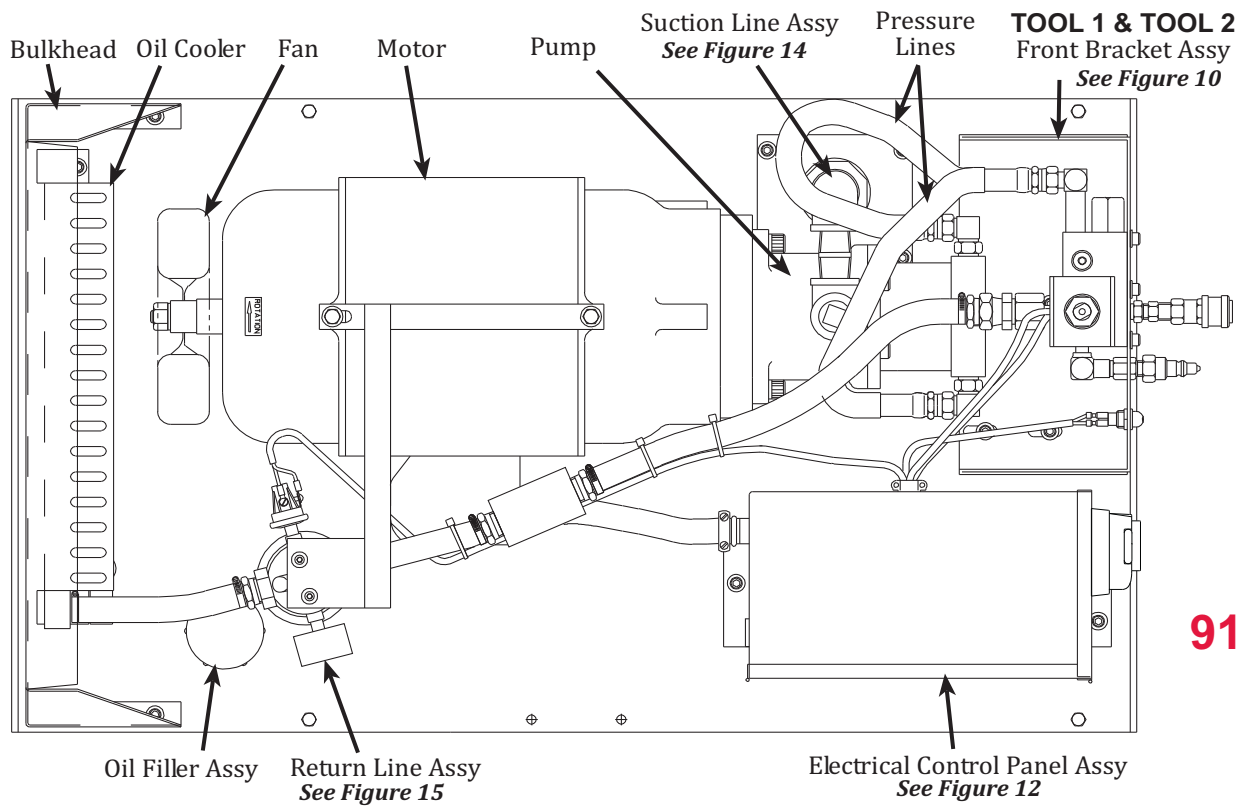
Figure 1





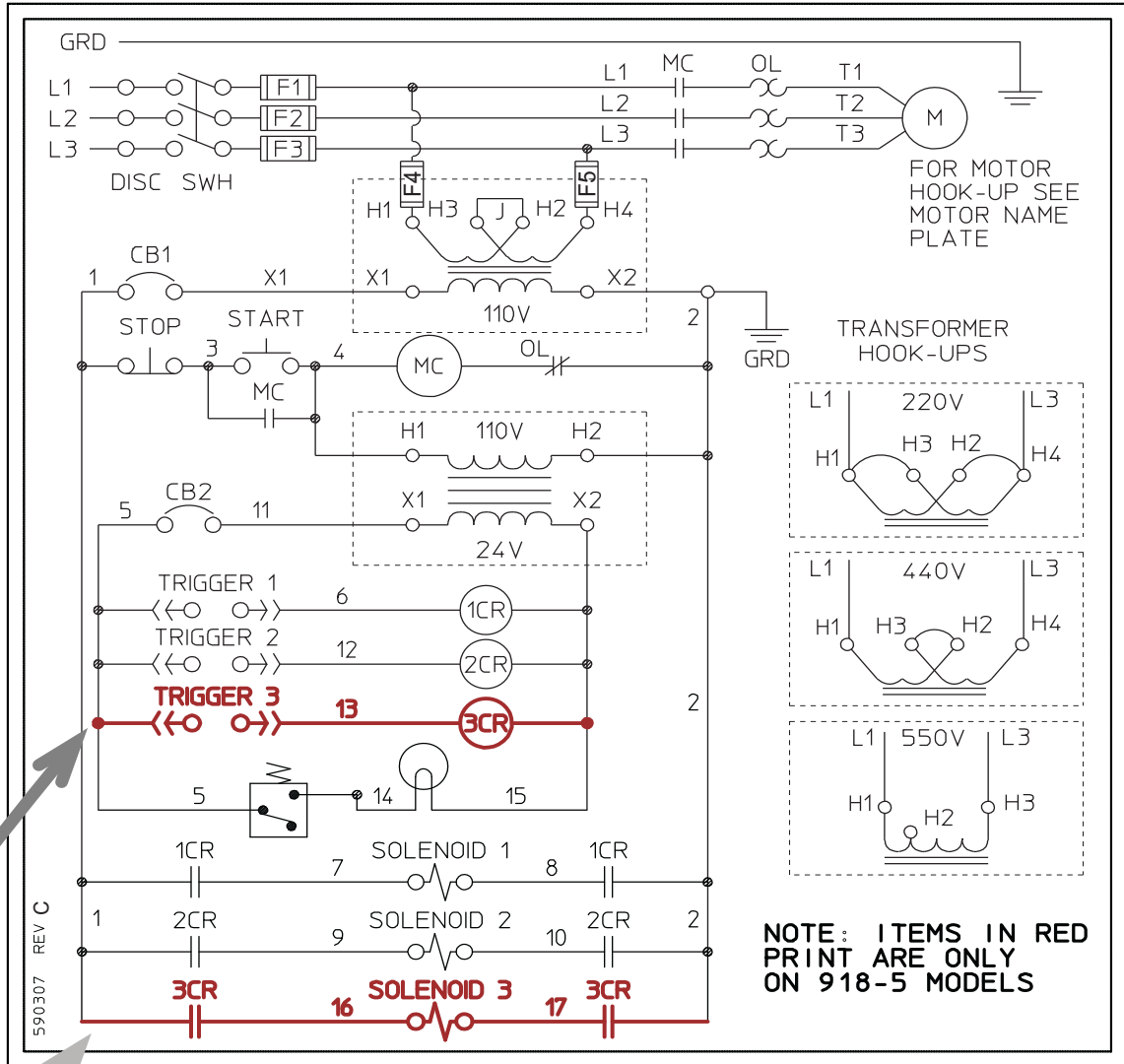
**TOP VIEW WITH COVER REMOVED**

Figure 2



# 918 & 918-5 ELECTRICAL SCHEMATIC

Figure 3

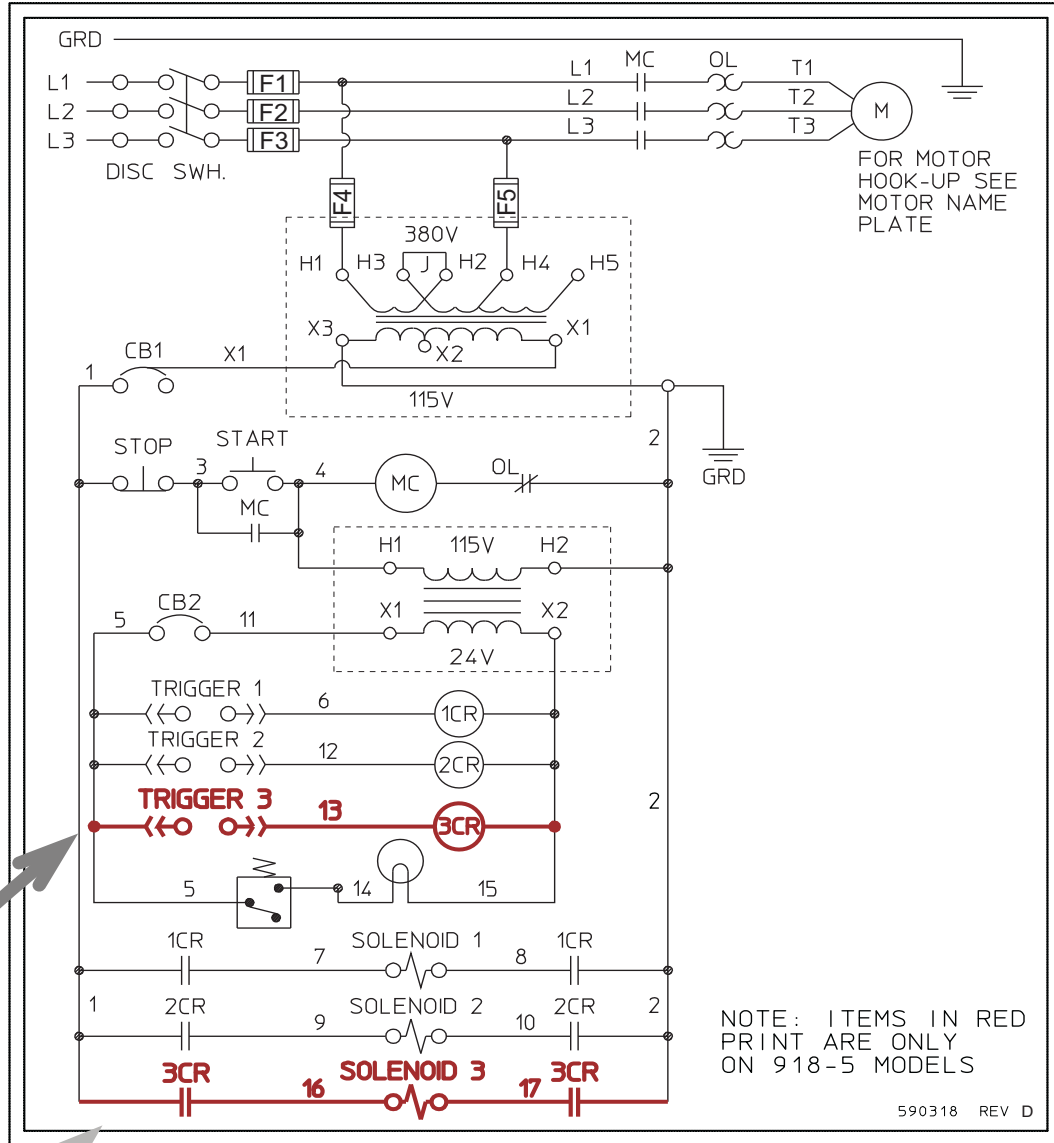


**NOTE: The graphics identified below appear in RED printing on the schematic.**



# 918-380 & 918-5/380 ELECTRICAL SCHEMATIC

Figure 4

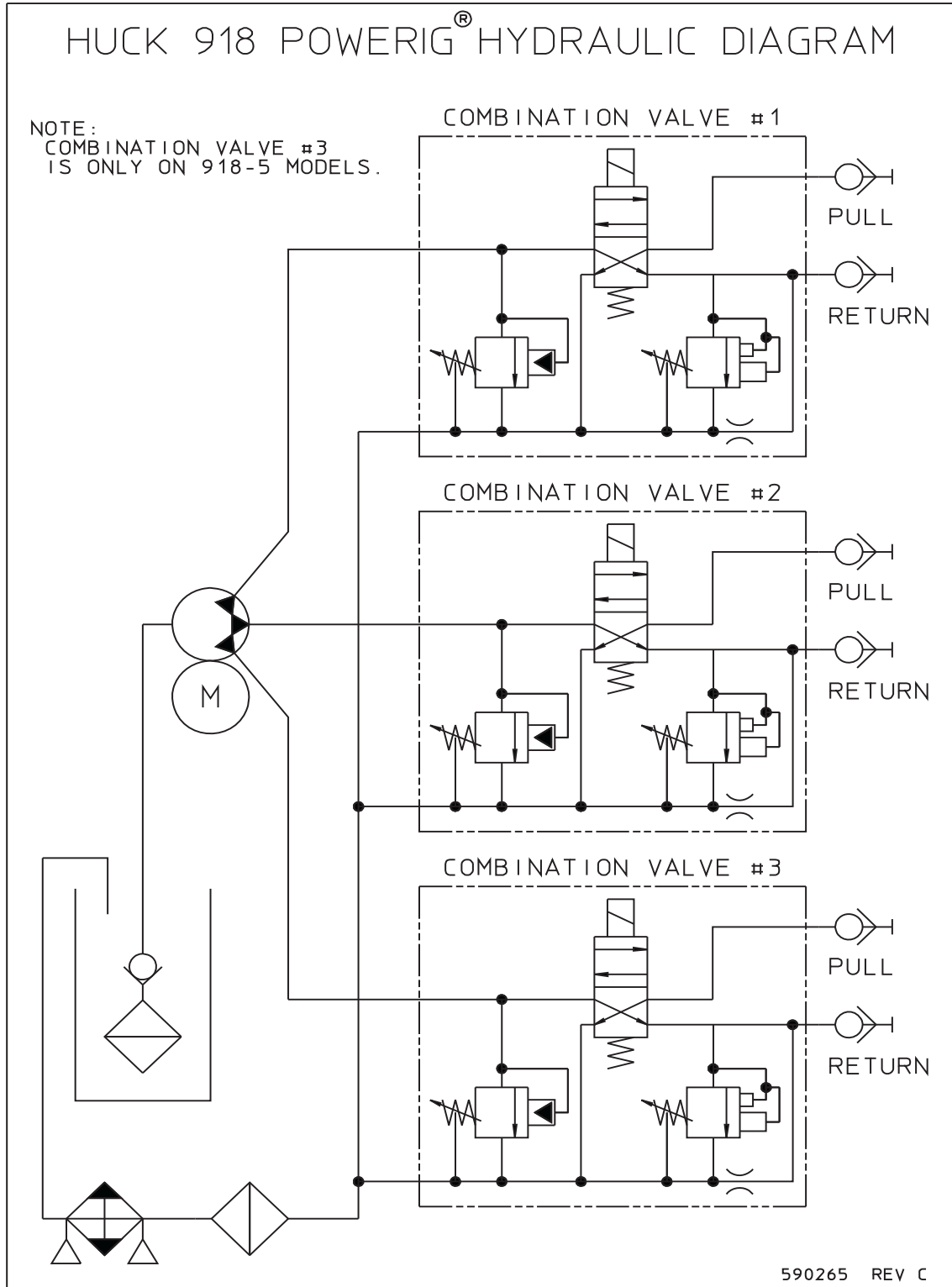


**NOTE: The graphics identified below appear in RED printing on the schematic.**



**918 & 918-5 HYDRAULIC DIAGRAM**

Figure 5





## PREPARATION FOR USE

### GOOD SERVICE PRACTICES

The introduction of foreign material into the hydraulic system will result in poor performance and repair down-time. To avoid this, observe the following good service practices:

1. Clean area around reservoir filler cap before removing it.
2. When adding hydraulic fluid to the reservoir, use a clean funnel and filter the fluid with a 10 micron filter.
3. Do not let hose fittings and couplers lay on or drag around on a dirty floor, or on the ground.

**NOTE** Two very important acts concerning pressures must be known before preparing Models 918 and 918-5 POWERIG® Hydraulic Units for first-time use:

1. Electric current to be used:
  - a. 440 volts, 60 Hz, 3 phase;
  - b. 550 volts, 60 Hz, 3 phase;
  - c. 380 volts, 50 Hz, 3 phase.
2. PULL pressure for each tool and RETURN pressure for each tool.



**WARNING:** See PULL and RETURN pressures listed in applicable Tool Instruction Manual. Improper settings of PULL and RETURN pressures could cause violent rupture of the system or tool. Fatal or severe injury from exploding components/hydraulic fluid could occur to anyone in the immediate vicinity.

### FIRST TIME START-UP

1. Check that drain plug and hydraulic fluid beater port plugs are tight.
2. Fill reservoir with hydraulic fluid (approximately 22 gallons) until fluid level is in middle of fluid level gauge.
3. Remove plastic shipping plugs from the PULL and RETURN pressure ports for both TOOL #1 and TOOL #2 (918) and also TOOL#3 (918-5).
4. Connect installation tools.



**CAUTION:** See CONNECTING INSTALLATION TOOL(S) TO POWERIG HYDRAULIC UNIT section of this manual.

5. Remove POWERIG Hydraulic Unit hood.
6. Remove pipe plug in service tee in suction line. Use 5/8 inch hex key, P/N 504249.
7. Turn fan by hand to prime pump. Add fluid until pump is filled level with top of service tee. Reassemble pipe plug. Use TEFLON stick type thread compound.



**CAUTION:** Always prime pump after filling reservoir.

### 220\*, 380, 440\* OR 550 VOLT, 3-PHASE OPERATION



**WARNING:** Only a qualified electrician is to install the power cable, according to local electrical codes, and service the electrical control and disconnect panel. **ALWAYS DISCONNECT PRIMARY POWER SOURCE FROM HYDRAULIC UNIT WHEN ANY MAINTENANCE IS PERFORMED ON UNIT, including opening any panels or access doors. SEVERE ELECTRICAL BURNS and/or ELECTROCUTION MAY RESULT IF THIS PRECAUTION IS NOT TAKEN.** Other severe injuries may occur from mechanical components such as the fan if motor starts up.

1. Turn disconnect switch to **OFF** (see *WARNING* above) and open covers or electrical control panel. See Figure 12.
2. Bring 220, 380, 440 or 350 volt, three phase input power cable (4 conductors) into disconnect compartment through hole in front of panel and secure with connector furnished.
3. Remove line shield.
4. Connect power cable leads to terminals L1, L2, and L3. Replace line shield.
5. Connect ground wire (green) to ground terminal provided. Tighten nut on ground connection securely.
6. Close covers of electrical control panel.
7. Connect power cable to input power source.
8. Turn disconnect switch to **ON** and push **START** button.

*continued*



## PREPARATION FOR USE (continued)

9. Check that motor rotation is in the same direction as arrow on motor cover. To reverse rotation, disconnect power cable from power source, turn disconnect switch to **OFF** and open covers. Remove line shield. Change position of any two wires connected to terminals L1, L2, or L3. Replace line shield. Close covers. Connect power cable to power source. Turn disconnect switch to **ON** and push **START** button.
10. Let hydraulic unit operate for approximately five minutes to remove air from hydraulic fluid circuit. Check for leaks.
11. Push STOP button.
12. Check hydraulic fluid level and add hydraulic fluid if necessary.
13. Reinstall hood.
14. Check output pressures. See **CHECKING & ADJUSTING PRESSURES** section of this manual.

**\*Note: Kits are available for conversion from 440 to 220 volts and conversion from 220 to 440 volts.**

### **REGULAR USE**

Before each POWERIG® Hydraulic Unit operation:

1. Check hydraulic fluid level in reservoir and add hydraulic fluid as required. Whenever hydraulic fluid is added, it must be filtered by a 10-micron filter.
2. Be sure hood is in place. Never operate unit without hood.
3. Inspect hoses for cuts and damage and replace as required.
4. Check for leaks and correct.
5. Connect power cable to power source compatible with internal wiring of unit.

### **CONNECTING INSTALLATION TOOLS TO POWERIG HYDRAULIC UNIT**

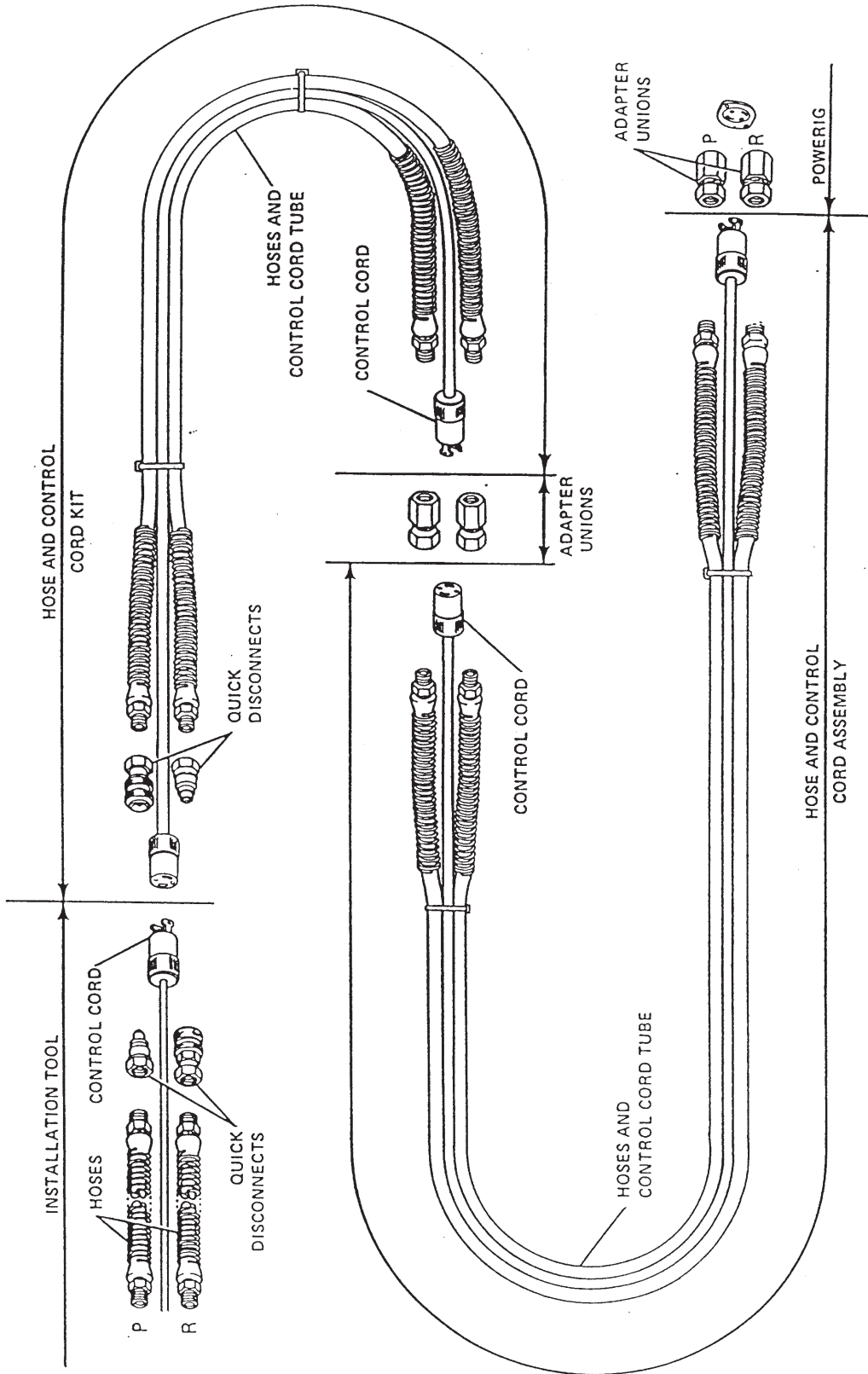


**CAUTION: Whenever threaded hydraulic connections are assembled, coat threaded fittings of hoses with SLIC-TITE (a non-hardening TEFLON thread compound), or equivalent. Available from Huck in slick form as P/N 503237. Do not use TEFLON tape or red lead compound. Shredded tape causes valves to malfunction.**

Figure 6 on the next page shows a typical hose and control cord hook-up. HOSE AND CORD KITS for connecting Installation Tools to the unit are shown in the **KITS AND ACCESSORIES** section of this manual. Be sure that hose from port P of tool is connected to PULL pressure port on POWERIG Hydraulic Unit, and hose for port R of tool is connected to RETURN pressure port of unit.

# TYPICAL HOSE AND CONTROL CORD HOOK-UP

Figure 6





## CHECKING & ADJUSTING PRESSURES

### PREPARATIONS FOR CHECKING PRESSURES WHEN USING T-124833CE GAGE:

If necessary, prime and bleed hydraulic unit. See **PREPARATION FOR USE** section of this manual.

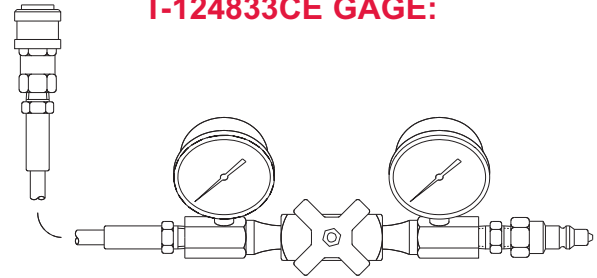
**WARNING:** Turn the hydraulic unit OFF prior to connecting or disconnecting tools. If it is necessary to connect or disconnect a tool while the unit is running, use the following procedure for maximum safety:  
 Connect tool's hydraulic hoses to unit before connecting tools switch control cord to unit. If a malfunctioning cord switch is connected first, hydraulic unit may begin to cycle unexpectedly. Unexpected cycling may lead to serious injury. WHEN CONNECTING HOSES, SWITCH MUST BE CONNECTED LAST. Just as important: WHEN DISCONNECTING HOSES, SWITCH MUST BE DISCONNECTED FIRST.

The pressures for each tool must be checked separately. The pair(s) of unused PULL pressure and RETURN pressure ports must be connected together with one hydraulic (jumper) hose: PULL connected to RETURN of same valve or tool. NOTE: Tool(s) connected to unit can take the place of jumper hose(s).

**WARNING:** Maximum PULL pressure is 8400 psi. Refer to specific tool instruction manual for PULL and RETURN pressures for specific Huck Installation Equipment. Severe personal injury may occur if excessive pressures cause violent failure of equipment.

1. Turn unit OFF. Connect male coupler of gauge to PULL pressure female coupler of hydraulic unit.
2. Connect female coupler of gauge to RETURN pressure male coupler of hydraulic unit.
3. Turn needle valve of T-124833CE all the way out.
4. Install an auxiliary Electric Switch and Control Cord Assembly, 113056, in control cord socket of tool port being checked, or use trigger of tool that is connected to ports being checked. Fluid will be directed out PULL pressure when switch is depressed. Connect unit to primary power source and turn unit ON.

### CHECKING OUTPUT PRESSURES WITH T-124833CE GAGE:



**CAUTION:** The following check must be completed quickly as sustained high pressure will cause premature wear on the unit.

1. Close the valve (turn handle clockwise). Depress auxiliary trigger switch and hold. Read PULL pressure on right hand gage. Release trigger switch.
2. Open the valve (turn handle counterclockwise) a few turns.
3. **DEPRESS** and **RELEASE** auxiliary trigger switch to set unit's internal valve. Hydraulic fluid is directed out RETURN pressure port.
4. **SLOWLY** close the valve. The pressure will rise, and then, drop sharply. Read RETURN pressure on left-hand gauge just before the pressure drops.
5. Open the valve. Turn hydraulic OFF.

**WARNING:** Turn hydraulic unit OFF. Accidental cycling of the hydraulic unit may cause severe injury when disconnecting couplings. Fluid may spray unexpectedly.

6. Disconnect auxiliary trigger. Disconnect pressure setting gage.
7. Refer to installation tool's instruction manual for specific PULL and RETURN pressures.

*continued*





## CHECKING & ADJUSTING PRESSURES

*(continued)*

### ADJUSTING OUTPUT PRESSURES

The POWERIG® Hydraulic Unit should be prepared for operation. See **PREPARATION FOR USE**. Pressure checking Gauge T-124833CE should be used to check pressures before and after adjusting PULL and RETURN pressures.

### ADJUSTING COMBINATION VALVE, PART NO. 119740, FOR 918 AND 918-5 POWERIG® HYDRAULIC UNITS.

918 and 918-5 POWERIG Hydraulic Units are equipped with valves that can be set at specific PULL and RETURN pressures as given in the applicable Tool instruction Manual(s) for your Huck Installation Tool(s). There is a socket head screw to adjust PULL pressure and a different one to adjust RETURN pressure. Refer to Figure 7.



**CAUTION:** If there is a choice, always adjust POWERIG Hydraulic Unit to the lowest pressures given. Lower pressures cause less wear on the equipment.

### PULL PRESSURE ADJUSTMENT

Use 5/16 hex key for PULL pressure adjusting screw. See Figure 7.

- Turn adjusting screw in (closest to bulkhead - - clockwise) to increase pressure.
- Turn adjusting screw out (counterclockwise) to decrease pressure.
- Check resulting PULL pressure setting with gauge T-124833CE.

### RETURN PRESSURE ADJUSTMENT

Use 5/16 hex key for RETURN pressure adjusting screw. See Figure 7.

- Turn adjusting screw in (clockwise) to increase pressure.
- Turn adjusting screw out (counterclockwise) to decrease pressure.
- Check resulting RETURN pressure setting with gauge T-124833CE.



## OPERATING INSTRUCTIONS

Before starting Powerig Hydraulic Unit operation, be sure unit has been prepared for service as shown in **PREPARATION FOR USE**. Connect hoses and control cords as shown in **CONNECTING INSTALLATION TOOL(S) TO POWERIG HYDRAULIC UNIT**.

1. Connect power cable to proper power source.
2. Turn DISCONNECT SWITCH to ON.
3. To start unit push START button and then release.
4. Push STOP button to stop unit.

5. Depress tool trigger to cycle tool (When tool trigger is held down, tool piston will retract. When trigger is released, tool piston will return.) Always be alert for:
  - (a) leaks at hose connections,
  - (b) damage to hoses, and
  - (c) hydraulic fluid level.



**WARNING: Severe personal injury may result if connections or hoses fail.**

## WRENCHING-UP OF PIPE THREADS

The following table pertains to 1/8, 1/4, and 3/8 NPTF joints in this product. All turn counts listed are beyond hand-tight. Teflon stick or equivalent (NOT tape) must be used without exception.

**Table 2 - Wrenching-up of Pipe Threads**

Pipe Thread Size	Number of Turns
1/8 NPTF	2 - 2 1/4
1/4 NPTF	1 1/2 - 1 3/4
3/8 NPTF	1 1/2 - 1 3/4



## MAINTENANCE



**WARNING:** Only a qualified electrician is to install the power cable, according to local electrical codes, and service the electrical control and disconnect panel. **ALWAYS DISCONNECT PRIMARY POWER SOURCE FROM HYDRAULIC UNIT WHEN ANY MAINTENANCE IS DONE ON UNIT.** This includes opening any panels or access doors. **SEVERE ELECTRICAL BURNS OR ELECTROCUTION MAY RESULT IF THIS PRECAUTION IS NOT TAKEN.** Other severe injuries may occur from mechanical components, such as the fan, if motor starts up.

### PREVENTIVE MAINTENANCE

An effective preventive maintenance program includes scheduled inspections to detect and correct minor troubles:

1. Inspect hydraulic and electrical fittings to be sure they are secure.
2. Inspect hoses frequently for signs of damage. Replace hoses if damage is detected.
3. Inspect during operation to detect any abnormal heating, vibration or leakage.
4. Inspect hydraulic fluid periodically and replace if contamination is detected. Clean sump filter if fluid is dirty and being replaced. NOTE: Light on bulkhead will come on when filter is dirty and oil should be replaced.
5. Keep hood in place and keep all exterior surfaces clean.
6. Replace oil filter every six months or if oil filter light on bulkhead comes on. A filter element can be ordered from Huck, part number 507089.



**CAUTION:** Do not operate POWERIG Hydraulic Unit if line voltage is lower than 5 percent below normal.

7. Do not block ventilation louvers at end of unit. Maintain a minimum of 4 inches of clearances from louvers to wall or solid object.

### Combination Valve Overhaul

Combination valves should be returned to the nearest repair facility shown on the inside of the back cover of this manual if a major overhaul is necessary. Minor overhaul includes cleaning and replacing seals, perishable parts and high wear components. Huck recommends only minor overhaul by the user.

One spare combination valve should be kept on hand for each POWERIG Hydraulic Unit. Smear LUBRAPLATE 130AA, or hydraulic fluid, on O-

rings and other components when reassembling combination valve. Follow Figure 7 for proper position of all components.



**WARNING:** After overhauling combination valve(s) PULL and RETURN pressures must be checked. Severe personal injury may occur if excessive pressure causes violent hose or installation equipment failure.

### OUTPUT PRESSURES

To prevent malfunctions, check and adjust PULL and RETURN pressures of POWERIG® Hydraulic Unit. Check pressures when:

- Unit is being used for the first time.
- Any part of combination valve is repaired.
- Combination valve is replaced.
- Troubleshooting is to be performed.
- Before any tool is connected.
- Whenever tool does not perform as expected.
- Whenever unsure of the pressure setting.

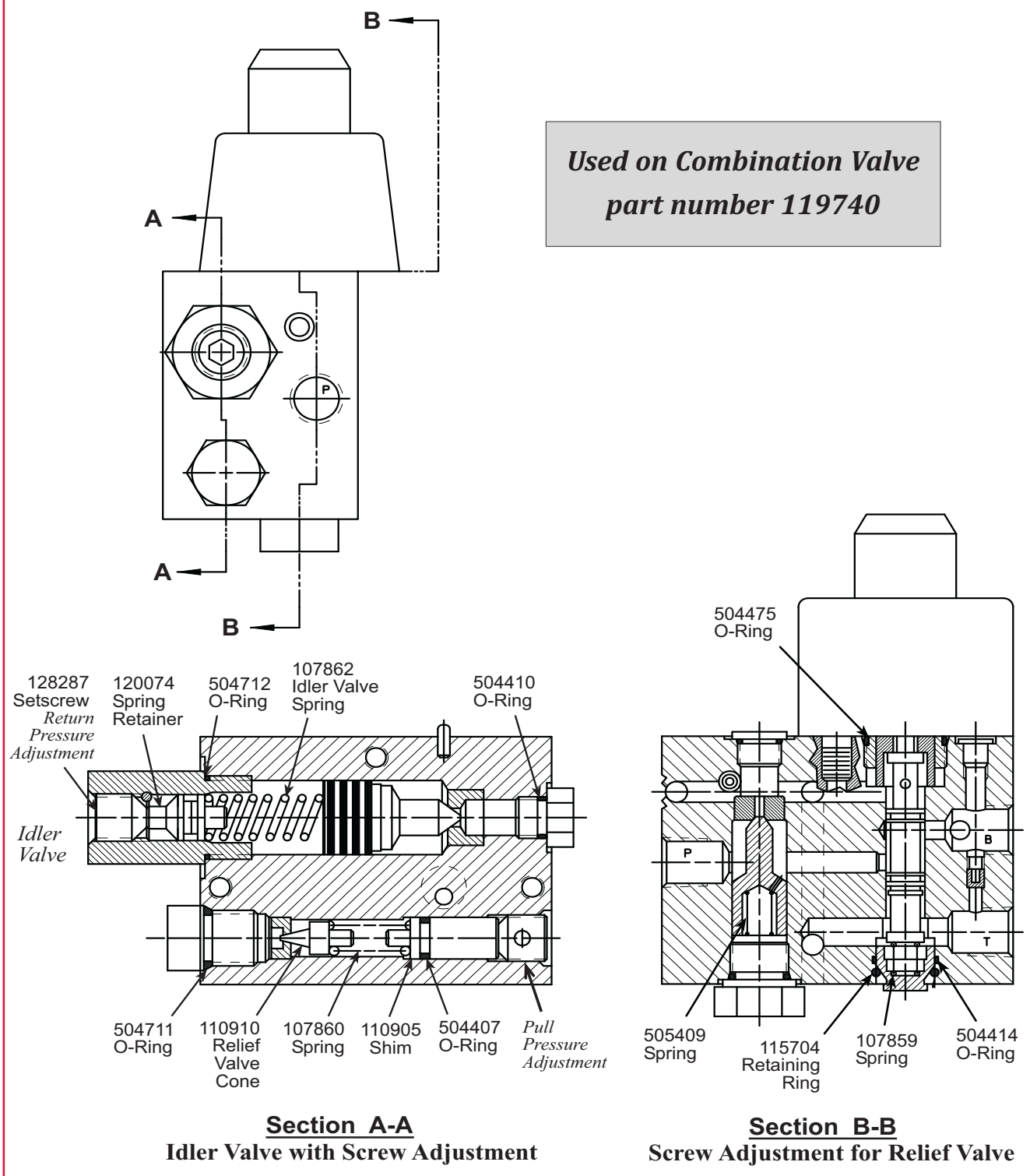


**WARNING:** Excessive pressures may cause violent rupture of some part of the fastening system. Exploding components may cause severe or fatal injuries to anyone in the vicinity. If the system does not rupture, continuous higher than normal pressure will cause premature wear of equipment.

# 120073 COMBINATION VALVE SERVICE KIT

Figure 7

*Used on Combination Valve  
part number 119740*





## HYDRAULIC PUMPS

**For parts identification, refer to Figures 8 and 9 on the following page.**

Pumps used on all Models 918-2 and 918-3 are identical except for the covers. The 918-2 pump cover has two outlets while the 918-3 pump cover has three outlets.

Pumps should be returned to the address shown on the inside back cover of this manual if a major overhaul is necessary. These pumps will be returned to the manufacturer for overhaul and test, and will be returned with a new warranty.

Minor overhaul (clearing and replacing perishable and high wear components) may be done if replacement parts are available as shown in Figure 8.

An extra pump should be kept on hand for each POWERIG® Hydraulic Unit.

### **TO REMOVE PUMP FOR OVERHAUL:**

**For parts identification, refer to Figures 1, 2, 8, & 9.**

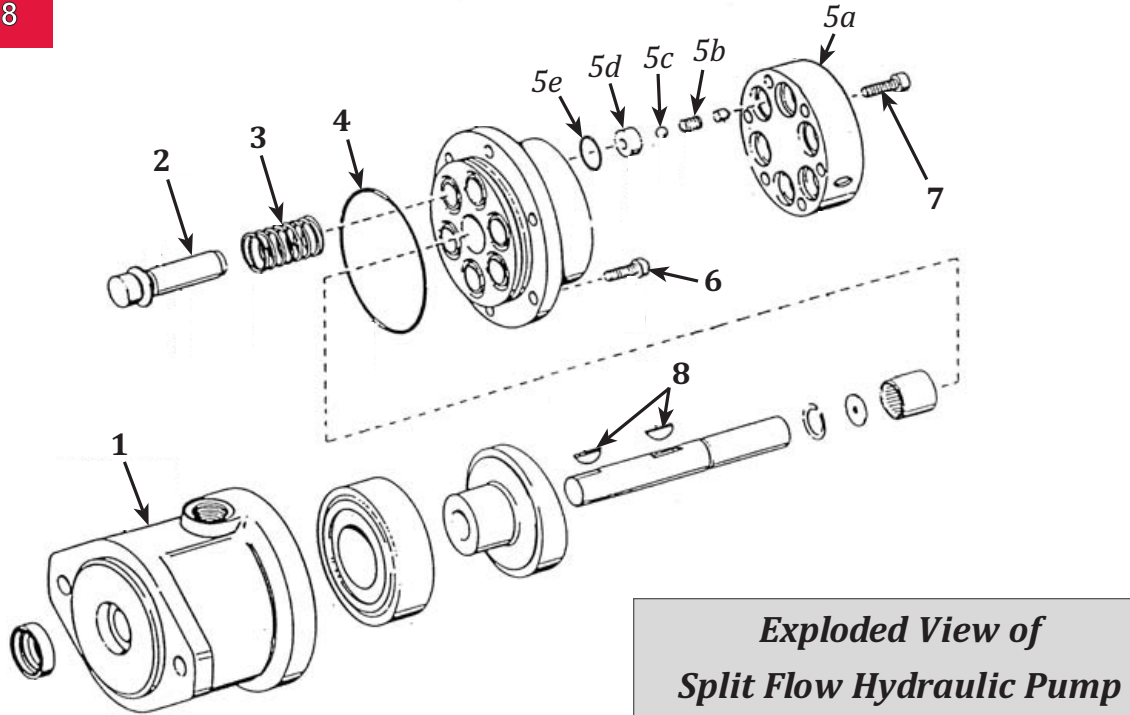
1. **Disconnect electrical power supply from hydraulic unit** and remove hood.
2. Disconnect solenoid wires in electrical panel or remove solenoids from combination valves.
3. Disconnect pressure hoses from combination valves.
4. Disconnect return line hose.
5. Remove six socket head cap screws holding bracket and combination valves. Lift bracket and valves and set them aside.
6. Loosen pipe coupling in suction line assembly. See Figure 14, Item 6.
7. Remove two socket head cap screws holding pump to motor.
8. Support weight of pump and slide out of motor housing.
9. Pump to motor coupling 110572, comes out with the pump. Remove coupling only if necessary.
10. Remove six socket head cap screws (Figure 8, Item 7) to remove cover when replacing O-Rings, Seats, Balls or Springs. (If this is the only service being performed, steps 5, 6, 7, 8 and 9 may be eliminated).
11. Remove six Socket Head Screws (Figure 8, Item 6) to remove Barrel for replacement of O-ring, Piston Assemblies or Springs. (If this is the only service being performed, steps 5, 6, 7, 8 and 9 may be eliminated).
12. A worn shaft seal can be removed using a pointed rod.
13. Use Pump Seal Kit listed in KITS AND ACCESSORIES section of this manual.
14. Smear O-Rings with \*LUBRIPLATE® 130AA or hydraulic fluid when reassembling.
15. Tighten Socket Head Screws (Figure 8, Items 6 & 7) to 30 - 35 ft. lbs. torque.
16. If pump to motor coupling was removed, reassemble with coupling positioned 5/16 - 3/8 inches from pump flange.
17. Reassemble pump to motor. Tighten two Socket Head Setscrews to 90 Ft. lbs. torque if plated and 120 ft. lbs. if unplated.
18. Reassemble solenoids, pressure hoses, return hose and suction line. Use SLIC-TITE® thread compound, Huck part number 503237, on pipe threads of fittings and hoses.



**CAUTION: Pumps must be primed after overhaul. See FIRST TIME START-UP. Check output pressures. See CHECKING & ADJUSTING OUTPUT PRESSURES.**

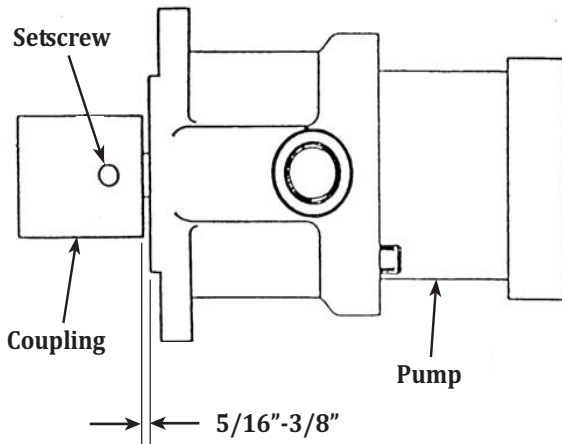
**HYDRAULIC PUMPS** (CONTINUED)

Figure 8



*Exploded View of  
Split Flow Hydraulic Pump*

Figure 9



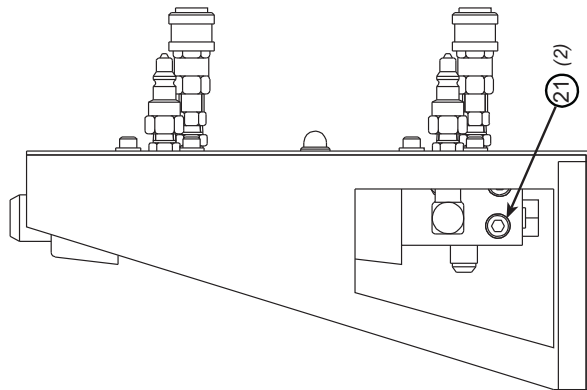
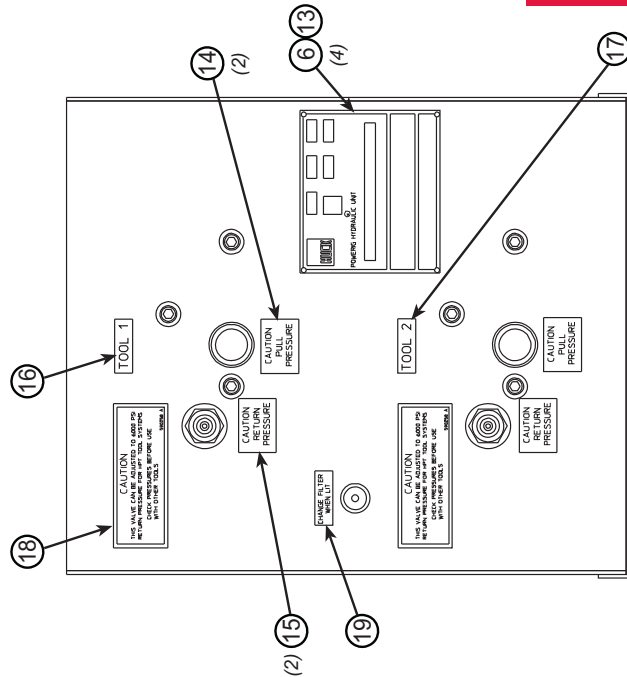
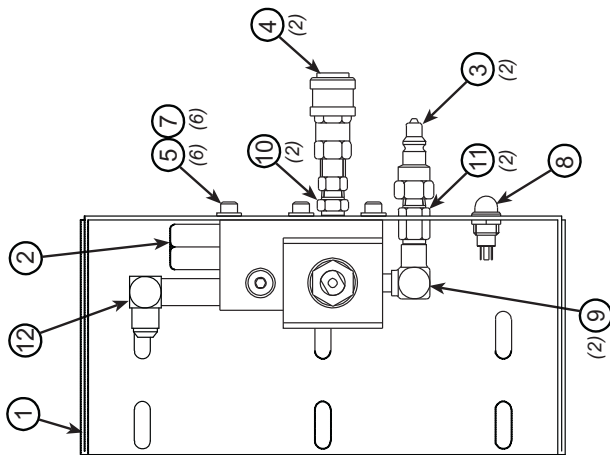
*Pump and Coupling*

Item	918	918-5	Description	Qty
1	110931	110931	Shaft Seal	1
2	109404	109404	Piston Assembly	6
3	109405	109405	Piston Return Spring	6
4	504649	504649	O-Ring	1
5	110509	114195	Cover & Pin Assembly	1
5a	109615	114199	Cover	1
5b	109407	109407	Spring	6
5c	109413	109413	Ball	6
5d	109406	109406	Seat	6
5e	504617	504617	O-Ring	6
6	500090	500090	Socket Head Screw 1"	6
7	500095	500095	Socket Head Screw 2.25"	6
8	*	*	Woodruff Key	2

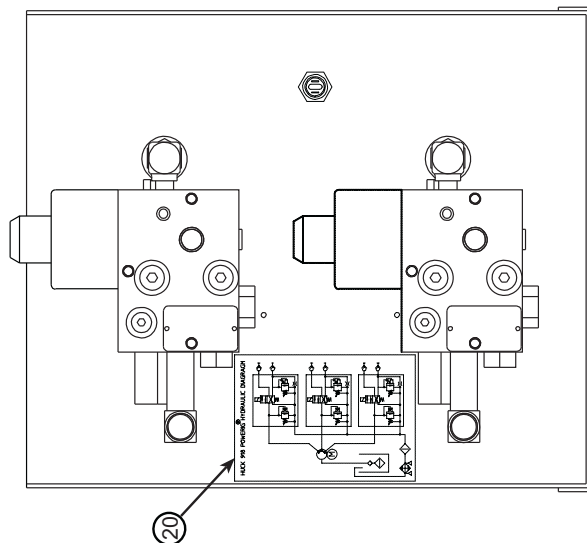
# FRONT BRACKET ASSEMBLY

Figure 10

124082CSA  
Front Bracket Assembly

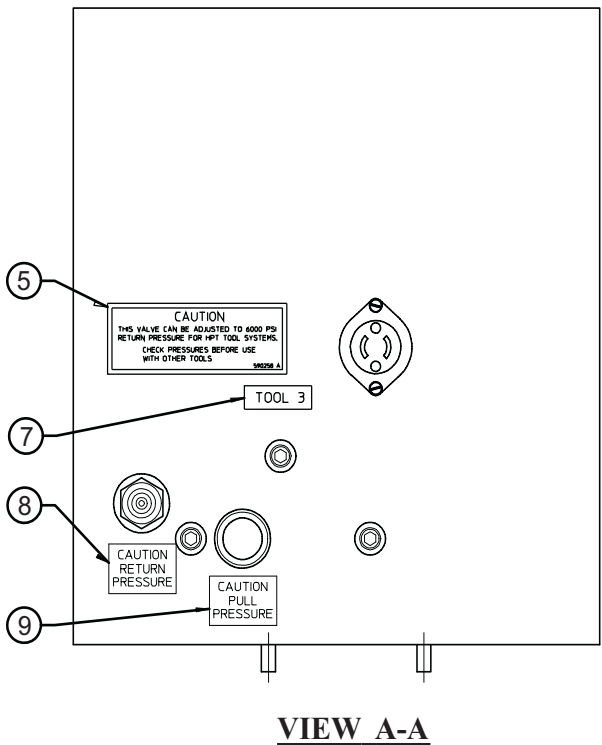
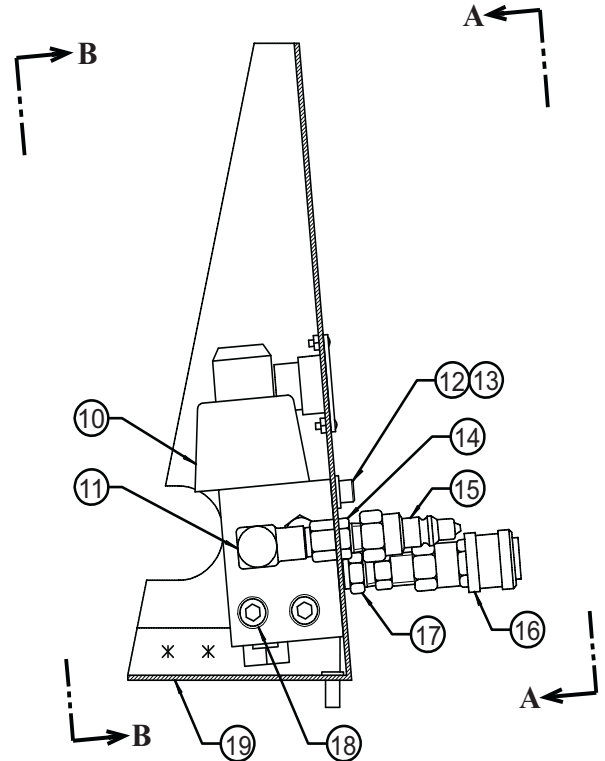
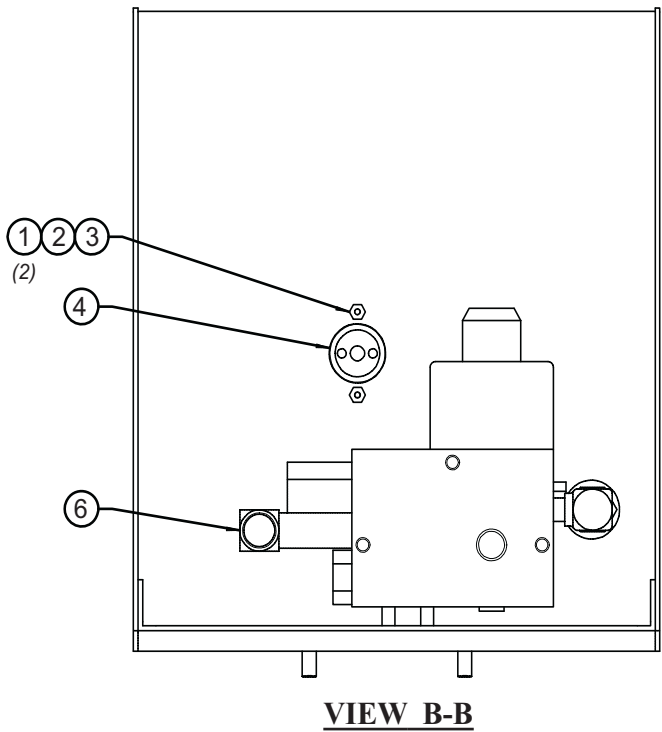


Part No.	Qty.	Description	Item
503706	2	Pipe Plug	21
590265	1	Hydraulic Diagram Sticker	20
590260	1	Change Filter Sticker	19
590258	2	Caution Sticker (ref)	18
590136	2	TOOL 2 Sticker	17
590135	2	TOOL 1 Sticker	16
590133	2	Return Pressure Sticker	15
590132	2	Pull Pressure Sticker	14
590012CSA	1	Nameplate	13
504058	2	Elbow	12
504057	2	Hex Nipple	11
503683	2	Hex Nipple	10
503680	2	Street Elbow	9
505930	1	Indicator Light	8
500170	6	Flat Washer	7
502992	4	Drive Screw	6
501236	6	Socket Head Screw	5
110439	2	Coupler Body	4
110438	2	Coupler Nipple	3
119740	2	Combination Valve	2
113922	1	Front Bracket	1



# ELECTRICAL ENCLOSURE ASSEMBLY 918-5 SERIES

Figure 11



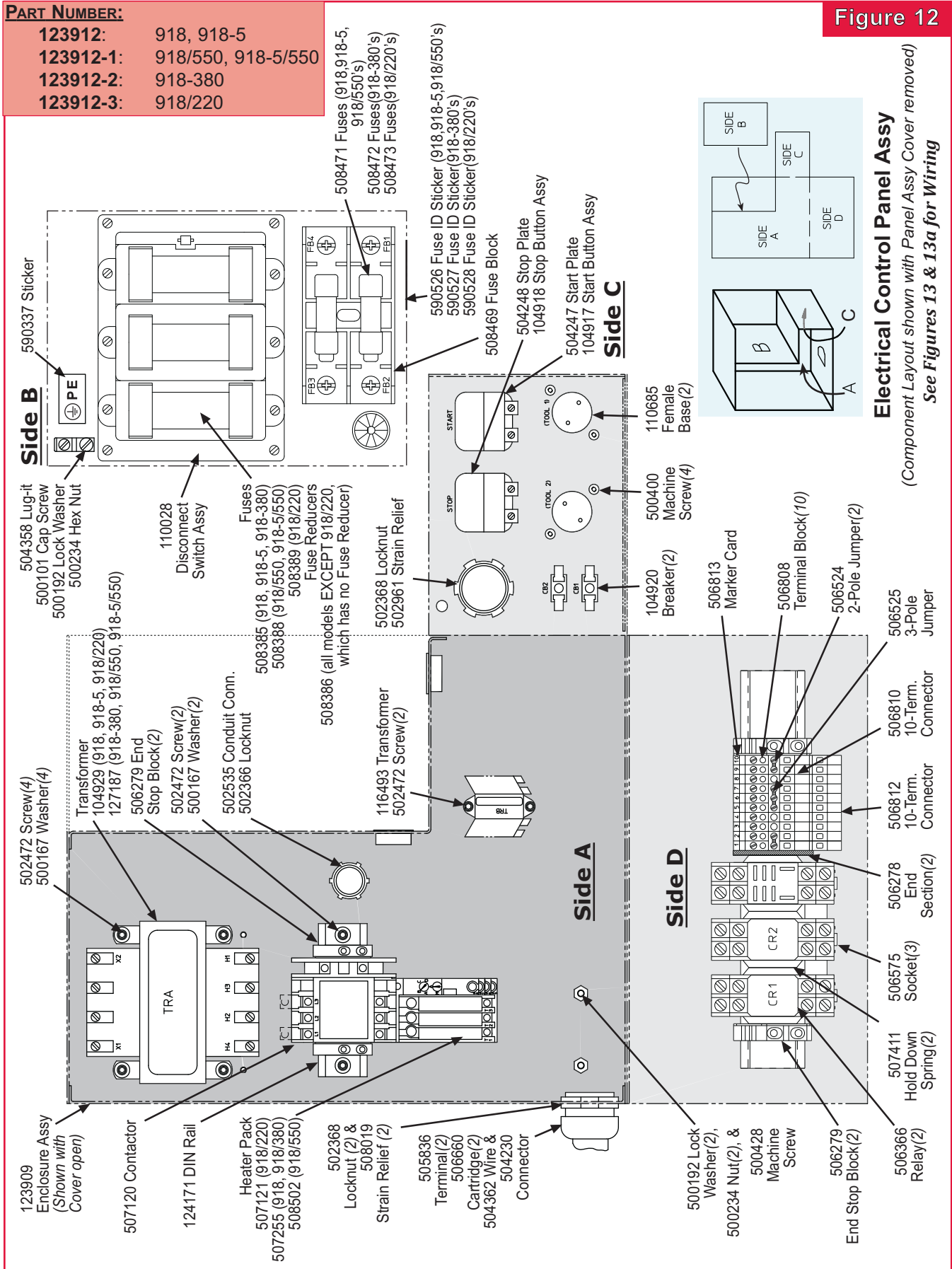
123521	1	MOUNTING BRACKET, 3-TOOL	19
503706	1	PIPE PLUG-FLUSH 3/8 NP	18
503683	1	NIPPLE, HEX .38 NPTF X 1.69	17
110439	1	BODY-HYD COUPLER	16
110438	1	NIPPLE-HYD COUPLER	15
504057	1	NIPPLE, HEX .38 NPTF X 2.25	14
500170	3	WASHER-SAE FLAT .31 ZP	13
501236	3	SCR SOC .31-18 X .50 LW ZP	12
503680	1	ELBOW, STREET	11
119739	1	VALVE-COMBINATION	10
590132	1	STICKER-PULL PRESSURE	9
590133	1	STICKER-RETURN PRESSURE	8
590250	1	STICKER-TOOL 3	7
504058	1	ELBOW 1-E#849LL-FS-08X06	6
590258	1	STICKER-CAUTION	5
110685	1	BASE FEMALE	4
500691	2	WASHER-LOCK INT TEETH #06	3
500400	2	MSCR RND #06-32 X 38 ZP	2
500212	2	NUT HEX #06-32 ZP	1
PART NO	QTY	DESCRIPTION	ITEM

123526 - Electrical Enclosure Assembly 918-5, Tool 3



# ELECTRICAL CONTROL PANEL ASSEMBLY

Figure 12



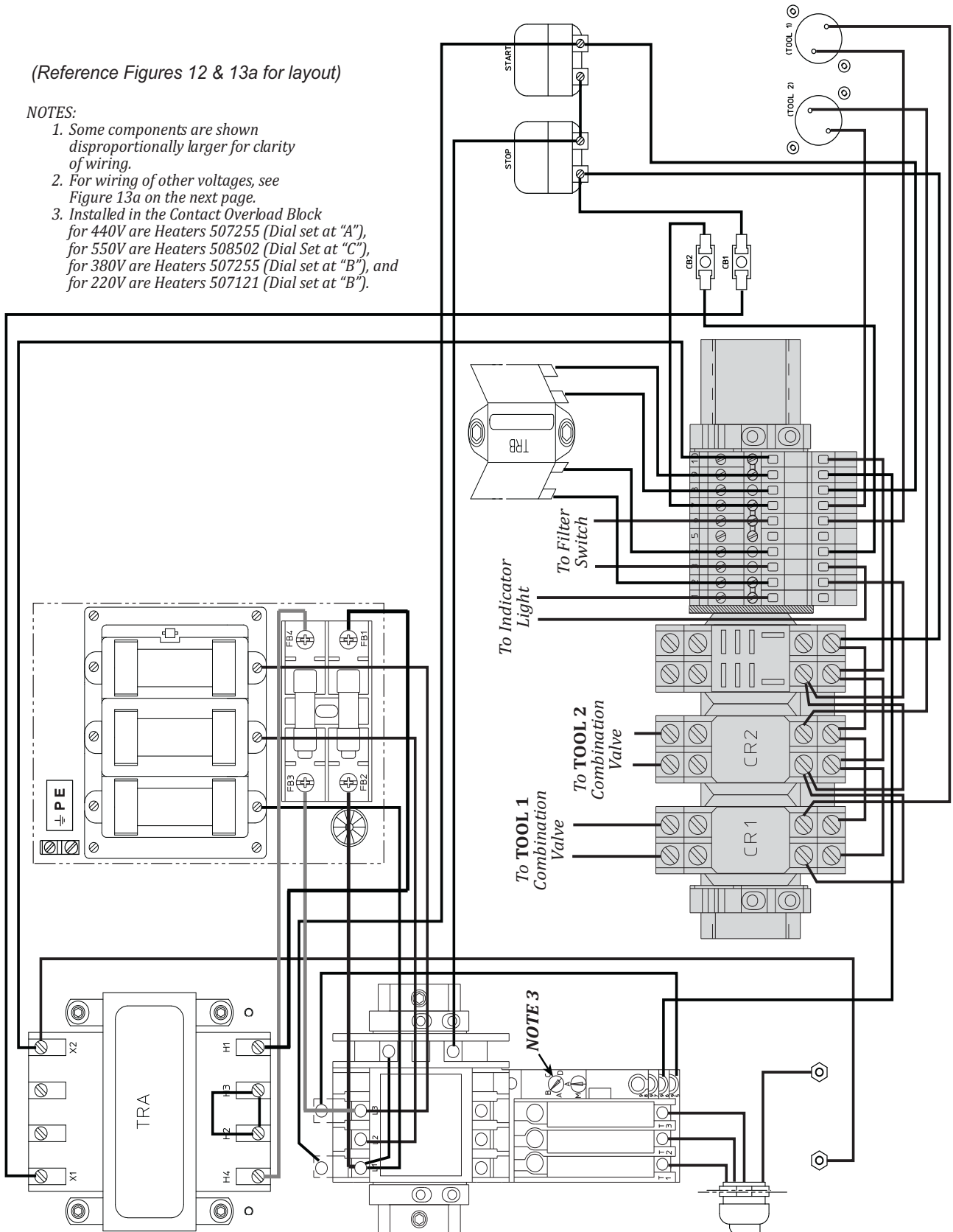
# ELECTRICAL CONTROL PANEL WIRING

Figure 13

(Reference Figures 12 & 13a for layout)

**NOTES:**

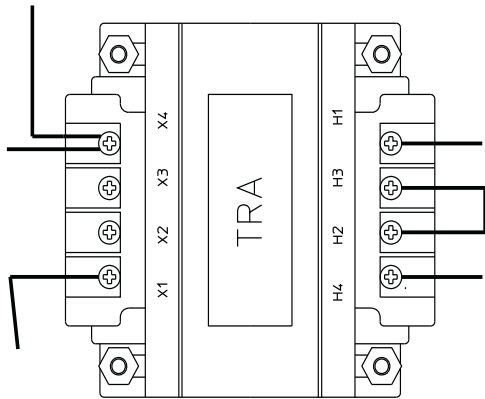
1. Some components are shown disproportionately larger for clarity of wiring.
2. For wiring of other voltages, see Figure 13a on the next page.
3. Installed in the Contact Overload Block for 440V are Heaters 507255 (Dial set at "A"), for 550V are Heaters 508502 (Dial Set at "C"), for 380V are Heaters 507255 (Dial set at "B"), and for 220V are Heaters 507121 (Dial set at "B").



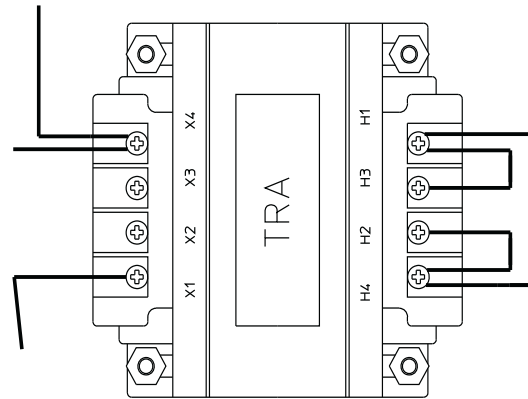
# ELECTRICAL CONTROL PANEL ALTERNATE WIRING

Figure 13a

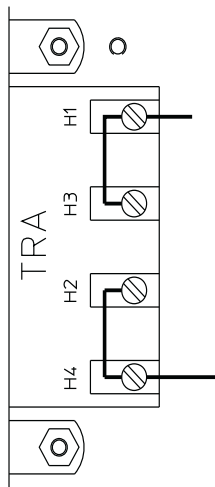
(Reference Figures 12 and 13 for layout)



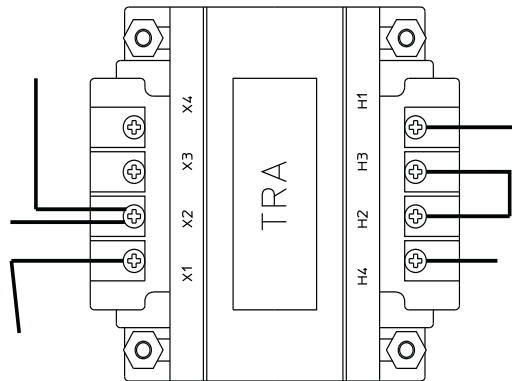
**380V Hook-up**



**190V Hook-up**



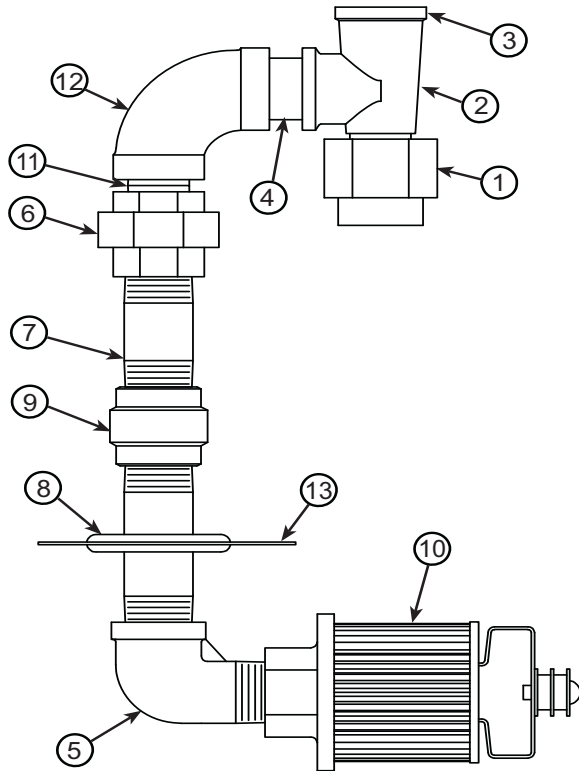
**220V Hook-up**



**550V Hook-up**

## SUCTION LINE ASSEMBLY 918 & 918-5

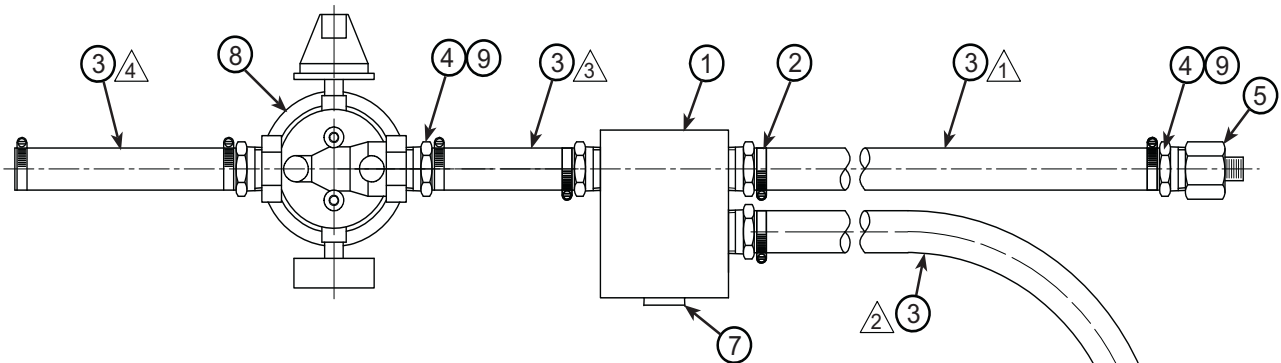
Figure 14



507461	1	Pipe Nipple	14
106561	1	Suction Line Plate	13
503744	1	Elbow	12
505937	1	Pipe Nipple	11
106540	1	Strainer	10
503894	1	Check Valve	9
503745	1	Grommet	8
503743	1	Pipe Nipple	7
506496	1	Pipe Coupling	6
503741	1	Street Elbow	5
503742	1	Pipe Nipple	4
505026	1	Pipe Plug	3
503746	1	Service Tee	2
503730	1	Str 1.31-12MUNC-1.00FNPT	1
<b>Part No.</b>	<b>Qty.</b>	<b>Description</b>	<b>Item</b>

## RETURN LINE ASSEMBLY 918

Figure 15



507561	8	Grommet, Hose Coupling	9
124850	1	Filter Assembly, Return Line	8
502377	1	Pipe Plug .75-14 Socket	7
506517	1	Elbow, 90°	6
506186	2	Straight SAE #6 - 3/4 NPT	5
502940	7	Hose Coupling 3/4 NPT	4
504154	58in.	Cotton Braid Hose	3
504361	8	Hose Clamp	2
123530	1	Return Line Manifold Block	1
<b>Part No.</b>	<b>Qty.</b>	<b>Description</b>	<b>Item</b>

**Notes:**

The hose lengths listed below are suggested lengths. Your hose length may vary slightly.

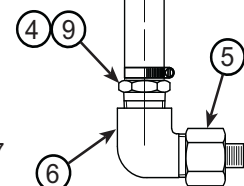
① Hose cut length = 19.00 inches

② Hose cut length = 21.00 inches

③ Hose cut length = 6.00 inches

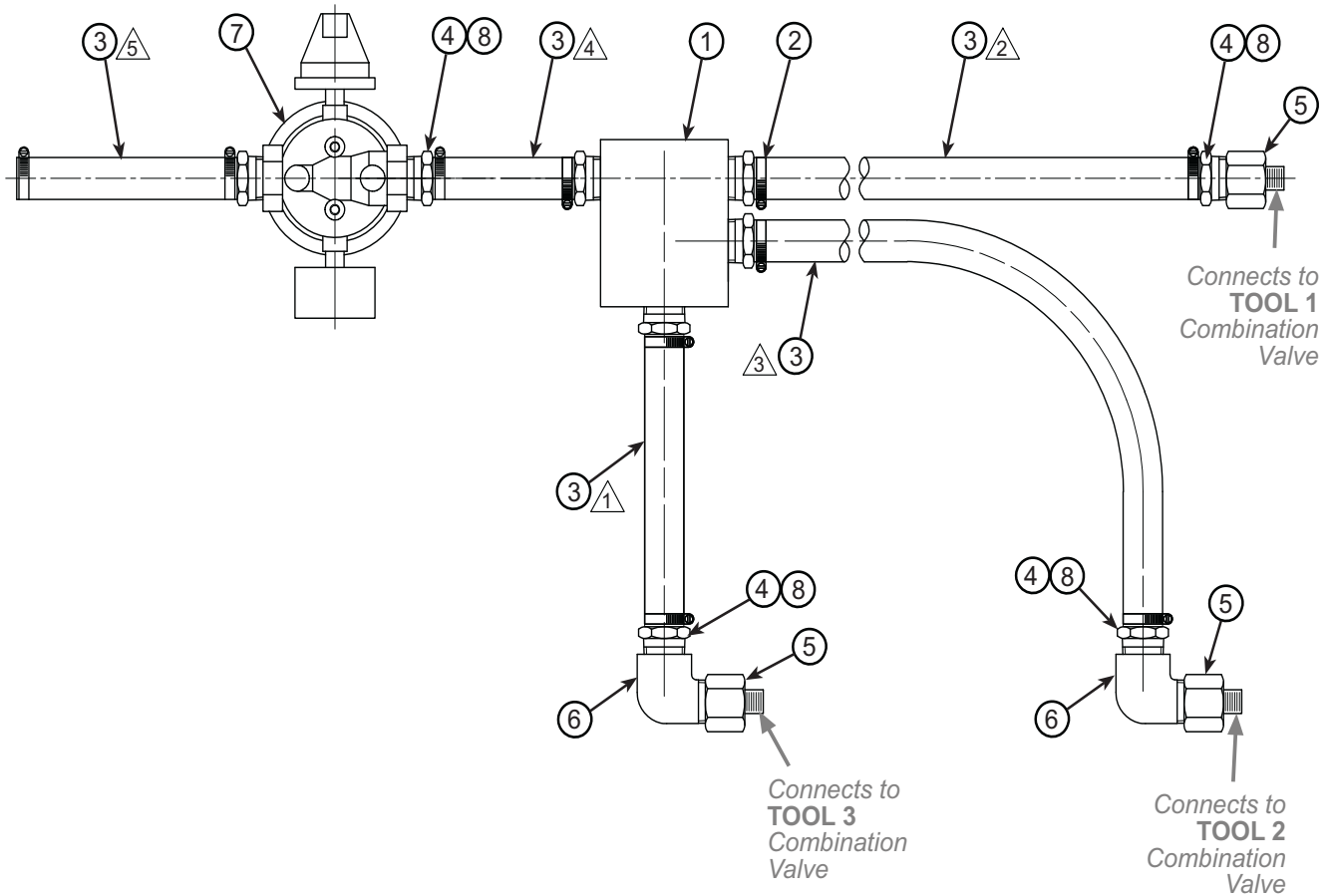
④ Hose cut length = 6.75 inches

5 Apply Teflon sealant, Huck P/N 503237 on all tapered pipe connections.



# RETURN LINE ASSEMBLY 918-5

Figure 16



Note: The hose lengths listed below are suggested lengths. Your hose length may vary slightly.

- △1 Hose cut length = 4.50 inches
- △2 Hose cut length = 19.00 inches
- △3 Hose cut length = 21.00 inches
- △4 Hose cut length = 6.00 inches
- △5 Hose cut length = 6.75 inches

507561	9	Grommet, Hose Coupling	8
124850	1	Filter Assembly, Return Line	7
506517	2	Elbow, 90°	6
506186	3	Straight SAE #6 - 3/4 NPT	5
502940	9	Hose Coupling 3/4 NPT	4
504154	6 ft.	Cotton Braid Hose	3
504361	10	Hose Clamp	2
123530	1	Return Line Manifold Block	1
Part No.	Qty.	Description	Item

**123529 - Return Line Assembly  
918-5**

**SERVICE NOTES**

Use this space to record any notes about your system.



## TROUBLESHOOTING

*Always check out the simplest possible cause of a malfunction first. Review PREPARATION FOR USE and FIRST TIME START-UP. Check fuses, circuit breakers, control cord and connections, and hydraulic hose couplers. Where possible, substitute known good parts for suspected bad parts. Use following chart as an aid in locating trouble and correcting it. Also, refer to ELECTRICAL and HYDRAULIC SCHEMATICS and WIRING DIAGRAMS to trace defective circuits.*

1. With POWERIG® Hydraulic Unit motor running, tool fails to operate when trigger is depressed.
  - a. Loose or faulty connections in control cord.
  - b. Loose or faulty hydraulic hose couplings.
  - c. Defective tool trigger assembly.
  - d. Open 24 volt circuit breaker.
  - e. Defective relay or solenoid coil.
  - f. Hydraulic fluid viscosity too heavy to pick up prime. Replace fluid.
  - g. Clogged strainer in reservoir.
  - h. Defective hydraulic pump. Replace pump.
  - i. Defective directional valve assembly. Replace assembly.
  - j. Installation tool not operating properly. Troubleshoot tool.  
(See applicable Tool Instruction Manual).
  
2. Tool does not return on release of trigger.
  - a. Defective relay or solenoid coil.
  - b. Defective directional valve. Clean and replace spring.
  - c. Installation tool not operating properly. Troubleshoot tool.  
(See applicable Tool Instruction Manual).
  
3. Pump cavitating (noisy throughout entire installation cycle).
  - a. Low hydraulic fluid level in reservoir
  - b. Clogged strainer in reservoir.
  - c. Hydraulic fluid viscosity too heavy to pickup prime. Replace fluid.
  
4. Tool operation slow but entire cycle does occur.
  - a. Pump cavitating. See 3.
  - b. Hydraulic fluid viscosity too thin. Do not operate if over 150° F.
  - c. Worn seals in combination valve. Replace seals with kit.
  - d. Worn pump seals, seats, etc. Replace seals, etc. or complete pump if necessary.
  - e. Worn directional valve or relief valves. Use Gage T-124833CE to check output pressure, and replace valve if necessary.
  
5. Solenoid coil heats up.
  - a. Low voltage. Check and correct.
  - b. Wrong solenoid coil. Replace coil (50 hertz or 60 hertz).

## KITS AND ACCESSORIES

### HOSE AND CONTROL CORD KITS

Refer to Figure 6 for typical kit hook-ups

<u>PART NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
110838	(1)	Hose and Control Cord Kit - 12 ft. Long
110847	1	Hose and Control Cord Assembly
110440	1	Hydraulic Quick Disconnects (male and female)
110839	(1)	Hose and Control Cord Kit -26ft. Long
110848	1	Hose and Control Cord Assembly
----	1	Hose and Control Cord Tube
110525	1	Control Cord
110440	1	Hydraulic Quick Disconnects
110841	(1)	Hose and Control Cord Kit - 52 ft. Long
110848	2	Hose and Control Cord Assembly
110440	1	Hydraulic Quick Disconnects (male and female)
503697	2	Adapter Union

- The total length must not exceed 156 ft. to maintain safe pressure at the unit and working pressure at tool. Hose Kits may be coupled together using Quick Disconnects, 110440, or Adapter Unions, 503697, (must be ordered separately). 38 ft. Kit, 110840, is 110838 and 110839 connected together.
- The hoses in these kits are rated by the manufacturer for 10,000 psi maximum working pressure.

### PRESSURE CHECKING GAGE

Huck recommends periodic checks with Pressure Checking Gage part number T-124833CE by maintenance personnel. Abnormally high pressure can cause sudden failure of the hydraulic unit and excessive wear. **Severe personal injury may be the result.**

### HYDRAULIC QUICK DISCONNECTS

These quick disconnects provide a positive, easy connection for tool hoses to POWERIG Hydraulic Unit hoses. Quick Disconnect part number 110440 is a set consisting of one female member and one male member.

### AUXILIARY ELECTRIC TRIGGER ASSY

Auxiliary Electric Trigger Assy part number 113056 contains a switch, housing, and a 13 foot cord.

### CONTROL CORD CONNECTIONS

Replacement Control Cord Connector Set part number 110835 are available.

### HYDRAULIC FLUID HEATER KIT

Optional Heater Kit part number 110907 is for cold weather. Kit has two heater elements and related components. Instructions provided.

### PUMP SEAL KIT

Pump Seal Kit part number 110933 contains shaft seal and O-Rings for overhauling one hydraulic pump.

### CONVERSION KITS

Conversion Kits are available for changing voltage of unit from 440 volt to 220; 220 to 440. Contact Alcoa Fastening Systems at the address listed on the inside back cover of this manual for more information.

### POWERIG HEATER KIT

Powerig Heater Kit part number 110907 consists of two 220-240VAC heaters. Each heater has two wires with ring terminals, which connect to the primary side of the large transformer.



## **LIMITED WARRANTIES**

### **TOOLING WARRANTY:**

Huck warrants that tooling and other items (excluding fasteners, and hereinafter referred as "other items") manufactured by Huck shall be free from defects in workmanship and materials for a period of ninety (90) days from the date of original purchase.

### **WARRANTY ON "NON STANDARD OR CUSTOM MANUFACTURED PRODUCTS":**

With regard to non-standard products or custom manufactured products to customer's specifications, Huck warrants for a period of ninety (90) days from the date of purchase that such products shall meet Buyer's specifications, be free of defects in workmanship and materials. Such warranty shall not be effective with respect to non-standard or custom products manufactured using buyer-supplied molds, material, tooling and fixtures that are not in good condition or repair and suitable for their intended purpose.

**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. HUCK MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES AS TO MERCHANTABILITY OR AS TO THE FITNESS OF THE TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS FOR ANY PARTICULAR PURPOSE AND HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

Huck's sole liability and Buyer's exclusive remedy for any breach of warranty shall be limited, at Huck's option, to replacement or repair, at FOB Huck's plant, of Huck manufactured tooling, other items, nonstandard or custom products found to be defective in specifications, workmanship and materials not otherwise the direct or indirect cause of Buyer supplied molds, material, tooling or fixtures. Buyer shall give Huck written notice of claims for defects within the ninety (90) day warranty period for tooling, other items, nonstandard or custom products described above and Huck shall inspect products for which such claim is made.

### **TOOLING, PART(S) AND OTHER ITEMS NOT MANUFACTURED BY HUCK:**

**HUCK MAKES NO WARRANTY WITH RESPECT TO THE TOOLING, PART(S) OR OTHER ITEMS**

**MANUFACTURED BY THIRD PARTIES. HUCK EXPRESSLY DISCLAIMS ANY WARRANTY EXPRESSED OR IMPLIED, AS TO THE CONDITION, DESIGN, OPERATION, MERCHANTABILITY OR FITNESS FOR USE OF ANY TOOL, PART(S), OR OTHER ITEMS THEREOF NOT MANUFACTURED BY HUCK. HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, PART(S) OR OTHER ITEMS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

The only warranties made with respect to such tool, part(s) or other items thereof are those made by the manufacturer thereof and Huck agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

Huck shall not be liable for any loss or damage resulting from delays or nonfulfillment of orders owing to strikes, fires, accidents, transportation companies or for any reason or reasons beyond the control of the Huck or its suppliers.

### **HUCK INSTALLATION EQUIPMENT:**

Huck International, Inc. reserves the right to make changes in specifications and design and to discontinue models without notice.

Huck Installation Equipment should be serviced by trained service technicians only.

Always give the Serial Number of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Huck International, Inc. Please contact one of the offices listed below.

#### Eastern

One Corporate Drive Kingston, New York 12401-0250  
Telephone (845) 331-7300 FAX (845) 334-7333

#### Outside USA and Canada

Contact your nearest Huck International Office, see back cover.

In addition to the above repair facilities, there are Authorized Tool Service Centers (ATSC's) located throughout the United States. These service centers offer repair services, spare parts, Service Parts Kits, Service Tools Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck office listed on the back cover for the ATSC in your area.



For the Long Haul™

## A Global Organization

Alcoa Fastening Systems (AFS) maintains company offices throughout the United States and Canada, with subsidiary offices in many other countries. Authorized AFS distributors are also located in many of the world's

Industrial and Aerospace centers, where they provide a ready source of AFS fasteners, installation tools, tool parts, and application assistance.

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Tucson, AZ 85714  
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520-747-9898  
FAX: 520-748-2142

**Alcoa Fastening Systems**  
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310-830-8200  
FAX: 310-830-1436

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FAX: 03-764-5510

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**HWB898 1003-5M**

# Alcoa Fastening Systems



One Great Connection<sup>SM</sup>