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Instruction Manual
940-220
Powerig® Hydraulic Unit



Serial Number Notice
2

Safety Instructions
3-4

Description
4

Specifications
5

Principle of Operation
5

Preparation for Use
6

Operation
6

Maintenance
7

Components Drawings
8-12

Options and Accessories
13

Troubleshooting
13



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Makers of Huck®, Marson®, Recoil®
Brand Fasteners, Tools & Accessories







NOTICE

This instruction manual applies only to
Huck Powerig Model 940-220 with
Serial number 1191 and above



Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

-  - 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.

Notes: are reminders of required procedures.

Bold, italic type, and underline: emphasize a specific instruction.



WARNINGS: Must be understood to avoid severe personal injury.



CAUTIONS: Show conditions that will damage equipment or structure.

I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.
2. 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.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the assembly power tool.
5. Do not modify this assembly power tool. This can reduce effectiveness of safety measures and increase operator risk.
6. Do not discard safety instructions; give them to the operator.
7. Do not use assembly power tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Huck representative.
11. Only genuine Huck parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. 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 preventing an accident which may cause

severe personal injury.

17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled with out nose assembly installed.
19. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet for correct positioning.

II. PROJECTILE HAZARDS:

1. Risk of whipping compressed air hose if tool is pneudraulic or pneumatic.
2. Disconnect the assembly power tool from energy source when changing inserted tools or accessories.
3. Be aware that failure of the workpiece, accessories, or the inserted tool itself can generate high velocity projectiles.
4. Always wear impact resistant eye protection during tool operation. The grade of protection required should be assessed for each use.
5. The risk of others should also be assessed at this time.
6. Ensure that the workpiece is securely fixed.
7. Check that the means of protection from ejection of fastener or pintail is in place and operative.
8. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

III. OPERATING HAZARDS:

1. Use of tool can expose the operator's hands to hazards including: crushing, impacts, cuts, abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly and be ready to counteract normal or sudden movements with both hands available.
4. Maintain a balanced body position and secure footing.
5. Release trigger or stop start device in case of interruption of energy supply.
6. Use only fluids and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these not to allow counteracting of normal or unexpected tool movement.
8. If the assembly power tool is fixed to a suspension device, make sure that fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

IV. REPETITIVE MOTION HAZARDS:

1. When using assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. When using tool, the operator should adopt a comfortable posture while maintaining a secure footing and avoid awkward or off balanced postures.
3. The operator should change posture during extended tasks to help avoid discomfort and fatigue.
4. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warnings should not be ignored. The operator should tell the employer and consult a qualified health professional.

V. ACCESSORIES HAZARDS:

1. Disconnect tool from energy supply before changing inserted tool or accessory.
2. Use only sizes and types of accessories and consumables that are recommended. Do not use other types or sizes of accessories or consumables.

Continued on next page...



Safety Instructions (continued)

VI. WORKPLACE HAZARDS:

1. Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line or hydraulic hose.
2. Proceed with caution while in unfamiliar surroundings; there could be hidden hazards such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive environments.
4. Tool is not insulated against contact with electrical power.
5. Ensure there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

VII. NOISE HAZARDS:

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems such as tinnitus, therefore risk assessment and the implementation of proper controls is essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpiece from 'ringing'.
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain tool as recommended in the instruction handbook to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable / inserted tool as recommended to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your employer and



WARNINGS: Do not exceed maximum pull or return settings on tool.
Be sure all hose connections are tight. All tool hoses must be connected.

consult a physician.

4. Support the weight of the tool in a stand, tensioner, or balancer in order to have a lighter grip on the tool.

IX. HYDRAULIC TOOL SAFETY INSTRUCTIONS:

1. Carry out a daily check for damaged or worn hoses or hydraulic connections and replace if necessary.
2. Wipe clean all couplers before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.
3. Ensure that couplings are clean and correctly engaged before operation.
4. Use only clean oil and filling equipment.
5. Power units require a free flow of air for cooling purposes and should therefore be positioned in a well ventilated area free from hazardous fumes.
6. Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.

Description

Model 940-220 Powerig Hydraulic Unit is a portable, electrically operated power source designed to operate all Huck hydraulic installation equipment excluding HUCK-SPIN tools. It operates on 220V AC, 50-60 Hz, one-phase electrical power. The **power cord** is type SO 600 volt 12/3. The Powerig Hydraulic Unit requires 15 amp (minimum) circuit with a common wall outlet. An **electrical enclosure** contains a motor, contact, a transformer, a relay and a circuit breaker. See also Figure 5. Hydraulic pressure is developed by a two-stage, gear-piston **pump** driven by a 1-1/8 horsepower universal electric **motor**. Pressurized fluid is directed by a **four-way directional valve** to either the PULL port or the RETURN port of the installation equipment. The **four-way directional valve** is operated by a 24 volt AC control circuit. The **high pressure relief valve** controls PULL pressure (maximum pressure of the unit) and is adjustable by the operator. An internal relief valve is preset at the factory to protect the operator and equipment. The internal relief is not adjustable by the operator. A **pressure switch** controls RETURN pressure and turns off the Powerig Hydraulic Unit at the end of an installation cycle. Pressures are adjustable to match Huck equipment being used. See applicable tool instruction manual for pressure settings for other Huck installation equipment. Hydraulic fluid is stored in the **reservoir** which also serves as the base. Remove the **filler cap/dipstick** to check fluid level and to add fluid. Hydraulic **quick disconnect couplers** are furnished for connecting hoses from installation equipment.

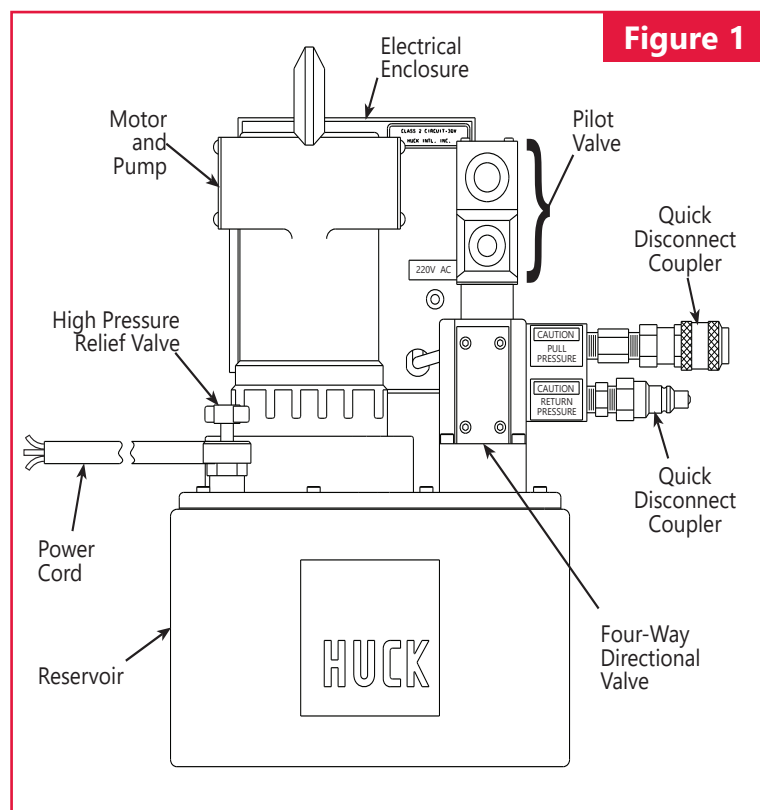


Figure 1

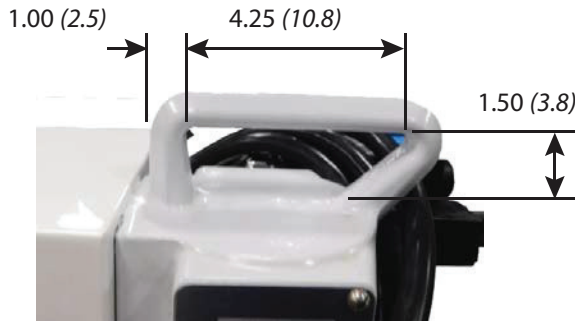


Specifications

CSA-US CERTIFIED

940 series Powerigs are intended for use in indoor factory environments. If used outdoors, they must be protected from the elements.

WIDTH 16.1 (40.9 cm) **LENGTH** 13.9 (35.4 cm)
HEIGHT 18.5 (47.0 cm) **WEIGHT** 66 lbs. (30 kg)
HANDLE DIMENSIONS inches (cm)



ELECTRICAL SYSTEM 220V, 50/60 Hz, single phase, AC

CONTROL SYSTEM Solenoid-operated directional valve 24 V

MOTOR 12,000 RPM, 1-1/8 HP, 13A

PUMP 2-stage gear-piston, 70 cu.in./min. @5,000psi out pressure. (Output pressure adjustable to 8,500 psi)

RESERVOIR CAPACITY 2.6 gallons (10 liters)

PRESSURE SETTING AS SHIPPED

RETURN: 2,200-2,400 psi (15,200-16,500 kPa)

PULL: 5,400-5,700 psi (37,200-39,300 kPa)

MIN. OPERATING TEMP (ambient) 0° F (-18 ° C)

MAX HYDRAULIC FLUID TEMP 150° F (65 ° C)

DESIGN COMPLIES WITH

NFPA 79

ISO 4413

ISO 12100

SOUND EMISSIONS

LWA: 87.5

LpA: 76.5

LpC: 92.9

HYDRAULIC FLUID Hydraulic fluid shall meet DEXRON® III, DEXRON VI, MERCON®, Allison C-4 or equivalent Automatic Transmission Fluid (ATF) specifications. Fire-resistant fluid may be used if it is an ester-based fluid such as Quintolubric® HFD or equivalent. Water-based fluid shall NOT be used as serious damage to equipment will occur.

Where the following trade names are used in this manual, please note:

DEXRON is a registered trademark of General Motors Corporation.

GLYD Ring is a registered trademark of Trelleborg Sealing Solutions Germany GmbH

Loctite is a registered trademark of Henkel Corporation, U.S.A.

LUBRIPLATE is a registered trademark of Fiske Brothers Refining Co.

MERCON is a registered trademark of Ford Motor Corp.

MOLYKOTE is a registered trademark of Dow Corning Corporation

Never-Seez is a registered trademark of Bostik, Inc.

Quintolubric is a registered trademark of Quaker Chemical Corp.

Slic-tite is a registered trademark of LA-CO Industries, Inc.

Spirolox is a registered trademark of Smalley Steel Ring Company

Teflon is a registered trademark of Chemours Company FC.

Threadmate is a registered trademark of Parker Intangibles LLC.

TRUARC is a trademark of TRUARC Co. LLC.

Vibra-Tite is a registered trademark of ND Industries, Inc. USA.

Principle of Operation

FIGURE 2 shows the electrical schematic diagram of the Powerig® Hydraulic Unit.

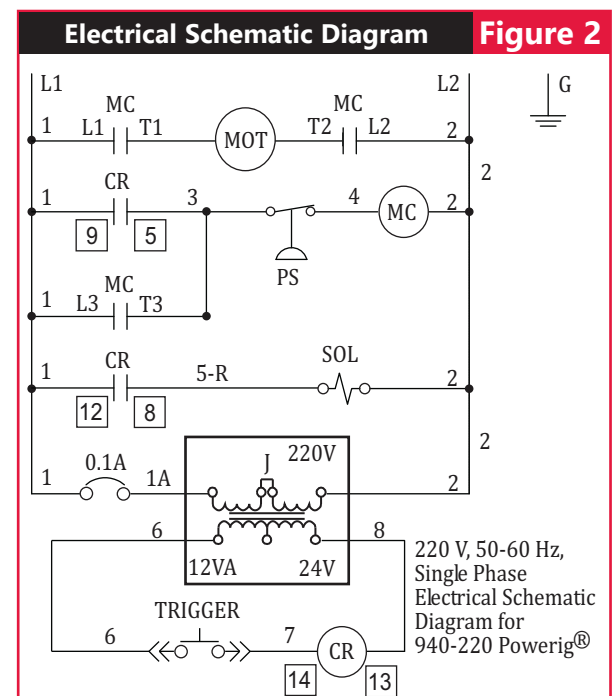
Pressure switch (PS) contacts are normally closed. Increasing pressure opens contacts.

When the tool trigger switch is depressed, 24 volts AC is applied between relay terminals CR13 and CR14 activating the relay coil and closing two sets of contacts, CR9-CR5 and CR12-CR8. Closing contacts CR9-CR5 starts the motor. Closing contacts CR12-CR8 activates the solenoid coil of the pilot valve. The pilot valve shifts the directional valve spools.

Pressurized fluid is directed to the PULL pressure port of the installation equipment.

When the tool trigger switch is released, the relay contacts open. The solenoid coil is deactivated and the spring return of the pilot valve shifts the directional valve spools. Pressurized fluid is directed to the RETURN pressure port of the installation equipment.

The motor contact is held closed until the preset RETURN pressure is reached and pressure switch (PS) contacts open. The motor turns off, the pressure drops, and pressure switch returns to the closed (normal) position.





Preparation for Use

SERVICE

Introduction of foreign material into Hydraulic Unit will result in poor performance and down time for repair. To avoid this: Clean the area around the filler cap before adding hydraulic fluid; Use a clean funnel with a filter; and keep quick-disconnect couplers clean by keeping them off the floor. Wipe off quick-disconnect couplers before connecting them.

BEFORE USE

Fill the reservoir with hydraulic fluid, approximately 2.6 gallons (9.8 liters), until the fluid level is between the grooves of the dipstick.

The Powerig Hydraulic Unit is shipped without hydraulic fluid.

Operation

BEFORE EACH USE:

1. Check the fluid level in the reservoir and add hydraulic fluid as required.
2. Inspect hoses for damage and wear. If more than the surface texture of hoses has been removed, they must be replaced.
3. Check the entire system and repair any leaks.
4. Check electrical cord and extension for abrasion and replace as required.
5. Plug the power cord into a grounded wall outlet. If an extension cord is used, it should be UL type SO or STO, 600 volt, 12/3 if 25 feet long and 10/3 if 50 feet long.
6. Check pressures and adjust as necessary. **WARNINGS MUST BE UNDERSTOOD BEFORE CHECKING PRESSURES.**

CHECKING PRESSURES



WARNING: If recommended maximum pressure is exceeded, violent failure of fastening system may occur. This may cause severe personal injury.

Check pressures before use, before troubleshooting, and after overhauling. See pressures given in specific tool manual. Use T-124833CE gauge to check and adjust pressures.

1. Plug Powerig Hydraulic Unit into a 220 volt, 15 (minimum) amp wall outlet.
2. Plug an auxiliary trigger (optional HUCK part number 113056) into the outlet on the Powerig Hydraulic Unit control panel.
3. Connect T-gauge part no. T-124833CE, to the hydraulic quick disconnects, and move gauge lever to middle position (open).
4. Press and hold the auxiliary trigger to start the Powerig Hydraulic Unit. The motor will start. Hydraulic fluid will be directed to the PULL pressure port of the installation equipment.



CAUTION: This check must be completed quickly, as the hydraulic unit's components should not be subjected to sustained high pressure.

5. Move the T-gauge lever to the PULL position.
6. Read the PULL pressure on the gauge.
7. Move the gauge lever to the "open" position.
8. Release the tool trigger. Hydraulic fluid is directed to the RETURN pressure port of the installation equipment.
9. Slowly move the gauge lever to the RETURN position.
10. Read the maximum pressure on the gauge (just before

the unit turns off). This is the RETURN pressure.

11. Disconnect the electrical power, and remove the gauge.

ADJUSTING PRESSURES

NOTE: Use "T" gage T-124833CE to check pressures during adjustment. Set pressures according to the installation equipment manual.

ADJUSTING PULL PRESSURE

NOTE: PULL pressure is the maximum Powerig® pressure. Do not exceed the pressure rating of the installation equipment. See the installation equipment manual for pressure rating.

1. Loosen the jam nut of the high pressure relief valve.
2. Turn the adjusting screw clockwise to increase PULL pressure OR counterclockwise to decrease PULL pressure.
3. Tighten the jam nut after PULL pressure has been adjusted.
4. Check PULL pressure. Follow instructions in the appropriate section of this manual.

ADJUSTING RETURN PRESSURE

1. Loosen the jam nut on pressure switch.
2. Turn the adjusting screw clockwise to increase RETURN pressure OR counter-clockwise to decrease RETURN pressure.
3. Tighten the jam nut on pressure switch after return pressure has been adjusted.
4. Check RETURN pressure. Follow instructions in the appropriate section of this manual.

CONNECT THE TOOL:

Connect a Huck hydraulic tool to the Powerig using a hose kit.

BE SURE THAT:

1. Hose from PULL PRESSURE on the control panel runs to the port stamped with a letter P on the tool.
2. Hose from RETURN PRESSURE on the control panel runs to the port stamped with letter R on the tool.

Plug the control cable from the tool into the two-prong socket on the Powerig Hydraulic Unit control panel.

Depress the tool trigger switch and let the Powerig operate for a few minutes to circulate fluid and remove air from the system.

Attach a nose assembly to the installation equipment. Fasteners may now be installed. Follow instructions in the tool manual.



Maintenance

PREVENTIVE MAINTENANCE

An effective preventive maintenance program includes scheduled inspections to detect and correct minor troubles. Perform the following steps monthly during normal use:

- Ensure secure fit of hydraulic and electrical fittings.
- Inspect hoses for signs of damage. Replace hoses if abrasion is deeper than the surface texture.
- Rotate hoses end-for-end to equalize wear and fatigue.
- Inspect during operation to detect any abnormal heating, vibration or leakage.
- Inspect hydraulic fluid. If contamination (particles, water, sludge, etc.) is detected, clean reservoir and replace fluid.
- Clean exterior surfaces.
- Check supply voltage. Do not operate the Powerig® Hydraulic Unit if the line voltage is more than 5 percent above or below 220 Volts.
- Check motor brushes. See figure below.

SPARE PARTS

The quantity of spare parts that should be kept on hand varies with the application and number of the Powerig Hydraulic Units in service. Parts that should be available to the service technician are: Pump-to-Motor Coupling, Relay, Transformer, Pilot Valve, and Motor Brushes. See **Options and Accessories** section of this manual for part numbers.

DIRECTIONAL VALVE OVERHAUL

If overhaul of the directional valve is necessary, a valve repair kit that has the spools, cartridges & poppets is 129437, is available for purchase, and should be kept on hand. To rebuild valve, follow instructions included with kit.

PUMP OVERHAUL

If pump requires overhaul return it, or the complete unit, to the nearest repair facility shown on the inside back cover.

REPLACING PUMP-TO-MOTOR COUPLING

Pump-to-motor coupling can be replaced by removing four socket cap screws holding the motor housing to the cover plate and lifting the motor to one side. Lift out the original coupling with needle-nose pliers. Drop in the new coupling, align the slots and reassemble motor to cover plate.

INTERNAL ADJUSTMENT OF PRESSURE SWITCH

1. Remove the top cover of the switch.
2. Loosen two screws located in bottom of switch housing.
3. Place a 0.20-inch-thick shim between the spring retainer and the platen.
4. Loosen the set screw on the spring retainer until it contacts shim.
5. Lock the spring retainer in place with the set screw.
6. Slide the switch mounting bracket toward the switch button until it contacts the platen surface.
7. Secure with two screws located in the middle of the bottom cover.
8. Connect a volt/ohm meter to the electrical cord.
9. Tighten the switch adjustment screw against the switch mounting bracket until the switch button contacts the platen and actuates. The volt/ohm meter will react when the button actuates. A click can be heard.
10. Continue tightening the switch adjustment screw 1/8 of a turn after the switch button actuates.
11. Replace the top cover of the switch.

SERVICE PERIOD	ACTION	BEFORE EACH USE	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 200 HOURS
Hydraulic Hose Fittings	Check-Clean	•			
Electrical Connections	Check	•			
Hydraulic Fluid Level, Fill Cap Tight	Check	•			
Verify Pull & Return Pressure, Tighten Adjustment Screw Jam Nuts	Check		•		
Tighten Cover Plate Screws	Check		•		
Tighten Screws on Engine	Check		•		
Change Hydraulic Fluid, Clean Tank	Change				• (Notes 1 and 2)
Check Motor Brushes	Check			•	
Directional Valve Seals, Poppets & Seats	Check				• (Note 3)
External Relief Valve Stem	Check				• (Note 4)

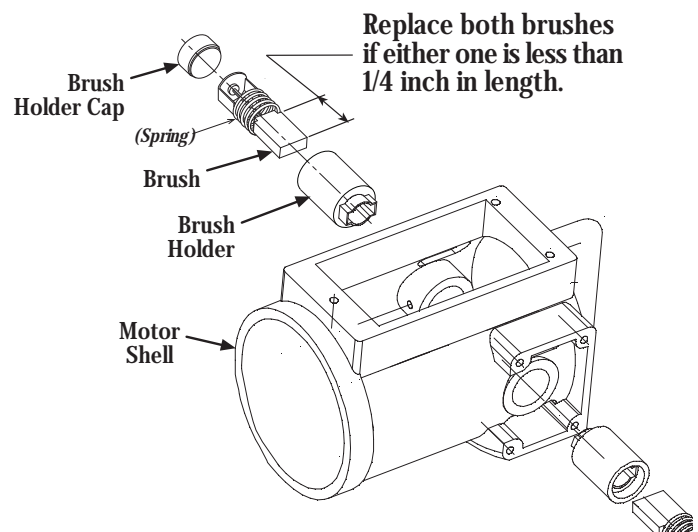
Notes:

1. Service more frequently when used in dusty areas.
2. Hydraulic fluid: use 32AW (0°F - 70°F ambient), 46AW (30°F - 120°F ambient), or ATF (30°F - 90°F ambient).
3. If poppets show wear, use Huck Directional Valve Kit to replace poppets, seats & seals.
4. If valve stem shows wear, replace with Huck Valve Stem.

CHECKING MOTOR BRUSHES

Checking motor brushes frequently helps to prevent premature failure of the armature. To check the brushes:

1. Remove the metal brush cover plates.
2. Unscrew the plastic brush holder caps. **Note: Springs on the brushes will push on the caps. Hold the caps as they are loosened.**
3. Remove brush assemblies.
4. Clean copper commutators on the armature with a pencil eraser.
5. Clean out spaces between connections with a plastic tool. If commutator is damaged or worn, replace armature with Armature/Field Kit, which is included in the Motor Service Kit. See **Options and Accessories** section of this manual for part numbers.
6. Measure the length of the carbon brush, and replace both brushes if either one is 1/4 inch or less in length.
7. Install brush assemblies, brush holder cups, and metal brush cover plates.



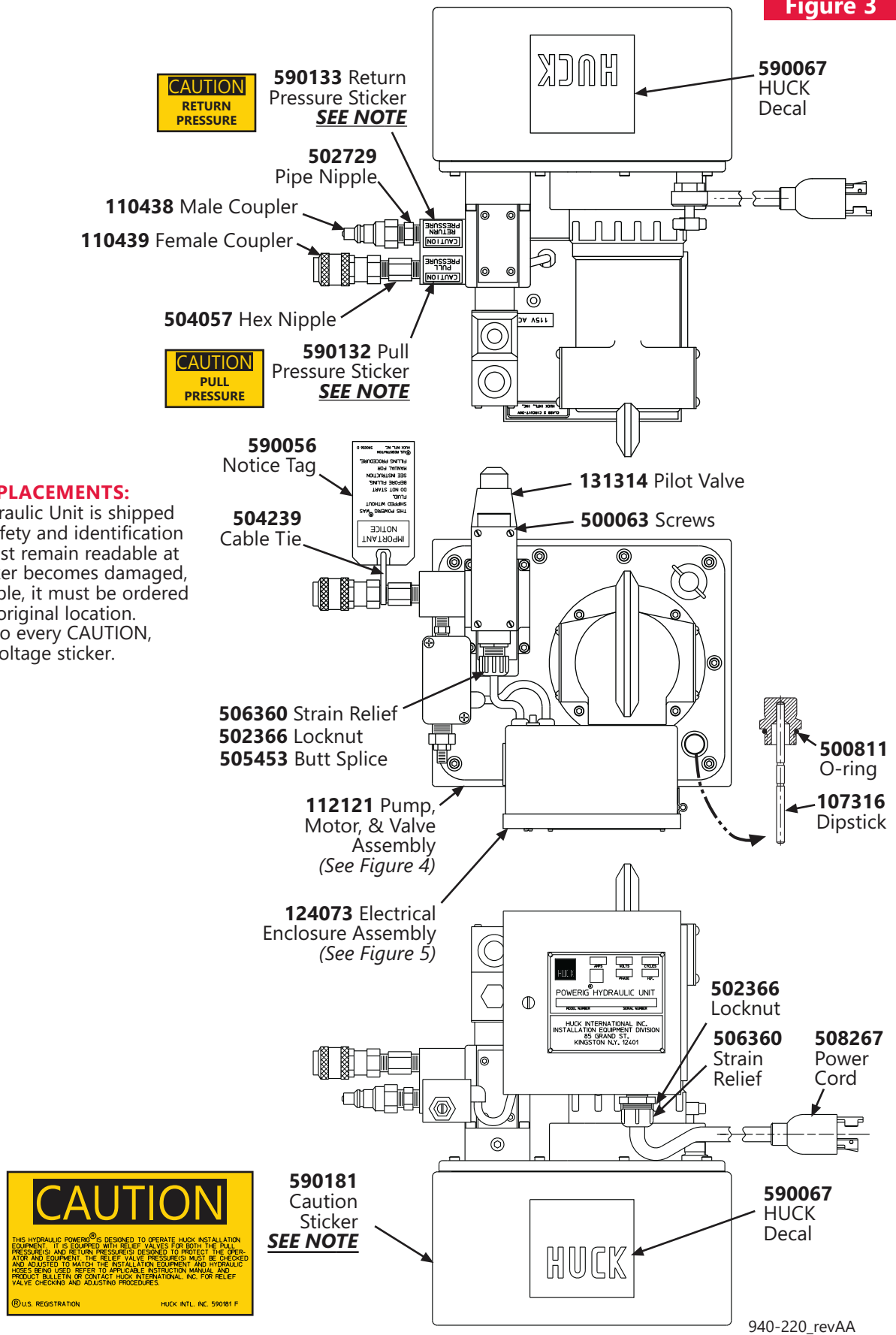


940-220 Basic Assembly

Figure 3

NOTE STICKER PLACEMENTS:

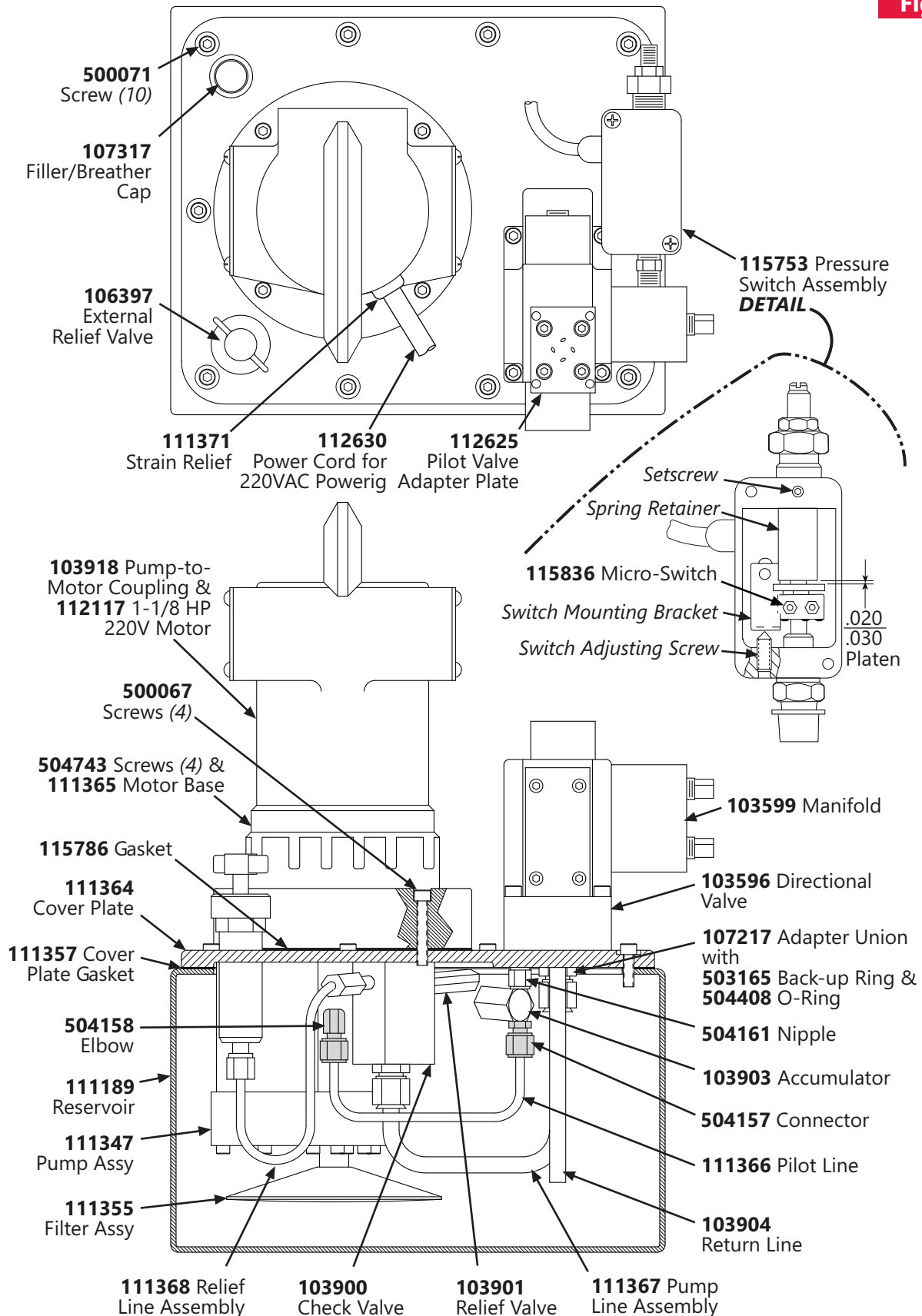
This Powerig Hydraulic Unit is shipped with important safety and identification stickers which must remain readable at all times. If a sticker becomes damaged, worn, or unreadable, it must be ordered and placed in its original location. This rule applies to every CAUTION, WARNING, and Voltage sticker.





112121 Pump, Motor, Valve Assembly

Note: This assembly is purchased complete. The part numbers listed are for reference and replacement part purposes only.

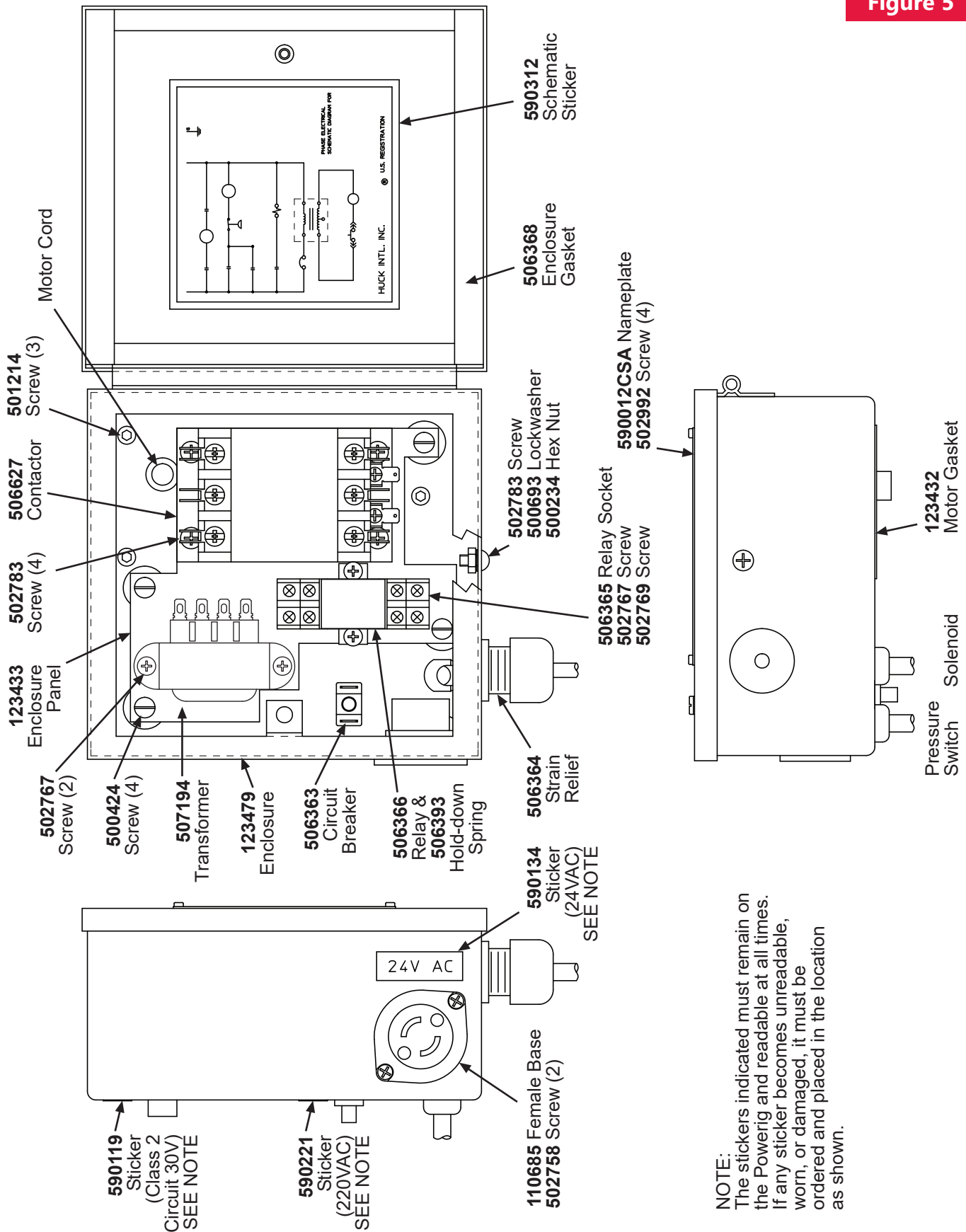
Figure 4

112121_revE



124073 Electrical Enclosure and Wiring 1 of 2

Figure 5



124073_revJ

Figure 6



- Wire Label Code:

XX - XX	┌───┐	R = Red
	└───┘	W = White
		B = Blue
		BL = Black

└───┬───┘ Indicates alphanumeric label to appear at both ends of the conductor.
- Connections made to 506365 Socket Relay, strip end of wire 0.30 inches.
- Connections made to 110685 Female Base, strip end of wire 0.50 inches.
- Wire color code for Power Cord:

L1=	Light Blue or Black
L2=	Brown or White
G =	Green/Yellow or Green
- Wire color code for Pressure Switch:

3 =	Light Blue, Black, or Grey
4 =	Brown or White

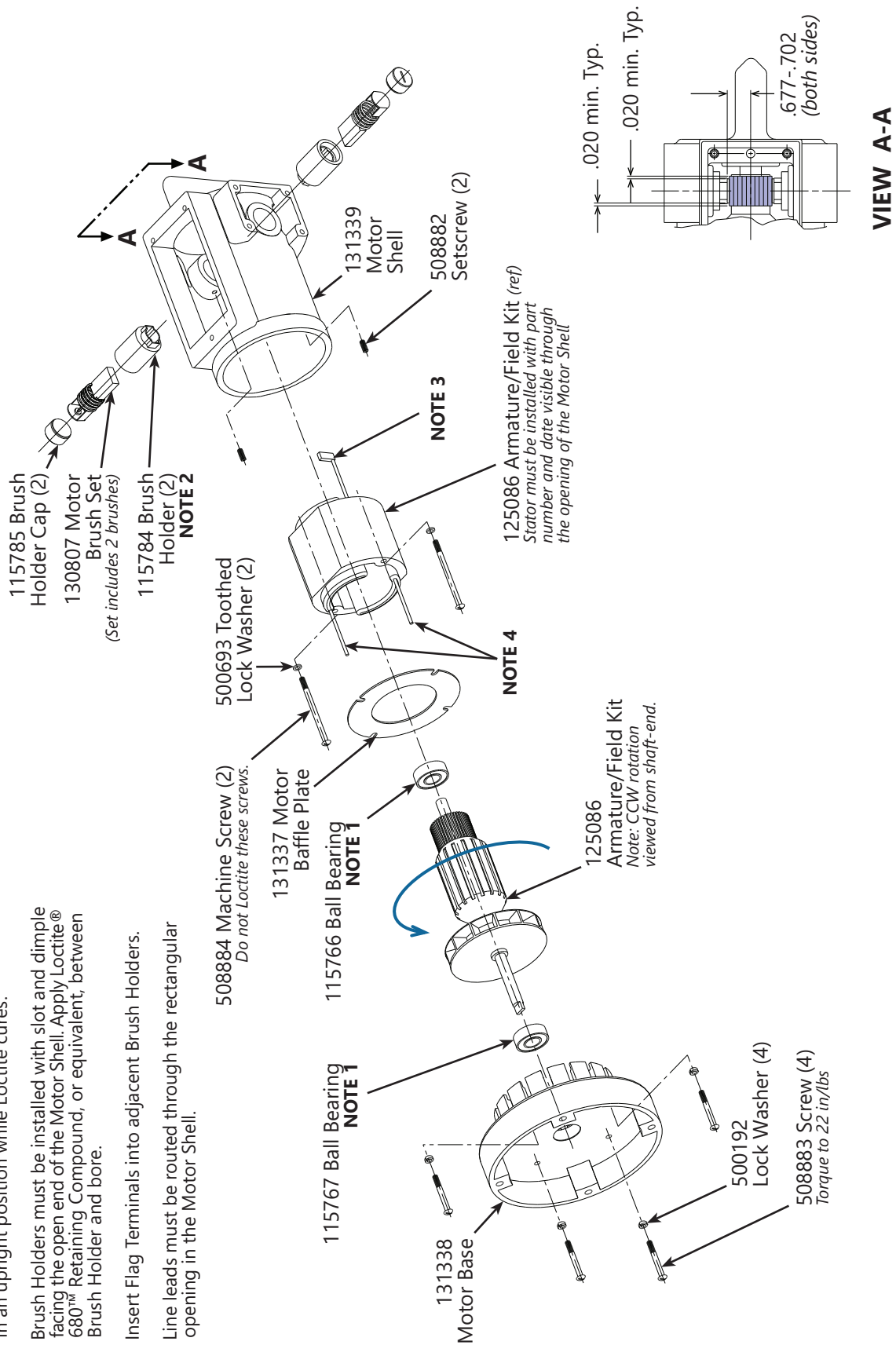
TERMINAL	WIRE NUMBER LOCATION
505705	Pressure Switch 4
505744	Pressure Switch 3, Motor Wires, and Power Cord L1 & L2



112117 Motor

Figure 7
NOTES:

1. Press bearings into armature, and install as a unit into the motor shell. Apply Loctite® 277 Threadlocker, or equivalent, between outer race and bore. Place motor in an upright position while Loctite cures.
2. Brush Holders must be installed with slot and dimple facing the open end of the Motor Shell. Apply Loctite® 680™ Retaining Compound, or equivalent, between Brush Holder and bore.
3. Insert Flag Terminals into adjacent Brush Holders.
4. Line leads must be routed through the rectangular opening in the Motor Shell.



112117_revD



Options & Accessories

940T-1

This special version of the 940 Powerig is part of Huck's revised after market Truck Kits, which contain different pressure installation tools. This hydraulic unit will be shipped from the factory with output pressures set at:

PULL	5700-5800 psi
RETURN	4400-4600 psi

AUXILIARY SWITCH AND CONTROL CORD 113056

An auxiliary switch is available for use when checking and adjusting pressures and when troubleshooting.

GAUGE T-124833CE

A "T" gauge is available for use when checking and adjusting pressures, and when troubleshooting.

DIRECTIONAL VALVE KIT 129437

Includes seals necessary to service Directional Valve 103596.

RIG TRANSPORT DOLLY 129703

Heavy duty steel dolly for easy movement of Powerig throughout the work area.

HOSE AND CONTROL CORD KITS of various lengths
Please contact your HUCK representative.

SPARE PARTS FOR MAINTENANCE

Pump-to-Motor Coupling	103918
Relay	506366
Transformer	507194
Pilot Valve	131314
Motor Brushes Kit	130807
Armature/Field Kit	125086
Motor Service Kit	115771

(This Motor Service Kit includes the Motor Brushes Kit and the Armature/Field Kit.)

Troubleshooting

Always check the simplest possible cause of malfunction first. For example, blown fuse, tripped circuit breaker, defective switch or control cord. Eliminate each possible cause until the defective circuit or part is located. Where possible, substitute known good parts for suspected bad parts. A qualified electrician should check out the electrical system. Use this section as an aid in locating trouble and correcting it.

1. **Motor fails to start when trigger is depressed.**
 - a. Loose or faulty control cord or connectors.
 - b. Power source not properly fused.
 - c. Defective tool switch.
 - d. Loose wire(s).
 - e. Defective relay.
 - f. Incorrect power source.
 - g. Defective motor contactor.
 - h. Defective transformer.
2. **Motor runs, but tool will not reciprocate.**
 - a. Hoses not coupled properly.
 - b. Hydraulic fluid viscosity not proper or level is too low.
 - c. Defective pilot valve solenoid or coil.
 - d. Unloading valve missing in tool.
 - e. Bind in tool or nose assembly.
 - f. Defective directional valve
 - g. Pump to motor coupling damaged.
3. **Pintail fastener fails to break off.**
 - a. PULL pressure set too low.
 - b. Worn or defective hose couplers.
 - c. Hydraulic fluid viscosity not proper or level is too low.
 - d. Hydraulic fluid overheated.
 - e. Worn or defective directional valve.
 - f. Internal relief valve set too low or defective.
 - g. Worn or defective pump.
4. **Tool will not return when switch is released. (Tool will not push nose assembly off swaged fastener.)**
 - a. RETURN pressure set too low.
 - b. Hoses not coupled properly.
 - c. Worn or defective solenoid.
 - d. Worn or defective pilot valve.
5. **Motor fails to shut off when installation cycle is completed.**
 - a. RETURN pressure is set too high.
 - b. Hydraulic fluid viscosity not proper or level is low.
 - c. Hydraulic fluid overheated.
 - d. Defective limit switch in pressure switch assembly.
6. **Pump making noise throughout entire cycle.**
 - a. Pump is cavitating. Fluid level may be low or fluid viscosity is too heavy.
 - b. Strainer is dirty and clogged.
7. **Tool will not return when switch is released. (Tool will not push nose assembly off swaged fastener.)**
 - a. Pump is cavitating. Fluid level may be low or fluid viscosity is too heavy.
 - b. Strainer is dirty and clogged.
 - c. Worn or defective directional valve.
 - d. Worn or damaged pump.
 - e. Worn or defective hydraulic couplers.



Limited Warranties

Limited Lifetime Warranty on BobTail® Tools:

Huck International, Inc. warrants to the original purchaser that its BobTail® installation tools manufactured after 12/1/2016 shall be free from defects in materials and workmanship for its **useful lifetime**. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

Two Year Limited Warranty on Installation Tools:

Huck International, Inc. warrants that its installation tools and Powerig® hydraulic power sources manufactured after December 1, 2016 shall be free from defects in materials and workmanship for a period of two years from date of purchase by the end user. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

90 Day Limited Warranty on Nose Assemblies and Accessories:

Huck International, Inc. warrants that its nose assemblies and accessories shall be free from defects in materials and workmanship for a period of 90 days from date of purchase by the end user. This warranty does not cover special clearance noses, or special order / non-standard product, or part failure due to normal wear, abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

Useful lifetime is defined as the period over which the product is expected to last physically, up to the point when replacement is required due to either normal in-service wear, or as part of a complete overhaul. Determination is made on a case-by case basis upon return of parts to Huck International, Inc. for evaluation.

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.

Huck shall not be liable for any loss or damage resulting from delays or non-fulfillment 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 location (see reverse).

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 Tool Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck International location (see reverse) for the ATSC in your area.



ARCONIC

Arconic Inc. (NYSE: ARNC) creates breakthrough products that shape industries. Working in close partnership with our customers, we solve complex engineering challenges to transform the way we fly, drive, build and power.

Through the ingenuity of our people and cutting-edge advanced manufacturing, we deliver these products at a quality and efficiency that ensures customer success and shareholder value.

Arconic Fastening Systems Tooling Support Locations

INDUSTRIAL NORTH AMERICA

Kingston Operations
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Fax: +1-845-334-7333
afs.sales.kingston@arconic.com

Tracy Operations (IDG)
1925 North MacArthur Drive
Tracy, CA 95376
Tel: +1-800-826-2884
Fax: +1-800-573-2645
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8001 Imperial Drive
Waco, TX 76714-8117
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São Paulo Operations
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Suzhou Operations
58 Yinsheng Road,
SIP Suzhou, Jiangsu
215126 China
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Huck provides technical assistance regarding the use and application of Huck fasteners and tooling. **NOTICE:** The information contained in this publication is only for general guidance with regard to properties of the products shown and/or the means for selecting such products, and is not intended to create any warranty, express, implied, or statutory; all warranties are contained only in Huck's written quotations, acknowledgments, and/or purchase orders. It is recommended that the user secure specific, up-to-date data and information regarding each application and/or use of such products.