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SECTION I. DESCRIPTION

GENERAL

The Huck Model 911 Powerig® is a portable, gasoline engine-driven hydraulic power source designed to operate all Huck Installation Tools requiring hydraulic pressure.

Figure 1 shows construction features of the Model 911 Powerig and identifies main components. Hydraulic pressure is developed by a two-stage hydraulic pump driven by a 5-hp, gasoline engine. Hydraulic pump output is directed to either the pull or return port of the Installation Tool by a four-way directional valve assembly. The directional valve is controlled from the Tool through the remote control system of the Powerig. Components of the remote control system include a 12-volt alternator, a fused diode rectifier circuit, and two multi-contact relays. Fuse, diodes, and relays are located in the electrical control panel.

Hydraulic fluid is stored in the 5-gallon reservoir that also serves as supporting platform for the Powerig components. Adjustable legs, furnished with the Powerig, aid the circulation of cooling air around the reservoir. An optional Sled 106466 is recommended when the Powerig is to be used in loose soil.

CAUTION

Always use legs or sled with Powerig. Under normal operating conditions this will help insure that hydraulic fluid temperature remains below 150°F. If hydraulic fluid temperature exceeds 150°F, service problems may develop in the pump.

Figure 1. Model 911 Powerig
The Model 911 Powerig is designed to supply hydraulic pressure to the Installation Tool only during the installation cycle. When the installation cycle is completed, hydraulic fluid is bypassed to the reservoir. Two relief valves, one internal, the other external, control hydraulic pressure during the installation cycle. The internal relief valve is factory-set to 8600-9000 psi, and the external relief valve is factory-set to 5400-5700 psi. When received from the factory, the Model 911 Powerig is set to operate 5400 psi Series Installation Tools. For 8000 psi Series Installation Tools, the external relief valve must be adjusted so that only the internal relief valve prevails. Relief valve adjustment procedures are described in Section V.

Hydraulic fluid, gasoline, and engine crankcase oil for the Powerig can be obtained from local gasoline service stations.

The Model 911 Powerig may be ordered separately or in accessory kits with associated hydraulic hose and control cord. Refer to Section VI for a listing of accessory kits.

Table 1. Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>18-5/8 inches</td>
</tr>
<tr>
<td>Length</td>
<td>21-1/8 inches</td>
</tr>
<tr>
<td>Height</td>
<td>27 inches</td>
</tr>
<tr>
<td>Weight (with hydraulic fluid, oil and gasoline)</td>
<td>175 pounds</td>
</tr>
<tr>
<td>Hydraulic Pressure Output</td>
<td>Up to 8000 psi</td>
</tr>
<tr>
<td>Engine</td>
<td>Tecumseh Products Company V50 Heavy Duty, 5 hp, 4-Cycle, Single-Cylinder, Air-Cooled Gasoline Engine</td>
</tr>
<tr>
<td>Pump</td>
<td>2-Stage, Gear-Piston Type</td>
</tr>
<tr>
<td>Electrical System</td>
<td>Alternator - 12 Volts, 3 Amps</td>
</tr>
<tr>
<td>Operation Temperature (Atmospheric)</td>
<td>-40° F Minimum</td>
</tr>
<tr>
<td>(Hydraulic Fluid)</td>
<td>150° F Maximum</td>
</tr>
<tr>
<td>Reservoir Capacity (Hydraulic Fluid)</td>
<td>5 Gallons</td>
</tr>
</tbody>
</table>

Hydraulic Fluid

1. 40° F to 80° F Ambient
   - Sun - Vis 16 (SUS 150 - 160 @ 100° F)
   - Mobil - DTE 24 (SUS 153 @ 100° F) or equivalent
2. Over 80° F Ambient
   - Mobil - DTE 26 (SUS 300 @ 100° F) or equivalent
3. 0° F to 90° F Ambient
   - Automatic transmission fluid, Type A (SUS 200 - 220)
4. -40° F to 80° F
   - MIL - H - 5606 hydraulic fluid

Crankcase Oil (A.P.I. Classification MS) Above 32° F - SAE 30
Below 32° F - SAE 10W

Gasoline Regular Grade
**PRINCIPLE OF OPERATION**

Figure 2 is a schematic diagram of the Powerig electrical control system showing functional layout of circuit components. For physical location of components refer to Table 2.

Referring to Figure 2, with the Powerig engine running, a 12-volt alternator output is developed and applied to the diode rectifier circuit. Output of the diodes is approximately 12 volts dc, which is available to operate relays 1CR and 2CR and the pull pressure and return pressure solenoids.

When the Tool trigger is depressed, it completes the circuit of relay 2CR, energizing the relay, and providing the following simultaneous circuit operations:

1. Normally closed contact 2CR (1,4) opens, insuring that the return pressure solenoid coil does not energize during the pull pressure cycle.
2. Normally open contact 2CR (1,3) closes, energizing the pull pressure solenoid coil. This action causes the pilot-operated valve spools in the directional valve to direct the hydraulic pump output out the pull pressure port.
3. Normally open contact 2CR (8,6) closes, completing the circuit of relay 1CR and energizing the relay. This action closes contact 1CR (11,9) to insure that relay 1CR remains energized, and also closes contact 1CR (1,3) to partially complete the return pressure solenoid coil circuit.

When the Tool trigger is released, relay 2CR de-energizes, providing the following simultaneous circuit operations:

1. Contact 2CR (1,3) opens, de-energizing the pull pressure solenoid coil.
2. Contact 2CR (8,6) opens but since contact 1CR (11,9) is closed, relay 1CR remains energized.
3. Contact 2CR (1,4) closes, completing the circuit of the return pressure solenoid coil. This action energizes the solenoid coil causing the pilot-operated valve spools in the directional valve to direct the hydraulic pump output out the return pressure port.

At the end of the Tool return stroke, pressure rises and opens the pressure switch in the relay 1CR circuit. This action de-energizes relay 1CR, opening all its contacts. As a result, the return pressure solenoid coil de-energizes, the pilot valve returns to its original position, and the pressure switch closes, completing the installation cycle.

![Figure 2. Schematic Diagram of Powerig Electrical Control System](image-url)
Table 2. Location of Electrical Control System Components

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>LOCATION</th>
<th>REFERENCE ILLUSTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diodes</td>
<td>Electrical Control Panel</td>
<td>Item 9, Figure 7</td>
</tr>
<tr>
<td>Fuse</td>
<td>Electrical Control Panel</td>
<td>Item 8, Figure 7</td>
</tr>
<tr>
<td>Relay 1CR</td>
<td>Electrical Control Panel</td>
<td>Item 5, Figure 7</td>
</tr>
<tr>
<td>Relay 2CR</td>
<td>Electrical Control Panel</td>
<td>Item 2, Figure 7</td>
</tr>
<tr>
<td>Control Cord Socket</td>
<td>Electrical Control Panel</td>
<td>Item 7, Figure 7</td>
</tr>
<tr>
<td>Pull Pressure Solenoid Coil</td>
<td>Four-Way Valve Assembly</td>
<td>Item 5, Figure 9</td>
</tr>
<tr>
<td>Return Pressure Solenoid Coil</td>
<td>Four-Way Valve Assembly</td>
<td>Item 5, Figure 9</td>
</tr>
<tr>
<td>Pressure Switch</td>
<td>Four-Way Valve Assembly</td>
<td>Item 7, Figure 9</td>
</tr>
</tbody>
</table>

SECTION II. PREPARATION FOR USE

GOOD SERVICE PRACTICES

The introduction of foreign material into the hydraulic system of the Model 911 Powerig can result in poor performance and increased repair downtime. To avoid this, observe the following practices:

1. Before removing reservoir filler cap, clean area around cap.
2. When filling reservoir, use clean funnel with a filter.
3. Always check that hose fittings are free of dirt before attachment. Use compressed air to clean hose fittings.
4. Coat threaded fittings of hydraulic hose with a non-hardening Teflon thread compound (Huck No. 503237). DO NOT USE TEFLOP TAPE OR RED LEAD COMPOUND.
5. Do not let threaded fittings or couplings of hydraulic hose contact a dirty floor or unclean working surface.

SERVICING POWERIG

CAUTION

Do not fill reservoir, crankcase, or fuel tank while engine is running.

First-Time Use

First-time use of the Model 911 Powerig involves the following servicing.

1. Attach legs to Powerig base and adjust so that Powerig is setting level.

2. Remove filler cap (Figure 3) and fill reservoir with approximately five gallons of clean hydraulic fluid Huck No. 100506 (Table 1). Check that fluid level is between grooves marked on reservoir dipstick.
3. Fill fuel tank (Figure 3) with regular grade gasoline.

CAUTION

Do not mix oil with gasoline.

4. Fill engine crankcase through filler port (Figure 3). Do not overfill. Use a good grade of oil such as A.P.I. classification MS. Do not use oils marked only MM or ML, or unmarked. Above 32°F, use grade SAE 30. Below 32°F, use Grade SAE 10W. Multiple weight oils such as all-season 10W-30 are not recommended.

NOTE

Carburetors are preset at factory. Do not attempt to make adjustments at this time (See Section V).

5. Check that pressure output of Powerig is compatible with the Installation Tool it is to operate. Valve setting procedures are described in Section V.
Regular Use

Before each Powerig operation, perform the following services:

1. Check that Powerig is setting level. Adjust legs, if necessary.
2. Check hydraulic reservoir dipstick (Figure 3) and add hydraulic fluid, if necessary. See Table 1 for correct type of hydraulic fluid.
3. Check fuel tank and, if necessary, fill with regular grade gasoline.
4. Check crankcase filler port (Figure 3) for level of oil, and fill if necessary. Do not overfill. See Table 1 for correct grade of oil.

NOTE

During initial engine "break-in" period, watch oil level closely.

5. Check that settings of internal relief valve are such that pressure output of Powerig is compatible with the Installation Tool it is to operate. Valve setting procedures are described in Section V.
5400 PSI SERIES INSTALLATION TOOL

Hose and Cord Kit 102516

1/4 x 12 FT. Hose 100919 (2)

3/8 x 38 FT. Hose 100909 (2)

Body Coupler 103392
Nipple Coupler 103391

3/8-In. Adapter Union 502956

52 FT. Control Cord 103006

Notes:
1. A 14-FT. Control Cord 101717 and 40-FT. Control Cord 101718 are available.
2. See Section VI for other available hose and cord kits.

8000 PSI SERIES INSTALLATION TOOL

Hose and Cord Kit 107583

3/8 x 50 FT. Hose 107580

Body Coupler 103392
Nipple Coupler 103391

3/8 x 50 FT. Hose 107648

52 FT. Control Cord 108603

Notes:
1. A 12-FT. Hose and Cord Kit 106636 is available (see Section VI).

Use Adapter Cord 108604 to Adapt P & S Plug of Control Cord to Hubbell Base Connector of Powerig

Figure 4. Connecting Model 911 Powerig To Installation Tool
CONNECTING POWERIG TO INSTALLATION TOOL

Hose and control cord kits for the Model 911 Powerig are listed in Section VI. Figure 4 shows an assembled configuration for each series of Installation Tool.

5400 psi Series Installation Tools

For 5400 psi Series Installation Tools, assemble hose and control cord kits and make Tool connections as follows (Figure 4):

1. Remove shipping plugs from adapter unions installed in pull pressure and return pressure ports of Powerig.
2. Connect long hose (38-ft.) to adapter unions in pull pressure and return pressure ports of Powerig.
3. Connect 3/8-inch adapter unions to long hose.
4. Connect short hose (12-ft.) to long hose.
5. Connect nipple coupler to hose assembly connected to return pressure port of Powerig.
6. Connect body coupler to hose assembly connected to pull pressure port of Powerig.
7. Remove shipping plug from control cord socket of Powerig and plug in control cord (52-ft.).
8. Harness hose and control cord with cable ties approximately every 3 feet.

NOTE

Always assemble 12-foot hose so that it is connected to Tool hose. The relatively light 12-foot hose facilitates Tool handling.

9. Connect Tool hose to Powerig hose.

NOTE

Hose for 5400 psi Tools are assembled with a body coupler on the hose connected to the “R” port of the Tool, and a nipple coupler on the hose connected to the “P” port.

10. Plug Tool control cord into Powerig control cord.

8000 psi Series Installation Tools

For 8000 psi Series Installation Tools, assemble hose and control cord kits and make Tool connections as follows (Figure 4):

1. Remove shipping plugs from adapter unions installed in pull pressure and return pressure ports of Powerig.
2. Connect long hose (50-ft.) to adapter unions in pull pressure and return pressure ports of Powerig.
3. Connect nipple coupler to hose connected to return pressure port of Powerig.
4. Connect body coupler to hose connected to pull pressure port of Powerig.
5. Remove shipping plug from control cord socket on electrical control panel of Powerig and plug in adapter cord 108604. Plug control cord (52-ft.) into adapter cord.
6. Harness hose and control cord with cable ties approximately every three feet.
7. Connect Tool hose to Powerig hose.

NOTE

Hose for 8000 psi Tools are assembled with a body coupler on the hose connected to the “R” port of the Tool, and a nipple coupler on the hose connected to the “P” port.

8. Plug Tool control cord into Powerig control cord.
SECTION III. OPERATION INSTRUCTIONS

NOTE
Before starting engine, check that Powerig has been serviced and Tool connected as described in Section II.

OPERATING ENGINE

WARNING
Provide sufficient ventilation while engine is running to avoid carbon-monoxide poisoning.

Start engine as follows:

1. Move engine throttle control (Figure 5) to "start" position.
2. Pull starter handle (Figure 5). Use quick, full arm stroke. Keep firm grip on handle, and return rope slowly.
3. When engine starts, move throttle control to "Run" position.

CAUTION
To prolong engine and pump life, never leave engine operating in "Run" position when Powerig is not being used for long periods. Move throttle control to "Slow" or "Idle" position or shut unit off.

To stop engine, move throttle control to "Stop" position.

CHECKING COMPLETE SYSTEM

With engine running, check complete system as follows:

1. Depress and release Tool trigger several times to cycle Tool. Observe action of Tool for proper operation.

Figure 5. Model 911 Powerig, Side View
NOTE

Tools are described in detail in related Huck Instruction Manuals.

2. Check for leaks at hose connections.
3. Observe Powerig engine for proper operation.

NOTE

Hydraulic fluid may need to be replenished after test cycling Tool.
Check fluid level in reservoir and, if required, add fluid as described in Section II.

SECTION IV. SPECIAL SERVICE TOOLS

Special tool kits are not required to service the Model 911 Powerig.

SECTION V. MAINTENANCE AND REPAIR

NOTE

The Powerig electrical control panel should be serviced only by a qualified electrician.

CAUTION

Do not switch hose used on 8000 psi Series Installation Tools.

PREVENTIVE MAINTENANCE

An effective preventive maintenance program includes scheduled inspections to detect and correct minor troubles.
1. Verify that hydraulic hose fittings and electrical connections are secure.
2. Inspect hose frequently for signs of damage or aging. At regular intervals switch hose for 5400 psi Series Installation Tools to equalize wear and materials fatigue. Replace hose at six-month to one-year intervals, depending on use.

3. Inspect components during operation to detect any abnormal heating, leakage, vibration, or wear.
4. Inspect oil filter periodically. If necessary, clean according to instruction tag.
5. Inspect hydraulic fluid periodically. Replace if any evidence of impurities is detected.
6. Keep all exterior surfaces clean.

Engine

Normally, only routine maintenance and simple adjustments are necessary for proper operation of the Model 911 Powerig engine. When major

<table>
<thead>
<tr>
<th>PART</th>
<th>NO. REQ'D.</th>
<th>TECUMSEH PART NUMBER</th>
<th>TECUMSEH PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ENGINE</td>
<td>ENGINE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V40-50114F</td>
<td>V50-60142G</td>
</tr>
<tr>
<td>Spark Plug</td>
<td>1*</td>
<td>Champion J-8</td>
<td>Champion J-8</td>
</tr>
<tr>
<td>Muffler</td>
<td>1</td>
<td>29633</td>
<td>29633</td>
</tr>
<tr>
<td>Starter Assembly</td>
<td>1</td>
<td>590420</td>
<td>590420</td>
</tr>
<tr>
<td>Starter Rope, Nylon</td>
<td>1</td>
<td>590386</td>
<td>590386</td>
</tr>
<tr>
<td>Handle Assembly, Starter</td>
<td>1</td>
<td>530387</td>
<td>590387</td>
</tr>
<tr>
<td>Fuel Tank</td>
<td>1</td>
<td>31525</td>
<td>32584</td>
</tr>
<tr>
<td>Fuel Cap</td>
<td>1</td>
<td>32387A</td>
<td>32387A</td>
</tr>
<tr>
<td>Air Cleaner Element (Foam Type)</td>
<td>1 30727</td>
<td>30727</td>
<td>30727</td>
</tr>
<tr>
<td>Diodes (Rectifier)</td>
<td>2*</td>
<td>30842</td>
<td>30842</td>
</tr>
<tr>
<td>Fuse, 6 amp.</td>
<td>1*</td>
<td>29561</td>
<td>29561</td>
</tr>
</tbody>
</table>

NOTE: Asterisk (*) indicates extra parts to be kept on hand.
adjustments, repairs or overhaul are required, it is advisable to call a local authorized Tecumseh Lauson-Power Products Service Outlet. The company provides service throughout the world and authorized repairmen can usually be located through the telephone directory yellow pages, under the heading "Engines-Gasoline."

Most minor engine repair parts can be purchased from the local Tecumseh engine service shop (Table 3). When ordering repair parts from a Tecumseh outlet, specify engine model number and serial number. For Powerig Serial Numbers 0101 through 0150, engine model number is V40-50114F. For Powerig Serial Numbers 0151 and above, engine model number is V50-60142G.

Perform the following maintenance on the engine:
1. Check oil every five operating hours, and each time before using Powerig.
2. Change crankcase oil after first two hours of operation. Thereafter, change crankcase oil every 25 hours of operation. If Powerig is operated in extremely dusty or dirty environment, change engine oil every eight hours of operation. Before changing oil, disconnect wire from spark plug. Unscrew oil drain plug (Figure 3), tip engine toward oil drain hole, and drain completely. Replace oil drain plug and refill as described in Section II.
3. The air-cooled engine operates most efficiently when cooling fins are kept clean. Remove all dust and dirt from cylinder fins and underside of housing, as required.
4. A dirty or clogged air cleaner results in noticeable loss of engine power. Clean the reusable-type air cleaner each 10 operating hours, or more frequently if unit is operating in dusty or dirty environment. To clean, remove air cleaner (Figure 5) and dip in gasoline.
5. Remove and inspect spark plug (Figure 3) at each oil change. Keep electrodes clean and free of carbon. Adjust electrode gap to .030 inch. If electrodes are pitted or burned, or ceramic insulator is cracked, replace spark plug. Before installing a spark plug, coat threads lightly with graphite grease.

**CARBURETOR ADJUSTMENT**

Carburetor settings are carefully made and checked at the factory. Do not make unnecessary adjustments. Where adjustments are necessary, proceed as follows:
1. Close power-adjusting needle (Figure 5), by turning clockwise to fingertight only. Back off (open) one and one-half turns counterclockwise.
2. Close idle-adjusting needle (Figure 5), by turning clockwise to fingertight only. Back off (open) one and one-half turns counterclockwise.
3. Start engine as described in Section III.
4. Position throttle control at "Run." Rotate power adjusting needle one-eighth of a turn at a time, forward or backward, until engine runs smoothly. Allow several seconds between each adjustment to permit engine to react to each new setting.
5. Position throttle control at "Slow" or "Idle." Adjust idle-adjusting needle until engine runs smoothly. Allow several seconds between each adjustment to permit engine to react to each new setting.

**CAUTION**

Maximum engine speed is preset at factory and should be changed only by an authorized Tecumseh Lauson-Power Service repairman who has the proper equipment to make this adjustment.

**PRESSURE RELIEF VALVE SETTING**

The internal relief valve (Item 9, Figure 10) is factory-set to 8600-9000 psi, and the external relief valve (Figure 5) is factory-set to 5400-5700 psi. When received from the factory, the Model 911 Powerig is set to operate 5400 psi Series Installation Tools.

**8000 psi Series Installation Tool**

For 8000 psi Series Installation Tools, the external relief valve must be adjusted so that only the internal relief valve prevails. To "shut down" the external relief valve, loosen locknut on adjusting screw, turn screw in as far as it will go, and tighten locknut.

**5400 psi Series Installation Tool**

A Model 911 Powerig set to operate an 8000 psi Series Installation Tool must be reset to operate a 5400 psi Series Installation Tool. Adjust the external relief valve as follows:
1. Connect an 8000 psi Series Installation Tool to Powerig. Depress Tool trigger for one minute to circulate and force air out of hydraulic circuit.
2. Disconnect Powerig hose from Tool hose and connect Powerig hose to T-10206 gauge (Figure 6) (Tool trigger cord is still connected to Powerig control cord).
3. Loosen locknut on external relief valve.
4. Open gauge valves No. 1 and No. 2.
5. Depress Tool trigger and slowly close valve No. 2. Read pull pressure on gauge.
6. Adjust external relief valve, repeating steps 4 and 5, until gauge reads 4400-5700 psi. Perform this operation as quickly as possible to avoid damaging Powerig pump.

2. Disconnect wire from spark plug.

3. Drain fuel tank completely by removing fuel line at tank or at carburetor.

NOTE

Turning adjusting screw of external relief valve counterclockwise decreases Powerig output pressure; turning clockwise increases Powerig output pressure.

4. Drain carburetor by pressing upward on drain button (Figure 5).

7. When valve setting has been established, tighten locknut of external relief valve.

5. Remove spark plug and pour approximately one ounce of SAE 30 oil through spark plug hole into cylinder. Crank engine several times with starter cord to spread oil over cylinder wall.

6. Clean, regap, and reinstall spark plug, leaving spark plug wire disconnected.

7. Clean exterior surfaces of Powerig.

8. Store Powerig in a protected indoor area.

WARNING

Drain gasoline outdoors away from fire or flame. Drain gasoline into safety containers.
TROUBLESHOOTING
Always check out the simplest possible cause of a malfunction first. For example, a blown fuse, bad control cord connection, or defective hydraulic hose coupler. Then proceed logically, eliminating each possible cause until the defective circuit or part is located. Where possible, substitute known good parts for suspected bad parts. Use the Troubleshooting Chart as an aid in locating trouble and correcting it. Also, refer to Figure 2 when troubleshooting the Powerig Electrical System.

### Troubleshooting Chart

<table>
<thead>
<tr>
<th>TROUBLE</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. With Powerig engine running, Tool fails to operate when trigger is depressed.</td>
<td>Loose or faulty connectors in control cord.</td>
<td>Check and secure connectors, or replace faulty connectors.</td>
</tr>
<tr>
<td></td>
<td>Loose or faulty hydraulic hose couplings.</td>
<td>Check and tighten securely, or replace faulty couplings.</td>
</tr>
<tr>
<td></td>
<td>Defective Tool trigger assembly.</td>
<td>Replace trigger assembly.</td>
</tr>
<tr>
<td></td>
<td>Blown fuse or defective diode in rectifier circuit of Electrical Control System.</td>
<td>Replace fuse or diode.</td>
</tr>
<tr>
<td></td>
<td>Defective relay 2CR or pull pressure solenoid coil in Electrical Control System.</td>
<td>Check and replace relay 2CR, or solenoid coil.</td>
</tr>
<tr>
<td></td>
<td>Low hydraulic fluid level in reservoir.</td>
<td>Check and fill reservoir to correct level.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic fluid viscosity too heavy to pick up prime.</td>
<td>Replace fluid with recommended type.</td>
</tr>
<tr>
<td></td>
<td>Clogged suction strainer.</td>
<td>Check and clean strainer.</td>
</tr>
<tr>
<td></td>
<td>Improperly driven hydraulic pump, or defective hydraulic pump.</td>
<td>Check pump driving coupling, or replace pump assembly.</td>
</tr>
<tr>
<td></td>
<td>Defective directional valve assembly.</td>
<td>Replace valve assembly.</td>
</tr>
<tr>
<td></td>
<td>Installation Tool not operating</td>
<td>Troubleshoot Tool. (See applicable Tool Instruction Manual).</td>
</tr>
<tr>
<td>TROUBLE</td>
<td>PROBABLE CAUSE</td>
<td>CORRECTIVE ACTION</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>B. Tool does not return on release of trigger.</td>
<td>Defective relay 1CR, relay 2CR, pressure switch, or pull pressure solenoid coil in Electrical Control System.</td>
<td>Check and replace relay, or pressure switch, or solenoid coil.</td>
</tr>
<tr>
<td></td>
<td>Installation Tool not operating properly.</td>
<td>Troubleshoot Tool. (See applicable Tool Instruction Manual).</td>
</tr>
<tr>
<td>C. Return pressure does not &quot;shut off.&quot;</td>
<td>Defective pressure switch.</td>
<td>Check and replace pressure switch.</td>
</tr>
<tr>
<td></td>
<td>Installation Tool not operating properly.</td>
<td>Troubleshoot Tool. (See applicable Tool Instruction Manual).</td>
</tr>
<tr>
<td>D. Pump cavitating (noisy throughout entire installation cycle).</td>
<td>Low hydraulic fluid level in reservoir.</td>
<td>Check and fill reservoir to correct level.</td>
</tr>
<tr>
<td></td>
<td>Clogged suction strainer.</td>
<td>Check and clean strainer.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic fluid viscosity too heavy to pick up prime.</td>
<td>Replace fluid with recommended type.</td>
</tr>
<tr>
<td>E. Tool operation slow but entire cycle does occur.</td>
<td>Pump cavitating.</td>
<td>See Trouble D.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic fluid viscosity too thin.</td>
<td>Check fluid temperature and do not operate if over 150°F.</td>
</tr>
<tr>
<td></td>
<td>Defective directional valve assembly.</td>
<td>Replace valve assembly.</td>
</tr>
<tr>
<td></td>
<td>Defective hydraulic pump.</td>
<td>Replace pump assembly.</td>
</tr>
<tr>
<td></td>
<td>Internal and external relief valves not operating properly.</td>
<td>Check pressure output of Powerrig and adjust relief valves, if necessary.</td>
</tr>
<tr>
<td></td>
<td>Low engine shaft speed.</td>
<td>Check for proper speed of 3600 rpm, and adjust engine speed if necessary.</td>
</tr>
</tbody>
</table>
PARTS LISTS

The following parts lists are partial listings only. All part numbers are available from Huck for replacement. Part numbers in the 500000 Series are standard items purchasable at most local supply firms.

![Electrical Control Panel](image)

**Figure 7. Electrical Control Panel**

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Electrical Control Panel Assembly - Complete</td>
<td>106403</td>
<td>1</td>
</tr>
<tr>
<td>2*</td>
<td>Relay (2CR) - 12 VDC</td>
<td>106412</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Spring - Hold Down</td>
<td>103576</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Socket ( Relay 2CR) - Amphenol</td>
<td>102472</td>
<td>1</td>
</tr>
<tr>
<td>5*</td>
<td>Relay (1CR) - 12 VDC</td>
<td>106415</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Socket ( Relay 1CR) - Amphenol</td>
<td>503568</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Socket - Control Cord</td>
<td>502627</td>
<td>1</td>
</tr>
<tr>
<td>8*</td>
<td>Fuse - Bussman #AGC-6</td>
<td>503720</td>
<td>1</td>
</tr>
<tr>
<td>9*</td>
<td>Diode (Rectifier)</td>
<td>106417</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Cord Grip Assembly</td>
<td>106482</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Fuse Block - Diode</td>
<td>106416</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTE:** Asterisk (*) indicates items of which a supply should be maintained for replacement.
Figure 8. Model 911 Powerig. Left Rear View

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reservoir</td>
<td>106383</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Leg - Ohio #FT4448</td>
<td>503909</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Pump Assembly - Complete</td>
<td>103371</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Engine Assembly - 5 hp.</td>
<td>106391</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Extension - Shaft</td>
<td>106392</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Set Screw, 1/4 - 20 x 1/4</td>
<td>501635</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Handling Frame</td>
<td>106419</td>
<td>1</td>
</tr>
<tr>
<td>--</td>
<td>Sealing Washer - Handling Frame Screws</td>
<td>503913</td>
<td>2</td>
</tr>
<tr>
<td>--</td>
<td>Key - Engine Shaft (5/32 x 5/8 Woodruff)</td>
<td>503107</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>*Coupling - Pump to Engine</td>
<td>103918</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Ball Bearing - Pump</td>
<td>503721</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTE: Asterisk (*) indicates items of which a supply should be maintained for replacement.
Figure 9. Model 911 Powerig. Right Front View

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Four-Way Valve Assembly - Complete</td>
<td>106395</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Manifold</td>
<td>103599</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Directional Valve</td>
<td>103596</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Pilot Valve</td>
<td>106421</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Coil - 12 VDC, Vickers #245446</td>
<td>106409</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Adapter Unions - Anchor #6FH-6UFS</td>
<td>503697</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Pressure Switch</td>
<td>103375</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Cap Assembly - Filler, Breather, Dipstick</td>
<td>103592</td>
<td>1</td>
</tr>
<tr>
<td>--</td>
<td>Gasket - Pressure Switch</td>
<td>106521</td>
<td>1</td>
</tr>
<tr>
<td>--</td>
<td>Gasket Set - Electrical Control Panel</td>
<td>106408</td>
<td>1</td>
</tr>
</tbody>
</table>
Figure 10. Model 911 Powerig. Bottom View

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cover Plate</td>
<td>106389</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Return Tube</td>
<td>103904</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Accumulator</td>
<td>103903</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Pilot Tube Assembly</td>
<td>103905</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Relief Valve - External</td>
<td>106397</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Relief Valve - Internal</td>
<td>106400</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Pump Tube Assembly</td>
<td>106399</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Check Valve</td>
<td>103900</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Relief Valve - Internal</td>
<td>103901</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Pump Assembly</td>
<td>103371</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Filter Assembly</td>
<td>103902</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Base - Hubbel #7474</td>
<td>502627</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Cord Grip Assembly</td>
<td>106462</td>
<td>1</td>
</tr>
<tr>
<td>--</td>
<td>Gasket - Pump Mounting</td>
<td>106388</td>
<td>1</td>
</tr>
</tbody>
</table>
SECTION VI. ACCESSORIES

Powerig Accessory Kits

The Model 911 Powerig can be ordered individually or in accessory kits to match the user’s needs. These accessory kits are described in Table 4.

Table 4. Model 911 Powerig Accessory Kits

<table>
<thead>
<tr>
<th>KIT NUMBER</th>
<th>KIT CONTENT</th>
</tr>
</thead>
</table>
| 911-50 (5400 psi) | 1. Model 911 Powerig  
          | 2. 50 - foot Hose and Cord Kit (102516)                                      |
| 911-51 (8000 psi) | 1. Model 911 Powerig  
          | 2. 50 - foot Hose and Cord Kit (107583)                                      |

Hose and Cord Kits (5400 psi Series Installation Tools)

Hose and cord kits for 5400 psi Series Installation Tools may be ordered separately. Tables 5, 6, and 7 list these kits and their components. For component identification, refer to Figure 4.

Table 5. Hose and Cord Kit 102516 (5400 psi)

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ’D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose and Cord Kit - 50 Ft.</td>
<td>102516</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 3/8 inch x 38 feet</td>
<td>100909</td>
<td>2</td>
</tr>
<tr>
<td>Hose - 1/4 inch x 12 feet</td>
<td>100919</td>
<td>2</td>
</tr>
<tr>
<td>Adapter Union - Anchor #6F-6UF5</td>
<td>502956</td>
<td>2</td>
</tr>
<tr>
<td>Nipple - Hydraulic Coupler</td>
<td>103391</td>
<td>1</td>
</tr>
<tr>
<td>Body - Hydraulic Coupler</td>
<td>103392</td>
<td>1</td>
</tr>
<tr>
<td>Cord - Extension, Control (52 ft.)</td>
<td>103006</td>
<td>1</td>
</tr>
<tr>
<td>Tie - Cable, Nylon, Panduit #SST-4-H</td>
<td>503541</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 6. Hose and Cord Kit 102703 (5400 psi)

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ’D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose and Cord Kit - 12 Ft.</td>
<td>102703</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 1/4 inch x 12 feet</td>
<td>100919</td>
<td>2</td>
</tr>
<tr>
<td>Nipple - Hydraulic Coupler</td>
<td>103391</td>
<td>1</td>
</tr>
<tr>
<td>Body - Hycraulic Coupler</td>
<td>103392</td>
<td>1</td>
</tr>
<tr>
<td>Cord - Extension, Control (14 ft.)</td>
<td>101717</td>
<td>1</td>
</tr>
<tr>
<td>Tie - Cable, Nylon, Panduit #SST-4-H</td>
<td>503541</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 7. Hose and Cord Extension Kit 102347 (5400 psi)

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ’D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose and Cord Extension Kit - 38 Ft.</td>
<td>102347</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 3/8 inch x 38 feet</td>
<td>100909</td>
<td>2</td>
</tr>
<tr>
<td>Adapter Union - Anchor #6F-6UF5</td>
<td>502956</td>
<td>2</td>
</tr>
<tr>
<td>Cord - Extension, Control (40 ft.)</td>
<td>101718</td>
<td>1</td>
</tr>
<tr>
<td>Tie - Cable, Nylon, Panduit #SST-4-H</td>
<td>503541</td>
<td>13</td>
</tr>
</tbody>
</table>
Hose and Cord Kits (8000 psi Series Installation Tools)

Hose and cord kits for 8000 psi Series Installation Tools may be ordered separately. Tables 8 and 9 lists these kits and their components. For component identification, refer to Figure 4.

Table 8. Hose and Cord Kit 107583 (8000 psi)

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose and Cord Kit - 50 Ft.</td>
<td>107583</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 3/8 inch x 50 feet</td>
<td>107580</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 3/8 inch x 50 feet</td>
<td>107648</td>
<td>1</td>
</tr>
<tr>
<td>Nipple - Hydraulic Coupler</td>
<td>103391</td>
<td>1</td>
</tr>
<tr>
<td>Body - Hydraulic Coupler</td>
<td>103392</td>
<td>1</td>
</tr>
<tr>
<td>Cord - Extension, Control (52 ft.)</td>
<td>108603</td>
<td>1</td>
</tr>
<tr>
<td>Tie - Cable, Nylon, Panduit #SST-4-H</td>
<td>503541</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 9. Hose and Cord Kit 106636 (8000 psi)

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose and Cord Kit - 12 Ft.</td>
<td>106636</td>
<td>1</td>
</tr>
<tr>
<td>Hose - 1/4 inch x 12 feet</td>
<td>100919</td>
<td>1</td>
</tr>
<tr>
<td>Hose - Anchor 4S4-6MS, 12 feet</td>
<td>105228</td>
<td>1</td>
</tr>
<tr>
<td>Nipple - Hydraulic Coupler</td>
<td>103391</td>
<td>1</td>
</tr>
<tr>
<td>Body - Hydraulic Coupler</td>
<td>103392</td>
<td>1</td>
</tr>
<tr>
<td>Cord - Extension, Control (14 ft.)</td>
<td>108601</td>
<td>1</td>
</tr>
</tbody>
</table>

Sled 106466

An optional Sled 106466 (Figure 11) is recommended when the Powerig is to be used in loose soil. The skid not only facilitates moving the Powerig but also allows air to circulate around the hydraulic fluid reservoir. The sled is attached to the Powerig with bolts shipped with the sled (Table 10).

Table 10. Powerig Sled and Attaching Bolt Kit

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>PART NO.</th>
<th>NO. REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powerig Sled</td>
<td>106466</td>
<td>1</td>
</tr>
<tr>
<td>Attaching Bolt Kit</td>
<td>106472</td>
<td>1</td>
</tr>
<tr>
<td>Bolt - Hex Head, 1/2 - 13 x 1 1/4</td>
<td>500037</td>
<td>4</td>
</tr>
<tr>
<td>Washer - Flat, 1/2</td>
<td>500173</td>
<td>4</td>
</tr>
<tr>
<td>Lockwasher - 1/2 medium</td>
<td>500197</td>
<td>4</td>
</tr>
</tbody>
</table>
Figure 11. Powerig Sled 106466
HUCK INSTALLATION EQUIPMENT

HUCK INSTALLATION EQUIPMENT SHOULD BE SERVICED BY TRAINED SERVICEMEN ONLY.

HUCK MANUFACTURING COMPANY WILL TRAIN YOUR SERVICEMEN AT YOUR FACTORY OR OURS. WRITE TO DETROIT OR CONTACT YOUR HUCK REPRESENTATIVE FOR DETAILS.

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   Tel: 914-331-7300  Telex: 96-8459
WESTERN – 900 Watsoncenter Rd., Carson, California 90745
   Tel: 213-830-8200  Telex: 85-6403

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Huck Manufacturing Company agrees to repair or replace F.O.B. its works, any tool part or parts manufactured by it proving defective due to faulty workmanship or material, within 90 days from date of shipment by the company, provided written notice is received by the company immediately following the discovery of such defect.

Defective tool part or parts not manufactured by the company are guaranteed only to the extent that the company recovers under the original manufacturer's guarantee. The company shall not be held liable for any damages or delays caused by defective material or workmanship and its liability shall be confined to replacement of the defective parts, subject to the conditions herein contained, and the company will make no allowance for repairs or alterations made by the customer or be held responsible for damage resulting from substitute service parts, unless authorized in writing by the company.

The warranty herein expressed shall be the exclusive warranty on the products and shall be in the place and stead of any other warranty, express or implied.
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Huck Manufacturing Company maintains company offices throughout the United States, Canada, and subsidiary offices in many foreign countries.

Sales engineers and systems specialists are located in your area to offer the assistance you require in solving your fastener problems. This is direct company representation by Huck’s own specialists with a thorough knowledge of fastening jobs in your industry.

CUSTOMER SERVICES

Electronic data processing speeds your orders to the plant.

Special training courses are offered in our Detroit facilities or AT YOUR FACTORY SITE in the use and maintenance of the Huck Fastening System.

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TELEX 75-8246

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TELEX 13-8247

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Danavia A/S
48 Strandgade

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Biskop Jens Nielsen's Gt. 5

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Rue de Artilleria Un. 104-4 Esq.

SWEDEn, Stockholm
J. Danielson & Company, AB
Sandhamngatan 29

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Gebr. Titgeneyer
Seminarstrasse 33-34

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