NOTE:
Please read this manual before servicing or using the Powerig Hydraulic Unit. Comply with WARNINGS and CAUTIONS to prevent personal injury or damage to the equipment. Always wear approved eye protection when operating Huck installation equipment.

If you need more information, please contact your Huck representative or nearest Huck office listed on the back cover of this manual.

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GENERAL
The Huck Model 912 POWERIG® Hydraulic Unit is a portable, gasoline powered hydraulic power source designed to operate all Huck Hydraulic Installation Equipment.

Figure 1 shows construction features of hydraulic unit and identifies main components.

Hydraulic pressure is developed by a two-stage, gear piston hydraulic pump driven by a Tecumseh 6hp Motor. Pump output is directed to either PULL or RETURN pressure ports of the installation tool by a four-way directional valve. Directional valve is controlled, with a trigger/switch, from the tool by a 12-volt control system.

An internal relief valve is pre-set at the factory for the protection of operator and equipment. An external relief valve controls PULL pressure. A pressure switch controls RETURN pressure and automatically directs fluid back into reservoir when switch is released and installation cycle is completed. As shipped from the factory, external relief valve is set at 5400-5700 psi (37200-39300 kPa) and return pressure switch is set at 2700-3300 psi (15200-16500 kPa). PULL pressure is adjustable to match Huck installation tool being used. See applicable installation tool manual.

Hydraulic fluid is stored in a reservoir which serves as the base for the motor-pump, and directional valve.

Hydraulic quick disconnect couplers are furnished for connecting hoses from the installation tool.

This POWERIG® Hydraulic Unit includes a roll cage for protection, as well as to facilitate moving the hydraulic unit to various work stations. The unit weighs approximately 175 pounds (78.7 kg) when filled with hydraulic fluid.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>Width</td>
<td>21 inches 547 mm</td>
</tr>
<tr>
<td>Length</td>
<td>24 inches 629 mm</td>
</tr>
<tr>
<td>Height</td>
<td>27 inches 699 mm</td>
</tr>
<tr>
<td>Weight (without Hyd. fluid)</td>
<td>135 pounds 60.75 kg</td>
</tr>
<tr>
<td>Reservoir Capacity</td>
<td>5 gallons .02m3</td>
</tr>
<tr>
<td>Power Source</td>
<td>Tecumseh 6hp, 4 cycle, single cylinder air cooled gasoline engine - point condenser ignition with 3 amp charging coil.</td>
</tr>
<tr>
<td>Output Pressure</td>
<td>Pull 5700 psi 39300 kPa</td>
</tr>
<tr>
<td>Return 3300 psi</td>
<td>18800 kPa</td>
</tr>
</tbody>
</table>
PREPARATION FOR USE

For component identification refer to illustrations and parts list.

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 (API classification MS)
- Above 32°F - SAE 30
- Below 32°F - SAE 10W
Gasoline Regular Grade

CAUTION:

DO NOT MIX OIL WITH GASOLINE

1. Fill engine crankcase with oil (see above). Fill reservoir with hydraulic fluid, and fill fuel tank with regular grade gasoline.
2. Carburetor is preset at factory. Do not adjust unless necessary.
3. During break-in observe engine oil level, and change oil after two hours.
   Thereafter, depending on conditions, change oil every 8 to 25 hours.

OPERATING INSTRUCTIONS

WARNING

Provide ventilation to avoid carbon monoxide poisoning.

1. Follow instructions on engine for starting and stopping.

CAUTION

To prolong engine and pump life, never leave engine operating in RUN position when POWERIG® Hydraulic Unit is not being used to install fasteners. When engine operates for long periods without installing fastener, move throttle control to SLOW or IDLE position or shut unit off.
GOOD PRACTICES

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

1. When filling reservoir with hydraulic fluid, clean area around filler cap before removing.
2. Use clean funnel with filter.
3. Do not let hose fittings or couplings lie, or drag around, on dirty floor or ground.
4. Wipe off couplings before connecting them.
5. Periodically, drain and clean reservoir and fill with clean fluid.

FIRST TIME USE

1. Fill reservoir with hydraulic fluid, approximately 5 gallons (.02m3), until the fluid level is between the grooves of the dipstick (Figure 2 - Item 17).
2. Attach Pull Pressure and RETURN pressure hoses to the hydraulic unit.
3. Check the PULL pressure and adjust as necessary while engine is running. See Setting and Checking Output Pressures.
4. Attach installation tool to hoses. Be sure that: (1) hose from PULL PRESSURE on the unit runs to port "P" of the tool and (2) hose from RETURN PRESSURE on the unit runs to port "R" of the tool.
5. Start motor so hydraulic unit is idling.
6. Depress tool switch and let unit operate for a few minutes to circulate hydraulic fluid and remove air from the system.
7. Check fluid level in reservoir and add hydraulic fluid as required.
8. Check for leaks.
9. The unit and installation tool are now ready for attaching the applicable nose assembly and the installation of Huck fasteners.

REGULAR USE

Before using Hydraulic Unit:
1. Check hydraulic fluid level in reservoir and add fluid as required.
2. Inspect hoses for damage and replace as required.
3. Check entire system for leaks and repair.

OPERATION

The operation of the Model 912 Hydraulic Unit is controlled by the switch in the installation tool or by an auxiliary switch.
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 hoses for signs of damage. REPLACE HOSES IF DAMAGE IS DETECTED.
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.

Perform the following maintenance on the engine:
1. Check oil every five operating hours, and each time before using Hydraulic Unit.
2. Change crankcase oil after first two hours of operation. Thereafter, change crankcase oil every 25 hours of operation. If power source is operated in extremely dusty or dirty environment, change oil every eight hours of operation. Before changing oil, disconnect wire from spark plug. Unscrew oil drain plug (Figure 2 - Item 14), tip engine toward oil drain hole and drain completely. Replace oil drain plug and refill.
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 2 - Item 15) and dip in gasoline.
5. Remove and inspect spark plug (Figure 3 - Item 16) at each oil change.
   Keep electrodes clean and free of carbon. Adjust electrode gap to 0.030 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.

SETTING AND CHECKING OUTPUT PRESSURES

NOTE:
Do not adjust PULL pressure unless a pressure gauge is available. Follow instructions supplied with pressure gauge for proper pressure checking and adjusting. Adjusting 912 POWERIG® Hydraulic Unit PULL pressure:
Loosen jam nut on relief valve, Figure 1. Turn adjustment clockwise to increase PULL pressure -- counter-clockwise decreases pressure. Tighten jam nut. RETURN pressure is preset at factory and is not adjustable.
NOTE:
Relief valve jam nut must always be tightened all the way clockwise once pressure is set. This is so your settings won’t “drift” while the hydraulic unit is operating.

TROUBLESHOOTING

1. With POWERIG® Hydraulic Unit engine running. Tool fails to operate when trigger is depressed.
   a. Loose or faulty connectors in control cord.
   b. Loose or faulty hydraulic hose couplings.
   c. Defective Tool trigger assembly.
   d. Blown fuse in rectifier circuit of Electrical control System.
   e. Low hydraulic fluid level in reservoir.
   f. Hydraulic fluid viscosity too heavy to pick up prime.
   g. Clogged suction strainer.
   h. Improperly driven hydraulic pump, or defective hydraulic pump.
   i. Defective directional valve assembly. Filter clogged.
   j. Installation Tool not operating.
   k. Ball off seat in pilot section of combination valve.

2. Tool does not return on release of trigger.
   a. Defective pilot valve.
   b. Installation Tool not operating properly.
   c. Solenoid damaged.
   d. Hoses not coupled properly.

3. Pump cavitating (noisy throughout entire installation cycle).
   a. Low hydraulic fluid level in reservoir.
   b. Clogged suction strainer.
   c. Hydraulic fluid viscosity tool heavy to pick up prime.

4. Too operation slow but entire cycle does occur.
   a. Pump cavitating.
   b. Hydraulic fluid viscosity too thin.
   c. Defective directional valve assembly.
   d. Defective hydraulic pump.
   e. Internal and external relief valve not operating properly.
   f. Low engine shaft speed.
<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NUMBER</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>116598</td>
<td>1</td>
<td>Motor-- 6 Horse Power •• • •</td>
</tr>
<tr>
<td>2</td>
<td>500216</td>
<td>3</td>
<td>Nut</td>
</tr>
<tr>
<td>3</td>
<td>500194</td>
<td>3</td>
<td>Washer - Lock</td>
</tr>
<tr>
<td>4</td>
<td>116602</td>
<td>1</td>
<td>Frame</td>
</tr>
<tr>
<td>5</td>
<td>110687</td>
<td>1</td>
<td>Connector - Female</td>
</tr>
<tr>
<td>6</td>
<td>504057</td>
<td>1</td>
<td>Nipple</td>
</tr>
<tr>
<td>7</td>
<td>502729</td>
<td>1</td>
<td>Nipple</td>
</tr>
<tr>
<td>8</td>
<td>116603</td>
<td>4</td>
<td>Foot Rubber</td>
</tr>
<tr>
<td>9</td>
<td>500028</td>
<td>4</td>
<td>Bolt - Hex Head</td>
</tr>
<tr>
<td>10</td>
<td>500195</td>
<td>4</td>
<td>Washer - Lock</td>
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<tr>
<td>11</td>
<td>500217</td>
<td>4</td>
<td>Nut</td>
</tr>
<tr>
<td>12</td>
<td>116604</td>
<td>4</td>
<td>Spacer</td>
</tr>
<tr>
<td>13</td>
<td>- - - - -</td>
<td>1</td>
<td>Pump/Base</td>
</tr>
<tr>
<td>14</td>
<td>110440</td>
<td>1</td>
<td>Hyd Coupling Assembly</td>
</tr>
<tr>
<td>15</td>
<td>120332</td>
<td>1</td>
<td>Pilot Valve &amp;Solenoid. •</td>
</tr>
<tr>
<td>16</td>
<td>504177</td>
<td>1</td>
<td>Spark Plug</td>
</tr>
<tr>
<td>17</td>
<td>504206</td>
<td>1</td>
<td>Muffler</td>
</tr>
<tr>
<td>18</td>
<td>SEENOTES</td>
<td>1</td>
<td>Oil Filler ••</td>
</tr>
<tr>
<td>19</td>
<td>SEENOTES</td>
<td>1</td>
<td>Air Cleaner ••</td>
</tr>
<tr>
<td>20</td>
<td>121610</td>
<td>1</td>
<td>Fuse Holder (See Figure 6)</td>
</tr>
<tr>
<td>21</td>
<td>121611</td>
<td>1</td>
<td>Fuse (See Figure 6)</td>
</tr>
<tr>
<td>22</td>
<td>121612</td>
<td>1</td>
<td>Diode</td>
</tr>
</tbody>
</table>

Ref. No. 15 * OTC # 17890-6---Coll not available separately due to use of various Pilot Valves on this unit by OTC.

•• Model Number TVM 140 - 70387L 3AC Charging Alternator with #3 Crank Assembly .875 Diameter. Available from local Tecumseh Dealer or Tecumseh Products Company
Engine and Transmission Group
900 North Street Grafton, Wisconsin 53024
FIGURE 1
MAIN COMPONENTS
Sectional View of Directional Valve
Showing Location of O-rings and Back-up Rings Furnished in Kit No. 111416

Figure 4

10
PARTS LIST -- O-RING KIT NO. 111416

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NO.</th>
<th>REQ. NO.</th>
<th>DESCRIPTION</th>
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</thead>
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<tr>
<td>1</td>
<td>501084</td>
<td>10</td>
<td>Back-Up Ring S-11248-12</td>
</tr>
<tr>
<td>2</td>
<td>501087</td>
<td>8</td>
<td>Back-Up Ring S-11248-15</td>
</tr>
<tr>
<td>3</td>
<td>501088</td>
<td>4</td>
<td>Back-Up Ring S-11248-16</td>
</tr>
<tr>
<td>4</td>
<td>504402*</td>
<td>1</td>
<td>O-ring AS 568-006</td>
</tr>
<tr>
<td>5</td>
<td>504404</td>
<td>13</td>
<td>O-ring AS 568-008</td>
</tr>
<tr>
<td>6</td>
<td>504405</td>
<td>4</td>
<td>O-ring AS 568-009</td>
</tr>
<tr>
<td>7</td>
<td>504408</td>
<td>12</td>
<td>O-ring AS 568-012</td>
</tr>
<tr>
<td>8</td>
<td>504411</td>
<td>8</td>
<td>O-ring AS 568-013</td>
</tr>
<tr>
<td>9</td>
<td>504412</td>
<td>4</td>
<td>O-ring AS 568-015</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Back-up rings are W.S. Shamba Series S-11248
    (MS-28774 Teflon) or equivalent.
    Back-up dash numbers correspond to O-Ring dash numbers.
(2) O-ring sizes are specified as AS 568 dash numbers. (AS 568 is an
    Aerospace Size Standard for O-Rings.)
(3) Material for O-rings is VIT0N-75 Durometer or equivalent.

NOTE: All O-Rings provided are not used in this valve refer to drawing
for locations, quantities and part numbers. FIGURE 4
Table:

<table>
<thead>
<tr>
<th>WIRE NO</th>
<th>DESCRIPTION</th>
<th>COLOR</th>
<th>LENGTH</th>
<th>LOC FROM</th>
<th>STRIP JACKET</th>
<th>TERMINAL</th>
<th>LOC TO</th>
<th>STRIP JACKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1-1</td>
<td>18 / 2 SJG</td>
<td>WHITE</td>
<td>10.50</td>
<td>SOL-1</td>
<td>F2</td>
<td>CN2</td>
<td>1.00</td>
<td>I/E</td>
</tr>
<tr>
<td>W1-2</td>
<td>MEDIUM DUTY CORD</td>
<td>BLACK</td>
<td>11.50</td>
<td></td>
<td></td>
<td>CN2</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>W2-1</td>
<td></td>
<td>WHITE</td>
<td>16.00</td>
<td>SOL-2</td>
<td>F1</td>
<td>CN1</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>W2-2</td>
<td></td>
<td>BLACK</td>
<td>16.50</td>
<td></td>
<td></td>
<td>CN4</td>
<td>1.88</td>
<td></td>
</tr>
</tbody>
</table>

Diagram:

- Diode 121612: Orientate as shown.
- 1/8 win. (see note)
- (Heat Shrink)
- Crimp Nut
- (Black Heat Shrink)
- Ground (-) (Crimp & Solder)
- Power Supply (Crimp & Solder)
- 375 .500 (Strip Wire)

Notes:
- Bend diode lead wires a safe distance from diode body.

Figure 5

Wiring Diagram

912 POWERIG® Hydraulic Unit
Warranties

Warranty

THE NINETY DAY WARRANTY HEREBIN EXPRESSED SHALL BE THE EXCLUSIVE WARRANTY ON ITEMS MANUFACTURED BY SELLER AND SHALL BE IN THE PLACE AND STEAD OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Seller 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 seller or its suppliers.

All warranty claims must be submitted to the seller in writing, within 30 days from date of shipment, and no returns will be accepted without written permission.

Other provisions hereof notwithstanding, seller shall not be liable for any loss of business, profits or any incidental or consequential damages incurred by Buyer or any third person in connection with the items or use thereof, however caused.

Tool Warranty

Seller expressly disclaims any warranty express or implied, as to the condition, design, operation, merchantability or fitness for use of any tool, or part(s) thereof not manufactured by seller. The only warranties made with respect to such tool or part(s) thereof are those made by the manufacturer thereof and seller agrees to cooperate with buyer in enforcing such warranties when such action is necessary. Seller agrees to repair or replace F.O.B. seller’s plant, any tool or part(s) thereof manufactured by it and proved to seller to be defective due to faulty workmanship or material.

Warranty on “Other Items”

With regard to items other than FASTENERS and TOOLS (“OTHER ITEMS”), seller expressly disclaims any warranty, express or implied, as to the condition, design, operation, merchantability or fitness for use of any “OTHER ITEMS”, or part(s) thereof not manufactured by seller. The only warranties made with respect to such “OTHER ITEMS” or part(s) thereof are those made by the manufacturer thereof and seller agrees to cooperate with buyer in enforcing such warranties when such action is necessary.

Seller agrees to repair or replace F.O.B. seller’s plant, any “OTHER ITEMS” or part(s) thereof manufactured by it and proved to seller to be defective due to faulty workmanship or material.

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 servicemen only.

Always give the Serial No. 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
85 Grand Street, Kingston, New York 12401-0250
Telephone 914-331-7300, FAX 914-334-7333

Western
900 Watsoncenter Road, Carson, California 90745
Telephone 310-830-8200, FAX 310-830-1436

Canada
326 Humber College Boulevard, Rexdale, Ontario M9W 5P4, Canada. Telephone 416-675-3400, FAX 416-675-5917

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) 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 Office listed on the back cover for the ATSC in your area.
Huck International Inc. maintains company offices throughout the United States and Canada with subsidiary offices in many foreign countries. Sales engineers and systems specialists located in your area can help in solving your fastener problems.

**Huck International Inc. world-wide locations:**

**Americas**

Huck International, Inc.  
*Installation Systems Division*  
P.O. Box 2270  
85 Grand Street  
Kingston, NY 12401  
800-431-3091  
914-331-7300  
FAX: 914-334-7333

Huck International, Inc.  
*World Headquarters*  
6 Thomas Street  
P.O. Box 19590  
Irvine, CA 92718  
714-855-9000  
FAX: 714-855-8537

Huck International, Inc.  
*Aerospace Fastener Division*  
PO Box 5268  
900 Watson Center Rd.  
Carson, CA 90749  
800-421-1459  
310-830-8200  
FAX: 310-830-1436

Huck International, Inc.  
*Aerospace Fastener Division*  
Lakewood Operation  
3969 Paramount Blvd.  
Lakewood, CA 90712  
800-344-6566  
310-421-3711  
FAX: 310-425-3242

Huck International Ltd.  
6160 Kennedy Road, Unit 10  
Mississauga, Ontario L4T214  
Canada  
905-584-1825  
FAX: 905-584-1983

Huck International, Inc.  
*Aeronautical Fastener Division*  
3724 East Columbia  
Tucson, AZ 85714  
800-544-3011  
602-747-9888  
FAX: 602-749-2142

Huck International, Inc.  
*Industrial Fastener Division*  
PO Box 8117  
8001 Imperial Drive  
Waco, TX 76714-8117  
800-388-4825  
817-776-2000  
FAX: 817-751-5259

**Far East**

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Private Bag 6  
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Australia 3178  
03-764-5500  
Toll Free: 008-335-030  
FAX: 03-764-5510

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FAX: 06-372-8346  
TELEX: 63632

Huck International Singapore PTE, Ltd  
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FAX: 65-298-2792

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FAX: 0952-290459

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Germany  
05522-505-300  
FAX: 05522-505-300

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Clos D'Asseville  
BP4  
95450 Us Par Vigny  
France  
34-66-07-00  
FAX: 34-66-07-00