# ILLUSTRATIONS

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An important notice:

Operator must read and understand any WARNING and Caution stickers/labels supplied with equipment before connecting equipment to any primary power supply - - as applicable, the following sections each have specific safety, and other, information:

- **WARNINGS and CAUTIONS**
- **DESCRIPTION**
- **SPECIFICATIONS**
- **PRINCIPLE OF OPERATION**
- **PREPARATION FOR USE**
- **PREVENTIVE MAINTENANCE**
- **OPERATION AND TOOL HANDLING**

As applicable, the disassembly and assembly sections contain specific overhaul and safety procedures.

Only persons who have read and understood all applicable manuals or received training approved by Huck International, Inc. will be able to use Huck equipment with personal safety and efficiency.

If you require additional information, contact your local Huck representative or the nearest office listed on the back cover.

**SAFETY GLOSSARY**

**WARNINGS** must be understood to avoid severe personal injury.

**Cautions** show conditions that will damage equipment and/or structure.

**Notes** are reminders of required procedures.

*Italic type and underlining strengthens a specific instruction.*

**WARNINGS**

When operating Huck installation equipment always wear approved eye protection. Whenever within the working environment, wear approved eye protection, with side shields, to protect from anything that breaks on the fastening system including: Erupting fluid lines, flying fastener particles or any other dirt/debris that could cause eye injury. Where applicable, refer to ANSI Z87.1 - 1989.

Disconnect primary power source before doing maintenance on Huck equipment.

- For electrically operated POWERIG® Hydraulic Units, unplug the power cord from the socket. If there is no plug, turn off the power at the disconnect switch. Follow lockout/tagout procedures in force by your employer.
- For equipment powered by compressed air, disconnect the air hose before doing any maintenance.
- For hydraulic tools, or other hydraulic equipment, disconnect the hydraulic hoses from the hydraulic unit before doing any maintenance.

If any equipment shows signs of damage or leakage, **DO NOT** connect it to the primary power supply (either electrical or compressed air) - - and do not continue to use equipment that develops erratic symptoms. If equipment is damaged, or there are other serious discrepancies, affected equipment may rupture violently - - parts may strike the operator, and/or other personnel, and cause severe personal injury. Ensure that **ALL** air and/or hydraulic hose and/or electrical plugs/connectors are correctly connected before switching on power supply to equipment. If incorrectly connected, the tool may respond erratically and cause severe personal injury.
TABLE 1 - SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>12.5 inches</td>
</tr>
<tr>
<td></td>
<td>320 mm</td>
</tr>
<tr>
<td>Length</td>
<td>17.0 inches</td>
</tr>
<tr>
<td></td>
<td>435 mm</td>
</tr>
<tr>
<td>Height</td>
<td>20.5 inches</td>
</tr>
<tr>
<td></td>
<td>520 mm</td>
</tr>
<tr>
<td>Weight (without hyd. fluid)</td>
<td>64 pounds</td>
</tr>
<tr>
<td></td>
<td>29 kg</td>
</tr>
<tr>
<td>Electrical System</td>
<td>115 volts A.C. 60 hertz single phase, AC</td>
</tr>
<tr>
<td>Remote Control</td>
<td>Solenoid operated Directional Valve, 24 volts AC</td>
</tr>
<tr>
<td>Motor</td>
<td>3400 RPM, 1/2 HP, 706 FLA or 8.8 SFA amps. nom.</td>
</tr>
<tr>
<td>Running Amps</td>
<td>12 Maximum</td>
</tr>
<tr>
<td>Kilowatts</td>
<td>1.26 Maximum</td>
</tr>
<tr>
<td>Pump</td>
<td>2-stage, Gear-Piston type, 20 cu. in./min. @ 800 to 8,800 psi Output</td>
</tr>
<tr>
<td>Pressure</td>
<td>Adjustable to 8,800 psi</td>
</tr>
<tr>
<td>Reservoir Capacity</td>
<td>1-1/2 gal.</td>
</tr>
<tr>
<td></td>
<td>.006 m3</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>(Ambient - min.) 0°F</td>
</tr>
<tr>
<td></td>
<td>-18°C</td>
</tr>
<tr>
<td></td>
<td>(Hydraulic Fluid - max.) 150°F</td>
</tr>
<tr>
<td></td>
<td>65°C</td>
</tr>
<tr>
<td>Hydraulic Fluid</td>
<td>Not furnished by Huck - - see page 5 for recommendations.</td>
</tr>
<tr>
<td>Sound Level</td>
<td>76 DBA</td>
</tr>
</tbody>
</table>

* (Shipped with PULL pressure at 5400-5700 psi [37200-39300 kPa] and the RETURN pressure at 2200-2400 psi [15200-16500 kPa].)

* When a 943 is shipped for use with HPT tooling, advise Huck when placing an order that the PULL and RETURN Pressures must be set at:
  PULL pressure 8400 psi (57900kPa)
  RETURN pressure 6000 psi (41400 kPa)

SEE PAGE 17 FOR ADDITIONAL INSTRUCTIONS
ON PRESSURE SETTING
The Huck Model 943 Hydraulic POWERIG® is a portable, electrically operated hydraulic power source designed to operate all Huck Hydraulic Installation Equipment. The Model 943 POWERIG operates on 115 volt, 50/60 hertz, single phase, alternating current.

Figure 1 shows construction features of the Model 943 POWERIG and identifies main components.

Hydraulic pressure is developed by a pump driven by a ½ hp electric motor. Pump output is directed to either the PULL or RETURN pressure ports of the installation equipment by a four-way directional valve. The directional valve is controlled from the installation equipment by a 24-volt control system.

An internal relief valve is pre-set at the factory for the protection of the operator and equipment. An external relief valve controls the PULL pressure. A pressure switch controls the RETURN pressure and automatically turns off the POWERIG when the equipment switch is released and installation cycle is completed. As shipped from the factory, the external relief valve is set at 5400-5700 psi (37250-16500 kPa) and the pressure switch is set at 2200-2400 psi (15200-16500 kPa). Both the PULL and RETURN pressures are adjustable to match the Huck equipment being used. See Table 6.

An electrical control panel contains the motor contactor, transformer, relay and a fuse.

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

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

The POWERIG is equipped with a power cord (600 volt Type SO 12/3) with a two-prong and ground blade plug molded to it. It is designed to plug into a 115 volt-50/60 hertz - single phase convenience outlet.

The motor-pump includes a handle to facilitate moving the POWERIG to various work stations. The Model 943 POWERIG weighs approximately 75 pounds (34 kg) when filled with hydraulic fluid.

PRINCIPLE OF OPERATION

Refer to Figure 2

Two sets of contacts, normally open, are employed in relay 1 CR. The pressure switch contacts are normally closed.

When installation equipment switch is depressed, relay coil is activated closing both sets of contacts. Closing contacts activates the solenoid coil of pilot valve. The pilot valve shifts directional valve spools to direct pump output out PULL pressure port to the installation equipment.

When the switch is released, the relay contacts open. The solenoid coil is de-activated and spring return of the pilot valve shifts the directional valve spools to direct pump output out RETURN pressure port to the installation equipment.

The motor contactors are held closed until a predetermined RETURN pressure is reached and pressure switch contacts momentarily open causing the motor to shut off and the pressure switch to return to normal position.
Good Practices

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

1. When filling reservoir with hydraulic fluid, clean area around filler cap before removing it.

2. Use clean funnel with filter.

3. Do not let hose fittings or couplers lie or drag around on a dirty floor or the ground.

4. Wipe off couplers before connecting them.

5. Periodically, drain and clean reservoir and fill with clean fluid.
First Time Use

1. Fill reservoir with hydraulic fluid, approximately 1-1/2 gallons (.006 m³).

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 60°F
   
   MIL - H 5606 hydraulic fluid.

2. Attach PULL pressure and RETURN pressure hoses to the POWERIG.

3. Plug power cord into grounded convenience socket supplying 115 volts, 60 hertz, single phase alternating current. The power supply must be fused with a 25 ampere maximum, (slow-blow) fuse. Gasoline powered-portable generators must be rated 3500 watts (minimum), continuous duty. 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.

4. Check both the PULL and RETURN pressures and adjust as necessary. See Setting and Checking Output Pressures.

5. Attach installation tool to hoses. Be sure that: (1) hose from PULL PRESSURE on the POWERIG runs to port P of the tool and (2) hose from RETURN PRESSURE ON THE POWERIG runs to port R of the tool.

6. Depress tool switch and let POWERIG 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 POWERIG and installation tool are now ready for attaching the applicable nose assembly and the installation of Huck fasteners.

Regular Use

Before each POWERIG use:
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.

4. Check electrical cord and extension for damage and replace as required.

OPERATION

The operation of the Model 943 Hydraulic POWERIG is controlled by the switch in the installation tool or by an auxiliary switch.
FIGURE 4
FRONT VIEW
FIGURE 6
ELECTRICAL CONTROL PANEL BOX
# BASIC REPAIR PARTS LIST

<table>
<thead>
<tr>
<th>REF.</th>
<th>FOR 943</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120029</td>
<td>MOTOR</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>124325</td>
<td>POWER CORD &amp; PLUG</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>120030</td>
<td>FILTER</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>120031</td>
<td>FILLER PLUG (NOT SHOWN)</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>110438</td>
<td>COUPLER NIPPLE</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>110439</td>
<td>COUPLER BODY</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>507275</td>
<td>PILOT VALVE ASSEM.</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>120032</td>
<td>SOLENOID SUB-ASSEM.*</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>REF. ONLY</td>
<td>COIL*</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>115753</td>
<td>PRESSURE SWITCH</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>507272</td>
<td>CONTACTOR</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>110685</td>
<td>CONTROL CORD SOCKET</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>120034</td>
<td>TRANSFORMER</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>507271</td>
<td>RELAY</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>507273</td>
<td>FUSE HOLDER</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>503323</td>
<td>FUSE 2AMP 250V #3:13</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>507277</td>
<td>VALVE SHEAR SEALS*</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>122251</td>
<td>HIGH PRESS. ADJUSTMENT</td>
<td>- -</td>
</tr>
<tr>
<td>20</td>
<td>REF. ONLY</td>
<td>RETURN PRESS. ADJUST.</td>
<td>- -</td>
</tr>
<tr>
<td>21</td>
<td>103901</td>
<td>INTERNAL RELIEF VALVE</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>507278</td>
<td>RESERVOIR BASE</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>111357</td>
<td>RESERVOIR GASKET</td>
<td>1</td>
</tr>
</tbody>
</table>

* ITEMS 8, 9, AND 18 ARE COMPONENTS OF ITEM 7.
ITEM 9, COIL, IS NOT AVAILABLE SEPARATELY AND MUST BE REPLACED WITH ITEM 8, SOLENOID ASSEM.
Pressure Checking Gauge Set-up

Pressure gauges T-10280 (earlier model) and later model, T-124833, are used to check the pressure settings for PULL and RETURN pressures. HUCK RECOMMENDS THAT ONE OF THESE GAUGES IS ON HAND FOR SERVICE TECHNICIANS.

Control Cord (Electrical) Connectors

Replacement control cord connectors are available in a set as P/N 110835. A set consists of one female connector and one male connector.

Hydraulic Quick-Disconnect Couplers

Replacement couplers are available in a set as P/N 110440. A set consists of one body (female) and one nipple (male). Replacement O-ring for the body is P/N 504438 and the back-up ring is P/N 501102.

O-ring—P/N 504438
Back-up Ring—P/N 501102

O-ring, P/N 504438, and back-up ring, P/N 501102, must be replace if leakage occurs when hydraulic couplers are connected. Use a pick with a long point, of approximately .060 diameter, to lift out O-ring and back-up ring. O-ring, P/N 504438, and Back-up Ring, P/N 501102

Use a fine India stone to remove any nicks or burrs from diameter A and leading edge, to prevent damage to O-ring.

NOTES

P/N 504438 is a 75 durometer VITON, or equivalent, O-ring, size AS 568-111.

P/N 501102 is a teflon back-up ring, W.S. Shamban W-11248-111, or equivalent.
Preventive Maintenance

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

1. Inspect hydraulic and electrical fittings to be sure they are secure.

2. Inspect hoses for signs of damage. **Replace hoses if damage is detected.** At regular intervals switch hoses or end-for-end them to equalize wear and fatigue.

3. Inspect during operation to detect any abnormal heating, vibration or leakage.

4. Inspect hydraulic fluid periodically. If contamination is detected, clean reservoir and replace fluid.

5. Keep exterior surfaces clean.

6. Do not operate POWERIG if line voltage is more than 5 percent above or below normal (115V).

Troubleshooting

Always check out the simplest possible cause of malfunction first. For example, a blown fuse, tripped circuit breaker, defective switch or control cord, etc. may be the cause of the trouble. 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 the Troubleshooting Chart as an aid in locating trouble and correcting it.
<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Cause</th>
</tr>
</thead>
</table>
| 1. Motor fails to start when tool switch is depressed. | (a) Incorrect power source.  
(b) Power source not properly fused.  
(c) Defective relay.  
(d) Defective motor contactor.  
(e) Defective transformer.  
(f) Defective control cord or connectors.  
(g) Defective tool switch.  
(h) Loose wire (s). |
| 2. Motor runs, but tool will not reciprocate. | (a) Defective relay.  
(b) Defective pilot valve solenoid or coil.  
(c) Defective directional valve.  
(d) Pump to motor coupling damaged.  
(e) Hydraulic fluid viscosity not proper or level is low.  
(f) Bind in tool or nose assembly.  
(g) Unloading valve missing in tool.  
(h) Hoses not coupled properly. |
| 3. Pintail of fastener fails to break off. | (a) PULL pressure set too low.  
(b) Defective hose couplers.  
(c) Internal relief valve set too low or defective.  
(d) Hydraulic fluid overheated.  
(e) Hydraulic fluid viscosity not proper or level is low.  
(f) Defective pump.  
(g) Defective directional valve. |
<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Cause</th>
</tr>
</thead>
</table>
| 4. Tool will not return when switch is released. (Tool will not push nose assembly off swaged fastener.) | (a) Defective pilot valve.  
(b) Solenoid damaged.  
(c) Defective relay.  
(d) Hoses not coupled properly.  
(e) RETURN pressure set too low. |
| 5. Motor fails to shut-off when installation cycle is completed.       | (a) Pressure switch set tool high.  
(b) Hydraulic fluid overheated.  
(c) Hydraulic fluid viscosity not proper or level is low.  
(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 too heavy.  
(b) Strainer is dirty and clogged.                                     |
| 7. Tool operation slow—entire cycle does occur.                       | (a) Pump is cavitating-fluid level may be low or fluid viscosity too heavy.  
(b) Strainer is dirty and clogged.  
(c) Defective directional valve.  
(d) Worn or damaged pump.                                                 |
DIRECTIONAL VALVE OVERHAUL

If a minor overhaul of the directional valve — cleaning and replacing O-rings and back-up rings — is necessary, O-ring Kit, P/N 119906 is available. If a major overhaul is necessary, return the directional valve to the nearest repair facility shown on inside of back cover.

Clean components in mineral spirits. Smear Lubriplate 130AA, or equivalent, on O-rings and mating surfaces to aid assembly and prevent damage to O-rings. (Lubriplate is manufactured by Fiske Brothers Refining Co. and is available in most localities. A handy tube of Lubriplate 130AA is available from Huck as P/N 502723.)

Pump Overhaul

If a pump requires overhaul, return it or the complete POWERIG to the nearest repair facility.

Spare Parts And O-ring Kit

The quantity of spare parts that should be kept on hand varies with the application and number of POWERIGS in service. However, service kit number 943KIT should be kept on hand at all times. This kit contains parts required to service one directional and pilot valve, & one motor & pump assembly. 943KIT consists of:
directional valve kit 119906
motor & pump kit 119907
Refer to instructions with kits for more information on installation.
To prevent malfunctions, check and adjust PULL and RETURN pressures of POWERIG® Hydraulic Unit - - see T-10280 (earlier model) or T-124833 (latest model) PRESSURE GAUGE INSTRUCTION MANUAL for checking pressures. See ADJUSTING PRESSURES in this manual for setting pressures. Check and adjust pressures with either T-10280 or T-124833 gauges when:

- Unit is being used for the first time or has not been used for a month.
- Any part of combination valve is repaired.
- Combination valve is replaced.
- Troubleshooting is to be performed.
- Before any tool is connected.

**WARNING**

When hydraulic unit is running, be sure to connect tool's hydraulic hoses to unit before connecting tool's switch control cord to unit. If a malfunctioning cord switch is connected first, tool may begin to cycle unexpectedly. An accidentally cycling tool could severely injure a hand.

**WHEN CONNECTING HOSES, SWITCH MUST BE CONNECTED LAST.**

It is just as important: **WHEN DISCONNECTING HOSES, SWITCH MUST BE DISCONNECTED FIRST.**

**WARNING**

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

**Checking Pressures:**

See either T-10280 or T-124833 PRESSURE GAUGE INSTRUCTION MANUAL, as applicable, for checking procedure. Adjustment procedure is on the following page.
Checking and Adjusting POWERIG® Hydraulic Unit
Output Pressures (continued)

Use either the T-10280 or T-124833 pressure gauge, and applicable manual, for adjusting pressures. The tool trigger or Control Cord Kit, 113056, may be used to direct fluid flow. Observe WARNINGS on previous page.

Procedure for Adjusting/setting PULL Pressure:

1. Loosen locknut of external relief valve (3-19).

2. Turn the adjusting screw in (clockwise) to increase PULL pressure.

3. Adjusting screw is backed out (counter-clockwise) to decrease PULL pressure.

4. After PULL pressure has been adjusted, retighten locknut.

Procedure for Adjusting/setting RETURN Pressure:

1. Loosen Locknut of pressure switch (4-20).

2. Turn the adjusting screw in (clockwise) to increase RETURN pressure.

3. Adjusting screw is backed out (counter-clockwise) to decrease RETURN pressure.

4. After RETURN pressure has been adjusted, retighten locknut.
<table>
<thead>
<tr>
<th>OUTPUT PRESSURES</th>
<th>MODEL NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5400 PULL 2800 RETURN</td>
<td>516(1) 520(1) 524(1) 528(1) 532(1) 536(1) 504, 505, 506, 507, 585, 5304, 5901, 557, 4801-</td>
</tr>
<tr>
<td>7000 PULL 2800 RETURN</td>
<td>6042, 6062, 7042, 7062, 8042</td>
</tr>
<tr>
<td>8000 PULL 2800 RETURN</td>
<td>6304, 6304-16, 7142, 8142, 7304 8304, 9304, 12142</td>
</tr>
<tr>
<td>8400 PULL 2800 RETURN</td>
<td>2702, 4803</td>
</tr>
<tr>
<td>8400 PULL 6000 RETURN</td>
<td>HPT 25, HPT 57, HPT 35, HPT 90, HPT 70</td>
</tr>
</tbody>
</table>

(1) DENOTES SPRING RETURN (COLLAR CUTTERS)

NOTE: THIS CHART DOES NOT REFLECT ALL OF THE HUCK INSTALLATION TOOLS THAT CAN BE USED BUT REFLECTS THOSE MOST COMMON TO HEAVY INDUSTRY AND MINING.
CONTROL CORD KIT
P/N 113056

CONTROL CORD KIT OPTIONAL FOR USE WITH
ACCESSORY PRESSURE GAUGES T-10280 AND T-124833

113056 - Electric switch and control cord kit (13')

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>103944</td>
<td>SWITCH</td>
<td>1</td>
</tr>
<tr>
<td>110686</td>
<td>MALE CONNECTOR</td>
<td>1</td>
</tr>
<tr>
<td>110948-156</td>
<td>CORD - 156&quot;</td>
<td>1</td>
</tr>
<tr>
<td>108598</td>
<td>HOUSING</td>
<td>1</td>
</tr>
<tr>
<td>501900</td>
<td>CUP PT. SET SCR. - #6- 32 X 3/16</td>
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## ACCESSORIES

Table 7 — Hose And Control Cord Kits

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>NO. REQ’D.</th>
<th>DESCRIPTION</th>
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<tr>
<td>110838</td>
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<td>Hose and Control Cord Kit — 12 feet long</td>
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<td>110847</td>
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<td>Hose and Control Cord Assembly</td>
</tr>
<tr>
<td></td>
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<td>Hose and Control Cord Tube</td>
</tr>
<tr>
<td>110756</td>
<td>1</td>
<td>Control Cord</td>
</tr>
<tr>
<td>110440</td>
<td>1</td>
<td>Hydraulic Quick Disconnects (male and female)</td>
</tr>
<tr>
<td>110839</td>
<td>—</td>
<td>Hose and Control Cord Kit — 26 feet long</td>
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<tr>
<td>110848</td>
<td>1</td>
<td>Hose and Control Cord Assembly</td>
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<tr>
<td></td>
<td>1</td>
<td>Hose and Control Cord Tube</td>
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<td>Control Cord</td>
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<td>Adapter Union</td>
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<tr>
<td>503697</td>
<td>2</td>
<td>Adapter Union</td>
</tr>
</tbody>
</table>
LIMITED WARRANTIES

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

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

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

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

Tooling, Part(s) and Other Items not manufactured by Huck.

HUCK MAKES NO WARRANTY WITH RESPECT TO THE TOOLING, PART(S) OR OTHER ITEMS MANUFACTURED BY THIRD PARTIES. HUCK EXPRESSLY DISCLAIMS ANY WARRANTY EXPRESSED OR IMPLIED, AS TO THE CONDITION, DESIGN, OPERATION, MERCHANTABILITY OR FITNESS FOR USE OF ANY TOOL, PART(S), OR OTHER ITEMS THEREOF NOT MANUFACTURED BY HUCK. HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, PART(S) OR OTHER ITEMS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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

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

Huck Installation Equipment

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

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

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

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

Eastern
One Corporate Drive Kingston, New York 12401-0250 Telephone (914) 331-7300 FAX (914) 334-7333

Canada
6150 Kennedy Road Unit 10, Mississauga, Ontario, L5T 2J4, Canada.
Telephone (905) 564-4825 FAX (905) 564-1963

Outside USA and Canada
Contact your nearest Huck International Office, see back cover.

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

Huck Fastener maintains company offices throughout the United States and Canada with subsidiary offices in many other countries. Sales engineers and systems specialists located in your area can help in solving your fastener problems.

Huck Fasteners world-wide locations:

**Americas**

**Huck International, Inc.**
**World Headquarters**
3724 East Columbia
Tucson, AZ 85714
800-234-4825
602-747-9898
FAX: 602-748-2142

**Huck International, Inc.**
**Aerospace Fastener Division**
3724 East Columbia
Tucson, AZ 85714
800-234-4825
602-747-9898
FAX: 602-748-2142

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

**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**

**Huck International, Inc.**
**Installation Systems Division**
1 Corporate Drive
Kingston, NY 12401
800-431-3091
914-331-7300
FAX: 914-334-7333

**Huck International Ltd.**
Private Bag 6
Rowville, Victoria
Australia 3178
03-764-5500
Toll Free: 008-335-030
FAX: 03-764-5510

**Huck Limited**
Yodogwa-Gobankan 11F
No. 2-1, 3 Chome Toyosaki
Kita-Ku, Osaka 531 Japan
06-372-1193
FAX: 06-372-9346
TELEX: 63632

**Europe**

**Huck International Ltd.**
Unit C, Stafford Park 7
Telford, Shropshire
England TF3 3BQ
0952-290111
FAX: 0952-290459

**Huck S.A.**
Clos D’Asseville
BP4
95450 Us Par Vigny
France
34-66-07-00
FAX: 34-66-07-00
1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

HYDROCLEAR(R) DEXRON(R) III/MERCON(R) Automatic Transmission Fluid

MSDS Code: ATFC0089 Revised: 14-Mar-2000

"HYDROCLEAR" is a registered trademark of Conoco. "DEXRON" is a registered trademark of General Motors Corp. "MERCON" is a registered trademark of Ford Motor Company.

Product Use: Automatic Transmission Fluid
Conoco Blend Code: 46622

MANUFACTURER/DISTRIBUTOR
Conoco Inc.
P.O. Box 2197
Houston, TX 77252
PHONE NUMBERS
Product Information: 1-800-236-5550
Transport Emergency: CHEMTREC 1-800-424-9300 (U.S. & Canada)
703-527-3887 (elsewhere, call collect)
Medical Emergency: 1-800-441-3637

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS %
Base oils >65
Proprietary additives <15

If oil mist is generated, exposure limits apply (see Section 8).

3. HAZARDS IDENTIFICATION

--- EMERGENCY OVERVIEW ---
APPEARANCE / ODOR
Red liquid / mild petroleum hydrocarbon odor.

OSHA REGULATORY STATUS
This material is classified as nonhazardous under OSHA Regulations.

HMIG RATING
Health: 1; Flammability: 1; Reactivity: 0

Potential Health Effects
Primary Route of Entry: Skin
The product, as with many petroleum products, may cause minor skin, eye, and lung irritation, but good hygiene practices can minimize these effects.

Normal use of this product does not result in generation of an oil mist. However, if an oil mist is generated, overexposure can cause minor and reversible irritation to the eyes, skin, and especially the lungs. Proper personal protective equipment and sufficient ventilation can provide adequate protection.

Carcinogenicity Information
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or AGCH as a carcinogen.

4. FIRST AID MEASURES

INHALATION
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT
Wash skin thoroughly with soap and water. If irritation develops and persists, consult a physician.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
Material poses an aspiration hazard. If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.

Notes to Physicians
Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 ml water and mix thoroughly. Administer 5 ml/kg, or 350 ml for an average adult.

5. FIRE FIGHTING MEASURES

Flammable Properties
Flash Point (typical): 370 F (188 C)
Flash Point (minimum): 351 F (177 C)
Method: CO2

NFPA Classification: Class IIB Combustible Liquid.
NFPA Rating: Health 0, Flammability 1, Reactivity 0

Extinguishing Media
Water Spray, Foam, Dry Chemical, CO2.

Fire Fighting Instructions
Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water may be used to flush spills away from exposures. Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Safeguards (Personal)
NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Remove source of heat, sparks, and flame.

Initial Containment
Dike spill. Prevent material from entering sewers, waterways, or low areas

Spill Clean Up
Recover liquid for reuse or reclamation. Soak up with sawdust, sand, oil or dry or absorbent material.

7. HANDLING AND STORAGE

Handling (Personnel)
Avoid breathing vapors or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Wash contaminated clothing prior to reuse.

Handling (Physical Aspects)
Close container after each use. Do not pressurize, cut, weld, braze, solder, grind, or drill on or near full or empty container. Empty container retains residue (liquid and/or vapor) and may explode in heat of a fire.

Storage
Store in accordance with National Fire Protection Association recommendations. Store in a cool, dry place. Store away from heat, sparks and flames. oxidizers. Close container after each use.

8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Engineering Controls
VENTILATION
Normal shop ventilation.

Personal Protective Equipment
RESPIRATORY PROTECTION
None normally required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Select appropriate NIOSH-approved respiratory protective equipment when exposed to sprays or mists. Proper respirator selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure, and published respirator protection factors.

PROTECTIVE GLOVES
Should be worn when the potential exists for prolonged or repeated skin contact. NBR or neoprene recommended.

EYE PROTECTION
Safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT
Coveralls with long sleeves if splashing is probable.

Applicable Exposure Limits
If oil mist is generated, exposure limits apply.
PEL (OSHA) 5 mg/m3, 8-hr. TWA
TLV (ACGIH) 5 mg/m3, 8-hr. TWA, STEL 10 mg/m3
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Data
Boiling Point: Not Available
Vapor Pressure: Nil
Vapor Density: >1 (Air=1.0)
% Volatiles: Nil
Evaporation Rate: Nil
Solubility in Water: Insoluble
Odor: Petroleum Hydrocarbon (mild)
Form: Liquid
Color: Red
Specific Gravity: 0.87 @ 60 F (16 C)
Density: 7.14 lb/gal

10. STABILITY AND REACTIVITY

Chemical Stability
Stable

Conditions to Avoid
Heat, sparks, and flames.

Incompatibility with Other Materials
Incompatible or can react with oxidizers.

Decomposition
Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Polymerization
Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Animal Data
Mouse skin painting studies have shown that highly refined petroleum lube base oils similar to ingredients in this product have not caused skin tumors.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information
No specific aquatic data available for this product.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

Container Disposal
Empty drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All other containers should be disposed of in an environmentally safe manner.

14. TRANSPORTATION INFORMATION

Shipping Information
DOT: Not regulated.
ICAO/IMO: Not restricted.

15. REGULATORY INFORMATION

U.S. Federal Regulations
OSHA HAZARD DETERMINATION
This material is not known to be hazardous as defined by OSHA’s Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA/SUPERFUND
Not applicable; this material is covered by the CERCLA petroleum exclusion.

SARA, TITLE III, 302/304
It is possible material may contain extremely hazardous substances at concentrations below 1.0% so that a large- enough spill could warrant an Emergency Release Report.

SARA, TITLE III, 311/312 HAZARD CLASSIFICATIONS
Acute: No
Chronic: No
Fire: No
Reactivity: No
Pressure: No

SARA, TITLE III, 313
This material is not known to contain any chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to release reporting requirements.

TSCA
Material and/or components are listed in the TSCA Inventory of Chemical Substances (40 CFR 710).

RCRA
This material has been evaluated for RCRA characteristics and does not meet hazardous waste criteria if discarded in its purchased form. Because of product use, transformation, mixing, processing, etc., which may render the resulting material hazardous, it is the product user’s responsibility to determine at the time of disposal whether the material meets RCRA hazardous waste criteria.

CLEAN WATER ACT
The material contains the following ingredient(s) which is considered hazardous if spilled into navigable waters and therefore reportable to the National Response Center (1-800-424-8802).

Ingredient(s): Petroleum Hydrocarbons
Reportable Quantity: Film or sheen upon, or discoloration of any water surface.

CLEAN WATER ACT
This material is not known to contain hazardous substances in sufficient quantity to make it subject to CERCLA regulations.

State Regulations (U.S.)
CALIFORNIA "PROP 65"
This material may contain trace amount(s) of an ingredient(s) known to the State of California to cause cancer, birth defects, or other reproductive harm. Read and follow all label instructions.

PENNSYLVANIA WORKER & COMMUNITY RIGHT TO KNOW ACT
This material is not known to contain any ingredient(s) subject to the Act. Nonhazardous ingredient information is withheld as a trade secret in accordance with Section 11 of the Act.

Canadian Regulations
This is not a WMMIS Controlled Product.

# 16. OTHER INFORMATION

NOTE: This product or any other hydrocarbon-based lubricant should not be used in non-diaphragm compressors that produce "breathing air" unless the outlet is monitored continuously for carbon monoxide. These lubricants can produce carbon monoxide when subjected to high temperatures.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS
MSDS Coordinator
Address: Conoco Inc.
PO Box 2107
Houston, TX 77252

Document Number: HK 1007
Rev: 06/00