

# ORIGINAL INSTRUCTIONS



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## **TWO-STAGE HYDRAULIC PUMP**

**Max. Capacity: 10,000 PSI**

**Operating Instructions for:**

**RWP55-IBT-Air  
Model B**

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## SAFETY DEFINITIONS

Safety symbols are used to identify any action or lack of action that can cause personal injury. Your reading and understanding of these safety symbols is very important.



**Danger** is used only when your action or lack of action will cause serious human injury or death.



**Warning** is used to describe any action or lack of action where a serious injury can occur.

### **IMPORTANT**

**IMPORTANT** is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

## SAFETY PRECAUTIONS



All **WARNING** statements must be carefully observed to help prevent personal injury.

### Hydraulic Hose

- Before operating the pump, tighten all hose connections using the proper tools. Do not overtighten the connections. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Always shut off the electric motor before breaking any connections in the system.



- Should a hydraulic hose ever burst, rupture, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking hose under pressure with your hands. The force of the escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, extreme heat or cold, sharp surfaces, or heavy impact. Do not allow the hose to kink, twist, curl or bend so tightly that the oil flow within the hose is blocked or reduced. Periodically inspect the hose for signs of wear because any of these conditions can damage the hose and may result in personal injury.
- Do not use the hose to move attached equipment. Stress may damage the hose and cause personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury.



**Pump**

- Do not exceed the PSI hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities can result in personal injury.
- Before replenishing the oil level, retract the system to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure created when the cylinders are retracted.

**Cylinders**

- Do not exceed the rated capacities of the cylinders. Excess pressure can result in personal injury.
- Do not set poorly balanced or off-center loads on a cylinder. The load can tip and cause personal injury.

**Power Supply (Electric)**

- Disconnect the air supply when pump is not in use or when breaking any connection in the hydraulic system.
- A shutoff valve or quick disconnect should be installed in the air line to the pump unit. Close the shut-off valve before connection the air line to the pump.
- The line voltage must be the same as the voltage for which the pump is wired. Ex: 380 volt, 3 phase pump plugged into 380 volt, 3 phase power source.

# TWO-STAGE AIR HYDRAULIC PUMP

Max. Capacity: 10,000 PSI

## NOTE

- Carefully inspect the pump upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.
- Read and carefully follow these instructions. Most problems with new equipment are caused by improper operation or installation.
- Do not change motors without consulting the pump manufacturer's Technical Services Department.

## TWO-STAGE HYDRAULIC PUMP SET-UP PROCEDURE

### 1. Motor Hook-up and Operation

**Air Motor:** Remove the thread protectors from the air inlet, and install the air supply fittings (not supplied) as shown in Figure 1. Air supply must be minimum 50 CFM and 80 PSI, with 100 PSI maximum.

### IMPORTANT

Seal all external pipe connections with a high-quality, non hardening thread sealant. Teflon tape can be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Any loose pieces of tape could travel through the system and obstruct the flow of oil or cause jamming of precision-fit parts.

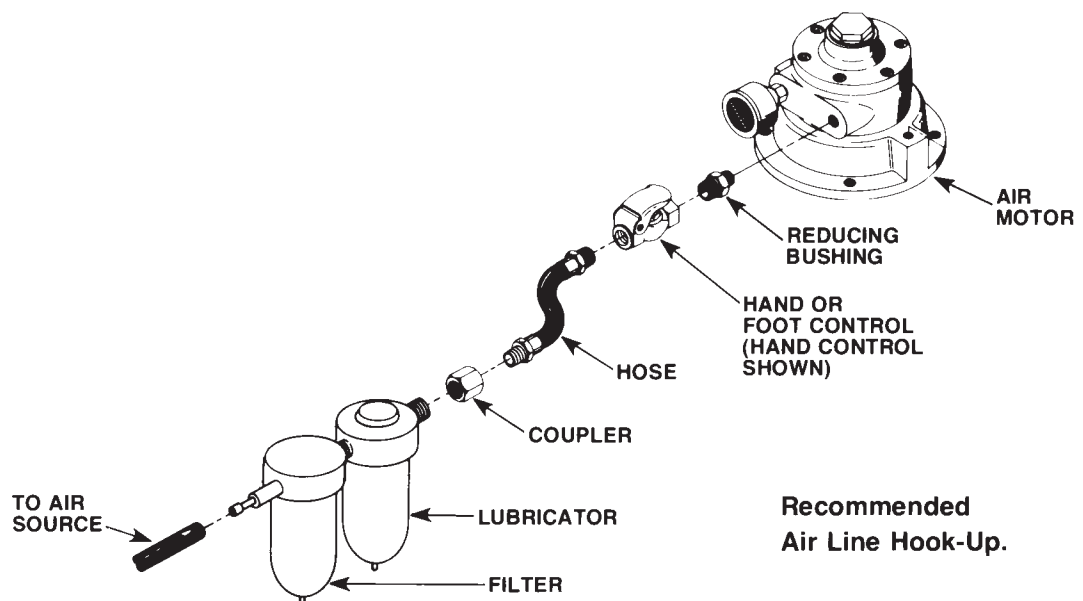


FIGURE 1

## **SET-UP AND OPERATION**

### **1. Filling the Reservoir**

#### **NOTE**

**The pump has been shipped without oil in the reservoir. When oil is required, use only Power Team approved hydraulic fluids.**

- A. Clean the area around the filler cap to remove all dust and grit. Any foreign material in the oil may damage the polished surfaces and precision-fit components of this pump.
- B. Retract all cylinders to their return position.
- C. Remove the filler cap and insert a clean funnel with a filter. Fill the reservoir with Power Team approved hydraulic oil to the bottom of the filler screen. Replace the filler/vent cap.
- D. Cycle the pump (with the cylinder(s) attached) several times. Retract the cylinder(s) and check the oil level in the pump reservoir.

### **2. Hydraulic Connections**

- A. Clean all the areas around the oil ports of the pump and cylinder(s).
- B. Inspect all threads and fittings for signs of wear or damage, and replace as needed.
- C. Clean all hose ends, couplers, or union ends.
- D. Remove the thread protectors from the hydraulic oil outlets. Connect the hose assembly to the hydraulic oil outlet, and couple the hose to the cylinder. Although a high-grade, non-hardening thread sealant is preferred, Teflon tape may be used to seal hydraulic connections if only one layer of tape is used. Apply carefully to prevent the tape from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of oil.

### **3. Priming The Pump**

When operating the pump for the first time:

- A. Valve and hose connections must be tight, and the reservoir must be filled to the proper oil level. Start the motor.
- B. Jog the pump several times to build pressure. If the pump doesn't build pressure, it may not be primed. Disconnect a hose from the system and route it back to the pump reservoir. Run the pump until a steady flow of oil is observed free of suspended air bubbles. Reconnect the hose to the system.
- C. Run cylinder out to its full travel several times to eliminate air from the system. For more complete instructions, refer to the section titled "Bleeding Air From The System."
- D. The pump is ready to be put into regular operation.

#### **IMPORTANT**

**After eliminating trapped air from a large work-holding system, retract the cylinders and refill the pump reservoir to 1/2" from the top of the filler hole.**

### **4. Adjusting the Low Pressure Unloading Valve**

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**NOTE**

**For easy adjustment of the pressure regulating valve, always adjust the pressure by increasing to the desired pressure setting.**

- A. Loosen the wing nut on the pressure regulating valve, and turn the knob out a few turns in a counterclockwise direction. This will decrease the setting to a lower than desired pressure.
- B. The pump must be completely connected. Press and hold the Run button on the hand switch.
- C. Slowly turn the pressure regulator knob in a clockwise direction. This gradually increases the pressure setting. When the desired pressure is reached, lock the knob in position by tightening the wing nut.

## **PREVENTIVE MAINTENANCE**



### **WARNING**

To help prevent personal injury,

- **Disconnect the pump from the power source before performing maintenance or repair procedures.**
- **Repairs or maintenance must be performed in a dust-free area by a qualified technician.**

#### **1. Bleeding Air from the System**

Air can accumulate in the hydraulic system if the reservoir oil level is too low. This air causes the cylinder to respond in an unstable or slow manner. To remove the air:

- A. The hydraulic cylinder(s) must be positioned on their side(s) with the couplers located upward.
- B. Remove any load from the cylinder(s), and cycle the hydraulic system through several cycles (fully extend and retract the cylinders).

### **IMPORTANT**

**Some of the single-acting spring return cylinders have a cavity in the rod that forms an air pocket. This type of cylinder must be positioned upside down when the hydraulic system is bled.**

#### **2. Hydraulic Fluid Level**

- A. Check the oil level in the reservoir after each 10 hours of use. Proper oil level is 1/2" from the top of the fill hole when all cylinders are retracted.
- B. Drain, flush and refill the reservoir with an approved, high-grade hydraulic oil after approximately every 300 hours of use. The frequency of oil changes will depend upon the general working conditions, severity of use, and overall cleanliness and care given the pump..

#### **3. Maintenance Cleaning**

- A. Keep the outer surface of the pump as free from dirt as possible.
- B. Protect all unused couplers.
- C. Keep all hose connections free of dirt and grime.
- D. Keep the filler/vent cap clean and unobstructed at all times.
- E. Equipment connected to the pump must be kept clean.
- F. Use only Power Team approved hydraulic fluids in this pump. Change as recommended.

#### **4. Draining and Cleaning the Reservoir**



**IMPORTANT**

**Clean the pump exterior before the pump interior is removed from the reservoir.**

- A. Remove the ten screws that fasten the motor and pump assembly to the reservoir.

**IMPORTANT**

**Lift the pump and motor off the reservoir carefully to avoid damaging the gasket or any internal components.**

- B. Clean the inside of the reservoir and fill half full with clean hydraulic fluid.
- C. Place the pump and motor assembly back onto the reservoir and secure with two machine screws assembled on opposite corners of the housing.

**IMPORTANT**

**Connect a hose to the pressure port on the valve. Place the other end of the hose into the oil filler plug hole.**

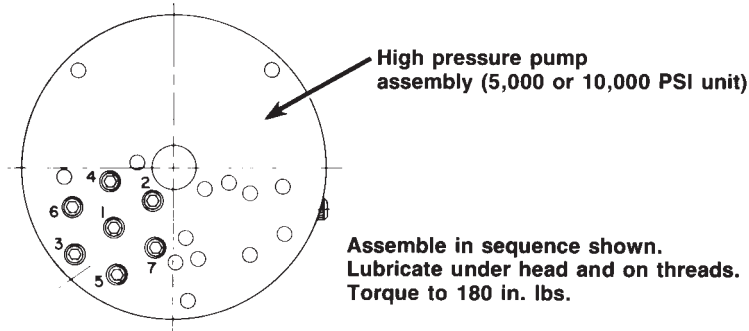
- D. Run the pump for several minutes. Then disconnect the motor and pump assembly, and drain and clean the inside of the reservoir.
- E. Fill the reservoir with Power Team approved hydraulic fluid. Place the pump and motor assembly (with gasket) on the reservoir and install all the screws. Tighten securely and evenly.

**5. Adding Oil to the Reservoir**

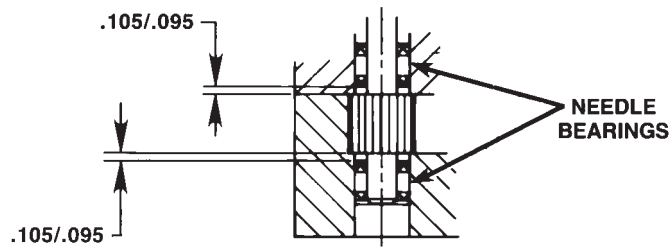
- A. Cylinder(s) must be fully retracted and the power supply disconnected when adding oil to the reservoir.
- B. Clean the entire area around the filler/vent cap before removing the filler/vent cap.
- C. Use a clean funnel with filter when adding oil.
- D. Use only an approved, high-grade hydraulic oil (215 SSU @ 100° F) only.

# REASSEMBLY SPECIFICATIONS

## HIGH PRESSURE PUMP ASSEMBLY BOLT TIGHTENING SEQUENCE



## NEEDLE BEARING INSTALLATION SPECIFICATIONS



When replacing the needle bearings on the drive gear of the basic pump, the dimensions shown must be as specified.

## TROUBLE-SHOOTING GUIDE



### WARNING

- To help prevent personal injury, any repair work or trouble-shooting must be done by qualified personnel familiar with this equipment.
- Use the proper gauges and equipment when troubleshooting.

### NOTE

- It is best to check for leaks by using a hand pump and applying pressure to the suspect area without the motor running. Watch for leaking oil and follow it back to its source.
- Plug the outlet ports of the pump when checking for leakage to determine if the leak is in the pump or elsewhere in the system.
- Refer to Parts List #100837 and the hydraulic and electrical schematic when using this trouble-shooting guide.

#### PROBLEM

**Pump is not delivering oil or delivers only enough oil to advance cylinder(s) partially or erratically.**

#### CAUSE

1. Oil level too low.
2. Loose-fitting coupler to cylinder.
3. Air in system.
4. Air leak in suction line.
5. Dirt in pump or filter plugged.
6. Oil is bypassing through the double-acting cylinder.
7. Cold oil or oil too heavy (Hydraulic oil is of a higher viscosity than necessary).

#### SOLUTION

1. Fill reservoir to 1/2" from top of filler hole with all cylinders retracted.
2. Check quick-disconnect couplings to cylinders. Inspect couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because the ball check does not stay open due to wear.
3. Bleed the system.
4. Check and tighten suction line.
5. Pump filter should be cleaned and, if necessary, pump should be dismantled and all parts inspected and cleaned.
6. By removing the cylinder and capping the hoses, the pump and valve can be checked. Observe if pump holds pressure.
7. Change to a lighter oil.

PROBLEM	CAUSE	SOLUTION
<b>Pump builds pressure but cannot maintain pressure.</b>	<p>8. Relief valve or low pressure unloading valve out of adjustment.</p> <p>9. Reservoir capacity is too small for the size of the cylinder(s) used.</p> <p>10. Defective directional valve.</p> <p>11. Sheared drive shaft key(s)</p> <p>12. Motor rotating in working direction.</p> <p>13. Vacuum in reservoir.</p> <p>14. Low pressure pump worn.</p>	<p>8. Adjust as needed.</p> <p>9. Use smaller cylinder(s) or larger reservoir.</p> <p>10. Inspect all parts carefully and replace if necessary.</p> <p>11. Replace.</p> <p>12. Air motor: Air line connected into wrong port.</p> <p>13. Check for plugged vent in filler plug.</p> <p>14. Remove end cap from low pressure gear pump. Clean pump, and replace worn gears, shifting spool, body or end cap.</p>
	<p>1. Check to see if there are any external leaks. If no oil leakage is visible, the problem is internal. If using a double acting cylinder, remove it from the system to ensure that the leak is not in the cylinder.</p>	<p>1. Seal leaking pipe fittings with pipe sealant.</p>
	<p>2. To test for a leaking control valve, lift the pump from the reservoir but keep the filter in the oil. Remove the drain line to see if the oil is leaking from the valve. If the valve is not leaking, the internal check valve could be leaking. Refer to the note concerning checking for oil leaks at the beginning of this troubleshooting Guide.</p>	<p>Clean, reseal or replace flow control valve parts. If the internal check valve(s) are leaking, the pump must be dismantled and the seat areas repaired, poppets replaced, etc.</p>
	<p>3. Leaking pressure switch seal.</p>	<p>3. Repair or replace seal.</p>
<b>Pump builds pressure in top port only.</b>	<p>1. Pump unit is set up to read only pressure in top port.</p>	<p>None required.</p>
<b>Pump will not build full pressure.</b>	<p>1. Faulty pressure gauge.</p> <p>2. Check for external leakage.</p>	<p>1. Calibrate gauge.</p> <p>2. Seal faulty pipe fitting with pipe sealant.</p>

PROBLEM	CAUSE	SOLUTION
	<ol style="list-style-type: none"> <li>3. Check the external pressure regulator. Check the relief valve setting.</li> <li>4. Look for internal leakage in double-acting cylinders.</li> <li>5. Check for leaks in the flow control valve.</li> <li>6. Inspect the pump for internal leakage. Check high pressure pump inlet or outlet ball checks.</li> <li>7. Sheared key(s).</li> <li>8. Inadequate air pressure.</li> <li>9. Shifting spool seat and/or shifting spool poppet (located under high pressure pump assembly) worn.</li> <li>10. Shifting spool O-ring (located within shifting spool bore) worn or broken.</li> </ol>	<ol style="list-style-type: none"> <li>3. Lift the pump from the reservoir, but keep the filter immersed in oil. Note the pressure reading when the relief valve begins to open. If functioning normally, it should start to leak off at relief valve pressure.</li> <li>4. Remove the cylinder from the pump. If the pump builds full pressure, the cylinder is defective.</li> <li>5. Clean and reseal or replace parts.</li> <li>6. Same procedure as above, but look for leaks around the entire inner mechanism. If there are no visible leaks, the high pressure pump sub-assembly may be leaking. Remove all parts. Check the valve head assembly body for any damage to the sea area. Clean and reseal if necessary. Inspect for damage and replace if necessary, then reassemble.</li> <li>7. Replace</li> <li>8. Increase air pressure.</li> <li>9. Clean and reseal or replace.</li> <li>10. With an O-ring pick, remove O-ring and backup washer through low pressure pump assembly end. Replace.</li> </ol>
<b>Cylinder(s) will not retract.</b>	<ol style="list-style-type: none"> <li>1. Check the system pressure; if the pressure is zero, the control valve is releasing pressure and the problem may be in the cylinder(s), mechanical linkage connected to cylinder(s), or quick-disconnect couplings.</li> <li>2. Defective valve.</li> <li>3. Inadequate air pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the cylinders for broken return springs, and check couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because on check does not stay open in the coupled position.</li> <li>2. Check valve operation and inspect parts. Replace if necessary.</li> <li>3. Increase air pressure.</li> </ol>

**PROBLEM**

**Pump delivers excess oil pressure.**

**CAUSE**

1. Faulty pressure gauge.
2. Relief valve not properly set.

**SOLUTION**

1. Calibrate gauge.
2. Adjust the relief valve.

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**DECLARATION OF INCORPORATION****EC DECLARATION OF INCORPORATION  
OF PARTLY COMPLETED MACHINERY**

Serial # 10xx

**Thierry Rouvelin**  
Vice President Engineering

We declare that our "-----" Models:

- 1.
- 2.

**Description of the product:**

To which this declaration relates are in conformity with the following:

<u>EN, EN-ISO, ISO standards</u>	<u>Title</u>
Per the provisions of the Machinery Safety Directive	2006/42 EC
EN_ISO 12100-1	Basic concepts, general principles for design - Part 1
EN_ISO 12100-2	Basic concepts, general principles for design - Part 2
EN 13478:2001+A1:2008	Fire prevention and protection
EN ISO 14121-1:2007	Risk assessment - Part 1
EN 982:1995	Safety requirements for fluid power systems & their components – Hydraulics
EN 983:1995	Safety requirements for fluid power systems & their components - Pneumatics
EN ISO 13849-1:2008	Safety-related parts of control systems - Part 1
EN ISO 13849-2:2008	Safety-related parts of control systems - Part 2
EN 61310-2:1995	Indication, marking and actuation
EN 61310-3:1999	Indication, marking and actuation

<u>EN, EN-ISO, ISO standards</u>	<u>Title</u>
Per the provisions of the Noise Emission in the Environment by Equipment for Use Outdoors Directive	2000/14 EC

EN_3200L0014	Noise emission in the environment for use outdoors
ISO 3744:1994	Sound Power Level Measurements

I, the undersigned, hereby declare that the equipment specified above conforms to the above European Communities Directive(s) and Standard(s). This product is not to be put into service until the final machine into which it is to be incorporated has been declared in conformity with the provisions of this Directives, where appropriate.

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Rockford, Illinois      **January xx, 2010**

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