



Operating Instructions for:
HPUTP150001K
HPUTP150002K

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Air-Powered
**HPUTP Series
Hydraulic Pump**



Table of Contents

Description.....	4
HPUTP Series Air/Hydraulic Pumps	4
Safety Symbols and Definitions.....	5
Safety Precautions	5
Initial Setup	8
Operating Instructions	9
Performance Specifications.....	10
General Maintenance	11
SPX Bolting Systems Facilities	13

Description

The HPUTP series hydraulic pumps are designed to have a maximum of 1500 bar (21,750 psi) at a flow rate of 0.72 litres/min (44 cu. in/min) or 1.14 liters/min (70 cu.in/min) depending on model. All pumps come fully assembled, less fluid, and ready for work.

HPUTP Series Air/Hydraulic Pumps

Description

Air Motor

The air/hydraulic pumps are suitable for operation up to 1,500 bar (21,750 psi).

The pump requires 6.0-6.9 bar (90-100 psi) of supplied air pressure. Weight can be up to 23 kg (50 lbs).

Note: The air supply must be minimum 0.8 M³/min. (28 CFM) standard and 1.6 M³/min. (56 CFM). Use of an air filter/lubricator is recommended.



Figure 1. HPUTP Series

Safety Symbols and Definitions

The safety signal word designates the degree or level of hazard seriousness.



DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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



WARNING:



- The following procedures must be performed by qualified, trained personnel who are familiar with this equipment. Operators must read and understand all safety precautions and operating instructions included with the pump. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.

- These products are designed for general use in normal environments. These products are not designed for lifting and moving people, agri-food machinery, certain types of mobile machinery, or in special work environments such as: explosive, flammable, or corrosive. Only the user can decide the suitability of this product in these conditions or extreme environments. SPX Hydraulic Technologies will supply information necessary to help make these decisions. Consult your nearest SPX Hydraulic Technologies facility, refer to SPX Hydraulic Technologies Facilities in this document.



- Safety glasses must be worn at all time by the operator and anyone within sight of the unit. Additional personal protection equipment may include: face shield, goggles, gloves, apron, hard hat, safety shoes, and hearing protection.



- The owner of this tool must ensure that safety-related decals are installed, maintained, and replaced if they become hard to read.



- Shut OFF the motor before opening any connections in the system.
- The guide cannot cover every hazard or situation so always do the job with SAFETY FIRST.

Pump



WARNING:

- Do not exceed the 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.
- Retract the system before adding fluid to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure created when cylinders are retracted.

Safety Precautions continued

- The pump must be used in an upright position.
- Repairs to the pump unit should only be carried out by SPX Bolting Systems or an authorized Service Agent.
- Do not connect pump to hydraulic system powered by another pump.

Hoses



WARNING:

- Before operating the pump, tighten all hose connections using the correct tools. Do not overtighten. Connections should be only secure and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.



- Should a hydraulic hose rupture, burst, or need to be disconnected, immediately shut off the pump and shift the system pressure manual release valve twice to release pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury.



- Do not subject the hose to potential hazard, such as fire, sharp surfaces, heavy impact, or extreme heat or cold. Do not allow the hose to kink, twist, curl, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury.
- Do not use the hose to move attached equipment. Stress can damage the hose and possibly 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 material 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.
- Avoid straight line tubing connections in short runs. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes. See diagrams in Initial Setup section of this form.
- Eliminate stress in the tube lines. Long tubing runs should be supported by brackets or clips. Tubes through bulkheads must have bulkhead fittings. This makes easy removal possible and helps support the tubing.
- Carefully inspect all hoses and fittings prior to use. Before each use, check entire hose for cuts, leaks, abrasion or bulging of cover, or damage or movement of couplings. If any of these conditions exist, replace the hose immediately. NEVER attempt to repair the hose.

Cylinder



DANGER:

- Do not exceed rated capacities of the cylinders. Excess pressure may result in personal injury.
- Read and understand all safety and warning decals and instructions for devices attached.
- Inspect each cylinder and coupler before each shift or usage to prevent unsafe

Safety Precautions continued

conditions from developing.

- Avoid pinch points or crush points that can be created by the load or parts of the cylinder.
- To help prevent material fatigue if the cylinder is to be used in a continuous application, the load should not exceed 85% of the rated capacity or stroke.

IMPORTANT

- Keep the cylinder clean at all times.
- Always use protective covers on disconnected quick couplers.
- Limiting the stroke and pressure on all cylinders will prolong their life.

Initial Setup

1. Remove all packing materials from the assembled unit.
2. Inspect the unit upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.

Filling the Pump Reservoir

Most pumps are shipped without hydraulic fluid in the reservoir. Hydraulic fluid may have been shipped in a separate container, but if hydraulic fluid is needed, use only approved Power Team hydraulic fluid rated at AW 46 47 cSt @ 38°C (237 SUS @ 100°F). If low temperature requirements are needed, use hydraulic fluid 5.1 cSt @ 100°C (451 cSt @ -40°C). Operating temperature ranges are from -10°–60° C(14–140°F).

1. Clean the area around the filler cap to remove debris. Debris in the hydraulic fluid can damage the polished surfaces and precision-fit components of this pump.
2. Remove the filler cap and insert a clean funnel with a filter.
3. Fill the reservoir with hydraulic fluid to 2.6 cm (1 in.) from the cover plate.
4. Replace the filler cap. Verify the breather-hole is open, if applicable.
5. Fully open the pressure release valve.
6. Connect air supply to pump unit.
7. Slowly open the pump unit air stop valve, starting the pump unit.
8. Allow the pump to circulate the oil, watching the oil flow through the opaque plastic oil return tube running from the pressure release valve back to tank. Any air that is present within the pump unit pressure chamber will be displaced and seen through this oil return tube. When most of the air bubbles cease to emerge and the oil flows freely, stop the pump unit.

The pump unit is now ready for use.

Hydraulic Connections

1. Clean the areas around the fluid ports of the pump and cylinders.
2. Inspect all threads and fittings for signs of wear or damage, replace as needed.
3. Clean all hose ends, couplers or union ends.
4. Remove the dust cap from the hydraulic fluid outlets.
5. Connect the hose assembly to the hydraulic fluid outlet, and couple the hose to the cylinder.



CAUTION: To prevent personal injury from leaking hydraulic fluid, seal all hydraulic connections with a high-quality, non-hardening, pipe thread sealant.



IMPORTANT: Sealant tape or non hardening sealer tape can be used to seal hydraulic connections if only one layer of tape is used. Apply tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Loose pieces of sealant could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.

Operating Instructions

Prior to operating pump, the following checks should be carried out;

- a. Hydraulic oil level - check reservoir level, ensure tank is at least ½ full.
- b. Air lubricator oil level - refill if needed.
- c. Air regulator water trap - drain water as necessary.
- d. Pump purging procedure has been carried out.

The pump unit should be regulated on-site to either stall at a predetermined hydraulic pressure (associated with the particular bolt tensioner and bolt size to be tightened) or to the maximum pressure of the tensioning tools, i.e. 1,500 bar (21,750 psi). This is achieved by carrying out the following procedure:

1. Either loop a 3m (9.8 ft) feed hose across the pump hydraulic oil outlets or alternatively attach blank female couplings.



WARNING: Unattached couplings, male or female, must not be pressurised under any circumstances

2. Open the pump hydraulic oil pressure release valve.
3. Ensure that the pump start/stop valve is closed.
4. Connect the pump to the air supply
5. Turn the air pressure regulator adjustment knob anti clockwise until the air pressure gauge reads zero pressure.
6. Open the pump start/stop valve. As the regulator has been set to read zero pressure the pump should not start. If the pump does operate, it should be very slow.
7. Close the hydraulic oil pressure release valve. Do not overtighten, the valve seat will be damaged if overtightened. A light nip will suffice.
8. Rotate the air pressure regulator adjusting knob slowly clockwise until the required hydraulic oil pressure reads on the pump pressure gauge
9. Close the pump start/stop valve.
10. Slowly open the hydraulic oil pressure release valve to relieve the system pressure.

The pump is now ready for operation and will automatically stall at the pre-set pressure. When using the pump unit the following safety rules must be adhered to.

Always wear eye protection during pump operation and during tensioning.

Although the pump may have been pre-set to stall at a certain pressure, always monitor the pressure gauge during pressure build up.

Always depressurize before leaving the system unattended.

Performance Specifications

The information in the following charts can be used as a basis to determine if the system is performing as expected during operation.

Pump	RPM	dB_A at Idle and 1500 bar (21,750 psi)	Air Supply Req'd bar (psi)	Air Consumption cu.m/min (CFM)	Hydraulic Fluid Type	Hydraulic Fluid Capacity L(Gal)	Air Lubricator Fluid	Air Lubricator Drip Rate	Pump Dimensions mm (in)
Standard	N/A	85	6.0-6.0 (90-100)	0.8 (28)	GB UNIPOWER SRC46	9.5 (2)	FUCHS SILKAIR VG22	approx. 1 drop per 30 pump strokes	420x420x390 (16.5x16.5x15.3)
High Flow	N/A	85	6.0-6.0 (90-100)	1.6 (56)	GB UNIPOWER SRC46	9.5 (2)	FUCHS SILKAIR VG22	approx. 1 drop per 30 pump strokes	456x530x515 (17.9x20.8x20.2)

Table 1. Drive Unit Requirements

Pump	Max. Pressure Output bar (psi)	Fluid Delivery* l/min (cu. in./min.) @			
		0 bar (0 psi)	200 (2,900)	600 (8,702)	1,500 (21,750)
Standard	1500 (21,750)	0.72 (43.9)	0.47 (28.6)	0.39 (23.7)	0.25 (15.2)
High Flow	1500 (21,750)	1.14 (69.6)	0.96 (58.%)	0.80 (48.8)	0.50 (30.5)

* Typical delivery. Actual flow varies with field conditions.

Table 2. Fluid Pressure Chart

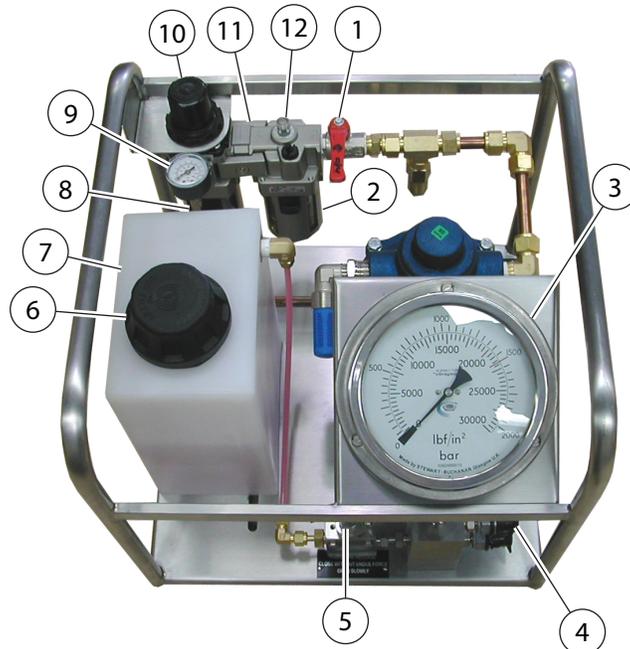


Figure 2. Component Identification

Item	Description
1	Stop/Start Valve
2	Lubricator Oil Level
3	6 in. Oil Pressure Gauge
4	Fluid Outlet(s)

Item	Description
5	Pressure Release Valve
6	Reservoir Filler Cap
7	Fluid Reservoir
8	Water Trap

Item	Description
9	Air Pressure Gauge
10	Air Filter/Regulator
11	Air Lubricator
12	Lubricator Drip Adjuster

General Maintenance



WARNING:

- Repairs and maintenance are to be performed in a dust-free area by a qualified technician.

System Evaluation

The components of your hydraulic system—tools, cylinders, pumps, hoses, and couplings—all must be:

- Rated for the same maximum operating pressure.
- Correctly connected.
- Compatible with the hydraulic fluid used.

A system that does not meet these requirements can fail, possibly resulting in serious injury. If you are in doubt about the components of your hydraulic system, contact SPX Bolting Systems or authorized service agent.

Inspection

Keep a dated and signed inspection record of the equipment. Before each use, the operator or other designated personnel should visually inspect for the following conditions:

- Cracked or damaged cylinder or tool.
- Excessive wear, bending, damage, or insufficient thread engagement.
- Leaking hydraulic fluid.
- Scored or damaged piston rod.
- Incorrectly functioning or damaged heads and caps.
- Loose bolts or cap screws.
- Damaged or incorrectly assembled accessory equipment.
- Modified, welded, or altered equipment.
- Bent or damaged couplers or port threads.

Periodic cleaning



WARNING: Contamination of the hydraulic fluid could cause the valve to malfunction. Loss of the load/function or personal injury could result.

Establish a routine to keep the hydraulic system as free from debris as possible.

- Seal unused couplers with dust covers.
- Keep hose connections free of debris. Equipment attached to a cylinder must be kept clean.
- Keep the breather-hole in the filler cap clean and unobstructed.
- Use only Power Team hydraulic fluid or equivalent. Replace hydraulic fluid as recommended, or sooner if the fluid becomes contaminated. Never exceed 300 hours of use between fluid changes.

Hydraulic Fluid Level

In order to keep the pump running efficiently, simple maintenance should be carried out after each period of use.

1. Disconnect pump unit from the air supply. Wipe away as much debris, grease, oil, etc from the external surfaces as possible. If necessary, carefully wash down in a degreasing bath. Ensure that the degreasing fluid does not mix with the hydraulic oils or enter the air filter/regulator assemblies.

General Maintenance continued

2. Visually examine the pump unit. Check hydraulic couplings for damage. Check hoses and air pipes for cuts, crimps and damage. Any damaged items must be replaced.
3. Check the hydraulic oil level and condition. If the oil appears dirty or emulsified, empty and clean the reservoir, and replace with fresh oil. Fill oil tank at least $\frac{1}{2}$ full.
4. Remove the air lubricator bowl and inspect the oil for contamination and debris. Discard the oil if contaminated and clean the bowl (do not use solvent). Refill or top up the oil to the correct level using the specified lubricator oil. Refit the bowl.
5. On air filter/regulators with manual drain taps, empty any water which may have accumulated. Remove the bowl and if still present, empty any remaining water (air filter/regulators with auto-drain function can still accumulate water if the vents are blocked by debris). Clean out any debris from the bowl. Check the condition of the filter element. If dirty, carefully unscrew the retainer, remove the filter element and wash in warm soapy water (NOTE: filter elements are fragile). Using compressed air, blow the filter element dry from the inside out. Refit the filter element and re-attach the bowl.
6. Connect blank couplings to pump outlets and connect air supply. Test run pump, check and adjust as below ;
 - With the air regulator at 0 bar (0 psi) (and pressure release valve open), increase the air pressure (via the regulator). Pump should start at approximately 0.68-1.03 bar (10-15 psi) air pressure.
 - Close pressure release valve. Adjust air regulator until 1500 bar (21,750 psi) is achieved. Hold for 5 minutes.
 - Cycle pump unit to max. pressure several times checking oil pressure stability.
 - Allow pump unit to run continuously with pressure release valve open, set air lubricator drip rate to approximately 1 drop per 30 pump strokes.
 - Stop pump unit.
7. Check the pump pressure gauge for accuracy against a calibrated master pressure gauge. It is recommended that the pump pressure gauge be tested at 345, 690, 1,034, 1,379 and 1,500 bar (5000, 10000, 15000, 20000 and 21750 psi) increments, and be within +/- 2% of the master pressure gauge reading.
8. If any aspect of the pump unit deviates from the above it is recommended that the pump unit is returned to SPX Bolting Systems or an authorized service agent for investigation/repair.

SERVICE AND REPAIR

Due to the complexity of the pump unit, it is recommended that any repairs should only be undertaken by SPX Bolting Systems or authorized service agent.

END OF LIFE AND DISPOSAL

In accordance with our End of Life Policy, should the product be no longer required for use, it should be returned to SPX Bolting Systems where it shall be disposed of in a safe and environmentally friendly manner.

SPX Bolting Systems Facilities



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