Hydronic Corporation

Air Driven Hydraulic Pumps and Intensifiers

P830 Installation, Use and Maintenance Manual

Contents

Introduction, Guarantee and Identification Plate

Description, Startup Procedures

Description of Working Parts, Storage and Disposal

Fault Finding, Maintenance and Weights

Spare Parts

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Introduction

This handbook is intended to give the operator the basic instructions for the use and maintenance of the pump. The air hydraulic pump operator must read this handbook before putting the pump into operation. After correctly installing the pump, keep this manual stored in a safe place. If you have difficulty in understanding any part of this handbook, contact Hydronic Corporation. Regular servicing and correct use of the pump are fundamental in obtaining optimum performance over its life. When contacting our service center, specify the pump model and serial number; this will help us to respond quickly and effectively.

Guarantee

Hydronic pumps are guaranteed both for the quality of materials used and for overall design. The warranty runs for six months of normal use at eight hours per day and five days per week. The warranty itself does not cover seals or defects arising out of operating with unsuitable fluids or at pressures above the specified maximum. The guarantee cannot cover pumps that may have been tampered with. Defective goods must be sent to Hydronic Corporation at Farmington Hills or to the distributor covering the area, freight pre-paid in either case. Any pump returned to us must be accompanied by a full written description of such faults or defects as have been discovered. Please also ensure that the pump's serial number is attached to the paperwork.

Installation Guide

Pumps may be installed in a vertical position for optimum functioning of suction and delivery valves.

The air inlet connection is ½" NPT. Piping of not less than 3/8" bore should be used. ½" should be used if the pump is to be run at higher speeds for greater flows.

It is advisable to use or maintain:

- Hydraulic oil having viscosity of 150 to 250 SSU
- Oil temperature 32° F to 150° F
- Air temperature 40° F to 100° F
- Room temperature 40° F to 100° F

Obstructive icing of the silencer may occur under certain temperature/humidity conditions. This can be remedied by the addition of antifreeze oil for pneumatic equipment to a mist lubricator.

Compressed Air System

It will be advisable to fit an air filter/regulator unit having minimum flow capacity of 50 scfm with an air pressure gauge to ensure the pump has sufficient air energy to work correctly and provide the hydraulic performance you expect.

Hydraulic System

Valves, pipes, hoses and accessories should all correspond to maximum working pressure of the pump used and be of a size that will fulfill flow requirements.

Application

Hydronic air driven hydraulic pumps are designed for operating oil hydraulic circuits and to cover the widest range of requirements to the best advantage.
The pump itself operates quite simply, using a known pressure intensification principle. A piston with a large surface area is actuated by compressed air. Attached to it is a piston with a smaller surface area, which is driven in a hydraulic chamber generating a high level of hydraulic pressure. The continuous pumping action is produced by the compressed air being switched by a special sealless spool valve. By regulating the compressed air supply pressure from 30 psi to 100 psi, the maximum hydraulic pressure can be adjusted by the ratio of the pump used. As the hydraulic load of the circuit increases and the oil pressure rises, the pump will slow down and eventually stop. In this way, the maximum load of the circuit will be maintained without air consumption.

Storage

If the pump is to be kept out of use for a long period, clean the pump in general and drain the oil from the tank. Cover the pump and store it in a dry, well-protected place. It is advisable to wrap the pump in a plastic film. To put back into service, check all parts, fill tank with oil and try the pump out to ensure that it is working properly. **This operation must be carried out by qualified personnel**.

Disposal

If the pump is to be scrapped, treat as a special type of waste. Dismantle it and divide it into materials of the same type and dispose of them in accordance with the local laws and regulations in your state.

Starting - Up

Oil pressure can be determined by regulation of the compressed air, bearing in mind multiplication ratio pre-selected for the pump itself.

The models are: P830 RATIO 1:257
P830 RATIO 1:402
P830 RATIO 1:465
P830 RATIO 1:528

For instance, when supplied with compressed air at 80 psi, the P830-257 will produce oil pressure of 80 x ratio, 20,560 psi. It should be remembered that actual efficiency produced by the pump is slightly less than given by the above theoretical calculation. This difference will not be noticed by a hydraulic gauge.

Having connected the compressed air supply at a low pressure, allow the pump to operate slowly until primed and oil comes through to the oil output port. Now shut off the air supply to the pump and securely connect the hydraulic circuit. Switch on the air supply again and allow the pump to run in order to bleed any air out of the hydraulic circuit.

Pump features:

- High performance, double acting pneumatic drive section
- Air operation means intrinsically safe in hazardous areas
- Release valves are available for manual operations or with an air pilot signal for automated operations.
- High pressure NPT ports for pressure connection
- Available with pressure switches and transducers
- The pump itself works automatically and operates by way of an integral valve.
- The pneumatic drive section has graphite filled seals for minimum friction, no lubrication requirement and long life.
- The hydraulic section comprises an alloy steel pump casing, hard chrome plated piston rod and bronze filled seals.
- The suction side of the pump is equipped with a spring-loaded check valve. A spring-loaded outlet ball type check valve is incorporated in the hydraulic piston.
- Complete power units with release valves, reservoirs, air regulators, protective frames, and gauges are available as well as custom configurations.

Fault Finding Chart

Fault	Cause	Remedy
1] Pump does not cycle or runs slowly.	1.1] Low pressure in compressed air line.	1.1] Clear any blockage or restriction on the air line.
	1.2] Formation of ice on the exhaust side.	1.2] Shut off pump for a short time and drain off water from the filter.
	1.3] Accumulation of waste in the silencer.	1.3] Remove silencer, clean and replace.
	1.4] Blocked element in air filter/regulator.	1.4] Close down air-supply, dismantle and clean filter.
2] Pump loses air from silencer when stalled.	2.1] Worn valve or seal	2.1] Replace seal or valve.
3] Excess oil leakage from air silencer.	3.1] Worn hydraulic seal	3.1] Replace seal.
4] Pump cycles without pumping oil.	4.1] Blocked oil-intake	4.1] Clean out filter.
	4.2] Bad connection on suction line.	4.2] Check for bad connections or air leaks on suction line.
5] Pump functions but only generates low pressure and does not stall at max. pressure.	5.1] Internal leakage in the circuit.	5.1] Find leak source and change valve.
	5.2] Suction valve seats damaged and leaking.	5.2] Replace suction valve parts.
	5.3] Output valve seats damaged and leaking.	5.3] Replace output valve parts.
	5.4] Worn oil seal.	4.4] Replace seal.

Maintenance

Periodically release the condensation from the air filter. Replace the hydraulic oil every 1500 hours or whenever the oil is polluted.

Warning: Remember that repair work can only be made when pneumatic and hydraulic pressure has been released and you are sure that no pressure remains in the circuit.

Delivery of the pump

Transport

All the material shipped, including the detached parts, has been thoroughly checked before being consigned to the forwarding agent. The pump is shipped in double corrugated cardboard packaging, which assures protection of the product.

Unpacking

On receipt of the product, open the packaging and remove the pump. Take care not to damage any part of the pump. Make an initial check on the pump for damage in transit. In case of damage or if in doubt, do not use the pump and contact Hydronic Corporation or your distributor. The packaging [plastic bags, expanded polystyrene, nails, screws, wood, etc.] must not be left within reach of children since they are potential source of danger. Be sure to dispose of pollutant or non-biodegradable materials in the correct way. Materials must be disposed of in accordance with the laws in force.

Approximate gross weight

P830 standard reservoir	44 lbs.
P830 large reservoir	55 lbs.

Contents of the package

The packaging will always contain the following:
1 x air driven hydraulic pump
1 x installation, use and maintenance manual

Original spare parts

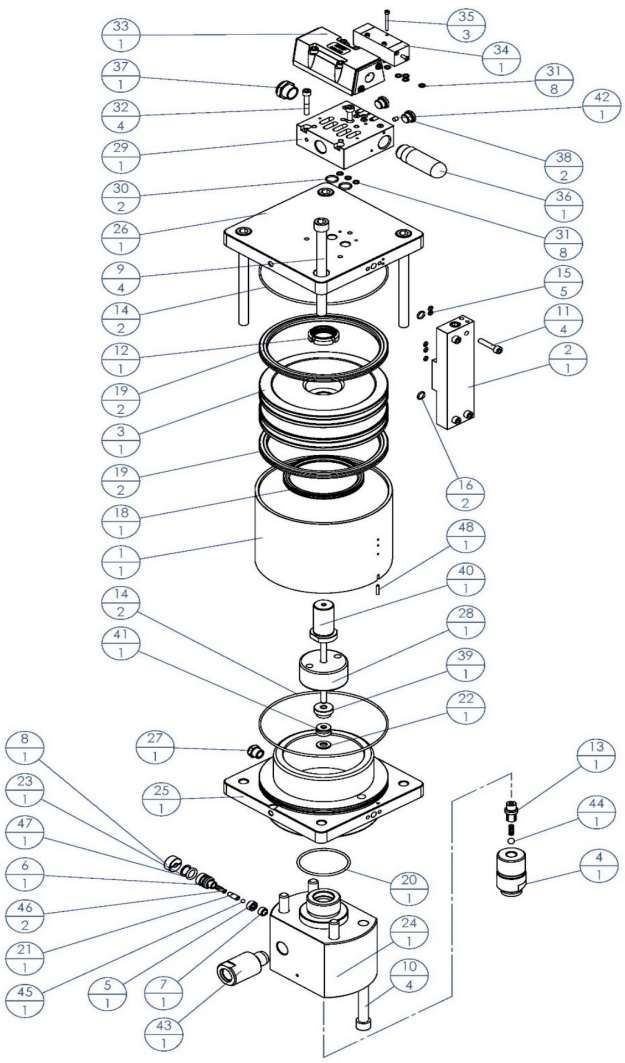
Parts orders must always be accompanied by the following information:

A] The pump model B] The pump serial number C] The year of construction
(all this data is given on the nameplate)

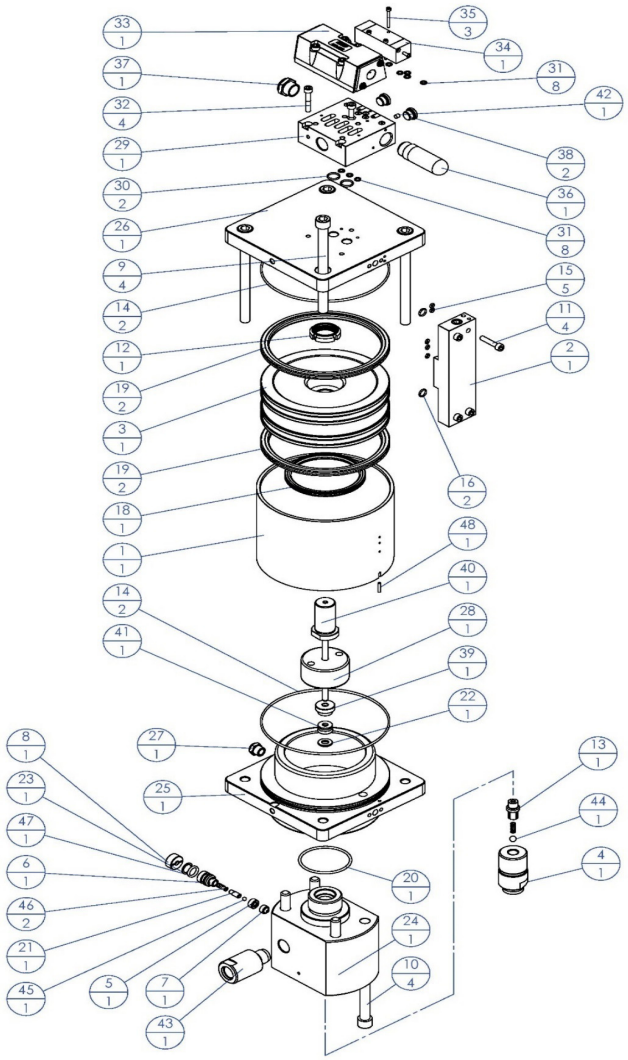
D] The part numbers E] The quantity required F] The name of the part
(All this data is given in the parts list)

A clear and correct statement of this data will allow our after-sales service to respond quickly and appropriately. Every spare part must be replaced by professionally qualified staff. The manufacturer declines all responsibility for malfunctions or accidents deriving from any failure of the product when unqualified persons have made any attempt at repair.

Pump Exploded View



ITEM	SEAL KIT	QTY	CODE	DESCRIPTION
1		1	5.018.0710	JACKET P830 - ø 160
2		1	5.065.0710	SUPPLY BLOCK
3		1	5.068.0710	PNEUMATIC PISTON P830 - ø 160
4		1	5.071.0710	SUCTION CONNECTOR 3/4'
5		1	5.034.0711	GRAIN
6		1	5.046.0710	DELIVERY CENTERING
7		1	5.033.0711	DELIVERY VALVE SEAT
8		1	5.034.0710	GRAIN
9		4	3.094.0056	SCREW M12x150 - UNI 5931
10		4	3.094.0055	SCREW M12x100 - UNI 5931
11		4	3.094.0009	SCREW M6x30 - UNI 5931
12		1	3.045.0205	SELF-LOCKING NUT M25x1,5
13		1	5.046.0029	SUCTION CENTERING P830
14	*	2	3.051.0078	O-RING 2-162/3575
15	*	5	3.051.0002	O-RING 2-7/2015
16	*	2	3.051.0071	O-RING 5-612/108
18	*	1	3.051.0710	SEAL RING ø 100
19	*	2	3.051.0711	SEAL RING ø 160
20	*	1	3.051.0102	O-RING 5-039/165
21		1	5.046.0711	DELIVERY CENTERING
22		1	5.008.0062	WASHER P830-528
		1	5.008.0710	WASHER P830-465
		1	5.008.0711	WASHER P830-402
		1	5.008.0061	WASHER P830-257
23	*	1	3.005.0038	ANTI-EXTRUSION RING
24		1	5.028.0711	PUMP BODY P830-528
		1	5.028.0718	PUMP BODY P830-465
		1	5.028.0712	PUMP BODY P830-402
		1	5.028.0713	PUMP BODY P830-257
25		1	5.086.0710	PUMP FRONT HEAD
26		1	5.086.0711	PUMP REAR HEAD
27		1	3.070.0036	SILENCER 1/4" NPT
28		1	5.045.0710	LOCKING NUT P830-528 - M42x1,5
		1	5.045.0712	LOCKING NUT P830-465 - M42x1,5
		1	5.045.0713	LOCKING NUT P830-402 - M42x1,5
		1	5.045.0714	LOCKING NUT P830-257 - M42x1,5
29		1	7.078.0020-NPT	AIR VALVE BLOCK 1/2" NPT
		1	7.078.0020	AIR VALVE BLOCK 1/2" NPT
30	*	2	3.051.0109	O-RING 2-14/2050
31	*	8	3.051.0130	O-RING 2-8/2018
32		4	3.094.0026	SCREW M6x35 - UNI 5931
33		1	4.091.0020	PNEUMATIC VALVE
34		1	4.091.0028	BI-STABLE MEMORY
35		3	3.094.0061	SCREW M3x30 - UNI 5931
36		1	3.070.0096	SILENCER MALE 1/2" NPT
37		1	3.070.0068	SILENCER MALE 1/2" NPT
38		2	3.070.0028	PLUG 1/4" NPT
39	*	1	5.014.0711	BUSHING P830-528
		1	5.014.0712	BUSHING P830-465
		1	5.014.0713	BUSHING P830-402
		1	5.014.0714	BUSHING P830-257
40		1	7.078.0718	HYDRAULIC PISTON P830-528
		1	7.078.0719	HYDRAULIC PISTON P830-465
		1	7.078.0720	HYDRAULIC PISTON P830-402
		1	7.078.0721	HYDRAULIC PISTON P830-257



ITEM	SEAL KIT	QTY	CODE	DESCRIPTION
41	*	1	5.050.0022	HP GASKET - P830-528
		1	5.050.0023	HP GASKET - P830-465
		1	5.050.0024	HP GASKET - P830-402
		1	5.050.0025	HP GASKET - P830-257
42		1	3.041.0010	FILTER
43		1	5.071.0025	DELIVERY CONNECTOR 3-4/16 UNF
		1	5.071.0030	DELIVERY CONNECTOR P830
44		1	3.076.0011	BALL ø 7,95
45		1	3.076.0013	BALL ø 4,75
46		2	5.064.0022	DELIVERY SPRING
47		1	3.051.0006	O-RING 2-112/3050
48		1	5.034.0070	NEEDLE-ROLLER

Seal Kits	**Ratio**	**Code #**
S830-257-N-SK	1:257	3.054.0713
S830-402-N-SK	1:402	3.054.0712
S830-465-N-SK	1:465	3.054.0718
S830-528-N-SK	1:528	3.054.0711