



WHITE KNIGHT®

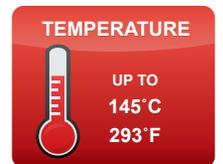
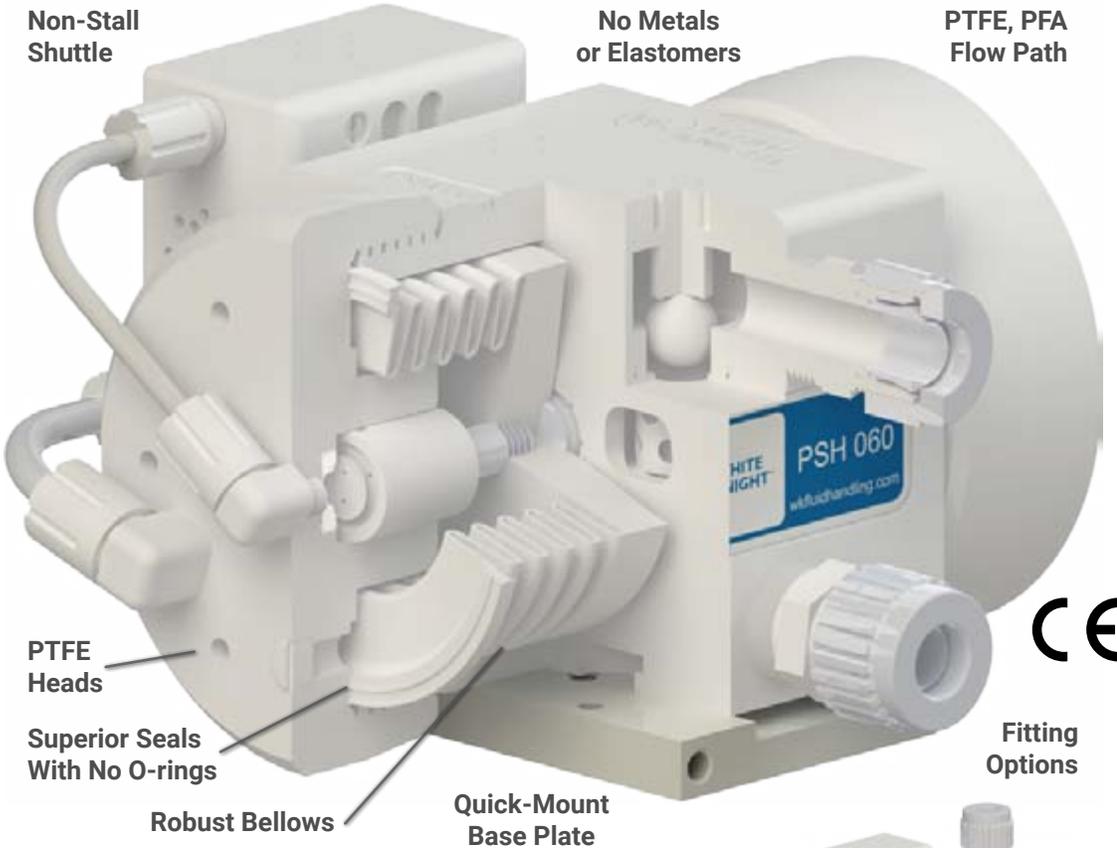
.....engineer approved™

PSH SERIES PUMPS

Ultra-Pure Pumps for Advanced Chemical Processes

Metal-free pumps with PTFE/PFA flow paths for ultra-pure chemical process applications. PSH Series pumps are capable of up to 145°C (293°F) fluid temperatures and 5.5 bar (80 psi) air pressures. PSHSD models can run dry for more than one hour without pump damage.

Advanced Pump Technologies



Features & Benefits

- Process-safe PTFE, PFA flow paths
- Contains no metals or elastomers
- Durable machined design with minimal parts
- Reliable, safe operation with no O-rings and leak-free seals
- On-board, non-stall shuttle saves space and eliminates resets
- Robust bellows allow for 5.5 bar (80 psi) supply pressure
- Pneumatic Logic™ minimizes liquid pulsation and pump vibration
- No lubricants in shift mechanism to eliminate potential contamination
- No electric motors, which generate heat
- Class 100 cleanroom assembly, testing, and packaging
- No preventative maintenance during two-year warranty



Industries

Semiconductor
LEDs & Electronics
Flat-Panel Displays
Photovoltaic / Solar
Aerospace

Applications

Chemical Delivery
Chemical Circulation
Chemical Processing
Chemical Reclaim
Bulk Transport
CMP Slurry

<https://wkfluidhandling.com/psh-series/>





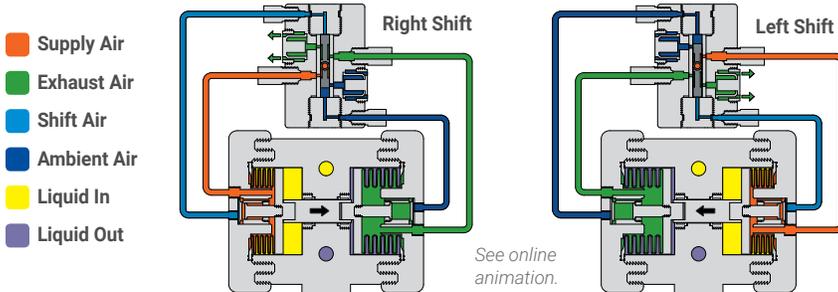
WHITE KNIGHT®

.....engineer approved™

PSH SERIES PUMPS

Operation

Pneumatic Logic™ minimizes pulsation, vibration, and wear. It automatically resets shuttle valves after shutdowns, and ensures correct spool placement at the end of each stroke. It has no detents to fail or seals to fatigue.



Configuration

PSH 060 - F 12 - LFO - SF0 - T P 08 -
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (optional)

① Pump Type

PSH = Standard
 PSHSD = Dry-run capable

① Pump Size

030 = 30 lpm (8 gpm) max discharge
 060 = 60 lpm (16 gpm) max discharge
 140 = 140 lpm (36 gpm) max discharge

② Fitting Style

F = Flaretek® compatible
 T = Tube Out
 W = Weldable
 P = Pillar S-300®
 N = Female NPT (FNPT)

③ Fitting Size

04 = 1/4 in
 06 = 3/8 in
 08 = 1/2 in
 12 = 3/4 in
 16 = 1 in
 20 = 1-1/4 in

④ Leak Detection

LF0 = 15 ft fiber optic cable, no amplifier
 LF1 = 15 ft fiber optic cable, D10 amplifier
 LF2 = 25 ft fiber optic cable, no amplifier
 LF3 = 25 ft fiber optic cable, D10 amplifier
 LC0 = 15 ft conductivity cable

⑤ Stroke Detection

SF0 = Single probe, 15 ft fiber optic cable, no amplifier
 SF1 = Single probe, 15 ft fiber optic cable, D10 amplifier
 SF2 = Single probe, 25 ft fiber optic cable, no amplifier
 SF3 = Single probe, 25 ft fiber optic cable, D10 amplifier
 SP1 = Single Pressure Switch (NPN)
 SP2 = Dual NPN Pressure Switch (each with two DP2)*
 SP3 = Dual Pressure Switch (no switches supplied)*
 SP4 = Single PNP Pressure Switch
 SP5 = Dual PNP Pressure Switch (each with two DP2)

⑥ Liquid Outlet Position

F = Front straight liquid outlet
 T = Top straight liquid outlet

⑦ Liquid Outlet Style and Size

Choices are same as ② and ③ above

⑨ Revision level

Contact White Knight for copy exact information.

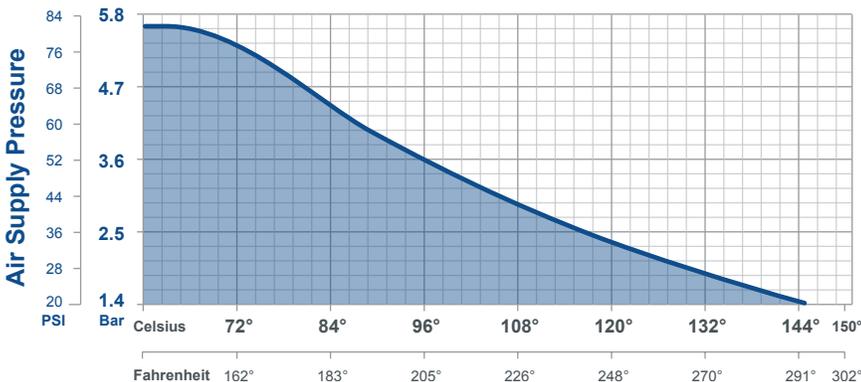
Define optional items only if desired. Define outlet fitting options (6-8) if they differ from inlet fitting options (2)(3).

All fittings are not available in all sizes, and all fittings are not compatible with all pump sizes. Call for details.

Operating pumps in timer mode requires end-of-stroke detection to prevent over stroking. Operating a pump in timer mode without stroke detection voids the warranty.

*Comes without White Knight shuttle valve.

Temperature Limitations



Specifications

Model	PSH030	PSH060	PSH140	
Max Flow Rate*	22.8 lpm (6.02 gpm)	58.3 lpm (15.40 gpm)	118 lpm (31.3 gpm)	
Displacement Per Cycle*	0.074 liters (0.019 gal)	0.178 liters (0.047 gal)	0.500 liters (0.132 gal)	
Cycles per min	≤ 333	≤ 348	≤ 254	
Air Connection	1/4 in FNPT	1/4 in FNPT	3/8 in FNPT	
Weight	4.6 kg (10.05 lb)	7.3 kg (16.1 lb)	18.5 kg (40.9 lb)	
Suction Lift*	≤ 1 m (3 ft)	≤ 1 m (3 ft)	≤ 1 m (3 ft)	
Sound	Pressure**	74.00 dB(a) 79.90 dB(a)	73.11 dB(a) 82.50 dB(a)	71.73 dB(a) 75.42 dB(a)
	Power**	63.01 dB(a) 69.90 dB(a)	64.29 dB(a) 74.11 dB(a)	70.46 dB(a) 75.27 dB(a)

Stroke Detection	Fiber optic with or without D10 sensor, or solid state pressure switch (NPN or PNP)	Max Fluid Temperature	145°C (293°F)
Leak Detection	Fiber optic with or without sensor, or conductivity	Max Supply Air Pressure	5.5 bar (80 psi)
Electronic Control	CPC, CPT, or custom. Call for details.	Min Startup Air Pressure	1.4 bar (20 psi)
		Fluid Path Materials	PTFE, PFA
		Non-Fluid Path Materials	PTFE, PFA, Ceramic

* May vary by configuration. Suction lift diminishes over time. Recommended installation level less than 3 ft above source.

** dB at 100 psi 50 CPM (top) and 100 psi max. CPM (bottom). Sound levels measured in accordance with ISO9614-2:1997.

***Dry-run capable PSHSD pumps require flooded suction, and may have a reduced warranty. Contact White Knight for details.





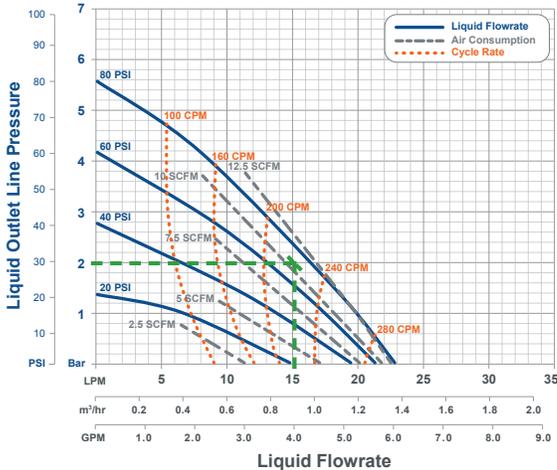
WHITE KNIGHT®

.....engineer approved™

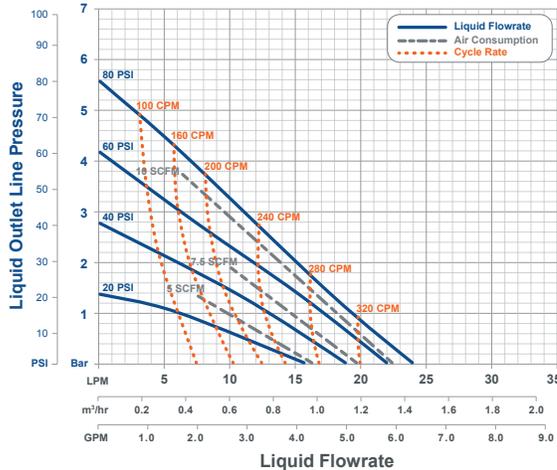
PSH SERIES PUMPS

Performance

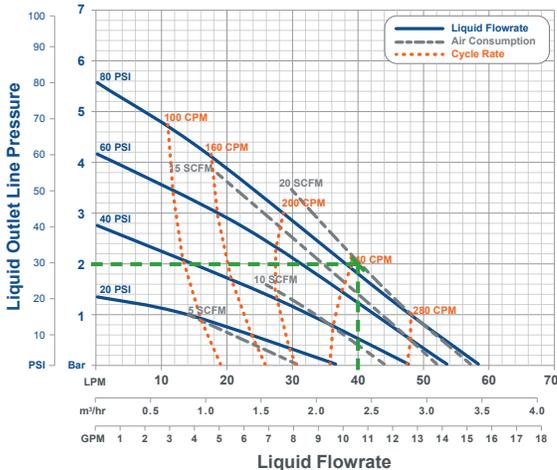
PSH030



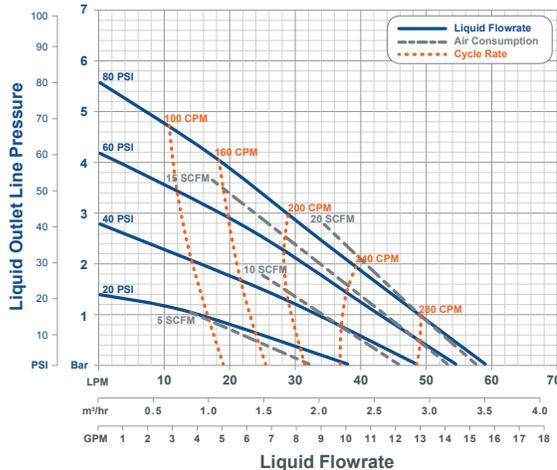
PSH030SD



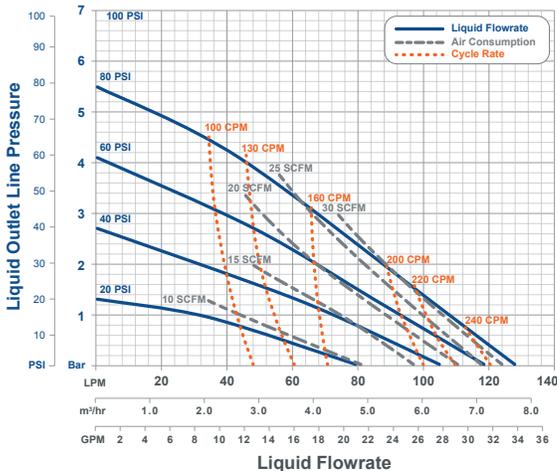
PSH060



PSH060SD



PSH140



Reading Charts

Draw a horizontal line from your liquid outlet line pressure and a vertical line through your desired flow rate. At their intersection, estimate required liquid flow rate (or air supply pressure), cycle rate and air consumption.

See green dashed lines in PSH030 and PSH060 charts for examples.

Example 1

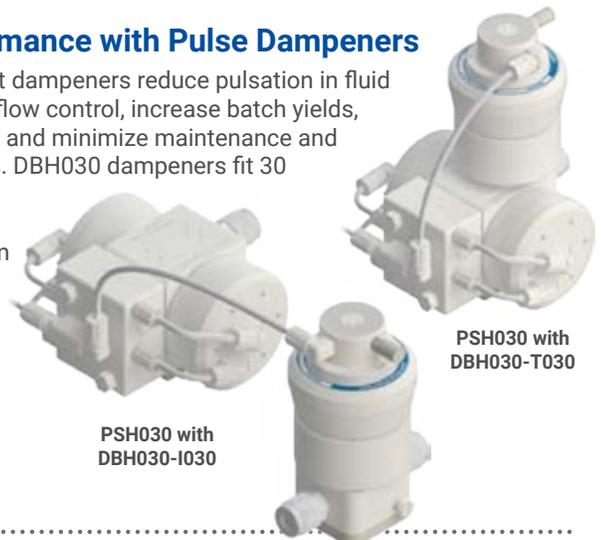
At 2 bar (30 psi) liquid outlet line pressure and 70 psi supply pressure, PSH030 pumps provide 15 lpm (4 gpm) liquid flow rate. They would cycle at 220 CPM, and exhaust 10 SCFM of air.

Example 2

At 2 bar (30 psi) liquid outlet line pressure and 82 psi supply pressure, PSH060 pumps provide 40 lpm (10.6 gpm) flow rates. They would cycle at 240 CPM and exhaust 20 SCFM of air.

Improve Performance with Pulse Dampeners

In-line and top-mount dampeners reduce pulsation in fluid systems to improve flow control, increase batch yields, protect components, and minimize maintenance and downtime for repairs. DBH030 dampeners fit 30 and 60 lpm pumps. DBH060 dampeners fit 30, 60 and 140 lpm pumps. DBH140 dampeners fit 60 and 140 lpm pumps.





WHITE KNIGHT®

.....engineer approved™

PSH SERIES PUMPS

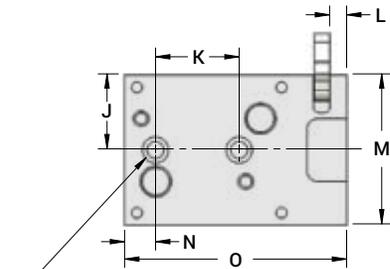
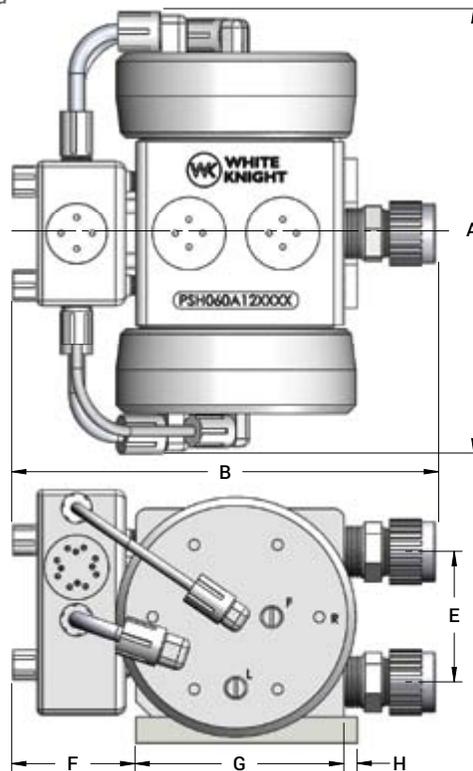
Dimensions

Dimensions in mm (inches)

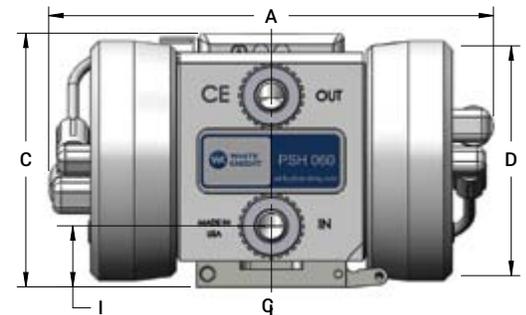
	PSH030	PSH060	PSH140
A	237 (9.3)	270 (10.6)	361 (14.2)
B	209 (8.2)	257 (10.1)	342 (13.5)
C	121 (4.8)	154 (6.1)	235 (9.2)
D	∅116 (4.6)	∅146 (5.8)	∅225 (8.9)
E	57 (2.2)	79 (3.1)	138 (5.4)
F	66 (2.6)	75 (3.0)	75 (3.0)
G	100 (3.9)	127 (5.0)	206 (8.1)
H	8 (0.3)	8 (0.3)	8 (0.3)
I	32 (1.3)	37 (1.5)	53 (2.1)
J	31 (1.2)	46 (1.8)	47 (1.8)
K	51 (2.0)	51 (2.0)	51 (2.0)
L	11 (0.4)	10 (0.4)	11 (0.4)
M	62 (2.5)	91 (3.6)	94 (3.7)
N	25 (1.0)	19 (0.7)	57 (2.2)
O	111 (4.4)	135 (5.3)	215 (8.4)

Rigid baseplate available. Call for details.

<https://wkfluidhandling.com/ps/>



MOUNT WITH 2 EA. 3/8" (10 mm) SOCKET HEAD CAP SCREWS



White Knight Accessories

Ultra-Pure Closed-Loop Systems

Automatically control flow or pressure with metal-free systems capable of 210°C, dead-head and suction lift!



Automatically maintain flow or pressure in ultra-pure chemical process and delivery systems. Simplify process automation to save time and resources, improve yields and reduce cost.

<https://wkfluidhandling.com/closed-loop/>

- ⊙ Up to 210°C (410°F)
- ⊙ No metals or elastomers
- ⊙ No heat generation
- ⊙ No O-rings or lubrication
- ⊙ Suction lift & dead-head

Pulse Dampeners

Reduce pulsation in fluid systems to improve flow control, increase yields, protect fittings and pipes, and minimize downtime for repairs.

<https://wkfluidhandling.com/dampeners/>



Pressure Regulators

Control upstream or downstream pressure! A single back-pressure regulator equalizes upstream fluid pressure across multiple discharge outlets. Forward-pressure regulators control downstream pressure.

<https://wkfluidhandling.com/regulators/>



Cycle-Rate Translator

The CPT enables pump replacements in existing tools. It operates a White Knight pump at its optimal cycle rate and scales the operational cycle rate to that expected by the tool.

<https://wkfluidhandling.com/cpt/>

