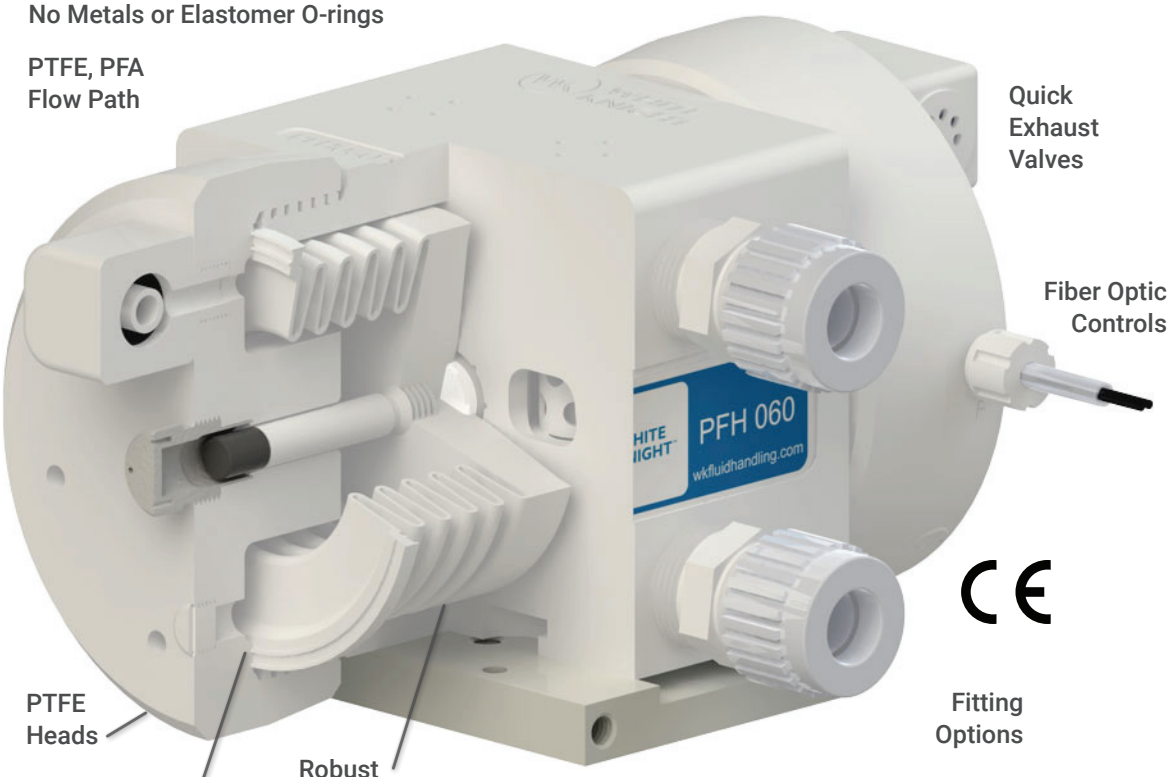
WHITE KNIGHT®
engineer approved™

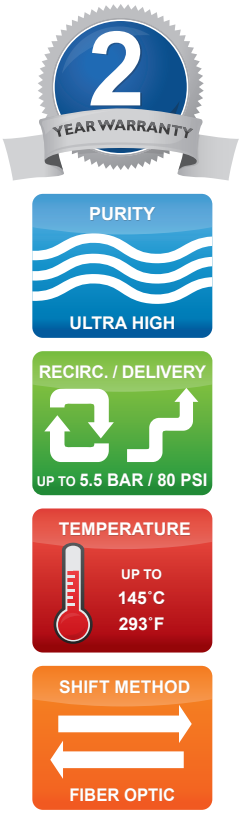
PFH SERIES PUMPS

Ultrapure Chemical Pumps with Fiber-Optic Sensors

Metal-free pumps with PTFE, PFA flow paths for ultrapure chemical processes. PFH Series pumps are capable of up to 145°C (293°F) fluid temperatures and 5.5 Bar (80 psi) air pressures. PFHSD models can run dry for more than one hour without damage. PFH015, PFH030, PFH060 and PFH140 pumps offer flow rates up to 15, 30, 60 and 140 lpm, respectively.

Advanced Pump Technologies





Features & Benefits

- Process-safe PTFE, PFA flow paths
- Contains no metals or elastomers
- Durable machined design with minimal parts
- Fiber-optic sensors provide optimal control
- Reliable, safe operation with leak-free seals and no O-rings
- Robust bellows allow for 5.5 Bar (80 psi) supply pressure
- Lubricant-free shifting eliminates 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/pfh-series/

P: 435.783.6040 | info@wkfluidhandling.com | https://wkfluidhandling.com

WHITE KNIGHT®

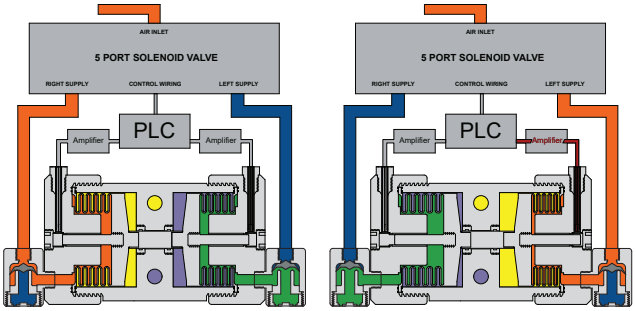
engineer approved™

PFH SERIES PUMPS

Operation

A solenoid valve and fiber optics monitor stroke timing to optimize liquid flow and pump durability.

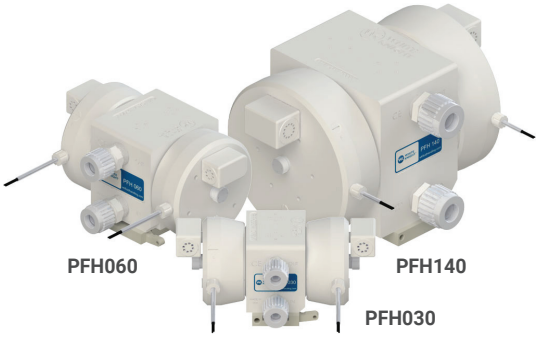
See online animation.



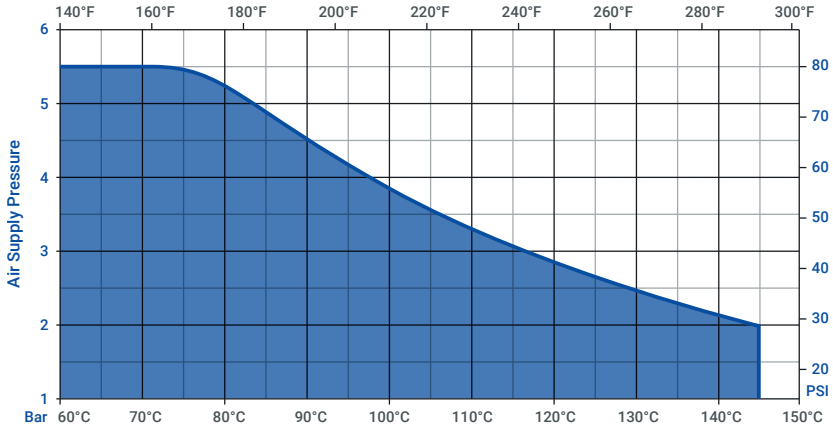
Supply air to left side

Supply air to right side

Supply Air | Ambient Air | Liquid Out
Exhaust Air | Shift Signal | Liquid In



Temperature Limitations



Specifications

Model		PFH015	PFH030	PFH060	PFH140
Max Flow Rate*		12.8 lpm (3.38 gpm)	25.1 lpm (6.63 gpm)	63.9 lpm (16.88 gpm)	145.8 lpm (38.52 gpm)
Displacement Per Cycle*		0.089 liters (0.024 gal)	0.089 liters (0.024 gal)	0.216 liters (0.057 gal)	0.500 liters (0.132 gal)
Cycles per min		≤ 190	≤ 336	≤ 318	≤ 235
Air Connection		1/4 in FNPT	1/4 in FNPT	1/4 in FNPT	3/8 in FNPT
Weight		3.6 kg (8.0 lb)	3.6 kg (8.0 lb)	5.9 kg (13.0 lb)	17.2 kg (37.9 lb)
Suction Lift*		≤ 1 m (3 ft)	≤ 1 m (3 ft)	≤ 1 m (3 ft)	≤ 1 m (3 ft)
Sound	Pressure**	69.54 dB(a) 66.58 dB(a)	69.54 dB(a) 66.58 dB(a)	82.74 dB(a) 82.61 dB(a)	81.98 dB(a) 91.60 dB(a)
	Power**	58.44 dB(a) 65.52 dB(a)	58.44 dB(a) 65.52 dB(a)	71.92 dB(a) 73.84 dB(a)	76.37 dB(a) 83.16 dB(a)

Stroke Detection	Fiber optic with or without D10 sensor
Leak Detection	Fiber optic with or without sensor, or conductivity
Electronic Control	CPC, CPT, or custom. Call for details.

Max Fluid Temperature	145°C (293°F)
Max Supply Air Pressure	5.5 Bar (80 psi)
Min Startup Air Pressure	1.4 bar (20 psi)
Fluid Path Materials	PTFE, PFA
Non-Fluid Path Materials	PTFE, PFA

** May vary by configuration and system. Suction lift diminishes over time. Recommended installation level less than 3 ft above source. To calculate displacement, divide flow rate by CPM.*
*** dB at 80 psi 50 CPM (top) and 80 psi max. CPM (bottom). Sound levels measured in accordance with ISO9614-2:1997.*
****Dry-run capable PFHSD pumps require flooded suction, and may have a reduced warranty. Contact White Knight for details.*

Configuration

PFH 060 _ - F 12 - LF0 - SFD0 - T P 08 - A - _
⓪ ① ② ③ ④ ⑤ ⑥ ⑦⑧⑨ ⑩ Ⓐ
(optional)

⓪ Pump Model
PFH = Standard
PFHSD = Dry-run capable

① Pump Size (max discharge)
030 = 30 lpm (8 gpm)
060 = 60 lpm (16 gpm)
140 = 140 lpm (36 gpm)

② Check ball material
blank (default) = PTFE
F = PFA check balls

③ Fitting Style
F = Flaretek® compatible
T = Tube Out
W = Weldable
P = Pillar S-300®
N = Female NPT (FNPT)

④ 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
24 = 1-1/2 in

⑤ Leak Detection *(optional)*
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

⑥ Stroke Detection *(*Required for operation)*
Dual Probe
SFD0 = 15 ft fiber optic cable, no amplifier
SFD1 = 15 ft fiber optic cable, D10 amplifier
SFD2 = 25 ft fiber optic cable, no amplifier
SPD3 = 25 ft fiber optic cable, D10 amplifier
Single Probe, Dual Detect
SFS = Single probe, dual detect, no fibers
SFD0 = 15 ft fiber optic cable, no amplifier
SFD1 = 15 ft fiber optic cable, D10 amplifier
SFD2 = 25 ft fiber optic cable, no amplifier
SPD3 = 25 ft fiber optic cable, D10 amplifier

⑦ Liquid Outlet Position
F = Front straight liquid outlet
T = Top straight liquid outlet

⑧⑨ Liquid Outlet Style and Size
Choices are same as ③ and ④ above

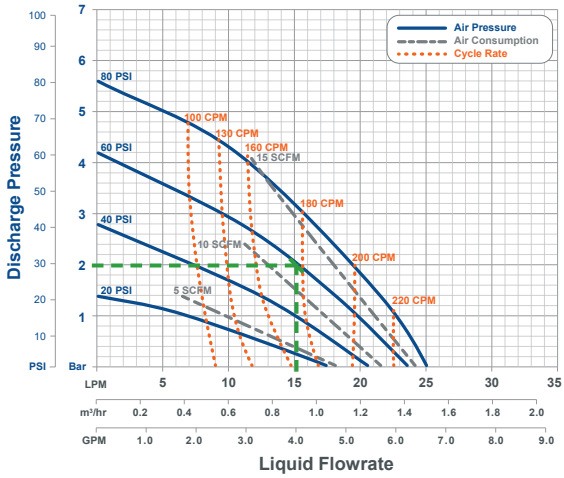
⑩ Quick Exhaust/Air Inlet
A = 5/16 in NPT Adapter

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 pump in timer mode requires end-of-stroke detection to prevent over stroking. Operating a pump in timer mode without stroke detection voids the warranty.
Operating pump without quick exhaust valves voids warranty. Customers may use NPT adapter and supply their own QEVs.
Contact White Knight for copy exact information.

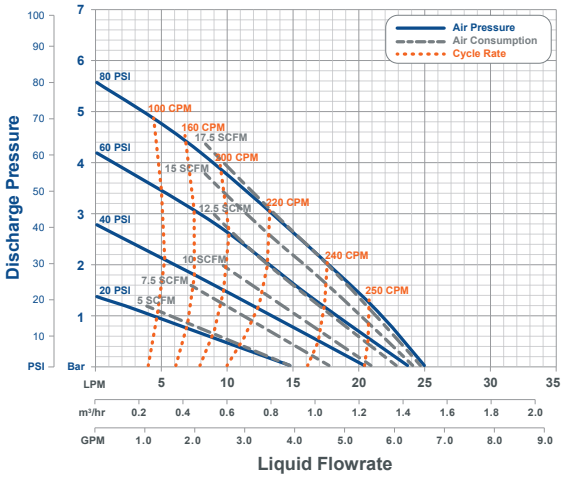
P: 435.783.6040 | info@wkfluidhandling.com | https://wkfluidhandling.com

Performance

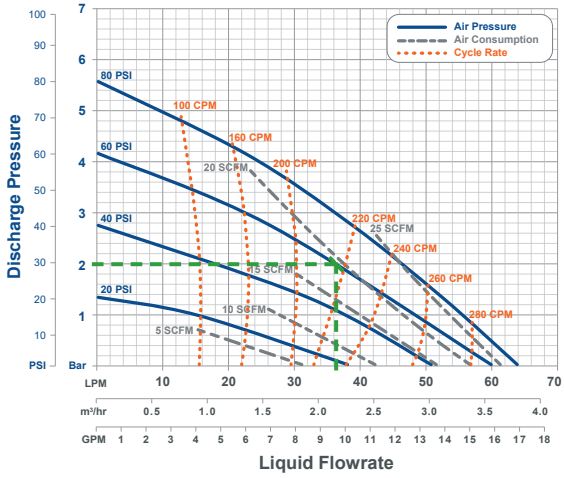
PFH030



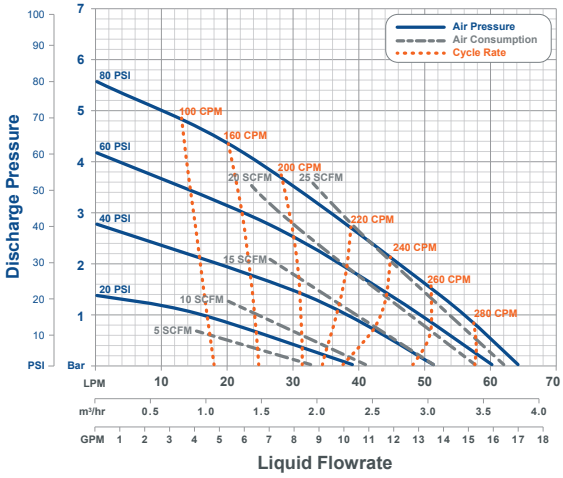
PFHSD030



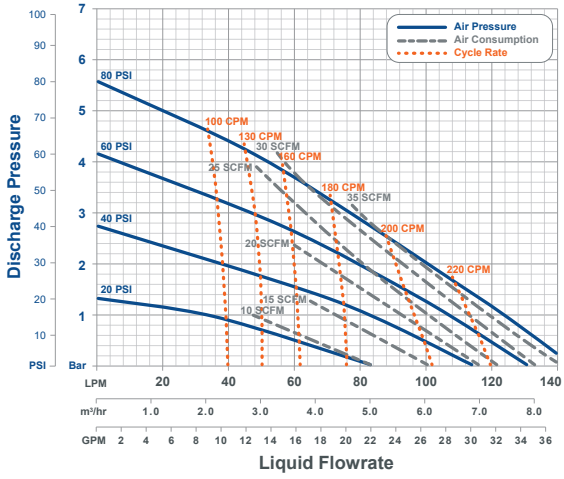
PFH060



PFHSD060



PFH140



Reading Charts

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

See green dashed lines in PFH030 and PFH060 charts for examples.

Example 1

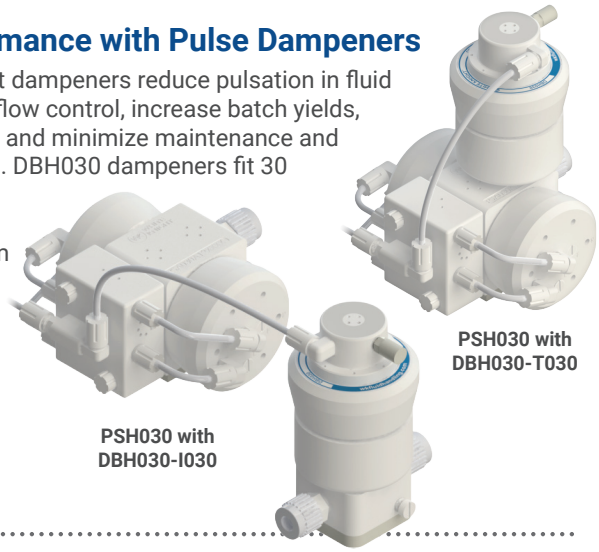
At 2 Bar (30 psi) liquid discharge pressure and 60 psi supply pressure, PFH030 pumps provide 15 lpm (4 gpm) liquid flow rate. They would cycle at 175 CPM, and exhaust 12 SCFM of air.

Example 2

At 2 Bar (30 psi) liquid discharge pressure and 60 psi supply pressure, PFH060 pumps provide 36 lpm (9.8 gpm) flow rates. They would cycle at 215 CPM and exhaust 19 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.



PSH030 with DBH030-T030

PSH030 with DBH030-I030

Graph is for reference only. Performance was measured utilizing 1/2 in (3/8 in ID) air line and 1-1/4 in (1-1/8 in ID) liquid lines with 1 ft flooded suction. Performance may vary in your system.

P: 435.783.6040 | info@wkfluidhandling.com | https://wkfluidhandling.com

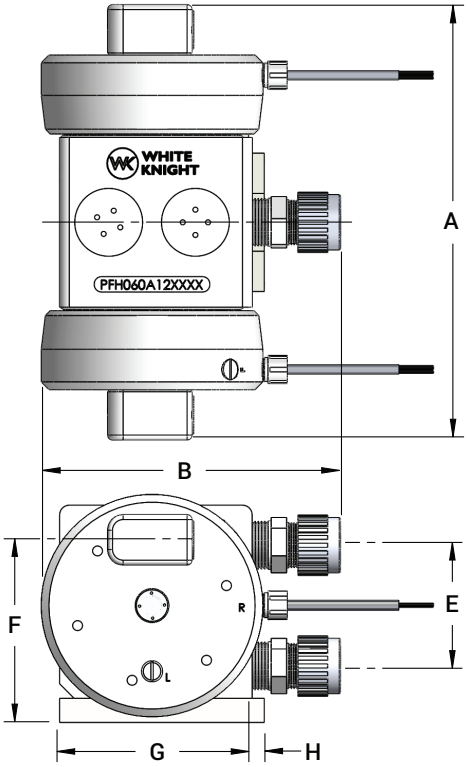
Dimensions

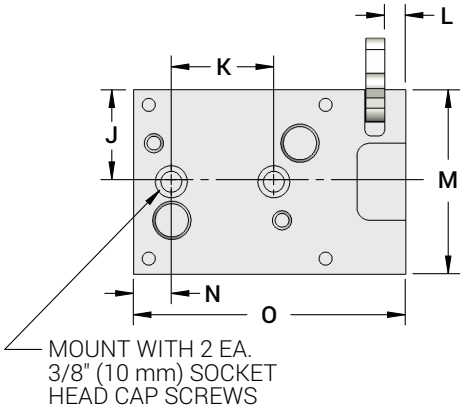
mm (inches)

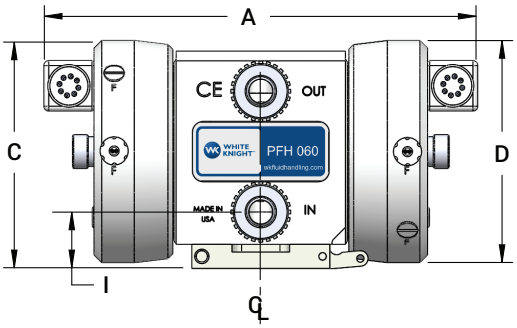
	PFH015 PFH030	PFH060	PFH140
A	263 (10.4)	287 (11.3)	383 (15.1)
B	154 (6.1)	197 (7.7)	277 (10.9)
C	121 (4.8)	150 (5.9)	235 (9.2)
D	ø116 (4.6)	ø146 (5.8)	ø225 (8.9)
E	57 (2.2)	79 (3.1)	138 (5.4)
F	100 (3.9)	120 (4.7)	192 (7.6)
G	100 (3.9)	127 (5.0)	206 (8.1)
H	8 (0.3)	8 (0.3)	8 (0.3)
I	32 (1.3)	37 (1.5)	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/pfh/







White Knight Accessories

Ultrapure 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 ultrapure chemical process and delivery systems. Simplify process automation to save time and resources, improve yields and reduce cost.

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

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

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/

P: 435.783.6040 | info@wkfluidhandling.com | https://wkfluidhandling.com