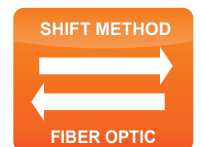
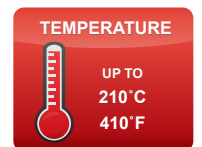
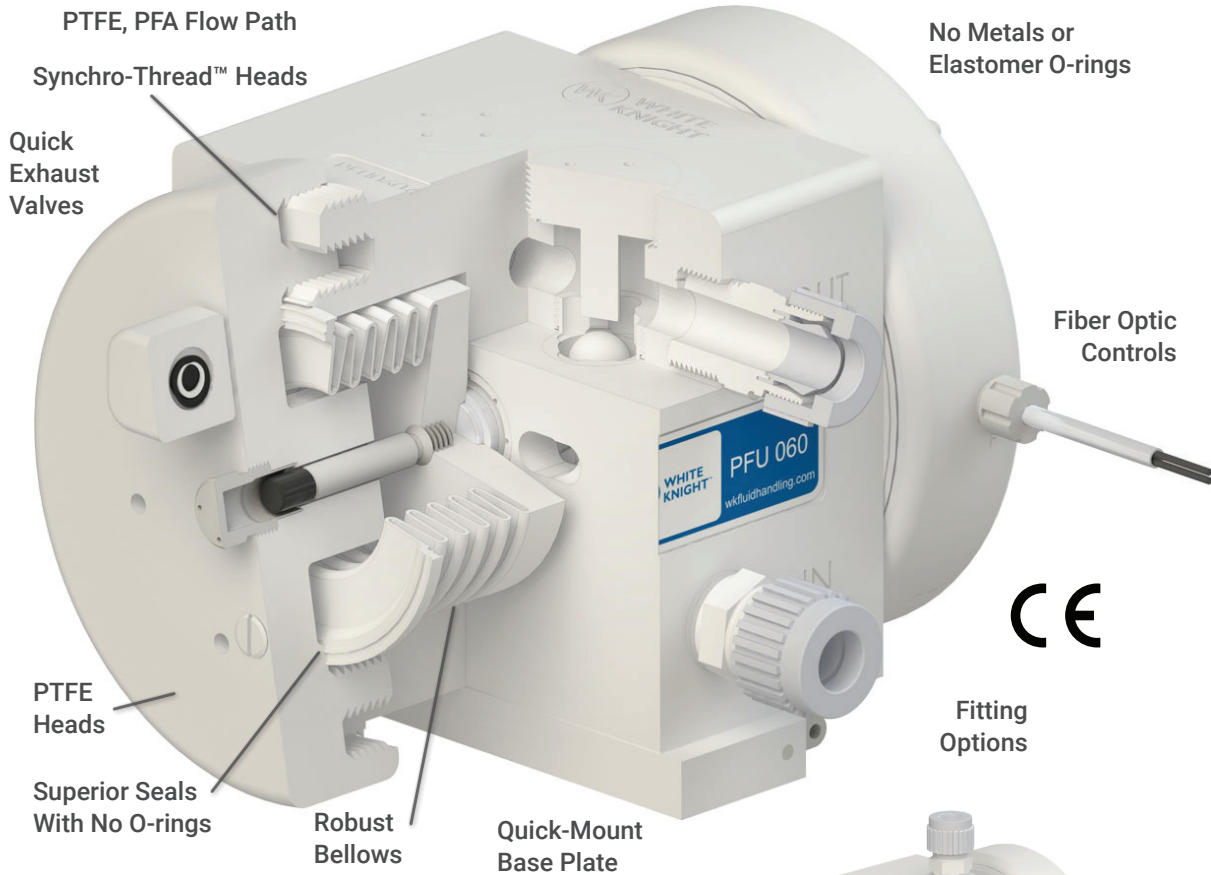


Ultrapure Chemical Pumps with Fiber-Optic Sensors

Metal-free pumps with PTFE, PFA flow paths for ultrapure chemical process applications. PFU Series pumps are capable of 210°C (410°F) fluid temperatures and 7 Bar (100 psi) air pressures. PFUSD models can run dry for more than one hour without pump damage.

Advanced Pump Technologies



Features & Benefits

- Process-safe PTFE, PFA flow paths
- Durable machined design with no metals or elastomers
- Synchro-Thread™ allows for fluids up to 210°C (410°F)
- Fiber-optic sensors provide optimal control
- Reliable, safe operation with leak-free seals and no O-rings
- Robust bellows allow for 7 Bar (100 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

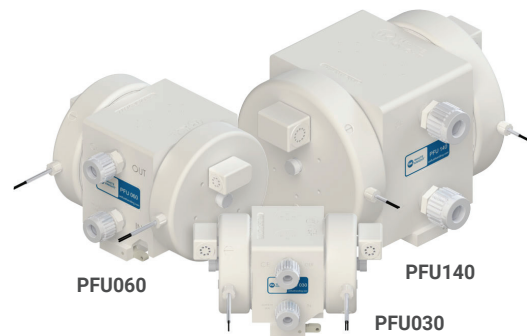
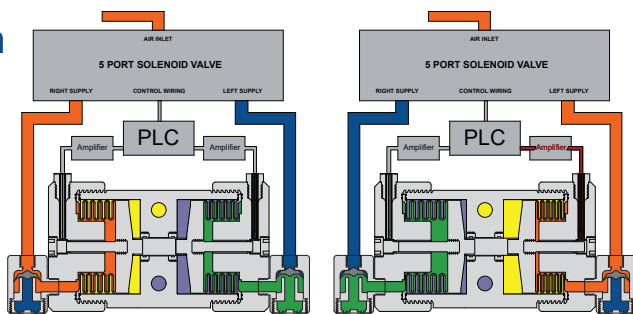
<https://wkfluidhandling.com/pfu-series/>



Operation

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

See online animation.



Configuration

PFU 060 - F 12 - LF0 - SFD0 - T P 08 - A -
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ A (optional)

- ① **Pump Model**
PFU = Standard
PFUSD = Dry-run capable
- ② **Check ball material**
F = PFA
M (060) = PTFE
Blank (030/140) = PTFE
- 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

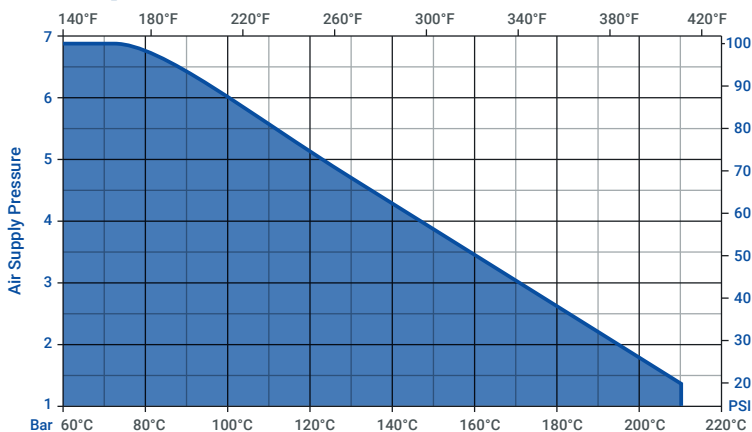
- ⑥ **Stroke Detection (*Required for operation)**
Dual Probe
SFD0 = 15 ft fiber optic cable, no amplifier
SFD1 = 15 ft fiber optic cable, D10 amplifier
SFD2 = 25 ft fiber optic cable, no amplifier
SPD3 = 25 ft fiber optic cable, D10 amplifier
Single Probe, Dual Detect
SFS = Single probe, dual detect, 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
- ⑧ ⑨ **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.

Temperature Limitations



Specifications

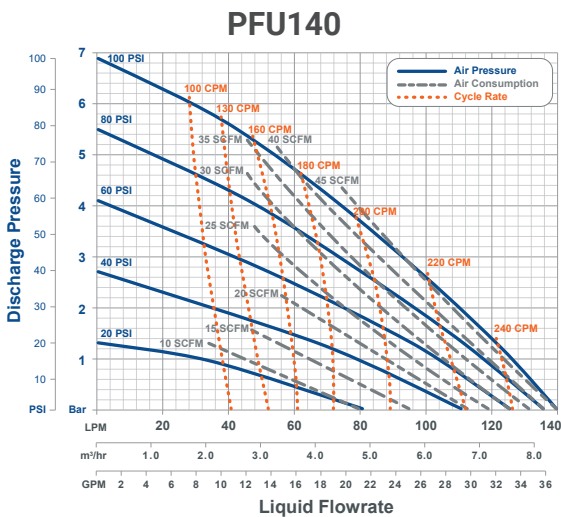
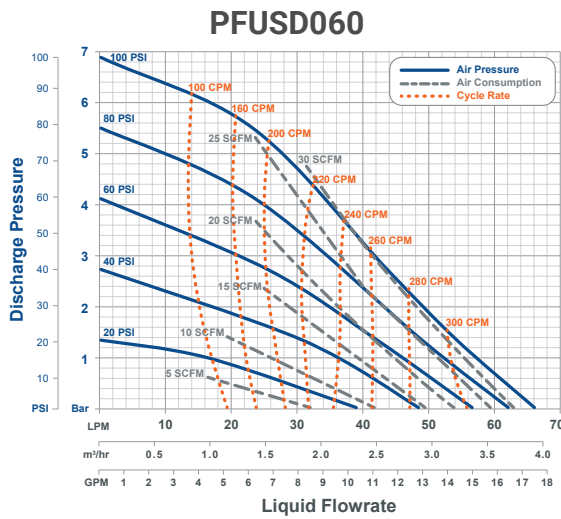
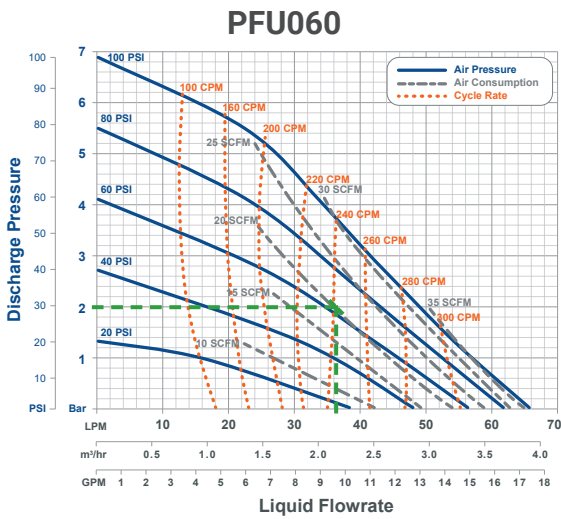
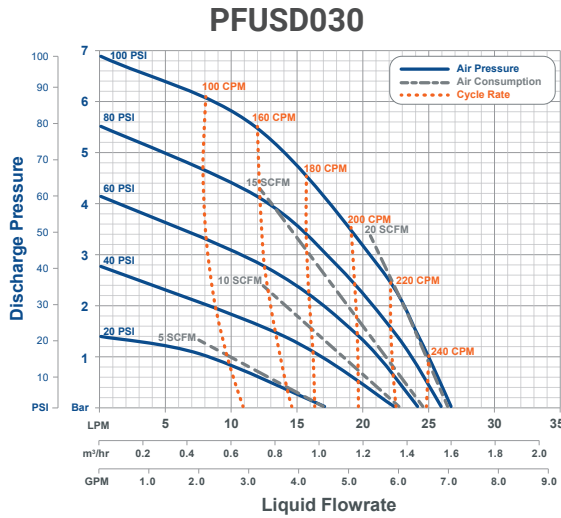
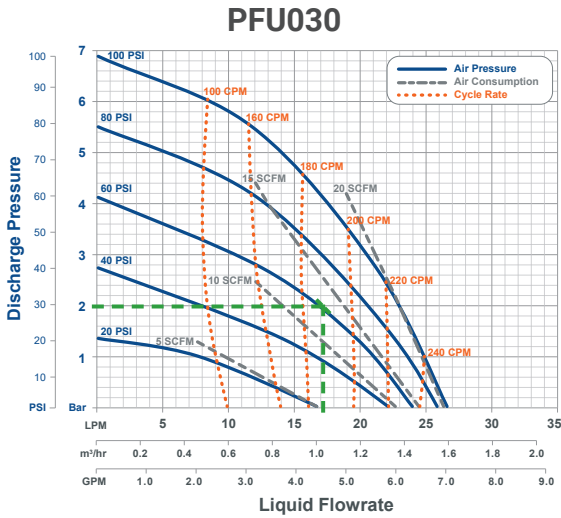
Model	PFU030	PFU060	PFU140	
Max Flow Rate*	26.4 lpm (6.97 gpm)	65.8 lpm (17.38 gpm)	139.8 lpm (36.93 gpm)	
Displacement Per Cycle*	0.089 liters (0.024 gal)	0.216 liters (0.057 gal)	0.500 liters (0.132 gal)	
Cycles per min	≤ 336	≤ 318	≤ 235	
Air Connection	1/4 in FNPT	1/4 in FNPT	3/8 in FNPT	
Weight	5.5 kg (12.1 lb)	13.7 kg (30.3 lb)	20.4 kg (45.0 lb)	
Suction Lift*	≤ 1 m (3 ft)	≤ 1 m (3 ft)	≤ 1 m (3 ft)	
Sound	Pressure**	69.54 dB(a) 66.58 dB(a)	82.74 dB(a) 82.61 dB(a)	77.90 dB(a) 79.56 dB(a)
	Power**	58.44 dB(a) 65.52 dB(a)	71.92 dB(a) 73.84 dB(a)	73.78 dB(a) 76.10 dB(a)

Stroke Detection	Fiber optic with or without D10 sensor	Max Fluid Temperature	210°C (410°F)
Leak Detection	Fiber optic with or without sensor, or conductivity	Max Supply Air Pressure	7 Bar (100 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

* 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 100 psi 50 CPM (top) and 100 psi max. CPM (bottom). Sound levels measured in accordance with ISO9614-2:1997.
 ***Dry-run capable PFUSD pumps require flooded suction, and may have a reduced warranty. Contact White Knight for details.



Performance



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 PFU030 and PFU060 charts for examples.

Example 1

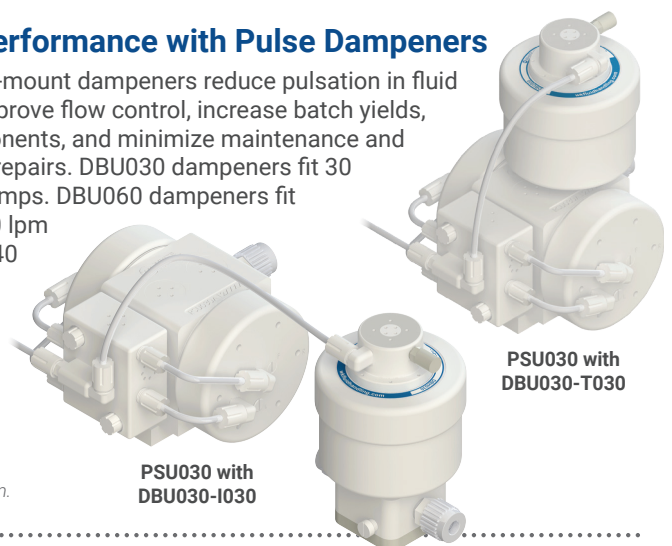
At 2 Bar (30 psi) liquid discharge pressure and 60 psi supply pressure, PFU030 pumps provide 17 lpm (4.5 gpm) liquid flow rate. They would cycle at 175 CPM, and exhaust 12 SCFM of air.

Example 2

At 2 Bar (30 psi) liquid discharge pressure and 60 psi supply pressure, PFU060 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. DBU030 dampeners fit 30 and 60 lpm pumps. DBU060 dampeners fit 30, 60 and 140 lpm pumps. DBU140 dampeners fit 60 and 140 lpm pumps.



PSU030 with DBU030-I030

PSU030 with DBU030-T030

*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.

Dimensions

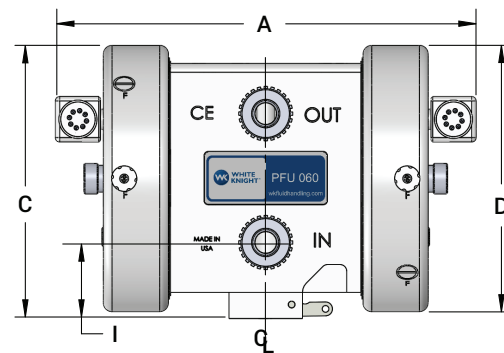
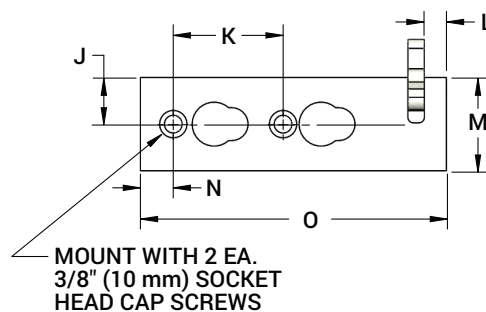
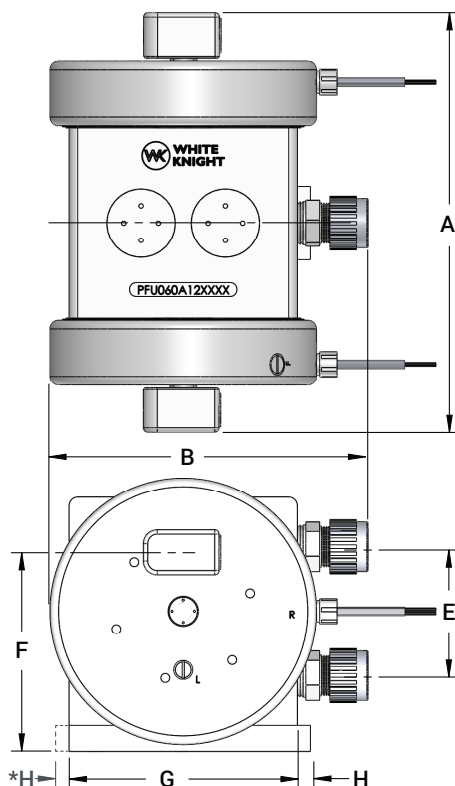
mm (inches)

	PFU030	PFU060	PFU140
A	263 (10.4)	308 (12.1)	384 (15.1)
B	173 (6.8)	233 (9.2)	298 (11.7)
C	149 (5.9)	201 (7.9)	256 (10.1)
D	∅140 (5.5)	∅196 (7.7)	∅249 (9.8)
E	67 (2.6)	95 (3.7)	138 (5.4)
F	116 (4.6)	146 (5.7)	201 (7.9)
G	121 (4.8)	167 (6.6)	224 (8.8)
H	10 (0.4)	10 (0.4)	10 (0.4)
I	46 (1.8)	55 (2.2)	62 (2.4)
J	25 (1.0)	27 (1.1)	30 (1.2)
K	55 (2.2)	64 (2.5)	76 (3.0)
L	13 (0.5)	13 (0.5)	13 (0.5)
M	50 (2.0)	54 (2.1)	60 (2.4)
N	10 (0.4)	19 (0.8)	103 (4.1)
O	140 (5.5)	177 (7.0)	234 (9.2)

Rigid baseplate available. Call for details.

* Only for PFU030 models

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



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.

<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/>