



WHITE KNIGHT®

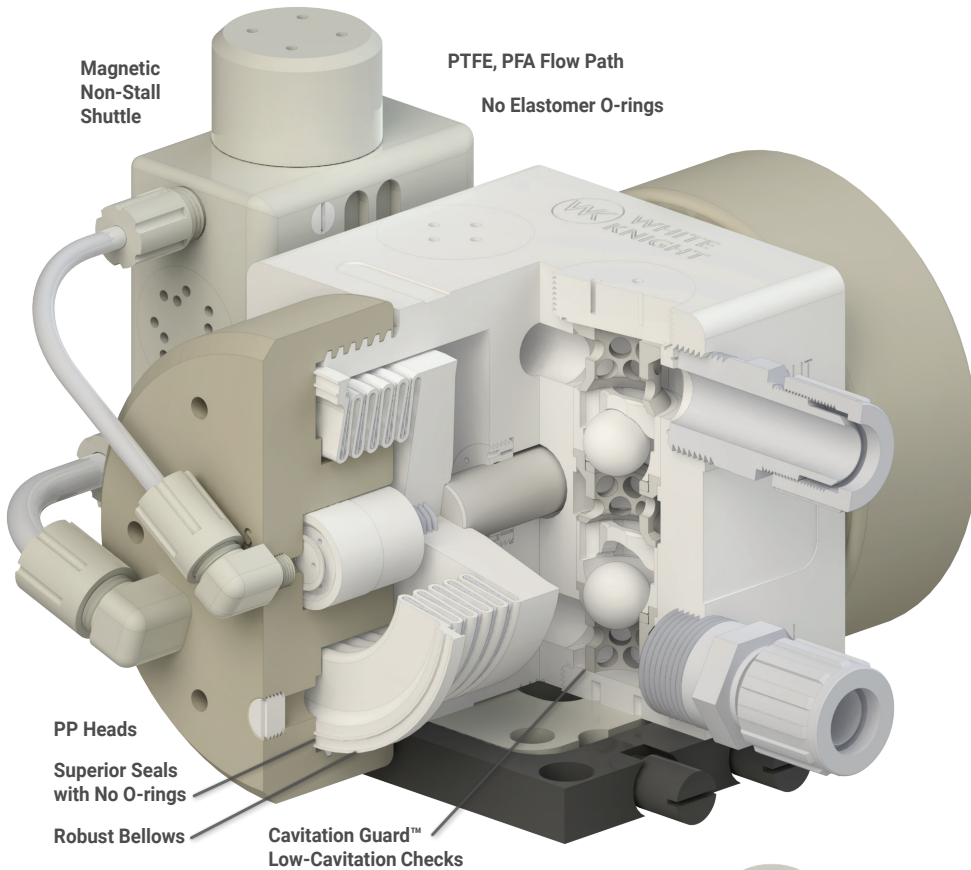
.....engineer approved™

PA SERIES PUMPS



Ultrapure Chemical Pumps with Cavitation Guard™

PTFE pumps with nonmetal flow paths for ultrapure chemical processes. They include an on-board magnetic shuttle for enhance reliability, and low-cavitation checks for applications with high head pressure. The pumps are capable of up to 100°C fluid temperatures and 100 psi air pressures. The pumps are available in two models, PA060 and PA140, which are capable of maximum flow rates of 60 and 130 lpm, respectively.



Magnetic Non-Stall Shuttle

PTFE, PFA Flow Path

No Elastomer O-rings

PP Heads

Superior Seals with No O-rings

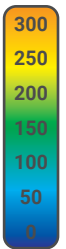
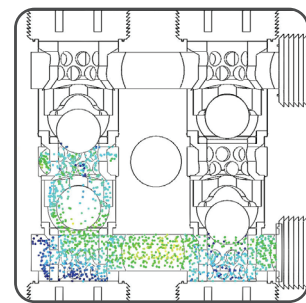
Robust Bellows

Cavitation Guard™ Low-Cavitation Checks

Cavitation Guard™

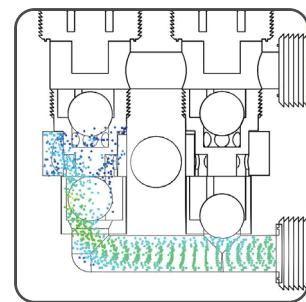
Minimize cavitation with fewer fluid acceleration points in the flow path.

Flow with Cavitation Guard™



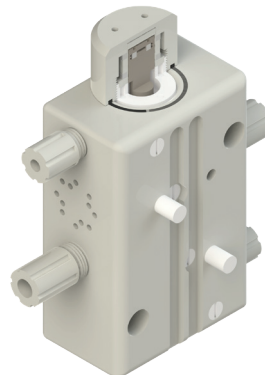
Velocity (in/s)

Flow without Cavitation Guard™



Features & Benefits

- Process-safe PTFE, PFA flow paths
- Low-Cavitation checks reduce fluid acceleration points in the flow path
- Minimal parts in durable machined design
- Reliable, safe operation with leak-free seals
- On-board magnetic shuttle saves space, prevents stalls, and reduces alarm errors in applications with high head pressure
- Pneumatic Logic™ minimizes liquid pulsation and pump vibration
- Robust bellows for 100 psi supply pressure
- Lubricant-free shifting removes contaminants
- Class 100 cleanroom assembly, testing, and packaging
- No preventative maintenance during warranty



Magnetic Shuttle

This shuttle uses encapsulated rare earth magnets to improve pump reliability and prevent stalls in extreme situations, such as pumping against high head pressure or with low air volume. The shuttle reduces tool alarm errors and process switches to redundant systems. Its non-wearable detent minimizes wear without grease to reduce maintenance costs and eliminate potential contamination.

- Prevents stalls in applications with high head pressures
- Prevents stalls caused by low air volumes
- Reduces tool alarm errors
- Non-wearable detent reduces maintenance costs
- Lubricant-free shifting eliminates potential contamination
- Improved cleanliness over greased designs

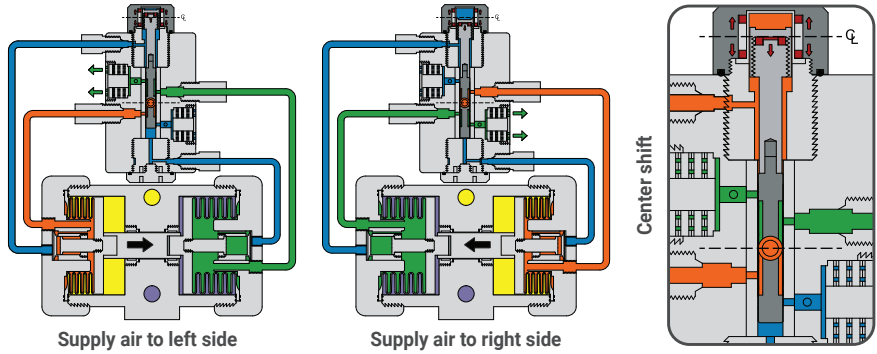




Operation

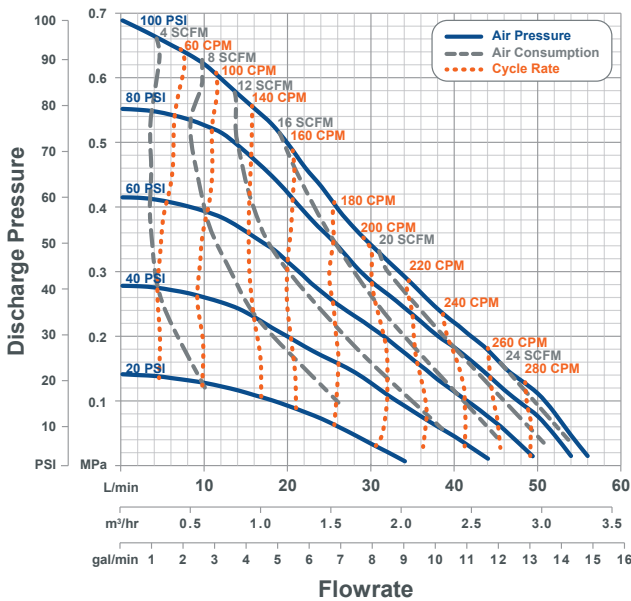
Pneumatic Logic™ minimizes pulsation, vibration, and wear. It corrects spool placement after each stroke and resets shuttle valves after shutdowns. The magnetic shuttle detent prevents stalls in applications with high head pressure.

- Supply Air
- Exhaust Air
- Ambient Air
- Liquid Out
- Liquid In
- Magnetics

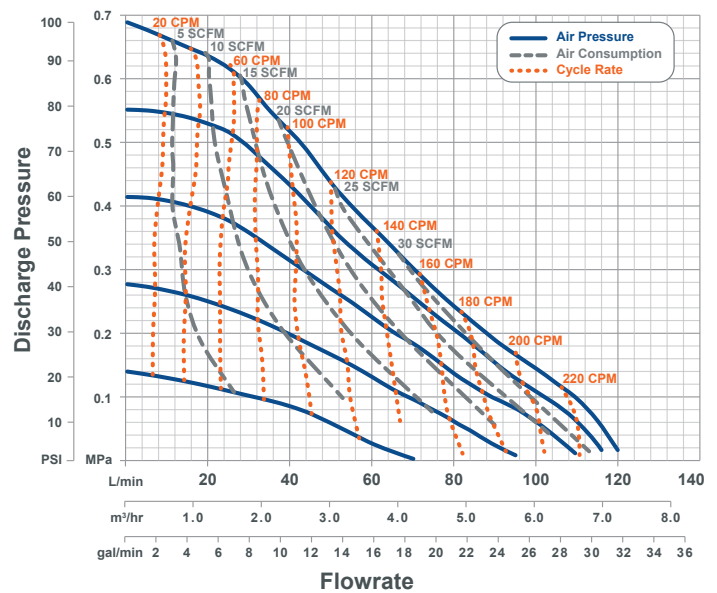


Performance

PA060



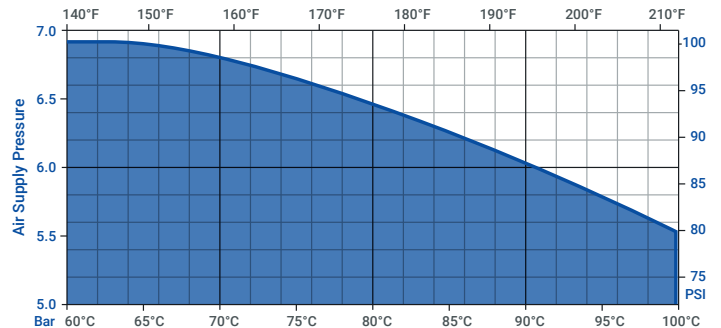
PA140



Specifications

Model	PA060	PA140
Max Flow Rate*	56.7 lpm (14.98 gpm)	125.4 lpm (33.13 gpm)
Displacement Per Cycle*	0.173 L (0.046 gal)	0.477 L (0.126 gal)
Cycles per min.	≤ 327	≤ 263
Air Connection	1/4-in FNPT	3/8 in FNPT
Weight	4.7 kg (10.4 lb)	16.6 kg (36.6 lb)
Suction Lift*	≤ 3 m (10 ft)	≤ 3 m (10 ft)
Sound Pressure**	73.11 dB(a), 82.50 dB(a)	81.98 dB(a), 91.60 dB(a)
Sound Power**	64.29 dB(a), 74.11 dB(a)	76.37 dB(a), 83.16 dB(a)

Temperature Limitations



Model	PA060, PA140
Max Fluid Temperature	100°C (212°F)
Max Supply Air Pressure	7 Bar (100 psi)
Min Startup Air Pressure	1.4 Bar (20 psi)
Fluid Path Materials	PTFE, PFA
Non-Fluid Path Materials	PTFE, PFA, PP, Ceramic

Model	PA060, PA140
Stroke Detection	Fiber optic with or without D10 sensor, or solid state pressure switch (NPN or PNP)
Leak Detection	Fiber optic with or without sensor, or conductivity
Electronic Control	CPC, CPT, or custom. Call for details.

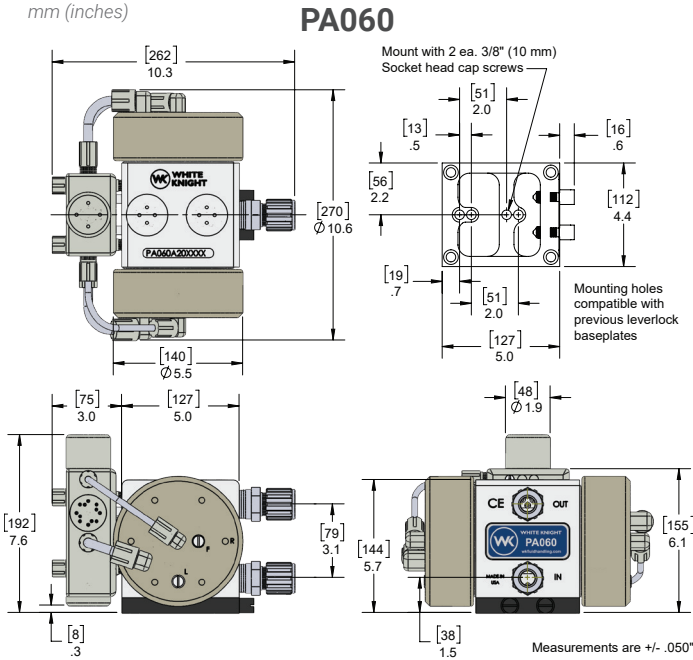
Graphs are for reference only. Supply air pressure equals discharge pressure at 0 flow rate, air use, and cycles. Performance was measured utilizing 1/2 in (3/8 in ID) air line and 1-1/4 in (1-1/8 in ID) liquid lines with 1 ft flooded suction. Performance may vary in your system.

* 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 and 100 psi maximum CPM. Sound levels measured in accordance with ISO9614-2:1997.

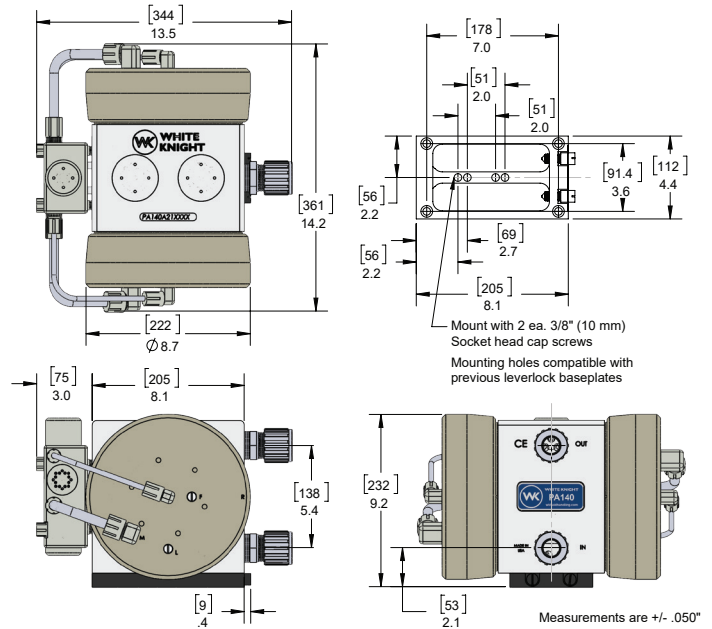


Dimensions

mm (inches)



PA140



White Knight Accessories

Ultrasure 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 ultrasure 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/>