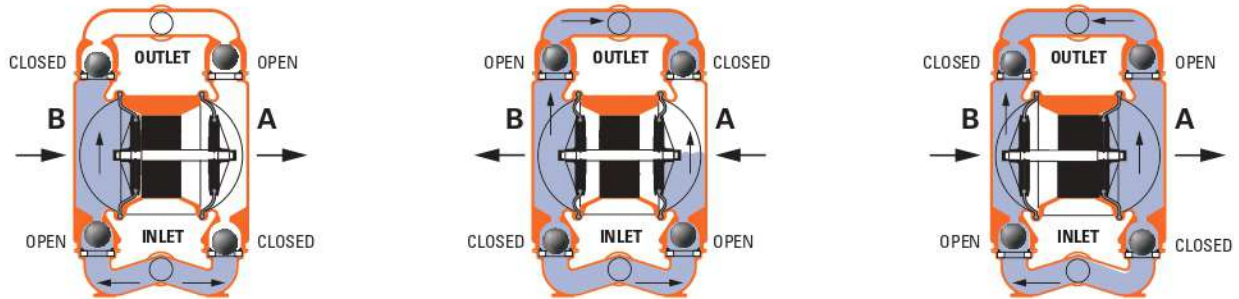


# Working Principle of Wilden AODD Pumps

Wilden AODD pumps are reciprocating, positive-displacement-style pumps driven by compressed air. The following drawings and information detail the liquid flow pattern through the pump from its initial unprimed position.



1. The air valve directs pressurized air to the back side of Diaphragm A.
2. The compressed air moves the diaphragm away from the center of the pump.
3. Diaphragm B is pulled in by the shaft connected to the pressurized Diaphragm A.
4. Diaphragm B is now on its suction stroke. The movement of Diaphragm B toward the center of the pump creates a vacuum within chamber B and causes the atmospheric pressure to force fluid into the inlet manifold forcing the inlet valve ball off its seat.
5. When the pressurized diaphragm, Diaphragm A, reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of Diaphragm B.
6. The pressurized air forces diaphragm B away from the center while pulling Diaphragm A to the center.
7. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces.
8. The hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge.
9. At completion of the stroke, the air valve redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke.
10. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke.

This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

## Benefits of AODD Pumps

Thanks to their unique operating principle, AODD pumps excel in a wide variety of applications and incorporate numerous features and benefits, including:

- Self priming
- Portable
- High vacuum
- Run-dry capable
- No heat generation
- Submersible
- Superior product containment
- Easy installation
- Corrosion resistant
- Longest Mean Time Between Failure (MTBF)





## Wilden Pro-Flo® SHIFT Series

The Wilden Pro-Flo® SHIFT Series is the premier AODD pump. The innovative, yet simple, Pro-Flo SHIFT design features an air control spool that automatically optimizes air consumption and eliminates the overfilling that can lead to overcharging of the air chamber, all while causing no corresponding reduction in flow rate. This results in a reduction of air consumption and operational costs while maximum operational efficiency and volumetric consistency are maintained. Pro-Flo SHIFT Pumps are an exact fit from bolt-down footprint to inlet/discharge connections and can drop into existing fluid-handling piping systems.

- Delivers more yield per SCFM versus competitive AODD pumps
- Longer diaphragm life
- ATEX-compatible for use in explosive atmospheres
- Ability to use wet/dry air
- Fewer operating parts, meaning less downtime and simplified maintenance
- Quiet operation





## Non-Metallic Model Overview

All 1/4" - 2" Non-metallic PD pumps are now upgradeable!

PD pumps are manufactured such that solenoid operation, flow monitoring and leak detection functionality can be added at a later date. As your processes mature, this capability allows you to enhance manually operated processes to incorporate additional control and monitoring capabilities. Simply remove two plugs and replace with a proximity sensor and (or) leak detector. Once upgraded, these components can also be integrated with the ARO® controller for seamless integration.




Models	1/4" Metallic	3/4" Metallic	1" Metallic	1-1/2" Metallic	2" Metallic	3" Metallic
Maximum Flow gpm (lpm)	12 (45.4)	13.6 (51.5)	52 (197)	123 (465)	172 (651)	275 (1,041)
Maximum Discharge Pressure psi (bar)	100 (6.9)	100 (6.9)	120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)
Fluid Ports Inlet/Outlet (bsp)	1/2" (F) - In/Out	3/4" - 14 N.P.T.F.-1 Rp 3/4" (4-14 BSP parallel)	1-1/2" NPT Rp 1-1/2" (8-11 BSP) (Side or Center)	1-1/2" - 1-1/2" NPT Rp 1-1/2" (8-11 BSP) (Side or Center) 1-1/2" ANSI DIN (65 only/Center)	2" NPT Rp 2" (2-11 BSP) (Side or Center) 2" ANSI DIN Flange with 2" pipe tap (55 only/Center)	3" NPT Rp 3" (3-11 BSP) (Center) 3" ANSI/DIN Flange
Material of Construction	Aluminum Stainless Steel	Aluminum	Aluminum Cast Iron Stainless Steel Hastelloy*	Aluminum Cast Iron Stainless Steel Hastelloy*	Aluminum Cast Iron Stainless Steel Hastelloy*	Aluminum Cast Iron Stainless Steel Hastelloy*
Pump Weight lbs (kg)	10.4 (4.7) PO05A-KAS-X-B 15.6 (7.1) PO05A-XSS-X-B 8.0 (3.7) PO05R-KAS-X-B 14.3 (6.5) PO05R-XSS-X-B	8.74 (3.96)	20.7 (9.4) Alum 35.2 (15.9) CI 38.2 (17.3) SS 39.6 (18.0) Hastelloy add 4.65 (2.11) for Alum air motor; add 11.99 (5.03) for SS air motor	37.7 (17.1) Alum 73.2 (33.2) CI 61.2 (27.8) SS 86.9 (39.4) Hastelloy add 3.08 (1.40) for Alum air motor; add 14.39 (6.53) for SS air motor	64 (29) Alum 132 (60) CI 122 (55) SS 55 (25) Hastelloy 114 (51.7) SS Flange 122 (55.3) Hastelloy add 34 (15) for CI or SS air motor	113 (51.3) Alum 197 (89.4) CI 201 (92.1) SS 203 (92.1) Hastelloy add 40 (18.1) for SS air motor
Maximum Solids in (mm)	3/32 (2.4)	3/32 (2.4)	1/8 (3.2)	1/4 (6.4)	1/4 (6.4)	3/8 (9.5)
Maximum Dry Suction Lift ft (m)	15 (4.5)	15 (4.5)	19 (5.7)	14 (4.2)	14 (4.2)	14 (4.2)
Recommended Filter/Regulator	P39124-624	P39124-624	P39224-614	P39344-614	P39354-614	P39454-614
Airline Kit	66073-1	66073-1	66073-2	66084-1	66109	66109



Models	1/4" Non-Metallic	3/8" Non-Metallic	1/2" Non-Metallic	1/2" Classic Non-Metallic	3/4" Non-Metallic	1" Non-Metallic	1-1/2" Non-Metallic	2" Non-Metallic
Maximum Flow gpm (lpm)	5.3 (20)	10.6 (40.1)	14.4 (54.5)	13 (49.2)	14.8 (56)	53 (200)	123 (465)	184 (696)
Maximum Discharge Pressure psi (bar)	125 (8.5)	100 (6.8)	100 (6.8)	100 (6.9)	100 (6.8)	120 (8.3)	120 (8.3)	120 (8.3)
Fluid Ports Inlet/Outlet (bsp)	Q-14-1/8 PTFE SAE SHORT	3/8" (F) - In/Out	1/2" (F) - In/Out	1/2-14 N.P.T.F.-1	3/4" - 14 N.P.T.F.-1 Rp 3/4" (4-14 BSP parallel)	1" ANSI/DIN Flange (Side or Center) 1 - 1-1/2" NPT Rp 1-1/2" (8-11 BSP) (Center Discharge)	1-1/2" ANSI/DIN Flange (Side or Center)	2" ANSI/DIN Flange (Side Discharge)
Material of Construction	Polypropylene Groundable Acetal PVDF	Polypropylene Groundable Acetal PVDF	Polypropylene Groundable Acetal PVDF	Polypropylene Groundable Acetal PVDF	Polypropylene	Polypropylene PVDF Conductive Polypropylene	Polypropylene PVDF Conductive Polypropylene	Polypropylene PVDF Conductive Polypropylene
Pump Weight lbs (kg)	Poly 2.86 (1.3) PVDF 3.88 (1.76) Acetal 3.52 (1.6)	4.2 (1.9) PD03P-XDS-X 4.3 (1.9) PD03P-XES-X 4.5 (2.0) PD06P-XKS-X 4.8 (2.1) PD06P-XLS-X 3.4 (1.6) PD06P-XPS-X 3.5 (1.6) PD06P-XFS-X	6.3 (2.9) PD06P-XDS-X-B 6.7 (3.0) PD06P-XES-X-B 8.8 (3.1) 7.2 (3.3) 5.2 (2.4) 5.4 (2.5)	7.2 (3.3) Polypropylene 8.8 (4.0) Acetal 9.5 (4.3) Kynar PVDF	5.61 (2.54)	19.35 (8.78) Poly Threaded 19.59 (8.89) Poly Center Port 19.97 (9.01) Poly Side Port 25.82 (11.72) Threaded 26.72 (12.12) PVDF Center Port 27.15 (12.32) PVDF Side Port	42.30 (19.19) Poly Center Port 42.80 (19.32) Poly Side Port 55.94 (25.37) Center Port 63.94 (29.0) PVDF Side Port	65.3 (38.7) Poly 110.9 (60.3) PVDF
Maximum Solids in (mm)	1/16 (1.6)	1/16 (1.6)	3/32 (2.4)	3/32 (2.4)	3/32 (2.4)	1/8 (3.2)	1/4 (6.4)	1/4 (6.4)
Maximum Dry Suction Lift ft (m)	15 (4.6)	9.25 (2.8)	15 (4.6)	15 (4.6)	15 (4.6)	19 (5.7)	14 (4.2)	14 (4.2)
Recommended Filter/Regulator	P39124-620	P39124-600	P39124-600	P39124-624	P39124-600	P39224-600	P39334-600	P39454-610
Airline Kit	66073-1	66073-1	66073-1	66073-1	66073-1	66073-2	66084-1	66109



PLASTIC	Size	Connection Type	Wetted Path Material	Max. Flow Rate	Max. Suction Lift	Max. Solids Passage	Certifications
	38 mm (1-1/2")	Bolted	Polypropylene, PVDF	458 lpm (121 gpm)	5.6 m Dry (18.4') 9.0 m Wet (29.5')	6.4 mm (1/4")	CE
		Clamped	Polypropylene, PVDF	379 lpm (100 gpm)	6.2 m Dry (20.4') 8.3 m Wet (27.2')	4.8 mm (3/16")	
	51 mm (2")	Bolted	Polypropylene, PVDF	709 lpm (187 gpm)	5.9 m Dry (19.3') 8.3 m Wet (27.2')	6.4 mm (1/4")	CE
		Clamped	Polypropylene	643 lpm (170 gpm)	6.6 m Dry (21.8') 8.3 m Wet (27.2')	6.4 mm (1/4")	
	76 mm (3")	Bolted	Polypropylene, PVDF	1024 lpm (271 gpm)	5.8 m Dry (19.1') 8.6 m Wet (28.4')	12.7 mm (1/2")	CE



PLASTIC	Size	Connection Type	Wetted Path Material	Max. Flow Rate	Max. Suction Lift	Max. Solids Passage	Certifications
	6 mm (1/4")	Bolted	Polypropylene, PVDF	16.7 lpm (4.4 gpm)	1.9 m Dry (6.2') 9.3 m Wet (30.6')	0.7 mm (1/32")	CE
		Clamped	Polypropylene, PVDF	18.1 lpm (4.8 gpm)	3.05 m Dry (10.0') 8.84 m Wet (29.0')	0.4 mm (1/64")	
	13 mm (1/2")	Bolted	Polypropylene, PVDF	58.7 lpm (15.5 gpm)	5.5 m Dry (18.0') 9.3 m Wet (30.6')	1.6 mm (1/16")	CE
		Clamped	Polypropylene, PVDF	56.8 lpm (15 gpm)	6.1 m Dry (20.0') 9.8 m Wet (32.0')	1.6 mm (1/16")	
	25 mm (1")	Bolted	Polypropylene, PVDF	220 lpm (58 gpm)	3.6 m Dry (11.9') 9.8 m Wet (32.0')	4.76 mm (3/16")	CE
		Clamped	Polypropylene, PVDF	140 lpm (37 gpm)	5.5 m Dry (18.0') 8.8 m Wet (29.0')	3.2 mm (1/8")	
	38 mm (1-1/2")	Bolted	Polypropylene, PVDF	454 lpm (120 gpm)	5.7 m Dry (18.7') 9.3 m Wet (30.6')	6.4 mm (1/4")	CE
		Clamped	Polypropylene, PVDF	354 lpm (94 gpm)	4.88 m Dry (16.0') 9.3 m Wet (30.6')	4.8 mm (3/16")	
	51 mm (2")	Bolted	Polypropylene, PVDF	624 lpm (165 gpm)	6.23 m Dry (8.65') 9.0 m Wet (29.5')	6.4 mm (1/4")	CE
		Clamped	Polypropylene	591 lpm (156 gpm)	7.4 m Dry (24.4') 9.45 m Wet (31.0')	6.4 mm (1/4")	
	76 mm (3")	Bolted	Polypropylene, PVDF	878 lpm (232 gpm)	5.5 m Dry (18.2') 8.6 m Wet (28.4')	12.7 mm (1/2")	CE