

# ARO® 1/2" High Performance Diaphragm Pumps

Non-Metallic and Metallic Models



*Ideal for OEM installations and  
General Industrial applications  
where peak performance, endurance  
and reliability are a must.*

**IR** Ingersoll Rand

1/2" Metallic and Non-Metallic Models  
**High Performance Diaphragm Pumps**



**Productivity**

Maximized flow rates + Minimized pulsation and air consumption = Maximum Performance



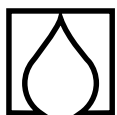
**Versatility**

Multiple porting options available along with interface options allow you to customize this pump specifically to your OEM application.



**Reliability**

Lube Free Patented Differential Valve both on Major air valve and Simulshift™ (Pilot Valve) provides reliable Worry Free Operation – Fluid On demand every time.



**Environmentally Sound**

Bolted Construction in conjunction with a wide range of material options provides maximum chemical and leak resistance.



**Serviceability**

Modular Construction, reduced parts count and simple to use repair kits will minimize repair time and cost.

**Don't forget the other compelling reasons to use Aro Diaphragm Pumps:**

ARO Diaphragm pumps are simple to apply to your application because they are self priming and can be run at variable flows controlled by air pressure or fluid back pressure. They can handle materials that are abrasive and/or shear sensitive. They can also be run dry without damage to the pump.

1/2" Metallic and Non-Metallic Models  
**"Unbalanced" Major Air Valve**

Unbalanced valve design eliminates valve centering and pump stall-out-even under low air inlet pressures.

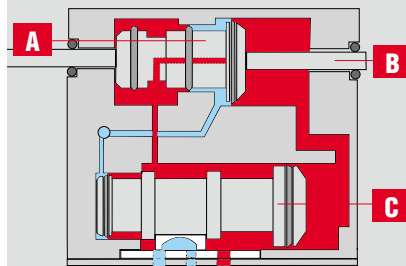
**"D" Valve**

- ❑ Provides a positive seal.
- ❑ Helps insure optimum energy efficiency while avoiding costly air "blow-by."
- ❑ Ceramic construction insures long service life.

**"SimulShift™" Valve**

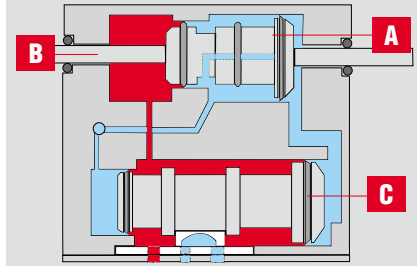
- ❑ Provides an ultra-positive, reliable shift signal that avoids stall-out.
- ❑ Provides faster pump trip-over with more flow.
- ❑ Faster trip-over with less pulsation and superior laminar material flow.

**Diaphragm Moving Right to Left**



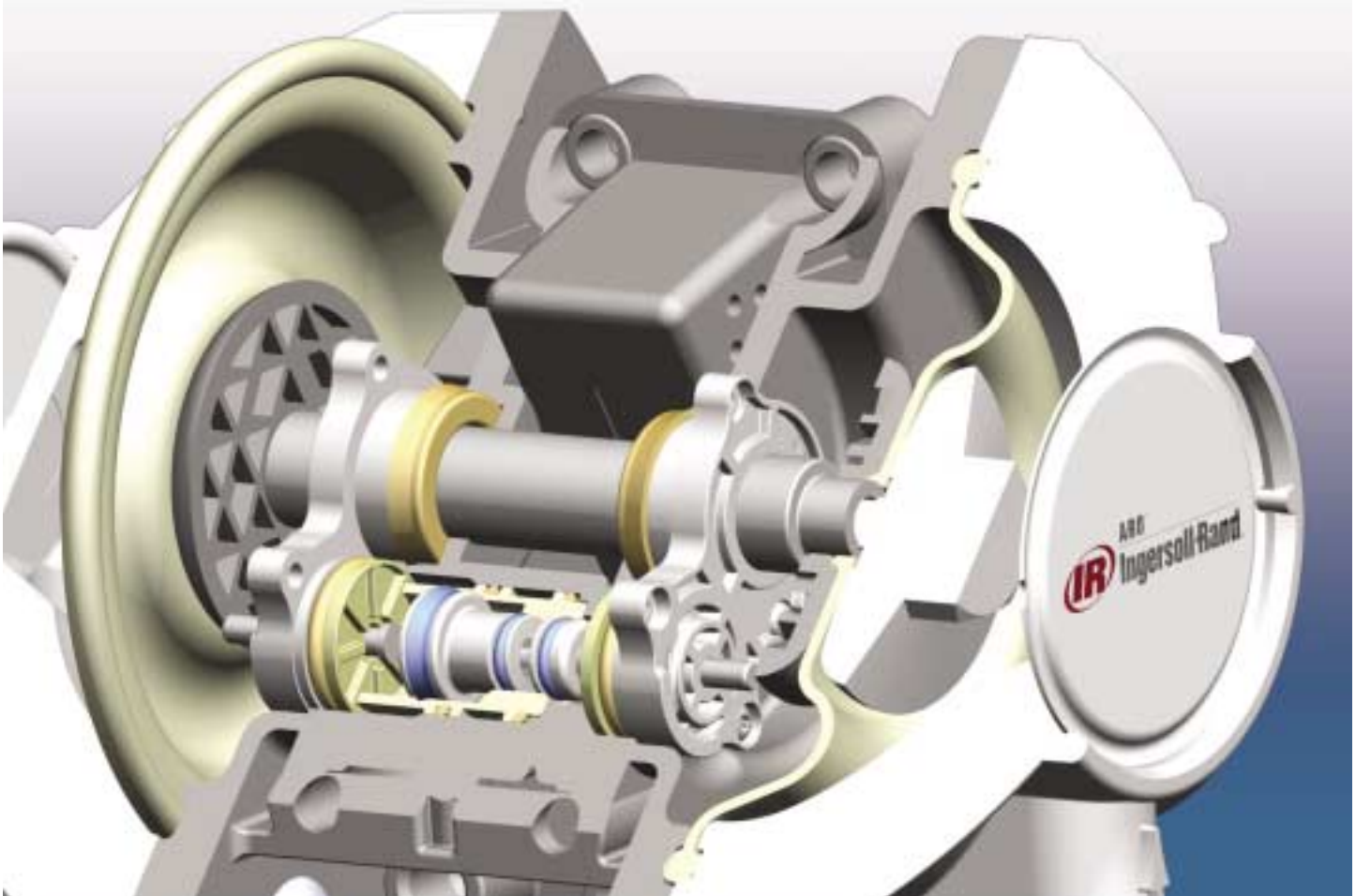
- 1.) The diaphragm pushes the right Actuator Pin (B) mechanically moving the SimulShift™ Valve (A) to the left.
- 2.) Compressed air flows to the large side of the SimulShift™ Valve, pneumatically moving the valve to the position shown.
- 3.) Compressed air also flows to the large end of the Major Air Valve (C), pneumatically shifting it to the left.

**Diaphragm Moving from Left to Right**



At end of stroke:

- 1.) Diaphragm pushes Pin (B) and SimulShift™ Valve (A) to the right.
- 2.) Large ends of SimulShift™ Valve (A) and Major Valve (C) are vented to exhaust pilot signal.
- 3.) Constant compressed air supply acting on the smaller areas of the SimulShift™ Valve and Major Valve shifts both valves to the right and hold them in position until the next cycle begins



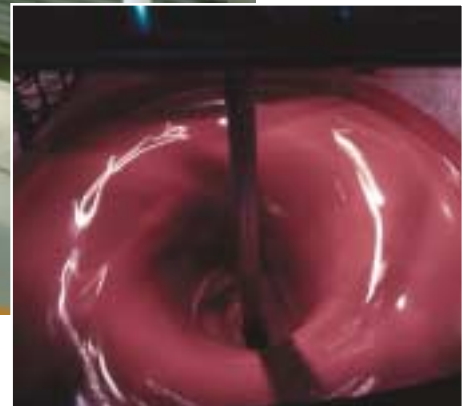
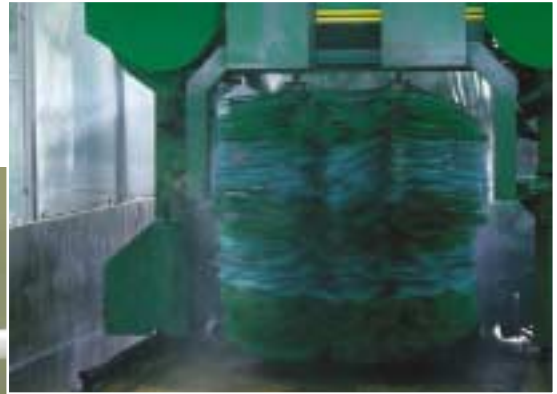
OEM Applications  
**High Performance Diaphragm Pumps**

❑ **Chemical Dosing  
PH Control**

- manual / automatic actuation

❑ **Car Wash**

- detergent
- wax
- specialty cleaners



❑ **Paints/Coatings**

- mixing
- formulation
- recirculation
- application



❑ **Commercial Laundry**

- metering
  - soap
  - degreaser
  - bleach
  - softener

❑ **Concrete Application**

- additives (chemical)
- colorants



# Industrial Transfer Applications High Performance Diaphragm Pumps



## ▣ **General Transfer**

- machining coolants / oils



## ▣ **Fluid Transfer**

- solvents
- corrosive / abrasive chemicals



## ▣ **Printing**

- flexographic inks
- press recirculation and supply
- solvent transfer



## ▣ **Waste Water Treatment**

- PH control
- acids / caustics
- flocculent
- coagulant

## ▣ **Material Application**



# 1/2" Non-Metallic Models High Performance Diaphragm Pumps

## 1/2" Non-Metallic Performance Specifications

Ratio:	1:1	
Maximum:	(L/mn) 54.5	
Displacement per cycle:	(Liters) 0.15	
Air Inlet: (Female)	1/4 -18 PTF SAE SHORT	
Fluid Inlet/Outlet:	1/2 - 14 N.P.T.F.-1	
	1/2 -14 BSP, parallel	
Max. operating pressure:	(bar) 6.9	
Suspended solids max. dia.:	(mm) 2.4	
Weight:	(kg)	PD05P-XDS-XXX-B 2.85
		PD05P-XES-XXX-B 3.03
		PD05P-XKS-XXX-B 3.08
		PD05P-XLS-XXX-B 3.28
		PD05P-XPS-XXX-B 2.36
		PD05P-XRS-XXX-B 2.47
		<b>Note:</b> PE05P-XXS-XXX-B0S, subtract .19
Maximum dry suction lift:	(m) 2.4 PTFE fitted	



## Ordering Menu

<b>PX05</b>	<b>P</b>	<b>-</b>	<b>X</b>	<b>X</b>	<b>S</b>	<b>-</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>-</b>	<b>BXX</b>
<b>Model Series</b>	<b>Center Section</b>		<b>Connection</b>	<b>Wetted parts</b>	<b>Hardware</b>		<b>Seat Material</b>	<b>Ball Material</b>	<b>Diaphragm Material</b>		<b>Specialty Code</b>
D Standard E Externally Controlled	P Polypropylene		A 1/2" NPT B 1/2" BSP	D Groundable Acetal (single port) E Groundable Acetal (multiple port) K PVDF (single port) L PVDF (multiple port) P Polypropylene (single port) R Polypropylene (multiple port)	S Stainless Steel		D Acetal K PVDF P Polypropylene S Stainless Steel	A Santoprene C Hytrel* G Nitrile S Stainless Steel T PTFE U Polyurethane V Viton	A Santoprene C Hytrel* G Nitrile T PTFE U Polyurethane V Viton		B Standard B0S See Options on Page 52

\* Hytrel replaces Buna, Geolast, Polyurethane and Nitrile producing superior chemical compatibility and diaphragm life

## Accessories\* (for specialty pump application options and additional accessories see page 47)

### Air Line Connection Kit | Kit No. 66073-1

Kit includes Piggyback Filter/Regulator with gauge, pipe nipple and a 1.5m section of air hose.

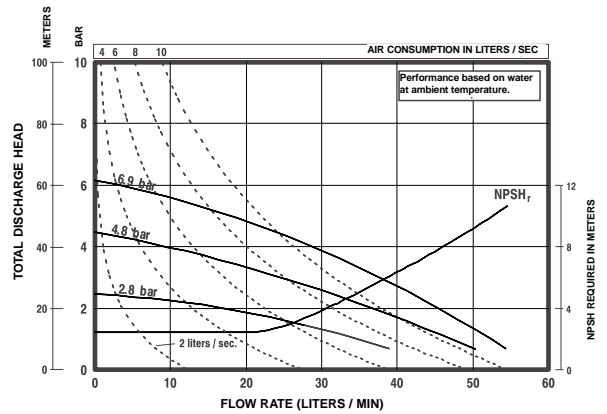
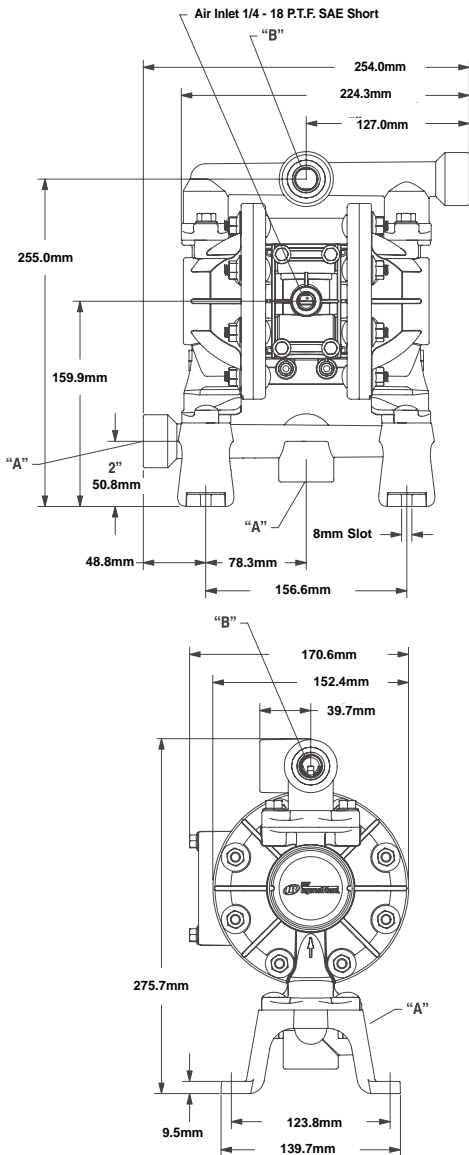
### Service Repair Kits | Kit No. 637428 (air motor for PX05P)

Kit No. 637427-XX (fluid section)

### Muffler Kit | Kit No. 637438 (ported exhaust)

\*Please note pumps are not included with these kits.

# 1/2" Non-Metallic Dimensions and Flow Curves High Performance Diaphragm Pumps



PE05P-APS-PAA-B0S  
with 637440-1 kit

## Dual Inlet/Outlet Kits

- 637440-1 (NPT Poly)
- 637440-4 (BSP Poly)
- 637440-2 (NPT Acetal)
- 637440-5 (BSP Acetal)
- 637440-3 (NPT PVDF)
- 637440-6 (BSP PVDF)

Pump Model	"A" Material Inlet
PD05P- <u>A</u> XS-XXX-B	1/2 - 14 NPTF-1
Pump Model	"B" Material Outlet
PD05P- <u>A</u> XS-XXX-B	1/2 - 14 NPTF-1
Pump Model	"A" Material Inlet
PD05P- <u>B</u> XS-XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)
Pump Model	"B" Material Outlet
PD05P- <u>B</u> XS-XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)



# 1/2" Metallic Models High Performance Diaphragm Pumps

## 1/2" Metallic Performance Specifications

Ratio:	1:1	
Maximum:	(L/mn)	45.4
Displacement per cycle:	(Liters)	0.15
Air Inlet: (Female)	1/4 -18 PTF SAE SHORT	
Fluid Inlet/Outlet:	1/2 - 14 N.P.T.F -1	
	1/2 - 14 BSP, parallel	
Max. operating pressure:	(bar)	6.9
Suspended solids max. dia.:	(mm)	2.4
Weight:	(kg)	PD05A-XAS-XXX-B 4.7
		PD05A-XSS-XXX-B 7.52
		PD05R-XAS-XXX-B 3.65
		PD05R-XSS-XXX-B 6.46
Maximum dry suction lift:	(m)	2.8 PTFE fitted



## Ordering Menu

<b>PX05</b>	<b>X</b>	<b>-</b>	<b>X</b>	<b>X</b>	<b>S</b>	<b>-</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>-</b>	<b>BXX</b>
<b>Model Series</b>	<b>Center Section</b>		<b>Connection</b>	<b>Wetted parts</b>	<b>Hardware</b>		<b>Seat Material</b>	<b>Ball Material</b>	<b>Diaphragm Material</b>		<b>Specialty Code</b>
D Standard E Externally Controlled	A Aluminium R Polypropylene		A 1/2" NPT B 1/2" BSP	A Aluminium* S Stainless Steel	S Stainless Steel		F Aluminium P Polypropylene S Stainless Steel	A Santoprene C Hytrel** G Nitrile S Stainless Steel T PTFE U Polyurethane V Viton	A Santoprene C Hytrel* G Nitrile T PTFE U Polyurethane V Viton		B Standard B0S See Options on Page 52

\* Components Anodized to Provide Superior Corrosion and Abrasion Resistance

\*\* Hytrel replaces Buna, Geolast, Polyurethane and Nitrile producing superior chemical compatibility and diaphragm life

## Accessories\* (for specialty pump application options and additional accessories see page 47)

### Air Line Connection Kit\* | Kit No. 66073-1

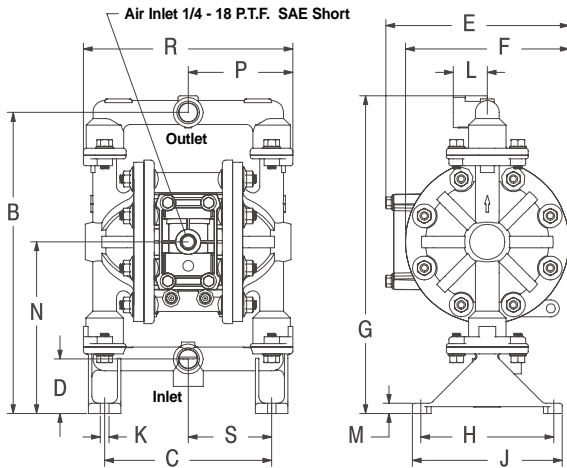
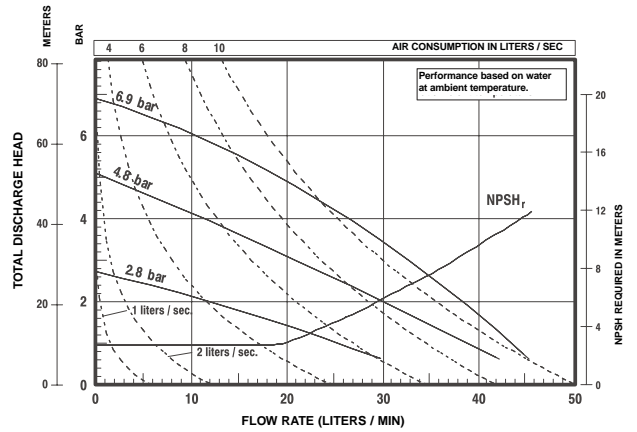
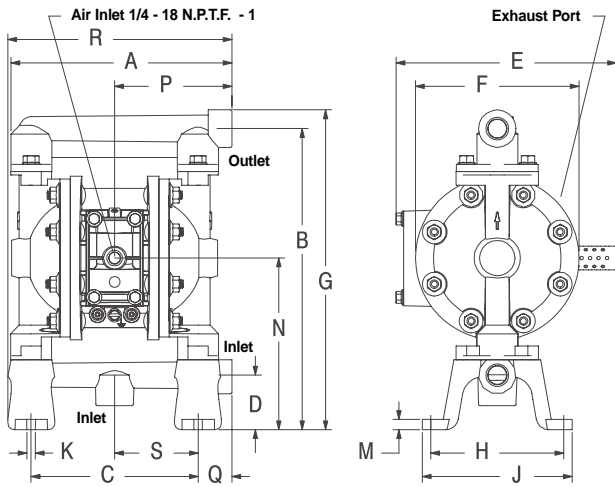
Kit includes Piggyback Filter/Regulator with gauge, pipe nipple and a 1.5m section of air hose.

### Service Repair Kits | Kit No. 637428 (air motor for PX05)

Kit No. 637427-XX (fluid section)

\*Please note pumps are not included with these kits.

# 1/2" Metallic Dimensions and Flow Curves High Performance Diaphragm Pumps



### DIMENSIONS

A - 206.0mm	G - see below	N - 159.9mm
B - 280.4mm	H - 123.8mm	P - see below
C - 155.6mm	J - 139.7mm	Q - 31.6mm
D - 50.8mm	K - 8.0mm	R - see below
E - see below	L - 31.8mm	S - 77.8mm
F - 152.4mm	M - 9.5mm	

	"E"	"G"	"P"	"R"
PD05A-XXS-XXX-B	205.5mm	297.9mm	109.3mm	208.5mm
PD05R-XXS-XXX-B	170.6mm	296.0mm	97.4mm	194.9mm

<b>Pump Model</b>	<b>Material Inlet</b>
PD05R- <u>AXS</u> -XXX-B	1/2 - 14 NPTF-1
<b>Pump Model</b>	<b>Material Inlet</b>
PD05R- <u>BXS</u> -XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)
<b>Pump Model</b>	<b>Material Outlet</b>
PD05R- <u>AXS</u> -XXX-B	1/2 - 14 NPTF-1
<b>Pump Model</b>	<b>Material Outlet</b>
PD05R- <u>BXS</u> -XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)



## Accessories

# High Performance Diaphragm Pumps

### Wall Mount

#### Description

Wall mount bracket constructed of heavy gage coated steel for use with metallic pump models.

(Pump not included)

**Order No.** 76763



### Countdown Batcher (PD model only)

#### Description

Manual start batch counter kit allows user to program in (pre-determined) number of cycles. Unit will reset itself and be ready for next batch.

(Pump not included)

**Order No.** 67072

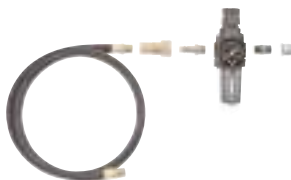


### Air Line Connection Kit

#### Description

Air line connection kit includes Piggyback Filter/Regulator with gauge, pipe nipple, and 1,5m section of air hose.

**Order No.** 66073-1



### Filter/Regulator

#### Description

"Piggyback" unit features 20 micron filter, polycarbonate bowls and 8,6 bar. gauge. 1/4" NPT ports.

**Order No.** P29122-600



### Siphon Tube

#### Description

For use when pumping from a 200 L container. Includes PVC downtube and bung adapter. For use with wall mount or other applications.

(1/2" NPT port on tube,  
2" NPT threads on bung adapter)

**Order No.** 61409 (PVC) 90° NPT(F)  
61412 (PVC) Straight NPT(F)



### Solenoid Actuation Kit (PD model only)

#### Description

Control pump cycle rate with on/off signal from PLC or other device. Kit includes CHW connector with 36" cable plus components and instructions to install on standard pump. For dosing and batching applications. (Pump not included)

**Order No.** 67165-1 (24 VDC)  
67165-2 (120 VCA)



### Cycle Sensor (PD model only)

#### Description

Provides electronic feedback system to track pump cycling. Can be used for PM (Preventative Pump Maintenance), cycle rate and monitoring rough flow rate. Requires power supply and devices to gather, store or manipulate data.

(A reed switch interface 10 W, 200 VDC and 0.5 amps, pump not included)

**Order No.** 67386



### Solenoid Actuation Valves (PD model only)

#### Description

3-way valve controls air supply to pump. Activation starts pump, deactivation cuts off air supply to pump and from motor, relieves air pressure from motor. 1/4" NPT ports

120 VCA  
**Order No.** MQ3728-120-A  
24 VDC  
**Order No.** MQ3728-024-D

(L'électrovanne requiert l'emploi d'un connecteur, à voir en référence page 11)



# Accessories

## High Performance Diaphragm Pumps

### Non-metallic Dual Inlet/Outlet Kits

#### Description

Use one pump to transfer two fluids, or produce a 50-50 fluid mix. Kits include manifolds and seals to retrofit standard pumps.

#### Order Kit No.

637440-1 (NPT Poly)    637440-5 (BSP Acetal)  
 637440-4 (BSP Poly)    637440-3 (NPT PVDF)  
 637440-2 (NPT Acetal)    637440-6 (BSP PVDF)



### PE Series Pumps with BOS Specialty Code

#### Description

Replaces standard pump air valve. Operate pump with a remote four-way valve. Provides the ultimate cycle rate control for dosing and batching applications.

#### Order No. PE05X-XXX-XXX-B0S

(Remote valve not included in model. See below for four-way valve options.)



### Exhaust Threaded Muffler Kit

#### Description

Kit allows operator to pipe exhaust air away from application. Fits only non-metallic air motor section. 3/8" exhaust port.

(Muffler not included)

#### Order No. 637438



### PE Series Pump Control

#### Description

ARO Alpha™ 4-way valve supplies air to cycle pump. Features bonded spool plus many actuator/return and solenoid options. (Pump not included)

1/4" body ported. Actuator/Return options. Solenoid coil voltage options.

#### Order No.

Model :	Actuator/Return :	Voltage :
A212SD-120-A	Solenoid/solenoid	120 Vca
A212SS-120-A	Solenoid/spring	120 Vca
A212SD-012-D	Solenoid/solenoid	12 Vcc
A212SS-012-D	Solenoid/spring	12 Vcc
A212SD-024-D	Solenoid/solenoid	24 Vcc
A212SS-024-D	Solenoid/spring	24 Vcc
A212PS	Pilot/spring	
A212PD	Pilot/spring	

(Solenoid Valves require use of Connector, referenced on this page)



Valve does not include connector, mufflers or fittings

### Connectors

#### Description

Connects valve solenoid to PLC or other control device. Female connector to male DIN of valve solenoid. 250V max., 6A max., DIN 43650, NEMA 4, IEC 60 529

Straight connector with 36" horizontal cable located on back.

#### Order No. CBW

Straight connector with 36" vertical cable located on top.

#### Order No. CHW



	Temp. Limit F (C)	Scale 1 - 5 (5 is best)		
		Chemical	Abrasion	Flex Life*
Acetal	180 (91)	3	3	-
Aluminum	-	1	3	-
Hytrek	150 (66)	2	4	5
PVDF	200 (107)	5	2	-
Polypropylene	150 (79)	4	2	-
Santoprene	225 (107)	4	4	5
Stainless Steel (300 Series)	-	4	4	-
PTFE	225 (107)	5	2	4
Viton	350 (176)	4	2	1

\* Applies to diaphragms only.

**Note :** These are guidelines only. Consult the manufacturer of pumped fluid for exact compatibility and temperature requirements.

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