



# **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.***

# Big Delivery. High-Performance.

The maker of the best-selling 1/2-inch diaphragm pump in the world, just got better!



## **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.

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

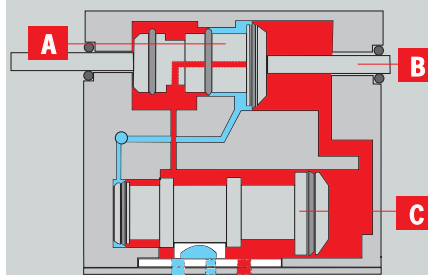
### “D” Valve

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

### “SimulShift™” Valve

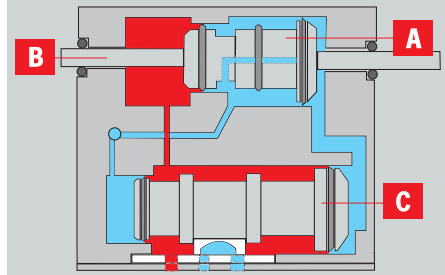
- ▷ Provides an ultra-positive, reliable shift signal that avoids stall-out.
- ▷ Provides faster pump trip-over with more flow.
- ▷ Faster trip-over with less pulsation and superior laminar material flow.

**Diaphragm Moving Right to Left**



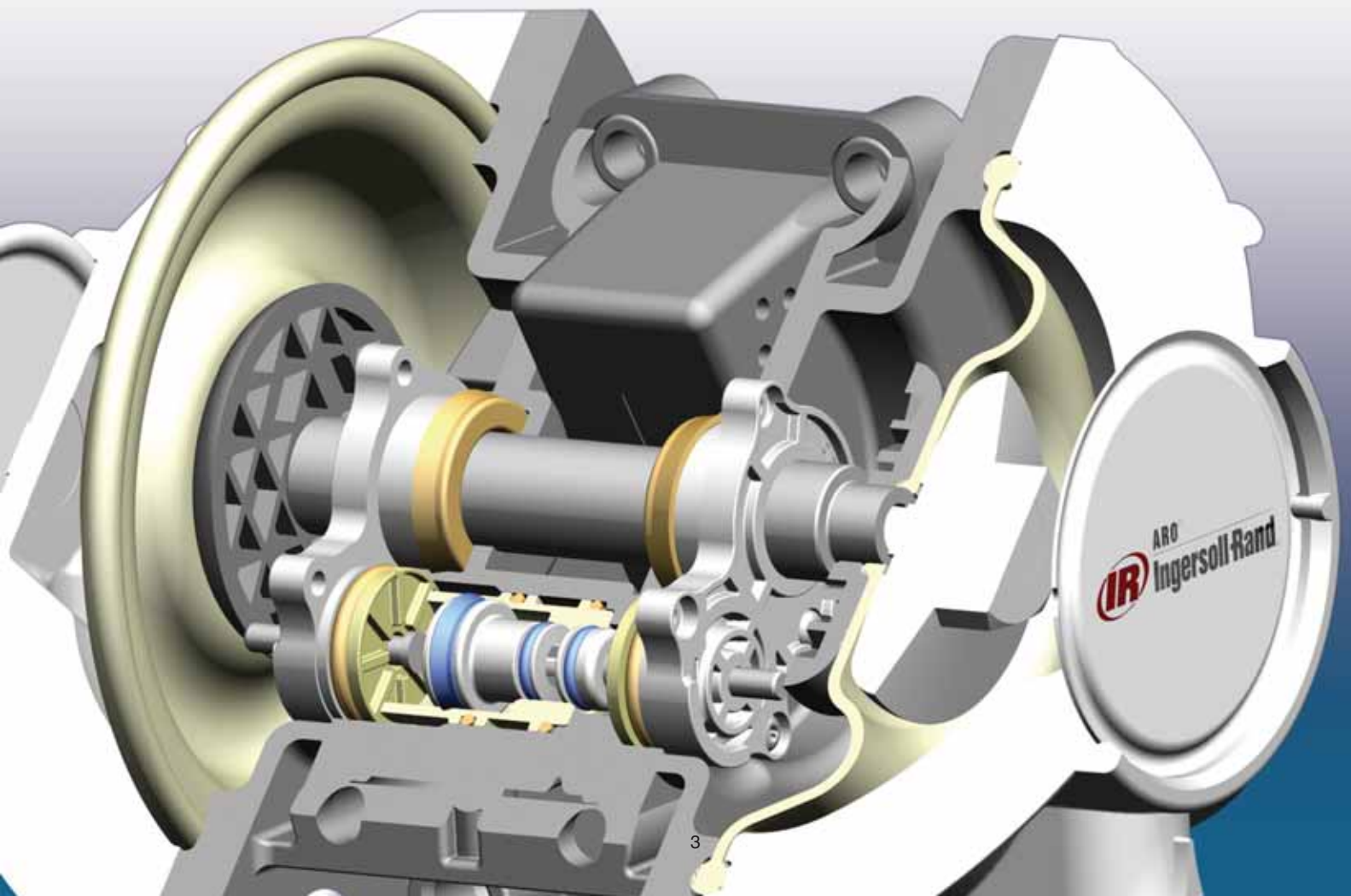
- 1.) The diaphragm pushes the right Actuator Pin (B) mechanically moving the Simul-Shift Valve (A) to the left.
- 2.) Compressed air flows to the large side of the Simul-Shift Valve, pneumatically moving the valve to the position shown.
- 3.) Compressed air also flows to the large end of the Major Air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

**Diaphragm Moving from Left to Right**



At end of stroke:

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





# PD05X High Performance Diaphragm Pumps

## OEM Applications

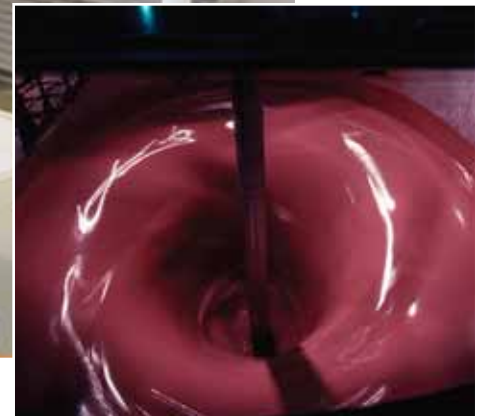
### ▽ *Chemical Dosing PH Control*

- 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

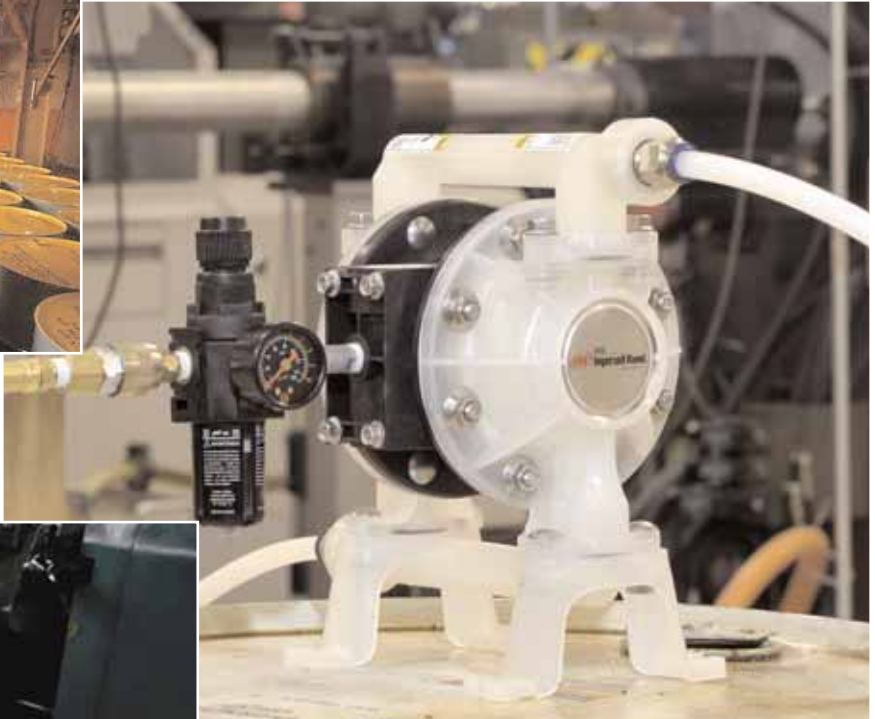
## ▽ General Transfer

- 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
- flocculant
- coagulant

## ▷ Material Application



# PD05X High Performance Diaphragm Pumps

## 1/2" Non-Metallic Models

### 1/2" Non-Metallic Performance Specifications

Ratio:	1:1
Maximum: GPM (LPM)	14.4 (54.5)
Displacement per cycle:	Gallons (Liters) .039 (.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:	psi (bar) 100 (6.9)
Suspended solids max. dia.:	in. (mm) 3/32" (2.4)
Weight: lbs (kg)	
	PD05P-XDS-XXX-B 6.28 (2.85)
	PD05P-XES-XXX-B 6.67 (3.03)
	PD05P-XKS-XXX-B 6.78 (3.08)
	PD05P-XLS-XXX-B 7.24 (3.28)
	PD05P-XPS-XXX-B 5.21 (2.36)
	PD05P-XRS-XXX-B 5.44 (2.47)
Maximum dry suction lift:	ft (m) 7.9 (2.4) PTFE fitted



### Ordering Menu

PD05	P	-	X	X	S	-	X	X	X	-	BXX
<b>Model Series</b>	<b>Center Section Material</b>		<b>Fluid Connection</b>	<b>Fluid Caps/ Manifold Material</b>	<b>Hardware Material</b>		<b>Seat Material</b>	<b>Ball Material</b>	<b>Diaphragm Material</b>		<b>Specialty Code</b>
D Standard	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* T PTFE (Teflon) V Viton	A Santoprene C Hytrel* T PTFE (Teflon) V Viton	B Standard B0S See Options on Page 11			

\* 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 10)

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

Kit includes Piggyback Filter/Regulator with gauge, pipe nipple and a 5-foot section of air hose.

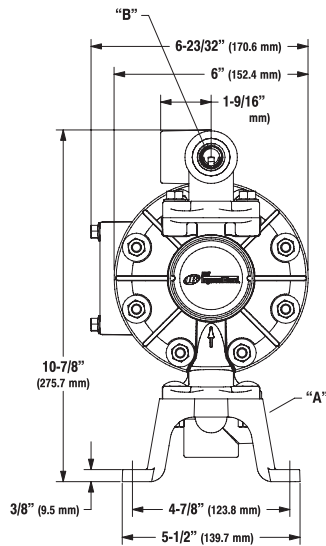
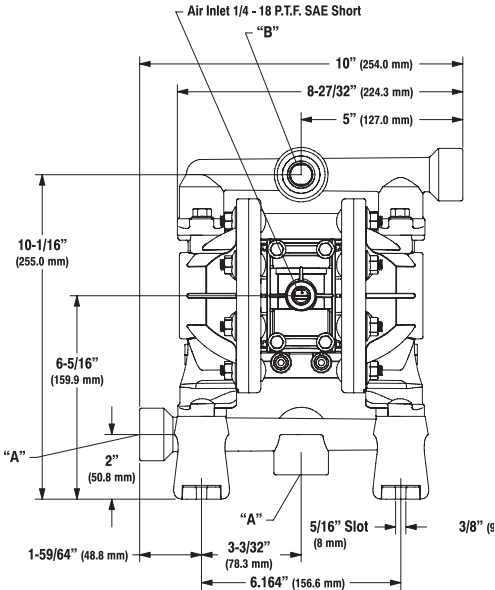
#### Service Repair Kits | Kit No. 637428 (air motor for PX05P)

Kit No. 637427-XX (fluid section)

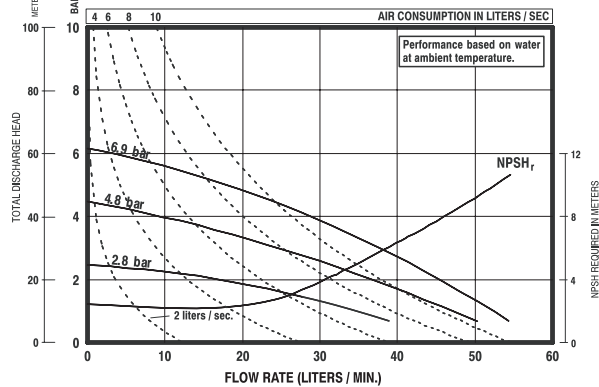
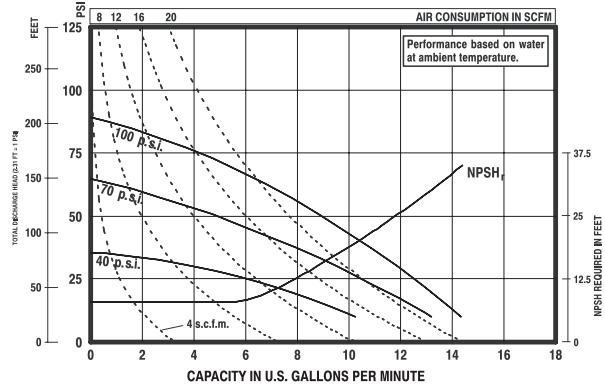
#### Muffler Kit | Kit No. 637438 (ported exhaust )

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





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



Refer to [www.irtools.com](http://www.irtools.com) for full size flow curves.

For additional information contact technical support at (800)495-0276



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)



# PD05X High Performance Diaphragm Pumps

## 1/2" Metallic Models

### 1/2" Metallic Performance Specifications

Ratio:	1:1
Maximum: GPM (LPM)	12 (45.4)
Displacement per cycle:	Gallons (Liters) .039 (.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:	psi (bar) 100 (6.9)
Suspended solids max. dia.:	in. (mm) 3/32" (2.4)
Weight: lbs (kg)	
	PD05A-XAS-XXX-B 10.36 (4.7)
	PD05A-XSS-XXX-B 16.57 (7.52)
	PD05R-XAS-XXX-B 8.04 (3.65)
	PD05R-XSS-XXX-B 14.25 (6.46)
Maximum dry suction lift:	ft (m) 9.1 (2.8) PTFE fitted



### Ordering Menu

PD05	X	-	X	X	S	-	X	X	X	-	BXX
Model Series	Center Section Material	Fluid Connection	Fluid Caps/Manifold Material	Hardware Material	Seat Material	Ball Material	Diaphragm Material	Specialty Code			
D Standard	A Aluminum R Polypropylene	A 1/2" NPT B 1/2" BSP C Tri-clamp	A Aluminum* S Stainless Steel	S Stainless Steel	A Aluminum P Polypropylene S Stainless Steel	A Santoprene C Hytrel** S Stainless Steel T PTFE (Teflon) V Viton	A Santoprene C Hytrel* T PTFE (Teflon) V Viton	B Standard B0S See Options on Page 11			

\* 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 10)

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

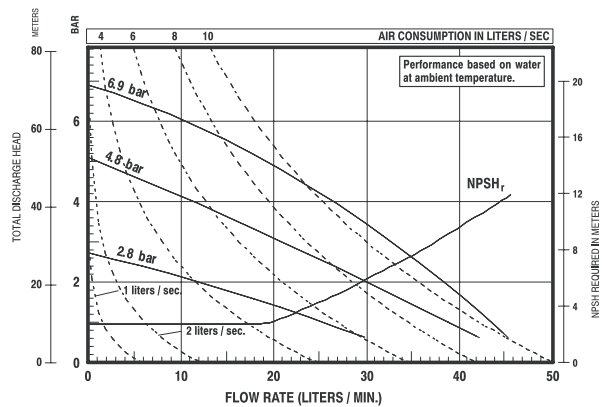
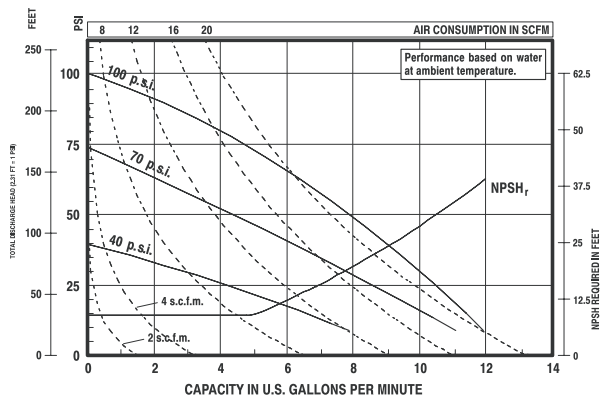
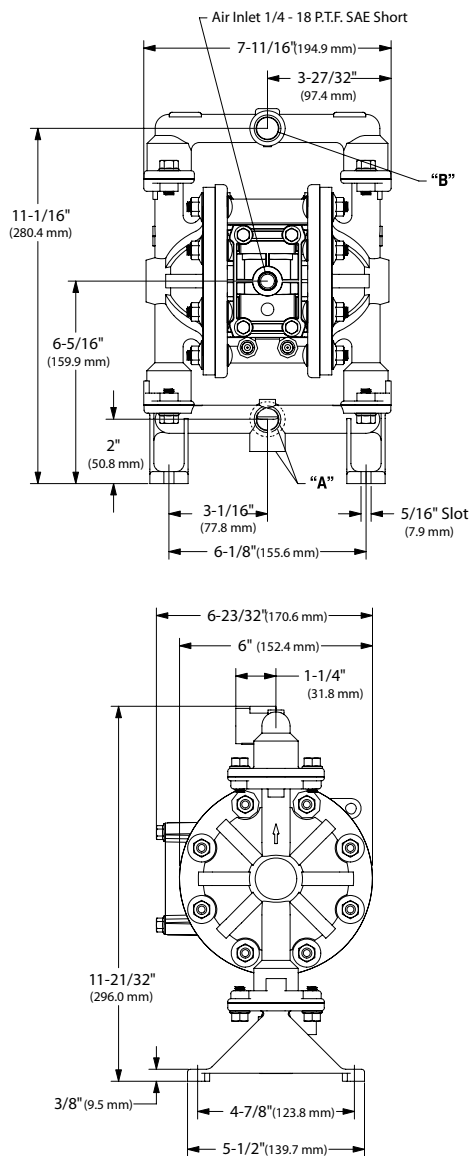
Kit includes Piggyback Filter/Regulator with gauge, pipe nipple and a 5-foot section of air hose.

#### 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.





Refer to [www.irtools.com](http://www.irtools.com) for full size flow curves.

For additional information contact technical support at (800)495-0276

<b>Pump Model</b>	<b>"A" Material Inlet</b>
PD05R- <b>A</b> XS-XXX-B	1/2 - 14 NPTF-1
<b>Pump Model</b>	<b>"B" Material Outlet</b>
PD05R- <b>A</b> XS-XXX-B	1/2 - 14 NPTF-1
<b>Pump Model</b>	<b>"A" Material Inlet</b>
PD05R- <b>B</b> XS-XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)
<b>Pump Model</b>	<b>"B" Material Outlet</b>
PD05R- <b>B</b> XS-XXX-B	Rp 1/2 (1/2 - 14 BSP, parallel)

# PD05X High Performance Diaphragm Pumps

## Accessories

### WALL MOUNT

#### Description

Wall mount bracket constructed of heavy gage coated steel for use with metallic and non-metallic pump models  
(pump not included)

Order No. 76763



### AIR LINE CONNECTION KIT

#### Description

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

Order No. 66073-1



### SIPHON TUBE

#### Description

For use when pumping from a 55-gallon 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)



### 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 watts, 200VDC and .5 amps, pump not included)

Order No. 67386



### 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



### Filter/Regulator

#### Description

"Piggyback" unit features 20 micron filter, polycarbonate bowls and 5-125 lb. gauge. 1/4" NPT ports

Order No. P29122-600



### 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 (24VDC)  
67165-2 (120VAC)



### SOLENOID ACTUATION VALVES

#### 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 VAC  
Order No. MQ3728-120-A

24 VDC  
Order No. MQ3728-024-D

(Solenoid Valve requires use of Connector, referenced on page 11)



# PD05X High Performance Diaphragm Pumps

## Accessories / Fluid Compatibility Chart

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



### EXHAUST THREADED MUFFLER KIT

#### Description

Kit allows operator to pipe exhaust air away from application. Fits only non-metallic air motor section. 3/8" NPT exhaust port. (muffler not included)

Order No. 637438



### 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



### 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.)



### 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-VAC
A212SS-120-A	Solenoid/Spring	120-VAC
A212SD-012-D	Solenoid/Solenoid	12-VDC
A212SS-012-D	Solenoid/Spring	12-VDC
A212SD-024-D	Solenoid/Solenoid	24-VDC
A212SS-024-D	Solenoid/Spring	24-VDC
A212PS	Pilot/Spring	
A212PD	Pilot/Pilot	

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



Valve does not include connector, mufflers or fittings

	Temp Limit F (C)	Scale 1 - 5 (5 is best)		
		Chemical	Abrasion	Flex Life*
Acetal	180 (91)	3	3	-
Aluminum	-	1	3	-
Hytrell	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	-
Teflon	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.



ARO Diaphragm Pumps are backed by a generous 5-year warranty on materials and workmanship for your purchasing peace of mind.

Aro's Pump design and manufacturing operations have demonstrated compliance with the quality process, health and safety, technical file and multi-lingual standards set forth by the FEM (Federation Europeene de la Manutention) for the European Union (Communitie Economique).



Ingersoll Rand Industrial Technologies provides products, services, and solutions to enhance the efficiency and productivity of our commercial, industrial, and process customers. Our innovative products include air compressors, air systems components, tools, pumps, material and fluid handling systems and microturbines.

[www.irtools.com/aro](http://www.irtools.com/aro)