Pumps and Accessories for the Process Industries

COMPONENT

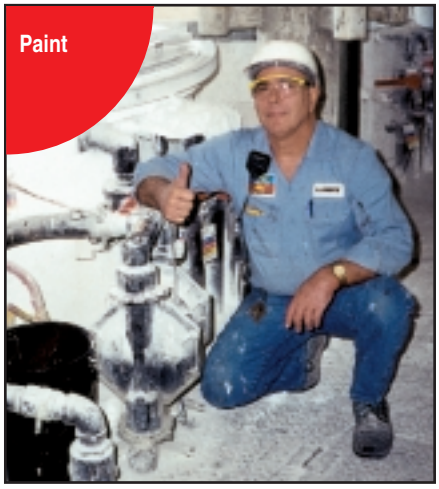
COMPLETE

Get in the ZONE

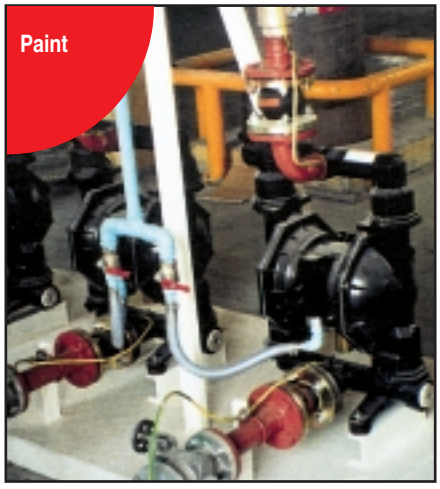
IR ARO®

Get in the ZONE

Where Process and Product Converge to Achieve Optimum Results.



An ARO PD20A-X transfers paint formulation materials between tanks.



ARO PD20X-A Pumps used in the manufacture of varnish

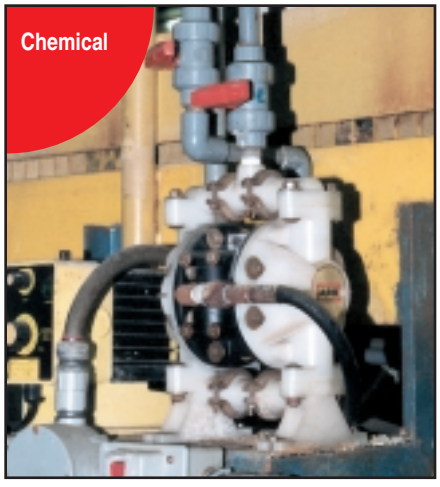
An ARO 3:1 Power Pump circulates injection molding colorant.

Welcome to the ARO® Zone.

The place where your production processes and our engineered products "converge to achieve optimum results". But beyond process and product there is a third essential element that makes the "zone" a very real place: the ARO Pumps Distributor. To make the leap from acceptable to "optimum results", it takes in-depth working knowledge of both process and product. Your ARO Pumps Distributor knows both, and its knowledge and expertise, not hype, that will usher you and your operation into this new dimension of productivity.

The ARO-Zone. . . get into it!

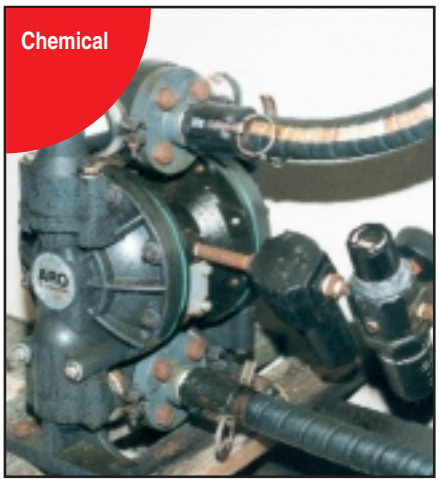
ARO®



This ARO 666057-444 pumps magnesium sulfate

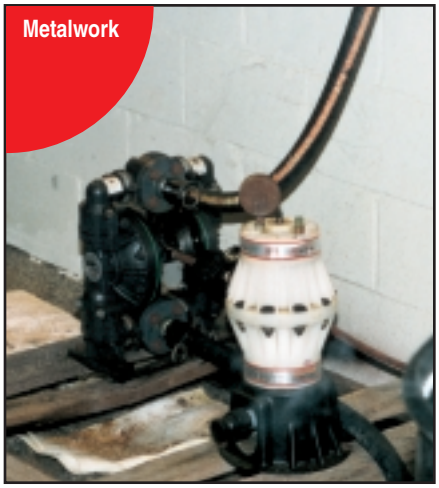
ARO 1" stainless steel diaphragm pumps transfer caustic material from 55-gallon drums into mixing tanks.

3" ARO diaphragm pump (located outdoors) transfer chemicals from train/truck tanks.



A 1' non - metallic (Kynar®) pumps moves caustic soda to a holding tank.

A 1-1/2' non-metallic ARO pump used in a waste water facility



An ARO 6661B4-344 is used to pump muriatic acid.

Non-metallic ARO pumps are used to move a variety of acids.

ARO 1/2"diaphragm pumps supply waste water treatment chemicals.

An ARO 2" piston pump supplies metalwork solvent.

These pumps pull material from 55-gallon drums to a mixing area.

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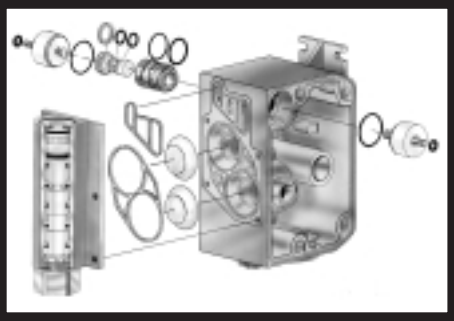
From "Unstallable™ " to unstoppable, with ARO, its features that provide the force.

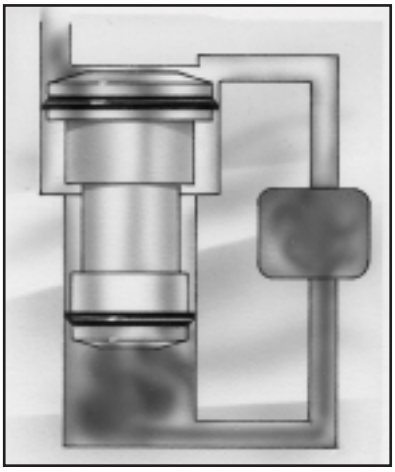
Large pump air valve features.



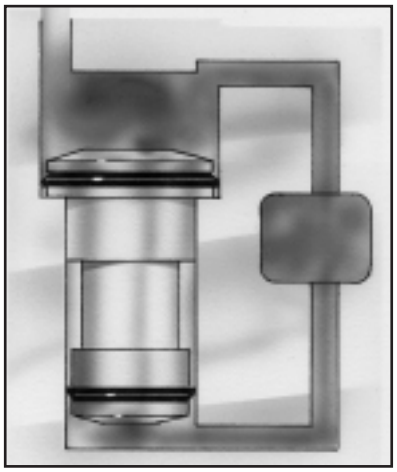
The ARO 2" and 3" pump design combines an unbalanced valve (in the main spool and trip pilot) with Quick Dump™ technology.

ARO, Owner of the "Unstallable" Air Valve Design

As relevant today as the day it came to market, ARO is still the sole owner of the technology and the title: *Unstallable.* ARO uses no magnets, springs, re-set buttons, or other secondary actuators to insure pump shifting - only air.



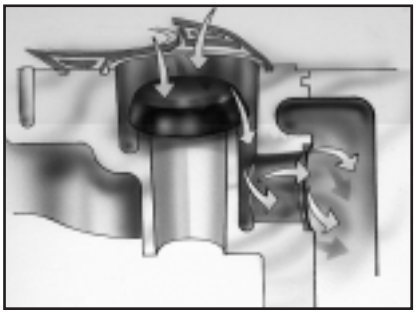
ARO's patented "unbalanced" major air valve has constant air pressure applied to its small end. This assures that the pump resets. Competitive designs lose their signal during every shift, making them vulnerable to stalling.



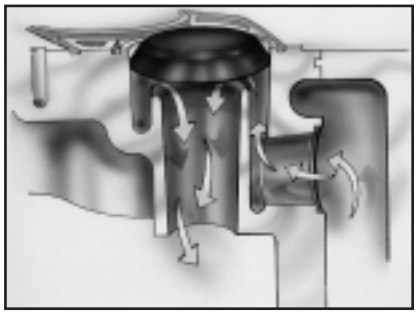
To reverse the valve, air pressure is supplied to the larger end of the valve, allowing the valve to shift - note that constant air pressure continues to be applied to the small end.

The Ice Age Is Over.

Following closely on the heels of pump stall-out is the infamous freezing problem inherent in most diaphragm pumps. At ARO, the ice age has been over since the introduction of our unique, enlarged "Quick Dump™" patented air exhaust valve, which diverts air exhaust from critical, ice-prone passages. Available on the ARO 2" (Ball & Flap) and 3" models.

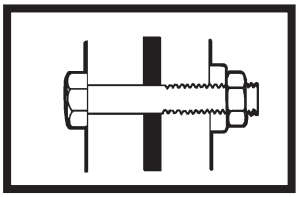


When the main valve opens and pressurizes the diaphragm air chamber, the Quick Dump operates like a normal air passage and admits air into the diaphragm's air chamber.



When the main air valve is ready to exhaust, the Quick Dump diverts all of the cold/wet exhaust air coming from the diaphragm air chamber away from the main air valve, avoiding ice formation in the critical valve passages.

For Safety, Reliability and Ease of Assembly: Bolted Is Better



ARO Diaphragm Pumps feature bolted construction to avoid the proven problems created by clampband type pump fasteners. These include material spills and leaks, bolt loosening and breakage due to poor joint integrity, and difficult reassembly.

An Air Valve that Forgives and Forgets

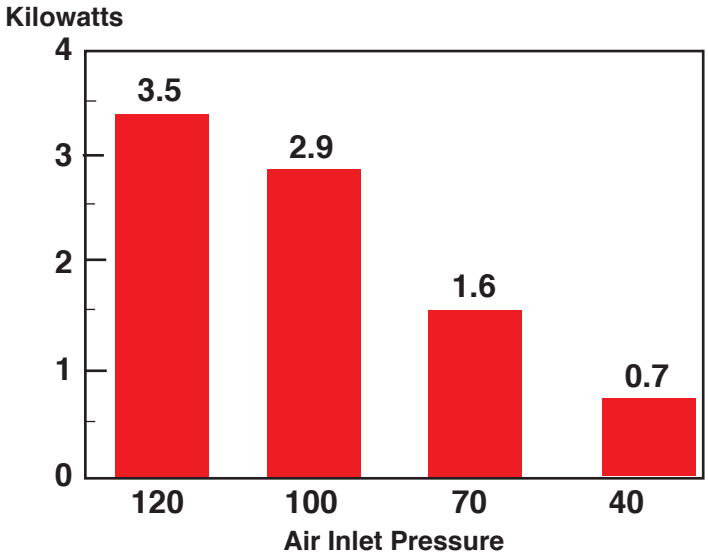
"The Unstallables" ARO® AIR-OPERATED DIAPHRAGM PUMPS

ARO's major air valve requires no added lubrication and the "wiping" action of the seals makes it extremely forgiving of contaminated compressed air supplies.

Lost Air Is No Bargain

If your diaphragm pumps are not ARO Diaphragm Pumps, chances are their air valves are blowing out perfectly good air to atmosphere, at no small expense. And this is not intermittent. This is whenever and wherever these pumps are operating.

Competitive Pump Design Kilowatts Wasted



The close fitting air valve designs used on competitive pumps allow air to by-pass continually - wasting air - even when not pumping!

REGISTERED FIRM

ARO's Bryan, Ohio facility, where our diaphragm pumps are manufactured, is registered by Underwriters Laboratories Inc. to ISO 9001 Quality Standards.

YEAR 5 WARRANTY

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

CE

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).

Member of Hydraulic INSTITUTE

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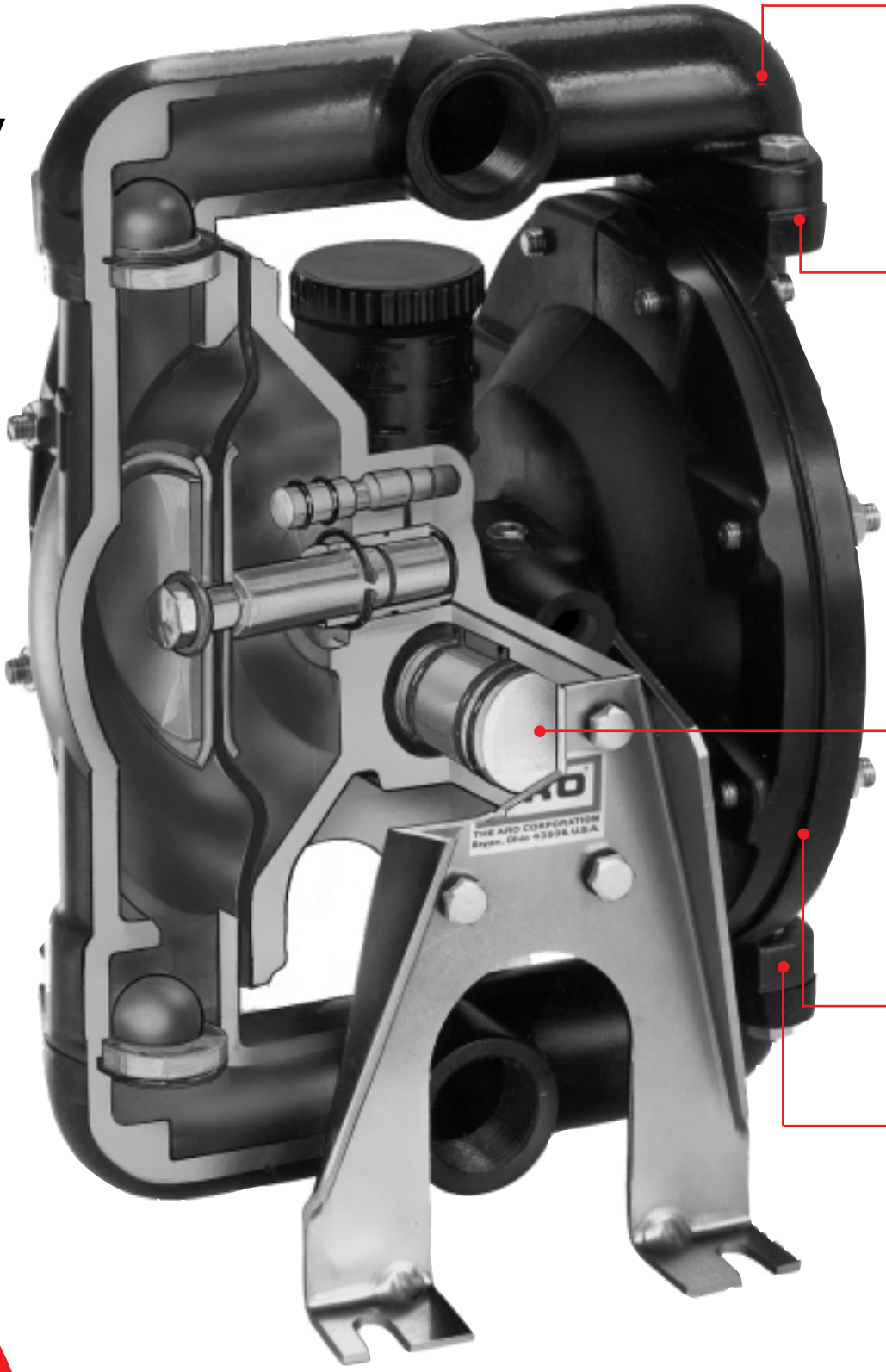
Design Features

YEAR 5 WARRANTY



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Ideal For Abrasion And Solids Handling

Because it does not use rotating, sliding seals, like rotary/centrifugal pumps, more process engineers look to ARO diaphragm pumps for handling tough abrasion applications.

From Top to Bottom, ARO's "Flap" Valve Pump is Your Best High Solids - Handling Choice

The ARO 2" Flap Valve Pump uses a top-suction porting design. Top suction porting is ideal for pumping abrasives and large particles because it uses gravity to assist in draining solids from the pump. Conventional high-solids pump designs use bottom suction; forcing the pump to fight (and lose against) gravity, allowing sediment and solids to accumulate , ultimately "packing out" the pump. See page 19.

Bolted Construction For Safe Reliability and Ease of Assembly:

All ARO diaphragm pumps use bolted construction that process professionals demand. And, ARO Non Metallic Diaphragm Pumps utilize fasteners that are constructed of 300 series stainless steel for maximum chemical resistance.

Bolted is Safer - bolted construction reduces the risk of spills, environmental contamination and the attendant, mandatory reports to regulatory agencies that spills can create.

Bolted is Reliable - Bolted construction withstands the heavy loading that diaphragm pumps are subjected to, without concerns of breakage or loosening.

Bolted is Easier to Assemble - ARO's bolted design allows for easy positioning and alignment of parts during reassembly. This is a significant advantage over band-clamp style pump fasteners, which are difficult to align and hold together during reassembly.

Bolted is Less Expensive - ARO's design uses standard bolts which cost significantly less to replace. Non standard fastening devices (such as band clamps) are considered "wear parts" and are more expensive to replace.

ARO's Patented "Unbalanced" Air Valve

ARO's "Unbalanced" air valve design makes this, and all of ARO'S Diaphragm Pumps "Unstallable". Because the unbalanced valve cannot settle in a neutral position when the pump is shut down, it can't become stuck, requiring the operator to hammer on the pump in order to start pumping again.

- **Eliminates Shifting/Freezing Problems**
- **Does Not Require Lubrication**
- **Uses Significantly Less Power Than Competition**
- **Forgiving In Dirty Air**

"Unstallable" Air Motor Design Expanded: Introducing Simul-Shift™

ARO Diaphragm Pumps are known throughout industry as "The Unstallables", thanks in large part to their patented "unbalanced" air valve design, which eliminates air valve stalling, sticking and centering. With the new 2" and 3" pumps, Quick Dump and Simul-Shift™ valve technology. Simul-Shift's unique design applies constant air pressure to both the pilot and major shift valves to further enhance pump performance and significantly reduce pulsation.

"Quick-Dump™" Anti-Freeze Valve Design

ARO's "Quick-Dump" exhaust valve, eliminates air motor icing, the second most prevalent problem with conventional air motor designs by diverting cold wet exhaust air away from the critical air valve passages. Incorporated in the new 2" and 3" pumps, Quick Dump and Simul Shift have removed the Diaphragm Pump's stall-out stumbling block, it is, by far, the most energy efficient air valve on the market. Quick Dump will help reduce your energy costs. **Note:** Quick-Dump is incorporated in 2" and 3" models.

Broad Material Selection

ARO offers a wide selection of materials, allowing your choice of the best possible wetted and non-wetted materials suited to your application.

Positive Priming Provides Instant Start-Ups

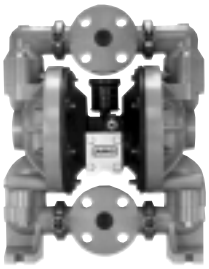
Check valves are located close to the diaphragm chambers, ensuring a positive prime first time every time.

Model Overview

1/4" Ports
Non-Metallic

1/2" Ports
Non-Metallic

1/2" Ports
Metallic



1" Ports
Non-Metallic

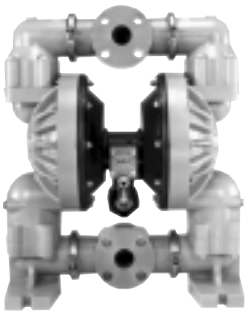
1" Ports
Metallic

1" Ports
Stainless
(3:1 Ratio)

MODEL	1/4" (Non-Met.)	1/2" (Non-Met.)	1/2" (Met.)	1" (Non-Met.)	1" (Met.)	1", 3:1 (Met.)
Maximum Flow GPM (LPM)	4.6 (17.4)	13 (49)	13 (49)	47 (178)	35 (133)	24 (90.7)
Maximum Discharge Pressure PSI (BAR)	100 (6.8)	100 (6.8)	100 (6.8)	120 (8.3)	120 (8.3)	300 (20.7)
Fluid Ports Inlet/Outlet (BSP Available)	3/8" (F) - In 1/4" (F) - Out (No BSP)	1/2" (F) - In/Out (No BSP)	1/2" (F) - In/Out (No BSP)	1" ANSI Flange	1" (F) - In/Out	1" (F) - In/Out
Materials of Construction	Polypropylene Groundable Acetal Kynar®	Polypropylene Groundable Acetal Kynar®	Stainless Steel Aluminum	Polypropylene Kynar (PVDF)	Aluminum Stainless Steel Cast Iron	Stainless Steel
Pump * Weight Lbs. (Kg.)	4.1 (1.85) Poly 4.6 (2.10) Acetal 9.5 (4.3) Kynar	8.8 (4.0) Acetal 7.2 (3.3) Poly 9.5 (4.3) Kynar	14.6(6.6)SST 8.4(3.8)Alum	*20.3 (9.2) Poly *28.5 (12.9) Kynar	*19 (8.6) Alum *36 (16.3) S. S. *31 (14.1) Cast Iron	*90 (40.7) S.S.
Maximum Solids Inches (mm)	Clean Fluids	3/32 (2.4)	3/32 (2.4)	1/8 (3.2)	1/8 (3.2)	1/8 (3.2)
Best Selling Models (BSP Available)	PD02P-APS-PTA PD02P-APS-PTT PD02P-ADS-DTT PD02P-AKS-KTT	66605J-388 66605J-3EB 66605J-344 66605H-244 66605K-444 66605H-2A4	PD05P-ASS-SAA PD05P-ASS-STT PD05P-AAS-STT PD05P-AAS-PGG	6661A3-3EB-C 6661A3-344-C 6661B3-344-C 6661A4-444-C	666100-322-C 666100-344-C 666101-344-C 666101-3EB-C 666111-244-C 666112-8EB-C	PH10A-ASS-SST
Recommended Filter/ Regulator	P29122-600 (Filter/Regulator)	P29122-600 (Filter/Regulator)	P29122-600 (Filter/Regulator)	P29221-610 (Filter/Regulator)	P29221-610 (Filter/Regulator)	P29231-610 (Filter/Regulator)
Air Line Kit	66073-1	66073-1	66073-1	66073-2	66073-2	-
See Page	9	11	10	13	14	22

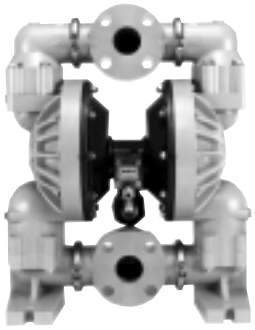
* Weights listed are for aluminum air motor models

Model Overview



1-1/2" Ports
Non-Metallic

1-1/2" Ports
Metallic



2" Ports
Non-Metallic

2" Ports
Ball Valve

2" Ports
"Flap" Valve

3" Ports
Metallic

MODEL	1-1/2" (Non-Met.)	1-1/2" (Met.)	2" (Non-Met.)	2" Ball (Met.)	2" Flap (Met.)	3" (Met.)
Max. Flow GPM (Liters)	100 (379)	100 (379)	145 (548)	170 (644)	170 (644)	275 (1,041)
Maximum Operating Pressure PSI (BAR)	120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)
Fluid Ports BSP Available	1-1/2" Flange Ansi	1-1/2" (F)	2" ANSI Flange	2" (F) (2" SST Model uses ANSI Flange with pipe tap)	2" (F) 2" Flange (2" SST Model uses Flange pipe tap)	3" (F)
Materials of Construction	Polypropylene Kynar®	Aluminum Stainless Steel Cast Iron	Polypropylene Kynar	Aluminum Stainless Steel Cast Iron	Aluminum Stainless Steel Cast Iron	Alum., Stn Stl. Cast Iron Hastelloy
Pump Weight* Lbs. (Kg.)	*62 (28) Poly *92 (42) Kynar	*51 (23.1) Alum *79 (35.8) Cast Iron 84(38.1) S. S.	*62 (28) Poly *92 (42) Kynar	*64 (29) Alum *154 (70) S. S. *133 (60) Cast Iron	*74 (34) Alum *188 (85) S. S. *161 (73) Cast Iron	*110 (50) Alum *195 (88) S. S. *190 (86) Cast Iron *195 (88) Hastelloy
Maximum Solids Inches (mm)	1/4 (6.4)	1/4 (6.4)	1/4 (6.4)	1/4 (6.4)	2 Semi (50) Solid	3/8 (9.5)
Best Selling Models	6661T3-3EB-C 6661T3-344-C 6661U3-344-C 6661U4-444-C	666150-322-C 666150-344-C 666152-3EB-C 666151-344-C 666151-3EB-C 666161-244-C	6662A3-3EB-C 6662A3-344-C 6662B3-344-C 6662B4-444-C	PD20A-AAP-GGG PD20A-AAP-KTT PD20A-ACP-AAA PD20A-ASP-AAA PD20A-ASP-KTT PD20C-ASS-KTT	PF20A-AAP-SAA PF20A-ACP-SAA PF20A-ASS-SAA PF20C-ASS-SAA PF20A-AAP-SUA PF20C-ASS-SVT	PD30A-AAP-GGG-B PD30A-AAP-KTT-B PD30A-ACS-AAA-B PD30A-ASS-AAA-B PD30A-ASP-KTT-B PD30S-ASS-STT-B
Recommended Filter/ Regulator	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	F25451-110 (Filter) 27354-600 (Reg.
Air Line Kit	66084-1	66084-1	66084-1	66312	66312	66109
See Page	15	16	17	18	19	20

* weights listed are for aluminum air motor models

Model Overview

Sanitary Transfer
Tri-Clamp (S-Tran)

1:1 Ratio Piston

2:1 Ratio Piston

4:1 Ratio

MODEL	Tri-Clamp (S-Tran) Pumps	1:1 Ratio Piston	2:1 Ratio Piston	4:1 Ratio Piston
Maximum Flow	2-1/2"=170 GPM (644 lpm) 3"=275 GPM (1041 lpm)	9 GPM (34.01 lpm)	4 GPM (15.1 lpm)	4.1 GPM (15.8 lpm)
Maximum Operating Pressure PSI (BAR)	120 (8.3)	150 (10.2)	150 (10.2)	150 (10.2)
Materials of Construction	Stainless Steel	Carbon Steel	Carbon Steel Stainless Steel	Carbon Steel Stainless Steel
Pump Weight Lbs. (Kg.)	2"=178 (80.7) 3"=248 (112.5)	12 (5.4)	12 (5.4) Carbon Steel Models 16 (7.2) S.S. Stub 19 (8.6) S.S. Drum	32 (14.5) Stub 46 (20.9) Drum
Maximum Solids Inches (mm)	2"=1/4" (6.4) 3"=3/8" (9.5)	Clean Fluids	Clean Fluids	Clean Fluids
Best Selling Models	PM20S-CSS-SAA-A02 PM30S-CSS-SAA-A02	612041-1 612041-3	650110-1C 650115-1C 650132-C 650133	NM2304A-11-311 NM2304A-41-311 NM2304B-11-311 NM2304B-41-311
Recommended Filter/ Regulator	2"=F25451-110 3"=F254610-110 R27461-100	C28123-600	C28123-600	C28123-600
Air Line Kit	2"=66312 3"=66109			
See Page	21	27	28-29	30-31