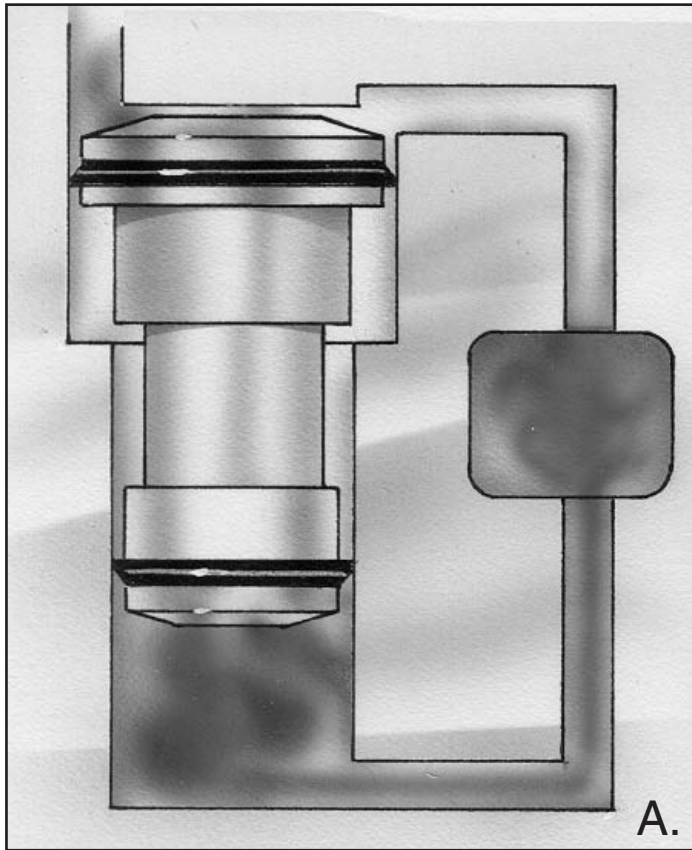


## Fluid Handling

- Diaphragm Pumps
- Piston Pumps
- Control Handles

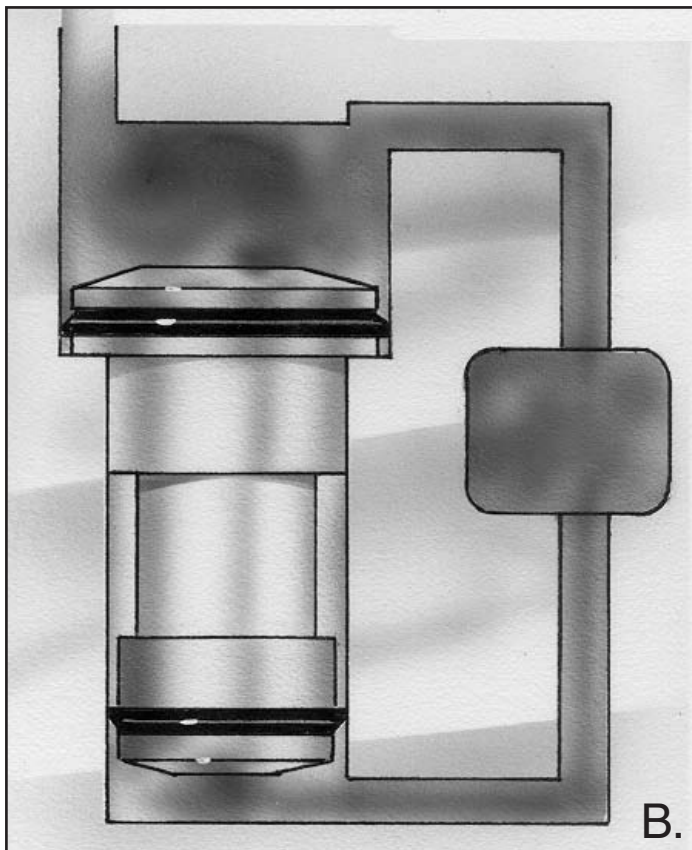


## **ARO, Owner of the “Unstallable” Air Valve Design**

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.

### **Figure A.**

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.



### **Figure B.**

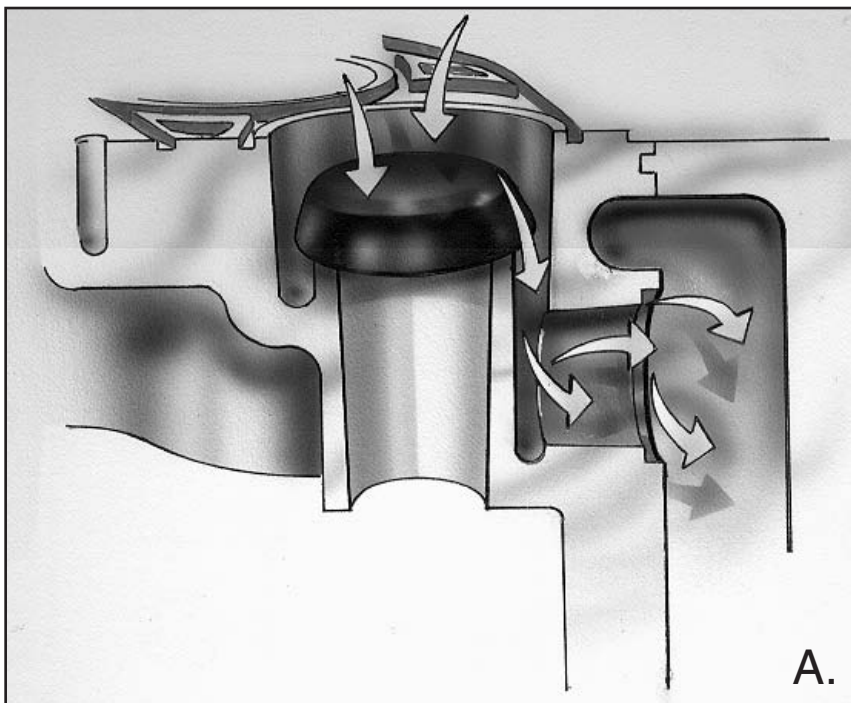
To reverse the valve, air pressure is supplied to the larger end of the valve, allowing the valve to shift - note that constant air pressure continues to be applied to the small end.

## 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.

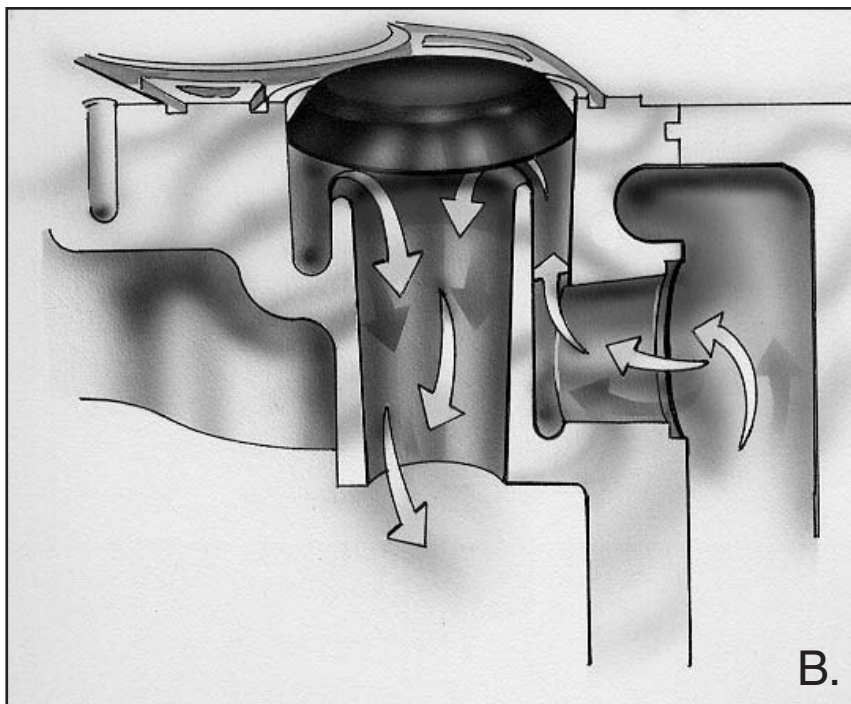
**Figure A.**

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.



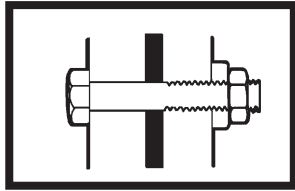
**Figure B.**

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.



**ARO®**  
**Diaphragm Pumps**

**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**

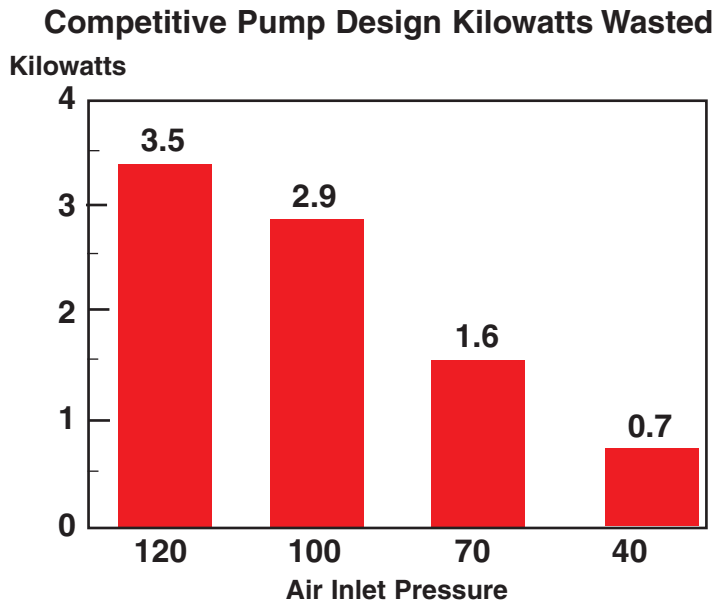


ARO's major air valve requires no added lubrication and the "wiping" action of the seals makes it extremely forgiving of contaminated compressed air supplies.



**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.



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



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



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



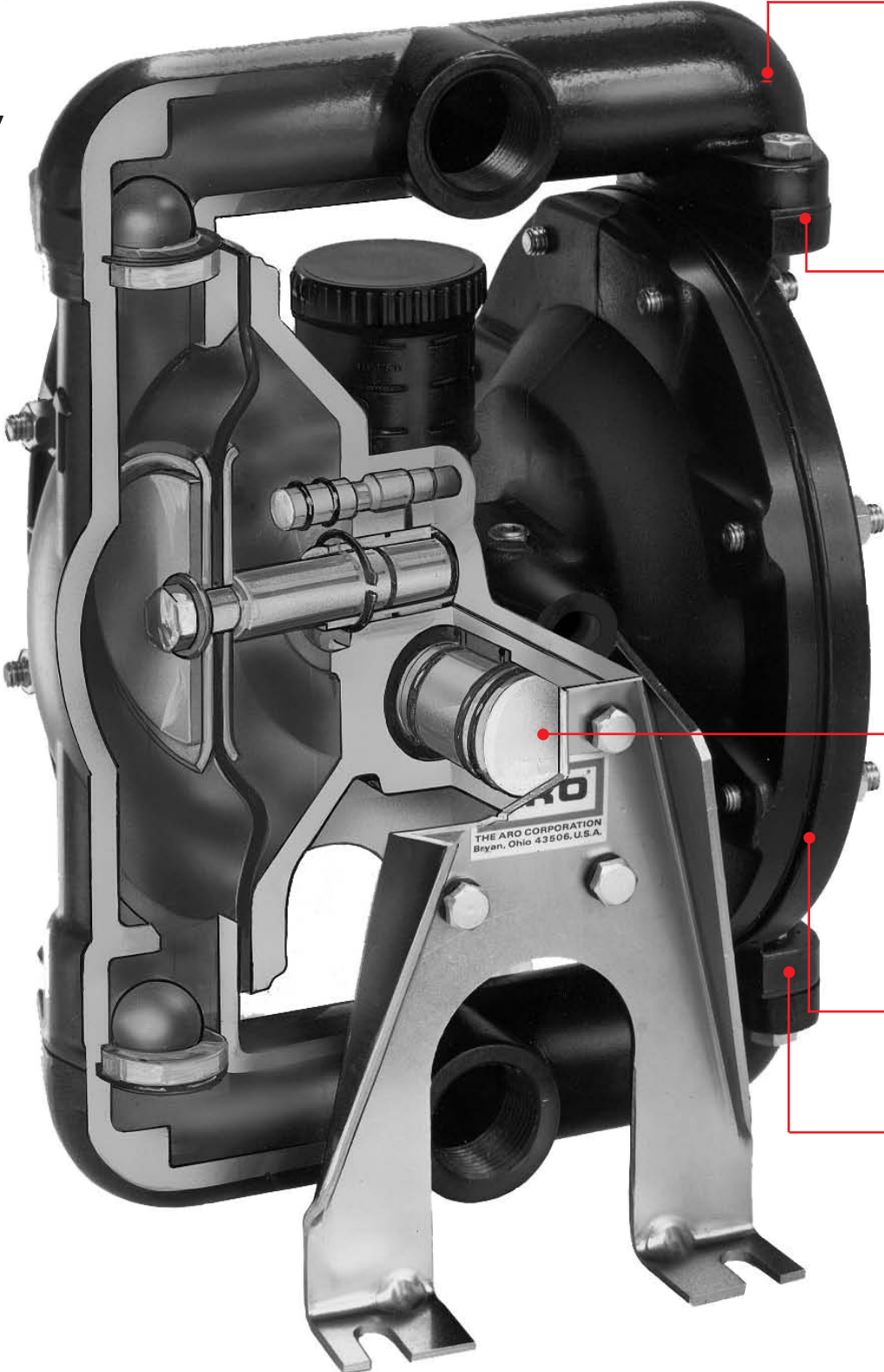
ARO's Pump design and manufacturing operations have demonstrated compliance with the quality process, health and safety, technical file and multi-lingual standards set forth by the FEM (Federation Europeene de la Manutention) for the European Union (Communitie Economique).



**ARO®**  
**Diaphragm Pumps**

**Design Features**

**5**  
**YEAR**  
**WARRANTY**



# Diaphragm Pumps

## 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.

# Diaphragm Pumps

## Model Overview



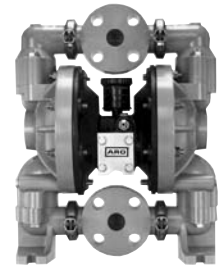
**1/4" Ports  
Non-Metallic**



**1/2" Ports  
Non-Metallic**



**1/2" Ports  
Metallic**



**1" Ports  
Non-Metallic**




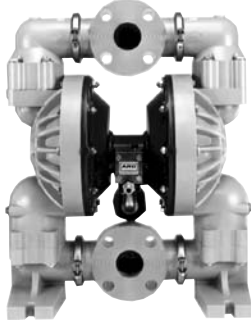

MODEL	1/4" (Non-Met.)	1/2" (Non-Met.)	1/2" (Met.)	1" (Non-Met.)
<b>Maximum Flow GPM (LPM)</b>	4.6 (17.4)	13 (49)	13 (49)	47 (178)
<b>Maximum Discharge Pressure PSI (BAR)</b>	100 (6.8)	100 (6.8)	100 (6.8)	120 (8.3)
<b>Fluid Ports Inlet/Outlet (BSP Available)</b>	3/8" (F) - In 1/4" (F) - Out (No BSP)	1/2" (F) - In/Out (No BSP)	1/2" (F) - In/Out (No BSP)	1" ANSI Flange 1" NPT Threaded
<b>Materials of Construction</b>	Polypropylene Groundable Acetal Kynar® (PVDF)	Polypropylene Groundable Acetal Kynar® (PVDF)	Stainless Steel Aluminum	Polypropylene Kynar® (PVDF)
<b>Pump * Weight Lbs. (Kg.)</b>	4.1 (1.85) Poly 4.6 (2.10) Acetal 9.5 (4.3) Kynar® (PVDF)	8.8 (4.0) Acetal 7.2 (3.3) Poly 9.5 (4.3) Kynar® (PVDF)	14.6(6.6)SST 8.4(3.8)Alum	*20.3 (9.2) Poly *28.5 (12.9) Kynar® (PVDF)
<b>Maximum Solids Inches (mm)</b>	Clean Fluids	3/32 (2.4)	3/32 (2.4)	1/8 (3.2)
<b>Best Selling Models (BSP Available)</b>	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	6661AF-3EB-C 6661AF-344-C 6661BF-344-C 6661AG-444-C 6661BG-444-C
<b>Recommended Filter/ Regulator</b>	P29122-600 (Filter/Regulator)	P29122-600 (Filter/Regulator)	P29122-600 (Filter/Regulator)	P29221-610 (Filter/Regulator)
<b>Air Line Kit</b>	66073-1	66073-1	66073-1	66073-2
<b>See Page</b>	<b>9</b>	<b>11</b>	<b>10</b>	<b>13</b>

\* Weights listed are for aluminum air motor models

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# ARO® Diaphragm Pumps

## Model Overview

				
<b>1" Ports Metallic</b>	<b>1-1/2" Ports Non-Metallic</b>	<b>1-1/2" Ports Metallic</b>	<b>2" Ports Non-Metallic</b>	<b>2" Ports Metallic</b>
<b>1" (Met.)</b>	<b>1-1/2" (Non-Met.)</b>	<b>1-1/2" (Met.)</b>	<b>2" (Non-Met.)</b>	<b>2" (Met.)</b>
35 (133)	90 (340)	90 (340)	145 (548)	135 (511)
120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)	120 (8.3)
1" (F) - In/Out	1-1/2" Flange Ansi	1-1/2" (F)	2" ANSI Flange	2" (F)
Aluminum Stainless Steel Cast Iron	Polypropylene Kynar® (PVDF)	Aluminum Stainless Steel Cast Iron	Polypropylene Kynar® (PVDF)	Aluminum Stainless Steel Cast Iron
*19 (8.6) Alum *36 (16.3) S. S. *31 (14.1) Cast Iron	*62 (28) Poly *92 (42) Kynar® (PVDF)	*51 (23.1) Alum *79 (35.8) Cast Iron 84(38.1) S. S.	*62 (28) Poly *92 (42) Kynar® (PVDF)	*46 (20.9) Alum *92 (41.6) Cast Iron 89 (40.3) S. S.
1/8 (3.2)	1/4 (6.4)	1/4 (6.4)	1/4 (6.4)	1/4 (6.4)
666100-322-C 666100-344-C 666101-344-C 666101-3EB-C 666111-244-C 666112-8EB-C	6661T3-3EB-C 6661T3-344-C 6661U3-344-C 6661U4-444-C	666150-3EB-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	666200-3EB-C 666200-322-C 666200-344-C 666202-3EB-C 666201-344-C 666201-3EB-C 666211-244-C
P29221-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)	P29241-610 (Filter/Regulator)
66073-2	66084-1	66084-1	66084-1	66084-1
14	15	16	17	18

\* weights listed are for aluminum air motor models

# ARO® Specialty & Piston Pumps

## Model Overview



**1:1 Ratio Piston**

**2:1 Ratio Piston**

**4:1 Ratio**

**1:1 Ratio**

MODEL	1:1 Ratio Piston	2:1 Ratio Piston	4:1 Ratio Piston	1:1 Ratio Diaphragm
Maximum Flow	18 GPM (68.1 lpm)	4.3 GPM (16.3 lpm)	4.1 GPM (15.8 lpm)	11 GPM (41.6 LPM)
Maximum Operating Pressure PSI (BAR)	150 (10.2)	150 (10.2)	150 (10.2)	100 (6.8)
Materials of Construction	Carbon Steel	Carbon Steel	Carbon Steel Stainless Steel	Polypropylene Stainless Steel Aluminum
Pump Weight Lbs. (Kg.)	12 (5.4)	19.6 (8.9) Carbon Steel Drum 17.5 (7.9) Carbon Steel Stub	32 (14.5) Stub 46 (20.9) Drum	
Maximum Solids Inches (mm)	Clean Fluids	Clean Fluids	Clean Fluids	3/32 (2.4)
Best Selling Models	612041-1 612041-3	NM2202A-11-731 NM2202A-41-731	NM2304A-11-311 NM2304A-41-311 NM2304B-11-311 NM2304B-41-311	DA005-PPAA-2-A DA005-PPTT-2-A DA005-SSTT-2-A DA005-APNN-2-A
Recommended Filter/ Regulator	C28123-600	C28123-600	C28123-600	P29122-600
Air Line Kit	66073-1	66073-1	66073-1	66073-1
See Page	22	22	24	20

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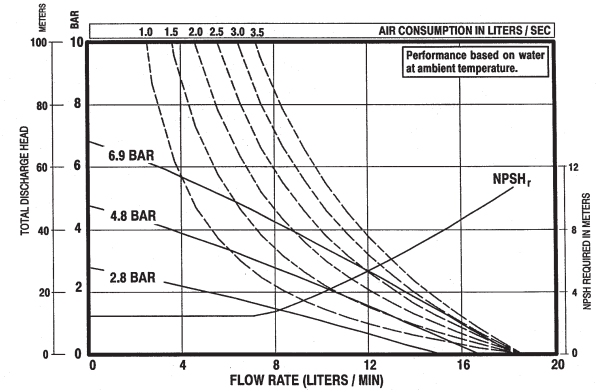
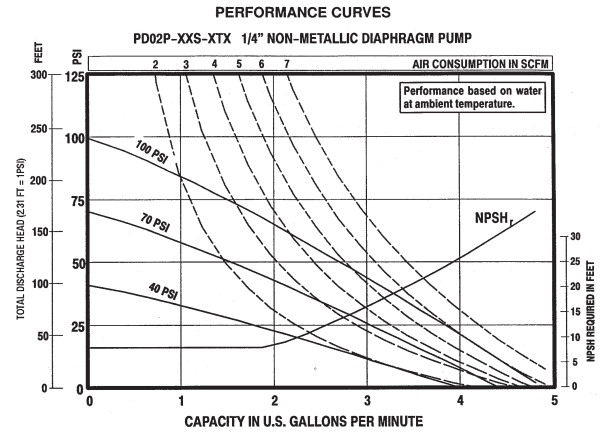
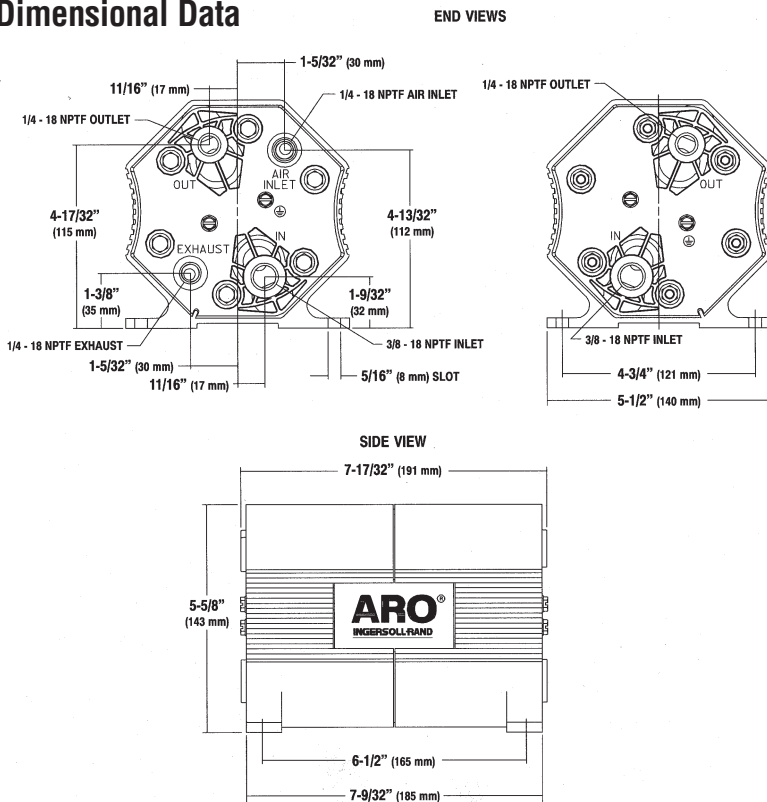
# Diaphragm Pumps

## 1/4-Inch Ports Non-Metallic

### Performance Specifications

<b>RATIO:</b>	1:1
<b>MAXIMUM G.P.M. (LPM):</b>	4.6 (17.4)
<b>DISPLACEMENT GALLONS (Liters) PER CYCLE:</b>	.014 (.053)
<b>AIR INLET:</b>	1/4" NPTF (f)
<b>FLUID INLET:</b>	3/8" NPTF (f)
<b>FLUID OUTLET:</b>	1/4" NPTF (f)
<b>MAX. OPERATING PRESSURE PSI (bar):</b>	100 (6.8)
<b>SUSPENDED SOLIDS MAX. DIA. IN. (mm):</b>	Clean Fluid Only
<b>WEIGHT - LBS. (KGS):</b>	4.1 (1.85) Poly, 4.6 (2.10) Acetal, 9.5 (4.3) Kynar® (PVDF)
<b>MAX. DRY SUCTION LIFT:</b>	20 ft.

### Dimensional Data



### Accessories

**Recommended Filter/Regulator**  
 (See Page 264)

Filter / Regulator: P29122-600



P29122-600

### Ordering

**Best Selling Models** | PD02P-APS-PTA, PD02P-APS-PTT, PD02P-ADS-DTT, PD02P-AKS-KTT

**PD02 P - XXX - XXX**

**Base Model**

1/4" Pump

**Center Section**

Polypropylene

**Hardware**  
 S Stain. Steel

**Disk Check/Diaphragm**

Code	Description
TA	Teflon/Santoprene
TG	Teflon/Nitrile
TT	Teflon/Teflon

**Seat Material**

Code	Description
D	Acetal
P	Polypropylene
K	Kynar (PVDF)

**Port**

Code	Description
A	NPT Single Inlet/Single Outlet
D	NPT Single Inlet/Dual Outlet
E	NPT Inlet/Single Outlet
H	NPT Dual Inlet/Dual Outlet

**Wet End**

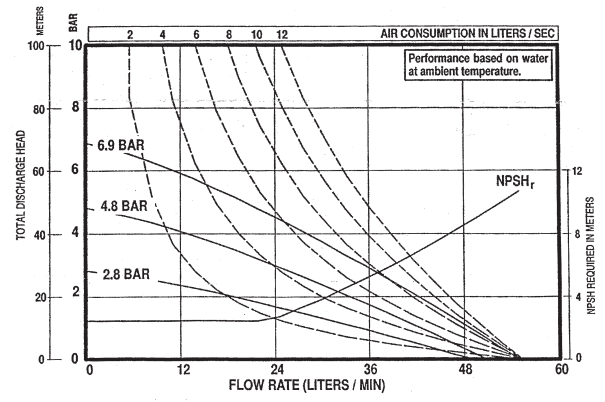
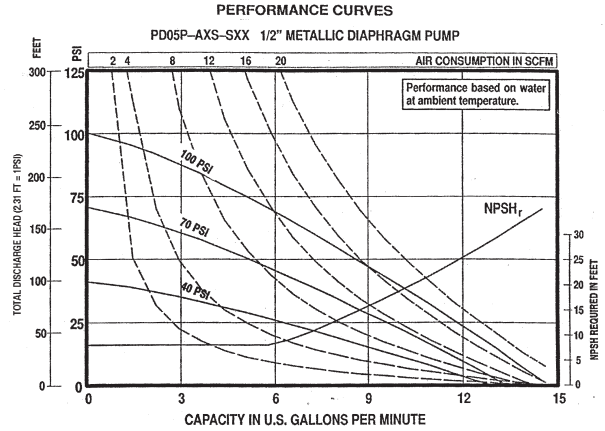
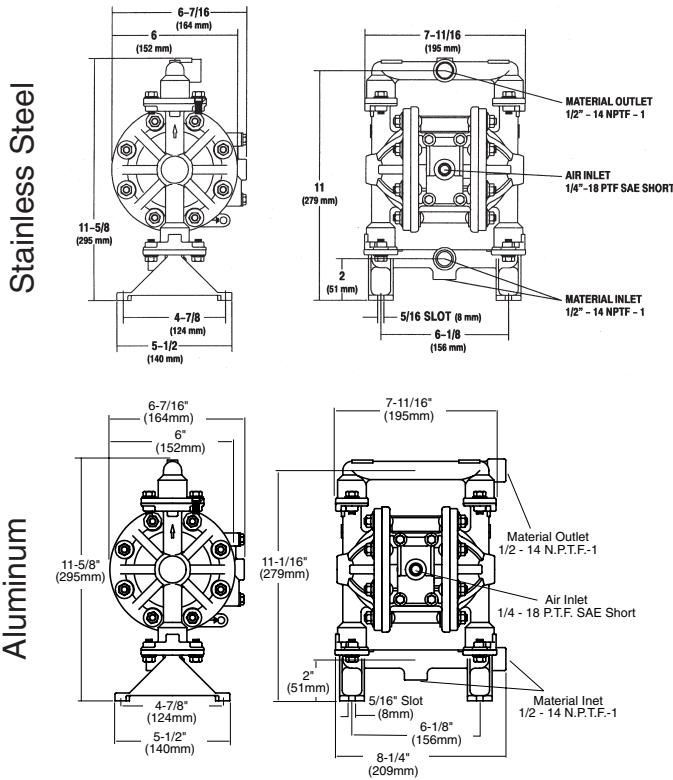
Code	Description
D	Acetal
P	Polypropylene
K	Kynar (PVDF)

# Diaphragm Pumps 1/2-Inch Ports Metallic

## Performance Specifications

RATIO:	1:1
MAXIMUM G.P.M. (LPM):	13 (49)
DISPLACEMENT GALLONS (Liters) PER CYCLE:	.040 (.15)
AIR INLET:	1/4"-18 NPTF (f)
FLUID INLET:	1/2"-14 NPTF (f)
FLUID OUTLET:	1/2"-14 NPTF (f)
MAX. OPERATING PRESSURE PSI (bar):	100 psi (6.8 bar)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	3/32" (2.4mm)
WEIGHT - LBS. (Kg):	14.6 lbs (6.6 kgs)SST, 8.4 lbs (3.8 kgs) Alum
MAX DRY SUCTION LIFT:	10 ft. (Teflon fitted)

## Dimensional Data



## Accessories

**Recommended Filter/Regulator**  
(See Page 264)

Filter / Regulator: P29122-600



**Ordering** *Best Selling Models* | PD05-ASS-SAA, PD05P-ASS-STT, PD05P-ASS-STT, PD05P-AAS-PGG

## PD05 P - AXS - XXX

**Base Model**  
1/2" Pump  
**Center Section**  
Polypropylene

**Hardware**  
S Stain. Steel

**Ball Check/Diaphragm**

Code	Description
AA	Santoprene/Santoprene
GG	Nitrile/Nitrile
TT	Teflon/Teflon

**Port**

Code	Description
A	NPT Single Inlet/Single Outlet

**Wet End**

Code	Description
S	316 St. Steel
F	Aluminum

**Seat Material**

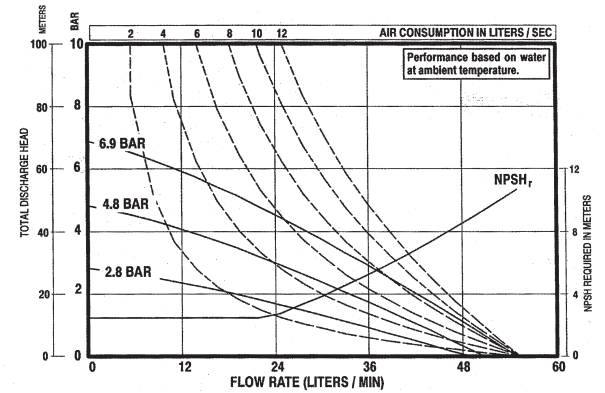
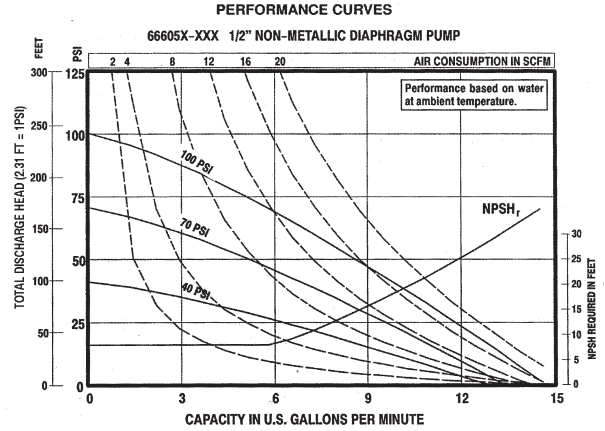
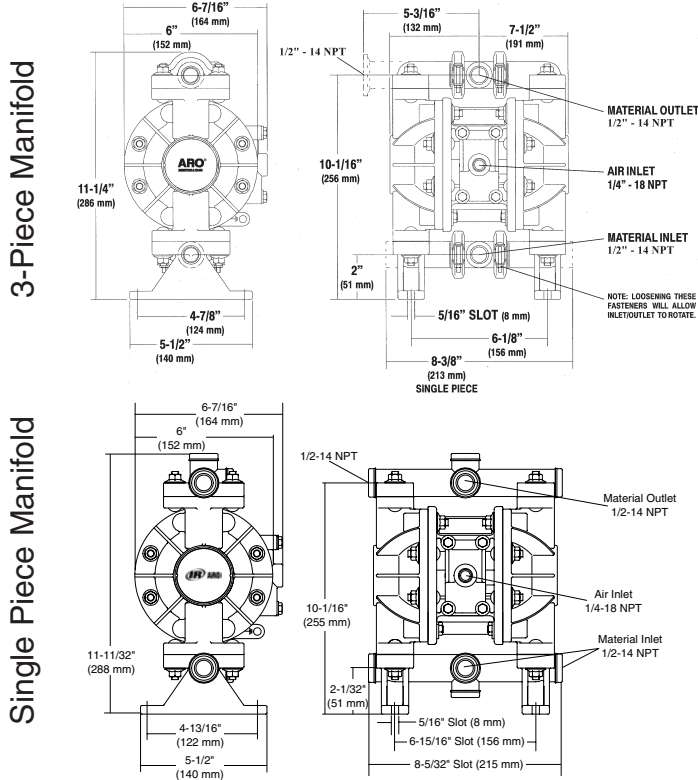
Code	Description
F	Aluminum
S	300 Series

# Diaphragm Pumps 1/2-Inch Ports Non-Metallic

## Performance Specifications

RATIO:	1:1
MAXIMUM G.P.M. (LPM):	13 (49) Ball 10 (37.9) Duckbill Check
DISPLACEMENT GALLONS (Liters) PER CYCLE:	.04 (.15) Ball .032 (.12) Duckbill Check
AIR INLET:	1/4"-18 NPTF (f)
FLUID INLET:	1/2"-14 NPTF (f)
FLUID OUTLET:	1/2"-14 NPTF (f)
MAX. OPERATING PRESSURE PSI (bar):	100 (6.9)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	3/32-inch (2.4) Duckbill Check- Fibers
WEIGHT - LBS. (Kg):	7.2 (3.3) Polypropylene 9.5 (4.3) Kynar® (PVDF)
MAX. DRY SUCTION LIFT:	10 ft. (Teflon fitted)

## Dimensional Data



## Accessories

**Recommended Filter/Regulator**  
(See Page 264)

Filter / Regulator: P29122-600



P29122-600

Ordering **Best Selling Models** | 66605J-388, 66605J-3EB, 66605J-344, 66605K-444

**6660 5X - XXX**

Base Model

1/2" Pump

Air Motor

Polypropylene

Wetted Parts

Code	Description
J*	Polypropylene
K*	Kynar (PVDF)
3	Polypropylene
7	Kynar (PVDF)

Check Valve Seats

Code	Description
2	Stainless Steel
3	Polypropylene
4	Kynar (PVDF)
0	Duckbill

Disk Check/Diaphragm

Code	Description
22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
88	Polyurethane/Polyurethane
EB	Santoprene/Santoprene
D2	Nitrile/Nitrile (Duckbill Only)
A4	Stainless/Teflon

All hardware is 300 Series Stainless Steel.

\* Single piece manifold

# Diaphragm Pumps

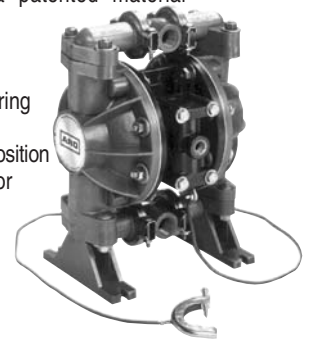
## 1/2-Inch Ports Non-Metallic Groundable

### Performance Specifications

RATIO:	1:1
MAXIMUM G.P.M. (LPM):	13 (49)
DISPLACEMENT GALLONS (Liters) PER CYCLE:	.04 (.15)
AIR INLET:	1/4"-18 NPTF (f)
FLUID INLET:	1/2"-14 NPTF (f)
FLUID OUTLET:	1/2"-14 NPTF (f)
MAX. OPERATING PRESSURE PSI (bar):	100 (6.9)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	3/32-inch (2.3)
WEIGHT - LBS. (Kg):	8.8 (4.0) Acetal
MAX. DRY SUCTION LIFT:	10 ft. (Teflon fitted)

### Model Overview

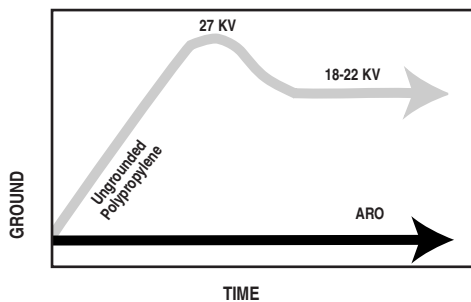
ARO® Groundable Diaphragm Pump is constructed from a patented material blend that serves to route electrostatic buildup to a single bleed-off point, ensuring safe operation. This exclusive body composition also provides superior compatibility with harsh industrial solvents and other volatile materials.



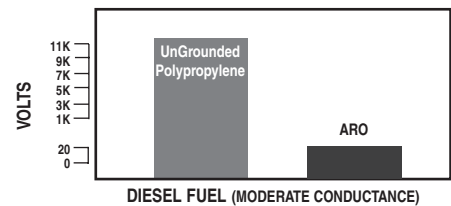
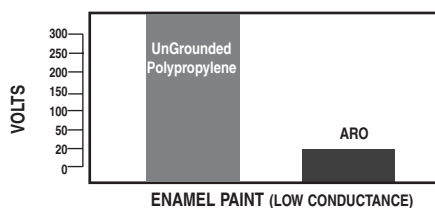
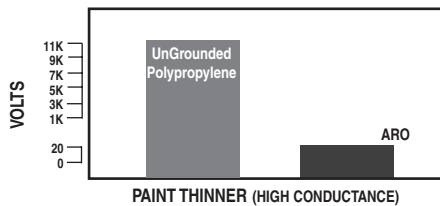
### Dimensional Data

See 1/2-inch (ports) non-metallic pump dimensional and flow data on page 11.

### Independent Laboratory Test Results



**UNRESTRICTED FLOW TESTS**  
This test involved readings taken with an electro-static field strength meter during free-flow operation of the three pumps. Readings were taken at each pump's metallic clamps and fasteners, traditional electro-static "hot-spots."



An independent lab test showed that the ARO Groundable pump, pumping materials such as paint thinner, diesel fuel and enamel paint under high flow conditions, accumulated a maximum of .0032 millijoules of energy. The report concluded that energies of this magnitude are not sufficient to ignite flammable vapors. Reported minimum ignition energies of several flammable fluids are as follows:

Methyl Ethyl Ketone: 0.53 millijoules	Acetone: 1.15 millijoules
Isopropyl Alcohol: 0.65 millijoules	Hydrogen: 0.02 millijoules

### Ordering *Best Selling Models* | 66605H-2A4, 66605H-244

**6660 5X - XXX**

Base Model

1/2" Pump

Air Motor

Polypropylene

#### Wetted Parts

Code	Description
H	Single Piece Manifold/Acetal
6	3 Piece Manifold/Acetal

#### Ball Check/Diaphragm

#### Check Valve Seats

Code	Description
2	Stainless Steel
6	Acetal

#### Code Description

A4	Stainless S./Teflon
44	Teflon/Teflon

### Accessories

#### Recommended Filter/Regulator

(See Page 264)

Filter / Regulator: P29122-600



P29122-600

\* A groundable pump is defined as one which is not able to accumulate a charge of sufficient energy to ignite flammable vapors. Be sure that every component in your system is properly grounded.

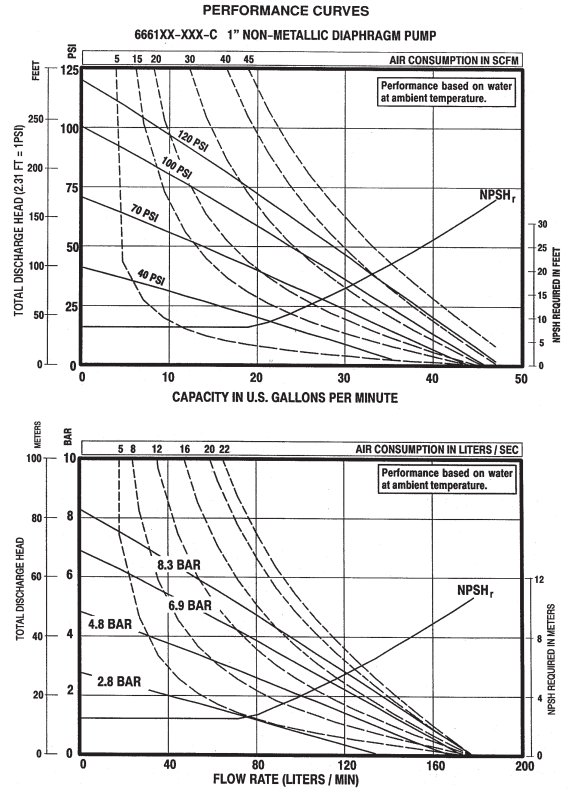
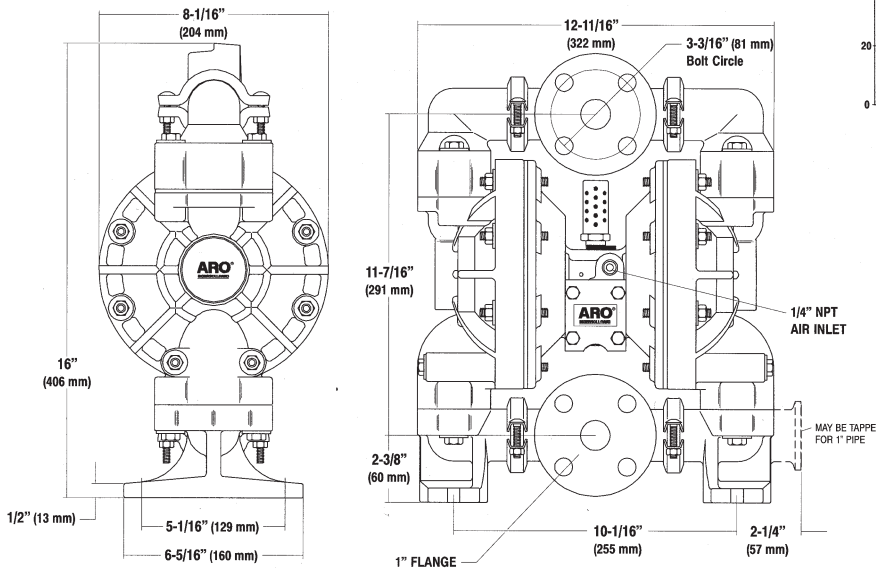
# Diaphragm Pumps

## 1-Inch Ports Non-Metallic

### Performance Specifications

<b>RATIO:</b>	1:1
<b>MAXIMUM G.P.M. (LPM):</b>	47 (178)
<b>DISPLACEMENT GALLONS (Liters) PER CYCLE:</b>	.170 (.64)
<b>AIR INLET:</b>	1/4" NPTF (f)
<b>FLUID INLET:</b>	ANSI Class 150, 1" Pipe Flange
<b>FLUID OUTLET:</b>	ANSI Class 150, 1" Pipe Flange
<b>MAX. OPERATING PRESSURE PSI (bar):</b>	120 (8.3)
<b>SUSPENDED SOLIDS MAX. DIA. IN. (mm):</b>	1/8-inch (3.2)
<b>WEIGHT - LBS. (Kg):</b>	20.3 (9.2) Polypropylene 28.5 (12.9) Kynar® (PVDF) For Cast Iron center section models, add 8.5 lbs. (3.81 kg.)
<b>MAX. DRY SUCTION LIFT:</b>	15 ft. (Rubber fitted)

### Dimensional Data



### Accessories

#### Recommended Filter/Regulator (See Page 286)

Filter / Regulator: P29221-610  
67078 - Polypropylene Flange Kit 1" NPT (F)



P29221-610

**Ordering** *Best Selling Models* | 6661AF-3EB-C, 6661AF-344-C, 6661BF-344-C, 6661AG-444-C, 6661BG-444-C

## 6661 XX - XXX

All hardware is 300 Series Stainless Steel.

**Base Model**  
1" Pump

Air Motor	
Code	Description
A	Aluminum
B	Cast Iron

Check Valve Seats	
Code	Description
3	Polypropylene
4	Kynar (PVDF)
8	Stainless Steel (400, hardened)

Ball Check/Diaphragm	
Code	Description
22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
EB	Santoprene/Santoprene

#### Wetted Parts

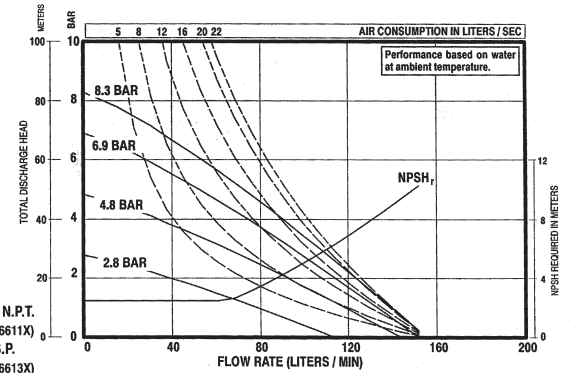
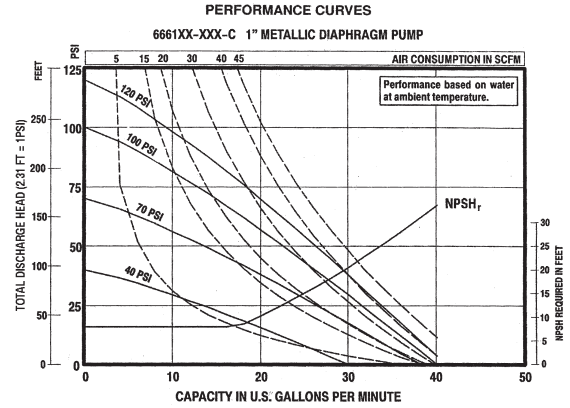
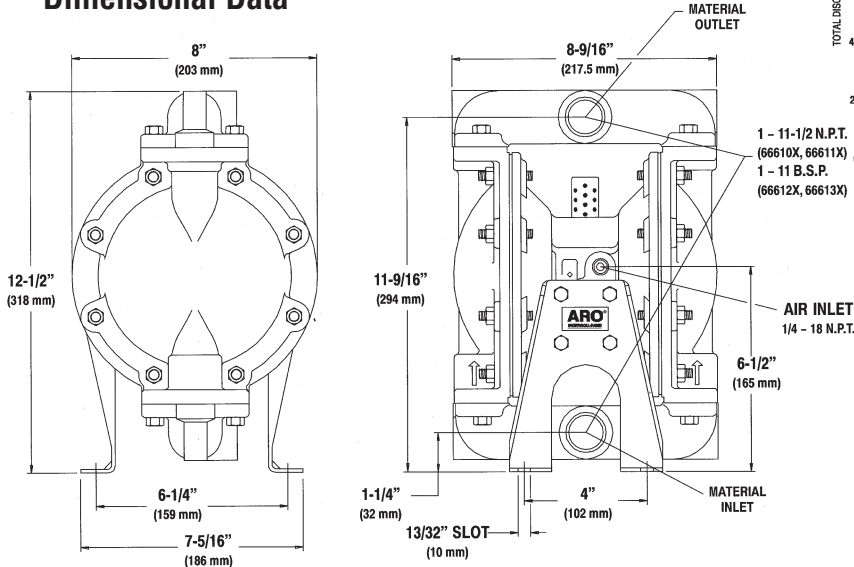
Code	Description	Code	Description
3	Polypropylene Flange	J	Polypropylene, N.P.T.
4	Kynar (PVDF) Flange	K	Kynar (PVDF), N.P.T.
F	Polypropylene Flange	L	Polypropylene, B.S.P.
G	Kynar (PVDF) Flange	N	Kynar (PVDF), B.S.P.

# Diaphragm Pumps 1-Inch Ports Metallic

## Performance Specifications

<b>RATIO:</b>	1:1
<b>MAXIMUM G.P.M. (LPM):</b>	35 (133)
<b>DISPLACEMENT GALLONS (Liters) PER CYCLE:</b>	.16 (.60)
<b>AIR INLET:</b>	1/4" NPTF (f)
<b>FLUID INLET:</b>	1" NPTF (f) or 1" BSP (f)
<b>FLUID OUTLET:</b>	1" NPTF (f) or 1" BSP (f)
<b>MAX. OPERATING PRESSURE PSI (bar):</b>	120 (8.3)
<b>SUSPENDED SOLIDS MAX. DIA. IN. (mm):</b>	1/8-inch (3.2)
<b>WEIGHT - LBS. (Kg):</b>	19 (8.6) Aluminum 36 (16.3) Stainless Steel 31 (14.1) Cast Iron
	For Cast Iron center section models, add 8.5 lbs. (3.81 kg.)
<b>MAX. DRY SUCTION LIFT:</b>	20 ft. (Rubber fitted)

## Dimensional Data



## Accessories

**Recommended Filter/Regulator**  
(See Page 286)

**Filter / Regulator: P29221-610**



P29221-610

**Ordering** *Best Selling Models* | 666100-322-C, 666101-344-C, 666111-244-C, 666101-3EB-C, 666100-344-C, 666112-8EB-C

**6661 XX - XXX - C**

**Base Model**  
1" Pump

### Air Motor

Code	Description
0	Aluminum
1	Cast Iron
2	BSP Aluminum
3	BSP Cast Iron

### Wetted Parts

Code	Description
0	Aluminum
1	316 Stainless Steel
2	Cast Iron
A	BSP Aluminum
B	BSP Cast Iron
C	Cast Iron w/SS Hardware

### Check Valve Seats

Code	Description
1	Aluminum
2	316 Stainless Steel
3	Polypropylene
4	Kynar (PVDF)
5	Carbon Steel
8	400 SS (400, hardened)

### Ball Check/Diaphragm

Code	Description
22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
EB	Santoprene/Santoprene
A4	Stainless/Teflon

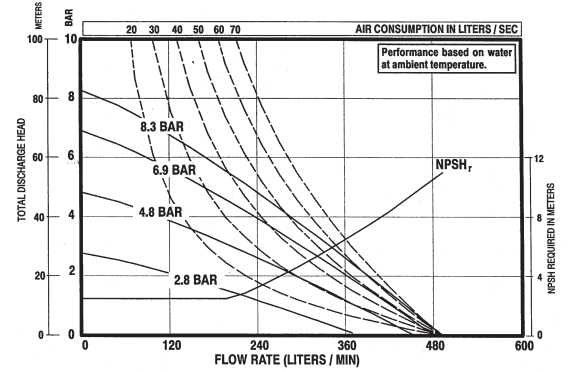
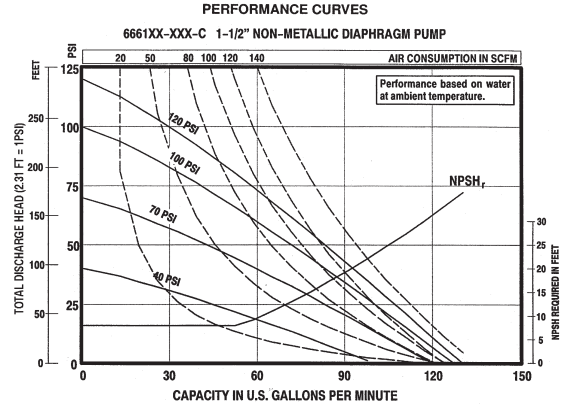
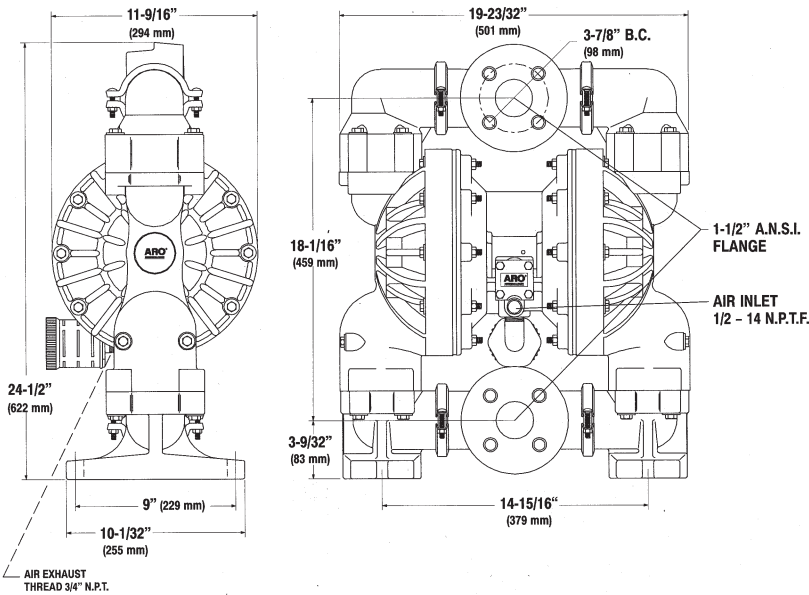
# Diaphragm Pumps

## 1 1/2-Inch Ports Non-Metallic

### Performance Specifications

RATIO:	1:1
MAXIMUM G.P.M. (LPM):	100 (379)
DISPLACEMENT GALLONS (Liters) PER CYCLE:	.72 (2.7)
AIR INLET:	1/2" NPTF (f)
FLUID INLET:	ANSI Class 150, 1-1/2" Pipe Flange
FLUID OUTLET:	ANSI Class 150, 1-1/2" Pipe Flange
MAX. OPERATING PRESSURE PSI (bar):	120 (8.3)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	1/4-inch (6.4)
WEIGHT - LBS. (Kg):	62 (28) Polypropylene 92 (42) Kynar® (PVDF) For Cast Iron center section add 23 lbs. (10.4 kg)
MAX. DRY SUCTION LIFT:	14 ft. (Rubber fitted)

### Dimensional Data



### Accessories

**Recommended Filter/Regulator**  
(See Page 286)

Filter / Regulator: P29241-610  
67079 - Polypropylene Flange Kit  
1-1/2" NPT (F)



P29241-610

**Ordering** *Best Selling Models* | 6661T3-3EB-C, 6661U3-344-C, 6661T3-344-C, 6661U4-444-C

All hardware is 300 Series Stainless Steel.

**6661 XX - XXX - C**

Base Model  
1 1/2" Pump

Ball Check/Diaphragm

#### Air Motor

Code	Description
T	Aluminum
U	Cast Iron

#### Wetted Parts

Code	Description
3	Polypropylene
4	Kynar (PVDF)

#### Check Valve Seats

Code	Description
3	Polypropylene
4	Kynar (PVDF)
8	400 SS (400, hardened)

#### Code Description

22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
EB	Santoprene/Santoprene

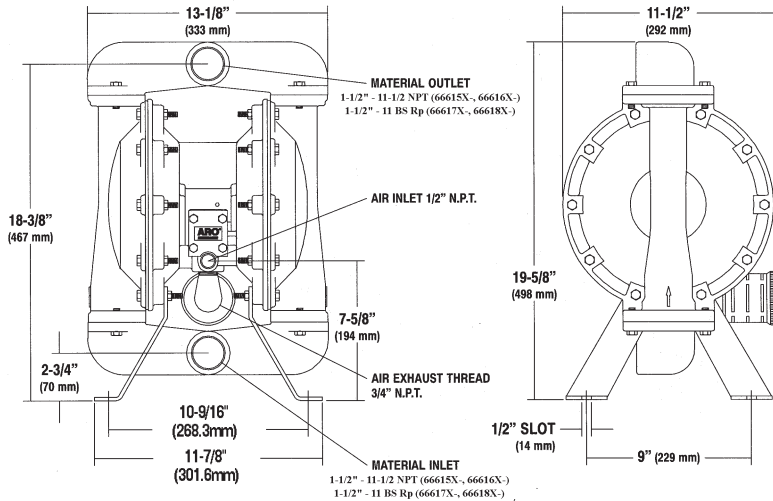
# Diaphragm Pumps

## 1 1/2-Inch Ports Metallic

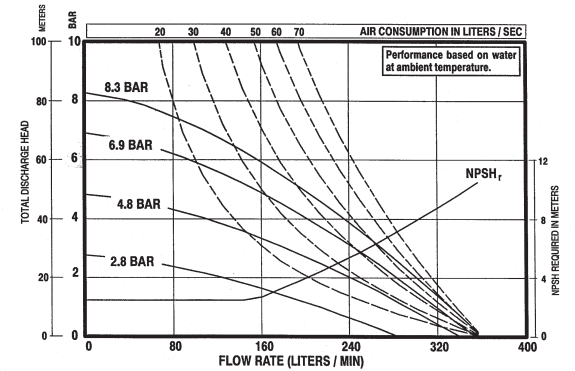
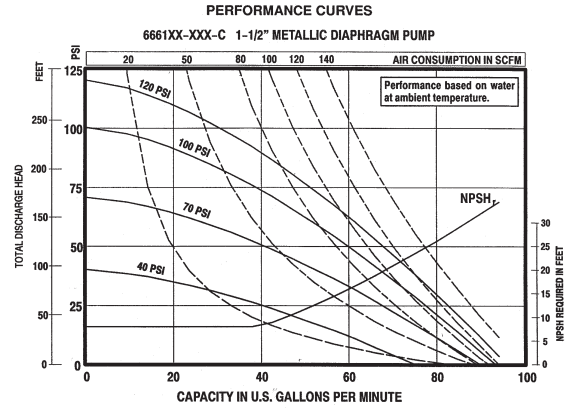
### Performance Specifications

<b>RATIO:</b>	1:1
<b>MAXIMUM G.P.M. (LPM):</b>	90 (340)
<b>DISPLACEMENT GALLONS (Liters) PER CYCLE:</b>	.73 (2.76)
<b>AIR INLET:</b>	1/2" NPTF (f)
<b>FLUID INLET:</b>	1-1/2" NPTF (f) or 1-1/2" BSP (f)
<b>FLUID OUTLET:</b>	1-1/2" NPTF (f) or 1-1/2" BSP (f)
<b>MAX. OPERATING PRESSURE PSI (bar):</b>	120 (8.3)
<b>SUSPENDED SOLIDS MAX. DIA. IN. (mm):</b>	1/4-inch (6.4)
<b>WEIGHT - LBS. (Kg):</b>	51 (23.1) Aluminum 84 (38.1) Stainless Steel 79 (35.8) Cast Iron For Cast Iron center section models, add 23 lbs. (10.4 kg.)
<b>MAX. DRY SUCTION LIFT:</b>	19 ft. (Rubber fitted)

### Dimensional Data



Screened Inlet Kits Available.



### Accessories

Recommended Filter/Regulator  
(See Page 286)

Filter / Regulator: P29241-610



P29241-610

Ordering **Best Selling Models** | 666150-3EB-C, 666150-322-C, 666150-344-C, 666152-3EB-C, 666151-344-C, 666161-244-C

**6661 XX - XXX - C**

Base Model  
1 1/2" Pump

Ball Check/Diaphragm

#### Air Motor

Code	Description
5	Aluminum
6	Cast Iron
7	BSP Aluminum
8	BSP Cast Iron

#### Wetted Parts

Code	Description
0	Aluminum
1	316 Stainless Steel
2	Cast Iron
A	Aluminum w/SS Hardware
B	316 SS w/SS Hardware
C	Cast Iron w/SS Hardware

#### Check Valve Seats

Code	Description
1	Aluminum
2	316 Stainless Steel
3	Polypropylene
4	Kynar (PVDF)
8	400 SS (Hardened)

#### Code Description

Code	Description
22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
EB	Santoprene/Santoprene
A4	Stainless/Teflon

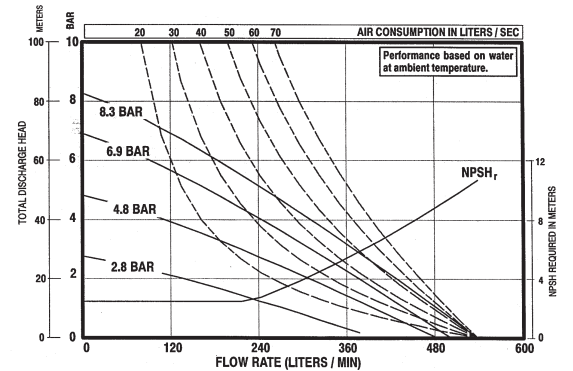
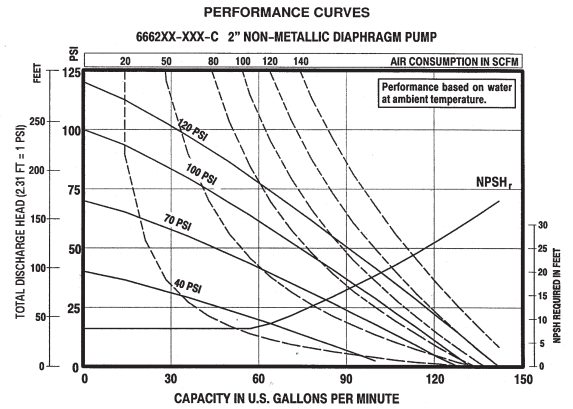
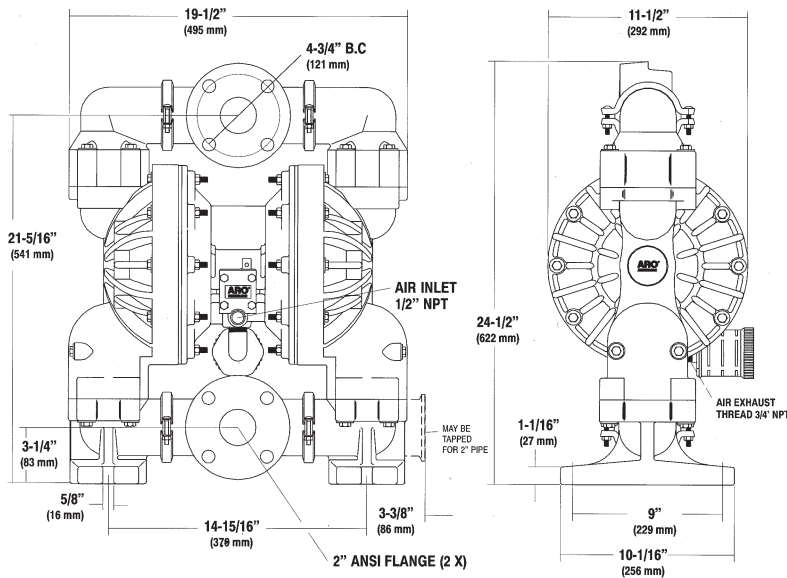
# Diaphragm Pumps

## 2-Inch Ports Non-Metallic

### Performance Specifications

<b>RATIO:</b>	1:1
<b>MAXIMUM G.P.M. (LPM):</b>	145 (548)
<b>DISPLACEMENT GALLONS (Liters) PER CYCLE:</b>	.72 (2.7)
<b>AIR INLET:</b>	1/2" NPTF (f)
<b>FLUID INLET:</b>	ANSI Class 150, 2" Pipe Flange
<b>FLUID OUTLET:</b>	ANSI Class 150, 2" Pipe Flange
<b>MAX. OPERATING PRESSURE PSI (bar):</b>	120 (8.3)
<b>SUSPENDED SOLIDS MAX. DIA. IN. (mm):</b>	1/4-inch (6.4)
<b>WEIGHT - LBS. (Kg):</b>	62 (28) Polypropylene, 92 (42) Kynar® (PVDF) For Cast Iron center section models, add 23 lbs. (10.4 kg.)
<b>MAX. DRY SUCTION LIFT:</b>	14 ft. (Rubber fitted)

### Dimensional Data



### Accessories

**Recommended Filter-Regulator**  
(See Page 286)

Filter / Regulator: P29241-610

67080 - Polypropylene  
Flange Kit 2" NPT (F)



P29241-610

**Ordering** *Best Selling Models* | 6662A3-3EB-C, 6662B3-344-C, 6662A3-344-C, 6662B4-444-C

All hardware is 300 Series Stainless Steel.

**6662 XX - XXX - C**

Base Model  
2" Pump

Code	Description
3	Polypropylene
4	Kynar (PVDF)
8	400 SS (Hardened)

Ball Check/Diaphragm

Code	Description
22	Nitrile/Nitrile
33	Viton/Viton
44	Teflon/Teflon
EB	Santoprene/Santoprene

### Air Motor

Code	Description
A	Aluminum
B	Cast Iron

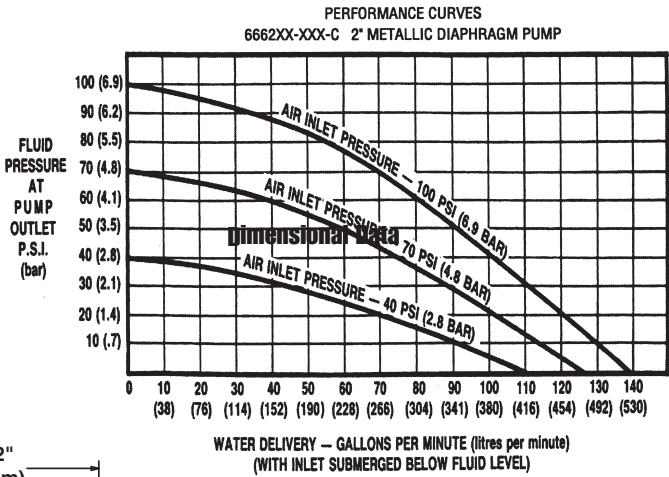
### Wetted Parts

Code	Description
3	Polypropylene
4	Kynar (PVDF)

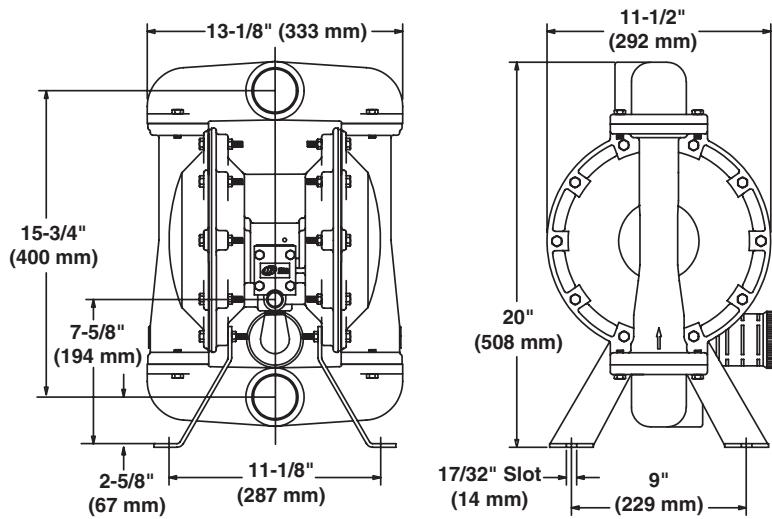
# Diaphragm Pumps 2-Inch Ports Metallic

## Performance Specifications

MAXIMUM G.P.M. (LPM):	135 (511)
FLUID INLET:	2" F
FLUID OUTLET:	2" F
MAX. OPERATING PRESSURE PSI (bar):	120 (8.3)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	1/4-inch (6.4)
WEIGHT - LBS. (Kg):	46 (20.9) Aluminum 92 (41.6) Cast Iron 89 (40.3) Stainless Steel
MAX. DRY SUCTION LIFT:	19 ft. (Rubber fitted)



## Dimensional Data



## Accessories

### Recommended Filter/Regulator

(See Page 286)

Filter / Regulator: P29241-610



P29241-610

## Ordering

**6662 XX - XXX - C**

Base Model  
2" Pump

Ball Check/Diaphragm  
Code Description

### Air Motor

Code	Description
0	Aluminum
1	Cast Iron
2	BSP Aluminum
3	BSP Cast Iron

### Wetted Parts

Code	Description
0	Aluminum
1	Stainless Steel
2	Cast Iron
A	Alu w/SS Hardware
B	SS w/SS Hardware
C	CI w/SS Hardware

### Check Valve Seats

Code	Description
1	Aluminum
2	Stainless Steel
3	Polypropylene
4	Kynar (PVDF)
5	Carbon Steel
8	SS (400 Hardened)

22	Nitrile
33	Viton
44	Teflon
62	Acetal/Nitrile
EB	Santoprene

**Warning:** Aluminum is not compatible with Halogenated Hydrocarbon Solvents

# Specialty Diaphragm Pumps Fuel Transfer Pumps

## Performance Specifications

	1 Inch	1-1/2 Inch	2 Inch
<b>RATIO:</b>	1:1	1:1	1:1
<b>MAX. G.P.M. (Liters):</b>	29 (110)	75 (284)	75 (284)
<b>AIR INLET:</b>	1/4" NPT	1/2" NPT	1/2" NPT
<b>PORT SIZE:</b>	1" NPT	1-1/2" NPT	2" NPT
<b>MAX. OP. PRESSURE PSI (bar):</b>	50 (3.40)	50 (3.4)	50 (3.4)
<b>PASS SOLIDS MAX.DIA. IN. (mm):</b>	1/8" (3.2)	1/4" (6.4)	1/4" (6.4)
<b>WEIGHT LBS. (Kgs.):</b>	19 (8.6)	51 (23.1)	54 (24.5)

## Dimensional Data

See pg. 14 for 1" Metallic Pump dimensional data. See pg. 16 for 1-1/2" Metallic Pump dimensional data. The dimensions for the 1-1/2" Metallic Pump are the same for the 2" U.L. Fuel Pump.

## U.L. Listed Fuel Transfer Pumps

These ARO Diaphragm Pumps have been designed specifically for dispensing petroleum-based fuel. These pumps meet UL-79 specification, code and are compatible with:

- GASOLINE
- AVIATION FUEL
- DIESEL FUEL
- FUEL OIL
- KEROSENE
- UNLEADED FUEL

Used for high-volume transfer, bulk-unloading or fueling applications. To meet UL-79 specification, a 50 PSI pressure relief valve opens and bleeds off excess pressure. The relief valve can be plumbed to return the bleed-off fuel to the storage container.

## Ordering

MODEL	FLUID	SEAT	BALL	DIAPHRAGM
	INLET/OUTLET PORT SIZE			
<b>ALUMINUM CONSTRUCTION</b>				
Unleaded 650717-C	1" NPT	Kynar PVDF	Acetal	Viton®
Unleaded 650718-C	1-1/2" NPT	Kynar PVDF	Acetal	Viton
Unleaded 650719-C	2" NPT	Kynar PVDF	Acetal	Viton

Viton Diaphragms are recommended for use with unleaded fuels.



1-inch

Air Connectors shown are not included.



1-1/2 -inch



2-inch

## Accessories

### Recommended Filter/Regulator

(See Page 286)

**1" Diaphragm Pump**

Filter / Regulator: P29221-610

**1-1/2" / 2" Diaphragm Pump**

Filter / Regulator: P29241-610



P29241-610

# Specialty Diaphragm Pumps

## Drum Pumps

### Pump Features

- **Choose from Aluminum, Stainless Steel or Polypropylene Body Construction** - ARO Drum Pumps are available in three body materials for optimum fluid compatibility.
- **11 GPM Flow Capability** - Drum Pumps offer plenty of capacity to satisfy a broad range of transfer application volume demands.
- **Stall-Free Operation** - ARO Diaphragm Drum Pumps feature a patented “unbalanced” air valve design that avoids stall-out, even under low air-inlet pressures
- **Bolted Construction** - Unlike traditional band-clamp style pumps, ARO Diaphragm Drum Pumps utilize bolted fasteners for leak-tight integrity.
- **5-Year Warranty**

### Pump Packages

- **Package Components Factory-Matched** - ARO Drum Pump package components (adapters, siphon tubes, etc.) contain pre-specified, matching materials of construction for complete fluid compatibility.
- **Choose from Basic to Complete** - Drum Pump Packages can be ordered in 3 styles:
  - **Basic:** Pump, Bung Adapter, Air Safety Shut-Off, Siphon Tube, Weather Seal and base
  - **Complete/Transfer:** Basic Pump plus Fluid Hose or Fluid Hose with Non-Drip Nozzle
  - **Complete/Dispensing:** Basic Pump plus Foot Valve, Hose and Dispensing Nozzle



### Accessories

Tailor your own Drum Pump package with any of these accessories:

- **Hoses** - 1/2" ID hose comes with factory installed cam coupler on one end to attach to pump. Other end comes either bare or with a preassembled fitting for dispense nozzle. Hose materials available are: Nitrile, EPDM, Vinyl or Nylon.
- **Tank Adapters** - For bulk tank applications, tank adapter kit comes complete with all necessary hardware and works like a bulk head fitting.
- **Foot Valves** - For quick priming. Foot valves are available in either stainless steel or polypropylene.
- **Drum Adapter Kits** - 55-gallon bung adapter kits come complete with base, weather seal, threaded adapter, siphon tube and stainless fasteners. Choose from polypropylene, stainless steel or aluminum construction.

- **Quick, Convenient Drum Changeout**
- **Choose from Basic to Complete Pump Packages**
- **5-Year Warranty**
- **Broad Assortment of Accessories**
- **Package Components Factory-Matched for Optimum Compatibility**

### Ordering Information

**Basic Packages** (Each package includes Pump, Bung Adapter, Air Shut-off, Siphon Tube, Weather Seal and Base)

Model	Body Material	Seat Material	Bal/Diaphragm Material	Fluid Service
DA005-PPUU-2-A	Polypropylene	Polypropylene	Polyurethane	Water/Oil
DA005-PPNN-2-A	Polypropylene	Polypropylene	Nitrile	Water/Oil
DA005-PPTT-2-A	Polypropylene	Polypropylene	Teflon®	Mild Acid
DA005-SSTT-2-A	Stainless Steel	Stainless Steel	Teflon®	Solvent
DA005-ASTT-2-A	Aluminum	Stainless Steel	Teflon®	Solvent
DA005-APNN-2-A	Aluminum	Polypropylene	Nitrile	Oil

**Complete/Transfer Packages** (Each package contains Basic Package plus Cam Coupler, 10-Feet of Fluid Hose or 10-Feet of Fluid Hose with Non-Drip Nozzle.)

Model	Body Material	Seat Material	Ball/Diaphragm Material	Hose Material	Non-Drip Nozzle	Fluid Service
DA005-PPUU-2-C	Polypropylene	Polypropylene	Polyurethane	Vinyl	No	Water/Oil
DA005-PPNN-2-N	Polypropylene	Polypropylene	Nitrile	Nitrile	No	Water/Oil
DA005-PPNN-B-M	Polypropylene	Polypropylene	Nitrile	Nitrile	Yes	Oil
DA005-APNN-2-O	Aluminum	Polypropylene	Nitrile	Nitrile	No	Oil
DA005-APNN-B-P	Aluminum	Polypropylene	Nitrile	Nitrile	Yes	Oil

# Specialty Diaphragm Pumps

## Drum Pump Accessories

### Ordering Information

**Complete/Dispensing Packages** (Each package contains Basic Package Plus Foot Valve Assembly, 10' Hose, Cam Coupler and Dispensing Nozzle.)

Model	Body Material	Seat Material	Ball/Diaphragm Material	Hose Material	Dispense Fixture	Fluid Services
DA005-PPNN-B-J	Polypropylene	Polypropylene	Nitrile	Nitrile	Bibb w/ Trigger	Water/Oil
DA005-APNN-B-D	Aluminum	Polypropylene	Nitrile	N/A	Oil Tapper	Oil
DA005-APNN-B-L	Aluminum	Polypropylene	Nitrile	Nitrile	Bibb w/ Trigger	Water/Oil

### 55-Gallon Drum Bung Adapter Kits

(Kit contains Base, Bung Adapter, Bung Seal, Siphon Tube, Weather Seal and Hardware)

Model	Base Material	Tube Material	Weather Seal	Base Seal
67231	Polypropylene	Polypropylene	UHMW PE	Viton
67231-6	Aluminum	Stainless Steel	Viton	Viton
67231-7	Stainless Steel	Stainless Steel	Viton	Viton

*Note: Fasteners are 300 Series Stainless Steel*

**Bulk Tank Adapter Kit** (Kit contains Base, Threaded Adapter, and Hardware)

67234	Polypropylene / Viton O-Ring Seal
67234-7	Stainless Steel (300 Series) / Viton O-Ring Seal

*Note: Fasteners are 300 Series Stainless Steel*

**Foot Valves** (Recommended for use with dispensing nozzle. Assembly includes Housing, Ball Check & O-Ring)

637336	Polypropylene w/Viton O-Ring & Ball use with 67231
637337	Stainless Steel w/Viton O-Ring & Ball use with 67231-6, or 67231-7

**Fluid Hose** (1/2" ID Hose comes in 10-foot lengths and with Cam Coupler)

Model	Material	Pump Used With	Fittings End/End	Dispensing Nozzle Used w/ (Order Separately)
621517-10	Nitrile	Polypropylene	Cam/Bare	N/A
621516-10	Nitrile	Polypropylene	Cam/Brass 1/4-18 NPT Male	635129
621523-10	Nitrile	Polypropylene	Cam/Non-Drip Nozzle	Included
621515-10	EPDM	Polypropylene	Cam/Bare	N/A
621519-10	Vinyl	Polypropylene	Cam/Bare	N/A
621514-10	EPDM	Polypropylene	Cam / 1" NPT	95199
622514-10	Nylon	Polypropylene	1/2" NPT / 1/2" NPT 316 Stainless Steel	
621518-10	Nitrile	Aluminum	Cam/Bare	N/A
621520-10	Nitrile	Aluminum	Cam/Brass 1/4-18 NPTF	635129
621524-10	Nitrile	Aluminum	Cam/Non-Drip Nozzle	Included

*Note: Hose requires 95189 to adapt to 1/2" port*

### Fluid Dispensing Nozzles

Model	Description
95199	<b>Composite Nozzle</b> - High flow nozzle works like gasoline nozzle. Features tough composite (polypropylene) construction for caustic service.
95200	<b>Swivel</b> - 1" M X 1" FNPT Polypropylene hose swivel attaches between hose an dispensing nozzle and allows operator to rotate freely. Use with 95199.
95183	<b>Oil Tapper</b> - Easy-pull tapper attaches directly to pump outlet port and provides even flow dispensing. Aluminum construction for oil service.
77617-Z	<b>Oil Tapper Fitting</b> - Plated carbon steel 1/2-14 NPTF X 3/8-18 NPTF -1. Used to attach 95183 Oil Tapper to 1/2" Aluminum pump
635129	<b>Bibb with Trigger</b> - 1/4" NPTF inlet, zinc die casting with brass and nitrile seals for water or oil service. Radiator type bibb has 1/4" fluid inlet and non-drip tip.

### Pump Outlet Adapter

95189	<b>Composite Fitting</b> - 1/2" Male NPT x MaleCam adapter (Polypropylene)
95190	<b>Aluminum Fitting</b> - 1/2" Male NPT x MaleCam adapter (Aluminum)

### Drum Adapter Kit

67231



### Tank Adapter

67234



### Foot Valve

637336



### Hose, Swivel & Dispensing Nozzle

621514-10, 95200, 95199



### Hose & Dispensing Bibb



### Hose & NonDrip Nozzle

621523-10



# Piston Pumps

## N-Series Pumps

### Features

- **Patented ARO® Stall-Free, Ice-Free Air Motor Design:** Your guarantee of trouble-free pump operation. The N Series air motor also contains fewer parts and requires absolutely no mechanical assist devices such as trip rods or push pins.
- **Higher Flows-** The new 2:1 N-Series pump features higher flows (4.3 GPM/ 16.3 lpm vs. 4.0 GPM /15.1 lpm max.) than its predecessor.
- **Over 10 Million Cycles:** In field tests under rigorous, real-world working conditions, the new N-Series 2:1 pumps have turned over more than 10-million cycles-and are still running!
- **Smooth, Low Pulse Flow:** The 2:1 pumps cycle rate delivers a smoother flow with less pulse, making it ideal for handling sensitive materials.
- **Broad Application\*:** The new N's can pump higher viscosity materials-making them ideal for a wide variety of fluids including:
  - Coatings
  - Adhesives
  - Resins
  - Solvents
  - Chemicals
  - Laquers
  - Sealants
- **Choose Your Pump Type:** Stub (wall-mountable) or 55-Gallon
- **Choose Your Packings:**
  - Upper:** Ryton-Filled Teflon®, UHMW-PE or Polyurethane
  - Lower:** Teflon, UHMW-PE
- **New Packing Design Delivers Long Life:** The 2:1 N Series upper and lower packings feature a new packing design that has proven to last 3-times longer than prior designs in working field tests.
- **Excellent for Moisture/Air Sensitive Materials:** Including inert blanket applications using ports supplied on outlet body and optional bung adaptor.
- **Divorced Design Tie Rods:** Provide easier, faster service while preventing air motor contamination.
- **5-Year Warranty:** Peace of Mind

\* Consult factory for questions pertaining to specific applications

NM2202A-11-X31  
Carbon Steel  
Stub Model



**Note:** Bung Adapter #67145-4-B  
(Not Shown in Picture)  
Included on All Models

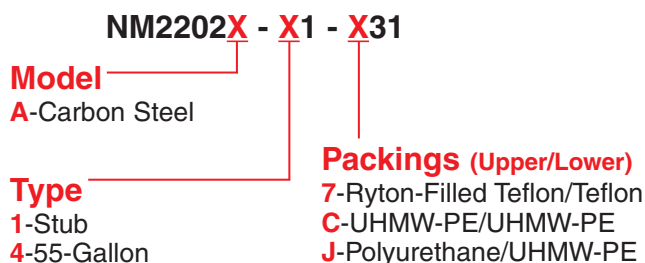
### Accessories

AIR F/R/L:	C28123-600
Wall Mount:	61113
Muffler:	61879
AIR Line Oil:	62274 (1 Quart)
Siphon Hose:	65986 (5 Gal.) 65986-1 (55 Gal.)

C28123-600



### Ordering Information

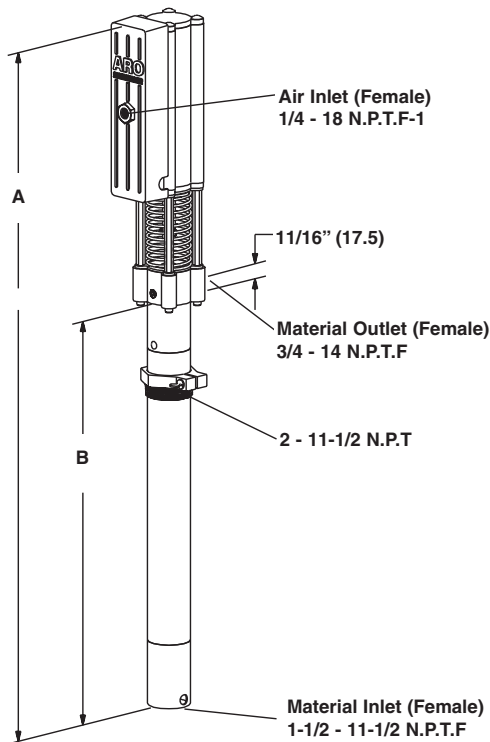


# Piston Pumps N-Series Pumps

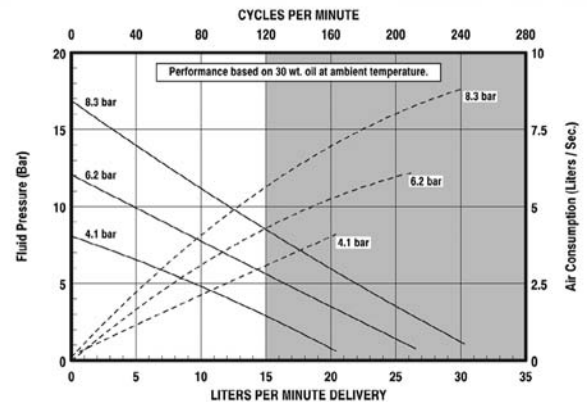
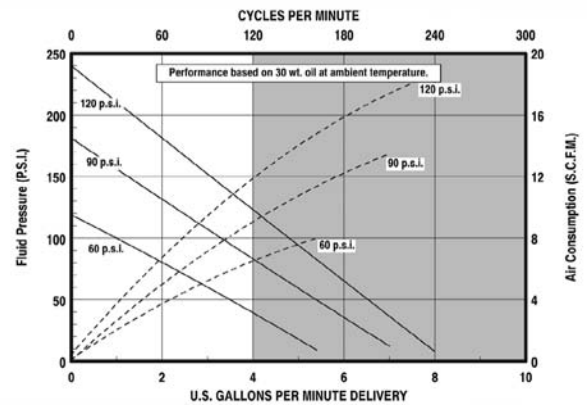
## Performance Specifications

AIR INLET PRESSURE RANGE	30-150 psi. (2-10.3 bar)
FLUID PRESSURE RANGE	70-350 psi. (4.8-24.2 bar)
MAX. REC'D CYCLES/MINUTE	120
DISPLACEMENT IN. <sup>3</sup> (CM <sup>3</sup> ) PER CYCLE	8.3
CYCLES PER GALLON	27.9
FLOW @ 60 CYCLES PER MINUTE	2.15 gpm (8.14 lpm)
NOISE LEVEL @ 100 PSI	80 db(A)
AIR MOTOR	637377
MOTOR REPAIR KIT	66098
MOTOR DIAMETER	2" (5.08 cm)
STROKE	3" (7.62)
AIR INLET	(Female) 1/4 -18 NPTF
LOWER PUMP REPAIR KIT	637378-X31 (Carb. Steel)
MATERIAL INLET	Stub: (Female) 1 1/2 NPTF 55-Gallon: Immersed
MATERIAL OUTLET	(Female) 3/4 NPTF
MAX. WORKING FLOW RATE	4.3 gpm (16.3 lpm)
VOLUME / CYCLE	4.59 Oz. (135.6 ml)

## Dimensional Data



Model	A (mm)	B (mm)	Weight (kg)
NM2202A-11-X31	34-3/16" (868)	20-1/16" (508.8)	17.5 (7.9)
NM2202A-41-X31	47-7/8" (1214.8)	33-11/16" (855.6)	19.6 (8.9)



# Piston Pumps

## N-Series Pumps

### Materials of Construction

Model	Body	Cycles Per Gal.	Cubic Inches Per Cycle	Plunger Packing Material (Code) See Chart Below	Ratio	Maximum Per Minute Gallons (Liters)	Fluid Inlet/Outlet In. (NPT)	Air Inlet In. (NPT)	Container Size
<b>3" Air Motor</b>									
NM2304A-11-311 2-Ball	Carbon Steel	28	8.2 (130cm <sup>3</sup> )	C	4:1	4.2 (15.8)	1-1/4/3/4	1/4	Stub (Wall Mount)
NM2304A-41-311 2-Ball	Carbon Steel	28	8.2 (130cm <sup>3</sup> )	C	4:1	4.2 (15.8)	1-1/4/3/4	1/4	55-Gallon (205 Liters)

\* GPM is measured at 120 cycles per minute

Code	Packing Description	Plunger Description
C	UHMW-PE Upper/Lower	Carbon Steel on CS pumps

NOTE: All models include 2" Bung Adapter

### N-Series Pumps

- **Reliable** - The new N-Series features a stall-free, ice-free air motor design contained in a rugged housing that will withstand most working environments.
- **Fewer parts** - ARO's N-Series air motor pumps are constructed with 50% fewer parts than the majority of comparable pumps. Install the new N-Series and see for yourself how fewer parts translate into fewer headaches when it comes to service or routine maintenance.
- **No mechanical assist** - The "N's" patented valving design uses no trip rods or push pins to break.
- **Minimum number of tools, no special tools** - If you can find a standard wrench you can service this pump.
- **No air motor lubrication required under normal use.**
- **Noise levels within industry standards** - Only 85 db's.
- **A longer stroke for longer life** - ARO's N-Series air motor stroke is a full 3/4" longer than its predecessor. A longer stroke translates into fewer cycles, fewer cycles mean a longer pump and air motor life.
- **The right lower pump packings** - N-Series features ultra-tough UHMW-PE, for the ultimate in pump-to-process compatibility.

### For Low-Medium Viscosity Prep and Assembly Fluids



NM2304A-41-311  
4:1 Ratio

**YEAR 5  
WARRANTY**



NM2304A-11-311  
4:1 Ratio

- Light Adhesives
- Sound Deadeners
- Underbody Anti-Rust
- Sealers
- E-Coat

## Lubrication Pumps

# Thunder Series Pumps

### A Pump with Striking Design and Powerful Performance.

This is what the lubrication professional wants, and with *Thunder*, this is what the lubrication professional gets. From *the* pump maker that knows the lube business better than anyone: *ARO*.

- **Reliable** - Thunder features a stall-free, ice-free air motor design (patents applied for) contained in a rugged housing that will withstand most working environments.
- **The Right Price** - Through advanced designed technology, Thunder rolls through manufacturing faster than any pump on the market. With speed comes economy – which we're rolling on to you.
- **Fewer parts** - Thunder pumps are constructed with 50% fewer parts than the majority of comparable pumps. Install Thunder and see for yourself how fewer parts translate into fewer headaches when it comes to service or routine maintenance.
- **No mechanical assists** - Thunder's valving design (patents applied for) uses no trip rods or push pins to break.
- **Minimum number of tools, no special tools** - If you can find a standard wrench you can service Thunder.
- **In-Line Service** - You can service Thunder right where it stands; avoiding the costly tear-down/removal/replacement cycle that most pumps require.
- **Thunder's design improves flow, reduces pulsation and extends service life.**
- **All pumps come equipped with a 2" bung adapter, standard.**
- **All weather pumping** - Thanks to its unique bung adapter design, by adding an optional seal kit, P/N# 67088-X, Thunder can be used outdoors or in, with complete confidence, making it perfect for lube rig installation.
- **Noise levels within industry standards** - This is *one* form of thunder that's quiet: 2" 80 db's., 3" 85 db's.
- **Lube free air motor**
- **Two models** - 3:1 ratio and 5:1 ratio.

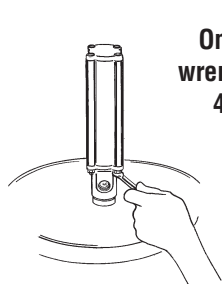
**YEAR 5  
WARRANTY**

**THUNDER  
SERIES PUMPS**

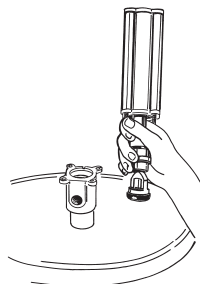


**3:1 Stub Pump  
or  
5:1 Stub Pump**

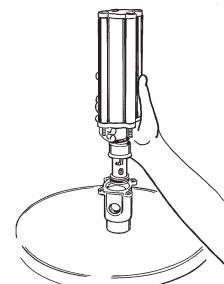
### Pump In-Line Service



One standard  
wrench to loosen  
4 nuts . . .



. . . allows you to  
replace all dynamic  
service kit items  
(no additional  
wrenches required  
for 3:1) . . .



. . . and put  
Thunder back in  
service in a matter  
of minutes.

# Lubrication Pumps

## Thunder Series Pumps

### Motor Oil, Gear Oil, Transmission Fluid

Basic Pumps 3:1 ratio, 2" diameter air motor (3"-stroke)

Model	Max. Flow Max. GPM	Free Flow Max. GPM	Air Inlet NPT(F)	Fluid Inlet/Outlet NPT(F)	Container Size
<b>LM2203A-11-B</b> (-12-B=BSP thread)	6	9	1/4"	3/4 1/2	Stub
<b>LM2203A-31-B</b> (-32-B=BSP thread)	6	9	1/4"	3/4 1/2	16-Gallon
<b>LM2203A-41-B</b> (-42-B=BSP thread)	6	9	1/4"	3/4 1/2	55-Gallon
<b>LM2203A-51-B</b> (-52-B=BSP thread)	6	9	1/4"	3/4 1/2	275-Gallon

150 psi maximum air inlet pressure

Each pump includes Bung Adapter #67145-3-B (Non-weather tight)

Note: for weather tight Bung Adapter order 67088-3. Includes 67145-3 bung adapter or 67088 seal kit.

Basic Pumps 5:1 ratio, 3" diameter air motor (3"-stroke)

Model	Max. Flow Max. GPM	Free Flow Max. GPM	Air Inlet NPT(F)	Fluid Inlet/Outlet NPT(F)	Container Size
<b>LM2305A-11</b> (-12=BSP thread)	6	9	1/4"	1-1/2 1/2	Stub
<b>LM2305A-31</b> (-32=BSP thread)	6	9	1/4"	1-1/2 1/2	16-Gallon
<b>LM2305A-41</b> (-42=BSP thread)	6	9	1/4"	1-1/2 1/2	55-Gallon
<b>LM2305A-51</b> (-52=BSP thread)	6	9	1/4"	1-1/2 1/2	275-Gallon

Each pump includes Bung Adapter #67145-4-B (Non-weather tight)

Note: for weather tight Bung Adapter order 67088-4. Includes 67145-3 bung adapter or 67088 seal kit.

### Thunder Pump Packages

3:1 ratio, gear oil, 2" diameter air motor

Model	Package Description
<b>LP2100-1</b>	16 Gal. PORTABLE GEAR OIL PACKAGE – Includes LM2203A-31-B Basic Pump, 635190-1 Meter (Pint), 635391-1 Control Handle, 640058-2 Dolly, 94421 Drum Cover, 623501-6 Material Hose (6"). 67085 Ball check valve included.
<b>LP2100-2</b>	Same as LP211-1 except 635190-3 Meter (Liter)

5:1 ratio, gear oil, 3" diameter air motor

Model	Package Description
<b>LP3100-1</b>	16 Gal. PORTABLE GEAR OIL PACKAGE – Includes LM2305A-31 Basic Pump, 635190-1 Meter (Pint), 635391-1 (Flex) Control Handle, 640058-2 Dolly, 94421 Drum Cover and 623501-6 Material Hose (6").
<b>LP3100-2</b>	Same as LP3100-1 except 635190-3 Meter (Liter)

**YEAR 5  
WARRANTY**



3:1 Oil  
LM2203A-11-B



5:1 Oil  
LM2305A-11

Containers and Air  
Connectors shown  
NOT included.



LP2100-1

LP3100-1

**ASAP**  
ARO<sup>®</sup> SYSTEMS AND PACKAGES

### Extra Drum Covers

#### Thunder Packages

Come complete with drum covers.

For additional covers order by model numbers shown.



94420  
5-Gallon

94421  
16-Gallon

94422  
55-Gallon

### Extra Follower Plates

#### Thunder Packages

Come complete with a follower plate.

To order extra plates refer to the model number/size below.



640095-2-B  
35 - Pound Pail

640165  
120 - Pound Drum

640015-1  
400 - Pound Drum

# Lubrication Pumps

## Thunder Series Pumps

### Grease

Basic Pumps 50:1, 2" diameter air motor (3" stroke)

Model	Working Flow Lbs. Per Min.	Free Flow Lbs. Per Min.	Air Inlet NPT(F)	Fluid Outlet NPT(F)	Container Size
LM2250-21-E (-22=BSP thread)	2 lbs.	9.0 lbs.	1/4"	3/8"	35-lbs.
LM2250-31-E (-32=BSP thread)	2 lbs.	9.0 lbs.	1/4"	3/8"	120-lbs.
LM2250-41-E (-42=BSP thread)	2 lbs.	9.0 lbs.	1/4"	3/8"	400-lbs.
LM2250-61-E (-62=BSP thread)	2 lbs.	9.0 lbs.	1/4"	3/8"	60-lbs.

Note: For weather tight applications order 67088.

Basic Pumps 50:1, 3" diameter air motor (3" stroke)

Model	Working Flow Lbs. Per Min.	Free Flow Lbs. Per Min.	Air Inlet NPT(F)	Fluid Outlet NPT(F)	Container Size
LM2350-21-B (-22-B=BSP thread)	4 lbs.	7.5 lbs.	1/4"	3/8"	35-lbs.
LM2350-61-B	4 lbs.	7.5 lbs.	1/4"	3/8"	60-lbs.
LM2350-31-B (-32-B=BSP thread)	4 lbs.	7.5 lbs.	1/4"	3/8"	120-lbs.
LM2350-41-B (-42-B=BSP thread)	4 lbs.	7.5 lbs.	1/4"	3/8"	400-lbs.

150 psi maximum air inlet pressure

Note: For weather tight applications order 67088.

### Thunder Pump Packages

50:1 ratio, grease, 2" diameter air motor

Model	Package Description
LP2001-1-B	35-lb. GREASE PACKAGE – Includes LM2250-21-B Pump, 94420 Drum Cover, with 94334 Handle, 640095-2-B Follower Plate.
LP2002-1-B	35-lb. GREASE PACKAGE – Same contents as LP2001-1-B package, also includes 76493 Adapter, 624201-10 Material Hose (10'), 636077 Z-Swivel and 636111 Standard Gun.
LP2003-1-B	120-lb. GREASE PACKAGE – Includes LM2250-31-B Pump, 94421 Drum Cover, 640165 Follower Plate.
LP2004-1-B	120-lb. GREASE PACKAGE – Same contents as LP2003-1-B package, also includes 76493 Adapter, 624201-10 Material Hose (10'), 636077 Z-Swivel and 636111 Standard Gun.
LP2006-1-B	120-lb. GREASE PACKAGE – Same contents as LP2004-1-B, except includes 640058-2 Dolly.

Important: The 50:1 ratio grease packages listed above have a maximum air inlet pressure of 150 psi.

Model	Package Description
LP3001-1	35-lb. GREASE PACKAGE – Includes LM2350E-21-B Pump, 94420 Drum Cover, with 94334 Handle, 640095-2-B Follower Plate, also includes 624201-10 Material Hose (10'), 636077 Z-Swivel, 76493 Adapter, and 636103 Booster Gun.
LP3002-1	120-lb. GREASE PACKAGE – Includes LM2350E-31-B Pump, 94421 Drum Cover, 640165 Follower Plate, 624401-4 Material Hose (4') and 622201-3 Air Line Hose (3').
LP3003-1	120-lb. GREASE PACKAGE – Includes LM2350E-31-B Pump, 94421 Drum Cover, 624201-10 Material Hose (10'), 636077 Z-Swivel, 640057 Dolly, 636103 Booster Gun, 640165 Follower Plate, and 76493 Adapter.
LP3004-1	120-lb. GREASE PACKAGE – Same contents as LP3003-1, less 636103 Booster Gun with 636111 Standard Gun and 640058-2 Dolly.
LP3005-1	400-lb. GREASE PACKAGE – Includes LM2350E-41-B Pump, 94422 Drum Cover, 624401-10 Material Hose (4'), 622201-3 Air Line Hose (3'). Order Follower Plate 640015-1 when required.
LP3007-1	60-lb. GREASE PACKAGE – Includes LM2350E-61-B Pump, 71740-1 Drum with Cover and Tie Down Brackets, Portable Hand Cart, 636111 Control Handle and 624401-4 Material Hose (4').

Important: The 50:1 ratio grease packages listed above have a maximum air inlet pressure of 150 psi.



Containers and Air Connectors shown NOT included Except LP3007-1 (Includes Container).



# Fluid Handling Pumps Control Handles

## Fluid Control Handles, Non-Metered



635193

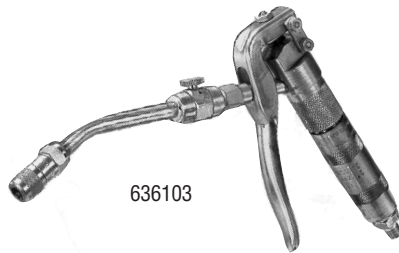


635392



635399

Model	Description	Max. Working Pressure PSI (lbs.)	Fluid Inlet NPT (F)	Fluid Outlet
<b>Motor Oil, Gear Oil, Transmission Fluid (high-volume)</b>				
635193	Has flexible rubber hose with non drip nozzle. Use with 1:1 and 3:1 pumps.	600 (41)	3/4	–
635395-2	Has flexible rubber hose with non drip nozzle. Use with 5:1 and 9:1 pumps.	900 (41)	3/4	–
<b>Motor Oil, Gear Oil, Transmission Fluid (standard-volume)</b>				
635392	Has flexible rubber hose, built-in swivel and filter, and non-drip nozzle	1,000 (69)	1/2	Nondrip tip
635399	Has flexible rubber hose, built-in swivel, and right-angle non-drip nozzle.	1,000 (69)	1/2	Nondrip tip
<b>Water, Anti-freeze</b>				
635129	Radiator bibb	300 (21)	1/4	Nondrip tip



636103

## High Pressure Grease Control Handle

Model	Description	Max. Working Pressure PSI (lbs.)	Fluid Inlet NPT (F)	Fluid Outlet
636103	High pressure booster handle delivers line pressure for normal lubrication. Trigger booster feature delivers 12,000 psi (828 bar) to break loose tougher fittings. Includes curved nozzle with hydraulic coupler, inlet material filter and manual pressure vent for easy disconnection.	7,500 (517)	1/8 (M) or 3/8 (F)	Hydraulic Coupler

Warning: Do not use with whip hose!



636077

## Swivel

636077	Easy-turn swivel provides operator mobility when using fluid control handles. Do not install swivels in systems where they will be subjected to fluid pressures higher than their ratings.
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## **Fluid Handling Pumps Pump Warranty**

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### **Five Year Product Warranty**

The ARO Pumps, in this catalog are backed up by our famous 5-year warranty, as a measure of the confidence we place in the quality of these products. A confidence that you can share.

#### **FIVE-YEAR WARRANTY**

IR/ARO warrants to the original use purchaser of IR/ARO manufactured pumps that IR/ARO will repair or replace, free of charges, including return shipping costs within the Continental United States of America, any such product which under normal use and service proves defective in material or workmanship, as determined by IR/ARO Inspection, within FIVE YEARS from date of shipment from IR/ARO, provided the claimed defective product, or part thereof, is promptly returned to the IR/ARO factory or IR/ARO authorized warranty repair center with transportation prepaid.

This warranty does not cover failure of parts or components due to normal wear or damage, which in the judgment of IR/ARO, arises from misuse, abrasion, corrosion, negligence, accident, substitution of non-IR/ARO parts, faulty installation or tampering.

If IR/ARO Inspection discloses no defect in material or workmanship, repair or replacement and return will be made at customary charges.

This warranty covers IR/ARO manufactured products shipped on or after July 4, 1988.

Equipment not covered by IR/ARO warranty: accessories or components of equipment sold by IR/ARO that are not manufactured by IR/ARO (such as switches, hoses, gasoline engines, etc.) are subject to the warranty, if any, of their manufacturer. IR/ARO will provide the purchaser with reasonable assistance in making such claims.

The foregoing warranty supersedes, voids and is in lieu of all or any other warranties, express or implied, and no warranty or merchantability or fitness for particular purpose is intended or made. IR/ARO's sole obligation and the original use purchaser's sole remedy is as stated above and in no event shall IR/ARO be liable for any special, direct, indirect, incidental, consequential or other damages, or expenses of any nature including, without limitation, loss of profits or production time incurred by the original use purchaser or any other party.