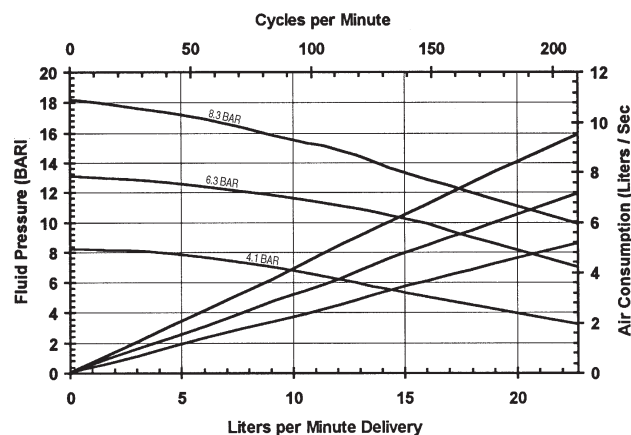
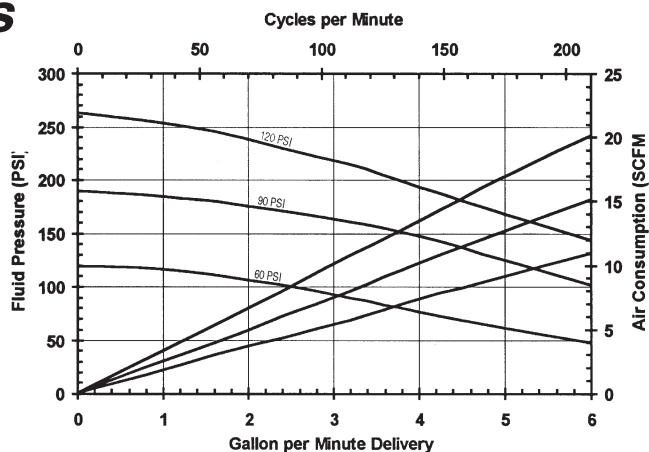
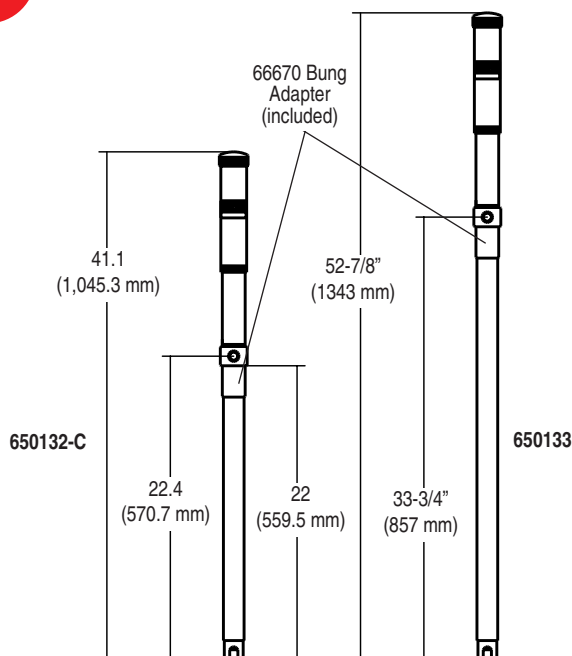


Performance Specifications

AIR INLET PRESSURE RANGE:	30-150 (2-10.2 bar)
FLUID PRESSURE RANGE:	60-300 PSI (4-20.4 bar)
MAX. REC'D CYCLES PER MINUTE:	120
DISPLACEMENT In ³ (cm ³) PER CYCLE:	7.2 (117.9)
CYCLES PER GALLON (LITER):	32 (8.4)
FLOW @ 120 CYCLES PER MINUTE:	4-GPM (15.1-lpm)
NOISE LEVEL @ 60 PSI:	77.8 db(A)
LOWER PUMP MATERIAL:	316 Stainless Steel
PLUNGER MATERIAL:	316 Stainless Steel
CYLINDER MATERIAL:	Stainless Steel
AIR MOTOR:	60702
MOTOR REPAIR KIT:	66098
MOTOR DIAMETER:	2" (5.2 cm)
STROKE:	6" (15.2 cm)
AIR INLET:	1/4" NPT (F)
LOWER PUMP REPAIR KIT:	637044 (Teflon) 637045 (UHMW-PE)
MATERIAL INLET:	1" NPT (F)-Stub Model Immersed-Drum Model
MATERIAL OUTLET:	1/2" NPT (F)
WEIGHT LBS. (Kgs.):	16 (7.2) Stub Model 19 (8.6) Drum Model



Dimensional Data



Accessories

AIR F/R/L:	C28123-600
Wall Mount:	61113
Muffler:	61879
AIR Line Oil:	62274
Siphon Hose:	67140-1 (5 Gal.) 67140-2 (55 Gal.)

See Page 35 for Piston Pump Accessories



C28123-600

Ordering

Stub Mounted Base Model	650132	-	C
55-Gallon Base Model	650133	-	
55-Gallon Base Model	650133	-	1

Teflon Packings

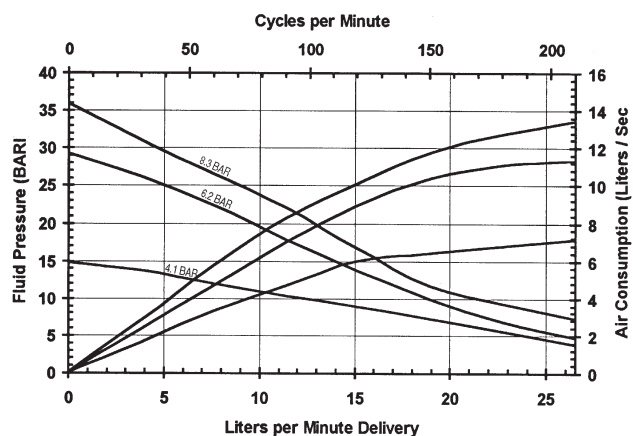
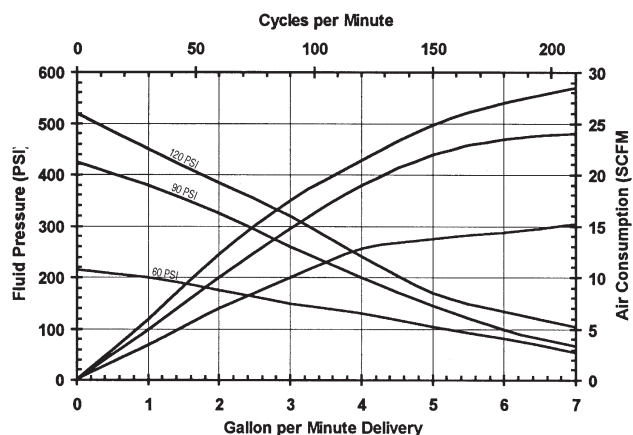
UHMW-PE Packings

5-Year
Warranty!

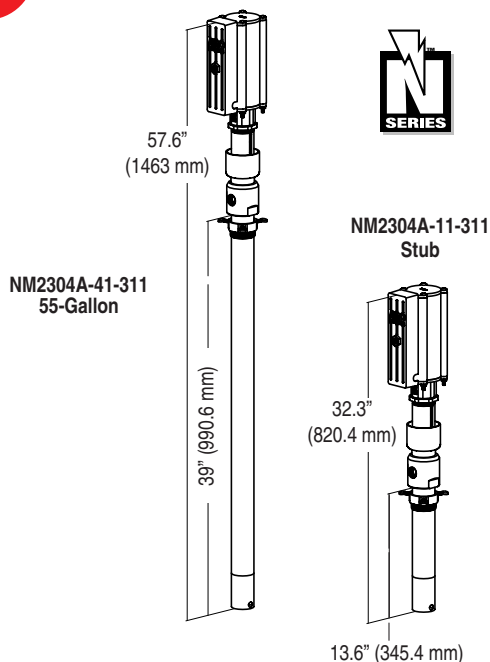
Get in the
ZONE

Performance Specifications

AIR INLET PRESSURE RANGE:	150 (10.2 bar)
FLUID PRESSURE RANGE:	120-600 PSI (8.1-40.8 bar)
MAX. REC'D CYCLES PER MINUTE:	120
DISPLACEMENT In ³ (cm ³) PER CYCLE:	8.2 (134.3)
CYCLES PER GALLON (LITER):	28 (7.4)
FLOW @ 120 CYCLES PER MINUTE:	4.2-GPM (15.8-lpm)
NOISE LEVEL @ 100 PSI:	85 db(A)
LOWER PUMP MATERIAL:	Carbon Steel
PLUNGER MATERIAL:	Carbon Steel
AIR MOTOR:	66913
MOTOR REPAIR KIT:	637316
MOTOR DIAMETER:	3" (7.6 cm)
STROKE:	3" (7.6 cm)
AIR INLET:	1/4" - 18 N.P.T.F.-1(f)
LOWER PUMP REPAIR KIT:	637176 for NM2304A-X1-311
MATERIAL INLET:	1-1/2" NPT(F)
MATERIAL OUTLET:	3/4" NPT (F)
WEIGHT LBS. (Kgs.):	NM2304A-11-311 = 32 (14.5) NM2304A-41-311 = 46 (20.9)
2" BUNG ADAPTER:	Included



Dimensional Data



Accessories

AIR F/R:	P29122-600
Wall Mount:	61113
Wet Sol:	66333-B (1 Quart)

See Page 35 for Piston Pump accessories



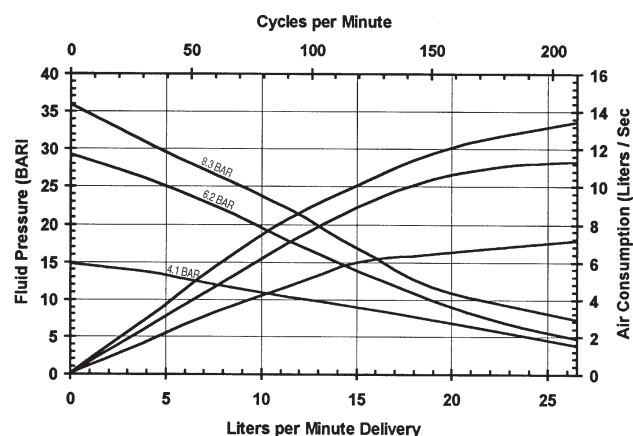
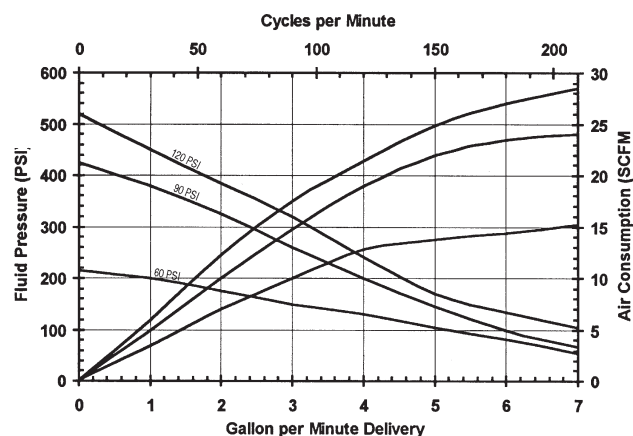
P29122-600

Ordering

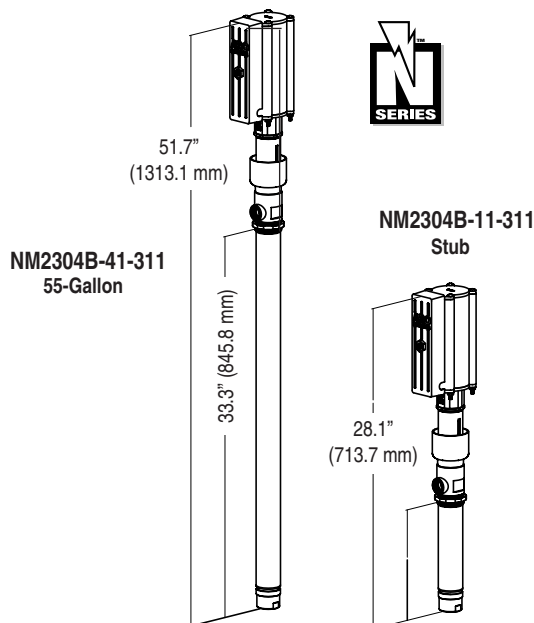
Base Model						Type		Packings					
N	M	2	3	0	4	A	-	X	1	-	3	1	1

Performance Specifications

AIR INLET PRESSURE RANGE:	150 (10.2 bar)
FLUID PRESSURE RANGE:	120-600 PSI (8.1-40.8 bar)
MAX. REC'D CYCLES PER MINUTE:	120
DISPLACEMENT In ³ (cm ³) PER CYCLE:	8.2 (134.3)
CYCLES PER GALLON (LITER):	28 (7.4)
FLOW @ 120 CYCLES PER MINUTE:	4.2-GPM (15.8-lpm)
NOISE LEVEL @ 100 PSI:	85 db(A)
LOWER PUMP MATERIAL:	316 Stainless Steel
PLUNGER MATERIAL:	316 Stainless Steel
CYLINDER MATERIAL:	Stainless Steel
AIR MOTOR:	66913
MOTOR REPAIR KIT:	637316
MOTOR DIAMETER:	3" (7.6 cm)
STROKE:	3" (7.6 cm)
AIR INLET:	1/4" - 18 NPT(F)
LOWER PUMP SERIES:	65108 (NM2304B-11-311) 65106 (NM2304B-41-311)
LOWER PUMP REPAIR KIT:	637010 for NM2304B-X1-311
MATERIAL INLET:	1-1/4" NPT(F)
MATERIAL OUTLET:	3/4" NPT (F)
WEIGHT LBS. (Kgs.):	NM2304B-11 = 32 (14.5) NM2304B-41 = 46 (20.9)
2" BUNG ADAPTER:	Included



Dimensional Data



Accessories

AIR F/R:	P29122-600
Wall Mount:	61113
Wet Sol:	66333-B
Siphon Hose:	67140-1 (5-Gallon) 67140-2 (55-Gallon)

See Page 35 for Piston Pump accessories



P29122-600

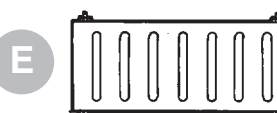
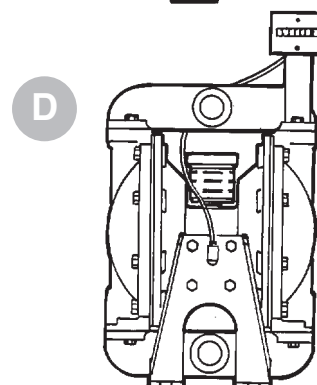
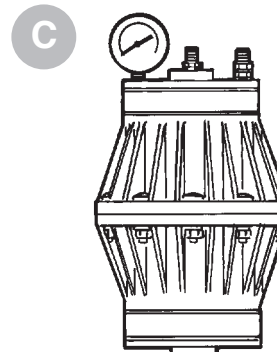
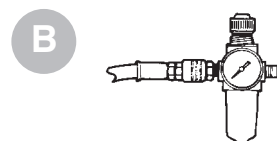
Ordering

Base Model	Type	Packings
N M 2 3 0 4 B	- X 1 -	X 1 X
	1 Stub (Wall Mount) 4 55-Gallon (205 Liters)	311- Glass Filled Teflon C1B- UHMW-PE/Ultra Coat Ceramic* 31B- Teflon/Ultra Coat Ceramic*

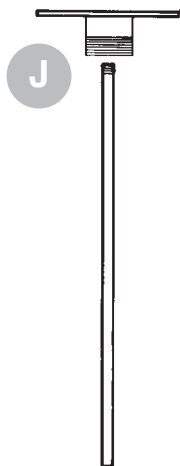
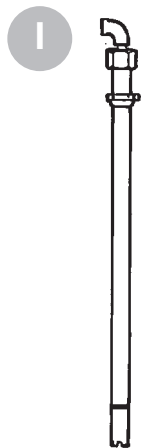
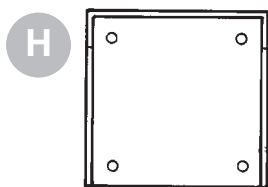
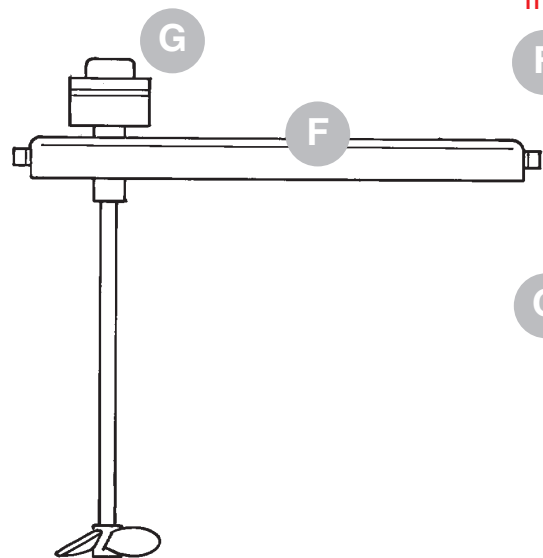
*Ultra-Coat option available on stub-type pumps only

Typical Pump System

ITEM	DESCRIPTION	USED WITH	ORDER MODEL
A	ARO-STOP® VALVE - Pump overrun control shuts off air to pump when material container is empty or line is broken. Quick set and reset feature included.	1/2" & 1" Pumps	635040
		1-1/2" & 2" Pumps	23644-400
		3" Pumps	635043
B	Air Line Connection Kit - Kit includes Piggyback Filter/Regulator with gauge, pipe nipple, and 5-foot section of air hose.	1/4", 1/2"	66073-1
		(12 SCFM Max Flow)	
		1/2", 1"	66073-2
		1-1/2" (Metallic),	
		1-1/2", 2" (Non-Met)	66084-1
C	Shock Blocker™ Pulsation Dampener - Patented dampener design provides automatic pulsation dampening.	2" Met. (Ball & Flap)	66312
		3"	66109
		1/4" - 1" Ports	SB10X-XXX
		(100 psi max.)	See page 24
D	Cycle Counter Kit - Easy to install cycle counter records up to 999,999 cycles. Kit comes complete with all necessary hardware for instant pump installation. Excellent for fluid inventory, preventive maintenance, and fluid metering.	1-1/2" - 2" Ports	SB20X-XXX
			See page 25
		3" Ports	SB30X-XXX
E	Screened Inlet Adapter Kits - Carbon steel, E-Coated screen prevents unwanted solids from entering pump. Kit includes hardware for easy, quick attachment to pump.		See page 26
		1/2", 1", 1-1/2"	
		2" and 3" Pumps	66975
		(See Pages 40-41 for new ARO®Tron Pump Controls.)	
		1-1/2" Ports	67174-15
		Aluminum Pump	
		2" Ports	67174-20
		Aluminum Pump	
		3" Ports	67174-30
		Aluminum Pump	



Pumping Accessories



ITEM DESCRIPTION

F Drum Covers - Available in either Carbon (CS) or Stainless Steel (SS), durable drum covers will accommodate both diaphragm pump and agitator, where needed.

G Material Agitators - Agitators available for both 5- and 55-gallon containers. Air-operated agitator motors generate between 500-1,000 RPM (5 gal. model), and 300-3,000 RPM (55 gal. model). Agitator shaft and propellers are constructed of corrosion-resistant 316 Stainless Steel.

H Wall Mount Brackets - Sturdy wall mount brackets provide a convenient means of mounting pumps for centralized transfer operations. Mounts are constructed of heavy-gauge, coated steel and include mounting hardware.

I Siphon Tubes - For use when pumping from a 55-gallon container, siphon tubes are available in plastic (PVC, PP, Teflon), carbon steel (CS), or 316 stainless steel (SS). 1-inch siphon tubes come with foot valve for positive priming. Both 1/2-inch and 1-inch models include bung adapters.

J Drum Pump Adapter Kit - Easy to install adapter kit permits drum mounting of pump in minutes. Kit includes 304 stainless steel mounting plate and siphon tube. Mounting hardware included.

USED WITH

ORDER MODEL

1/4" Pump
5-Gal. Cont. 67055-B (SS)

1/2" Pump
5-Gal. Cont. 66815-1 (CS)
5-Gal. Cont. 66971 (SS)

5-Gallon Cont. 651100
55-Gallon Cont. 651103

1/4" Pump 67054-B
1/2" Pump 76763 (doesn't include mounting hardware)

1" Pump (Metallic Only) 66100
1-1/2" Pump (Metallic Only) 62133
1", 3;1 Pump 67142

1/4" Pump 67059-1 (Teflon)
67059-4 (PP)

1/2" (Non-Met.) Pump 61409(PVC) 90°
(55 Gal. Cont.) NPT(F)
61412(PVC), straight
NPT(M)

1" Pump 65109 (CS)
(55 Gal. Cont.) NPT(F)
66568 (SS)
NPT(F)
66779(PVC)
NPT(F)

1" Pump 66779-2(PVC)
For Bulk (275 NPT(F) 49"L
Gal.) Tank use 66779-3(PVC)
NPT(F) 61"L

1/4" Pump 65031
1/2" (Non-Metallic and Metallic) 65938

Pumping Accessories

ITEM DESCRIPTION

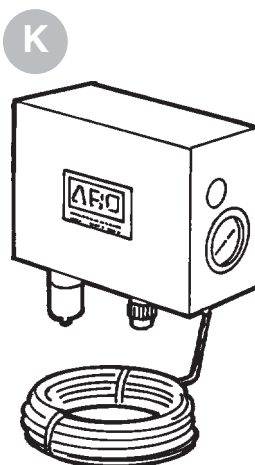
USED WITH

ORDER MODEL

K

All Pneumatic Liquid Level Sensors - This device senses the backpressure (59916-1 high level) or lack of backpressure (59916-2 low level) on the end of tubing that is located in tank or sump. The tubing is strategically placed at a desired level or levels. When an input occurs the pneumatic output signal from this device is used to actuate an air valve. See page 38 for valve recommendations.

Any Style Pump

59916-1
59916-2

Pressure Relief Valve - Relief valve is preset to 125 psi (± 10 psi). To be used in systems where thermal expansion or excess backpressure can develop in the fluid lines. Valve should be installed in a piping tee located near the outlet of the pump. Tubing or hose will be required to return bleed-off to fluid container. Valve is 1/4-18(M) inlet/outlet threaded.

Any Pump

93368-1

Grounding Strap - 25-foot grounding strap is used to ground pumps. Strap is 14-gage, heavy-duty sheathed wire and includes wire end attachments. Must be ordered separately.

Any Pump

66885-1

Service Kits, Air Filter/Regulator Units, Air Line Kits

SERVICE KITS			AIR KITS	
Pump Port Size	Air Valve Kit	Fluid Section Kit (Diaphragm Material)	Recommended Air Line Filter/Regulator Units	Air Line Kit
1/4"	637276	637313-PT (Teflon) 637313-PA (Santoprene)	P29122-600	66073-1
1/2"	637141	637140-XX*	P29122-600 P29221-610	66073-1 66073-2
1" Non-Metallic	637118-C	637161-XX*-C	P29221-610	66073-2
1" Metallic	637118-C	637119-XX*-C	P29221-610	66073-2
1" Metallic 3:1	637178	637179	P29231-610	N/A
1-1/2" Non-Metallic	637118-C	637165-XX*	P29241-610	66084-1
1-1/2" Metallic	637118-C	637124-XX*	P29241-610	66084-1
2" Non-Metallic	637118-C	637165-XX*	P29241-610	66084-1
2" Metallic	637302	637309-XX*	P29241-610	66312
2" Flap	637302	637310-XX*	P29241-610	66312
3" Metallic	637302	637303-XX*	F25451-110 (Filter) 27354-600 (Regulator)	66109

***NOTE:** To receive the correct ball and diaphragm materials - replace the **XX** with the last 2 digits of your pump model number.

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Accessories



C28123-600



P29122-600



635040



61113



61879



66334-B

Model Number	Description	Pumps Used With	Port Size NPT	Reg. Pressure Range PSI (bar)	Max. Flow
AIR FILTER / REGULATOR / LUBRICATOR					
MINIATURE F / R / L					
C28123-600	Filter/Regulator-Lubricator Drop/fog-type lubrication, 20 micron filter, polycarbonate bowls. 0-150 lb. gauge	2" & "N", air motor pumps	1/4 (F)	5-125 (.3-8.5)	13 SCFM (6 dm ³ /s)
P29122-600	Filter/Regulator "Piggyback" unit features, 20 micron filter, polycarbonate bowls. 0-150 lb. gauge	2" & "N", air motors	1/4 (F)	5-125 (.3-8.5)	12 SCFM (6 dm ³ /s)

OVER-RUN CONTROL

635040	ARO Stop Valve	Over-run control valve for all Piston Pumps. Valve automatically shuts pump off if material supply is interrupted.
--------	-----------------------	--

AIR LINE LUBRICANT

62274	Gear Oil - One Quart Bottle A high quality "EP" extreme pressure gear oil, non-detergent, rust or oxidation inhibited, with a viscosity of 700-1000 S.U.S. at 100°F.	Used in air line lubricator to air motor.
-------	--	---

WALL MOUNTS

61113	Wall Mount Bracket Has 2" NPT(F) opening to accept bung type pumps. Bracket slips over rim of open head drum or can be wall mounted.	Used with 2" and "N" Series" air motor stub pumps fitted with bung dapters or 55-gallon bung type pumps.
-------	--	--

Model Number	Description	Pump Used With	Air Inlet NPT	Size Inches X Inches PSI (bar)
61879	Air Motor Muffler Reduces air exhaust noise level to acceptable OSHA standards.	2" air motor, 2:1 ratio pumps	3/8 (M)	1-1/4 x 3-1/2 (32 x 89)

WET SOL "PLUS"

66333-B	Wet Sol - One Quart Container Designed to prolong packing life by keeping the piston rod and packings wetted. Also reduces the possibility of material hardening on the piston rod.	Used with all pumps with wet cups.
66334-B	Wet Sol - One Gallon Container	

SIPHON HOSES

67140-1	5 Gallon,	Stainless Steel tube and fittings. 5 ft. Hose, 3/4 in. (NPT), with nylon inner tube
67140-2	55 Gallon,	Stainless Steel tube and fittings. 5 ft. Hose, 3/4 in. (NPT), with nylon inner tube

Air System Components

Air Systems Components

Air Filter

Model Number	Description	Pumps Used With	NPT Inlet	Max. Inlet PSI	Max. CFM	Micron Element	Size L x W
F25121-200	Filter	1/4" (Dia.) 2" & N-Series (Piston)	1/4	150	38	20	4.2 x 2.0
F25221-110	Filter	1/2", 1" Models	1/4	175	54	40	7.0 x 2.6
F25241-110	Filter	1-1/2", 2" Models Non-Metallic	1/2	250	122	40	7.0 x 2.6
F25451-110	Filter	2" Metallic, 3" Models	3/4	250	345	40	11.7 x 4.75



Air Regulator

Model Number	Description	Pumps Used With	NPT Inlet	Gauge Ports	Max. Inlet PSI	Pressure Range	Max. CFM	Size L x W
127122-600	Regulator w/gauge	1/4" (Dia.), 2" & N-Series (Piston)	1/4	1/8	200	0-125	38	3.125 x 1.625
R27221-600	Regulator w/gauge	1/2", 1" Models	1/4	1/4	200	0-125	54	4.75 x 2.6
R27241-600	Regulator w/gauge	1-1/2", 2" Models Non-Metallic	1/2	1/4	200	0-125	122	4.75 x 2.6
27354-600	Regulator w/gauge	2" Metallic, 3" Models	3/4	1/4	250	0-125	345	8.6 x 3.5



Air Lubricator

Model Number	Description	NPT Inlet	Max. Inlet PSI	Max. CFM	Size L x W
L26221-110	Lubricator	1/4	175	75	7.7 x 2.6
L26241-110	Lubricator	1/2	175	110	7.7 x 2.6
L26241-110	Lubricator	3/4	250	190	11.7 x 4.7



Air Filter / Regulator

Model Number	Description	Pumps Used With	NPT Inlet	Gauge Ports	Max. Inlet PSI	Pressure Range	Max. CFM	Micron Element	Size L x W
P29122-600	Filter / Reg. w/gauge	1/4" (Dia.), 2" & N-Series (Piston)	1/4	1/8	150	0-125	12	20	6.0 x 2.0
P29221-610	Filter / Reg. w/gauge	1/2", 1" Models	1/4	1/4	175	0-125	93	40	9.5 x 2.6
P29231-610	Filter / Reg. w/gauge	3/1 (Dia.)	3/8	1/4	175	0-125	135	40	9.5 x 2.6
P29241-610	Filter / Reg. w/gauge	1-1/2" Models	1/2	1/4	175	0-125	140	40	9.5 x 2.6



Filter / Regulator Accessories

Model Number	Description	Used With	Model Number	Description	Used With	Model Number	Description	Used With
29660-1	20 Micron Element	F125121-200 P29122-600	100067	0-160 lb. Gauge	R27221-600 R27241-600 27354-600 27364-600 P29221-610 P29241-610	104078	Automatic Drain	125121-000 P29122-600
29077	Mounting Bracket	27354-600 27364-600				104265	Nut/Bracket Kit	127122-600 P29122-600
29850	0-150 lb. Gauge	127122-600				104119	40 Micron Element	F25451-110 F25461-110
100095-160	0-150 lb. Gauge	P29122-600	104068	Automatic Drain	F25221-110 F25241-110 P29221-610 P29241-610 F25451-110 F25461-110	104172	Wall Mounting Kit	R27221-600 R27241-600 P29221-610 P29241-610
100031-1	40 Micron Element	F25221-110 F25241-110 P29221-010 P29241-010						



Features

1/8" and 1/4" Port Sizes

ARO® Module/Air 1000 Series “Piggyback” units are compact to save space, giving more design flexibility. These units have one common inlet/outlet for both the filter and regulator. This saves on space, set-up time and piping costs.

- Glass reinforced, composite bodies with threaded brass inserts are light weight, corrosion resistant and have no paint to chip. Combination units can be pipe nipples or clamped together in a modular configuration.
- Non-rising self locking adjustment knob cannot be vibrated loose.
- Increase/decrease arrows on the knob allows easy adjustment.
- Regulator offers in-line repairability. Diaphragm can be replaced without removing unit from line.
- Bayonet bowl attachment with line-up arrow heads provides easy filter element removal. Arrow heads assure user of locked position.
- Standard automatic drains available.
- Bowl has external thread, 1/8" NPT for piping away moisture.
- Polycarbonate bowl with guard or composite corrosion resistant bowl available.
- Air inlet arrow is molded into housing for easy air line hookup.



P29122-600

Performance Specifications

Ordering

See previous page.

Materials of Construction

Body:	Glass Reinforced Bodies
Bowl:	Polycarbonate w/Bowl Guard
Bowl Guard:	Composite w/Sight Windows
Composite Bowl:	Nylon
Seals:	Buna-N
Drain:	Push Type
Filter Element:	Porous Polypropylene
Diaphragm:	Buna-N
Spring Housing:	Glass Filled Nylon

Operating Conditions

Temperature Range:	0° to 125° F (-18° to 52° C)
Max. Inlet Pressure:	Poly Bowl – 150 PSIG (10.4 bar) Composite Bowl – 150 PSIG (10.4 bar)
Flow:	Air flow is at 90 PSIG (6.2 bar) inlet and 5 PSIG (0.4 bar) pressure drop 1/8" = 13 scfm (6 dm ³ /s) 1/4" = 13 scfm (6 dm ³ /s)

2-Way Solenoid/Pilot Acting Valves **Pump Type/Size**



- Normally Closed
- Brass Body
- Stainless Steel Steel
- Spring Return
- Connector Option Include CSN-30 or CHW-30

Model Number	Port Size	Cv	Voltage	DIAPHRAGM PUMPS				PISTON				
				1/4"	1/2"	1"	1-1/2"	2" Plastic	2" Met.	3"	2"	3"
TB03EB-024-D	3/8"	4.5	24 DC	•	•	•					•	•
TB03EB-120-A	3/8"	4.5	120 AC	•	•	•					•	•
TB04EB-024-D	1/2"	4.5	24 DC				•	•				
TB04EB-120-A	1/2"	4.5	120 AC				•	•				
TB06HB-024-D	3/4"	12.0	24 DC						•	•		
TB06HB-120-A	3/4"	12.0	120 AC						•	•		

Note: See Page 39 for cable connectors.

2-Way Direct Acting Solenoid



- Normally Closed
- Brass Body
- Stainless Steel Stem
- Spring Return
- Connector Options include CSN-30 or CHW-30, exception 1/4" valve which uses CSN or CHW.

Model Number	Port Size	Cv	Voltage	DIAPHRAGM PUMPS				PISTON PUMPS				
				1/4"	1/2"	1"	1-1/2"	2" Plastic	2" Met.	3"	2"	3"
TB022B-024-D	1/4"	.18	24 DC	•	•							
TB022B-120-A	1/4"	.18	120 AC	•	•							
TB035B-024-D	3/8"	4.0	24 DC		•	•	•	•	•		•	•
TB035B-120-A	3/8"	4.0	120 AC		•	•	•	•	•		•	•
TB045B-024-D	1/2"	4.0	24 DC					•	•			
TB045B-120-A	1/2"	4.0	120 AC					•	•			
TB066B-024-B	3/4"	8.6	24 DC							•	•	
TB066B-120-A	3/4"	8.6	120 AC							•	•	

Note: See Page 39 for cable connectors.

3-Way Solenoid Actuated Valves



- Normally Closed
- Aluminum Body
- Spring Return
- Connector Options include CSN-30 or CHW-30 for CAT66-P, or CSN or CHW for all others

CAT66P

H253SS



MQ3729

Model Number	Port Size	Cv	Voltage	DIAPHRAGM PUMPS				PISTON				
				1/4"	1/2"	1"	1-1/2"	2" Plastic	2" Met.	3"	2"	3"
CAT66P-024-D	1/4"	.2	24 DC	•								
CAT66P-120-A	1/4"	.2	120 AC	•								
MQ3728-024-D	1/4"	1.5	24 DC		•	•					•	•
MQ3728-120-A	1/4"	1.5	120 AC		•	•					•	•
H253SS-024-D	3/8"	2.2	24 DC			•						
H253SS-120-A	3/8"	2.2	120 AC			•						
H254SS-024-D	1/2"	2.4	24 DC				•	•				
H254SS-120-A	1/2"	2.4	120 AC				•	•				
MQ3729-024-D	3/4"	7.5	24 DC						•	•		
MQ3729-120-A	3/4"	7.5	120 AC						•	•		

Note: See Page 39 for cable connectors

Air Control Needle Valves



104104-N02

- Composite Body
- Can be Panel Mounted
- Infinite Control Settings
- Corrosion-Resistant Stainless Steel Insert & Stem

Model Number	Port Size	Cv	DIAPHRAGM PUMPS				PISTON				
			1/4"	1/2"	1"	1-1/2"	2" Plastic	2" Met.	3"	2"	3"
104104-NS2	1/4"		•	•	•					•	•
104104-N02	1/4"		•	•	•						
104104-N04	1/2"	4.5				•	•				
104104-N06	3/4"	4.5						•	•		

Lock-Out Valves/Hasp



104174



100085

- Meets OSHA lock-out / tag-out regulations
- Installs upstream of air filter / regulator unit

Model Number	Port Size	DIAPHRAGM PUMPS				PISTON				
		1/4"	1/2"	1"	1-1/2"	2" Plastic	2" Met.	3"	2"	3"
104253-2*	1/4"	•							•	•
104174-2	1/4"	•	•	•						
104174-4	1/2"				•	•				
100085 (Hasp)	1/2"	•	•	•	•	•			•	•

* Safety lockout for Module/Air 10000

Accessories



CSN-30



CHW-30

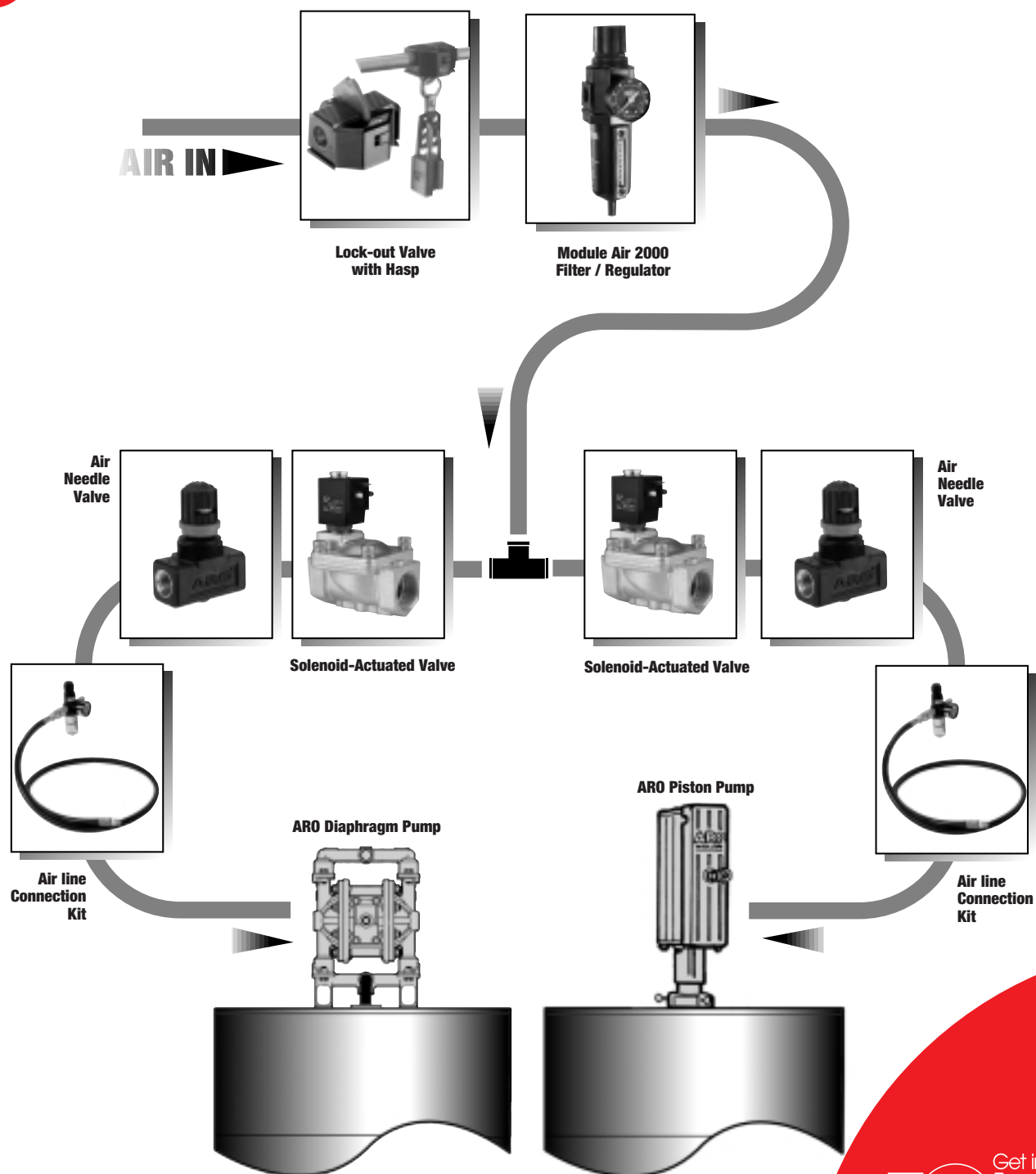
Connectors

Model	Description
CSN	Strain relief connector for 3-way valves
CSN-30	Strain relief connector for 2-way valves and CAT66P-XXX-X Valves
CHW	Molded cable connector for 3-way valves, 36" molded leads
CHW-30	Molded cable connector for 2-way valves and CAT66P-XXX-X, 36" molded leads

Coils

Model	Description
116218-39	22 mm, 24 VDC Coil
116218-33	22 mm, 120 VAC Coil
119378-39	30 mm, 24 VDC Coil
119378-33	30 mm, 120 VAC Coil

Typical Installation





Cycle Sensor Kits

ARO's new Cycle Sensor Kit provide continuous, real-time monitoring of your Diaphragm Pump's cycle rate. What's the advantage? By knowing your pump's actual operational cycle rate, not only can you adjust to achieve a more precise material flow, but you can also begin to track and measure your pump's performance and parts wear cycle. With this data now in hand, you'll be better prepared for your pump's service and replacement needs - as opposed to unanticipated pump failure and the frantic downtime emergencies that send you or your maintenance people scrambling.

- **Simple Installation** - The ARO Cycle Sensor Switch Kit install in minutes to provide years of reliable pump cycle intelligence.
- **Simple Operation** - Once connected to your PLC, an ARO Mini-batch Controller (see reverse for more information), or simple LED read-out meter, the closed-contact magnetic sensor switch provides failsafe accuracy and dependability.
- **Avoids Diaphragm Failure Mess and Downtime** - By providing critical pump cycle data, you can begin to take charge of your pump's service and replacement schedule instead of pump failure and its attendant mess taking charge of you.



67168



67169

Ordering

Pump Cycle Sensor Kits

Kit Model	Diaphragm Pump Model
67168	1/2" Ports / Non-Metallic
67169	1", 1 1/2", 2" Ports / Non-Metallic & 1", 1 1/2" / Metallic
67170	2", 3" Ports / Metallic

Pneumatic Batch Counter

ARO[®] Pneumatic Batch Counter Kits control the volume of fluid dispensed by controlling the number of pump cycles. Since all ARO Diaphragm Pumps are positive displacement pumps, with a known displacement, the number of pump cycles, times the pump's displacement, equals the total volume dispensed. These kits are totally pneumatic and are therefore explosive proof.

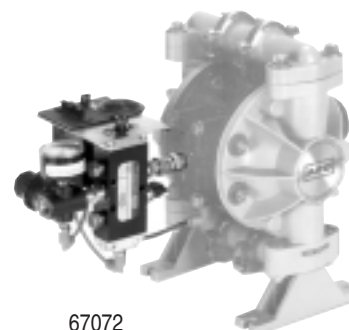


67170

Ordering

Pneumatic Batch Counter

Kit Model	Diaphragm Pump Model
67072	Manual start batch counter kit for 1/2" and 1" ports pumps



67072



Cycle Actuation Kits

ARO's new ARO®TRON Cycle Actuation Kits allow the cycle rate of an ARO Diaphragm Pump to be remote-controlled with an electrical signal from PLC's, pH or Pressure Sensors, or even simple Line Switches.

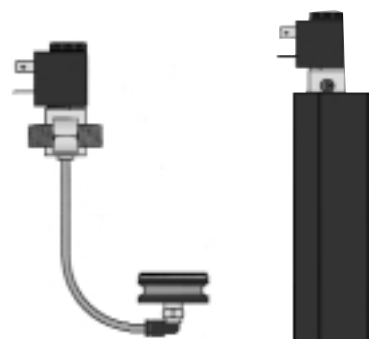
Ordering

KIT MODEL	DESCRIPTION
67165-1	24 VDC Kit adapts to 1/2" pumps (metallic/ non-metallic)
67165-2	120 VAC Kit adapts to 1/2" pumps (metallic/non-metallic)
67165-3	No Coil* Kit adapts to 1/2" pumps (metallic/non-metallic) For 1/4" (ported) pump cycle actuation, use any of the above three 67165-X (24 VDC, 120 VAC, No Coil) kits with any of the following specially outfitted 1/4" pumps: 650771-1-B (PD02P-APS-PTT), 650771-2-B (PD02P-APS-PTA), 650771-3-B (PD02P-ADS-DTT)
67166-1	24 VDC Kit adapts to 1", 1-1/2" metallic and 1", 1-1/2" and 2" non-metallic pumps (except 3:1 AODs)
67166-2	120 VAC Kit adapts to 1", 1-1/2" metallic and 1", 1-1/2" and 2" non-metallic pumps (except 3:1 AODs)
67166-3	No Coil* Kit adapts to 1", 1-1/2" metallic and 1", 1-1/2" and 2" non-metallic pumps (except 3:1 AODs)
67167-1**	24 VDC Kit adapts to 2" and 3" metallic pumps
67167-2**	120 VAC Kit adapts to 2" and 3" metallic pumps
67167-3**	No Coil* Kit adapts to 2" and 3" metallic pumps

***NOTE:** Extra coils (assorted voltage ratings) are available for non-24 VDC or 120 VAC applications. Contact ARO Customer Service for information.

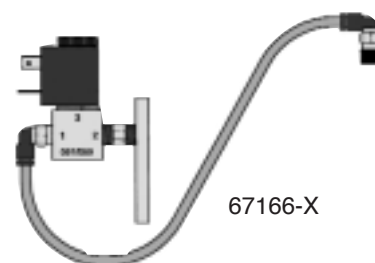
****NOTE:** Valve Block available in aluminum only.

Important Note: To achieve optimum performance, be sure to provide a balanced ("time-on" equals "time-off") input signal from your electronic device. For Important Pump Displacement Information, see chart on previous page.



67165-X

67167-X



67166-X

Excellent for
dosing /
batching
applications

Get in the
ZONE
ARO

Performance Technical Data

The pump sound pressure levels published below have been updated to an Equivalent Continuous Sound Level (L_{Aeq}) to meet the intent of ANSI S1.13-1971. CAGI-PNEUROP S5.1 using four microphone locations.

PUMP PORT SIZE (INCHES)	AIR OPERATING PRESSURE (PSI)	CYCLES/ MIN	SOUND PRESSURE (L_{Aeq})
Diaphragm Pumps			
1/4	70	60	59.8 db(A)
1/2	70	60	71.1 db(A)
1	70	60	64.5 db(A)
1-1/2	70	60	77.7 db(A)
2	70	60	*85.0 db(A)
3	70	50	*83.0 db(A)
Piston Pumps			
1:1	60	40	78 db(A)
2:1	60	40	76 db(A)
4:1	100	N/A	85 db(A)

Viscosity Conversion Chart

Centi Poise	Poise	Saybolt Universal (SSU)	Saybolt Furrol	Ford No. 3	Ford No. 4	Zahn No. 1	Zahn No. 2	Zahn No. 3
1	.01	31						
2	.02	34						
4	.04	38						
7	.07	47		8				
10	.10	60		9	5	30	16	
15	.15	80	13	10	8	34	17	
20	.20	100	15	12	10	37	18	
25	.24	130	17	15	12	41	19	
30	.30	160	19	19	14	44	20	
40	.40	210	24	25	18	52	22	
50	.50	260	29	29	22	60	24	
60	.60	320	34	33	25	68	27	
70	.70	370	39	36	28	72	30	
80	.80	430	42	41	31	81	34	
90	.90	480	49	45	32	88	37	10
100	1.0	530	54	50	34		41	12
120	1.2	580	59	58	41		49	14
140	1.4	690	70	66	45		58	16
160	1.6	790	79	72	50		66	18
180	1.8	900	91	81	54		74	20
200	2.0	1000	100	90	58		82	23
220	2.2	1100	110	98	62		88	25
240	2.4	1200	120	106	65			27
260	2.6	1280	128	115	68			30
280	2.8	1380	138	122	70			32
300	3.0	1475	148	130	74			34
320	3.2	1530	153	136	89			36
340	3.4	1630	163	142	95			39
360	3.6	1730	173	150	100			41
380	3.8	1850	185	160	106			43
400	4.0	1950	195	170	112			46
420	4.2	2050	205	180	118			48
440	4.4	2160	216	188	124			50
460	4.6	2270	227	200	130			52
480	4.8	2380	238	210	137			54
500	5.0	2480	248	218	143			58
550	5.5	2660	266	230	153			64
600	6.0	2900	290	250	170			68
700	7.0	3380	338	295	194			76
800	8.0	3880	388	340	223			
900	9.0	4300	430	365	247			
1000	10.0	4600	460	390	264			
1100	11	5200	520	445	299			
1200	12	5620	562	480	323			
1300	13	6100	610	520	350			
1400	14	6480	648	550	372			
1500	15	7000	700	595	400			
1600	16	7500	750	635	430			
1700	17	8000	800	680	460			
1800	18	8500	850	720	490			
1900	19	9000	900	760	520			
2000	20	9400	940	800	540			
2100	21	9850	985	835	565			
2200	22	10300	1030	875	592			
2300	23	10750	1075	910	617			
2400	24	11200	1120	950	645			
2500	25	11600	1160	985	676			
3000	30	14500	1450	1230	833			
3500	35	16500	1650	1400	950			
4000	40	18500	1850	1570	1060			
4500	45	21000	2100	1780	1175			
5000	50	23500	2350		1350			
5500	55	26000	2600		1495			
6000	60	28000	2800		1605			
6500	65	30000	3000		1720			
7000	70	32500	3250		1870			
7500	75	35000	3500		2010			
8000	80	37000	3700		2120			
8500	85	39500	3950		2270			
9000	90	41000	4100		2360			
9500	95	43000	4350		2470			
10000	100	46500	4650		2670			
15000	150	69400	6940					
20000	200	92500	9250					
30000	300	138600	13860					
40000	400	185000	18500					
50000	500	231000	23100					
60000	600	277500	27750					
70000	700	323500	32350					
80000	800	370000	37000					
90000	900	415500	41550					
100000	1000	462000	46200					
125000	1250	578000	57800					
150000	1500	694000	69400					
175000	1750	810000	81000					
200000	2000	925000	92500					

Performance Technical Data

ARO Diaphragm Pumps

		Scale 1 - 5 (5 is best)		
	Temp Limit F (C)	Chemical	Abrasion	Flex Life*
Acetal	180 (91)	3	3	-
Aluminum	-	1	3	-
Buna N (Nitrile)	180 (82)	2	2	3
Cast Iron	-	3	4	-
EDPM	280 (138)	3	2	3
Geolast (Nitrile Based)	180 (82)	2	2	3
Hytrel	150 (66)	2	4	4
Kynar (PVDF)	200 (107)	5	2	-
Neoprene	200 (93)	2	2	3
Polypropylene	150 (79)	4	2	-
Polyurethane	150 (66)	1	4	4
Santoprene	225 (107)	4	4	5
Stainless Steel (300 Series)	-	4	4	-
Stainless Steel (400 Series)	-	3	5	-
Teflon	220 (104)	5	2	4
Viton	350 (104)	4	2	1

* Applies to diaphragms only.

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

Five Year Pump Warranty

All ARO Pumps 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.

PUMP 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 pumps 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.

Application Specification Form

Completing this sheet will provide our Sales Engineers with the information they need to quote the correct product to fulfill your specific requirement. Please fax to 419-633-1748.

Company _____
Address _____
City _____ State/Province _____ Zip/Postal Code _____
Phone _____ Fax _____
E-mail _____
Contact _____

Fluid(s) Transferred _____
Flow Rate _____ T.D.H. ft. _____ Temp. _____ Viscosity _____
Specific Gravity _____

Additional information _____

Additional Specifications _____

Convenient Conversion Factors

Watts X 0.00134 = H.P.

Kw X 1.34 = H.P.

$\frac{\text{Feet of Head (Water)}}{2.31} = \text{PSI}$

KPa X .145 = PSI

Liters X .264 = Gallons

Meters X 3.28084 = Feet

mm X 0.03937 = Inches

Kgs X 2.2046223 = Pounds (avdp.)

$^{\circ}\text{F} = 1.8^{\circ}\text{C} + 32$

1 GPM = 0.003785 m³/min.

Gallons of Water X 8.3453 = Pounds of Water

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