

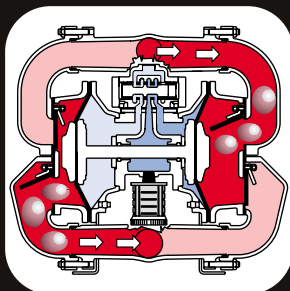
A detailed close-up photograph of a mechanical pump assembly. The image shows a large, dark, polished flywheel on the right side, connected to a series of connecting rods and pistons. The components are made of metal and show signs of wear and lubrication. The background is dark and out of focus, emphasizing the mechanical parts.

MARATHON®
A WARREN RUPP PUMP BRAND

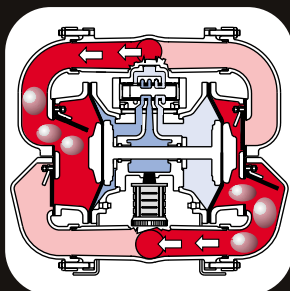
*Air-Operated
Double Diaphragm
Pumps*

Basic Design Features

MARATHON® diaphragm pumps are driven by compressed air. The directional air distribution valve and pilot valve, referred to as the “air end”, are located in the center section of the pump. Liquid moves through two manifolds and outer chambers of the pump, referred to as the “wet end”. Generally, check valves (ball-type or flap-type) are located at the top and bottom of each outer chamber or on a common manifold. The two outer chambers are connected by suction and discharge manifolds. The pumps are self-priming.



Flap Valve Model
(Bottom discharge)
Left chamber is on a discharge stroke.
Right chamber is on a suction stroke.



Right chamber is on a discharge stroke.
Left chamber is on a suction stroke.

Lube-Free Air Distribution Valve

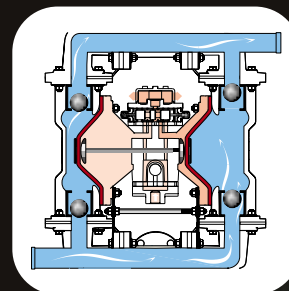
During operation, the air distribution valve controls alternate pressurizing of one diaphragm, then the other. The valve automatically transfers air pressure to the opposite chamber after each stroke. This provides alternating suction and discharge strokes, as the diaphragms move in parallel paths. MARATHON air valves require no lubrication. This is the preferred mode of operation. Clean, dry air will enhance pump performance.

Diaphragms

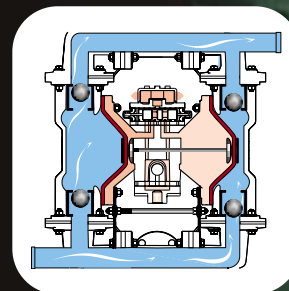
Flexible diaphragms are bolted at their outer perimeters, between the inner and outer chambers. The diaphragms are connected at their movable centers by a rod.

Check Valves

As fluid moves through the pump, check valves open and close. This allows each outer chamber to alternately fill and discharge. The check valves respond to differential pressures. Ball-type check valves can pass very small particles. Flap-type check valves will pass soft solids to nearly line size.



Ball Valve Model
(Top discharge)
Left chamber is on a discharge stroke.
Right chamber is on a suction stroke.



Right chamber is on a discharge stroke.
Left chamber is on a suction stroke.

The Pumping Cycle

As the air distribution valve directs pressurized air to the left diaphragm, the diaphragm is pushed outward. **This is a discharge stroke**, which forces liquid from the left outer chamber. Discharged liquid moves from the chamber, through an open discharge check valve, and exits the pump at the discharge manifold. The position of the discharge port can be top, bottom or side. As the left diaphragm is pressurized outward, the connecting rod pulls the right diaphragm inward on a **suction stroke**, which fills the right chamber with fluid. Liquid enters the pump at the suction manifold, moves through an open suction check valve and fills the chamber. At the end of the cycle, the air distribution valve automatically shifts the air pressure to the opposite diaphragm, initiating another pumping cycle.

Guaranteed No-Stall, Or Your Money Back!

The exclusive Externally Serviceable Air Distribution System (ESADS+Plus) has shown superior durability in severe operations around the world. This tough air valve design is standard equipment on most pumps. Lube-free and in-line serviceable, ESADS+Plus is GUARANTEED to perform, or we'll replace it free of charge.



MARATHON®

MARATHON Pumps are air-operated, double diaphragm pumps. The simple design and operation offers many advantages over other types of pumps.

Pumps abrasive and shear-sensitive materials

Low internal velocities move abrasives easily, with no damage to the pump. The gentle pumping action does not shear fragile materials.

Pumps viscous materials

Even heavy or solids-laden materials can be pumped. MARATHON Pumps move everything from water to peanut butter.

Sealless, with no motors

These air-operated pumps, with no motors, seals or packing to leak, are environmentally friendly.

Self-priming

The pumps are able to dry prime under most suction lift conditions.

Variable flow

Simply regulate the inlet air supply to adjust the pump flow from zero to maximum capacity.

Optional porting

Many discharge porting options are available, including top, bottom and dual.

- Select top porting for thin liquids, or if entrained air could be a problem.
- Select bottom porting for thick or solids-laden materials.
- Select dual porting for specialized applications.

Runs dry without damage

MARATHON Pumps can run dry without damage, unlike other types of pumps.

Deadheads against closed discharge

Excessive back pressure stops pump without damage. No need for expensive bypass systems or pressure relief valves. Pump simply stops operation until discharge opens.

Groundable

Air-operation reduces sparking concerns associated with other electrical or rotating pumps.

Category



Ball Valve
pages:
4,5,6,7



Flap Valve
pages:
8,9



Impeller
pages:
10,11



Battery
pages:
10,11

Industry



Chemical/
Petrochemical
pages:
4,5,6,7



Automotive/
Plating
pages:
4,5,6,7



Sludge/Slurries
pages:
6,7,8,9,10,11



Marine
pages:
6,7,8,9,10,11



Industrial/
Municipal Waste
pages:
6,7,8,9



Construction/
Utilities
pages:
8,9,10,11



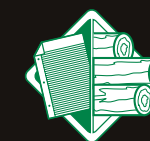
Paint/
Coatings
pages:
4,5,6,7



Ceramic Glaze/
Slip
pages:
6,7,8,9



Mining
pages:
6,7,8,9



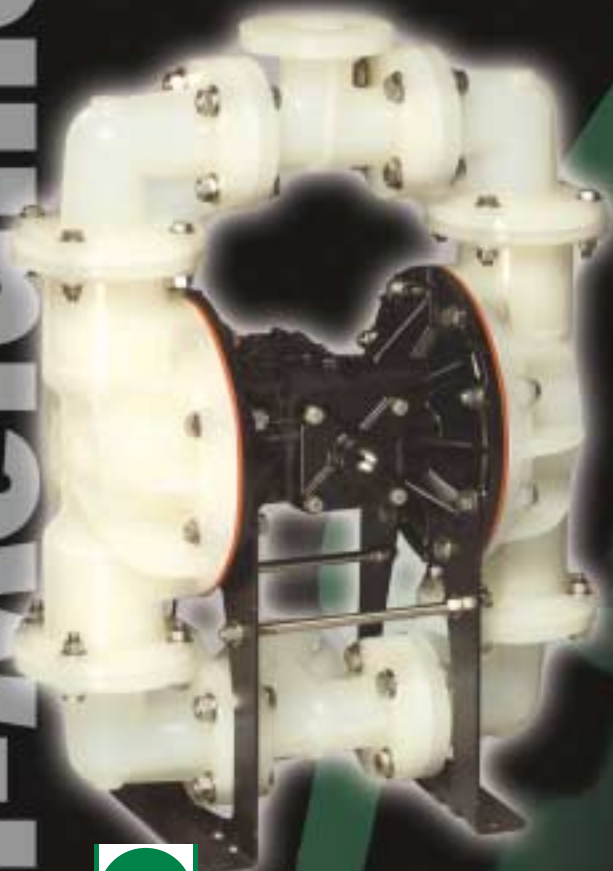
Pulp/
Paper
pages:
6,7

Accessories
page:
12

Installation Guide
page:
13

Materials Profile
page:
14

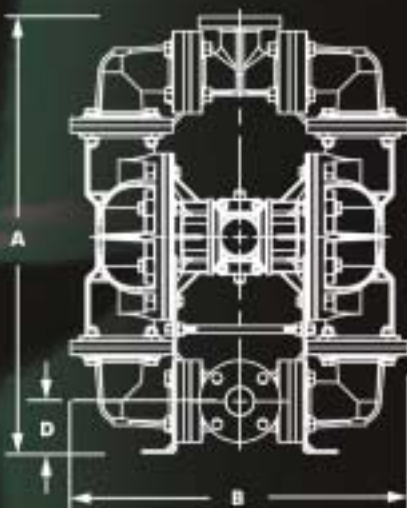
MARATHON® Pumps
page:
15



MARATHON®

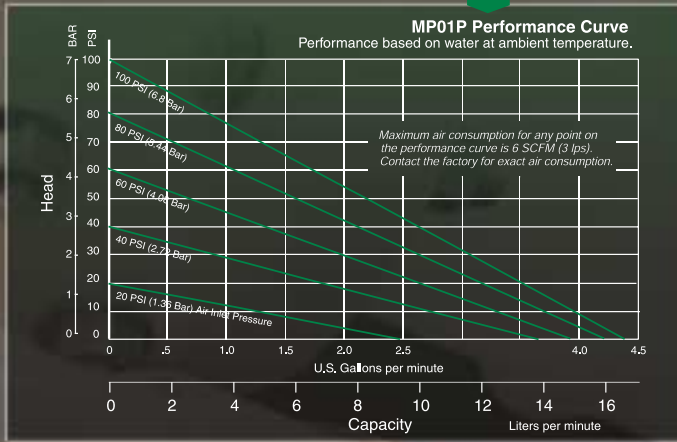
The MARATHON Non-Metallic Series passes the acid test. Rugged, bolted construction. Models in PVDF and Polypropylene. Specially-coated, chemically-resistant hardware.

Model	Pipe Size		Displacement per stroke		Max. Flow per min.		Max. Solids Handling		Max. Discharge Pressure	
	inches	mm	gal	liters	gal	liters	inches	mm	psi	bar
MP01P	.25	6	.01	.04	4	15	.03	1	100	6.9
M05	.5	15	.026	.098	14	52	.125	3	100	6.9
M07	.75	20	.026	.098	23	87	.15	4	100	6.9
M10	1	25	.026	.098	23	87	.15	4	100	6.9
M1F	1	25	.17	.64	45	170	.25	6	100	6.9
M15	1.5	40	.36	1.36	90	340	.47	12	100	6.9
M20	2	50	.36	1.36	150	568	.66	17	100	6.9
M30	3	80	.9	3.41	238	901	.71	18	100	6.9

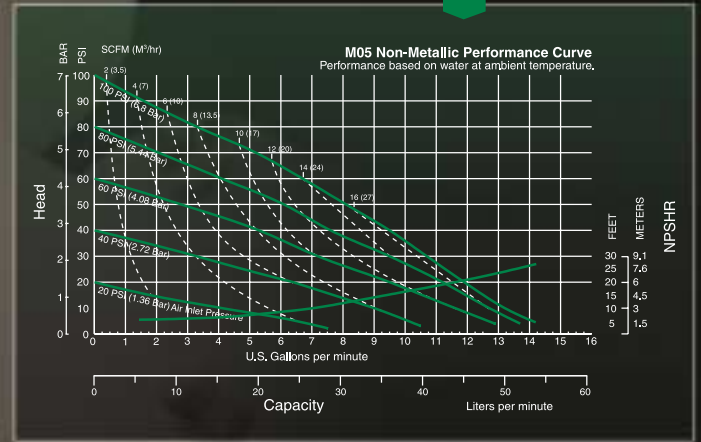


Pump	Height inches (mm)	Width inches (mm)	Depth inches (mm)	Bottom of Base to Center line of:		Connections
				Suction inches (mm)	Discharge inches (mm)	
MP01P	7 13/16" (198)	7" (178)	5" 1/2 (140)	3/4" (19)	7 13/16" (198)	1/2" MNPT & 1/4" FNPT
M05	11 5/16" (287)	10 1/8" (257)	8 3/4" (222)	1 3/8" (35)	11 5/16" (287)	1" MNPT & 1/2" FNPT or BSP
M07	13 11/32" (339)	11 13/16" (300)	8 3/4" (179)	1 13/16" (46)	13 11/32" (339)	1 1/2" MNPT - 3/4" FNPT or BSP
M10	13 13/16" (351)	11 13/16" (300)	9 1/4" (235)	2 1/2" (64)	11 11/16" (297)	1" 125# ANSI only
M1F	20 3/4" (527)	17" (433)	11 5/32" (283)	2 1/2" (64)	20 3/4" (527)	1" 125# ANSI and / or DIN
M15	28 11/16" (729)	23 7/8" (606)	14 15/16" (379)	3 1/2" (89)	28 11/16" (729)	1 1/2" 125# ANSI/40 mm DIN
M20	32 1/16" (814)	24 5/8" (625)	14 15/16" (379)	3 13/16" (97)	32 1/16" (814)	2" 125# ANSI/50 mm DIN
M30	40 5/8" (1032)	33 3/8" (848)	18 1/4" (464)	4 7/8" (124)	40 5/8" (1032)	3" 125# ANSI/80 mm DIN

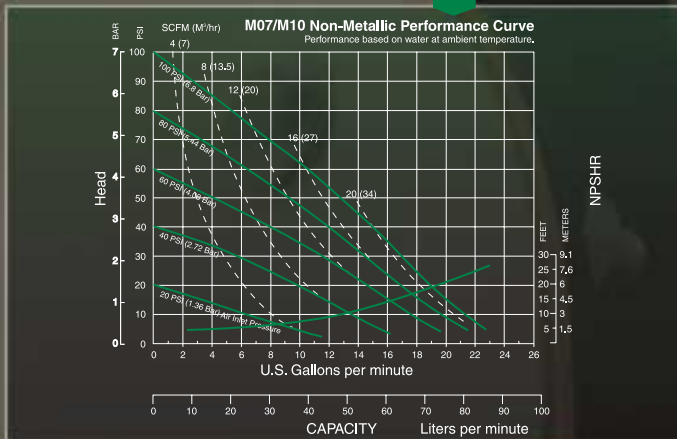
MP01P



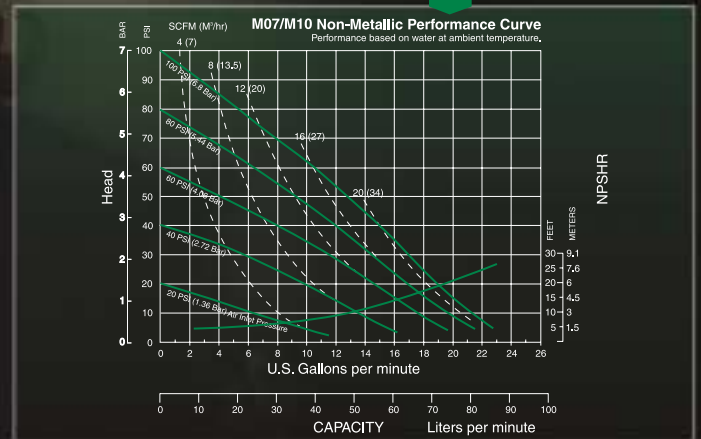
M05



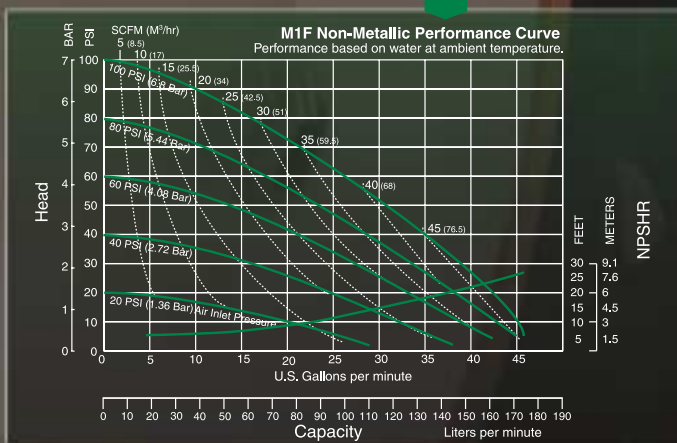
M07



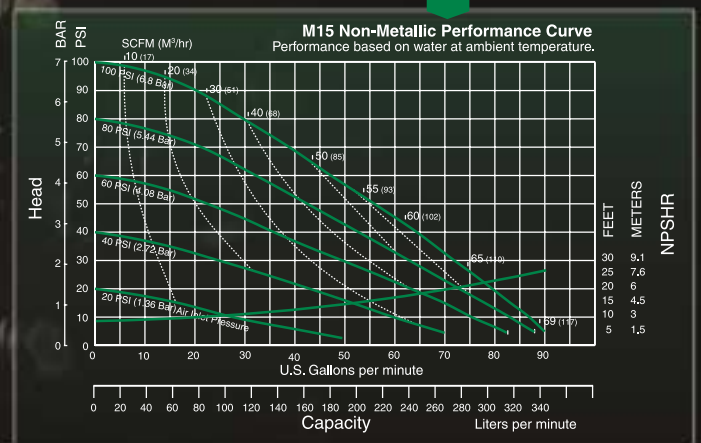
M10



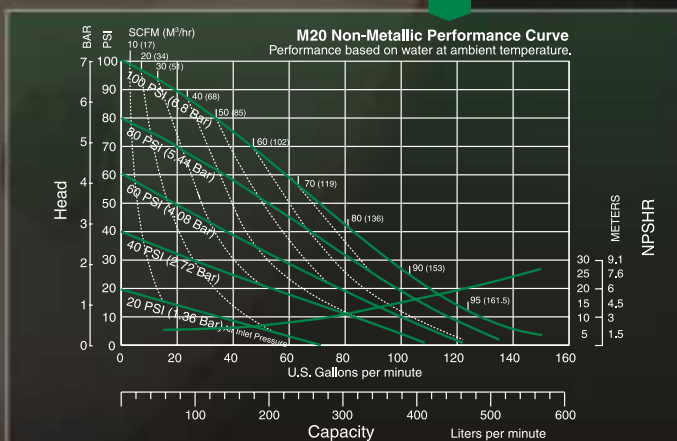
M1F



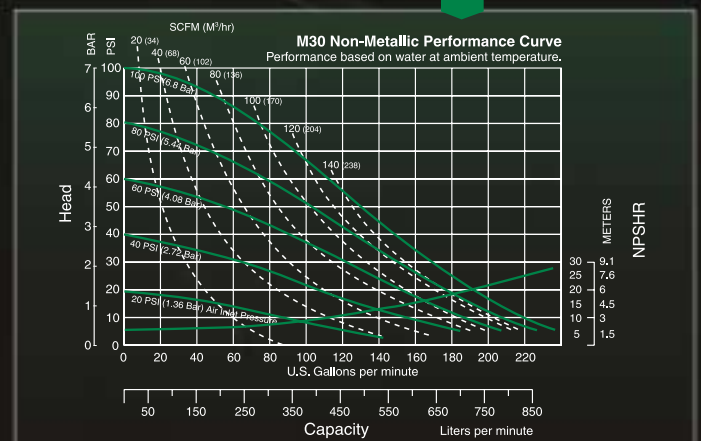
M15

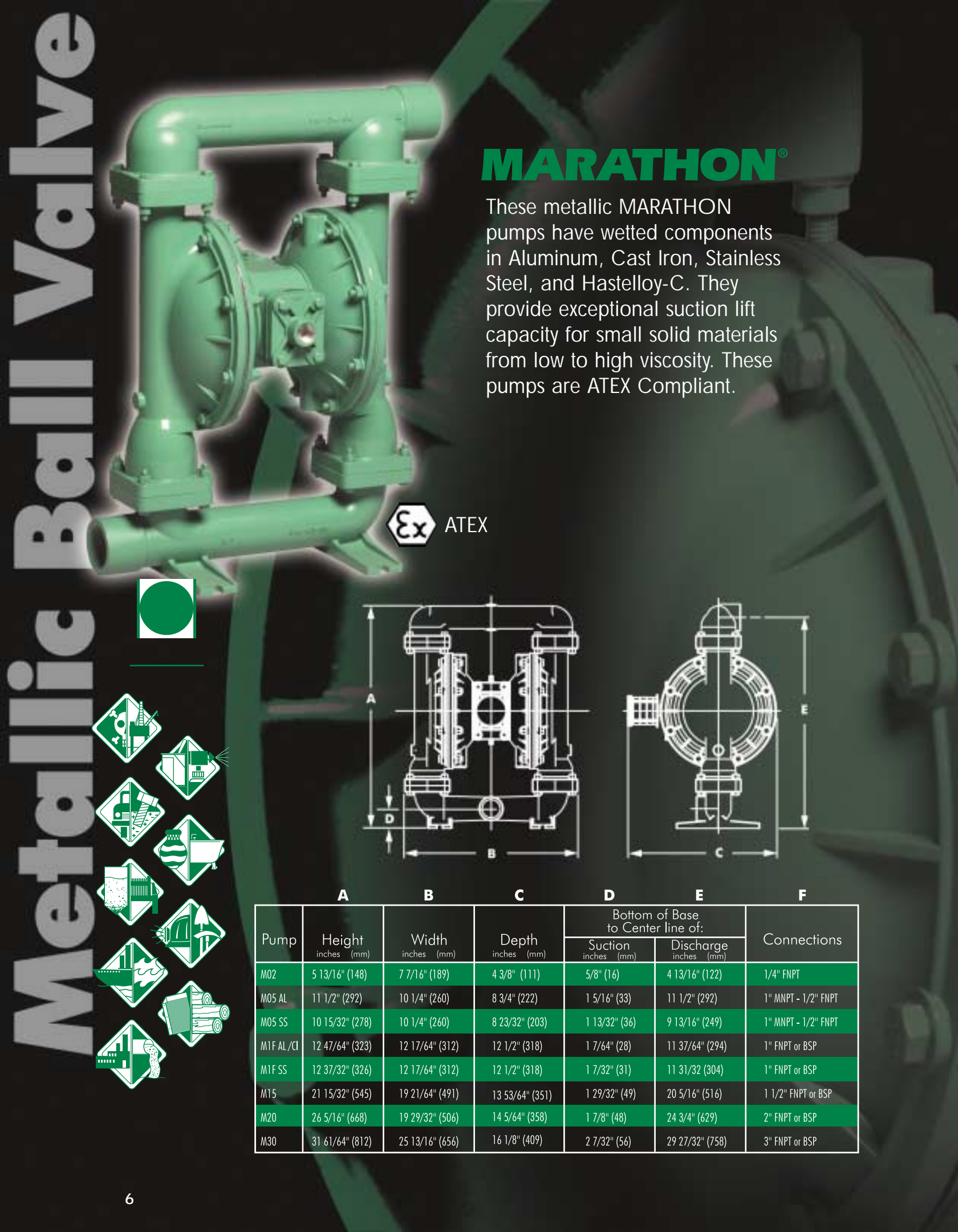


M20



M30

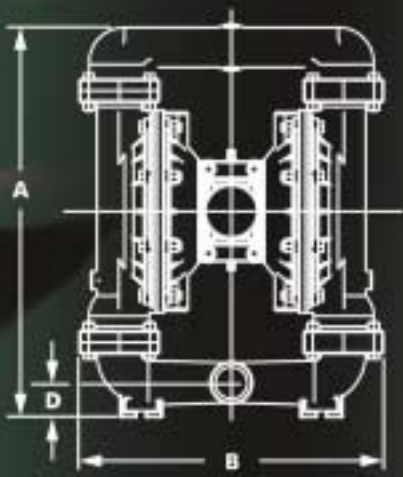




Metallic Ball Valve

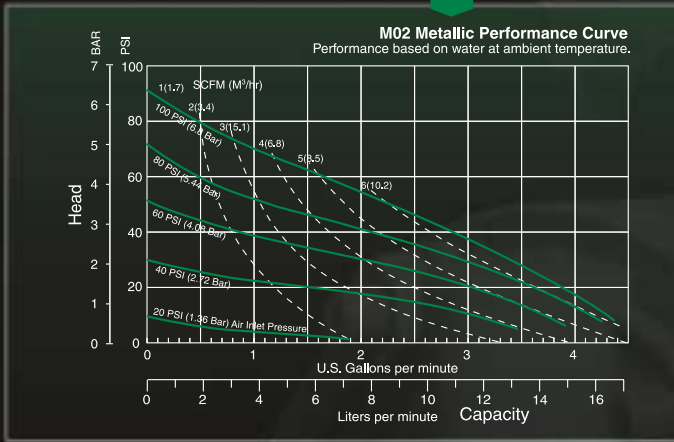
MARATHON®

These metallic MARATHON pumps have wetted components in Aluminum, Cast Iron, Stainless Steel, and Hastelloy-C. They provide exceptional suction lift capacity for small solid materials from low to high viscosity. These pumps are ATEX Compliant.

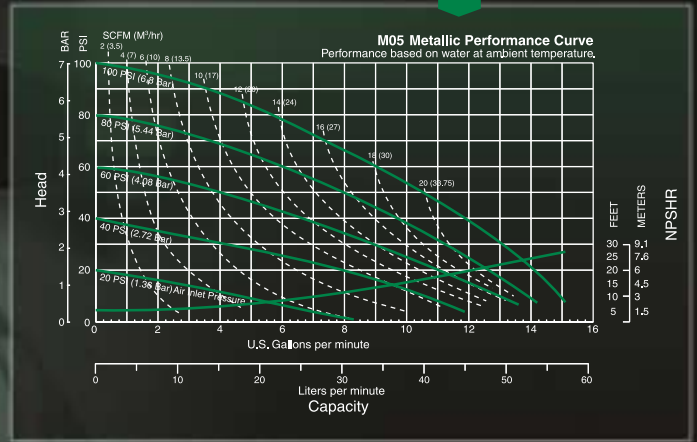


Pump	A Height inches (mm)	B Width inches (mm)	C Depth inches (mm)	Bottom of Base to Center line of:		F Connections
				D Suction inches (mm)	E Discharge inches (mm)	
M02	5 13/16" (148)	7 7/16" (189)	4 3/8" (111)	5/8" (16)	4 13/16" (122)	1/4" FNPT
M05 AL	11 1/2" (292)	10 1/4" (260)	8 3/4" (222)	1 5/16" (33)	11 1/2" (292)	1" MNPT - 1/2" FNPT
M05 SS	10 15/32" (278)	10 1/4" (260)	8 23/32" (203)	1 13/32" (36)	9 13/16" (249)	1" MNPT - 1/2" FNPT
M1F AL/CI	12 47/64" (323)	12 17/64" (312)	12 1/2" (318)	1 7/64" (28)	11 37/64" (294)	1" FNPT or BSP
M1F SS	12 37/32" (326)	12 17/64" (312)	12 1/2" (318)	1 7/32" (31)	11 31/32" (304)	1" FNPT or BSP
M15	21 15/32" (545)	19 21/64" (491)	13 53/64" (351)	1 29/32" (49)	20 5/16" (516)	1 1/2" FNPT or BSP
M20	26 5/16" (668)	19 29/32" (506)	14 5/64" (358)	1 7/8" (48)	24 3/4" (629)	2" FNPT or BSP
M30	31 61/64" (812)	25 13/16" (656)	16 1/8" (409)	2 7/32" (56)	29 27/32" (758)	3" FNPT or BSP

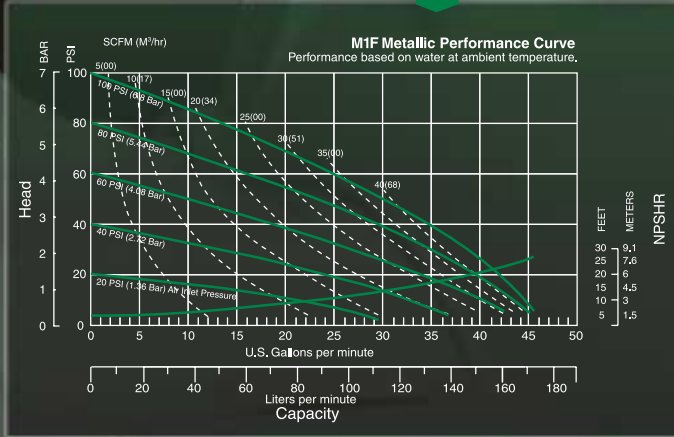
M02



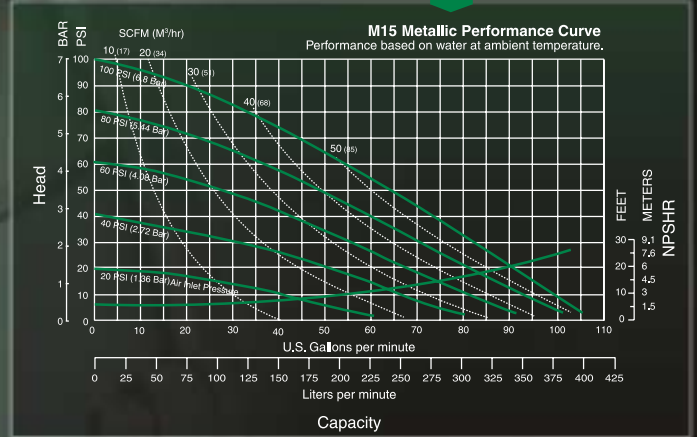
M05



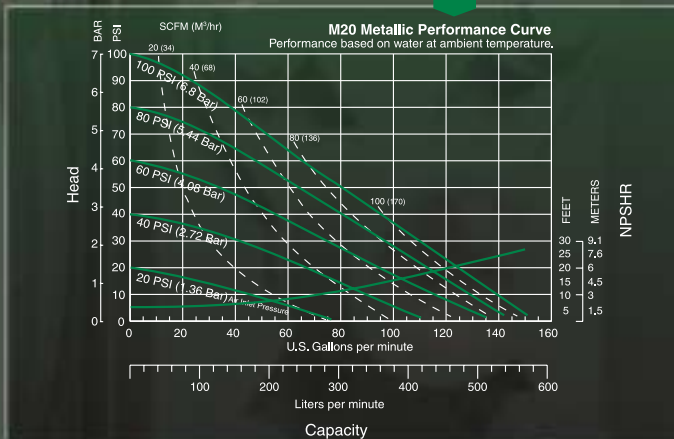
M1F



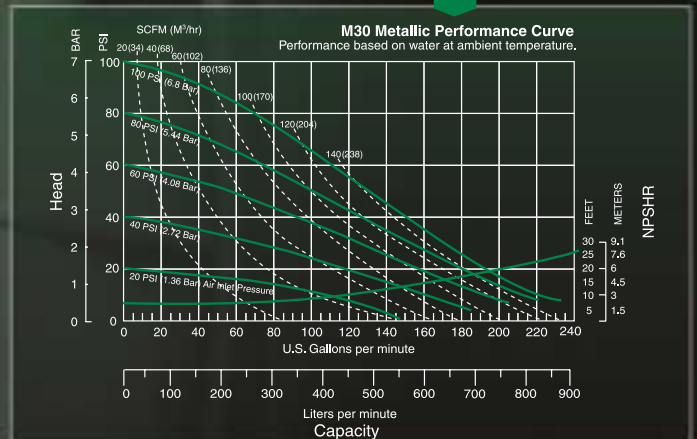
M15



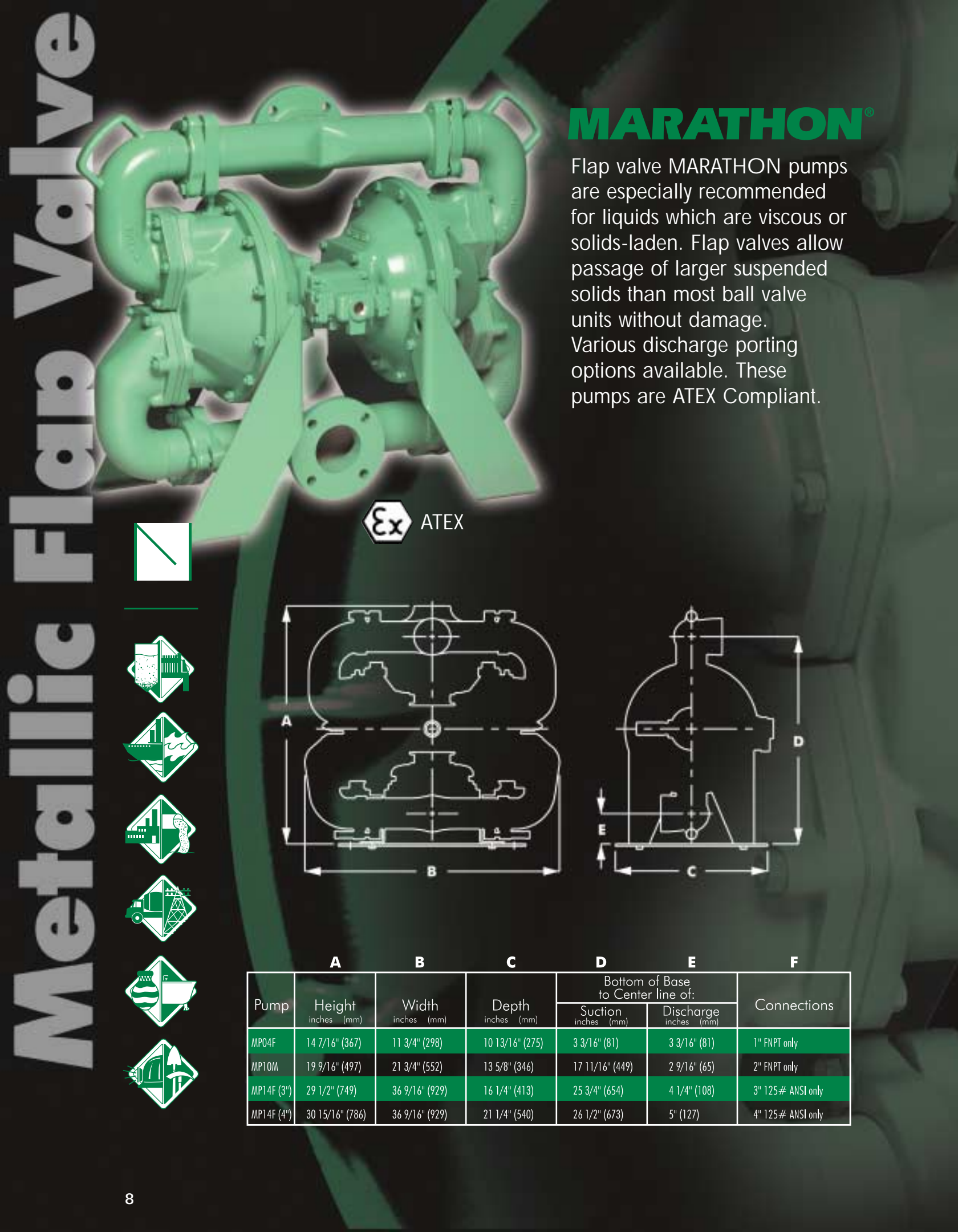
M20



M30



Model	Pipe Size inches mm	Displacement per stroke gal liters	Max. Flow per min. gal liters	Max. Solids Handling inches mm	Max. Discharge Pressure psi bar
M02 Metallic	.25 6	.003 .01	4.4 16.6	.079 2	125 8.6
M05 Metallic	.5 12	.026 .098	15 57	.125 3	125 8.6
M1F Metallic	1 25	.11 .42	45 170	.25 6	125 8.6
M15 Metallic	1.5 40	.41 1.55	106 401	.25 6	125 8.6
M20 Metallic	2 50	.42 1.59	150 567	.25 6	125 8.6
M30 Metallic	3 80	.94 3.56	235 889	.38 9.5	125 8.6

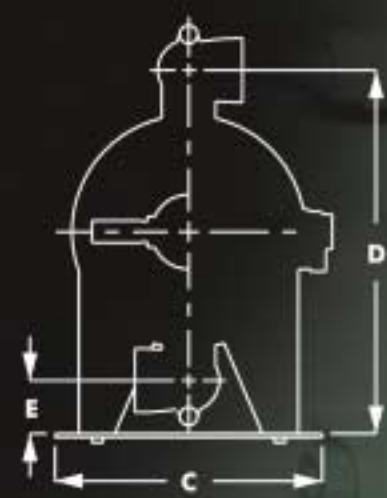
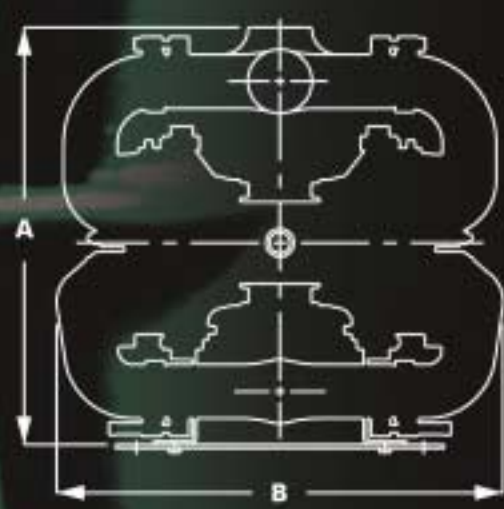


Metallic Flap Valve



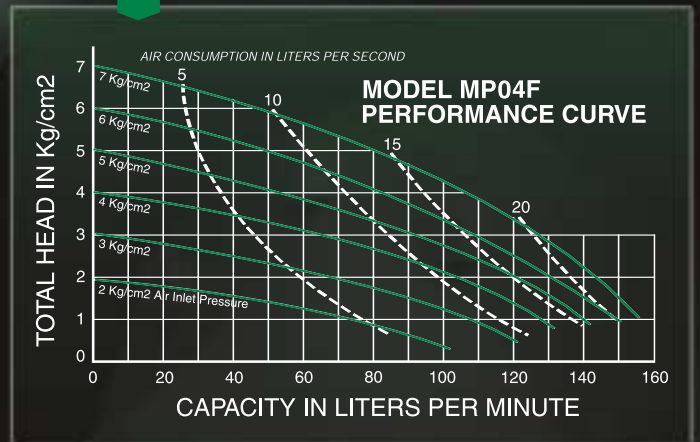
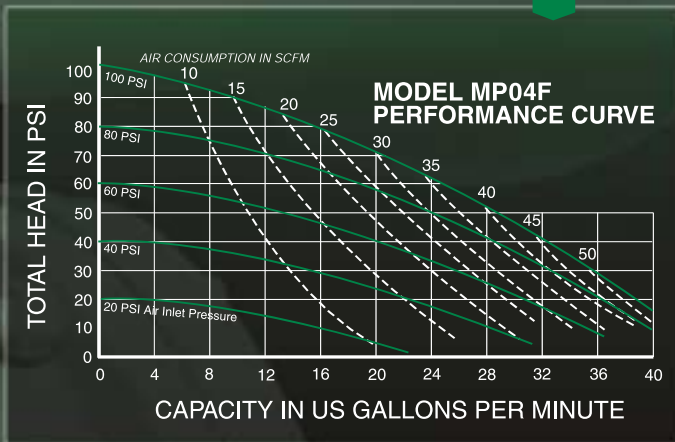
MARATHON®

Flap valve MARATHON pumps are especially recommended for liquids which are viscous or solids-laden. Flap valves allow passage of larger suspended solids than most ball valve units without damage. Various discharge porting options available. These pumps are ATEX Compliant.

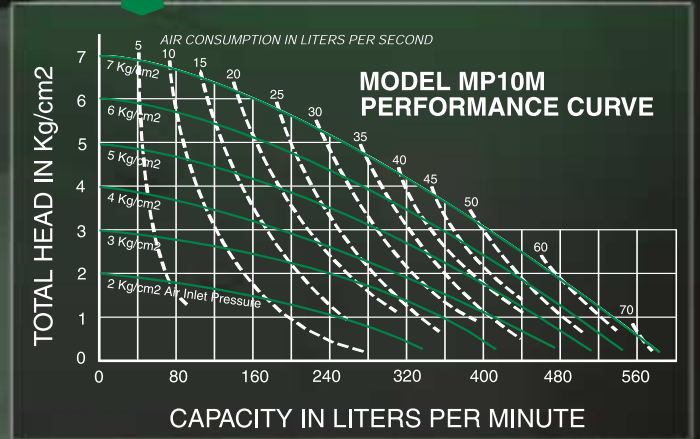
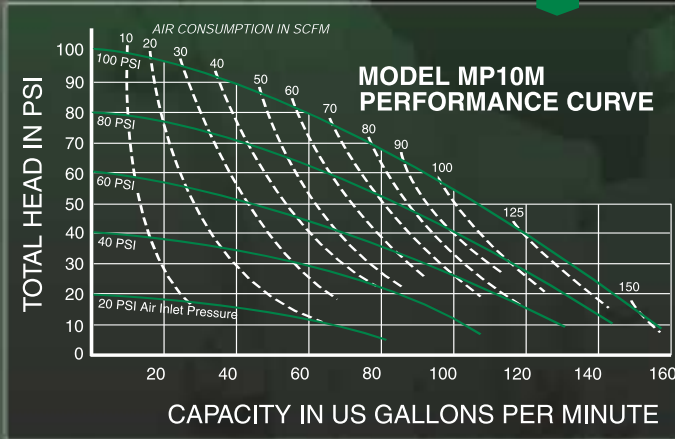


Pump	Height inches (mm)	Width inches (mm)	Depth inches (mm)	Bottom of Base to Center line of:		Connections
				Suction inches (mm)	Discharge inches (mm)	
MP04F	14 7/16" (367)	11 3/4" (298)	10 13/16" (275)	3 3/16" (81)	3 3/16" (81)	1" FNPT only
MP10M	19 9/16" (497)	21 3/4" (552)	13 5/8" (346)	17 11/16" (449)	2 9/16" (65)	2" FNPT only
MP14F (3")	29 1/2" (749)	36 9/16" (929)	16 1/4" (413)	25 3/4" (654)	4 1/4" (108)	3" 125# ANSI only
MP14F (4")	30 15/16" (786)	36 9/16" (929)	21 1/4" (540)	26 1/2" (673)	5" (127)	4" 125# ANSI only

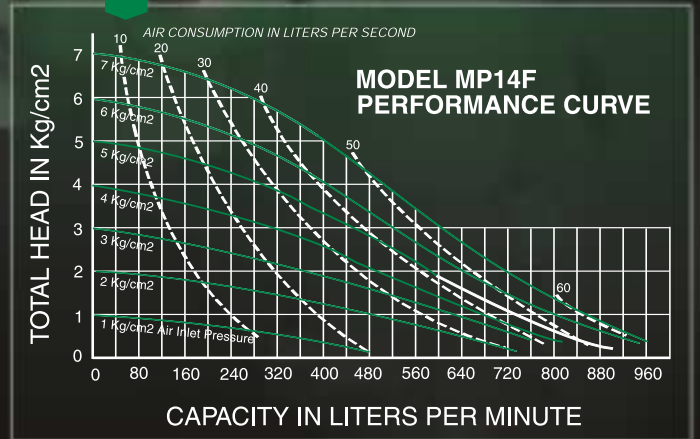
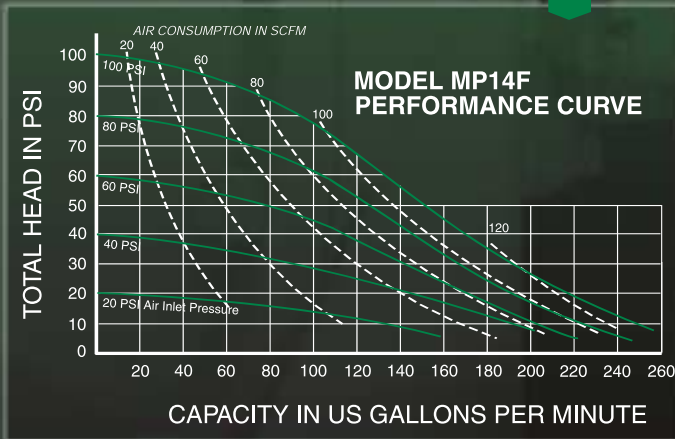
MP04F



MP10M



MP14F



Model	Pipe Size		Displacement per stroke		Max. Flow per min.		Max. Solids Handling		Max. Discharge Pressure	
	inches	mm	gal	liters	gal	liters	inches	mm	psi	bar
MP04F	1	25	.09	.34	42	159	1	25	125	8.6
MP10M	2	50	.43	1.60	140	530	2	50	125	8.6
MP14F	3	80	1.62	6.15	260	998	3	76	125	8.6



Submersibles

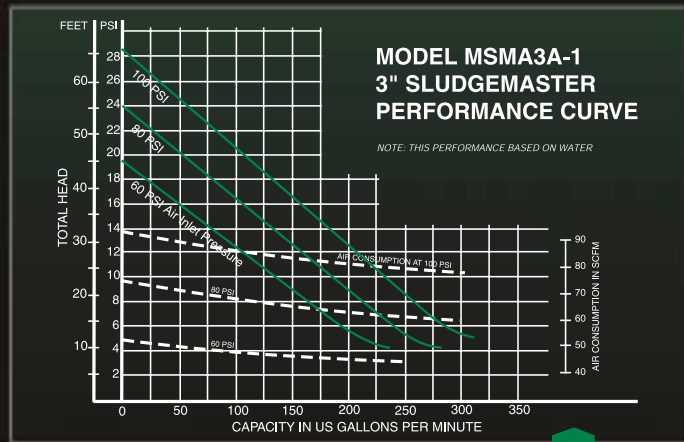


MARATHON®

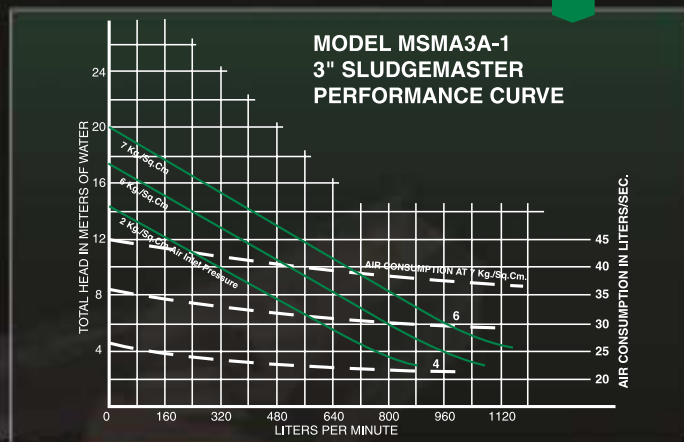
The **HandiPump™** submersible, battery-powered pump operates using any 12-volt DC car or truck battery. It comes equipped with cables and battery clips. Extremely portable, the pump weighs only 33 pounds (15kg) and can fit through openings as small as 10" (25cm) and is whisper quiet.

Model MSMA3-A, the submersible, air-operated trash pump, handles mud, leaves, twigs, sand, sludge, trash-laden water and soft solids to 1½" (3.8cm). High capacity - low head. It weighs only 59 pounds (26kg), and can fit through an opening as small as 14" (35cm). Sturdy construction for rough handling and long life.

Model	Pipe Size		Max. Flow per min.		Max. Solids Handling		Max. Discharge Pressure	
	inches	mm	gal	liters	inches	mm	psi	bar
MPS03	1.5	40	43	163	1/16	1	10	.68
MSMA3-A	3	80	300	1140	1.5	38	100	6.9



MSMA3-A



MPS03

Capacity		Discharge Height	
Gallons per minute	Liters per minute	Feet	Meters
41.6	157.4	5	1.5
34.0	128.7	10	3.0
25.0	94.6	15	4.5
21.3	80.6	20	6.0
0.0	0.0	25	7.6

Accessories



Air Preparation

Clean, dry air is the key to trouble-free pump operation. The filter/regulator line offers modular convenience for installation and service.

Liquid Level Control

This float-actuated air valve and liquid level control provides all-pneumatic operation. Air powered operation makes it ideal for use in hazardous areas.

Pail & Drum Adaptor Kits

Convert 1/4", 1/2" and 3/4" plastic pumps to drum or pail applications. The adaptor kits are constructed of chemically-resistant materials to handle the job. Plastic pipe assembly comes complete with all the hardware needed.

Surge Suppressors

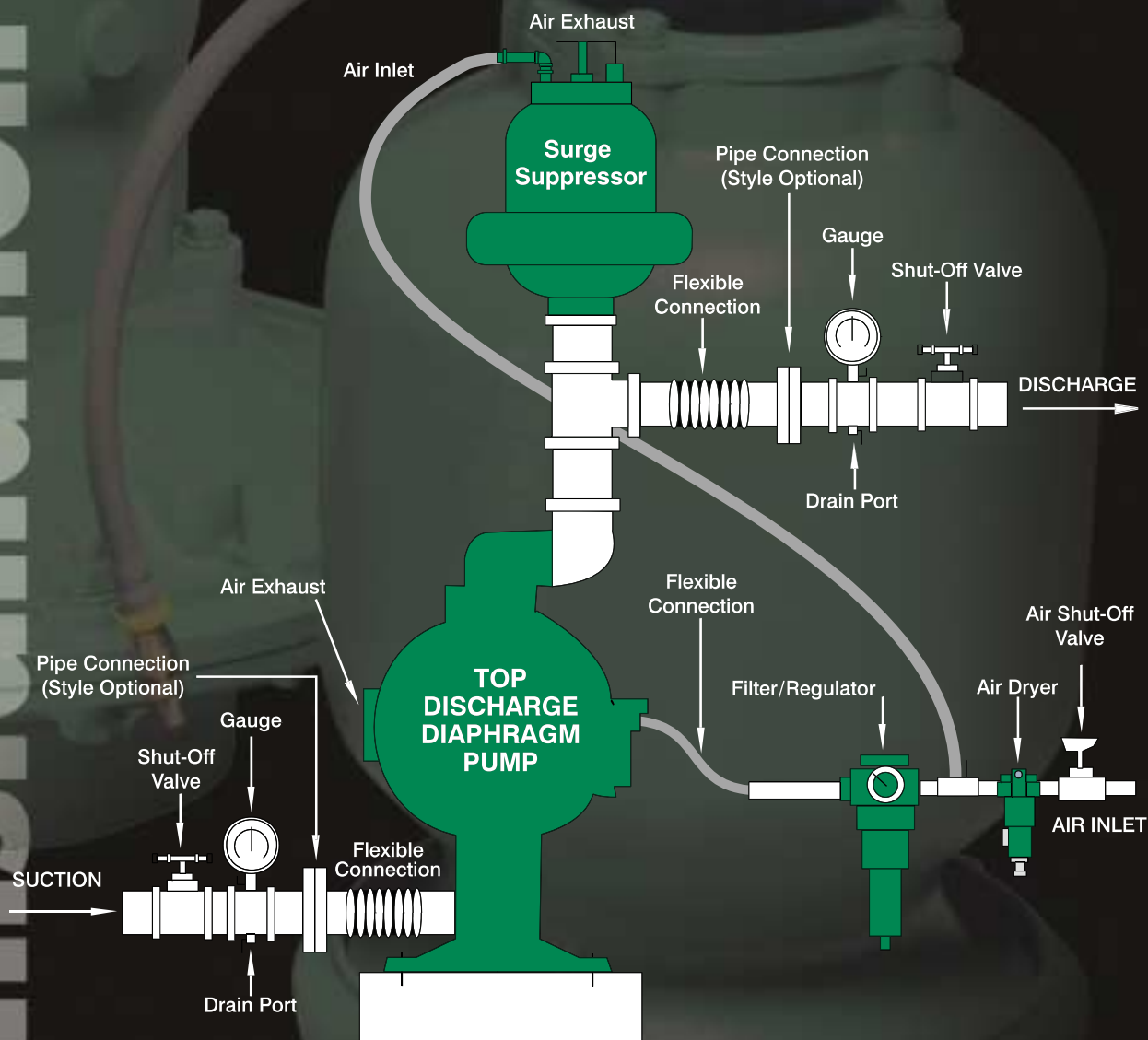
For use with any diaphragm pump, surge suppressors maintain a constant air cushion volume in a pumping application for the most effective surge suppression. Many models are automatically self-charging and self-venting.

Surge Dampeners

Designed for use with 1/2" and 3/4" pumps, these non-metallic dampeners are manually charged with air. The dampener consumes no air after being manually charged.



CAUTION
The air exhaust should be piped to an area for safe disposition of the product being pumped, in the event of a diaphragm failure.



Items available from MARATHON® Pumps.

Materials Profile	Operating Temperatures		
	Minimum	Maximum	Optimum
Buna-N General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	-10°F -23°C	190°F 88°C	50°F to 140°F 10°C to 60°C
Conductive Acetal Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	Governed by diaphragm material of pump.		
EPDM Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	-10°F -23°C	212°F 100°C	50°F to 212°F 10°C to 100°C
Hytrel® Good on acids, bases, amines and glycols at room temperatures only.	-10°F -23°C	190°F 88°C	50°F to 140°F 10°C to 60°C
Neoprene All purpose. Resistant to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters, nitro hydrocarbons and chlorinated aromatic hydrocarbons.	-35°F -37°C	170°F 77°C	50°F to 130°F 10°C to 54°C
Nylon 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	32°F 0°C	120°F 49°C	32°F to 120°F 0°C to 49°C
Polypropylene A thermoplastic polymer. High tensile and flex strength. Resists strong acids and alkalis. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	40°F 5°C	150°F 66°C	40°F to 150°F 5°C to 66°C
Polyvinylidene Fluoride (PVDF, Kynar®) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	-10°F -12°C	200°F 93°C	10°F to 200°F -13°C to 93°C
Rupplon® (Urethane) Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	32°F 0°C	150°F 66°C	50°F to 110°F 10°C to 43°C
Santoprene® Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	-10°F -23°C	212°F 100°C	50°F to 212°F 10°C to 100°C
Virgin PTFE (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE: molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	-35°F -37°C	212°F 100°C	50°F to 212°F 10°C to 100°C
Viton® Shows good resistance to a wide range of oils and solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70° F) will attack Viton.	32°F 0°C	212°F 100°C	50°F to 212°F 10°C to 100°C
WR-C Warren Rupp Alloy "C" equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy castings commonly referred to as Hastelloy "C" alloy in the pump industry. Hastelloy "C" is a registered trademark of the Cabot Corporation.	Governed by diaphragm material of pump.		
WR-S Warren Rupp Alloy Type 316 Stainless Steel equal to or exceeding ASTM specification A743 CF-8M for corrosion resistant iron chromium, iron chromium nickel, and nickel based alloy castings for general applications. Commonly referred to as 316 Stainless Steel in the pump industry.	Governed by diaphragm material of pump.		

Always refer to the Chemical Resistance Chart when specifying MARATHON® pumps.

Solids Handling MARATHON Pumps

Non-Metallic Ball Valve

MP01P pumps handle .031 (1mm) soft solids.
M05 Pumps handle .125 (3mm) soft solids.
M07 Pumps handle .150 (4mm) soft solids.
M10 Pumps handle .150 (4mm) soft solids.
M1F Pumps handle .25 (6mm) soft solids.
M15 Pumps handle .47 (12mm) soft solids.
M20 Pumps handle .66 (17mm) soft solids.
M30 Pumps handle .71 (18mm) soft solids.

Metallic Ball Valve

M02 Pumps handle .079 (2mm) soft solids.
M05 Pumps handle .125 (3mm) soft solids.
M1F Pumps handle .25 (6mm) soft solids.
M15 Pumps handle .25 (6mm) soft solids.
M20 Pumps handle .25 (6mm) soft solids.
M30 Pumps handle .38 (9.5mm) soft solids.

Metallic Flap Valve

1" Pumps handle 1" (25mm) soft solids.
2" Pumps handle 2" (50mm) soft solids.
3" Pumps handle 3" (76mm) soft solids.

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®Santoprene is a registered tradename of Monsanto Corporation
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®Kynar is a registered tradename of Pennwalt Corporation
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Marathon Pumps

Metallic
Flap Valve

Non-Metallic
Ball Valve

Submersible

Metallic
Ball Valve

