

ARO®

SHOCK BLOCKER™

FLUID PULSATION DAMPENERS



The Automatic Shock Blockers

For over 90 years, the ARO® Fluid Products business of Ingersoll Rand® has developed partnerships with more than 200 original equipment manufacturers and distributors, enabling us to better focus on the unique pumping needs of many industries. It's a strategic merger of our partners' application expertise, along with our decades-long legacy of designing and building outstanding piston and diaphragm pumps.



Foaming



Material Pulsation



Hydraulic Shock



Splashing

Diaphragm and piston pumps of any type have at least two points in their cycle where they provide no pressure or flow to a process. The unwanted result of this pressure fluctuation can often be material foaming, material pulsation, hydraulic shock or material splashing. While traditional pulsation dampeners can help reduce unwanted pulsation and other problems, they also require operator intervention and adjustments.

Applications where Shock Blockers provide advantages:

- Fluid Dispensing Control
- Inline Flow Meter Protection
- Long Pipe Runs
- Equipment Protection (Pumps, Meters, Piping)
- High Back Pressure Application



Design Features

1", 2" AND 3" SHOCK BLOCKERS

- Automatic Air Adjustment - compensates for fluctuations in fluid pressure without operator intervention.
- Significant Pulsation Reduction - the new Shock Blockers deliver an average 60% - 80% pulsation reduction in high back pressure applications.
- Perfect for Process Applications - pulsation reduction in long piping runs help prevent costly fluid pipe and downstream valve damage.
- Built for High-Flow/Aggressive Fluid Applications - the 2" models can handle up to 159 in.³ maximum fluid volume, and 3" models up to 509 in.² maximum fluid volume.
- Broad Material Range for Compatibility - choose from PVDF, polypropylene, groundable acetal, aluminum, cast iron or stainless steel body materials for optimum pump-to-pulsation dampener compatibility
- Broad Diaphragm/Bladder Fluid Compatibility - choose from Santoprene®, Nitrile, PTFE, Viton or Urethane for optimum fluid-to-diaphragm compatibility.
- Bolted Construction - for leak-free vessel integrity and a safer work-site.
- Ultra-Rugged Construction for Long service Life - both inside and out, the new Shock Blockers re built tough to deliver worry free, near pulse-free fluid handling.

Performance Charts

Fluid Pressure PSI Back Pressure	1/2" Pump w/1" Shock Blocker					% Reduction In Pulsation	
	20	40	60	1	2	3	4
	94	92	91	81	83	85	70
				10	12		65
				Flow (GPM)			

Fluid Pressure PSI Back Pressure	1" Pump w/1" Shock Blocker					% Reduction In Pulsation	
	20	40	60	80	1	5	10
	90	99	85	85	80	75	70
					15	20	25
					Flow (GPM)		

1-1/2" Pump w/2" Shock Blocker		% Reduction In Pulsation
Fluid Pressure PSI Back Pressure	40 80	70
	60 89	70
	80 80	65
	100 80	70
	1 20 40 60 80	
	Flow (GPM)	

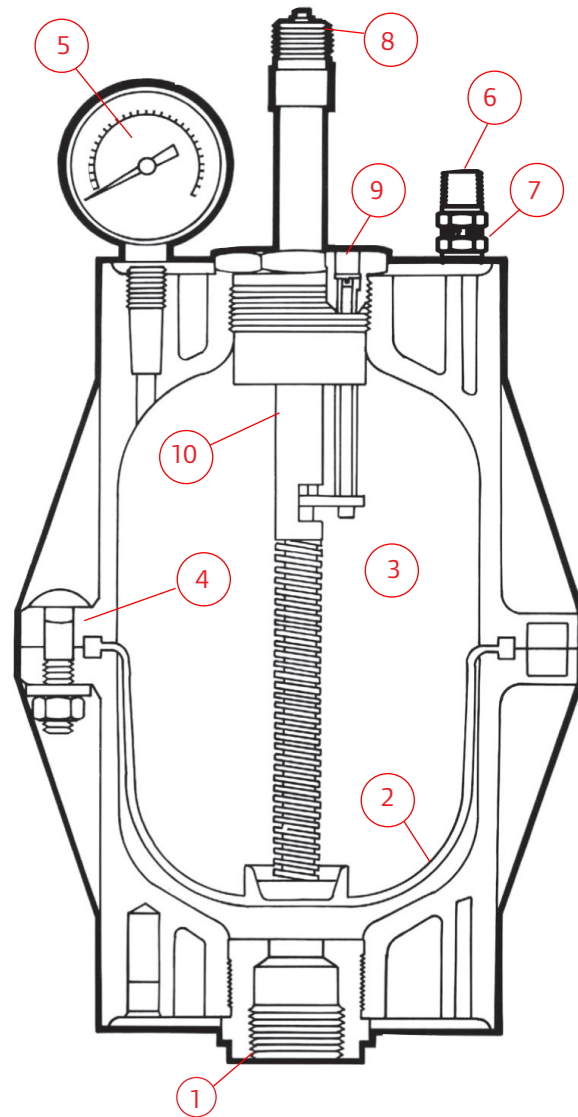
Fluid Pressure PSI Back Pressure	2" Pump w/2" Shock Blocker					% Reduction In Pulsation	
	40	60	80	100	3	30	70
	65	70	70	60	55	60	55
					100	130	
					Flow (GPM)		

Fluid Pressure PSI Back Pressure	3" Pump w/3" Shock Blocker					% Reduction In Pulsation	
	40	60	80	100	5	75	125
	60	65	60	60	50	55	50
					150	200	
					Flow (GPM)		

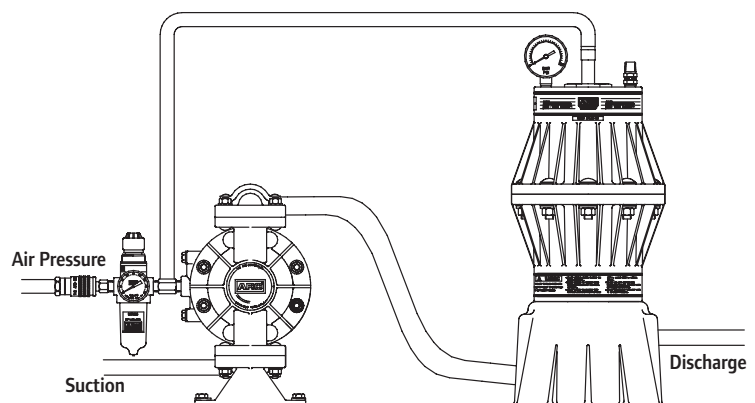
Design Features

1" NON-METALLIC SHOCK BLOCKER

- ① **Fracture-Resistant Fluid Inlet** minimizes the chance of cracking the main vessel's housing while threading.
- ② **Bladder** flexes as fluid pulses from the pump.
- ③ **Enlarged Air Chamber** provides superior smoothing of fluid pressure.
- ④ **Flange Bolt Fasteners** make assembly faster and easier and insures a leak-free seal.
- ⑤ **Pressure Gauge** (included) provides easy visibility for convenient process monitoring.
- ⑥ **Pressure Relief Valve** minimizes the possibility of vessel over-pressurization (above 125 PSI).
- ⑦ **Grounding Lug** provides convenient ground connection.
- ⑧ **Air-Tamer Auto-Adjust Assembly**
Unlike other air adjusters, Air-Tamer has no lip seals along its piston to wear out, and all moving parts are encased inside the dampener housing.
- ⑨ **Bleed Port** can be plumbed to drain off material in the event of bladder failure.
- ⑩ **Bladder Guard** prevents damage or rupture of the bladder.



Typical Installation Used with 1/2" & 1" Ported Diaphragm Pumps



1" Non-Metallic Shock Blocker

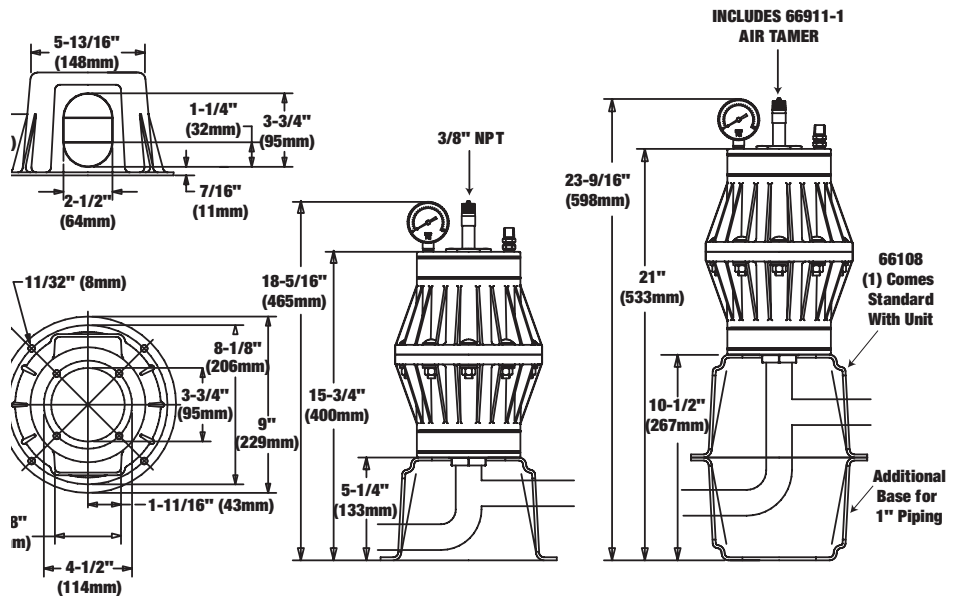


1" Shock Blocker

Specifications

Pulsation Dampener Type	Non-Metallic / Automatic
Material	See model description chart
Weight	Polypropylene 8.4 lbs (3.8 kgs) Conductive Acetal 8.6 lbs (3.9 kgs) Pure Kynar (PVDF) 9.0 lbs (4.1 kgs)
Material Inlet/Outlets	SB10X-AXX 1" - NPTF (Female) (Both are available) SB10X-BXX - 1" BSP (Female)
Air Inlet	Air Tamer is 3/8" NPTF (Male) (Standard)
Maximum Air Inlet Pressure	100 PSIG (6.9 bar)
Maximum Material Inlet Pressure	100 PSIG (6.9 bar)
Maximum Temperature Limits	Polypropylene 35° F - 100° F (+1.6° C - 37.7° C) Conductive Acetal 10° F - 180° F (-12° C - 82° C) Pure Kynar 10° F - 200° F (-12° C - 93° C)
Maximum Fluid Volume	57 In. ³ (931)

Dimensions



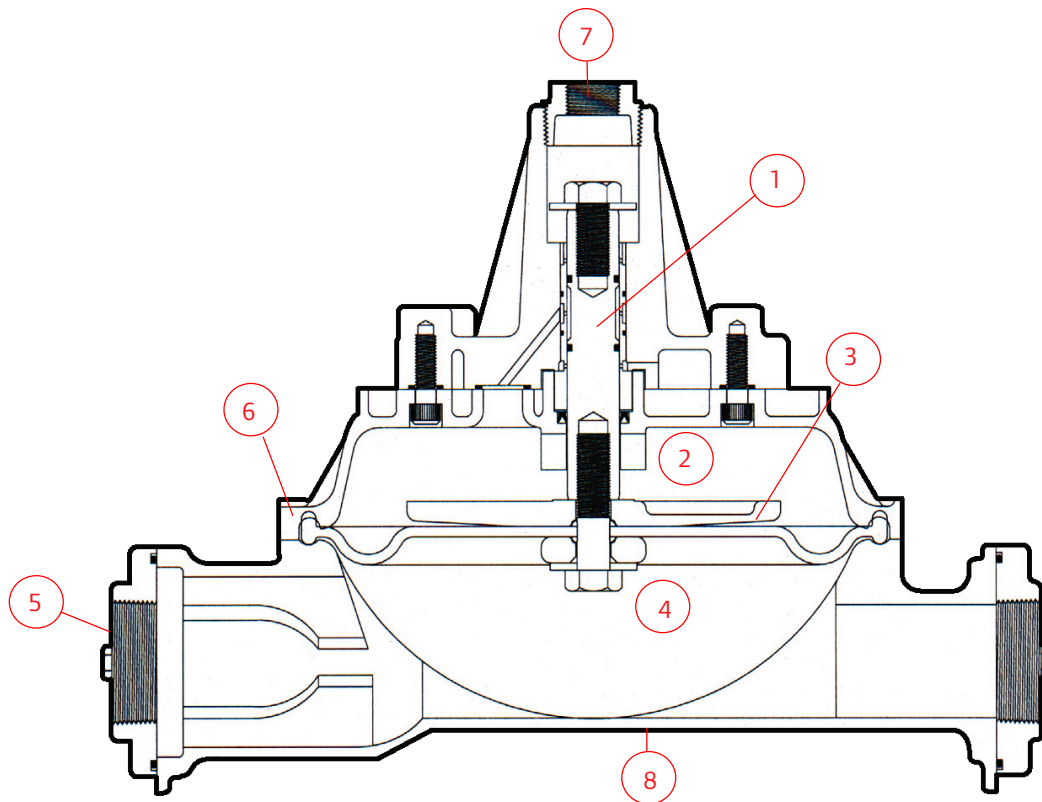
Ordering

Position	1	2	3		4	5	6		7
Example:	SB	10	X	-	X	X	X	-	X

Position 1 Model Series	Position 2 Size	Position 3 Air Body	Position 4 Thread	Position 5 Fluid Construction	Position 6 Hardware	Position 7 Diaphragm
SB- Shock Blocker	10 - 1"	P - Polypropylene K - Pure Kynar (PVDF) D - Conductive Acetal	A - NPT B - BSP	P - Polypropylene K - Pure Kynar (PVDF) D - Conductive Acetal	S - Stainless (304)	A - Santoprene C - Hytrel T - PTFE U - Urethane

Design Features

2" & 3" METALLIC SHOCK BLOCKER

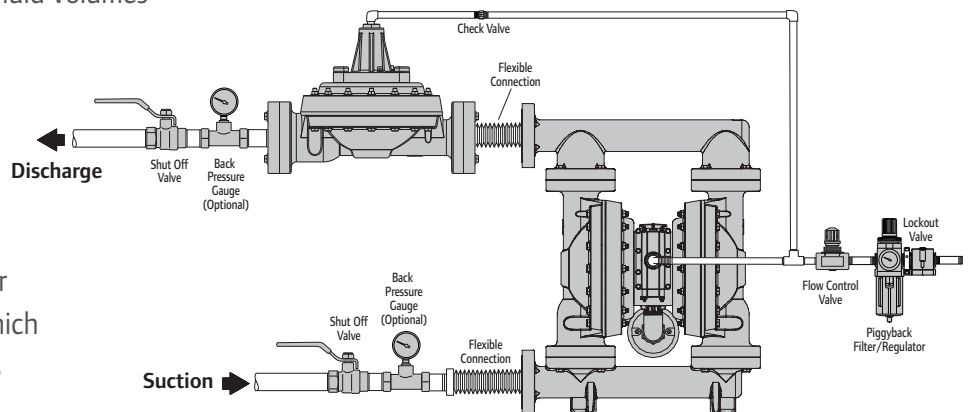


- ① **Auto-Adjust Valve** Similar to ARO's patented Air Tamer design; automatically adjusts to fluid pressure to reduce pulsation
- ② **Air Chamber** Large air chamber offers air support to the diaphragm during the pulsation process and smoothing of fluid pressure
- ③ **Diaphragm** flexes as fluid pulses from the pump
- ④ **Large Fluid Section** offers sensitivity for 2" and 3" diaphragm pump fluid volumes
- ⑤ **Fluid Inlet/Outlet Ports**
NPTF & BSPP internal pipe threads for 2" & 3",
ANSI/DIN Option for 2"
- ⑥ **Bolted Fasteners**
For leak-free integrity, similar design and characteristics which set ARO® Diaphragm Pumps apart from the competition

- ⑦ **Air Inlet** Will accept same air line pressure as diaphragm pump
- ⑧ **Part Interchangeability** Utilize parts from the 2" & 3" diaphragm pump

► **Typical Installation** SB20X use with 1-1/2" and 2" Diaphragm Pumps, SB30X use with 3" Metal Diaphragm Pumps

Proper support of piping and pulsation dampener is required.



2" & 3" Metallic Shock Blocker



Specifications

Pulsation Dampener Type

Metallic / Automatic

Material

See model description chart

Weight

SB20X Aluminum (fluid cap) 29 lbs (13.2 kgs)
 SB20X Cast Iron (fluid cap) 70 lbs (31.8 kgs)
 SB20X Stainless St. (fluid cap) 71 lbs (32.2 kgs)
 SB30X Aluminum (fluid cap) 41 lbs (18.6 kgs)
 SB30X Cast Iron (fluid cap) 94 lbs (42.6 kgs)
 SB30X Stainless St. (fluid cap) 96 lbs (43.5 kgs)

Material Inlet/Outlets

SB20X-AXX-X 2" -11-1/2 NPTF -1
 SB20X-BXX-X 2" -11 BS Rp
 SB30X-AXX-X 3" -8 NPTF -1
 SB30X-BXX-X 3" -11 BS Rp

Air Inlet

3/4" - 14 NPT (female)

Maximum Air Inlet Pressure

120 PSIG (8.3 bar)

Maximum Material Inlet Pressure

120 PSIG (8.3 bar)

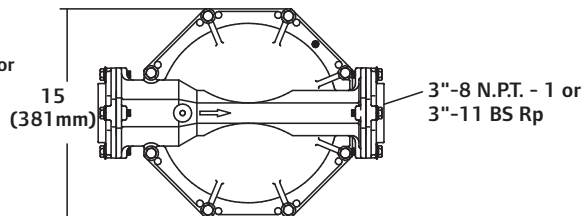
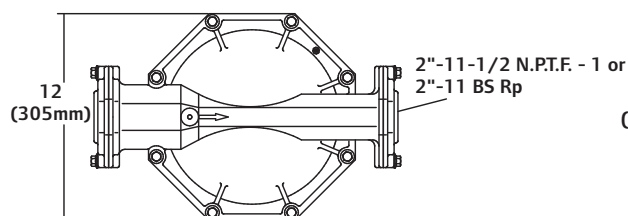
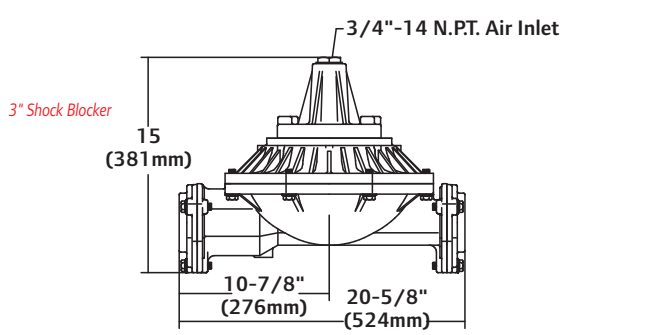
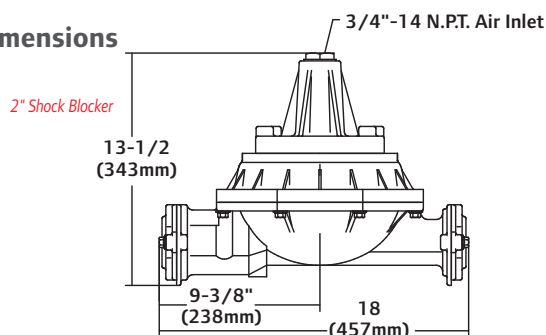
Maximum Temperature Limits

200° F (93° C)

Maximum Fluid Volume

SB20X 159 in.³ (2.61 lit.)
 SB30X 509 in.³ (3.84 lit.)

Dimensions



Ordering

Position	1	2	3		4	5	6		7
Example:	SB	XX	X	-	X	X	X	-	X

Position 1 Model Series	Position 2 Size	Position 3 Air Body	Position 4 Thread	Position 5 Fluid Construction	Position 6 Hardware	Position 7 Diaphragm
SB- Shock Blocker	20 - 2" 30 - 3"	A - Aluminum C - Cast Iron* S - Stainless Steel	A - NPT B - BSP	A - Aluminum C - Cast Iron S - Stainless Steel	S - Stainless (304) P - Plated Steel	A - Santoprene G - Nitrile T - PTFE V - Viton

* Available with 2" model only

2" Non-Metallic Shock Blocker

Automatically reduces the pressure fluctuation found in normal diaphragm pump operation and can help eliminate material foaming, hydraulic shock or material splashing.



Automatic Shock Blocker®

- **Automatic Air Adjustment** - compensates for fluctuations in fluid pressure without operator intervention.
- **Significant Pulsation Reduction** - Shock Blockers deliver an average 60% - 80% pulsation reduction in high back pressure applications.
- **Built for high-flow/aggressive fluid applications** - contains up to 0.9 Gal (3.38L) of fluid volume.
- **Broad Material Range for Compatibility**, Polypropylene fluid section with a choice of PTFE, Santoprene, Viton or Nitrile diaphragms for optimum fluid compatibility.
- **Perfect for Process Applications** - pulsation reduction in long piping runs help prevent costly fluid pipe and downstream valve damage.
- **Bolted construction** - for leak-free vessel integrity and a safer work-site.
- **Ultra-Rugged Construction for long service life**- both inside and out, the Shock Blockers are built tough to deliver worry-free, near pulse-free fluid handling.

Ordering

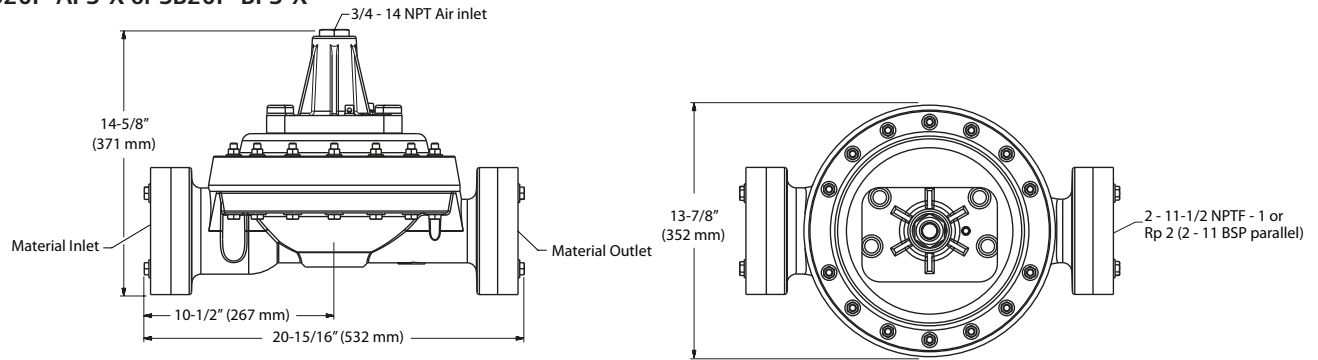
Position	1	2		3	4	5		6
Example:	SB20	P	-	X	P	S	-	X

Position 1 Model and Size	Position 2 Air Section	Position 3 Fluid Connection	Position 4 Fluid Section	Position 5 Hardware	Position 6 Diaphragm Material
SB20 - 2"	P - Polypropylene/ Aluminum R - Polypropylene/ Stainless Steel	A - 2-11-1/2 NPTF-1 B - Rp 2 (2-11 BSP, parallel) F - 2" ANSI/DIN Flange Inlet and Outlet K - 2" ANSI/DIN Flange Inlet/ NPTF Outlet L - 2" ANSI/DIN Flange Inlet/ BSPP Outlet	P - Polypropylene	S - Stainless Steel	A - Santoprene® G- Nitrile T - PTFE / Santoprene® V - Viton®

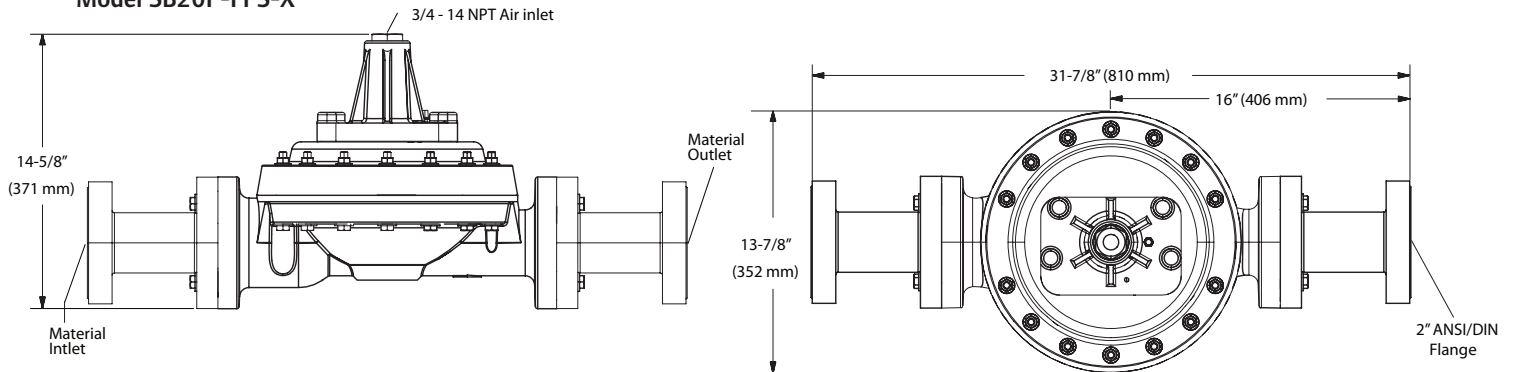
Viton® is a registered trademarks of the DuPont company. Santoprene® is a registered trademark of Monsanto Company, licensed to Advanced Elastomer Systems, L.P.

Dimensions *Dimensions shown are for reference only, they are displayed in inches and millimeters (mm).*

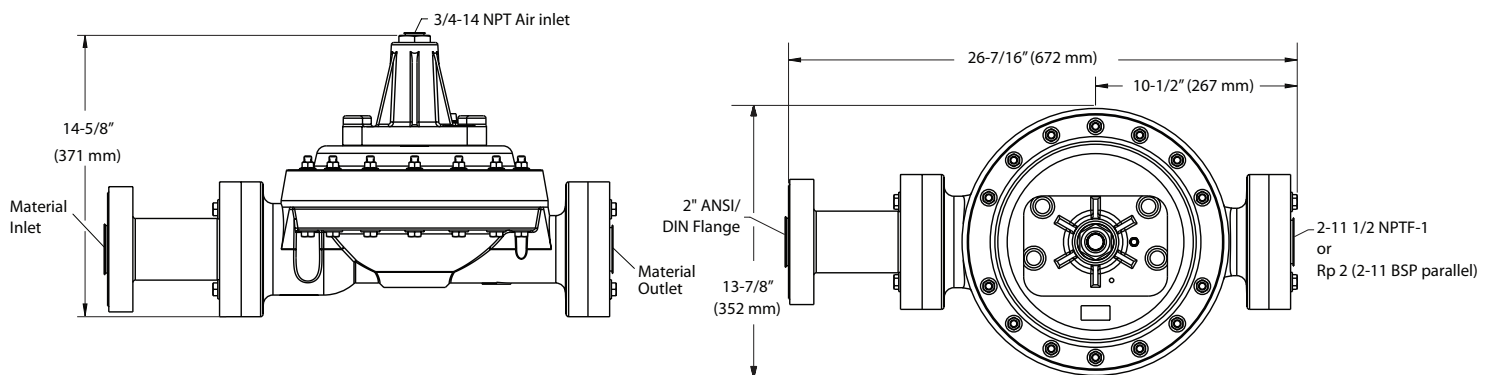
SB20P-APS-X or SB20P-BPS-X



Model SB20P-FPS-X



SB20P-KPS-X or SB20P-LPS-X



Accessories

Air Filter/Regulator

The ARO-FLO Series units extend the life of air operated equipment while reducing operating costs. These units efficiently remove solid particles from compressed air lines - making them the great choice for large flow applications.



P39224-614



P39124-600

Piggyback Filter/Regulator, Metal Bowl w/ Sight Glass, Auto Drain

Pump Size	NPT Model Number	Port Size	Max Inlet Pressure (psi)	Pressure Range (psi)	Max CFM	Micron Element	Size HxWxD (inches)
1/4" to 3/4"	P39124-624	1/4"	250	0-140	47	5	6.9 x 2.9 x 2.9
1"	P39224-614	1/4"	250	0-140	72	5	9.0 x 2.2 x 3.2
1-1/2"	P39344-614	1/2"	250	0-140	172	5	10.9 x 2.8 x 3.2
2"	P39354-614	3/4"	250	0-140	173	5	10.9 x 2.8 x 3.2
3"	P39454-614	3/4"	250	0-140	236	5	14.7 x 3.5 x 4.1

Piggyback Filter/Regulator, Poly Bowl w/Guard, Manual Drain

Pump Size	NPT Model Number	Port Size	Max Inlet Pressure (psi)	Pressure Range (psi)	Max CFM	Micron Element	Size HxWxD (inches)
1/4" to 3/4"	P39124-600	1/4"	150	0-140	47	5	6.2 x 2.9 x 2.9
1"	P39224-600	1/4"	150	0-140	72	5	8.1 x 2.2 x 3.2
1-1/2"	P39344-600	1/2"	150	0-140	172	5	10.0 x 2.8 x 3.2
2"	P39354-600	3/4"	150	0-140	173	5	10.9 x 2.8 x 3.2

Cautions of the Use of Polycarbonate Plastic Bowls - Use Only with Compressed Air. Filters and lubricators with polycarbonate plastic bowls are specifically designed for compressed air service, and their use with any other fluid (liquid or gas) is a misapplication. Avoid Harmful Substances. Some compressor oils, chemical cleaners, solvents, paints, and fumes will attack plastic bowls and can cause bowl failure. Do not use with or near these materials. Consult the factory with any questions.



Ingersoll Rand attests that ARO®-Flo Series of filters, regulators, lubricators (1000, 1500, 2000, 3000 Series) and select accessories are out of scope for ATEX Directive 94/9/EEC or 2014/34/EU. The products listed in IRITS-1215-197 certificate can be used in group II, category 2 environment; Gas and Dust with temperature a T6 (Ex II 2GD T6) if all conditions set up in the Instruction Manual are met. Instruction Manuals and certificate regarding ATEX Declaration can be found at AROZONE.COM

Air Control Actuation Valves

3-way valve controls air supply to pump. Activation starts pump, deactivation cuts off air supply to pump and exhausts air from motor, which prevents stalling.

MQ3728-120-A for 1/2" and 1" pumps,

H2545S-120-A for 1-1/2" pumps,

MQ3729-120-A for 2" and 3" pumps

24 VDC MQ3728-024-D for 1/2" and 1" pumps

H2545S-024-D for 1-1/2" pumps

MQ3729-024-D for 2" and 3" pumps



MQ3728-120-A used on 1/2" and 1" pumps

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About Ingersoll Rand

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