

# A.R.I. D-46



Waterworks

## Combination Air Valve for High Flow **PATENTED**

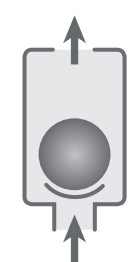
### Description

A.R.I. D-46 Series, is a full-bore Combination Air Valve. Installed on liquid transmission systems, the Air Valve is designed to improve hydraulic operation by protecting the pipeline, increasing pipeline efficiency and reducing energy requirements. The Air Valve provides high-capacity air release and intake.

### Installation

- Pump stations: after the pump and after the check valve
- Downstream (after) and upstream (before) of shut-off valves
- After deep-well pumps
- On long constant-sloped pipeline segments
- At peaks along the pipeline and at peaks relative to hydraulic gradient
- At end lines
- Before water meters
- On strainers and filters

### Operation



Air Discharge



Air Intake



Automatic  
Air Release




One Way out



Non Slam

## Features and Benefits

Reliable operation	reduces water hammer impact, saves energy and increases system efficiency
Dynamic design	high capacity air discharge
One-piece lightweight body	lessens the chance of leaks and vandalism
Screened threaded outlet	insect-proof, for vent pipe connection
All internal operating parts - specially selected materials	non-corrosive and durable
Automatic air release orifice	high flow air release, lessens obstruction by debris
Minimum down-time for maintenance	2" - all operating parts in one replaceable cartridge 3" - 6" - automatic air release component maintained within the air valve
Automatic air release Rolling seal	leak-free sealing over wide range of pressure differentials
Built-in drainage outlet	hygienic, drains surplus water above the sealing mechanism
ATEX certified air valves 	certification is conditional on the customer connecting the designated part on the product to a dedicated ground connection point.

## Technical Specifications

Size Range	2" - 6"
Sealing pressure range	1.45 - 250 psi Testing pressure: 1.5 times maximum working pressure
Temperature	Maximum working temperature: 140 F Maximum intermittent temperature: 194 F
Metal valve coating	Fusion bonded epoxy coating in compliance with standard DIN 30677-2

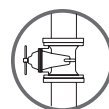
Upon ordering, please specify: model, size, working pressure, thread / flange standard and type of liquid

## Valve Selection Options

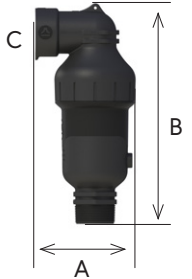
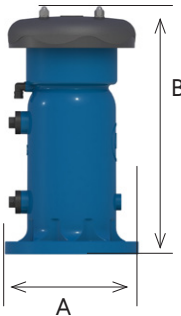
Valve connection	Threaded male BSPT/NPT (2"), Flanged ends to meet various requested standard (2"-6")
Standard materials	Reinforced nylon (For 2") , cast ductile iron body
Optional Add-on Components	One-way, Out-only attachment, allows for air discharge only, prevents air intake Adjustable Non-Slam disc, can also be optionally retrofitted on existing D-46 air valves.
Additional Product Configurations	SB Underground Air Valve System (for 2" & 3")
Models	Elbow Outlet Models, Screen Cover Models

The valve installed under the air valve must be fully open to prevent damage or malfunction and ensure performance within the specifications of the air valve.

For complete installation instructions, please refer to the IOM document.



## Dimensions and Weight

Size	Dimensions (Inch)		Connections	Weight (Lbs.)	Orifice Area (Sq.In)		
	max. A	B	C		A / V	Auto.	
Nylon Models							
2" (50mm) TRH	5.91	12.9	2" BSPT/ NPT F	3.08	3.29	0.023	
2" (50mm) FL	6.69	14.4	2" BSPT/ NPT F	4.18	3.29	0.023	
Metal Models - Elbow Outlet							
2" (50mm) FL	6.5	13.2	2" BSPT/ NPT F	16.1	3.04	0.023	
3" (80mm) FL	7.9	18.4	3" BSPT/ NPT F	19	7.79	0.021	
4" (100mm) FL	8.7	21.1	4" BSPT/ NPT F	40.1	12.17	0.021	
6" (150mm) FL	14.3	29.8	6" Grooved	96.1	28.29	0.023	
Metal Models - Screen Cover Outlet							
2" (50mm) FL	6.50	11.9	NA	14.96	3.0	0.023	
3" (80mm) FL	7.95	14.8	NA	28.16	7.8	0.021	
4" (100mm) FL	9.25	16.7	NA	37.4	12.2	0.021	
6" (150mm) FL	12.72	23.4	NA	94.6	28.3	0.023	

FL - Flanged THR - Threaded

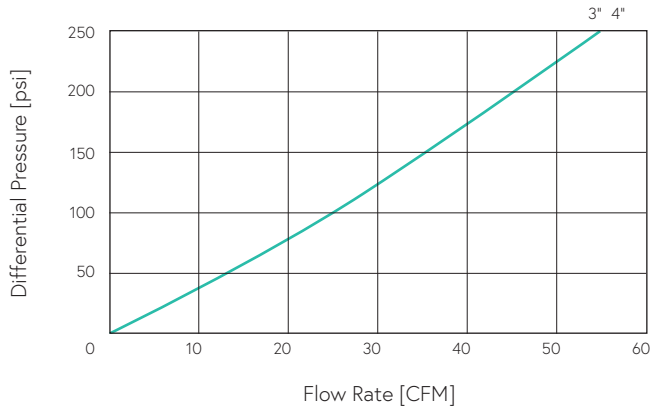
### NOTE

The cover assembly with the discharge elbow can be set in four directions. Dimension A in the picture and in the table shows the maximum product width. This width can be reduced by changing the cover direction.

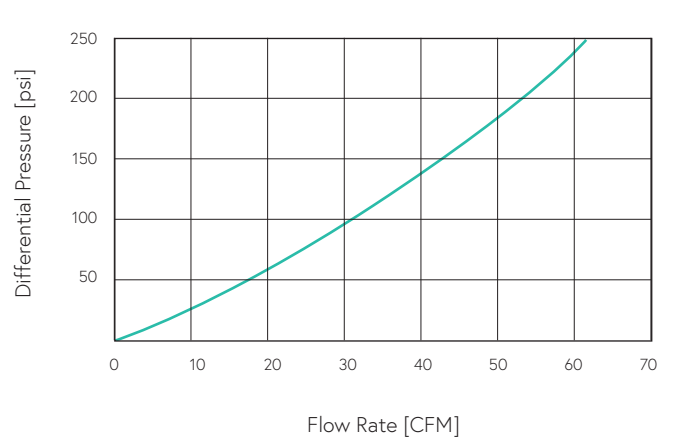
All product weights are approximate, due to the differences in flange standards, materials and variable accessories.

## Flow Charts

Automatic Air Release Flow Rate

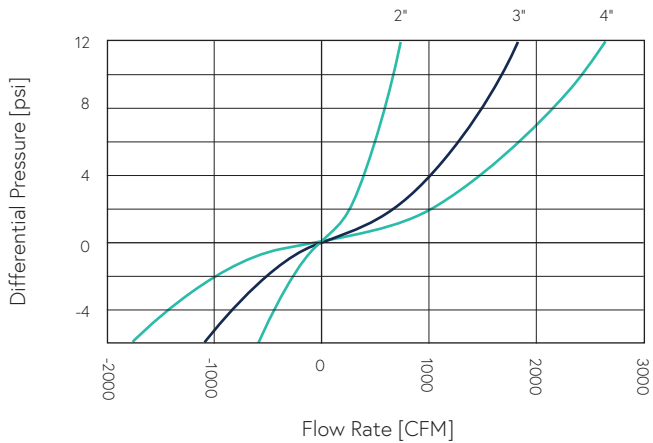


Automatic Air Release Flow Rate

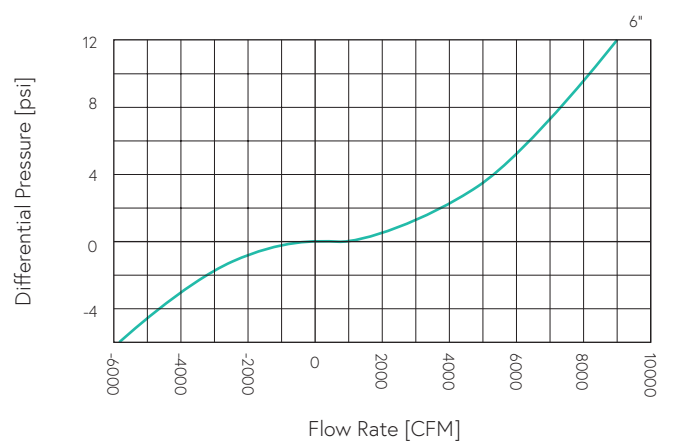


## Elbow Outlet Models

Air & Vacuum Flow Rate

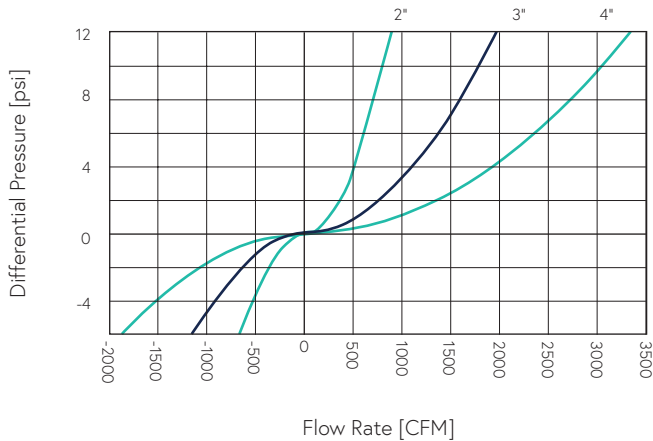


Air & Vacuum Flow Rate

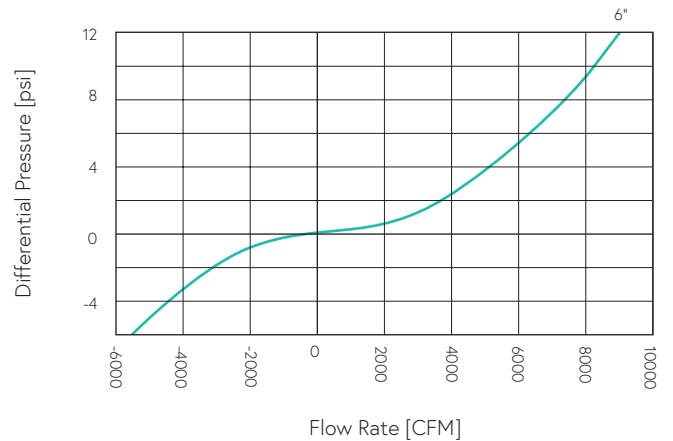


## Screen Cover Outlet Models

Air & Vacuum Flow Rate



Air & Vacuum Flow Rate



## Non-Slam Add-on Component Data Table for Variable Orifices

### Nylon Models

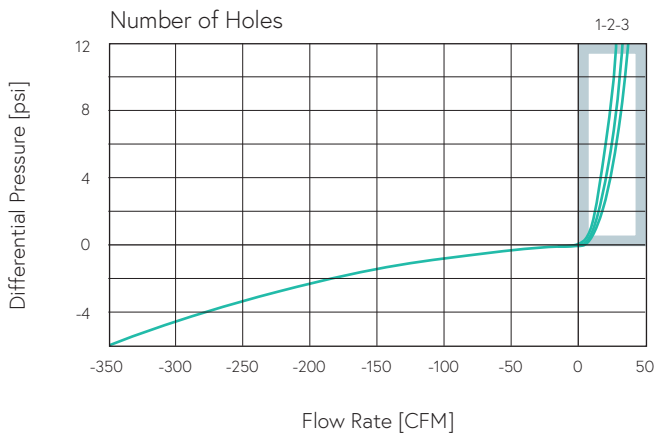
Size	Number of orifices	Discharge orifice (Inch)	Total NS area (Sq.In)	NS orifice (Inch)	Switching point (psi)	CFM (5.8 psi)
2" (50mm)	1 orifice	2"	0.024	0.18	Spring loaded normally closed	14
	2 orifices	2"	0.049	0.25		19
	3 orifices	2"	0.074	0.31		24

### Metal Models

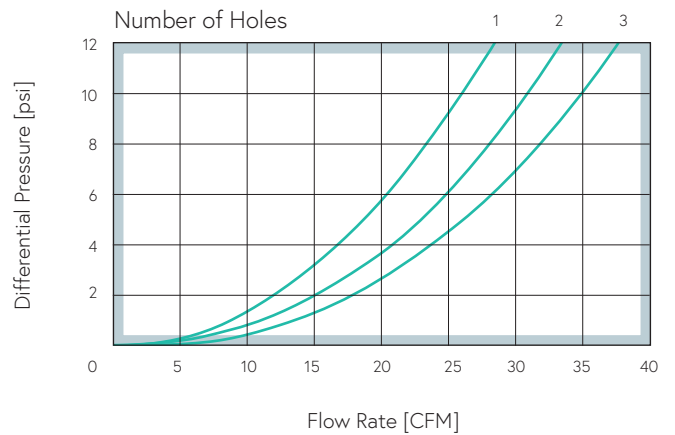
Size	Discharge orifice (Inch)	Total NS area (Sq.In)	NS orifice (Inch)	Switching point (psi)	CFM (5.8 psi)
2" (50mm)	2"	0.12	0.39	0.015	38
3" (80mm)	3"	0.29	0.59	0.06	106
4" (100mm)	4"	0.62	0.89	0.073	138
6" (150mm)	6"	1.37	1.34	0.44	427

## NS Nylon Model

Air & Vacuum Flow Rate

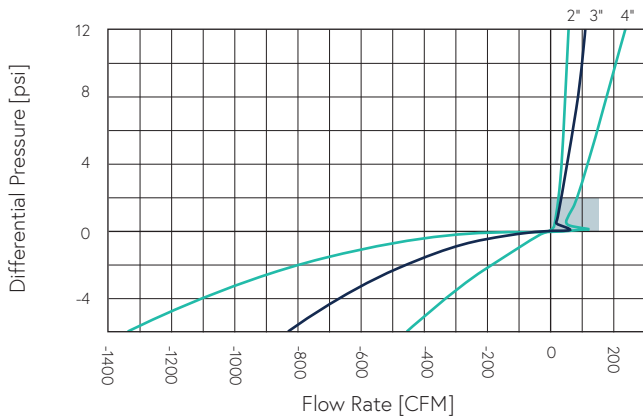


Air Flow Rate

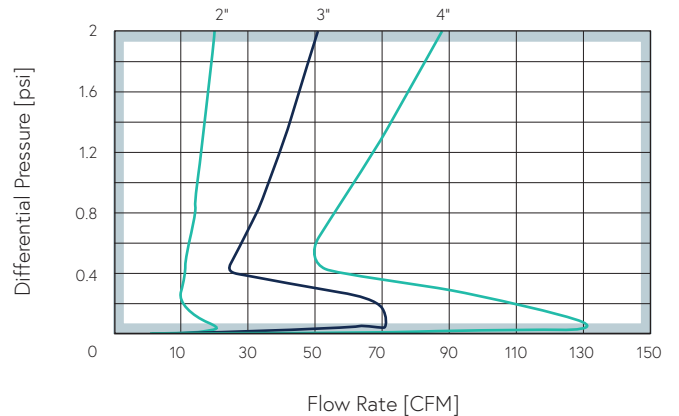


## NS Metal Models - Elbow Outlet

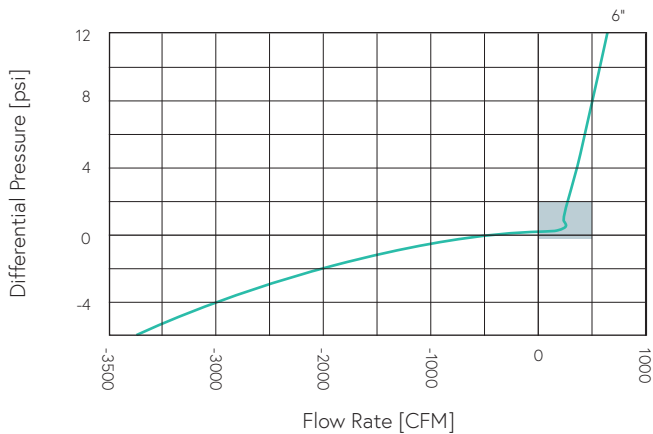
Air & Vacuum Flow Rate



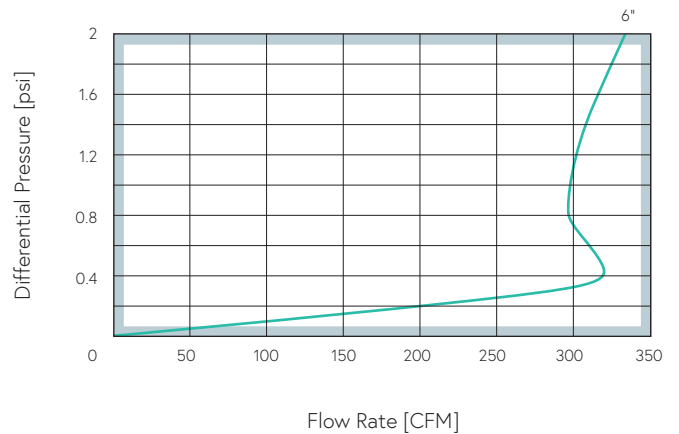
Air Discharge Switching Region



Air & Vacuum Flow Rate

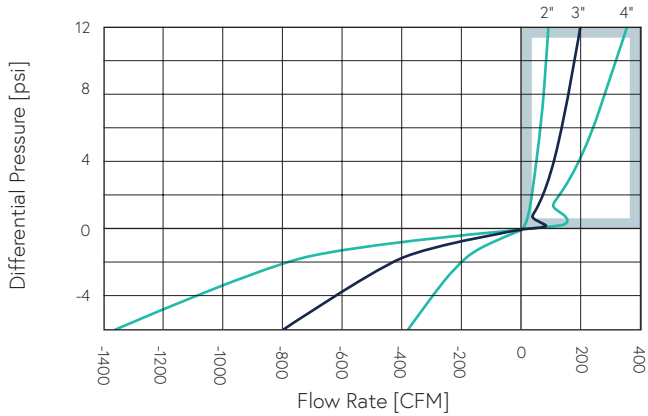


Air Discharge Switching Region

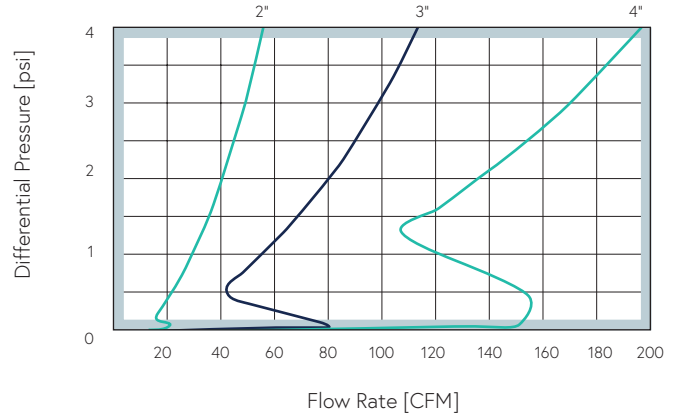


## NS Metal Models - Screen Cover Outlet

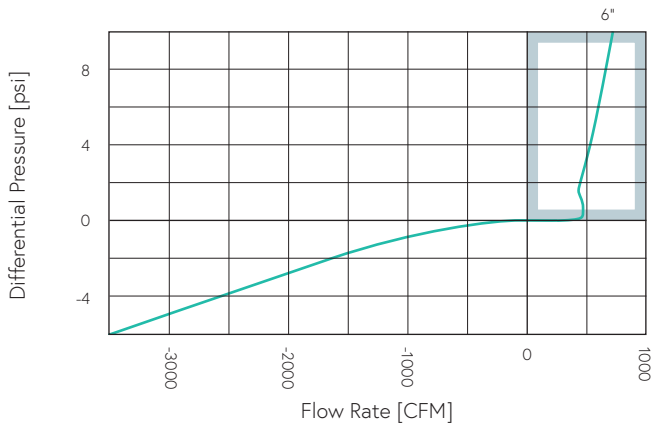
Air & Vacuum Flow Rate



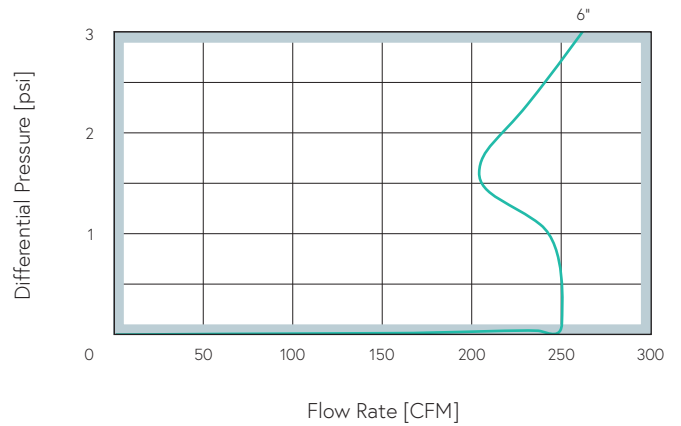
Air Discharge Switching Region



Air & Vacuum Flow Rate



Air Discharge Switching Region



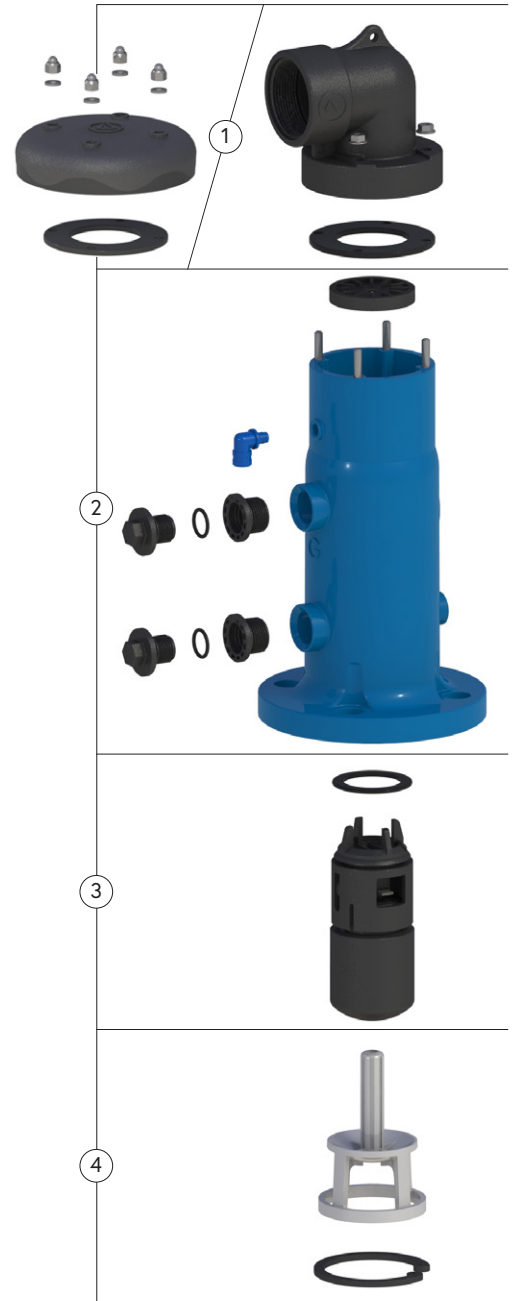
## Parts List and Specification | Nylon 2"

No.	Part	Material
1	Cover Assembly	
1a	Cover	Reinforced Nylon
1b	Optional - Non Slam	Reinforced Nylon
2	Air Release / Air & Vacuum Assembly	
2a	Air & Vacuum Seal	EPDM
2b	Air Release Cover	Reinforced Nylon
2c	Rolling Seal	EPDM
2d	Float	Polypropylene
2f	O-ring	NBR
3	Body Assembly	
3a	Body	Reinforced Nylon
3b	Pressure Release Plug 1/4"	Reinforced Nylon
4	Optional Flange Assembly	
4a	O-ring	NBR
4b	Flange	Reinforced Nylon + Stainless Steel 316



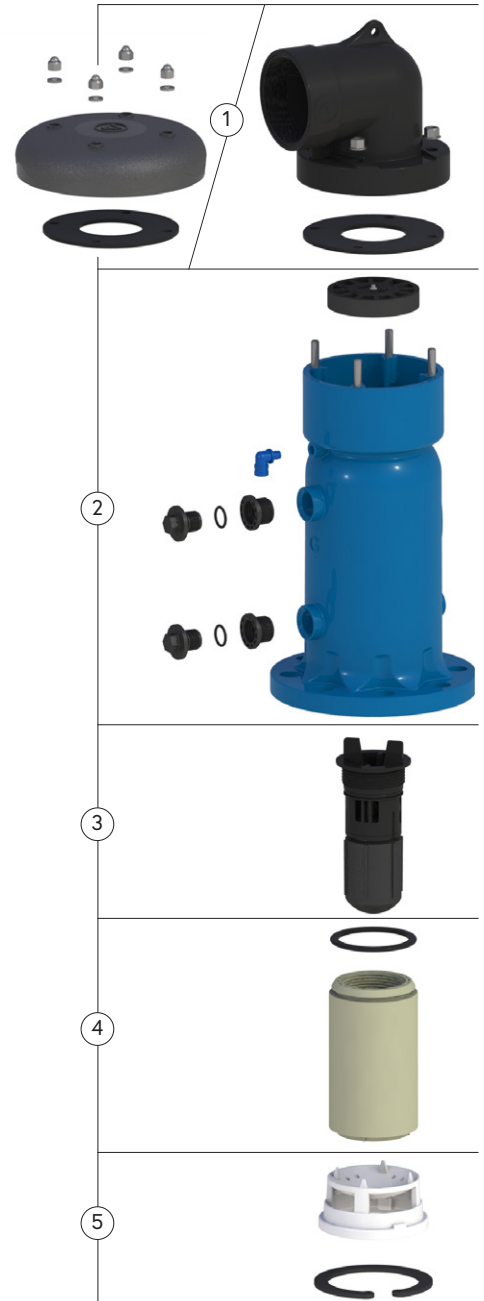
## Parts List and Specification | Metal 2"

Part	Material
1. Discharge Assembly	
1a. Discharge Elbow or Screen Cover	Polypropylene
1b. Seal	NBR
2. Body Assembly	
2a. Optional - Non Slam Disc	Reinforced Nylon
2b. Body	Ductile Iron
2c. Plugged Drain Outlet	Polypropylene
2d. Pressure Release Plug 1/2"	Reinforced Nylon
3. Air Release / Air & Vacuum Assembly	
3a. Air & Vacuum Seal	EPDM
3b. Air Release Cover	Acetal
3c. Rolling Seal	EPDM
3d. Float	Polypropylene
4. Seat Assembly	
4a. Float Seat	Acetal
4b. Snap Ring	Reinforced Nylon



## Parts List and Specification | Metal 3" 4"

Part	Material
1. Discharge Assembly	
1a. Discharge Elbow or Screen Cover	Polypropylene
1b. Seal	NBR
2. Body Assembly	
2a. Optional - Non Slam Disc	Reinforced Nylon
2b. Body	Ductile Iron
2c. Plugged Drain Outlet	Polypropylene
2d. Pressure Release Plug 1/2"	Reinforced Nylon
3. Air Release Assembly	
3a. Cover	Acetal
3b. O-ring	EPDM
3c. Rolling Seal	EPDM
3d. Air Release Float	Polypropylene
4. Air & Vacuum Assembly	
4a. Air & Vacuum Seal	EPDM
4b. Air & Vacuum Float	Polypropylene
5. Seat Assembly	
5a. Float Seat	Acetal
5b. Snap Ring	Reinforced Nylon



## Parts List and Specification | Metal 6"

Part	Material
1. Discharge Assembly	
1a. Discharge Elbow or Screen Cover	Polypropylene
1b. Lifting Ring	Stainless Steel 316
1c. Seal	NBR
1d. Optional for Elbow Model Flange + Locking Ring + O-ring	Polypropylene / Steel + Acetal+ EPDM
2. Body Assembly	
2a. Optional - Non Slam Disc	Reinforced Nylon
2b. Body	Ductile Iron
2c. Plugged Drain Outlet	Polypropylene
2d. Pressure Release Plug 1/2"	Reinforced Nylon
3. Air Release Assembly	
3a. Cover	Reinforced Nylon
3b. O-ring	EPDM
3c. Rolling Seal	NBR
3d. Air Release Float	Foamed Polypropylene
4. Air & Vacuum Assembly	
4a. Air & Vacuum Seal	EPDM
4b. Air & Vacuum Float	Reinforced Polypropylene
5. Seat Assembly	
5a. Float Seat	Acetal
5b. Snap Ring	Acetal

