

SUREFLOW® C70 COMBINATION AIR VALVE

DOUBLE ORIFICE WITH SURGE PROTECTION, 2-STEP FUNCTION AUTOMATIC ORIFICE, AIR ACCUMULATION AND VACUUM PREVENTION, LOW PRESSURE SEALING



FEATURES

- Straight flow body with nominal (equal) inlet and outlet size
- Aerodynamic full-body kinetic shield
- Innovative 2-step function, automatic orifice
- Optional outlets
- 2 service ports
- Drainage valve
- Compact, simple, robust and reliable structure
- Fully corrosion-resistant parts
- Surge Protection (optional)
- Inflow Prevention (optional)
- Insect Screen (optional)

DESCRIPTION

SUREFLOW C70 is a high quality combination air valve for a variety of water networks and operating conditions. It evacuates air during pipeline filling, allows efficient release of air pockets from pressurized pipes, and enables large volume air intake in the event of network draining. With its advanced aerodynamic design, double orifice and anti-slam/slow closing device, this valve provides excellent protection against air accumulation, vacuum formation and pressure surges, with improved sealing in low pressure conditions. The valve minimizes water spraying during air release.

APPLICATIONS

Pumping stations and deep well pumps – Air relief, surge protection and vacuum prevention.
Pipelines – Protection against air accumulation and vacuum formation at elevations, slope change points and at road/river crossings.
Water networks – Protection against vacuum formation, surge and water hammers at points likely to experience water column separation.

BENEFITS

Higher than usual air flow rates.
Low pressure sealing (0.1bar).
Minimizes water spraying during air release.
Lower maintenance and increased life span.
Australian Standards - AS4956 approved (Licence No SMKP25537 SAI Global) and AS/NZS 4020 approved.

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PRINCIPLES OF OPERATION

Pipeline Filling:

During the filling process of a pipeline, high air flow is forced out through the kinetic orifice of the air valve. Once water enters the valve's chamber, the float buoyed upwards causes the kinetic orifice to close. The unique aerodynamic structure of the valve body and float ensures that the float cannot be closed before water reaches the valve.

Pressurized Operation:

During pressurized operation of the pipeline, air accumulates in the upper part of the air valve chamber, causing the float to gravitate downwards. The automatic orifice opens in a two-step function, forming an air gap between the water level and the air release orifice and then releasing the accumulated air, while minimizing the spray effect. Once the air is discharged, the water level and float rise, causing the automatic orifice to close.

Pipeline Draining:

When a pipeline is drained, a negative differential pressure is created causing atmospheric air to push the float down. The kinetic orifice stays open and air enters the valve chamber, preventing vacuum formation in the pipe.

Surge Protection (anti-slam):

The anti-slam device is fitted to the air valve outlet. In the event of pressure surge, it partially closes the valve's outlet. The approaching water column decelerates due to the resistance of the rising air pressure in the valve. This is typically used on pump stations and at specific pipeline locations to minimise pressure surges during pipe filling or power failure conditions at the pump station.

Inflow Prevention:

The inflow prevention is a Normally Closed check device fitted on the valve's outlet and prevents flow of atmospheric air into the valve. Typically used to prime pump suction lines or on pipelines requiring only air discharge and no air re-entry such as siphons.

VALVE SELECTION

Body Material:

Standard – Cast ductile iron

Coating – Fusion bonded Epoxy, Blue

Inlet sizes:

DN50, DN80, DN100, DN150, DN200

2", 3", 4", 6", 8"

Connections:

Threaded Female BSPT – only for DN50 (2")

Flanged AS4087 - Class 16 / Class 35

Outlets:

Sideways DN50-80 (2-3") BSP threaded,

DN100-200 (4-8") Victualic connection

Additional features:

Surge Protection (C70-SP)

Inflow Prevention (C70-IP)

OPERATIONAL DATA

Pressure rating: PN16, PN35

Operating pressure range: 0.1 - 16 bar, 0.1-35 bar

Operating temperature: Water up to 60°C

ORIFICES SPECIFICATION

Size		Kinetic		Surge Protection	
DN	Inch	d[mm]	Ad[mm ²]	d[mm]	Ad[mm ²]
50	2"	50	1,963	5 x 4	79
80	3"	80	5,027	8 x 4	201
100	4"	100	7,854	10 x 4	314
150	6"	150	17,671	15 x 4	707
200	8"	200	31,416	20 x 4	1,257

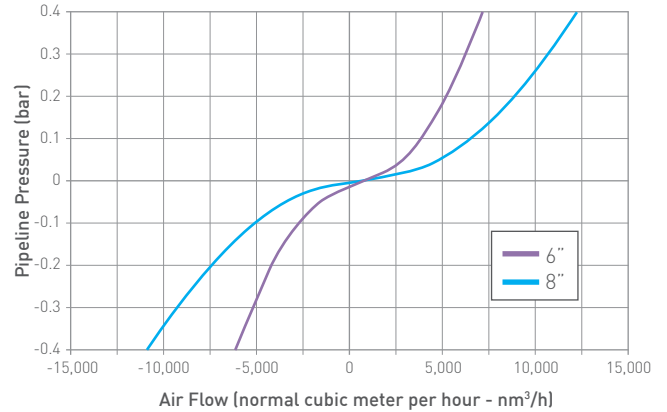
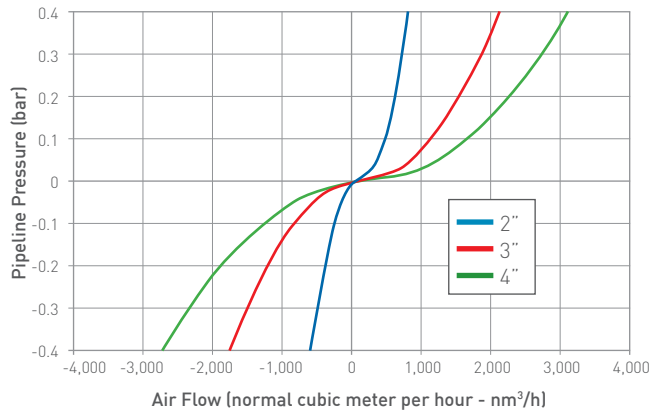
Size		Automatic	
DN	Inch	Ad[mm ²] 16 bar	Ad[mm ²] 35 bar
50	2"	1.1	0.4
80	3"	2.5	1.0
100	4"	3.1	1.3
150	6"	8.6	3.5
200	8"	22.1	8.0

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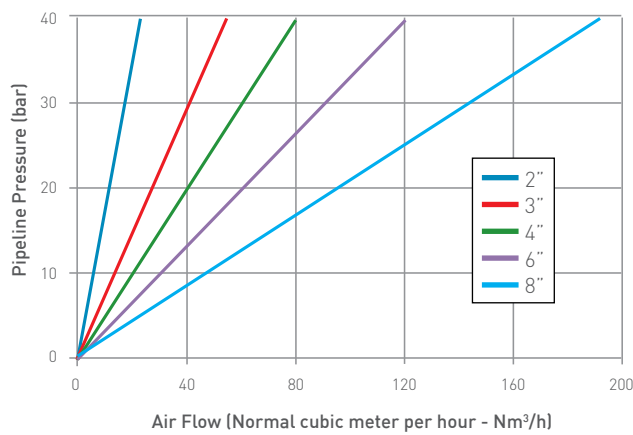
AIR FLOW PERFORMANCE CHARTS

Air Relief and Intake (Pipeline Filling, Draining & Vacuum Conditions) for Down Outlet

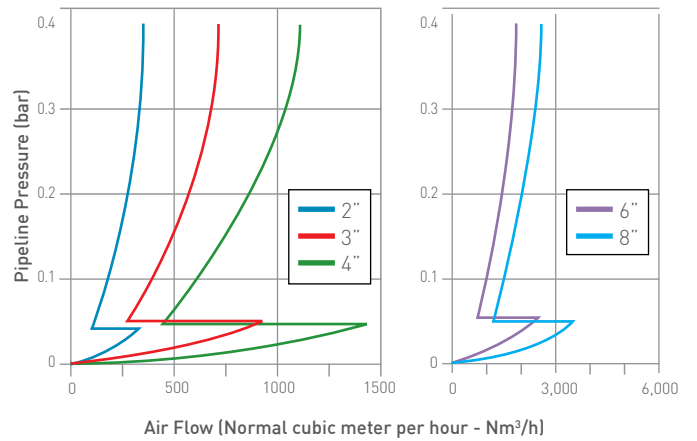


Air relief and intake charts are based on actual measurements, made during 2015 in Air Flow test bench, according to EN-1074/4 standard and refer to Side outlet.

Air Release (Pressurized Operation)

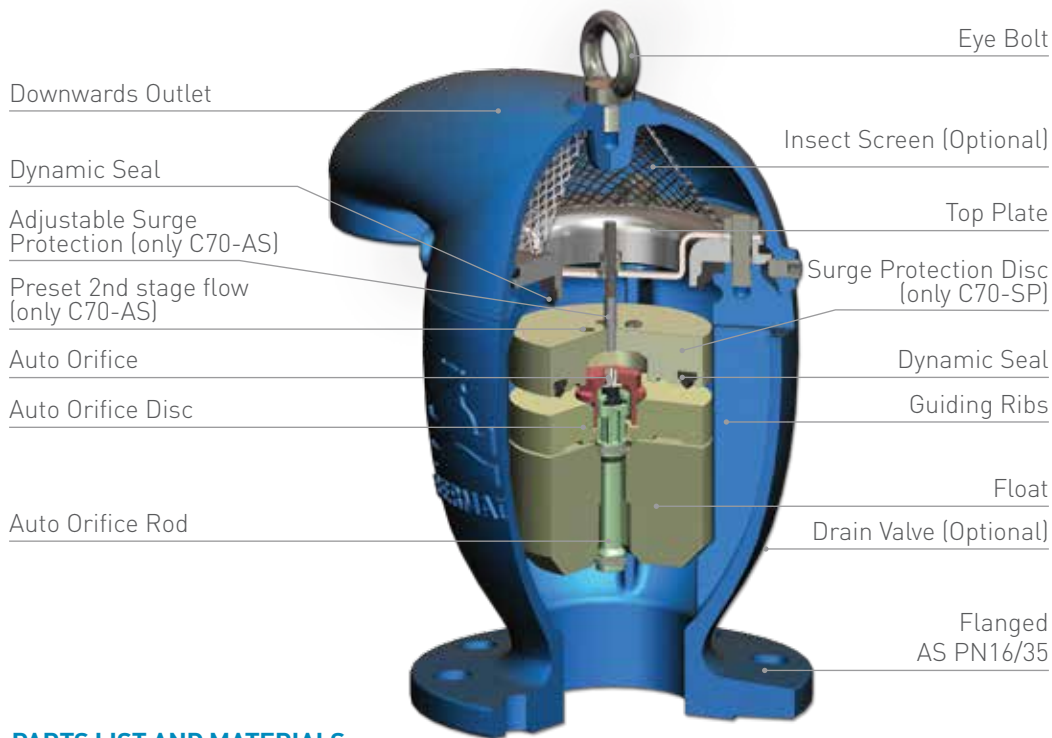


Air Relief with Surge Protection (C70-SP)



DIMENSIONS & WEIGHTS

Size			Side Outlet			Down Outlet			Mushroom Outlet		
DN	Inch	Connection	D (mm)	H (mm)	Weight (Kg)	D (mm)	H (mm)	Weight (Kg)	D (mm)	H (mm)	Weight (Kg)
50	2"	Threaded	181	284	8	225	282	8	175	286	8
50	2"	Flanged	187	302	10	232	300	11	175	286	10
80	3"	Flanged	245	356	17	311	356	17	229	327	16
100	4"	Flanged	283	410	22	371	410	23	272	380	22
150	6"	Flanged	368	571	50	493	569	53	381	572	51
200	8"	Flanged	475	770	121	661	770	125	506	709	120



Without Surge Protection (C70)



With Inflow Prevention (C70-IP)

PARTS LIST AND MATERIALS

	Description	Material	Standards/Remarks
1	Body-Flange/Theaded	Casted, Ductile Iron	ASTM A536 GR. 65-45-12 [EN1563 Grade 450-10]
2	Outlet side, down, mushroom	Casted, Ductile Iron	ASTM A536 GR. 65-45-12 [EN1563 Grade 450-10]
3	Top Plate Seal	EPDM (For Drinking Water)	EN 681-1
4	Surge Protection Disc	Polyproylene (For Drinking Water)	Only C70-SP
5	Surge Protection Disc Seal	EPDM (For Drinking Water)	Only C70-SP
6	Surge Protection Adjustable Shutter	Stainless Steel	ASTM A270 GR. 304 (only C70-AS)
7	Auto Orifice Disc	Polyproylene (For Drinking Water)	
8	Float	Polyproylene (For Drinking Water)	
9	Top Plate	Stainless Steel	ASTM A743 GR. CF8M
10	Insect Screen	Stainless Steel	ASTM A240 GR. 304
11	Check Disk (Inflow Prevention)	Stainless Steel + EPDM	Only at C70-IP
12	Cover O-Ring	EPDM (For Drinking Water)	EN 681-1
13	Auto Orifice	Stainless Steel (For Drinking Water)	ASTM A240 GR. 316
14	Auto Orifice O-Ring	EPDM (For Drinking Water)	EN 681-1
15	Auto Orifice Plug	Polyamide (For Drinking Water)	
16	Auto Orifice Plug O-Ring	EPDM (For Drinking Water)	EN 681-1
17	Auto Orifice Seal	EPDM (For Drinking Water)	EN 681-1
18	Auto Orifice Rod	Polyamide (For Drinking Water)	
19	Snap Ring	Polyamide (For Drinking Water)	
20	Cover Screw	Stainless Steel	ASTM A276 GR. 316 DIN 913 A2
21	Stud	Stainless Steel	ASTM A276 GR. 316 DIN 939 A4
22	Nut	Stainless Steel	ASTM A276 GR. 316 DIN 939 A4
23	Washer	Stainless Steel	ASTM A276 GR. 316 DIN 125 A2
24	Eye Bolt	Stainless Steel	ASTM A276 GR. 316 DIN580 A4
25	Drain Valve	Stainless Steel	ASTM A270 GRADE 316

VIADUX WATER NETWORK SYSTEMS

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