

COMBINATION AIR VALVE

Model C70

BERMAD 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 Surge Protection (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.

Typical 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.

Features & Benefits

- Straight flow body with nominal (equal) inlet and outlet size: Higher than usual flow rates.
- Aerodynamic full-body kinetic shield: Prevents premature closing without disturbing air intake or discharge.
- Dynamic sealing: Prevents leakage under low pressure conditions (1.5 psi; 0.1 bar).
- Minimizes water spraying during air release: Innovative 2-step function, automatic orifice (Patent Pending).
- Three optional outlets (sideways, downwards, circular-surround mushroom configuration) that can swivel 360°: Easy to install in a variety of site conditions.
- Compact, simple, robust and reliable structure with fully corrosion-resistant parts: Lower maintenance and increased life span.
- Designed in compliance with functional standards and water service standards.
- Factory approval and Quality Control: Performance and specification tested and measured with specialized test bench, including vacuum pressure conditions.





Additional Features & Accessories

- Built in or optional slow closing (anti slam) devices: Controlled air relief for preventing damage to the valve and the system:
 - Surge Protection - the kinetic orifice is partially closed during the second stage of the air relief (C70-SP).
 - Assisted Closing - the kinetic orifice is set to be partially closed (C70-AC) or fully closed during air relief. When the kinetic orifice is fully closed during air relief, the air valve performs as a Vacuum Breaker.
- Inflow Prevention: Prevents intake of atmospheric air in cases where this could lead to damaged pumps, required re-priming, or disruption of siphons; prevents intake of flood water or contaminated water into potable water networks (C70-IP).
- Service Port fitted with 1/4"; DN6 plug (codes P, U)
- Drainage Valve (code Z)
- Insect Screen (code S)

Materials

- Body and Cover:
 - Cast Ductile Iron (C70-C), for 2-10"; DN50-250
 - Stainless Steel (C70-N), for 2-6"; DN50-150
 - Cast Steel / WCB (C70-S), for 2-6"; DN50-150
 - Polyethylene Mushroom Cover (C70-J) for 2-8"; DN50-200
- Coating: Fusion Bonded Epoxy, Blue
- Top Plate: Stainless Steel, Ductile Iron
- Float Assembly: Polypropylene, Glass-reinforced Nylon
- Automatic Orifice: Stainless Steel
- Elastomers: EPDM

Operational Data

- Pressure Rating: 230 psi; ISO PN16, 360 psi; ISO PN25, 580 psi; ISO PN40
- Minimum operating pressure: 1.5 psi; 0.1 bar
- Maximum operating pressure: 230 psi; 16 bar, 360 psi; 25 bar, 580 psi; 40 bar
- Media and operating temperature: Water, 33-140°F; 1-60°C

Valve Selection

	2"; DN50	3"; DN80	4-6"; DN100-150	8"; DN200	10"; DN250
Body construction	Ductile iron, stainless steel, cast steel (WCB)			Ductile iron	
inlet connection type	Threaded (female), flanged	Flanged			
Outlets	Down, side, mushroom				Mushroom
Connection to drainage pipeline	Side outlet (female threaded)		Side outlet (grooved)		-
Additional Features	SP, AC, IP (IP with side outlet only)			SP, AC	SP
Optional Accessories	Insect screen (down or side outlet only), 90-degree elbow (threaded), service port, drainage needle valve		Insect screen (down or side outlet only), service port, drainage needle valve		

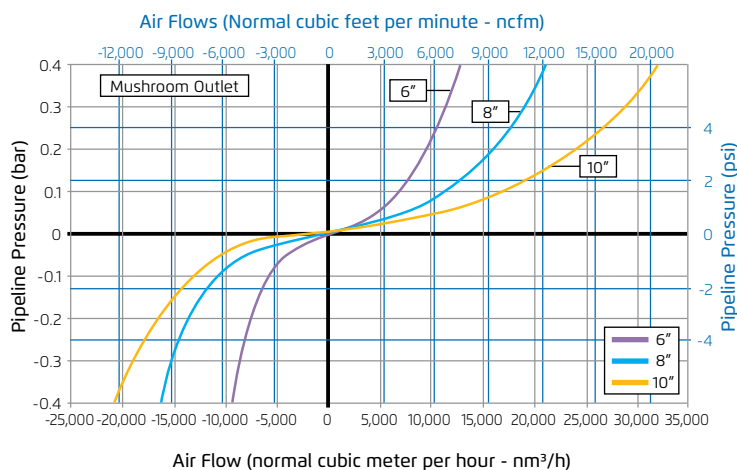
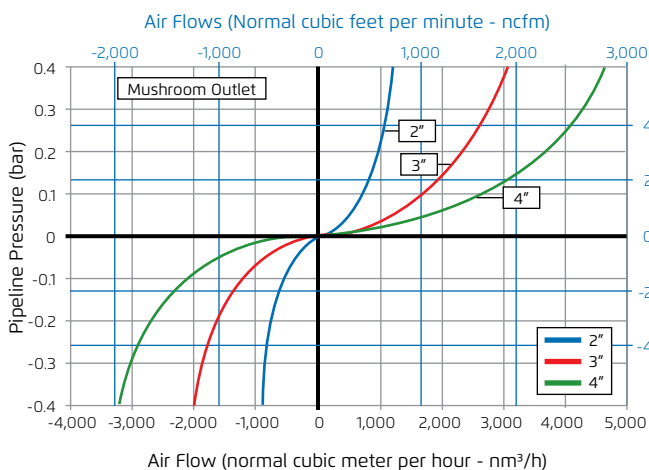
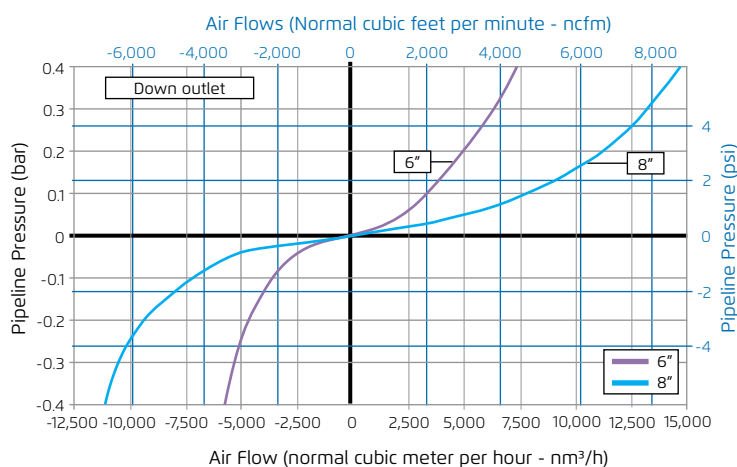
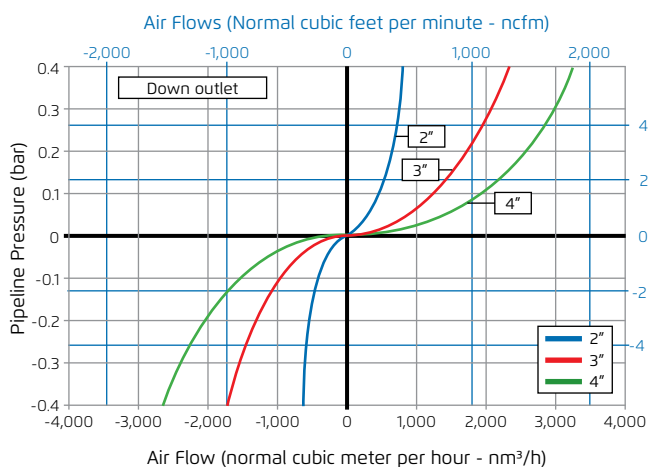


Orifice Specifications

Inlet Size	Automatic Orifice Area			Kinetic Orifice		Surge Protection		
	230 psi PN16	360 psi PN25	580 psi PN40	Diameter	Area	Number of holes	Hole Diameter	Total Area
	Sq inch mm	Sq inch mm	Sq inch mm	inch mm	Sq inch mm		inch mm	Sq inch mm
2" DN50	0.002 1.1	0.001 0.6	0.001 0.4	2.0 50	3.142 1,963	4	0.197 5	0.122 79
3" DN80	0.004 2.5	0.002 1.5	0.002 1	3.0 80	7.069 5,027	4	0.315 8	0.312 201
4" DN100	0.005 3.1	0.003 2	0.002 1.3	4.0 100	12.566 7,854	4	0.394 10	0.487 314
6" DN150	0.014 9.1	0.009 5.7	0.005 3.5	6.0 150	28.274 17,671	4	0.591 15	1.096 707
8" DN200	0.034 22.1	0.022 14.5	0.012 8	8.0 200	50.265 31,416	4	0.787 20	1.948 1,257
10" DN250	0.044 28.2	0.030 19.6	- -	10.0 250	78.540 49,087	4	0.866 22	2.357 1,521

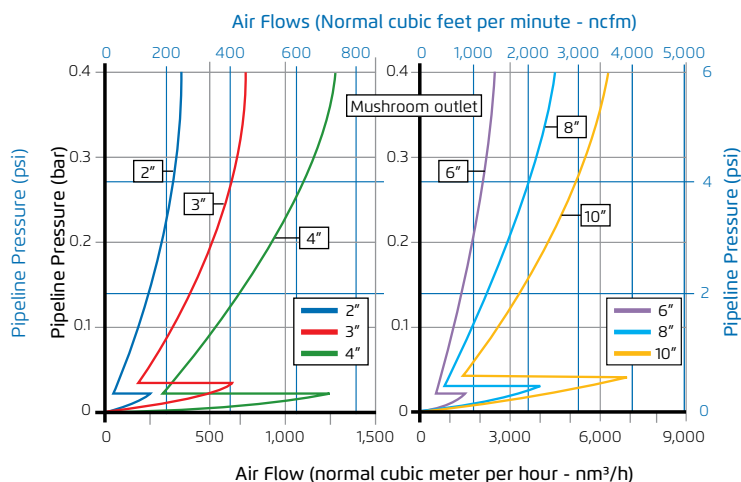
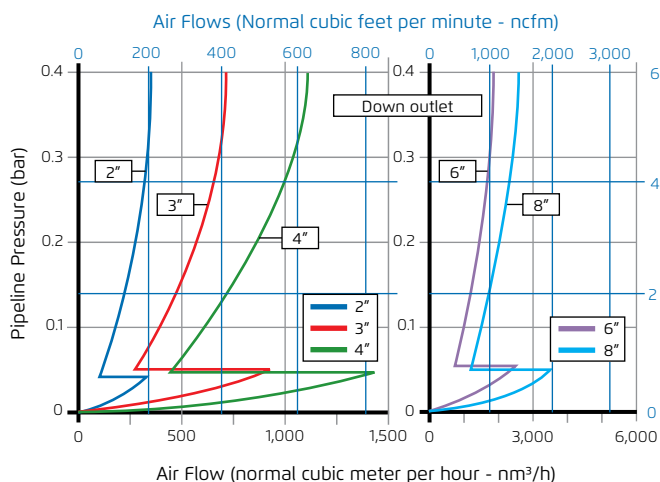
Air Flow Performance Charts

Air Relief and Intake (Pipeline Filling, Draining and Vacuum Conditions)

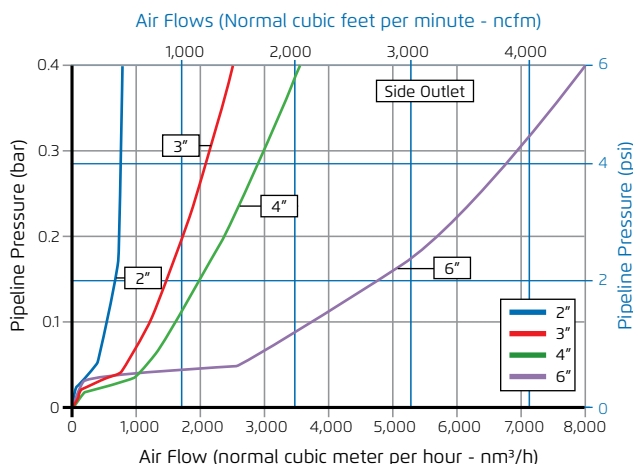




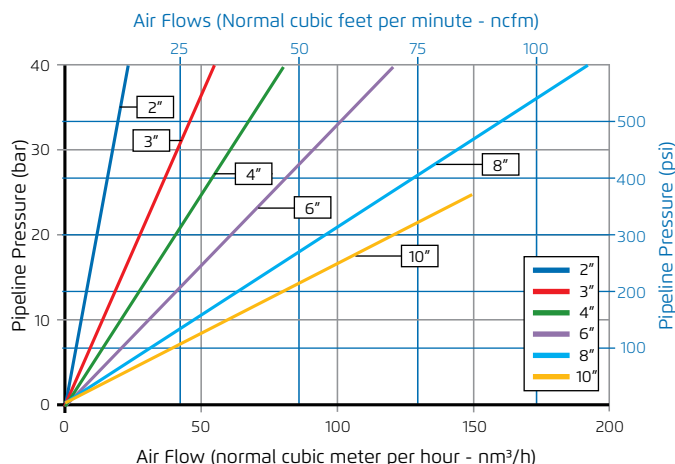
Air Relief with Surge Protection (Pipeline Filling)



Air Relief with Inflow Prevention (Pipeline Filling)



Air Release (Pressurized Operation)



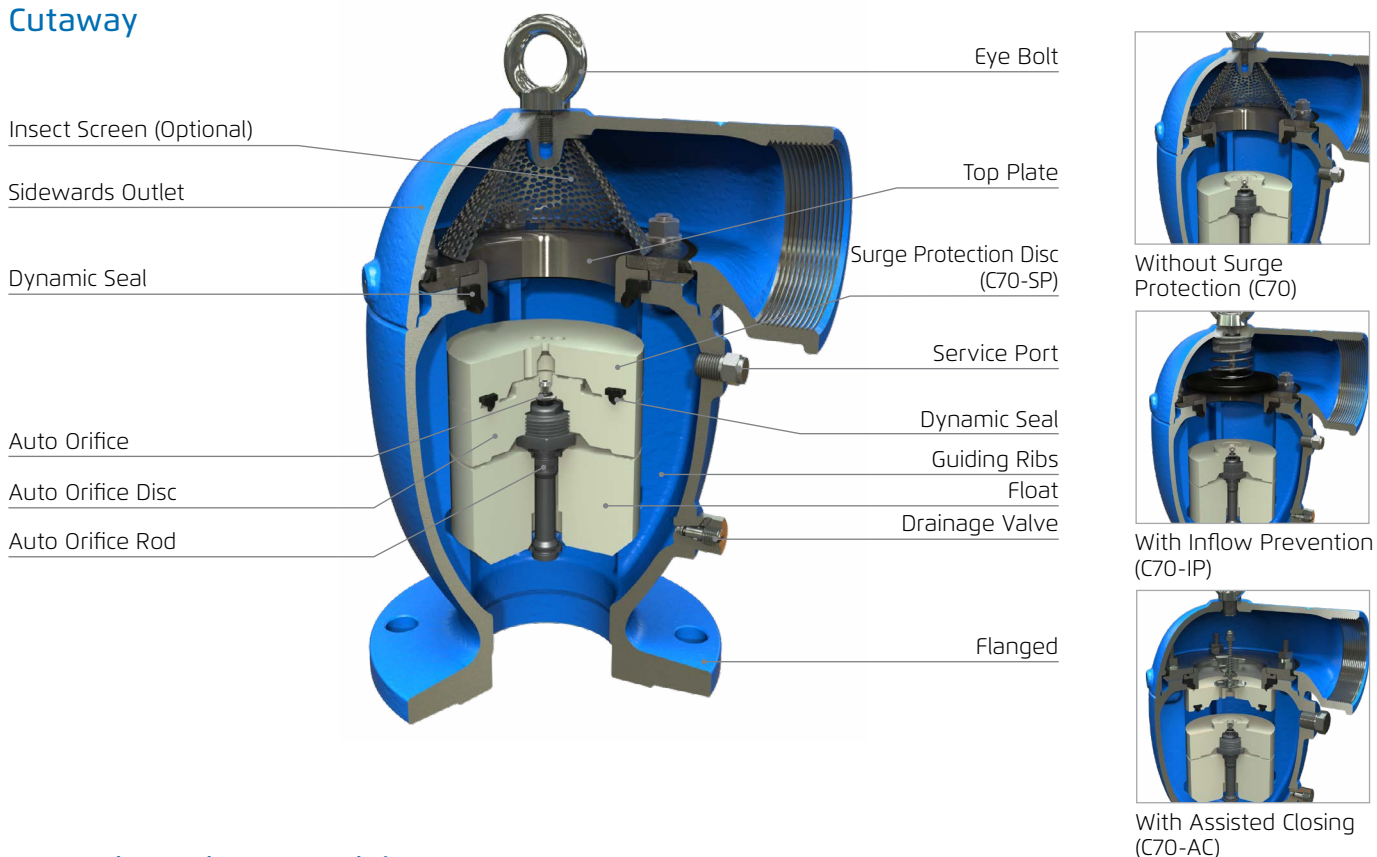
For higher automatic air release capacity, Please consult with BERMAD.

Data for C70 with Surge Protection Features

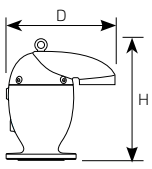
Inlet Size	C70-SP Switching Value			C70-SP/AC Air relief at 6 psi; 0.4 bar		
	Mushroom	Side	Down	Mushroom	Side	Down
inch	psi	psi	psi	ncfm	ncfm	ncfm
mm	bar	bar	bar	nm³/h	nm³/h	nm³/h
2"	0.29	0.57	0.68	239	200	200
DN50	0.02	0.04	0.05	420	350	350
3"	0.44	0.78	0.88	450	399	399
DN80	0.03	0.05	0.06	790	700	700
4"	0.29	0.71	0.80	730	627	627
DN100	0.02	0.05	0.06	1,280	1,100	1,100
6"	0.29	0.64	0.83	1,402	958	958
DN150	0.02	0.04	0.06	2,460	1,680	1,680
8"	0.36	0.73	0.73	2,565	1,471	1,471
DN200	0.03	0.05	0.05	4,500	2,580	2,580
10"	0.41	-	-	3,578	-	-
DN250	0.03	-	-	6,278	-	-

Air relief and intake charts for inlet sizes 2-8"; DN50-200 are based on actual measurements, measured during 2014-2015 in Bermad Air Flow test bench, according to EN-1074/4 standard and recognized by AS-4598 (2008) standard. For Side outlet air flow performance, please consult with BERMAD. Use Bermad Air software for optimized Sizing & Positioning of Air Valves

Cutaway



C70 - Dimensions & Weights **

													
Inlet Size	Connection	Side Ductile Outlet			Down Ductile Outlet			Mushroom Ductile Outlet			Mushroom PE outlet		
		Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight
Inch	---	inch	inch	lbs	inch	inch	lbs	inch	inch	lbs	inch	inch	lbs
mm	---	mm	mm	Kg	mm	mm	Kg	mm	mm	Kg	mm	mm	Kg
2"	Threaded	7.362	11.575	17.7	9.134	11.575	18.850	6.890	10.945	17.8	7.480	9.252	13.8
DN50		187	294	8.1	232	294	9	175	278	8.1	190	235	6.3
2"	Flanged	7.362	12.205	24.6	9.134	12.205	25.684	6.890	11.535	24.6	7.480	9.843	21.8
DN50		187	310	11.2	232	310	12	175	293	11.2	190	250	9.9
3"	Flanged	9.843	14.016	45.1	12.402	14.016	45.878	8.661	13.228	45.1	9.252	12.008	40.1
DN80		250	356	20.5	315	356	21	220	336	20.5	235	305	18.2
4"	Flanged	11.339	16.260	64.6	14.882	16.260	67.263	10.236	14.961	65.5	10.827	13.780	58.0
DN100		288	413	29.3	378	413	31	260	380	29.7	275	350	26.3
6"	Flanged	15.512	22.441	138.4	20.315	22.441	145.483	14.173	20.551	139.8	14.961	18.504	121.9
DN150		394	570	62.8	516	570	66	360	522	63.4	380	470	55.3
8"	Flanged	20.394	30.315	293.2	26.378	30.315	301.041	18.583	28.189	289.6	20.000	25.591	238.2
DN200		518	770	133.0	670	770	137	472	716	131.4	508	650	108.1
10"	Flanged	---	---	---	---	---	---	22.441	32.480	469.2	---	---	---
DN250		---	---	---	---	---	---	570	825	212.8	---	---	---

** Dimension and weight may vary based on the final configuration. Please contact BERMAD.