COMBINATION AIR VALVE

Model C70-C

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.

Features & Benefits

- Straight flow body with nominal (equal) inlet and outlet size: Higher than usual flow rates.
- 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 (Patented).
- Three optional outlets (sideways, downwards, circular surround mushroom configuration) that can swivel 360°: Easy to install in a variety of site conditions.
- Compact, simple and robust structure with fully corrosion resistant internal parts: Lower maintenance and increased life span.
- Certified to functional standards: WRAS (UK), EN-1074/4 (Europe), AENOR (Spain), SAI AS4956 (Australia), WSAA (Australia), WSAA (Australia), PUB SS 375 (Singapore).
- Designed in compliance with AWWA C512 (USA).
- Certified to drinking water standards: WRAS (UK), ACS (France), NSF-ANSI-CAN 61 and NSF-ANSI 372 (USA), SAI AS4020 (Australia), PUB SS 375 and SS 270 (Singapore).
- Factory approval and Quality Control: Performance and specification tested and measured with specialized test bench, including vacuum pressure conditions.

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 road / river crossings.
- Water networks: Protection against vacuum formation, surge and water hammers at points likely to experience water column separation.

Additional Features & Accessories

- Surge Protection (code SP): the kinetic orifice is partially closed during the second stage of the air relief, preventing damage to the air valve and the system.
- Assisted Closing (code AC): the kinetic orifice is set to be partially closed during air relief.
- Inflow Prevention (code IP): prevents intake of atmospheric air, when 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.
- Service ports (codes P, U) fitted with ¼"; DN6 plug for pressure gauge connection, check point or test drain for air valve function.
- Drainage Valve (code Z).
- Insect Screen (code S).



C70 Mushroom Outlet



C70 Down Outlet



C70 Side Outlet

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Inlet and Outlet Connections

- Inlets: Female threaded 2"; DN50, flanged 2-10"; DN50-250
- Outlets:
  - Downwards, 2-8", DN50-200 without a connection to drainage pipeline
  - Sideways, female threaded 2-3"; DN50-80, grooved 4-8", DN100-200. Optional addition of extension with 90 degrees for 2-3"; DN50-80
  - Mushroom, 2-10", DN50-250, Does not comply with additional features of AC and IP

Materials

- Body: Ductile Iron
- Kinetic Orifice (Top plate): Stainless Steel, Ductile Iron
- Automatic Orifice: Stainless Steel
- Float: Polypropylene, Glass-reinforced Nylon
- Elastomers: EPDM
- Coating: Fusion Bonded Epoxy

Operational Data

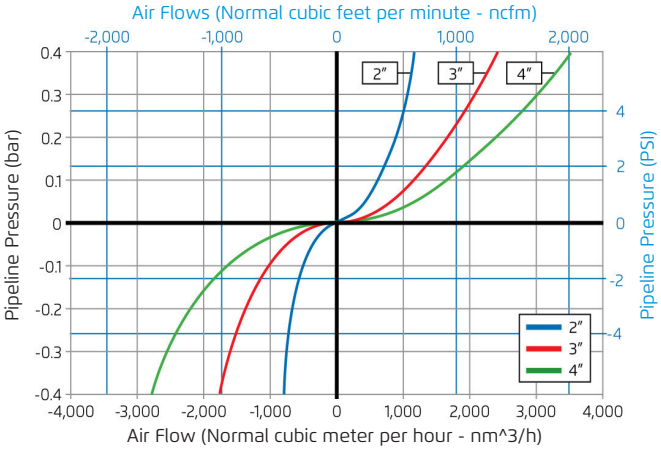
- Pressure Rating: ISO PN16, ISO PN25, ISO PN40
- Minimum operating pressure: 0.1 bar
- Maximum operating pressure: 16 bar, 25 bar, 40 bar
- Media and operating temperature: 1-60°C

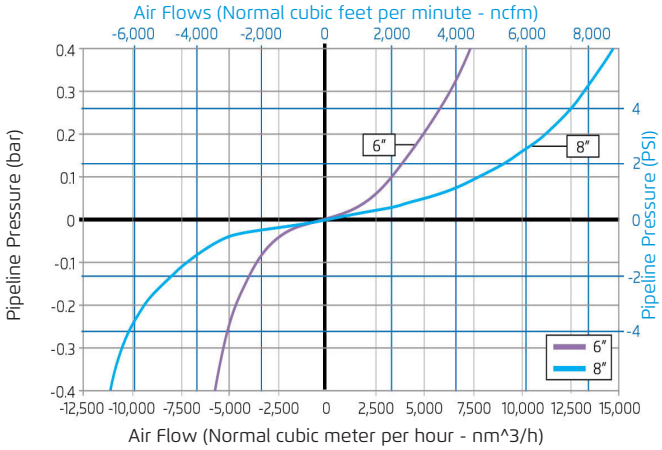
Orifice Specifications

Inlet Sizes	Automatic Orifice Area			Kinetic Orifice		Surge Protection		
	PN16	PN25	PN40	Diameter	Area	Number of holes	Hole Diameter	Total Area
Inch; mm	Sq mm	Sq mm	Sq mm	mm	Sq mm	--	mm	Sq mm
2"; DN50	1.1	0.6	0.4	50	1,936	4	5	79
3"; DN80	2.5	1.5	1	80	5,027	4	8	201
4"; DN100	3.1	2	1.3	100	7,854	4	10	314
6"; DN150	9.1	5.7	3.5	150	17,671	4	15	707
8"; DN200	22.1	14.5	8	200	31,416	4	20	1,257
10"; DN250	28.2	19.6	-	250	49,087	4	22	1,521

Air Flow Performance Charts

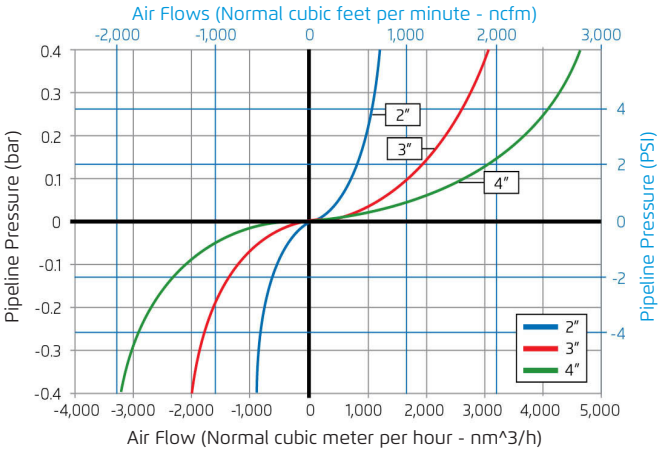
Air Relief and Intake - Down or Side outlet (Pipeline Filling, Draining and Vacuum Conditions)

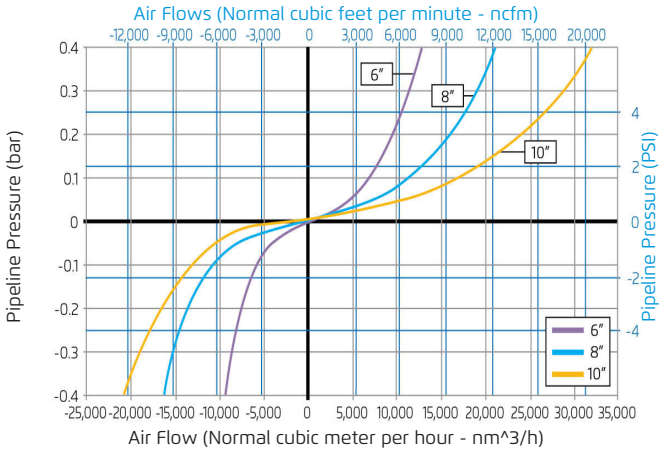




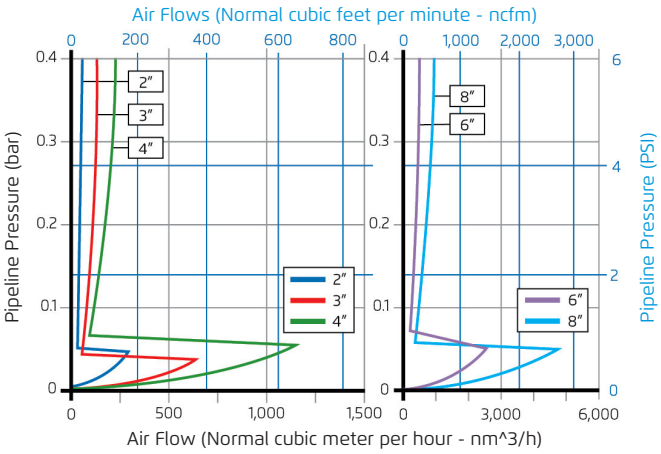
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Air Relief and Intake - Mushroom outlet (Pipeline Filling, Draining and Vacuum Conditions)

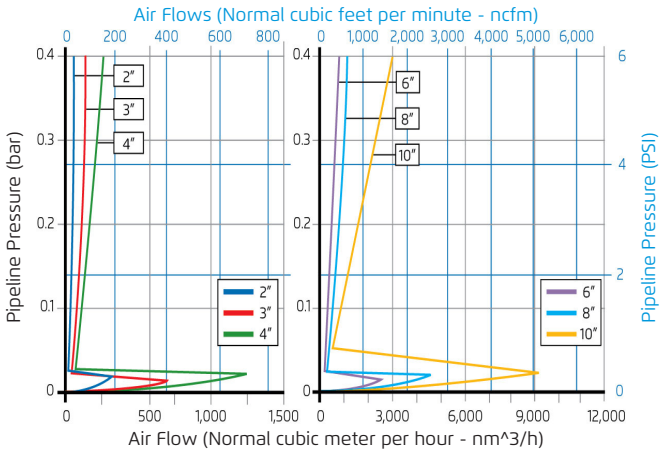




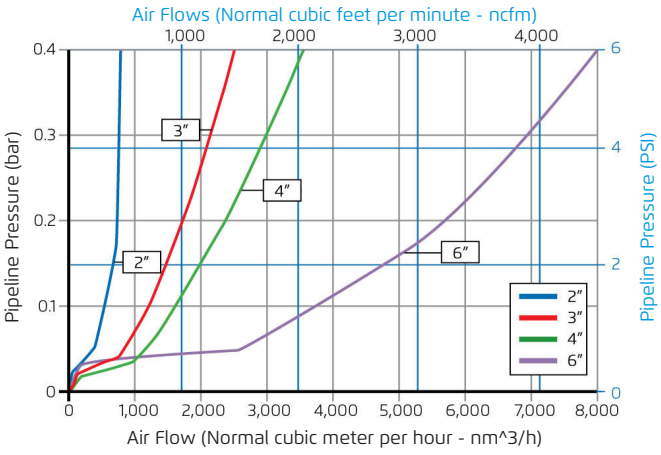
Air Relief with Surge Protection - Down or Side outlet (Pipeline Filling)



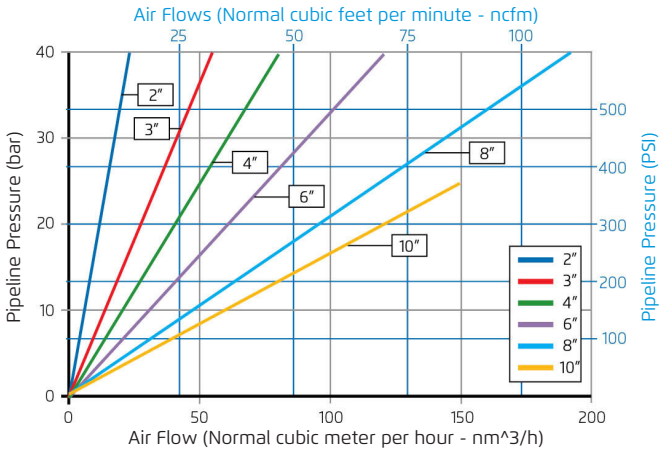
Air Relief with Surge Protection - Mushroom outlet (Pipeline Filling)



Air Relief with Inflow Prevention - Side outlet (Pipeline Filling)



Air Release (Pressurized Operation)



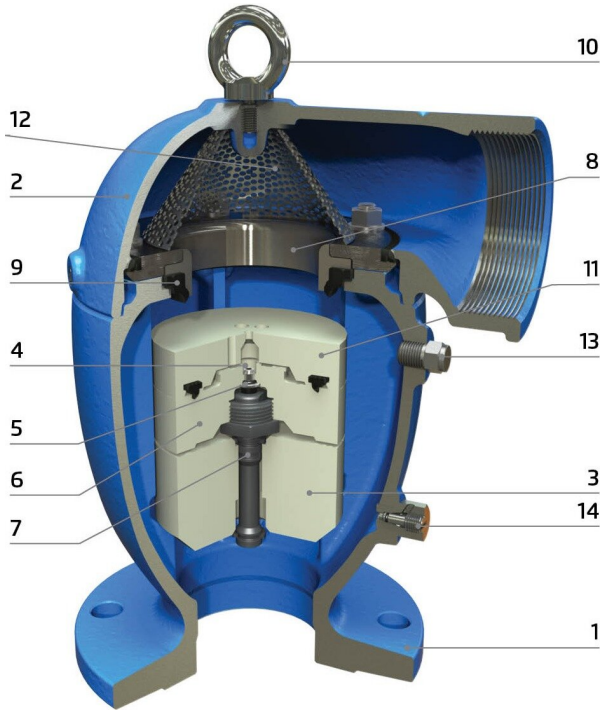
- For higher automatic air release capacity, Please consult with BERMAD.
- Air relief and intake charts for inlet sizes DN50-200 are based on actual measurements, measured during 2014-2015 in Bermad Air Flow test bench, according to EN-1074/4 standard and recognized by AS-4598 (2008) standard. For Side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

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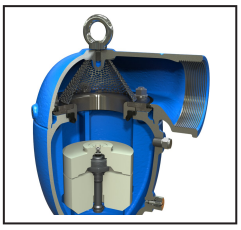
Data for C70-C with Surge Protection Feature

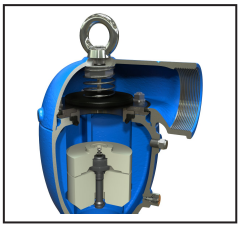
Inlet Sizes	C70-SP Switching Value			C70-SP-AC Air relief at 0.4 bar		
	Mushroom	Side	Down	Mushroom	Side	Down
Inch; mm	bar	bar	bar	nm^3/h	nm^3/h	nm^3/h
2"; DN50	0.02	0.05	0.05	70	60	60
3"; DN80	0.02	0.04	0.04	140	90	90
4"; DN100	0.02	0.05	0.05	260	230	230
6"; DN150	0.02	0.05	0.05	850	500	500
8"; DN200	0.02	0.05	0.05	1150	950	950
10"; DN250	0.02	-	-	3000	-	-

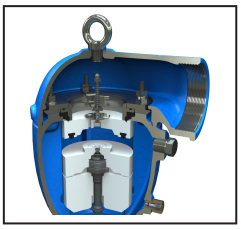
Cutaway



[1] Body
[2] Cover
[3] Float
[4] Auto Orifice
[5] Auto Orifice Seal
[6] Auto Orifice Disc
[7] Auto Orifice Rod
[8] Kinetic Orifice
[9] Kinetic Orifice Seal
[10] Eye Bolt
[11] Surge Protection Disc (SP, Optional)
[12] Insect Screen (Optional)
[13] Service Port (Optional)
[14] Drainage Valve (Optional)

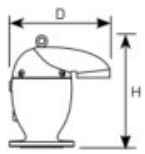

Without Surge Protection (code 00)


With Inflow Prevention (code IP)


With Assisted Closing (code AC)

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Dimensions & Weights









Inlet Sizes	Connection	Mushroom Ductile Outlet			Down Ductile Outlet			Side Ductile Outlet		
		Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight
in; mm		mm	mm	Kg	mm	mm	Kg	mm	mm	Kg
2"; DN50	Threaded	175	278	8.1	232	294	8.6	187	294	8.1
2"; DN50	Flanged	175	293	11.2	232	310	11.7	187	310	11.2
3"; DN80	Flanged	220	336	20.5	315	356	20.8	250	356	20.5
4"; DN100	Flanged	260	380	29.7	378	413	30.5	288	413	29.3
6"; DN150	Flanged	360	522	63.4	516	570	66.0	394	570	62.8
8"; DN200	Flanged	472	716	131.4	670	770	136.6	518	770	133.0
10"; DN250	Flanged	570	825	212.8	---	---	---	---	---	---

Weights refer to air valves with flanges for high pressure (ANSI 300, ISO-40, AS35)

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