

## Combination Air Valve

### Model C 30-C

BERMAD C30 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, this double orifice valve provides excellent protection against air accumulation and prevents vacuum formation, with improved sealing in low pressure conditions.



### Typical Applications

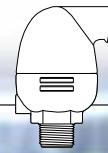
- Pipelines – Protection against air accumulation and vacuum formation at elevations, slope change points and road/river crossings.
- Water networks – Protection against air accumulation and vacuum formation.
- In proximity to control valves and water meters – Prevention of biased readings and inaccurate pressure regulation due to air flow through devices.
- Residential networks – Protection against air accumulation.
- Desalination plants and sea water applications – Protection against air accumulation and vacuum formation

### Features & Benefits

- Straight flow body with large diameter automatic orifice – 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 (0.1 bar).
- Compact, simple and reliable structure with fully corrosion-resistant parts; lower maintenance and increased life span.
- Threaded Side outlet (DN50/2") for connection of Surge Protection (SP) or Inflow prevention (IP) devices.
- Designed in compliance with EN-1074/4 standard 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

- Surge Protection (anti-slam) – Smoother operation, preventing damage to the valve and the system (C30-SP).
- Inflow prevention – Prevents intake of atmospheric air in cases where this could lead to damaged pumps, required re-priming, or disruption of siphons (C30-IP).
- Service Ports fitted – DN6 (1/4") plug for pressure gauge connection, check point or test drain for air valve function.



## 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 upward 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. This in turn causes the automatic orifice to open, releasing the accumulated air. 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: Ductile Iron
- Inlet sizes: DN50(2")
- Connections:
  - Threaded male BSPT
  - Flanged ISO16
- Outlet: Sideway
- Additional features:
  - Surge Protection (SP)
  - Inflow Prevention (IP)

## Operational Data

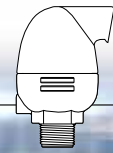
- Pressure rating: ISO PN16
- Operating pressure range: 0.1 - 16 bar
- Operating temperature: Water up to 60°C

## Orifice Specifications

Size		Kinetic		Automatic
DN	Inch	D [mm]	Ad [mm <sup>2</sup> ]	Ad [mm <sup>2</sup> ]
50	2"	45.0	1,590	12.2

## Dimensions & Weights

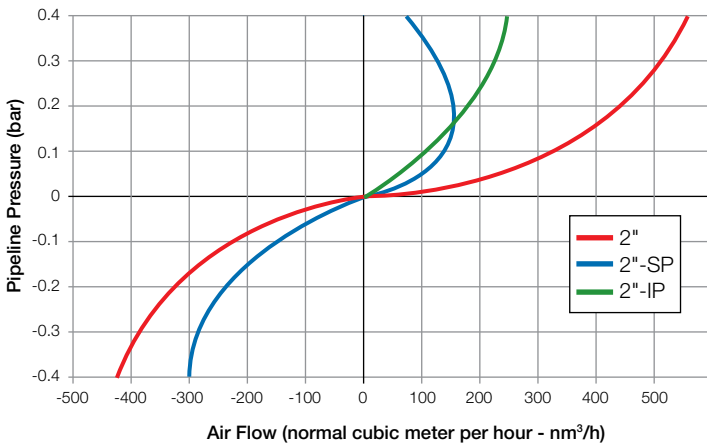
Size		Connection	Side Outlet		
DN	Inch		D (mm)	H (mm)	Weight (Kg)
50	2"	Threaded	157	248	6.2
50	2"	Flanged	190	250	10.3



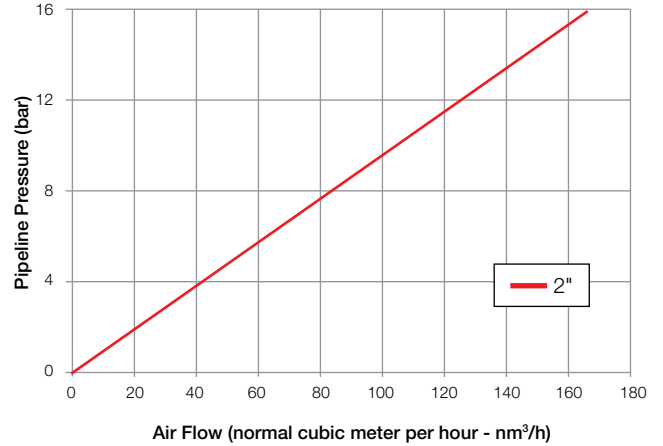
## Air Flow Performance Charts

### Air Relief and Intake

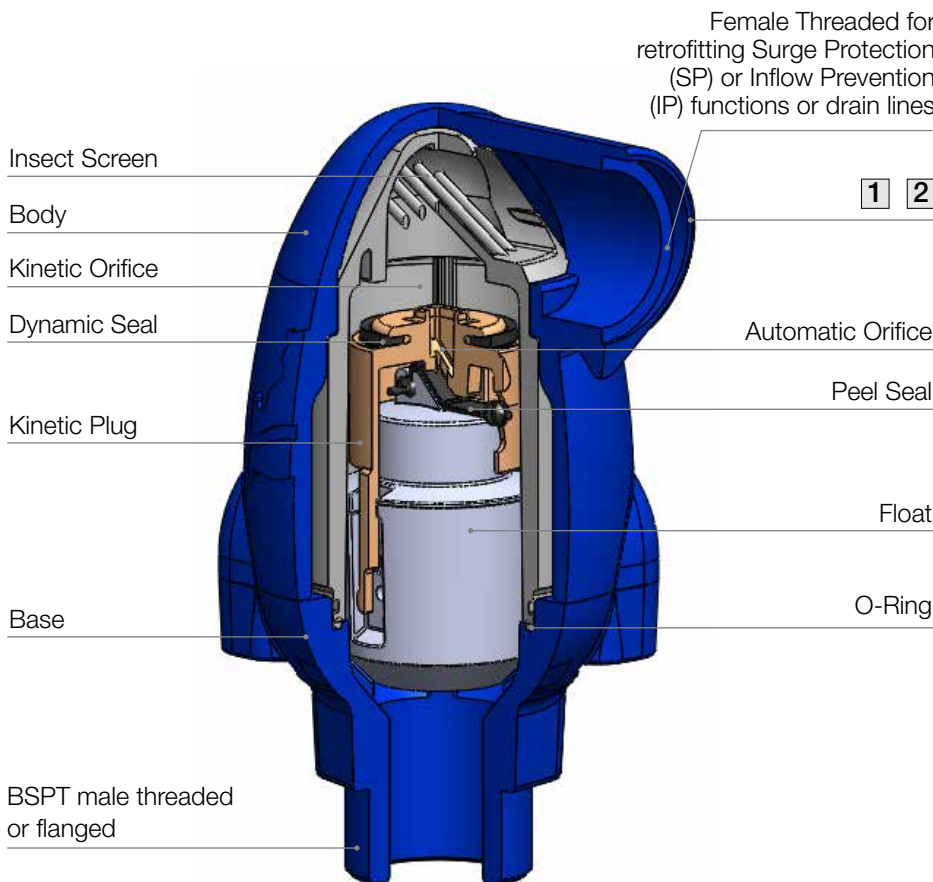
(Pipeline Filling, Draining and Vacuum Conditions)



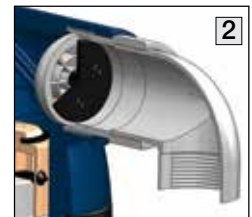
### Air Release (Pressurized Operation)



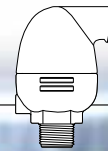
Air relief and intake charts refer to Side outlet and are based on actual measurements, made during 2014-2015 in BERMAD Air Flow test bench, according to EN-1074/4 standard and certified to AS-4598 (2008) standard. Use BERMAD Air software ([www.bermad-air.com](http://www.bermad-air.com)) for optimized Sizing & Positioning of Air Valves.



Surge Protection (anti-slam)



Inflow Prevention



## Parts List and Materials

	Description	Material	Remarks
1	Base BSP/NPT	Ductile Iron (for Drinking Water)	ASTM A536 65-45-12
2	Body	Ductile Iron (for Drinking Water)	ASTM A536 65-45-12
3	Internal Body	Glass Reinforced Nylon (for Drinking Water)	
4	Float	Polypropylene (for Drinking Water)	
5	Kinetic Plug	Glass Reinforced Nylon (for Drinking Water)	
6	Kinetic Orifice Seal	EPDM (for Drinking Water)	
7	Automatic Orifice Seal	EPDM (for Drinking Water)	
8	O-Ring	EPDM (for Drinking Water)	
9	Surge Protection (Optional)	GF Nylon, PP, EPDM	Only C30-SP
10	Inflow Prevention (Optional)	GF Nylon, PP, EPDM	Only C30-IP
11	Flange	Ductile Iron (for Drinking Water)	