Viadux C30 - Combination Air Valve,

Installation, Operation and Maintenance Manual (IOM)

2"- C30	3/4" - C30 1" - C30

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General

Viadux 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 again air accumulation and prevents vacuum formation with improved sealing at low pressure.

This document is the Installation, Operation and Maintenance manual (IOM) of this valve; it describes the procedures required for proper usage of the valve.

Safety

Since air valves operate in pressurized water systems you are required to carefully read this manual before using the valve. Handle the valve with care and make sure to comply with all the relevant required safety instructions and standards, general and local.

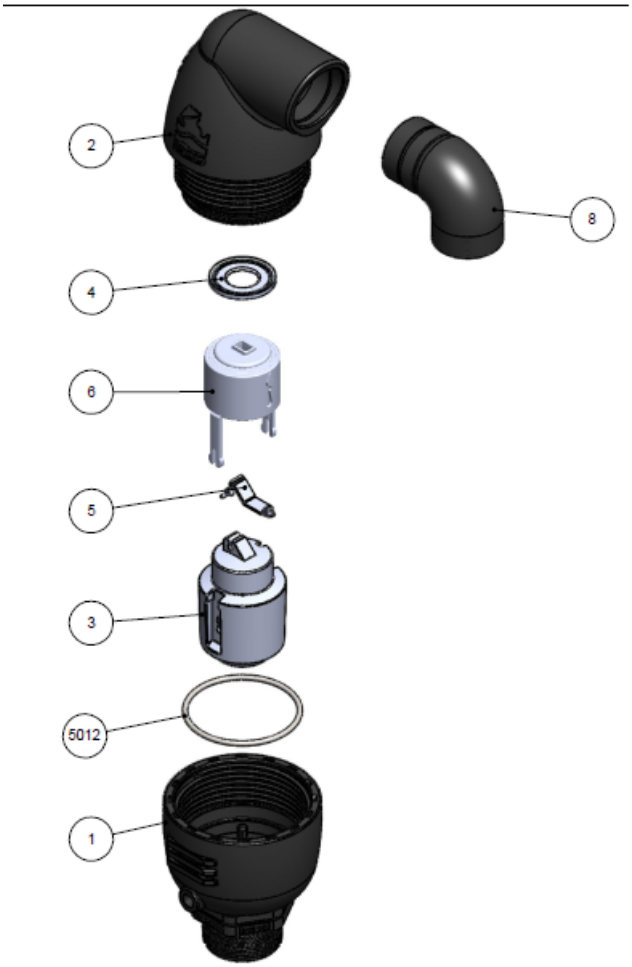
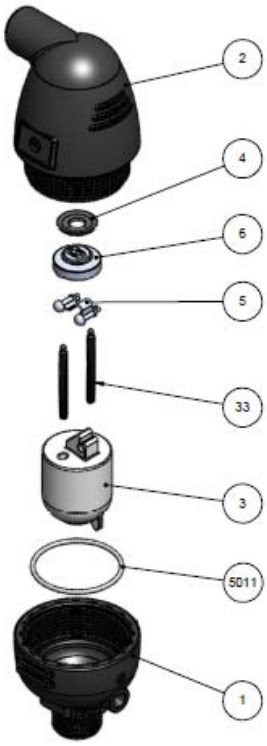
Operational Data

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

Materials and Connections

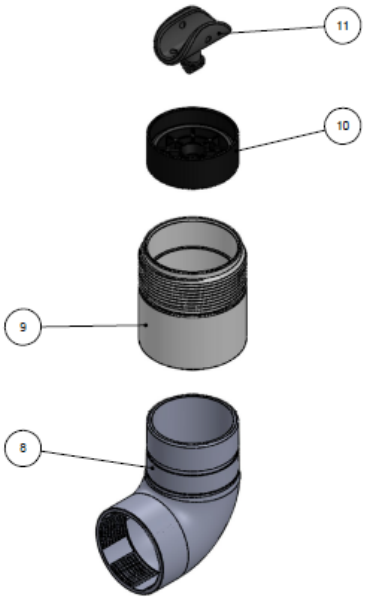
Body material	Glass-reinforced Nylon
Inlet diameter	3/4", 1", 2" DN20, DN25, DN50
Connections	Threaded Male BSPT
Outlet types	Sideways, Downwards (DN50 / 2" only)
Additional features	(2" / DN50 only):
	Surge Protection (C30-SP)
	Inflow Prevention (C30-IP)

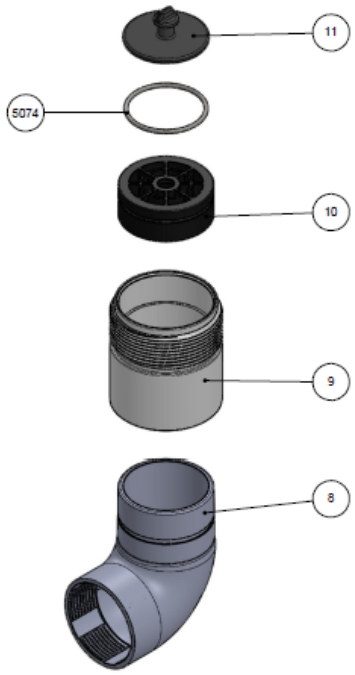
C30 Part list

2" / DN50	3/4 - 1" / DN20 – DN25
	

2" / DN50		3/4 - 1" / DN20 – DN25	
Part Number	**Description**	**Part Number**	**Description**
1	Base	1	Base
2	Body	2	Body
3	Float	3	Float
6	Kinetic Plug	6	Kinetic Plug
4	Kinetic Seal	4	Kinetic Seal
5	Peal Seal	5	Peal Seal
5012	O-ring	5011	O-ring (Base)
8	Drain Elbow	33	Kinetic Plug Leg

Surge Protection (SP) and Inflow Prevention (IP) – Parts List





Surge Protection (SP)		Inflow Prevention (IP)	
Part Number	**Description**	**Part Number**	**Description**
11	Surge Seal	11	Inflow Seal
10	Grid	10	Grid
9	Surge Extension	9	Surge Extension
8	Drain Elbow	8	Drain Elbow
		5074	O-ring

Unpacking and post shipment inspection

- Make sure that till the actual installation the valve remains dry and clean in its original Package.
- Unpack the valve and make sure that all the wrapping materials are removed.
- Before installation it is necessary to inspect that no damage to the valve had occurred during shipment; do not install a damaged valve!
- Verify that the valve to be installed meets the design specifications of the specific installation site; take extra care and make sure that the expected system pressure complies with the pressure rating of the valve.

Site Preparation

- Air Valves located above ground should be protected from freezing, contamination and vandalism.
- If the valve is to be installed in a pit, make sure that the pit has proper drainage and sufficient dimensions for servicing the valve.
- Flush the pipeline prior to the Air Valve installation in order to prevent damage to the valve internals due to large debris carried by the water during startup
- The C30 air valves are not to be used in systems containing high suspended solids; consider selecting other Viadux Air Valve models for such water type.

Installation

Typical Applications

- Main Irrigation Networks – Air relief, protection against air accumulation and vacuum formation downstream of pumps, along supply lines and at elevations in main irrigation networks.
- Irrigation Control Heads – Air relief, protection against air accumulation and vacuum formation at filtration and fertilization stations and downstream of main control valves.
- Infield Systems – Protection against air accumulation and vacuum formation in proximity to water meters and automatic regulators.
- Landscape Irrigation – Protection against air accumulation and vacuum formation.

Please note:

1. If required a Down Outlet and a Connection to a Drainage Pipe can be fitted to the 2" / DN50 valve’s outlet.

2. Depending on the specific installation requirements a Surge Protection (SP) or an Inflow Prevention (IP) device may be added to the air valve.

Installation instructions

- Install the Air Valve as close as possible to the pipe, at a high point of its circumference, in vertical position (within 5 degrees of vertical alignment) and with its inlet facing down.
- • The diameter of the pipe connecting the Air Valve with the pipeline should be at least equal to the Air Valve inlet diameter.
- Install a shutoff valve between the air valve and the pipeline for allowing easy inspection and maintenance.

Operation

Start-up and first operation

• Open the shutoff valve and verify that the Air Valve connections are not leaking; if needed follow the troubleshooting instruction section of this document. Please note that at the first time the valve is filled up some water may exit through its outlet port.

• Prevent water hammer during startup and pipeline filling by maintaining the velocity lower than 0.5m/sec (1.6 feet/sec). Consider adding the Surge Protection feature in systems where higher velocity is expected.

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 pipeline.

Surge Protection (Anti-slam)

The anti-slam device (SP) 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.

Inflow Prevention

The inflow prevention (IP) is a Normally Closed check device fitted on the valve's outlet and preventing flow of atmospheric air into the valve.

Maintenance

Inspection

The valve does not require any specific maintenance, however a periodical inspection of the seals is recommended for removing debris and foreign objects.

Troubleshooting

Symptom	Action
Leakage at the inlet connection	Tighten the valve connection, use thread sealant. Check whether any part is damaged.
Leakage at the valve body	Tighten the valve's body, check the O-ring
Leakage at the valve's outlet	Dissemble and inspect the valve's orifices, float and seals. Flush the valve to remove debris, Remove any foreign objects, check and replace any damaged part.
Valve does not release air or allow air intake	Verify that the operation pressure does not exceed the valve's rated working pressure. Check and removed foreign objects, Clean the valve's internal parts, replace if necessary. Consult Bermad if the symptom continues.

Disassembling the air valve - size 2" / DN50)

1. Release the valve's cover (Part #2) by turning it counterclockwise, un-screw and remove it from the valve's base (Part #1). Make sure that the valve parts, seated within the cover do not fall out of the cover.

2. Inspect the valve basis O-ring (Part #5012) and if necessary replace it with a new one. Make sure that the new O-ring is seated correctly in its designated groove in the valve's basis.

3. Pull the float assembly (Parts #3 ,#5 and #6) out of the valve's cover.

4. Disconnect the Kinetic Plug (Part #6) from the Float (Part #3) using its Snap Legs.

5. Inspect the float's peal seal (Part #5) and the float (Part #3) for wear and tear.

6. If necessary replace the old parts.

Reassembling the air valve - size 2" / DN50

1. Wet the Kinetic Seal (Part #4) with water and install it on the Kinetic Plug (Part #6) with its **raised edges** side facing upward. See figure A.

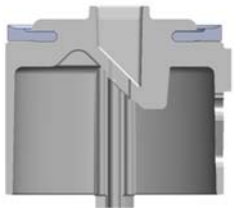


Figure A

2. Wet the new peal seal (Part #5) with clean water. Use the Lower Insertion Assistance Handle and insert the lower end of the peal seal (Part #5) to its designated groove in the upper part of the float (Part #3). Make sure that the serrated side of the seal (A) is facing the float flat side (B) as shown in Figure B.

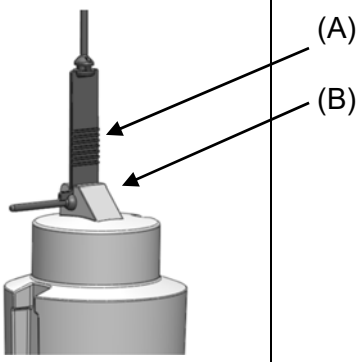


Figure B

3. Use the Upper Insertion Assistance Handle to conduit the loose end of the Peal Seal (Part #5) through its designated bore in the Kinetic Plug (Part #6) body. Pull the Upper Insertion Assistance Handle till the upper mushroom shape of the peal seal sticks out of the Kinetic Plug upper side. Make sure that the Peal Seal remains straight and not folded within the bore, See Figure C.

Figure C

4. Once the Peal Seal (Part #5) is correctly seated in place cut the Insertion Assistance Handles and discard them.

5. Connect the Kinetic Plug (Part #6) to the Float (Part #3) using its Snap legs in the right orientation as shown in Figure D.

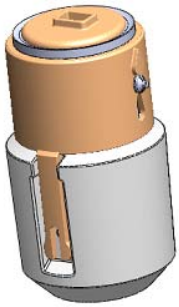


Figure D

6. Make sure that the valve's basis O-ring (Part #21) is fully inserted to its groove within the base, See Figure E.

Figure E

7. Insert the complete float assembly to its place in the Valve Cover (Part #2), See Figure F.

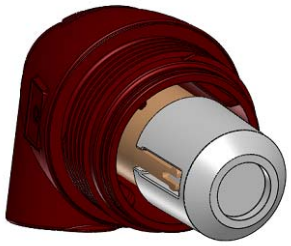


Figure F

8. Reassemble the valve cover to the valve basis by screwing it on the basis thread. Tighten the cover till the logo is parallel with the wrench plats of the basis. See Figure G

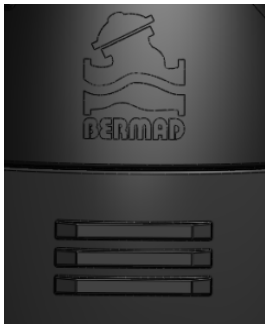


Figure G

9. The valve is reassembled; perform a complete start up procedure as described above.

Disassembling the Air Valve - sizes 3/4 - 1" / DN25 DN50

1. Release the valve's cover (Part #2) by turning it counterclockwise, un-screw and remove it from the valve's base (Part #1). Make sure that the valve parts, seated within the cover do not fall out of the cover.

2. Inspect the valve basis O-ring (Part #5011) and if necessary replace it with a new one. Make sure that the new O-ring is seated correctly in its designated groove in the valve's basis.

3. Pull the float assembly (Part #3) out of the valve's cover.

4. Disconnect the Kinetic Plug (Part #4 from the Float (Part #3) using its Snap Legs.

5. Inspect the float's peal seal (Part #5 or #18) and the float (Part #3) for wear and tear. If necessary replace the old parts.

Reassembling the Air Valve - sizes 3/4 - 1" / DN20 DN25

1. Wet the Kinetic Seal (Part #4) with water and install it on the Kinetic Plug (Part #6) with its raised edges side facing upward. See figure A.

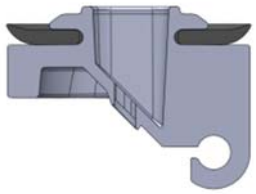


Figure A

2. Wet the new peal seal (Part #5) with clean water .Use the Insertion Assistance Handle and insert the peal seal (Part #5) to its designated groove in the kinetic plug (Part #6) as shown in Figure B.

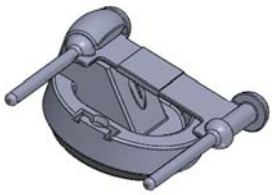


Figure B

3. Use the Insertion Assistance Handle and insert the of the peal seal (Part #5) to its designated groove in the automatic float (Part #3), insert the "legs" (Part #33) to the kinetic plug (Part #4) and then to the 2 holes in the automatic float (Part #3),See Figure C.

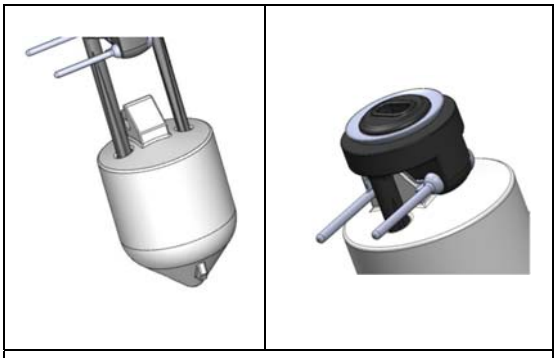


Figure C

4. Once the Peal Seal is correctly seated in place, cut the insertion assistance handles and discard them, See Figure D.

Figure D

5. Make sure that the valve's basis O-Ring (Part#5011) is fully inserted to its groove within the basis. See Figure E.

Figure E

6. Insert the complete float assembly to its place in the Valve Cover (Part #2), See Figure F.

Figure F

7. Reassemble the valve cover to the valve basis by screwing it on the basis thread.
Tighten the cover till Bermad's logo is parallel with the wrench plats of the basis, See Figure G.

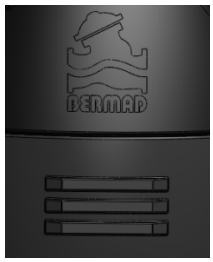


Figure G

8. The valve is reassembled; perform a complete start up procedure as described above.