



CSA products for treated water

**Anti-shock
Water Combination air valve**

Mod. FOX 3F-AS-M

Instructions

These instructions provide installation, operation and maintenance information for CSA Mod. FOX 3F-AS-M water combination air valves. They are for use by personnel who are responsible for installation, operation and maintenance of CSA Air/Vacuum release valves.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

If a safety sign or symbol becomes difficult to see or read, please contact CSA.



WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service, with suitable protection for any potential pipeline material in the valve.

Inspection

Your CSA FOX 3F-AS-M combination air Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime. Order parts from your local CSA sales representative if available, or directly from CSA. When ordering parts, please include the model, type and numbers located on the data plate placed on the valve. Also include the part name, the assembly drawing number, and the quantity stated on the assembly drawing.

CSA Service

CSA service personnel are available to maintain and repair all CSA products. CSA also offers customized training programs and consultation services.

For more information, contact your local CSA sales representative if available, or directly CSA. Visit our website at www.csasrl.it.

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Description

The CSA FOX 3F-AS water combination air valve is designed to release air pockets in working conditions, to allow the entrance of large volumes of air during pipe draining, or burst, with a controlled air outflow in case of rapid pipeline filling and transients events.

This type of air valve should not be considered as a pressure relief for shock conditions and water hammer events which develop elsewhere in the system, for which other and different CSA models and solutions are available.

The maximum and minimum pressure are stated in the order and according to technical literature. In general we recommend to ensure at least 0,3 bar acting on the air valve to guarantee for the perfect sealing during working conditions.

Handling and Storage

Lifting the valve improperly may damage it. Lift the valve with slings, chains or cables fastened around the valve body, or eyebolts on the cap if present, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, place valve indoors in secure, weather tight storage. If temporary outside storage is unavoidable, make sure a vermin proof rain cover is secured around/over the valve to keep off rain and mud. Skid and set the assembly on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water. Do not leave the valve exposed to high humidity and excessive temperature conditions.

Installation

The water combination air valve should always be installed in a vertical position. An isolation valve between this unit and the transmission (pipeline) system is necessary to allow maintenance and valve's inspection. Where to use:

- High points in pipelines where the hydraulic gradient and flow conditions are such that a negative pressure can possibly occur.
- Change in slope descending and ascending (for the latter air vacuum models are normally enough)
- Downstream of sectioning devices in a pipeline such as a check, gate valves, butterfly valves where vacuum can occur upon closure.
- Downstream of pumps to prevent water hammer in case of power failure in presence of negative pressure conditions
- Anywhere on the system where column separation is likely to occur

Note to Engineer: If the air valve is to be installed inside a pump house, use threaded or outlet flanged connections and pipe back into the well or to outside obtained by CSA SUB kit. This will greatly muffle the high noise level caused by the air being discharged and provide for drainage of any small amount of water or water vapour that may accumulate. Same thing applies in case of possible flood events to the installation chamber to avoid the entrance of polluted water

- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.

- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used.
- Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.

Fusion/Powder Coated Valves



CAUTION!

Valves with fusion/powder coated exterior paint require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange to prevent the paint from cracking or chipping.

Maintenance

The anti water-hammer combination air valve is automatic in operation and requires very little maintenance. It should always be installed in a vertical position with a maximum tilt within 3°. The anti-shock systems never in contact with fluid and therefore not subject to servicing.

A semi-annual inspection for leakage and AS spring compression is recommended. For the latter once the pressure has been completely relieved out of the air valve simply remove cap, (2) filter (16) as explained in the next page. Exerting a small pressure on top of the AS spring guide (17) should be able to push down the shaft (19) connected to the AS flat (22) opening the passage through the main seat (5). For excessive friction, spring (18) block contact CSA for an immediate replacement. A malfunction of the air valve can be identified by the seepage of water through the air release nozzle and/or through the main seat. Should a malfunction occur, the following steps should be taken to repair the valve;

Disassembly Procedure



WARNING!

Servicing the Air/Vacuum Valve while the pipeline is under pressure can cause personal injury or equipment damage. Relieve pipeline pressure or shut off isolation valve before servicing the Air/Vacuum Valve.

See Figures 1 on page 7 for part identification.

1. Relieve pipeline pressure or shut off isolation valve before servicing the Air Valve.
2. Slowly remove the drain port (14) to relieve internal pressure
3. Remove cover nuts (10) and cover (2).



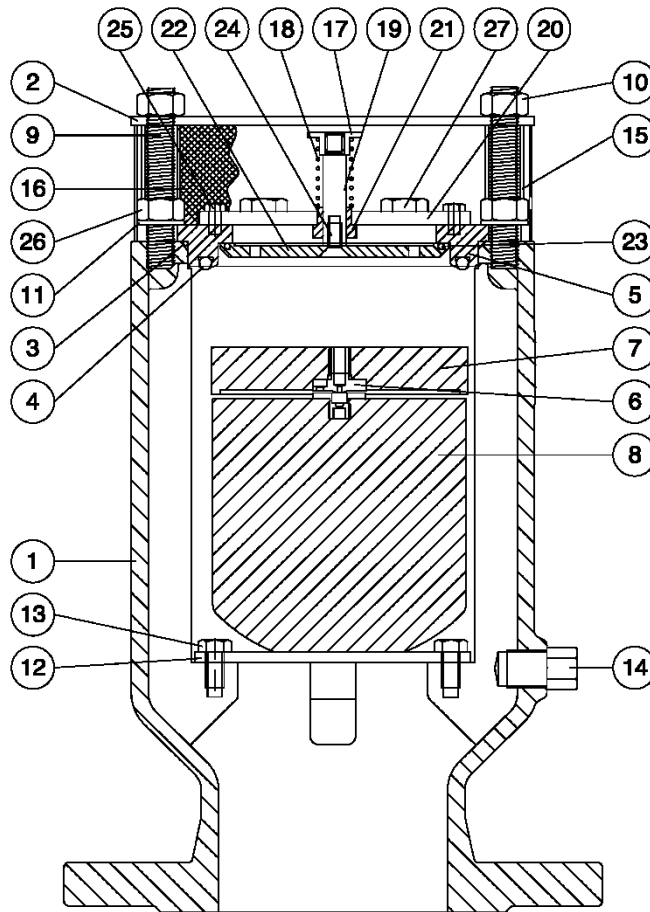
WARNING!

When removing the filter be aware of sharp edges, use protective gloves and exert care during handling

4. Remove spacers (15) and filter (16)
5. Remove seat nuts (26), washers (11) and extract the seat (5) along with AS mechanism with it (the latter composed of the spring guide (17), spring (18), shaft (19), screw (24), AS flat (22) with adjustable holes for the controlled air outflow)
6. Do not try to pull apart/disassemble the AS mechanism without the support of CSA personnel
7. Inspect sealing surface of the seat (5) and check whether gaskets (3) and (4) are torn or damaged.
8. Pull out the mobile block composed of the upper float (7) and lower float (8) joined together by the air release system (6)
9. Inspect the air release system (6) , clean it with some water and/or compressed air and replace it if needed
10. Do not try to pull apart the air release system (6) without the support of CSA personnel
11. Inspect all connections of linkage for excessive wear.
12. Clean all surfaces before re-assembly.
13. Check to see if foreign matter or dirt is preventing float (8) from seating properly on the air deflector (12)
14. Clean as necessary.

Drawings

Figure 1: FOX 3F-AS-M



N.	Component	Standard material	Optional
1	Body	ductile cast iron GJS 500-7 or GJS 450-10	
2	Cap	stainless steel AISI 304	stainless steel AISI 316
3	O-ring	NBR	EPDM/Viton/silicone
4	O-ring	NBR	EPDM/Viton/silicone
5	Seat	stainless steel AISI 304	stainless steel AISI 316
6	Nozzle subset	stainless steel AISI 316	
7	Upper flat	polypropylene	
8	Float	polypropylene	
9	Studs	stainless steel AISI 304	stainless steel AISI 316
10	Nuts	stainless steel AISI 304	stainless steel AISI 316
11	Washers	stainless steel AISI 304	stainless steel AISI 316
12	Diffuser	stainless steel AISI 304	stainless steel AISI 316
13	Screws	stainless steel AISI 304	stainless steel AISI 316
14	Drainage valve	stainless steel AISI 303	stainless steel AISI 316
15	Spacers	stainless steel AISI 304	stainless steel AISI 316
16	Filter	stainless steel AISI 304	
17	Spring guide nut (from DN 100)	stainless steel AISI 303	stainless steel AISI 316
18	Spring	stainless steel AISI 302	
19	AS shaft	stainless steel AISI 303	stainless steel AISI 316
20	Support (from DN 150R)	stainless steel AISI 304	stainless steel AISI 316
21	Guiding nut (from DN 150R)	Delrin (polyoxymethylene)	
22	AS flat	stainless steel AISI 304	stainless steel AISI 316
23	O-ring	NBR	EPDM/Viton/silicone
24	Screw	stainless steel AISI 304	stainless steel AISI 316
25	Screws (from DN 150R)	stainless steel AISI 304	stainless steel AISI 316
26	Nuts	stainless steel AISI 304	stainless steel AISI 316
27	Screws	stainless steel AISI 304	stainless steel AISI 316

Spare parts: 3-4-6-7-8-23

The list of materials and components is subject to changes without notice.

Troubleshooting (ref picture 1 on page 7)

Condition	Possible Cause	Corrective Action
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Miss-alignment or damage to field piping and supports.	Adjust miss-alignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.
Valve leaks out of the main sealing seat (5).	Valve is not vertical	Place the valve in a vertical position
	Possible corrosion through the body and seat	Check the fluid chemicals parameters and contact CSA
	Dirt accumulated on the seat o-ring (4) and/or upper float (7)	Clean the components and replace if necessary
	Worn seat (5) and/or float (7)	Replace seat and/or float.
	Line pressure is under 0,3 bar	Replace seat with softer seat (the minimum pressure is 0,2 bar , contact CSA for lower values)
	Worn o-ring between seat and body (3)	Inspect and replace o-ring
The valve doesn't open completely during negative pressure conditions	The air valve is underside and/or the AS spring (18) is blocked due to friction or corrosion.	Contact CSA for assistance with air valves sizing and replace the spring
Valve leaks out of the air release subset (6)	Valve is not vertical	Place the valve in a vertical position
	Possible corrosion through the subset (6)	Check the fluid chemicals parameters and contact CSA
	Dirt accumulated on the air release subset (6)	Inspect and clean the air release subset (6), replace if necessary
	Line pressure is extremely low	Check the operating pressure acting on the air valve and contact CSA for further assistance

Guarantee

Products, auxiliaries and parts thereof of CSA srl manufacture are warranted to the original purchaser for a period of twelve (12) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with CSA srl recommendations. Repair or replacement, at our option, for items of CSA srl manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall CSA srl. be liable in this respect. CSA srl does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does CSA srl guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than CSA srl. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by CSA srl or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to, an actuator is attached to the item by anyone other than CSA srl. factory Service personnel. All orders accepted shall be deemed accepted subject to CSA srl warranty terms and conditions.

Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL CSA srl BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND CSA srl LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION BY YOU FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

Sales and Service

For information about our service, approvals, certifications:

Web site: www.csasrl.it E-Mail : info@csasrl.it



CSA srl Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only.