



CSA products for waste water

**Anti water hammer
combination air valve**

Mod. SCF-RFP

Instructions

These instructions provide installation, operation and maintenance information for CSA Mod. SCF-RFP series waste water air valve. They are for use by personnel who are responsible for installation, operation and maintenance of CSA automatic air 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 us.



WARNING!

Personnel involved in the installation or maintenance of air 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 waste water 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. 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.

Table of Contents

Description - - - - -	4
Handling and Storage - - - - -	4
Installation - - - - -	4
Maintenance - - - - -	5
Drawings - - - - -	7
Troubleshooting - - - - -	8

Description

The CSA SCF-RFP anti water hammer combination wastewater air valve is designed to allow the entrance of large volumes of air in case of negative pressure conditions, caused for example by pump failure, burst, draining, and the controlled two stages outflow to create some sort of air bag should the air velocity become excessive (likely to produce water hammer during the closure). During working conditions the air release system will purge our air pockets accumulating inside the valve. This type of air valve should not be considered as a pressure relief for shock conditions and water hammer events produced by increase in pressure, which may develop elsewhere in the system, for which other and different CSA models and solutions are available. The maximum and minimum working 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 drain port to guarantee for the perfect sealing during working conditions, lower values available on request.

Handling and Storage

Lifting the valve improperly may damage it. Lift the valve by hand or with slings, chains or cables fastened around the valve body, or fastened to eyebolts if present or 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, a maximum of 3° tilt is allowed. 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
- At the dead end of pipelines
- Do not use this valve downstream of pumps, check valve and sectioning devices likely to produce sudden variation in the fluid velocity, thus transients, for which where other CSA models are available like SCF-AS

Note to Engineer: If installed inside a pump house, in presence of wires, control panels, switches, use the threaded connection and pipe back into the well or to outside (available as a standard feature on the DN 50). 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 during working conditions and opening/closing cycles. Same thing applies in case of possible flood events to the installation chamber to avoid the entrance of liquid back into the main line.

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

SCF-RFP

- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used, Unless otherwise specified the threaded connection is according to GAS, different available on request.

Maintenance

The anti hammer combination wastewater air valve SCF-RFP is automatic in operation and requires very little maintenance. It should always be installed in a vertical position with a maximum tilt within 3°.

A semi-annual visual inspection for leakage and the proper function is recommended. A malfunction of the air valve can be identified by the seepage of water through the main seat and through the nozzle. Should a malfunction occur, the following steps should be taken to repair the valve;



WARNING!

During servicing the waste water in closed environment and chambers be aware of the accumulation of gas with the risk of poisoning and loss of conscience. Always wear face mask and respirator, do not proceed with back up

Disassembly Procedure

See Figures 1 on page 7 for part identification.

1. Relieve pipeline pressure or shut off isolation valve before servicing the Air Valve.



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.

2. Slowly open the drain port (22) to relieve internal pressure
3. Remove the nuts (20) and cap (3), for the DN 50 and if ordered by a separate conveyance kit pay attention not to damage o-rings and threaded elbows.
4. Unscrew the seat (17) with a tool by using the holding point obtained from machining
5. Check whether the gasket (15) and (16) have been torn, damaged and for possible dirt accumulation clean and replace it if necessary
6. Remove nuts (24) and washers (21) on the connection between the upper (2) and lower body (1)
7. Pull out the upper body (2)
8. Inspect the sealing surface of the anti-shock flat (13) and check whether the gasket (14) is torn or damaged, clean it and replace them if necessary

9. Push up the float (4) from below, hold the end of the shaft (5) tight and unscrew the obturator (12) paying attention not to damage the o-ring



WARNING!

During servicing and separation of the lower from the upper body be aware of possible dirt accumulated on the lower body

10. Inspect the nozzle subset (11) using clean water and/or compressed air, do not try to disassemble it before consulting us and without the assistance of our authorized personnel
11. Check the movement of the shaft (5) inside the driving sleeve for the absence of friction, possible deposit and obstruction.
12. Inspect the sealing surface of the obturator (12), clean it if necessary
13. The protection rubber (8) should never be taken out except for emergencies
14. Inspect the surface of the float (4) looking for possible deformations, corrosion,



WARNING!

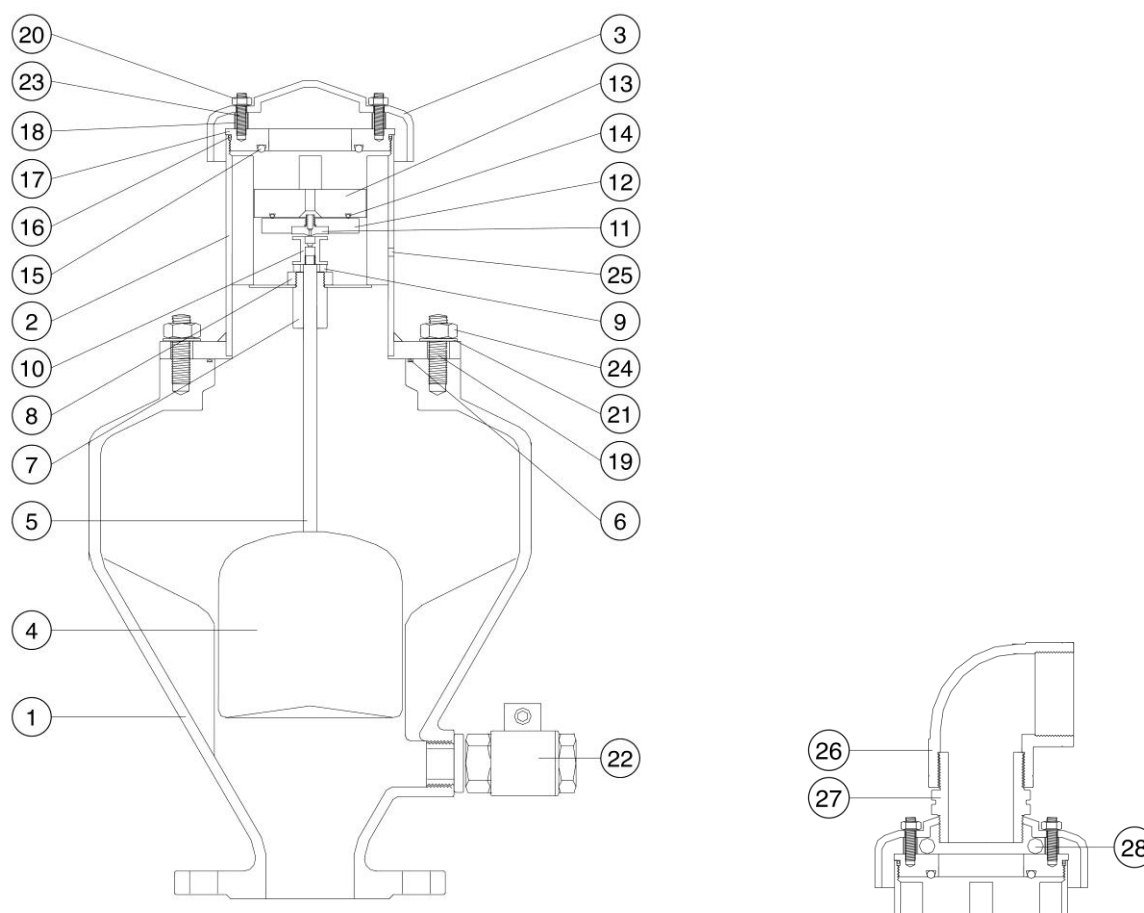
The outlet threaded connection is supplied according to GAS standard unless otherwise specified. If connected to piping to convey gas and exhaust away from the valve do not exert excessive momentum and torque as doing so would be likely to pluck it out and produce damages. Consult CSA for further assistance

accumulation of dirt

15. When handling the float (4) and its shaft (5) be aware not to bend it or deform, also check the float surface, shape, and make sure not sign of wear, corrosion and buckling are present (possibly due to water hammer events and aggressive fluid)
16. Inspect all connections of linkage for excessive wear.
17. Clean all surfaces before re-assembly.

SCF-RFP

Figure 1: SCF-RFP wastewater combination air valve



N.	Component	Standard material	Optional
1	Lower body	ductile cast iron GJS 500-7 or GJS 450-10	
2	RFP upper body	stainless steel AISI 316	
3	Cap	ductile cast iron GJS 500-7 or GJS 450-10	
4	Float	stainless steel AISI 316	
5	Float shaft	stainless steel AISI 316	
6	O-ring	NBR	EPDM/Viton/silicone
7	Driving sleeve	stainless steel AISI 303	stainless steel AISI 316
8	Nut	stainless steel AISI 304	stainless steel AISI 316
9	Plane gasket	NBR	
10	Gasket holder	stainless steel AISI 316	
11	Nozzle subset	stainless steel AISI 316	
12	RFP obturator flat	polypropylene	
13	Anti-shock flat	polypropylene	
14	Anti-shock flat gasket	NBR	EPDM/Viton/silicone
15	Seat gasket	NBR	EPDM/Viton/silicone
16	O-ring	NBR	EPDM/Viton/silicone
17	Seat	stainless steel AISI 316	
18	Spacers	stainless steel AISI 304	
19	Studs	stainless steel AISI 304	stainless steel AISI 316
20	Nuts	stainless steel AISI 304	stainless steel AISI 316
21	Washers	stainless steel AISI 304	stainless steel AISI 316
22	Ball valve 1"	stainless steel AISI 316	
23	Studs	stainless steel AISI 304	stainless steel AISI 316
24	Nuts	stainless steel AISI 304	stainless steel AISI 316
25	Plug	brass	stainless steel AISI 316
26	Threaded elbow	polypropylene	
27	Fitting	polypropylene	
28	Exhaust air control gasket	NBR	
Spare parts: 4-5-6-9-10-11-12-13-14-15-16-28			

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

Troubleshooting (ref drawing 1 on page 7)

Condition	Possible Cause	Corrective Action
Valve leaks at inlet threaded connection.	The plane gasket is missing on the flanged connection and/or the flange is damaged	Tighten flange bolting and check the flange surface (RF or FF)
	The bolts at the flanged connection have been set asymmetrically	Make sure to set the nuts tight symmetrically avoiding deformations and excessive stress at the flanges inlet
	Miss-alignment or damage to field piping and supports.	Adjust miss-alignment or repair piping or supports.
	Corrosion forming at the air valve inlet	Check the fluid chemicals parameters and contact us
Valve leaks out of the main sealing seat (17).	Valve is not vertical	Place the valve in a vertical position
	Possible corrosion forming between the upper body (2) and seat (17)	Check the fluid chemicals parameters and contact us
	Dirt accumulated on the seat o-ring (15), on the anti-shock flat (13), and on the anti-shock gasket (14)	Clean seat ,anti-shock upper surface and o-rings
	Corrosion through the float(17) with entrance of fluid and loss of buoyancy	Replace the mobile block and check the chemical properties of the fluid, contact us
	Line pressure is under the minimum working pressure (0,3) bar or lower if specified by us	Check the available working pressure and replace seat with softer gaskets, do never go below 0,2 bar and contact us for lower values
	Worn o-ring (16) between seat and body	Inspect and replace o-ring
Valve leaks out of the air release subset (11)	Valve is not vertical	Place the valve in a vertical position
	Possible corrosion through the air release subset (11)	Check the fluid chemicals parameters and contact us
	Dirt accumulated on the air release subset (11)	Inspect and clean the air release subset (11), replace if necessary
	Line pressure is extremely low	Check the available working pressure, do never go below 0,2 bar and contact us for lower values



*We reserve 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.*

Rev. 1 – 3/2015