CSA products for waste water

Anti-surge air valve

Mod. FOX SCA

Instructions

These instructions provide installation, operation and maintenance information for CSA Mod. SCA waste water air valve with surge prevention device. They are for use by personnel who are responsible for installation, operation and maintenance of CSA Air/Vacuum 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. Safety label(s) on the product indicate hazards that can cause 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 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 surge prevention 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.

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Description

The CSA SCA waste water surge prevention 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. On the second phase of the transient, thanks to an exclusive CSA anti-shock device, the air discharge is controlled by adjustable sonic nozzles to create a slow closing air bag effect, thus reducing the velocity of the approaching water column and the risk of over pressures.

This type of air valve should not be considered as 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 0,4 bar acting on the air valve to ensure 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 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. 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, also exposed to water hammer events
- Adjacent to any quick closing valve in a pipeline such as a check or gate valve where vacuum can occur upon closure.
- Adjacent to pumps , where vacuum can occur upon power failure.

  Note to Engineer: If the air valve is to be installed inside a pump house, use threaded or flanged connections and pipe back into the well or to outside. 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 vapor that may accumulate. 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.
- 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 surge prevention vacuum breaker SCA 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 is recommended. A malfunction of the air valve can be identified by the seepage of water 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.

WARNING!

Do not completely remove pipe plug or cover screws while the valve is under pressure.

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 (18) to relieve internal pressure.
3. Remove nuts (28) and washers (29) and extract the complete upper body (2).
4. Remove nuts (15) and pull out the cap (3).
5. Remove seat nuts (26) and the washers (16) and extract the AS seat (12) without disassembling the anti - shock system composed of the spring, flat, shaft.
6. Check the o-rings (11) and (13) making sure they haven't been torn or damaged, clean them out and replace if needed.
7. Pushing from beneath the float (4) rise it and inspect the obturator flat (10) for possible dirt and torn our surfaces and unscrew it from the connection to the shaft of the float (4) if necessary. Check the float shaft too and make sure it is not bent.

8. Check the float surface, the shape and make sure no sign of deformation or corrosion are present.
9. Inspect all connections of linkage for excessive wear.
10. Clean all surfaces before re-assembly.
11. The Anti- shock system located on the seat is never in contact with the liquid and therefore maintenance is not needed, should you need to do it we recommend to order the entire spare part or please contact us for technical support

Assembly Procedure

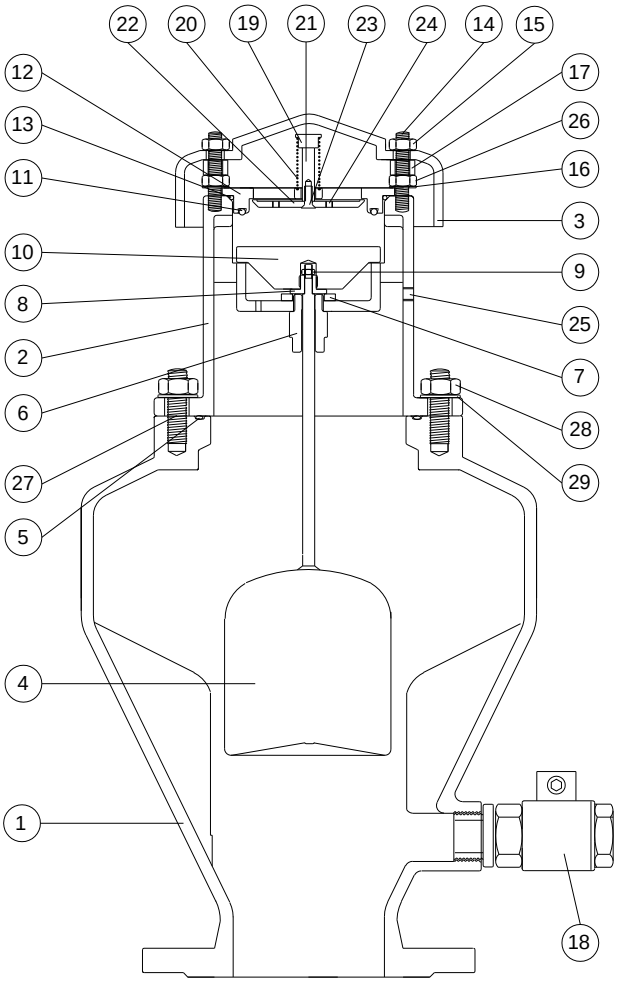
See Figures 1 for part identification.

Install the parts inside the upper body (2) in the following order:

a. float (4) and obturator (10),
b. AS seat (12), washers and nuts (16 and 26),
c. cap (3) and nuts (15).
d. Pull the complete upper body (2) on the lower body (1)

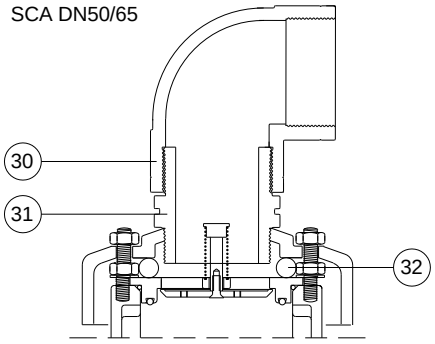
Drawings

Figure 1: SCA



N.	Component	Material
1	Lower body	GJS 500-7/GJS 450-10
2	Upper body	GJS 500-7/GJS 450-10
3	Cap	GJS 500-7/GJS 450-10
4	Float with shaft	AISI 316
5	O-ring	NBR/EPDM/Viton/Silicone
6	Driving sleeve	AISI 303/AISI 316
7	Plane gasket	NBR
8	Connection screw	AISI 303/AISI 316
9	Nut	AISI 304/AISI 316
10	Obturator flat	Polypropylene
11	Seat gasket	NBR/EPDM/Viton/Silicone
12	AS seat	AISI 304/AISI 316
13	O-ring	NBR/EPDM/Viton/Silicon
14	Studs	AISI 304/AISI 316
15	Nuts	AISI 304/AISI 316
16	Washers	AISI 304/AISI 316
17	Spacers	AISI 304
18	Ball valve 1"	AISI 316
19	Spring guide nut (DN150-200)	AISI 303/AISI 316
20	Spring	AISI 302
21	As shaft	AISI 303/AISI 316
22	As flat	AISI 304/AISI 316
23	Screw	Brass/AISI 316
24	Plugs	Brass/AISI 316
25	Plug	AISI 304/AISI 316
26	Nuts	AISI 304/AISI 316
27	Studs	AISI 304/AISI 316
28	Nuts	AISI 304/AISI 316
29	Washers	AISI 304/AISI 316
30	Threaded elbow	Polypropylene
31	Fitting	Polypropylene
32	Exhaust air control gasket	NBR
Spare parts: 4-5-7-8-9-10-11-13-32		

SCA DN50/65



Operation ref fig. 1 on page 7

The two functions anti surge air valve Mod. SCA unit operates on the interphase between the kinetic energy in the relative velocity flows of air and water. This model is a normally open air valve to allow the entrance of large volumes of air during negative pressure conditions, pipe draining or burst. When water rushes into the air valve in case of uncontrolled pipe filling or transients event, the discharge is controlled by means of adjustable sonic nozzles (24) located on the flat AS flat (22), producing some sort of air bag effect slowing down the approaching water column and avoiding possible water hammer. This ensures normal gentle closing of the Air/Vacuum Valve regardless of the initial velocity flows involved and minimizes pressure surges when the valve closes. This type of valve should not be considered as a relief valve for shock conditions which develop elsewhere in the system.

Troubleshooting

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	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 Outlet port.	Valve is not vertical	Place the valve in a vertical
	Possible corrosion through the body and seat	Check the fluid chemicals parameters and contact us
	Dirty seat and/or float.	Clean seat and/or float.
	Worn seat and/or float.	Replace seat and/or float.
	Line pressure is under 0,3 bar	Replace seat with softer seat.
	Float linkage is dirty.	Clean float linkage.