



CSA products for waste water

Air vented anti surge tank

Mod. AVAST

CSA anti surge tank Mod. AVAST

Instructions

These instructions provide installation, operation and maintenance information for CSA Mod. AVAST waste water air vented anti surge tanks. They are for use by personnel who are responsible for installation, operation and maintenance of CSA products.

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 surge tanks 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 anti-surge tank 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 COMEVAL. 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

COMEVAL service personnel are available to maintain and repair all CSA products. COMEVAL also offers customized training programs and water hammer consultation services useful for the choice of the AVAST (air vented anti surge tank)

For more information, contact us or visit our website at www.comeval.es.

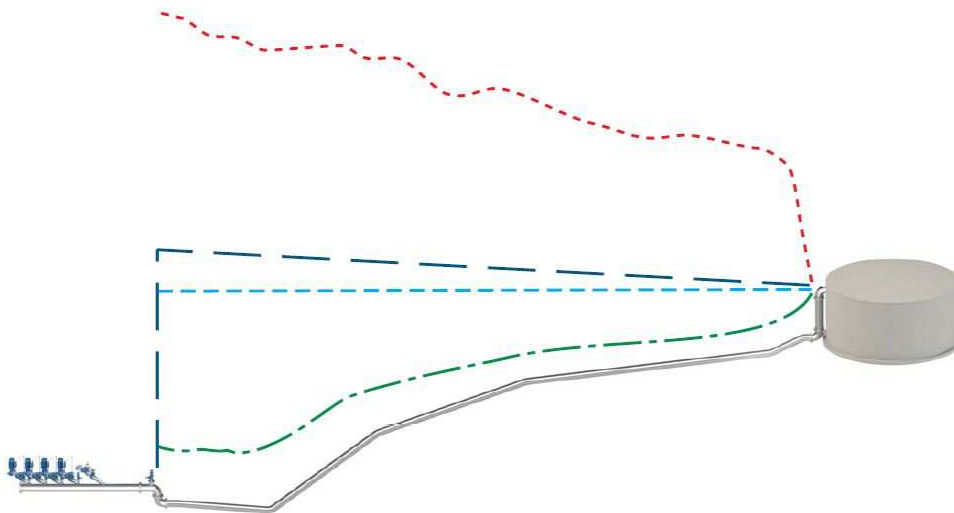
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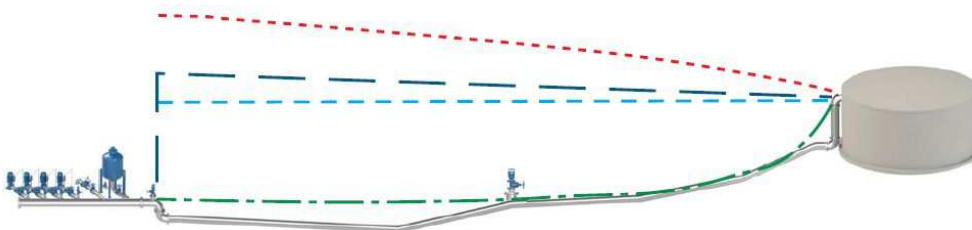
Description

The CSA wastewater anti surge tank is designed to protect pipeline, and pressurized systems in general, against the detrimental effects of water hammer events caused by pump failure.

AVAST, pat. pending, is based upon an innovative principle where an anti-slam air valves on top will allow the entrance of large amount of air if required during the transient, with the outflow control during filling and priming of the system. Air compressors, bladders and any other auxiliary source of energy will therefore be avoided and not needed. As well as ancillary devices such as safety valves, by-passes and level indication system. AVAST is fully automatic, simple and extremely reliable, and manufactured according to ASME or ISO welding standards, in compliance with several coating and corrosion parameters to match even the most demanding criteria. The maximum and minimum pressure are stated in the order and according to technical literature. In general we recommend to ensure at least 0,5 bar acting on top of the AVAST with a maximum working pressure of 16 bar.



Picture A



Picture

Pictures above are showing the effect of AVAST on a system exposed to water hammer and negative pressure in case of pump failure, red and green dotted line expressing the maximum and minimum pressure envelope reached during the transient event. Shouldn't the HGL drop below sub atmospheric pressure values at the location of AVAST we recommend twice per year, during maintenance operation, to drain the tank by 60% of its capacity through the drain port normally obtained on the bottom plate and/or on the flanged outlet connection to the main line.

Handling and Storage

Lifting the AVAST improperly may damage it. Lift the valve with slings, chains or cables fastened around the eyebolts. 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 outlets including the upper part where the air valve is located, 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.



WARNING!

During handling of AVAST be sure to have it firmly secured and balanced. Operate the crane and lifting devices slowly always making sure to keep personnel and field technician within a safety distance. Failing in doing so may result in severe injuries for people and damages to the equipment.

Fusion/Powder coated devices



CAUTION!

Equipment and devices 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.

Installation

The air vented anti-surge tank for wastewater AVAST should always be installed in a vertical position on top of the pipe or in derivation from it. 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.
- Downstream of check valves in pumping stations to protect the system in case of pump failure
- Adjacent to any sectioning valve in a pipeline whose fast manoeuvring is likely to produce unwanted surge events

Note to Engineer: If 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 vapour 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 and for possible leakage that may occur.

- 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.



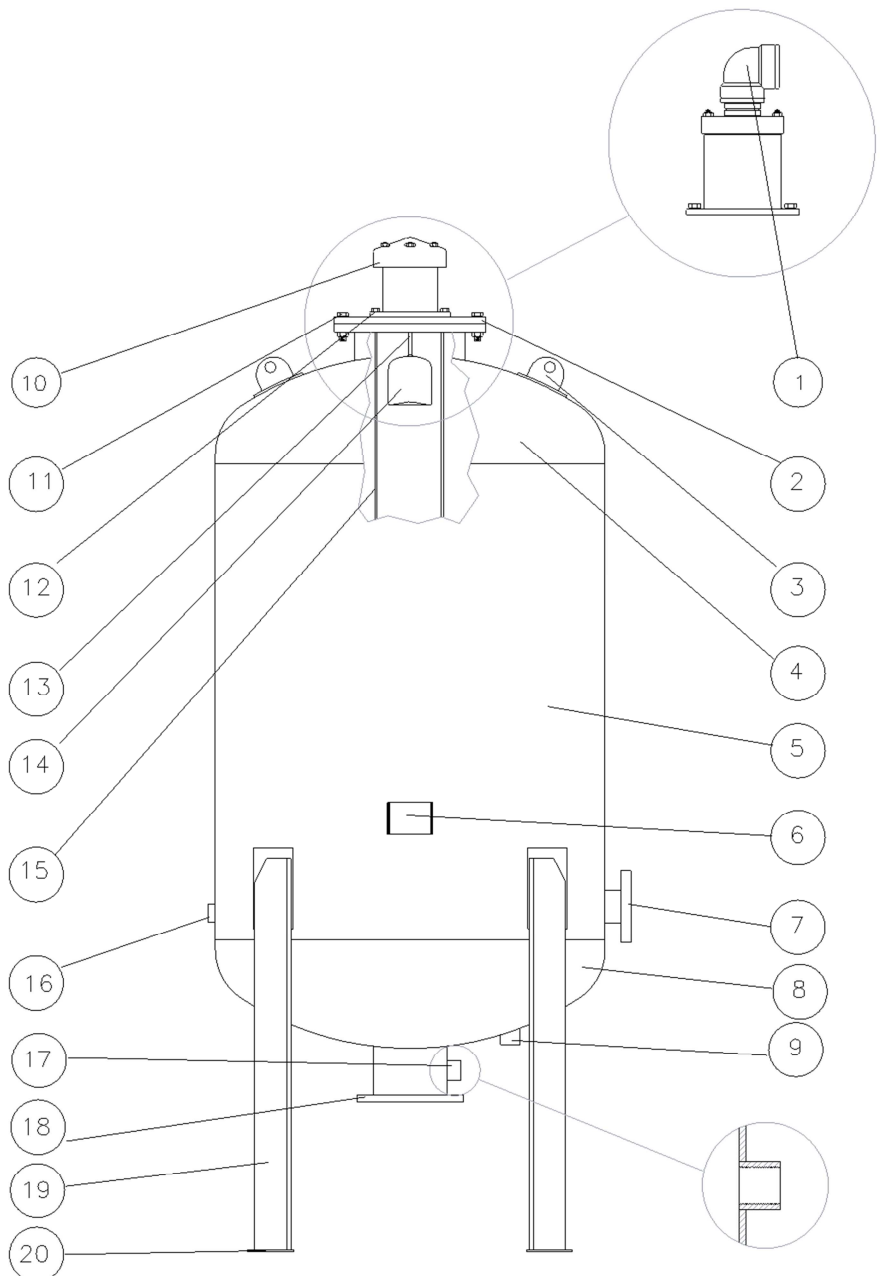
Maintenance

The anti-surge tank is automatic in operation and requires very little maintenance. It should always be installed in a vertical position. A semi-annual visual inspection for leakage on top of it where the anti-slam system is located would be advised. A malfunction of the AVAST can be identified by the seepage of water through the top part. AVAST has been designed as a universal and complete solution against water hammer events, mostly to provide liquid back to the system in case of pump failure and risk of negative pressure conditions.

Drawings

Picture 1 Air vented anti surge tank A.V.A.S.T.

Pos.	Component
1	Conveyance system(optional)
2	Upper flange
3	Hoisting points
4	Upper head
5	Shell
6	Marking and identification
7	Flange connection (optional)
8	Lower head
9	Drain
10	Anti slam device
11	Upper flange nuts
12	Anti-slam device nuts
13	Shaft
14	Float
15	Stand pipe
16	Pressure gauge outlet
17	Drain (optional)
18	Flanged outlet to the main line
19	Support
20	Brackets



CSA anti surge tank Mod. AVAST

Disassembly Procedure

See Figures 1 on page 6 for part identification.

1. Relieve pipeline pressure or shut off isolation valve, installed between the AVAST flanged connection (18) and the main line, before servicing the AVAST



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. Open the drain (9) or (17) to relieve internal pressure until the complete discharge of all the liquid contained. The dimension and connection of the drain will change with the AVAST total volume, and available according to installation requests, and it is specified in the assembly drawing of the tank provided the approval process. During the AVAST draining operation air will be entered through the air valve (10) supplied with a standard outlet cover or with an exhaust conveyance system (1). Shouldn't that happen check for possible clogging and obstruction that may prevent air circulation.
3. Remove the anti-slam device nuts (12)



WARNING!

Do not completely remove nuts, plugs or cover screws while the valve is under pressure. Always make reference to the pressure gauge (16) for any doubt or contact CSA prior to any action that may lead to injuries and possible damages

4. Take out the anti-slam air valve system (10) as a whole unit, the CSA anti-slam air valve (10) , pat. Pending, doesn't have to be disassembled prior to consult with COMEVAL. The anti-slam system, connected to the float (14), is composed of an obturator , a sealing system and anti-shock device the latter never in contact with the liquid and therefore maintenance free. The obturator, linked to the float (14) and responsible of the proper sealing of the AVAST against a seat, has to be checked to make sure no sign of deformation, corrosion and dirt are present. With regards to the presence and accumulation of dirt we would like to reiterate that the minimum pressure for AVAST to work properly shall be 0,5 bar on top (10) with a maximum of 16 bar.
5. We strongly recommend to keep one or two fully anti-slam unit (10) as a replacement needed in case of emergency
6. Inspect the shaft (13) and float (14) making sure there are no sign of deformation, corrosion
7. Check for the proper movement of the float by pushing it upwards and making sure no sign of friction and/or obstruction are present
8. From the top, after having removed the anti-slam air valve (10) check with a light whether dirt or deposit has reached and remained stuck inside the stand pipe (15) whose internal
9. Inspect all connections of linkage for excessive wear.
10. Clean all surfaces before re-assembly.

Note to the engineer

CSA AVAST is produced according to the PED directive and applicable welding standards European and /or ASME VIII Div 1. U stamp available on request

CE marking and technical documents, if applicable, along with NDE, penetrant tests and any other procedure which wouldn't include 3.1 material certificate and pressure test certificate, should always be required before the order confirmation and accepted by COMEVAL.

During the calculation and thickness of the metal hazard conditions are assumed to enhance safety and reliability, such as the possible absence of air circulation through the anti-slam system on top (10), with a resistance to negative pressure up to -0,5 bar.

Always make reference to the identification and marking present on the tag (6) supplied with the AVAST showing the relevant information in compliance with the standard and project requirements

In case of indoor installations always allow for at least 1 m or more above the upper part of the anti-slam system (10) for the proper maintenance and possible back wash operations. Failing in doing so would result in serious problems during the standard maintenance procedures.

The brackets and anchors bolts are calculated according to the applicable standard. In case of wind, earthquake and any other analysis which doesn't include the pressure calculation they should always be mentioned and required to COMEVAL during the approval of the AVAST drawing, and before the order confirmation.

The flanged connection (7) is normally an optional which proves to be useful for the possible connection with safety valve, air valves and any other device advised on a case by case basis.

The exhausts conveyance system (1), available on request is extremely useful to avoid the risk of seepage in case of low pressure and potential problems, to muffle the noise and avoid the emission of bad smells and gas (this would mostly apply to sewage mains)

Troubleshooting

Condition	Possible Cause	Corrective Action
Valve leaks at the flanged outlet to the main (18)	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 on the anti-slam system (10)	AVAST is not vertical	Place the anti surge tank AVAST in a vertical position
	Possible corrosion through the seat	Check the fluid chemicals parameters and contact
	Dirty accumulated inside the stand pipe (15)	Disassemble the upper part following the procedure above and inspect the stand pipe from the top, clean it if necessary
	Worn seat and/or float.	Replace seat and/or float.
	Pressure at the top of the AVAST is below 0,3 bar	Replace seat with softer seat.
	Float (14) has been damaged and full of water with loss of buoyancy	Inspect and replace the float
	Worn o-ring between seat and anti-slam system obturator	Inspect and replace o-ring
Valve leaks through upper flange and or the flange connecting the anti-slam device to the AVAST	Possible corrosion through the bodies	Check the fluid chemicals parameters and contact us
	Damage to the o-ring and gaskets located on such points	Inspect and replace the gaskets
	Insufficient torque on the nuts (11 and 12) needed to ensure the water tightness between the anti-slam system (10) and the rest of the AVAST	Apply enough torque to avoid the leakage
Valve leaks out of the drain (9-17), pressure gauges (16) and flanged outlet where present (7)	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Possible corrosion through the bodies	Check the fluid chemicals parameters and contact

Guarantee

Products, auxiliaries and parts thereof of COMEVAL 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 COMEVAL recommendations. Repair or replacement, at our option, for items of COMEVAL 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 COMEVAL be liable in this respect. COMEVAL does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does COMEVAL 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 COMEVAL 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 COMEVAL 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 COMEVAL. factory Service personnel. All orders accepted shall be deemed accepted subject to COMEVAL warranty terms and conditions.

Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL COMEVAL BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND COMEVAL 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.comeval.es E-Mail : info@comeval.es



COMEVAL 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.