

Operating and Maintenance Instructions for

HaVent - automatic and infinitely variable air valve for potable water Model 993

1. Intended usage and product description

The HaVent automatic and infinitely variable air valve is suitable for potable water up to a maximum operating pressure of 250 psi / 17 bar.

The HaVent has been designed for installation in manhole shafts, air valve sets (Model 992) or in water treatment systems. A shut-off valve should be installed below the automatic air release valve for maintenance purposes.

Air and vacuum valves contain compressed air. Therefore, isolate the air and vacuum valve from the operating system. Before starting any maintenance work the valve must be isolated and depressurized.

Design features:

- HaVent is an automatic and infinitely variable air valve for an operating range of **0 – 250 psi / 17 bar** (standard version)
- HaVent is a true 2" FNPT air and vacuum valve, valve body is made of stainless steel 316.

The HaVent is a two-way air valve, both aerating and removing air enclosed in pipelines. The valve operates automatically and is designed to reduce water hammer.

2. Installation

Prior to installation, the pipe must be flushed out, as dirt, drill shavings or other debris can impair the valve's operation if they are allowed to enter it.

The valve must always be installed on a vertical outlet of the pressure pipeline. It should always be installed as close as possible to the pipeline to minimise the risk of freezing. Laterally displaced connections to the pressure pipeline should be avoided. We strongly recommend installing a shut-off element (shut-off valve or auxiliary shut-off) below each air valve for maintenance purposes and to allow pressure testing of the pipeline.

In addition, a drain valve should be installed below the valve for maintenance purposes, to facilitate installation and removal and to allow functional testing.

With large pipeline dimensions, please note that the air needs to be fed to the valve. Otherwise, some of the air will pass by the side of the valve. For this purpose, a breather dome should be installed. It is a good idea to make the connection to the pipeline as large as possible and to bind it to the vertical flange outlet of the pipeline, using a reducer (that can simultaneously serve as a breather dome) where applicable.

The valve must be installed in the depressurised state. This means that pressure will need to be discharged from the pipeline. In the case of pressurised pipelines, the shut-off element below the valve must be closed prior to installation.

The 2" threaded connection must be sealed using a double nipple or implemented as a conventional flanged connection plus flat gasket.

During initial air release, a very small amount of water might spray out of the valve. This is perfectly normal. If exhaust pipes are being run from the valve, care should be taken to ensure that no water that has accumulated from the pipe can run back into the valve.

3. Initial setup into operation and pressure test

Observe the information under point 2 about flushing out the pipeline prior to installation.

The maximum filling speed is based on the general specifications ($v_{max} = 0.25$ m/s).

Before filling the pipeline, open the isolation element below the valve. The valve will vent automatically and close of its own accord as soon as the water presses the float up against the sealing diaphragm.

Leaks can only be caused by dirt entering the valve. If a leak does occur because of dirt, please proceed as described in chapter **4 Maintenance**.

Air valves are inspected at the factory so that they do not have to be included in the pressure test.

Air valves must be taken out of operation while the pipeline is undergoing pressure testing, otherwise air release could occur during the test. This would result in a drop in pressure. At the end of the pressure test, please remember to put the valve back into operation and to carry out a visual inspection at operating pressure!

The valve can be put out of operation by closing the isolation valve. Air valves are classed as end valves at geodetic high points.

Measures to be implemented prior to pressure testing

Valves that have not been shut off properly can result in erroneous pressure testing results. As soon as any air is removed from the piping via the valve and the seal seat opens slightly as a result, there will be a drop in pressure. In the test record, this might be interpreted as a leak in the piping or at valve points.



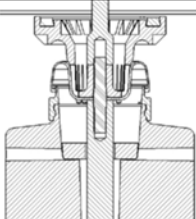
To avoid erroneous measurements, the valve must be taken out of operation prior to pressure testing by closing the shut-off valve!

Once pressure testing is complete, slowly open the shut-off valve below the valve again to make the air valve ready for operation again!

4. Maintenance

If debris is allowed to enter the valve body (e.g. PE shavings as a result of drilling, wood, polystyrene, etc.), this can impair the sealing function, as can deposits associated with water containing iron, manganese or suspended matter. To prevent malfunctions, maintenance should therefore be carried out at least once a year. Depending on the composition of the water, it may be necessary to reduce the maintenance intervals.

Procedure:

<p>a.) First of all, slowly close the isolation valve below the air valve. ATTENTION: There may be some compressed residual air left inside the valve. Therefore, the first thing you must do before carrying out any further work on the valve is to release the pressure carefully.</p>	
<p>b.) It may be necessary to remove any supply/exhaust air piping that is connected to the valve.</p>	
<p>c.) If the valve body is difficult to access, the valve should be removed in its entirety for cleaning purposes. To do this, you should undo threaded connection. If the valve is easy to access, it can be cleaned while still attached to the pipeline.</p>	
<p>d.) Remove case cover with a needle hole key (size 80 – 125 and 6 mm pins) or spanner (SW 70) .</p>	
<p>e.) Remove the interior components (float with integrated valve mechanism). Remove any debris that is present and clean the body components and seal areas.</p>	
<p>f.) Check roll diaphragm and flat gasket for wear or damage. If necessary, ensure that replacements are ordered and change the sealing elements.</p>	
<p>g) Reassemble the valve by following the steps in reverse (take care of the correct seat of the guiding rod). Thread and O-ring must be clean and need to be greased with appropriate fad.</p>	
<p>h.) Slowly reopen the shut-off valve.</p>	
<p>If the valve fails to close tightly enough afterwards, steps a. – h. must be repeated.</p>	

5. Accessories/Special function

The air valve can be equipped for the sole purpose of air release or air supply by installing a non-return valve on the top body outlet in the required direction.

This is usually done at the factory in accordance with specifications, but the non-return valve can also be retrofitted by customers.

If you have any other queries or need further information, please contact:

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