Know How Bleeding and Venting Valves

Bleeding and venting valves remove or admit air or gases automatically from/to tanks, vessels or pipelines. They are float-controlled valves which close as the liquid level rises and open as the level falls.

Operation
A rising liquid level lifts the float and closes the valve, in most cases via a system of levers. If the liquid level drops because air is entering the system or the plant is being started up, the valve will open and either admit air or vent the air from the system.

Start-up bleeding and venting valves
are used to vent low-pressure plant systems when such systems are started up or filled. The float acts directly on the cone. They have a large seat diameter to ensure fast venting for pressures below 0.1 bar. During operation these valves are kept closed by the internal system pressure. A suddenly occurring vacuum causes them to open and equalise the pressure. This prevents damage which a vacuum may cause.

Continuous vent valves
are used to remove air which accumulates as the plant operates. They incorporate a lever system which enables them to operate at very low and high pressures.
A non-return valve can be fitted to the outlet side of these valves to prevent air entering the system. In this case they are pure vent valves, no air enters the system.

Combined Bleeding and Venting Valves
are combined start-up and continuous bleed/venting valves. They have a large seat for start-up operation and a small seat for continuous operation, which are controlled by a float via a system of levers. Both valve seats are open while the system is being filled. During system operation the large seat is kept closed by the internal pressure. Any accumulating small air volumes are vented from the system via the small valve seat. If the pressure drops below 0.1 bar the large valve seat can open again. If a vacuum occurs which may be caused, for instance, by a pump failure, the large seat opens instantaneously and prevents damage.
If subsequently a pressure surge runs back through the pipeline, the large seat closes causing the air volume which has entered the system to act as a damper while escaping to atmosphere through the small seat.

Elastomers and coatings
Standard valves can be used for water up to 80 °C, in certain cases up to 130 °C, higher temperatures with special types.
For ozone we supply a special version fitted with special elastomers. For hydrocarbons like petrol, gasoline etc. we use FPM. For hot mineral water, sea water and other liquids containing chloride we supply valves that feature coated bodies and internal components. For corrosive media we supply rubber-coated valves. In addition we can supply special valves manufactured from high-molybdenum materials.
Please note that our stainless steel venting valves are in most cases cheaper than equivalent cast iron valves.

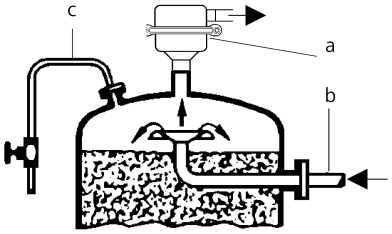
Operating pressure range
You should select an operating pressure range which covers the maximum pressure that may occur, as otherwise the vent valve will not open. You should select the type and size of vent valve according to the air volume to be removed at operating pressure. You will find the appropriate tables in the data sheets. The throughput capacities given in these tables apply to a fully open valve i.e. when the system is started up or as long as the liquid level remains below the vent valve inlet. For steady and continuous venting, e.g. of filter vessels, the throughput capacity should be reduced by approximately 30%.
To ensure smooth operation and long life, continuous vent valves should not be overdimensioned. If the throughput capacity is excessive for a given nominal diameter, a higher operating pressure coupled with a correspondingly lower throughput may provide the solution.

Installation
Vent valves should always be installed at high points in pipelines or vessels. Do not install vent valves on standpipes or in flushing lines but at those points where air accumulates. Select a pipe run where the flow velocity is reduced and, if required, install a vent dome. You should choose an installation site where the vent valve is not likely to "hammer" and thereby get damaged.

During venting slugs of water must not be carried over and enter the valve body at high speed. If you are in doubt you should install a baffle or deflector.
Please make sure that the cross-sectional area of the tank outlet is not less than that of the vent valve inlet.
Under certain conditions (steam, foaming, very high flow velocity, contamination) a vent valve may "spit" i.e. discharge a small quantity of water when closing. For this reason it is recommended to fit a blow-off line to the outlet of the valve, if required.
In the case of large air capacities, great turbulence, two-phase mixed media or side-mounting of the valve because of restricted headroom above the tank, a pipeline should be installed between the bleed valve cover and the highest point of the tank (i.e. a balancing line such as is used with level control valves). For this purpose the bleed valve cover must be fitted with an additional connector.

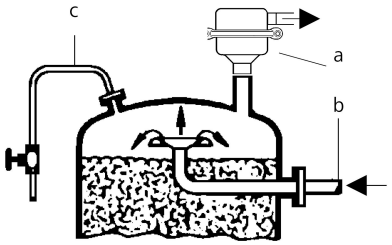
Example for insatllation on a filter vessel

Picture 1: wrong, in center



a = Bleeding/venting valve b = Water supply c = Vent line

Picture 2: right, off-centre



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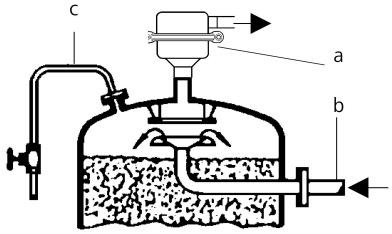
Picture 3: right, with deflector



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Pollution
If you have polluted liquids and the vent valve must be cleaned from time to time, please, install a stop valve between tank, vessel resp. pipeline and vent valve. This is not necessary if the equipment to be vented can be simple depressurized.

Operation
Pressure surges or water hammer can destroy a float. For this reason suitable protective devices should be installed in the system.
With foaming media and their reduced specific density, bleeding/venting valves cannot operate reliably. For such applications we strongly recommend the installation of a smoothing vessel. In such cases our bleeding/venting valves type EB 1.11 and EB 1.84 may be used.

Maintenance
Pressure reducers must be cleaned and serviced regularly, especially in the case of liquids containing compounds which tend to form deposits such as iron or lime.

Valves free of oil and grease or silicone
Please pay attention to order an fit only spares free of oil and grease resp. free of silicone.

Please consult our engineer if extreme operating conditions apply or whenever you are in doubt.

Notes on Safety, Operating Instruction etc. MUST be followed.