

Level controllers and float valves control the liquid level in a vessel

Level controller or float valve

You should use a level controller with float chamber if the float cannot be mounted in the vessel. It is mounted in the pipeline and connected to the vessel by means of balancing lines.

Float valves have no float chamber. The float is always mounted in the vessel.

Feed and drain valves

Feed valves (code letter "Z") close as the float rises and prevent overflowing. Drain valves (code letter "A") close as the float sinks and ensure that the liquid level does not drop below the required level.

Mounting of float-controlled valves

- Float valves for installations in vessels are mounted inside the vessel complete with float.
 - Float valves for installation on vessels are flange-mounted on the outer skin of the vessel.
 - Float valves for installation in pipe lines are installed in the feed/drain pipe.
- The float lever either projects into the vessel or the float movement is transferred by means of a cable.

Flow direction of float valves

The flow direction determines the mounting arrangement and type of float lever used:

- horizontal, flow direction towards or away from the vessel code letter "w"
- vertical, flow direction upwards code letter "o"
- vertical, flow direction downwards (code letter "u")

Selecting valve type and nominal diameter

To select the valve type and determine the required nominal diameter you should calculate first the operating performance parameter K_v , based on the maximum operating values and minimum pressure drop D_p . You should choose a valve having a K_{vs} value which is 30 % greater than the calculated K_v figure.

Selecting the operating pressure range

The maximum operating pressure of your system must be within the operating pressure range of the valve; if not, the float valve will not close or open.

Pressure inside the vessel

Check whether the vessel in which the float is to be mounted is not pressurised. If the vessel is pressurised a pressure-resistant ball float has to be fitted. Cylindrical floats may only be used in non-pressurised vessels.

Temperature

If the valve is to be used for temperatures above 80 °C or a liquid other than water, the compatibility of the elastomers must be checked. For hydrocarbons like gasoline, petrol etc., for example, the valves are fitted with FPM elastomers, whilst for higher temperatures they are fitted with EPDM or, if necessary, with a metallic cone seal.

Adapting the float

Float valves are normally designed for media with the specific gravity of water. By choosing a different float geometry, by filling the float or by altering the operating pressure range, we can adapt the floats to other media.

Balance and double seat

Single seat non-balanced float valves are used for low pressures. They are relatively insensitive to contamination and dirt deposits. Single seat balanced valves can be used for larger pressure drops and feature smaller floats. Double seat valves are specially suitable for large flow rates.

Overflow preventers

A special product are the PTB-approved overflow preventers Types 365 and 365F. These are mechanical safety devices for flammable liquids.

Valve seat leakage

These valves are no shut-off elements ensuring a tight closing of the valve. In accordance with DIN EN 60534-4 and/or ANSI FCI 70-2 they may feature a leakage rate in closed position in compliance with the leakage classes II – V:

Leakage class II (metal sealing double seat cone) = 0.5% K_{vs} value

Leakage class III (metal sealing cone) = 0.1 % K_{vs} value

Leakage class IV (PTFE seal cone) = 0.01 % K_{vs} value

Leakage class V (soft seal cone) = $1.8 \times 10^{-5} \times \Delta p \times D^*$ [l/h]

*D=seat diameter

Any low leakage requirement must be expressly specified when ordering. Valve leakage can be considerably reduced by special measures such as lapping the valve seat, using special cone seals and increasing the valve closing force by changing the lever geometry or increasing the size of the float.

Adjustable filling level

In the case of valves fitted with float rod and adjustable float, the level in the vessel can be adjusted by sliding the float along the rod.

Float rod guide

For float rods a guide must be provided in the vessel to prevent the float oscillating. Float valves with parallel guide or special designs featuring a top-mounted float do not require a rod guide.

Operation

Make sure that no pressure surges or water hammer occur in the system, which could destroy the float. In the case of foaming media and the resulting reduction of the specific gravity, a float valve cannot operate reliably. In this case a foam abatement circuit should be provided.

Maintenance

Float valves and level controllers should be cleaned and serviced at regular intervals. This rule applies especially to valves which are rarely operated e.g. valves fitted in sprinkler systems. Thorough cleaning is important in the case of liquids containing substances which easily form deposits (such as iron, lime, suspended solids etc). Sand and abrasive particles carried along in the liquid can cause rapid wear. Please ask for specially adapted valves.

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

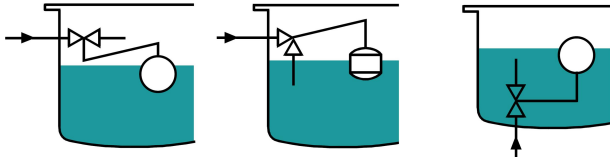
Know How Float Valves



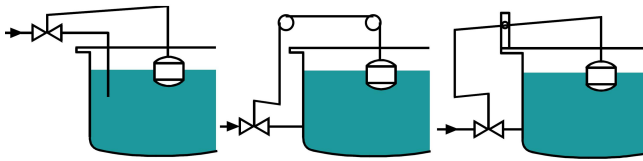
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Sample for installation for inflow valves

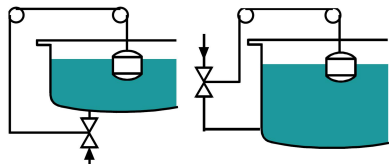
for installation in vessels



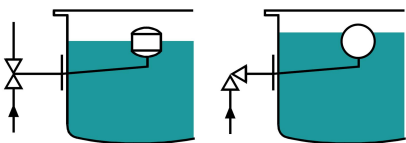
for installation in pipelines, horizontal installation



for installation in pipelines, vertical installation



for installation at tanks



overflow preventer for flammable liquids

