

Venturi-Style Domestic Water-Jet Air-Compressor



You do not need a compressor or an air pump, if you use our water-jet air compressor. In principle, it is a water-operated venturi-style jet pump. Water flows with high velocity through a nozzle and entrains air out of its environment. The water and the air are then mixed in a second nozzle and transported to the pressure air chamber, where the air pearls to the water surface.

Air compressors need a certain difference of pressure between inward and outward opening, which becomes larger with increasing pump pressure.

While setting the switch-in and switch-off pressure, make sure, that the difference between these two pressures is larger than the necessary difference of pressure of the Domestic Water-Jet-Air-Compressors, because otherwise no air is being entrained at all.

For example if the switch-off pressure is fixed at 40 m, then the starting pressure must be below 32 m, since the Domestic Water-Jet Air-Compressor needs a difference of pressure of about 8 m after the characteristic.

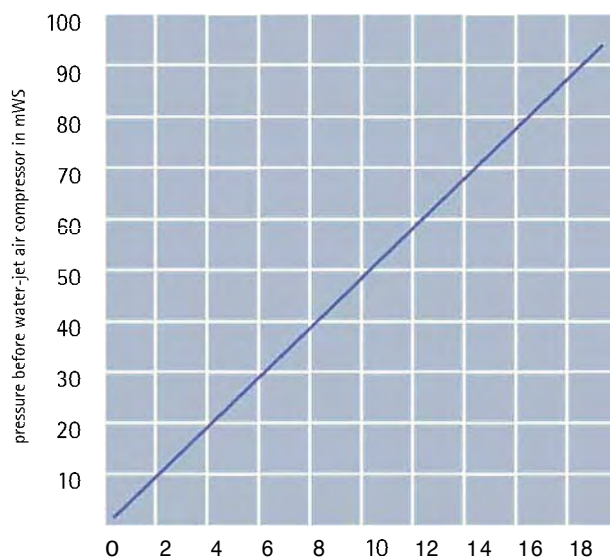


fig. 2

For automatically maintaining the air pressure in the pressure air chamber of domestic cold-water supply facilities.

In home water supplying plants the air in the pressure air chamber must be supplemented more frequently, since it is absorbed by the water in it and may also escape by leakages.

In some cases, you may also use a small compressor or, especially in small facilities, an air pump.

The Domestic Water-Jet Air-Compressor possesses a check valve and an air adjusting screw in its top. The check valve prevents a leaking of the water if the plant stands still; with the adjusting screw the aspirated amount of air can be adjusted.

If the starting pressure is set higher, the pressure of the pump must be increased too, to provide the necessary difference of pressure between switch-in and switch-off pressure.

Example:

If the starting pressure of the pump is set to 2 at., the pump will start after the pressure in the chamber is less than 2 at. If the working pressure of the pump is set to 4 at, the necessary difference of pressure is about 0.8 at. (fig. 2). This means, that air is entrained between 2 and 3.2 at. Between 3.2 at. and 4 at. only water is transported through the air compressor. After the switch-off pressure of 4 at. is reached, the pump stops, until the pressure in the chamber sinks, by using water or leakage, under 2 at.. Then the pump starts again.

In order to make the use the domestic water-jet air compressor as economically as possible, each apparatus is designed and manufactured individually.

Please also pay attention to the fact, that pressure and total hoisting depth of the pump are not confounded, because in the total hoisting depth the suction height is contained, which must be added to the pressure. From the lists of the pump manufacturers one can nearly always see the attainable delivery of a certain hoisting depth.

required difference of pressure in mWS
erforderliche Druckdifferenz in mWS

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INSTALLATION

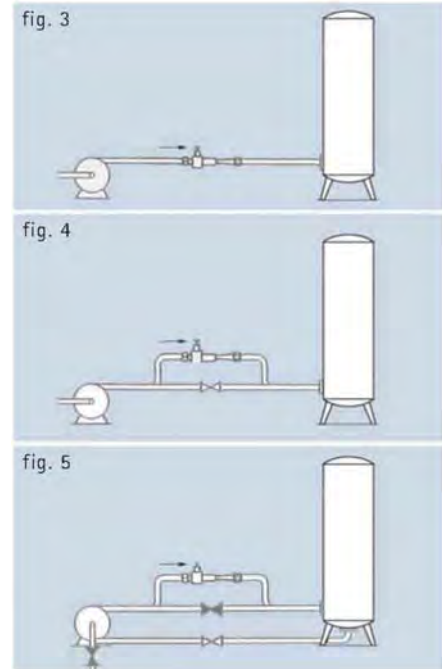
In smaller plants with centrifugal pumps directly into the pressure pipe between pump and air chamber (fig. 3).

In any plant with piston pump and to the power-saving in larger plants with centrifugal pumps into a by-pass line (fig. 4).

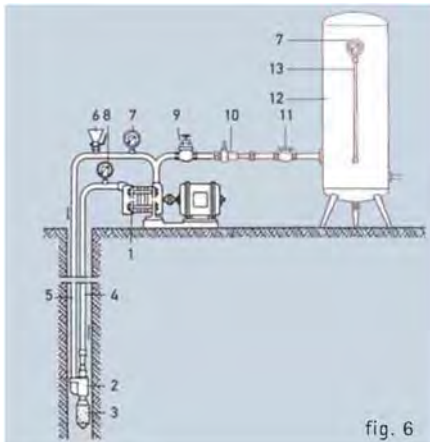
A valve is mounted into the pressure pipe thus either only part of the water flows through the Domestic Water-Jet Air-Compressor or to ventilate occasionally. With opened valve the Domestic Water-Jet Air-Compressor is except function, for ventilating the valve must be locked completely or partly. With piston pumps the mentioned valve must be a spring-tensioned pressure-regulating valve, so that it can take up the pressure surges (fig. 4).

In large plants a by-pass line enables power-saving ventilation, if the water in the cycle already flows to the pump under pressure (Fig. 5).

If the Domestic Water-Jet Air-Compressor fails despite correct circuit and attitude, either the nozzles are clogged or the check valve is not correct.



Example: Complete home water supplying plant



- 1: Pump
- 2: Eductor
- 3: Foot valve
- 4: Ascending-Water Pipe
- 5: Service Water Pipe
- 6: Filling Funnel
- 7: Pressure Gauge
- 8: Vacuum Meter
- 9: Shut-Off Valve
- 10: Domestic Water-Jet Air-Compressor
- 11: Check Valve
- 12: Boiler
- 13: Water Level

When ordering we ask to answer the following questions:

1. How large is the switch-off pressure?
2. How large is the delivery of the pump at switch-off pressure?
3. How large is the starting pressure?

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Sizes, Dimensions and Weights	Size	Capacity (l/min)	Diameter of Connection (inch)	Length (mm)	Weight (kg)
	1	40	1"	150	1,0
	2	60	1¼"	175	1,7
	3	100	1½"	230	2,5
	4	150	2"	260	4,1
	5	400	3"	420	12,0
Material: Cast iron / nozzle: tombac					