

# Pressure maintenance and control set for hydrophore installations

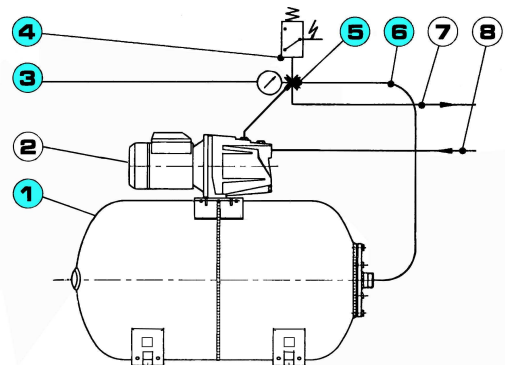


In order to ensure that pressure is maintained within specified use value limits, in the case of domestic hydrophore systems, it is necessary to use a pressure maintenance and control set.



The set includes:

- hydrophore tank (no.1)
- pressure sensitive switch (no.4)
- pressure gauge (no.3)
- 5-way valve (no.5)
- anti-vibration hose (no.6)



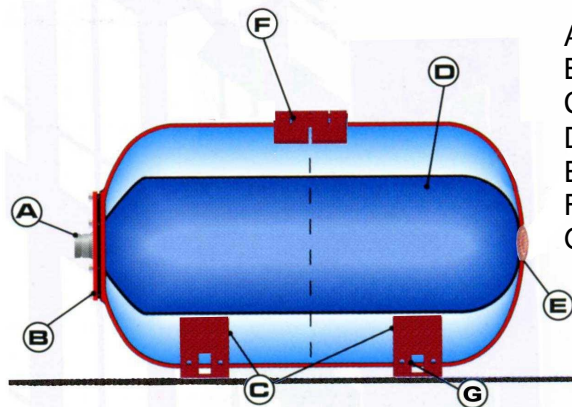
A complete hydrophore installation consists of a pump (no.2) and a pressure maintenance and control set. The installation diagram on the left shows the delivery pipe marked with no.7 and the suction pipe with no.8:

## Operation:

To ensure that the pipe works using a completely automatic cycle, a comprehensive pressure maintenance and control system should be installed. None of the elements independently used will appropriately fulfil the function of pressure maintenance and control. However, used together, the components will ensure that the hydrophore installation works correctly by turning it on, if the pressure falls below a specified level and turning it off, after a required value of pressure is reached.

If the pressure was controlled solely with a pressure sensitive switch, than any slightest water outflow, because of low water compressibility, would cause a sharp drop in pressure and the pump would be started again. Any further start-up would lead to a drastic increase in the volume of water in the installation and would cause pressure increase in regards to the pressure value which turns off the pump. As a result, the pump would be working in the process of constantly being turned on and then off again, all in small intervals, each lasting a few seconds. The hydrophore tank works as a necessary buffer and ensures reliable operation of the system.

The tank, which forms a part of the pressure maintenance and control set, consists of an external tin shell and of an internal elastic rubber membrane. The rubber from which the membrane is made is the EPDM type of rubber - suitable to be in contact with water. Please find below a reference drawing:



- A) installation port (usually 1")
- B) flange(zinc galvanized carbon steel)
- C) tin shell (painting carbon steel)
- D) elastic membrane EPDM
- E) air valve (stainless steel/brass/NBR)
- F) base of the pump (painting carbon steel)
- G) tank feet (painting carbon steel)

The water is pumped through the port A, to the membrane D, which is located inside the shell C. The air is artificially pushed through the valve E with the initial pressure (usually 1.7 bar), between the membrane D and shell C. The water flowing into the tank compresses the air which is inside the tank to have the same pressure as one produced by the pump. After the required pressure is reached, the pressure sensitive switch turns off the pump. Every water demand causes the stored water to be pushed out by the compressed air, and the air, while doing that, increases in volume. It is only thanks to air compressibility, that there is no drastic, uncontrollable pressure drop in the installation and that the pump is not started again. The parameters of the tank and the pressure sensitive switch are chosen in such a way, that the pump is only turned on after an outflow of water takes place which is 1/3 the nominal volume of the tank. Another required component of the set is a 5-way valve. It is a special pipe fitting, which should be installed on the pump, on the installation port. The pressure sensitive switch and the pressure gauge are then fitted on the valve. The pressure gauge is used for periodical quality control checks of the system. The anti-vibration hose also is fitted onto the 5-way valve – it connects the pump and the compression installation with the tank.

## Technical details of the components:

1. Pressure sensitive switch:  
Supply voltage 230V/50Hz ~1 phase, max. electricity 10A, factory setting of the pressure for turning it on 1.5 bar, pressure for turning it off 3.0 bar, port ¼"
2. 5-way valve:  
1"M x 1"F x 1"F x ¼"M x ¼"F, height 70mm
3. Pressure gauge:  
0-10 bar, 40mm diameter, port ¼" M, axial
4. Anti-vibration hose:  
Ports 1"M x 1"F with an elbow, length 50cm/60cm/70cm/80cm, aluminium braid, EPDM insert, brass connectors
5. CF24L tank type  
Nominal volume 24L, EPDM membrane, max. operating pressure 6 bar, test pressure 11.5 bar, port 1", air tank pressure 1.7 bar.

Set of component products, distribution in Poland:  
PHU DAMBAT owner of the IBO brand  
Gawartowa Wola 38  
05-085 KAMPINOS  
Poland