

# Manual for Commissioning Hydrophore set

This manual provides instructions for commissioning a hydrophore set equipped with an on/off pressure switch.

The hydrophore set consists of a pump, diaphragm tank, pressure switch, and various appendages such as check valves, hoses, and pressure gauges. The setup and adjustment process depends on factors such as the type of pump, desired system pressure, the size of the diaphragm tank, and the specific characteristics of the installation. These factors include variable water demand and the period of usage. Proper adjustment of the hydrophore set is only possible after full installation.

The procedure for testing and adjusting the system after installation should be followed in the order outlined below:

1. Electrically connect the pump;
2. Fill the pipes and pump housing with water and/or open the water supply;
3. Turn on the pump (check the rotation direction!);
4. Completely bleed the system;
5. Close the discharge pipe and set the desired (maximum) shut-off pressure on the pressure switch.

**Note:** The maximum shut-off pressure should always be set to 0.5 bar lower than the pump's maximum discharge pressure or the sum of the supply pressure (from the inlet line) and the pump's discharge pressure.

Example A)                      Maximum pump pressure = 4.0 bar  
    Supply pressure (suction from a tank) = 0.0 bar  
    Maximum shut-off pressure setting = 3.5 bar

Example B)                      Maximum pump pressure = 4.0 bar  
    Supply pressure (from the inlet line) = 2.0 bar  
    Maximum shut-off pressure setting = 5.5 bar

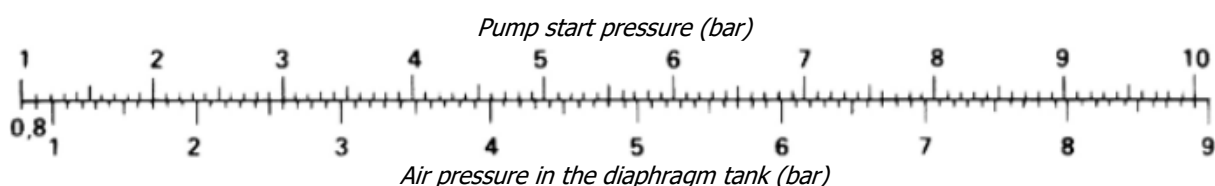
### Attention!

When using a closed supply line, such as a water pipe, and/or when a supply pressure is applied, a supply pressure protection system must always be used. This device should shut off the pump when the (supply) pressure drops below 0.5 bar. Additionally, the protection should be implemented with a locking mechanism to ensure proper operation.

Each type of pressure switch has a maximum setting screw and a differential setting screw. The maximum setting screw is used to adjust the shut-off pressure. The differential setting screw adjusts the difference between the shut-off and the start pressure.

6. Fill the diaphragm tank with compressed air to a pressure that corresponds to the pump's start pressure.

**Note:** The start pressure is the pressure at which the pump starts. The supply pressure in the diaphragm tank should be set according to the table below. The tank can be filled using compressed air or a bicycle pump, whichever is more convenient. Filling should only be done when the system is depressurized, meaning the pump is off, the water supply (supply pressure) is shut off, and the discharge pipe is open. The fill valve is typically located under a plastic cap.



## 7. System operation check

Note: Always check the start and shut-off pressures multiple times to ensure proper operation. If necessary, these can be adjusted using the setting screws.

### Time-Delayed Shutoff

To prevent the pump from frequently turning on and off, a modified version of the system is often built. This version includes a hydraulic time delay, which is achieved by installing a modified check valve between the diaphragm tank with the pressure switch and the pump system (pump and discharge pipe). Several small holes are drilled into this check valve (four holes of about 6 mm in a 1" check valve).

The check valve is positioned to allow water to flow directly from the diaphragm tank into the system. When water usage stops, the pump will continue running until the set shut-off pressure, on the pressure switch and diaphragm tank side, is reached. The diaphragm tank will gradually fill with water through the small holes.

This results in the following system characteristics:

- The pump will continue running for a longer period when water usage stops.
- The pump will not turn on and off unnecessarily.
- The system pressure will temporarily rise when water usage stops. This rise depends on the maximum pump pressure or the sum of the maximum pump pressure and the prevailing supply pressure.

The duration for which the pump continues running is determined by several factors: the size of the diaphragm tank, the holes in the check valve, and the pressure difference between the system pressure and the pressure in the diaphragm tank.

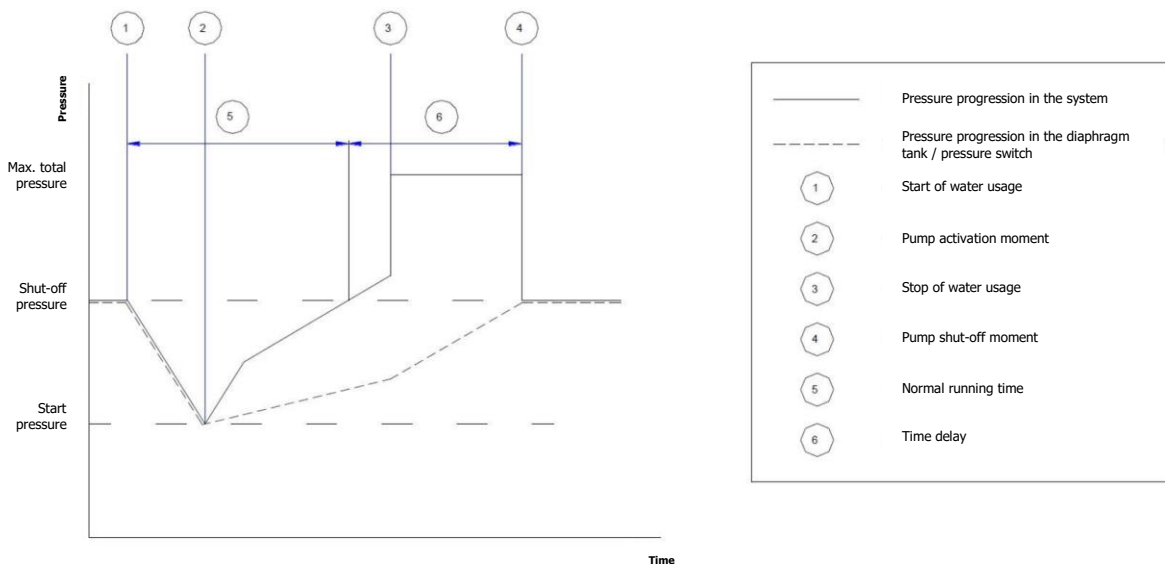


Figure 1: Diagram of time delay and pressure progression in the system versus diaphragm tank