

# PRESSURE SWITCH AND VESSEL SET UP

The following notes are a guide to assist in the setup and adjustment of a “Telemechanique” pressure switch and pressure vessel. Please note that this is a guide only and you should refer to the manufacturer’s instructions.

All mains electrical work should be undertaken out by a qualified and competent electrician.

## INSTALLATION

The pressure vessel and pump should be secured by foundation bolts and, if necessary, shims should be used to ensure the base is level and properly supported.

When the pump is to draw water from a lower level than the pump inlet port, a foot valve must be fitted at the end of the suction pipe, below the lowest possible water level.

Ensure that the pump and manifold is positioned to allow access for examination, adjustment and maintenance, and that there are adequate drain facilities, and protection from water damage in the immediate vicinity of the pump. In particular the pressure gauge and pressure switch should be easily accessible. To aid set up, an isolation valve should be fitted on the discharge side of the pump after the pressure switch, pressure vessel pressure gauge.

The Telemechanique pressure switches have numbered terminals as follows :

Terminals 1 & 3 – 230volt power in.

Terminals 2 & 4 – To motor.

## ADJUSTMENT OF THE VESSEL PRE-CHARGE PRESSURE

Firstly, decide the cut in and cut out pressures you will require for the pressure switch.

As a guide, the differential between the cut in and cut out pressures is usually in the region of 1,5 bars, as this amount of differential provides a good operating range especially for smaller single phase pumps. This setting however will be dependent on the pump’s required operating parameters and the pressures required at full flow so in effect this differential may be smaller.

The pressure vessel is normally supplied with a pre-charged pressure ranging from 1,5 to 2 bars but under normal operating pressures should be adjusted to 90% of the cut in pressure for the pump.

Eg :

Required cut in pressure                      2,0 bars

Required cut-out pressure                    3,5 bars

Therefore tank pressure should be set at :  $2 \text{ bars} \times 90\% = 1,8 \text{ bars}$ .

To adjust the pre-charge pressure of the tank, remove the black cap at the end or on top to reveal a Schrader valve. A small compressor or foot pump can be used to make any adjustment – check the pressure with a standard pressure gauge.

## STARTING AND ADJUSTING

Before starting the pump ensure that it has been fully primed and vented. Also follow the manufacturer’s instructions for the pump

Isolate the power and remove the cover on the pressure switch.

Before starting the pump loosen both the differential and range nuts completely, then tighten the range nut to approximately  $\frac{3}{4}$  of maximum spring tension. (The range nut is the metal cross headed nut whilst the differential nut is the plastic nut on the smaller spring).

Switch on the electrical supply to the pump.

Please note that the complete irrigation system mainline should be full and flushed through before adjusting the pressure switch as back pressure will also need to be taken into account for the low pressure start up and you may need to adjust the pressure upper limit to attain this. Once the pump is running, the discharge gate valve should be slowly closed until the pump cuts out – this will simulate the system being shut down with no water required upstream. Next, slowly re-open the discharge gate valve until the pressure drops and the pump restarts – make a note of the pressure that this happens as this is the cut-in pressure.

Now once again isolate the power supply.

If the cut in pressure is too low tighten the range nut – conversely, if the cut in pressure is too high you will need to loosen the range nut. Switch the power supply back on and repeat the procedure until the right cut out pressure is obtained.

Once the cut in pressure is obtained, switch on the pump and close the discharge gate valve and observe the pressure gauge until the pump cuts out. This will be the cut out pressure which should obviously be above the normal operating pressure required of the system. Isolate the power supply.

If the cut out pressure is too low then tighten the plastic differential nut but if the pressure is too high then you will need to loosen the plastic differential nut.

Switch on the pump and repeat the procedure until the right cut out pressure is obtained. Isolate the supply and replace the pressure switch cover.

The widest differential possible will reduce the number of stop/starts on the pump.

Finally Check the system for correct operation and ensure the pump does not stop or start more than 20 times per hour.

#### MAINTENANCE

- 1) Check the pump is giving the correct quantity of water and is quiet and operating smoothly.
- 2) Check the pump and manifolds etc for leaks.
- 3) Check that the motor is not overheating.
- 4) Remove and or clean any filters on the system.
- 5) Check that all controls are working correctly including probes and float switches.
- 6) As mentioned above, check that the pump is not starting more than 20 times an hour
- 7) Check the pressure of the vessel every 6 months.
- 8) Unusually long periods of inactivity before or after installation are considered more detrimental than a same period of constant running. The unit must still be maintained and in addition, the pump unit should be switched on for short periods once a month to ensure that lubricants are kept on the bearings and wearing parts.

#### TELEMECHANIQUE XMP PRESSURE SWITCH

