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# Commissioning Instructions

# PU SERIES PRESSURISATION EQUIPMENT PRESSURE SWITCH CONTROL (SPU & MPU)

## 1. General

This commissioning guide is designed for use by Armstrong trained engineers fully conversant with sealed systems. Unless third parties are fully competent, commissioning must be carried out by an Armstrong trained engineer.

## 2. Expansion Vessel Air Cushion Pressure

The air cushion pressure of the expansion vessel is the pressure to which it is charged with air, before water is allowed to enter the vessel. To check the air cushion pressure, the vessel must be isolated from the system and all water drained from the vessel, otherwise a correct reading will not be obtained. Use a car tyre pressure gauge to obtain the reading.

Adjustment of the air cushion can be carried out using a foot pump or, for larger vessels, an oil-free compressor. Nitrogen bottles may be used if required.

After checking the air cushion pressure, the vessel should be examined for air leaks, using a soapy water solution.

## 3. Priming the Make Up Unit (SPU models)

NB. MPU models are self-priming.

Remove upper drain plug from the pump, (situated on top of pump casing).

If water does not flow out of this tapping, remove strainer cover from foot valve in the small plastic break tank; gently depress foot valve stem so that water runs through suction pipe into the pump. When priming is complete replace plug.

Where fitted, multistage pumps will not always prime first time. It may be necessary to run pump close to full flow to vent air. A short hose connected to the vent tapping and directed to drain will normally suffice.

## 4. Overload Setting

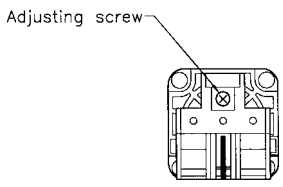
Where fitted, set the overload unit in the pump starter to match the motor nameplate full load current. Some units do not have thermal overload, in this case motors are protected by thermisters and no setting is required.

## 5. Cold Fill Pressure Switch (P/S 3)

This is usually the same as the air cushion pressure. However on constant run systems and manual top up systems the cold fill pressure is set slightly higher than the air cushion pressure. This provides a small storage of water in the system as make up units provide for leak losses only and will not, on large systems, exceed the system contraction rate. Large chilled water systems are also considered to be continuous run systems and often also have higher cold fill pressure. This is because make up can only take place while the system is operating.

It is important to ensure that the cold fill pressure is never lower than the air cushion pressure.

The pump control pressure switch (P/S3) is adjusted to start the pump at the required system cold fill pressure. The switch differential is fixed and no adjustment is possible. Turn the adjusting screw clockwise to increase pressure.




## 6. Cold Fill Pressure Switch (P/S 4)

Set as P/S3 for second system on model 627 two system units. Maybe fitted as a standby switch on other units where requested.

## 7. Low Pressure Cut-out Switch (P/S 2)

This parameter must be set when the system is idle. Pressurise the unit to 0.15 bar below cold fill pressure. Increase the setting to well above the cold fill pressure (at this point the switch indicates a low pressure condition). Then slowly reduce the range setting until the switch resets.

## 8. High Pressure Cut-out Switch (P/S 1)

Pressurise the unit to 0.35 bar below the safety valve setting. Reduce the pressure switch setting to well below the safety valve pressure (at this point the switch indicates a high pressure condition). Then slowly increase the switch setting until the switch resets.

## 9. Filling the system

The make up unit is designed to maintain system pressure and provide make up water only. The system should therefore be back-filled with the make up unit only being switched on once back filling is complete.

## TROUBLE SHOOTING CHART

| SYMPTOMS | CAUSE | CORRECTION |
|---|---|---|
| Pump will not run | Unit up to pressure | n/a |
| | Pressure switch set too low | Adjust pressure switch |
| | Power not available at unit | Check power at units terminal box |
| | Faulty pressure switch | Short out pressure switch |
| Pump runs, but pressure will not build up | Pumps not properly primed | Re-prime the pumps |
| | Loose impeller | Remove motor and impeller from pump body for inspection. Fit new impeller and/or key |
| | All valves open to system | Close valves |
| Pump cycles rapidly (hunts) | Incorrect air charge pressure | Adjust air cushion pressure |
| | Perforated expansion vessel diaphragm | Fit new diaphragm |
| | Break tank foot valve letting by | Clean or replace foot valve |
| Pump builds up pressure, but cold fill pressure is too low | Incorrect setting of pressure switch | Re-adjust pressure switch |
| Maximum system working pressure exceeded | Air cushion pressure in expansion vessel too high | Adjust air cushion pressure |
| | Expansion vessel too small | Fit additional expansion vessel |
| | System cold fill pressure set too high | Adjust pressure reducing valve |
| Pump runs continuously (System up to pressure) | Pump pressure switch set too high | Adjust pressure switch |

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