



Econopress DM 126 Digital Micro Electronic Pressurisation Set

Installation, Operation & Maintenance Documentation

STOKVIS ENERGY SYSTEMS

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DM 126 (v1.1) – DOC167V5

GENERAL SAFETY INFORMATION

These operating & maintenance instructions are intended for the installer, operator or user and for any maintenance of the equipment therefore must be kept with the unit for the life of the equipment and made available to all persons.

The unit must only be installed/operated/used or maintained by a competent person: A competent person is someone who is technically competent and familiar with the safety practices and the hazards involved in installing and operating this equipment.

Failure to install/operate/use or maintain the equipment as recommended could cause damage to the equipment and anything subsequently connected to it, this will invalidate the warranty provided to the purchaser of the equipment.

Damage caused to the equipment by misuse misapplication, or mishandling could lead to the following risks: Risk of Electrocution, Fire, Burns, Flooding or injury to people or property dependent upon the circumstances involved.

Note

- This equipment contains moving/rotating parts that must remain guarded. Removal or loss of guards could lead to serious personal injury.
- This equipment automatically restarts after a power interruption.
- The company does not accept responsibility or liability for any consequences or damage/losses due to misapplication, mishandling or misuse of the equipment.
- Water storage tanks contain water and as such represent a risk of flooding and/or injury.
- The equipment is only suitable for earth referenced supplies and must be permanently earthed to avoid Electric shock hazard.
- Even with the equipment isolator OFF, mains voltage may still be present from the BMS system. This represents an Electric shock hazard.
- Do not touch any live parts for at least 5 minutes after switching off the electricity supply. Failure to observe this will risk a severe Electric shock and/or Burns and could be lethal.
- The equipment must not be pressurised beyond the maximum working pressure as stated on the boiler/pumps/pipework/vessels or serious mechanical damage/destruction could occur causing injury to people or damage to property.
- The equipment must not be heated/chilled beyond the maximum/minimum working temperature as stated on pumps/pipework/vessels/ or serious mechanical damage/destruction could occur causing injury to people or damage to property.

- Any damage to equipment, pumpset, vessels, pipework or system components caused by misapplication, mishandling or misuse could lead to Electric shock hazard, Burns hazard, Fire hazard, Flooding hazard or cause injury to people or damage to property.
- Pressure vessels must never be disconnected or disassembled whilst in use; they contain high pressure air/gas charge which could cause injury to people or damage to property.
- Where Expansion Vessel(s) are supplied as a loose item, they must be installed/connected correctly before operating the equipment, otherwise serious damage from over pressure/pump overheating could occur.
- Do not operate this equipment prior to commissioning: This could cause irreparable damage to the equipment/pipework or system components which is not be covered by the warranty.
- Isolate the equipment before pressure testing the system. Excess pressure could irreparably damage the pressure transducer or pressure switches (where fitted) and to the diaphragms of pressure vessels.
- It is the installers' responsibility to ensure subsequent system pipework etc can accept the pressures generated by the equipment and to install an overpressure safety device into the system with due respect to the maximum working pressure stated on any of the attached pressure vessels and any other device connected to the system e.g. boilers, calorifiers etc.

General Installation

Introductory notes

These pressurisation units operate in a single pump, (duty) format. These units together with the individually sized expansion vessel/s are employed to maintain the ambient cold fill pressure and accommodate the volume changes that occur in sealed heating and chilled water systems.

Each unit is individually supplied, any system alterations may require a design or setting change.

The full system should be pressure tested and flushed BEFORE connection to the unit or vessel to prevent any damage from metal particles, dirt etc., and to eliminate all leaks.

Under no circumstances must any treatment be introduced into the system via any part of the unit.

The unit can be used to fill the system using its' "SYSTEM FILL" feature, although this may be slower than other usual means of manual filling. Please refer to "SYSTEM FILL" later in the instructions.

Site Location

The unit location should be undercover, dry and freely ventilated. Protection from frost must be ensured.

Reasonable access to all parts of the set and adequate service work space must be provided. A minimum clearance of 500mm above the unit is required to access components.

Rear holes are provided for wall fixing of the unit, please ensure suitable fixings are used for the weight being supported and that the wall structure is capable also of supporting the unit when it is full of water.

If unit is to be wall-mounted, refer to the diagrams on the following page for wall fixing dimensions.

Mechanical

Connect the cold water mains supply via a stop tap and union connector to the break tank ball valve (½" BSPM).

Arrange the overflow to discharge away to a suitably noticeable position (22mm compression).

Using the ½" BSPF outlet, link into the system on the return side of the boiler, and the suction side of the pump incorporating a minimum two metre anti-gravity loop fitted with automatic air vent. A branch should be taken off of the same part of the loop and piped to the expansion vessel or vessels ensuring that each is supplied with a lock shield valve, drain cock and a union connection for any future service work. Refer to the schematic installation diagram elsewhere in this manual.

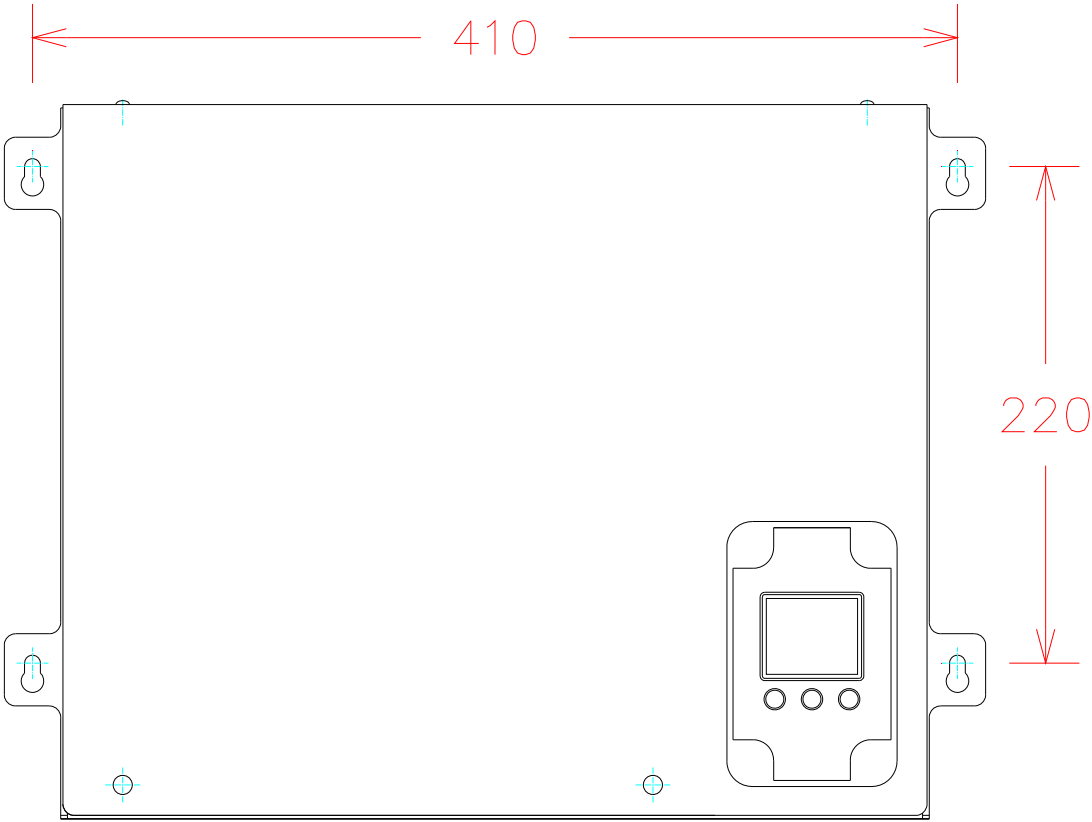
Please locate at least one vessel close the pressurisation unit (i.e. within 2 metres) to assist the controls of the unit.

All pipework links should be suitably sized with a minimum of 22 mm up to 6 metres, and 28 mm for up to 12 metre runs (larger sizes are required above 300 litre vessels or multiples).

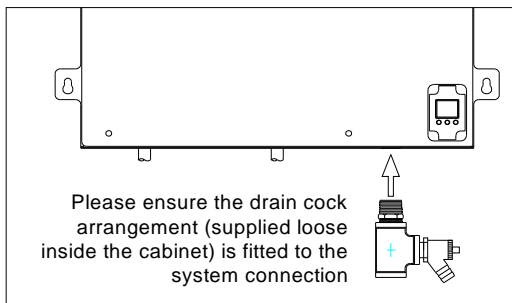
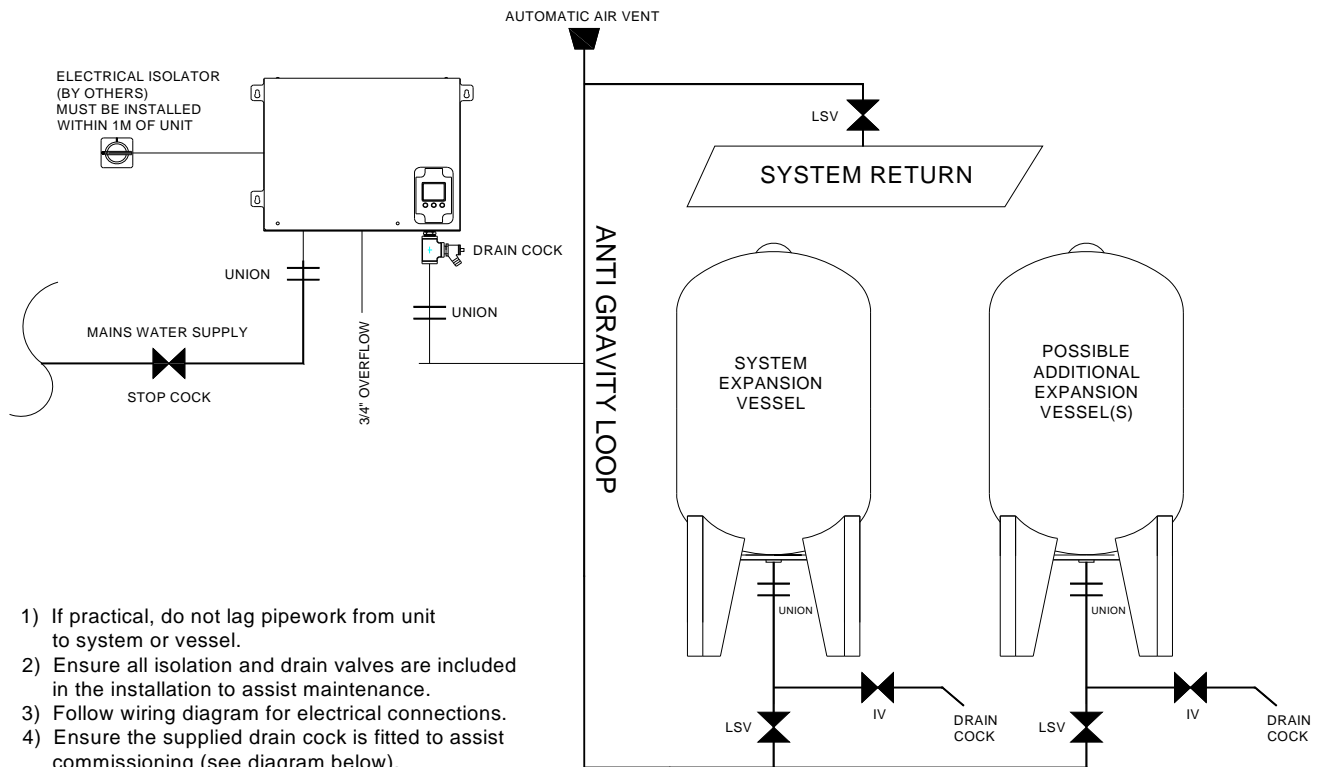
- ALL PIPEWORK MUST BE LEFT UNLAGGED WHERE PRACTICAL TO PRESERVE VESSEL MEMBRANES FROM PREMATURE TEMPERATURE INDUCED AGEING

Please refer to schematic installation diagram.

WALL MOUNTING DIAGRAM



Schematic Installation Diagram Single System Pressurisation Unit & Vessel(s)



Notes:

If practical do not lag pipework from unit to system or vessel.
 Ensure all isolation and drain valves are included in the installation to assist maintenance.
 Follow wiring diagrams for electrical connections.

Electrical

Connections to unit

The supply should be brought to the set with suitable trunking or armoured cable, with trunking we recommend that the final metre is converted to flexible conduit to avoid any undue stress or fatigue to the unit.

All supply cables should be sized according to accommodate any voltage drop due to long cable runs.

Voltage at the unit should be single phase, 230 volt, 50 Hz. A neutral supply is required.

The circuit board connections are the plug and socket type to assist with the wiring, these can just be pulled out and wired and replaced.

The pump rating is 0.37kW and 2.5amps FLC.

The volt free contacts are rated at 1.5 Amps, 230 volt. **These should only be used for signals or lamps and not to take any load or there is a risk that board damage could occur.**

It is strongly recommended that a local isolator is installed within one metre of the unit incorporating sufficient contacts to isolate both the mains supply and all control cables being used.

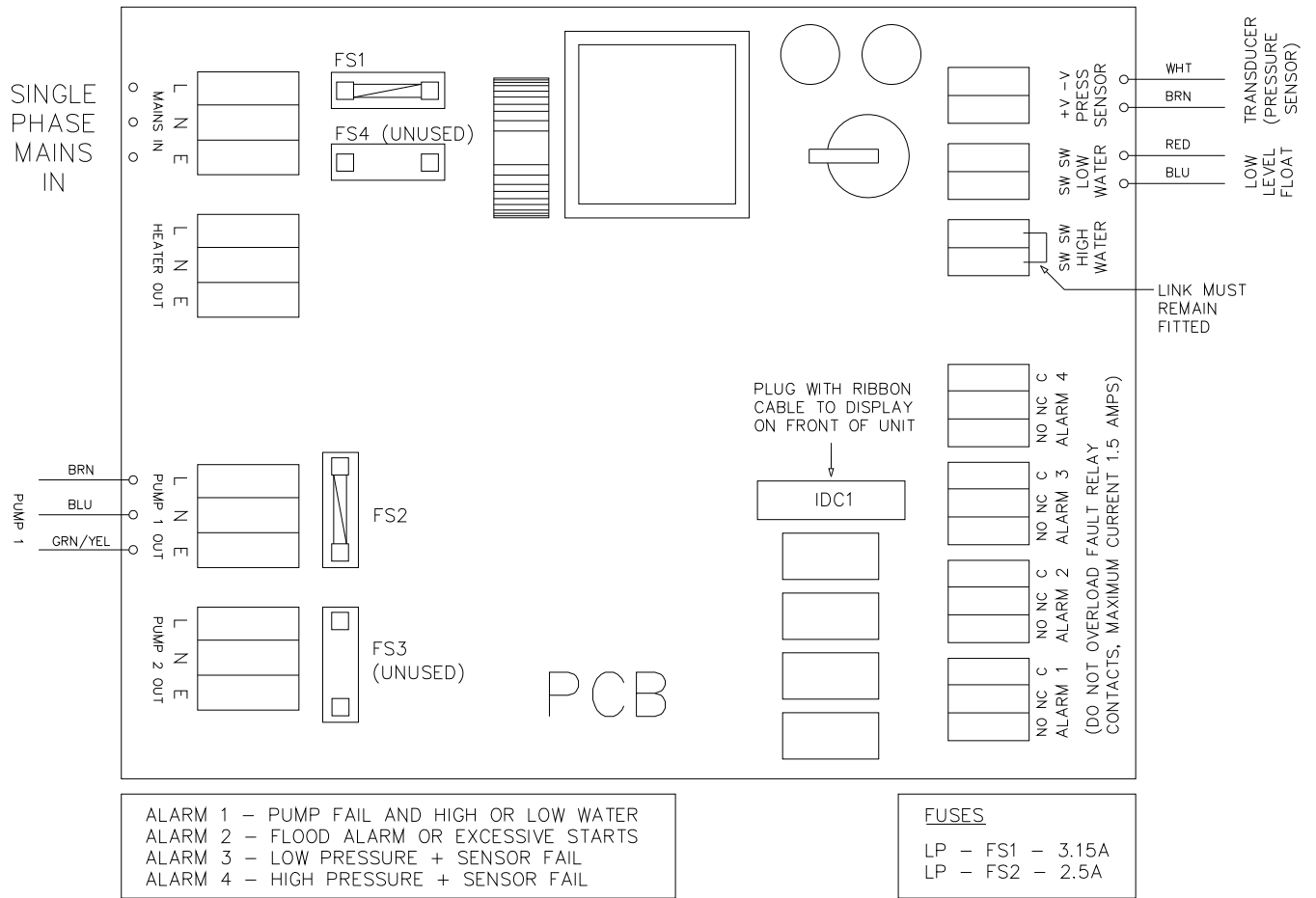
The sites supply fuses should be rated to run one pump or a pair in a duty standby unit.

All equipment should be earthed.

IT IS STRONGLY RECOMMENDED THAT ANY SUPPLY FEEDING THE VOLT FREE CONTACTS FOR ALARMS OR CUT OUTS, IS DISCONNECTED BY THE INDEPENDENT ISOLATOR.

All connections should be performed by a competent electrician conversant with the wiring diagram provided and all current regulations. Care should be taken when connecting to terminals on the circuit board and excess pressure should be avoided on terminals or the circuit board.

Wiring Diagram (DM-126)



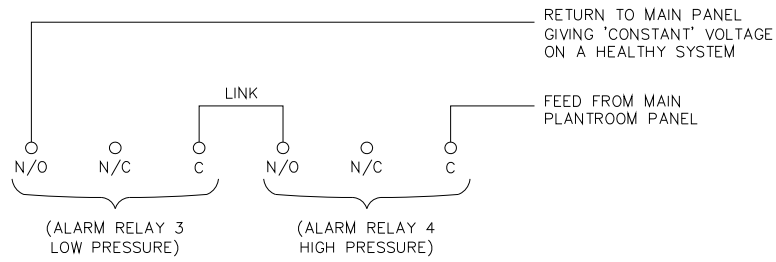
VOLTS FREE CONTACTS

The alarm relays 1 and 2 energize on a fault.

The alarm relays 3 and 4 de-energize on a fault, therefore activating the low-pressure/high-pressure faults if the pressurisation unit is isolated from the electrical supply.

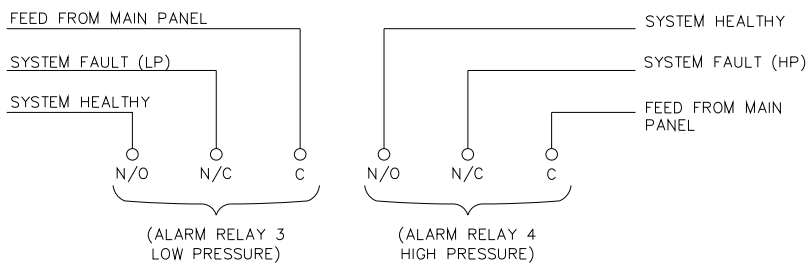
WIRING EXAMPLES

EXAMPLE OF COMMON FAULT CIRCUIT FOR HIGH/LOW PRESSURE FAULT



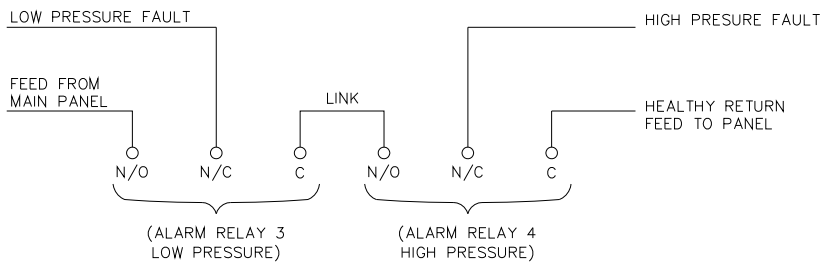
NOTE: THIS CIRCUIT IS SHOWN IN A DE-POWERED STATE. WHEN THE UNIT IS TURNED ON THESE RELAYS WILL CHANGE STATE

EXAMPLE OF COMMON FAULT WITH SIGNAL



NOTE: THIS CIRCUIT IS SHOWN IN A DE-POWERED STATE. WHEN THE UNIT IS TURNED ON THESE RELAYS WILL CHANGE STATE

EXAMPLE OF COMMON FAULT BREAKIN CIRCUIT WITH SEPARATE FAULT SIGNAL



NOTE: THIS CIRCUIT IS SHOWN IN A DE-POWERED STATE. WHEN THE UNIT IS TURNED ON THESE RELAYS WILL CHANGE STATE

THE ABOVE RELAYS ARE SHOWN IN AN ENERGIAED STATE WHEN THE UNIT IS POWERED UP. THE RELAYS WILL DE-ENERGIZE ON A FAULT IF THE UNIT POWER IS TURNED OFF.

ALARM RELAYS 1 AND 2 CAN BE USED FOR INDICATION AS REQUIRED. THESE TWO RELAYS ONLY ENERGIZE WHEN A FAULT OCCURS.

Commissioning

These notes are guide lines to engineers who are conversant with sealed systems and pressurisation units.

A commissioning service can be provided by us for customers where required (see front page for contact details).

If the unit has been factory set, no adjustments after pump priming should be necessary.

NOTE: All pump(s) must be vented prior to any running using the vent plug (13mm spanner) situated adjacent to the discharge top outlet. If water is not present, check and try again, replace the vent plug and tighten after venting. If necessary, seal with PTFE tape on the plug threads.

Settings

STANDARD UNIT COLD FILL UP TO 2.6 BAR

HIGH PRESSURE UNITS COLD FILL UP TO 6 BAR

We base our settings on the following:-

1) The cold fill pressure:

The unit cold fill pressure is the point at which the pump switches off.

The cold fill setting is based on the following:-

The static height of the system from the unit to the highest pipework in metres + 4 metres extra.

e.g. 9 metres static + 4 metres = 1.3bar (note: approximate conversion:- 10 metres = 1 bar)

The minimum cold fill setting should be 1.0 bar, this will allow up to 6 metres of pipework height.

2) The low pressure:

Setting is to be set 0.4 below cold fill pressure

e.g. cold fill 1.5 bar, LP = 1.1 bar.

3) The high pressure:

Setting should be set at 0.3 bar below the system safety valve setting

e.g. safety valve set at 4.0 bar, HP = 3.7 bar.

Note: there is a minimum differential above the cold fill setting of 0.4bar.

To program the unit if it has not been factory set, proceed using the flow chart on the following pages.

Vessel Air Pressure

If not factory set, the vessel air pressure must be set to 0.1 bar below the cold fill pressure (e.g. cold fill of 1.0 bar, vessel pressure 0.9 bar).

Note: The air charge should never exceed 5.0 bar as a maximum.

All vessels have to be empty of all water prior to setting the air pressure. Isolate and drain down first.

The air valve for the vessel is located below the black cap, which should be replaced after checking/adjusting the air pressure.

Use an oil free compressor or foot pump (smaller vessels) to add air as required. A tyre gauge should be used to finally check the required pressure.

IMPORTANT: Please remember to open the vessel isolation valves after checking the air charge.

SYSTEM FILL MODE

The fill mode is designed to help clients fill their systems if they either do not have, or wish to use, other methods of system filling.

During the system fill, the unit operates in a different manner. Firstly the only control feature used is the low water level lock out circuit to protect the pump(s). If the pumps stop due to lack of water, the display will flash "LOW WATER" while the water tank re-fills, after the float switch rises a timer will delay the pump for 25-30 seconds before allowing it to re-start.

To start system fill (after inputting system settings) press and hold the two outer buttons together for 3 seconds (the display will flash), input the code:- **213213**

Then go into System Fill program to start the unit. Note: It must only be done after the settings have been put into the unit. The flashing display will continue until the system filling is complete.

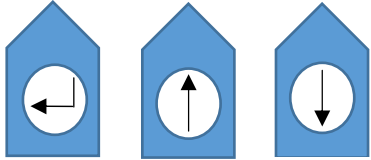
TO ENTER THE CUSTOMER MENU

- 1) Press and hold the two outer buttons together.
- 2) Input the code 213213 using the three buttons. This will give you eight parameters which can be set by the customer, after inputting the setting, return to the top and press for exit.
 - A) System Fill – Use this if the system is empty and after the system details have been entered.
 - B) Cold Fill = Range 0.6 to 2.6 bar.
 - C) Low Pressure – Range 0.0 to 3.0 bar, set this 0.4 bar below the cold fill pressure.
 - D) Low pressure delay – Range 0 to 240 seconds, factory set at 5 seconds. This should be left except for problem systems.
 - E) High Pressure – Range 1.0 – 9.0 bar, set this to 0.3 bar below the system safety valve.
 - F) High Pressure Delay – Range 0 to 240 seconds, factory set at 5 seconds, this should be left except for problem systems.
 - G) Pump Test. This allows you to test a pump by holding the button.

SETUP FLOW CHART

Control Display

**DIGITAL SERIES
SYSTEM HEALTHY
1.0 BAR**



ENTER KEY UP/ INCREASE KEY DOWN/ DECREASE KEY

NOTE: YOUR CODE IS 213213

SWITCH ON UNIT
(WITH LOCAL ISOLATOR AND/OR CONTROL BOX ROCKER SWITCH)



PRESS AND HOLD ENTER AND DOWN KEYS TOGETHER



"ENTER CODE" WITH 1-2-3 APPEARS ON SCREEN



PUT IN CODE 213213 PRESS UP KEY FOR 2 THEN PRESS ENTER KEY FOR 1 THEN PRESS DOWN KEY FOR 3 THEN REPEAT SEQUENCE UP KEY FOR 2, ENTER KEY FOR 1 AND DOWN KEY FOR 3



WHEN ALL DESIRED PARAMETERS ARE SET USE THE UP KEY TO SELECT EXIT PRESS ENTER KEY TO MAIN SYSTEM SCREEN



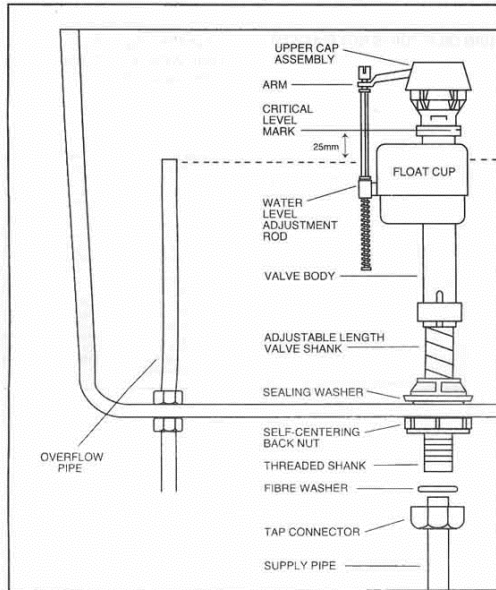
NOTE: UNIT WILL RETURN TO MAIN SYSTEM SCREEN IF NO BUTTONS ARE PRESSED IN CUSTOMER MENU AFTER 5MINS

SELECT UP OR DOWN KEY TO SET REQUIRED PARAMETER PRESS ENTER KEY TO RETURN TO MENU



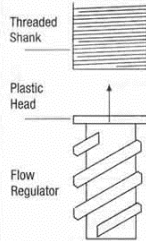
CUSTOMER MENU APPEARS ON SCREEN PRESS DOWN KEY TO SELECT PARAMETER REQUIRED THEN PRESS ENTER KEY

BOTTOM INLET VALVE INSTRUCTIONS



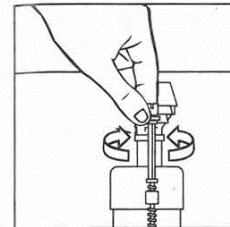
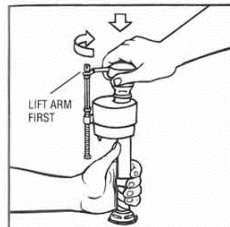
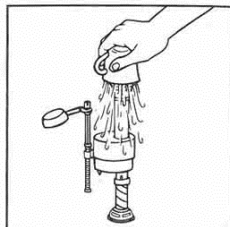
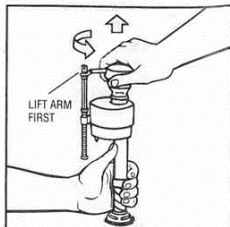
VALVE FLOW REGULATOR INSTALLATION INSTRUCTIONS

In areas of high water pressure elements of noise, such as water hammer can be experienced. To minimise this please fit the flow regulator supplied with the valve.



Insert flow regulator into threaded shank

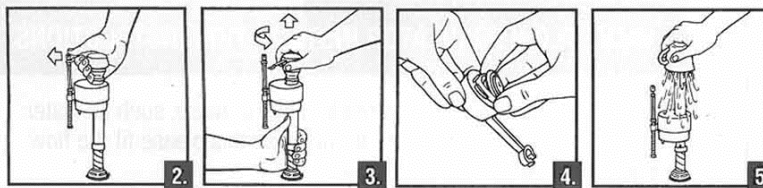
The regulator must be fully inserted to function properly



IMPORTANT: ALWAYS CLEAR DEBRIS FROM WATER LINE TO COMPLETE INSTALLATION. Shut off water supply to cistern. Remove VALVE TOP by lifting arm and rotating TOP 1/8 turn anti-clockwise, pressing down slightly on cap. While holding a container over the uncapped VALVE to prevent splashing, turn water supply on and off to clear debris that may be in supply line. Turn off water supply and replace TOP by engaging lugs and rotating 1/8 turn clockwise. MAKE CERTAIN TOP IS TURNED TO THE LOCKED POSITION. VALVE MAY NOT TURN ON IF TOP IS NOT FULLY TO THE LOCKED POSITION. Turn on water supply.

Submerge the float cup under the water for 30 seconds. Adjust the water to the desired level by turning the water level adjustment rod and moving float cup up or down. Water level should be set to water line on cistern.

TROUBLESHOOTING – SEAL REPLACEMENT: If valve won't turn on or shut off or refill of cistern water is slow after valve has been in use for some time, a replacement seal may be needed. Ask your dealer for Model 242MP071 and install as follows:



1. Turn off water supply as in Figure 1 of instructions.
2. Remove water level adjustment rod from upper cap assembly as shown.
3. Remove upper cap assembly by lifting arm and rotating 1/8 anti-clockwise, pressing down slightly on cap.
4. Replace seal.
5. Hold a cup over the uncapped valve (to prevent splashing), and turn water supply on and off to clear debris in supply.
6. Refit upper cap assembly. Make sure upper assembly is fully turned clockwise to the locked position or valve will not turn on. Reattach water level adjustment rod to upper cap assembly by snapping back in place.
7. Turn on water supply as before.

WARNING: Do not use sealing compound, paste, flux or solvent on the inlet valve, as there is a risk of debris flushing through the valve. Rubber washers should provide adequate seal. PTFE tape may be used on threads. Do not over tighten plastic nuts.

Maintenance

Six monthly checks should be made on the expansion vessels. The air charge should be checked after the vessel is isolated and drained using the local valve and drain cock.

Note: You cannot check these vessels unless drained. Use an oil free compressor or foot pump to inflate and check with a good quality gauge for the air pressure.

Yearly checks should proceed as above followed by running the pumps to check operation, mechanical seals and electronic controls. This can be performed by isolating the system with the unit isolation valve, connecting a hose from the unit drain cock and placing the other hose end back into the unit's water tank. As you open the drain cock the pressure should fall and start a pump, this can be run for 5-10 minutes after which you should close the drain cock allowing the unit to build pressure and stop.

After maintenance, ensure you open the unit back up to the system.

Other checks consist of testing for noisy bearings, faulty ball valve or float, float switch operation, electrical connections and general operation and condition of the unit.

All maintenance should be carried out by a competent person conversant with sealed system pressurisation units.

A full maintenance programme is available on request.

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