



Masterfill System Pressure Manager Operating & Maintenance Manual.



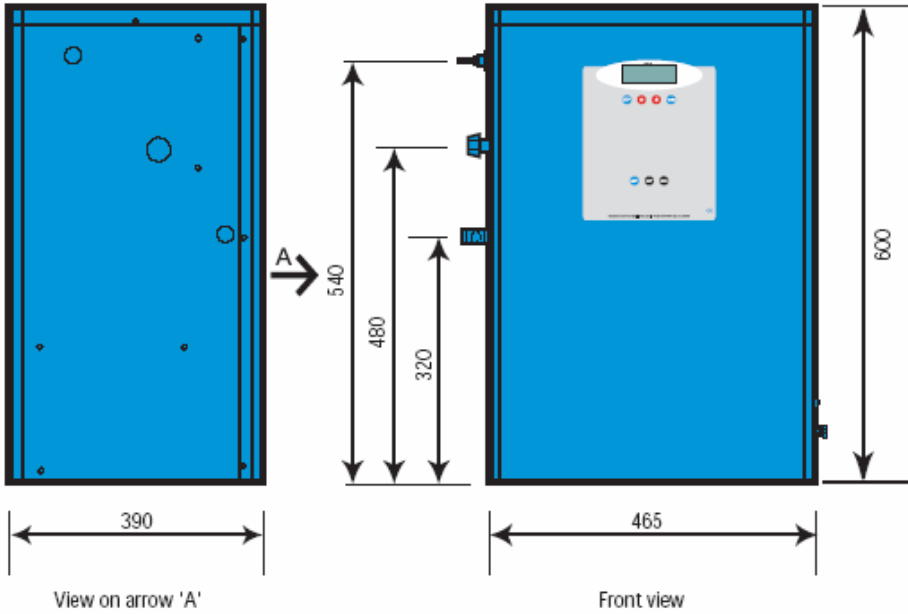
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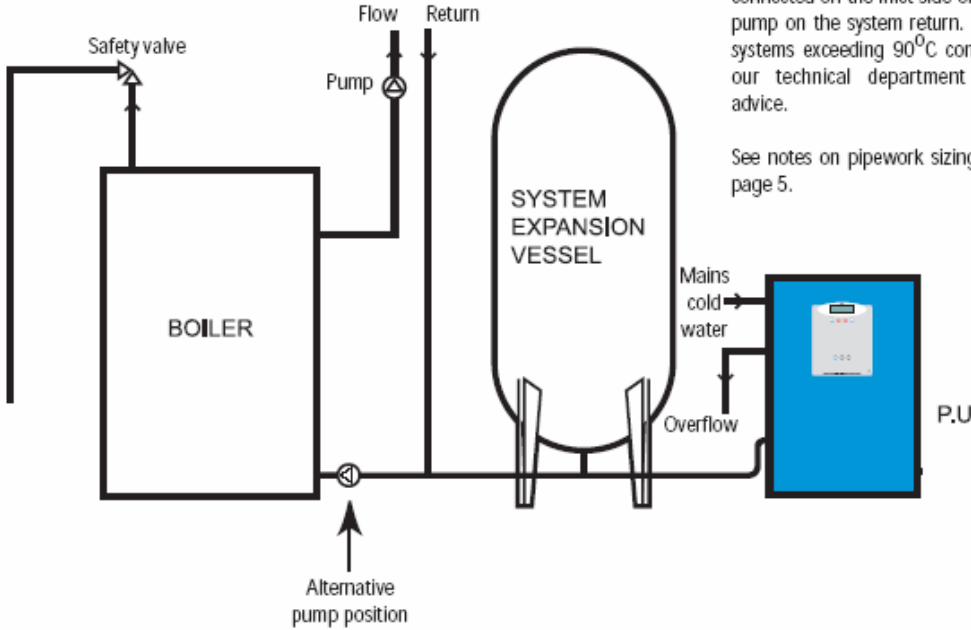
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Dimensions



Typical installation diagram



The expansion vessel is usually connected on the inlet side of the pump on the system return. For systems exceeding 90°C contact our technical department for advice.

See notes on pipework sizing on page 5.

Single pump and twin pump pressurisation units

The range is a fully automatic heating / chiller system pressure management device, and is suitable for the water management in all domestic and commercial heating and cooling systems.

It is supplied as a fully tested unit and should require minimal adjustment "on site" adjustment to meet the needs of the respective systems.

1 Installation

All products should be installed by a competent person with regard to the relevant requirements of the Health and Safety Regulations, Building Regulations, IEE Regulations, Water Supply (water fittings) Regulations, Water Bye-laws (Scotland) and any other local bye-laws or planning requirements.

The unit is intended for floor mounting: the unit should be situated in such a position as to enable the liquid crystal display to be easily read.

1.1 Mains/boosted cold water supply

The unit is designed to be connected directly to the mains cold water supply, or a boosted cold water supply, the unit is supplied complete with all necessary isolating valves, but an inlet water isolating valve is recommended.

The water inlet is 15mm compression and should be connected to the mains cold water supply by 15mm copper tube or equivalent approved plastic pipework.

If the Masterfill unit is sited some distance from the mains cold water supply it may be advisable to install a single check valve adjacent to the mains cold water supply.

To reduce the pressure drop on very long supply routes then 22mm supply pipework is recommended.

1.2 Connection to the system

The unit is connected to the heating/chiller system by way of the 15mm outlet valve, the pipework from the unit should be made in 15mm copper or similarly approved plastic pipework.

A suitably sized expansion vessel should be incorporated into the system at this point. Please refer to typical installation diagram on page 3.

If you require any assistance regarding vessel sizing please contact our sales department.

The final connection into the heating/chiller system should be sized accordingly, recommendations are shown below:

Vessel size up to 100L 1/2" (15mm) expansion pipework.

Vessel size up to 300L 3/4" (22mm) expansion pipework

Vessel size up to 1000L 1" (28mm) expansion pipework.

For vessel sizes in excess of 1000L capacity please contact our Sales department.

IMPORTANT NOTE

The expansion vessel nitrogen/air charge must be set at the same pressure as the cold fill pressure of the system.

1.3 Overflow connection

The unit is supplied with a 3/4" BSP plastic overflow (warning pipe) connection which should be led to a drain and be visible at point of discharge,

We cannot accept any responsibility for flood damage caused by failure to connect the overflow.

2 Electrical connections

The unit requires a permanent 240V 50Hz 1 phase supply rated at 6 amp.

The unit is internally fused at 5 amp (see electrical installation diagram).

The unit also incorporates two BMS relays offering volt free contacts for the remote indication of high or low pressure conditions within the heating/chiller system.

These relays are also independently fused at 5 amp to protect the unit from external electrical faults.

A further volt free relay is included in the unit, this is to interlock the boiler or chiller control circuits.

Should either of the alarm relays operate then the relay will shut down the boiler or chiller, indication of any alarm situation will be indicated on the display.

The relays are suitable for use on control voltages up to 250V. 5 amps

Once the unit has been correctly connected the unit is ready for use.

Ensure that the unit has an adequate water supply and the service valves are open.

Check for water leaks.

Although every unit is factory tested it is still advisable to vent the pump(s) before operation.

This is achieved by slackening the brass plug (14mm A/F) situated on the pump housing, until all air is eliminated.

Switch on electrical supply to the unit and the illuminated on/off switch to the lower right hand side of the unit and the unit will start to pressurise the system.

When the system has achieved the set pressure, the unit will stop filling, and go to standby.

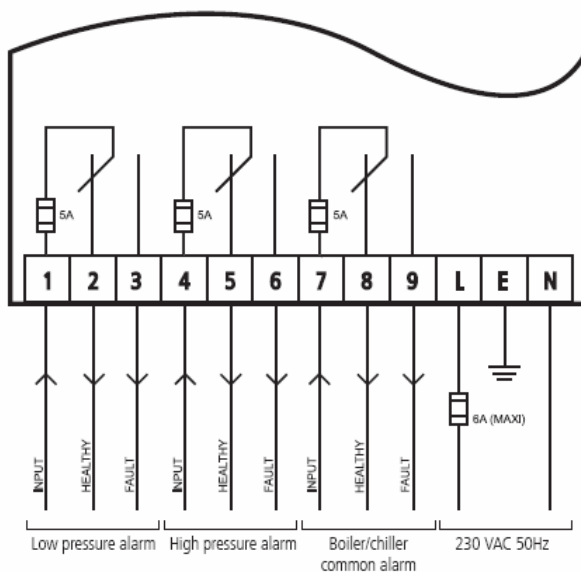
Important note, this pressurisation unit is not designed to fill systems from empty, it is only capable of "top up" and pressurisation.

However the Minifill Electronic has been designed to undertake a 'Fill Function'.

Please contact our Sales department for further details.

The system should be filled by other means in compliance with the water regulations.

2.1 Electrical diagram



Electrical data

Supply: 240V 1ph 6 amp
Full load current: 2.5 amp
Start current: 4.5 amp
Fuse rating: 6 amp

BMS relays and boiler/chiller relays: volt free contacts rated at 240V at 5 amp

All relays are Independently fused at 5 amp

Low pressure alarm High pressure alarm
Boiler/chiller common alarm
240 V 50Hz

3 Alarm conditions

Please note the unit is a factory tested, should you require to change any of the preset parameters - please see "Settings".

3.1 Low water level alarm

The unit continuously monitors the water level in the feed tank. If this falls to below an acceptable level then the unit will operate a safety shut down. When water level is reinstated the unit will automatically reset.

3.2 System failure

The unit can differentiate between normal system fill rates and excessive water demand usually due to a Uncontrolled / Flood condition.

If this situation occurs the unit will shut down, and issue a flood alert warning on the LCD.

This alert must be reset manually, by switching off the unit waiting 30 seconds and switching back on, if the leak has been rectified the unit will then operate as normal.

3.3 High or low pressure alarms

If, for any reason the system water pressure reaches a high or low condition, as determined by the preset parameters the LCD will show the alarm message, the relevant BMS relay will operate and the boiler/chiller control relay will shut down the boiler or chiller.

When normal operating pressure is resumed the unit will automatically reset,

3.4 Pump failure

The unit can also determine whether a pump has developed a fault.

This is achieved by monitoring the system pressure and if an increase in pressure is not sensed in a set period of time it will stop operation of that pump and the "pump failure" message will appear on the LCD.

If the twin pump version is used, it will automatically change to the remaining pump, and a pump failure message will be displayed.

3.5 Frequent use alarm

This alarm is to assist in diagnosing any leaks that may be present in the heating (or cooling system).

If in any 24 hr period the unit operates more than a preset limit i.e. 5, then a frequent use alarm will show, (the operation of the system will not be affected, this function is for information only).



3.6 Frequent use reset

This is achieved by switching the power supply to the unit off and on again.

3.7 Hours run facility

This is accessed by scrolling the system data button.

3.8 Hours run reset

This is achieved by depressing the   simultaneously.

IMPORTANT NOTE

The unit has a predetermined maximum fill rate of 12 litres per minute. Therefore, by multiplying the fill rate by the hours run the approximate water usage can be calculated.

4 Fault diagnosis

System faults will be apparent from the alarm message displayed.


The unit itself has a full self diagnostic microprocessor unit which continually self checks the operation, if an internal fault is diagnosed then the fault will be displayed on the screen, e.g. sensor disconnected.

Fault conditions

Fault indications	Cause	Remedies
Low water level	No water in tank	Reinstate water supply to tank
Sensor failure	Possible sensor fault	1. Switch unit off and back on, if sensor failure does not reappear on the display see note 2. If sensor failure does reappear check sensors are connected to the printed circuit board correctly. If the problem persists ring our service department.
	Incoming voltage instability	2. If this occurs switch the unit off and back on, the unit should then operate as normal. If this fault appears on a regular basis then a mains electrical filter (anti surge device) is required. Ring our service department for advice.
Low pressure alarm	System pressure low	Check system for leaks. Switch unit off and back on to reinstate. Check Low Alarm setting.
High pressure alarm	System pressure high	Reduce pressure in system and check expansion vessel air charge/size. Check High Alarm setting.
System failure	Possible excess water leak on the system	Check system for leaks, then switch unit off and back on to reinstate.
Pump failure	Possible pump fault	Switch unit off and back on to reinstate, if pump does not operate when required replace pump. If pump operates, dry run setting may need to be increased.
Frequent use alarm	Possible persistent leak on system	If the unit operates more than the set value in a 24hr period the unit will bring up the frequent use alarm, this will not stop the unit from operating but indicates that there may be a small leak on the system. Switch the unit off and back on to reinstate. Investigate possible leak.

The units have been designed such that most apparent 'faults' can be remedied on site, if in doubt ring our service department.

5 Manual override

Should the unit fail for any reason then a manual override facility can be employed. After ensuring that the heating system is charged with water, and that the unit is not indicating a system fault, rather than a unit fault i.e. flood alarm, then the BMS relays can be overridden by depressing the  and service buttons simultaneously for 3 seconds, repeating the operation will return the BMS relays to normal mode.

6 Audible alarm override



If the unit does indicate a fault, an audible alarm will sound, this can be overridden by depressing the service button.

7 Adjusting settings

The unit is supplied pre-tested, if required the settings can be adjusted to suit your respective system requirements .

7.1 Press and hold the system data & service mode buttons simultaneously for approx 3 seconds

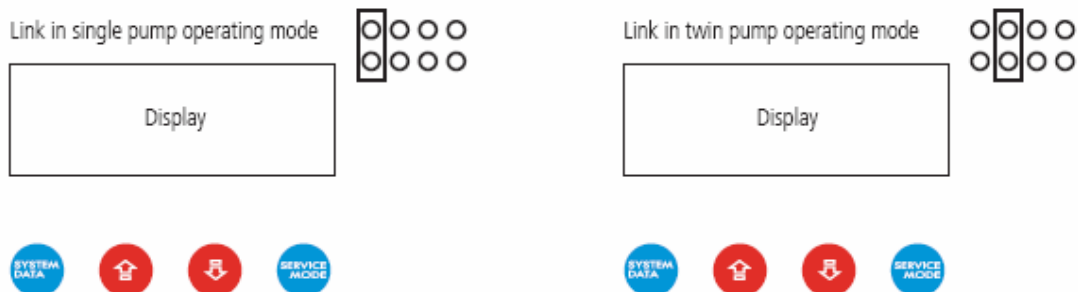
7.2 The display will indicate that you are now in the service mode

7.3 Use the 'system data' button to scroll through the settings, each setting can be adjusted by use of the   buttons.



Section 8 describes the function of each setting

7.4 After adjusting the setting, the unit will return to its standard operating mode approximately 30 seconds after release of the buttons

7.6 Operating links



8 Menu functions

- Target low - this is the pressure at which the unit will operate i.e. start to repressurise the system. This is usually set at 0.2 - 0.3 below the target high
- Target high - this is the pressure at which the unit will cease repressurising i.e. the cold fill pressure
- Alarm low - the pressure at which the low pressure alarm relay will operate. Usually set 0.4 - 0.5 bar below the target low
- Alarm high - the pressure at which the high pressure alarm relay will operate. Usually set 0.3 bar below the system safety valve setting
- Hours run - for information only, no setting required.
Please note, to zero the hours run the   buttons need to be pressed simultaneously for 3 seconds
- Dry run - this function affects the pump failure facility, the longer the dry run setting (which is calculated in minutes) the longer the unit will try to operate before notification of failure
Please note: where being used on a very large system the unit may indicate pump failure when it is operating normally, in this instance a longer dry run period may be required
- Delay off - this setting allows adjustment to prevent over or under shoot of the fill pressure - increasing time prevents under shoot, decreasing time prevents over shoot
- Frequent use - this setting warns of frequent use which would indicate a system leak and will show a warning message if in any 24 hour period the unit operates in excess of the frequent use setting
- Delay on - This setting is a further flood protection setting and reducing the setting will reduce the sensitivity of the flood protection
- Diff delay - no setting required

9 Maintenance

The inlet filter(s) which is housed in the service valve on the pump(s) inlet pipework should be checked and cleaned annually.

EXPANSION VESSELS - Charge pressure should be checked annually when the vessel is disconnected from the system and empty (the air charge pressure must equal the cold fill pressure of the unit).

MHS Boilers Ltd will be pleased to undertake the annual servicing of all units supplied. Please contact the Technical Services Department for further details. (01268 591010)