



Mechanical Unit- Installation, Operation & Maintenance

IMPORTANT INFORMATION

Environment

- It is not anticipated that this equipment will be exposed to adverse environmental conditions without additional protection.
- Site the equipment in a frost free area.
- Ensure that 100mm of clear access is available around the equipment with 500mm clear access at the front.
- Flush the mains water supply pipe before connection to this equipment.
- An inline filter must be fitted to the inlet of the equipment if the mains water supply is suspected to contain debris.
- Please refer to BS 7074 for the installation code of practice.
- Do not use this equipment to fill a system unless otherwise stated; it is designed to 'top-up' a system in the event of pressure loss due to de-aeration and minor system leakage.

Safety

- Electrical installation must be carried out by a competent person
- **WARNING – LIVE TERMINALS WITHIN THIS EQUIPMENT**
- Isolate the equipment before removing any covers
- **Do Not** make any electrical adjustments to the equipment unless it is isolated from the mains electrical supply
- **Do Not** operate with the electrical covers removed
- **Do Not** alter any internal pipe-work, this equipment is tested prior to Dispatch.
- **Do Not** obstruct and ventilation fans or apertures
- **Check** supply voltage and overload protection is correct

Application

Automatic make up and pressurisation unit for sealed heating and cooling systems.

This equipment is designed to work in conjunction with an appropriately sized expansion vessel.

Cold Pressures

The unit is fully adjustable to provide a minimum static pressure of 0.7 bar(g) the maximum static pressure is dependant on the pumpset fitted. If in any doubt please contact your product supplier.

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Do not use this equipment to fill a system, use a WRAS approved filling loop for initial filling.

Mechanical equipment does not have the required electrical monitoring for ethical system filling operations. Under no circumstances must mini units be used to fill a system of any size.

A suitable safety relief valve must be fitted to the system.

Electrical Considerations

Electrical installation must be carried out by a trained and competent person. Isolate the unit from the electrical mains supply before removing any covers, or servicing the unit.

Unless otherwise stated the equipment requires a 230v, 50Hz single phase electrical supply.

Installation

- Remove the appropriate coverings.
- Ensure that the float valve is set to its lowest position.
- All pipework connections are to be made with appropriate proprietary jointing compound. PTFE is not permitted.
- Connect the overflow pipework.
- Connect the mains water pipework.
- Connect the system pipework.
- Open the system isolation valve. (The Lockshield valve or the boilerfix chrome plated valve (Boilerfix valves must be inline with the pipework to be open).
- Check the break tank internal pump suction filter is present and clear.
- Connect the electrical supply to the fused connection block / fused spur as appropriate.
- Connect the boiler to the boiler interlock connection block, High / Low Switches if fitted, if required.

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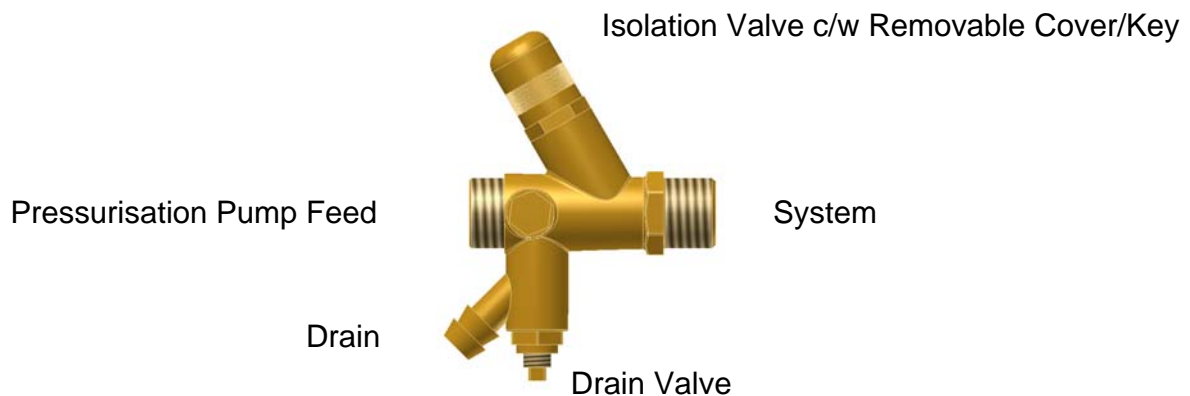


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Lock-shield Valve (If fitted)

This valve acts as a system isolation valve, pressurisation unit drain valve and transducer connection point (Where fitted).

The Lock-shield valve is supplied in the normally closed position, this **must** be opened to allow system pressure to be seen by the pressurisation equipment. To open remove the key, exposing the isolation valve spindle, open the valve (anticlockwise rotation) and replace cover (key).



Primary Pressure Adjustment



Note: All units with Pressure Reducing Valves as the main control will also contain a Pressure Switch in the assembly. When a pressure reducing valve is present the pump pressure switch does not normally require adjustment.

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Commissioning

- Commissioning must be carried out by a trained and competent person.
- Close the system connection valve.
- Turn on the unit, the current pump pressure is shown on the mounted gauge.
- Adjust the pressure (Cold fill pressure) using the single pressure switch (mini units) or the pressure reducing valve. When a pressure reducing valve is present the pump pressure switch does not normally require adjustment.
- When the pressure shown on the mounted gauge is to the desired cold fill pressure open the system connection valve.
- Once open to the system minor further adjustment may be required.
- If possible, bleed any residual air from the pumps. Caution do not attempt this operation unless you are trained to do so.
- Note - The cold pressure of the system should be set to at least 0.2 bar(g) above the static height of the system, with a minimum permissible set pressure of 0.7 bar(g).
- Note - The high and low pressure switches are pre-set for systems with an anticipated cold fill pressure of 1.0 bar(g), for other system pressures adjustment of the high and low switches may be required.

High and Low Pressure Settings (if fitted)

The high pressure switch is pre-set to cut out at 3.0 bar(g) and will not reset until the system pressure has dropped to 2.0 bar(g).

The low pressure switch is pre-set to cut out at 0.5 bar(g) and will not reset until the system pressure has increased to 0.9 bar(g).

These switches can be adjusted using the appropriate nut on top of the switch housing.

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Maintenance

Before carrying out any maintenance please remember to first electrically isolate the equipment and then hydraulically isolate the equipment.

Please ensure that competent trained engineers are used to carry out any service or maintenance work.

It is recommended that the system as a whole is serviced and inspected annually. At that time the gas charge within the system expansion vessel (if appropriate) should be checked and verified as equal to the cold fill pressure set on this pressurisation unit.

The cold fill pressure should be equal to the static height of the system +0.3bar, to ensure air is capable of being purged from the uppermost points of the system.

The pump, float valve (ball cock) and high / Low switches (if fitted) should also be checked at this interval as a minimum.

Check the internal filters within the break tank are present and clear.

A visual check of the equipment for corrosion or damage should also be carried out and noted. All settings should be recorded and compared to the previous service or commissioning for analysis of the system as a whole.

This equipment is designed to provide periodic water top up in the event of minor losses from a sealed heating or chilled system. Please consider the environment and report / rectify any significant water losses.

Maintenance Timeline

Commissioning by trained engineers	Day 1
Check alarms and counters	First 6 months
Service and Inspection	Annually thereafter

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Fault Finding

- Check electrical supply.
- Check for external controls affecting the unit.
- If the pump is running continuously:
 - Either the system is not full (possibly a leak)
 - Check the pump pressure switch operation
 - Check the Pressure Reducing Valve operation
- If the pump does not run:
 - Check the pump pressure switch operation
 - Check the pump operation
 - Check the internal filter within the break tank is present and clear
- If the unit fails to pressurise the system:
 - Check the system connection valve is open
 - The operation of the break tank float valve that there is water available in the break tank
 - Check the internal filter within the break tank is clear
 - Check for system leaks
- For intermittent running, but normal when pressurising, check for system leaks
- If the system over-pressurises:
 - Check the operation of the pump pressure switch
 - Check the operation of the Pressure Reducing Valve (if fitted)

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Warranty

This equipment is covered against manufacturing defects for 12 months from date of purchase from BSS.

This warranty covers the replacement of parts or products, verified as having a manufacturing defect, when inspected at the St Helens factory.

BSS reserves the right to inspect an installation to verify that the equipment has been installed in accordance with the written instructions.

Any modifications to the supplied equipment must be approved in writing by BSS, failure to do so will invalidate the warranty.

Site Visit

Before requesting a site visit, the following information must be made available to the BSS sales team.

- Serial number of the equipment. **Failure to verify the serial number at the time of visit will invalidate the warranty**
- A purchase order to cover the work in the event that no manufacturing defect is found. (This must be the direct customer of BSS).
- A site contact name and number
- A **full** description of the alleged fault

Liability

BSS can only respond to warranty queries from its direct customer. If in doubt, please contact your installer to establish the supply chain.

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Wiring Diagrams

Mains Power Switch



Pump Selector Switch



Pump

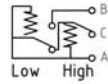


Pump Pressure Switch



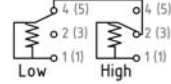
Break On Rise
1&2 (1&3)

Combined High/Low Switch



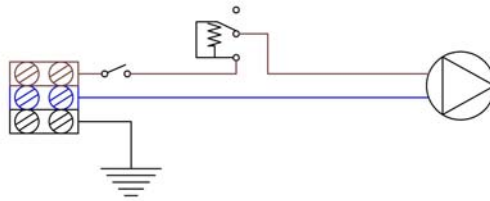
Normally Closed A&C
Normally Open A&B

Seperate High/Low Arrangement



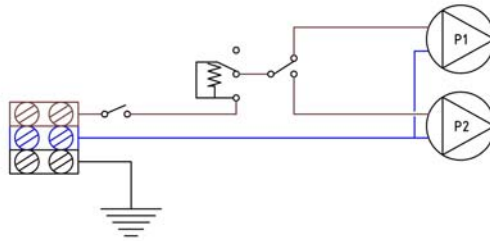
Make On Rise 1&4 (1&5)
Break On Rise 1&2 (1&3)

Live
Neutral
Earth (Ground)



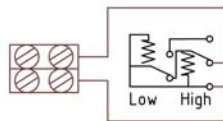
Single Pump Units

Live
Neutral
Earth (Ground)



Twin Pump Units

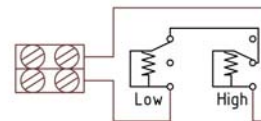
Combined High/Low



Boiler Control IN
Boiler Control OUT

Boiler Control IN
Boiler Control OUT

Seperate High/Low



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Initial Commissioning Record

Engineers Details	
Name	
Company	
Address	
Contact Number	

Settings		
Cold Fill Pressure		Bar (g)
Low Pressure Alarm		Bar (g) (if fitted)
High Pressure Alarm		Bar (g) (if fitted)
Expansion Vessel Pre-charge		Bar (g)

	Signed	Date
Engineer		
Site Representative		

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