

# XCEL HEAT BANKS

## Installation Instructions

**Congratulations on your purchase of a DPS Xcel Heat Bank thermal store. The Xcel is manufactured in the UK from top quality materials and meets all the latest relevant safety and constructional standards. The high grade laser cut and laser welded Duplex stainless steel cylinder offers exceptional strength and corrosion resistance, backed by a lifetime guarantee. Insulation levels exceed the latest requirements of Building Regulation Part L.**

**The Xcel may be used with gas, oil or biomass boilers, wood burners, solar panels, heat pumps, electric heating elements, or central boiler systems. Two large 1½” connections are provided for connecting to wood burners and may be either pumped or on gravity circulation. A large 1m<sup>2</sup> coil is provided as standard for connection of solar panels. Three 2¼” connections are provided for immersion heaters or retro-fit coils. An additional twenty two ¾” connections are provided for pumped circuits, thermostats and sensors.**

The Xcel's DHW 160kW heat exchanger can heat mains water supplied at pressures between 0.1 and 10 bar, without the need for pressure reducing valves. Intermittent water supplies will not cause problems, unless they are utilised for overheat protection.

The Xcel cylinder connects to a separate feed and expansion tank incorporating an open vent pipe, and remains unpressurised without the need for safety discharge valves or annual maintenance. It is also possible to connect the Xcel as a pressurised storage system, using the optionally supplied safety controls in place of a feed tank, providing the Xcel is not connected to a uncontrolled heat source such as wood burner or large solar array.

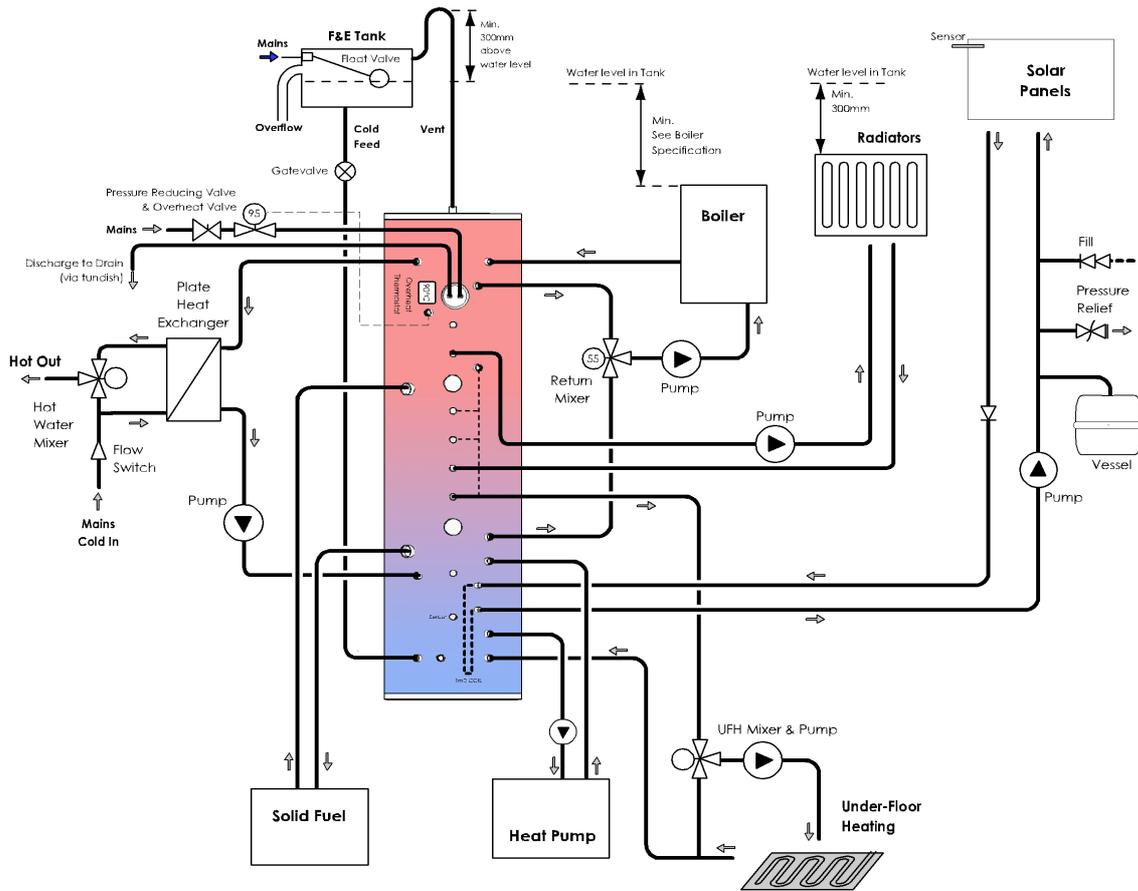
**IMPORTANT General Requirements:**

- 1. IN ORDER FOR GUARANTEES ON THIS SYSTEM TO START:**
  - (a) THE INSTALLER MUST FILL IN THE FORM AT THE BACK OF THESE INSTRUCTIONS.**
  - (b) THE OWNER OR OCCUPANT MUST FILL IN THE FORM AT THE BACK OF THESE INSTRUCTIONS AND RETURN TO:**

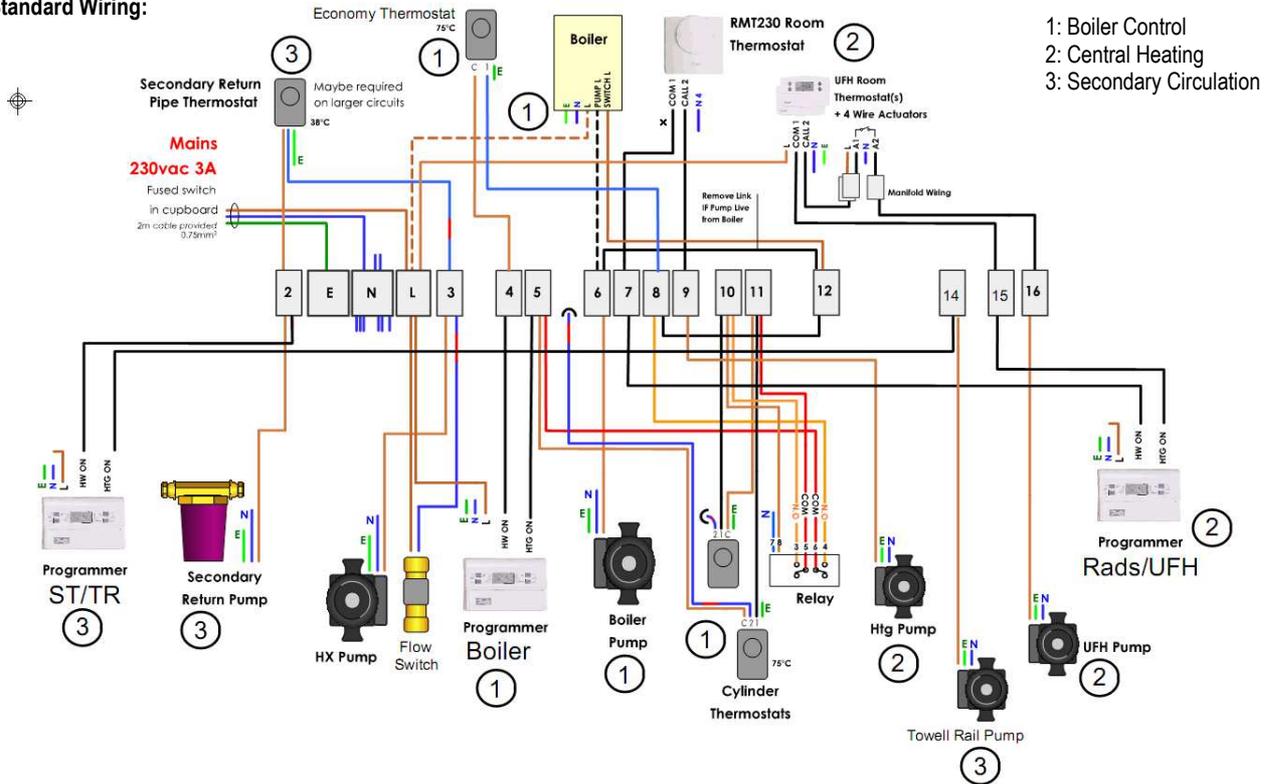
**Dedicated Pressure Systems Ltd., 9-19 Manor Green Road, Epsom, Surrey KT19 8RA**

2. PLEASE READ THESE INSTRUCTIONS IN FULL BEFORE PROCEEDING WITH INSTALLATION.
3. THE XCEL SHOULD BE INSTALLED AND MAINTAINED BY A COMPETENT INSTALLER IN ACCORDANCE WITH G3 BUILDING REGULATION (ENGLAND AND WALES), P3 TECHNICAL STANDARD (SCOTLAND) OR P5 BUILDING REGULATION (NORTHERN IRELAND), AS WELL AS THE WATER FITTING REGULATIONS (ENGLAND AND WALES) OR WATER BYELAWS (SCOTLAND), AND I.E.E. WIRING REGULATIONS.
4. FOLLOWING INSTALLATION AND COMMISSIONING, THE OPERATION OF THE SYSTEM SHOULD BE EXPLAINED TO THE AND THESE INSTRUCTIONS LEFT WITH THEM FOR FUTURE REFERENCE.
5. Read these instructions in conjunction with those of the primary heating appliances (boilers, wood burners etc.) before attempting installation.
6. The Installer should tick sections in these instructions that have been applied to the final installation.
7. Do not attempt to lift the unit using the pre-fabricated pipework.
8. All pre-made connections should be checked & tightened prior to installation.
9. Connections in 22mm to the Heat Bank are provided by a combination of metric compression bosses, supplied with nuts and olives, push-fit connections, and BSP threaded connections.
10. The stored water in the Heat Bank must be protected with a suitable chemical scale & corrosion inhibitor. It is important that this is refreshed at suitable intervals to protect the store and all components.
11. The cylinder must be installed to allow access to all fitted components for maintenance purposes. This should include the removal and replacement of Immersion Heaters.
12. The domestic hot water operates at mains pressure, therefore all pipework and fittings must be suitable for the maximum pressure and temperature duty.

**Full Multi Fuel Schematic:**



**Standard Wiring:**



- 1: Boiler Control
- 2: Central Heating
- 3: Secondary Circulation

### Electrical Supplies:

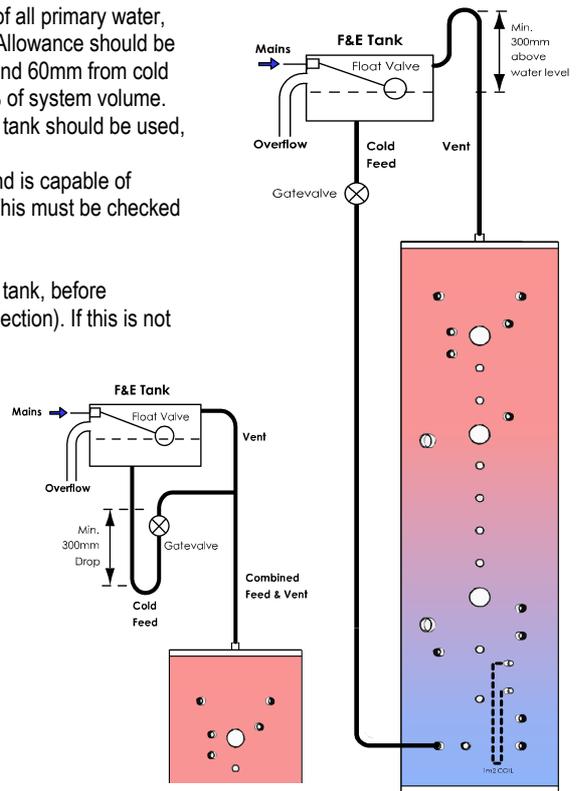
1. The Xcel Heat Bank (when fitted with any controls) requires a 3 Amp, 230v AC power supply, via a fused switched spur.
2. Power supplies to boilers and other equipment that has wiring connections, should be taken from the wiring centre on the Xcel.
3. The Xcel can be optionally supplied with 3kW, 6kW, or 9kW electric elements, with up to three elements in total. Power supplies should be as follows:
  - (a) For 3kW elements, a 16 Amp , 230v AC power supply, via a double-pole wall switch. 2.5mm<sup>2</sup> heat resistant cable to be used. Standard immersion heater controllers may be used as required.
  - (b) For 6kW elements, a 30 Amp , 230v AC power supply, via a double-pole wall switch and double-pole contactor linked to thermostats, low water switch, and timer (if required). 4mm<sup>2</sup> heat resistant cable to be used.
  - (c) For 9kW elements, a 45 Amp , 230v AC power supply, via a double-pole wall switch and double-pole contactor linked to thermostats, low water switch, and timer. 6mm<sup>2</sup> heat resistant cable to be used.
4. RCD/RCBO protection should be provided on all immersion heater supplies.
5. All supplies must be earthed, as well as all connections to immersion heaters.
6. Do not turn on power supplies to the controls or immersion heaters until the system has been filled with water.
7. When connecting to immersion heaters, press the reset button on the fitted overheat thermostat, and check that control thermostats are set to 75°C (unless the design of the system calls for different temperature settings).

### Making Push-Fit Connections:

1. Any soldered joints in adjoining pipework should be made prior to connection to adjoining push-fit connections.
2. Cut tube square using a rotary pipe cutter - do not use a hacksaw to cut the tube.
3. Check that the end of the tube is free from burrs and sharp edges or damage will occur to the O-Ring seals.
4. Allow 27mm of pipe for insertion into the fitting plus 10mm of pipe to allow use of a disconnecting tool.
5. Insert the tube through the release collar of the fitting to rest against the grab ring.
6. Push the tube in firmly until it reaches the tube stop.

**Feed and Expansion Tank:**

1. Feed and Expansion tanks should be sized to allow for suitable expansion of all primary water, equal to 4% of the entire system volume, including cylinder and pipework. Allowance should be made for cold fill level, and a minimum of 30mm from position of overflow, and 60mm from cold inlet position. As a rule of thumb, pick a header tank with a capacity of 10% of system volume.
2. Where wood burners are connected to system, a metal feed and expansion tank should be used, along with a copper float on inlet valve.
3. An overflow must be connected that is rated to 100°C, continually falling, and is capable of discharging the full failure flow rate of the inlet valve (with float removed). This must be checked during commissioning.
4. Feed and Expansion Tanks should be insulated.
5. The vent pipe should be taken to a level 300mm higher than top of the F&E tank, before connection through lid or into side at high level (30mm above overflow connection). If this is not possible then it may be necessary to tee the cold feed into the vent pipe (rather than the connection provided on the Xcel), via a return drop of at least 300mm (see diagram).
6. Vent pipes must be continually rising from the Xcel. Horizontal runs should have a slight incline.
7. Do not install separate vents, or cold feeds, at different points in a system that shares flow. Any pumped flow will generate a pressure difference along pipework, and this will cause circulation through the F&E tank, heating it up, and mixing oxygen into the system, accelerating system corrosion.
8. See Assembly X2009-19P for manually filled (no-discharge) systems.
9. Spare Parts:
  - (a) Metal F&E Tank (400 litre systems) ..... FE450300
  - (b) Metal F&E Tank (800 litre systems) ..... FE450450
  - (c) Ball Float Valve (Swan Neck) ..... JET-11SWAN-NECK
  - (d) Copper Float for float valve ..... COPPERFLOAT
  - (e) Tank Connector, 22mm Compression ..... CC2822

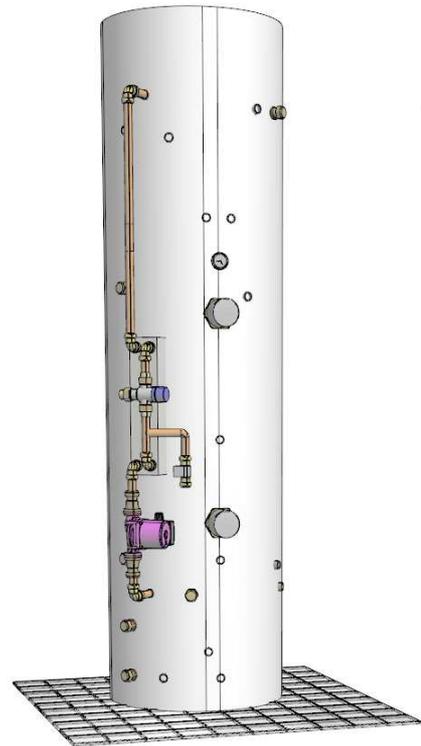


**Pressurised Storage Systems:**

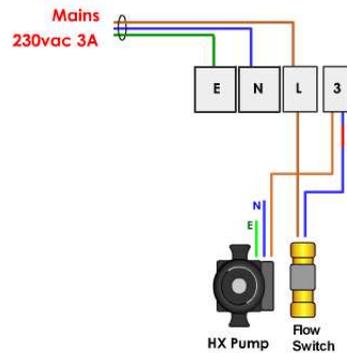
1. INSTALLATION AND MAINTENANCE OF PRESSURISED STORAGE SYSTEMS MUST BE DONE BY REGISTERED UNVENTED PERSONS ONLY.
2. SYSTEMS MUST BE SERVICED ANUALLY, WITH ALL SAFETY VALVES TESTED.
3. SERVICING MUST BE RECORDED ON A LABEL SECURELY ATTACHED TO STORAGE UNIT.
4. SYSTEMS MUST NOT BE CONNECTED TO HEAT SOURCES (THAT CAN ACHIEVE > 90°C) WITHOUT THERMOSTATIC CONTROL, OR WITHOUT THE FACILITY TO BE TURNED OFF VIA CONTROL THERMOSTATS, UNLESS SUITABLY APPROVED PROTECTION HAVE BEEN PROVIDED.
5. DO NOT use O-Ring Seals on Immersion Heaters. If factory fitted then they should be replaced with PTFE string, and a fibre washer.
6. The following safety controls must be installed:
  - (a) Expansion Vessel of size equal to, or greater than, 25% of total system volume, and having a pre-charge pressure between 0.9 and 1 bar.
  - (b) 2.5 bar Expansion Relief Valve, connected to a bottom (cold feed) connection on the Xcel, or adjoining pipework (without possibility of isolation from the Xcel).
  - (c) 3 bar, 90°C Pressure and Temperature Relief Valve, connected directly to top (vent) connection on the Xcel.
  - (d) 1 bar RPZ (Reduced Pressure Zone) Automatic Filling Valve (requires discharge).
  - (e) Pressure Gauge and Temperature Gauge.
  - (f) Discharge pipe capable of removing the combined maximum discharge from all three safety valves.
7. Spare Parts:
  - (a) Expansion Vessel, 100 litres ..... XVES
  - (b) Expansion Vessel, 120 litres ..... XVES
  - (c) Expansion Vessel, 150 litres ..... XVES
  - (d) 2.5 bar Expansion Relief Valve ..... XVES
  - (e) 3 bar, 90°C Pressure and Temperature Relief Valve ..... XVES
  - (f) 1 bar RPZ Automatic Filling Valve ..... XVES
  - (g) Pressure Gauge ..... XVES
  - (h) Temperature Gauge ..... XVES

**X2009-2: Mains Hot Water via Plate Heat Exchanger.**

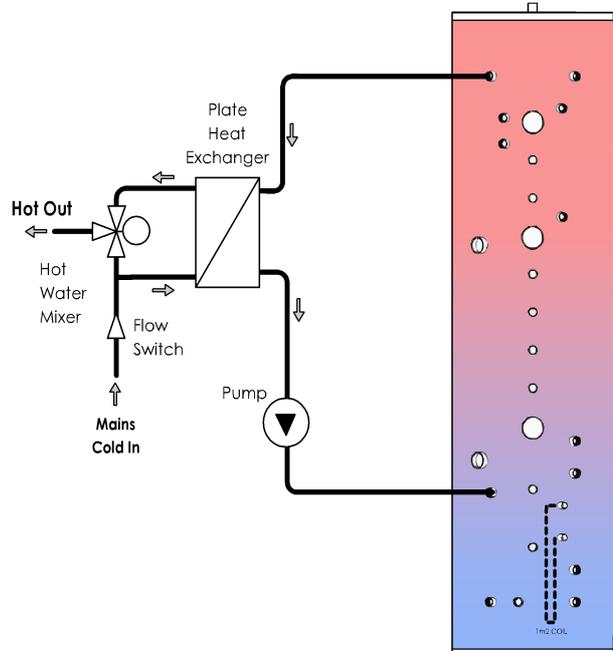
1. Please check that the maximum supply pressure does not exceed 6 bar, and if necessary a Pressure Reducing Valve should be fitted onto the incoming mains. Please ensure that all fittings and appliances connected to mains supplies are rated at least 50% higher than supply pressure.
2. A Mains Isolating Valve must be fitted onto the incoming mains within the cylinder cupboard within clear view.
3. A Y-Pattern Strainer (supplied loose) must be fitted onto the incoming mains. The Y-Pattern Strainer should be fitted down-flow of the Isolating Valve in a position to enable servicing.
4. In areas of hard water it is recommended that a Scale Inhibitor be fitted on the incoming mains supply, and installed as per the manufacturers' instructions.
5. Although supply pressure may be as low as 0.1 bar, the flow rate performance is relative to the supply pressures, and low supply pressures will result in poor flow rates to taps.
6. A thermostatic mixing valve is supplied as standard for temperature limitation of water supplied to outlets. This should be adjusted to users preference, and can be locked to prevent tampering.
7. The circulating pump is factory set to speed 1. This can be turned up if flow rates to hot taps need to be increased.
8. Pipework Connections:
  - (a) Cold Mains In, 22mm.
  - (b) Hot Mains Out, 22mm.



9. Electrical Connections factory made.



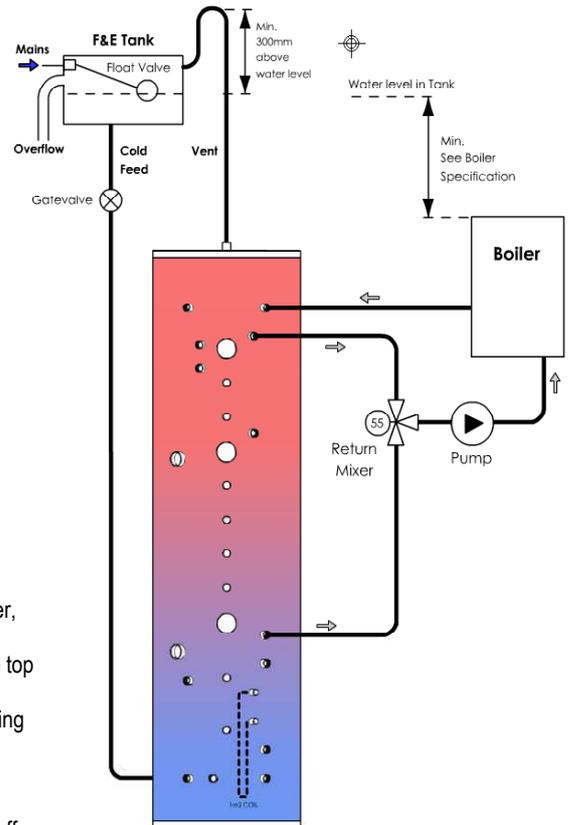
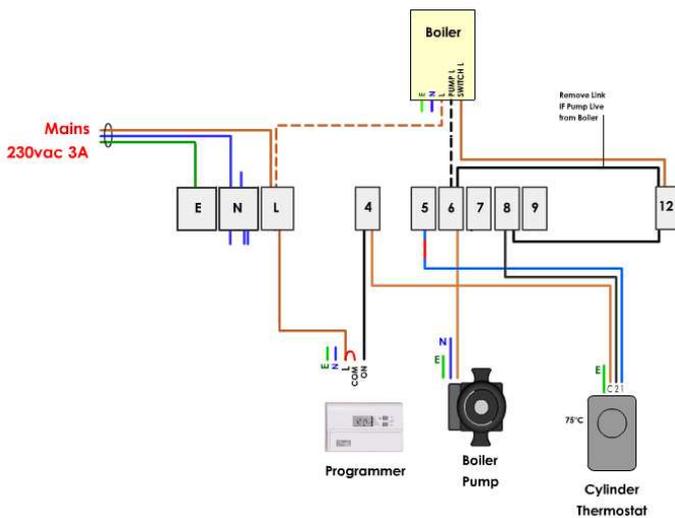
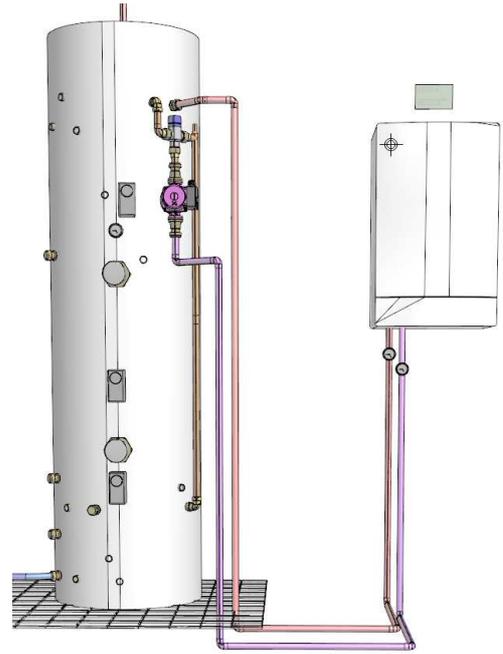
10. Operation:
  - (a) When a hot tap is opened, cold water passes through the flow switch, plate heat exchanger and thermostatic valve.
  - (b) The flow switch passes a live signal to the circulating pump.
  - (c) Hot water is pumped into the heat exchanger from the top of the Xcel, heating up the mains water supplied to taps.
  - (d) When the tap is shut, the flow switch removes live feed from the pump



11. Spare Parts:
  - (a) Thermostatic Mixing Valve, 22mm ..... HG22
  - (b) Thermostatic Mixing Valve, 28mm ..... HG28
  - (c) Washers for 1" Unions ..... WASHER1
  - (d) Circulating Pump ..... WILO RS 25
  - (e) Pump Washers ..... 6078002
  - (f) Flow Switch ..... FSX-019

**X2009-5: Direct Boiler Connection, GX System, 35kW.**  
 See Also 11B/12B (Pumps) and 6,7 (Thermostats)

1. Suitable for connection of boilers up to 35kW output.
2. If output of boiler exceeds 35kW, assembly X2009-5A is required instead.
3. The lower return connection from the Xcel to the Boiler is taken from above the solar coil as standard. To enable the boiler to heat the entire store (including solar section), then the return connection needs to be reconnected lower down, and cylinder thermostats need lowering.
4. It assists in commissioning, and fault-finding, to install temperature gauges on boiler flow and return pipes.
5. If the Xcel is installed as a vented system, and the boiler is only suitable for pressurised systems, then a plate heat exchanger will need to be installed to isolate boiler from vented storage system.
6. The circulating pump is factory set to speed 3. This can be adjusted to obtain a temperature drop across boiler of 15 to 20°C.
7. Return temperature to boiler should ideally be 55°C, with an 18°C temperature rise, to achieve a 73°C flow temperature.
8. Boiler control thermostat should generally be left on maximum.
9. Pipework Connections:
  - (a) Return top Boiler, 28mm.
  - (b) Flow from Boiler, 28mm.
10. Electrical Connections (Single Thermostat):

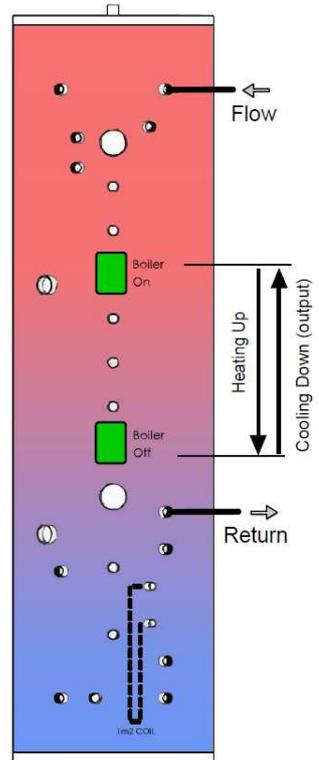
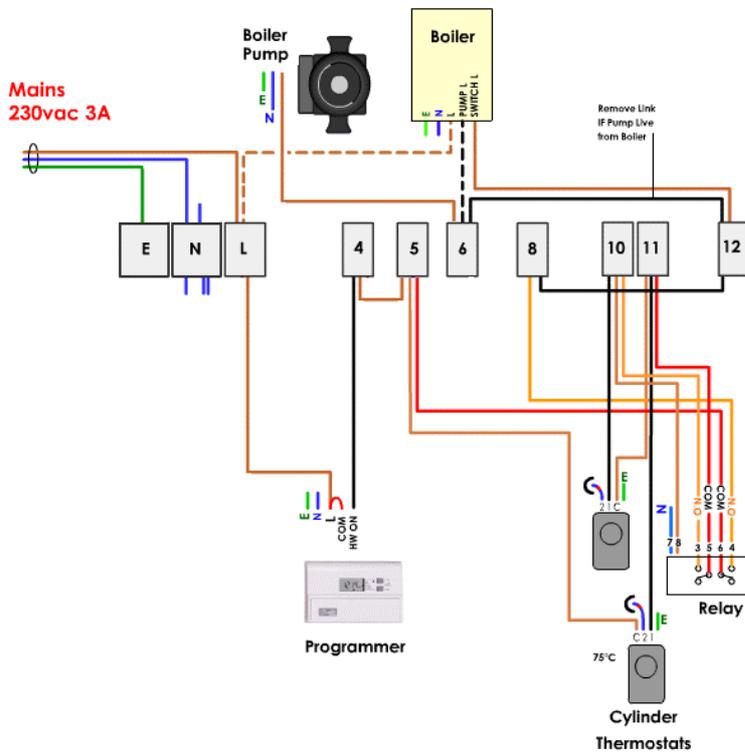


11. Operation:
  - (a) When cylinder thermostats call for heat, a live feed is provided to boiler, and boiler pump.
  - (b) The boiler fires, and water is re-circulated by the return mixer from the top of the Xcel, through the boiler, and back to the top of the Xcel.
  - (c) Once the top of the Xcel reaches > 55°C, the return mixer starts drawing from the base connection to the Xcel, to regulate return temperature.
  - (d) Xcel heats up from the top-downwards, until cylinder thermostats are satisfied, and live feed to boiler is removed.
  - (e) Boiler pump may keep running for a short period following boiler turn-off.

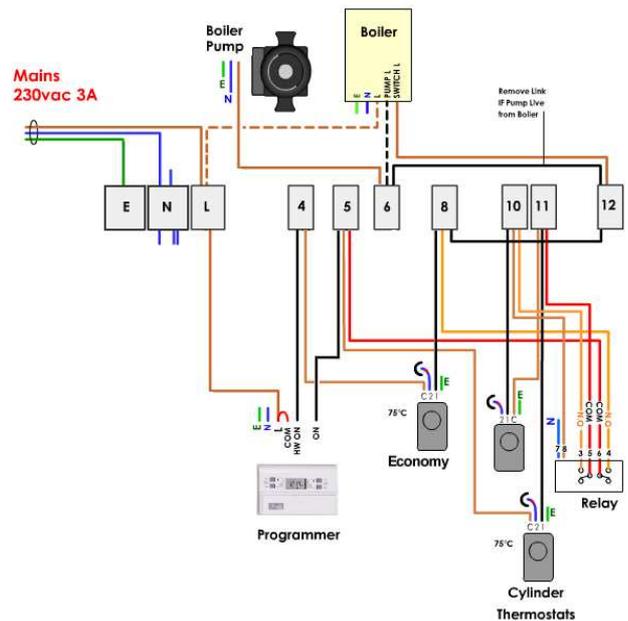
12. Spare Parts:
  - (a) Return Mixing Valve, 28mm ..... HG28
  - (b) Circulating Pump [X2009-11B] ..... WILO RS 25
  - (c) High Flow Circulating Pump [X2009-12B] ..... SE125
  - (d) Pump Washers ..... 6078002

- ❑ X2009-7: Thermostat and Relay for Buffering Boiler Input.
- ❑ X2009-8: Thermostat for Boiler Control (economy mode). (see X2009-18A)

1. The use of two thermostats linked with a relay allows the thermostats to act as a latch, with one thermostat acting as the switch on, and the other as the switch off. This is used to hold off firing of the boiler until there is a known volume of water at a low enough temperature to call for the boiler to fire.
2. Once fired, the boiler will continue to fire until the off thermostat is satisfied.
3. Additional cylinder thermostats can provide reheating to set positions on the store (assuming top-down reheating). Thermostats located at the top of the Xcel can provide an economy mode, heating up small quantities of hot water for low-medium hot water demand. Thermostats located at base of the Xcel can provide a heavy demand mode, where the entire volume of the store is heated.
4. Additional switching will be required for each thermostat used, either by a wall mounted switch, or using a timer or programmer.
5. Electrical Connections (X2009-7 only):



6. Electrical Connections (X2009-7 and -8):

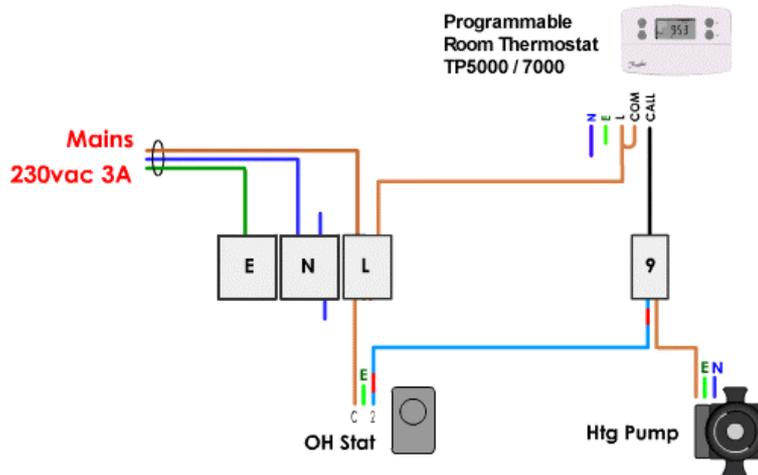


7. Spare Parts:

- (a) Danfoss Randall ITC 100 thermostat .....ITC100
- (b) Relay .....RELAY10

❑ **X2009-9: Overheat Thermostat.**

1. The overheat thermostat is wired to pass a live to a central heating pump to initiate central heating once the stored water reaches 90°C, thereby cooling the store and preventing overheating due to continued heat input from wood burners or solar panels.
2. If motorised valves or actuators are fitted on heating circuits, then the overheat thermostat must be wired so as to open the appropriate valve(s) and initiate the circulation pump for the overheat dump circuit.
3. Ensure that the dump heating circuit is capable of removing enough heat from the system. This will depend on the type of appliance that overheat protection is provided for. In the case of wood burners without thermostatic control, this can be between 3 and 30kW depending on model and type of fuel used.
4. Ensure that any fitted radiator thermostats or room thermostats do not prevent transfer of heat, even when rooms are up to temperature. Some radiators may have to be left without thermostatic valves.
5. Room thermostats are by-passed as shown in wiring diagram below.
6. The temperature setting on the overheat thermostat may be lowered if it is desirable to have central heating start automatically when the store reaches a specified temperature.
7. When dumping heat into an underfloor heating system, it will be necessary to integrate with the type of underfloor heating controls that are used. It is generally necessary to simulate both a call for heating and short-circuit the room thermostats of the zones to be dumped to, and may require the use of additional relays. For further help, please contact the DPS technical department, providing detailed information on the UFH wiring.
8. This option is often used in conjunction with Option X2009-13: Power-free overheat protection via discharge.
9. Electrical Connections (Standard Radiator Circuit with Programmable Room Thermostat and Overheat):



10. Spare Parts:

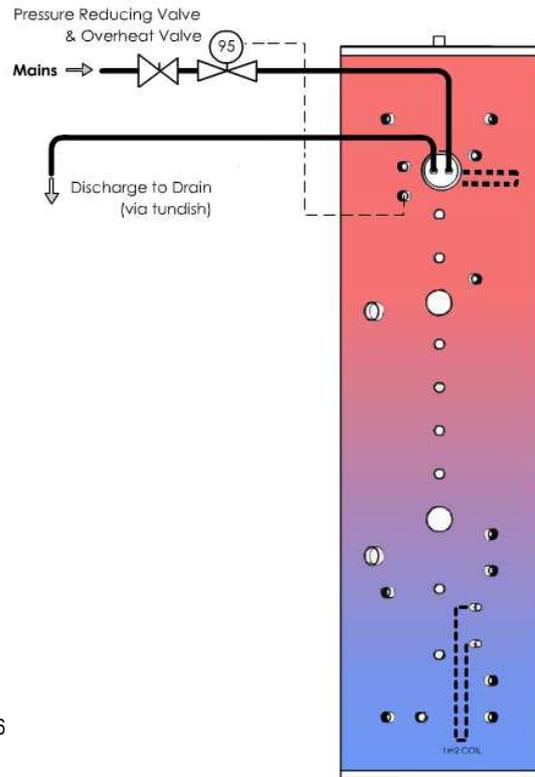
- (a) Danfoss Randall ITC tamperproof thermostat ..... ITC Tamperproof

❑ **X2009-13: Overheat Discharge to Drain.**

1. The overheat discharge system uses a mechanical thermostatic valve to discharge water to drain via a coil in the Xcel, thereby cooling stored water and preventing overheat.
2. The discharge valve is factory set to 95°C and cannot be adjusted.
3. A pressure reducing valve, set less than 1 bar, should be fitted up-flow of the discharge valve to maintain calibration.
4. The discharge pipe should be run in 15mm pipe, 100°C rated, before final discharge via an air-break, typically using a Tundish.
5. The discharge valve is fitted with a manual test facility. Function of the valve should be tested during commissioning, and annually thereafter.

6. Spare Parts:

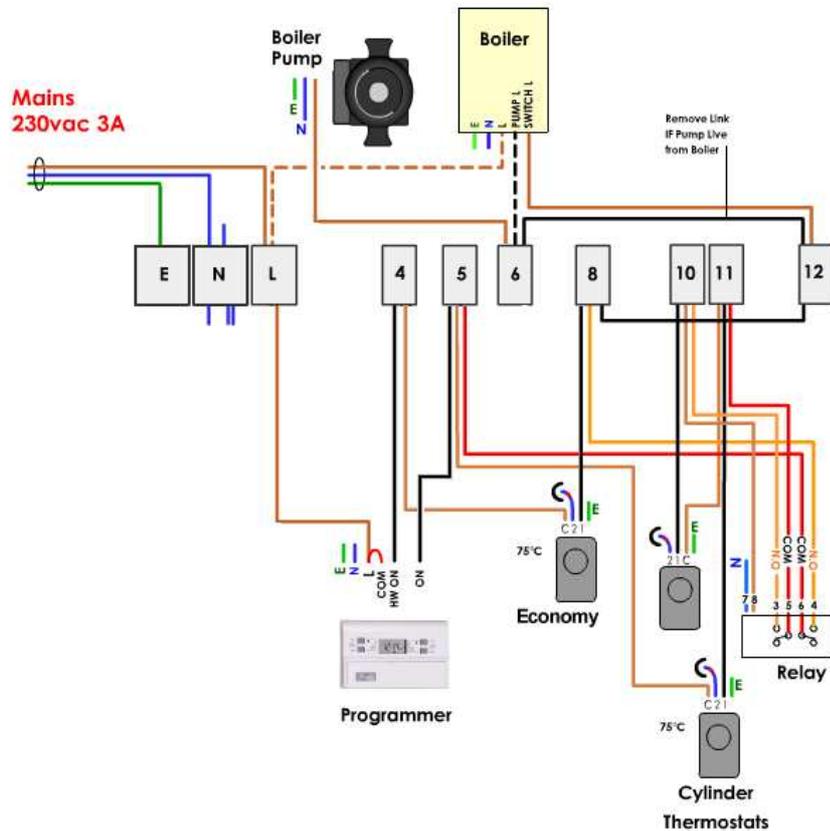
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|--|----------|
| (a) Overheat Discharge Valve.....                  | WBA-1A   |
| (b) Pressure Reducing Valve with Gauge, 15mm ..... | WBA-2A   |
| (c) Retro-Fit Overheat Coil .....                  | HOTROD16 |



❑ **X2009-18A: Two Channel Programmer for using Economy/Normal Recovery modes.**

1. Where option X2009-8 is chosen to add Economy Mode to your Xcel Heat Bank, an additional cylinder thermostat is provided to allow smaller quantities of hot water to be heated using the boiler. Option X2009-18A provides a two-channel programmer that allows you to easily control when the boiler should run in economy mode, and when the boiler should heat the entire store.
2. Channel 1 is used to set times when economy mode is to be used.
3. Channel 2 is used to set times when normal mode is to be used.
4. If both channels are on at the same time, economy mode is ignored.
5. In economy mode, the boiler typically heats up the top 25% of the store. The position of the economy mode thermostat can be altered to increase/decrease the amount of water heated up in economy mode.
6. Economy mode will provide enough hot water to run sinks, basins, a bath, or one or two showers, and can keep taps running as long as required (in a similar fashion to a combination boiler).
7. Economy mode will not provide enough stored hot water to run multiple baths or showers at the same time (unless water is also being heated by an alternative heat source), and will not provide central heating.
8. The economy mode should be used as standard where the Xcel is connected to alternative heat sources such as wood burners or solar panels. This ensures that the majority of the water in the Xcel is not heated by the boiler and can therefore be used for storing heat from the alternative sources.
9. Standard mode should be typically used as a timed boost to heat up the whole store in advance of known heavy draw-off periods. This way you can be sure that there is enough water ready when needed. Alternatively the +1hr Boost facility can be used to generate higher volumes of hot water as needed.

10. Electrical Connections:



11. Spare Parts:

- (a) Danfoss FP715 Two Channel Programmer..... FP715

**X2009-EH: Energy Harness Pre-Heat System.** (Patent applied for)



1. The Energy Harness is designed to work with low-grade heat sources to provide domestic hot water, and central heating.
2. The system works in conjunction with a Combination Boiler, to top-up hot water temperatures when necessary, and to drive central heating.
3. It also works in conjunction with a low-grade heat source, including any combination of the following:
  - (a) Flue Heat Recovery systems.
  - (b) Heat Pumps.
  - (c) Solar Panels.
4. The following Assemblies are combined to provide the complete Energy Harness system. These can be ordered separately.
  - (a) X2009-2S: DHW Plate Heat Exchangers, two in series.
  - (b) X2009-41EH: Crouzet XD26 Controller pre-programmed for use with the EnergyHarness, including control of pump speed to achieve DHW setpoint temperature, control of flue-recovery circuit and solar pumps, and optional after-heating control with limitation of boiler pre-heat supply temperature.
  - (c) 2x X2009-11B: Fitted pumps (boiler & solar circuits).
  - (d) X2009-16A: 3kW Backup Immersion Heater
5. Control of flow to combination boiler for after-heating is controlled separately, either using a mechanical thermostatic valve designed for this purpose, or by using a motorised valve, or by using a pumped loop through boiler. See spare parts list below for part numbers for each system.
6. Electrical Connections:
  - (a) For Crouzet XD26 Controller, see X2009-41 assembly.
  - (b) For Resol ES Controller, see separate data sheet.
7. Pipework Connections:
  - (a) Cold Mains In, 22mm
  - (b) Hot Mains Out, 22mm
  - (c) Flow and Return to Boiler Heat Recovery / Heat Pump, 22mm
  - (d) Flow and Return to Solar Panel, 22mm
8. Spare Parts:
  - (a) Temperature / Flow Sensor .....FTSENSOR40
  - (b) Circulating Pump .....WILO RS 25
  - (c) Pump Washers .....6078002
  - (d) After-heating Mechanical Thermostatic Valve .....555CSD1
  - (e) After-heating Diverting Valve (non WRAS) .....DANF DIVERT 22
  - (f) After-heating Bronze Pump .....WILO SB30

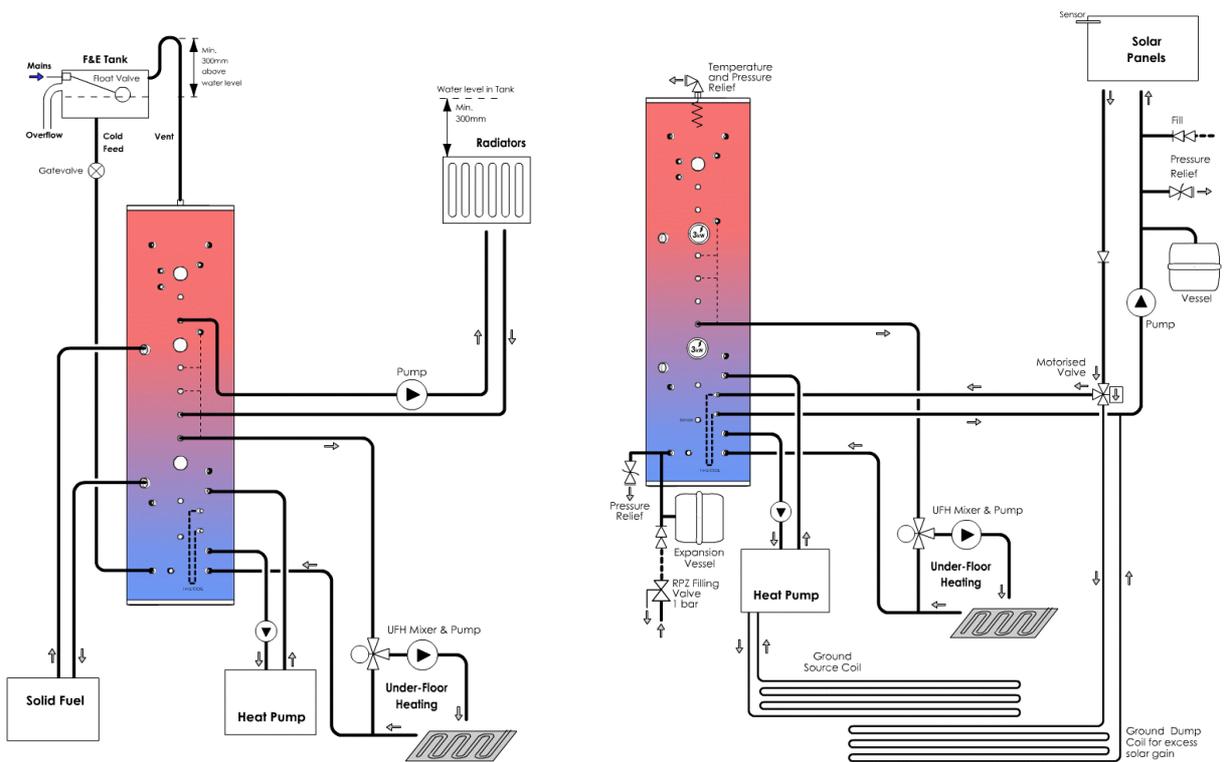


Factory Supplied 210 litre Energy Harness System

**Integration with Heat Pump Systems:**

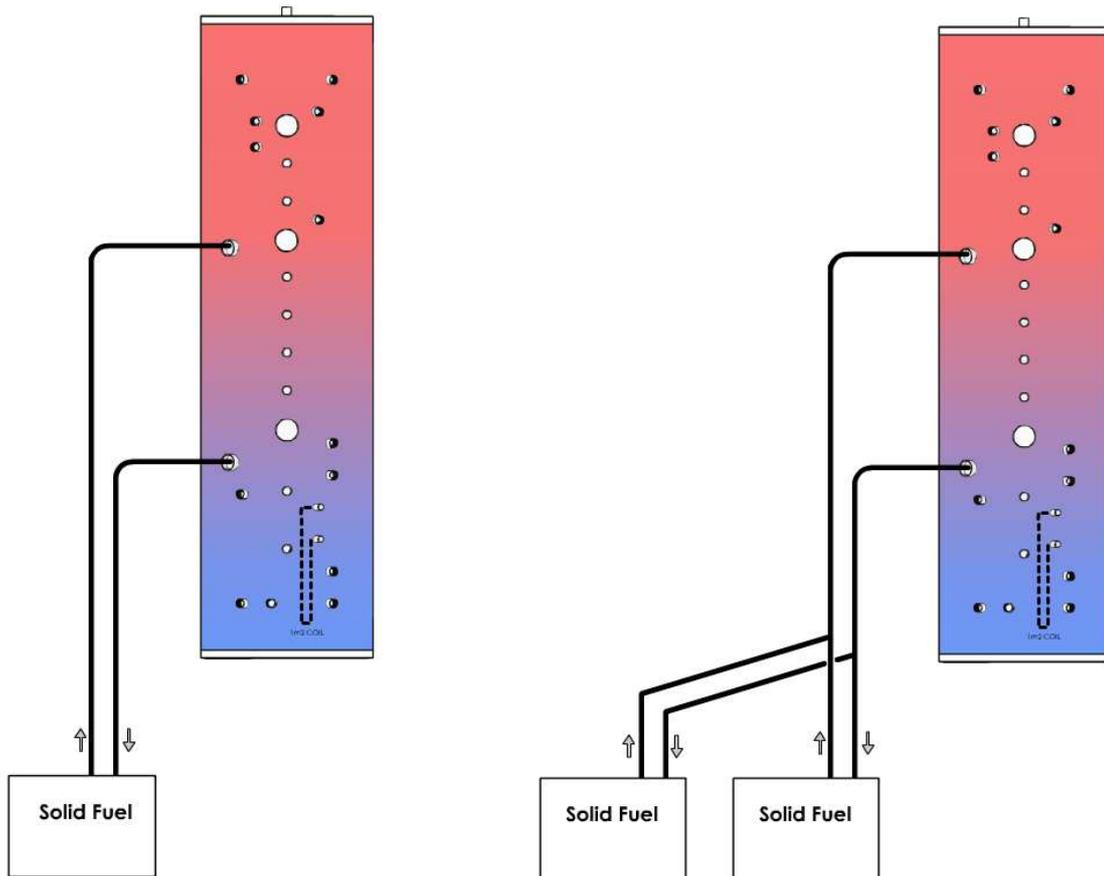
1. The Xcel Heat Bank can act as a buffer between a heat pump and the central heating system, allowing heat pump to be combined with other heat sources for both hot water and heating.
2. Heat pumps are generally connected into the lower half on the Xcel, with higher temperature heat sources (wood burners, gas boilers) using the upper half of the store. It is important to keep the heat pump cold return connection from low down.
3. Where a heat pump is integrated in a vented Xcel storage system, it may be necessary to remove any low-pressure safety switches in the heat pump, and replace with a flow switch. Consult heat pump manufacturer.
4. To reduce turbulence in the stored water, caused by high flow heat pump circuits, Diffuser Tubes can be supplied on request.
5. To improve performance due to low storage temperatures, a number of higher duty plate heat exchangers are available for generating mains hot water. See section on *Plate Heat Exchanger Performance*.
6. Sample Schematics:

(a) Solid Fuel combined with Heat Pump on a vented system. (b) Solar combined with Heat Pump on pressurised system.



☐ **Example Schematic, Wood Burner on Gravity:**

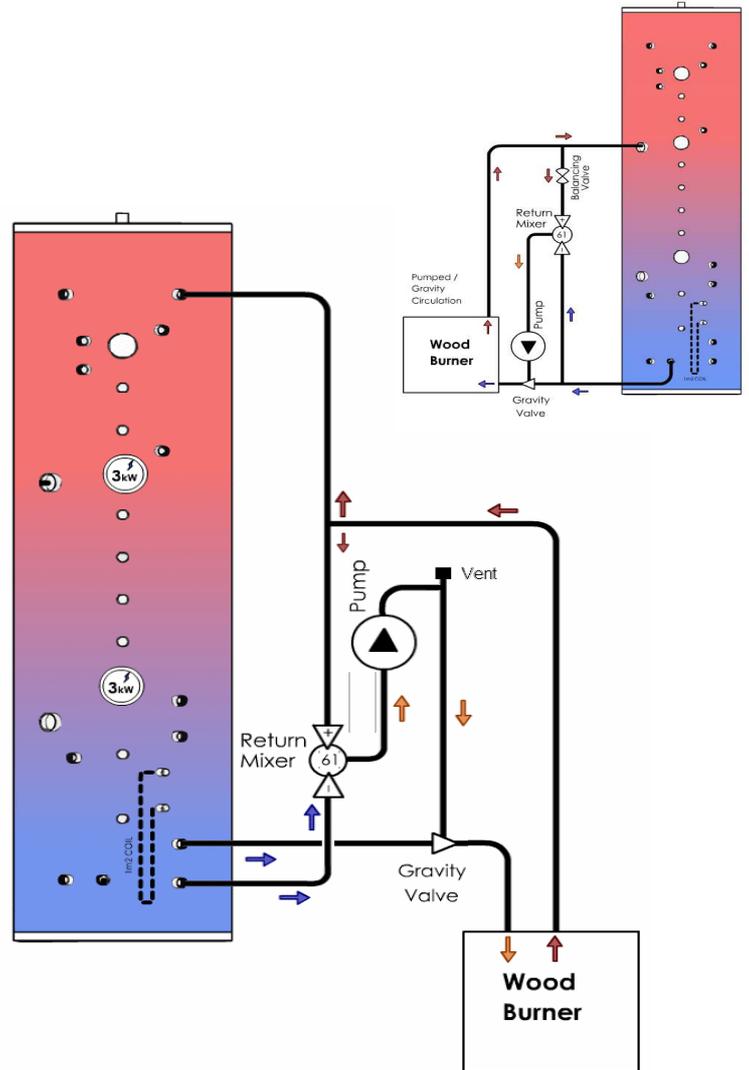
1. For use with Wood Burners installed where gravity circulation is possible.
2. Overheat protection is not detailed in top schematic, and should be provided from Xcel.
3. This is the simplest form of connection of a wood burner, and the most often used.
4. The Xcel is provided with two 1½" Bosses for connection of pipework up to 42mm, is required.
5. Read in conjunction with section on **X2009-13: Overheat Discharge to Drain.**



☐ **Example Schematic, Wood Burner Pumped/Gravity:**

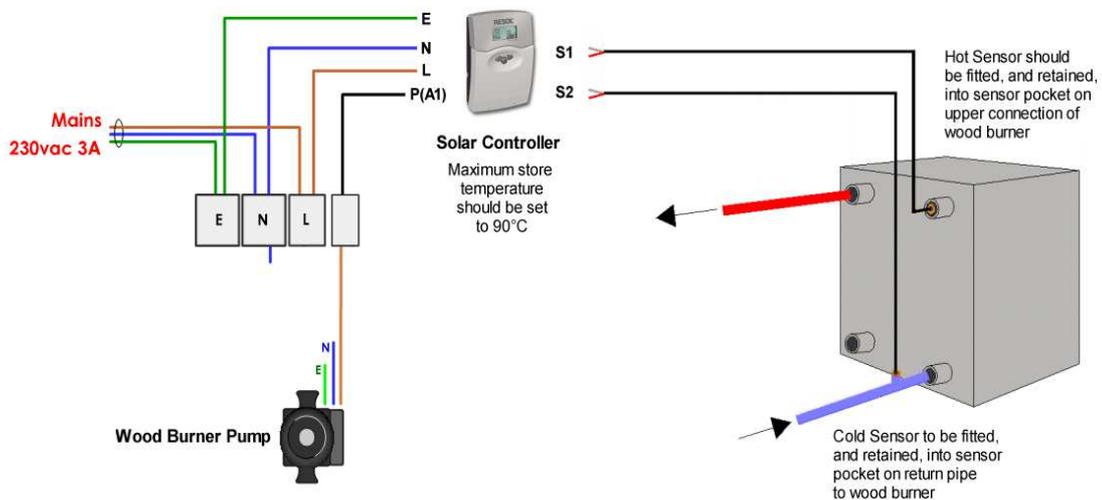
1. For use with Wood Burners installed where gravity circulation is possible, and pumped operation is also desirable.
2. Overheat protection is not detailed in top schematic, and should be provided from Xcel.
3. The Gravity Valve allows gravity circulation to operation in conjunction with a pumped flow.
4. The Return Mixer re-circulates water through wood burner until temperatures reach 61°C, preventing low flue temperatures that result in deposits.
5. A balancing valve must be fitted onto the hot inlet to the mixing valve, and should be set to pass the minimum flow permissible for the wood burner (typically 5 litres/ minute).
6. Read in conjunction with section on **X2009-13: Overheat Discharge to Drain**.
7. Spare Parts:

- (a) Return Mixer 1" ..... HG28
- (b) Pump ..... WILO RS 25  
(larger duty pumps on request)
- (c) Three-Port Gravity Valve 1"MBSP ..... WBA-4
- (d) Three-Port Gravity Valve 1¼"MBSP ..... WBA-4B
- (e) 28mm Union for Gravity Valve (x1) ..... U11328
- (f) Differential Temp Controller ..... WBA-5A
- (g) Flue Thermostat ..... FLUESTAT



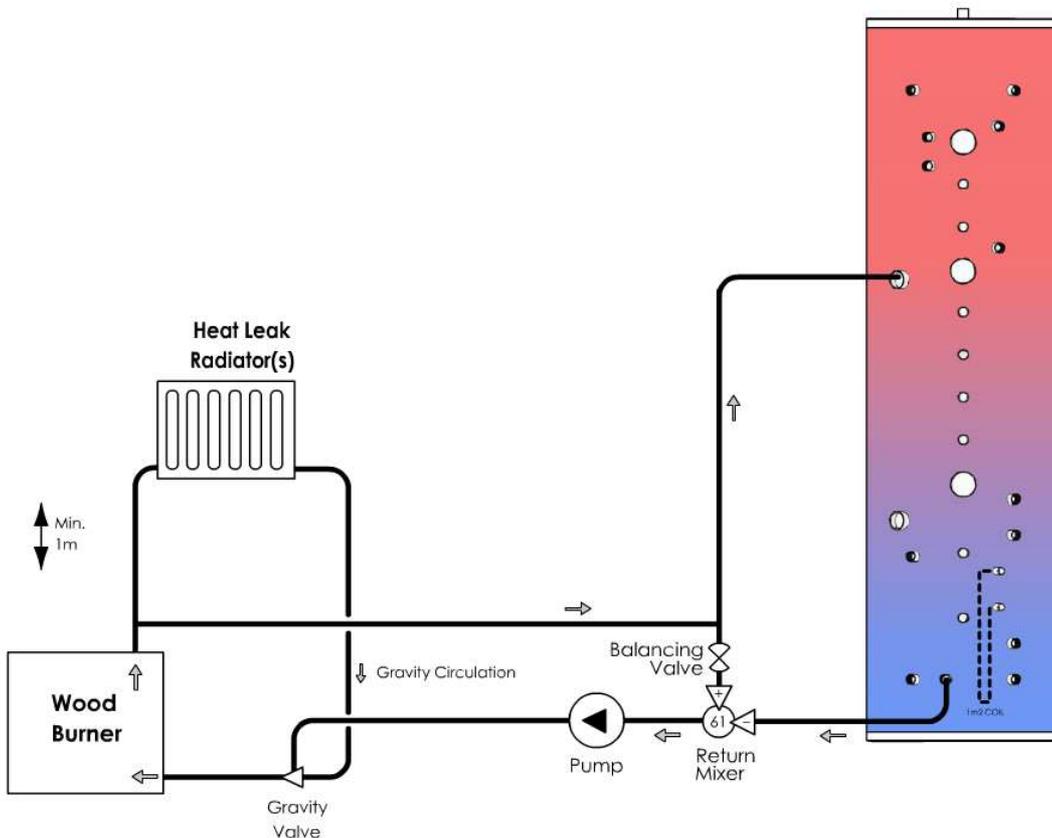
8. Electrical Connections:

- (a) The wood burner circulating pump can be controlled using a solar controller fitted as shown below.



❑ **Example Schematic, Wood Burner Pumped/Gravity:**

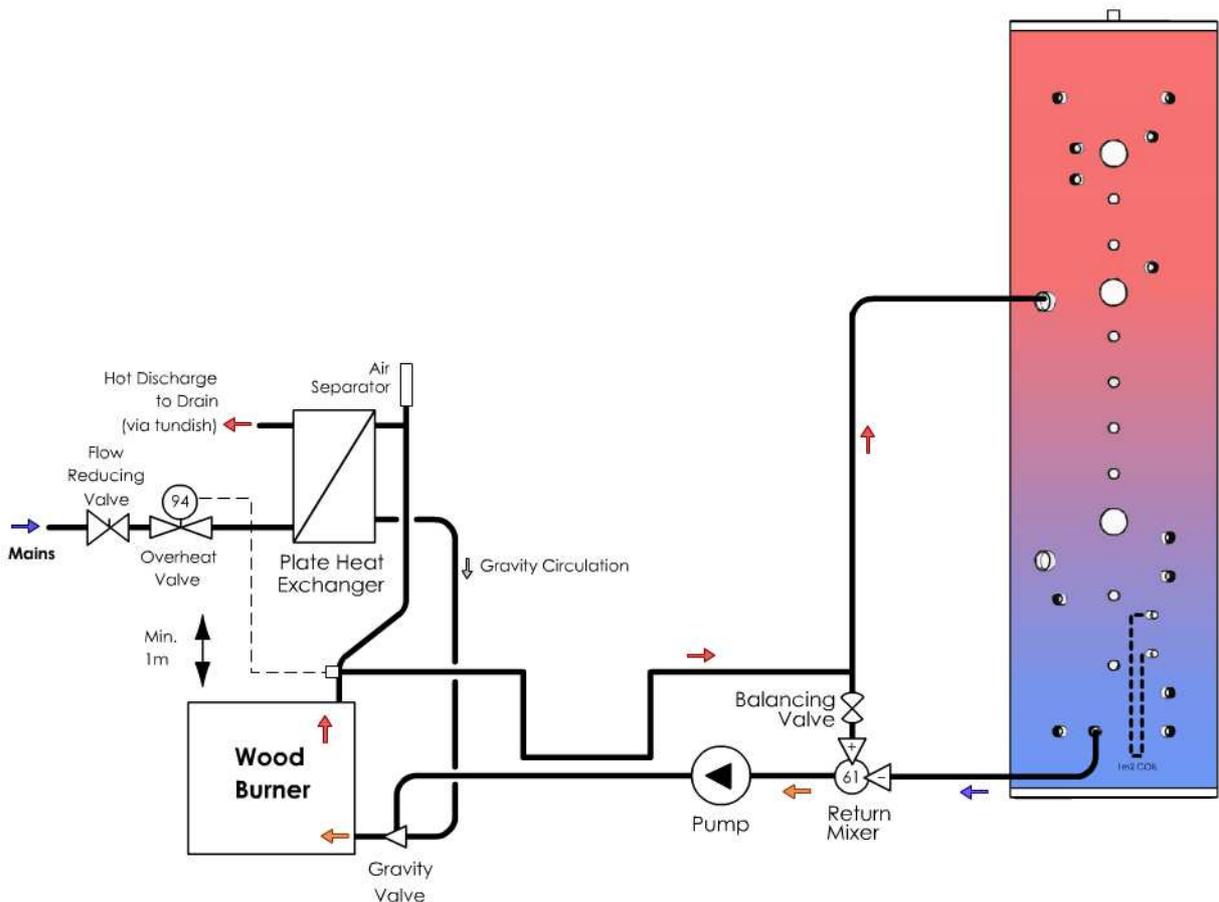
1. For use with Wood Burners installed where gravity circulation is not possible, and a dump radiator can be uninstalled for overheat protection.
- 2.
3. Overheat protection is not detailed in top schematic, and should be provided from Xcel.
4. The Gravity Valve allows gravity circulation to operation in conjunction with a pumped flow.
5. The Return Mixer re-circulates water through wood burner until temperatures reach 61°C, preventing low flue temperatures that result in deposits.
6. A balancing valve must be fitted onto the hot inlet to the mixing valve, and should be set to pass the minimum flow permissible for the wood burner (typically 5 litres/ minute).
7. Read in conjunction with section on **X2009-13: Overheat Discharge to Drain.**
8. Spare Parts:
  - (a) Return Mixer 1" ..... HG28
  - (b) Pump ..... WILO RS 25  
(larger duty pumps on request)
  - (c) Three-Port Gravity Valve 1"MBSP ..... WBA-4
  - (d) Three-Port Gravity Valve 1¼"MBSP ..... WBA-4B
  - (e) 28mm Union for Gravity Valve (x1) ..... U11328
  - (f) Differential Temp Controller ..... WBA-5A
  - (g) Flue Thermostat ..... FLUESTAT

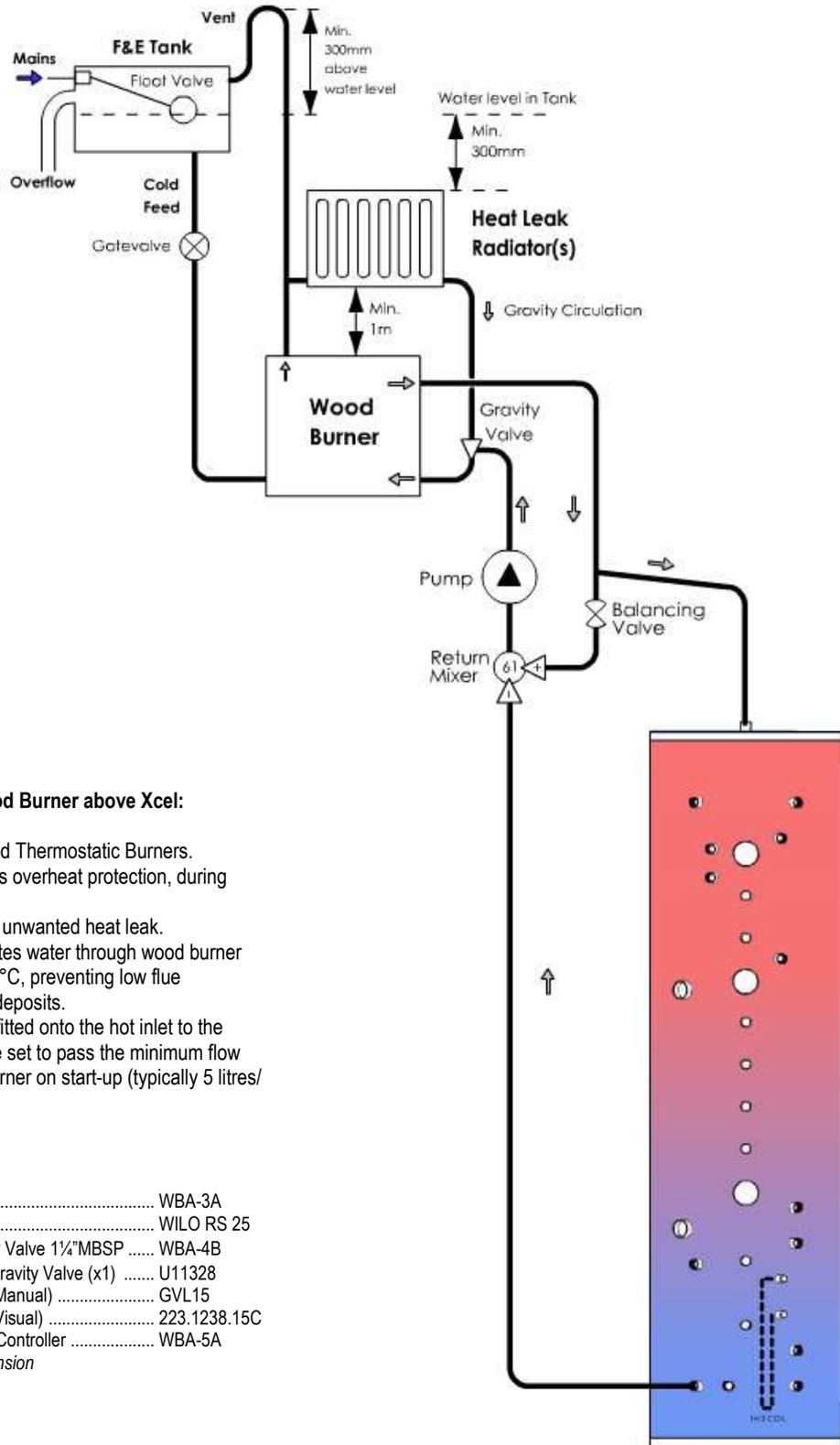


❑ **Example Schematic, Wood Burner remote from Xcel:**

1. For use with Wood Burners installed where gravity circulation is not possible, and a heat leak radiator is impractical.
2. Heat Leak Plate Heat Exchanger provides overheat protection, during pump or power failure.
3. Cold mains water is passed through the heat exchanger when the wood burner achieved 94°C. The mains water cools the gravity circuit above the wood burner, and is then discharged to drain.
4. The Gravity Valve prevents unwanted heat leak.
5. The Return Mixer re-circulates water through wood burner until temperatures reach 61°C, preventing low flue temperatures that result in deposits.
6. A balancing valve must be fitted onto the hot inlet to the mixing valve, and should be set to pass the minimum flow permissible for the wood burner on start-up (typically 5 litres/ minute).
7. Read in conjunction with section on **X2009-13: Overheat Discharge to Drain**.
8. Spare Parts:

- |     |  |   |
|-----|--|---|
| (a) | Return Mixer 1" .....                          | HG28                                      |
| (b) | Pump .....                                     | WILO RS 25 (larger duty pumps on request) |
| (c) | Three-Port Gravity Valve 1¼"MBSP .....         | WBA-4B                                    |
| (d) | 28mm Union for Gravity Valve (x1) .....        | U11328                                    |
| (e) | Differential Temp Controller .....             | WBA-5A                                    |
| (f) | Flue Thermostat .....                          | FLUESTAT                                  |
| (g) | Overheat Discharge Valve.....                  | WBA-1A                                    |
| (h) | Pressure Reducing Valve with Gauge, 15mm ..... | WBA-2A                                    |
| (i) | Plate Heat Exchanger IC8-40.....               | XXX                                       |
| (j) | Cover Plate for IC8-40 .....                   | XXX                                       |
| (k) | Air Separator .....                            | XXX                                       |





**Example Schematic, Wood Burner above Xcel:**

1. For use with Four-Port Wood Thermostatic Burners.
2. Heat Leak Radiator provides overheat protection, during pump or power failure.
3. The Gravity Valve prevents unwanted heat leak.
4. The Return Mixer re-circulates water through wood burner until temperatures reach 61°C, preventing low flue temperatures that result in deposits.
5. A balancing valve must be fitted onto the hot inlet to the mixing valve, and should be set to pass the minimum flow permissible for the wood burner on start-up (typically 5 litres/minute).
6. Spare Parts:

- (a) Return Mixer 1" ..... WBA-3A
- (b) Pump ..... WILO RS 25
- (c) Three-Port Gravity Valve 1½"MBSP ..... WBA-4B
- (d) 28mm Union for Gravity Valve (x1) ..... U11328
- (e) Balancing Valve (Manual) ..... GVL15
- (f) Balancing Valve (Visual) ..... 223.1238.15C
- (g) Differential Temp Controller ..... WBA-5A
- (h) See Feed & Expansion Tank Section.

# Installation Notes

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**IC8x40 Plate Heat Exchanger Specifications:** *(used in assemblies X2009 -2, -4, -8)*

**BT12x40 Plate Heat Exchanger Specifications:** *(used in assemblies X2009 –2A)*

**Table of Heat Losses from Uninsulated Copper Pipe:**

1. This table highlights the importance of insulating pipework.

Nominal bore		Heat loss for fluid inside pipe					
		(W/m)			(Btu/hr.ft)		
		Temperature difference (oC)			Temperature difference (oF)		
(mm)	(inches)	22	38	55	70	100	130
15	1/2	21	32	45	22	34	47
22	3/4	28	43	60	29	45	53
28	1	34	53	76	36	56	79
35	1 1/4	41	64	89	43	67	93
42	1 1/2	47	74	104	49	77	108
54	2	59	93	131	62	97	136
67	2 1/2	71	111	156	74	116	162
76	3	83	129	181	87	135	189
108	4	107	165	232	111	172	241

**PLEASE RETURN THIS FORM TO:**

Thermal Integration Ltd., 1-3 Wealdstone Road, Sutton, Surrey SM3 9QN  
 Tel. 0845 2411441 Fax. 01372 803675

The Installer should fill out the following section before leaving with the end user.

Installer Details	Please tick to confirm the following requirements have been completed.
Name: Address:  Telephone: Mobile: Email: Commissioning Date: IMPORTANT – Unit Serial Number as shown on label:	<input type="checkbox"/> System has been protected with a suitable corrosion inhibitor to the appropriate level, and label left on store to indicate the date, type and amount added <u>and</u> the date it needs refreshing by.  <input type="checkbox"/> The sections in these instructions that apply to final installation have been ticked as completed and commissioned as per instructions.  <input type="checkbox"/> These instructions have been left with the end user.

The End User should fill out the following section before returning by post.

End User / Owner Details	Please tick the following that apply.
Name: Address:  Telephone: Mobile: Email: Date of Occupancy:	<input type="checkbox"/> You are satisfactory with the installation of your Xcel Heat Bank. <i>(If not then please attach your reasons).</i>  <input type="checkbox"/> The system is functioning correctly.  <input type="checkbox"/> You would like us to contact you in regards to extended warranty options, or ongoing maintenance contracts.  <input type="checkbox"/> You would recommend an Xcel Heat Bank to your friends.

**Failure to return this form may jeopardise the warranty on this system.**

## **WARANTEE INFORMATION**

**Stainless Steel Xcel Heat Banks carry the following guarantees:**

**1. Thirty years on the base unit against leaks.**

This guarantee only applies as long as the system is kept protected with a suitable corrosion inhibitor, and all additions of inhibitor are clearly recorded (date and quantity) on the system using labels supplied with the inhibitor.

**2. Two year guarantee on all fitted components.**

Pumps, programmers, valves and fittings are all covered by a two year guarantee against defects. This does not cover damage arising from faulty site installation or wiring, or against limescale. Replacement components will be charged for, and a credit issued upon receipt of the returned faulty components, unless components fail within one year from the date of supply when they will generally be covered by on-site backup. DPS does not cover the costs of returning faulty components.

**3. One year on-site cover.**

Within the UK mainland, on-site cover is provided against product defects or faulty workmanship. This does not cover faulty installation or wiring, and any call-outs resulting from faulty installation or wiring will be charged at the current service charge rate, including travelling time. It is our aim to provide on-site backup within 48 hours of notification, however this is not guaranteed.

**Guarantees provided outside the UK:**

Systems supplied outside the UK are still covered against base unit leaks and against component failure, however on-site backup is not provided.

**All guarantees are subject to the current terms and conditions of sale provided at quotation stage.**

**If you have any problems with your Xcel Heat Bank, please contact:**

**Thermal Integration Ltd., 1-3 Wealdstone Road, Sutton, Surrey SM3 9QN**

**Tel: 0845 2411441**

**Email: [servicing@heatweb.com](mailto:servicing@heatweb.com)**