

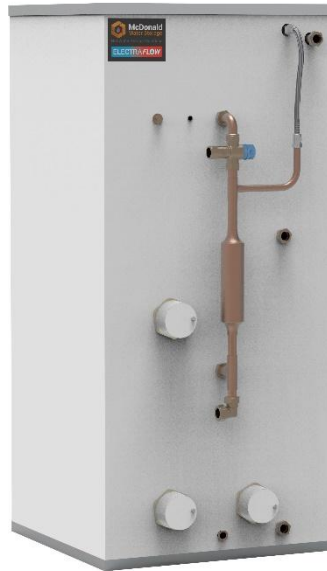


McDonald
Water Storage

ELECTRAflow

Thermal Store

Installation & Technical Manual



Tel: (01592) 611123

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November 2025

Commissioning Checklist Inside

Manual must be completed by Installer and left with Home Owner

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Preface

An early adopter of the principal of domestic thermal stores, McDonald Water Storage first started manufacturing thermal stores in early 1990s. Manufactured by our trained coppersmiths and designed based upon the experiences of our technical team. The McDonald Water Storage ELECTRAflow provides the perfect electric only solution to both mains pressure hot water and wet central heating.

This information provided is intended to provide support with the installation of the ELECTRAflow thermal storage system. Responsibility for selection and specification of our equipment remains that of our customer and any experts or consultants concerned with the installation(s). Our full Terms & Conditions of Sale are available on request.

The ELECTRAflow thermal storage system is required to be fitted by a competent installer, in accordance with **Building Regulations G**, **Gas Safety Regulations**, and the **Water Fitting Regulations (England and Wales)**, **Water Fitting Regulations (Northern Ireland)** or **Water Byelaws (Scotland)**.

(Please note that while the ELECTRAflow overcomes Safety implications within **Building Regulations G3** relating to pressure and temperature discharge requirements, the installation of the ELECTRAflow may be notifiable to the relevant building control.)

Handling & Storage

It is important the ELECTRAflow is handled with care and stored the correct way up in a dry place at all times prior to, during and after installation.

Carrying handles are provided in the back of the rectangular cased products to assist with lifting and positioning. **DO NOT LIFT BY THE PIPEWORK** as this can loosen off the pre-tested pipework and may result in leaks. It is good practice to check the joints before filling with water in case anything has been loosened in transit. Any manual lifting will need to comply with the requirements of the Manual Handling Operations Regulations issued by the Health & Safety Executive. For installations on higher levels of properties such as the 4th floor it is recommended as best practice for the ELECTRAflow to be moved vertically within a lift.

The Environment

This product has been manufactured using many recyclable materials, including copper and the approved HCFC/CFC free polyurethane foam insulation. At the end of its useful life, it should be disposed of at a Local Authority Recycling Centre, to maximise the products full environmental benefits.

What is a Thermal Store?

- Initially the Thermal Store is filled through the ball-valve that is sited in the feed and expansion tank to the cold working level. This primary water stays within the unit.
- The primary store of water is then heated directly via the use of immersion heaters.
- The hot water is generated via a secondary heat exchanger that draws its heat from the primary store of water.

Design

The copper ELECTRAflow Thermal Store is a bespoke primary store that is very well insulated to ensure minimum Heat Loss and optimally designed to meet the stringent requirements of ERP. In addition, the rectangular tank variant will hold 25% more water than a cylinder in a given space, and the dimensions can be altered to make the best use of the available space.

Cold water at mains pressure passes through a High Efficiency Coil, which is specifically designed to draw heat from the thermal store at mains pressure. This heated water is subsequently blended with cold mains water through a Thermostatically Controlled Mixing Valve, to provide mains pressure water at 55°C to the taps and showers.

If the length of the hot water draw off pipework is excessive, and delivery time to the outlet is greater than 60 seconds, you may consider using a secondary pipework loop.

The Secondary Pipework Loop (DHW Coil & External Pipework) can contain a total of **3 - 5 Litres** of water, and incorporates an expansion bottle to accommodate the thermal expansion of the heated mains water. If the volume of the secondary pipework loop **exceeds 15 Litres**, then the installer must fit suitable relief valves and appropriately sized expansion vessels*.

***Any expansion vessels fitted must be serviced annually.**

The open vented wet central heating system is supplied directly from the store whereas a sealed heating system is supplied via an internal heating coil. The installer must appropriately size the heating expansion vessel for any sealed heating system.

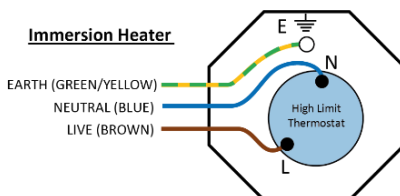
Being a thermal store that is vented, it is inherently safe and requires no annual maintenance. Its benefits go one step further as being a primary store there is no legionella risk, and having a blending valve ensures in-built scald protection.

Mains Water Supply

- The mains supply to the unit should ideally be in a minimum of **22mm diameter** but will work with 15mm if there is adequate pressure and flow rate.
- The ELECTRAflow will operate with a minimum incoming mains pressure of **1.0 Bar** and a **minimum flow rate of 10 Litres/minute**. Careful consideration should be made to ensure the pressure of hot and cold supplies are balanced.
- An incoming pressure of **2.1 Bar** is the most optimal for performance.
- If the incoming pressure **exceeds 3 Bar**, then a pressure reducing valve must be fitted after the stopcock of where the incoming cold supply enters the property.
- No Pressure Reducing Valve or Check Valve should be fitted **within 2 metres** of the Cold Inlet to the ELECTRAflow Coil.
- If the flow rate exceeds **18 Litres per minute** at any tap, it should be restricted to maintain the performance of the system as a whole.

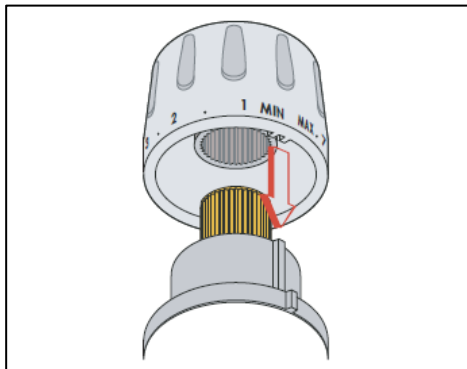
Immersion Heaters

- The temperature of the store is controlled by the ELECTRAflow Controller. This has been preset to **85°C**, but can be adjusted to between **75°C** and **85°C** to suit user requirements, see separate controller instructions regards how to change the setting. The temperature is monitored through the PT1000 sensor at the top of the unit and will control the power to the immersions.
- The Immersion Heater high limit thermostats are preset at **90°C**.
- If in any doubt of how to set the Immersion or what temperature we would advise for specific installations, please contact us on **01592 611123**.
- All Immersion Heaters should be wired by a qualified electrician as shown, for further information refer to literature provided with the Immersion;



Thermostatic Mixing Valve

- The Thermostatic Mixing Valve must be pre-set to provide the optimal temperature of Hot Water.
- The recommended Temperature setting is around **50 - 55°C**. Take into account any Shower TMVs (**Page 9**).
- The Thermostatic Mixing Valve is already pre-set to deliver **55°C**, with the Dial locked in place.
- If the Valve must be adjusted, remove the retaining screw and then reposition the Dial and adjust. Once set, reposition the Dial on the splined shaft, then re-fit and tightening the retaining screw.



Water Treatment

In accordance with the **Building Regulations L1A: New Dwellings/ L1B: Existing Dwellings**, the requirements set out in the **Domestic Building Services Compliance Guide** specify that “where the mains water hardness exceeds 200ppm provision should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the rate of accumulation of lime scale”. In most instances of this water condition, an inline Water Conditioner/Scale Inhibitor would be fitted to the incoming mains.

The water quality shall be in accordance with **European Council Directive 98/83/EC**, or revised version at the date of installation, and is not fed with water from a private supply. Particular:

- | | |
|----------------------------------|--------------------------|
| • Chloride content: | Max. 200 mg/l |
| • Sulphate content: | Max. 200 mg/l |
| • Combination chloride/sulphate: | Max. 300 mg/l (in total) |

The ELECTRAflow is part of the primary system and other parts of the primary circuit will require the application of a protective scale and corrosion inhibitor such as Fernox to ensure adequate protection. This should avoid having corrosive material in the primary system and remove any build-up of sludge which can reduce the performance

of the High Efficiency Heat Exchanger Coil. The volumes and concentration of inhibitor required should be calculated in accordance with the manufacturer's instructions. Please ensure that the thermal store volume is also included as well as the radiator and pipework volume.

An inhibitor is optional where a sealed heating coil is specified. However if there are doubts regarding the quality of water being used to fill the ELECTRAflow, an inhibitor should be added to the appliance when filling in line with the manufacturer's instructions for these products. Please note, the stored water and domestic hot water supplies are separate. If chlorination is carried out on the cylinder volume or hot water supply, then the cylinder or associated hot water pipework will also require adequate flushing. Failure to do so will cause damage to the system.

If an Inhibitor is installed, please follow the Inhibitors Maintenance Instructions and replace when required. When replacing the Inhibitor, please ensure to fully flush the Water System before installing the new Inhibitor.

Please note that in all ELECTRAflow models, the primary water within the thermal store water is used as primary storage and the domestic hot water is heated instantaneously by means of the High Efficiency Heat Exchanger Coil. Therefore, treating the primary water will not have an effect on the domestic hot water supply.

Pipework

All pipework is factory tested following manufacture. Where $\frac{1}{4}$ Turn Taps are installed in the property, we advise the system is checked for hydraulic shock when taps are closed quickly. If this is the case, it is recommended to fit a shock arrestor on the cold feed to the thermal store, after a PRV (if fitted), to take up the additional pressure.

It is imperative to achieve balanced supply of hot and cold water in a mains pressure system, and that the piping in a dwelling should be sized in accordance with **BS 6700**.

However, the following rule of thumb guide lines should be adequate for most of the smaller property types as long as water pressures are within the recommended range.

- The cold feed from the main incoming stop tap to the ELECTRAflow should be run in **22mm** pipe. The cold main and hot draw-off should also be run in **22mm** as far as the branch to the bath tap.
- A **15mm** copper or equivalent external service may be sufficient for a small 1 bathroom dwelling (depending upon the flow rate available), but the minimum recommended size for new dwellings is **22mm** (25mm MDPE).

- The internal branches to the hand basins and sinks should be in **10mm** and to the baths and showers in **15mm**. (1 metre minimum)
- A pressure reducing valve must be fitted after the stopcock if above 3 bar, where the incoming cold supply enters the property and at least 2 metres from the unit.
- To drain DHW system, cold mains to unit must be isolated with a hot tap opened. Place a bucket or similar below the compression elbow and remove to drain the water from the coil and DHW System. Once cold mains has been connected, the compression elbow should be tightened both sides.
- The DHW pipework on the unit is factory insulated prior to delivery.

Discharge/Overflow Requirements

The ELECTRAflow is a Vented Thermal Store and therefore does not require safety discharge from a Pressure and Temperature Relief Valve as highlighted in Part G of the Building Regulations.

The **Manual Fill** version of the ELECTRAflow Thermal Store can be sited anywhere within the property as no discharge pipework is required, however we do supply an Overflow pipe to the Feed & Expansion tank. (On the Multifuel model, if an open vented central heating is to be run, ensure a minimum **500mm** from the highest point of the radiator circuit and the bottom of the Feed & Expansion Tank.) Once the unit is filled through the pipework, close off the isolation valve and disconnect the flexible hose from the pipework and cap the pipe to avoid any dead legs.

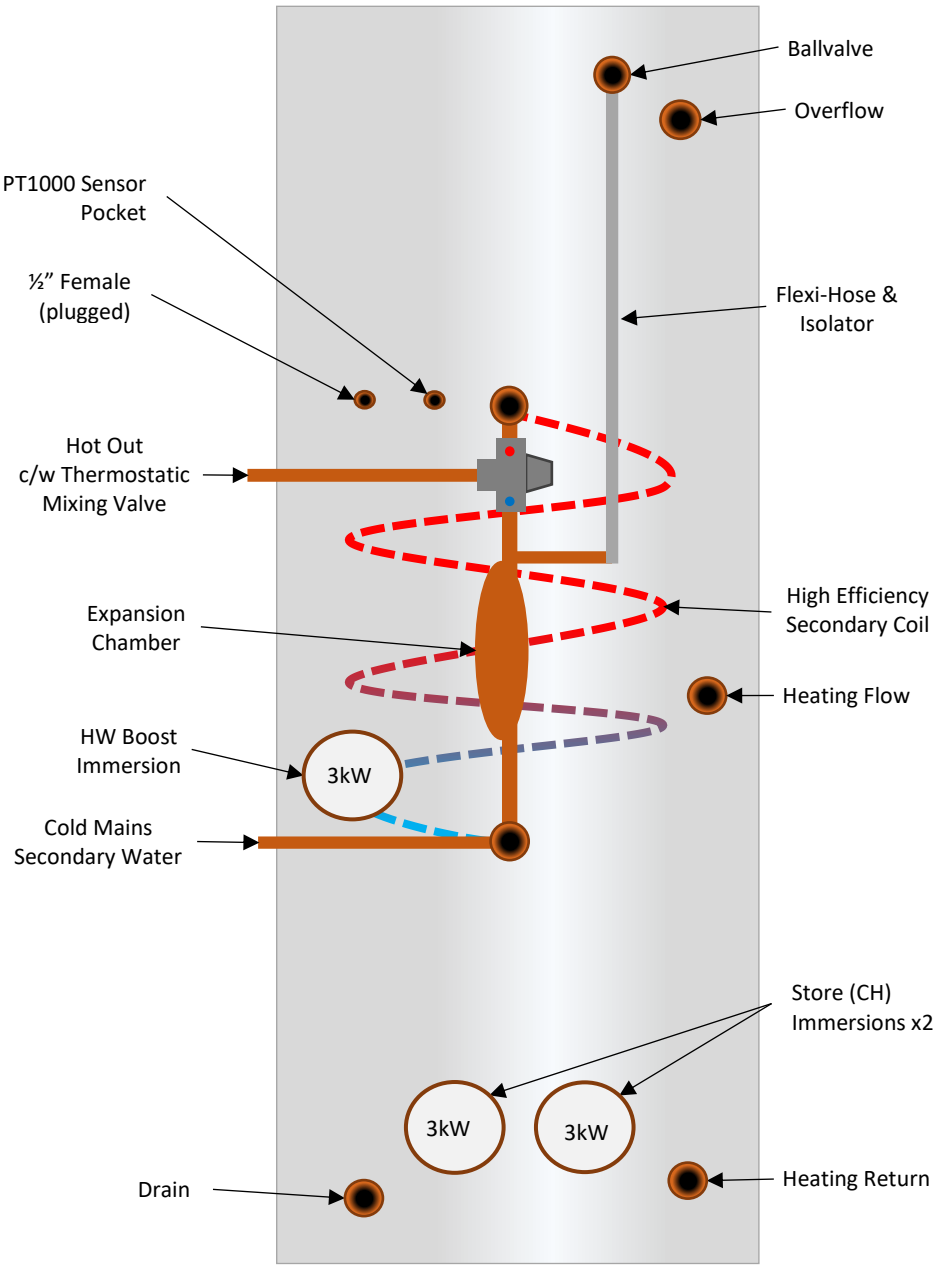
If an **Automatic Fill** version is to be installed then the overflow must be run to a suitable drain point. A tundish is supplied if the overflow termination is difficult to see. The tundish must be fitted **vertically**, with continuous fall of the overflow pipe.

The overflow should be run in either 22mm copper tube or high temperature overflow pipe with suitable supports. Ensure that the overflow is capable of coping with a ball-valve fail situation and restrict flow to the ball-valve accordingly.

Showers

- ELECTRAflow is compatible with all showers.
- Most commonly used are of the Thermostatic Mixing type. All mains pressure systems are subject to dynamic changes particularly when other hot and cold taps/showers are opened and closed. This will cause changes in the inlet hot water temperature and pressure at mixed water outlets such as showers.
- Careful consideration should be taken in selecting specification of the shower valve to ensure the correct mixed water temperature and pressure is maintained and that it is suitable for the type of people using it.
- Some showers in the TMV2 range have about a 10 degree differential between the hot inlet temperature and the mixed outlet temperature, allowing showering temperatures of up to 48 degrees.
- Other valves such as TMV3 only allow maximum temperatures of 41 degrees.
- Commissioning should ensure that the hot draw off from the thermal store is set taking this into account.
- Please ensure that the shower head is capable of taking mains pressure.
- Please ensure that the shower tray drain is capable of handling the shower head flow rate. A flow restrictor may be required in the shower outlet hose.
- The hot water supply to a shower-mixing valve should be fed wherever practical directly from the ELECTRAflow or be the first draw-off point on the hot circuit.
- The cold supply to a shower-mixing valve should wherever practical be fed directly from the incoming mains. To ensure balanced pressure for the shower mixing valve, a pressure reducing valve must be fitted after the stopcock of where the incoming cold supply enters the property.
- The shower must incorporate or be fitted with the necessary check valves to provide back-syphonage protection in accordance with the Water Regulations.

ELECTRAflow Combination



ELECTRAflow Combination: Description & Heights

The ELECTRAflow Combination Cylinder is an electrically heated Thermal Store cylinder. This unit is suitable for use with off peak electricity tariffs, such as Economy 7 and Economy 10.

These dimensions and the diagrams shown above are indicative to provide guidance to approximate sizes. The ELECTRAflow Thermal Store units are bespoke designed to suit the specific installation and will be supplied with a sketch prior to manufacturing.

Capacity (Litres)	180	210	250	300
Diameter (mm)	550	550	600	600
Height (mm)	1500	1700	1700	2050
Heating Expansion (l)	25	25	25	25

Allow 100mm clearance on any face of the unit with pipework / connections and allow 225mm between the top of the tank and ceiling to allow access to service the ballvalve if ever required.

The ELECTRAflow is a bespoke designed product with indicative sizes for reference shown **above**. Larger volumes and different configurations other than shown are available to suit the available space and application.

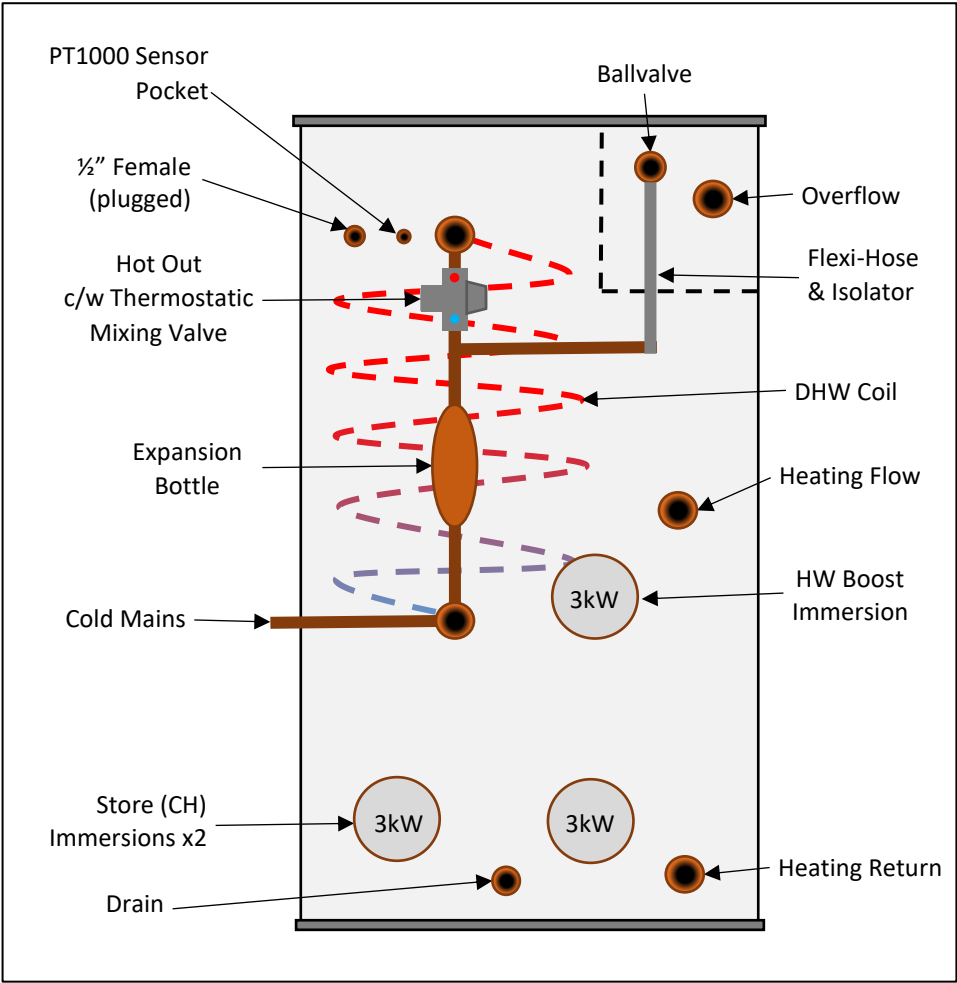
The units are also available in a cylinder variant, with indicative sizes shown below.

Capacity (Litres)	180	210	250	300
Diameter (mm)	550	550	550	600
Height (mm)	1350	1550	1850	1850

The selection chart below provides a guideline to sizing the ELECTRAflow, but please note that this will incorporate both the heating and hot water demand.

Capacity (Litres)	Property Type
180	1 Bed with shower
210	1 Bed with bathroom
250	1 – 2 Bed with bathroom & en suite shower
300	2 – 3 Bed with bathroom & en suite shower

ELECTRAflow Rectangular Tank



ELECTRAflow Rectangular Tank: Description & Heights

The ELECTRAflow Tank is an electrically heated Thermal Store tank. This unit is suitable for use with off peak electricity tariffs, such as Economy 7 and Economy 10.

These dimensions and the diagrams shown above are indicative to provide guidance to approximate sizes. The ELECTRAflow Thermal Store units are bespoke designed to suit the specific installation and will be supplied with a sketch prior to manufacturing.

Capacity (Litres)	180	210	250	300
Depth (mm)	570	570	600	640
Width (mm)	525	585	600	640
Height (mm)	1285	1285	1260	1285
Heating Expansion (l)	20	20	20	20

Allow 100mm clearance on any face of the unit with pipework / connections and allow 225mm between the top of the tank and ceiling to allow access to service the ball-valve if ever required.

The ELECTRAflow is a bespoke designed product with indicative sizes for reference shown above. Larger volumes and different configurations other than shown are available to suit the available space and application.

The selection chart below provides a guideline to sizing the ELECTRAflow, but please note that this will incorporate both the heating and hot water demand.

Capacity (Litres)	Property Type
180	1 Bed with shower
210	1 Bed with bathroom
250	1 – 2 Bed with bathroom & en suite shower
300	2 – 3 Bed with bathroom & en suite shower

Technical Data

Combination Cylinder ERP / Heat Loss Data

Capacity (Litres)	180	210	250	300
Insulation Thickness (mm)	50	50	50	50
ERP Class	C	C	C	C
Standing Heat Loss (Watts)	59	65	72	80
Standing Heat Loss (kWh/day)	1.43	1.52	1.64	1.82

Rectangular Tank ERP / Heat Loss Data

Capacity (Litres)	180	210	250	300
Insulation Thickness (mm)	50	50	50	50
ERP Class	C	C	C	C
Standing Heat Loss (Watts)	73	78	85	94
Standing Heat Loss (kWh/day)	1.75	1.87	2.04	2.26

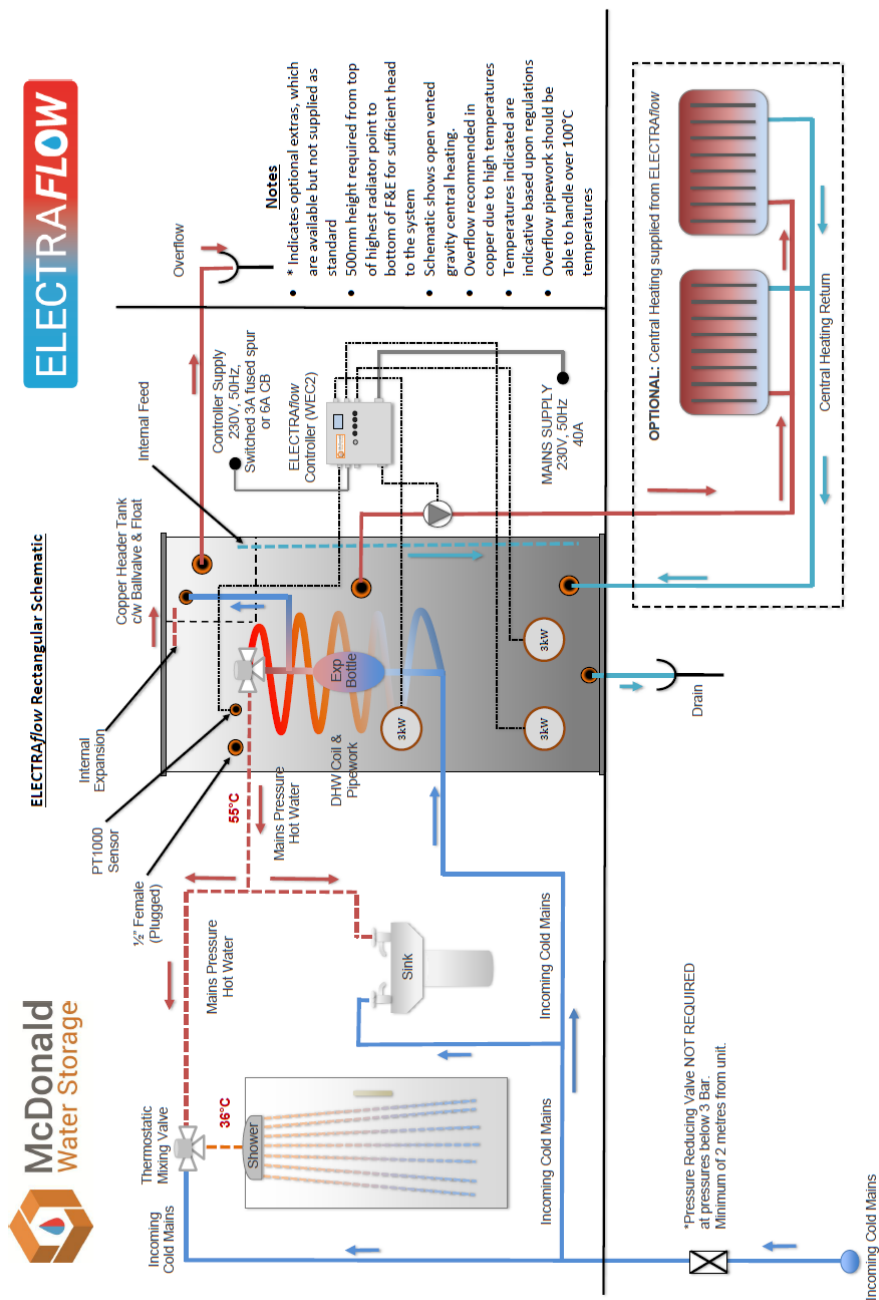
Thermal Store ELECTRAflows have been tested in accordance with EN 50440. Heat losses should not be directly compared with heat losses from unvented/vented tanks, because unvented/vented tanks are tested at 65°C and thermal stores at 75°C, so they are treated differently in SAP.

Draw Off Profile (L)

Capacity	@50°C	@45°C	@40°C
180	135	171	198
210	158	200	231
250	188	238	275
300	225	285	330

- Store Temperature - 75°C
- Incoming Mains - 10°C
- Ambient Temperature - 20°C
- Tap Flow Rate - 12L/min

Installation Schematic



Controller

The ELECTRAflow unit is supplied complete with the controller and room thermostat. The controller enables the following functionality for the homeowner;

- Set the heat up times for the thermal store inline with the available off-peak tariffs at the property
- Set the heating times for the property
- Boost the store if it has been depleted of heat during the day
- Adjust the store temperature to suit the installation requirements

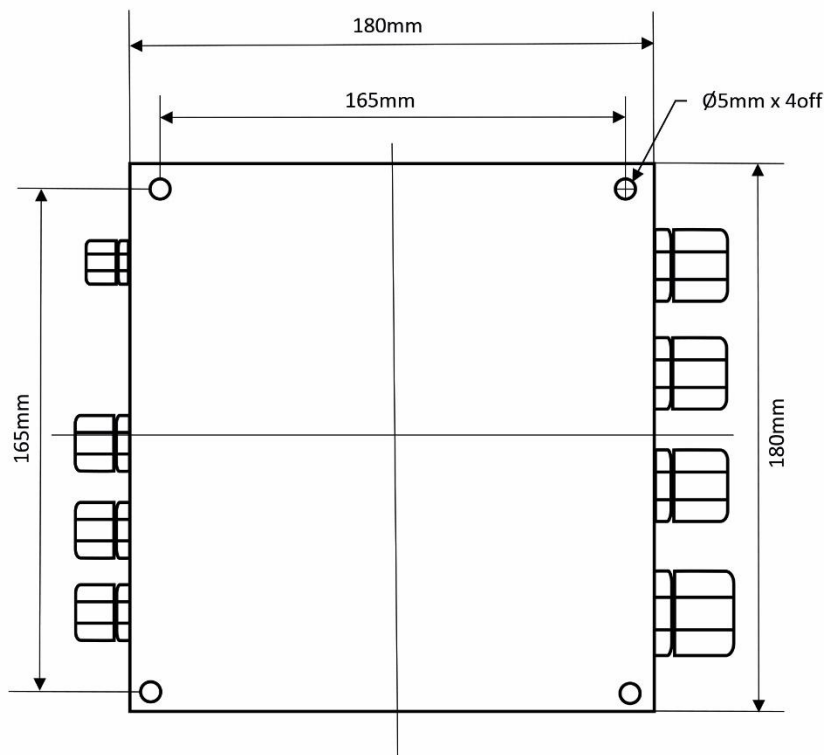
Controller Specification

The ELECTRAflow unit is supplied complete with the controller and room thermostat. The controller enables the following functionality for the homeowner;

Purpose of control	: Sensing control
Classification	: Type 1.B Action, micro-disconnection on operation
Contact rating	: 230VAC Suitable for heating element up to 3KW
Control power supply	: 230V AC 50Hz 4W
Load power supply	: 230V AC 50Hz 3 x 3KW + 700W (heating pump)
Boost duration	: 30, 60 and 120 min
Operating temperature range	: 0OC to 40OC
Control pollution situation	: Pollution degree 2
Shock protection	: Class II
Rated impulse voltage	: 4000V
Ball pressure test	: 75OC
Enclosure protection	: IP30
Contacts	: Micro-disconnection
Construction	: Independently mounted control for surface mounting
Case material	: Polystyrene, UL94-HB
Overall Dimensions	: Width 235mm (including cable glands) Height 182mm Depth 63mm
Mounting	: Surface mounting

Warning - Installation and connection should only be carried out by a suitably qualified person and in accordance with the current edition of the IEE wiring regulations. Warning: Isolate all the mains supplies before commencing installation.

Controller Mounting

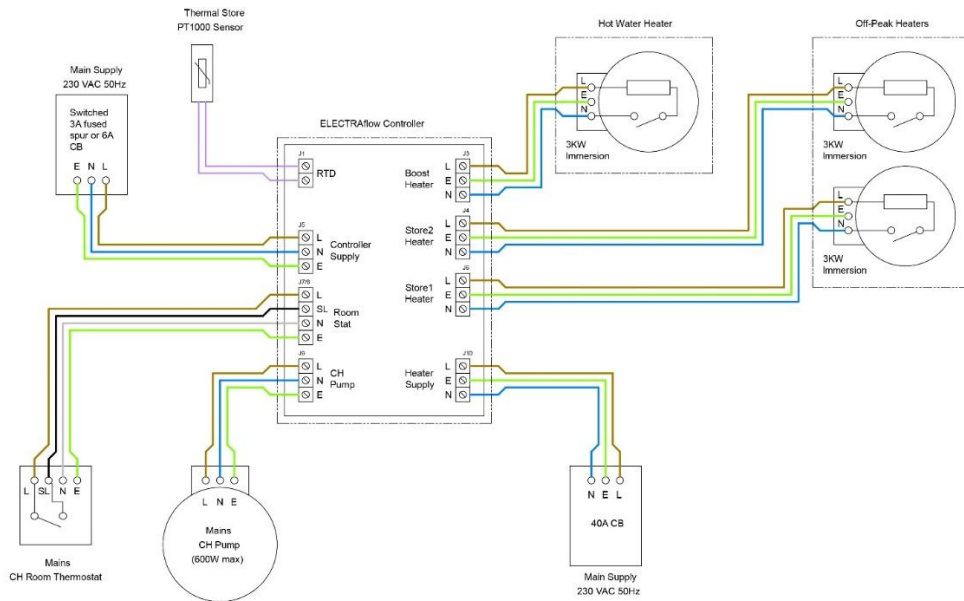


Fix the unit securely in place using the 4 off 5mm dia. mounting holes in the enclosure. The mounting holes are located directly behind the enclosure lid screws. The drawing above shows the location and fixing centres of the holes.

The Controller should be located in close proximity to the cylinder in a position where it will remain dry. The unit should be mounted on a suitable solid surface (e.g. wall or metal plate), however ensure that:

- the mounting surface is flat to avoid distortion of the case.
- clearance is provided for mounting the enclosure and that there is sufficient access for wiring to the unit.
- ensure a minimum of 50mm free air space around the unit (excluding the rear face). Do not mount directly to any heat source.
- avoid tight radius bends on all external cables to the unit.

Controller Wiring Diagram



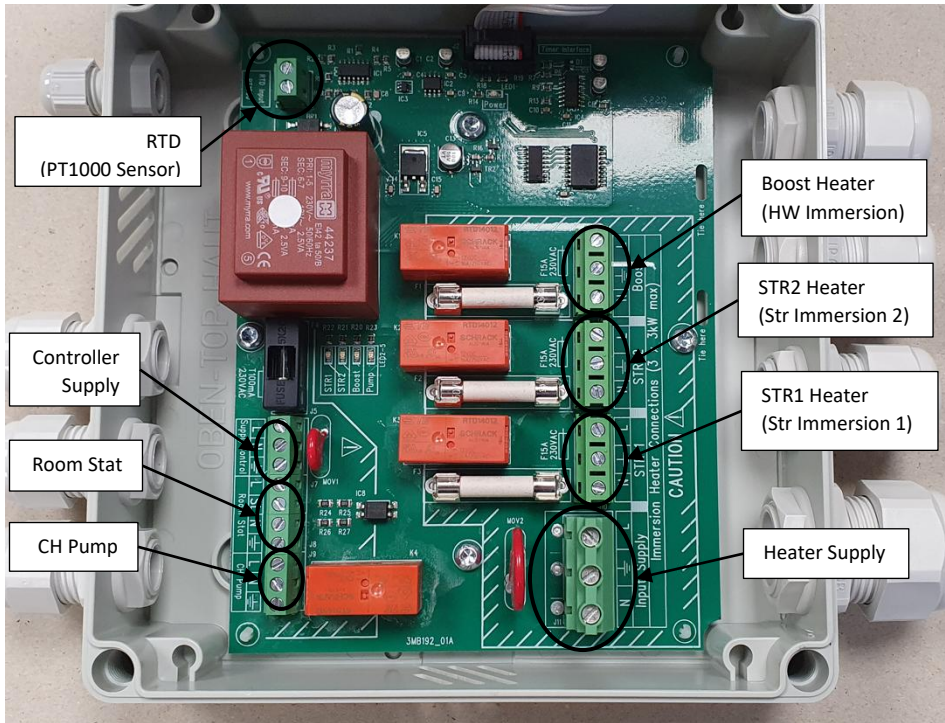
The supply circuit for each heater group should have an independent connection to the power distribution equipment and be protected by a suitably rated HRC fuse or circuit breaker. An appropriately rated isolation switch (minimum contact air gap of 3mm) should be used close to the control.

Three-core cable should be used for each of the heater connections, with a minimum conductor size of 2.5mm^2 for a 3KW heater. A three core cable should be used for the mains supply to the controller, with a minimum conductor size of 6.0mm^2 . All cables must pass through the cable glands provided and be secured on completion of wiring.

NOTE: The Controller must be powered from a single independently fused and switched supply which is not derived from the heater circuits. This will allow the unit to operate during programming with the heater supplies switched off for safety. Both the Controller and Heater supplies must come off the main 24-hour supply, and none can come from economy distribution. There is an internal battery to maintain the clock and settings during power loss, but unless the independent supply is present the Controller will not function even if the heater supply is switched on.

Please note, although there are three 3KW heaters attached the unit only requires a 6KW mains supply, as it is only possible for a maximum of two of these to be on at the same time.

Controller Circuit Board



Controller Repair and Service

The Controller is NOT user serviceable.

Do not dismantle the Controller.

In the unlikely event of a fault developing please contact your installer or qualified electrician.

The control unit is protected by an internal 100mA fuse. Under abnormal load conditions the fuse will blow and need replacing (230VAC T100mA).

The immersion heaters are protected by individual internal 15A HRC fuses.

In the event that a fuse should blow, the reason should be investigated as an underlying problem may be overlooked. If the immersion heaters / pump are found to be in good working order and the wiring shows no sign of damage the fuse should be replaced with a new, identically rated, device. (230VAC F15A HRC)

Controller Checklist

Must only be set up by Heating Engineer.					
Which Store Operating Mode has been set?				TIMED / OFF	
Which Central Heating Operating Mode has been set?				TIMED / CONSTANT / OFF	
Has the Current Date been set?				Yes	
Has the Current Time been set?				Yes	
What is the Energy Tariff set?					
(STR) Off Peak Times Set (DEFAULT or Time)	1 st ON		1 st OFF		
	2 nd ON		2 nd OFF		
	3 rd ON		3 rd OFF		
(CH) Central Heating Times Set (DEFAULT or Time)	1 st ON		1 st OFF		
	2 nd ON		2 nd OFF		
	3 rd ON		3 rd OFF		
Has "ECON DST" (Daylight Saving Time) been enabled?			Yes		No
What temperature is the Controller "HIGH TEMP" set to?					°C
What is the "AMB TEMP"(Controller Ambient Temperature)?					°C
Refer to "ELECTRAflow Controller User Instructions" supplied with Unit.					

Commissioning

The below is a recommended guide of actions and checks that should be undertaken during commissioning:-

DO

- ✓ **During commissioning, complete all relevant sections of the Commissioning Checklist (Page 22-25). This must be completed during commissioning and left with product to meet the Warranty conditions.**
- ✓ Check and tighten pipework where applicable.
- ✓ Check the incoming mains water pressure. If the incoming mains pressure is higher than **3.0 Bar**, fit a Pressure Reducing Valve set at 3.0 Bar maximum – recommended **2.1 Bar** where the cold supply enters the property as this will create balanced pressure throughout.
- ✓ Ensure that connections are fitted in accordance with the sketch supplied
- ✓ Ensure the drain is connected to allow draining of the unit if required. If a drain-cock is fitted, we recommend a DZR fitting.
- ✓ Fit the Overflow with Copper piping or high temperature plastic to the thermal store system where required.
- ✓ Allow 100mm clearance on any face of the unit with pipework / connections and allow 225mm between the top of the tank and ceiling to allow access to service the ball-valve if ever required.
- ✓ Check all connections including factory made, prior to and after installation, including pipework, immersion heaters, components etc.
- ✓ Fill the **ELECTRAflow** via the ball-valve in Feed & Expansion Tank
- ✓ Ensure the system is inhibited correctly. (**See Page 6**)
- ✓ Check the water level in the Feed & Expansion Tank, and adjust ball-valve so water is at lowest level.
- ✓ On the **Automatic Fill** version, turn down servicing valve once system is initially filled to where the warning/overflow pipe will cope with the discharge from a ball-valve failure.
- ✓ On the **Manual Fill** version, once the unit is filled through the pipework, close off the isolation valve, disconnect the flexible hose from the pipework and cap the pipe to avoid any dead legs.
- ✓ Check for leaks throughout the thermal storage system.
- ✓ Run all taps and other hot outlets to remove all air from the system.
- ✓ Ensure the store temperature is set to between 75°C and 85°C on the controller. Consideration should be made for the temperature and pressure rise, caused by “creeping”, where small draw offs are present.

- ✓ Electric only - Immersion Heater temperature is set by the ELECTRAflow controller and is supplied at 85°C, but can be adjusted to between 75°C and 85°C to meet users' hot water requirements.
- ✓ Temperature Controls must be fitted to ensure safe temperature of Thermal Store
- ✓ Ensure PT1000 sensor is secure in the pocket
- ✓ On installs where open vented central heating is run from the ELECTRAflow, ensure that 500mm height difference is in place between the highest point of the radiator circuit and the bottom of the Feed & Expansion Tank.
- ✓ Ensure that all exposed pipework on the ELECTRAflow is insulated to minimise any heat losses.
- ✓ Ensure the Thermostatic Mixing Valve is adjusted to control the hot water outlet temperature between **50 - 55°C**, taking shower differential into consideration. Once set, lock the Thermostatic Mixing Valve dial. (**See Page 5**)
- ✓ If required, chlorinate the hot and cold water system in accordance with **BS 6700** and Water Regulations. Please note that the whole of the domestic hot and cold water systems must be adequately flushed after chlorination. Failure to do so will cause damage to the exchangers/immersion heaters etc.

DON'T

- ✗ Use a combined feed and vent.
- ✗ Place any clothing or other combustible materials against or on the ELECTRAflow.

Commissioning Checklist

THERMAL STORE MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST
This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.
Failure to install and commission this equipment to the manufacturer’s instructions may invalidate the warranty but does not affect statutory rights.
Customer Name:
Telephone Number:
Address:
ELECTRAflow Make & Model:
Production Number:
Commissioned by (PRINT NAME):
Company Name:
Telephone Number:
Company Address:
Commissioning Date:

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?				Bar
If above 3.0 Bar, has a pressure reducing valve been fitted?	Yes		No	
Have ¼ Turn Taps been installed in the property?	Yes		No	
If yes, has the system been checked for Hydraulic Shock?	Yes		No	
Has cold mains strainer been cleaned of installation debris?	Yes		No	
Is the installation in a hard water area (above 200ppm)?	Yes		No	
If yes, has a water scale conditioner/inhibitor been fitted?	Yes		No	
What type of scale conditioner/inhibitor has been fitted?				
Has flow rate been restricted to a maximum of 18 litres at any one outlet?	Yes		No	
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?				Yes
Type of control system (if applicable)	Y Plan		S Plan	
				Other
What is the hot water thermostat set temperature?				°C
If fitted, what is the Immersion Heater thermostat temperature?				°C
What is the hot water temperature at the nearest outlet?				°C
What store temperature is the unit sitting at?				°C
What is the maximum hot water temperature at taps?				°C
If a manual fill, has any ball-valve been disconnected or blanked?	Yes		No	
Has the automatic fill flow rate been reduced to ensure the overflow can cope?	Yes		No	
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed?				Yes

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations.	Yes	
The system has been installed and commissioned in accordance with the manufacturer's instructions.	Yes	
The system controls have been demonstrated and understood by the customer.	Yes	
The manufacturer's literature, including this Checklist, has been explained and left with customer.	Yes	

Commissioning Engineer's Signature:

Customer's Signature:

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

Troubleshooting

Below contains a troubleshooting and solution guide to the thermal store system. If this table does not resolve your problem, please contact either your installer or phone McDonald Water Storage Technical Team for further advice.

SYMPTOM	SOLUTION
The water at the tap is lukewarm or cold	The thermal store is designed to start to work best when the store temperature is at or approaching 70°C - 75°C. While the thermal store can provide hot water at lower temperature storage, the available flow rates and volume will be reduced. Check the store temperature is at or approaching 70°C - 75°C either via the ELECTRAflow controller (see separate controller instructions) or directly on the store. (Please note that the temperature shown through the controller is at the top of the cylinder, and this may be up to 10°C lower at the bottom. This is due to the stratification of the cylinder.) If not the case, a qualified electrician should check that the immersion heaters are working, the safety cut-out has not tripped, and receiving the correct supply at the correct time (off-peak).
The thermal store is at 70°C and the water at the taps is still lukewarm or cold	1) If the store is at or approaching 70°C - 75°C, check that the Thermostatic Mixing Valve is correctly set. The maximum temperature of water from the Mixing Valve should be about 55°C. 2) If the valve is correctly set, check that the flow rate at any outlet (e.g. bath tap) does not exceed 18 Litres per minute. If the flow rate is too high then sufficient heat transfer inside the ELECTRAflow may not be occurring. Turn the flow through the tap down or fit a suitable flow restrictor and the temperature will increase. 3) If Stage 1 and 2 has not resolved the problem a competent installer should check the mixing valve for blockages within the internal filter of the mixing valve.
Not enough hot water and the store is less than 70°C	Check the heat sources and their input in (kW) to the store as this will be lower than the kW output which will result in the store not producing enough heat for the exchanger to provide heated mains pressure water.

There is a brownish tint to the mains pressure hot water	This could be a symptom with the heat exchanger coil leaking inside the thermal store. An installer should have this tested. If this is the case, pay attention to the Feed & Expansion Tank as the pressure within the store will increase causing the tank to overflow continually.
The thermal store is at 70°C but the mains pressure temperature drops quickly when running a tap (e.g. bath)	1) If an inhibitor has been installed, check with the installer that it has been installed at the correct proportion and checked at appropriate frequencies.
	2) If an in-line strainer is fitted to the cold mains supply to the unit, it may be choked and require cleaning.
	3) Carefully check the hot water temperature flow into the mixing valve. If it is very hot, it may be that the valve needs to be checked / replaced. A competent installer should check the mixing valve for blockages within the internal filter.
	4) If the DHW Coil is giving an initial heat transfer and then fading, this could be a sign of scale build up inside the Heat Exchanger Coil, especially if in a known hard water area. A competent installer would need to descale the DHW coil and check/fit descaling equipment.
Flow rate from taps has dropped	This could be debris blocking the water flow. Check any installed Strainers have been cleaned of debris.

Warranty

McDonald Water Storage guarantee the ELECTRAflow shell against material defect or manufacturing fault for a period of 5 years from the date of delivery.

Components are guaranteed for 2 years.

The above product guarantee is valid provided:

- It has been installed by a competent installer in accordance with the instructions detailed in our installation manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- No factory fitted parts have been removed for unauthorised repair or replacement and the product has not been modified.
- All parts supplied loose with the unit must be fitted unless agreed in writing by McDonald Water Storage.
- Any replacement parts should be purchased from McDonald Water Storage.

- The hot water store has only been used for the storage of potable water supplied from the public mains (Max – 200mg/litre chloride). And treated as detailed in the installation instructions.
- The water quality shall be in accordance with **European Council Directive 98/93 EC**, or revised version at the date of installation, and is not fed with water from a private supply. Particular:
 - Chloride content: Max. 200mg/l
 - Sulphate content: Max. 200mg/l
 - Combination chloride/sulphate: Max. 300mg/l (in total)
- It has not been subject to wrong or improper use, left uncared for, or subjected to scale or frost damage.
- In accordance with the **Building Regulations L1A: New Dwellings/ L1B: Existing Dwellings**, the requirements set out in the **Domestic Building Services Compliance Guide** specify that “where the mains water hardness exceeds 200ppm provision should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the rate of accumulation of lime scale”.
- Where appropriate the unit has been serviced annually by a competent, licenced engineer in accordance with the requirement set out in the installation manual.
- The Commission Checklist Service Record included in our manual has been completed and updated after each annual service where required.
- Any disinfection has been carried out strictly in accordance with **BS 6700**.
- For heavy use installation where constant usage / reheat is required titanium immersion heaters should be fitted.
- Please note, defects caused by corrosion or scale deposits are not covered by any guarantee.
- Without prejudice to any other term, we shall not be liable for any water damage caused directly or indirectly as a result of any leak or other defect in the goods. We cannot control the conditions of use of the goods or the time or manner or location in which they will be installed and the purchaser agrees to be fully responsible for testing and checking all works which include the goods at all relevant times (up to, including and after commissioning) and for taking all necessary steps to identify any leaks and prevent any damage being caused thereby.

Please see our full Terms & Conditions on our website:

<https://www.mcdonaldwaterstorage.com/>

Ancillary Descriptions

The following spare parts are available to purchase from the Website, with additional information provided. Follow the link <https://mcdonaldwaterstorage.com/spares/> or phone the office on (01592) 611123.

ELECTRAflow Controller (WEC2)	Controller for Heating and Hot Water cycles of ELECTRAflow tank	
Low Watts Density Immersion Heaters (WEIH / WEIHT)	3kW Immersion Heater for Hot Water Cylinder (WEIH) – High Limit thermostat supplied separate (WEIHT)	
Thermostatic Mixing Valve (WESTMV)	Adjustable Valve top blend hot and cold water feeds.	
Thermal Store Pump (WTP)	Primary Heating System Circulation Pump	
Pressure Reducing Valve (WUVPR)	Designed to regulate the incoming mains pressure to a fixed 2.1 Bar pressure	
Expansion Vessels (WU2EV)	Optional expansion vessel to absorb excess pressure in secondary pipework <i>(Must be serviced annually)</i>	
Ballvalve (WP15BVJ)	Valve to control water flow to Header tank (Float required)	
Plastic Float (WPF4)	Plastic Floats for Ballvalves	
PT1000 Sensor (WECPROBE)	Wired Sensor Probe for Controller	
Room Thermostat (WERS)	Room Thermostat for Controller	
Mixing Valve Cover (WESTMVC)	Insulation cover for mixing valve	

Notes

Notes



McDonald Water Storage

Hot Water Storage Solutions

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Email: sales@mcdonaldwaterstorage.com



hot water association

CHARTER MEMBER



The HWA Charter Statement requires that all members adhere to the following:

- To supply fit for purpose products clearly and honestly described
- To supply products that meet or exceed appropriate standards and building and water regulations
- To provide pre and post technical support
- To provide clear and concise warranty details to customers