ELECTRAFLOW BOILER VENTED & UNVENTED INSTALLATION INSTRUCTIONS
1.0 INTRODUCTION

This document is designed to provide full technical details and installation instructions for the ELECTRAflow central heating and domestic hot water heater.

Installers should also see the ELECTRAflow – Multi channel timer controller installation manual.

NB WHEN INSTALLING OUR ELECTRAFLOW LINKED TO OUR POWERFLOW UNVENTED MAINS PRESSURE SYSTEM, PLEASE REFER TO THE ENCLOSED POWERFLOW INSTRUCTION BOOKLET AND ENSURE IT IS LEFT WITH THE CUSTOMER. ALL CONNECTIONS BELOW THE COLD FEED WITH CHECK VALVE FITTED, RELATE TO THE ELECTRAFLOW BOILER.

WHEN INSTALLING A VENTED CYLINDER NORMAL INSTALLATION AND WORKING HEAD RULES APPLY.
THE SUPPLIED MIXING VALVE MUST BE FITTED.

It is recommended that the pipework installation is carried out by an experienced heating engineer/plumber. The electrical installation should be carried out by an approved electrician in accordance with the instructions provided and BS 7671:2001 Requirements for Electrical Installations – IEE Wiring Regulations, Current Edition.

ENSURE THE ELECTRAFLOW CONTROLLER IS FITTED IN AN ADEQUATELY VENTILATED AREA TO AVOID OVERHEATING CUT OUTS.

Full technical back up and support is available from McDonald Water Storage, Glenrothes, Fife (Telephone No 01592 611123).

NB – The Installer must ensure that the available electricity supply to the property has sufficient capacity to serve the increased load imposed by the particular ELECTRAflow unit selected.

2.0 DESCRIPTION

The ELECTRAflow is a combined unit designed to provide domestic hot water from a storage cylinder and to service a wet central heating system from an electric boiler all governed by a purpose built controller designed to promote maximum operational efficiency.

A full range of ELECTRAflow units is available having a maximum installed capacity of either 12 or 15kW, suitable for a 230V supply. Higher capacity, non standard systems, can also be provided on request to suit particular applications. Up to 5 no. 3kW immersion heaters are incorporated, dependant upon unit selected, which can be split in any configuration to suit the particular heating and domestic hot water loads served.

3.0 TECHNICAL SPECIFICATION

See ELECTRAflow Controller Installation Instructions and POWERflow installation Instructions.
4.0 INSTALLATION (GENERAL)

The following drawings have been prepared by McDonald Water Storage, each of which is provided at the rear of this document to provide typical wiring and pipework hydraulic arrangements.

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5.0 INSTALLATION (PIPEWORK)

The boiler must be installed by a qualified, competent tradesman who is aware of and will comply with all relevant standards that are applicable: e.g. Building Regulations, the Local Authority Regulations, the Water Supply Regulations and undertaking the relevant British Standards. The system must be flushed in accordance with BS 7593 and in accordance with McDonald Water Storage instructions and drawings to ensure proper operation.

IT IS THE INSTALLERS RESPONSIBILITY TO ENSURE THAT THE INSTALLATION DOES NOT CONTRAVENE THE REQUIREMENTS OF THE WATER SUPPLY REGULATIONS, BUILDING REGULATIONS OR LOCAL AUTHORITY REGUALTIONS.

Use standard size pipework. DO NOT SOLDER DIRECTLY ONTO THE BOILER TAILS. Push-on or compression fittings are suitable for connecting directly into the boiler tails.

The ELECTRAflow boiler is suitable for operation in sealed or open vented systems. If you are unsure about your application regarding suitability of the boiler please do not hesitate to contact McDonald Water Storage.

Ensure there is always an open route for the water to flow in any installation, to meet the required minimum flow rate of the boilers and to allow for the pump over run. If an open route through the heating circuit cannot be guaranteed, then a bypass, fitted with an automatic bypass valve, must be fitted which meets the required minimum flow rated for the boiler.

The bypass must have a minimum of either 2 metres of 22mm continuous pipework, or be routed through a radiator with minimum dimensions of 600 x 600mm. Automatic pressure opening valves must be used with the bypass circuit, ensure they are installed correctly as per the manufacturer’s instructions. Gate valves are not suitable.

DO NOT FIT A VALVE BETWEEN THE BOILER AND THE SAFETY PRESSURE RELIEF VALVE OR EXPANSION RELIEF SYSTEM.

The boilers are suitable for operating pressures up to a maximum of 3 Bar. Normal sealed systems operate at 1 to 1.5 Bar.

ENSURE A 3 BAR PRESSURE RELIEF VALVE AND A SUITABLY Sized EXPANSION VESSEL ARE FITTED TO ALL SEALED SYSTEMS

With open vented installations, ensure there is a sufficient head of water for the pump to supply the full flow through the boiler of at least 1½ metres between the bottom of the F & E tank and the top of the boiler.
NOTE: TO COMPLY WITH THE BUILDING REGULATIONS, PART L (PART J IN SCOTLAND), WHEN THE ELECTRAFLOW IS USED FOR CENTRAL HEATING PURPOSES, A ROOM THERMOSTAT MUST BE FITTED TO CONTROL THE BOILER.

For installations with more than one boiler, seek advice from McDonald Water Storage.

After installation the system must be flushed out in accordance with BS 7593 : 1992 before adding the inhibitor e.g. Fernox or Sentinel X300 or X400 are ideal flushing agents for new and existing systems.

After flushing the correct amount of inhibitor must be added before use. Fernox “Superconcentrate”, or MB-1 or BetxDearborn Sentinel X100 can be used for most water areas, however we recommend you should check with your local water authority to ensure suitability. Check the inhibitor concentration after installation and periodically thereafter to ensure correct protection.

ENSURE THE BOILER CONTENT OF 40 LITRES IS TAKEN INTO ACCOUNT WHEN SIZING PRIMARY EXPANSION VESSEL AND CALCULATING INHIBITOR CONCENTRATION.

FAILURE TO FLUSH PROPERLY OR INADEQUATE INHIBITOR IN THE SYSTEM WILL INVALIDATE THE WARRANTY.

6.0 INSTALLATION (ELECTRICAL)

ALL WIRING MUST BE CARRIED OUT IN ACCORDANCE WITH CURRENT IEE WIRING REGULATIONS.

The ELECTRAflow unit must be installed by a qualified competent approved electrician in accordance with supplied instructions and drawings to ensure correct operation.

Check the main incoming supply to the property to ensure there is sufficient current and voltage for the size of the boiler or boilers to be installed. Remember to also take account of the supply requirements for the rest of the property. Ensure the correct cable size is used to feed the boiler.

Refer to McDonald Engineer’s Typical Wiring Diagrams Fig 2A (12kW) and Fig 2B (15kW) for detailed power wiring arrangements.

Refer to McDonald Water Storage Wiring Diagram Fig 2 for drop out contactor details where an existing or new electric shower is incorporated also the Multichannel Programmer Installation instructions for control system wiring.

Check that all electrical power connections are tight. Loose connections can cause a fire and will invalidate the warranty.

WARNING: THIS APPLIANCE MUST BE EARTHED.

All exposed pipework must be earthed in accordance with IEE Regulations.

After installation, preliminary electrical supply, ensure the system is full of water and set to the correct pressure (sealed systems), check for leaks. It is essential that the air is purged from the system. Only then can the supply be switched on.

On completion of the works the installation must be tested to IEE Regulations and an NICEIC Inspection and Completion Certificate must be issued.

Please take note of the installation conformation. If in doubt please contact McDonald Water Storage on 01592 611123.
7.0 COMMISSIONING

Prior to turning power ON carry out the following

a) Fill central heating and hot water section of ELECTRAflow and associated distribution pipework. Pressure test to 1.5 X normal working pressure for 30 minutes and check for leaks.

b) Thoroughly flush through hot water system opening each hot tap on a rotating basis until water runs clear and easy.

c) Thoroughly flush through central heating system and treat with proprietary corrosion inhibitor in accordance with BS 7593 requirements. Bleed all radiators to remove air.

d) Ensure that electricity supply is adequate and wiring is in accordance with the appropriate wiring diagrams and Multichannel time switch controller installation instructions. Ensure all electrical tests have been completed and satisfactory results obtained.

e) Ensure that CWS feed tanks/cold feed and expansion pipe routes are clear or for sealed systems, pressures are at correct levels.

f) Set Immersions Heaters Thermostats –
   ELECTRAflow Control Stats @ 75-80°C and Hi Limit at 95°C
   Hot Water - POWERflow - Control Stat @ 60°C High Limit @ 80°C
   Vented Cylinder – Control Stat @ 60°C High Limit @ 80°C

g) Activate heating and hot water systems. Carry out visual inspection.

h) Set hot water to 60°C. When up to temperature, open hot taps on a rotational basis, run for a few minutes to ensure 60°C hot water is discharged and system pipework is fully sterilized.

i) Heating Pump – ensure minimum flow rates are being obtained.
   - 3kW 0.065 litres/sec
   - 6kW 0.13 litres/sec
   - 9kW 0.195 litres/sec
   - 12kW 0.26 litres/sec

j) Commissioning Engineer to check supply tariff and agree with house owners any changes to pre set operating regimes. He/she should then run through all settings, fully demonstrating same to householders and ensuring they know how to operate the controls. Ensure householders receive a copy of the programmer’s “Users Manual”.

All pressure test and electrical test certificates to be provided.

8.0 FAULT FINDING

Contact McDonald Water Storage on 01592 611123 with any queries or faults.