

*An rogha is fearr*

**FIREBIRD**



**HEATING SOLUTIONS**

**SOLID FUEL HEAT EXCHANGER  
INSTALLATION & SERVICE MANUAL**



**WORKING TOWARDS A GREENER PLANET**

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## 1.0 INTRODUCTION

We would like to thank you for purchasing a Firebird Solid Fuel Heat Exchanger, hereinafter referred to as the SFHE. This instruction manual is for reference and installation guidance by qualified engineers or installers, who are HETAS approved, or equivalent, in solid fuel heating appliances.

You should ensure that all installation, servicing and commissioning works are carried out by a competent, qualified engineer. It should be noted that it is the responsibility of the installer/householder to ensure that this product is properly installed. Failure to do so may invalidate the warranty.

Please read this manual carefully prior to installation of the SFHE.

## 2.0 IMPORTANT SAFETY NOTES

- This SFHE must be open vented on the stove side.
- Please ensure that the existing pressurised heating system is installed to all regulations and operating accordingly.
- Ensure that BS 8303, Code of practice for installation of domestic heating and cooking appliances burning solid mineral fuel, is adhered to at all times.
- Ensure the following codes and standards are adhered to;
  - BS EN 14336:2004 Heating systems in buildings. Installation and commissioning of water based heating systems.
  - BS EN 12828:2012 + A1:2014 Heating systems in buildings. Design of water based heating systems.
  - BS EN 12831:2003 Heating systems in buildings. Method of calculation of the design heat load.
- Installation must conform to Building Regulations at all times.

## 3.0 SYSTEM INSTALLATION

The SFHE can be installed to:

- a) Link open vented and pressurised heating systems.
- b) Avoid relocation of the domestic hot water tank, hereinafter referred to as the DHW.
- c) Avoid awkward pipe installations.

### **Additional parts required for installation of the SFHE:**

- 2 x circulation pumps.
- 2 x pipe thermostats.
- 1 x 1" injector T.
- 1 x spring loaded non-return valve.

**To obtain the best results we recommend that the unit be fitted using the schematic provided. This will ensure that it will work correctly in normal conditions and in the event of power failure to the unit. This unit should be pumped on the pressurised circuit and this pump is controlled by a thermostat fitted on the return pipe from the SFHE to the stove.**

### **3.1 SYSTEM LOCATION**

The SFHE must be installed in an upright position. The unit must be securely fixed to a solid wall or floor using the fixing brackets supplied.

Care should also be taken to ensure that sufficient space is allowed around the unit to accommodate installation of pipe work and necessary pumps.

The SFHE must be installed 1.5m or more above the height of the stove to enable gravity circulation. In addition allow a minimum of 3m of 1"/28mm copper pipe work continuously rising from the stove to the feed/expansion tank. Typical location for the unit is in the attic space.

### **3.2 PLUMBING THE SFHE**

*See schematic on page 5.*

On the vented circuit, under normal conditions, the hot water from the stove activates the pump control thermostat (Thermostat 1 on schematic) on the flow pipe, which in turn activates the pump (Pump 1 on schematic) on the return pipe. This maintains the temperature of the circuit, which improves the efficiency of the stove and the heat transfer rate of the SFHE.

When the SFHE has achieved the required temperature, the thermostat on the return pipe to the stove activates the pump on the pressurised circuit. This ensures a more efficient transfer of heat to the pressurised system as it only transfers when the unit has reached the temperature set point. This heat is then transferred around the pressurised/central heating circuit.

The Flow pipe from the heat exchanger to the existing pressurised system should be connected directly to the **main/principal** flow pipe of the existing pressurised circuit.

The Return pipe to the heat exchanger from the existing pressurised system should be connected directly to the **main/principal** return pipe of the existing pressurised circuit.

The flow/return from/to the heat exchanger **must** be pumped.

Best practise is to fit a thermostat to your DHW cylinder, which will divert the heat to the heating system when your DHW cylinder is satisfied. This will prevent the DHW tank from over heating.

A pressure relief valve **must** be installed on the pressurised side of the unit. It cannot be isolated from the pressurised circuit.

Best practice is to connect a heat leak radiator from the vertical flow and return pipe work of the stove as per schematic. It should be connected on the expansion pipe above the level of the SFHE. The radiator should be 10% of the output of the stove. e.g. 12kW stove should have a 1.2kW radiator. The heat leak radiator should have no valves, TRV, or any item which would inhibit the flow to the radiator.

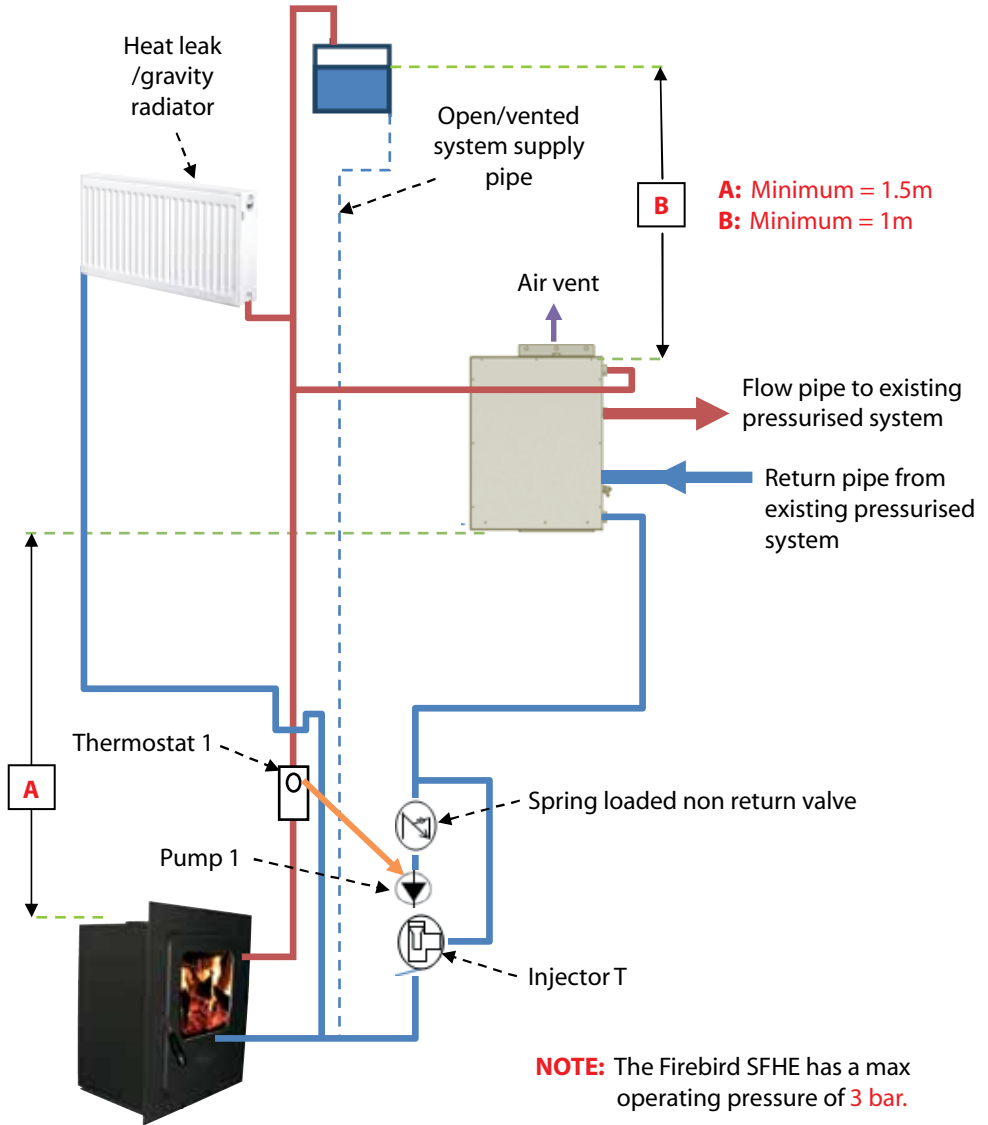
It is best practice to fit a bypass around the pump on the vented circuit. In the event of an interruption to the power supply, the SFHE will circulate via gravity around the pump, avoiding a build up of pressure. An injector T must be fitted between the pump and the stove on the return side as per schematic. This will guide the water to the stove and prevent it circulating around the bypass. If the pump is not operating, the non-return valve prevents the flow of water through the pump and instead, takes the route around the bypass. Only 1" or 28mm copper pipe may be used to connect the SFHE to the stove. To ensure the optimum transfer of heat, the SFHE should be located between 1.5m and 7m from the stove (in one direction i.e. 14m in total). The open/vented system supply pipe must be at least ½" or 15mm copper pipe.

### ***Plate Heat Exchanger***

The SFHE includes a plate heat exchanger. This unit requires clean system water to operate efficiently. The installer must ensure that the solid fuel and heat system circuits are clean. Both systems should be power flushed in accordance with BS 7593. A proprietary inhibitor should be added on commissioning. We recommend a permanent magnetic filtration filter to be fitted on the return pipe work after the last radiator on the central heating system. This will maintain maximum operational efficiency and protect the unit from damaging long term effects of "black iron sludge". The magnetic filter should be installed at all times according to the manufacturing instructions.

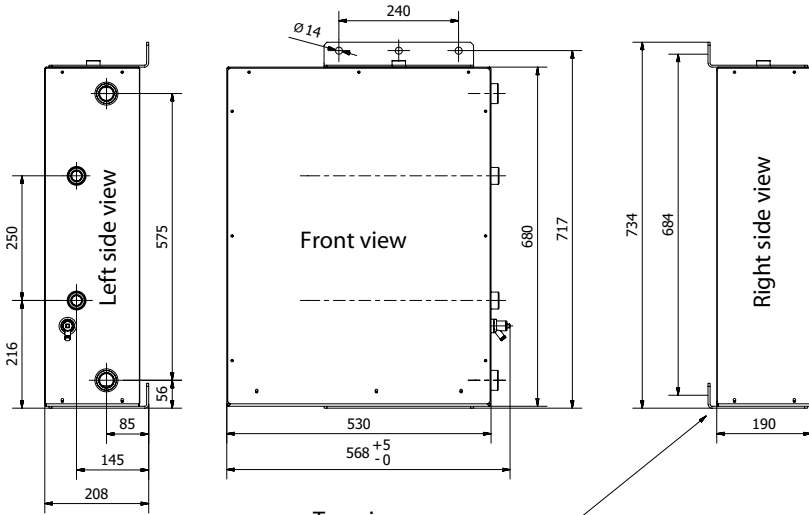
To comply with Building Regulations, in particular Part L, all solid fuel heating units must be linked directly to an open vented system and must have an open gravity circuit.

# Schematic Solid Fuel Heat Exchanger

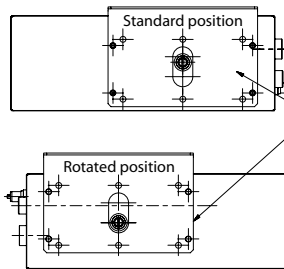


### 3.3 SYSTEM HEAT EXCHANGE PROCESS

The diagram below highlights the layout of the Firebird Solid Fuel Heat Exchanger. It can be fitted with pipe work on the left or on the right hand side. Care must be taken to ensure the pipe work is connected in accordance with the layout highlighted.



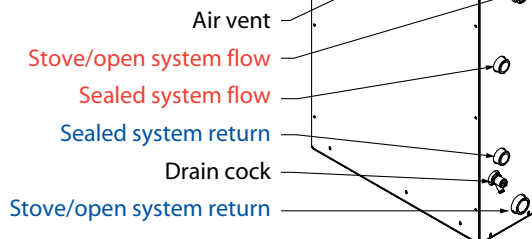
Top view



The bottom bracket can be turned upside down when the tank is hung on the wall.

Top and bottom brackets can be rotated by 180° if sockets need to be on the left hand side.

This panel can be removed to get full access to the heat exchanger.



## 4.0 HOT WATER CYLINDER REQUIREMENTS

Regulations and manufacturer's installation criteria must be met at all times on the hot water system. Particular reference to Part G (NI and UK regulations) must be met.

## 5.0 TECHNICAL DATA

|                                     |   |
|-------------------------------------|---|
| <b>Dimensions:</b>                  | 528mm length x 204mm width x 680mm height.  |
| <b>Maximum System Pressure:</b>     | 3 bar.  |
| <b>Temperature Operating Range:</b> | Max. temperature 80°C.  |
| <b>System weight:</b>               | 70kg.   |
| <b>Transfer Capacity:</b>           | Only connect one solid fuel appliance to this unit, with max. heat output to water of 12kW. |

## 6.0 COMMISSIONING

- 1) Ensure both the solid fuel and pressurised system side have been flushed and cleaned to BS 7593 standards and a proprietary inhibitor has been added to both sides of the system.
- 2) Fill the system and check all joints on both sides of the system, ensuring no leaks.
- 3) Check the header tank. Ensure there is water in the tank and the ball valve is operating freely. Check the colour of the water in the tank and sediment at the base of the tank. Clean if necessary. Check the level of inhibitor at both sides of the system. Refill/top up if necessary.
- 4) Ensure all air is removed from both sides of the system.
- 5) Ensure the pressure relief valve (on pressurised circuit) and air vent are working.
- 6) Light the stove and ensure both pumps work in conjunction with their thermostats.
- 7) Ensure the gravity/heat leak radiator is free from air and is in a locked open position.



## 7.0 TERMS & CONDITIONS OF WARRANTY

- This Firebird Solid Fuel Heat Exchanger is designed and manufactured to give many years of trouble free service. We provide a comprehensive warranty of 5 years on the unit. The warranty will only apply if the following terms, laid out in the warranty, are adhered to:
  - (a) All claims under the warranty must be received within 5 years from the date of installation. The signed and completed commissioning card must be returned to Firebird within 10 days of installation
  - (b) The plate heat exchanger component is guaranteed for a period of 2 years, but only when both the solid fuel and system side have been flushed and cleaned to BS 7593 standards and a proprietary inhibitor has been added to both sides of the system.
  - (c) Installation of the SFHE must be in accordance with this manual and all relevant standards and codes of practice.
  - (d) The SFHE must be commissioned by a competent person(s) and as set out in this instruction manual.
  - (e) Firebird can accept no liability in respect of any defect arising from incorrect installation, negligence, unfair wear and tear, misuse, alteration or repair by unqualified persons.
  - (g) The warranty extends to reasonable labour costs except under clause (a), where any valid claim made after 3 years will not include labour costs.
  - (h) Firebird's prior authorisation must be obtained before examination or repair of the appliance takes place.
  - (i) Firebird will examine all claims made under the warranty and for any claims deemed invalid, costs incurred will be borne by the householder.
  - (j) Any defective part removed under any or all of the warranties MUST be returned to Firebird.
- This system is designed to be open vented on one side, namely the solid fuel appliance side. The opposing side can be pressurised. Note all regulations with respect to solid fuel and pressurised heating systems must be adhered to.

**THE STATUTORY RIGHTS OF THE HOUSEHOLDER  
ARE NOT AFFECTED BY THIS WARRANTY**





## HEATING SOLUTIONS

Please complete the following details to register your Firebird Solid Fuel Heat Exchanger.

### Warranty / Commissioning Card

#### HOUSEHOLDER

Name: .....

Address: .....

.....

.....

Tel: .....

#### INSTALLER

Name: .....

Address: .....

.....

.....

Tel: .....

#### Solid Fuel Heat Exchanger

Serial Number: .....

Stove output to system: ..... kW (must not exceed 12kW).

Confirm stove output is no greater than SFHE rated input .... Yes / No (circle relevant).

System is installed in accordance with manual guidelines.

System is installed in accordance with building regulations.

#### Commissioning and handover details

System brought up to temperature by undersigned, operating safely and transferring energy.

Manuals handed to householder.

INSTALLER SIGNATURE ..... DATE .....

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