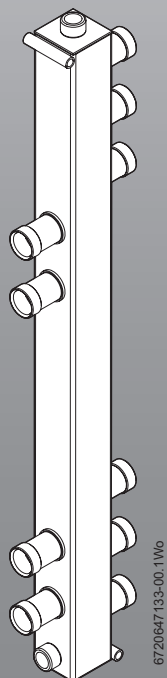


# INSTALLATION INSTRUCTIONS

## GREENSTAR LOW LOSS HEADER

FOR HEATING APPLICATIONS UTILISING TWO APPLIANCES



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# 1 SYMBOLS AND SAFETY PRECAUTIONS

## 1.1 EXPLANATION OF SYMBOLS

### WARNING SYMBOLS



Safety instructions in this document are framed and identified by a warning triangle which is printed on a grey background.



Electrical hazards are identified by a lightning symbol surrounded by a warning triangle.

Signal words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates possible damage to property or equipment, but where there is no risk of personal injury.
- **CAUTION** indicates possible personal injury.
- **WARNING** indicates possible severe personal injury.
- **DANGER** indicates possible risk of life.

### IMPORTANT INFORMATION



Notes contain important information in cases where there is no risk of personal injury or material losses and are identified by the symbol shown on the left. They are bordered by horizontal lines above and below the text.

### ADDITIONAL SYMBOLS

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Table 1 Symbols

### **1.2 SAFETY PRECAUTIONS**

#### **FITTING AND MODIFICATION**

The unit must not be modified in any way other than described in the Installation Instructions and any misuse or unauthorised modifications to the unit or associated components and systems could invalidate the warranty. The manufacturer accepts no liability arising from any such actions. This does not affect your statutory rights.

#### **HEALTH AND SAFETY**

The appliance contains no substances that contravene the COSHH Regulations (Control of Substances Hazardous to Health regulations 1988).

**BRITISH STANDARDS**

Where no specific instruction is given, reference should be made to the relevant British Standard codes of practice.

Gas boilers:

- BS7074:1 Code of practice for domestic and hot water supply
- BS6891 Installation of low pressure gas pipe work up to 28mm (R1)
- BS5546 Installation of gas hot water supplies for domestic purposes
- BS7593 Treatment of water in domestic hot water central heating systems
- BS6798 Installation of gas fired boilers of rate input up to 70kW (net)

Oil boilers:

- BS 5410: part 1: Code of practice for Oil Fired Boilers.
- BS 799: part 5: Specification for Oil Storage Tanks.
- BS 7593: Code of Practice for treatment of water in domestic hot water central heating systems.
- BS 5449: part 1: Specification for forced circulation hot water central heating for domestic premises.

The Building Regulations Part J and L1 England and Wales; Part F and Part J Section III Scotland; Part L and Part F Northern Ireland.

BS 7671: IEE Wiring Regulations, current edition.

**IRISH STANDARDS**

The relevant Irish standards should be followed, including:

ECTI National rules for electrical installations

IS 813:2002 for domestic gas installations

**Low Loss Header parts checklist**

The checklist details all parts supplied in the kit.

<b>Check list</b>	<b>Qty.</b>
Low Loss Header assembly	1
Low Loss Header installation instructions	1
Screw pack:	1
- Compression nut 28mm	10
- Compression ring 28mm	10
- Wall fixing screw	2
- Wall plug	2
- Nut ISO 4032-M6-8-A	2
Insulation - front	1
Insulation - rear	1
Cable tie	2

## 2 INSTALLATION CONSIDERATIONS



**CAUTION:** Risk of system damage.

- ▶ The Low Loss Header is designed to be used with Worcester boilers only.
- ▶ Before cleaning the system ensure the system and pipe work are in good working order. Use the existing boiler/circulation pump where possible or use a power flushing device before installing a new boiler.
- ▶ Fill the system with cold mains water to the recommended pressure and check for leaks.
- ▶ Open all drain cocks and drain the system, close drain cocks and add a suitable flushing agent at the correct strength for the system condition in accordance with the manufacturer's instructions.
- ▶ Care must be taken positioning the expansion vessel and pressure relief valve.
- ▶ The maximum flow rates of the boiler and system circuits must match.

### **GAS/OIL SUPPLY**

Is the gas or oil supply capable of supplying all the gas or oil appliances in the dwelling.

### **CASCADING TWO BOILERS**

One boiler may not have enough output to satisfy the requirements of a larger property.

Boilers can be connected in a modular or cascade system, Worcester, Bosch group would only recommend connecting two boilers using this header.

The maximum total input rating for a domestic dwelling is 70kW and this should be adhered to so that the system can be serviced and maintained by a registered engineer with domestic qualifications.

If there is no sequence controller for the boilers, a lead/lag boiler arrangement can be used. This is where one boiler's thermostat is set 5 °C higher than the other boiler. The lead boiler should be swapped with the lag boiler at each annual service.

### **PUMP SPEED**

The aim of the installation is to achieve hydraulic balance on either side of the Header.

Use the lowest pump speed that delivers heat to all the radiators in the system.

Use a differential thermometer to check the  $\Delta T$  across all radiators. For older systems a  $\Delta T$  of 10 K or for modern radiators a  $\Delta T$  of 20K is desirable.

### **DIAMETER OF PIPE WORK**

The pipe work must be sized to suit the flow rate from the total boiler output. Use the Domestic Heating Design Guide (2010) to calculate the flow rate and choose a suitable pipe size.

### **BEFORE FITTING THE LOW LOSS HEADER**

- ▶ Circulate the flushing agent before the boiler is fired up, run the boiler and system at normal operating temperature in accordance with the manufacturer's instructions.
- ▶ Drain and thoroughly flush the system to remove the flushing agent and any debris.

### 3 MOUNTING THE LOW LOSS HEADER

#### 3.1 MOUNTING DETAIL

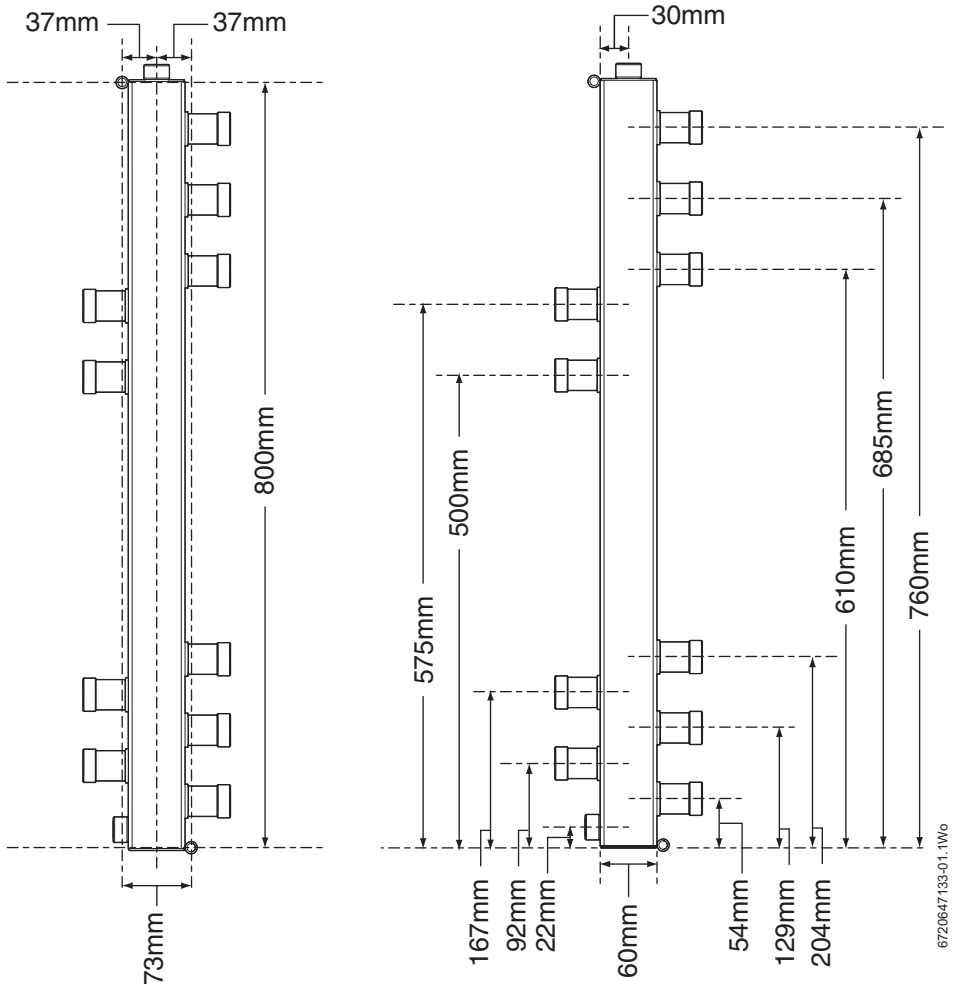
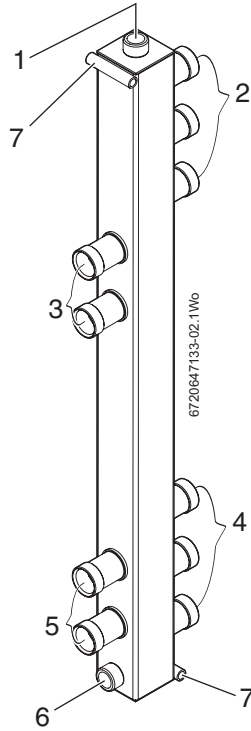


Fig. 1 Connection dimensions



**NOTE:** Allow sufficient space below for the insulation (at least 55mm) when fitting the Low Loss Header.

**3.2 LOW LOSS HEADER CONNECTIONS**



*Fig. 2 Low Loss Header connections*

1. Header auto air vent connection (½ inch female)
2. System flow connections (28mm)
3. Boiler flow connections (28mm)
4. System return connections (28mm)
5. Boiler return connections (28mm)
6. Header drain point connections (½ inch female)
7. Mounting points



**NOTE:** The Air Vent and Drain Cock are not supplied with the Low Loss Header kit.



3.3 MOUNTING THE LOW LOSS HEADER

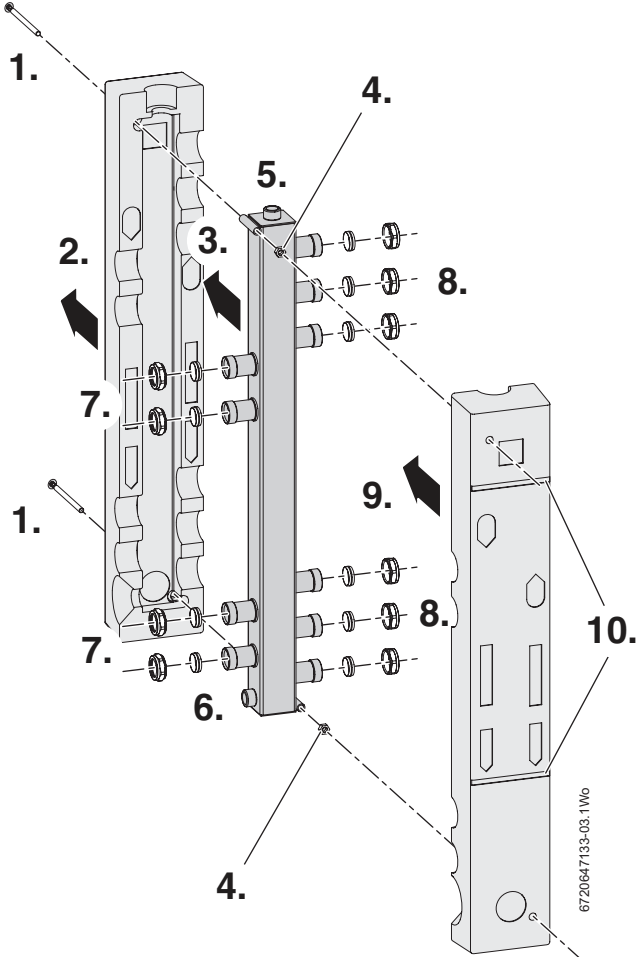
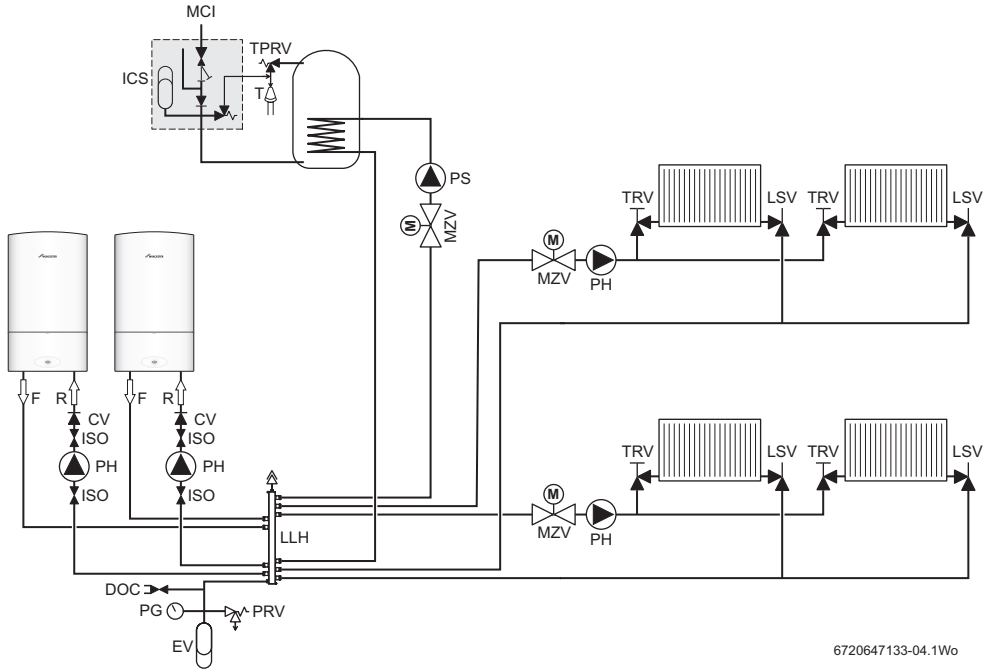


Fig. 3 Fitting the Low Loss Header

### INSTALLATION ACTIONS

1. Position the Low Loss Header in the required position and ensure that the unit is vertical.  
Mark through the fixing holes onto the mounting surface.  
Remove the Low Loss Header.  
Drill suitably sized holes to accommodate the wall plugs and fit the wall plugs into the hole.  
Mount the two securing bolts provided.
2. Slide the appropriate insulation, with the cable ties, over the securing bolts.
3. Slide the Low Loss Header into position over the securing bolts.
4. Secure the Header with the nuts provided.
5. Fit an air vent, an auto air vent is recommended.
6. Fit the drain point.  
Add a "Sealed System" kit if required.
7. Make the boiler side pipe connections.
8. Make the system side pipe connections.
9. Slide the second insulation over the Low Loss Header.
10. Secure the front insulation to the rear insulation with the cable ties provided, ensure that the cable ties run in the cable tie channels.

### 3.4 SYSTEM CONNECTION DIAGRAM



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Fig. 4 Typical Low Loss Header system diagram

F	Flow	PH	Pump - Heating
R	Return	PS	Pump - Cylinder
DOC	Drain off cock	PG	Pressure gauge
ISO	Isolation valve	EV	Expansion vessel
MCI	Mains cold inlet	TRPV	Temperature/Pressure relief valve
ICS	Inlet control set	MZV	Motorized zone valve
TRV	Thermostatic radiator valve	LSV	Lock shield valve
T	Tundish	LLH	Low Loss Header
CV	Check valve		

Table 2

The Low Loss Header is designed to be used with Worcester gas and oil boilers and provides a hydraulic break between the boilers and the downstream heating circuits.

The expansion vessel must be sized and pressurized to the system requirements.

The pumps must be sized according to the system requirements.

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