



# ENERGYCATCHER



## INSTALLATION AND SERVICING INSTRUCTIONS TO BE LEFT WITH THE USER



This is an energy saving product

Listed by The United Kingdom Water Fitting Byelaws Scheme

SAP RECOGNISED  
CERT ACCREDITATION



The code of practice for the installation, commissioning & servicing of central heating systems

Technical and illustrative data are not binding and can be modified without prior notice. The descriptions and illustrations in the present booklet are for guideline purposes only.

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Thank you for purchasing Energycatcher combiplus or combistore patented energy saving system which when used in conjunction with the arrangement listed below will save substantial amounts of energy along with meaningful carbon reductions.

## GENERAL INFORMATION

All Ravenheat appliances have been designed and manufactured to the highest quality and standards to be both reliable and to save on operating costs.

The Energycatcher must be installed in accordance with the manufacturer's guidelines. Failure to do so could negate the warranty supplied with this unit.

Energycatcher must be installed and serviced by a competent person in accordance with the following recommendations:

- Current Gas Safety (Installation and Use) regulations
- All current Building Regulations issued by the department for the Environment i.e. Approved Document L1.
- Building Standards (Scotland) (Consolidation) Regulations issued by the Scottish Development Department.
- UK Water Regulations/Bylaws (Scotland)

The installation should also be in accordance with the following British Standards Codes of practice:

- BS 5440:1:2000 Flues
- BS 5449:1990 Forced Circulation Hot Water System
- BS 5546:2000 Installation of Hot Water Supplies for Domestic Use
- BS 6700:1997 Design, Installation, Testing & Maintenance of Supplying Water
- BS 6798:2000 Installation of Gas Fired Hot Water Boilers
- BS 6891:1998 Gas Installation
- BS 7593:1992 Code of practice for treatment of Water In Heating System
- BS 7671:2001 Requirements for electrical Installation, IEE Wiring Regulations

Energycatcher is designed to be used on water systems not exceeding 6.0 bar static pressure. If the pressure is greater than this, a 6.0 bar limited pressure reducing valve must be fitted prior to the Energycatcher pipework (item 11 page 20).

### Note:

Energycatcher is designed to fit Ravenheat 120/150 models only. It can be fitted to any Band A condensing combi though the installer must have written approval from manufacturer of the boiler and the manufacturer of Energycatcher.

### IMPORTANT :

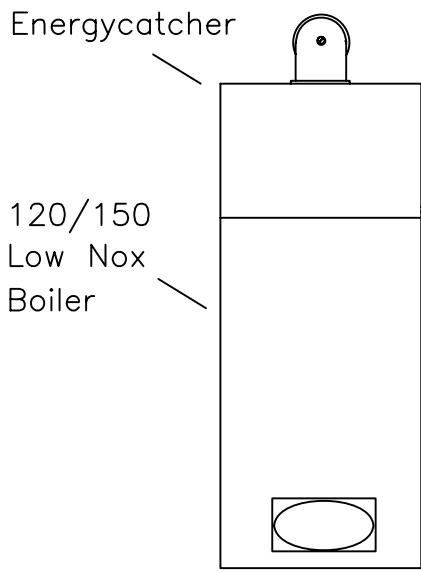
**2.5 bar pressure reducing valve (supplied) must be fitted on mains inlet supply before the Energycatcher or boiler see fig. 11 - 12 - 13.**

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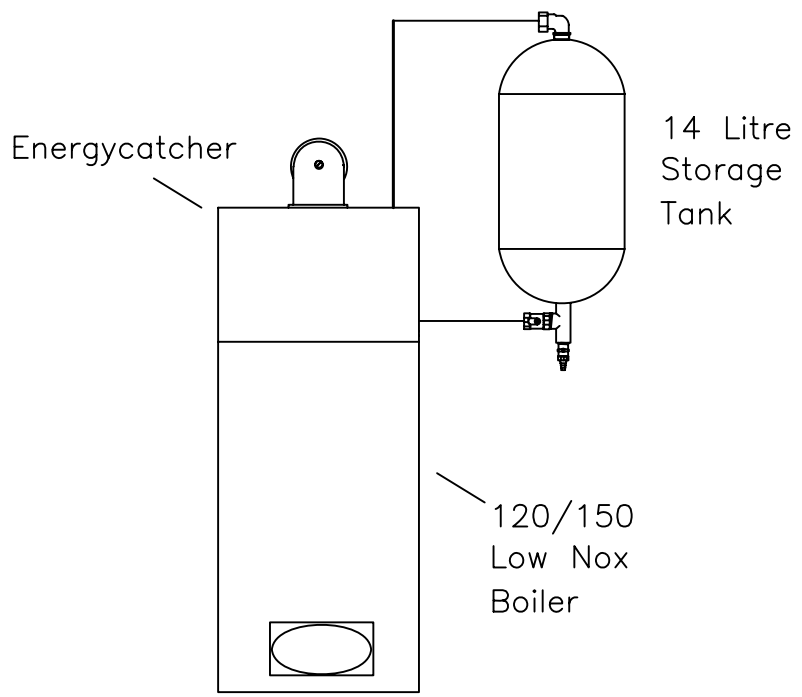
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COMBIPLUS

COMBISTORE



PFGHRD  
A0-1  
System



FGHRS  
B1-1  
System

PFGHRD : Passive Flue Gas Heat Recovery Device

FGHRS : Flue Gas Heat Recovery System

## Section 1 INTRODUCTION

Energycatcher is an ingenious patented unit which requires no electrical connection, has no running costs, and no maintenance costs.

All Ravenheat boilers conform to SEDBUK band A, they are over 91 % efficient in converting gas to heat. When Energycatcher is fitted to a boiler, it adds up to 7 % to the boiler efficiency and thereby an overall 7% saving on gas per year. Which, apart from the costs of buying the unit delivers FREE domestic hot water. This saving is good news for the householder's gas bill, and the environment.

In addition, the flue exhaust temperature, or plume, is also considerably cooler with Energycatcher.

UK building Regulations demand that this plume is exhausted from the house so as not to affect either the home's fabric or people. Tests by Ravenheat show that the plume temperature is reduced by up to 45 °C, making it far safer and resulting in much less heat being pumped into the atmosphere.

When Energycatcher is attached to a condensing boiler, the low temperature of this exhaust results in the polluting gases condensing to the drain, rather than going into the atmosphere;

### 1.1

Summary savings using Energycatcher:

- Energy neutral (free energy).
- The Energycatcher is efficient at extracting heat to water.
- Extra heat is extracted from outlet fumes reducing them to as low 23°C.
- When the boiler is working in hot water mode the outlet flue fume temperatures are no greater than 3-5 °C higher than the incoming cold feed.
- Extra boiler efficiency whenever the boiler is operating (DHW or CH). This efficiency is stored as thermal gain.
- Saves on gas bills.
- Helps the environment.

### 1.2

Summary of benefits of Energycatcher:

- Fuel bills reduced.
- CO2 saving
- Plumbing is almost eliminated due to operation (thermal gain).  
Outlet fumes are too low to support water vapour.
- Less cold water usage.
- Instant hot water delivery.
- Payback of initial outlay around 2 to 3 years.
- Delivers substantial heat savings (twice that of solar) when there are no thermal gains due to poor weather.
- Compatible to work with solar system in conjunction with Energycatcher for all year round savings.
- Uses no power to recover heat.
- No electrical power connections.

Section 2 GENERAL LAYOUT

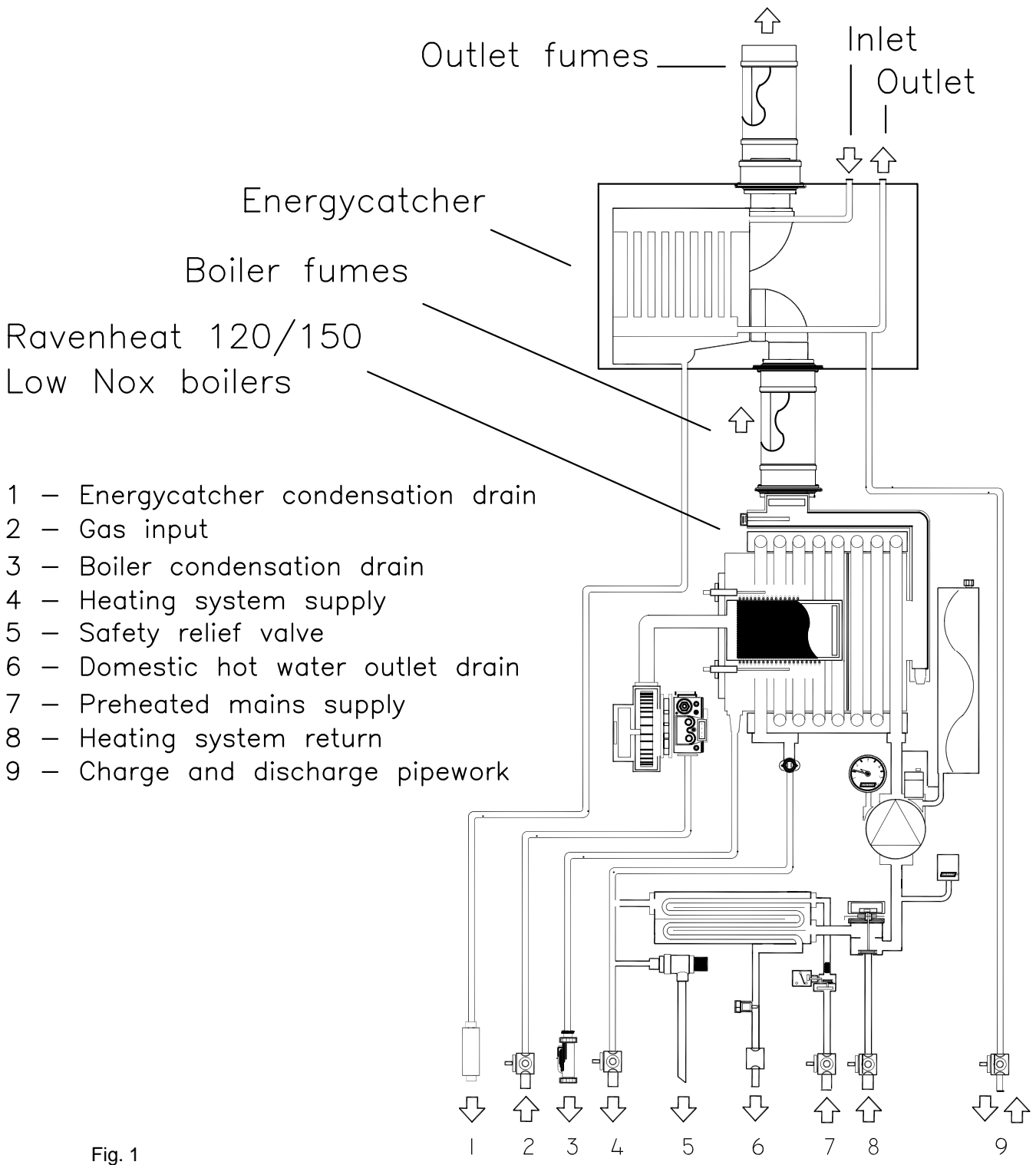


Fig. 1

Section 3 TECHNICAL DATA

D.H.W. pressure	max 6,0 (bar)
Dry weight	12,3 (Kg)
Water content	1,6 (Litre)
Water inlet pipe	3/4 " BSP
Water outlet pipe	3/4" BSP
Suitable for use with Ravenheat boiler models	Ravenheat 120/150 Low Nox boiler
Other boiler manufacture	Any band A SEDBUK gas boiler , of whatever type or make, can be fitted with a Ravenheat Energycatcher subject to all round consent.
Flue resistance Deduct from overall boiler flue length	1,5 m length for 60/100 flue 1,0 m length for 80/125 flue
Boiler flue length	See boiler manual and overall maximum flue length then deduct value in flue resistance as above

Section 4 OPERATING

4.1

The boiler's flue gases, instead of going straight outside at around 60 °C, the flue gases are fed into the Energycatcher, where they flow over a heat exchanger. This otherwise wasted heat is transferred to the water in the heat exchanger, which moves under convection into Energycatcher and/or a storage tank. The tank can be of any size to suit the need for example, after the central heating has run for a short period the store will be heated, giving a good supply of preheated hot water. The exhaust gases, now considerably cooler, then vent to the atmosphere.

If the householder runs the central heating system in the early morning, so the house is warmed for breakfast time. All the time the boiler is running, the waste heat in the flue is being transferred to the water in the heat exchanger, which then passes to the storage tank. This water can reach between 40 and 50 °C within 20 mins - to a max of 60 °C. When the householder runs the hot tap, either for a wash, shower or bath etc....

The preheated hot water runs directly from Energycatcher and/or storage tank through the boiler (combi type) to the tap, this preheated water is supplied totally free of charge, it is cycled through the boiler where the higher than normal inlet temperature is sensed, and only sufficient heat applied, bringing the water up to the normal preselected outlet temperature set on the boiler. Far less gas is used to supply this "piping hot" water.

Either way, the householder saves money; Ravenheat estimates that over the year, a typical average gas bill will be cut by up to 7% over and above a 91% efficient Sedbuk band A condensing boiler (over 50% saving by replacing non-condensing appliances with a Ravenheat condensing boiler and Energycatcher).

In addition, hot water flows from the tap quicker than normal (less cold water is used).

## Section 5 DELIVERY

### 5.1

The appliance will be delivered in two cartons:

(1) Large rectangular box contains:

a) Energycatcher main unit.

### 5.2

(2) Long rectangular box containing accessories:

a) stand off wall bracket for boiler and Energycatcher consisting of 1 left and 1 right hand painted side bracket.

b) 1 upper cross member and 1 lower T shaped cross member.

c) 1 paper template

d) 1 polythene bag containing:

2 22 mm flanged angle valves and fibre washers.

1 15 mm angled valve (blue) and washer.

1 angled bend and washer.

1 bag of 4 fixing bolts and dowels.

1 15 mm drained down valve.

1 condensing trap.

e) 1 polythene bag containing:

4 Energycatcher / boiler fixing bolts and nuts.

1 pipe clamping clip.

1 dual lock strip (condensing trap fixing)

8 screws and washers (back frame assembly screws).

f) 2 Data ID label for Energycatcher (affix correct one to boiler).

Section 6 INSTALLATION

6.1  
 WHEN INSTALLING ENERGYCATCHER IT MUST BE FITTED IN CONJUNCTION WITH RAVENHEAT 120/150 CONDENSING BOILER THEREFORE ITS IMPORTANT TO FAMILIARISE YOURSELF WITH THE BOILER MANUAL IN CONJUNCTION WITH INSTALLATION OF ENERGYCATCHER.

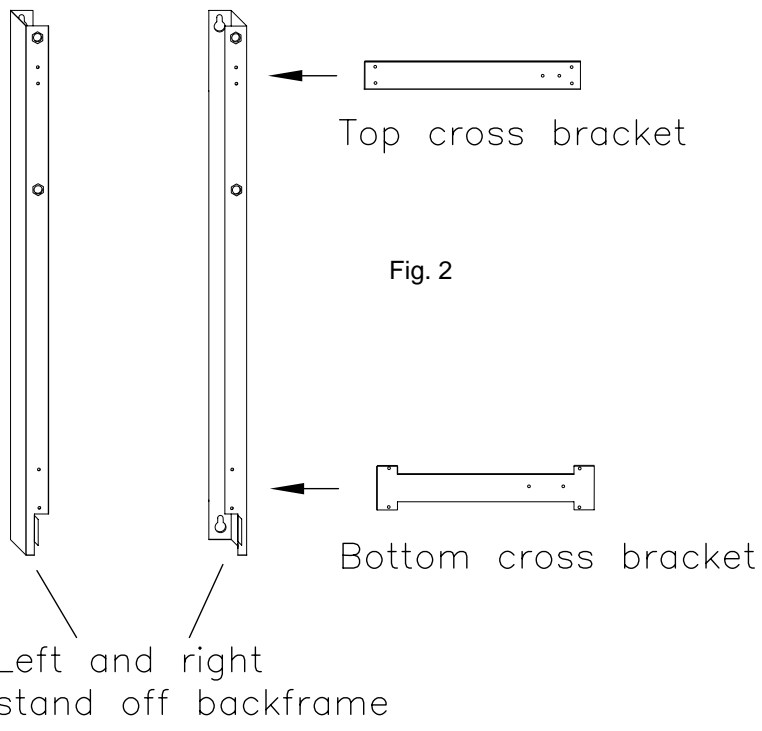
6.2  
 Assembling backframe.

Select the left and right hand side stand off bracket, placing them face down with the fixing studs facing upwards and screw holes cross referencing, take the 8 screws fix the top and bottom cross members on the inner side of the side stand off brackets. Fig. 2

Note:  
 It is important to ensure screw holes line up correct as these have been deliberately offset to avoid incorrect positioning of cross members within the backframe assembly. Fig. 4.

Fix 4-15mm clips provided ( pointing clips to the wall ) in the backframe cross members. Fig. 5

Important: Make sure that top and bottom cross brackets must be fixed as on Fig.2



6.3  
 Attach the template to the wall making sure that the centre line is vertical using adhesive tape.

- mark the holes for the side fixing brackets to the wall as well as the centre flue duct, detach the template from the wall.
  - use a 10 mm drill to make the 4 holes. Insert the plastic expansion plugs.
  - cut or core drill the 105 mm diameter hole for inserting the flue duct (rear left, right or vertical).
- Fix the 4 coach bolts provided, leaving them a couple of mm proud of the wall.
- locate the boiler fixing stand off bracket over the 4 bolts and tighten it to the wall, taking care not to over twist or distort the frame if the wall is uneven.

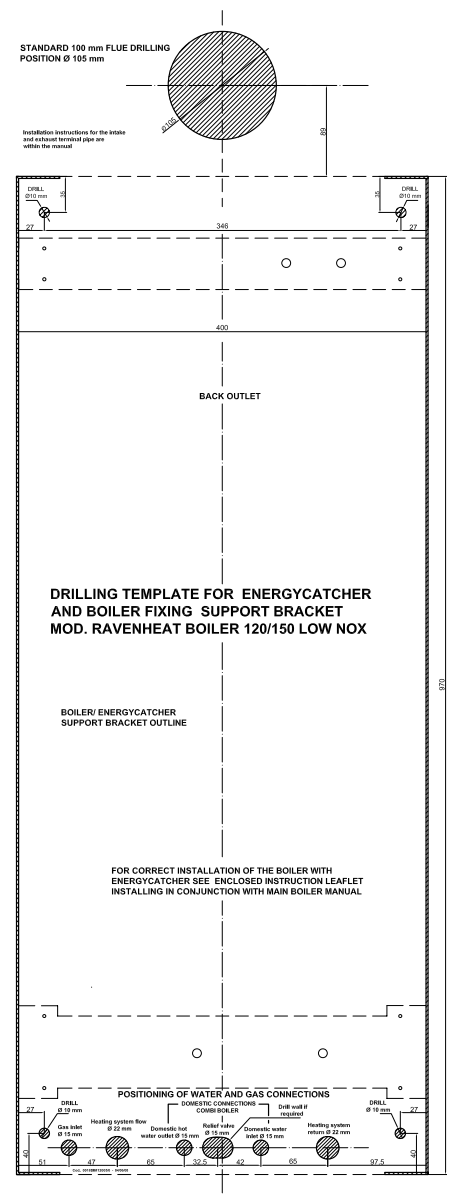


Fig. 3  
 Template

6.4  
Locate the 4 boiler/Energycatcher fixing bolts and nuts into the upper studs of the secured backframe, leave them slightly loose of the frame.

6.5.1  
You may wish to run cold feed/preheat pipes into the backframe.

It is best to use 15 mm plastic pipe as this should bend when located in plastic clips, otherwise put offset bends on feed pipes.

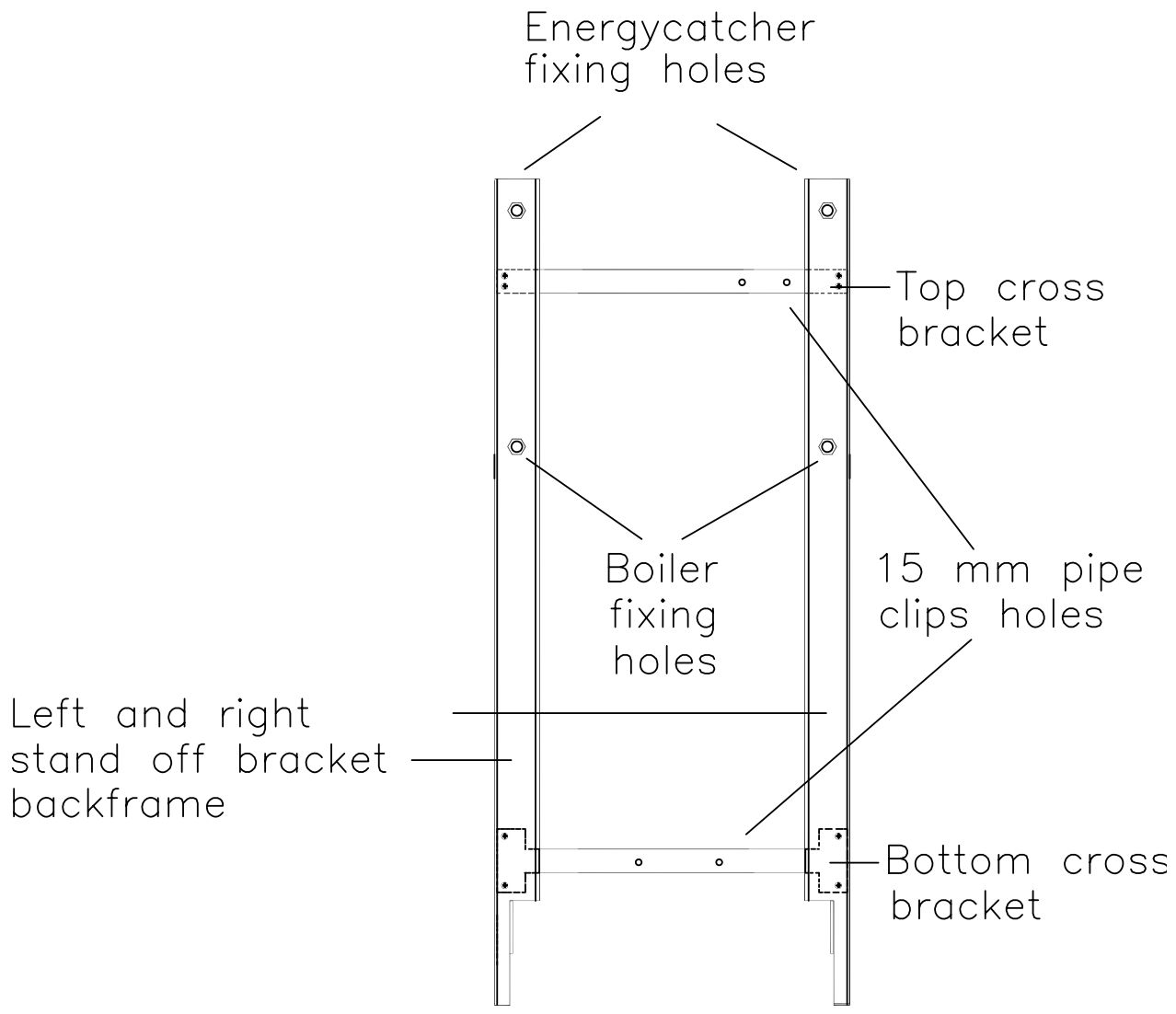


Fig. 4

6.5.2  
 Take out from the Energycatcher valve pack the blue isolation valve and connect it to a 15 mm pipework (not supplied) making sure compression connection is water tightened. length of pipe approx 120 cm.

- Clip the pipe into backframe right side clips.
- Connect cold mains inlet and locate in clips leaving more than 100 mm above top backframe so this can be connected to the cold inlet later.

Note:  
 It may be necessary to slacken backframe from the wall to locate pipes in clips.

6.6  
 Unpack and prepare the selected boiler for installation as set out in the main boiler manual.

6.7  
 Remove the straight exhaust white header and gasket from the top of the boiler by removing the 4 screws located on the top of the boiler itself. Fig. 6.

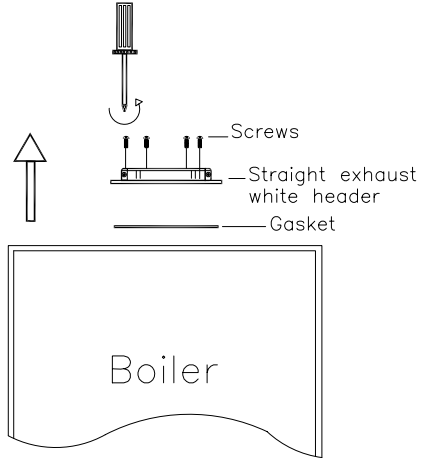


Fig. 6

6.8  
 Lift up the boiler onto the 2 lower backframe bolts and locate tighten them to secure boiler to backframe. Fig. 4.

6.9  
 Remove boiler front cover by removing lower 2 screws on bottom of cover slide up the front panel to dislocate it from studs. Fig. 7.

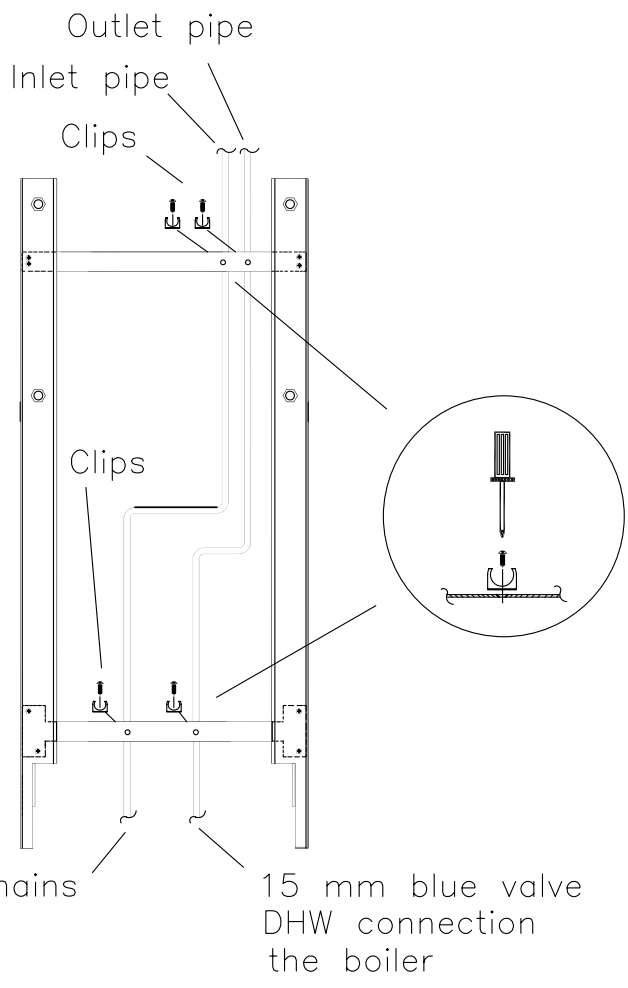


Fig. 5

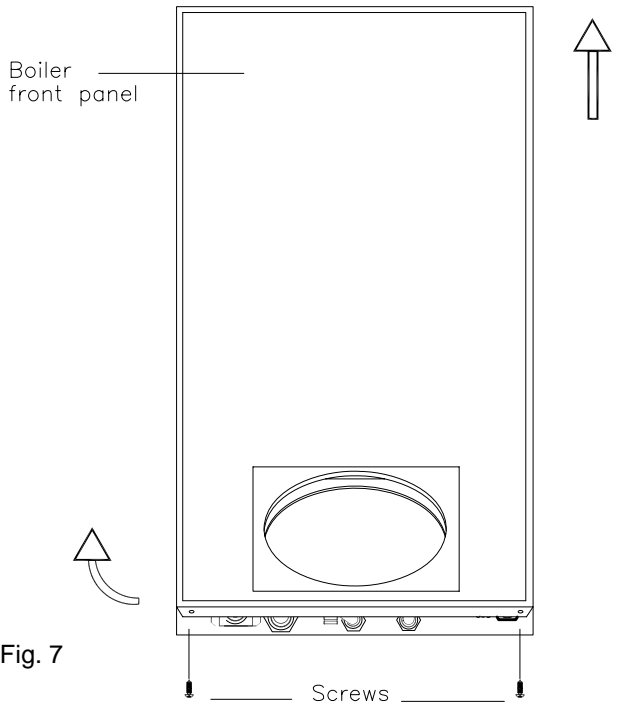


Fig. 7

**Section 7 ENERGYCATCHER FIXING**

**7.1**  
Before fitting remove the front cover of Energycatcher by removing the 2 screws located on the top of the front panel.

**7.2**  
Slide up the front panel to dislocate it from fixing studs and remove.  
Fig. 8.

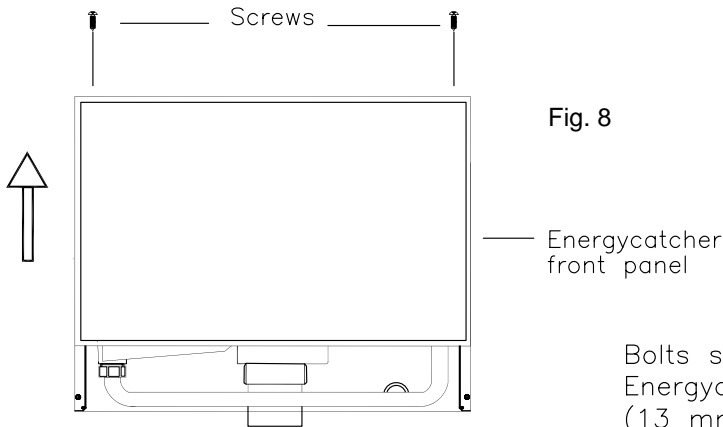


Fig. 8

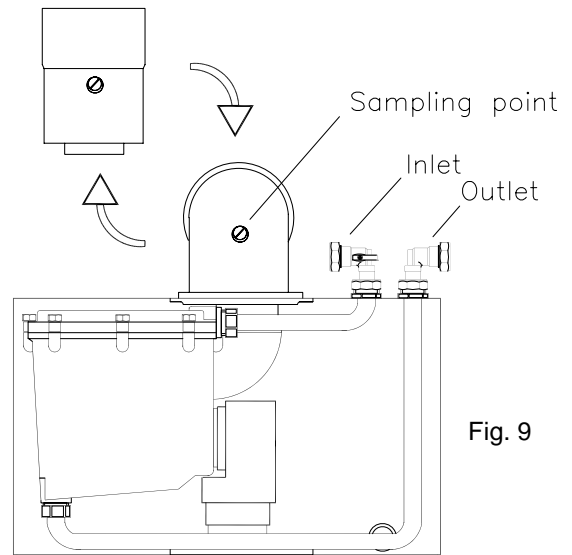


Fig. 9

**7.3**  
**IMPORTANT**  
Make sure the black rubber 60 mm seal is located into the boiler top flue exhaust manifold.

**7.4**  
Before offering Energycatcher up to the boiler it is important to lubricate the inlet and outlet manifold on Energycatcher and boiler.

**IMPORTANT**  
Generally speaking oils and greases are not suitable for the "peroxide-EPDM", therefore we suggest a correct lubrication using silicone-substances, for instance "silikon spray" (Arexons) or similar product.

**7.5**  
Taking Energycatcher, lift it up on the top of the boiler while at the same time ensuring that the 2 flexible pipes (condensing outlet pipe and drain down braided hose) drop down the backframe so that they can be connected later. Lift Energycatcher onto the 2 fixing bolts at the upper top of the stand off backframe while at the same time locating the Energycatcher flue inlet manifold into the boiler black rubber washer.

**7.6**  
Tighten Energycatcher fixing bolts.

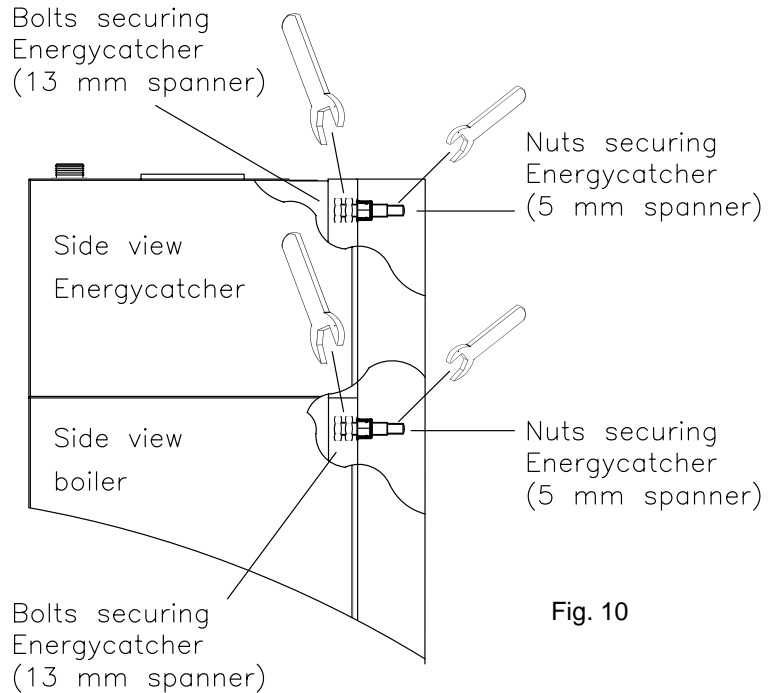


Fig. 10

**7.7**  
Fit desired flue as set out in main boiler installation manual.

Note : If the flue from Energycatcher is vertical then the flue connection must start with a header sampling point. Part. no. PR5094110A.  
Fig. 10.

**7.8**  
Flue resistance.  
It is important to deduct appropriate flue length to allow for Energycatcher's increased flue resistance. Details of which are set out in section 3.

## Section 8 WATER CONNECTIONS

### Note:

Energycatcher comes with its own extended valve pack water connections, change these with ones supplied in boiler box. Use 2 of the angled water boiler connection valves to correct Energycatcher inlet and outlet. Fig. 9.

Energycatcher external pipework ( not provided) can be installed in 15 mm plastic or copper.

### 8.1

The boiler water connections are as set out in the main manual.

Cold mains inlet feed must be taken immediately to Energycatcher up through the backframe.

Fig.4a.

### 8.2

The outlet pipe (preheat) from Energycatcher outlet to be taken down the backframe and connected to the boiler cold water inlet (use the blue angled valve provided) in Energycatcher accessory box.

Fig. 10 ( section 6.5.1).

### 8.3

All other water and gas connections along with electricity supply to the boiler are all as set out in the boiler instruction manual.

### 8.4

Fix the straight 1/2" / 15mm isolating drain using the fibre washer provided to the 1/2" BSP outlet from the braided pipe , this will act as a drain down discharge point if this is required.

Ensure this is correctly closed and capped where necessary to prevent this being opened accidentally ( cap not provided )

### 8.5

Fix the condensate trap to the flexible discharge pipe from Energycatcher ensuring that this trap is fixed to the Energycatcher (not the boiler discharge pipe as this is already trapped within the boiler). By teeing these together ensure that the condensate discharge is disposed of safely as set out in the main installation manual. Also ensuring that condensate trap is securely secured.

## Section 9 ENERGYCATCHER WITH REMOTE TANK

### 9.1

The tank pipework should not exceed 5 m total length. Positioning of the tank must be above the Energycatcher, or at the left or right hand side. When fitting at the side use the hose which can be taken through the side of backframe.

Fig. 12-13.

Important : if using the flexible hose to the tank connection you must cap off the 3/4" preheat outlet on the top right of energycatcher.

### 9.2

If you are to use Energycatcher with an additional 15ltr cylinder continue as follows:

### 9.3

Offer the cylinder up to the wall and fix with bracket provided, taking care not to exceed measurements.

### 9.4

It is important that both pipes connected to Energycatcher from the cylinder must have a slight fall back to Energycatcher.

## Section 10 STORE ENERGYCATCHER PIPEWORK

### 10.1

- Take cold mains inlet supply up through back of the boiler.
- Immediately above energycatcher fix a 15 mm T with the junction pointing horizontally forward and connect to Energycatcher inlet. Immediately above tee fit reversing valve with arrow pointing down (valve is sold separately).
- Immediately after the valve fit a further T.
- Take the pipework back down on to the boiler cold water inlet.
- Take the upper T connecting to the top of the cylinder.

Fig. 12-13.

Connect the return pipe from the tank to either top of energycatcher outlet or use flexible connector. Connecting through the hole in the side bracket fixing a draincock within the connection (not supplied).

### 10.2

#### Filling the system

It is important that the system is fully filled prior to the commissioning of the boiler otherwise the boiler could be damaged in the process of filling and charging the cylinder.

Make sure all air is removed by opening outlet taps. Check that the water is adequately running through the hot water supply and taps prior to commissioning. When replacing front panel refit boiler front panel first then Energycatcher panel.

### 10.3

Fix the Energycatcher ID label to boiler. See page 5.

10.4  
ENERGYCATCHER STAND ALONE UNIT

All pipes from  
Energycatcher can run  
down the backframe  
for neat installation

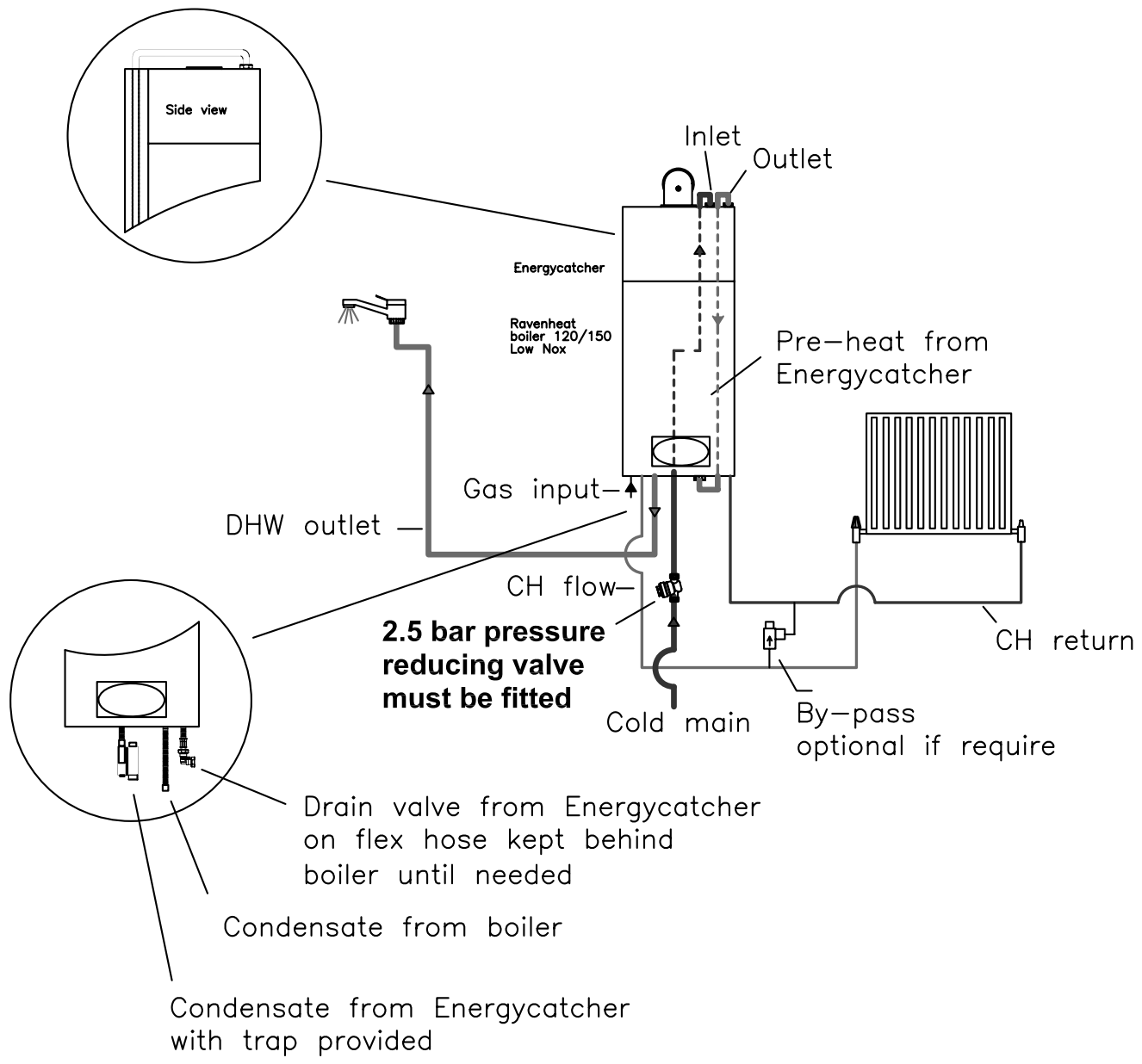


Fig. 11

10.5  
WITH REMOTE STORAGE TANK

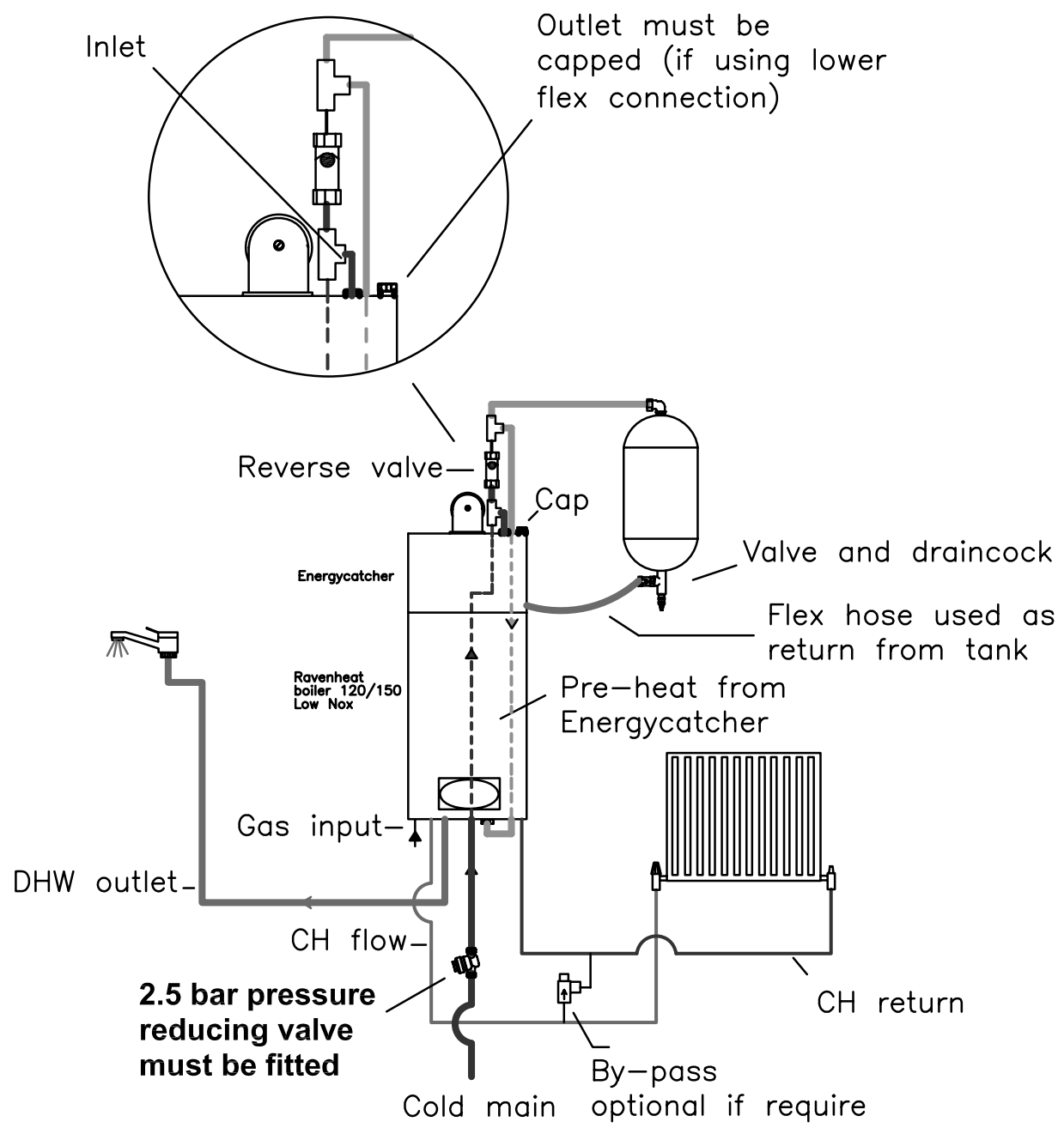
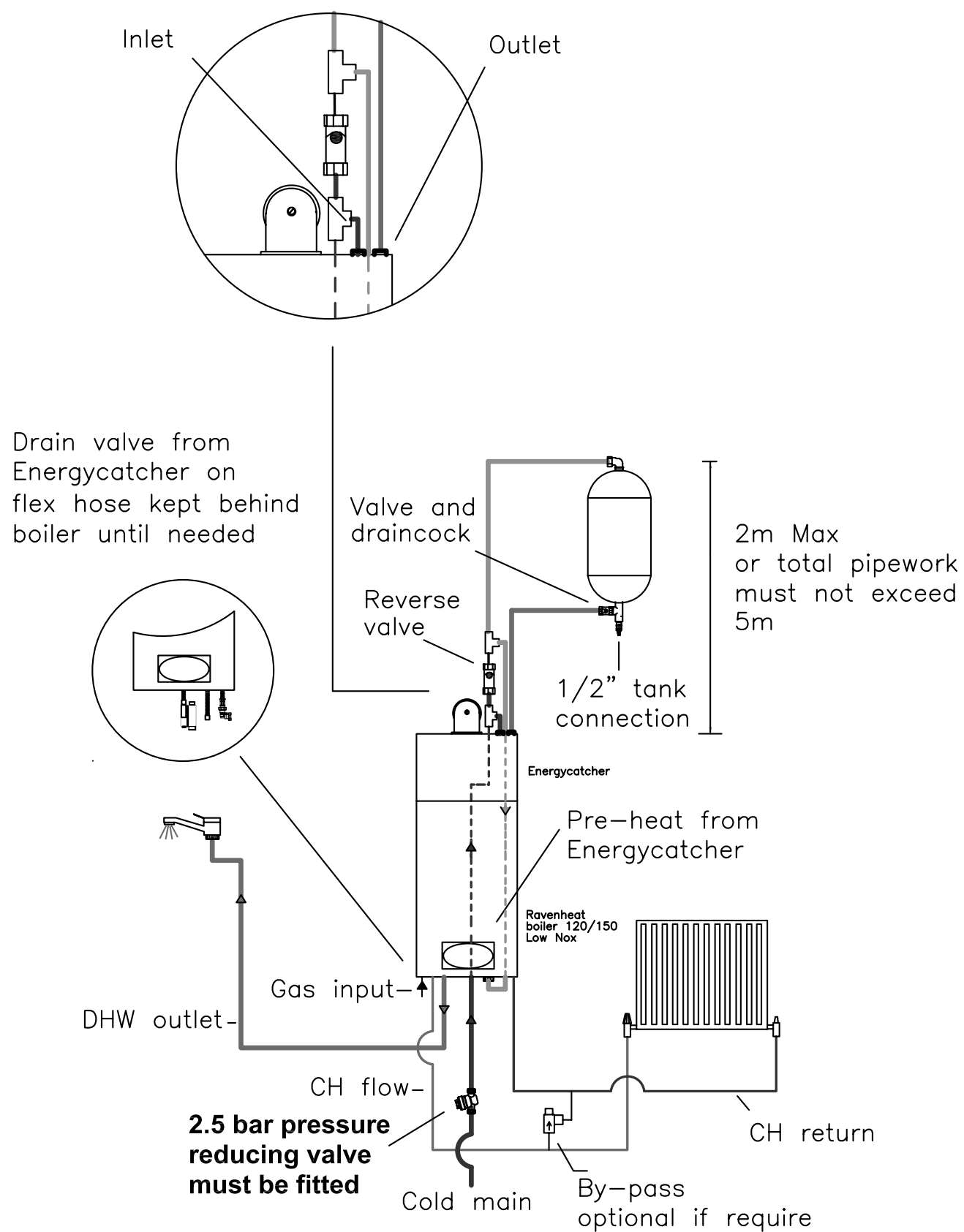


Fig. 12



Drain valve from Energycatcher on flex hose kept behind boiler until needed

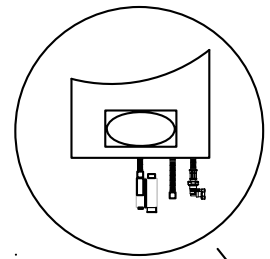


Fig. 13

## Section 11 SERVICING

Energycatcher is a simple designed unit, no maintenance is required. The unit contains no mechanical, electrical or serviceable parts.

It is recommended that the Energycatcher should be subjected to a general condition and flue inspection with boiler maintenance by a competent person.

Ravenheat are a member of the Benchmark initiative and fully supports the aims of the programme, to improve the standards of installation and commissioning of central heating systems in the UK and to encourage in the regular servicing of all central heating system to ensure safety and efficiency.

### 11.1

All routine boiler servicing requirements can be achieved by the removal of the Energycatcher front panel.

To remove the boiler front panel see boiler manual.

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## Section 12 ALTERNATIVE ENERGYCATCHER SYSTEMS

### 12.1

Energycatcher can be installed to work in conjunction with solar panels; the panels produce a boost to water temperatures when the sun shines, while the Energycatcher comes into its own whenever the boiler is used to heat the home or provide DHW. Energycatcher is a good investment to install in conjunction with solar panels, and offers immediate returns.

There are other systems designs which are available:

### 12.2

Increased energy saving with larger stores.

### 12.3

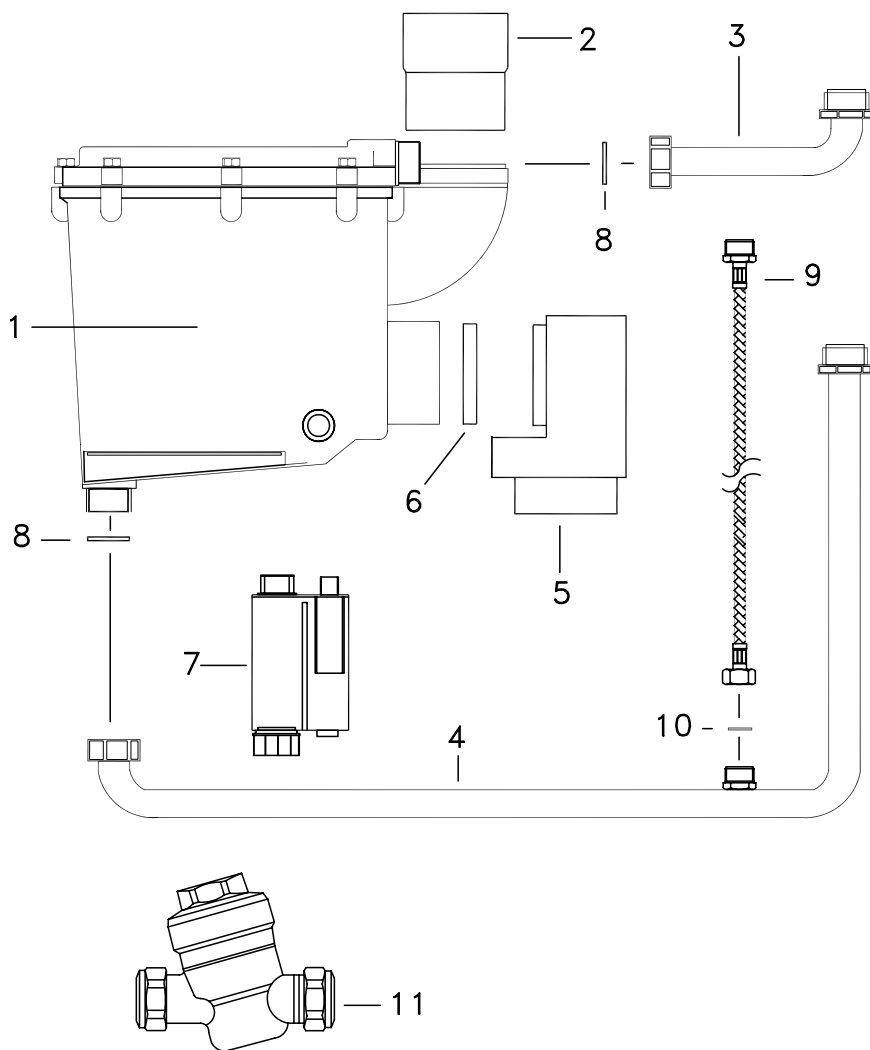
Increased domestic hot water flow rates.

### 12.4

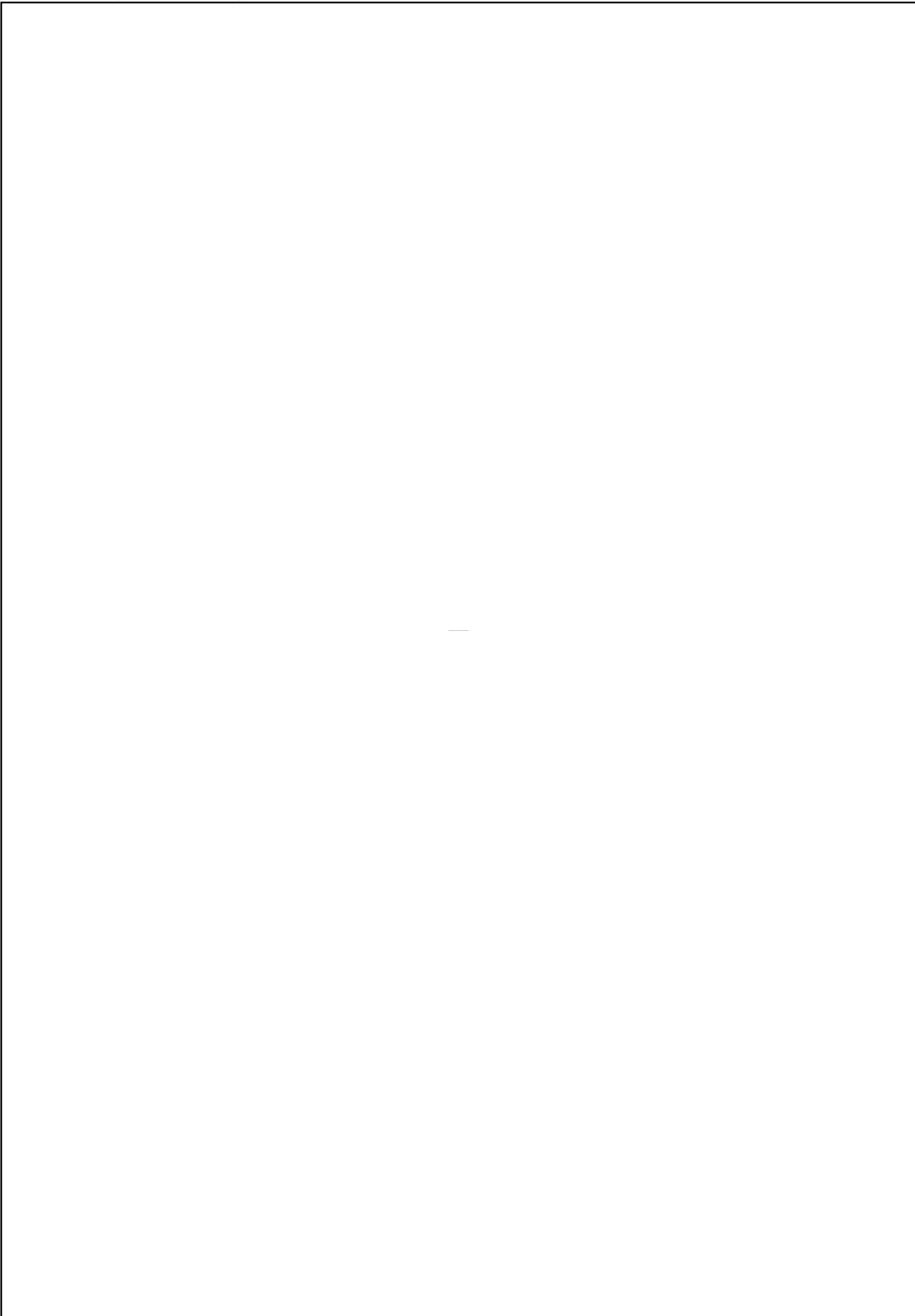
Management system to decrease flue plumbing even further.

For details of our design service please contact us with your requirements via email.  
[enquiries@ravenheat.co.uk](mailto:enquiries@ravenheat.co.uk)

Section 13 LIST OF SPARE PARTS



Pos.	Ravenheat part nr.	G.C. part nr.	Description
1	1002SCA12010/0		Heat exchanger
2	0019PRO12005/0		Flue extension
3	0010TUB12015/0		Flow pipe
4	0010TUB12005/0		Return pipe
5	0019ATT12005/0		Flue adapter
6	0014GUA11020/0		Flue gasket
7	0014RAC06005/0		Condensing trap
8	0013GUA01025/0		Gasket 24x15x2
9	0010TUB12010/1		Flex hose
10	0013GUA01020/0		Gasket 18.5x11.5x2
11	0008RID12010/0		Limited pressure valve (optional)





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