



# INSTALLATION AND SERVICING

## EVOJET 150 - 1450kW

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal.

For the very latest copy of literature for specification and maintenance practices visit our website [www.idealcommercialboilers.com](http://www.idealcommercialboilers.com) where you can download the relevant information in PDF format.



## CONFORMITY

---

IDEAL EVOJET boilers conform to the Efficiency Directive 92/42/EEC (★★★★), to Gas Directive 2009/142/EEC and applicable sections of the Electromagnetic Compatibility Directive 2004/108/EEC and Low Voltage Directive 2006/95/EEC.



The IDEAL EVOJET is a range of Natural Gas, LPG and Oil commercial condensing pressure-jet boilers conforming to the efficiency directive 92/42/EEC (★★★★).

IDEAL EVOJET – PRESSURE-JET BOILER RANGE										
Model	150	210	270	350	450	600	800	1000	1250	1450
Output Non-Condensing kW	146.6	205.2	264.3	343.7	441.9	589.2	785.6	982	1227.5	1423.9
Output Condensing kW	160.5	224.7	288.9	374.5	481.5	642.0	856.0	1070.0	1337.5	1551.5

Each boiler is designed to operate with a proprietary pressure jet or premixed burner. Riello preferred partner is Riello and an additional 1 year parts warranty is provided with an approved Riello burner. Selection of the burner will be made at the time of purchase, the burner type and control will enable 2 stage, fully modulating and Low NOx operation and will enable compliance with the Enhanced Capital Allowance scheme of the Energy Technology Criteria List.

## CONTENTS

### GENERAL

	Page
General safety information	4
Safety precautions	5
Product description	6
Control panels	7
Burners	7
Operation with Oil or Dual fuel	8
Product identification	9
Technical specifications	10

### USER MANUAL

Initial start-up	11
Preparing for extended periods of disuse	12
Cleaning	13
Maintenance	13
Useful information	14

### INSTALLATION MANUAL

Unpacking the product	15
Overall dimensions and weights	16
Handling	16
Place of installation	17
Water in the central heating circuit	18
Water treatment	19
Water connections	20
Condensate drain	24
Combustion gas exhaust	25
Installation in B23P configuration	25
Door hinges	26
Changing the direction of door opening	26
Removing the hinge assembly "B"	27
Earth connection	28
Fitting the panelling	29

### TECHNICAL ASSISTANCE SERVICE

Preparing for initial start-up	30
Initial start-up	31
Checks during and after initial start-up	32
Maintenance	33
- Opening the door	33
- Adjusting the door	33
Cleaning the boiler	34
Troubleshooting	35

The following symbols are used in this manual:



**CAUTION!** = Indicates actions that require caution and adequate preparation



**STOP!** = Identifies actions that you MUST NOT do

## SAFETY

### Current Gas Safety (Installation and Use) Regulations or rules in force.

It is law that all gas appliances are installed and serviced by a Gas Safe Registered Engineer in accordance with the regulations below. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure the law is complied with.

The following must be conformed with:

Current Building Regulations and Clean Air Act

Water Authority Regulations

Local Authority Regulations and Regional Bylaws

Gas Safety Regulations

Any special regional requirements of local Electricity and Gas undertaking.

Fire Service and Insurance Company requirements.

In the interests of safety, a competent installer should be employed to effect the installation of the appliance. Manufacturer's notes must NOT, in any way, be taken as overriding statutory obligations.

The installation of the boiler MUST also be in accordance with the latest I.E.E. (BS7671) Wiring Regulations, local buildings regulations, bye-laws of the local water authority, the building regulations and the Building Standards (Scotland) and any relevant requirements of the local authority.

Detailed recommendations are contained in the following Codes of Practice:

- BS 799 Pt4 & 7 Oil burning equipment.
- BS 799 Pt5 Oil storage tanks.
- BS 5410 Pt2 Installation for space heating, hot water and steam supply.
- BS 5854 Flues and flue structures in buildings.
- BS 5885 Pt1 Gas burners - with inputs 60kW and above.
- BS 6644 Installation of gas fired hot water boilers of rated input between 70kW and 1.8MW net (2nd and 3rd family gases).
- BS 6880 Low temperature hot water heating systems of output greater than 45kW.
  - Part 1 Fundamental and design considerations.
  - part 2 Selection of equipment.
  - part 3 Installation, commissioning and maintenance.
- BS 6891 Installation of low pressure gas pipework of up to 28mm (R1) in domestic premises (2nd family gas).
- EN 303.1 Heating boilers with forced draught burners. General requirements.
- EN 303.2 Heating boilers with forced draught burners with atomizing oil burners.
- EN 304 Test code for heating boilers for atomizing oil burners.
- 2006/95 EEC Low voltage directive. (Relevant standard is EN60335.1)
- 2004/108 EEC Electromagnetic Compatibility Directive. (Relevant standards are EN50081.1, EN50082.1 and EN55014.)
- 92/42 EEC Boiler Efficiency Directive

2009/142 EEC Gas Devices Directive. (Relevant standards are EN303.1, EN303.2 and EN304.)

IGE/UP/1 Soundness testing and purging of industrial and commercial gas installation.

IGE/UP/2 Gas installation pipework, boosters and compressors on industrial and commercial premises.

IGE/UP/10 Installation of gas appliances in industrial and commercial premises.

## SAFE HANDLING OF SUBSTANCES

Care should be taken when handling the boiler insulation panels, which can cause irritation to the skin. No asbestos, mercury or CFCs are included in any part of the boiler or its manufacture.

## GAS SUPPLY

The local gas supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas. An existing service pipe must NOT be used without prior consultation with the local gas supplier.

A gas meter can only be connected by the local gas supplier or by a Gas Safe Registered Engineer.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the rate of gas supply required. A minimum working gas pressure of 17.5mbar MUST be available at the boiler inlet for Natural gas and 37mbar for Propane.

Do not use pipes of smaller size than the burner inlet gas connection.

The complete installation MUST be tested for gas soundness and purged in accordance with the appropriate standards listed above.

### Gas Boosters

A gas booster is required if the gas pressure available at the burner is lower than that required by the burner manufacturer to attain the flow rate for maximum burner input rating.

Location of the booster requires careful consideration but should preferably be closer to the burner rather than the gas meter. Ventilation should also be considered to ensure ambient temperatures do not exceed designed recommendations. Further guidance is provided in IGE/UP/2 as listed above.

## FLUE INSTALLATION

### IMPORTANT

It is the responsibility of the installer to ensure that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building.

Fan dilution systems may be incorporated into the flue system. However, ventilation must take into account the additional air requirement of the boiler house and interlocking must be provided to ensure adequate air flow is attained before burner operation proceeds.

The flue must be installed in accordance with the appropriate standards listed.

## GENERAL SAFETY INFORMATION



EVOJET boilers are delivered in separate crates. Check that the appliance is complete and undamaged as soon as you receive it. Report any discrepancies or damage to the Ideal Boilers dealer who sold it.



This IDEAL EVOJET boiler must be installed by a legally qualified installer. On completion of the installation, the installer must issue the owner with a declaration of conformity confirming that the installation has been completed to the highest standards in compliance with the instructions provided by Ideal Boilers in this instruction manual, and that it conforms to all applicable laws and standards.



This boiler must only be used for the purpose specified by Ideal Boilers and for which it is designed. Ideal Boilers declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.



If you notice any water leaking from the boiler, immediately disconnect it from the mains electricity supply, shut off the water supply, and notify Ideal Boilers Technical Assistance Service or a qualified technician.



Periodically check that operating pressure in the heating circuit is over 1 bar but below the maximum limit specified for the appliance. If this is not the case, contact Ideal Boilers Technical Assistance Service or a professionally qualified technician.



If the boiler is not going to be used for an extended period of time, contact Ideal Boilers Technical Assistance Service or a qualified technician to have the following minimum preparation carried out.

- Switch the appliance OFF at the control panel and mains power switches
- Close the gas cock and heating water cock
- Drain the central heating circuit if there is any risk of freezing.



The boiler must be serviced at least once a year.



This instruction manual is an integral part of the boiler. It must be kept safe and must ALWAYS accompany the boiler, even if it is sold to another owner or transferred to another user or to another installation.



If you damage or lose this manual, order a replacement immediately from Ideal Boilers Technical Assistance Service.

## PRECAUTIONS

The operation of any appliance that uses electrical power demands that a number of fundamental safety precautions be respected. In particular:



Do not allow children or infirm persons to operate this EVOJET boiler unsupervised.



Do not operate any electrical devices or equipment, including switches or domestic appliances, etc., if you can smell gas or fumes. If you detect any suspicious smells:

- Ventilate the room by opening all doors and windows.
- Close the gas shut-off cock
- Report the fault immediately to Ideal Boilers Technical Assistance Service or a professionally qualified technician.



Do not touch the boiler while barefoot or wet.



Never clean or service the boiler without first disconnecting it from the mains electricity supply by turning the main power switch and the control panel switch OFF.



Do not tamper with or adjust the safety or control devices without prior authorisation and instructions from the boiler's manufacturer.



Never pull, disconnect, or twist the electrical cables coming from the boiler even if it is disconnected from the mains electricity supply.



Do not obstruct or restrict the vents in the room where the appliance is installed. Adequate ventilation is essential for correct combustion.



Do not expose the boiler to the elements. It is not designed for outdoor use.



Do not switch the boiler off if outdoor temperature drops below ZERO (risk of freezing)



Do not leave flammable substances in the room where the boiler is installed, even inside proper containers



Do not dispose of packaging material into the environment, or leave it within the reach of children, since it can become a potential hazard. Dispose of packaging material in compliance with applicable legislation.

## PRODUCT DESCRIPTION

EVOJET steel boilers are triple flue pass, condensing boilers for installation in a boiler room. While they are designed primarily for central heating purposes, in conjunction with a suitable storage cylinder they can also be used to produce domestic hot water.

All parts that come into contact with the combustion gases are made from titanium stabilised stainless steel to ensure maximum resistance to the corrosive action of acid condensation.

The boiler has been designed with the combustion chamber at the top and the smooth pipe tube bundle at the bottom to optimise heat exchange and energy efficiency and to maximise the condensing effect.

The EVOJET incorporates two return water connections 7 & 8, this facilitates multiple applications e.g. CH & DHW and enables the optimum operating efficiency to be achieved. The system with the lowest return water temperature should be connected to connection 8 whilst relatively high return water temperature should be connected to 7. This ensures the maximum condensing output.

The boiler has a high total water content which is diffe-

rentially distributed between its top and bottom sections. This allows outgoing water to reach the set temperature quickly while maintaining the condensing effect and the water heating time around the tube bundle for as long as possible.

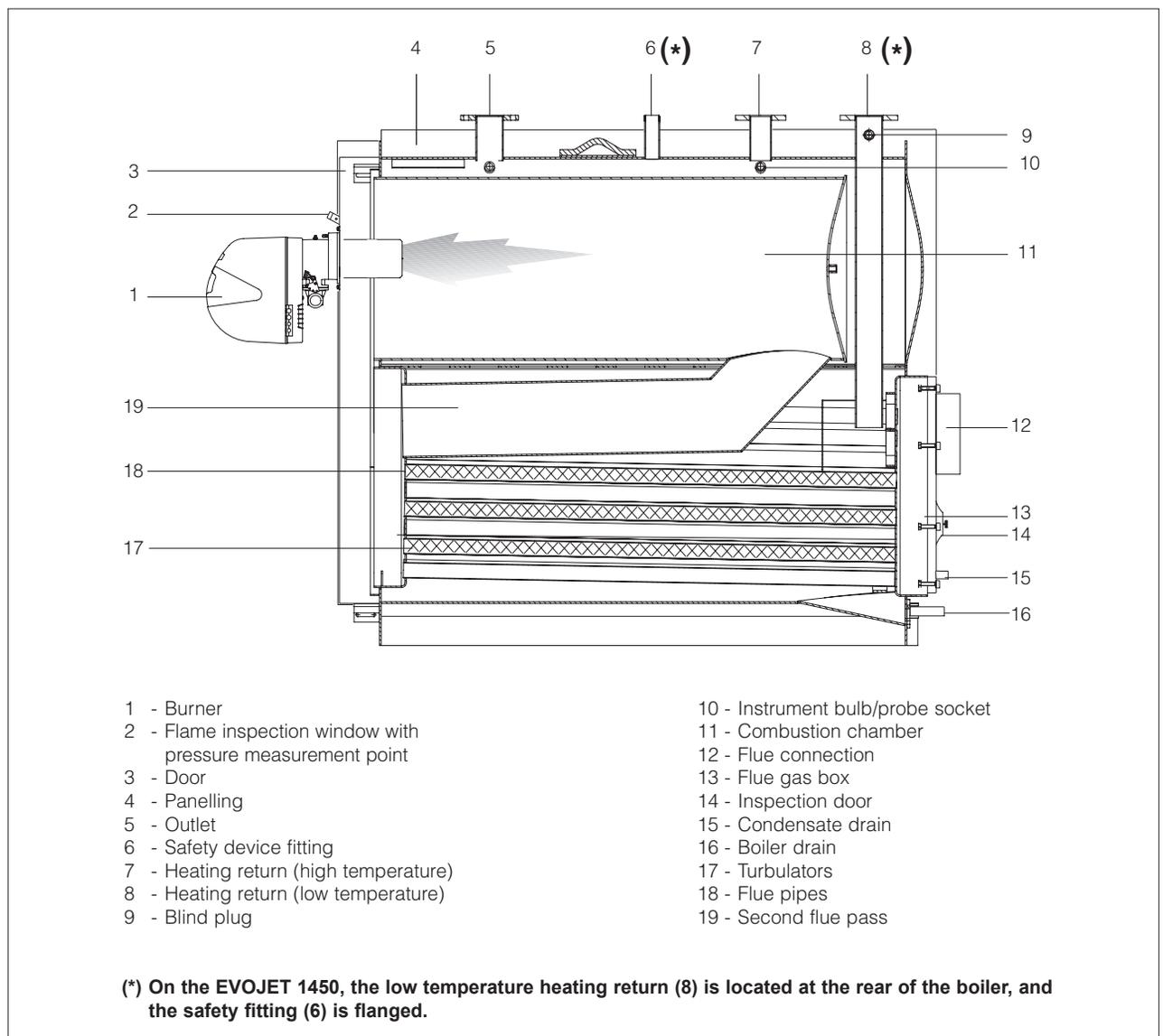
EVOJET boilers feature lightly pressurised combustion chambers for a smoother burner action, and high temperature resistant, stainless steel turbulators inside the tube bundle for maximum burner efficiency.

The boiler body is thoroughly insulated with a layer of high density glass wool.

The paint finished external panelling is also internally insulated with a layer of high density glass wool.

The boiler's front door and the flue gas chamber can be opened completely to facilitate the inspection, maintenance and cleaning of internal parts and to speed up servicing in general.

The front door can open in either direction and can be opened without removing the burner. The door is factory fitted with hinges on the left, but these can be reversed if necessary to suit individual installations.



(\*) On the EVOJET 1450, the low temperature heating return (8) is located at the rear of the boiler, and the safety fitting (6) is flanged.

All EVOJET boilers have been specified for use with a standard IDEAL TECH PRIME control.

The IDEAL TECH PRIME control panel is supplied with the boiler (UIN 212647) this is a single thermostatic control enabling single stage operation and for all modulating applications. The instructions for this control are provided in a separate manual supplied in the control panel box.

To enable two stage control a Two-Stage burner control kit (UIN 212644) should be requested.

Further control options for modulating burners via a Boiler Management System (BMS) or by an independent modulating controller may be specified when the burner type is selected.

#### **Oil & Dual Fuel - return water temperature control kit (UIN 215475)**

In oil or dual fuel applications the boiler should be prevented from condensing. To achieve this a 'return water temperature control kit' must be fitted. This kit comprises a return water thermostat that operates a 'Shunt Pump' if the return water temperature is less than 55 deg C.

The EVOJET boilers are designed to operate with Natural Gas, LPG or Oil using pressure-jet or premixed burners.

The burner specification will enable the choice of Two Stage / Fully Modulating & Low NOx operation.

The following burner & control options must be selected at the time of purchase.

#### **Two Stage Burner**

To operate a two stage burner the two stage burner control kit should be requested from the tech PRIME manual.

#### **Modulating Burner**

To operate a modulating burner the RWF50 modulating controller is required with a control thermistor. This option is selected when specifying the burner type.

#### **BMS (Boiler Management System) 0-10V**

RIELLO Burners:

For operation from a 0-10v BMS signal the RIELLO signal converter should be specified when selecting the burner.

NUWAY Burners:

The burner model which includes the 0-10v converter must be specified.

#### **Oil & Dual Fuel**

The optional controls for Oil firing burners are either RWF50 Modulating or 0-10v BMS.

#### **Commissioning**

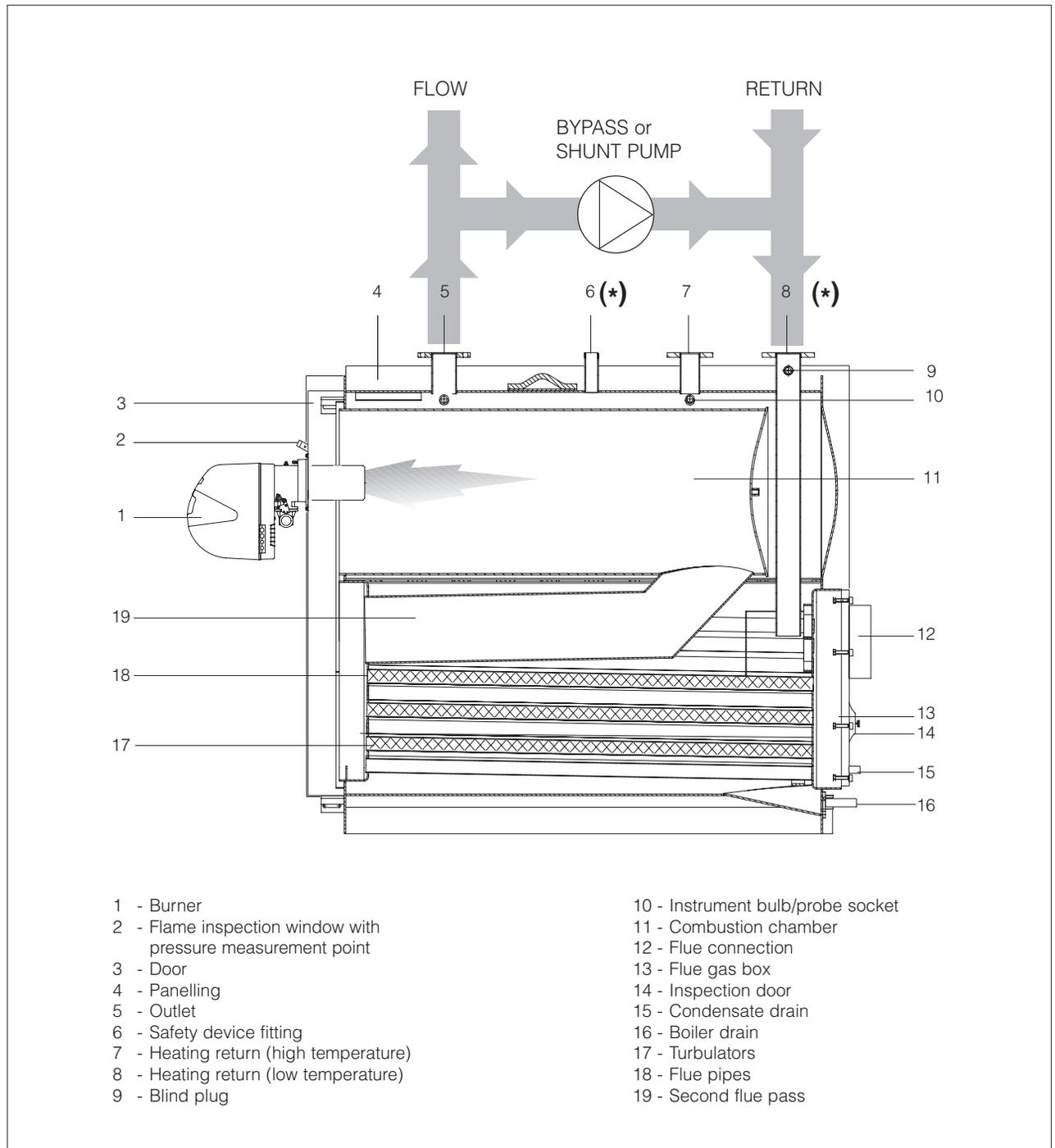
All installations must be commissioned by Ideal to activate warranty provision.

## OPERATION OF THE EVOJET BOILER WITH OIL/DUAL FUEL AS THE FUEL

For operation of the boiler with oil the following MUST be observed.

- The boiler should be applied on a system that is designed for low temperature hot water (70°C-80°C Flow, >60°C Return) operation.
- The return water MUST be connected to inlet 8, NOT inlet 7. Inlet 7 should be blanked off.
- The temperature at sensor position 9 must not be less than 60°C.
- The temperature can be maintained above 60°C by using a bypass or shunt pump (to be supplied by installer) to mix some of the hot flow water with the return water.

### Hydraulic System to Maintain Minimum Water Temperature at Return Entry to Boiler



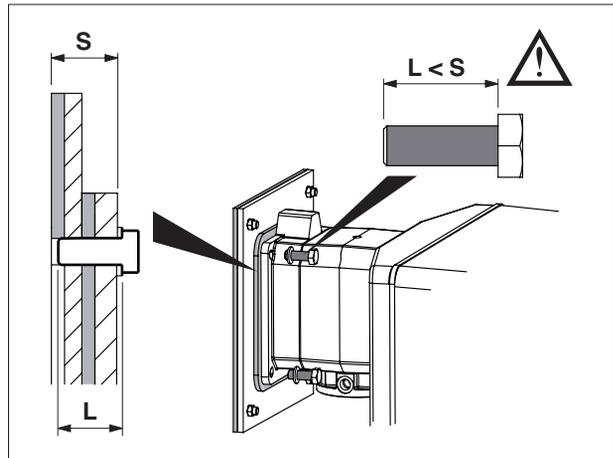
## IMPORTANT NOTES FOR BURNER INSTALLATION

Before fixing the burner to the boiler, make sure that:

- The door opens the right way (see the relevant sections for details on how to reverse the door).
- The length (L) of the burner fixing bolts is less than (S), i.e. the total depth of the seal, plates and washer.

**Longer bolts can cause the door to warp, compromising its ability to seal the boiler hermetically and permitting the release of combustion fumes.**

To ensure correct burner installation, also refer to the burner's own manual.

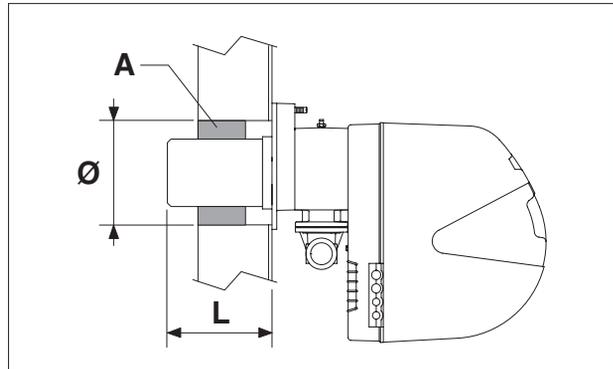


If you are installing a new boiler but re-using an old burner, always perform the following checks.

- Make sure that the performance of the old burner is adequate for the requirements of the boiler.
- Make sure that the length and diameter of the burner nozzle are as specified in the following table.



When you finish installing the burner in the boiler, fill the gap between the burner nozzle and the refractory material in the door with the ceramic insulation (A) supplied with the boiler.



MODEL	150	210	270	350	450	600	800	1000	1250	1450
Burner head L min (mm)	110	170	180	180	195	200	200	200	200	205
Ø hole in door (mm)	162	162	180	180	210	210	235	235	230	265



Do not re-use old burners if their nozzle lengths are below those specified in the table.

## PRODUCT IDENTIFICATION

EVOJET boilers are identified by two plates:

### - Serial number plate

This is located on the boiler body and specifies the serial number, model, and furnace power.

### - Data plate

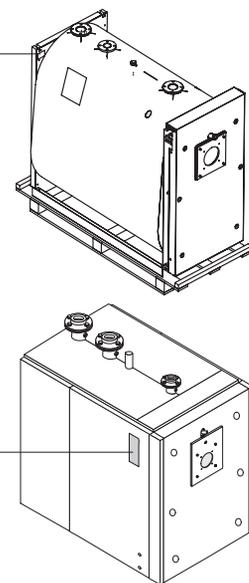
This lists the appliance's technical specifications and performance.

It comes inside the documentation envelope. On completion of the installation you MUST APPLY IT in a clearly visible position at the top of one of the side panels.

If you damage or lose this label, order a replacement immediately from Ideal Boilers Technical Assistance Service.

<b>ideal</b> Ideal Boilers Ltd, PO Box 103, National Avenue, Kingston Upon Hull, HU8 4JN		CE 0084	
Serial no.	24195191627	Max. operating pressure	PMS 6 bar
Model	EVOJET 150	Max. heat input	Qn (H) 150 kW
Fuel	ALL THE GASES		

<b>ideal</b> Ideal Boilers Ltd, PO Box 103, National Avenue, Kingston Upon Hull, HU8 4JN		CE 0084	
<b>CONDENSING BOILER</b>			
Model	EVOJET 150	Serial number	24195191627
Code	212382	PIN number	0694BR1053
Year of manufacture	2014	Category	B23
Max. heat input	Qmax(H) 150 kW	Min. heat input	Qmin(H) 111 kW
Max. useful heat output	Ph max(H) 147.8 kW	Min. useful heat output	Ph min(H) 108.2 kW
Furnace pressure	2.0 mbar	Useful heat output	Ph max 40/30° 159.7 kW
Max. operating pressure	PMS 6 bar	Water capacity	323 l
Max. permitted T°	Tmax 110 °C		
<b>OBLIGATORY GROUND CONNECTION</b>			
Fuel	ALL THE GASES		
Equipment category	SEE BURNER		
Device type	B23		
Country of destination	UK		



If these plates or any other means of clearly identifying the product are defaced, removed or lost, proper installation and servicing may be rendered difficult.

## TECHNICAL SPECIFICATIONS - GAS

Description	EVOJET BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
Fuel	all gases										
Max heat input (Qmax)	150	210	270	350	450	600	800	1000	1250	1450	kW
Min heat input (Qmin)	111	151	211	271	351	451	601	801	1001	1251	kW
Max Output Power (80/60)	146,6	205,2	264,3	343,7	441,9	589,2	785,6	982,0	1227,5	1423,9	kW
Max Output Power (50/30)	160,5	224,7	288,9	374,5	481,5	642	856	1070	1337,5	1551,5	kW
Min Output Power (80/60)	108,2	147,1	207,8	264,2	342,2	439,7	586	781	976	1219,7	kW
Efficiency Max Pn (80/60)	97,7	97,7	97,9	98,2	98,2	98,2	98,2	98,2	98,2	98,2	%
Efficiency Max Pn (50/30)	107	107	107	107	107	107	107	107	107	107	%
Efficiency Min Pn (80/60)	97,5	97,7	98,2	98,3	97,5	97,5	97,5	97,5	97,5	97,5	%
Efficiency Part Load	108,5	109,3	109,2	108,7	108,7	108,7	108,7	108,7	108,7	108,7	%
Losses from stack for sensible heat (Qmax)	1,7	1,7	1,5	1,5	1,9	1,9	1,9	1,9	1,9	1,9	%
Losses from casing with burner on	0,3	0,3	0,5	1,0	0,6	0,6	0,6	0,6	0,6	0,6	%
Constant pressure drop	<1										%
Flue gas temperature (ΔT)	< 45÷75 (*)										°C
Flue gas mass flow rate (Q max) (**)	0,07	0,09	0,12	0,15	0,20	0,26	0,33	0,43	0,54	0,63	kg/sec
Furnace pressure	2,0	2,7	3,2	4,6	5,0	5,5	5,7	6,3	6,8	7,4	mbar
Furnace volume	172,0	172,0	241,0	279,0	442,0	496,0	753,0	845,0	1037,0	1249,0	dm <sup>3</sup>
Total volume of flue gas side	272,0	292,0	413,0	482,0	737,0	860,0	1290,0	1454,0	1763,0	2097,0	dm <sup>3</sup>
Heat exchanger surface area	8,2	10,4	13,0	16,3	21,8	28,8	39,6	46,5	56,2	62,28	m <sup>2</sup>
Volumetric heat load (Q max)	872	1221	1120	1254	1018	1210	1062	1183	1205	1161	kW/m <sup>3</sup>
Specific heat load	18,0	19,9	20,4	20,9	20,1	20,3	18,5	21,0	21,7	22,6	kW/m <sup>2</sup>
Maximum condensate production	18,4	27,4	31,9	40,9	52,2	73,8	88,0	111,4	132,7	159,5	l/h
Maximum working pressure	6										bar
Maximum admissible temperature	110										°C
Maximum working temperature	95										°C
Pressure drop ΔT 10°C	43,2	36,0	54,0	46,4	33,8	30,2	128,7	121,5	100,4	150,1	mbar
Pressure drop ΔT 20°C	11,3	10,2	16,3	13,4	9,0	8,5	28,7	30,6	28,4	36,3	mbar
Water capacity	323	360	495	555	743	770	1320	1395	1825	1900	l

(\*) Depends on return temperature (30-60°C)

(\*\*) At Pn max and output T = 80°C, return T = 60°C and CO<sub>2</sub> = 10.3%



The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue.



Values obtained with RIELLO burners: BS - RS - RS.../M - RS.../M BLU.

Description	EVOJET BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
Fuel	low sulfur oil (<50ppm)										
Max heat input (Qmax)	150.0	210.0	270.0	350.0	450.0	600.0	800.0	1000.0	1250.0	1450.0	kW
Min heat input (Qmin)	111.0	151.0	211.0	271.0	351.0	451.0	601.0	801.0	1001.0	1251.0	kW
Max output power (80/60)	145,7	203,7	263,8	343,7	441,9	589,2	785,6	982,0	1227,5	1423,9	kW
Min output power (80/60)	108.2	147.1	207.8	264.2	342.2	439.7	586.0	781.0	976.0	1219.7	kW
Efficiency max Pn (80/60)	97,1	97,0	97,7	98,2	98,2	98,2	98,2	98,2	98,2	98,2	%
Efficiency min Pn (80/60)	97.5	97.4	98.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5	%
Losses from stack (sensible)	1.7	1.7	1.5	1.5	1.9	1.9	1.9	1.9	1.9	1.9	%
Losse from casing	0.3	0.3	0.5	1.0	0.6	0.6	0.6	0.6	0.6	0.6	%
Constant pressure drop	< 1.0										%
Flue gas temperature ( $\Delta T$ )	75.0										$^{\circ}C$
Flue gas mass flow rate (Qmax) **	0.07	0.09	0.12	0.15	0.20	0.26	0.33	0.43	0.54	0.63	kg/sec
Furnace pressure	2.0	2.7	3.2	4.6	5.0	5.5	5.7	6.3	6.8	7.4	mbar
Furnace volume	172.0	172.0	241.0	279.0	442.0	496.0	753.0	845.0	1037.0	1249.0	dm <sup>3</sup>
Total volume of fue gas side	272,0	292,0	413.0	482.0	737.0	860.0	1290.0	1454.0	1763.0	2097.0	dm <sup>3</sup>
Heat exchanger surface area	8.2	10,4	13.0	16.3	21.8	28.8	39.6	46.5	56.2	62.3	m <sup>2</sup>
Volumetric heat load (Qmax)	872	1221	1120	1254	1018	1210	1062	1183	1205	1161	kW/m <sup>3</sup>
Specific heat load	18,0	19,9	20.4	20.9	20.1	20.3	18.5	21.0	21.7	22.6	kW/m <sup>2</sup>
Maximum working pressure	6.0										bar
Max admissible temperature	110.0										$^{\circ}C$
Max working temperature	95.0										$^{\circ}C$
Pressure drop $\Delta T$ 10 $^{\circ}C$	43.2	36.0	54.0	46.4	33.8	30.2	128.7	121.5	100.4	150.1	mbar
Pressure drop $\Delta T$ 20 $^{\circ}C$	11.3	10.2	16.3	13.4	9.0	8.5	28.7	30.6	28.4	36.3	mbar
Water capacity	323.0	360.0	495.0	555.0	743.0	770.0	1320.0	1395.0	1825.0	1900.0	L

(\*) Depends on return temperature (30-60 $^{\circ}C$ )

\*\* At Pn max and output, flow T=80 $^{\circ}C$ , return T=60 $^{\circ}C$  and CO<sub>2</sub> = 12.5%

## INITIAL START-UP

### COMMISSIONING

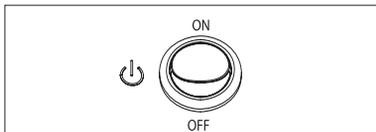
First commissioning must be undertaken by a combustion specialist appointed by the burner supplier. Installation, commissioning and maintenance should be in compliance with BS6644.

Once this has been done, the boiler can be left to function automatically.

- Check that the gas cock and heating water cock are shut.

- While the system is still cold, check that working pressure in the heating circuit is **over 1 bar** but below the maximum limit specified for the appliance.

- Since the control panel incorporates a temperature control function, make sure that the control panel is switched on.



- Adjust the timer thermostat (if installed) or the temperature control to the desired temperature (~20° C).

- Make the settings as instructed in the instruction manual for your control panel.

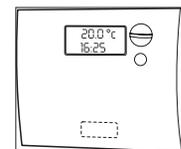
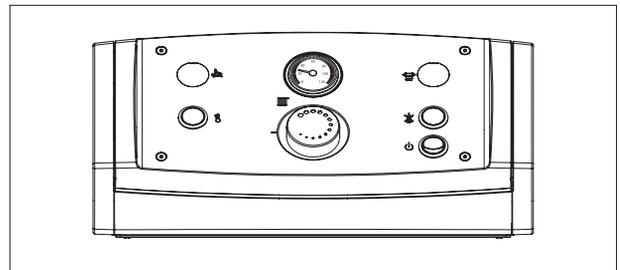
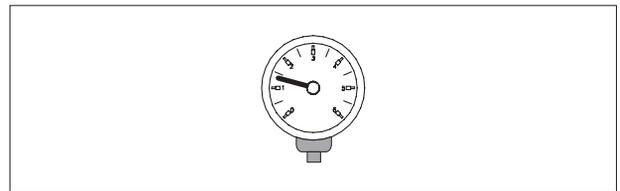
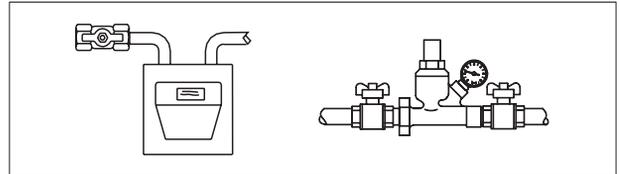
The burner should now ignite and remain in operation until the set temperature is reached.

The burner will then switch off and on automatically to maintain the set temperature without further operator action.

If any ignition faults or malfunctions occur, the burner performs a "LOCKOUT SHUTDOWN". This is shown by the red button light on the burner and by the warning light on the control panel.

Under certain circumstances, such as after long periods of disuse, the service engineer responsible for the boiler may need to re-start it without involving the Technical Assistance Service.

To do so, perform the following checks and operations:



 If a "LOCKOUT SHUTDOWN" occurs, wait about 30 seconds before resetting the burner.

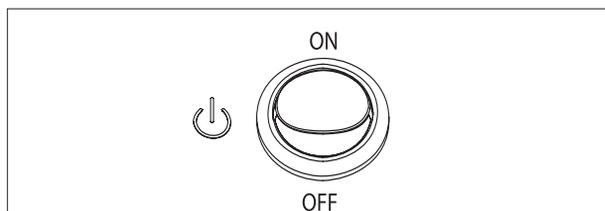
To reset the burner, press the red button light on the burner and wait until the flame ignites.

Repeat this operation 2 -3 times at the most. If the problem persists after that, call Ideal Boilers Technical Assistance Service.

## PREPARING FOR EXTENDED PERIODS OF DISUSE

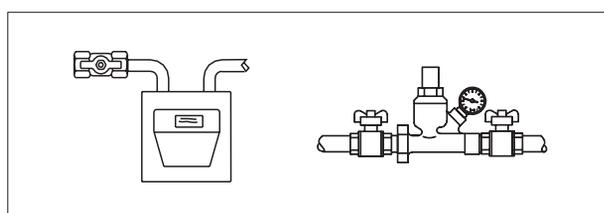
If the boiler is not going to be used for an extended period of time, perform the following operations:

- Turn the control panel power switch OFF.



- Turn the system's main power switch OFF.

- Close the fuel cock and heating water cock.



- Drain the central heating circuit if there is any risk of freezing.



Contact Ideal Boilers Technical Assistance Service if you encounter any problems in completing the above procedure.

## CLEANING

Use a cloth damped in soapy water to clean the boiler's external panelling.

To remove stubborn marks, use a cloth damped in a 50% mix of water and denatured alcohol or a suitable cleaning product.

Carefully dry the boiler after cleaning.



**Do not use abrasive** cleaning pads or powder detergents.



**Never** clean the boiler without first disconnecting it from the mains electricity supply by turning the main power switch and the control panel switch OFF.



The combustion chamber and flues must be cleaned periodically by a qualified technician.

## MAINTENANCE

THE PERSON RESPONSIBLE FOR SYSTEM OPERATION MUST ENSURE THAT PROFESSIONALLY QUALIFIED PERSONNEL UNDERTAKE PERIODIC MAINTENANCE AND COMBUSTION EFFICIENCY MEASUREMENTS. THIS SHOULD BE CONDUCTED IN COMPLIANCE WITH BS6644.



EVOJET steel boilers come in **2 separate crates**:

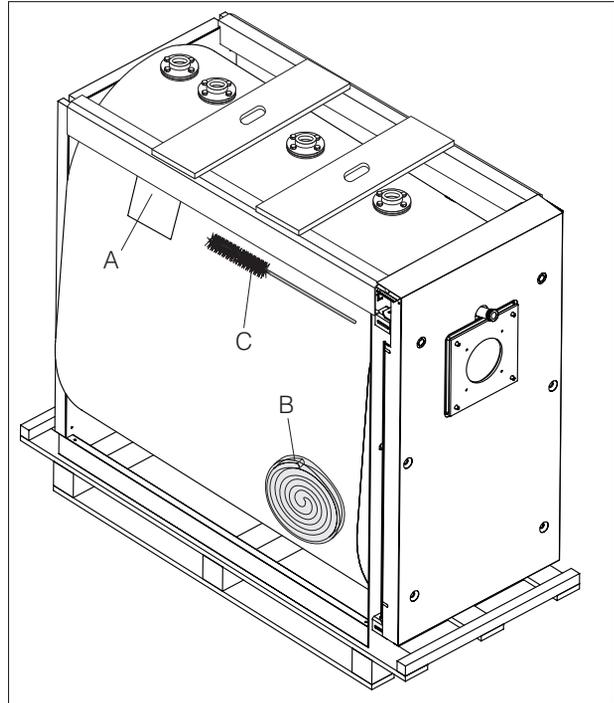
**1) BOILER BODY CRATE**, bearing the documentation

envelope (A) and containing:

- Instruction manual;
- Data label (to be applied to the panelling on completion of the installation);
- Certificate of Warranty and water test certificate;
- Bar code labels.
- Spare parts catalogue
- Ceramic insulation (B)
- Cleaning brush (C).

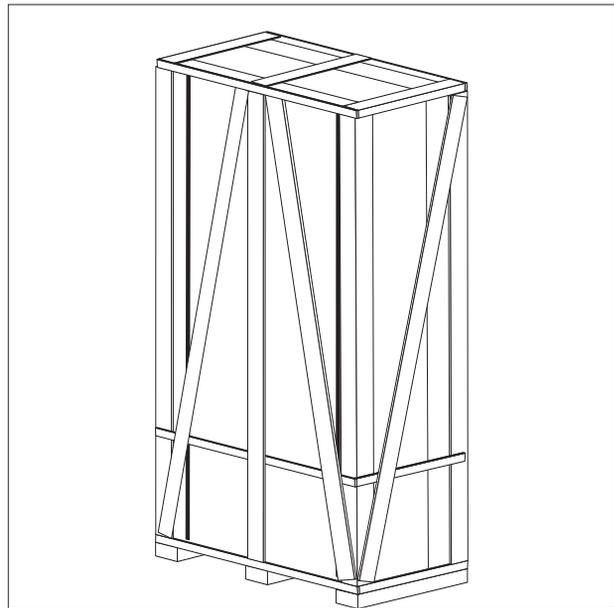


The instruction manual is an integral part of the boiler. Once located, read it thoroughly and keep it safe.



**2) PANELLING CRATE**, complete with assembly

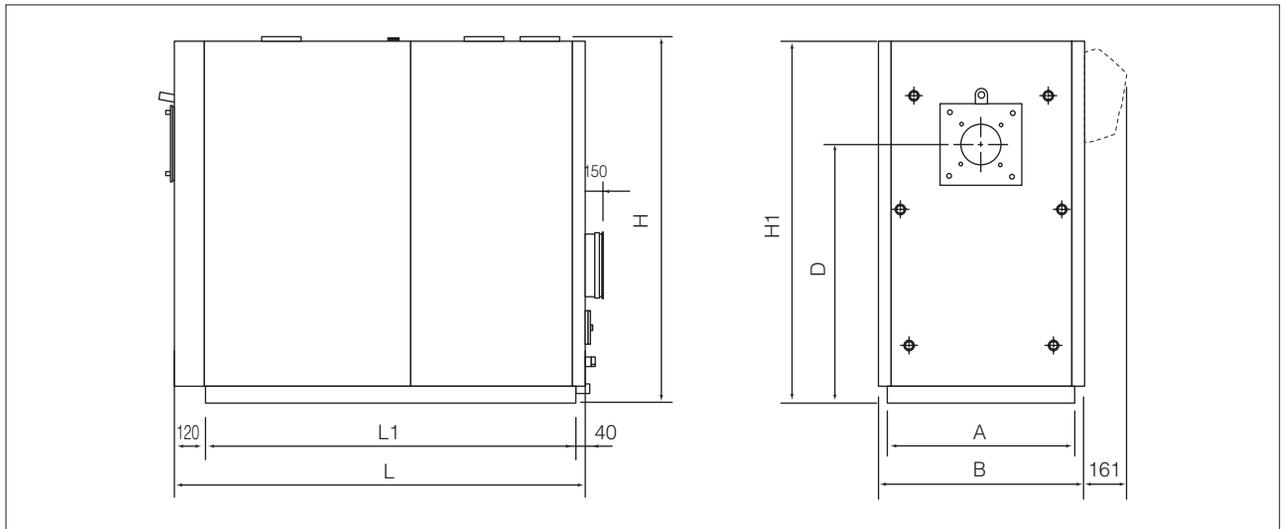
accessories, protected by cardboard packaging and a wooden crate.



**IMPORTANT!**

For the boiler to function correctly, it must be connected to a IDEAL TECH PRIME control panel and dedicated control accessories.

## OVERALL DIMENSIONS AND WEIGHTS



DESCRIPTION	BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
A - Base width	690	690	750	750	790	790	950	950	1070	1130	mm
B - Overall width	740	740	850	850	900	900	1060	1060	1180	1225	mm
L - Depth	1455	1455	1630	1830	2035	2235	2560	2810	3010	3080	mm
L1 - Base depth	1295	1295	1470	1670	1875	2075	2400	2650	2850	2850	mm
H - Height of water fittings	1315	1315	1450	1450	1630	1630	1910	1910	2030	2180	mm
H1 - Boiler height	1300	1300	1437	1437	1615	1615	1900	1900	2015	2167	mm
D - Height of burner plate	925	925	1030	1030	1235	1235	1390	1390	1495	1590	mm
Weight of boiler	510	530	677	753	1095	1250	1870	2085	2515	3050	Kg
Weight of panelling	50	50	60	70	90	120	140	160	215	230	Kg

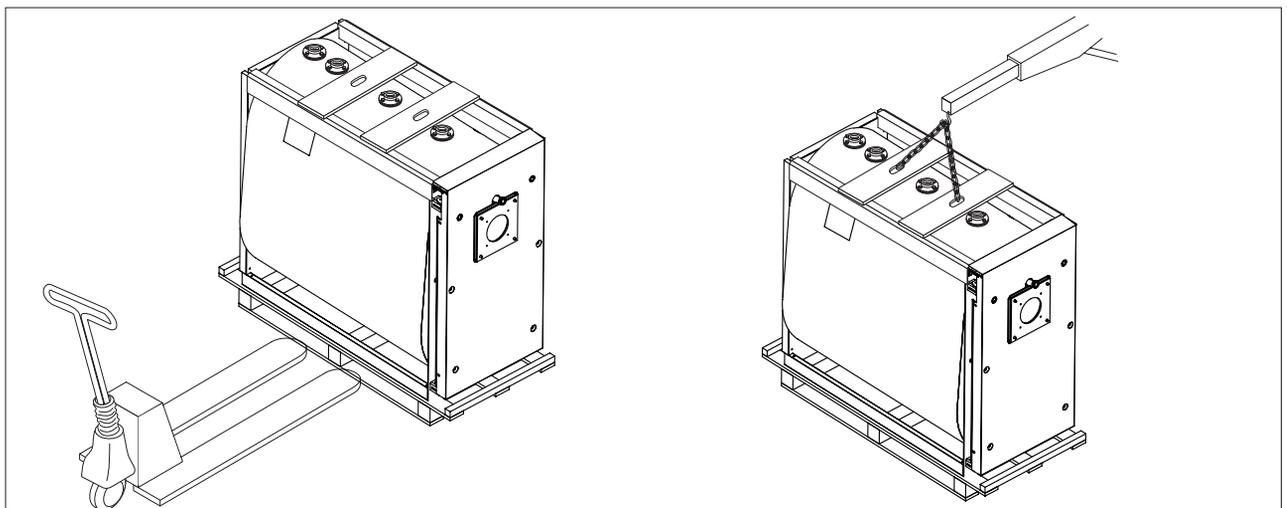
## HANDLING

EVOJET steel boilers are fitted with lifting attachments. Take great care when moving them and only use lifting equipment of adequate capacity.

Remove the transport straps and remove the wooden pallet before positioning the boiler.



Wear suitable personal protective equipment and use suitable safety devices.



## PLACE OF INSTALLATION

**EVOJET** steel boilers must be installed in a dedicated boiler room, with adequately sized vents, in compliance with BS6644.

If at all possible, the boiler should be installed on a raised base to stop the burner fan sucking up dust and to facilitate installation of a condensate drain system.

The boiler condensate drain must be located above the height of the lid of the system's condensate neutraliser.

The gas supply pipe must be installed in such away that the boiler's panelling can be removed and the front door opened without having to remove the burner.



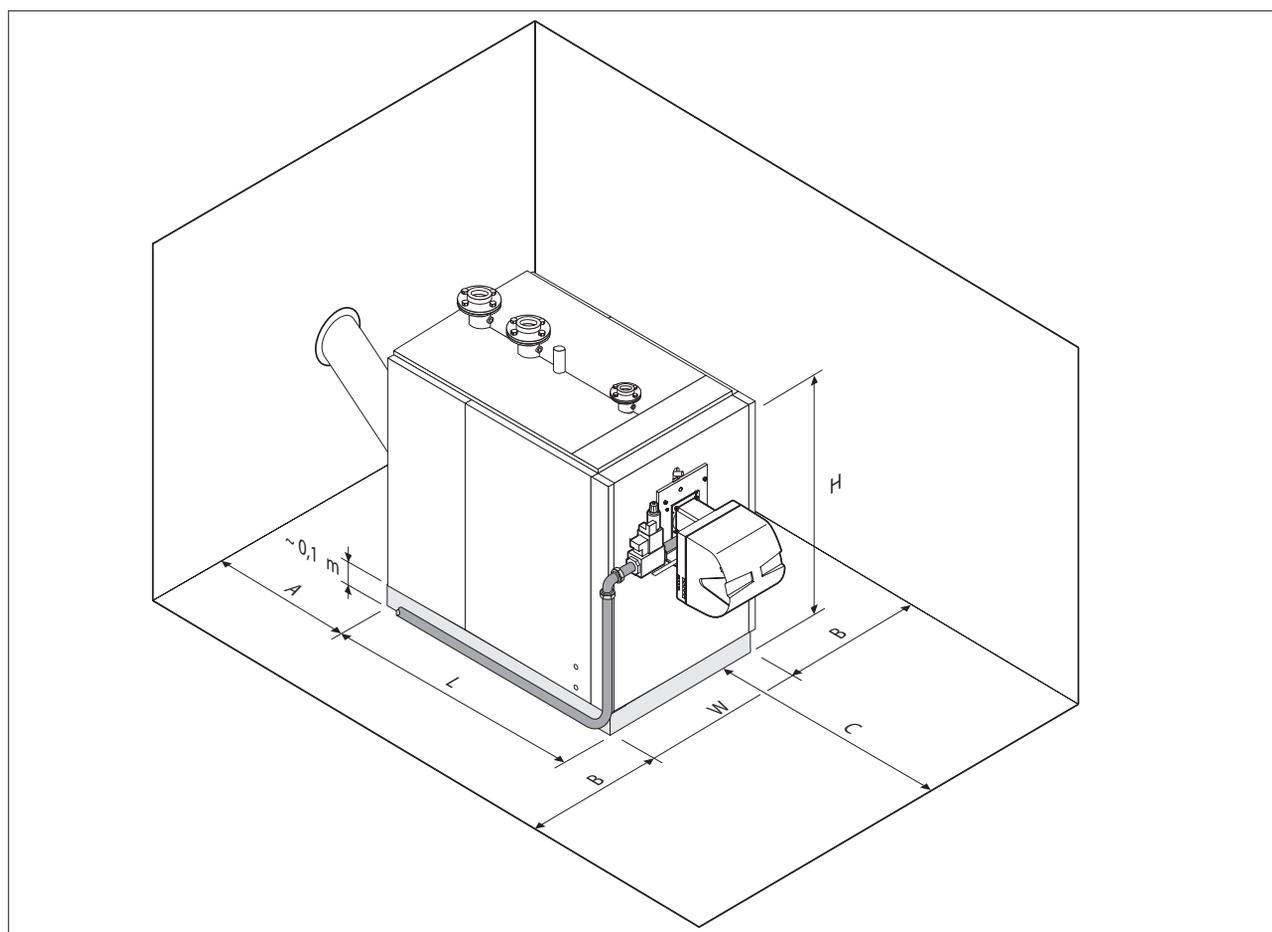
When installing the boiler, allow sufficient space around it to access all safety and control devices and to permit easy maintenance.



If the specific weight of the gas supply to the burner is greater than the specific weight of air, install all electrical parts at least 500 mm above floor level.



Do not install the boiler outdoors. It is not designed to work outdoors and is not fitted with the necessary automatic anti-frost systems to do so.



DESCRIPTION	BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
W - Width (mm)	750	750	850	850	900	900	1000	1000	1200	1250	mm
L - Depth (mm)	1350	1350	1620	1820	1930	2140	2400	2700	2920	3100	mm
H - Overall height (boiler + base) (mm)	1420	1420	1540	1540	1700	1700	2010	2010	2130	2280	mm

DESCRIPTION	CLEARANCES	
	Minimum	Recommended
A - Rear (mm)	1000	1000
B - Side (mm)	300* 600 (1450 model)	1000
C - Front	Burner Length	L

\*Side panel may need fitting prior to placing boilers in cascade

## WATER IN CENTRAL HEATING SYSTEMS: INSTRUCTIONS FOR THE DESIGN, INSTALLATION AND MANAGEMENT OF CENTRAL HEATING SYSTEMS

### 1. Chemical and physical characteristics of water

The chemical and physical characteristics of water used in central heating systems must conform to the requirements of EN 14868 standard and to the following tables:

STEEL BOILERS with furnace power < 150 kW			
		Water used for first filling	Water with system operating (*)
pH		6-8	7,5-9,5
Hardness	°fH	< 10	< 10
Electrical conductivity	µS/cm		< 150
Chlorides	mg/l		< 20
Sulphides	mg/l		< 20
Nitrides	mg/l		< 20
Iron	mg/l		< 0,5

STEEL BOILERS with furnace power > 150 kW			
		Water used for first filling	Water with system operating (*)
pH		6-8	7,5-9,5
Hardness	°fH	< 5	< 5
Electrical conductivity	µS/cm		< 100
Chlorides	mg/l		< 10
Sulphides	mg/l		< 10
Nitrides	mg/l		< 10
Iron	mg/l		< 0,5

(\*) values for water in system after 8 weeks of functioning

General note on water used to top up systems:

- If softened water is used to top up a system, 8 weeks of functioning after topping up, verify that the water in the system respects the above limits, in particular for electrical conductivity.
- This check is not necessary if demineralised water is used to top up the system.

### 2. Central heating systems

- ⚠ Do not use automatic filling devices to add water to central heating systems. Use a manual device instead and record top-ups in the system service book.
- ⚠ If a system comprises a number of boilers, when that system is first put into service, make sure that all the boilers function simultaneously or on a short interval rotation basis in order to evenly distribute initial limescale deposits.
- ⚠ When you finish installing a system, always flush it out to remove installation residues.
- ⚠ Water used to fill a system for the first time and water used to top it up must always be filtered (using synthetic or metal mesh filters with a filtration rating of no less than 50 microns) to prevent sludge from forming and triggering deposit corrosion.
- ⚠ Before re-filling an existing system, clean and flush it out thoroughly. Only fill the boiler after the central heating circuit has been thoroughly flushed out.

#### 2.1 New central heating systems

Initial filling of the system must be performed slowly. In theory, once filled and bled of all air, a heating circuit should not need topping up.

Systems should also be operated at maximum working temperature the first time they are started up, in order to facilitate de-aeration. (Gas is not released from the water at low temperatures.)

#### 2.2 Reconditioning old central heating systems

If a boiler has to be replaced, do not refill the entire central heating circuit if the quality of water in it conforms to requirements. If the quality of water fails to conform to requirements, either recondition the old water or separate the water circuits (water in the boiler circuit must conform to requirements).

### **3. Corrosion**

#### **3.1 Deposit corrosion**

Deposit corrosion is an electro-chemical phenomenon caused by the presence of foreign bodies (sand, rust, etc.) in the water mass. These solid substances generally form deposits (sludge) in the bottom of the boiler, in the tube heads and in the joins of tube bundles.

These parts of the boiler can therefore be affected by micro-corrosion caused by the electrochemical potential difference created between the metal parts in contact with impurities and other metal parts around them.

#### **3.2 Stray current corrosion**

Stray current corrosion is caused by the different electrical potentials of the water in the boiler and the metal body of the boiler or piping. Stray current corrosion is easily identified by the regular tiny conical holes it leaves.



All metallic parts should be grounded by an efficient earth cable for this reason.

### **4. Eliminating air and gas from central heating systems**

If oxygen enters a circuit continuously or even intermittently (e.g. in under-floor heating systems whose pipes are not protected by impermeable synthetic sheaths, in circuits with open expansion vessels, or in circuits that require frequent top-ups) always separate the boiler's water circuit from the central heating circuit.

#### **Mistakes to avoid and precautions**

From what has been said above we can see that it is essential to avoid two main factors that could lead to corrosion. These are contact between system water and air and the continuous addition of fresh water to the circuit.

To eliminate contact between system water and the air (thus avoiding oxygenation of the system water), we need to:

- ensure that the expansion vessel is a closed vessel, and of the correct size and pre-charge pressure (the pressure to be checked periodically);
- ensure that the system is always kept at a pressure higher than atmospheric pressure at all points (including the pump suction side) and under all operating conditions (precisely because the seals, gaskets and joins in a water circuit are designed to resist pressure from within, but not to resist a vacuum within);
- ensure that no part of the system is made from materials that are permeable to gases (e.g. plastic pipes with no oxygen barrier destined for under-floor heating systems).



**Finally, never forget that boiler failures caused by encrustation and corrosion are not covered under the terms of the warranty.**

### **5. Water Treatment**

#### **CENTRAL HEATING**

The EVOJET range of boilers have a stainless steel heat exchanger.

#### **IMPORTANT.**

**The application of any other treatment to this product may render the guarantee of Ideal Boilers Invalid.**

Ideal Boilers recommend Water Treatment in accordance with the Benchmark Guidance Notes on Water Treatment in Central Heating Systems.

If water treatment is used Ideal Boilers recommend only the use of SCALEMASTER SM-1 PRO, FERNOX, MB-1, ADEY MC1, SENTINEL-X100, CALMAG CM100 inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

#### **Notes.**

1. *It is most important that the correct concentration of the water treatment products is maintained in accordance with the manufacturers' instructions.*
2. *If the boiler is installed in an existing system any unsuitable additives MUST be removed by thorough cleansing. BS 7593:2006 details the steps necessary to clean a domestic heating system.*
3. *In hard water areas, treatment to prevent lime scale may be necessary - however the use of artificially softened water is NOT permitted.*
4. *Under no circumstances should the boiler be fired before the system has been thoroughly flushed.*

For further information contact:

Fernox Cookson Electronics  
Forsyth Road, Sheerwater, Woking  
Surrey GU21 5RZ  
+44 (0) 870 601 5000

Sentinel Performance Solutions  
The Heath Business & Technical Park  
Runcorn, Cheshire WA7 4QX  
Tel: 0800 389 4670  
www.sentinel-solutions.net

Scalemaster Water Treatment Products  
Emerald Way, Stone, Staffordshire  
ST15 0SR  
Tel:01785 811636

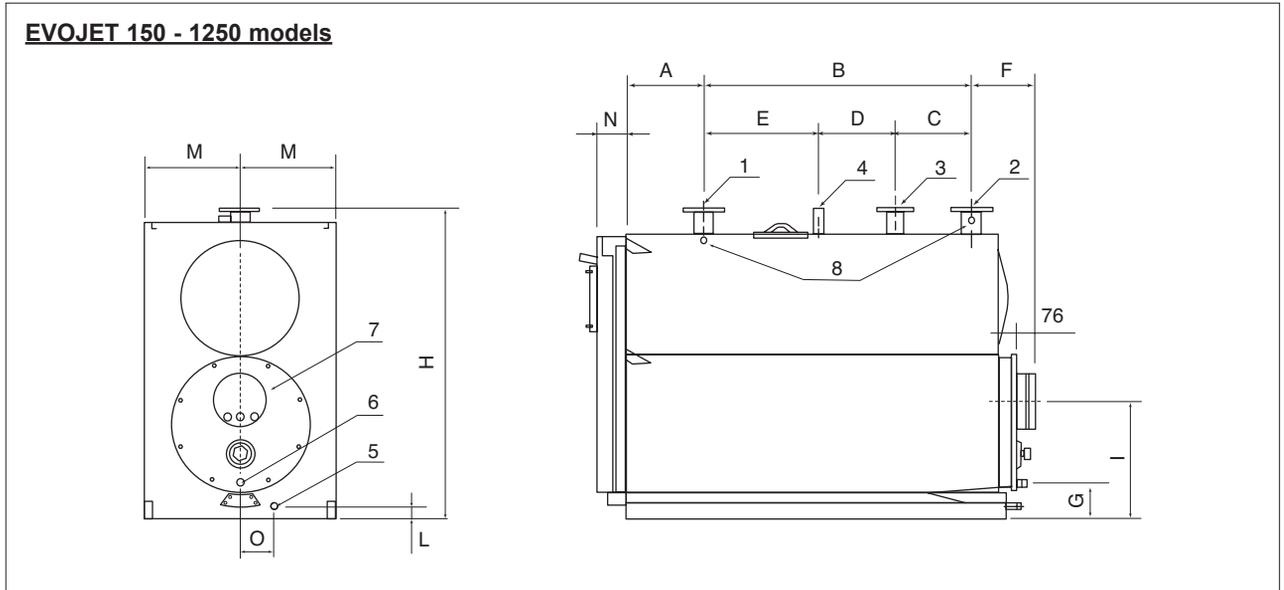
Calmag Ltd.  
Unit 3-6, Crown Works  
Bradford Road, Sandbeds, Keighley  
West Yorkshire BD20 5LN  
Tel: +44 (0) 1535 210 320

Adey Professional Heating Solutions  
Gloucester Road,  
Cheltenham GL51 8NR  
Tel: +44 (0) 1242 546700

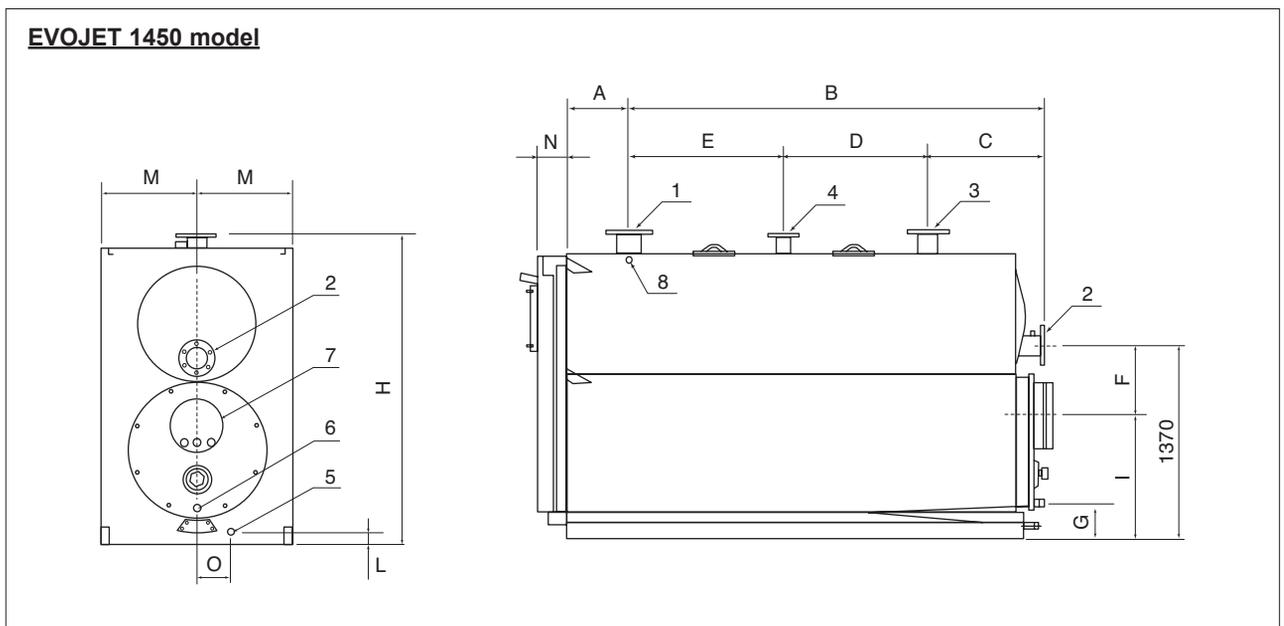
## WATER CONNECTIONS

**EVOJET** boilers are designed and made for use in central heating installations, but can also be used for domestic hot water production if connected to suitable sub-systems. Water fittings are as specified in the following table:

### EVOJET 150 - 1250 models



### EVOJET 1450 model



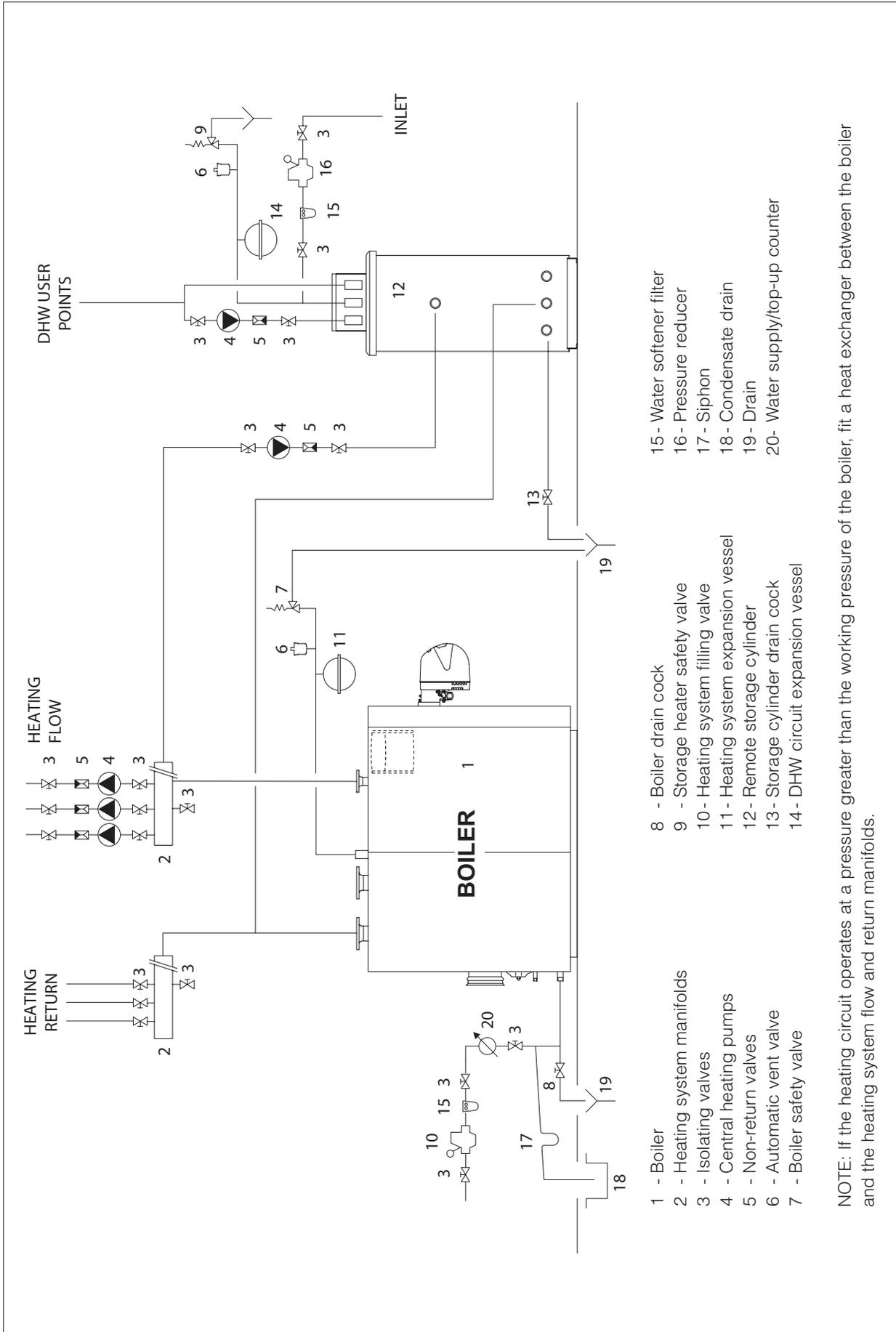
**!** The choice of system components and the method of their installation are left up to the installer. Installers must use their expertise to ensure proper installation and functioning in compliance with all applicable legislation.

**!** Circuits filled with anti-freeze must be fitted with water disconnectors.

Description	BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
1 - Heating flow (*)	65	65	65	80	100	100	125	125	150	150	DN
2 - Heating return 1 (Low Temperature) (*)	65	65	65	80	100	100	125	125	150	150	DN
3 - Heating return 2 (High Temperature) (*)	50	50	50	65	80	80	80	80	100	100	DN
4 - Safety device fitting	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/2	1" 1/2	80	80	80	80	Ø "- DN
5 - Boiler drain fitting	1"	1"	1"	1"	1"	1"	1"1/4	1"1/4	1"1/4	1"1/4	Ø"
6 - Condensate drain fitting	1"	1"	1"	1"	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1"1/4	1"1/4	Ø "- DN
7 - Flue gas exhaust fitting	200	200	250	250	300	300	350	350	400	450	Ø mm
8 - Instrument bulb/probe sockets	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	3 x 1/2"	n° x Ø "
A - Distance from burner head to heating flow outlet	300	300	300	315	311	311	410	410	430	440	mm
B - Distance from heating flow outlet to return 1	885	885	1050	1235	1400	1600	1800	2050	2200	2585	mm
C - Distance between heating returns 1 & 2	200	200	300	250	250	300	350	350	350	735	mm
D - Distance between heating return 2 and safety device fitting	285	285	300	450	600	700	750	850	850	850	mm
E - Distance between heating flow outlet and safety device fitting	400	400	450	535	550	600	700	855	1000	1000	mm
F - Distance between heating return 1 and flue gas outlet	200	200	225	225	270	270	325	325	345	560	mm
G - Height of condensate drain	160	160	165	165	215	215	195	195	225	235	mm
H - Height of boiler flanges	1340	1340	1450	1450	1630	1630	1910	1910	2030	2180	mm
I - Height of flue gas outlet	405	405	545	545	645	645	680	680	720	805	mm
L - Height of boiler drain fitting	60	60	55	55	75	75	95	95	105	85	mm
M- Boiler centreline	345	345	375	375	395	395	475	475	535	565	mm
N- Distance from burner head to door	110	110	120	120	125	125	125	125	140	150	mm
O - Distance from Boiler drain fitting	132	132	137	137	125	125	175	175	180	180	mm

(\*) All flanged connections are PN6 according to EN 1092-1.

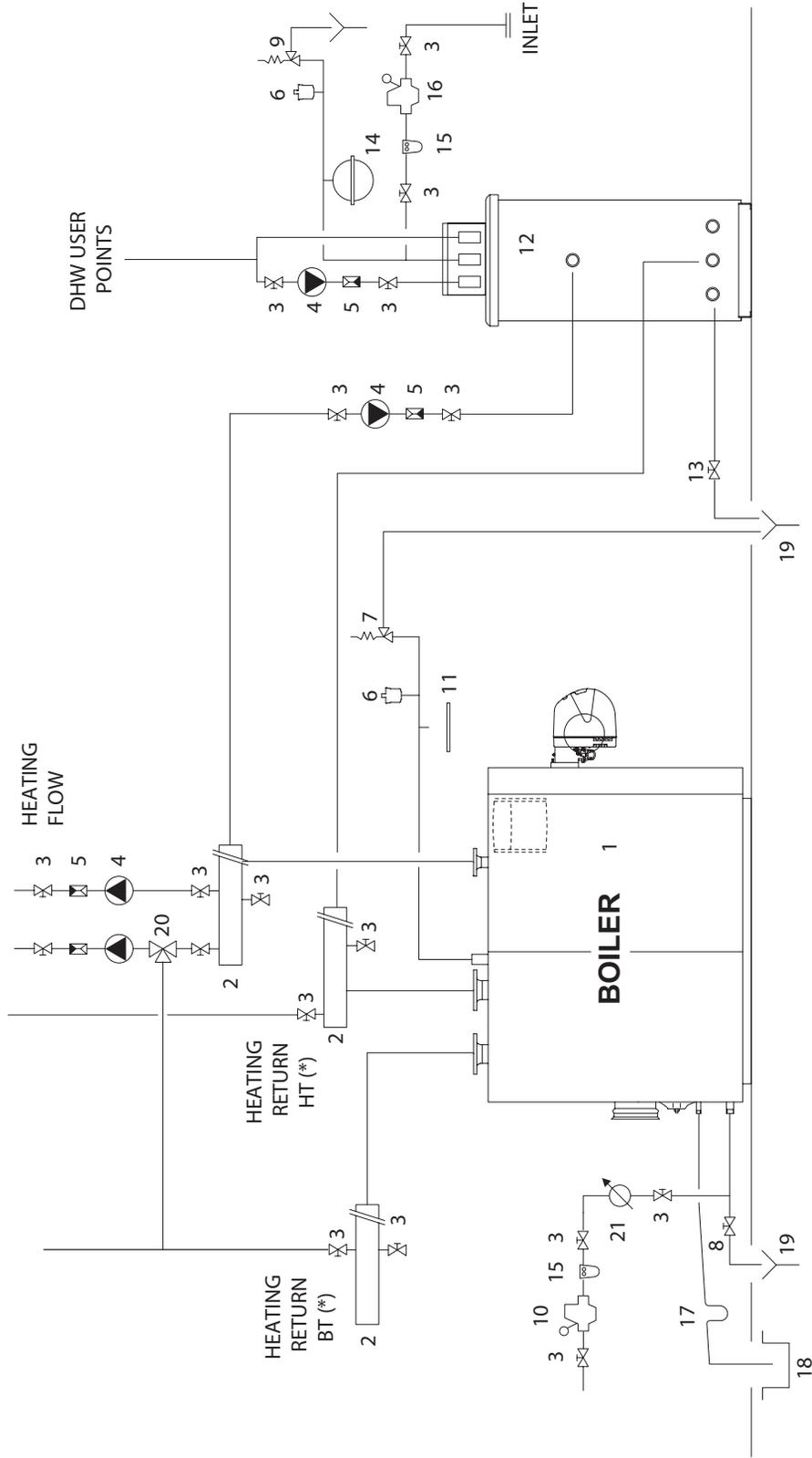
**FUNCTIONAL LAYOUT - 1 - DIRECT SYSTEMS**



- 1 - Boiler
- 2 - Heating system manifolds
- 3 - Isolating valves
- 4 - Central heating pumps
- 5 - Non-return valves
- 6 - Automatic vent valve
- 7 - Boiler safety valve
- 8 - Boiler drain cock
- 9 - Storage heater safety valve
- 10 - Heating system filling valve
- 11 - Heating system expansion vessel
- 12 - Remote storage cylinder
- 13 - Storage cylinder drain cock
- 14 - DHW circuit expansion vessel
- 15 - Water softener filter
- 16 - Pressure reducer
- 17 - Siphon
- 18 - Condensate drain
- 19 - Drain
- 20 - Water supply/top-up counter

**NOTE:** If the heating circuit operates at a pressure greater than the working pressure of the boiler, fit a heat exchanger between the boiler and the heating system flow and return manifolds.

**FUNCTIONAL LAYOUT - 2 - DIRECT AND MIXED SYSTEMS**



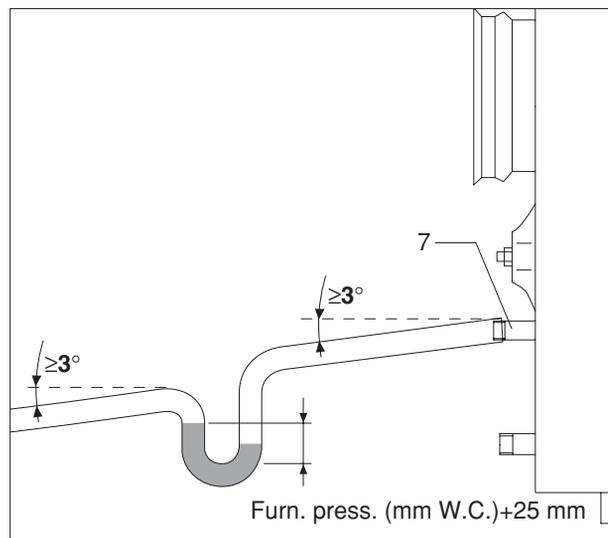
- 1 - Boiler
  - 2 - Heating system manifolds
  - 3 - Isolating valves
  - 4 - Central heating pumps
  - 5 - Non-return valves
  - 6 - Automatic vent valve
  - 7 - Boiler safety valve
  - 8 - Boiler drain cock
  - 9 - Storage heater safety valve
  - 10 - Heating system filling valve
  - 11 - Heating system expansion vessel
  - 12 - Remote storage cylinder
  - 13 - Storage cylinder drain cock
  - 14 - DHW circuit expansion vessel
  - 15 - Water softener filter
  - 16 - Pressure reducer
  - 17 - Siphon
  - 18 - Condensate drain
  - 19 - Drain
  - 20 - Servo valve
  - 23 - Water supply/top-up counter
- (\*) - HT = High Temperature  
BT = Low Temperature

## DRAINING THE CONDENSATE

EVOJET condensing boilers produce a flow of condensate that varies according to operating conditions. The maximum hourly production of condensate is shown in the technical specifications table for each individual model. The condensate drain system must be suitably dimensioned to cope with the flow produced. Also, pipe and hose diameter must not be less than 1" at any point. This diameter corresponds to that of the boiler's condensate drain fitting (7).

The connection to the waste water drain pit must be made in compliance with national and local legislation and standards.

To prevent combustion fumes from leaking into the air of the boiler room, the condensate drain pipe must incorporate a siphon creating a minimum head equivalent to the furnace pressure (see the 'Technical Specifications' table on page 9) plus 25 mm. The connecting pipes between the boiler, siphon and waste water drain pit must be laid at a minimum down slope of 3° and must be installed in such a way as to prevent any build-up of condensate.



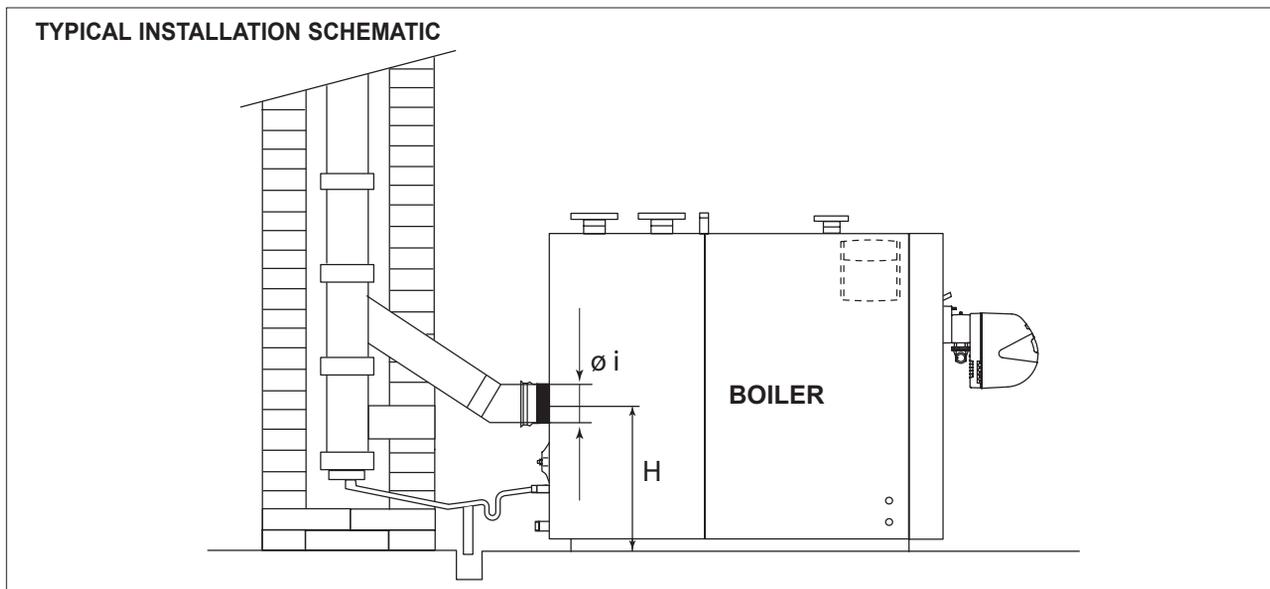
Es: (EVOJET 270)

- Furnace pressure = 3.2 mbar = 32 mm W.C.
- siphon head = 32 + 25 = 57 mm (approx.)

## COMBUSTION GAS EXHAUST

The flue gas exhaust and stack connection must be made in compliance with applicable laws and standards, using heat resistant, condensate resistant and stress resistant rigid pipe and sealed joints.

The stack must be fitted with a condensate trap and drain and the flue gas exhaust pipe must be installed at a slope of at least 3° towards the boiler.



DESCRIPTION	BOILER model										
	150	210	270	350	450	600	800	1000	1250	1450	
H -Height of flue gas outlet	515	515	545	545	645	645	680	680	720	805	mm
Ø i -Diameter of flue gas fitting	200	200	250	250	300	300	350	350	400	450	mm

**!** The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue.

**!** Inadequate or badly dimensioned stacks and flues can increase combustion noise and affect combustion parameters.

**!** Joints must be sealed using suitable materials (e.g. filler, mastic or silicon based sealant).

**!** Uninsulated flue pipes are potentially dangerous and can cause burns.

## INSTALLATION IN B23P CONFIGURATION

**!** The B23P configuration may only be adopted with premix gas burners.  
The table below specifies maximum permissible flue back-pressure. Make sure that flue pipes are of a suitable class for the values specified in the table.

BOILER model	RIELLO PREMIX BURNER model	Maximum flue pressure (*) (Pa)	Boiler noise level (**) (db(A))
EVOJET 150	RX180S/PV	150	68
EVOJET 210	RX250S/PV	150	68
EVOJET 270	RX360S/PV	150	69
EVOJET 350	RX500S/PV	180	67
EVOJET 450	RX500S/PV	180	74
EVOJET 600	RX850S/PV	180	74
EVOJET 800	RX1000S/PV	200	76
EVOJET 1000	RX1000S/PV	200	76

(\*) With B23P exhaust configuration (only with RX Series premix burners).

(\*\*) Noise level measured as continuous sound pressure weighted according to scale A, at 1 metre from the appliance.

## DOOR HINGES

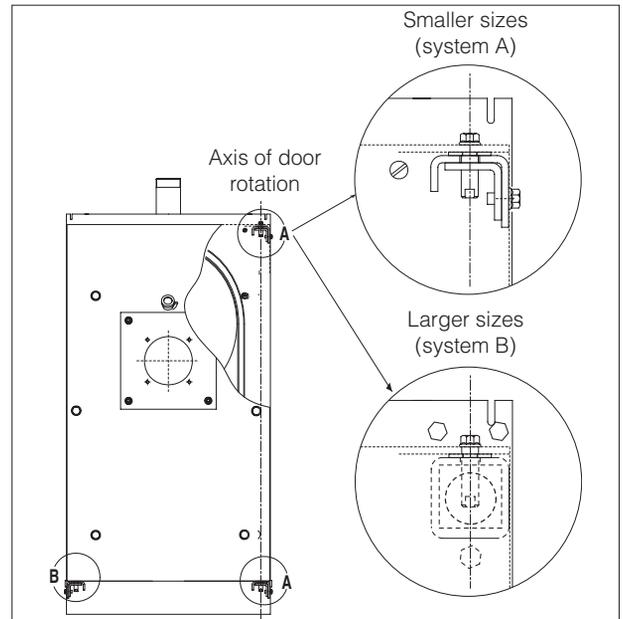
EVOJET boilers are pre-fitted with three hinges so that the direction of opening of the door can be rapidly reversed.

Once you have checked that the default direction of opening is as required, or have reversed the direction of opening as instructed in the 'Changing the direction of door opening' section, remove the spare hinge assembly 'B' (screw, bushing and washer) opposite the pivot side of the door.

Two different door hinging systems have been used to satisfy varying constructional requirements:

**System A** (on the smaller sizes) - comes with a bracket and two hinge fixing nuts

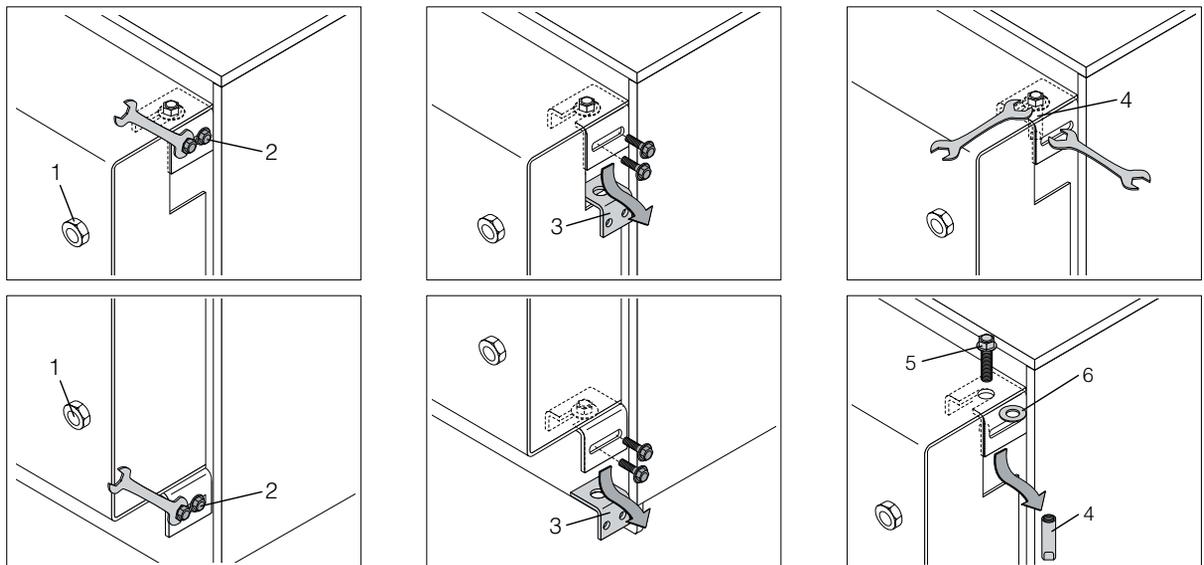
**System B** (on the larger sizes) - comes with a hinge fixing plate, a nut and an internal compression spring.



## CHANGING THE DIRECTION OF DOOR OPENING

The boiler door hinges are factory fitted on the right of the door. If you need to reverse the direction of opening, remove the boiler's side panel and proceed as follows.

### Smaller sizes (system A)

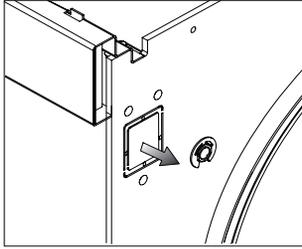


First ensure that the main door fixing bolts (1) are tight and then remove the safety bolts (2) and lift off the door fixing brackets (3).

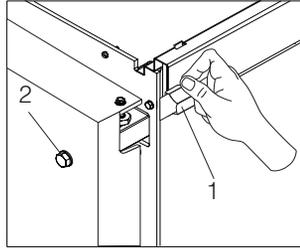
Insert a spanner through the top slot and hold the bushing (4) steady. Unscrew the top bolt (5), then remove the bushing (4) and washer (6).

Reverse the above steps to fit the door on the opposite side.

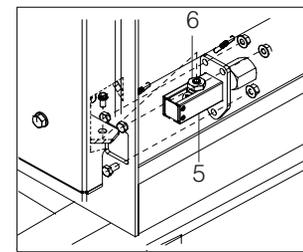
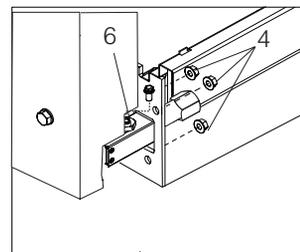
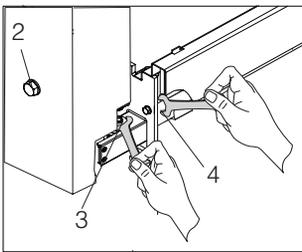
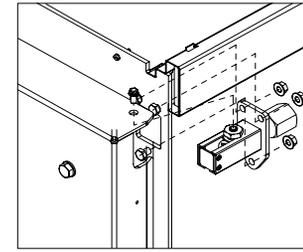
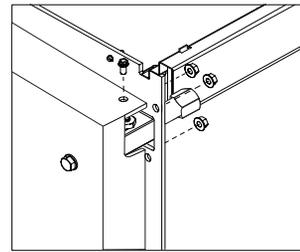
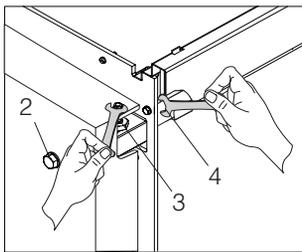
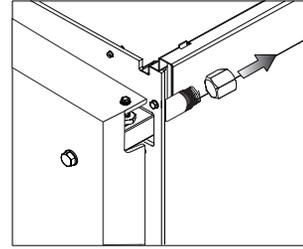
## Larger sizes (system B)



Open the door and with the aid of a small hacksaw or a file remove the knockout on the side opposite the leading edge of the door (both top and bottom). Then seal the door by tightening the bolts (2) so that the door is self-supported by compression against the packing.



Remove the plug (1) taking care not to lose the compressed spring inserted in the threaded tube.



Remove the bolt (3) and the nuts (4)

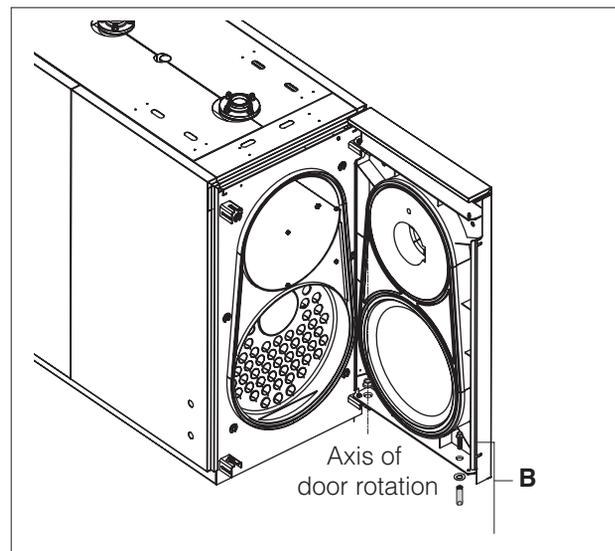
remove the nuts (4) that secure the hinge plate (5) to the door and remove the plate.

Remount the hinge plate on the opposite side, ensuring that the cylinder projecting above the nut (6) enters into its slot. If necessary tighten the nut (6) to raise it. Lastly, tighten the bolt (3).

## REMOVING THE HINGE ASSEMBLY 'B'

### System A

- First ensure that the side safety bolt (2) is tight and then remove the main fixing bolt (1).
- With the door open, remove the hinge assembly 'B' (bushing, bolt, and washer) opposite the pivot side of the door.



## EARTH CONNECTION

A terminal is provided on the front boiler head to connect the boiler body to an efficient earth system.

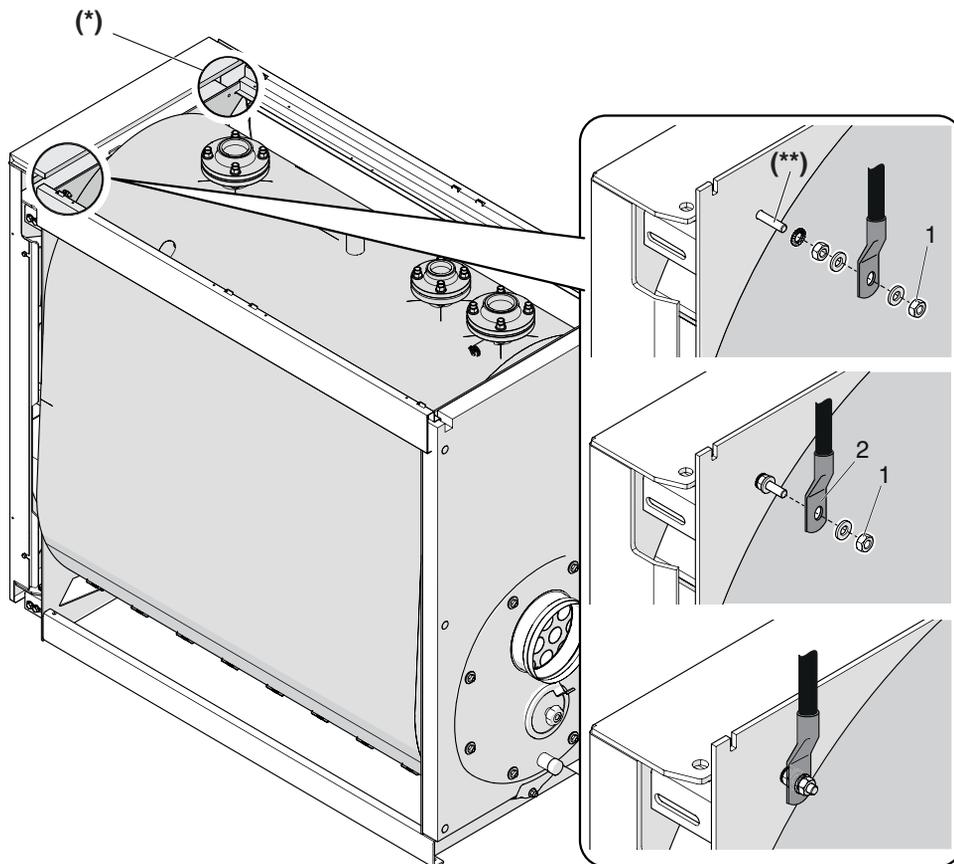
Proceed as follows.

- Unscrew the nut and washer (1) from the earth terminal.
- Attach the earth cable's eye connector (2) to the terminal. (Make sure that the cable is of adequate size and complies with legislation in the country of installation.)
- Fit the nut and washer (1) to the earth terminal and tighten the nut.

- Connect the other end of the cable to the system's earth bar.



Another hole (\*) in the left side of the boiler head can also be used to earth the appliance. If you wish to use this hole for the earth connection, remove the terminal fittings from the right of the head and move them to the left earthing point.



(\*\*) M6x30 brass

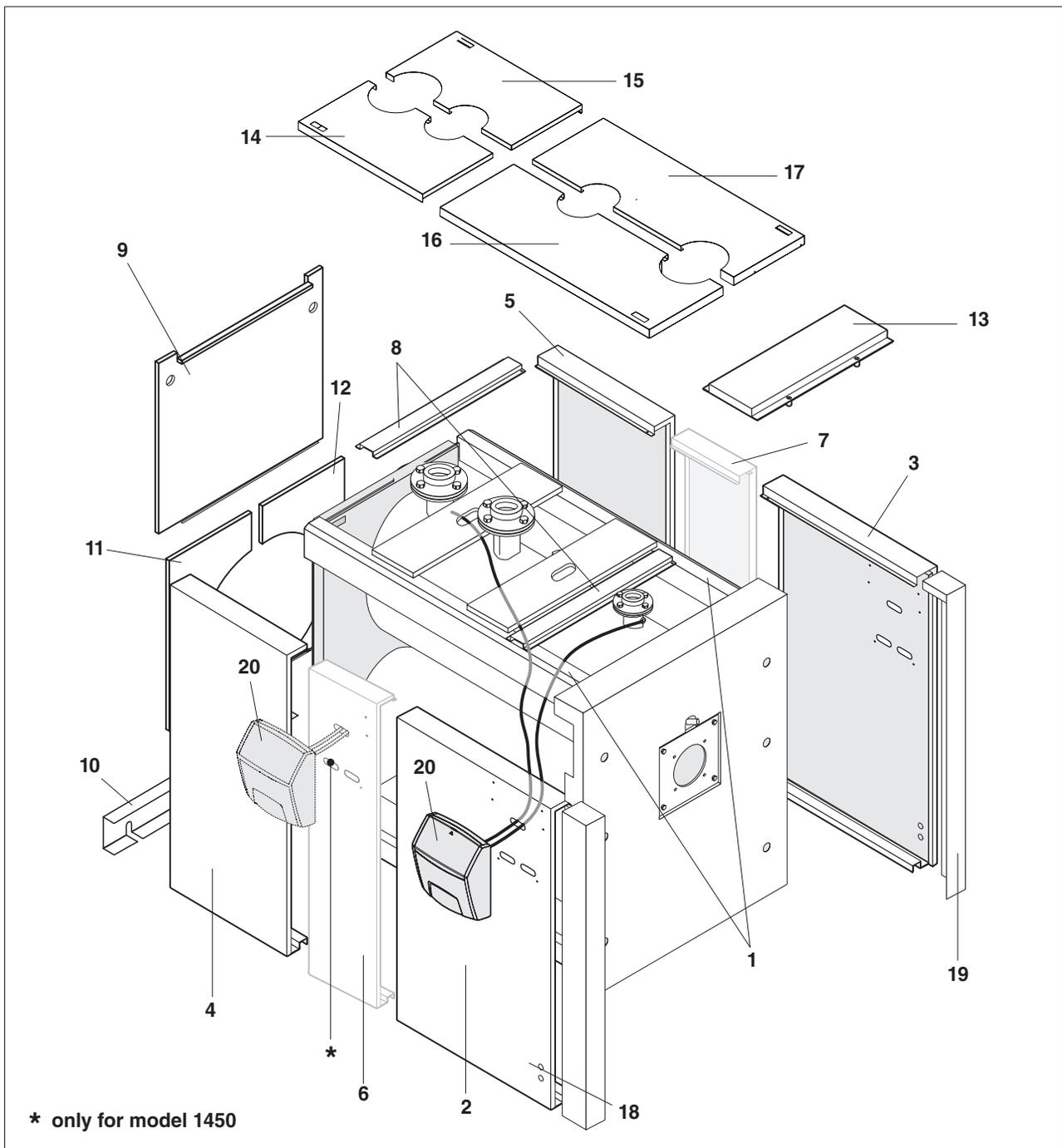
## FITTING THE PANELLING

To mount the panelling, proceed as follows:

- Push out the pre-formed slots in the boiler's side panel (2) or (3) depending on what side you want to install the control panel) corresponding to the oval cable grommets in the control panel.
- Perforate the membranes of the control panel cable grommets. Route the electrical cables through them and insert the sensors in their sockets.
- Fix the control panel (20) to the boiler casing using the screws provided.
- Fit the front side panels (2) and (3) and rear side panels (4) and (5) over the boiler frame (1) and to the top side beams.

On models 450, 600, 800, 1000, 1250, 1450, also fit side panels (6) and (7).

- Secure the side panels in place using the top cross beams (8) and the screws provided.
- Fit the top rear panel (9), the bottom rear bracket (10) and then the bottom rear panels (11) and (12). Fit the front top panel (13).
- Fit the top panels (14), (15), (16) and (17).  
Smaller models have only two top panels, one over the right and one over the left of the boiler.
- Finally, fit the front trim panels (18) and (19).



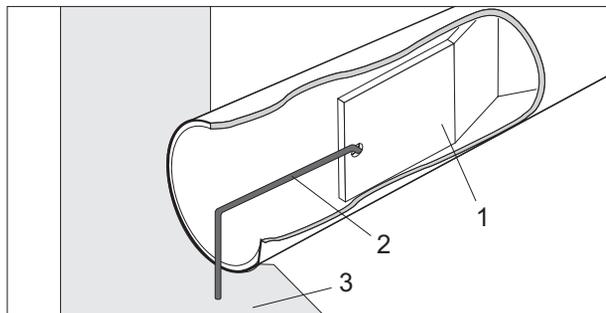
## PREPARING FOR INITIAL START-UP

### COMMISSIONING

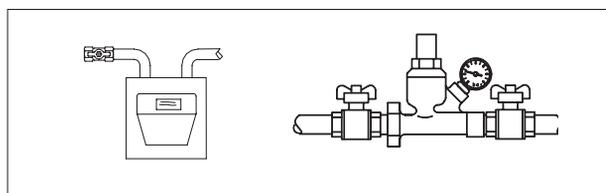
First commissioning must be undertaken by a combustion specialist appointed by the burner supplier. Installation, commissioning and maintenance should be in compliance with BS6644.

It is essential to perform the following checks before starting up or testing the functioning of the boiler. In particular, check that:

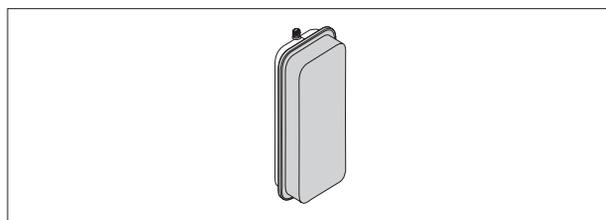
- The turbulators (1) are correctly positioned (vertical) inside the heat exchanger tubes and the clips (2) are resting against the wall (3) of the heat exchanger.



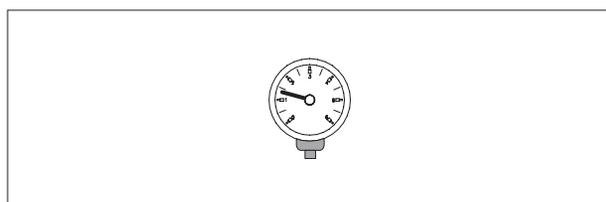
- The water and gas cocks are open.



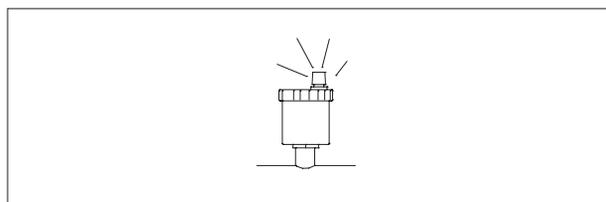
- The expansion vessel is properly charged.



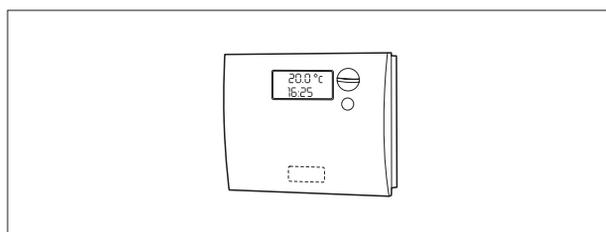
- The working pressure in the heating circuit is **over 1 bar** but below the maximum limit specified for the boiler.



- The water circuits have been properly bled.



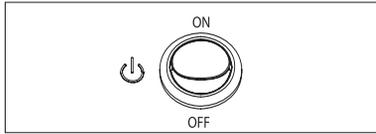
- The mains power connections to the boiler and its accessories (burner, pump, control panel, thermostats, etc.) have been properly made.



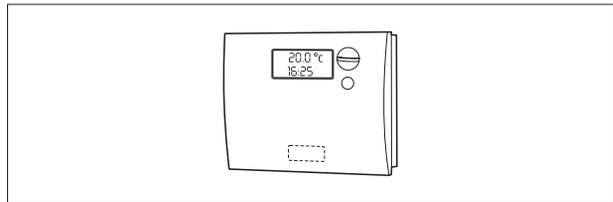
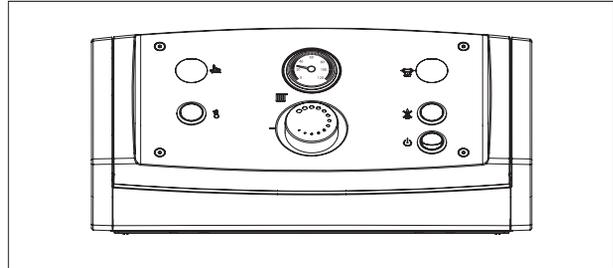
The phase-neutral polarity has been respected.  
**A ground (earth) connection is obligatory.**

Once you have completed all the preparatory steps, proceed as follows to start up the boiler for the first time:

- Since the control panel incorporates a temperature control function, make sure that the control panel is switched on.



- Adjust the timer thermostat (if installed) or the temperature control to the desired temperature (~20° C).



- Make the settings as instructed in the instruction manual for your control panel.

The burner should now ignite and remain in operation until the set temperature is reached.

If any ignition faults or malfunctions occur, the burner performs a 'LOCKOUT SHUTDOWN'. This is shown by the red button light on the burner and by the warning light on the control panel.

 If a LOCKOUT SHUTDOWN occurs, wait about 30 seconds before resetting the burner.

To reset the burner, press the red button light on the burner and wait until the flame ignites.

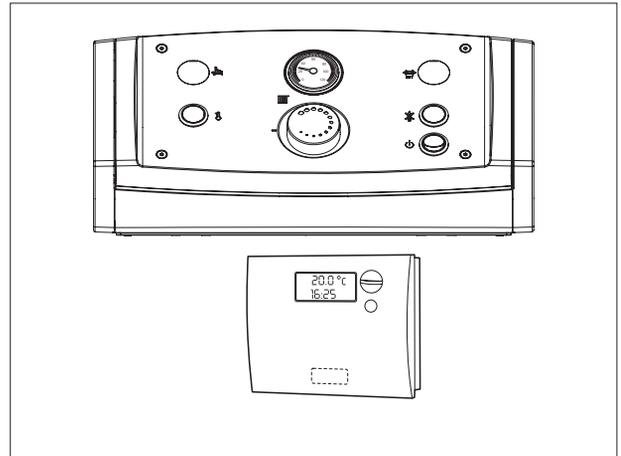
Repeat this operation 2 -3 times at the most. If the problem persists, perform the following checks:

- Check that all the instructions in the burner manual have been performed properly.
- Check that the instructions in the 'Preparing for Initial Startup' section have been performed properly.
- Check that all the electrical connections shown on the control panel wiring diagrams have been performed properly.

## CHECKS DURING AND AFTER INITIAL START-UP

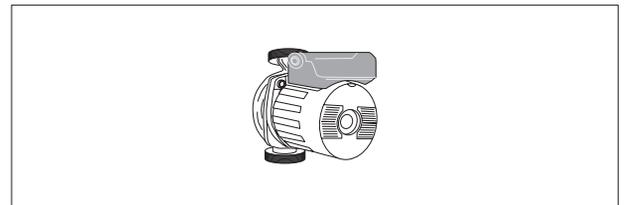
Once the boiler has started up, make sure that it shuts down and re-starts properly too. Proceed as follows:

- Set the boiler thermostat to the required setting (making sure that the temperature control is in manual mode).
- Switch the control panel power switch off.
- Set the room thermostat or timer to the required temperature.



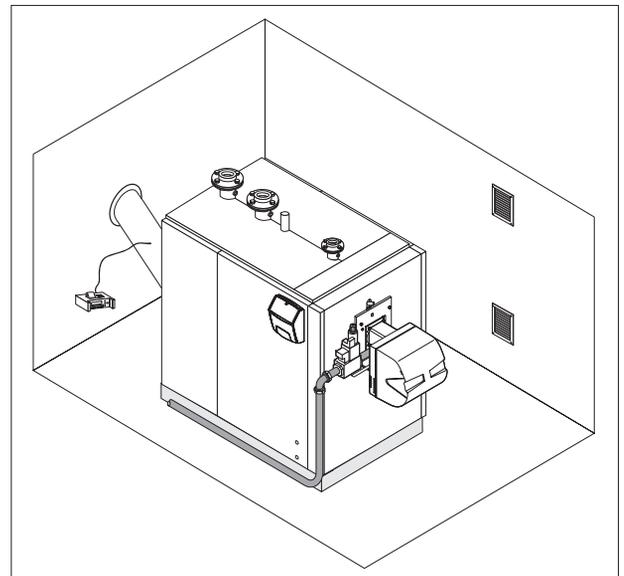
Make sure that there are no leaks around the boiler door seal. If you detect any leakage of fumes, increase the tightening of the door fixing bolts.

Make sure that all the pumps in the system are free and rotate in the right direction.



Turn off the main power switch to the boiler and make sure that the boiler shuts down properly.

Provided all the above conditions are satisfied, start the boiler up again, then analyse the combustion fumes and measure the gas flow.



Regular maintenance is one of the requirements. It is also essential for the safety, efficiency and durability of the boiler. Proper maintenance keeps consumption and emissions down, and ensures that the boiler continues to

operate reliably over time.

Have your boiler serviced by a qualified professional.

Analyse the combustion fumes before commencing any maintenance. The results of fume analysis can give a clear idea of what servicing or repairs are needed.

## OPENING THE DOOR

- Turn the system's main power switch OFF
- Close all the gas cocks.

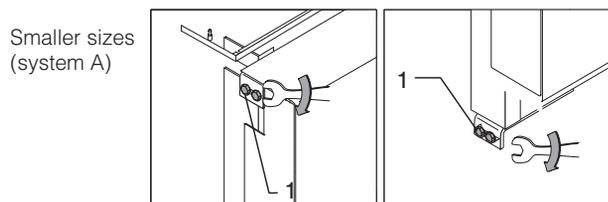
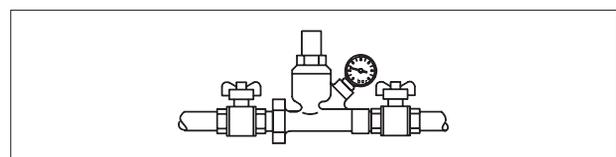
### System A:

- Make sure that the safety bolts (1) on the side of the boiler are tight.

### System A and B:

To open the door, simply remove the main fixing bolts (2) holding the door in place.

-  The first time you open the door, remove the spare hinge assembly 'B' (bushing, bolt, and washer) opposite the pivot side of the door.

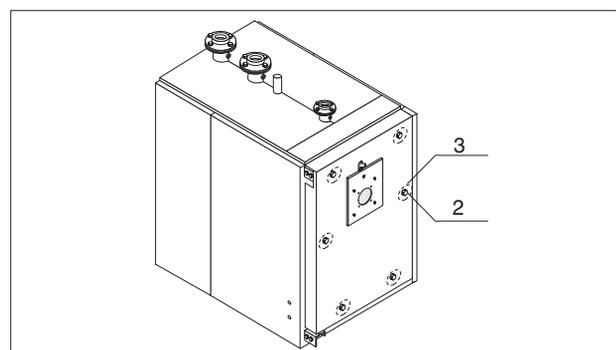


## ADJUSTING THE DOOR

Make quite sure that the door presses uniformly all around the double seal to prevent dangerous fumes escaping into the air. Proceed as follows to adjust the door seals:

### System A:

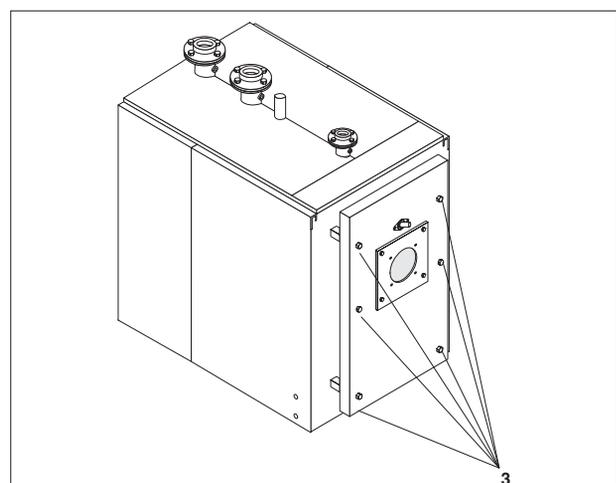
- Fit the door and tighten the main fixing bolts (2) until the seals start to compress.
- Loosen the safety bolts (1) then fully screw in the main door fixing bolts (2).
- Tighten the safety bolts (1).



### System B:

Put the door in its correct position and tighten the main locking screws (2) until the packing starts to be compressed

-  Make sure that the door is properly adjusted after every maintenance operation.

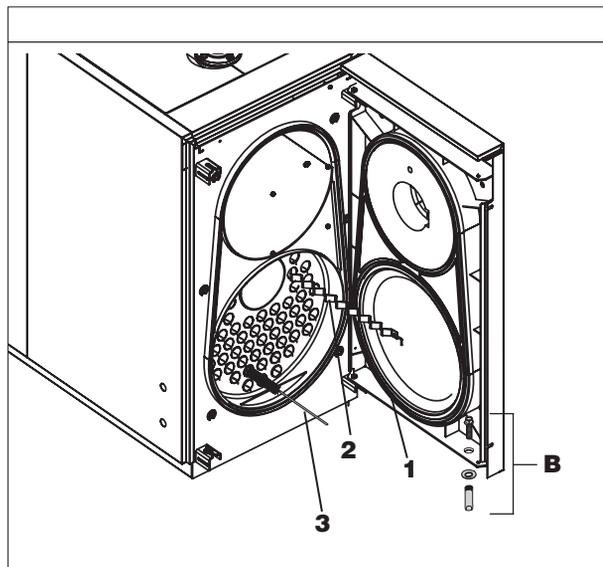


## CLEANING THE BOILER

Clean the boiler and remove any carbon deposits from the surfaces of the heat exchanger **at least once a year**. This not only extends the boiler's working life, but also keeps it efficient in terms of heat output and consumption.

Proceed as follows to clean the boiler:

- Open the door (1) and pull out the turbulators (2).
- Use a flue brush (3) or other suitable tool to clean inside the combustion chamber and the flue gas pipes.



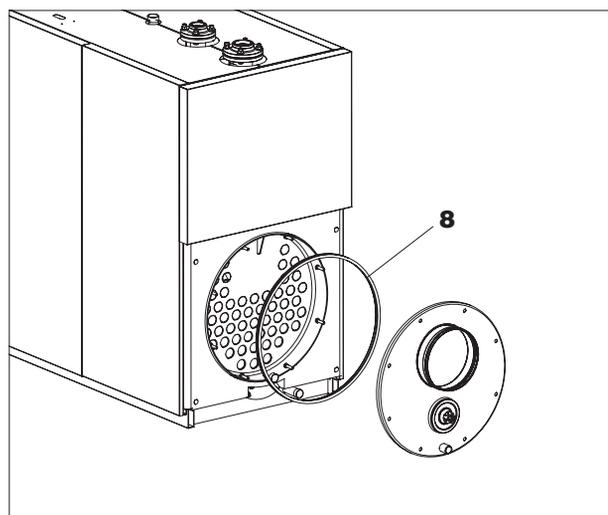
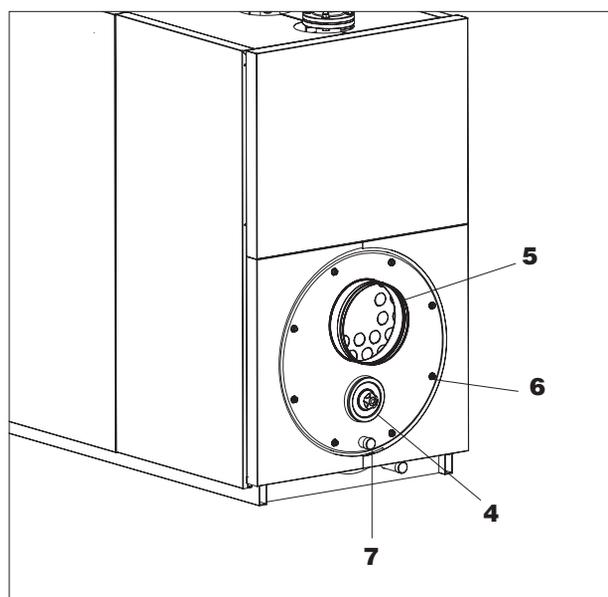
- Open the inspection port (4) and clean out any deposits from inside the flue gas box.

If more thorough cleaning is required, remove the outer panels, unscrew the eight fixing bolts and pull firmly on the flue gas box (5) to remove it from the boiler.

Check at regular intervals that the condensate drain (6) is not blocked.

If necessary, replace the seal (7).

Clean all removed components, then follow the above steps in the reverse order to refit them.



PROBLEM	CAUSE	CORRECTIVE ACTION
<b>The boiler does not reach its set temperature</b>	Heat exchanger dirty	Clean the flue gas pipes
	Heat exchanger and burner mismatched	Check specifications and settings
	Insufficient gas flow to burner	Check and adjust the burner
	Control thermostat problem	Check the functioning of the thermostat Check the temperature setting
<b>The boiler keeps shutting down, and the control panel warning light comes on</b>	Control thermostat problem	Check the functioning of the thermostat Check the temperature setting Check the electrical wiring Check the sensor bulbs
	No water supply Air in the circuit	Check the circuit pressure Check the vent valve
<b>The boiler has reached the set temperature but the radiators are still cold</b>	Air in the circuit	Bleed the circuit
	Pump malfunctioning	Check/release the pump
	Problem with minimum temperature thermostat (if present)	Check the temperature setting
<b>There is a smell of fumes</b>	Fumes are escaping into the air	Check that the boiler body is clean Check that the flue pipes are clean Check that the boiler, flue pipes and flue gas exhaust stack are all properly sealed
<b>The safety valve keeps opening</b>	Excessive pressure in the circuit	Check the circuit pressure Check pressure reducer functioning Check pressure reducer setting
	Problem with heating system expansion vessel	Check the efficiency of the expansion vessel
<b>There are traces of condensate on the rear head</b>	Flue gas box seals	Check the seals between the rear head and the flue gas box

### **Technical Training**

The Ideal Technical Training Centre offers a series of first class training courses for domestic, commercial and industrial heating installers, engineers and system specifiers.

For details of courses please ring:..... 01482 498432



Ideal Boilers Ltd. pursues a policy of continuing improvement in the design and performance of its products. The right is therefore reserved to vary specification without notice.

Ideal is a trademark of Ideal Boilers.

Registered Office

Ideal Boilers Ltd., PO Box 103, National Avenue, Kingston Upon Hull, HU5 4JN

Tel 01482 492251 Fax 01482 448858

Registration No. London 322 137

Ideal Technical Helpline: 01482 498376

[www.idealcommercialboilers.com](http://www.idealcommercialboilers.com)