MENU

imaxrange

imax W, imax Plus

Condensing boilers 45-280kW

Commercial & Industrial Boilers

BOILERS Ideal

ENGINEERED FOR PEACE OF MIND

the imax range

MENU

Contents

Introduction	3
The imax Range	4 - 5
Product specification	6 - 9
Option kits	10 - 11
Flueing	12 - 15
System requirements	16 - 19
General & performance data	20 - 21
Dimensional data	22 - 23

imax W

imax Plus

Introduction

Customers increasingly demand higher efficiencies and lower emissions from the heating plant. All this must be achieved in ever smaller dimensions. Ideal now provide a range of solutions with the high efficiency condensing *imax* wall hung boilers and *imax* Plus floor standing range.

***imax* W**

The Ideal ***imax*** W wall mounted boiler comes in a range of outputs 45, 60 or 80kW and all are capable of being installed as a single unit or in simple modular formations for even bigger outputs. The ***imax*** W is a highly efficient fully condensing boiler - up to 98% efficient nett (88.5% gross) non condensing and an impressive 108% nett (97.3% gross cv) at 30% load, fully condensing. Even higher efficiencies are achieved at lower system temperatures. The fully modulating gas/air design ensures that maximum efficiency is maintained down to very low loads reflecting the needs of modern systems. At its heart is a robust cast aluminium heat exchanger providing a compact, space saving design making this the ideal boiler for plant rooms where space is at a premium.

modulation to low outputs for high operating efficiencies

Ideal ***imax*** boilers are fan assisted and have been designed with siting flexibility in mind. Flues can be concentric, twin duct, room sealed or open flued in single or multiple installations. It is one of the easiest commercial boiler ranges to install and service.

The premix burner design ensures the lowest level of emissions. The range has been approved to the most stringent European Standards governing safety and performance of commercial boilers and is classified as low NOx (Class 5).

The Ideal ***imax*** W incorporates an advanced microprocessor based control system which operates all electrical functions of the boiler including ignition, flame detection, temperature control and burner modulation. In addition the system has full commissioning and fault diagnostic displays.

The boilers are offered with an extensive range of option kits including flues, system controls and modular header kits for maximum flexibility and ease of specification.

***imax* Plus**

The ***imax*** Plus extends the Ideal condensing boiler range with outputs from 80kW to 280kW in a range of six compact floor standing boilers and can be installed in multiple formation to provide even larger outputs if the system requires.

High efficiencies are the norm for ***imax*** boilers and the ***imax*** Plus is up to 96.6% efficient nett (87% gross cv) non-condensing, and 108.4% nett (97.7% gross cv) at 30% load. Even higher efficiencies are achieved at lower temperatures. The fully modulating gas/air design ensures maximum efficiency is maintained down to as low as 11.6kW output. This class-leading figure is achieved even with the largest model as the unique ***imax*** Plus design optimises load matching. The robust cast aluminium heat exchanger comprises of several sections, each flueway or module has its own burner fan, gas valve, ignition and safety controls and after all have modulated down to their combined minimum, modules are switched off to further match a reducing system load. Wasteful on/off cycling is reduced to the absolute minimum with the ***imax*** Plus, and a further benefit is that standby support is built into the design.

imax Plus boilers are designed for ease of installation and the flue can be positioned to left, right or rear, whilst system and gas connections can be made to left or right of the boiler. All to ensure boiler house siting is as simple and fast as possible.

Naturally the range meets the most stringent European Standards governing safety and performance and is classified as low NOx (Class 5). It is also the quietest boiler of its size at less than 50dBA.

The ***imax*** Plus uses advanced microprocessor based controls to operate all electrical functions and provides full commissioning and fault diagnostic displays. Furthermore it takes into account each modules' operating hours and evens out their usage. Further benefits are that Hours Run Meters and BMS control is built-in as standard, whilst an outside sensor for weather compensation is supplied with each boiler.

CE **Conforms with all relevant European standards and requirements**

imax W 45 - 80kW

The imax W control panel

- High operating efficiencies with close load matching
- Natural gas and propane
- Single unit or modular configuration, wall or frame mounted
- Wide modulating output range from 13 - 80kW
- Robust cast aluminium heat exchanger
- Integral commissioning and fault diagnostics
- Flue flexibility, concentric and twin duct, room sealed or open flue applications
- Easy to install and service
- Simple UK voltage system controls wiring
- Comprehensive control options
- Meets Building Regulations 2000 (Part L)

imax Plus 80 - 280kW

The imax Plus control panel (F120 shown)

- Range of six models from 80 - 280kW
- Compact size - small footprint
- High modulation - Close load matching (all models down to 11.6kW)
- 108.4% Net efficiency (fully condensing) at 30% part load
- Boilers consist of several modules giving built-in standby capability
- Robust cast aluminium heat exchanger
- Integral commissioning and fault diagnostics
- Optional flue and system connections for fast installations
- Meets Building Regulations 2000 (Part L)

product specification

Performance

The Ideal imax range offers high operating efficiencies, together with the lowest possible emissions, and is certified to comply with the Gas Appliance Directive (90/396) and the Boiler Efficiency Directive (92/42), the European Directives governing safety and performance of gas boilers ensuring high quality performance.

The design of the boiler ensures high efficiencies at both full and part loads to meet the new 'Building Regulations 2000' conservation of fuel and power. Approved efficiencies are up to 98% at 80˚C flow based on net calorific value of fuel (88.5% gross) at full load. At 30% part load the efficiencies exceed 108% net (97.3% gross).

Boiler	Range	Certificate No.	Notified Body	Reference
imax W	W45 - 80	0063BN3218I	Gastec NV	0063
imax Plus	F80 - 280	49BM3615	AFNOR, Paris	0049

In order to give you assurance and peace of mind a Certification of Compliance to the Building Regulations 2000 can be obtained from the commercial heating department.

Boiler Operation

imax W

On a call for heat, air is drawn into the boiler variable speed fan. The fan inlet incorporates a special mixing arrangement for gas supplied from the gas valve. The gas/air mixture is automatically ignited at low rate beneath the burner via a spark electrode and ignition proved by a flame rectification electrode. The flue gases pass downwards through the heat exchanger and via the sump and flue outlet to atmosphere. A plume of vapour will be visible at the terminal due to the low exit temperature.

The boiler modulates its output according to demand via the flow/return sensors and any external controls. The fan speed and gas flow are adjusted under this electronic control to provide the correct mixture and output. This maintains high efficiency part loads.

Condensation within the boiler will start to occur when the return temperature is below the dew point (55˚C). The flue gases will condense and increase boiler efficiency by giving up their latent heat to the system. Condensation formed within the boiler is removed via the integral drain.

imax Plus

When the boiler receives a call for heat, the boiler control Modular Boiler Drive (MBD) calculates the necessary output according to the difference between the set flow temperature (or compensated flow temperature for a CH call when using an outside sensor) and the boiler modules' combined flow temperature. The first module fan operates and the gas/air mixture is automatically ignited below the burner via a spark electrode and proved by a detection electrode. Ignition occurs in 5 seconds and once detected the module starts operating. Subsequently, additional modules will fire to provide the load required.

The boiler principle method of operation is to run as many modules simultaneously, at the lowest possible load, for maximum efficiency e.g.

If an F160 with 160kW max. output is only requested to provide 72kW.
72 / 4 = 18kW per module

Therefore, the boiler operates all modules at the reduced rate of 18kW. If the required load is less than the min. 12kW per module, then one module after the other will automatically shut down and the load shared by the remaining modules. The modules with the lowest number of hours run are automatically chosen to satisfy the demand.

Electrical Controls

The boilers incorporate an advanced microprocessor based control system which operates all electrical functions of the boiler including ignition, flame detection, flow/return temperature sensors and output modulation. In addition the microprocessor displays boiler status and a fault diagnosis program.

System Application

Ideal *imax* boilers are designed for central heating of large domestic and commercial premises and also for supplying domestic hot water via a calorifier or plate heat exchanger. They are suitable for fully pumped, open vented or pressurised systems and can be connected to heating and/or domestic hot water systems.

They are not suitable for direct hot water supply or gravity heating/hot water systems.

	imax W	*imax* Plus
Maximum static head:	40.7 metres (134 feet)	61 metres (200 feet)
Maximum working pressure:	4 bar (58.7psi)	6 bar (87psi)

Maximum design flow temperature is 82˚C (180f)
(This is adjustable to 90˚C if required at the control panel).

Pump overrun is provided as standard, and a period of 5 minutes must be allowed for in system design.

Frost protection is built into the boiler control, if the boiler sensor falls below 7˚C, this will result in the appliance firing.
This will protect the boiler only, not exposed system elements.

Packing

The Ideal *imax* is despatched from works in separate packs as follows:

***imax* W contains:**	***imax* Plus contains:**
Complete boiler	Assembled boiler body
with separate:-	Casing pack
Flue option packs	Condensate pipe & fixings
Control option packs	Flue manifold, socket & gasket
Modular header kits	Outside sensor pack

A full commissioning service is available at an extra charge.

Quality

As with all Ideal boilers, the *imax* W & *imax* Plus boilers are engineered to the highest quality standards. Ideal Boilers products meet or exceed the requirements of all relevant standards. Before despatch each boiler is fired and fully tested. The control valves are also adjusted to give the correct gas flow rate. Ideal Boilers are recognised as a World Class Manufacturer.

assurance of quality

BS EN ISO 9001: 2000

imax W Boiler Construction

Ideal imax W wall mounted boilers are constructed from cast aluminium heat exchangers with tubular steel flow and return manifolds.

The heat exchanger is mounted in a sealed white enamelled steel casing.

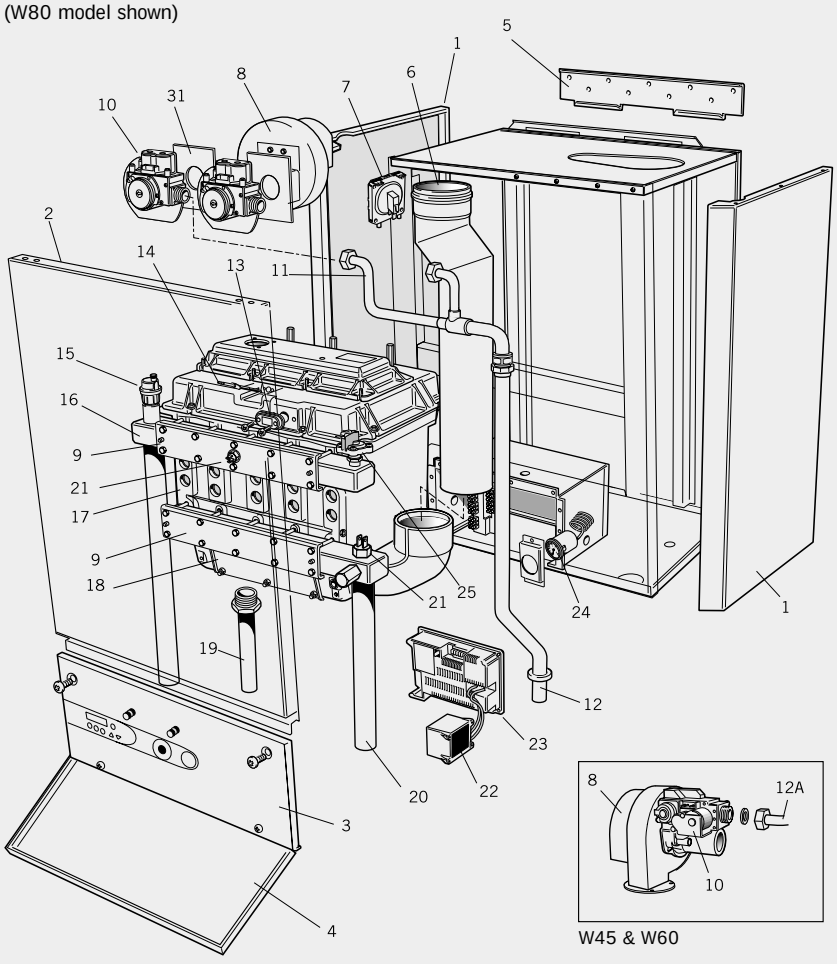
A premix downfiring burner is mounted above the heat exchanger.

A cast aluminium sump is fitted below with condensate drain connection.

The concentric flue outlet and air inlet is positioned on the boiler top, with gas and system connections at the base.

Controls are accessible behind a drop down door. Maintenance and servicing is all achieved from the boiler front.

(W80 model shown)

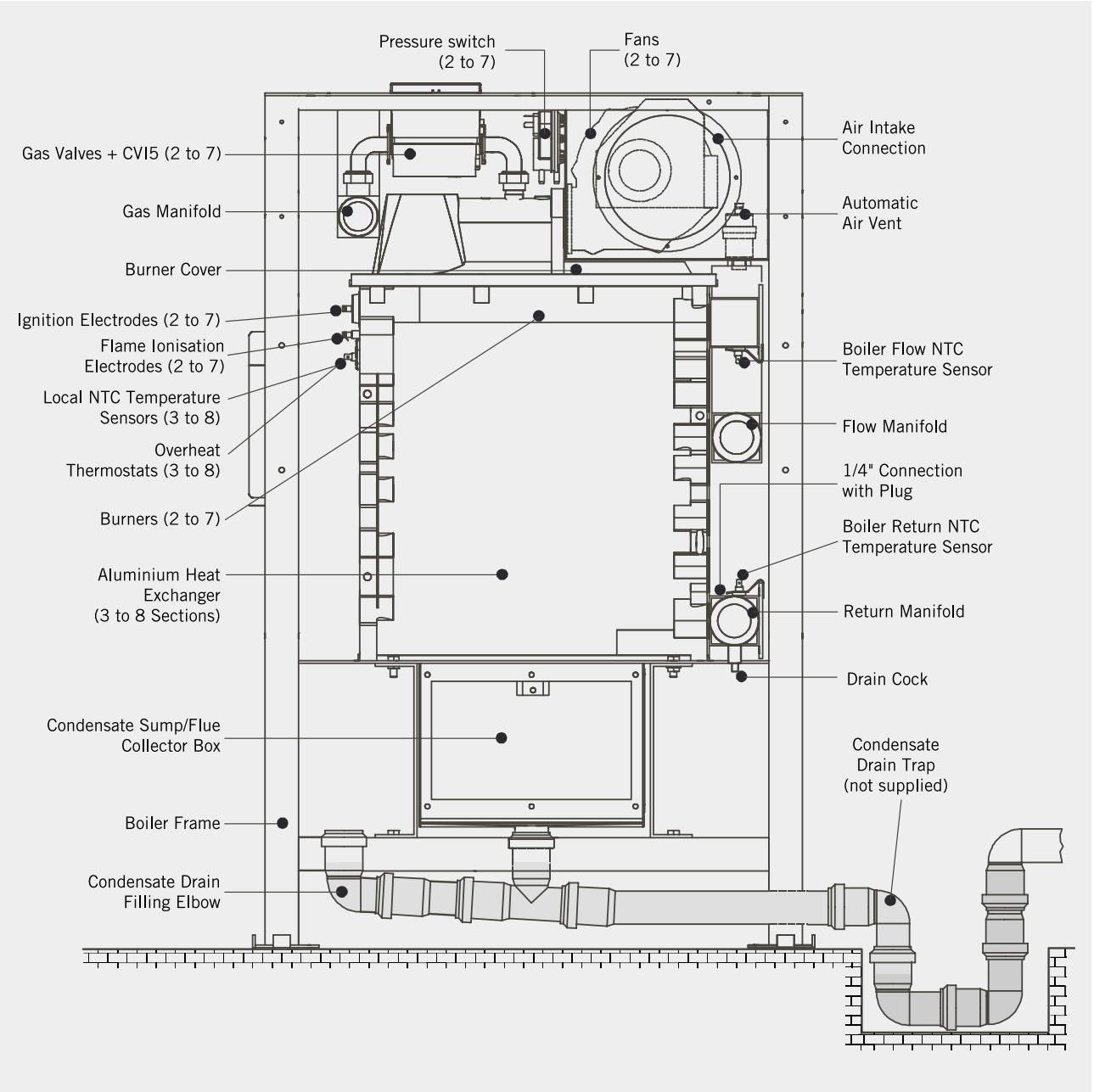


W45 & W60

1. Jacket side panel
2. Jacket front panel assy.
3. Controls fascia
4. Controls door assy.
5. Wall mounting plate
6. Internal flue tube
7. Air pressure switch
8. Fan
9. Mounting plate manifold
10. Gas valve
11. Upper gas pipe
12. Lower gas pipe
12A. Gas pipe
13. Sight glass complete
14. Ignition/detection electrode
15. Auto air vent
16. Manifold flow
17. Heat exchanger assy.
18. Inspection cover assy.
19. Condensate outlet pipe
20. Manifold return
21. Thermistor flow or return
22. Transformer
23. Control module
24. Pressure gauge
25. Water pressure switch
31. Gas manifold

imax Plus Boiler Construction

The construction of the imax Plus sectional heat exchanger design is of cast aluminium. Individual downfiring burners, fans, gas valves and ignition safety controls for each flueway or module are provided. A non-return valve ensures no reverse circulation of flue products through modules not operating. A stainless steel sump collects the flue products and diverts them to the flue, whilst allowing drainage of condensate products.



option kits

Option Kits

The imax boiler range comes with a host of options designed to give greater flexibility and control to your heating system.

	imax W	imax Plus
Modulating sequencer kit	✓	
Programmable room thermostat kit	✓	
Control interface kit	✓	
Outside sensor kit	✓	*
Tank sensor kit	✓	✓
Remote indication kit	✓	*
Hours run meter(s)	*	*
BMS (0-10V) kit	✓	*
Pump kit	✓	
Multi boiler frame and header kits	✓	

*Provided as standard

imax W Flue Kits

Horizontal wall flue kit — A range of concentric flue pipes together with wall mounted grille for horizontal flue applications.

Vertical roof flue kit — A range of concentric flue pipes together with terminal grille for roof flue applications.

Twin pipe flue kits — Air and flue pipe terminals for extra long runs using twin ducts.

Open flue kit — A range of air inlet grilles for direct installation to the boiler with flue connection.

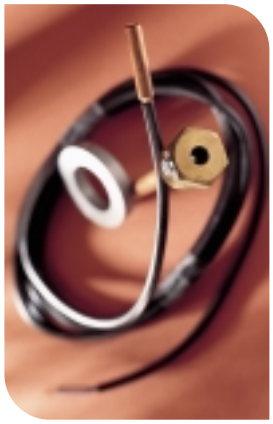
For more information see Flueing page 12.

Control Interface Kit

Remote Indication Kit

Programmable Room Thermostat Kit

Modulating Sequencer Kit



Tank Sensor Kit

BMS (0-10v) Kit

Outside Sensor Kit

Flue Options

imax W Multiple Boiler Kit Installations

imax W boilers are also designed for multiple boiler installations. Such installations can be an advantage in many situations:

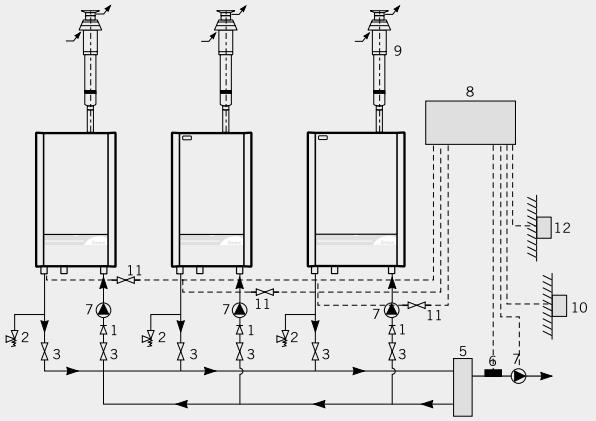
- Compact size means easier location, transportation and handling.
- Close load matching means higher annual operating efficiencies.
- Inherent reliability and service continuity. One boiler may be shut down for servicing whilst the remainder continue operating.
- A sequencer kit and multiple boiler pipework kits are available for the imax W.

The header kit comes complete with all the components necessary to complete a multiple installation:

- Gas and water headers (2 or 3 boilers)
- Mixing header
- Individual flow, return and gas connection pipework incorporating isolating valves
- All necessary mounting brackets for pipework

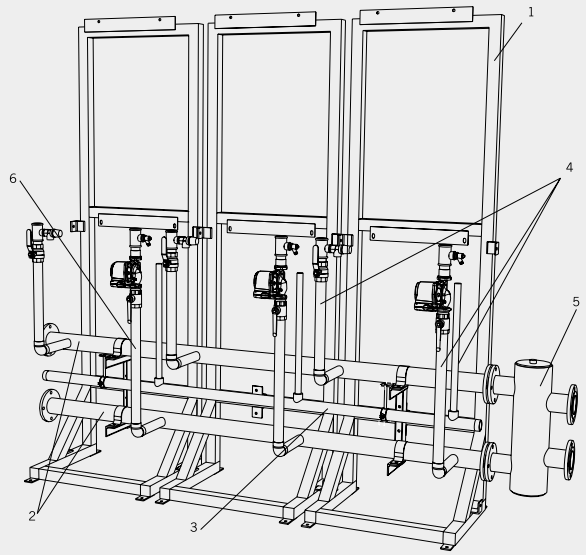
Ideal imax W boilers are also designed for use with a boiler frame mounting kit which allows boilers to be mounted onto a free standing boiler frame rather than onto the wall.

This frame mounting kit is especially useful when wall space is at a premium or wall condition is suspect. The frame mounting kit is suitable for use with installations of 1 or more boilers.



1. Non-return valve
2. Safety valve
3. Service valve
4. Expansion vessel
5. Mixing header
6. Flow sensor
7. System pump
8. Modulating Sequencer kit
9. Flue gas terminal
10. Room Temp. sensor
11. Drain cock
12. Outdoor sensor

imax W Multiple Boiler Frame Kit



1. Frame kit
2. 3 Blr. flow & return header kit
3. 3 Blr. gas header kit
4. Connection kit
5. Mixing header
6. Pump

(For dimensions see page 22)

imax Plus Multiple Boiler Installations

imax Plus boilers are suitable for installations where the load requires more than one boiler.

e.g. 2 x F280 = 560kW or in larger multiples

The flexibility of flue connection position (left, right or rear) and system and gas connections (left or right) allows multiple boilers to be sited more easily in confined boiler homes.

imax Plus boilers can be laid out for example with rears towards each other and flues at the same end. Many more options are possible to minimise plant room area.

Flue Systems

To ensure safe and satisfactory operation, the boiler must be connected to a chimney system capable at all times of adequately evacuating the combustion products (see performance data table on page 14 for approximate volumes).

The Ideal imax W & imax Plus boilers are suitable for use in both room sealed and open flue fan assisted operation. Connections for combustion air inlet and flue products discharge are located on the top of the appliance (imax Plus: separate vertical flue outlet to left, right or rear, air inlet at left or right).

concentric and twin duct systems

The jacket of the Ideal imax condensing boiler is constructed such that it forms an air tight seal. It is therefore important that the jacket of the unit is fitted properly whilst the boiler is in operation.

The boiler is suitable for use in either single or multiple flue configurations and can be fitted with a wide variety of flue systems.

Horizontal flue runs MUST be inclined at 2.5˚ to the horizontal in order that any condensate formed can be discharged through the boiler.

imax W & imax Plus

All joints or connections in the flue system must be impervious to condensate leakage and also any low points in the flue system should be drained using pipe of material resistant to condensate corrosion.

The flue duct termination point must be positioned so that it will not be affected by adverse wind conditions and be free from any obstructions. Note: A vapour plume will be visible at the terminal. Therefore where possible terminal positions which could cause problems due to plumeing should be avoided.

The use of a fan on the boiler permits long flue runs however, the resistance of bends etc will reduce the overall length. Full details of the imax W flue sizes and resistances can be found on page 13 of this booklet.

NO additional diverter, stabiliser, or draught break should be installed in the chimney system without prior consultation with Caradon Ideal Ltd.

Flues and terminal positions should be designed with strict regard to the requirements of BS 5440: Part 1, BS 6644, IGE UP/10 and the Building Regulations Part J as appropriate. Particular attention should be paid to these for multiple boiler installations and if required, the Clean Air Act.

imax W Flue Kits

imax W Only

The flue kits are suitable for use with the Ideal imax boiler only.

These kits and the associated options are suitable for both roof and wall mounting applications.

Several flue options are available:

- Horizontal flue kits (80/125mm or 100/150mm dia.)
- Vertical roof flue kits (80/125mm or 100/150mm dia.)
- Twin pipe flue kits
- Open flue kits

The twin pipe flue kit is suitable where particularly long flue runs are required and compact flue and air ducts are required.

The roof kit is suitable for both flat and pitched roof termination, using a concentric flue (tube within tube) to run vertically from the top of the boiler and terminating above the roof level.

If obstructions prevent direct flue routing then both 90˚ and 45˚ elbows can be provided to offset any of the flue systems.

Accessories

Flue duct extension kits are available for flue lengths extending beyond 1 metre. These packs contain additional 1 metre ducts and may be cut to the desired length.

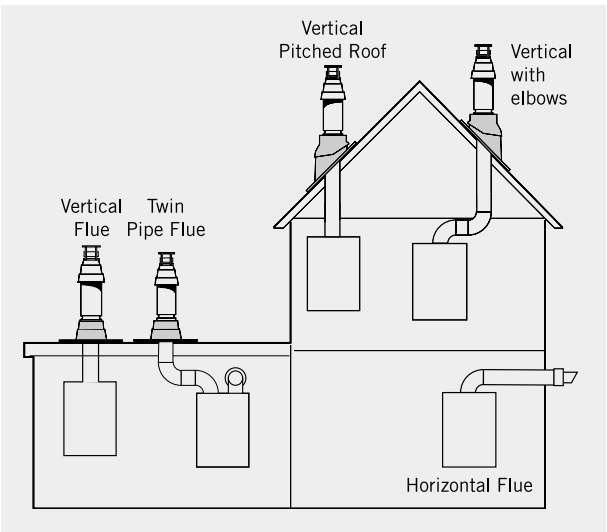
Elbows, 90˚ and 45˚, are also available.

Weatherproofing

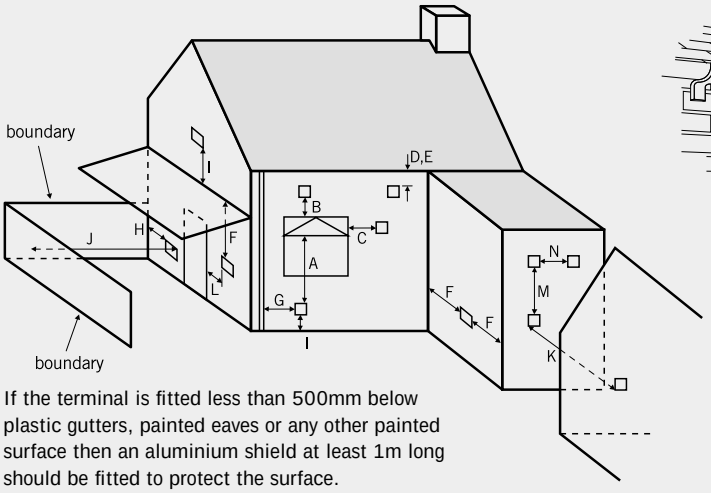
Where the flue passes through the roof line an adequate seal must be made. This can be achieved by using either:

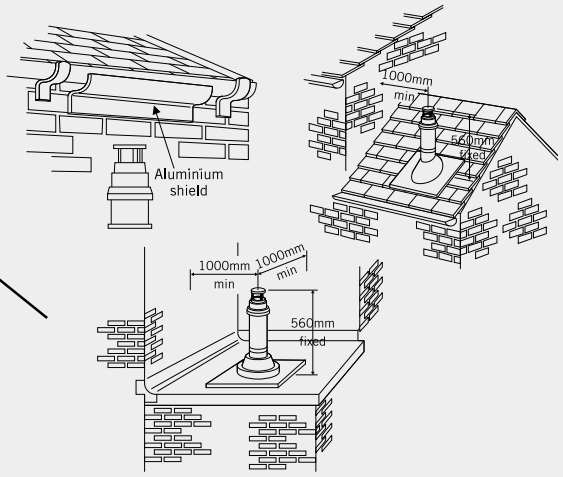
- Flat weather collar 125mm or 150mm
- Pitched weather collar 125mm or 150mm

Additional information covering selection and installation can be found within this guide.



imax W Flue Termination Position





If the terminal is fitted less than 500mm below plastic gutters, painted eaves or any other painted surface then an aluminium shield at least 1m long should be fitted to protect the surface.

Concentric Wall Terminal Positions	Minimum spacing	
A. Below an opening (1)	300 mm	12 in
B. Above an opening (1)	300 mm	12 in
C. Horizontally to an opening (1)	300 mm	12 in
D. Below gutters, soil pipes or drain pipes	75 mm	3 in
E. Below eaves	200 mm	8 in
F. Below balcony or car port roof	200 mm	8 in
G. From a vertical drain pipe or soil pipe	150 mm	6 in
H. From an internal or external corner or to a boundary alongside the terminal	300 mm	12 in
I. Above ground, roof or balcony level	300 mm	12 in
J. From a surface or a boundary facing the terminal	600 mm	24 in
K. From a terminal facing the terminal	1200 mm	48 in
L. From an opening in the car port into the building	1200 mm	48 in
M. Vertically from a terminal on the same wall	1500 mm	60 in
N. Horizontally from a terminal on the same wall	300 mm	12 in
Concentric Roof Terminal Positions		
Directly below an opening, air brick, windows, etc	300 mm	12 in
Below plastic/painted gutters	500 mm*	20 in
Below painted surface	500 mm*	20 in
Below eaves or balcony	500 mm	20 in
From wall	1000 mm	40 in

* may be reduced to 300 mm if a shield fitted

(1) An opening here means an openable element, such as an openable window, or a fixed opening such as an air vent. However, in addition, the outlet should not be nearer than 150 mm (fanned draught) to an opening into the building fabric formed for the purpose of accommodating a built in element, such as a window frame.

Flue Data

imax W Important - The boiler must be installed in a vertical position.

The pressure available at the boiler outlet is sufficient to overcome the resistance of considerable flue lengths. The maximum straight length of concentric flue may be as long as 31.6 metres, dependent on model. A twin duct arrangement can be up to 29 metres combined flue and air pipes, with small wall terminals.

The maximum potential length for each flue type by boiler model is shown in the table opposite, although allowances must be made when elbows are used. The length to be subtracted for each elbow used is also provided in the table below.

Maximum equivalent lengths (metres)	W45	W60	W80
Horizontal Wall Flue Kit 80/125	9.5	7.8	-
Horizontal Wall Flue Kit 100/150	31.6	26	16
Vertical Roof Flue Kit 80/125	9.5	7.8	-
Vertical Roof Flue Kit 100/150	31.6	26	16
Twin Pipe Flue Kit (W45 & W60 only)*	29	19	-
Open Flue Kit 80	20	13.3	-
Open Flue Kit 100	-	-	29

* Maximum combined air and flue ducts

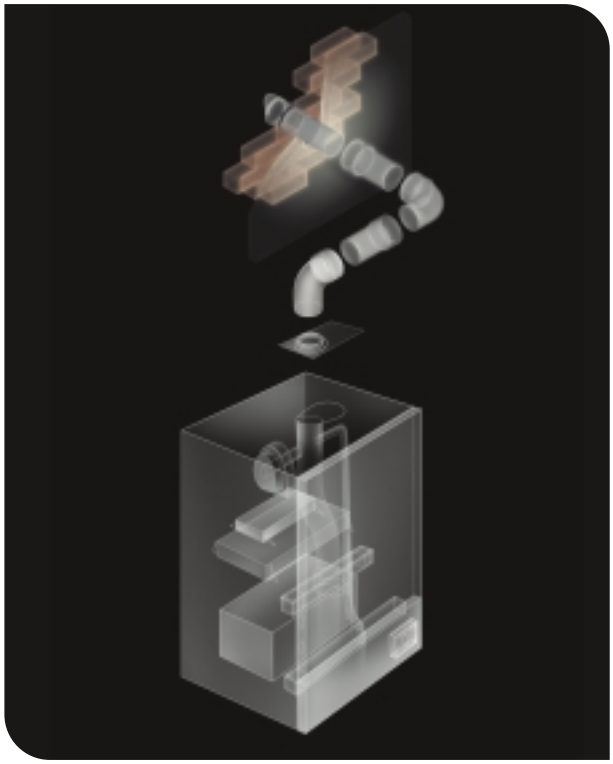
Fitting equivalent lengths (metres)	W45	W60	W80
1 metre extension 80/125	1.0	1.0	-
1 metre extension 100/150	1.0	1.0	1.0
45˚ elbow 80/125	1.1	1.1	-
45˚ elbow 100/150	1.2	1.2	1.2
90˚ elbow 80/125	1.6	1.6	-
90˚ elbow 100/150	2.0	2.0	2.0
1 metre extension 80 dia. (Twin duct type)	1.0	1.0	1.0
90˚ elbow 80 dia. (Twin duct type) Air tube	1.4	1.4	-
90˚ elbow 80 dia. (Twin duct type) Flue tube	2.1	2.1	-
45˚ elbow 80 dia. (Twin duct type) Air tube	0.4	0.4	-
45˚ elbow 80 dia. (Twin duct type) Flue tube	0.6	0.6	-

imax Plus

Proprietary flue systems are available for use with this range. A pressure of 100Pa is available at the flue outlet.

imax W Flue Designs

Flue designs are calculated against the maximum available resistance using the flue data table on page 10. The examples provided are given as a guide only, therefore a greater number of variations can be obtained

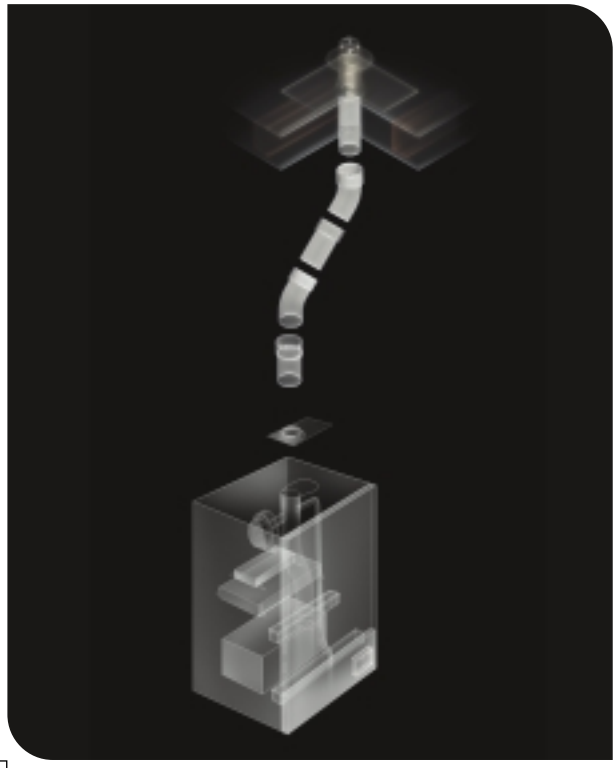


Example of Calculating Flue Resistance/Lengths -

Horizontal Concentric Flue

	Horizontal flue for imax W45 (80/125 dia.)	
	Part No.	Lengths (m)
Maximum equivalent length		9.5
Horizontal wall flue kit 80/125	158659	
2 x 1m extension flue	152400	2
1 x 90˚ elbow	152616	1.6
Total length reduction		3.6

The total equivalent length reduction is 3.6 metres, which is less than the maximum length possible of 9.5m. Therefore this arrangement is satisfactory.



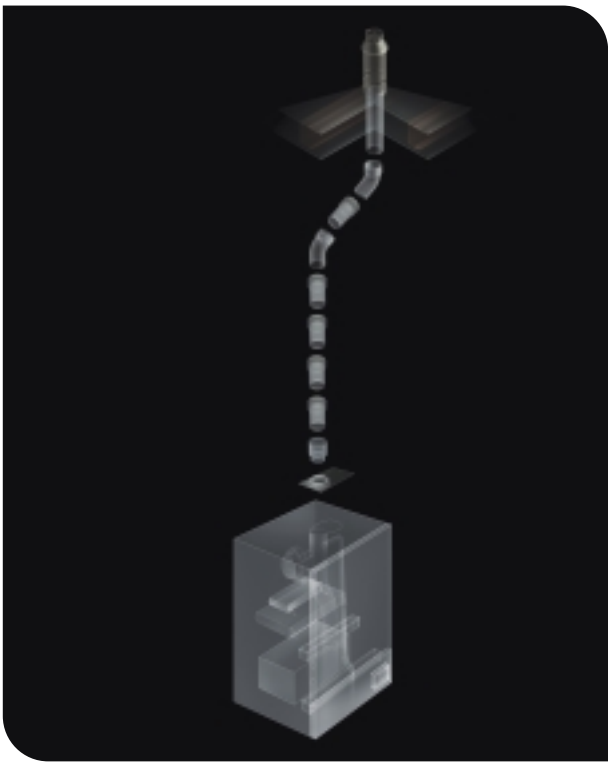
Example of Calculating Flue Resistance/Lengths -

Vertical Concentric Flue

	Vertical Roof flue for imax W60 (80/125 dia.)	
	Part No.	Lengths (m)
Maximum equivalent length		7.5
Vertical flue kit 80/125	158654	
2 x 1m extension flue	152400	2
2 x 45˚ elbows	152618	2.2
Total length reduction		4.2

The total equivalent length reduction is 4.2 metres, which is less than the maximum length possible of 7.5m. Therefore this arrangement is satisfactory.

imax W Flue Designs

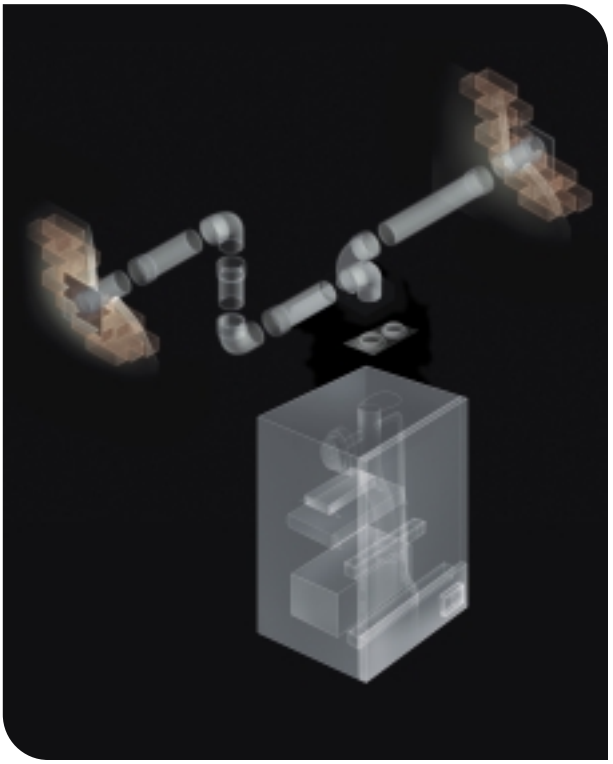


Example of Calculating Flue Resistance/Lengths -

Open Flue

	Open flue for imax W60 (80 dia.)	
	Part No.	Lengths (m)
Maximum equivalent length		13.3
Open flue kit 80	158662	
Vertical flue terminal 80	158769	
2 x 1m twin extension pipes 80	158771	2.0
2 x 45˚ elbows 80	158775	2.0
Total length reduction		4.0

The total equivalent length reduction is 4.0 metres, which is less than the maximum length possible of 13.3m. Therefore this arrangement is satisfactory and a longer flue length is possible if required.



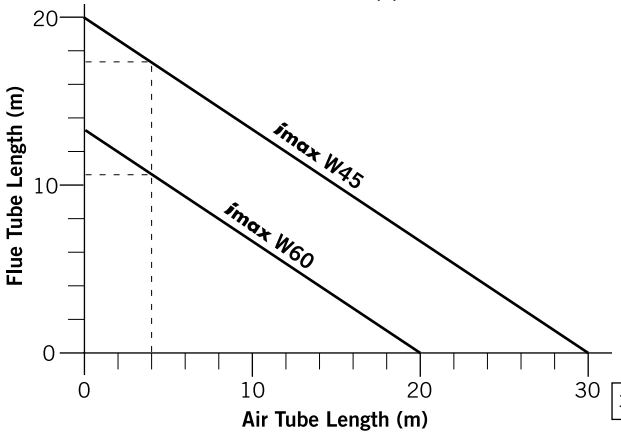
Example of Calculating Flue Resistance/Lengths -

Twin Duct

	Twin Duct for imax W45 & W60(80 dia.)
	Part No.
Horizontal flue terminal 80	158777
Horizontal air terminal 80	158778
1m flue extension pipes 80 (pair)	158771
90˚ elbow 80	158773

Calculation

1. Air pipe length Y = 8.5m.
2. Refer to graph below and plot vertical line on air axis at 8.5m as shown. Where vertical line intersects the bold W45 line, read off maximum allowable flue length.
   In this example maximum straight flue pipe length is 14m.
3. Bend allowance to be subtracted from flue length.
   In this example is 2 x 90˚ bends = 2 x 3.5m = 7m.
   Therefore X = 14 - 7 = 7 metres max. flue pipe.



system requirements

Open Systems

The system should be vented directly off the boiler flow pipe, as close to the boiler as possible. The cold feed entry should be inverted and MUST be positioned between the pump and the vent, and not more than 150mm (6") away from the vent connection.

There should be a minimum height, 500mm (20") of open vent above the cistern water level. The vertical distance between the highest point of the system and the feed/expansion cistern water level MUST not be less than 3 metres.

The information provided is based on the following assumptions:

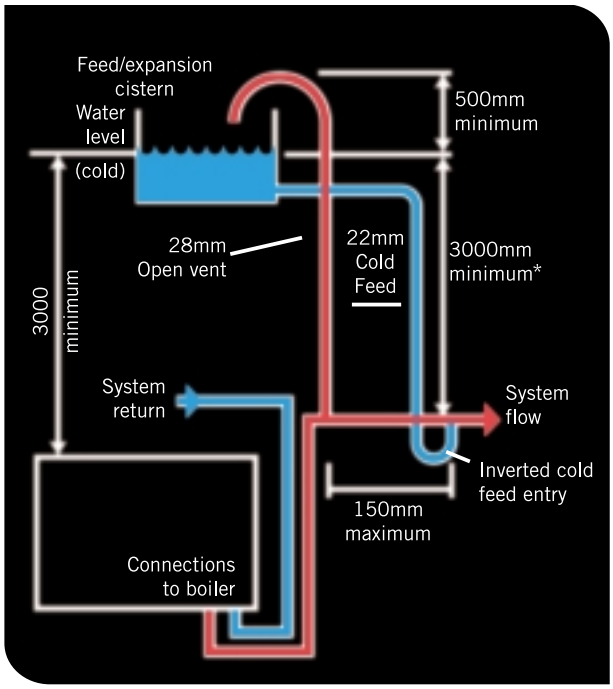
The boiler is at the highest point of the circulation system. Systems designed to raise above the flow tappings will, of course, automatically require a minimum static head higher than shown.

The position of the open vent/safety pipe above the expansion cistern water level is given as a guide only. The final position will depend upon particular characteristics of the system. Pumping over of water into the expansion cistern should be avoided.

Cold Feed/Open Vent

The independent cold feed and the open vent must comply with BS 6644 and be of the following minimum size:

Boiler output (kW)	Cold feed	Open vent
45 – 60	3/4" (19mm)	1" (25mm)
61 - 150	1" (25mm)	1 1/4" (32mm)
151 - 300	1 1/4" (32mm)	1 1/2" (38mm)



* *imax* Plus only: For head heights less than 8m the pump must be fitted on the return.

Sealed (Pressurised) Systems

***imax* W**

Working pressure 4 bar (58psi) maximum.

***imax* Plus**

Working pressure 6 bar (87psi) maximum.

Particular reference should be made to BS 6644: Section 2; Subsection 11, Guidance note PM5 "Automatically controlled steam and hot water boilers" published by the Health and Safety Executive and Water Regulations Guide.

The information and guidance given below is not intended to override any requirements of either of the above publications or the requirements of the Local Authority, gas or water undertakings.

In general, commercial closed pressurised systems are provided with either manual or automatic water make up.

In both instances it will be necessary to fit automatic controls intended to protect the boiler circulating system and ancillary equipment by shutting down the boiler plant if a potentially hazardous situation should arise.

Examples of such situations are low water level and operating pressure or excessive pressure within the system. Depending on circumstances, controls will need to be either manual or automatic reset. In the event of shut down, both visual and audible alarms may be necessary.

Pressure vessels used must comply with BS 4814 and must be sized on the basis of the total system volume and initial charge pressure.

Initial minimum charge pressure should not be less than 0.5 bar (7.2psi) and must take account of static head and specification of the pressurising equipment. The maximum water temperatures permissible at the point of minimum pressure in the system is specified in Guidance Note PM5.

When make up water is not provided automatically it will be necessary to fit controls which shut down the plant in the event of the maximum system pressure approaching to within 0.35 bar (5psi) of the safety valve setting.

Other British Standards applicable to commercial sealed systems are:

BS 6880: Part 2
BS 1212
BS 6281: Part 1
BS 6282: Part 1
BS 6283: Part 4

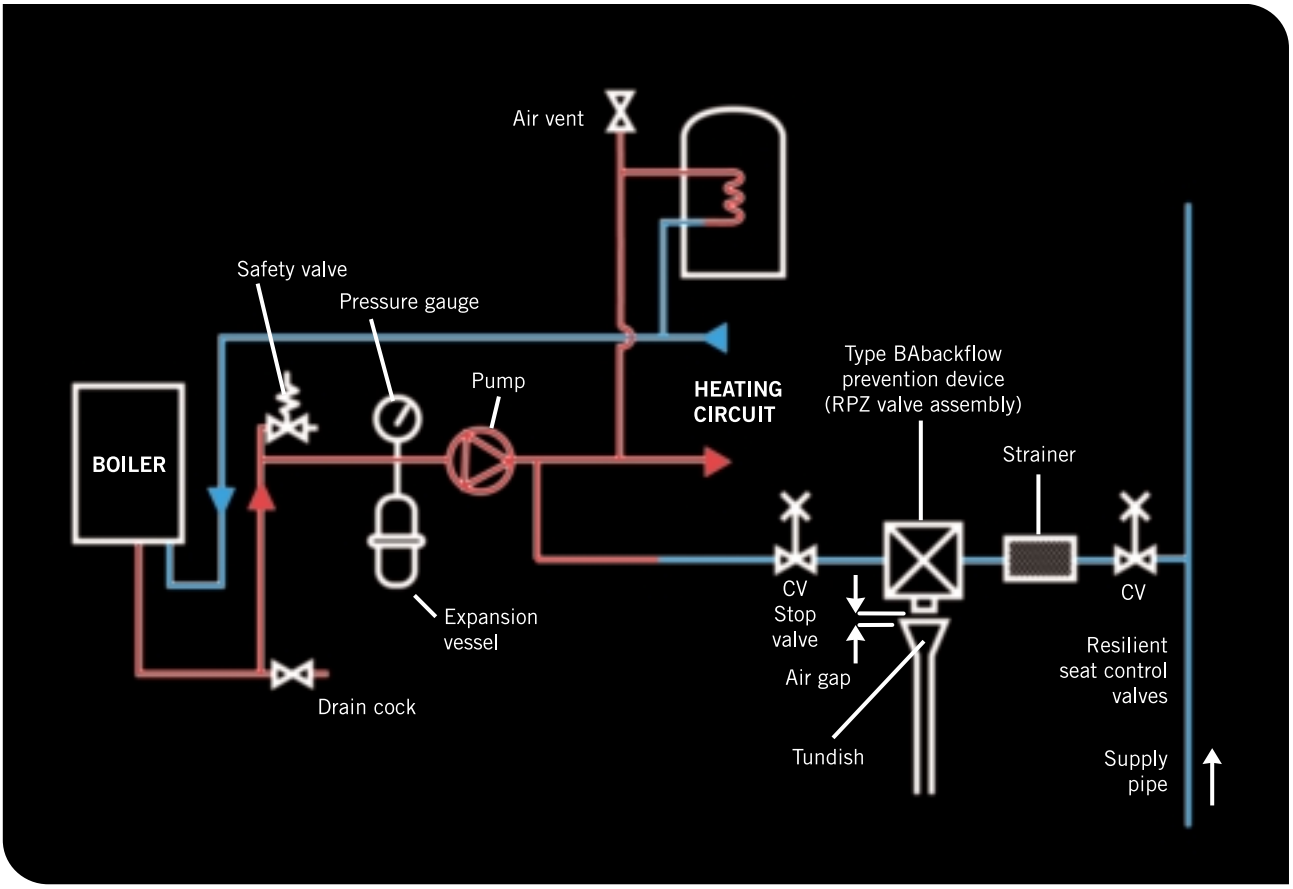
System Design

The efficiency of this range of boilers is higher than conventional boilers because of the increased heat exchange area.

At return temperatures of 55˚C and below, the differences become more marked because the water in the flue gases starts to condense releasing its latent heat.

In general, the lower return temperature, the better the efficiency.

In new systems it is best to design for the lowest flow and return temperatures that are practical (subject to the lower limit mentioned above). For optimum operation it is advised that the system be designed on a temperature differential of 20˚C.



Installation

For safety, a competent CORGI (Council for the Registration of Gas Installers) registered installer must fit this appliance. CORGI requires its members to work to satisfactory standards.

Boiler installation should comply with relevant British Standard Specifications, Codes of Practice, and current Building Regulations, together with any special regional requirements of the Local Authorities, Gas Supplier, and Insurance Company, and in particular:

BS 6891 Low Pressure Installation Pipes, BS 6644 Installation of Gas Fired Boilers, BS 6880 Part 1-3 Central Heating by Low Pressure Hot Water, CP 342.2 Centralised Hot Water Supply, IGE/UP/10 Installation of Gas Appliances in Industrial & Commercial Premises, Part 1: Flued appliances.

All electrical wiring must comply with IEE Regulations.

Manufacturer's notes must not be taken as overriding statutory obligations.

Minimum clearances from walls or other fixed objects to allow for installation, maintenance, and the free access of combustion air are shown in the boiler clearance diagram.

system requirements

Water Treatment

Corrosion will always occur within a heating/hot water system to a greater or lesser degree irrespective of water characteristics, unless the initial fill water from the mains is treated. For these reasons Ideal Boilers Solutions strongly recommends that when necessary the system be thoroughly cleaned prior to the use of a stable inhibitor which does not require continual topping up to combat the effects of hardness, salts and corrosion on the heat exchanger and its associated systems.

The Ideal ***i*max**W & ***i*max** Plus boilers have an aluminium alloy heat exchanger. Therefore it is important that if water treatment is used it is suitable for the material of the heat exchanger. The ONLY water treatments approved are 'Fernox Copal' and 'Sentinel X 100'. Current suitability should be confirmed with the manufacturer direct: BetzDearborn Ltd, Sentinel Division, Foundry Lane, Widnes, Cheshire WA8 8UD Telephone: 0151 424 5351 or Fernox, Fry Technology UK, Tandem House, Marlowe Way, Beddington Farm Road, Croydon CRO 4XS Telephone: 01799 550811 for technical information.

Any other treatment used will render the guarantee of Caradon Ideal Limited for this product INVALID. The use of artificially softened water is NOT permitted.

Gas

***i*max W & *i*max Plus**

Natural Gas models: If there is any doubt concerning the capacity of the gas meter, available gas pressure, adequacy of existing pipes or the size required for new service pipes, contact the Gas Region for advice. Installation pipework should be fitted and tested for gas soundness in accordance with BS 6891. The local Gas Region must be consulted if a gas pressure booster is needed.

***i*max W Only**

Propane Gas models: Contact the local Propane Gas supplier at the installation planning stage to ensure availability of an adequate supply of gas. Installation pipes, cylinders and pressure regulators should be fitted in accordance with BS 5482: 1. Bulk tank installations must comply with the Home Office Codes of Practice for the storage of LPG at fixed installations.

Ventilation

Open flued application

Safe, efficient, and trouble-free operation of conventionally flued gas boilers is vitally dependent on the provision of an adequate supply of fresh air to the room in which the appliance is installed.

Ventilation by grilles communicating directly with the outside air is required at both high and low levels. The minimum free areas of these grilles must be according to the scale below. The use of an extractor fan in the same room as the boiler (or in an adjacent room in communication) can, in certain conditions, adversely affect the safe operation of the boiler. Where such a fan is already fitted, or if an extractor fan is likely to be installed at a later date, then the advice of the gas supplier should be obtained.

***i*max W45 & W60 Only**

BS 5440: 2 - Inputs not exceeding 70kW (nett)

Total nett input rating of boilers	Air vent areas (air direct from outside)
Up to 70kW	5cm^2 per kW nett input

***i*max W & *i*max Plus**

BS 6644 - Inputs greater than 60kW (gross)

Total gross input rating of boilers	Position of air vents	Air vent areas (air direct from outside)
60kW to 2MW	High level	270cm^2 plus 2.25cm^2 per kW in excess of 60kW total rated input
60kW to 2MW	Low level	540cm^2 plus 4.5cm^2 per kW in excess of 60kW total rated input

Balanced flue applications

Room sealed installations require no air for combustion as this is drawn direct from the outside atmosphere. However, air may be required to ventilate the boiler house and remove any excess heat generated by the boiler.

***i*max** W boilers have a standard range of balanced flues available.

***i*max** Plus boilers have an air inlet connection which may be used with proprietary ducting if required. A separate flue connection is still required.

Condensate Drain

Ideal **imax** boilers will produce condensate whenever the temperature of the return water from the system is below approximately 55˚C (the dew point of the combustion products).

Natural Gas condensate is mildly acidic with a pH value of about 4 and therefore corrosion resistant materials must be used in the construction of the condensate drain. Standard PVC pipe is suitable for this purpose and should be connected to the plastic drain fitted on the boiler.

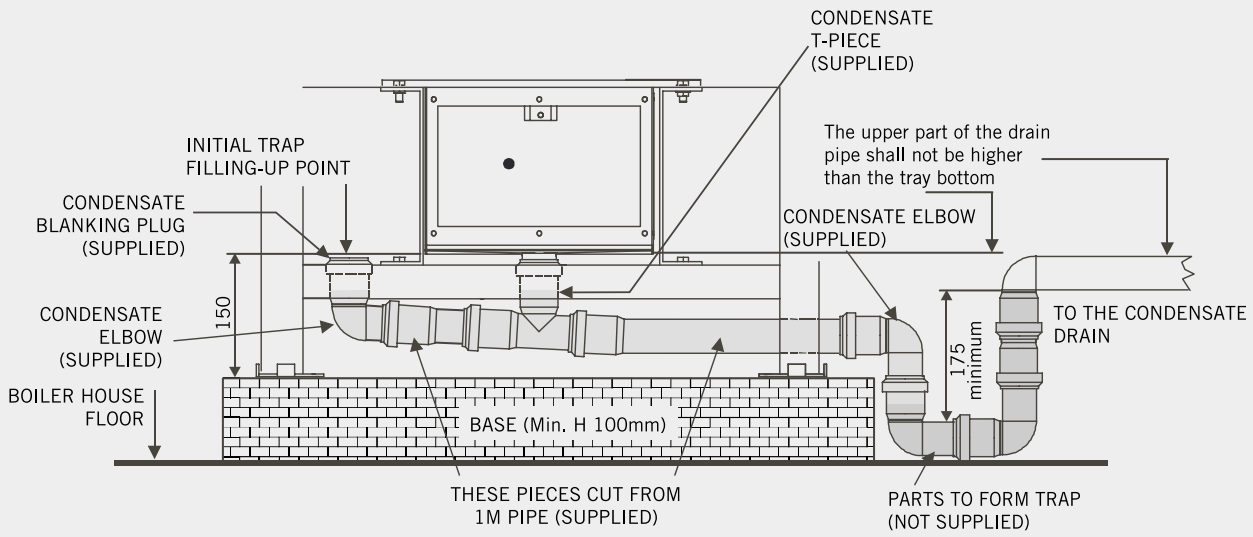
imax W

A condensate trap is supplied for fitting to the boiler and the drain may be led directly into the normal drainage system. The pipe should be installed with an adequate slope (eg 1 in 50) and consideration should be given to frost protection.

imax Plus

Pipework is supplied for fitting beneath the boiler and includes a filling point for initial charging of a condensate siphon (not supplied). The pipe should be installed with an adequate slope (eg 1 in 50) and consideration should be given to frost protection.

imax Plus Condensate Drain



general & performance data

MENU

General Data - imax W (45 - 80)

Model		W45 & W45P	W60 & W60P	W80 & W80P
Flow connection	BSP		R1¼"	
Return connection	BSP		R1¼"	
Maximum static water head	m		40.79	
	ft		133.83	
Maximum pressure	Bar		4.0	
	psi		58	
Gas inlet connection	mm		22	
Pressure required at the boiler inlet	mbar		17.5	
for the rated input (Natural Gas)	in. w.g.		7.0	
Electricity supply			230V 50Hz	
Nominal flue size / concentric	mm	80 / 125	80 / 125	100 / 150
Nominal flue size / twin pipe	mm	80 / 80	80 / 80	100 / 100
Condensate drain	mm		25	
NOx emissions	mg / kW / hr	45	55	60
	ppm (0% O_2)	26	31	34
Water content	l	8	8	10
	gal	1.76	1.76	2.20
Weight	kg	87	88	101
	lb	191	194	222
Power consumption	W	51	84	120

Performance Data - imax W (45 - 80)

Model			W45	W45P	W60	W60P	W80	W80P
Boiler output (condensing) 50/30˚C	max	kW	46.9	45.9	62.3	60.6	82.7	80.0
		Btu/h	160,000	156,000	212,560	206,750	282,170	272,950
	min	kW	13.9	13.7	13.9	13.6	21.3	20.7
		Btu/h	47,600	46,600	47,600	46,400	72,700	70,600
Boiler output (non-condensing) 80/60˚C	max	kW	43.7		58.9		78.2	
		Btu/h	149,000		200,960		266,800	
	min	kW	12.6		12.6		19.5	
		Btu/h	43,000		43,000		66,500	
Boiler input (Nett)	max	kW	45		60		80	
		Btu/h	153,540		204,720		272,960	
	min	kW	13		13		20	
		Btu/h	44,350		44,350		68,240	
Boiler input (Gross)	max	kW	49.9	48.9	66.5	65.1	88.7	86.9
		Btu/h	170,250	166,850	227,000	222,300	302,700	296,350
	min	kW	14.4	14.1	14.4	14.1	22.2	21.7
		Btu/h	49,150	48,150	49,150	48,150	75,650	74,100
Gas rate	Natural Gas	m^3/h	4.76		6.35		8.46	
		ft^3/h	166		222		296	
Gas rate	Propane	m^3/h		1.84		2.45		3.27
		ft^3/h		65		86		115
Approx flue gas volume (non condensing) max rate	Natural Gas	m^3/s	0.02		0.027		0.036	
		ft^3/min	42.33		57.67		77	
Approx flue gas volume (non condensing) max rate	Propane	m^3/s		0.019		0.026		0.034
		ft^3/min		40		54.67		72.33
Seasonal efficiency *(SEDBUK)		%	90.4	91.3	90.4	92.1	90.2	91.6

Note: Gas rates are calculated using a C.V. of 37.8 MJ/m^3 gross (34 MJ/m^3 nett) for Natural Gas or 95.7 MJ/m^3 for Propane.
* The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings.

General Data - imax Plus (80 - 280)

Model		F80	F120	F160	F200	F240	F280
Flow connection	BSP			R2"			
Return connection	BSP			R2"			
Maximum static water head	m			61			
	ft			200			
Maximum pressure	Bar			6			
	psi			87			
Gas inlet connection	BSP			R1½"			
Pressure required at the boiler inlet	mbar			15.0			
for the rated input (Natural Gas)	in. w.g.			6.0			
Electricity supply				230V 50Hz			
Nominal flue size	mm	150	150	150	200	200	200
Nominal air inlet size	mm	150	150	150	150	150	150
Condensate drain	mm			40			
NOx emissions	mg / kW / hr			< 62			
	ppm (0% O_2)			< 35			
Water content	l	10.1	14.2	18.3	22.4	26.5	30.6
	gal	2.22	3.13	4.03	4.93	5.84	6.74
Weight	kg	125	170	215	260	305	345
	lb	276	375	474	573	673	761
Power consumption	W	175	250	325	400	475	550

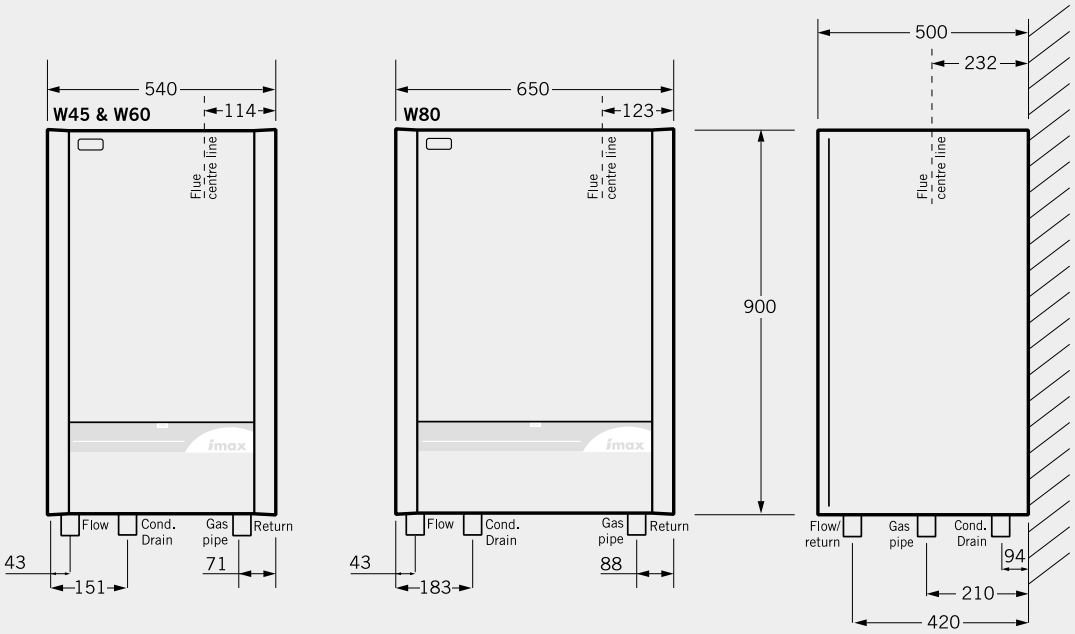
Performance Data - imax Plus (80 - 280)

Model			F80	F120	F160	F200	F240	F280
Boiler output (condensing) Mean 50/30˚C	max	kW	83.9	125.9	167.8	209.8	251.8	293.7
		Btu/h	286,300	429,600	572,550	715,850	859,200	1,002,150
	min	kW	13.0	13.0	13.0	13.0	13.0	13.0
		Btu/h	44,350	44,350	44,350	44,350	44,350	44,350
Boiler output (non-condensing) Mean 80/60˚C	max	kW	77.3	116.0	154.6	193.2	231.8	270.5
		Btu/h	263,750	395,800	545,950	659,250	818,900	923,000
	min	kW	11.6	11.6	11.6	11.6	11.6	11.6
		Btu/h	39,600	39,600	39,600	39,600	39,600	39,600
Boiler input maximum rate	Nett	kW	80	120	160	200	240	280
		Btu/h	272,950	409,450	545,950	682,450	818,900	955,400
	Gross	kW	88.8	133.2	177.6	222.0	266.4	310.8
		Btu/h	303,000	454,500	606,000	757,500	909,000	1,060,500
Boiler input minimum rate	Nett	kW	12	12	12	12	12	12
		Btu/h	40,950	40,950	40,950	40,950	40,950	40,950
	Gross	kW	13.3	13.3	13.3	13.3	13.3	13.3
		Btu/h	45,400	45,400	45,400	45,400	45,400	45,400
Gas rate	Natural Gas	m^3/h	8.42	12.63	16.83	21.04	25.26	29.46
		ft^3/h	297	446	594	743	892	1040
Approx flue gas volume (non condensing) max rate	Natural Gas	m^3/s	130	196	261	326	392	457
		ft^3/min	4,590	6,920	9,220	11,510	13,840	16,140

Note: Gas rates are calculated using a C.V. of 37.8 MJ/m^3 gross (34 MJ/m^3 nett) for Natural Gas.

dimensional data

imax W Boiler Dimensions

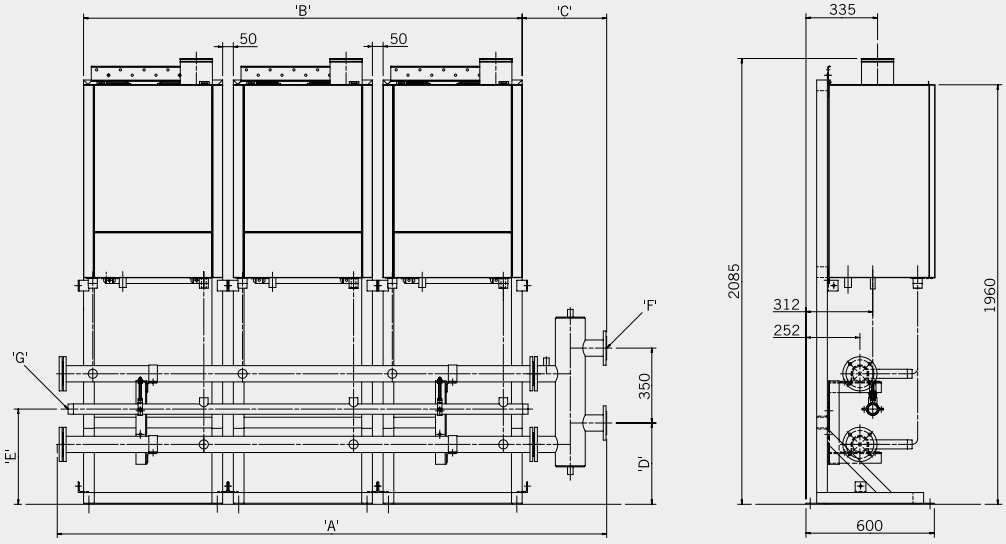


imax W Boiler House Clearances

The following minimum clearances must be maintained for operation and servicing:

- Front of boiler - 450mm
- Above boiler - dependent upon the flue system
- Sides of boiler - 50mm
- Below boiler - 300mm

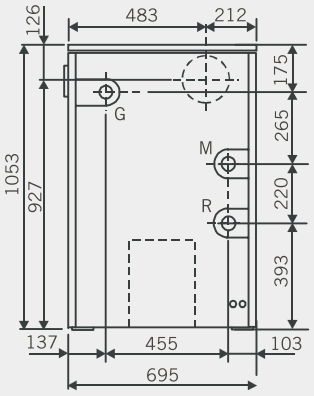
imax W Multiple Frame Kit



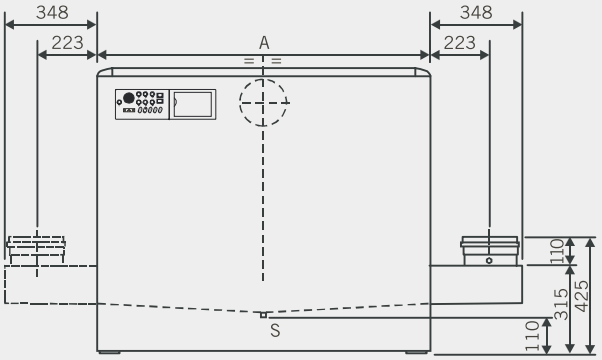
	A	B	C	D	E	F	G
2 Boiler, Frame & Header Kit W45/60	1648	1130	403.5	372	460	DN50 PN6	32NB
3 Boiler, Frame & Header Kit W45/60	2238	1720	403.5	372	460	DN50 PN6	32NB
2 Boiler, Frame & Header Kit W80	1868	1350	395	372	460	DN50 PN6	32NB
3 Boiler, Frame & Header Kit W80	2568	2050	395	380	455	DN65 PN6	40NB

imax Plus Boiler Dimensions

RIGHT HAND SIDE VIEW
(Delivery condition for
R.H. side connections)



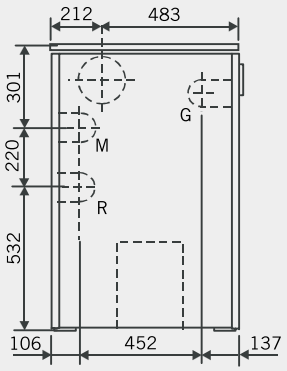
FRONT VIEW



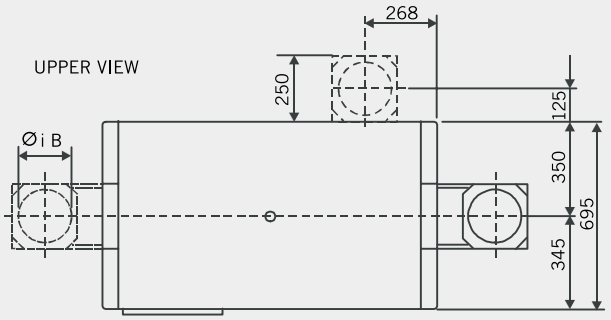
Warning:
Flow/Return connections change their position whether they are on the R.H. or on the L.H. side of the boiler (see views on the left).

Flue connection shown on RH side, options shown dotted at rear or left.

LEFT HAND SIDE VIEW
(Prenotches for left
side connections)



UPPER VIEW



Model		80	120	160	200	240	280
Modules No. off		2	3	4	5	6	7
A		695	695	832	968	1102	1236
B		150	150	150	200	200	200
Weight	kg	153	182	223	261	301	345

Connections

Gas	G : 1½”
Flow	M : 2”
Return	R : 2”
Condensate Drain	S : ø40

imax Plus Boiler House Clearances

The following minimum clearances must be maintained for operation and servicing:

- Rear of boiler - 300mm; except with rear flue 600mm.
- Sides of boiler - 50mm; except with side flue 600mm or pipework side 300mm.
- Front of boiler - 700mm; except compartment access doors may be closer, but not less than 200mm, and 700mm must still be available for service across the full width of the boiler.
- Between multiple boilers - 50mm; however due consideration must be respected for electrical connections, side pipework and flues if located between boilers.

The Ideal Commercial Range

Boiler output										
	kW	20	40	100	150	200	600	800	1000	1500	3500
	Btu/h (000)	68	136	340	511	682	2047	2729	3412	5118	11942
Atmospheric Boilers											
Concord CXA/H			40-120								
Concord CXS/H, CXSD/H			40-120								
Concord CXSi/H, CXDi/H				110-180							
Concord ES/H				140-380							
Concord Modular				80-720							
High Efficiency Boilers											
Concord Super Series 4				50-600							
Concord Super Plus					200-600						
Condensing Boilers											
imax W			45-80								
Concord CXC			49-116								
imax Plus				80-280							
GT Condenser					180-990						
Pressure Jet Boilers											
Buccaneer GTE		21-39									
Falcon GTE			36-102								
Harrier GTE				105-330							
Viceroy GT					300-780						
Viscount GTE								754-1450			
Vanguard L					130-3500						
Hot water solutions											
Buccaneer / Falcon Combination Boilers		21-64									
Senator Calorifiers					150-1000 litres						

Contact Numbers

Sales

Tel: 01482 498690

Fax: 01482 498621

Technical

Tel: 01482 498376

Fax: 01482 498621

Training

Tel: 01482 498432

Fax: 01482 498605

Approval
These appliances are certified to G.A.D. 90/396 and B.E.D. 92/42 safety and performance Directives for gas boilers.

Ideal Boilers pursues a policy of continuous improvement in design and performance of its products and reserves the right to vary specification without notice. Statutory rights of the consumer are not affected.

Assurance of quality
BS EN ISO 9001: 2000

Ideal Boilers Limited, PO Box 103, National Avenue, Kingston upon Hull HU5 4JN.
www.idealcommercialboilers.com email: commercial_heating@idealboilers.com

Imax/1/04 Issued subject to standard conditions