

installation and servicing

***i*max**

Your Ideal installation and servicing guide

W45, W60 & W80
W45P, W60P & W80P

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 Boilers.

***i* Ideal** BOILERS
ENGINEERED FOR PEACE OF MIND

GENERAL

Table 1 Performance Data

Boiler		<i>imax</i> W45	<i>imax</i> W45P	<i>imax</i> W60	<i>imax</i> W60P	<i>imax</i> W80	<i>imax</i> W80P
Boiler output (non-condensing)	Max kW	43.7		58.9		78.2	
	Btu/h	149,000		200,950		266,800	
Mean 70°C	Min kW	12.6		12.6		19.5	
	Btu/h	43,000		43,000		66,500	
Boiler output (condensing)	Max kW	46.9	45.9	62.3	60.6	82.7	80.0
	Btu/h	160,000	156,000	212,550	206,750	282,150	272,950
Mean 40°C	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 Input Max Rate	Nett kW	45.0	45.0	60.0	60.0	80.0	80.0
	Btu/h	153,550	153,550	204,700	204,700	272,950	272,950
	Gross 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
Boiler Input Min Rate	Nett kW	13.0	13.0	13.0	13.0	20.0	20.0
	Btu/h	44,350	44,350	44,350	44,350	68,250	68,250
	Gross 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	m ³ /h	4.76	1.84	6.35	2.45	8.46	3.27
	ft ³ /h	168	65	224	86	299	115
Approx. flue gas volume	m ³ /h	72	68	98	93	131	123
	ft ³ /h	2,540	2,400	3,460	3,280	4,620	4,340
CO ₂	@ Max Rate %	8.9	10.6	8.9	10.6	9.2	10.6
	@ Min Rate %	8.7	10.3	8.7	10.3	9.0	10.3
NOx	mg/kWh	45	42	55	65	60	63
	ppm	26	24	31	37	34	36
Part load efficiency (Gross)	%	96.4	97.2	96.4	97.5	96.4	97.0
*Seasonal efficiency (SEDBUK) Band A		[90.0]%	[91.3]%	[90.4]%	[92.0]%	[90.2]%	[91.6]%

Table 2 General Data

Boiler	<i>imax</i> W45	<i>imax</i> W45P	<i>imax</i> W60	<i>imax</i> W60P	<i>imax</i> W80	<i>imax</i> W80P
Gas supply	2H - G20 - 20mbar / 3P - G31 - 37mbar					
Gas supply connection	22mm copper					
Flow connection	R 1 1/4"					
Return connection	R 1 1/4"					
Max pressure (sealed system) bar (psi)	4.0 (58)					
Maximum static head	(m)					
	40.7					
	(ft)					
	133.8					
Electricity supply	230V ~ 50Hz					
Fuse rating	External : 3A Internal : 1x2AF & 1x4AT					
Power consumption (W)	51		84		120	
IP rating	IP20					
Nominal flue dia - concentric (mm)	80/125		80/125		100/150	
Nominal flue dia - twin pipe (mm)	80/80		80/80		100/100	
Condensate drain (mm)	25					
Water content	(l)					
	8					
	(gal)					
	1.76					
Weight	(kg)					
	87					
	(lb)					
	191					
	194					
	222					

* The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy ratings of dwellings. The test data from which it has been calculated have been certified by a notified body.

Note.

Natural gas consumption is calculated using a calorific value of 37.8MJ/m³ (1038Btu/ft³) gross or 34 MJ/m³ (910 Btu/ft³) nett at 15°C and 1013.25 mbar.

- a. For l/s divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m³)
- b. For ft/h³ divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft³).

Propane gas consumption is calculated using a calorific value of 95.7 MJ/m³ (2500 Btu/ft³) gross or 88.0 MJ/m³ (2300 Btu/ft³) nett at 15°C and 1013.25 mbar.

To obtain the fuel consumption in liquid form divide the above figures by 270.

HEALTH & SAFETY DOCUMENT NO. 635

The electricity at work regulations, 1989. The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

IMPORTANT. These appliances are CE certified for safety and performance. It is, therefore, important that no external control devices, e.g. flue dampers, economisers etc., are directly connected to these appliances unless covered by these Installation and Servicing Instructions or as otherwise recommended by **Caradon Ideal Limited** in writing. If in doubt please enquire.

Any direct connection of a control device not approved by **Caradon Ideal Limited** could invalidate the certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above regulations.

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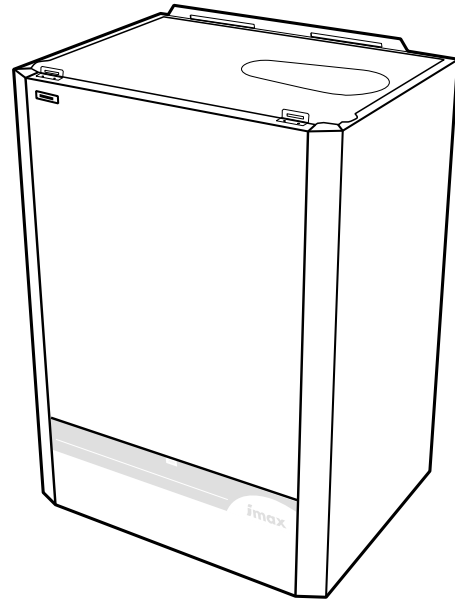
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imax

Natural Gas & LPG

PI No. 0063 BN 3218

Destination Countries: GB,IE



Key to symbols

IE = Ireland, GB =	United Kingdom (Countries of destination)
PMS =	Maximum operating pressure of water
C13 C33 =	A room sealed appliance designed for connection via ducts to a horizontal or vertical terminal, which admits fresh air to the burner and discharges the products of combustion to the outside through orifices which, in this case, are concentric. The fan is down stream of the combustion chamber.
C53 =	A room sealed appliance which is connected via its separate ducts to two terminals that may terminate in zones of different pressure.
C63 =	A room sealed appliance intended to be connected to a separately approved and marketed system for the supply of combustion air and discharge of combustion products. The fan is down stream of the combustion chamber.
B23 =	An appliance intended to be connected to a flue which evacuates the products of combustion to the outside of the room containing the boiler. The combustion air is drawn directly from the room. The fan is down stream of the combustion chamber.
II2H3P =	An appliance designed for use on 2nd and 3rd Family gases.

CAUTION. To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

INTRODUCTION

The **imax** boilers are fully automatically controlled, wall mounted, fanned, super efficient condensing appliances.

The **imax** condensing boilers can be installed either on the wall or into a prefabricated floor mounted frame.

The boilers are suitable for use with a room sealed flue or open flue application.

Through a sophisticated control system combined with premix burner arrangement the boilers are capable of high operating efficiencies of 94% and low emissions.

These boilers are certified to meet the requirements of the EC Gas Appliance Directive, Boiler Efficiency Directive, EMC and Low Voltage Directive.

Note.

These boilers cannot be used on systems that include gravity circulation.

The boiler are suitable for connection to fully pumped, open vented or sealed water systems. Adequate arrangements for completely draining the system by provision of drain cocks MUST be provided in the installation pipework.

OPTIONAL EXTRA KITS

- **Vertical Roof Flue Kit 80/125** (Suitable for W45 and W60)
- **Vertical Roof Flue Kit 100/150** (Suitable for W45 and W60)
- **Vertical Roof Flue Kit 100/150** (Suitable for W80)
- **Horizontal Wall Flue Kit 80/125** (Suitable for W45 and W60)
- **Horizontal Wall Flue Kit 100/150** (Suitable for W45 and W60)
- **Horizontal Wall Flue Kit 100/150** (Suitable for W80)
- **Open Flue Kit 80** (Suitable for W45 and W60)
- **Open Flue Kit 100** (Suitable for W80)
- **Twin Pipe Flue Option 80/80** (Suitable for W45 and W60)
- **Pitched and Flat Roof Tiles** (For all vertical flue options)
- **Frame and Header Kits**
- **Programmable Room Thermostat Kit**
- **Modulating Sequencer Kit**
- **Room Sensor Kit**
- **Remote Indication Kit**
- **BMS (0-10V) Kit**
- **Outside Sensor Kit**
- **Tank Sensor Kit**
- **Control Interface Kit**

SAFETY

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

The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force.

In GB, the installation must be carried out by a CORGI Registered Installer. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety (Installation and Use) Regulations
- The appropriate Building Regulations either The Building Regulations, The Building Regulations (Scotland), Building Regulations (Northern Ireland).
- The Water Fittings Regulations or Water byelaws in Scotland.
- The Current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

In IE, the installation must be carried out by a Competent Person and installed in accordance with the current edition of I.S.813 "Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for electrical installation.

The **imax W45, W60, W80 and W45P, W60P, W80P** boilers have been tested and certified by Gastec to EN483 and EN677 for use with Natural Gas and LPG.

Detailed recommendations are contained in the following Codes of Practice:

BS. 6891	Installation of low pressure gas pipework of up to 28mm (R1) in domestic premises (2nd family gas).
BS. 5482 Pt. 1	Domestic butane and propane gas burning installations.
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.
BS. 6798	Installation of gas fired hot water boilers of rated input not exceeding 60kW.
BS. 6644	Installation of gas fired hot water boilers of rated inputs between 60kW and 2MW (2nd and 3rd family gases).
BS. 5449	Forced circulation hot water central heating systems for domestic premises. Note: only up to 45kW.
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. 4814	Specification for: Expansion vessels using an internal diaphragm, for sealed hot water heating systems.
BS. 5440	Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases).
	Part 1 Specification for installation of flues.
	Part 2 Specification for installation and maintenance of ventilation for gas appliances.

Where reference is made throughout these instructions I.S.813:2002 "Domestic Gas Installations" reference should also be made to I.S.820:2002 "Non-Domestic Gas Installations" as applicable.

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.

NOTE TO THE INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER.

LOCATION OF BOILER

The boiler must be installed on a flat and vertical wall, capable of adequately supporting the weight of the boiler and any ancillary equipment or on a boiler frame supplied in kit form by **Caradon Ideal Limited**.

The boiler must not be fitted outside.

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 registered CORGI engineer or in IE by a competent person.

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 boiler inlet gas connection.

The complete installation MUST be tested for gas soundness and purged in accordance with the appropriate standards listed on page 4.

FLUE INSTALLATION

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

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

The roof flue kits are suitable for both flat and pitched roof termination, using either concentric or flue only terminals.

Connection to the top of the boiler is made using a separately supplied vertical connector in concentric, twin pipe and open flue configurations (supplied in our optional extra kits).

Additional information covering the selection and installation can be found with this booklet.

Weather Proofing

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

- Flat weather collar
- Pitched weather collar

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

Flue duct extension kits are available for twin pipe and open flue configurations. These packs contain 2 x 1 metre ducts and may be cut to the desired length.

If obstructions prevent direct flue routing then both 90° and 45° elbows can be provided to offset the flue system.

Terminal Position

Due to the high efficiency of the boilers pluming will occur. For this reason, vertical termination is recommended, and in any case, terminal positions which could cause problems should where possible be avoided. Particular care should be taken in the case of large multiple boiler installations, and complying with the requirements of the Clean Air Act.

IMPORTANT

It is the responsibility of the installer to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance MUST be turned OFF, labelled as 'unsafe' and corrective action taken.

Where the lowest part of the terminal is fitted less than 2m (80") above a balcony, above ground or above a flat roof to which people have access then the terminal MUST be protected by a purpose designed guard. The minimum spacing between the balcony and the terminal should be 75mm, in order to allow a terminal guard to be fitted.

Terminal guards are available from boiler suppliers - for all requirements contact:

Grasslin (UK) Ltd., Tower House, Vale Rise,
Tonbridge, Kent TN9 1TB.
Tel: +44 (0) 1732 359 888. Fax: +44 (0) 1732 354 445
www.tfc-group.co.uk

Ensure that the guard is fitted centrally.

The air inlet/products outlet duct and the terminal of the boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440-1: 2000. In IE refer to I.S.813:2002.

The flue must be installed in accordance with Building Regulations and the recommendations of BS. 5440-1:2000 for inputs up to 70kW nett. For larger installation BS. 6644 should be complied with. In IE refer to I.S.820:2000.

WATER CIRCULATION SYSTEM

The system pump MUST be connected to the boiler, see below.

The boiler must NOT be used for direct hot water supply. The hot water storage cylinder MUST be of the indirect type.

Single feed, indirect cylinders are not recommended and MUST NOT be used on sealed systems.

The appliances are NOT suitable for gravity central heating nor are they suitable for the provision of gravity domestic hot water.

The hot water cylinder and ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing - particularly where pipes run through roof spaces and ventilated underfloor spaces.

The boiler must be vented.

Draining taps MUST be located in accessible positions, which permit the draining of the whole system - including the boiler and hot water storage vessel. They should be at least 1/2" BSP nominal size and be in accordance with BS. 2879.

The central heating system should be in accordance with the relevant standards listed on page 4.

Due to the compact nature of the boiler the heat stored within the castings at the point of shutdown of the burner must be dissipated into the water circuit in order to avoid overheating. In order to allow pump operation after burner shutdown the boiler control box incorporates a 5 minute pump overrun facility. In order to make use of this, the pump must be supplied from the terminals inside the boiler. Note: for pumps requiring greater than 1.0 amp current, they must be connected via a relay.

GENERAL

When sizing pumps, reference should be made to the graphs below which show the boiler resistance against flow rates, to achieve the required temperature differential.

Flow rates for common systems using either 11°C or 20°C temperature differentials are given in the table below.

	11°C	20°C
imax W45	0.94 l/s	0.53 l/s
imax W60	1.28 l/s	0.69 l/s
imax W80	1.69 l/s	0.94 l/s

Note.

- With the boiler firing at maximum rate, the temperature differential should not be less than 10°C. High flow rates required for lower temperature differentials could lead to erosion of the heat exchanger water ways.
- With the boiler firing at minimum rate, the temperature differential should not be greater than 35°C. Lower flow rates generating higher temperature differentials will lead to lock out of the boiler.
- The lower the return temperature to the boiler, the higher the efficiency.

In installations where all radiators have been provided with thermostatic radiator valves, it is essential that water circulation through the boiler is guaranteed. This can be best achieved by means of a differential pressure valve, which is installed in a bypass between the flow and return pipes. The bypass should be fitted at least 6m from the boiler, and should use a minimum size of 28mm pipe. The bypass should be capable of allowing a minimum flow rate to achieve a temperature differential of no greater than 35°C at minimum rate.

WATER TREATMENT

These boilers incorporate an ALUMINIUM heat exchanger.

IMPORTANT. The application of any other treatment to this product may render the guarantee of **Caradon Ideal Limited** INVALID.

Caradon Ideal Limited recommend Water Treatment in accordance with Guidance Notes on Water Treatment in Central Heating Systems.

Caradon Ideal Limited recommend the use of Fernox Copal or MB1, GE Betz Sentinel X100 or Salamander Corrosion Guard inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

For further information contact:

Fernox Manufacturing Co. Ltd., Cookson Electronics,
Forsyth Road, Sheerwater, Woking, Surrey, GU21 5RZ

Tel: +44 (0) 1799 521133

or

G E Betz Ltd, Sentinel Division, Foundry Lane, Widnes,
Cheshire, WA8 8UD

Tel: +44 (0) 151 424 5351

or

Salamander Engineering Ltd., Unit 24, Reddicap Trading Estate,
Sutton Coldfield, West Midlands, B75 7BU

Tel: +44 (0) 121 378 0952

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. BS7593:1992 details the steps necessary to clean a domestic heating system.
3. In hard water areas, treatment to prevent limescale 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.

ELECTRICAL SUPPLY

Wiring external to the appliance **MUST** be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations which apply. For Ireland reference should be made to the current ETCI rules for electrical installations

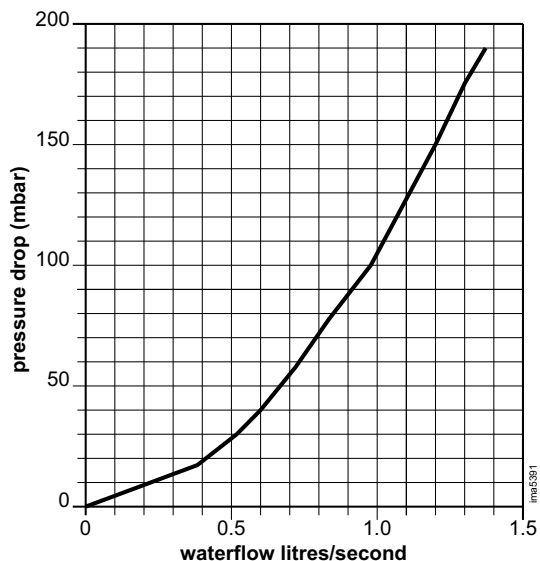
The point of connection to the mains should be readily accessible and adjacent to the boiler.

CONDENSATE DRAIN

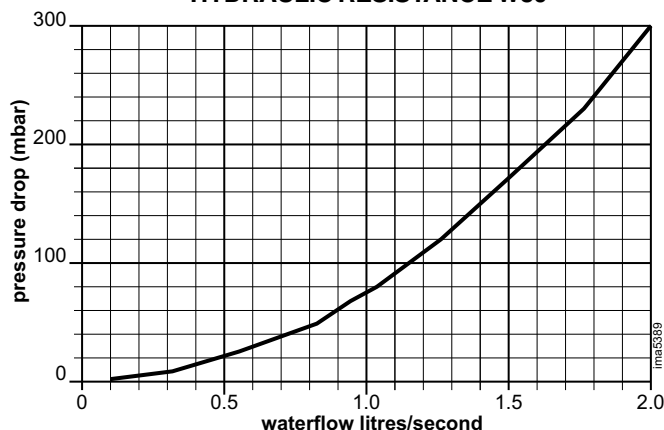
A condensate drain is provided on the boiler. This drain must be connected to a drainage point on site. All pipework and fittings in the condensate drainage system **MUST** be made of plastic - no other materials may be used.

IMPORTANT. Any external runs must be insulated.

HYDRAULIC RESISTANCE W45 / W60



HYDRAULIC RESISTANCE W80



1 BOILER CLEARANCES AND CONNECTIONS

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

Front of boiler - 450mm

Sides of boiler - 50mm

Above boiler - dependent upon the flue system see drawings

Below boiler - 300mm

Clearance between multiple boiler installations - 50mm

80/125 Concentric Flue Connector

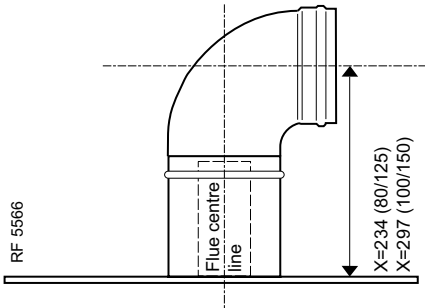
imax W45 and W60

Minimum boiler top clearances:

for vertical flue 200mm

for horizontal flue 350mm (410mm for 100/150)

for open flue 350mm



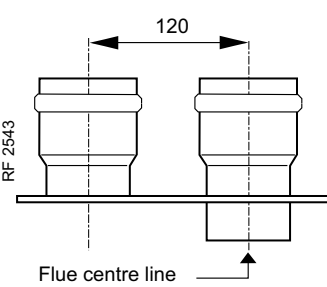
80/80 Twin Pipe Connector

imax W45 and W60

Minimum boiler top clearances:

for vertical flue 200mm

for horizontal flue 300mm



100/150 Concentric Flue Connector

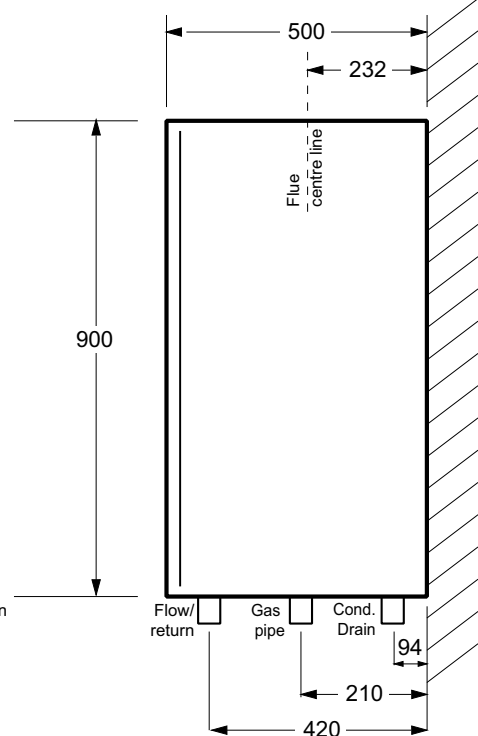
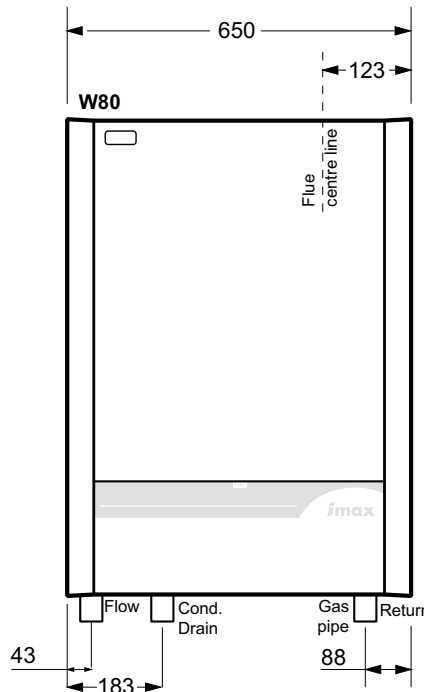
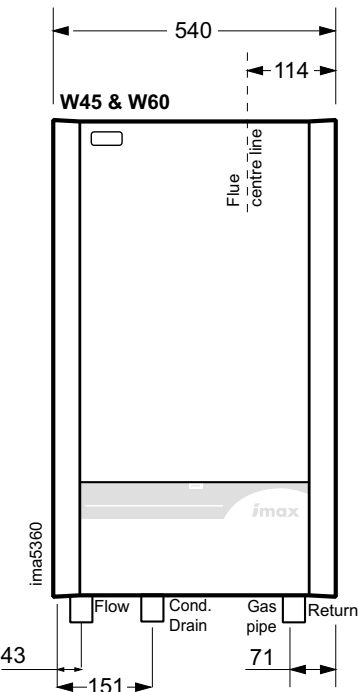
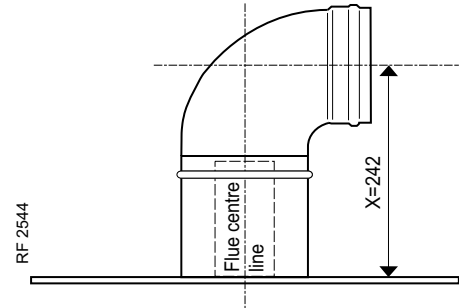
imax W80

Minimum boiler top clearances:

for vertical flue 200mm

for horizontal flue 365mm

for open flue 350mm



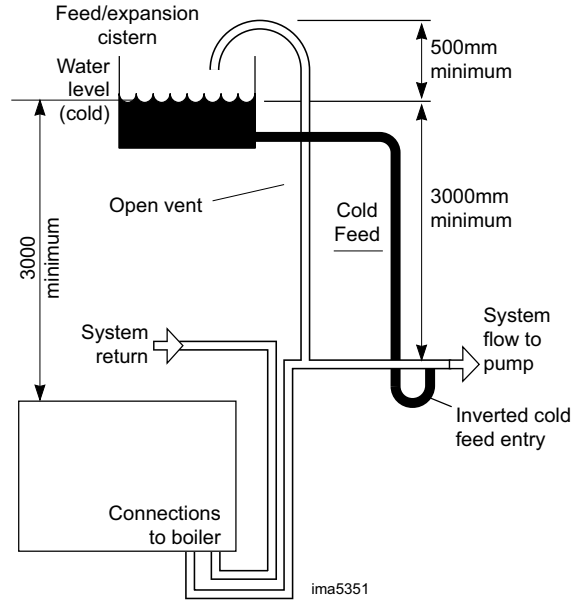
2 OPEN VENTED SYSTEM REQUIREMENTS

Detail reference should be made to the appropriate standards listed on page 4.

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

The vertical distance between the pump and feed/expansion cistern **MUST** comply with the pump manufacturer's minimum requirements, to avoid cavitation. Should these conditions not apply either lower the pump position or raise the cistern above the minimum requirement specified by **Caradon Ideal Limited**. The isolation valves should be fitted as close to the pump as possible.

The boiler is fitted with an automatic air vent, located in the left top side of the interior. This air vent must never be shut off, as this could result in dry firing of the boiler and subsequent damage to the heat exchanger.



3 SEALED SYSTEM REQUIREMENTS

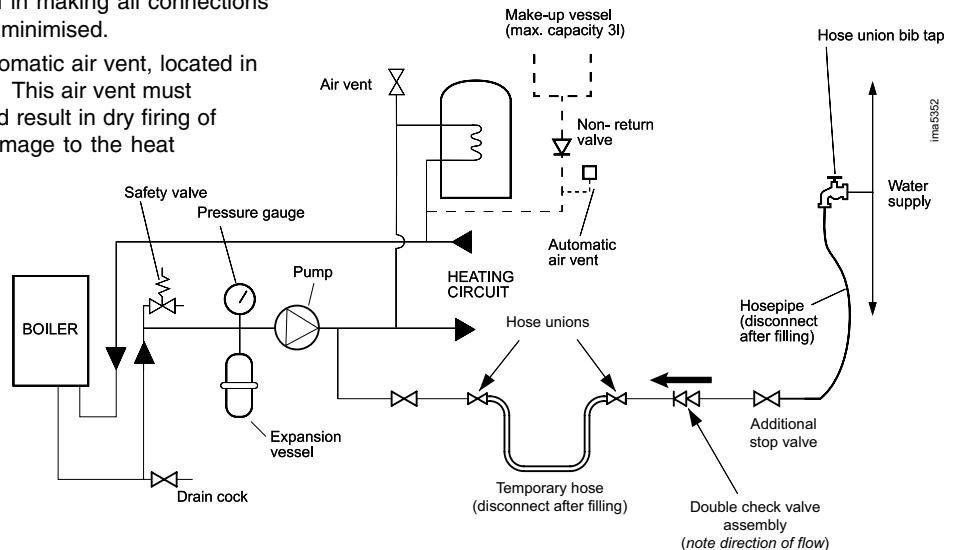
Note. The method of filling, refilling, topping up or flushing sealed primary hot water circuit from the mains via a temporary hose connection is only allowed if acceptable to the local water authority.

1. General

- Detail reference should be made to the appropriate standards listed on page 4. The information and guidance given below is not intended to override any requirements of these publications or the requirements of the local authority, gas or water undertakings.
- The installation should be capable of working with flow temperatures of up to 90°C and a temperature differential of up to 20°C.
- All components of the system, including the heat exchanger of the indirect cylinder, must be suitable for a working pressure of 4 bar (60 lbf/in²) and temperature of 110°C. Care should be taken in making all connections so that the risk of leakage is minimised.
- The boiler is fitted with an automatic air vent, located in the left top side of the interior. This air vent must never be shut off, as this could result in dry firing of the boiler and subsequent damage to the heat exchanger.

2. Safety Valve

A spring loaded safety valve complying with the relevant requirements of BS. 6759 Pt. 1 must be fitted in the flow pipe as close to the boiler as possible and with no intervening valve or restriction. The valve should have the following features:



- A non-adjustable preset lift pressure not exceeding 4 bar (60 lbf/in²).
- A manual testing device.
- Provision for connection of a discharge pipe. The valve or discharge pipe should be positioned so that the discharge of water or steam is visible, but will not cause hazard to user or plant.

3. Pressure Gauge

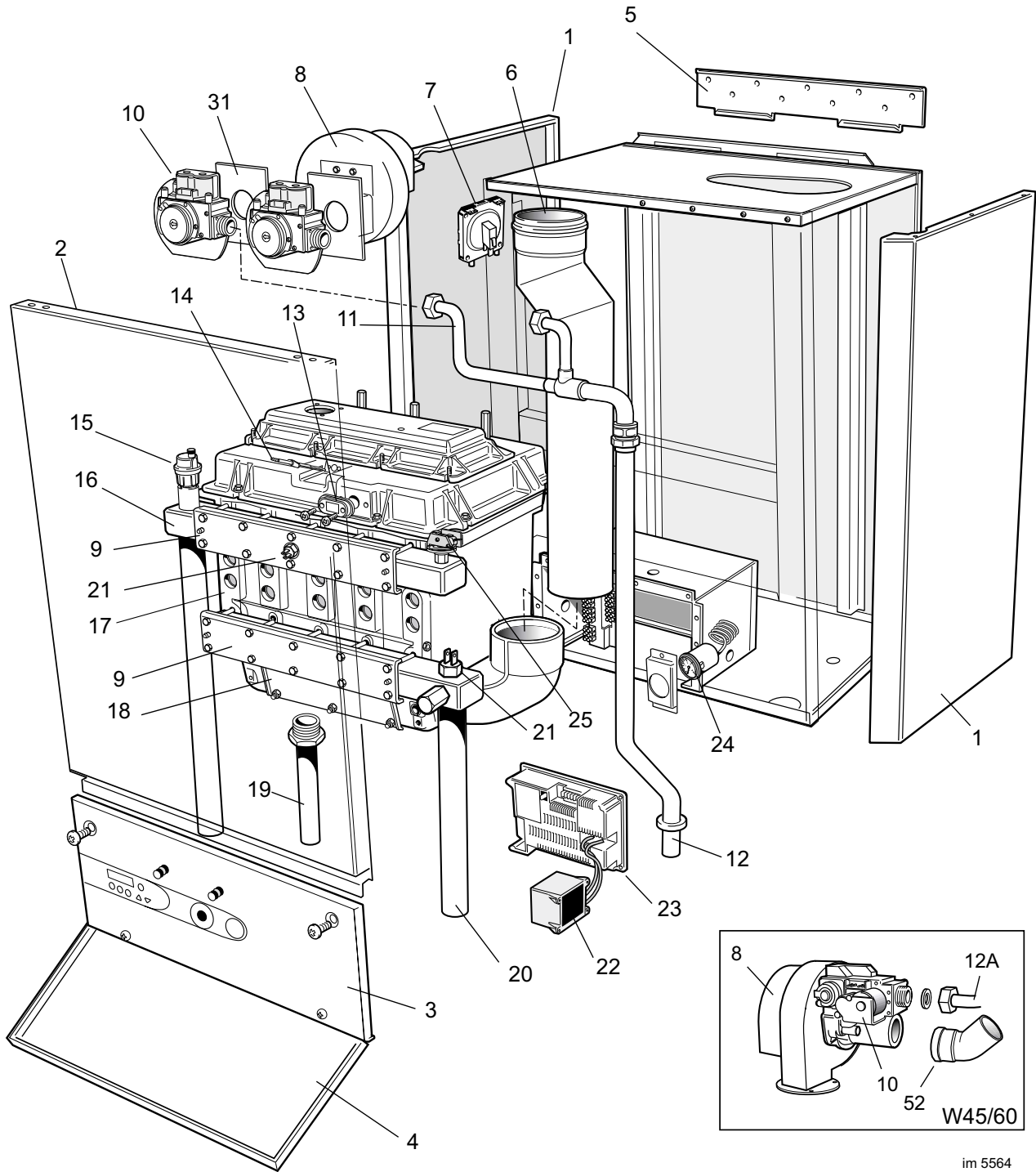
A pressure gauge covering at least the range 0-4bar must be fitted to the system. The gauge should be easily seen from the filling point and should preferably be connected at the same point as the expansion vessel.

4. Expansion Vessel

Expansion vessels used must comply with BS. 4814. Connection to the system must not incorporate an isolating valve.

INSTALLATION

4 BOILER ASSEMBLY - Exploded View (W80 shown)



Legend

- | | | |
|-----------------------------|----------------------------------|-------------------------------|
| 1. Jacket side panel | 11. Upper gas pipe | 20. Manifold return |
| 2. Jacket front panel assy. | 12. Lower gas pipe | 21. Thermistor flow or return |
| 3. Controls fascia | 12A. Gas pipe | 22. Transformer |
| 4. Controls door assy. | 13. Sight glass complete | 23. Control module |
| 5. Wall mounting plate | 14. Ignition/detection electrode | 24. Pressure gauge |
| 6. Internal flue tube | 15. Auto air vent | 25. Water pressure switch |
| 7. Air pressure switch | 16. Manifold flow | 31. Gas manifold |
| 8. Fan | 17. AH-5 heat exchanger assy. | 52. 45° elbow (W60/60P only) |
| 9. Mounting plate manifold | 18. Inspection cover assy. | |
| 10. Gas Valve | 19. Condensate outlet pipe | |

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INSTALLATION

5 PACKAGING REMOVAL

- After following the instructions on the box, the boiler should be laying on its back with the straps removed.
- Carefully read these installation instructions before proceeding.
- Remove the outer packing sleeve.
- Remove the protective cardboard sheet from the front of the boiler.
- Remove the packing piece from the top of the boiler. • Check the contents against the list in Frame 6 'Unpacking'. Note: some items are contained within the top packing piece.
- The boiler may now be stood on its base, with the cardboard bottom packing piece still in place to protect the connections. Due care should be taken when standing up the boilers, with respect to their weights, see below

imax W45 = 87kg

imax W60 = 88kg

imax W80 = 101kg

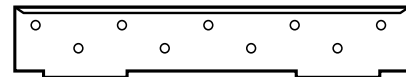
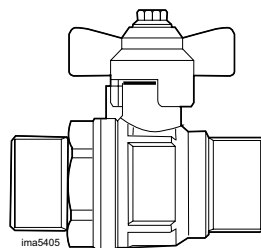
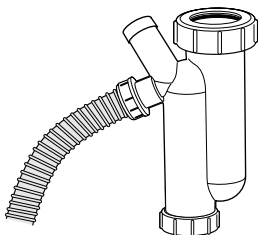
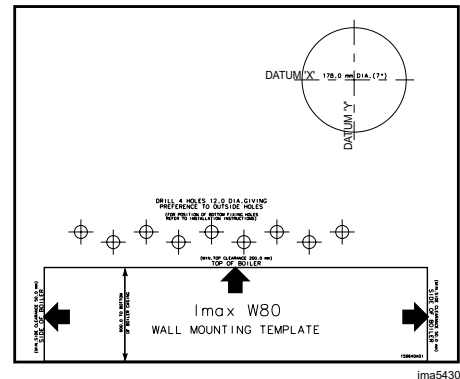
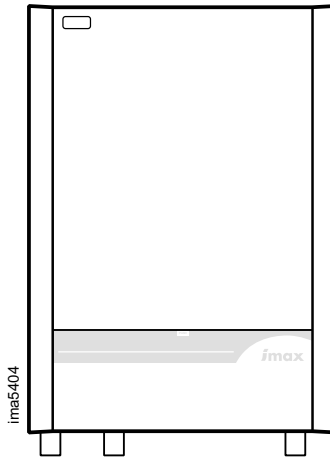
- The cardboard bottom packing piece may be removed after hanging the boiler on the wall.

6 UNPACKING

The boiler is supplied fully assembled in one pack. When unpacking the boiler check the contents against the list below. Do not dispose of the packaging until all contents are accounted for, as some parts are held within the cardboard packing pieces.

Pack Contents

- Fully assembled boiler
- Installation & Servicing Instructions
- User Instructions
- Log Book
- Wall mounting bracket
- Wall mounting template
- Condensate Trap
- Condensate Flexible Hose
- M10 x 70 Hex Head Coach Screws - 5 off
- M10 Wall Plug - 5 off
- Gas cock
- Cable Clips - 4 off

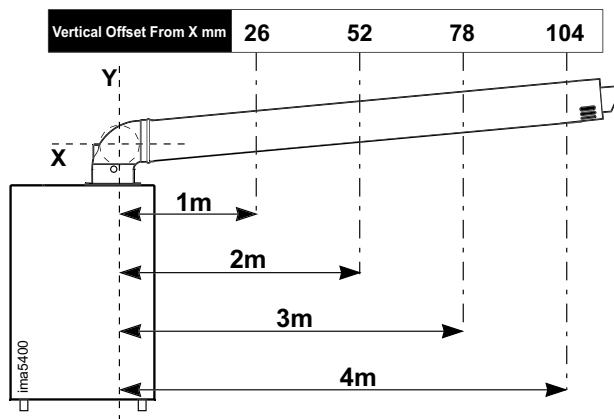
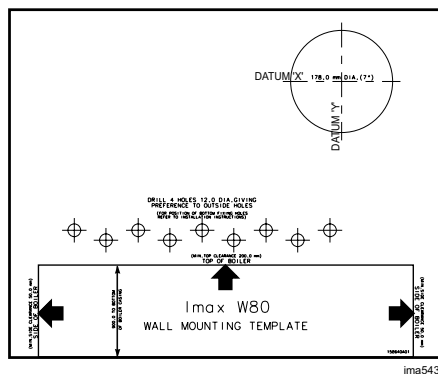


7 WALL MOUNTING TEMPLATE

Note. The template shows the positions for the fixing holes. Care must be taken to ensure the correct holes are drilled.

1. Tape template into the selected position.
2. Ensure squareness by hanging a plumbline.
3. Mark onto the wall
 - a. The 4 wall mounting plate screw positions.
 - b. The boiler lower fixing position
 - c. The position of the flue duct. Mark the centre of the hole as well as the circumference.
4. Remove the template from the wall.

Note: Horizontal flue runs must be inclined at 1.5-3° to the horizontal to allow condensate to drain back to the boiler.

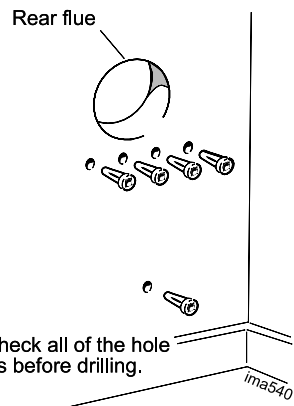


Distance from flue centre line (Y) to outside wall surface.
For lengths greater than 4m, increase offset (X) by 26mm for every additional 1m.

8 PREPARING THE WALL

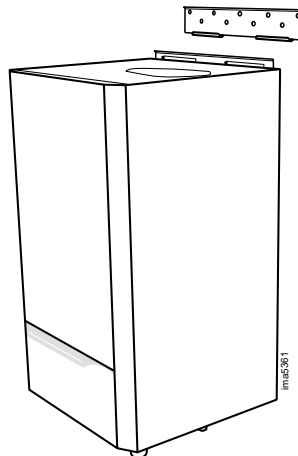
IMPORTANT. Ensure that, during the cutting operation, masonry falling outside of the building does not cause damage or personal injury.

1. Cut the flue hole ensuring that the hole is square to the wall. Both wall faces immediately around the cut hole should be flat.
2. Drill 4 holes with a 12mm (1/2") masonry drill and insert the plastic plugs provided, for the wall mounting plate.
3. Mark off and drill the boiler lower fixing position with a 12mm (1/2") masonry drill, insert the plastic plug provided .
4. Fix the wall bracket into place with 4 M10x70 hex head coach screws provided.



9 MOUNTING THE BOILER

- Due care should be taken when lifting the boilers, with respect to their weights, see below.
- imax W45** = 87kg
- imax W60** = 88kg
- imax W80** = 101kg
- Lift the boiler onto the wall mounting plate as shown. Note: It is not necessary to hold the boiler at an angle to engage the wall mounting plate.
 - Using the remaining coach screw, secure the bottom of the boiler to the wall through the attached bracket.



10 VENTILATION

The ventilation requirements of these boilers is dependant on the type of flue system used, and their heat input. All vents must be permanent with no means of closing, and positioned to avoid accidental obstruction by blocking or flooding.

imax W45, W60, W45P and W60P

Detail reference should be made to BS. 5440 Pt. 2. In IE refer to the current edition of I.S. 813.

The following notes are for general guidance only:

If installed as a room sealed appliance in a room or internal space, then no purpose provided ventilation is required.

If installed as an open flued appliance in a room or internal space then a permanent air vent is required. The sizes given below are for vents directly communicating with outside air. For other situations refer to BS. 5440 Pt. 2. In IE refer to the current edition of I.S. 813.

Boiler Size	W45 & W45P	W60 & W60P
Minimum vent free area (cm ²)	190	265

If installed in a compartment, then permanent air vents are required at high and low level. These vents may communicate direct to outside air, or to a room/internal space. If to a room/internal space, it must itself be adequately ventilated as above.

imax W45, W60, W45P and W60P

Minimum vent free area (cm ²) positioned at:	Open-flued				Roomsealed			
	To room or internal space		Direct to outside air		To room or internal space		Direct to outside air	
	W45/W45P	W60/W60P	W45/W45P	W60/W60P	W45/W45P	W60/W60P	W45/W45P	W60/W60P
High Level	450	600	225	300	450	600	225	300
Low Level	900	1200	450	600	450	600	225	300

imax W80, W80P and multiple boiler installations

Detail reference should be made to BS. 6644 for inputs between 60kW and 2MW. In IE refer to the current edition of I.S.820. The following notes are for general guidance only:

If ventilation is to be provided by means of permanent high and low vents communicating direct with outside air, then reference can be made to the sizes below. For other ventilation options refer to BS. 6644. In IE refer to the current edition of I.S.820.

imax W80 and W80P

Total input rating of boilers	Position vents	Air vent areas (air direct from outside)
Up to 2 MW	HIGH LEVEL	270cm ² plus 2.25cm ² per kW in excess of 60 kW total rated input
Up to 2 MW	LOW LEVEL	540cm ² plus 4.5 cm ² per kW in excess of 60 kW total rated input

INSTALLATION

11 FLUE SYSTEMS

A comprehensive range of flue kits are available from **Caradon Ideal Limited**. Examples of horizontal and vertical concentric, twin pipe and open flue options are demonstrated on the following pages. Tables are provided with these examples, giving the maximum extensions which may be added. The flue lengths achievable without any extensions are also provided.

For horizontal flues: this is the distance from the flue outlet centre line on the boiler to the outside wall.

For vertical flue: this is the distance from the top of the boiler case to the aperture in the weather collar.

If elbows are to be used, then the equivalent length of that fitting (see page 17) must be subtracted from the maximum flue extensions allowed for that flue option.

Note: Horizontal terminal resistance includes 1 x 90° elbow. Worked examples are shown on page 5, 17 and 18.

Alternatively the resistances of flue components are given on page 17, together with the maximum flue resistance each boiler can work against. These may be used to calculate the total flue resistance of the system, and to determine if they are acceptable to run on the boiler.

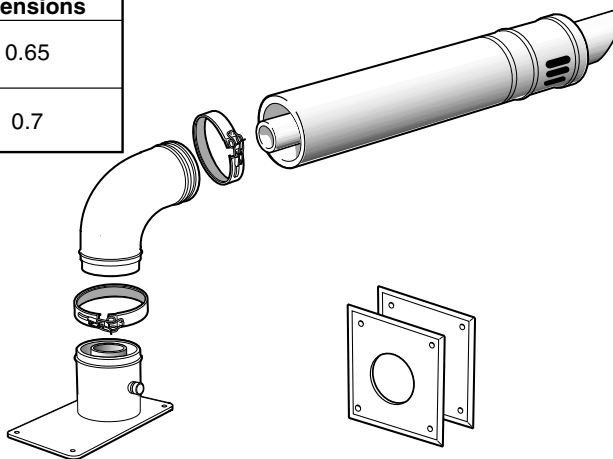
12 HORIZONTAL WALL FLUE KIT

Flue System	Part No.	Max Flue Ext.		Achievable flue length without extensions	
		W45	W60		
Horizontal wall flue kit 80/125 suitable for imax W45 & W60	158659	m	9.5	7.8	0.65
		Pa	60	78	
Horizontal wall flue kit 100/150 suitable for imax W80	158661	m	16		0.7
		Pa	100		

Contents

- Boiler adapter + screws (x6)
- 90° elbow
- Terminal
- Locking collars (x2)
- Wall plates (x2)

Note: See Frame 19 for elbow equivalent lengths.



RF 5755

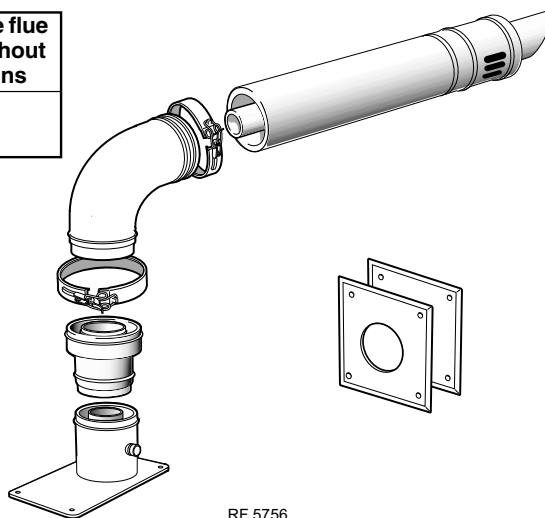
13 HORIZONTAL WALL FLUE KIT - For longer flue lengths for the **imax** W45 and W60

Flue System	Part No.	Max Flue Ext.		Achievable flue length without extensions	
		W45	W60		
Horizontal wall flue kit 100/150 suitable for imax W45 & W60	158660	m	31.6	26	0.7
		Pa	79	108	

Contents

- Boiler adapter + screws (x6)
- Inceaser
- 90° elbow
- Terminal
- Locking collars (x2)
- Wall plates (x2)

Note: See Frame 19 for elbow equivalent lengths.



RF 5756

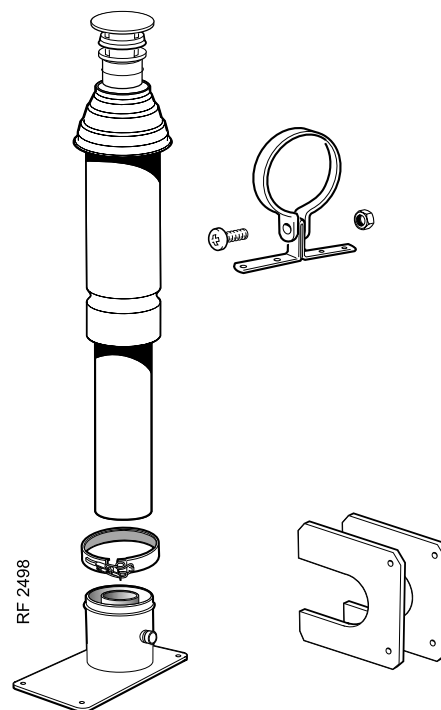
INSTALLATION

14 VERTICAL ROOF FLUE KIT

Flue System	Part No.	Max Flue Ext.			Achievable flue length without extensions
			W45	W60	
Vertical roof kit 80/125 suitable for imax W45 & W60	158654	m	9.5	7.8	0.65
		Pa	60	78	
Vertical roof kit 100/150 suitable for imax W80	158656	m	16		0.8
		Pa	100		

Contents

- Boiler adapter + screws (x6)
- Terminal
- Locking Collar
- Finishing plates (x2)
- Bracket



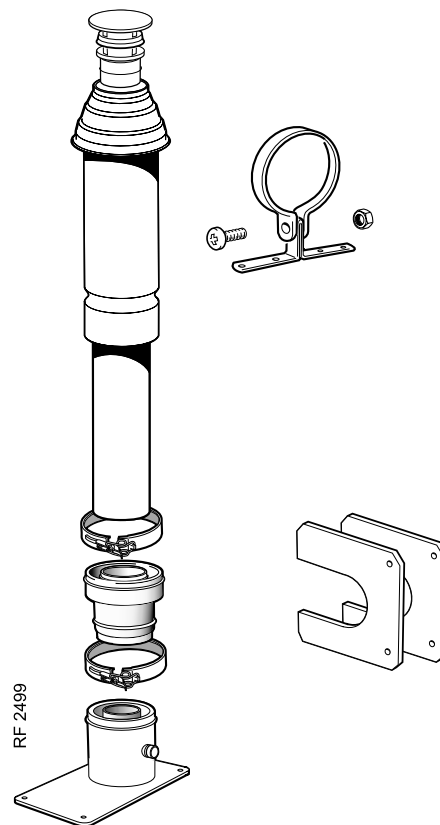
Note: See Frame 19 for elbow equivalent lengths.

15 VERTICAL ROOF FLUE KIT - For longer flue lengths for the **imax** W45 and W60

Flue System	Part No.	Max Flue Ext.			Achievable flue length without extensions
			W45	W60	
Vertical roof kit 100/150 suitable for imax W45 & W60	158655	m	31.6	26	0.9
		Pa	79	108	

Contents

- Boiler adapter + screws (x6)
- Increaser
- Terminal
- Locking Collars (x2)
- Finishing plates (x2)
- Bracket



Note: See Frame 19 for elbow equivalent lengths.

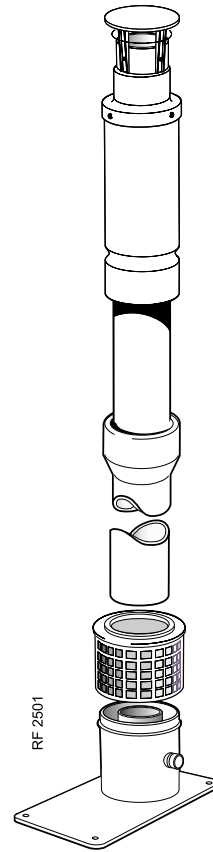
INSTALLATION

16 OPEN FLUE KITS

Flue System	Part No.		Max Flue Ext.	
			W45	W60
Open flue kit 80/125 suitable for imax W45 & W60	158662 +	m	20	13.3
	158769	Pa	60	80
Open flue kit 100/150 suitable for imax W80	158663 +	m	29	
	158770	Pa	100	

Contents

- 158662 / 158663
- Boiler adapter + screws (x6)
 - Air inlet grille
- 158769 / 158770
- Terminal

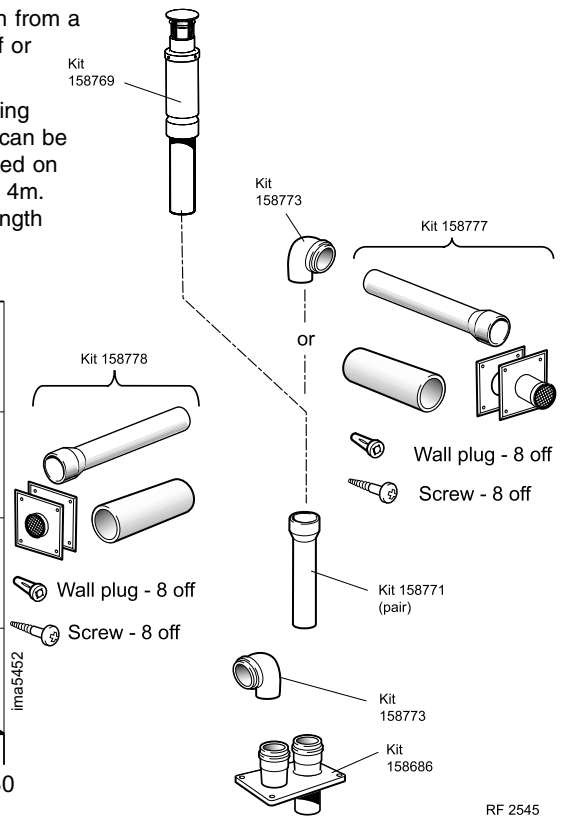
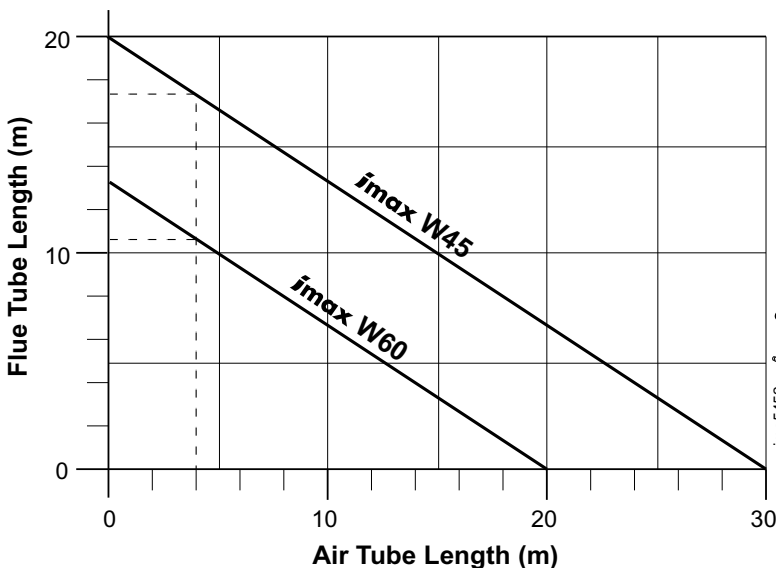


Note: See Frame 19 for elbow equivalent lengths.

17 TWIN PIPE FLUES **imax** W45 and W60

Twin pipe flue systems can be created using these kits. The air is drawn in from a horizontal wall terminal and the flue exhausted through either a vertical roof or horizontal wall terminal.

The maximum flue extension depends on the ratio of air to flue tube. By fixing either the air or flue tube length, you can determine how much of the other can be fitted using the appropriate line from the graph below. An example is marked on the graph. The example assumes the air tube extension has been fixed at 4m. From the graph we can determine that the allowable flue tube extension length would be 17.3m for W45 and 10.6m for W60.

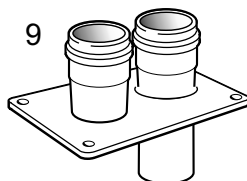
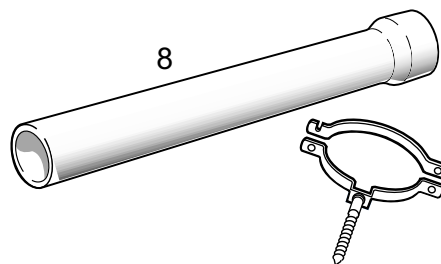
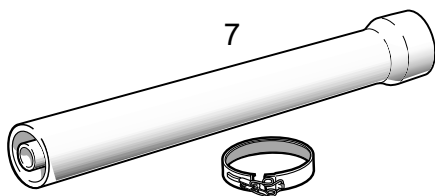
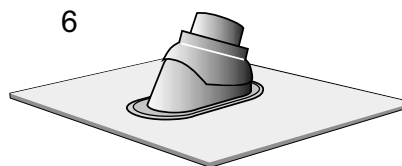
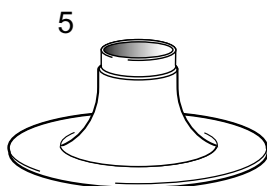
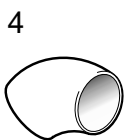
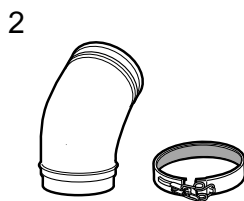


FLUE OUTLET

INSTALLATION

18 FLUE KIT ACCESSORIES

	Accessory	Part No.			
		80/125	100/150	80	100
1.	90° elbow (concentric)	152616	152617	n/a	n/a
2.	45° elbow (concentric)	152618	152619	n/a	n/a
3.	90° elbow	n/a	n/a	158773	158774
4.	45° elbow (pair)	n/a	n/a	158775	158776
5.	Flat Weather Collar	152611	152612	158780	158780
6.	Pitched Weather Collar	152609	152610	158779	158779
7.	1m Extension (concentric)	152400	152401	n/a	n/a
8.	1m Extension (pair)	n/a	n/a	158771	158772
9.	Twin pipe adapter 80/80	n/a	n/a	158686	n/a
10.	Increaser 80-100	n/a	n/a	152404	n/a



INSTALLATION

19 FLUE RESISTANCES

CONCENTRIC FLUE SYSTEMS

For concentric flue systems with elbows fitted, use the table to correct the maximum flue extension capability. Alternatively use the table to design the flue system, deducting the individual resistance of components from the maximum pressure drop allowed in the flue for that boiler.

The maximum pressure drop allowed in the flue is given below.

Note: The resistances are given in Pa and also the equivalent length of straight concentric pipe. Equivalent lengths are not an indication of the maximum flue length as terminal resistance must be deducted from them, plus any elbows.

imax W45: 100Pa = 16m 80/125 = 40m 100/150

imax W60: 140Pa = 11m 80/125 = 26m 100/150

imax W80: 150Pa = 24m 100/150

Concentric Flue Systems

Pressure drop per component	W45		W60		W80	
	Pa	m	Pa	m	Pa	m
Terminals						
Vertical Roof flue kit 80/125mm	40	6.3	62	6.2	-	-
Vertical Roof flue kit 100/150mm	21	8.4	32	7.6	50	8
Horiz. Wall kit 80/125mm + 90° elbow	40	6.3	62	6.2	-	-
Horiz. Wall kit 100/150 + 90° elbow	21	8.4	32	7.6	50	8
Pipes and elbows						
45° bend Ø 80/125 mm	7	1.1	11	1.1	-	-
45° bend Ø100/150 mm	3	1.2	5	1.2	7.5	1.2
90° bend Ø 80/125 mm	10	1.6	16	1.6	-	-
90° bend Ø 100/150 mm	5	2	8.4	2	12.5	2
Straight pipe Ø 80/125 mm per m	6.3	1	10	1	-	-
Straight pipe Ø 100/150 mm per m	2.5	1	4.2	1	6.3	1

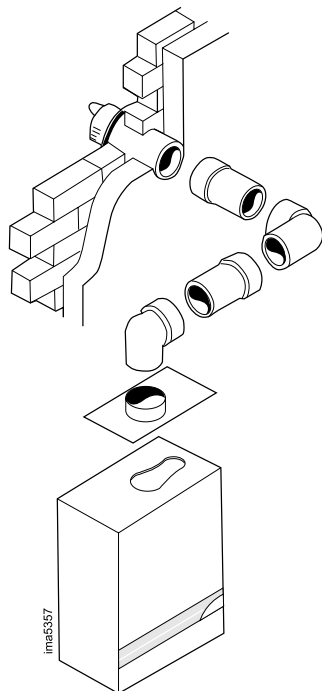
TWIN AND OPEN FLUE SYSTEMS

For twin or open flue systems with elbows fitted, use the table to correct the maximum extension capability. The table shows the equivalent length of either air or flue tube for the elbow required.

Twin and Open Flue Systems

Fitting	imax W45		imax W60		imax W80
	Air Tube	Flue Tube	Air Tube	Flue Tube	Flue Tube
90° elbow (m)	1.4	2.1	1.4	2.1	2.7
45° elbow (m)	0.4	0.6	0.4	0.6	1.8

20 EXAMPLES OF CALCULATING FLUE RESISTANCES/LENGTHS - EXAMPLE 1



Example 1

	Horizontal flue for imax W45	
	Resistance (Pa)	Resistance (m)
Flue size	80/125	80/125
Horizontal wall flue kit 80/125	40	6.3
2 x 1m extension flue	2 x (6.3)	2 x (1)
1 x 90° elbow	10	1.6
Total flue resistance	62.6	9.9

The total maximum flue resistance for an **imax** W45 is 100Pa or 16m 80/125. Therefore this installation is acceptable.

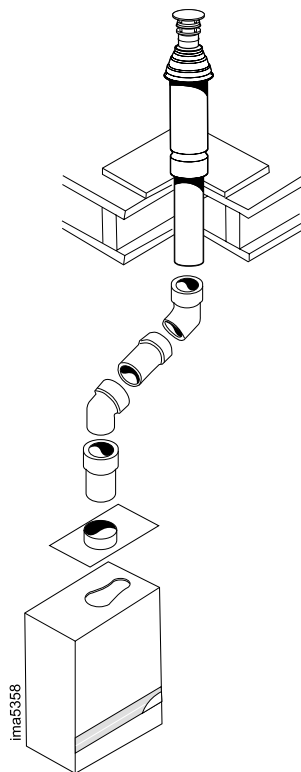
INSTALLATION

21 EXAMPLES OF CALCULATING FLUE RESISTANCES/LENGTHS - EXAMPLE 2

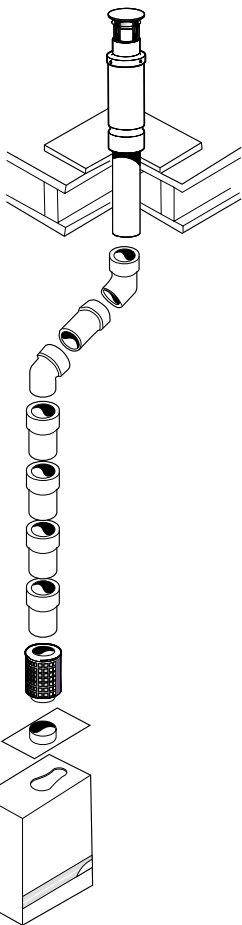
Example 2

	Vertical Roof flue for imax W60	
	Resistance (Pa)	Resistance (m)
Flue size	80/125	80/125
Vertical flue kit 80/125	62	6.2
2 x 1m extension flue	2 x (10)	2 x (1)
2 x 45° elbow	2 x (11)	2 x (1.1)
Total flue resistance	104	10.4

The total maximum flue resistance for an **imax** W60 is 140Pa or 11m 80/125. Therefore this installation is acceptable.



22 EXAMPLES OF CALCULATING FLUE RESISTANCES/LENGTHS - EXAMPLE 3



Example 3

	Horizontal flue for imax W80
	Resistance (m)
Flue size	100
5 x 1m extension	5 x (1)
2 x 45° elbow	2 x (1.8)
Total flue resistance	8.6

The maximum flue extension for an **imax** W80 on open flue is 29m. Therefore this installation is acceptable.

INSTALLATION

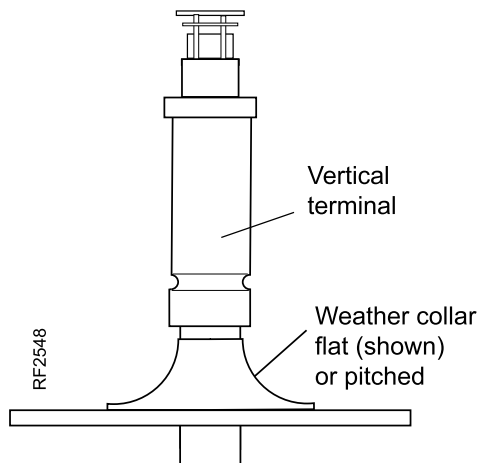
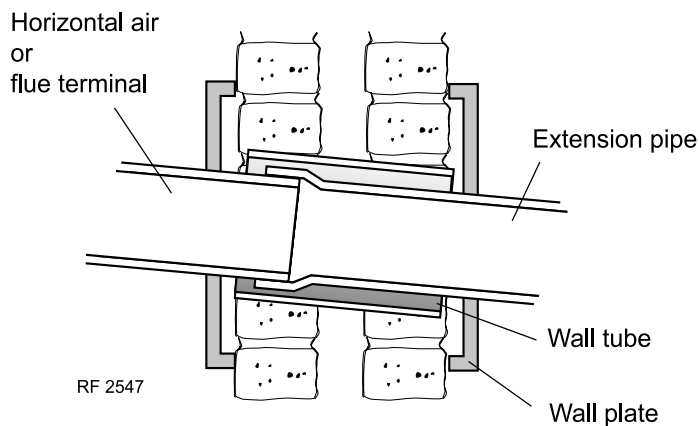
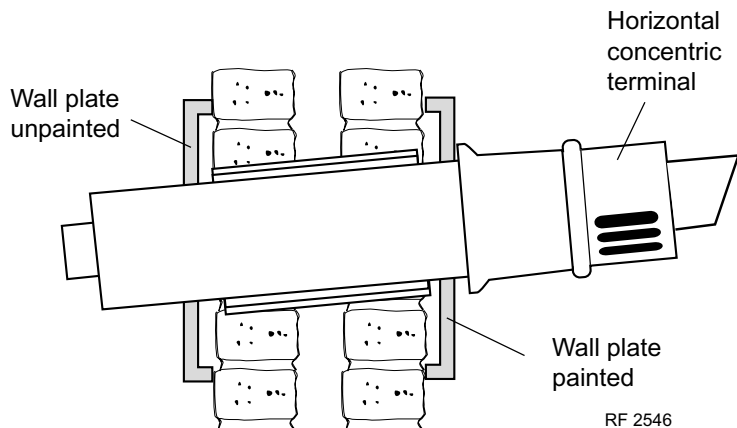
23 ASSEMBLING THE FLUE

Flue terminals or extension ducts may be cut to shorter lengths if required. When cutting a duct ensure it is square by marking the length all the way around and only cut back the plain end. When cutting concentric duct it is important that the inner duct is maintained at 20mm longer than the outer duct to allow correct connection of the ducts. Care should be taken to support the inner duct when cutting the flue.

Note. Horizontal flue runs must be angled down between 1.5° - 3° towards the boiler to allow the condensate to drain. For this reason it is recommended that a support bracket is used for every 1m of extension pipe.

Care must be taken when assembling flues, not to damage the seals.

See below for flue assembly examples.



INSTALLATION

24 FLUE TERMINATION POSITION

Due to the high efficiency of these boilers plumbing will occur. For this reason vertical termination is recommended, and in any case, terminal positions which could cause problems should where possible be avoided.

Particular care should be taken in the case of large multiple boiler installations, and complying with the requirements of the Clean Air Act.

The information below is extracted from BS. 5440 Pt. 1 and is for boilers with heat inputs not exceeding 70kW nett, and the latest Building Regulation Part J. Detailed reference should still be made to these standards. In IE refer to I.S. 813:2002.

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

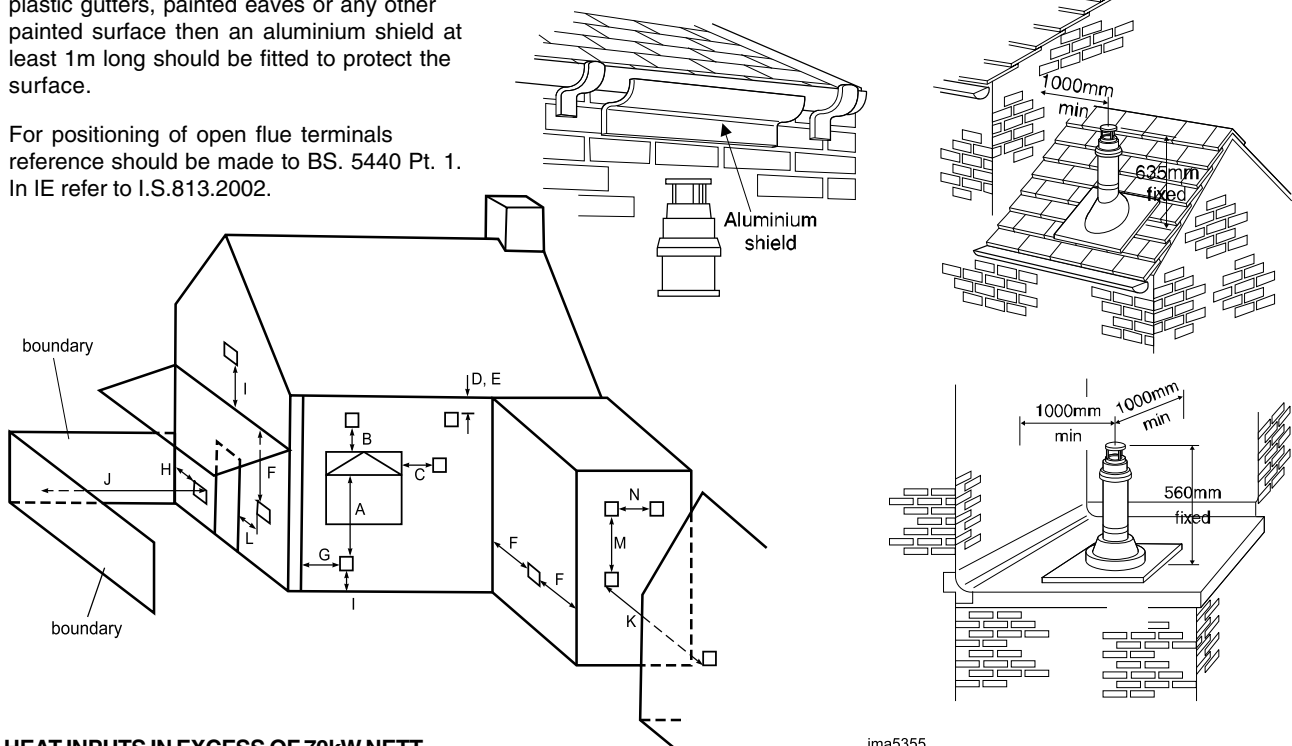
* may be reduced to 300mm if a shield fitted

ima5263

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

If the terminal is fitted less than 500 mm 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.

For positioning of open flue terminals reference should be made to BS. 5440 Pt. 1. In IE refer to I.S.813.2002.



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HEAT INPUTS IN EXCESS OF 70kW NETT

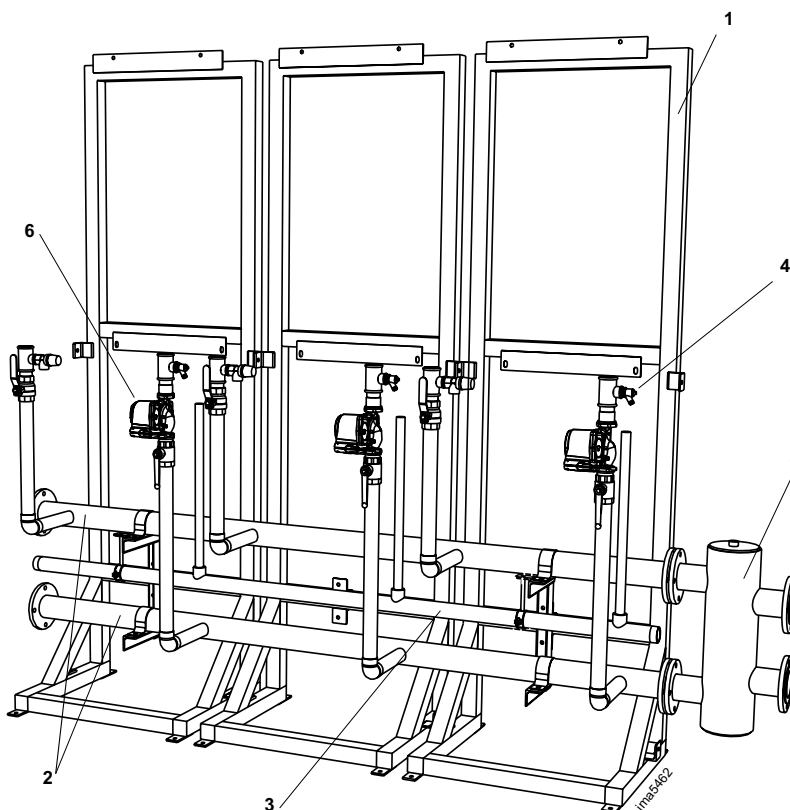
For boiler installations with total heat inputs in excess of 70kW nett, reference should be made to BS6644. In IE refer to I.S.820.2000.

FLUE OUTLET

25 BOILER FRAME AND HEADER KITS

Individual boiler frame kits are available, providing the option of mounting the boilers away from the boiler house wall. These frames can be bolted together for multiple installations.

A selection of 2 and 3 boiler water and gas header kits are available. These are suitable for a combination of different boilers.



LEGEND

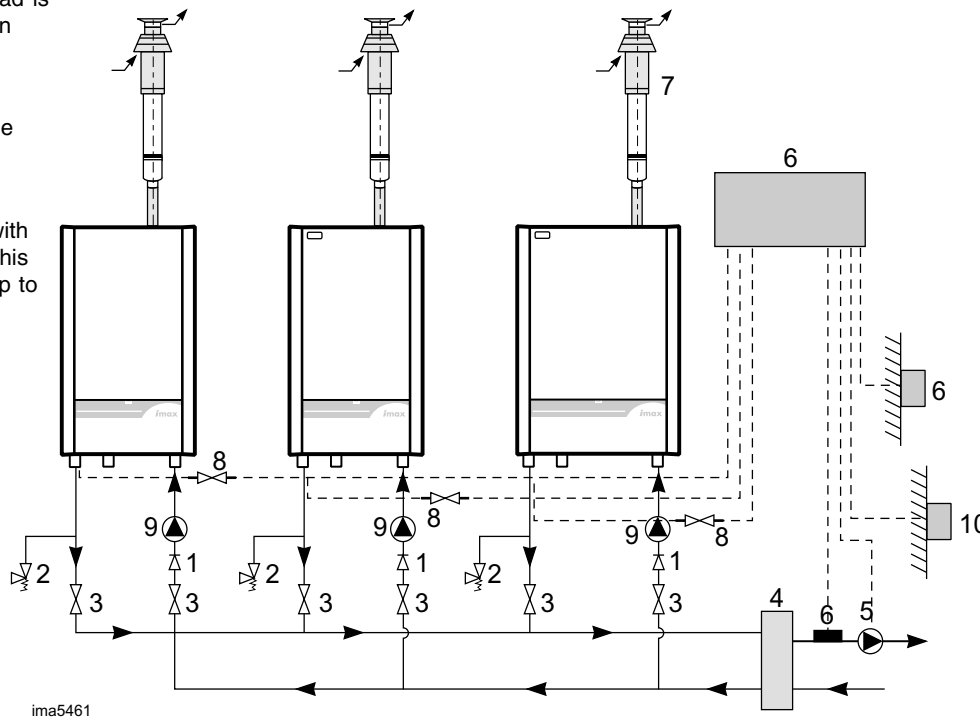
1. Frame kit
2. 3 Blr. flow & return header kit
3. 3 Blr. gas header kit
4. Connection kit (includes essential connection and valve components)
5. Mixing header
6. Pump Kit (supplied separately if required)

26 SEQUENCER CONTROL OF MULTIPLE BOILERS

In installations where the heat load is greater than the boiler capacity an ideal solution is to use multiple boiler arrangements.

The ideal way to control a multiple boiler installation is with our modulating sequencer

See below a typical installation with our modulating sequencer kit. This device is capable of controlling up to 5 boilers.



Legend

1. Non-return valve
2. Safety valve
3. Service valve
4. Mixing header
5. System pump
6. Modulating Sequencer kit complete with outdoor sensor and flow sensor
7. Flue gas terminal
8. Drain cock
9. Shunt pump
10. Room Sensor

INSTALLATION

27 CONDENSATE DRAIN

The condensate trap provided within the hardware pack must be connected to the condensate drain on the bottom of the boiler and then connected to a drainage point, preferably within the building.

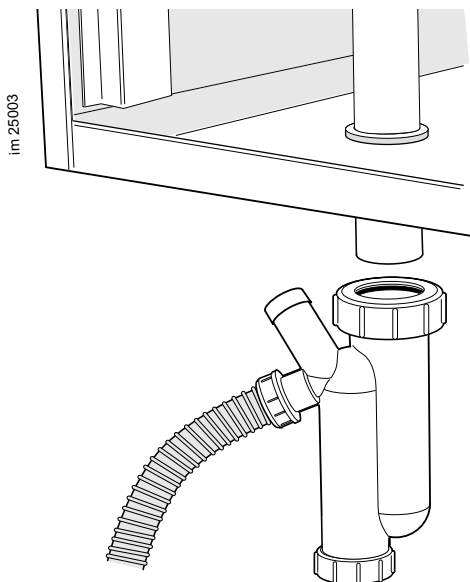
The pipe size from the condensate trap is 25mm.

The routing of the drain must be made to allow a minimum fall of 1 in 20 away from the boiler, throughout its length.

IMPORTANT. Any external runs must be kept to a minimum and insulated. This is to avoid freezing in cold weather causing blocking.

All pipework and fittings in the condensate drain system must be made of plastic. No other materials may be used.

Ensure condensate trap is full of water before lighting.

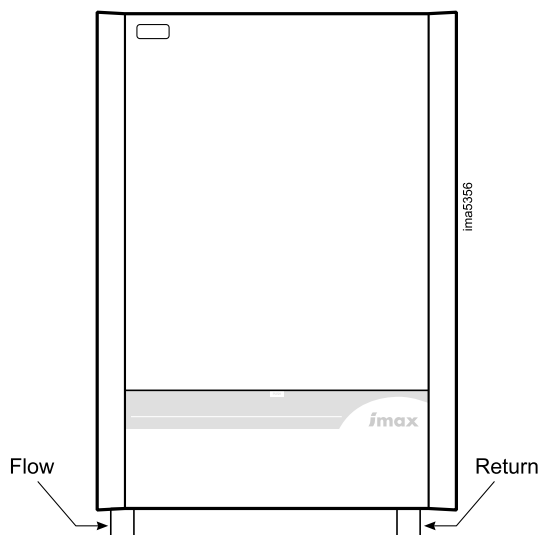


28 BOILER WATER CONNECTIONS

The boiler flow and return pipes are terminated with a 1 1/4" BSP male taper connection located at the bottom of the appliance.

Note. This appliance is NOT suitable for use with a direct hot water cylinder.

Plastic plugs fitted into the open ends of the flow and return pipes must be removed before connecting the system pipework.



29 FROST PROTECTION

The **imax** boiler has built into its control system the facility to protect the boiler only against freezing.

If the boiler flow temperature T_1 , falls below 7°C the pump runs without the boiler firing until the temperature exceeds 10°C.

If the flow temperature falls below 3°C the boiler will fire at minimum rate until the temperature exceeds 10°C.

Central heating systems fitted wholly inside the building do not normally require frost protections as the building acts as a 'storage heater' and can normally be left at least 24 hours without frost damage. However, if parts of the pipework run outside the building or if the boiler will be left off for more than a day or so, then a frost thermostat should be wired into the system, see Frame 48.

30 GAS CONNECTION

Refer to Frame 1 for details of the position of the gas connection.

A MINIMUM working gas pressure of 17.5 mbar (7" w.g.) must be available at the boiler inlet for natural gas and 37mbar for propane with the boiler firing. Refer to 'Servicing' for details of the pressure test point position.

Extend a gas supply pipe NOT LESS THAN 22mm O.D. to the boiler and connect using the gas cock provided.

Note. *If the pipe run from the meter to the boiler is greater than 3m (10') it is recommended that a 28 mm O.D. pipe is used.*

IMPORTANT. The gas service cock contains a non-metallic seal so must not be overheated when making capillary connections.

31 ELECTRICAL CONNECTIONS

Warning. This appliance MUST be efficiently earthed.

A mains supply of 230V 50Hz is required. The supply wiring MUST be suitable for mains voltage. Wiring should be 3 core PVC insulated cable NOT LESS than 0.75mm² (24 x 0.2 mm) and to BS. 6500, Table 16. The fuse rating should be 3A.

Wiring external to the boiler MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations. For Ireland reference should be made to the current ETCI rules for electrical installations.

Connection should be made in a way that allows complete isolation of the electrical supply - such as a double pole switch,

having a 3mm (1/8") contact separation in both poles, or a plug and unswitched socket serving only the boiler and system controls. The means of isolation must be accessible to the user after installation.

When making mains electrical connections to the boiler it is important that the wires are prepared in such a way that the earth conductor is longer than the current carrying conductors, such that if the cord anchorage should slip the current carrying conductors become taut before the earthing conductor.

4 self adhesive cable clips are provided to aid routing of the wiring across the bottom panel of the boiler.

32 EXTERNAL WIRING

External wiring MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations. For Ireland reference should be made to the current ETCI rules for electrical installations.

The wiring diagrams illustrated in Frames 48, 49 and 50 cover the systems most likely to be used with this appliance.

For wiring external controls to the boiler, reference should be made to the systems wiring diagram supplied by the relevant manufacturer in conjunction with the connection diagram shown in Frame 33.

Difficulty in wiring should not arise, providing the following directions are observed:

1. The appliance must be wired with a permanent live supply. External controls should NOT be wired in series with this mains input. Controlling the mains input in this way will prevent the pump over-run sequence and may cause damage to the heat exchanger.
2. 230V AC output is provided and must be used for the system pump and optionally for a DHW pump or valve, programmer and thermostats. Care must be taken to ensure that the earth conductor is longer than the current carrying conductors for reasons given in Frame 31.

3. Input terminals are available for connecting a variety of system controls for heating demand, and optionally for DHW demand.

Heating demand can be controlled by:

- 230V programmer and/or room thermostat
- programmable room thermostat kit
- Modulating sequencer kit
- a bms (connected via optional board)
- outside temperature sensor

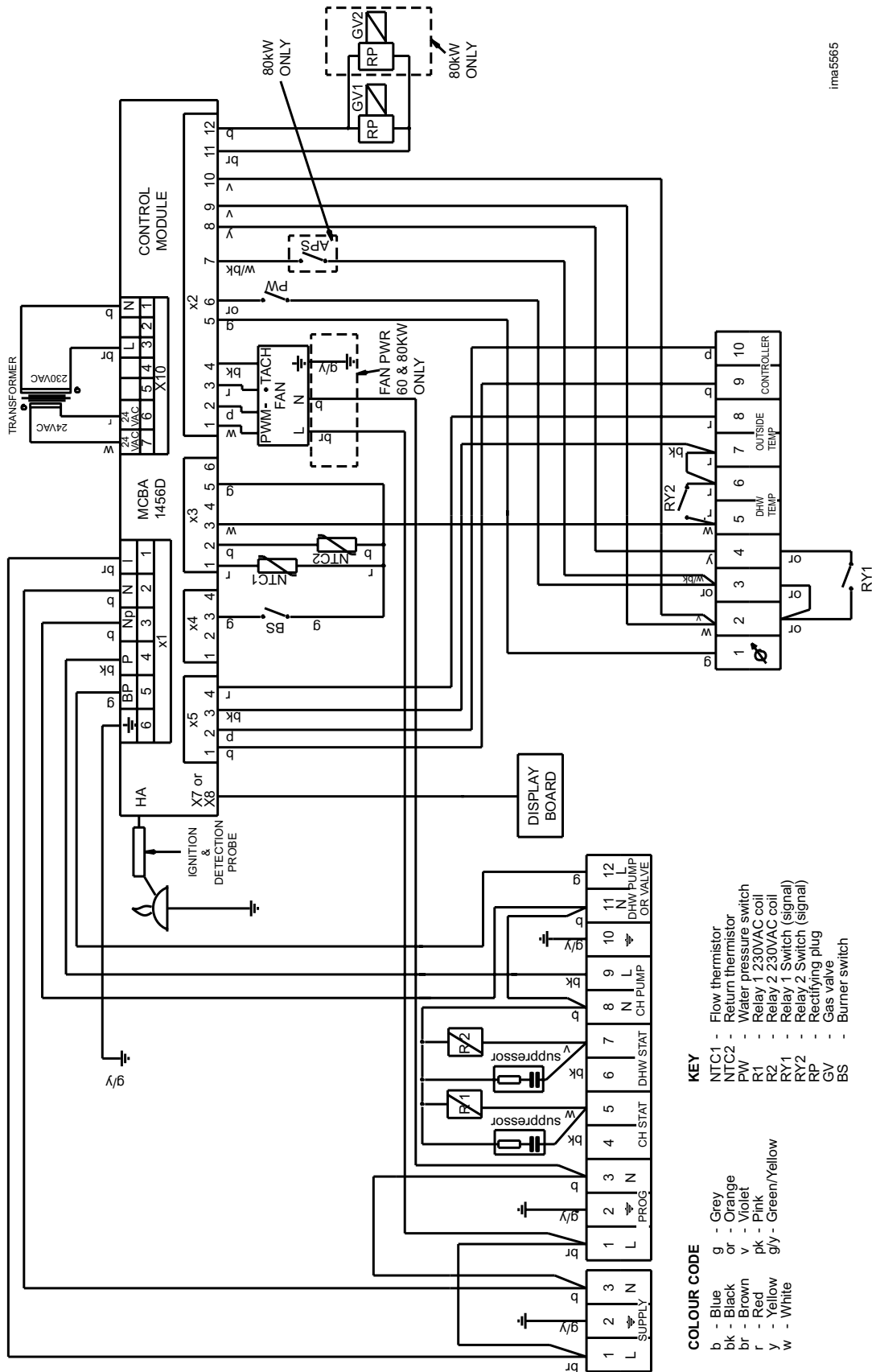
DHW demand can be controlled by:

- 230V programmer and/or cylinder thermostat
- tank sensor kit (this cannot be timer controlled except when using our programmable room thermostat, which can block DHW demand during the 'night' period).

The electrical supply and their inputs onto the boiler can be seen in Frame 33.

4. An optional outside temperature sensor may be fitted for outside weather compensation. See Frame 33 for connection details.

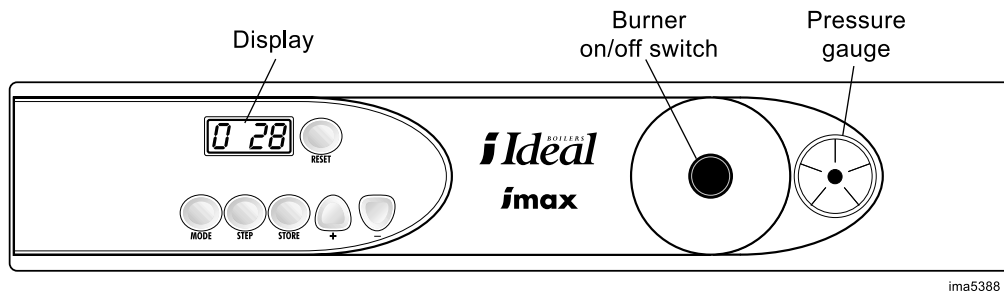
34 INTERNAL WIRING



ima5565

- COLOUR CODE**
- b - Blue
 - bk - Black
 - br - Brown
 - r - Red
 - y - Yellow
 - w - White
 - g - Grey
 - or - Orange
 - v - Violet
 - pk - Pink
 - g/y - Green/Yellow
- KEY**
- NTC1 - Flow thermistor
 - NTC2 - Return thermistor
 - PW - Water pressure switch
 - R1 - Relay 1 230VAC coil
 - R2 - Relay 2 230VAC coil
 - RY1 - Relay 1 Switch (signal)
 - RY2 - Relay 2 Switch (signal)
 - RP - Rectifying plug
 - GV - Gas valve
 - BS - Burner switch

35 BASIC CONTROLS DISPLAY



ima5388

Sequence	Boiler Status
a	DHW valve energised
0	Standby, no heat request
1	Pre-purge, post purge
2	Ignition
3	Burner on in CH mode
4	Burner on in DHW mode
5	Waiting for air pressure switch to open or close
6	Burner off because a set value has been reached
7	Pump overrun in CH mode
8	Pump overrun in DHW mode

During the operation of the **iMax**, the status of the appliance can be determined by the display.

1. Normal Operation Mode

The unit will either be in standby or in operation. The first digit on the display shows the boiler status (see table). The last 3 digits show the flow temperature.

2. Blocking Mode

The boiler will enter blocking mode under certain fault conditions. Whilst in blocking mode the burner is switched off. Once the fault conditions are clear the boiler will automatically reset itself. In blocking mode the display will alternate between showing a '9' in digit one, along with the flow temperature in digits 2, 3 and 4 e.g.

9 96

Followed by the blocking code 'bxx'. Refer to page 52 for Blocking Code references.

6 18

3. Error Mode

In error mode the display will flash on and off with the error code shown.

E 36

Refer to page 50 for error codes.

The boiler will enter error mode under certain fault conditions. The unit will be inoperative until the fault is rectified. The reset button is used to reset the boiler control module after an error has occurred.

Self Check and Anti-sieze Modules

After switching on the mains power or after a reset, the boiler performs a selfcheck. i.e. the DHW valve is energised and the pump is switched on for 10 seconds. This cycle repeats itself every 24hrs, as long as no heat request is given in 24hrs.

CH/DHW Systems

In standby mode pressing and holding the '+' button turns the CH system on/off.

In standby mode pressing and holding the '-' button turns the DHW system on/off.

36 STANDARD CONTROLS ACCESS

Modes of Operation

The standby, parameter and information modes are accessible without the service code.

Standby Mode

Stby

The standby mode will be shown after start up or reset of the boiler control module. If no buttons are pressed for 20 minutes the display will automatically be set to standby mode. If new parameters have been stored they will then become active.

Parameter Mode


PARA

In parameter mode it is possible to change the settings of the boiler control module. The following settings can be changed.





1. DHW Temperature
2. DHW System
3. CH System
4. Flow Temperature (T1)

Parameter settings and limits are listed below.

Parameter mode is entered from standby mode by pressing the 'mode' button once.

Press	Display
 MODE	<div style="border: 1px solid black; padding: 2px; display: inline-block;">PARA</div>

Press the 'step' button until the desired parameter is displayed.

Press	Display	Description	Lower Limit	Upper Limit	Factory Setting
 STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">1. 60</div>	DHW Temperature (°C) Instant water heater Storage Tank	40 20	65 70	60
 STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">2. 01</div>	DHW System	00 = Off 01 = On 02 = Off + pump continuous 03 = On + pump continuous		01
 STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">3. 01</div>	CH System	00 = Off 01 = On 02 = Off + pump continuous 03 = On + pump continuous		01
 STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">4. 82</div>	CH Flow Temperature (°C)	20	90	82

Press the '+' or '-' buttons to change the values.

The parameter setting can be stored by pressing and releasing the 'store' button, the new setting flashes twice to show it has been accepted. The new setting will become active when the 'mode' button is pressed or if the display is left. If the display is left, after 20 minutes it automatically returns to 'standby' mode.

INSTALLATION

37 STANDARD CONTROLS ACCESS CONT'D

Info Mode



Info mode is entered from standby mode by pressing the 'mode' button twice.

Press	Display
	P A R A
	I N F O

Press the step button until the desired information is displayed. The dot after the 1st right digit will be flashing indicating the boiler is in 'info' mode. No settings can be changed in 'info' mode.

Press	Display	Description
	Flashing 1. 2 1	Actual Flow Temperature T1 °C
	2. 2 1	Actual Return Temperature T2 °C
	3. - 3 7	DHW Temperature T3 °C (-37 displayed if tank sensor kit not fitted)
	4. - 3 7	OUTSIDE Temperature T4 °C (-37 displayed if outside sensor kit not fitted)
	5. - 3 7	N/A
	6. 8 2	Set Flow Temperature °C
	7. 0 0	Rate of Flow Temperature Rise °C/s
	8. 0 0	Rate of Return Temperature Rise °C/s
	9. 0 0	Rate of DHW Temperature Rise °C/s
	A. - 3 6	N/A

38 ADVANCED CONTROLS ACCESS

There is little requirement for advanced controls access as factory preset values are satisfactory for most parameters. If parameter changes are required with the optional kits then further instructions are provided with them.


9. Code Mode

C O D E


By entering the service code the following additional features are accessible:

- Parameters 5 to 42
- Communication Mode
- Fan Speed Mode
- Error Mode

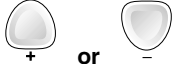
Code Mode is entered from standby mode by pressing and holding the 'mode' and 'step' buttons.

Press	Display
 MODE STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">C O D E</div>


Press the 'step' button once and the display will show 'C' as the first digit and a random number in the 3rd and 4th digits.

Press	Display
 STEP	<div style="border: 1px solid black; padding: 2px; display: inline-block;">C 0 9</div>

Use the '+' or '-' button to change the Code to 05.

Press	Display
 + or -	<div style="border: 1px solid black; padding: 2px; display: inline-block;">C 0 5</div>















Press and release the 'store' button, the display flashes to show the code has been accepted.

Press	Display
 STORE	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> C 0 5 <small>FLASHING</small> </div>

Press the mode button until the mode you want access to is displayed


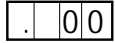

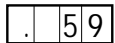

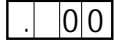

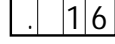

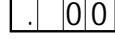

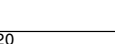

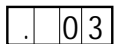



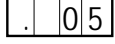




INSTALLATION

39 ADVANCED CONTROLS ACCESS CONT'D

	Press	Display	Description	Lower Limit	Upper Limit	Factory Setting
		PARA				
1		1. 60	DHW Temperature (°C) Instant water heater Storage tank	40 20	65 70	60
2		2. 01	DHW System 00 = Off 01 = On 02 = Off + pump continuous 03 = On + pump continuous			01
3		3. 01	CH System 00 = Off 01 = On 02 = Off + pump continuous 03 = On + pump continuous			01
4		4. 82	CH flow temperature (°C)	20	90	82
5		P05 appears for 1 second . 20	Lowest CH flow temperature (°C) When using outside temperature sensor compensation	15	60	20
6		P06 . -05	Lowest outside temperature (°C) That can influence temperature compensation	-20	10	-5
7		P07 . 20	Highest outside temperature (°C) Than can influence temperature compensation	15	25	20
8		P08 . -02	Outside temperature (°C) At which frost protection starts	-30	10	-02
9		P09 . 00	Outside temperature correction (°C) For boiler reading of outside temperature	-01	05	00
10		P10 . 25	Minimum CH flow temperature (°C) Which will enable a CH request to be satisfied, when using outside temperature compensation. note 00 = Off	01	60	25
11		P11 . 00	Booster time (minutes) note 00 = Off	01	30	00
12		P12 . 10	CH flow parallel shift For use with outside temperature sensor	00	80	10
13		P13 . 59	Maximum fan speed CH (hundreds) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	55 55 59 50 49 57











INSTALLATION

40 ADVANCED CONTROLS ACCESS CONT'D

	Press	Display	Description	Lower Limit	Upper Limit	Factory Setting
14		P14 	Maximum fan speed CH (units) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	00 00 00 00 00 00
15		P15 	Maximum fan speed DHW (hundreds) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	55 55 59 50 49 57
16		P16 	Maximum fan speed DHW (units) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	00 00 00 00 00 00
17		P17 	Minimum fan speed (hundreds) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	18 14 16 17 13 15
18		P18 	Minimum fan speed (units) W45 W60 W80 W45P W60P W80P	Do not adjust	Do not adjust	50 00 00 00 00 00
19		P19 	Ignition fan speed (hundreds)	Do not adjust	Do not adjust	35
20		P20 	CH post pump time (minutes) Note 0 = 10 seconds Do not set below 05	01	99	05
21		P21 	DHW post pump time (x 10 seconds)	00	30	03
22		P22 	CH modulation hysteresis on (°C)	00	20	05
23		P23 	CH modulation hysteresis off (°C)	00	10	05
24		P24 	DHW modulation hysteresis on (°C)	-06	30	05
25		P25 	DHW modulation hysteresis off (°C)	-05	30	05


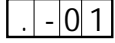

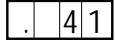

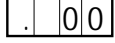

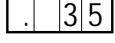

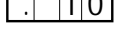

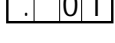

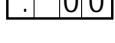
INSTALLATION

41 ADVANCED CONTROLS ACCESS CONT'D

	Press	Display	Description	Lower Limit	Upper Limit	Factory Setting
26		P26 [.] [0] [3]	DHW detection hysteresis on (°C)	-05	30	03
27		P27 [.] [0] [3]	DHW detection hysteresis off (°C)	-20	30	03
28		P28 [.] [0] [0]	Blocking time CH (seconds) Minimum off period between CH demands to reduce cycling	00	30	00
29		P29 [.] [0] [0]	Blocking time DHW (seconds) Minimum off period between DHW demands to reduce cycling	00	30	00
30		P30 [.] [0] [0]	Blocking time DHW to CH (seconds) 0=switch with burner on 1-29 has no function 30= switch with burner off for 10 sec			00
31		P31 [.] [2] [5]	Flow/Return temperature Differential (°C) At which burner modulates back	Do not adjust	Do not adjust	25
32		P32 [.] [0] [0]	RMCI address Note -01=RMCI off	-01	07	00
33		P33 [.] [2] [0]	Tplus (°C) Temperature added to DHW temperature set point (parameter 1) when storage tank used.	00	30	20
34		P34 [.] [0] [0]	CH type x0=Room thermostat x1=Outside temperature x2=N/A x3=N/A x4=0-10V: capacity (using BMS 0-10V kit) x5=0-10V: temperature (using BMS 0-10V kit) x6=+/- control 0x=N/A - First digit factory set to '0'. Do not adjust 1x=N/A - First digit factory set to '0'. Do not adjust 2x=N/A - First digit factory set to '0'. Do not adjust 3x=N/A - First digit factory set to '0'. Do not adjust 4x=N/A - First digit factory set to '0'. Do not adjust 5x=N/A - First digit factory set to '0'. Do not adjust 6x=N/A - First digit factory set to '0'. Do not adjust 7x=N/A - First digit factory set to '0'. Do not adjust 8x=N/A - First digit factory set to '0'. Do not adjust			00
35		P35 [.] [1] [3]	DHW type x0=N/A x1=N/A x2=Storage tank with tank sensor kit x3=Storage tank with DHW cylinder thermostat x4=N/A x5=N/A x6=N/A x7=N/A x8=N/A x9=External heat request (by control interface kit) 0x=3 way valve normally open 1x=hot water pump 2x=3way valve normally closed			13












INSTALLATION

42 ADVANCED CONTROL ACCESS CONT'D



	Press	Display	Description	Lower Limit	Upper Limit	Factory Setting
36		P36 	Manual fanspeed (for service use) Note -1=off 00 = min fan speed 50 = mid rate 100 = max fan speed	00	100	-01
37		P37 	N/A Value changes will not influence boiler			41
38		P38 	Flow temperature hold (°C) Temperature maintained by boiler when no heat request. Note 0=Off	01	80	00
39		P39 	N/A Value changes will not influence boiler			35
40		P40 	N/A Value changes will not influence boiler			10
41		P41 	N/A Value changes will not influence boiler			01
42		P42 	Low/Off cycle x0=off x1=on Special pump function CH/DHW 0x=CH normal pump function, DHW normal pump function 1x=CH pump off during heat request, DHW normal pump function 2x=CH pump normal function, DHW pump 5 sec on delay after heat request 3x=CH pump off during heat request, DHW pump 5 sec on delay after heat request			00

INSTALLATION


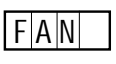

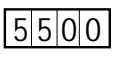
43 INFORMATION MODE (with code)

Press	Display	Description
	INFO	
	FLASHING 1. 21	Actual Flow Temperature T1 °C
	2. 21	Actual Return Temperature T2 °C
	3. -37	DHW Temperature T3 °C (-37 displayed if tank sensor kit not fitted)
	4. -37	Outside Temperature T4 °C (-37 displayed if outside sensor kit not fitted)
	5. -37	N/A
	6. 82	Set Flow Temperature °C
	7. 00	Rate of Flow Temperature Rise °C/s
	8. 00	Rate of Return Temperature Rise °C/s
	9. 00	Rate of DHW Temperature Rise °C/s
	A. -36	N/A


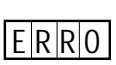

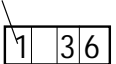

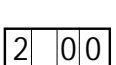

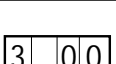

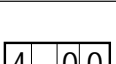

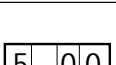

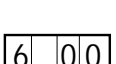
44 COMMUNICATION MODE (with code)

Press	Display	Description
	CONN	In this mode the communication between the boiler control module, optional control interface kit, and optional programmable room thermostat or modulating sequencer is shown.
		No communication
	FLASHING 	There is only communication between the boiler control module and optional controls interface kit.
	FLASHING 	There is communication between all devices.


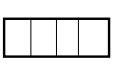
45 FAN MODE (with code)

Press	Display	Description
		Fan speed
		Actual fan speed ie 5500rpm

46 ERROR MODE (with code)

Press	Display	Description
		In error mode the last error is shown, and the boiler status and readings at that time are available The 1st digit flashes and shows the current step. The last two digits show the error code.
		Error code (see Table on page 48 for full list)
		Boiler step
		Flow temperature T1
		Return temperature T2
		DHW temperature T3
		Outside temperature T4

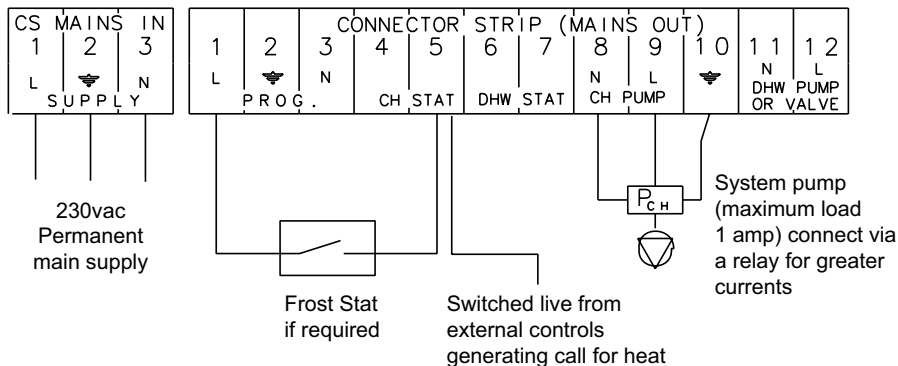
47 RETURN TO NORMAL OPERATING MODE

Press	Display	Description
		Press the reset button to return to normal operating mode or if no buttons are touched the boiler will automatically return after 20 mins.

INSTALLATION

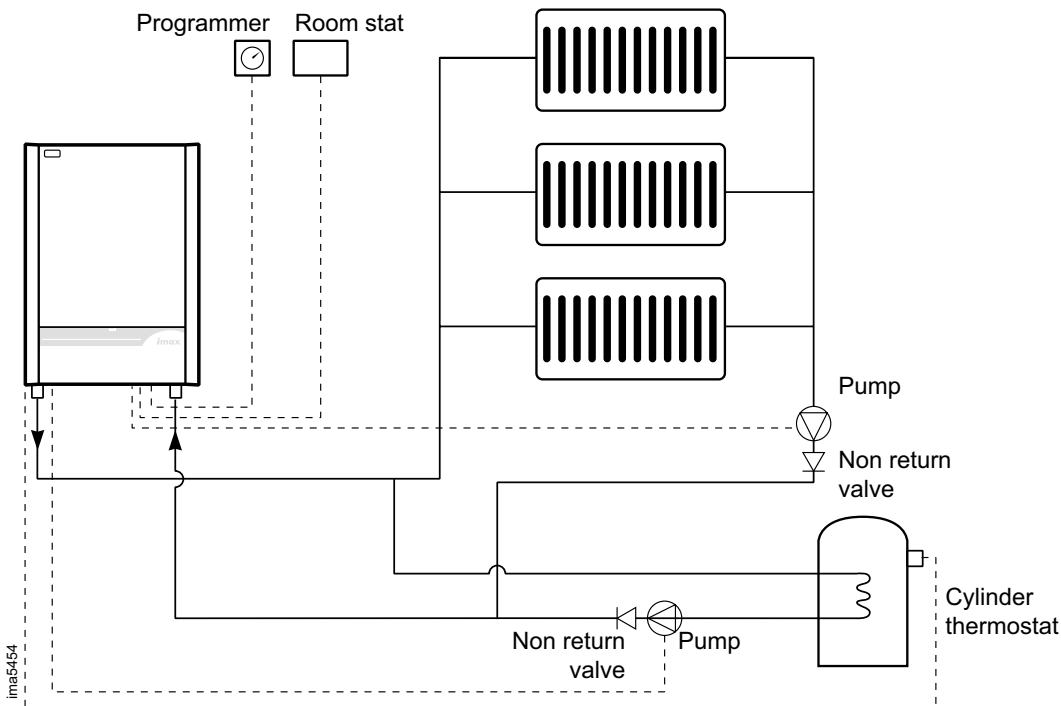
48 INDEPENDENT SYSTEM CONTROLS

If the system controls are to be independent of the boiler, then the following method should be used for connecting the boiler.



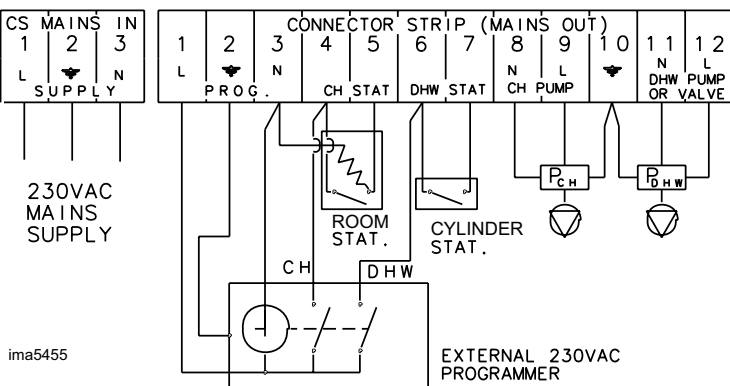
No parameter modifications are required.

49 MAINS VOLTAGE CH AND DHW CONTROLS WITH DHW PUMP OUTPUT



No parameter modifications are required.

Alternatives: Try our programmable room thermostat, outside sensor and tank sensor kit for enhanced user comfort. Full instructions provided with kits.



Note.
If either pump requires more than 1 amp supply current, connection must be made via a relay

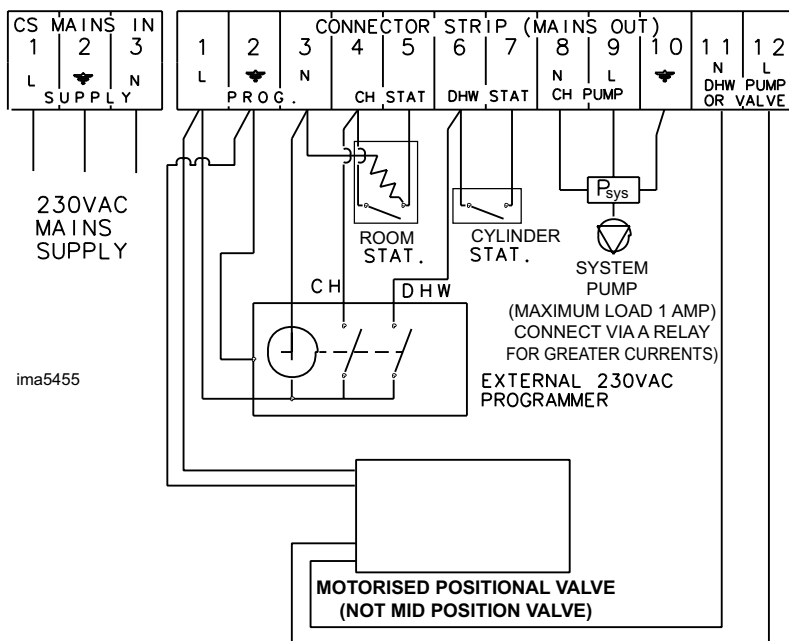
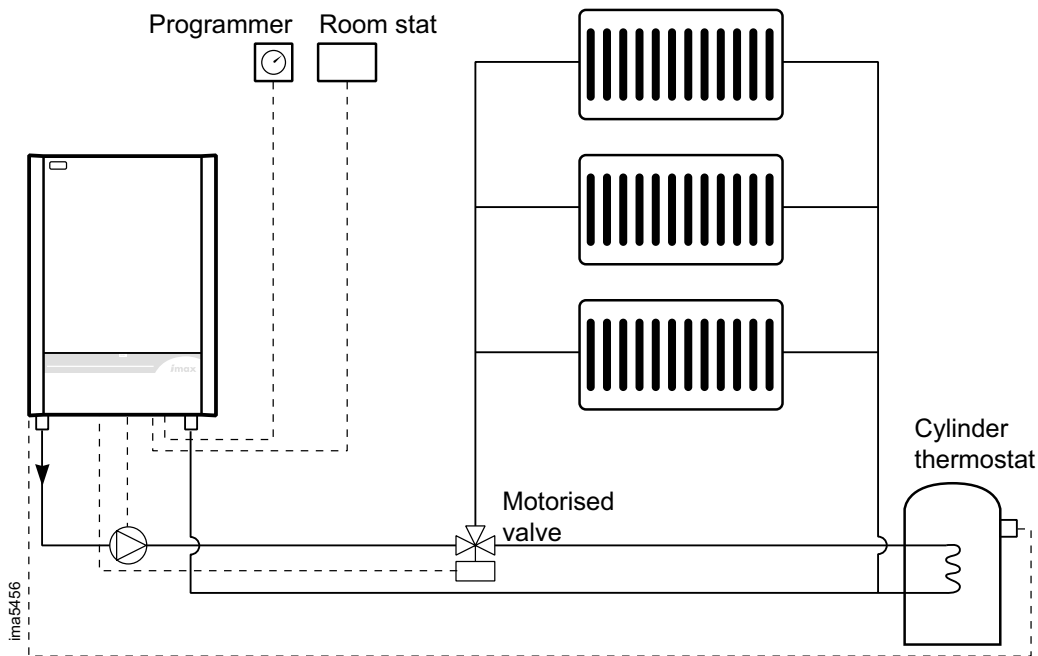
INSTALLATION

50 MAINS VOLTAGE CH AND DHW CONTROLS WITH DHW VALVE OUTPUT

Note.

This system will provide heating to one zone only at a time with DHW priority. To heat more than one zone simultaneously, use zone thermostat to energise individual zone valves with all calls for CH applying live to terminal 5 and a call for DHW applying live to terminal 7.

If all zones are fitted with individual zone valves a hydraulic bypass will be required to allow pump overrun. See page 6 for details.



Parameter modifications see Frames 38, 39 and 40.

Parameter 35 = 03 If a live output is required from terminal 12 for positioning of the valve to satisfy CH demand.

Parameter 35 = 23 If a live output is required from terminal 12 for positioning of the valve to satisfy DHW demand.

Alternatives: Try our programmable room thermostat, outside sensor and tank sensor kit for enhanced user comfort. Full instructions provided with kits.

51 COMMISSIONING AND TESTING

A. ELECTRICAL INSTALLATION

1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable meter.

B. GAS INSTALLATION

1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and then purged in accordance with the recommendations of the relevant standards listed on page 4.
In IE refer to I.S.813:2002.

WARNING. Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and **DO NOT SMOKE.**

52 INITIAL LIGHTING

1. Check that the system has been filled and the boiler is not air locked - air in the boiler could damage the heat exchanger. For this reason the airvent located in the left top side must never be shut off.
2. Check that all the drain cocks are closed and any valves in the flow and return are open.
3. Check that the GAS SERVICE COCK IS ON.
4. Fill the condensate trap with water before putting the unit into operation (see Frame 66 for condensate trap removal).
5. Check the indication on the pressure gauge. If the pressure is less than 1 bar the installation should be filled up first (sealed system only).
6. Switch the electricity supply ON and check that all the external controls are calling for heat. Check burner switch is set to on.
7. The boiler will commence the ignition sequence. If after 5 attempts the boiler has failed to light then it will lock out. Press the reset button to restart the ignition sequence.
9. To ensure the boiler operates at maximum rate without modulating set the fan speed to maximum.
10. To set the fan speed to maximum. Press and hold in the 'mode' and '+' buttons simultaneously. The display will show H as the first digit indicating the boiler is operating at maximum rate.
11. To ensure the boiler operates at minimum rate without modulating, set the fan speed to minimum
12. To set the fan speed to minimum. Press and hold in the 'mode' and '-' buttons simultaneously. The display will show L as the first digit indicating the boiler is operating at minimum rate.
13. Press the 'reset' button to return to normal operating mode.

Note.

It is possible to switch off the CH/DHW systems if the mode and +/- buttons are not held simultaneously. Refer to Frame 35 under the heading CH/DHW Systems for guidance.

Gas Rate

8. Operate the boiler for 20 minutes and check the gas rate (Table 1). You should be able to read at least 90% of the nominal.

53 GENERAL CHECKS

Make the following checks for correct operation.

1. The correct operation of ANY secondary system controls should be proved. Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.
2. Water circulation system;
 - a. With the system HOT examine all water connections for soundness.
 - b. With the system still HOT, turn off the gas, water and electricity supplies to the boiler and drain down to complete the flushing process.
- c. Refill and vent the system, clear all air locks and again check for water soundness.
- d. Balance the system.
3. Check the condensate drain for leaks and check it is discharging correctly.
4. Finally set the controls to the User's requirements.

Note. If an optional programmer kit is fitted then refer to the instructions supplied with the kit.

54 HANDING OVER

ROUTINE OPERATION

Full instructions covering routine lighting and operation of the boiler are given on the Lighting and Operation Instruction Label located on the inside of the lower controls door.

Draw the attention of the boiler owner or his representative to the Lighting and Operating Instruction Label. Give a practical demonstration of the lighting and shutting down of the boiler.

Describe the function of the boiler and system controls and show how they are adjusted and used.

Hand these Installation and Servicing Instructions, User's Instructions and Log book to the customer and request him to keep them in a safe place for ready reference. For IE, it is

necessary to complete a "Declaration of Conformity" to indicate compliance to the appropriate standard.

IMPORTANT. Point out to the owner that the boiler must have regular maintenance and cleaning, at least annually, in order to ensure reliable and efficient operation. Regular attention will also prolong the life of the boiler and should preferably be performed at the end of the heating season.

After servicing, complete the service section of the log book and return to the owner or their representative.

Recommend that a contract for this work should be made with the regional gas authority or a CORGI registered heating installer. In IE servicing work must be carried out by a competent person.

55 SAFETY

It is the law that any service work must be carried out by a registered CORGI installer. In IE service work must be carried out by a competent person.

WARNING. Always turn off the gas supply at the gas service cock, and switch off and disconnect the electricity supply to the appliance and any external controls before servicing or replacing components.

NOTE.

When the burner switch is in the off position the boiler control module remains live.

IMPORTANT.

After completing the servicing or replacement of components always:

- Test for gas soundness.
- Check the water system is correctly filled and free of air. Air in the boiler could cause damage to the heat exchanger. For this reason the automatic air vent in the left top side must never be shut off.
- Check the jacket front panel is correctly fitted, ensuring that a good seal is made. Secure the controls fascia in place.
- With the system hot examine all water connections for soundness.
- Check the gas rate and measure the combustion CO/CO₂ content. Refer to Frame 52 for reference on how to force the burner to maximum rate. The CO/CO₂ ratio of the flue gas should not be greater than 0.004 ratio.
- Carry out functional checks as appropriate.

56 SERVICING SCHEDULE

To ensure the continued safe and efficient operation of the appliance it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage but should be carried out at least annually.

Caradon Ideal Limited does not accept any liability resulting from the use of unauthorised parts or the repair and servicing of appliances not carried out in accordance with the Company's recommendations and specifications.

Note.

Some aluminium oxide build-up within the heat exchanger assembly is quite usual with this type of condensing boiler. Though removal and cleaning is recommended annually, the heat exchanger, sump and condensate trap must be inspected and cleaned after a maximum of 2 years operation.

1. Light the boiler and carry out function checks, noting any operational faults.
2. Run the boiler for 10 minutes and then check the gas consumption rate. Refer to Frame 52 for reference on how to force the burner to maximum rate.
3. Optional test - Connect a suitable gas analyser to the sampling point fitted in the flue adapter. For correct boiler operation the CO/CO₂ ratio of the flue gas should not be greater than 0.004 ratio. If this is the case and the gas input is at least 90% of the nominal, once compliance with the note above is ensured, then no further action need be taken. If not proceed to 4. Refer to Frames 57, 58, 59, 60, 61, 62, 63 and 64 for guidance.
4. Remove and clean the burner. Refer to Frames 57 and 59 or 61.
5. Inspect the heat exchanger through the burner opening. If there are signs of aluminium oxide build up, spray water down the flueways. Refer to Frame 62.
6. Remove the sump cover and scrape out any deposits. Refer to Frame 63
7. Remove the condensate trap and flush through with water. Refer to Frame 64.
8. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
9. After completion of servicing refer to Frame 55 for reference to final safety checks.

57 CASING REMOVAL

Front Panels

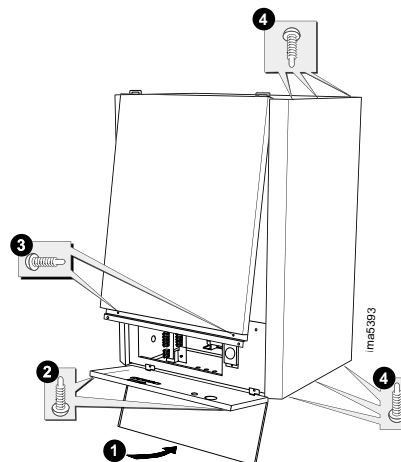
1. Press the centre of the lower controls door to unlatch the magnetic catch and lower it.
2. Remove the two screws from the control fascia and lower it.
3. Remove the two screws from the jacket front panel and lift it off the top locators. Place to one side.

Side Panels

Note.

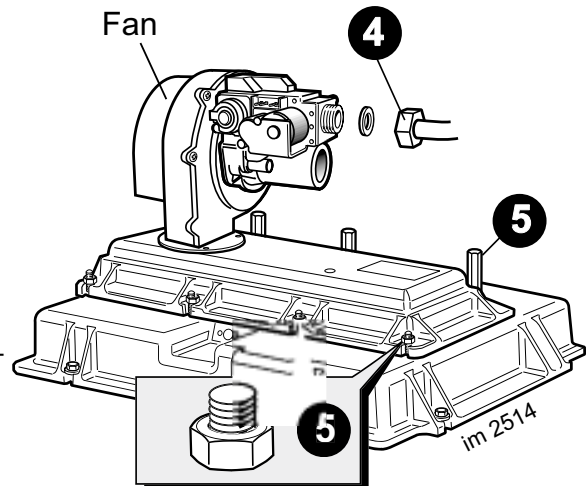
Removal is not required for normal servicing.

4. Remove the three screws from the top and the three screws from the bottom of the side panels.
5. Re-assemble in reverse order.



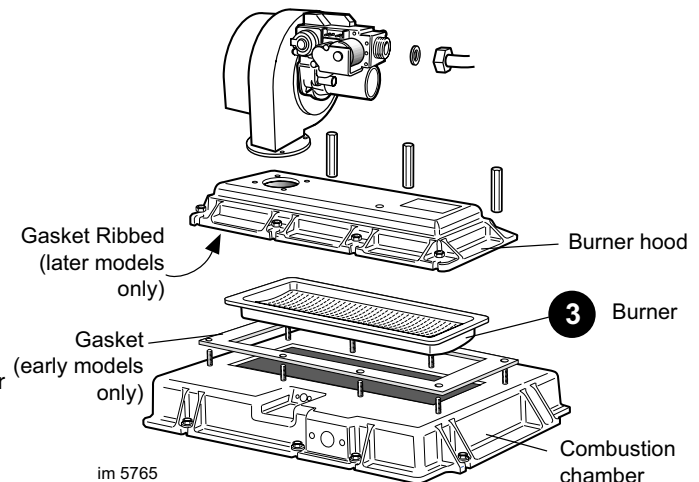
58 REMOVAL OF FAN, BURNER AND GAS VALVE ASSEMBLY - *imax* W45, W60, W45P AND W60P

1. Remove the jacket front panel, Refer to Frame 57.
2. Disconnect the electrical connections from the gas valve.
3. Disconnect the electrical connection from the fan.
4. Undo the gas valve nut and retain the fibre washer.
5. Remove the eight nuts and washers securing the assembly to the combustion chamber.
6. Pull off the H.T. lead to the spark/detection electrode.
7. Carefully remove the complete assembly taking care not to damage the spark/detection electrode.
8. Re-assemble in reverse order. The burner sealing gasket can be re-used providing it shows no sign of damage. The eight nuts and washers should be fitted following a diagonal tightening sequence twice. The nuts should be secured firmly. Replace the fibre washer as necessary.
9. Check the operation of the boiler. Refer to Frame 55.



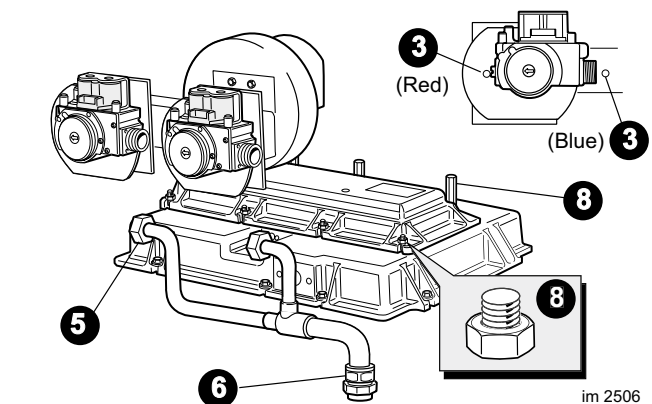
59 BURNER REMOVAL - *imax* W45, W60, W45P AND W60P

1. Remove the jacket front panel. Refer to Frame 57.
2. Remove fan, burner and gas valve assembly. Refer to Frame 58.
3. The burner can now be removed.
The burner can be cleaned using a soft brush, but only on the back face. The metal fibre surface must not be brushed. If the burner is showing any signs of damage it should be replaced.
4. After cleaning the burner, the sealing gasket can be re-used providing it shows no sign of damage. If it is damaged it must be replaced. On models with a ribbed gasket, ensure that it is correctly retained within the burner hood.
5. Reassemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.



60 REMOVAL OF FAN, BURNER AND GAS VALVE ASSEMBLY - *imax* W80/W80P

1. Remove the jacket front panel, refer to Frame 57.
2. Disconnect the electrical connections from both gas valves.
3. Pull off the high and low pressure sensing pipes from the assembly.
4. Disconnect both electrical connections from the fan.
5. Undo both gas valve nuts and retain the fibre washers.
6. Undo the gas pipe connector nut, retaining the fibre washer, and remove the upper gas pipe.
7. Pull off the H.T. lead to the spark/detection electrode.
8. Remove the eight nuts and washers securing the assembly to the combustion chamber.
9. Carefully remove the complete assembly taking care not to damage the spark/detection electrode with the assembly.
10. Re-assemble in reverse order. The burner gasket can be re-used provided it shows no signs of damage. The eight nuts and washers should be fitted following a diagonal tightening sequence twice. The nuts should be secured firmly. Replace the fibre washers as necessary.



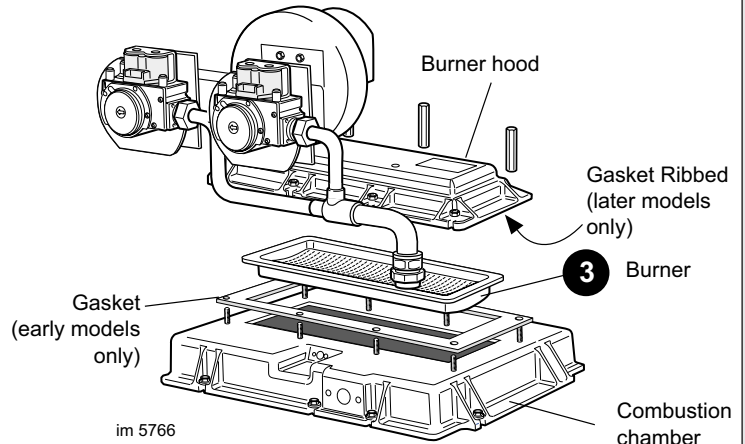
11. Check the operation of the boiler. Refer to Frame 55.

61 BURNER REMOVAL - *imax* W80/W80P

1. Remove the jacket front panel. Refer to Frame 57.
2. Remove fan, burner and gas valve assembly. Refer to Frame 60.
3. The burner can now be removed.

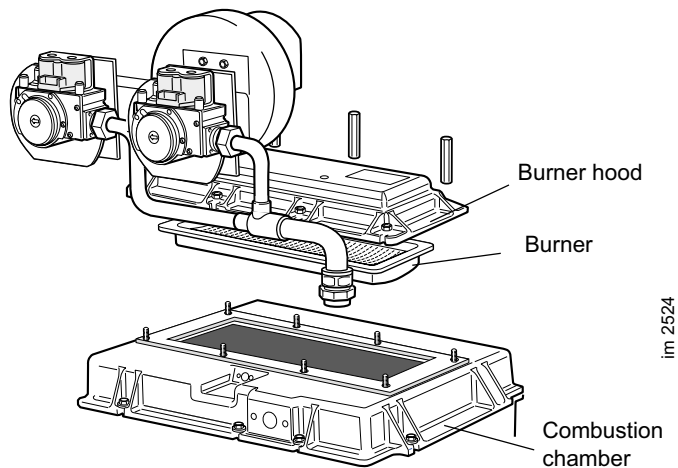
The burner can be cleaned using a soft brush, but only on the back face. The metal fibre surface must not be brushed. If the burner is showing any signs of damage it should be replaced.

4. After cleaning the burner, the sealing gasket can be re-used providing it shows no sign of damage. If it is damaged it must be replaced. On models with a ribbed gasket, ensure that it is correctly retained within the burner hood.
5. Reassemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.



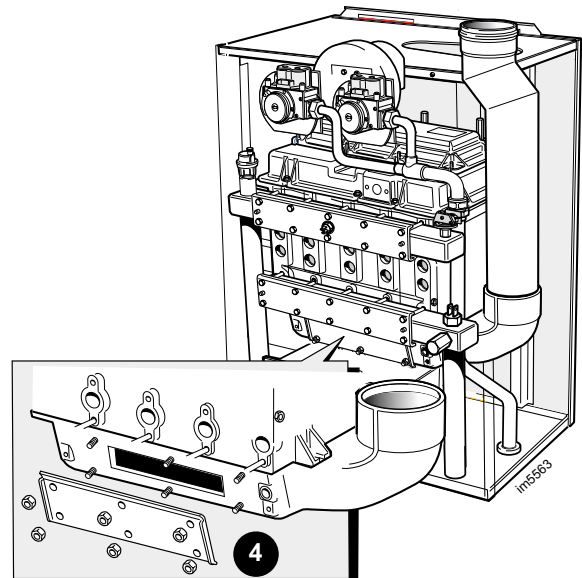
62 HEAT EXCHANGER INSPECTION / CLEANING

1. Remove the jacket front panel. Refer to Frame 57.
2. Remove the fan, burner and gas valve assembly. Refer to Frame 58 or 60.
3. Inspect the heat exchanger for signs of aluminium oxide build up. If necessary, clean the heat exchanger by spraying water down the flueways.
4. Reassemble in reverse order.
5. Check the operation of the boiler. Refer to Frame 55.



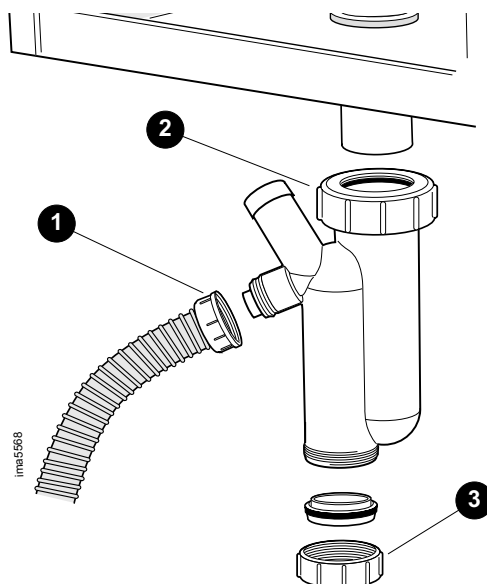
63 REMOVAL OF SUMP COVER

1. Remove the jacket front panel. Refer to Frame 57.
2. Disconnect HT Lead and earth lead from the ignition/detection probe.
3. Make Adequate provision to protect boiler from water spillage.
4. Undo 6 nuts and washers and remove sump cover.
5. Scrape out any deposits.
6. Reassemble in reverse order using a new sump cover gasket if it shows any signs of damage.
7. Check the operation of the boiler. Refer to Frame 55.



64 CONDENSATE TRAP

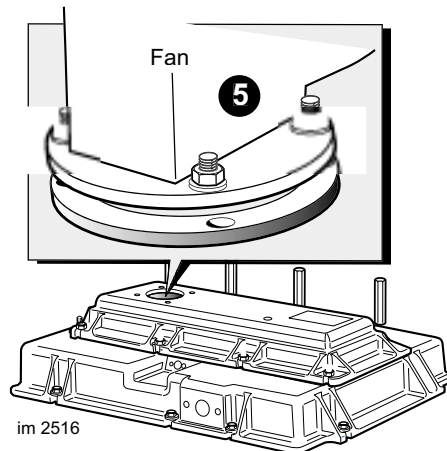
1. Unscrew the nut and disconnect the flexible pipe.
2. Unscrew the nut and remove the condensate trap.
3. Remove the nut and plug from the condensate trap and flush out with water.
4. Reassemble in reverse order ensuring the condensate trap is full of water before firing.
5. Check the operation of the appliance. Refer to Frame 55.



65 FAN REPLACEMENT - *imax* W45, W60, W45P AND W60P

Refer to Frame 55, then:

1. Remove the jacket front panel. Refer to Frame 57.
2. Disconnect the electrical connections from the gas valve.
3. Disconnect the electrical connections from the fan.
4. Undo the gas valve nut and retain the fibre washer.
5. Remove the four nuts securing the fan to the burner hood and lift out of the boiler.
6. Remove the 2 screws securing the venturi to the fan inlet.
7. Replace the fan using the new gaskets and fibre washer as supplied.
8. Re-assemble in reverse order.
9. Check the operation of the boiler. Refer to Frame 55.

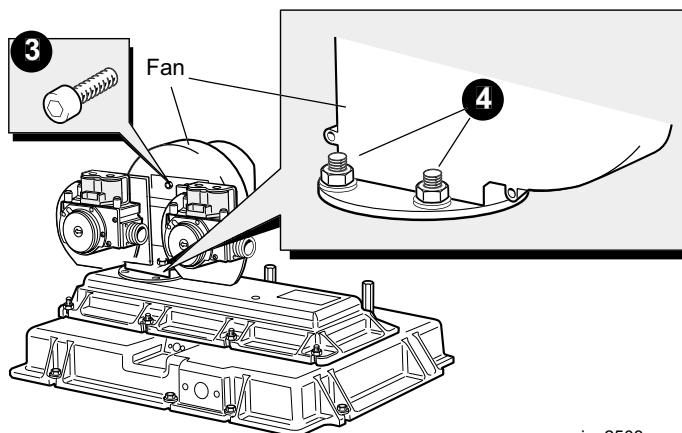


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66 FAN REPLACEMENT - *imax* W80/W80P

Refer to Frame 55, then:

1. Remove the jacket front panel. Refer to Frame 57.
2. Remove fan, burner and gas valve assembly. Refer to Frame 60.
3. Remove the four screws securing the gas manifold to the fan.
4. Remove the four nuts securing the fan to the burner hood.
5. Replace the fan with the new gaskets and fibre washers as supplied.
6. Reassemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 55.

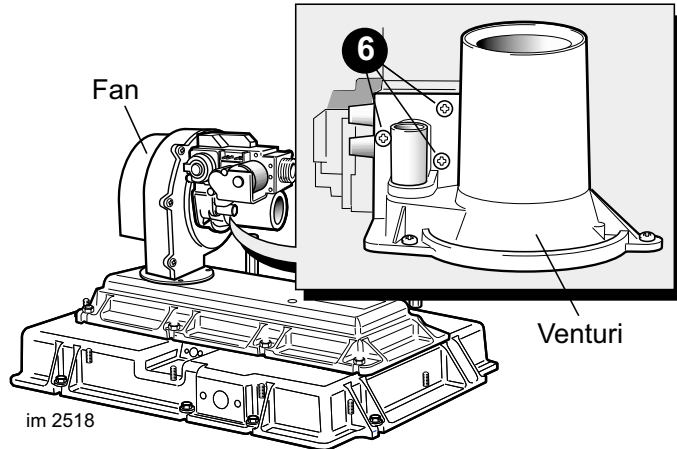


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67 GAS VALVE REPLACEMENT - *imax* W45, W60, W45P AND W60P

Refer to Frame 55, then:

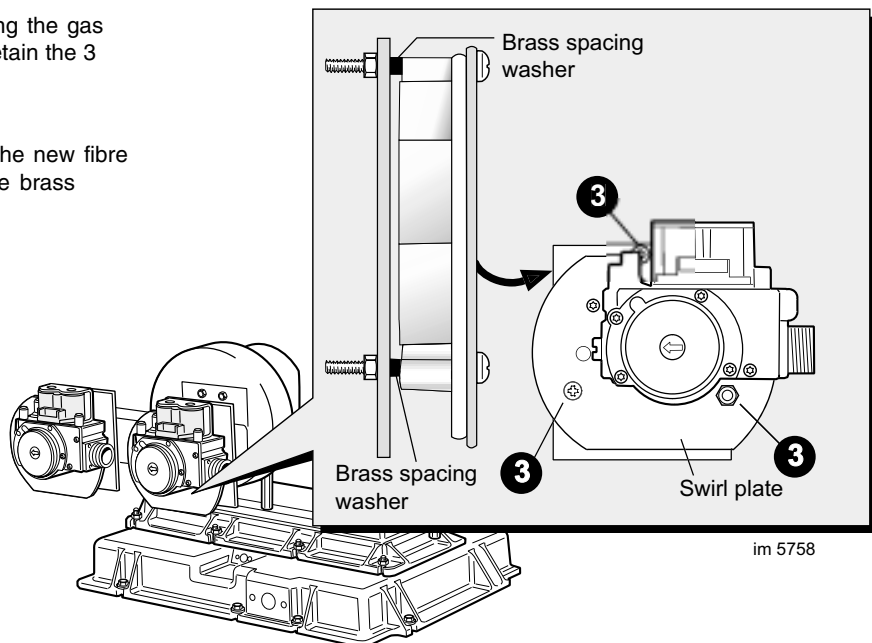
1. Remove the jacket front panel. Refer to Frame 57.
2. Disconnect the electrical connections from the gas valve.
3. Disconnect the electrical connections from the fan.
4. Undo the gas valve nut and remove the fibre washer.
5. Remove the 4 nuts securing the fan to the burner hood and lift out of the boiler.
6. Remove the three screws securing the gas valve to the venturi.
7. Replace the gas valve using the new rubber seal as supplied.
8. Reassemble in reverse order using the new fan gasket and fibre washer as supplied.
9. Check for gas soundness.
10. Only valves supplied by **Caradon Ideal Limited** should be used, as these are factory preset and require no adjustment.
11. Reference should now be made to Frame 52 to check the gas rate.
12. Check the operation of the boiler. Refer to Frame 55.



68 GAS VALVE REPLACEMENT - *imax* W80/W80P

Refer to Frame 55, then:

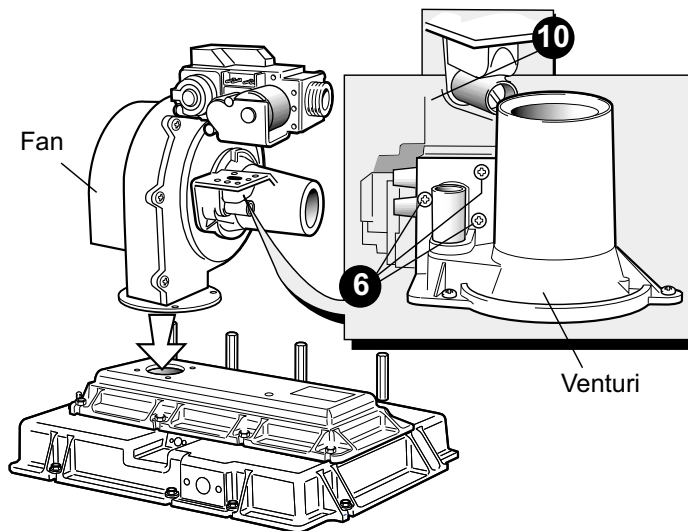
1. Remove the jacket front panel. Refer to Frame 57.
2. Undo the gas valve nut and remove the fibre washer.
3. Remove the nuts and screws securing the gas valve to the manifold taking care to retain the 3 nuts and brass spacing washers.
4. Replace the gas valve.
5. Reassemble in reverse order using the new fibre washer as supplied and ensuring the brass spacing washers are in place.
6. Check for gas soundness.
7. Only valves supplied by **Caradon Ideal Limited** should be used as these are factory preset and require no adjustment.
8. Reference should now be made to Frame 52 to check the gas rate.
9. Check the operation of the boiler. Refer to Frame 55.



69 VENTURI REPLACEMENT

Refer to Frame 55, then:

1. Remove the jacket front panel. Refer to Frame 57.
2. Disconnect the electrical connections from the gas valve.
3. Disconnect the electrical connections from the fan.
4. Undo the gas valve nut and remove the fibre washer.
5. Remove the 4 nuts securing the fan to the burner hood and lift out of the boiler.
6. Remove the 3 screws securing the gas valve to the venturi.
7. Remove the 2 screws securing the venturi to the fan.
8. Re-assemble in reverse order using the new seals and gaskets as supplied.
9. Check for gas soundness.
10. Only Venturi's supplied by **Caradon Ideal Limited** should be used as these are factory preset and require no adjustment.
11. Reference should now be made to Frame 52 to check the gas rate.
12. Check the operation of the boiler. Refer to frame 55.



im 2541

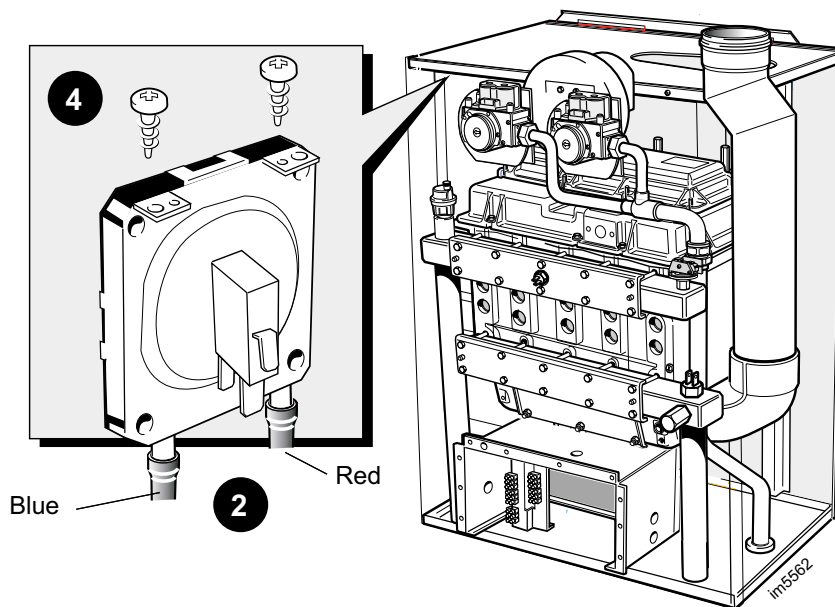
70 AIR PRESSURE SWITCH REPLACEMENT - *imax* W80/W80P

Refer to Frame 55, then:

1. Remove the jacket front panel. Refer to Frame 57.
2. Remove the two sensing pipes from the air pressure switch.
3. Pull off the two electrical connectors.
4. Remove the two self tapping screws.
5. Replace the air pressure switch and re-assemble in reverse order.

Note. The electrical connectors are connected to the terminals marked *C* and *NO*.

6. Check out the operation of the boiler. Refer to Frame 55.

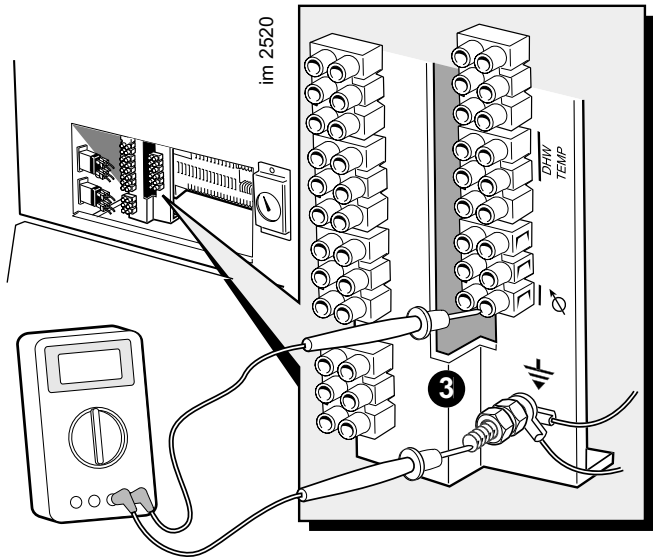


im5562

71 IGNITION/DETECTION ELECTRODE TESTING/REPLACEMENT

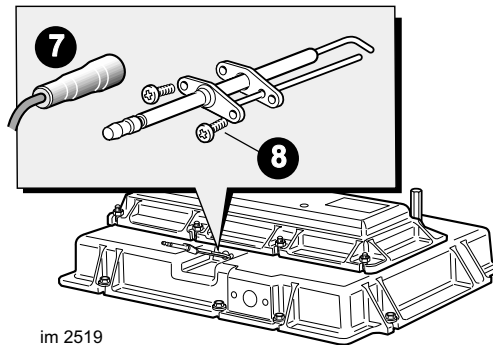
Refer to Frame 55, then:

1. Lower the controls fascia. Refer to Frame 57.
2. It is possible to measure the ionisation current with a voltmeter set at 0-10VDC. (0-10VDC = 0-10 micro amps ionisation current).
3. With the boiler running, connect a meter between the terminal marked \emptyset and earth.
4. Normal reading should be between 4-8V (4-8 μ A).
5. Replace the electrode if the reading is 3V or below.
6. To replace the ignition/detection electrode, first



remove the jacket front panel. Refer to Frame 57.

7. Pull the HT lead off the electrode.
8. Remove the 2 screws
9. Replace the electrode using the new gasket provided ensuring that the earth lead is recaptivated under the screw and washer.
10. Check the electrode gap is 3.5mm.
11. Re-assemble in reverse order.
12. Check the operation of the boiler. Refer to Frame 55.

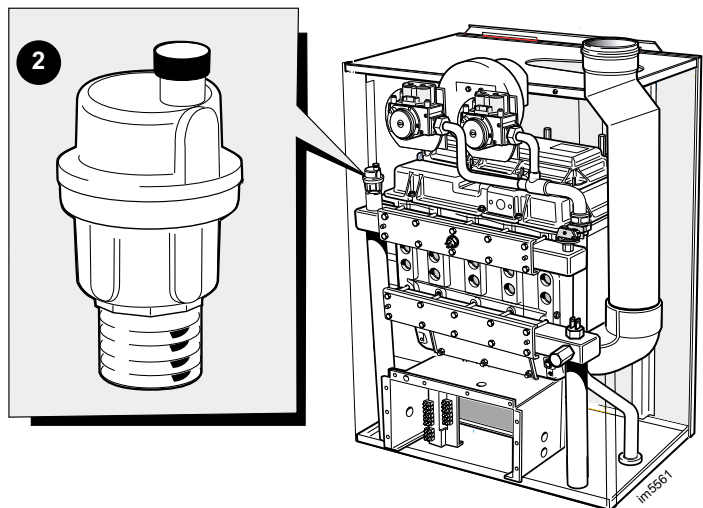


im 2519

72 AUTOMATIC AIR VENT REMOVAL

Refer to Frame 55, then:

1. Remove the jacket front panel. Refer to Frame 57.
2. Unscrew the air vent from the self sealing fitting on the LHS of the flow manifold.
3. Replace the air vent.
4. Ensure that the black plastic vent cap is loose to allow air to escape. Air in the boiler could cause damage to the heat exchanger.
5. Reassemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.

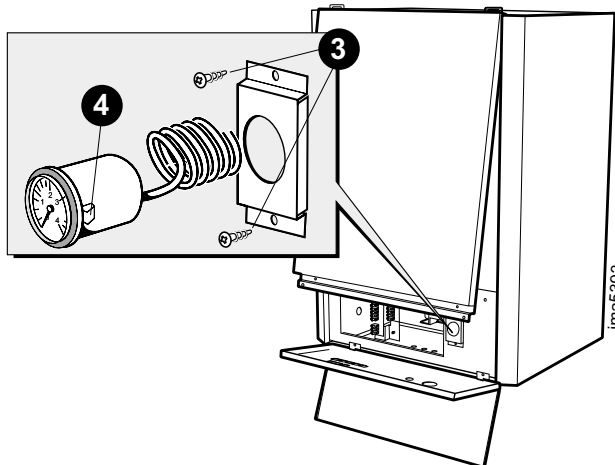


im3561

73 PRESSURE GAUGE REPLACEMENT

Refer to Frame 55, then:

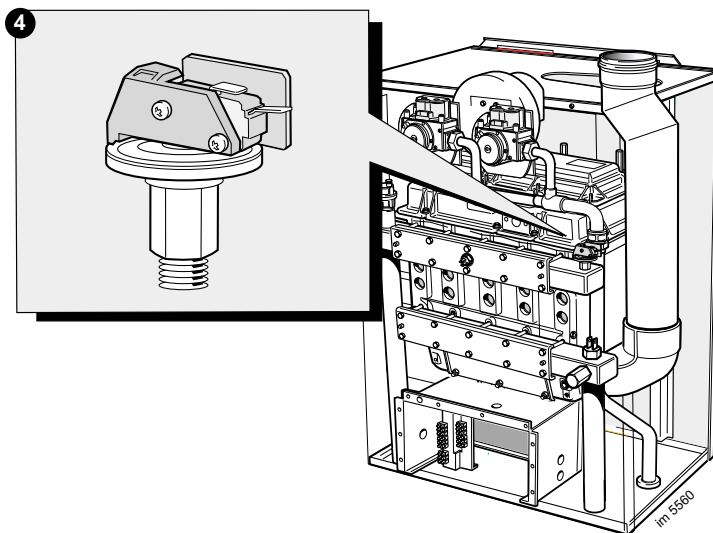
1. Remove the jacket front panel. Refer to Frame 57.
2. Unscrew the nut retaining the capillary from the self sealing fitting.
3. Unscrew the two screws from the pressure gauge bracket and withdraw the unit from the boiler.
4. Compress the retaining lugs and remove the gauge from the bracket.
5. Replace the pressure gauge using the fresh gasket supplied.
6. Reassemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 55.



74 WATER PRESSURE SWITCH REPLACEMENT

Refer to Frame 55, then:

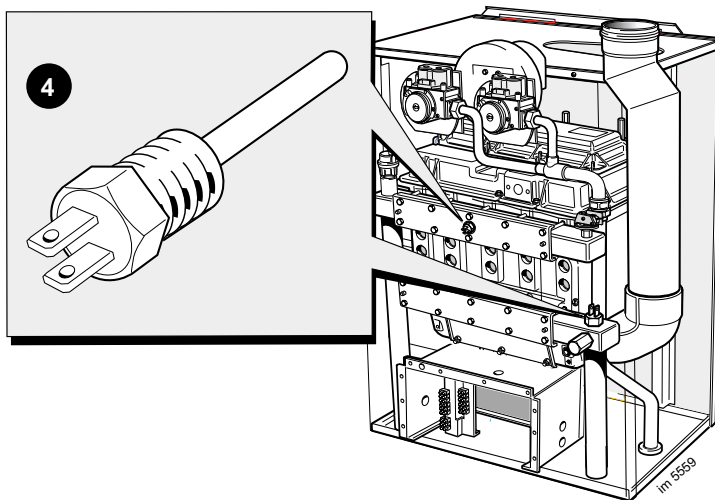
1. Remove the jacket front panel. Refer to Frame 57.
2. Isolate water circuit and drain system
3. Disconnect the electrical connections from the pressure switch.
4. Unscrew the water pressure switch
5. Fit the new water pressure switch.
6. Re-fill the system ensuring all the air in the heat exchanger is vented through the air vent.
7. Re-assemble in reverse order.
8. Check the operation of the boiler. Refer to Frame 55.



75 FLOW / RETURN THERMISTOR REMOVAL

Refer to Frame 55, then:

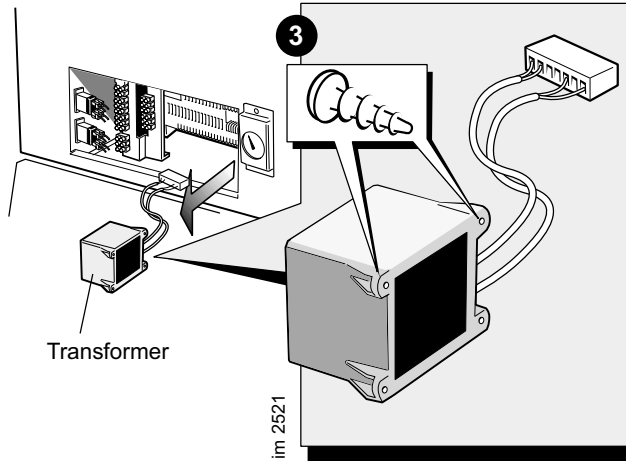
1. Remove the jacket front panel. Refer to Frame 57.
2. Isolate water circuit and drain system
3. Disconnect the electrical connections from the thermistor.
4. Unscrew the thermistor.
5. Fit the new thermistor with built in 'O' ring seal. Do not overtighten.
6. Refill the system ensuring all the air in the heat exchanger is vented through the air vent.
7. Re-assemble in reverse order.
8. Check the operation of the boiler. Refer to Frame 55.



76 TRANSFORMER REMOVAL

Refer to Frame 55, then:

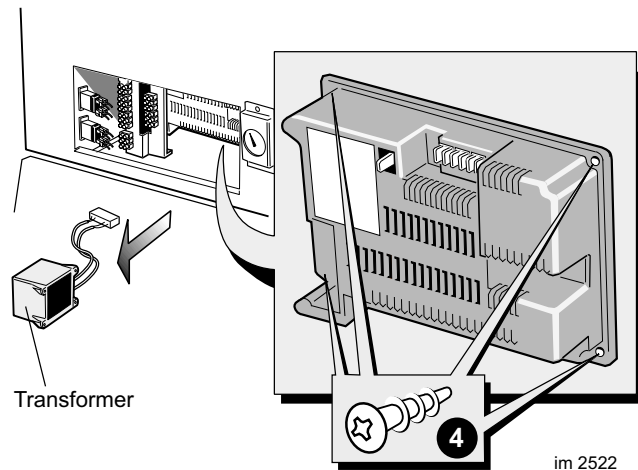
1. Lower the controls fascia. Refer to Frame 57.
2. Disconnect the transformer connection from the boiler control module.
3. Remove the four transformer mounting screws.
4. Fit new transformer.
5. Reassemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.



77 BOILER CONTROL MODULE REMOVAL

Refer to Frame 55, then:

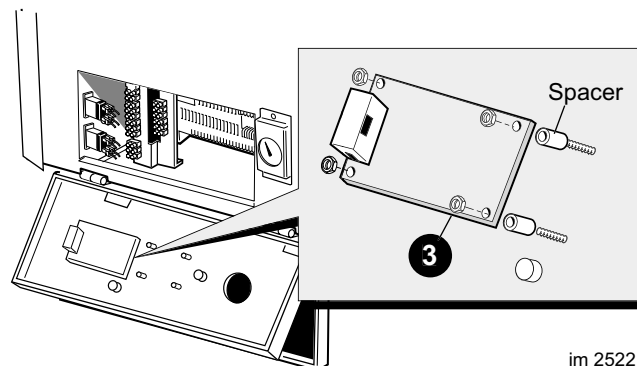
1. Lower the controls fascia. Refer to Frame 57.
2. To facilitate the removal of the boiler control module it will be necessary first to remove the transformer. Refer to Frame 76.
3. Disconnect the electrical connections from the module.
4. Remove the four module fixing screws.
5. Fit the new module and reassemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.



78 DISPLAY BOARD REMOVAL

Refer to Frame 55, then:

1. Lower the controls fascia. Refer to Frame 57.
2. Disconnect the electrical connection from the display board.
3. Undo and remove the 4 plastic nuts.
4. Lift the display board from the 4 studs being careful not to disturb the loose fitted plastic sleeves.
5. Fit the new display board and re-assemble in reverse order.
6. Check the operation of the boiler. Refer to Frame 55.



FAULT FINDING

Before attempting any electrical fault finding ALWAYS carry out the preliminary electrical system checks as detailed in the Instructions for the British Gas Multimeter or other similar commercially available meter.

The preliminary electrical system checks are the FIRST electrical checks to be carried out during a fault finding procedure.

On completion of any service/fault finding task which has required the breaking and remaking of electrical connections the following checks MUST be repeated:

- a Earth continuity
- b Polarity
- c Resistance to earth

Detailed instructions on the replacement of faulty components are contained in the 'Servicing' section of these Installation & Servicing Instructions.

Before carrying out Fault Finding ensure that all external controls calling for heat. There should be 230V \pm 10% available at the control box connection.

The boiler control module has replaceable fuses protecting the 230V and 24V circuits. A common reason for the 230V fuse to blow would be if the pump connected to the boiler was drawing more than 1 amp.

If the 230V fuse has blown, the display will be blank. Check for short circuits and pump loads before replacing the fuse.

If the 24V fuse has blow the display will show U 1.2. Check for short circuits before replacing the fuse.

Boiler Control Module Error Codes

Code	Description	Action
E 00	Flame error	Check inlet gas pressure Check flue for blockage Check wiring to ignition/detection electrode Check condition of ignition/detection electrode
E 02	No ignition after restart	Check inlet gas pressure Check flue for blockage Check wiring to ignition/detection electrode Check condition of ignition/detection electrode
E 03	Internal failure	Check gas valve wiring and rectifying lead Check gas valve solenoids are not open circuit Check general wiring harness and connections If all OK, replace boiler control module
E 04	Non-volatile lockout	Press reset
E 05	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 06	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 07	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 08	Air pressure switch not closed (80kW only)	Check flue for blockage Check air pressure switch sensing pipes Check fan speed Check air pressure switch & replace if necessary
E 11	EPROM read/write error	Replace boiler control module
E 12	Fuse 4AT on MCBA blown	Replace fuse 4AT
E 13	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 14	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 15	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 16	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module

FAULT FINDING

Boiler Control Module Error Codes Continued

Code	Description	Action
E 17	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 18	Flow temperature too high	Check no air in system or boiler Check adequate flow of water through boiler
E 19	Return temperature too high	Check no air in system or boiler Check adequate flow of water through boiler
E 25	Flow temperature rise too fast	Check no air in system or boiler Check adequate flow of water through boiler
E 28	No tacho from fan	Check electrical connections to fan If connections OK & fan rotates, replace fan
E 29	Tacho signal from fan does not reset to zero	Replace fan
E 30	Flow/return temperature differential too high	Check no air in system or boiler Check adequate flow of water through boiler
E 31	Flow thermister short circuit	Check wiring Disconnect terminals from thermistor & confirm short circuit using meter Replace thermister
E 32	Return thermistor short circuit	Check wiring Disconnect terminals from thermister & confirm short circuit using meter Replace thermister
E 33	DHW thermistor short circuit	Check wiring Disconnect terminals from thermister & confirm short circuit using meter Replace thermister
E 36	Flow thermistor open circuit	Check wiring Disconnect terminals from thermister & confirm open circuit using meter Replace thermister
E 37	Return thermistor open circuit	Check wiring Disconnect terminals from thermister & confirm open circuit using meter Replace thermister
E 38	Tank sensor open circuit	If not fitted check parameter 35 settings Check wiring Disconnect terminals from tank sensor & confirm open circuit using meter Replace tank sensor
E 44	Internal failure	Check wiring harnesses & connections If wiring OK replace boiler control module
E 60	Error reading parameters	Replace boiler control module
E 61	Air pressure switch does not open (W80 only)	Check for blockages in air pressure switch sensing pipes Check air pressure switch & replace if necessary
E 65	Not enough fan driving force	Check supply voltage to fan Replace fan

FAULT FINDING

Boiler Control Module Blocking Codes

Code	Description	Action
b 18	Flow temperature >95degC	Check no air in system or boiler Check adequate flow of water through boiler
b 19	Return temperature >95degC	Check no air in system or boiler Check adequate flow of water through boiler
b 24	Return temperature > Flow temperature for excessive time	Check no air in system or boiler Check adequate flow of water through boiler
b 25	Flow temperature rise too fast	Check no air in system or boiler Check adequate flow of water through boiler
b 26	Minimum water pressure switch not closed	Check no air in system or boiler If sealed system check charge pressure If open vent system check minimum head is 3m Check wiring to water pressure switch Check water pressure switch with meter & replace if necessary
b 30	Flow/return temperature differential too high	Check no air in system or boiler Check adequate flow of water through boiler
b 33	Tank sensor short circuit	Check wiring Disconnect terminals from tank sensor & confirm short circuit using meter Replace tank sensor
b 38	Tank sensor open circuit	If not fitted check parameter 35 settings Check wiring Disconnect terminals from tank sensor & confirm open circuit using meter Replace tank sensor
b 61	Air pressure switch closed (W80 only)	Check for blockages in air pressure switch sensing pipes Check air pressure switch & replace if necessary
b 65	Waiting for fan tacho signal at start up	Check fan wiring If no tacho signal from fan, replace fan

SHORT LIST OF PARTS

The following are parts commonly required as replacements, due to damage or expendability.

A full list of spares is held by **Caradon Ideal Limited** distributors and merchants.

Their failure or absence will affect the safety and/or performance of this appliance.

When ordering spare parts please quote:

1. Boiler model
2. Boiler serial no. (refer to the data plate on boiler)
3. Boiler P.I. No. (refer to the data plate on boiler)
4. Description
5. Quantity
6. Part no.

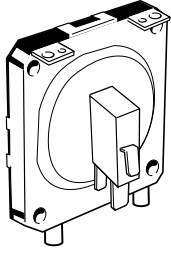
When replacing any part on this appliance use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal boilers.

Key No.	Description	Qty.	Part No.
7	Air pressure switch	1	172 666
8	Fan (W45 & W45P)	1	172 641
	Fan (W60, W60P, W80 & W80P)	1	172 642
10	Gas Valve Pre-set (W45 & W60)	1	172 966
	Gas Valve Pre-set (W45P & W60P)	1	172 967
	Gas Valve Pre-set (W80)	1	172 968
	Gas Valve Pre-set (W80P)	1	172 969
14	Ignition / detection electrode	1	172 665
15	Auto air vent	1	172 668
21	Thermistor (flow/return)	1	172 671
22	Transformer	1	172 657
23	Control Module (W45)	1	172 651
	Control Module (W60)	1	172 652
	Control Module (W80)	1	172 653
	Control Module (W45P)	1	172 654
	Control Module (W60P)	1	172 655
	Control Module (W80P)	1	172 656
24	Pressure gauge	1	172 669
25	Water pressure switch	1	172 667
26	Display board	1	172 660
27	Relay	1	172 658
28	Control module fuses	1	172 663
29	Burner (W45, W45P, W60 & W60P)	1	172 647
	Burner (W80 & W80P)	1	172 648
30	Burner Gasket (W45, W45P, W60 & W60P) - early models	1	172 649
	Burner Gasket Ribbed (W45, W45P, W60 & W60P) - later models	1	173 062
	Burner Gasket (W80 & W80P) - early models	1	172 650
	Burner Gasket Ribbed (W80 & W80P) - later models	1	173 063
32	Boiler Gasket Set	1	172 695

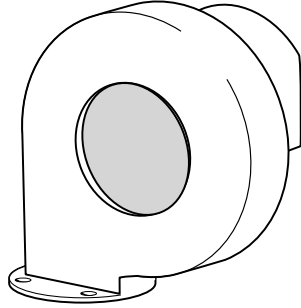
SHORT LIST OF PARTS

81 SHORT LIST

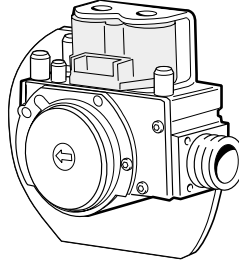
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8

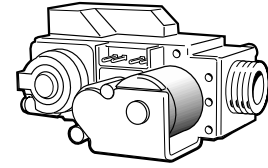


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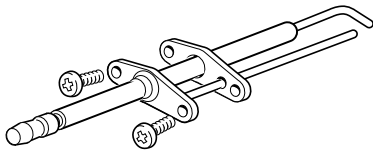


W80

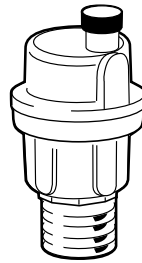
W45/60



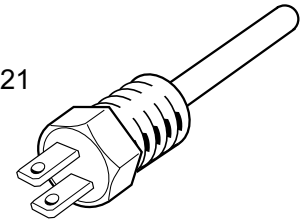
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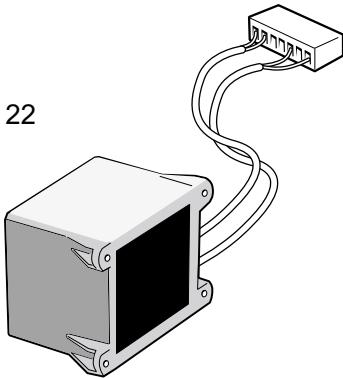
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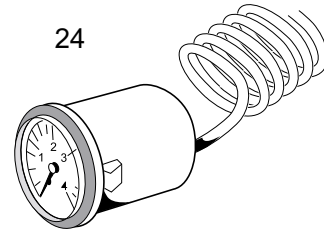
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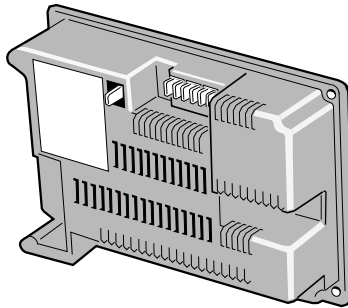
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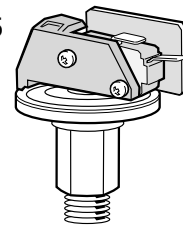
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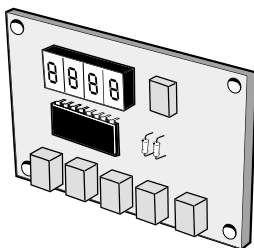
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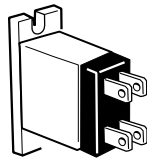
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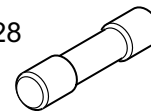
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27

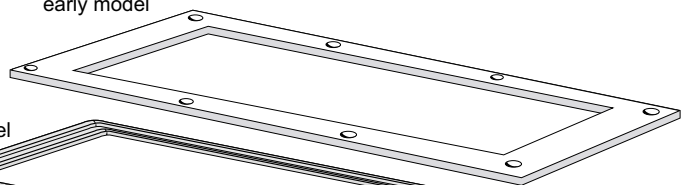


28

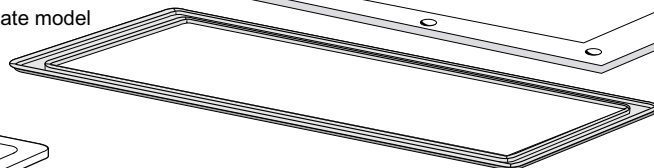


30

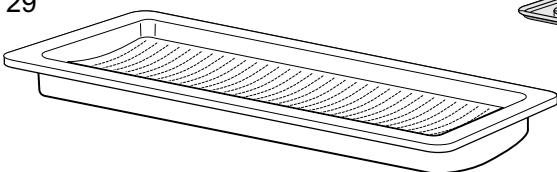
early model



late model



29



ima5558

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Technical Training

The Ideal Boilers 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 498 432

Ideal Boilers, P.O. Box 103, National Ave, Kingston upon Hull, HU5 4JN. Telephone: 01482 492 251 Fax: 01482 448 858. Registration No. London 322 137.

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



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ENGINEERED FOR PEACE OF MIND

May 2003

UIN 158 334 A03

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