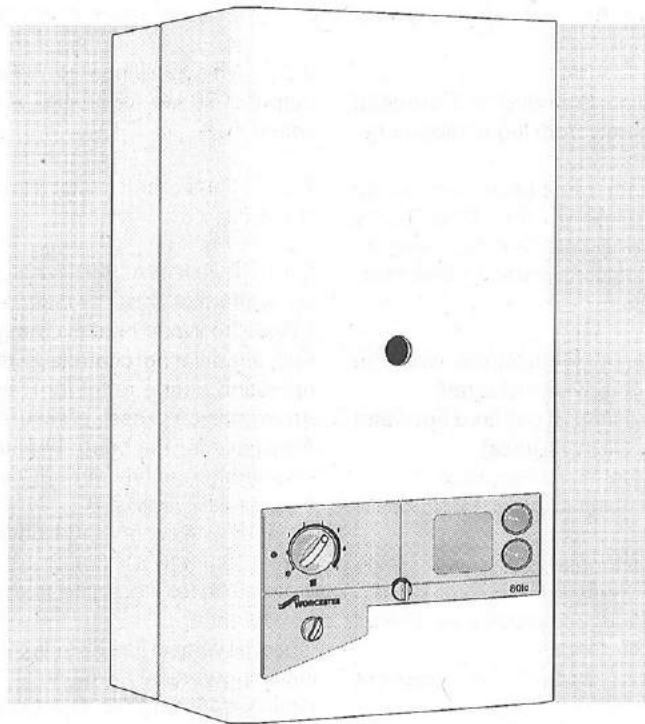


 **WORCESTER**

80ic RSF

WALL MOUNTED COMBINATION BOILER FOR CENTRAL HEATING
AND MAINS FED DOMESTIC HOT WATER

INSTALLATION AND SERVICING INSTRUCTIONS



Cat: II_{2H3+}
GC NUMBER
NG: 47 311 43
LPG: 47 311 46

BOILER OUTPUT

To Domestic Hot Water - Modulating control
Minimum 7.0 kW
Maximum 23.0 kW

To Central Heating
Minimum 10.0 kW
Maximum 20.0 kW



*Worcester Bosch supports the
Benchmark code of practice*

**IMPORTANT: THESE INSTRUCTIONS APPLY IN GREAT BRITAIN AND IRELAND ONLY
THESE INSTRUCTIONS ARE TO BE LEFT WITH THE USER OR AT THE GAS METER**

This appliance must be installed by a competent person in accordance
with the CURRENT Gas Safety (Installation and Use) Regulations

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1 Installation Regulations

1.1 Gas Safety (Installation and Use) Regulations, 1998: It is the law that all gas appliances are installed by a competent person in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your interest, and that of safety, to ensure compliance with the law.

1.2 The manufacturers notes must not be taken, in any way, as overriding statutory obligations.

1.3 The compliance with a British Standard or European Norm does not, of itself, confer immunity from legal obligations.

1.4 The installation of the appliance must be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, current IEE Wiring Regulations (BS7671), Building Regulations, Building Standards (Scotland) and Local Water Byelaws.

1.5 The installation should be in accordance with the following British Standards unless otherwise indicated:

BS 6798:1987 Specification for installation of gas fired hot water boilers of rated input not exceeding 60 kW [gross].

BS 5449:1990 Central Heating for Domestic Premises.

BS 5546:1990 Installation of gas hot water supplies for domestic purposes.

BS 5440:1:1990 Flues and Ventilation for gas appliances of rated input not exceeding 60 kW [gross]: Flues.

BS 5440:2:1989 Flues and Ventilation for gas appliances of rated input not exceeding 60kW [gross]: Air Supply.

BS 6891:1988 Installation of low pressure gas pipework installations up to 28mm (R1).

BS 6700: Domestic water supply in buildings.

BS 7593: Water treatment in domestic heating systems.

1.6 To ensure that the installation will perform to the highest standards, the system and components should conform to any other relevant Standards.

1.7 The appliance and/or components conform, where applicable, to the Essential Requirements of the Gas Appliance Directive, the Boiler Efficiency Directive, the EMC Directive and the Low Voltage Directive.

1.8 In accordance with the requirements of COSHH the appliance does not contain any substances which are harmful to health.

1.9 Product liability regulations indicate that, in certain circumstances, the installer can be held responsible, not only for mistakes on his part but also for damage from the use of faulty materials. We advise that, to avoid any risk, only quality approved branded fittings are used.

1.10 The advice and instructions given in this document covers, as far as possible, the foreseeable situations which may arise. Contact Worcester Heat Systems Technical Information Department, Telephone: 0990 266241, for advice on specific installations.

2 General Information

2.1 This appliance is not suitable for external installation.

2.2 The appliance controls are set to provide a maximum output of 20 kW for central heating and 23 kW for domestic hot water.

2.3 The control circuit provides direct burner ignition. A pilot is not used.

2.4 PRINCIPAL APPLIANCE COMPONENTS. See Fig. 1.
A low thermal capacity Gas to Water heat exchanger.
A Water to Water heat exchanger to provide domestic hot water.
Fully modulating controls in the domestic hot water modes of operation, range rated for Heating.
An expansion vessel, pressure gauge and pressure relief valve.
A by-pass for the central heating system.
Temperature safety cut-out controls.
A water flow regulator.
A standard telescopic horizontal flue assembly giving flue lengths from 135mm to 615mm.
Optional extra extension flue kits to provide for flue lengths up to 4000mm.
Optional vertical flue kit to provide for flue lengths up to 4000mm including vertical terminal.
Optional 45° and 90° flue bends.
Optional fascia mounted electro-mechanical programmer.

2.5 ELECTRICAL SUPPLY

Mains supply: 230V ~, 50 Hz.

External fuse: 3A.

Internal fuses: T2.5A, 250V and T2.0A, 250V.

2.6 GAS SUPPLY

Check the data plate (located on the inner cover of the appliance) to ensure the appliance has been set up for the correct gas supply. The appliance can be set up for either of the following gases: Natural gas (G20) or Propane (G31). A conversion kit including instructions is available to change the appliance from one gas to the other.

The boiler requires 2.7m³/h (100ft³/hr) of natural gas (G20) or 1.1m³/h (40ft³/hr) (2.0 kg/h) of propane gas (G31). The gas meter and supply pipes must be capable of supplying this quantity of gas in addition to the demands of any other appliances being served. The meter governor should deliver a dynamic pressure of 20mbar (8in wg) for natural gas or 37mbar (14.4 in wg) for propane at the inlet to the appliance.

The complete installation, including the gas meter, must be tested for soundness and purged. Refer to BS 6891.

2.7 PACKING

The appliance and flue components are packed in separate cartons.

2.8 GENERAL INSTALLATION

The appliance is suitable for connection to a sealed primary system only.

Any specified ventilation openings made into a wall or compartment door must not be obstructed.

If the appliance is to be fitted into a compartment then the compartment must conform to the requirements of BS 5440:2:1989 and BS 6798.

Notwithstanding the instructions given in BS 5440:2:1989 and BS 6798, this appliance may be fitted in a compartment with no vents as long as the minimum clearances stated in Section 6: Air Supply, are maintained.

Do not place anything on top of the appliance.

The clearances specified for servicing must be maintained.

It is generally advised to fit a bypass to all systems.

2.9 FLUE

The appliance has a multi-directional horizontal fanned flue system.

The standard telescopic flue assembly length is from 135mm to 615mm.

Extension flue lengths are available from 500mm to 4000mm.

A vertical flue kit is available for up to 4000mm including a vertical terminal.

Optional 45° and 90° flue bends are available.

A terminal guard, Type K2, GC 393 553, is available from Tower Flue Components, Vale Rise, Tonbridge, TN9 1TB.

Do not allow the flue terminal fitted to the outside wall to become obstructed or damaged.

A kit for internal fixing of the flue is available separately.

2.10 CONTROLS

The electronic control system and gas valve controls the heat input in response to the central heating and domestic hot water requirements.

The ON/OFF switch is used to turn the appliance on and off.

The Central Heating Temperature control knob provides for the selection of domestic hot water only (Turned fully anti-clockwise) or central heating and domestic hot water (Turned clockwise).

The DHW control varies the flow rate and therefore controls the water temperature. As the flow rate decreases (clockwise) the temperature increases.

A fascia-mounted programmer is available as an optional extra. A remote mounted programmer may be connected to the appliance.

There is provision for the connection of a mains voltage room thermostat and/or a frost thermostat.

The electronic controls prevent rapid cycling of the appliance in the central heating mode.

2.11 SYSTEM NOTES

IMPORTANT

Check that no dirt is left in either the gas or water pipework as this could cause damage to the appliance. Thoroughly flush the heating system and the cold water mains supply in accordance with the recommendations of BS7593: 1992.

Purge the gas supply before finally connecting the appliance.

The water pipe connections throughout a sealed system must be capable of sustaining a pressure of up to 3 bar.

Radiator valves must conform to the requirements of BS 2767 1991.

The relief valve discharge must be directed away from any electrical components or where it would cause a hazard to the user.

A drain cock to BS 2879 must be fitted to the lowest point of the system.

For circuit design purposes it is important that due note is taken of the information given in Table 3 relating to the available pump head.

2.12 SHOWERS, BIDETS, TAPS AND MIXING VALVES

Hot and cold taps and mixing valves used in the system must be suitable for operating at mains pressure.

Thermostatically controlled shower valves will guard against the flow of water at too high a temperature.

If using a pressure equalising valve, set the Domestic Hot Water temperature control knob to the 'MAX' position.

Hot and cold mains fed water can be supplied direct to an over-rim flushing bidet subject to local Water Company requirements.

With all mains fed systems the flow of water from the individual taps will vary with the number of outlets operated simultaneously and the cold water mains supply pressure to the property. Flow balancing using 'Ball-o-Fix' type valves is recommended to avoid an excessive reduction in flow to individual outlets. For further information contact Worcester Heat Systems Technical Helpline.

2.13 SAFETY CONSIDERATIONS

The appliance must not be operated in a waterless condition.

The appliance must not be operated with the boiler casing cover removed.

Work must not be carried out on the appliance without the gas and electricity supplies being switched off.

Checks must be made to ensure that the ventilation openings made into walls and partitions are of the correct size and are not obstructed.

2.14 OPERATION

Domestic Hot Water: With a demand for hot water the burner will light and then automatically adjust its output to maintain the temperature of the delivered water. When hot water is no longer required, the burner will extinguish. The fan and pump may continue to run for a short period to dissipate the residual heat from the appliance.

Central Heating: With a demand for heating the burner will light and will work with the adjusted output till the required system temperature is reached. If the system no longer requires the adjusted output to maintain the required temperature, the burner will extinguish. The appliance will remain off for a fixed period of three minutes before re-lighting to automatically meet the system requirements.

Domestic Hot Water and Central Heating: The appliance will supply heat to the central heating system as required. A demand for domestic hot water at a tap or shower will override the central heating requirement for the period of the domestic hot water demand. When hot water is no longer required the appliance will return to the central heating state and its normal mode of operation.

Appliance water flow diagram.

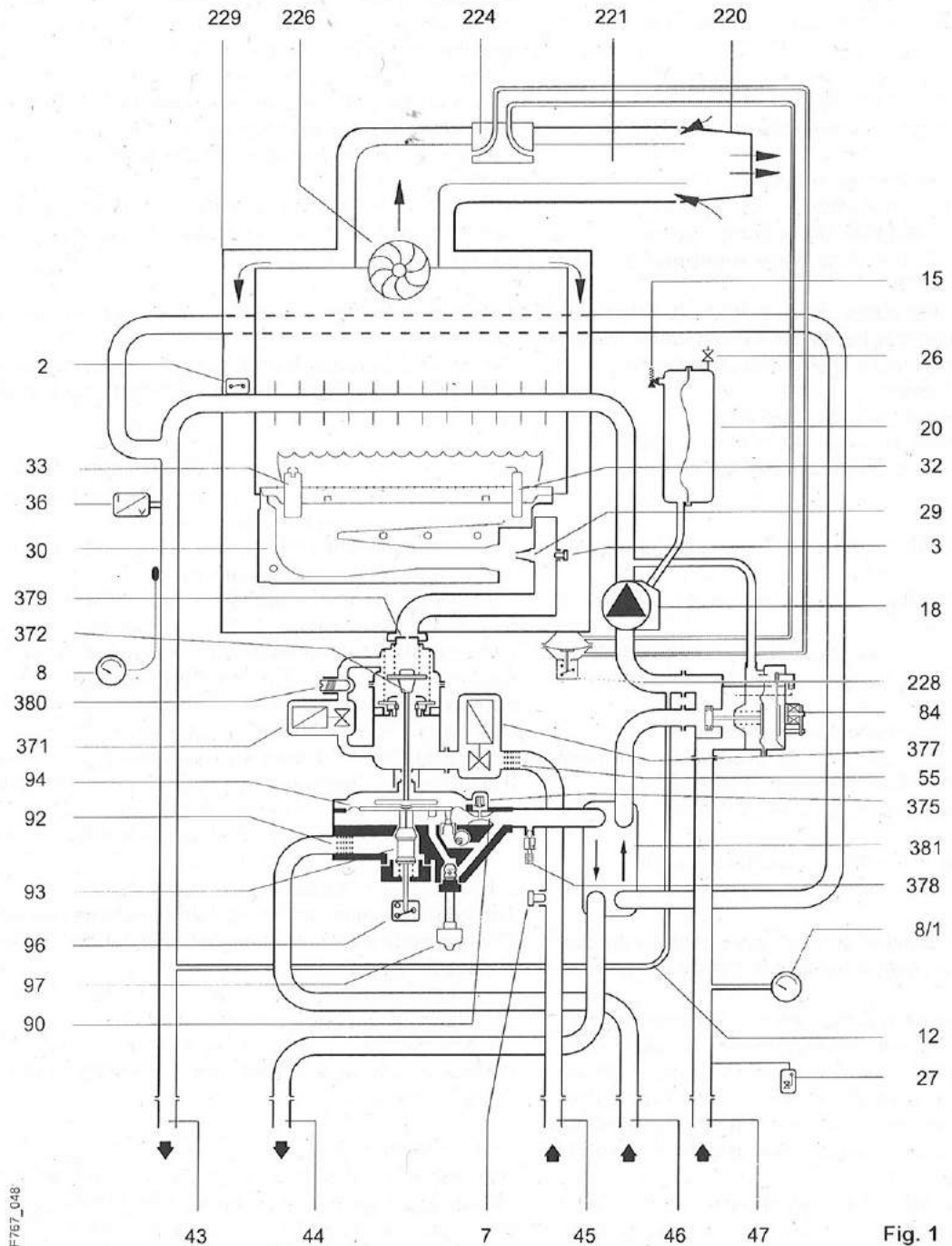


Fig. 1

- | | | | | | |
|-----|-------------------------------------|----|----------------------------------|-----|----------------------------------|
| 2 | Flue temperature limiter | 33 | Ignition electrode | 220 | Flue terminal |
| 3 | Burner pressure test point | 36 | Primary temperature sensor (NTC) | 221 | Concentric air/flue duct |
| 7 | Gas inlet test point | 43 | Central heating - flow | 224 | Air flow sensor |
| 8 | Thermometer | 44 | Domestic hot water outlet | 226 | Fan |
| 8.1 | Pressure gauge | 45 | Gas feed pipe | 228 | Differential air pressure switch |
| 12 | Bypass tube | 46 | Cold water inlet | 229 | Combustion chamber |
| 15 | Relief valve | 47 | Central heating return | 371 | Gas valve Central Heating |
| 18 | Circulation pump with air separator | 55 | Gas filter | 372 | Gas valve for domestic water |
| 20 | Closed expansion vessel | 84 | 3 way diverter valve | 375 | Slow ignition valve |
| 26 | Expansion vessel valve | 90 | Venturi | 377 | Safety Gas Valve |
| 27 | Automatic air vent | 92 | Water inlet filter | 378 | Drain |
| 29 | Burner injectors | 93 | Water flow regulator | 379 | Throttle disc |
| 30 | Burner | 94 | Diaphragm | 380 | Gas setting screw |
| 32 | Flame sensor | 96 | Water flow sensor micro-switch | 381 | Secondary heat exchanger (dhw) |
| | | 97 | Water flow selector | | |

3 Technical Data

The data plate is fixed to the inside of the LH rear casing panel.
Check data plate to ensure appliance has been adjusted for the gas supplied.

NOMINAL BOILER RATINGS									
GAS	MODE	OUTPUT		INPUT (net) *		BURNER SETTING PRESSURE		GAS RATE	
		kW	Btu/h	kW	Btu/h	mbar	in.wg	l/min	kg/h
NAT. G20	CH max	20	68,240	22,2	75,750	11,6	4,6	40,3	---
	CH min	10	34,120	11,8	40,260	2,9	1,2	20,1	---
	DHW max	23	78,480	25,6	87,350	15,5	6,1	46,3	---
	DHW min	7	23,880	7,8	26,610	1,4	0,55	14,1	---
LPG G31	CH max	20	68,240	22,2	75,750	26,5	10,6	14,0	1,8
	CH min	10	34,120	11,1	37,870	6,8	2,7	7,0	0,9
	DHW max	23	78,480	25,6	87,350	35	14,0	16,0	2,1
	DHW min	7	23,880	7,8	26,610	3,2	1,3	4,1	0,6

* Divide Net input by 0,901 (Nat. Gas) or 0,922 (Propane) to achieve gross input

Table 1

FLUE DETAILS		
HORIZONTAL FLUE (Side or Rear)	mm	inches
FLUE DIAMETER	100	3,9
WALL HOLE DIAMETER	110	4,25
WALL HOLE DIAMETER (using internal flue fitting kit)	150	5,9
STANDARD FLUE - MINIMUM LENGTH	135	5,0
STANDARD FLUE - MAXIMUM LENGTH	615	19,7
EXTENDED FLUE - MAXIMUM LENGTH	4000	137,8

Table 2

AVAILABLE PUMP HEAD						
BOILER OUTPUT		HEAD		FLOW RATE		TEMPERATURE RISE ACROSS HEATING FLOW AND RETURN
kW	Btu/h	Metres	Feet	l/min.	Gal/min.	
14	47.800	2	6.5	10	2.2	20°C
20	68.200	2	6.5	10	2.2	28°C

Table 3

		Power (kW)	10	12	14	16	18	20
Natural Gas	pressure (mbar)		2.9	4.2	5.7	7.4	9.4	11.6
	consumption (m ³ /h)		20.1	24.2	28.2	32.2	36.3	40.3
Propane	pressure (mbar)		6.8	10.4	14.2	18.5	23.4	26.5
	consumption (kg/h)		0.9	1.1	1.2	1.4	1.6	1.8

Table 4

SPECIFICATIONS	
CENTRAL HEATING FLOW FITTING	22 mm Compression
CENTRAL HEATING RETURN FITTING	22 mm Compression
COLD WATER MAINS INLET FITTING	15 mm Compression
DOMESTIC HOT WATER OUTLET FITTING	15 mm Compression
GAS INLET FITTING	Rc ½ inch
PRESSURE RELIEF VALVE DISCHARGE FITTING	15 mm Comp.
OVERALL HEIGHT (including flue turret)	1055 mm
CASING HEIGHT	850 mm (33,5 in)
CASING WIDTH	400 mm (17,75 in)
CASING DEPTH	340 mm (13.5 in)
PACKAGED WEIGHT	43 kg
MAXIMUM LIFT WEIGHT	42 kg
PRIMARY WATER CAPACITY	1 litres
OUTPUT TO DOMESTIC HOT WATER	Modulating 7 to 23 kW
OUTPUT TO CENTRAL HEATING	10 to 20 kW
MAXIMUM COLD SUPPLY PRESSURE	12 bar (180 psi)
CENTRAL HEATING CIRCUIT	
NOMINAL FLOW ($\Delta T = 30^{\circ}\text{C}$)	10 l/m
PRESSURE HEAD CORRESPONDING TO NOMINAL FLOW	0,2 bar
CENTRAL HEATING FLOW TEMPERATURE	45°C - 90°C
MAXIMUM ADMISSIBLE PRIMARY WATER PRESSURE	2.65 bar
DOMESTIC HOT WATER PRODUCTION	
WATER FLOW SELECTOR TURNED COMPLETELY TO THE RIGHT	
TEMPERATURE RISE	51°C
HOT WATER FLOW RATE	2,5 - 6,5 l/min
MINIMUM WORKING PRESSURE FOR MAXIMUM FLOW RATE	0,35 bar
WATER FLOW SELECTOR TURNED COMPLETELY TO THE LEFT	
TEMPERATURE RISE	25°C
HOT WATER FLOW RATE	4 - 13 l/min
MINIMUM WORKING PRESSURE FOR MAXIMUM FLOW RATE	1 bar
SPECIFIC RATE "D"	11.0 l/min
No _x CLASSIFICATION	2
SEDBUK CLASSIFICATION	BAND E

Table 5

4 Siting the Appliance

4.1 The appliance may be installed in any room although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations BS 7671 and, in Scotland, the electrical provisions of the Building Regulations applicable in Scotland, with respect to the installation of appliances in rooms containing baths or showers.

Where a room sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control using mains electricity must not be able to be touched by a person using the bath or shower.

4.2 The appliance is not suitable for external installation.

4.3 The appliance does not require any special wall protection.

4.4 The wall must be capable of supporting the weight of the appliance. See Table 4.

4.5 The clearances given in figure 2 must be available for installation and for servicing.

4.6 The appliance can be installed in a cupboard used for airing clothes provided that the requirements of BS 6798 and

BS 5440:2 are maintained.

Notwithstanding the instructions given in BS 5440:2, this appliance may be fitted in a compartment with no vents as long as the minimum clearances stated in Section 6: Air Supply, are maintained.

4.7 The airing space must be separated from the boiler space by a perforated non-combustible partition. Expanded metal or rigid wire mesh is acceptable provided that the major dimension is less than 13mm. See BS 6798:1987.

4.8 No combustible surface must be within 75mm of the casing. See BS476: 4.

4.9 The distance between the inner face of a cupboard door and the cabinet front should not be less than 75mm.

4.10 Always consider the possible need to disconnect the pipes from the appliance after installation.

4.11 LPG Installation: The appliance shall not be installed in a room or internal space below ground level when it is intended for use with LPG. This does not preclude the installation into rooms which are basements with respect to one side of the building but open to ground level on the opposite side.

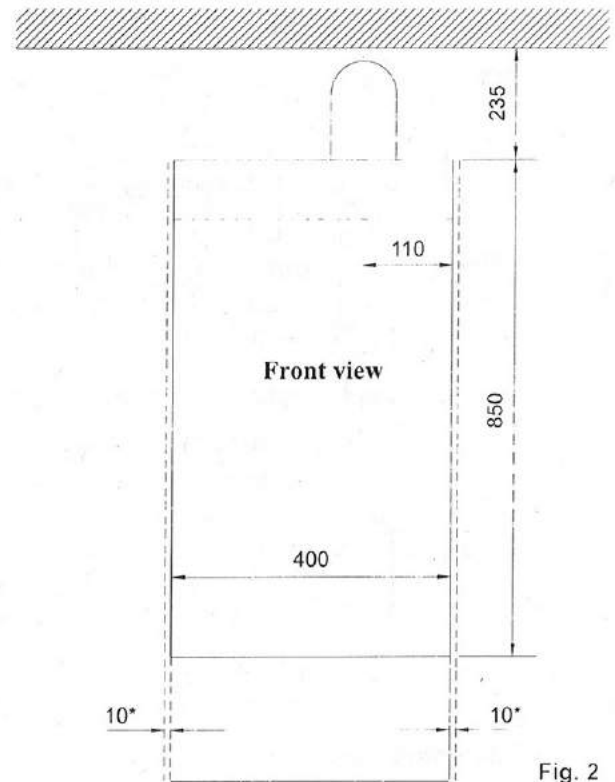
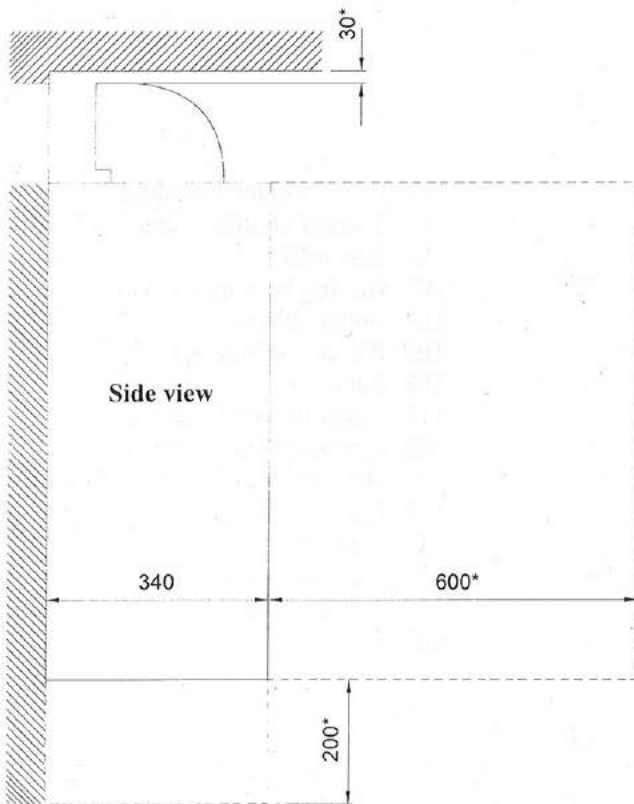


Fig. 2

* space required for installation and servicing

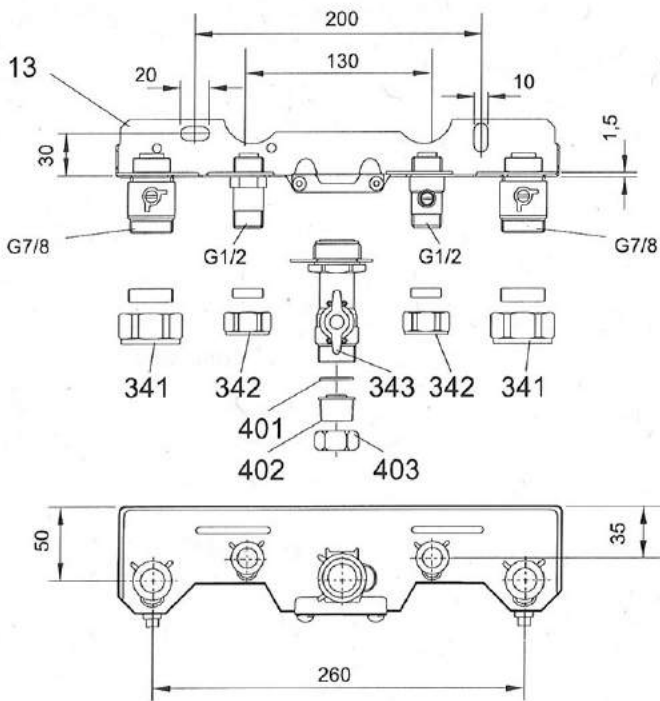
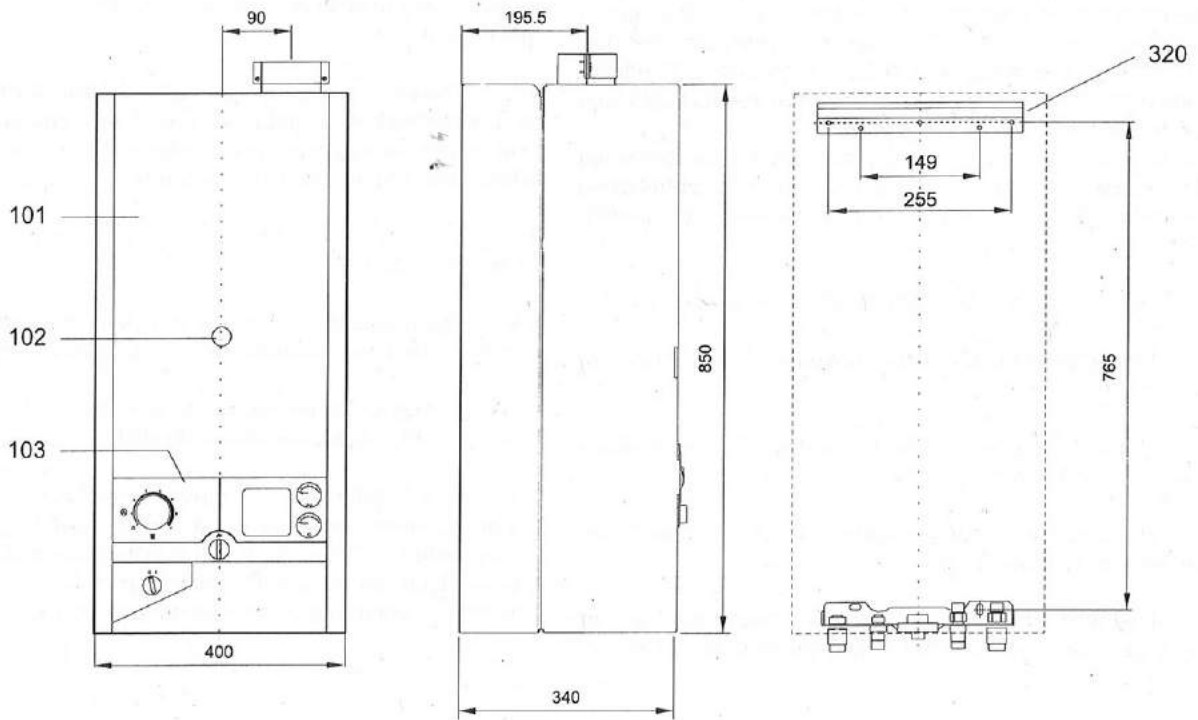
all measurements in mm.

	Installation	Service*
Above the turret	30 mm	30 mm
In front	600 mm	600 mm
Below	200 mm	200 mm
Right-hand side	10 mm	10 mm
Left-hand side	10 mm	10 mm

Table 6

* For cupboard installations refer to section 6

Measurements and connections (sizes given in mm.)



- 13 Pre-plumbing manifold
- 43 Central heating – flow
- 45 Gas Inlet
- 47 Central heating – return
- 101 Boiler cabinet
- 102 Flame viewing hole
- 103 Facia
- 114 Sanitary - Hot and Cold
- 320 Appliance mounting bracket
- 341 Nut and olive – 22mm compression
- 342 Nut and olive – 15mm compression
- 343 Gas cock – 3/4 "
- 401 Fibre Washer
- 402 Adapter – 3/4 - 1/2 "
- 403 Nut – 3/4 "

Mounting plate

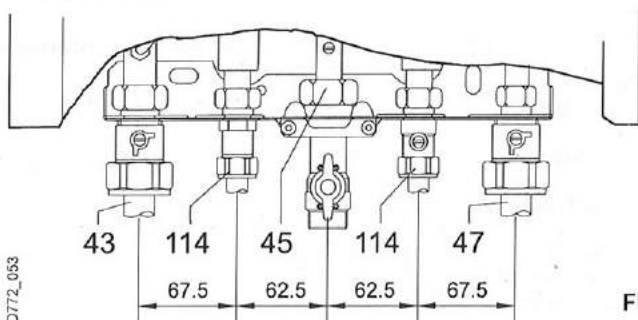


Fig. 3

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5 Siting the Flue terminal

See Fig. 4

- 5.1 The flue must be installed as specified in BS 5440:Part 1 and the Building Regulations
- 5.2 The terminal must not cause an obstruction or the discharge cause a nuisance.
- 5.3 If the terminal is fitted within 1000mm of a plastic or painted gutter or within 500mm of painted eaves then an aluminium shield at least 1000mm long should be fitted to the

underside of the gutter or painted surface.

5.4 If a terminal is fitted less than 2 metres above a surface to which people have access then a guard must be fitted. See Section 2.9.

5.5 The terminal guard must be evenly spaced about the flue terminal and fixed to the wall using plated screws.

5.6 In certain weather conditions a terminal may steam and siting where this could cause a nuisance should be avoided.

5.7 Take care to ensure that combustion products do not enter ventilated roof voids.



Fig. 4

TERMINAL POSITION	MIN. DISTANCE	TERMINAL POSITION	MIN. DISTANCE
A - directly below an openable window or other opening e.g. air brick.	300 mm (12 in.)	J - From a terminal facing a terminal.	1200 mm (47 in.)
B - Below gutters, soils pipes or drain pipes.	75 mm (3 in.)	K - From an opening in a car port (e.g. door window) into dwelling.	1200 mm (47 in.)
C - Below eaves.	25 mm (1 in.)	L - Vertically from a terminal on the same wall.	150 mm (6 in.)
D - Below balconies or car port roof.	25 mm (1 in.)	M - Horizontally from a terminal on the same wall.	300 mm (12 in.)
E - From vertical drain pipes and soil pipes.	25 mm (1 in.)		
F - From internal or external corners.	25 mm (1 in.)		
G - Above ground, roof or balcony level.	300 mm (12 in.)		
H - From a surface facing a terminal.	600 mm (24 in.)		

6 Air supply

6.1 The appliance does not require a separate vent for combustion air.

6.2 The appliance can be fitted in a cupboard with no vents for cooling but the minimum clearances must be increased to those given below. (Note: The clearances at the front are for a removable panel, e.g. a door).

Above the Turret	30 mm
Above casing	235 mm
Below casing	200 mm
Right-hand side	75 mm
Left-hand side	75 mm
In front	250 mm

Table 7

6.3 If the appliance is to be fitted in a cupboard or compartment with less clearance than those in table 7 (minimum clearances are given in Section 4. Siting the Appliance) then permanent air vents for cooling are required. One at high level and one at low level, either direct to outside air or to a room. Both vents must pass to the same room or be on the same wall to the outside air.

6.4 The minimum free areas required are given below

POSITION OF AIR VENTS	AIR FROM THE ROOM	AIR DIRECT FROM OUTSIDE
HIGH LEVEL	270 cm ³	135 cm ³
LOW LEVEL	270 cm ³	135 cm ³

Table 8

6.5 Refer to BS 6798 and BS 5440:2 for additional information.

7 Sealed Primary Systems

See Figs. 5 and 6.

7.1 The system must comply with the requirements of BS 6798 and BS 5449.

7.2 The appliance must not be operated without the system being full of water, properly vented and pressurised.

7.3 The sealed system must only be filled by a competent person using one of the approved methods shown in figure 6. The system design must incorporate the connections appropriate for one of these methods.

7.4 The pressure relief valve operates at 3 bar (45lb/in²). The discharge must be routed to the outside of the casing and directed away from electrical components or where it might be a hazard to the user.

7.5 The pressure gauge indicates the system pressure, which must be maintained.

7.6 The 8 litre expansion vessel is charged to 0.5 bar and is

suitable for a static head of 5 metres (17.5ft). The pressure can be increased if the static head is greater than 5 metres (17.5ft).

7.7 With an initial system pressure of 0.5 bar, a system capacity of about 100 litres can be accommodated. Refer to BS 7074 Pt. 1 for more information. The charge pressure can be increased but with a decrease in system volume.

7.8 Water loss must be replaced.

7.9 Expansion vessel. If the system volume exceeds that shown above, then an additional expansion vessel must be fitted and connected to the heating system primary return pipe as close as possible to the appliance. If an extra vessel is required, ensure that the total capacity of both vessels is adequate.

Further details are available in the current issues of BS5449 and BS6798.

Note: If the pressure gauge indicates 2.65 bar or greater when the appliance is at maximum temperature with all the radiators in circulation an extra expansion vessel is required.

Fig. 5 - Sealed primary water system

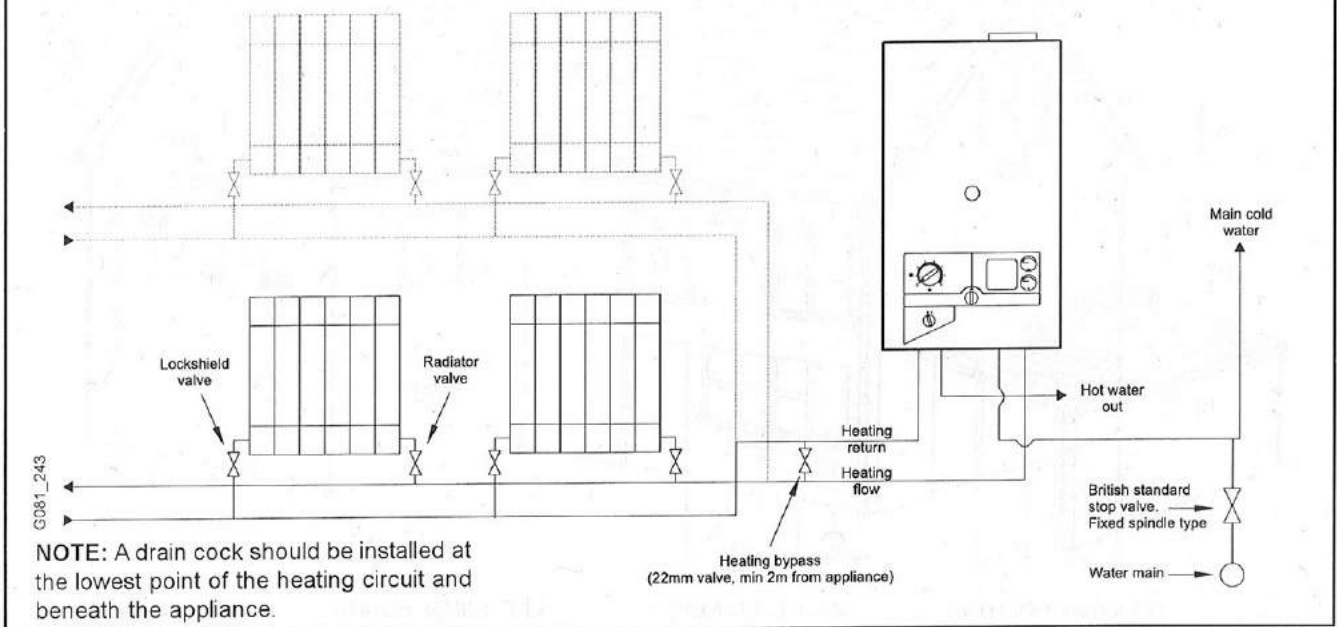


Fig. 6 - Methods of filling a sealed system (BS 5449)

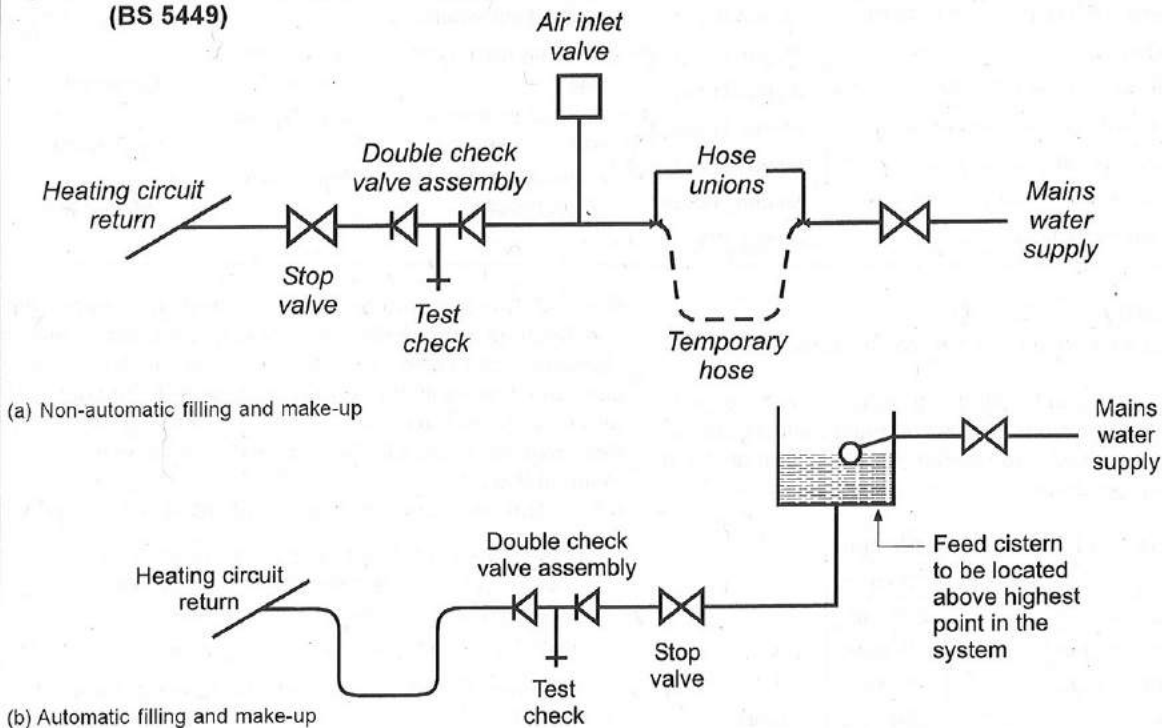
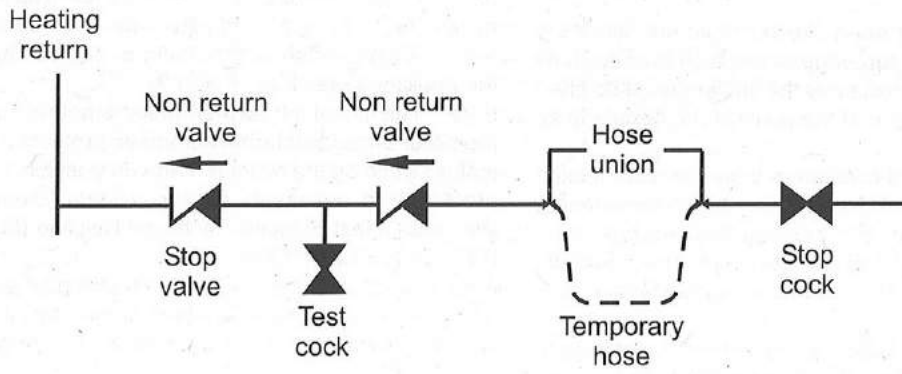
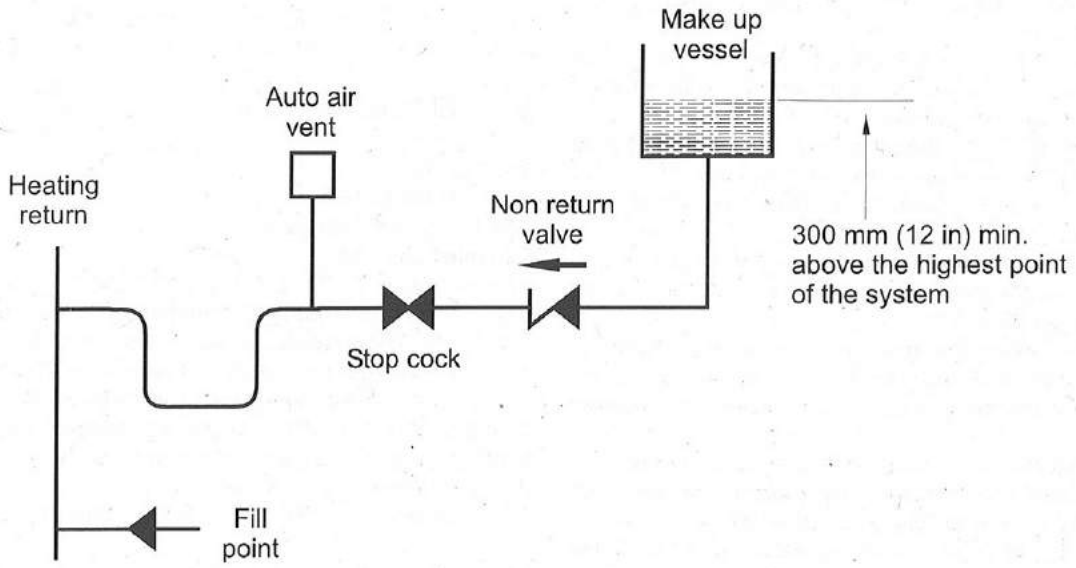


Fig. 7 - System filling and make-up



8 Hot Water Supply

8.1 The following are general requirements and, if necessary, reference should be made to the local Water Company before fitting the appliance.

8.2 MAINS COLD WATER INLET. Devices capable of preventing the flow of expansion water must not be fitted unless separate arrangements have been made.

8.3 The final 600mm of the mains cold water connection to the appliance should be made in copper tube only.

8.4 The appliance is suitable for a mains pressure of up to 12 bar (180 lb/in²).

8.5 The appliance is fitted with a mains supply isolating valve.

8.6 The maximum domestic hot water flow rate is 13.0 litres/min ($\pm 15\%$) (2.9 gallons/min).

8.7 In winter (when the mains inlet water temperature is lower) a reduced flow rate at the taps may be required to achieve the type of hot water delivery temperature available in warmer weather.

8.8 It is suggested that long pipe runs to the taps or shower should be insulated to prevent the rapid cooling of domestic hot water after a tap or shower has been turned off.

8.9 Hot and cold taps and mixing valves used with this appliance must be suitable for operating at mains pressure and temperatures of 65°C.

8.10 No anti-siphonage arrangements are necessary except for some loose head showers. See also Section 8.11 following.

8.11 Thermostatically controlled or pressure equalising shower valves will guard against the flow of water at too high a temperature.

8.12 The head of a loose head shower must not fall closer than 25mm (1in) above the top edge of the bath to prevent its immersion in bath water. Alternatively the shower must be fitted with an anti-siphonage device at the point of the flexible hose connections.

8.13 The supply of hot and cold mains water direct to a bidet is permitted, (subject to local Water Company requirements), provided that the bidet is of the over-rim flushing type. The outlet(s) should be shrouded and unable to have any temporary hand held spray attached. No anti-siphonage arrangements are necessary.

8.14 As the control circuit limits the maximum temperature of the Water to Water heat exchanger, there is normally no need for water treatment to prevent scale accumulation. In exceptional

circumstances a device to prevent scale formation can be fitted. Installation of a scale inhibitor assembly should be in accordance with the requirements of the local Water Company. An isolating valve should be fitted to allow servicing. The water hardness can be determined using a standard test paper or by reference to the local Water Company.

9 Electrical

See Fig. 10.

9.1 MAINS SUPPLY.

230 V ~, 50 Hz, 180 watts

External Fuse: 3A.

Internal Fuses: T2.5A, 250V and T2.0A, 250V.

9.2 It must be possible to completely isolate the appliance.

9.3 The following connection alternatives must be used: A 3 amp fused three-pin plug and unswitched shuttered socket outlet (both complying with the requirements of BS 1363) or a double pole isolator with a contact separation of 3mm in all poles and supplying the appliance and controls only.

9.4 The appliance must be earthed.

9.5 Mains Cable. 0.75mm² (24 x 0.20mm) to BS 6500 Table 16.

9.6 The wiring between the appliance and the electrical supply must comply with current IEE Wiring Regulations and any local regulations, which apply.

9.7 If a room thermostat and/or external programmer are to be fitted refer to Figs. 8 and 9. The devices must be suitable for use with mains voltage.

9.8 Facia mounted programmers are available as optional extras. Instructions are supplied with the programmer kits.

9.9 A time switch or programmer can be fitted externally to the appliance (see Figs. 8 and 9).

9.10 The use of a frost thermostat is not recommended since the boiler provides internal automatic protection, as long as the mains switch on the boiler is in the on position. However, if frost protection is necessary for the system, please contact the Worcester Heat Systems Technical Helpline (0990) 266 241

9.11 SAFETY CHECK.

After installation or in the event of an electrical fault the electrical system shall be checked for short circuits, fuse failure, incorrect polarity of connections, earth continuity and resistance to earth.

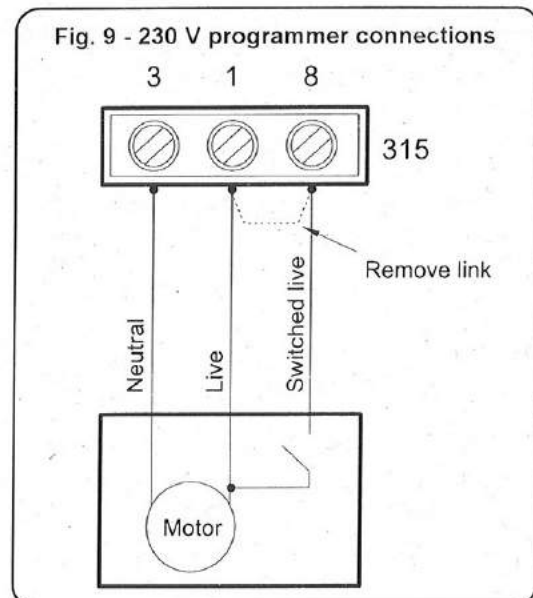
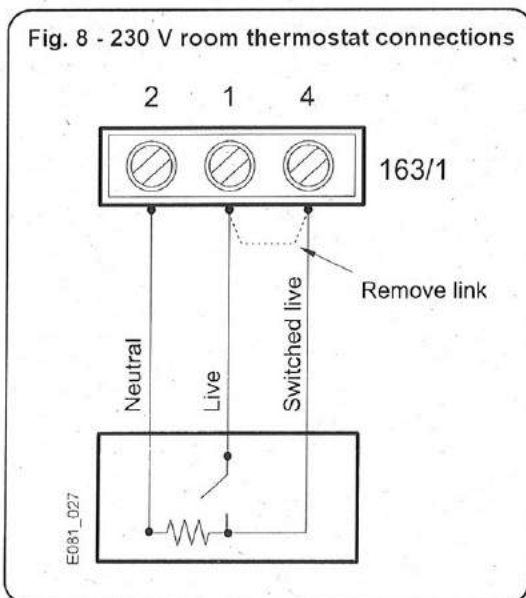


Fig. 10 - Wiring Diagram

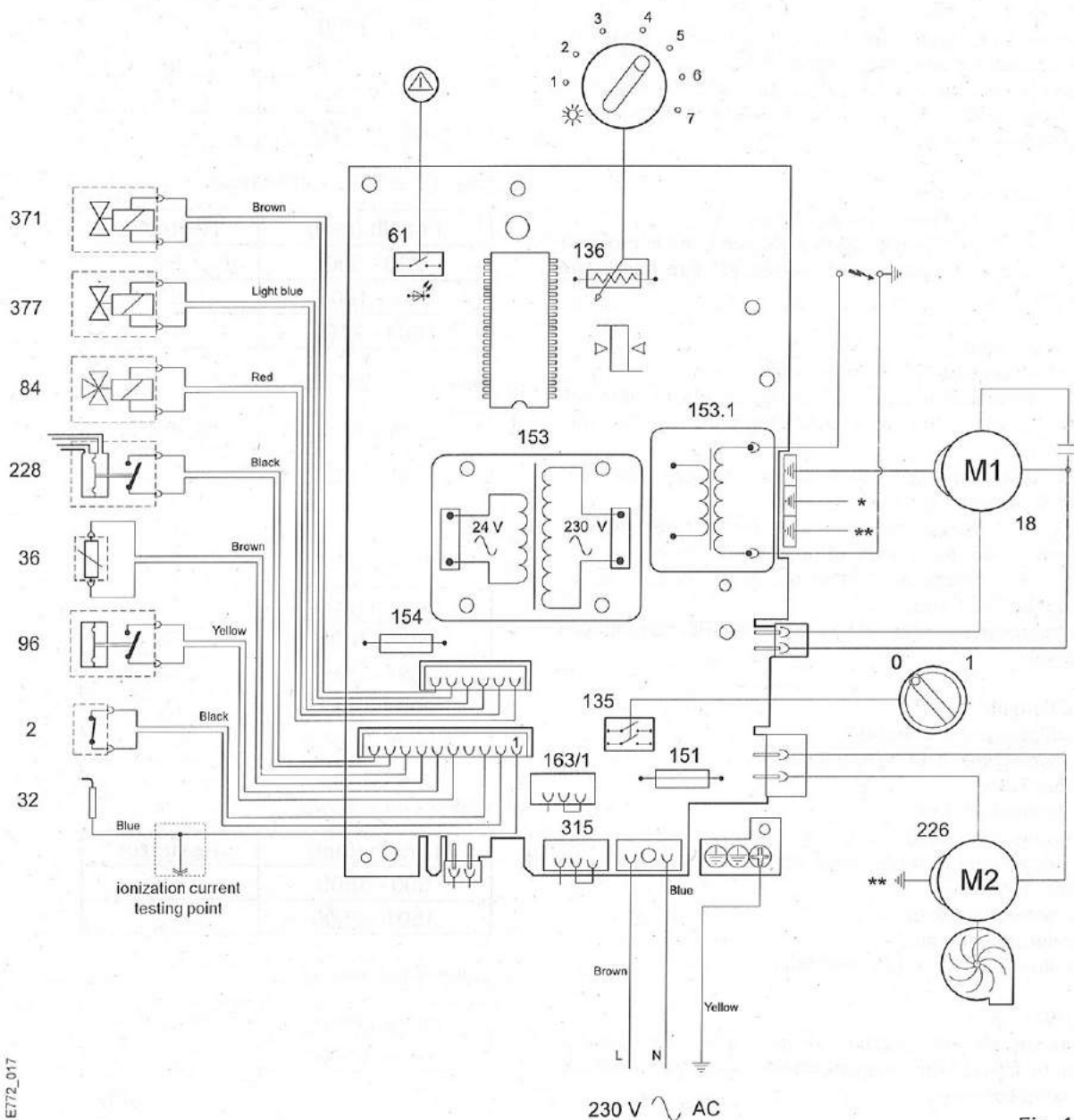


Fig. 10

E772_017

- | | | | |
|-------|--|-------|--|
| 2 | Flue temperature limiter | 154 | Fuse T1 2.0 A 250V |
| 18 | Circulation pump | 163/1 | Room thermostat connection |
| 32 | Flame sensor | 226 | Fan |
| 36 | Primary temperature sensor- NTC | 228 | Differential air pressure switch |
| 61 | Reset button/Indicator Light | 315 | Programmable clock terminal block |
| 84 | 3 way diverter valve | 371 | Gas valve |
| 96 | Water flow sensor micro-switch | 377 | Safety gas valve |
| 135 | Master switch | * | Earth connection point for the casing |
| 136 | Central heating temperature adjustment | ** | Earth connection point for the electrical mains connection |
| 151 | Fuse T2. 5A 250V | | |
| 153 | Transformer | | |
| 153.1 | Ignition transformer | | |

10 Installation

The appliance is supplied suitable for fitting to a sealed system.

10.1 FLUE OPTIONS.

The standard flue length is from 135mm to 615mm measured from the appliance casing to the outer wall.

Extension flue kits, a vertical take-off adapter, and 90° flue bends and 45° flue bends are available to increase the length and redirect the flue as follows.

Horizontal balanced flue:

- From 135mm to 4000mm straight flue.
- From 135mm to 2500mm when a 90° flue bend is required
- From 135mm to 1000mm when two 90° flue bends are required

Vertical balanced flue:

- From 500mm to 4000mm straight flue.
- From 500mm to 2500mm when two 45° bends are required.
- From 500mm to 2100mm when two 90° bends are required.

A 90° flue bend is equivalent to 1000mm of straight flue. A 45° flue bend is to half a 90° bend.

Refer to Figs. 22 and 23 to determine whether extension kits, 90° flue bends, 45° flue bends, or adapters are required.

The maximum number of 90° flue bends allowed is two, in addition to the flue turret.

The flue turret can be replaced by a flue bend with no reduction in flue length.

Flue components

- Adapter, boiler to turret.
- Adapter, item 1 to vertical flue.
- Flue Turret.
- Standard air duct.
- Standard flue duct.
- Restrictor rings, 4 off (Fan inlet).
- Flue terminal.
- Extension air duct.
- Extension flue duct.
- In-line flue elbows (45° and 90°).

IMPORTANT:

To ensure the correct operation of the appliance a restrictor ring must be fitted to the fan inlet, where applicable, to suit the flue configuration used.

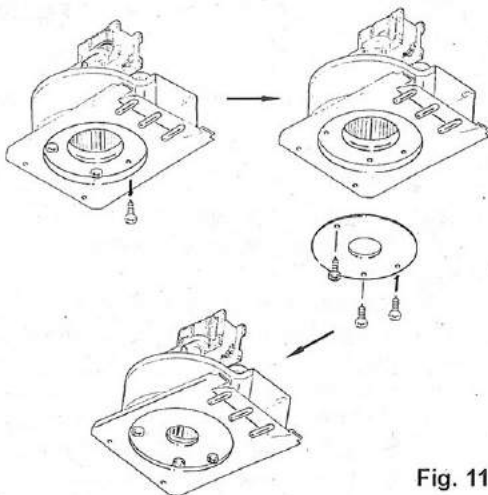


Fig. 11

Refer to table 9 for relation of restrictor ring / flue length.

The flue must be installed as specified in BS 5440 Part 1.

NOTE: READ THIS SECTION FULLY BEFORE COMMENCING INSTALLATION.

- Horizontal
 - Without Elbows

Length (mm)	Restrictor
250 - 1000	52
1001 - 2000	54
2001 - 3000	60
3001 - 4000	-

- With 1 x 90° or 2 x 45° elbows

Length (mm)	Restrictor
250 - 500	54
501 - 1500	60
1501 - 2500	-

- With 2 x 90° elbows

Length (mm)	Restrictor
250 - 1000	-

- Vertical

- Without Elbows

Length (mm)	Restrictor
500 - 1000	50
1001 - 2000	52
2001 - 3000	60
3001 - 4000	-

- With 2 x 45° elbows

Length (mm)	Restrictor
500 - 1500	60
1501 - 2500	-

- With 2 x 90° elbows

Length (mm)	Restrictor
500 - 2100	-

Table 9

10.2 GENERAL FITTING

Check that the appliance carton contains: Appliance, installer's instruction pack, pre-plumbing manifold, wall plate, user's information pack and installer's hardware pack and an appliance template.

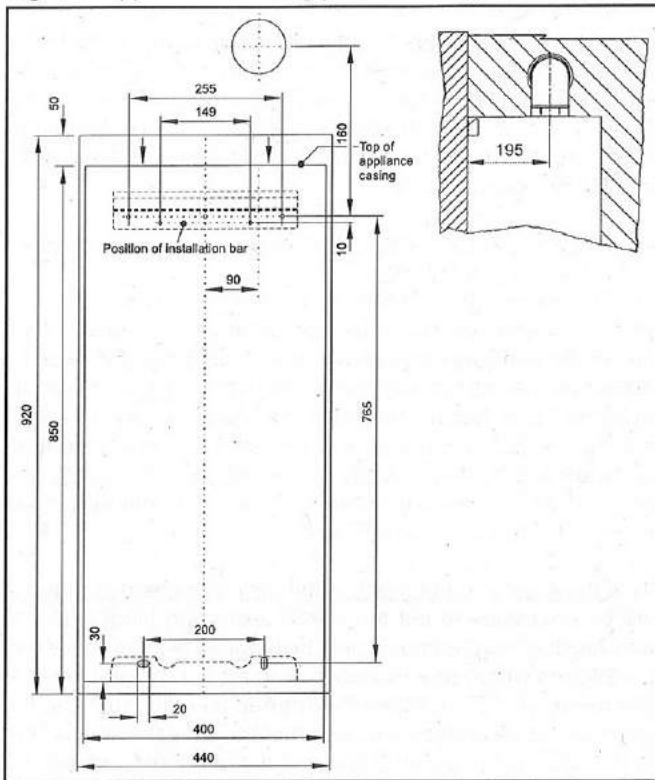
Check that the position chosen for the appliance is in accordance with the instructions given in Sections 4 and 5.

For vertical flue installation, refer to the instructions supplied with the vertical flue kit.

Hold the template to the wall. Check that the template is horizontal. See Fig. 12.

Mark the position of the fixing holes and the position of the flue hole centre line onto the wall.

Fig. 12 - Appliance mounting plate and flue position



Side Flue - Extend the horizontal flue central line from Fig. 12 along the appropriate wall. Check that it remains horizontal and measure 180 mm upwards and mark a horizontal line. Measure 195 mm from the junction of the walls and mark a vertical line, which will then give the position of the flue hole in the side wall. Drill the four fixing holes 60mm deep for No. 12 size plugs. Cut the flue duct hole at 110mm diameter (150mm dia. for internal fitting). Ensure that the hole is horizontal through the wall.

Fix the top wall plate and check that it is horizontal before tightening the screws. Fix the lower manifold / mounting plate containing the plumbing connections checking that it is horizontal and correctly positioned in relation to the top mounting plate.

Remove the plastic plugs from inside the boiler pipes.

Connect the water connections to the manifold. The primary system should be flushed and treated in accordance with the recommendations of BS 7593:1992.

A gas cock is supplied, but not located on the manifold, therefore the final gas connection can only be made after the appliance has been mounted on the wall (see fig. 3).

Brush off any dust or dirt from the valves.

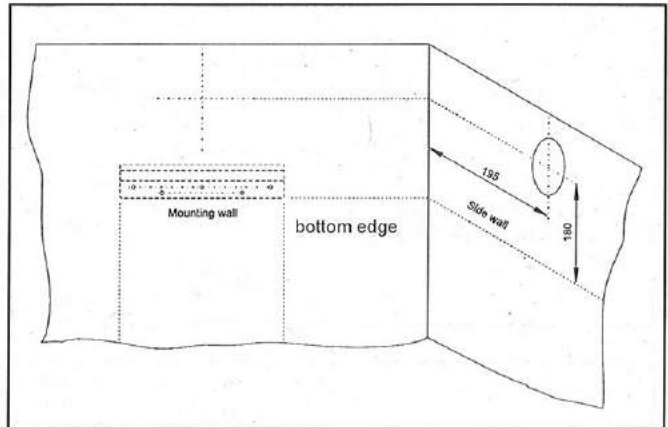
Lift the appliance onto the top mounting plate and the lower pre-plumbing manifold. Make up the water connections ensuring that the face to face joint rings are correctly located.

Make up the gas connection using the gas cock provided.

If the air and flue duct assembly is to be fitted from inside the room then the ducts must be cut to length, assembled and inserted through the wall at this stage before fitting the flue elbow

and adapters to the appliance. Refer to Section 10.3 following for the assembly of the air and flue ducts.

Fig. 13 - Marking out the side flue position



10.3 AIR AND FLUE DUCT PREPARATION AND ASSEMBLY

Before starting the installation, instal the adaptor supplied with the appliance.

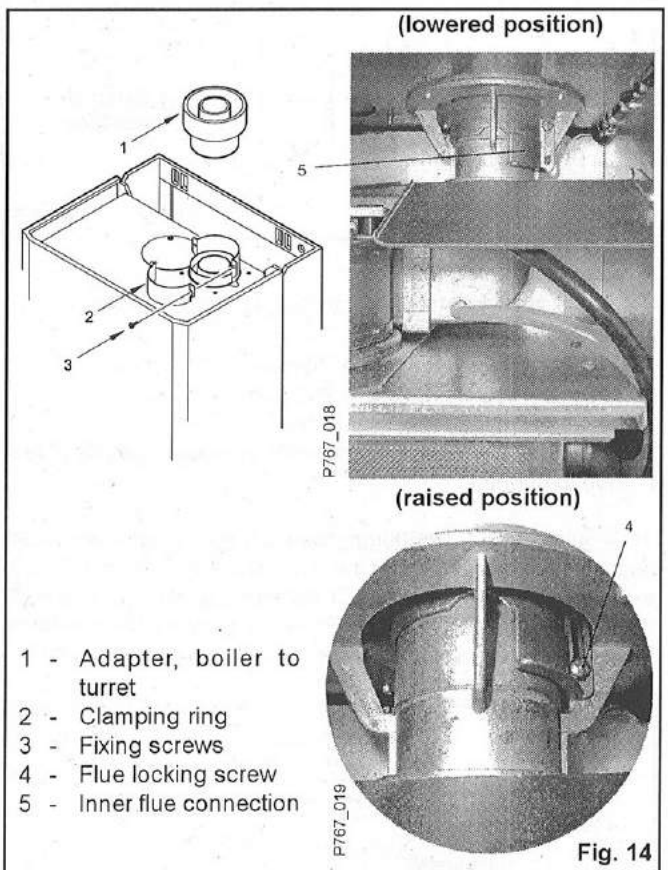


Fig. 14

Check the contents of the standard flue duct kit against the packing list. Similarly check the extension duct kits if applicable. Remove all the packing from the ducts and terminal assembly. The standard flue kit is telescopic, and requires no cutting providing that the total length of the flue assembly is 500mm long measured from the appliance casing to the outer wall face. See dimension L, Figs.15 and 16. When dimension L is greater than 500mm extension flue assemblies will be required.

It will not be necessary to cut either the ducts attached to the turret or the terminal unless L = 500mm to 600mm.

Measure and cut the air and flue ducts to length ensuring that the cuts are square and free from burrs. Always check the dimensions before cutting the ducts.

All extension duct dimensions refer to the straight lengths. The socketed ends must not be removed or included in any measurement.

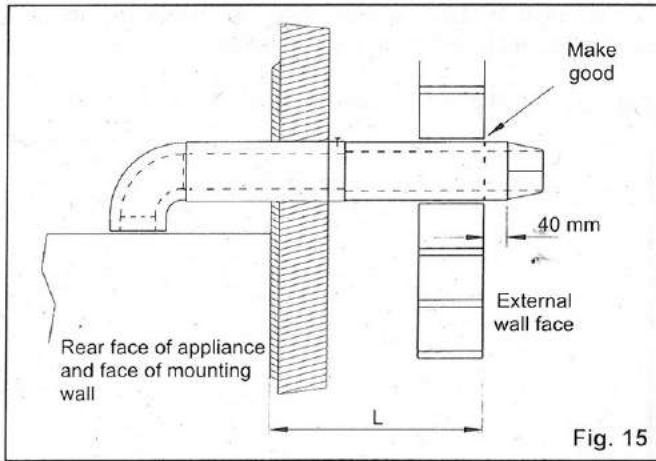


Fig. 15

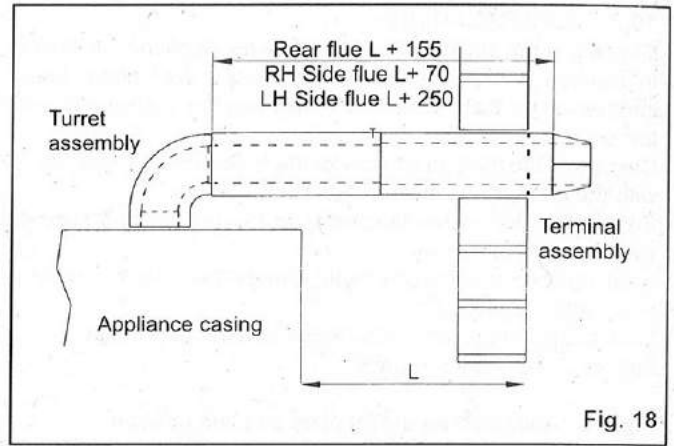


Fig. 18

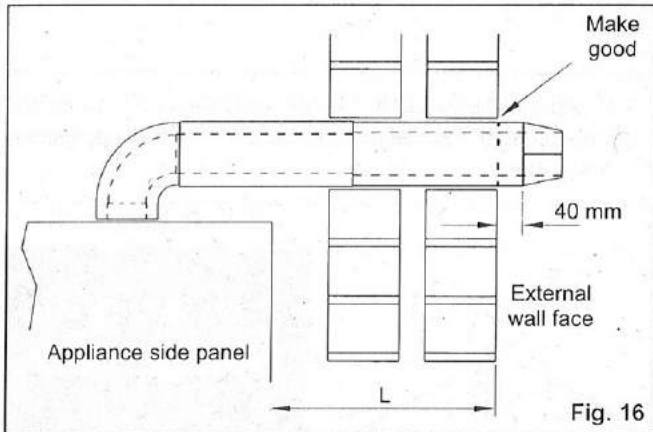


Fig. 16

10.4 EXTERNAL FITTING OF THE DUCT ASSEMBLY

Measure distance L.

RH Side flue duct length = $L + 70$ mm.

LH Side flue duct length = $L + 250$ mm.

Rear flue duct length = $L + 155$ mm.

Do not cut either the turret or the terminal assembly ducts unless $L = 500$ to 600 mm

1) Should $L = 500$ to 600 mm then cut the terminal assembly ducts reducing the length of the ducts to 200 mm. Then cut each extension to 200 mm (see fig 15). Assemble the flue as described below ensuring the correct length ($L + 70$ mm for RH side flues, $L + 250$ mm for LH side flues, or $L + 155$ mm for rear flues)

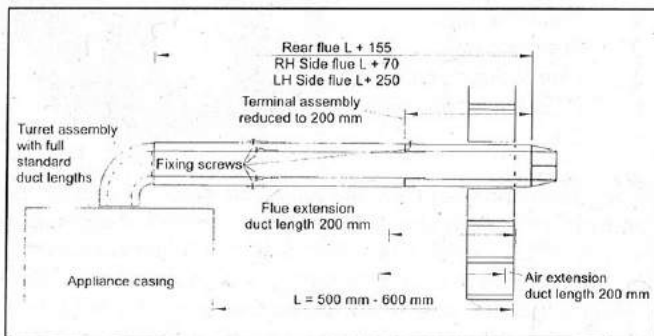


Fig. 17

2) If L is within the range 127 mm to 500 mm then the flue can be telescopically adjusted to the correct length ($L + 70$ mm for RH side flue, $L + 250$ mm for LH side flue or $L + 155$ mm for rear flue). The ducts are then fixed by drilling a pilot hole through the hole in the air duct and screwing the self tapping screw provided into the two ducts (see fig. 18).

3) If L is within any of the following ranges it will not be necessary to cut the extension ducts:

0.88 m to 1.10 m, 1.63 m to 1.85 m or 2.38 m to 2.5 m

Each extension duct must be connected to the first section of flue or the previous extension duct by firstly fitting the inner flue ducts together and pilot drilling and fixing (see fig. 19). Then the outer air ducts can be similarly fixed using the pair of screws provided. The flue terminal section can then be telescopically adjusted and fixed as before (see fig. 18) ensuring the correct length ($L + 70$ mm for RH side flues, $L + 250$ mm for LH side flues, or $L + 155$ mm for rear flues)

4) In the even of L not falling within any of the above ranges it will be necessary to cut the FIRST extension length. The air and flue duct lengths should both be reduced to the same length, $L - 240$ mm where one extension is used; $L - 990$ mm with two extensions and $L - 1,740$ mm with three (see fig. 19). The flue can then be assembled ensuring that the cut extension is fitted to the turret duct assembly first and that the flue is adjusted to the correct length of ($L + 70$ mm for RH side flues, $L + 250$ mm for LH side flues, or $L + 155$ mm for rear flues) (see fig 18).

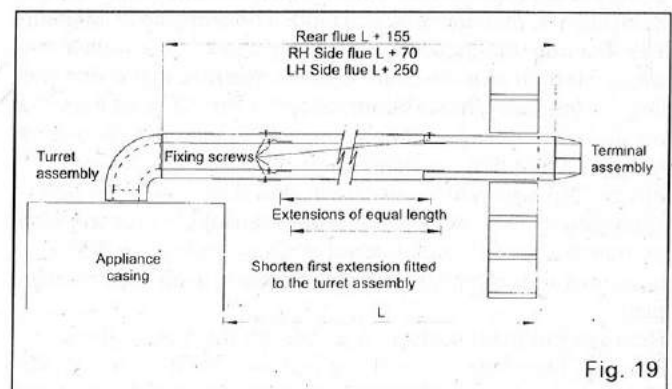


Fig. 19

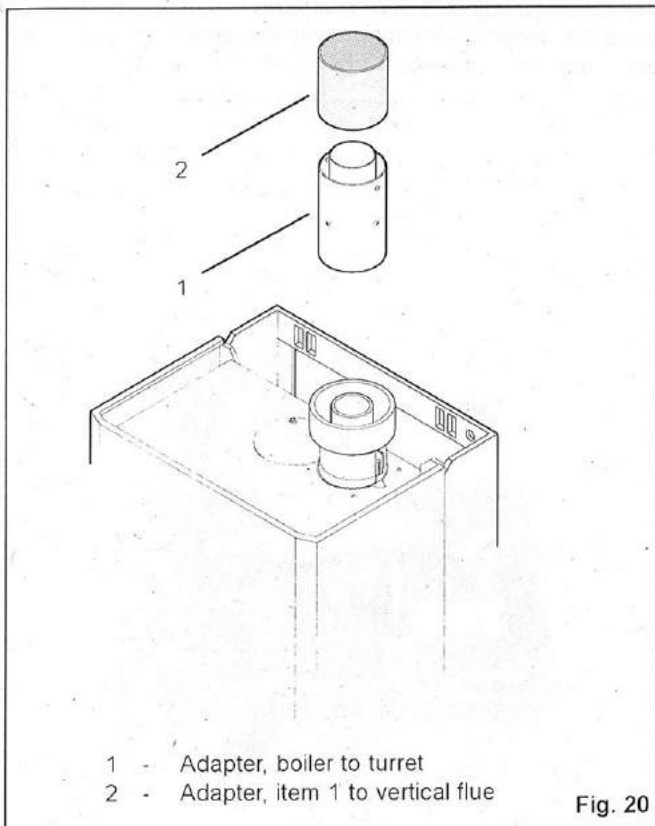
5) Finishing the flue

Apply the plastic tape provided to the last section of flue where it will be sealed to the external brickwork.

Remove the front clamp from the boiler flue connection and lower the flue duct sleeve by slackening the single locking screw at the RH side of the internal flue duct (fig. 14).

Fit the turret complete with boiler adapter to the flue system. From inside, push the assembly through the wall, align the flue turret with the boiler flue connection. For side flues the turret will need to be twisted into place through 90° to locate into the boiler flue connection. Replace the clamp and raise the inner flue connection and lock into place (fig. 14).

Make good the internal and external brickwork or rendering.



10.5 INTERNAL FITTING OF THE DUCT ASSEMBLY

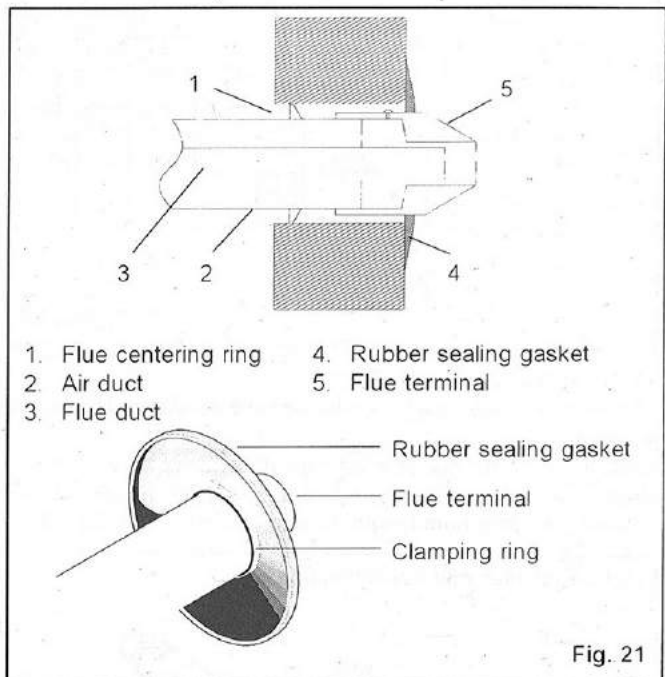
The rubber sealing gasket and the clamping ring are available from Worcester Heat Systems. Measure and cut the ducts as previously described for external fitting (Section 10.4). Fix the ducts to the terminal and fit the rubber sealing gasket and clamp to the terminal. Centralise the gasket and tighten the clamping ring. See Fig. 21. Slide the flue centering ring onto the air duct and tighten the screw. See Fig. 22. Fix the ducts and terminal assembly to the flue turret and boiler as described in Section 10.4 preceding, together with the appropriate restrictor ring.

Apply the plastic tape provided to the last section of the flue where it will be sealed to the external brickwork. Push the assembly through the wall so that the gasket flange is against the outside of the wall. See Fig. 22. Align the flue turret and adapter with the socket on the appliance, slide or twist the turret into the boiler flue connection as described in section 10.4 preceding together with the appropriate restrictor ring.

6) Fitting the restrictor ring

Refer to table 5 to select the correct restrictor ring depending on the equivalent length of the flue system.

Remove the fan, as described in replacement of parts. Remove the three screws holding the fan to its mounting plate and position the appropriate restrictor in the recess on the fan mounting plate and refit the three screws securing the restrictor, mounting plate and fan. Replace the fan on the boiler.



10.6 FLUE BENDS

See Figs. 22 and 23.

Measure distances X, Y and Z as appropriate.

RH Side flue duct length = X + 70 mm. See Fig. 22

LH Side flue duct length = X + 250 mm.

Rear flue duct length = X + 155 mm. See Fig.22

Cut the flue and air ducts which are to make up the first section X such that both the assemblies are of equal length (either X + 70 mm, X + 250 mm or X + 155 mm). Extensions will be necessary to allow X to be larger than 250 mm. Any extension ducts are fixed by drilling a pilot hole through the hole in the duct or elbow and screwing the self tapping screw provided into the two ducts. (See Fig.22). The length Y is the distance between bends the ducts must be cut to Y - 162 mm. The swaged ends must be removed from the extension tube and only the air duct needs fixing. See Fig.22. Z is the final flue length from the last elbow to the outside face of the external wall. The first duct sections fitted to the elbow must have unswaged ends. The length of the air ducts should be Z - 196 mm. The inner flue duct must be 30 mm longer than the air duct. If Z - 196 mm is less than 160 mm then the terminal section will need to be shortened to the same length as the extension flue section fitted to the elbow (length Z - 100). If flue extensions are needed to attain the required length care must be taken to ensure that the last section of flue is longer than 260 mm.

Each extension must be connected to the previous section of flue or bend by firstly fitting the inner flue ducts together and pilot drilling and fixing as above (See Fig. 22). Then the outer air ducts can be similarly fixed using a pair of screws provided. The flue terminal section can then be telescopically adjusted and fixed as before (See Fig. 22), ensuring the correct length of Z - 41. The silicon sealant supplied should be applied to the flue ducts which engage into elbows. See Fig. 22

From inside, push the assembly through the wall. Align the flue turret and adapter with the socket on the appliance, slide or twist the turret into the boiler flue connection as described in section 10.4 preceding, together with the appropriate restrictor ring. Make good the internal and external brickwork or rendering.

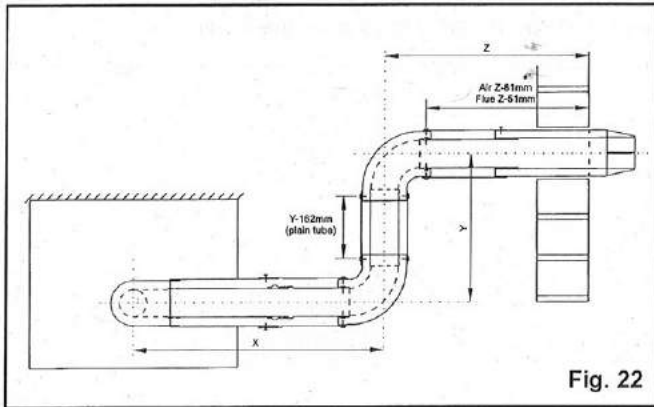


Fig. 22

10.7 VERTICAL ADAPTER

Fit the vertical flue adapter to the boiler flue adapter in place of the turret.

Measure and fit the flue as in Section 10.6 except the first section length is $X + 50$ mm measured from the top of the vertical flue adapter. The minimum length for X is 100 mm. See Fig. 23.

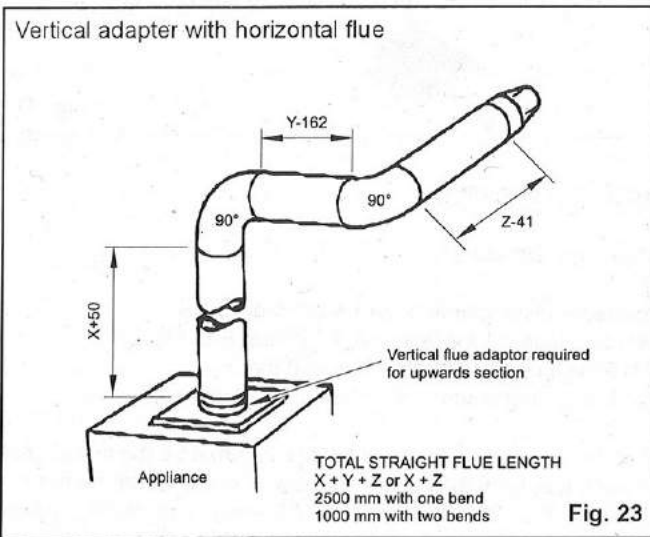


Fig. 23

- 151 Fuse T2.5A 250V
- 154 Fuse T2.0A 250V
- 160 Mains connection
- 163/1 Room thermostat connection
- 315 Clock connection
- a Connector: Electrode sensor
Temperature limiter
Micro-switch
Primary temperature sensor-NTC
Differential pressure switch
- c Connection to earth
- e Connection to pump
- f Ground connection
- g Connector: 3-way diverter
Security gas valve
Gas valve
- h Connector to fan

10.8 FINAL INSTALLATION

Check that all the water and gas connections have been tightened. Remove the 2 screws and the control panel cover and connect the mains electrical supply to the appliance at terminals L and N. See Figures 10 and 24. Connect any room and/or frost thermostats. The electrical leads must pass through the appropriate space in the control panel and be fixed with the cable clamps provided. Refit the control panel cover.

Test the gas supply pipework up to the appliance for soundness as indicated in BS 6891. Refer to Section 11 for a full description of the filling, venting and the pressurising of the system. If the appliance is not to be commissioned immediately, replace the cabinet casing. Check that the gas supply, the electrical supply and the water connections are all turned off. If the premises are to be left unoccupied during frosty conditions, then drain any water from the appliance and system.

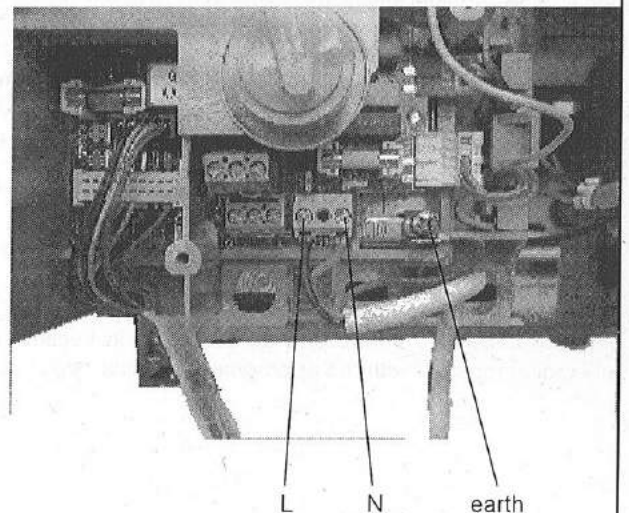
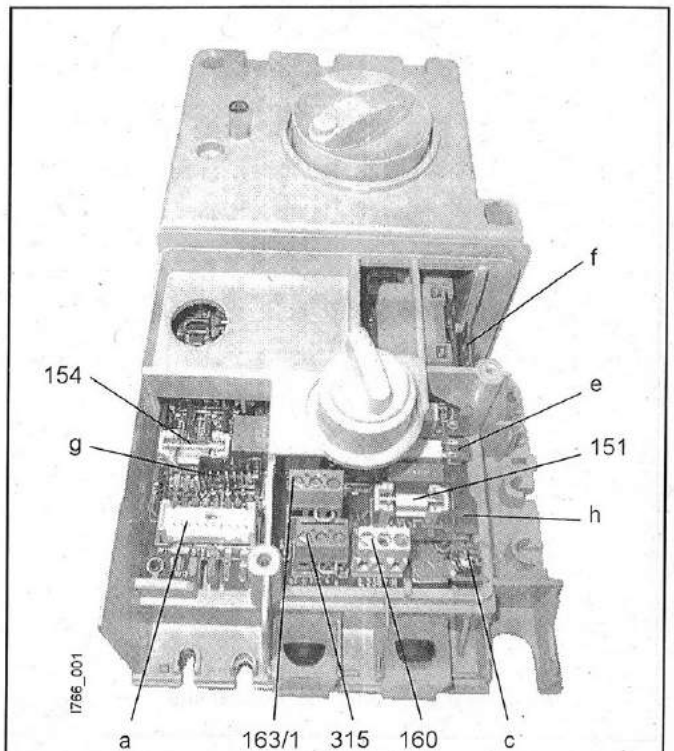


Fig. 24

11 Commissioning The Appliance

11.1 SUMMARY

Domestic Hot Water System. Check that the mains water supply has been fully flushed out at installation.

Central Heating System. Check that the central heating system has been fully flushed out at installation.

Gas Service. The complete system, including the meter, must be inspected and tested for soundness and purged as indicated in BS 6891.

11.2 APPLIANCE AND CENTRAL HEATING SYSTEM - PREPARATION

Remove the cabinet casing and lower the control assembly chassis, if necessary.

Check that the electrical supply and the gas supplies to the appliance are off.

Check that all the water connections throughout the system are tight.

Open the system valves at the appliance. Open all the radiator valves, fill the system and vent each radiator in turn.

The automatic air vent positioned on the expansion tank at the top rear of the appliance will vent the appliance. Check that the air vent cap has been loosened. See Fig. 1.

Check that the pressure relief valve, located at the lower RH corner of the appliance, operates by turning the knob anti-clockwise until it releases. Water should be expelled from the discharge pipe.

Set the Expansion Vessel Pressure

The charge pressure of the expansion vessel as dispatched is 0.5 bar, which is equivalent to a static head of 5 metres (17 ft). The charge pressure must not be less than the static head at the point of connection. See Fig. 7. A Schraeder type tyre valve is fitted to the expansion vessel to allow the charge pressure to be increased if necessary.

Set the system pressure

Fill the system until the pressure gauge shows 2.5 bar (37 lb/in²) and check for water soundness. Release water from the system using the relief valve test knob until the system design pressure is obtained, up to a maximum of 1.5 bar.

Initial system design pressure (bar) = Expansion vessel charge pressure + 0.3 bar.

NOTE: 1 bar is equivalent to 10.2 metres (33.5ft) of water.

If the pressure indicated on the pressure gauge is greater than 2.6 bar when operating at the maximum central heating temperature, then an extra expansion vessel must be fitted to the system as close as possible to the appliance central heating return connection. Refer to BS 7074 Part 1.

Any extra vessel fitted must be pressurised to the same figure as the integral vessel. If the expansion vessel fails then the specified replacement must be fitted.

11.3 PROGRAMMER

Any programmer fitted on the appliance should be set up at this stage following the instructions sent with the programmer.

If a fascia mounted programmer is to be fitted follow instructions with the programmer. Remove the fascia bottom panel as described in section 14.3 (c)

11.4 APPLIANCE OPERATION

Turn off the gas and electricity supplies to the appliance.

Loosen the burner pressure test point screw, located on the gas supply pipe to the burner manifold (pos. 1) and connect a pressure gauge.

Domestic Hot Water.

Set the CH temperature control knob to the MINIMUM position.

Set the water flow selector clockwise.

Set any programmer to HEATING & WATER

Turn on the gas and electricity supplies.

Turn on a hot water tap to create a demand for hot water.

A continuous ignition spark will occur until the burner is alight and sensed by the control circuit. The burner pressure should be 15,5 mbar for natural gas and 35 mbar for Propane.

If the burner pressure cannot be achieved then check that the inlet pressure at the appliance is 20mbar for natural gas and 37mbar for propane.

If the appliance does not light, check that it is not in the 'lockout' state by pressing the lockout reset LED button. See Fig. 26.

Check that fully heated water is available from the tap.

Gradually close the hot tap and check that the burner pressure drops. Fully open the tap and check that the burner pressure rises. Fully close the tap and check that the burner goes off. The fan may continue running until the appliance has cooled to a preset temperature.

Central Heating

The appliance is dispatched with the controls set to provide a maximum output for Central Heating of 14 kW.

Check that all the radiator valves are open.

Set the CH temperature control knob to MAXIMUM and check that the boiler is switched on.

A continuous ignition spark will occur until the burner is alight and sensed by the control circuit. The burner pressure should be 5,7 mbar for natural gas and 14,2 mbar for propane.

Set the room thermostat and the Central Heating Temperature Control to maximum.

On sealed systems check that the system is pressurised and set to the required pressure as indicated on the gauge. Check the system to ensure that all the radiators are heating up evenly.

Balance the system so that the required temperature difference across the central heating flow and return pipes is obtained.

Set the room thermostat, if fitted, to minimum and check that the burner goes out. Reset the room thermostat to maximum and the burner will re-light and follow the normal operating procedure.

Check for proper ignition of the burner after a break in the gas supply. Turn off the gas service cock and wait for 60 seconds. The burner will go out but sparking from the electrode will continue for 10 seconds when the appliance will enter a 'lockout' state. Carefully open the gas service cock, press the lockout reset button and observe the burner re-light and follow the normal sequence of operation.

Set the Operating Switch to OFF.

Turn off the gas service cock and the electrical supply to the appliance.

Drain the system while the appliance is still hot.

Refill, vent and, with a sealed system, re-pressurise as described in Section 11.2.

Domestic Hot Water and Central Heating

Turn on the electricity supply to the appliance and open the gas supply cock at the appliance.

Set the Operating Switch (and Programmer) to HEATING & WATER. If a programmer is fitted set the domestic hot water to Continuous or 24 Hrs and the central heating to ON. Open a tap, the burner will light and heat will pass into the system hot water is discharged. Close the tap and the burner will go off. The appliance will then return to the central heating mode and automatically balance with the system requirements.

Set the Operating Switch to OFF and the burner will go out.

11.5 COMPLETION OF COMMISSIONING

Disconnect the pressure gauge and tighten the test point screw. Restart the appliance and check for gas soundness around the test point screw.

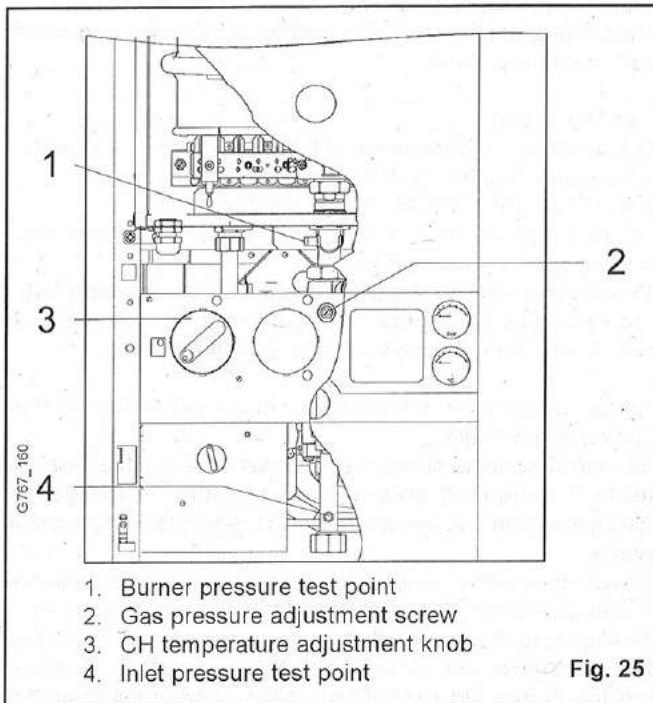
Refit the cabinet casing.

If the appliance is being passed over to the user immediately, refer to Section 13 - Instructions to the User and set the controls to the users requirements.

If the appliance is to be left inoperative, check that the Operating Switch is set to OFF. Turn off the gas service cock and switch off the electricity supply.

If there is any possibility of the appliance and system being left inoperative for long periods during frosty conditions, drain the appliance and system. For short inoperative periods, leave the appliance under the control of the built in frost thermostat or the remote frost thermostat (if fitted) or leave operating continuously with the room thermostat set at 6° C.

11.6 CENTRAL HEATING ADJUSTMENT



The boilers are pre-set for the type of gas

Check that the gas type indicated on the type plate matches that supplied by the gas company. If there is a difference, consult the Technical Telephone Services about conversion of the appliance.

The nominal useful output is set by using either the burner pressure method or the volumetric method.

Advice: the burner pressure method of installation is quicker and thus advisable under normal circumstances. If however the appliance is supplied by mains gas, and the adjustment is undertaken in a peak consumption period, the volumetric method should be used due to the pressure variations.

LPG (Propane) : LPG (Propane) boilers are pre-set at the connection pressure indicated on the type plate.

11.6.1 Burner Pressure Adjustment Method

1. Remove the wire and the sealing cover from the gas setting screw.
2. Unscrew the throttle screw (no. 1, fig. 25) and connect the pressure gauge.
3. Open the gas tap and switch on the appliance.
4. Set the temperature selector to position "7" (no. 3, fig. 25)
5. Gauge the burner pressure for the required power, taking into consideration the model type (see Table 4). Adjust burner pressure using the gas setting screw (no.2, fig. 25). Turning clockwise lowers the pressure, reduces the gas flow and consequently the power. Turning anti-clockwise increases the pressure on the burner, raising the gas flow and consequently the power.
6. Turn off the gas tap, disconnect the pressure gauge and tighten the screw back.
7. Replace the sealing cover and the wire. Crimp the lead seal with pliers.

Incoming pressure

8. Loosen the sealing screw (no. 4, fig. 25) and connect the pressure gauge to the measuring point.
9. Open the gas tap and switch on the appliance. Set the temperature selector to position "7" (no. 3, fig. 25).
10. The supply pressure for liquid gas appliances should be 37 mbar (propane appliances). If the supply pressure does not fall within this range, then the cause must be found and the problem rectified.
11. Close the gas tap, disconnect the pressure gauge and turn the sealing screw tightly shut (no. 4, fig. 25).

12 Instructions To The User

12.1 Tell the user how to operate the appliance and hand over the Users Instructions leaflet.

12.2 Tell the user what to do if the heating system is not to be used in frosty weather.

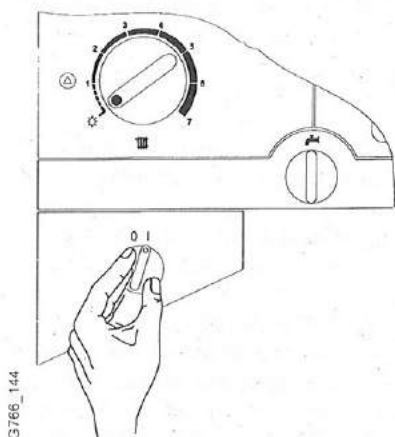
12.3 Tell the user the sealed system set pressure.

12.4 Tell the user of the importance of regular servicing. Worcester Heat Systems Ltd. offer a comprehensive maintenance contract.

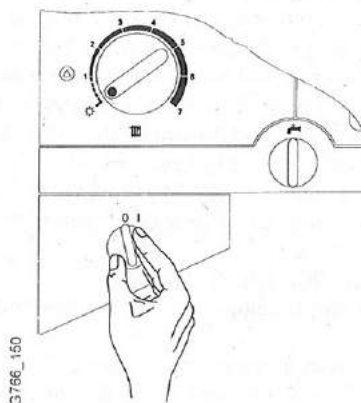
12.5 Set the system controls to the user's requirements.

12.6 If an external programmer has been fitted which has a programmable domestic hot water facility then it is suggested that this be set to Continuous or the equivalent.

Fig. 26 - user controls

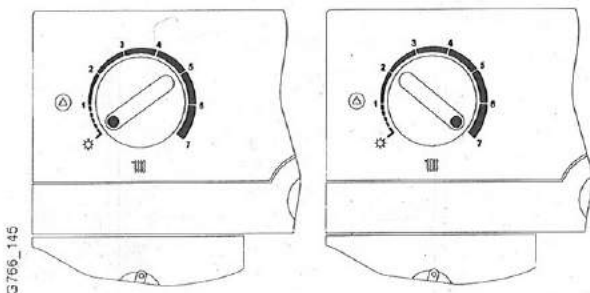


Turn the master switch to position I. The boiler is ready to operate.



To turn the boiler off:

Turn the main switch to ← (to the left). The timer will only work for 70 hours in the case of electricity failure. (read timer's operating instructions)

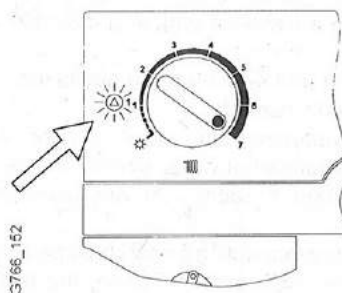


Turning the heating on and off

Summer (to the left): Temperature selector on position 1; only functions for domestic hot water.

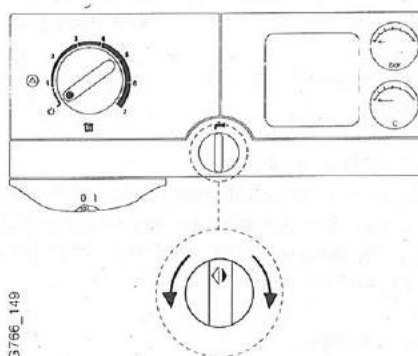
Winter (to the right): Temperature selector of the central heating flow with adjustment between 1-7.

- Position 1: approx. 45°C.
- Position 7: outflow temperature of heating system up to 90°C.



If an error occurs during the boiler's operation, then the LED button will flash. You must push the LED-button to operate the boiler again. If the LED flashes again, please contact your installer.

Domestic hot water flow selector



Turning the water flow selector anti-clockwise, will increase the flow and reduce the water temperature. Turning the water flow selector clockwise will reduce the flow and increase temperature.

13 Inspection and Service

13.1 SERVICING

To ensure continued efficient operation of the appliance it must be checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage, but once per year should generally be adequate. The extent of the service required by the appliance is determined by the operating condition of the appliance when tested by fully competent engineers.

Any service work must be carried out by competent engineers such as British Gas or Corgi registered personnel.

13.2 PRE-SERVICE INSPECTION

Check that the flue terminal and the terminal guard, (if fitted), are clear.

If the appliance is in a compartment, check that the ventilation openings if required in the compartment door or walls are clear. See Section 6 - Air Supply.

Check the system and remake any joints or fittings which show signs of leakage.

Refill, vent and re-pressurise as described in Section 11.2.

Operate the appliance and the system taking note of any faults. Measurement of the Flue Gases

For consistency of results of the flue gas measurements it is necessary to have a constant output and for the appliance to be at equilibrium.

Remove the casing and switch on the appliance.

Switch to DHW and CH mode.

Turn the DHW temperature control to the "Max." position.

Turn on a tap to create a hot water demand.

Wait until the appliance reaches thermal equilibrium (approx. 10 minutes).

A combustion products sampling point is provided in the pressure sensing tube to the Air Pressure Switch, the test point being located at the lower RH side of the boiler.

Connect the sampling probe and ensure an air tight connection. Expected measurements should be between:

	CO%	CO ₂ %
Natural Gas	0.001 to 0.01	6.5 to 7.0
Propane	0.001 to 0.01	7.6 to 8.2

Table 10

After taking the measurements ensure that the sample point is resealed.

IMPORTANT

Disconnect the electrical supply at the mains and turn off the gas supply at the gas service cock on the appliance before servicing.

After completing the service always test for gas soundness as indicated in BS 6891.

13.3 DISMANTLE THE APPLIANCE

To carry out a full and comprehensive service of the appliance remove the following parts to gain access to the components which need to be checked or serviced. Check that the gas and electricity supply to the panel is turned off.

(a) Cabinet Front Casing.

Remove outer casing by unscrewing the 2 lower retaining screws and lifting vertically upwards.

(b) Fan

Remove the fan by unscrewing the 2 front fixing screws, disconnect the electrical connections and rotate the fan slightly to the left. Inspect and if necessary clean the fan impellor.

(c) Burner

Remove the burner by unscrewing central union nut, lift slightly at the front, disconnect the electrode connections, remove the burner by first turning it upside down by raising the front edge of

the burner into the combustion chamber and turning it over towards the rear. The burner can then be slid forwards from the combustion chamber. Inspect and if necessary clean the burner blades. Remove the 8 screws securing the burner manifold. Inspect and if necessary clean the injectors. Do not use a metal probe or brush.

(d) Heat exchanger

Remove the fan and burner assembly as described above. Remove the two top panel retaining screws and slide off the top cover plate. Cover the gas supply to burner orifice. Inspect the finned copper heat exchanger and clean as necessary using a soft brush. Re-assemble the appliance in the reverse order.

13.5 TEST THE APPLIANCE

On completion of the service and reassembly of the appliance, check for gas soundness and the correct operation of the appliance as described in Section 11 - Commissioning.

Refit the cabinet front panel and reset the controls to the users requirements.

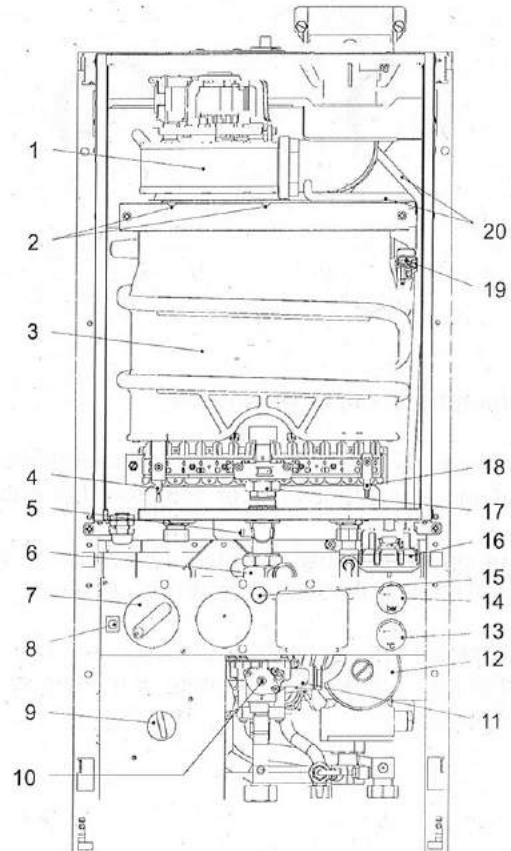
13.6 Inlet water filter

Remove the water flow regulating valve as described in section 6.

Pull out the retaining clip from the valve body and withdraw the brass housing and filter.

Clean or replace the filter as required.

Reassemble in the reverse order.



- | | |
|--|---------------------------------|
| 1 Fan | 11 Water valve |
| 2 Fan fixing screws | 12 Pump |
| 3 Heat exchanger | 13 System temperature indicator |
| 4 Ignition electrode | 14 System pressure gauge |
| 5 Burner pressure test point | 15 Gas pressure setting screw |
| 6 Gas valve | 16 Air pressure switch |
| 7 CH temperature control knob | 17 Burner fixing nut |
| 8 Reset button | 18 Flame sense electrode |
| 9 Mains electricity switch | 19 High limit thermostat |
| 10 DHW flow rate / temperature selector knob | 20 Air pressure sensing tubes |

14 Replacement Of Parts

1.1 IMPORTANT

Switch off the electricity and gas supplies before replacing any components. After the replacement of any components, check for gas soundness where relevant and carry out functional checks as described in Section 11 - Commissioning

14.2 COMPONENT ACCESS

To replace components it is necessary to remove one or more sections of the cabinet and cover plates within the appliance as described in Section 13.3. The control assembly may also need to be lowered as follows.

Remove the DHW flow/temperature selector knob. Remove the four screws retaining the control assembly chassis to the main boiler frame and unhook the chassis. Lower the chassis and re-hook in the bottom of the large rectangular slots in the main boiler frame (see fig. 28).

14.3 DRAINING THE APPLIANCE

Check that the electricity supply to the appliance is turned off. Before removing any component holding water it is important that as much water as possible is removed from the appliance. (a) Central Heating Circuit. Turn off the central heating flow and return valves at the appliance.

Remove the brass drain plug from the bottom of the pump inlet manifold. Drain into a suitable container.

Some water may remain in the diverter valve, water to water and Gas to Water heat exchangers and extra care must be taken when removing these components.

(b) Domestic Hot Water Circuit. Turn off the mains cold supply valve at the appliance and open the lowest hot water tap. A quantity of water will remain in the Water to Water heat exchanger and the diverter valve and extra care must be taken when removing these components.

14.4 COMPONENT REPLACEMENT

1. Automatic Air Vent.

Remove the inner casing cover as described in Section 13.3 (a).

Drain the central heating circuit as described in Section 14.3 (a).

Unscrew the vent valve from the boss on the body of the expansion tank.

Fit the replacement vent valve, making sure the joint to the mounting boss is sound.

Open the valves and fill and re-pressurise the system as described in Section 11.2.

2. Air Flow Pressure Switch.

Check that the electricity supply to the appliance is turned off. Remove the cabinet front panel as described in Section 13.3 (a).

Carefully pull off the sensing tubes from the switch, noting the position of the colour coded tubes.

Unscrew the single retaining screw and release the switch from the internal boiler case. Remove the cover of the switch by releasing the two screws and pull off the small spade terminals. Fit the replacement switch in the reverse order ensuring that the electrical connections have been made and that the sensing tubes are fitted correctly.

3. Fan.

Check that the electricity supply to the appliance is turned off. Remove the fan assembly as described in Section 13.3 (b). Fit the replacement fan in the reverse order.

4. Gas to Water Heat Exchanger and Limit Thermostat.

Check that the electricity supply to the appliance is turned off. Drain the central heating circuit as described in Section 14.3

(a). Remove the burner as described in 13.3(c). Lower the control chassis as described in 14.2. Slacken the two union connections on the flow and return pipe tails to the heat exchanger. Slacken and lower the two locking nuts retaining the heat exchanger to the inner casing base. Remove the two screws from the heat exchanger top retaining plate and remove the plate. Lift up the heat exchanger and remove forwards. Remove the limit stat electrical connections located at the top RH side of the heat exchanger. Undo the screw and remove the limit thermostat retaining clip and thermostat body.

Fit the replacement heat exchanger in the reverse order ensuring that both the face to face joint rings are correctly in the flow and return connections.

Open the valves and fill and re-pressurise the system as described in Section 11.2.

5. Water Flow Micro-switch

The water flow micro-switch is located under the water flow regulator valve and can be removed and replaced as follows. Check that the electricity supply to the appliance is turned off. Remove the cabinet front panel as described in Section 13.3 (a).

Lower the control chassis as described in 13.2.

Remove the micro switch housing by slackening the three screws holding the body together and releasing the housing from the valve body. If required the wiring can be disconnected from the spade terminals on the micro switch.

Replace the switch in reverse order and check the adjustment of the switch as follows.

All hot water taps must be off.

With the appliance turned on electrically remove the cover from the adjustment opening and the adjustment screw. Turn the screw in until the micro-switch operates (a click will be heard) and continue turning for a further 1 to 1½ turns to reset the micro-switch.

This adjustment must be carried out when the water flow valve or any of its components have been disturbed.

6. Water Flow Regulator Valve

Check that the electricity supply to the appliance is turned off. Remove the cabinet front panel as described in Section 13.3 (a).

Drain the Domestic Hot Water circuit as described in Section 14.3 (b).

Lower the control chassis as described in 14.2.

Disconnect DHW inlet connection at the rear of the valve, pull out the retaining clip from the outlet connection at the RH side of the valve. Slacken the two valve retaining screws at the connection to the gas valve and lower the regulating valve also sliding out the 'O' ring jointed water outlet connection.

Remove the micro switch housing by slackening the three screws holding the body together and releasing the housing from the valve body. If required the wiring can be disconnected from the spade terminals on the micro switch.

Fit the venturi to the new valve.

Fit the replacement water flow regulating valve in the reverse order ensuring that both the face to face joint, seal and 'O' ring seals are correctly positioned in the inlet and outlet connections. Open the valves and fill and re-pressurise the system as described in Section 11.2.

7. Gas Control Valve.

Turn off the main gas supply.

Remove the Water Flow Regulating Valve as described preceding to gain clear access to the gas valve. Unplug the electrical connection from the gas valve solenoid at the RH side of the valve body. Undo the gas inlet at the rear of the valve. Undo the union outlet connection at the top of the valve and remove the valve.

Fit the replacement gas valve in reverse order ensuring that the

face to face joint seals are correctly positioned and gas tight. Re-commission the appliance as described in section 11 checking that all gas and water connections are sound.

8. Circulating Pump

Check that the electricity supply to the appliance is turned off. Remove the cabinet front panel as described in Section 13.3 (a).

Drain the central heating circuit as described in Section 14.3 (a).

Lower the control chassis as described in 14.2.

Disconnect the pump electrical connection by unplugging the cable from the main control assembly, located at the lower RH side.

Undo the three union connections on the pump body, flow, return and connection to the expansion vessel. Remove the pump by withdrawing forwards and downwards.

Fit the replacement pump in the reverse order ensuring that the face to face joint seals are correctly positioned and water tight. Open the valves and fill and re-pressurise the system as described in Section 11.2.

9 Diverter Valve

Check that the electricity supply to the appliance is turned off. Remove the cabinet front panel as described in Section 13.3 (a).

Drain the central heating circuit as described in Section 14.3 (a).

Drain the Domestic Hot Water circuit as described in Section 14.3 (b).

Lower the control chassis as described in 14.2.

Remove the Water Flow Regulator Valve as detailed in section 5 above.

Remove the Gas Control Valve as detailed in section 6 above. Pull out the retaining clip from the small push-in pipe connection located at the RH side of the valve body.

Disconnect the electrical connections from the spade terminals on the valve solenoid.

Undo the four retaining screws holding the valve body to the back plate which forms the three water connections.

Withdraw the valve from the rear and side water connections. Fit the replacement valve in the reverse order ensuring that the 'O' rings in the rear of the valve body are correctly seated.

Following the replacement of all the associated parts open the valves and fill and re-pressurise the system as described in Section 11.2.

10 Gas Solenoid Valve

Check that the gas and electricity supplies to the appliance are turned off.

Remove the cabinet front panel as described in Section 13.3 (a).

Drain the central heating circuit as described in Section 14.3 (a).

Drain the Domestic Hot Water circuit as described in Section 14.3 (b).

Lower the control chassis as described in 14.2.

Remove the Water Flow Regulator Valve as detailed in section 6 above.

Remove the Gas Control Valve as detailed in section 7 above. Remove the Diverter Valve as detailed in 9 above, then proceed as follows

Undo the union connection at the top of the gas service isolating valve.

Remove the two screws in the gas valve mounting flange which hold the gas valve to the steel chassis of the boiler. Remove the single fixing screw from the bracket, located approximately midway up on the vertical gas inlet pipe and remove the gas valve and inlet pipe as a unit.

Unplug the electrical connection from the valve solenoid.

Fit the replacement valve in the reverse order ensuring that the face to face joint are located correctly.

Following the replacement of all the associated parts open the valves and fill and re-pressurise the system as described in Section 11.2.

11. Water to Water Heat Exchanger

Check that the gas and electricity supplies to the appliance are turned off.

Remove the cabinet front panel as described in Section 13.3 (a).

Drain the central heating circuit as described in Section 14.3 (a).

Drain the Domestic Hot Water circuit as described in Section 14.3 (b).

Lower the control chassis as described in 14.2.

Undo the four union connections at the rear of the unit and remove.

Fit the replacement heat exchanger in the reverse order ensuring that the face to face joints are located correctly and water tight. Open the valves and fill and re-pressurise the system as described in Section 11.2.

12. Control Thermostat Sensor

The sensor is located in a pocket attached to the flow pipe from the heat exchanger, to the left hand side of the gas valves. Remove and replace the sensor as follows.

Remove the cabinet front panel as described in Section 13.3 (a).

Lower the control chassis as described in 14.2.

Pull off the electrical connections from the spade terminals, spring off the retaining clip and withdraw the sensor from the pocket.

Fit the replacement sensor in reverse order and apply heat sink paste as necessary. Ensure the retaining clip is correctly positioned.

13. Gauze Filter

Remove the water flow regulating valve as described in section 6.

Pull out the retaining clip from the valve body and withdraw the brass housing and filter.

Clean or replace the filter as required.

Reassemble in the reverse order.

14. Injectors

Check that the electricity supply to the appliance is turned off

Remove the front casing as detailed in section 13.3a

Remove the burner assembly as described in section 13.3c.

Remove the burner manifold to expose the injectors. The injectors can then be removed and replaced as required.

Assemble in reverse order.

15. Ignition And Flame Sensing Electrodes.

Check that the electricity supply to the appliance is turned off

Remove the front casing as detailed in section 13.3a.

Remove the burner assembly as described in section 13.3c.

Slacken the clamping screw and slide the Ignition electrode assembly upwards from the clamp.

Replace in reverse order ensuring that the slots in the front edge of the ceramic locate correctly on the burner front rail

Remove the flame sensing electrode in a similar manner, again ensuring when replacing that the locating grooves in the ceramic locate on the burner front rail.

16. Ignition Leads

Check that the electricity supply to the appliance is turned off

Remove the front casing as detailed in section 13.3a.

Remove the control box cover by slackening the two retaining screws and lifting clear.

The ignition transformer is located at the top RH corner of the control.

Pull off the ignition leads from the spade terminals on the transformer and feed each lead upwards through the grommet in the inner casing base.

Replace in reverse order.

17. System Pressure Gauge

Check that the electricity supply to the appliance is turned off. Remove the front casing as detailed in section 13.3a. Drain the central heating circuit as described in Section 14.3 (a).

Slacken the union connection on the flexible hose at the rear of the pressure gauge. Depress the locating tabs on the gauge body and withdraw the gauge forward from the mounting frame. Reassemble in reverse order.

18. Internal Fuses

Check that the electricity supply to the appliance is turned off. Remove the front casing as detailed in section 13.3a. Remove the control box cover by slackening the two retaining screws and lifting clear.

The internal fuses can then be located, T2.5A on the RH side and the T2.0A on the LH side of the control board. Each fuse is identified on the printed circuit board.

Remove, check and replace as required.

Reassemble in reverse order.

19. Printed Circuit Control Board

Check that the electricity supply to the appliance is turned off. Remove the front casing as detailed in section 13.3a.

Remove the control box cover by slackening the two retaining screws and lifting clear.

Unplug the two multi-way plugs on the LH side of the board. Disconnect the mains input cable from the screw terminals and pull off the earth lead from the spade terminal and pull away the cable locking clamp from the base. Any other external control wiring should be removed in a similar manner.

Pull off the two edge connectors for the fan and pump supplies, also the earth leads from the spade terminals and release the cable clamp.

Pull off the ignition leads from the ignition transformer spade terminals.

Slacken the two control assembly retaining screws and withdraw the complete control assembly.

Remove the two retaining screws from the rear of the assembly, ease away the metal cover by pushing upwards on the earth terminals which protrude through to the front of the assembly.

Note:- the transformer is a 'plug in' item on the printed circuit board and can be removed at this point.

Gently ease away the printed circuit board from the control housing.

Replace the items in reverse order.

20. Pressure Relief Valve

The pressure relief valve is located at the lower RH corner of the boiler.

Check that the electricity supply to the appliance is turned off. Remove the front casing as detailed in section 13.3a.

Drain the central heating circuit as described in Section 14.3 (a).

Disconnect the discharge pipe from the relief valve and unscrew the valve from the return manifold.

Replace in reverse order.

21. Expansion Vessel

In the unlikely event of failure of the expansion vessel diaphragm it is acceptable to leave the vessel in place and fit a replacement

(of similar capacity) external to the appliance but as close as possible to the CH return.

It is necessary to remove the appliance from the wall in order to replace the expansion vessel.

Remove the expansion vessel by disconnecting the union connection on the flexible hose at the lower edge of the expansion vessel and withdrawing the vessel from the top of the boiler.

Replace in reverse order.

Re-commission the appliance and CH system as described in section 11.2.

15. Fault Finding Codes

If a problem occurs during the normal operation of the boiler the LED will flash and the boiler will shut down. The frequency of the LED flashing corresponds to a fault code, as described below. To reset the boiler controls the LED-button must be pressed.

Fault Code Frequency	Cause	Check
(Twice per second)	Limit Thermostat operation	Check the operation of the boiler flow temperature sensor. Check the operation of the boiler circulating pump.
(Once per second)	No flame detection signal	Check flame detection circuit. Check ignition system. Check gas supply and gas valves
(Once every 2 seconds)	False flame detection signal.	Inspect flame detection circuit. Check control panel assembly.
(Once every 4 Seconds)	Air flow not detected	Check that the fan operates Inspect the pressure pipes from flue outlet to Air Pressure Switch Check the operation of the switch Check that the flue or air inlet ducts are not obstructed.

see also section 18 - Trouble Shooting guide

16 Short Parts List

Key No.	Part	QTy	Part No
1	Gas Control Valve Natural Gas		8 707 011 513
1	Gas control Valve - Propane		8 707 011 535
2	Gas Inlet Valve - Natural Gas		8 705 202 117
2	Gas Inlet Valve - Propane		8 705 202 114
3	Burner - Natural Gas		8 708 120 447
3	Burner - Propane		8 708 120 446
4	Injector - Natural gas (120)		8 708 202 124
4	Injector - Propane (74)		8 708 202 127
5	Ignition Electrodes		8 708 107 008
6	Flame Sensing Electrode		8 708 107 009
7	Ignition Leads		8 704 401 106
8	Gas to Water Heat Exchanger		8 705 406 242
9	Water to Water Heat Exchanger		8 705 406 203
10	Automatic Air Vent		8 718 505 028
11	System Pressure Gauge		8 717 208 047
12	Thermometer		8 717 208 027
13	Pressure Relief Valve		8 717 401 022
14	Circulating Pump		8 717 204 192
15	Expansion Vessel		8 705 407 001
16	Diverter Valve		8 708 505 014
17	DHW Flow Regulator Valve		8 707 002 628
18	Micro switch assembly		8 707 200 007
19	Domestic Water Filter		8 700 507 001
20	Fan		8 707 204 005
21	Air Pressure Switch		8 707 406 007
22	Temperature Sensor - Boiler Flow		8 714 500 043
23	Overheat Limit Thermostat		8 707 206 132
24	Control Panel Assembly		8 717 207 366
	Fibre Washer Pack		8 700 103 678
	Fuse Pack		8 744 503 011 1 904 521 342
	Programmer Kit (Optional)		7 719 001 859
	Control Printed Circuit Board		8 748 300 270

Table 11

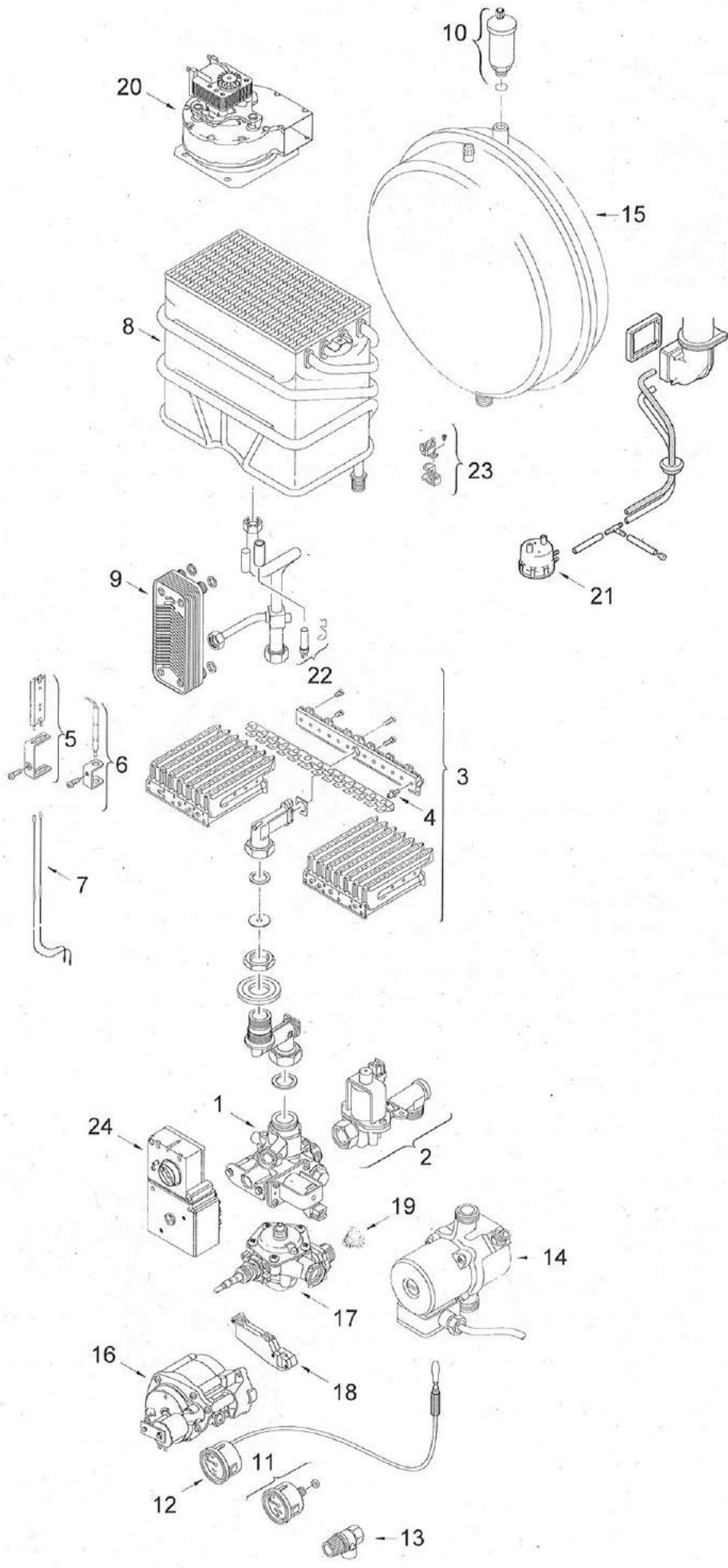


Fig. 27

17 Gas Conversion Instructions

Item n°	Description	NG to LPG kit	LPG to NG kit
2	Burner injector	7 710 249 073	7 710 239 062
3	Magnetic unit	8 708 202 127 (marked 120)	8 708 202 124 (marked 70)
4	Poppet valve head	8 708 504 043	8 708 504 047
		(marked 3E)	(marked 2E)
5	Poppet valve seat	8 708 500 249	8 708 500 247
6	Gasket	8 701 004 001	8 701 004 001
7	Throttle disc		8 700 100 205 (dia. 6,5 mm)
8	Washer	8 710 103 060	8 710 103 060

Table 12

IMPORTANT

Switch off the electricity and gas supplies before replacing any components. After the replacement of any components, check for gas soundness where relevant and carry out functional checks as described in Section 11 - Commissioning.

1. Remove the burner as described in section 13.3 (a) and (c).
2. Replace the injectors (2).
3. Lower the control assembly as follows. Remove the four screws retaining the control assembly chassis to the main boiler frame and unhook the chassis. Lower the chassis and re-hook in the bottom of the large rectangular slots in the main boiler frame. Replace the solenoid unit on the gas solenoid valve (3).
4. Remove the regulator head from the gas control valve (A) - see point 14.4, item 7. Replace the poppet valve head (4) and poppet valve seat (5). Replace the gasket (6).
- 6a. If converting to LPG
Remove the throttle disc (7) and joint ring (8) and re-fit the burner.
- 6b. If converting to Natural Gas.
Fit throttle disc (7) and joint ring (8) and re-fit the burner.
7. Fix the self adhesive label next to the data plate.
8. Adjust the gas pressures as described in section 12.4 and in accordance with the following table.
9. Turn on the gas service cock and electrical supply.
10. Confirm for gas soundness
- turn on a hot water tap for maximum hot water output
- check all the gas connection points
11. Readjust the burner gas pressure for the new gas type according to the values in table 4. When this is done, seal the adjusting screw with the wire and lead seal.
12. Fix the sticker next to the data plate.
13. Remount support and boiler front case.

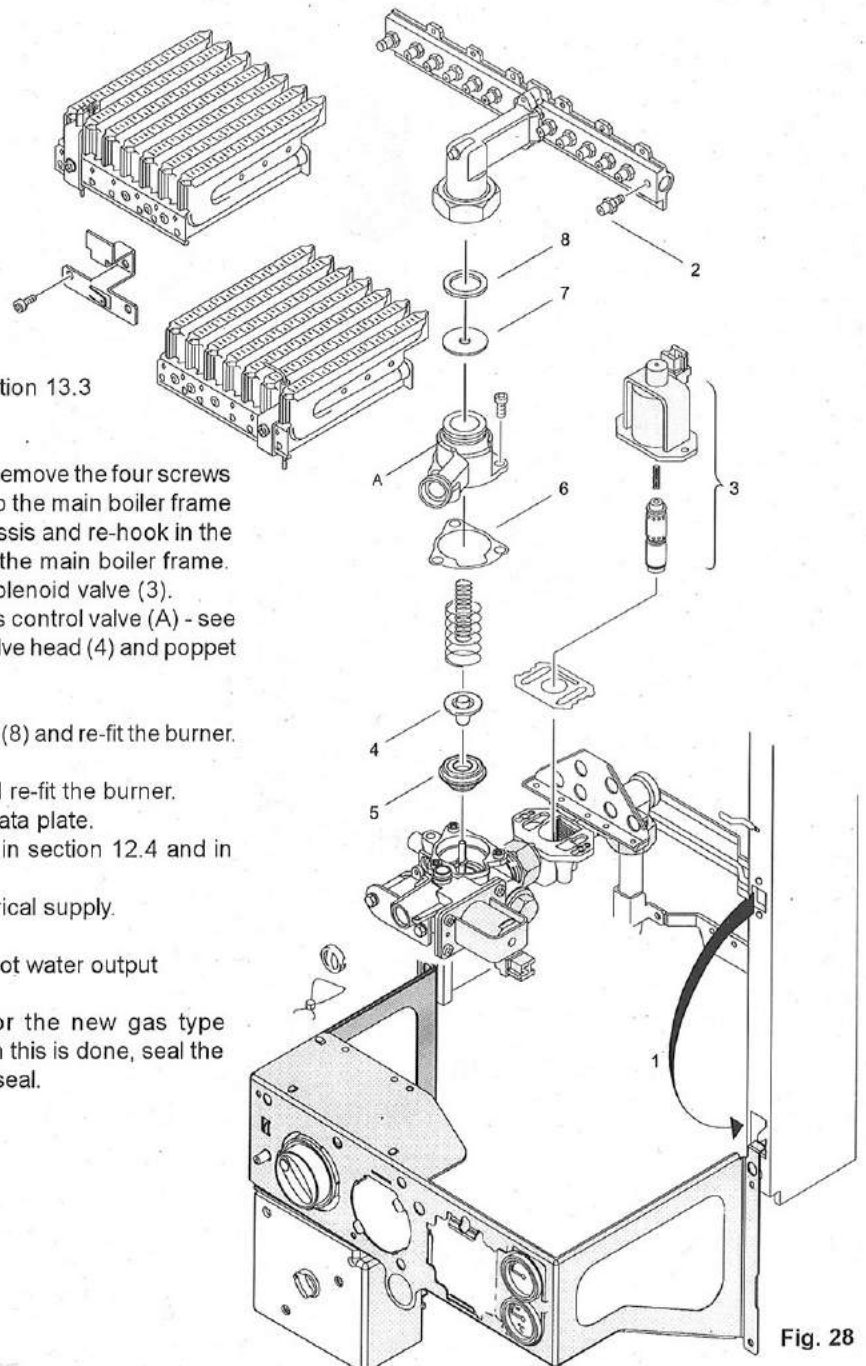
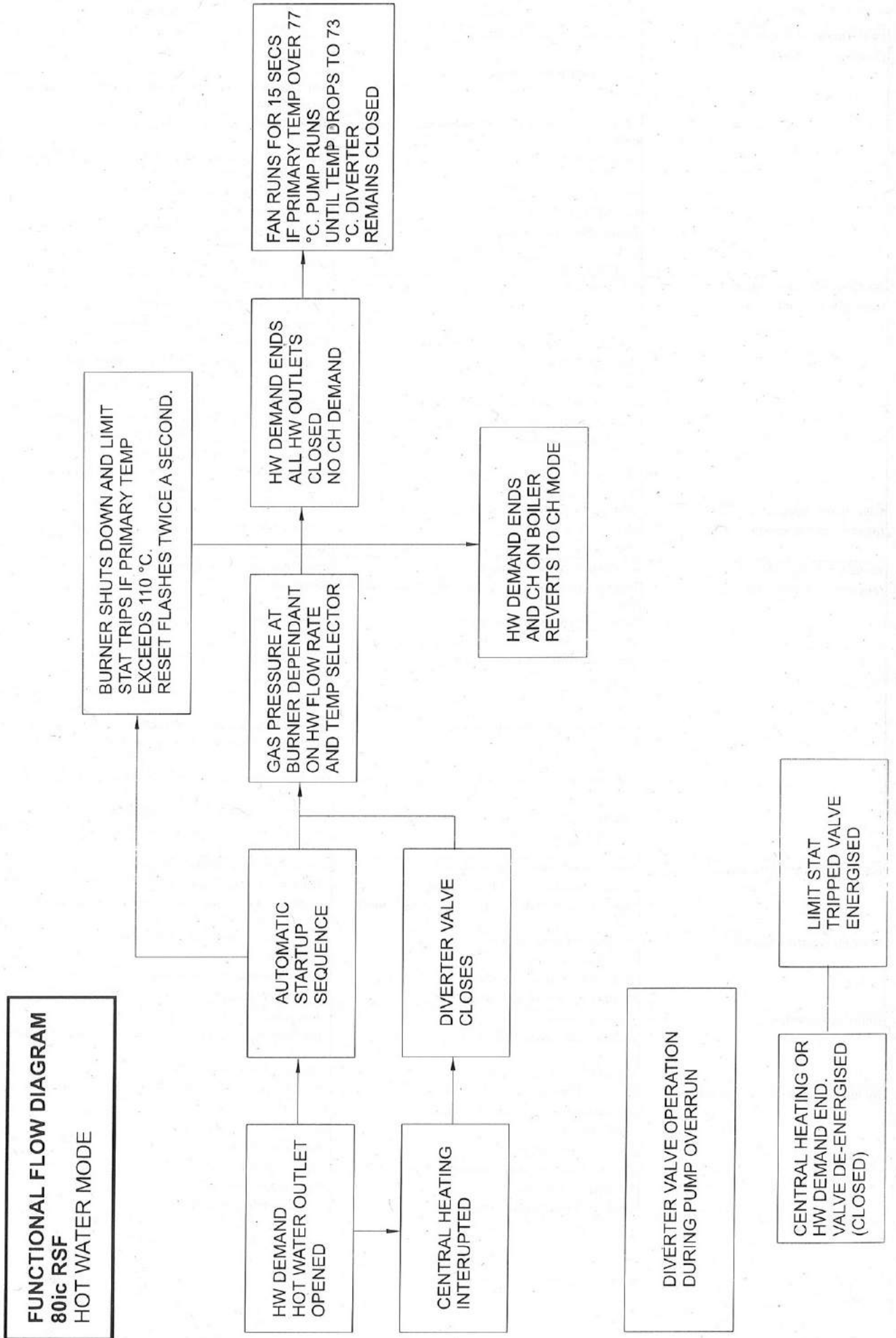


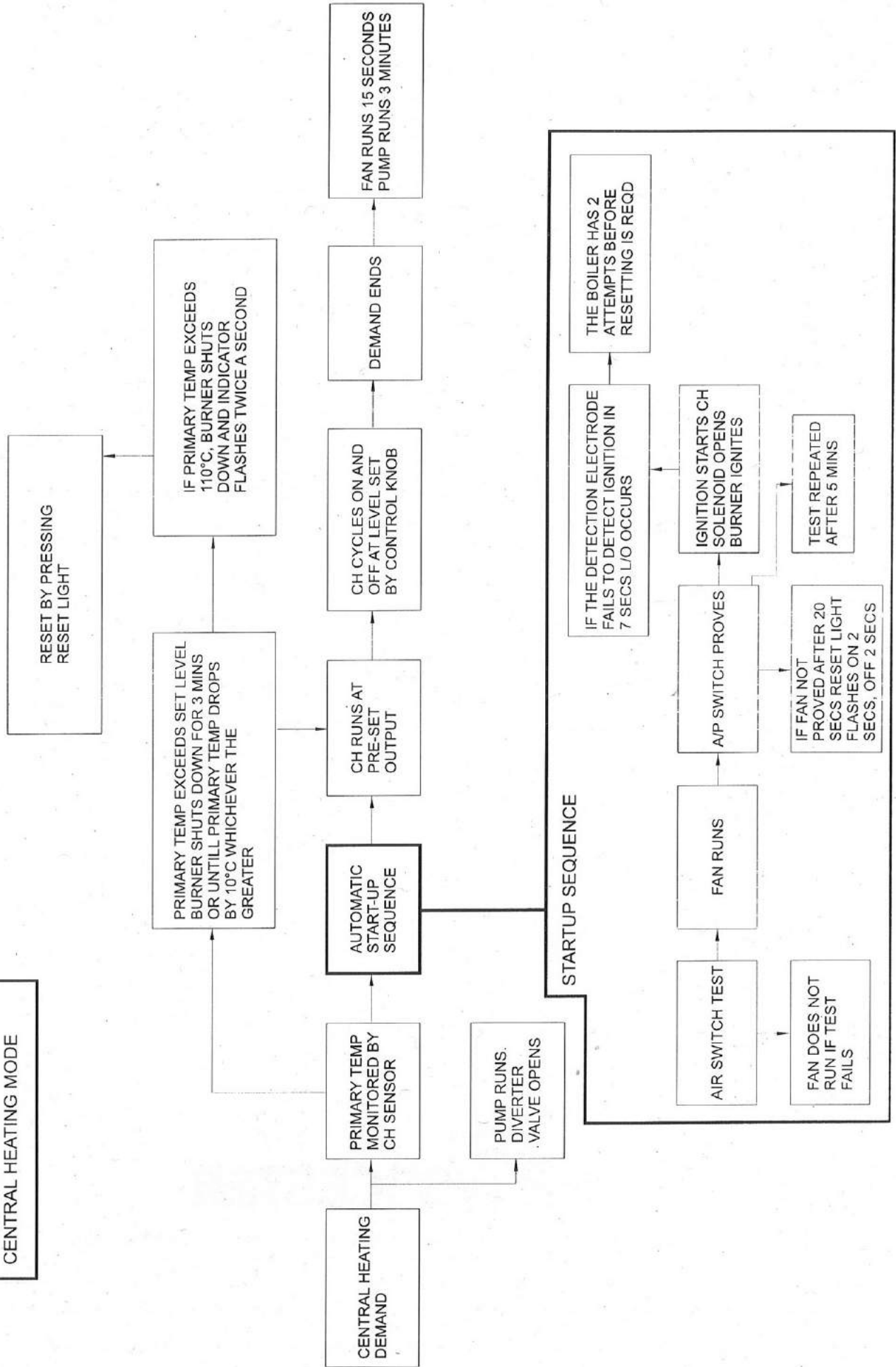
Fig. 28

18 Trouble Shooting Guide

Faults	Cause	Solutions
Limit Thermostat operation (Twice per second)	Low water in heating system. Seized circulating pump. Temperature sensor (NTC) is not correctly applied and positioned. Limit thermostat. Fuses. Damaged printed circuit board. Damaged circulating pump. Inadequate bypass.	Correct heating hot water pressure to 1.5 bar. Check for leakage. Remove sealing cap and release pump shaft. Turn the shaft with a screw driver. Operation must be carefully carried out as the pump has a ceramic shaft. Remount sensor (NTC) and place in correct position. Check connections and check thermostat for continuity, if open circuit replace thermostat. Check and if damaged, replace fuses. Replace circuit board. Check voltage (see table point 3) during burner operation. Replace if necessary. Check / adjust bypass.
No flame detection signal (once per second)	Gas supply. Ionisation or ignition lead not correctly connected. Damaged ionisation lead. Damaged ignition lead. Worn out electrodes (ionisation and ignition). Gas inlet valve cable is not correctly connected. Damaged gas inlet valve. Damaged printed circuit board.	Check that the gas cock is open. Check for correct gas inlet pressure. Check gas container (LPG appliances). Check connections. Measure ionization current (>1.5 Micro Amps) Check and change if necessary. Change worn out items. Check connections and if cable damaged, replace it. Check resistance of solenoid coil. If open circuit R=infinity or zero resistance (R=0) replace coil. Check voltage (see table point 5) if values are wrong, replace circuit board.
False flame detection (once every 2 seconds)	Damaged ionisation electrode. Moist printed circuit. Damaged printed circuit.	Change electrode. Dry circuit board. Change printed circuit board.
Air flow not detected (once every 4 seconds)	Blockage in flue or inlet duct. Pressure sensing tube not connected to air pressure switch. Air pressure sensing tube kinked. Damaged pressure sensing tube. Wiring to air pressure switch damaged or incorrectly connected. Flue ducts are too long. Incorrect restrictor fitted to fan inlet. Damaged air pressure switch. Damaged fan. Damaged printed circuit board.	Check and clear as required. Re-connect. Re-align tube. Replace as required. check connections or if damaged replace wiring. Check design of flue system and revise layout of system as required. Refer to table in section 10 (installation) and ensure that the correct size restrictor is fitted in relation to the flue system Check for continuity (fan switched off) if resistance is zero replace switch. Check wiring to fan motor, if correct change fan. Check voltages (see table points 3 and 4) if not correct, change printed circuit board.
Room temperature too low	Room thermostat is not correctly set. Boiler temperature control set too low. The boiler output rate is set too low for the heating load.	Check room thermostat adjustment. Adjust boiler temperature control. Recalculate the heating load and readjust the output rate as required (max. 20 kW).
DHW temperature too low	Insufficient inlet water pressure. Dirty taps or mixers. Water valve inlet filter blocked. Blocked water to water heat exchanger.	Check water pressure is 0.35 bar min. Clean taps. Clean or replace filter as required. Change heat exchanger.
Boiler will not start	Damaged fuses. Problem with mains supply. Damaged printed circuit board.	Check and replace as required. check voltage at mains supply and at points MP15 and MP16. Replace printed circuit board.
No ignition spark at the electrodes	Room 'stat set too low. Programmer set to wrong program. No mains supply. Damaged ignition electrode. Damaged ignition leads from ignition transformer. Damaged transformer. Damaged printed circuit board.	Select the temperature according to your needs. Program it correctly. See point (boiler will not start). Replace electrode. Replace ignition leads. Replace transformer. Replace printed circuit board.



**FUNCTIONAL FLOW DIAGRAM
80ic RSF
CENTRAL HEATING MODE**





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