



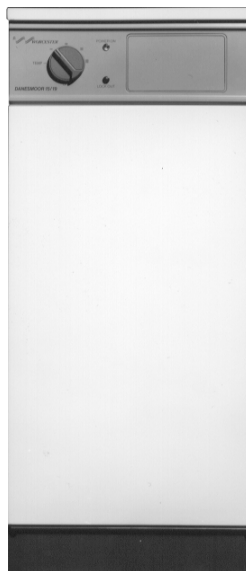
WORCESTER
Bosch Group

DANESMOOR

12/14, 15/19, 20/25, 26/32, 32/50, 50/70

CONVENTIONAL FLUE AND ROOM SEALED BF
FLOOR STANDING OIL-FIRED PRESSURE JET APPLIANCES

INSTALLATION AND SERVICING INSTRUCTIONS



BOILER OUTPUT

Hot Water and Central Heating

12/14 MINIMUM 12 kW (41,000 Btu/h)
MAXIMUM 14 kW (48,000 Btu/h)

15/19 MINIMUM 15 kW (51,000 Btu/h)
MAXIMUM 19 kW (65,000 Btu/h)

20/25 MINIMUM 20 kW (68,000 Btu/h)
MAXIMUM 25 kW (85,000 Btu/h)

26/32 MINIMUM 26 kW (89,000 Btu/h)
MAXIMUM 32 kW (109,000 Btu/h)

32/50 MINIMUM 32 kW (109,000 Btu/h)
MAXIMUM 50 kW (170,000 Btu/h)

50/70 MINIMUM 50 kW (170,000 Btu/h)
MAXIMUM 70 kW (239,000 Btu/h)

THESE INSTRUCTIONS APPLY TO UK MODELS ONLY

THESE INSTRUCTIONS ARE TO BE LEFT WITH THE APPLIANCE

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1. Installation Regulations

1.1 General installation information and advice may be obtained from the Oil Firing Technical Association for the Petroleum Industry (OFTEC). Training courses are also offered by OFTEC, leading to inclusion on their list of registered engineers.

1.2 The appliance should be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble free operation the appliance should be commissioned by a qualified engineer. OFTEC recommends the use of registered engineers for the commissioning of oil-fired burners.

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

1.4 The compliance with a British Standard does not, of itself, confer immunity from legal obligations. In particular the installation of this appliance must be in accordance with the relevant requirements of the following British Standards and regulations in respect of the safe installation of equipment.

BS 5410: part 1: 1997 Code of practice for Oil Fired Boilers.

BS 799: part 5: 1987 Specification for Oil Storage Tanks.

BS 7593: 1992 Code of Practice for treatment of water in domestic hot water central heating systems.

BS 5449: part 1: 1990 Code of practice for forced circulation hot water Central Heating for Domestic Premises.

BS 7074: part 1: 1989 Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.

BS 7671: IEE Wiring Regulations, current edition.

The Building Regulations Part J England and Wales; Part F Section III Scotland; Part L Northern Ireland.

Local water company bye-laws.

The Control of Pollution (Oil) Regulations.

1.5 To ensure that the installation will perform to the highest standards, the system and components should conform to those mentioned in the instructions.

2. General Information

2.1 These instructions cover both conventional flue (CF)/low-level discharge (LLD) and room sealed balanced flue (RS) appliances.

2.2 The Worcester Danesmoor range of appliances covered in these instructions has been designed to serve domestic central heating and hot water requirements ranging from 12 kW to 70 kW.

2.3 The RS balanced flue appliance forms a fully room sealed system by surrounding the burner with a unique, fully sealed, push fit box. This causes the combustion air to be drawn through a factory sealed air duct formed at the rear and underside of the boiler. The sealed burner cover gives excellent acoustic noise reduction and alleviates the need for an air brick to be located in the boiler room.

Because the balanced flue system does not rely on the cabinet panels to form the room seal, combustion readings can be taken from the flue outlet plate as on a conventional appliance, and the cabinet panels can be easily removed during installation thereby preventing any damage.

2.4 The boiler is factory set to the mid-range output and can be altered, if necessary, by adjusting the burner as specified in Tables 2 to 9. The low level discharge and room sealed 12/14, 15/19, 20/25 and 26/32 models are only suitable for use with 28 second Kerosene heating oil.

NOTE: It is a mandatory requirement of the building regulations that only 28 second kerosene is used on low level discharge flues.

2.5 The conventional flue 15/19, 20/25, 26/32, 32/50 and 50/70 models may be converted to burn 35 second gas oil by changing the nozzle and burner settings as specified in Tables 3,4,6,8 and 9.

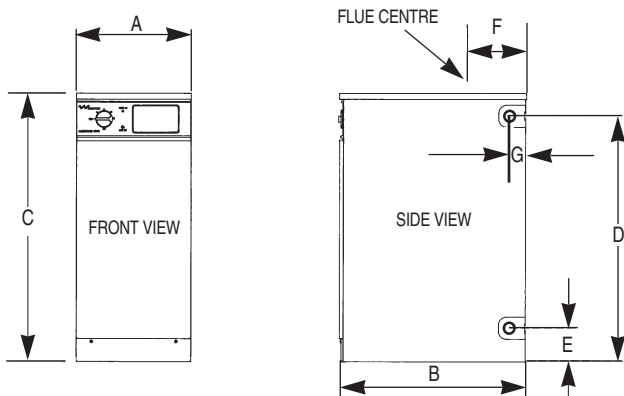
2.6 A colour coordinated twin channel programmer can be fitted to the appliance fascia panel. This is available from Worcester Heat Systems as an optional extra.

3. Technical Data

Table 1

SPECIFICATIONS							
Model	12/14	15/19	20/25	26/32	32/50	50/70	
POWER SUPPLY	230/240V 50 Hz	230/240V 50 Hz	230/240V 50 Hz	230/240V 50 Hz	230/240V 50 Hz	230/240V 50 Hz	
HEATING FLOW	1 in. BSP	1 in. BSP	1 in. BSP	1 1/4 in. BSP	1 1/2 in. BSP	1 1/2 in. BSP	
HEATING RETURN	1 in. BSP	1 in. BSP	1 in. BSP	1 1/4 in. BSP	1 1/2 in. BSP	1 1/2 in. BSP	
FUEL LINE	10mm Compression	10mm Compression	10mm Compression	10mm Compression	10mm Compression	10mm Compression	
MINIMUM FLUE REQUIREMENT	CF	100mm (4 in.) Class 2 Below 260°C	100mm (4 in.) Class 2 Below 260°C	100mm (4 in.) Class 2 Below 260°C	125mm (5 in.) Class 2 Below 260°C	125mm (5 in.) Class 1	150mm (6 in.) Class 1
	RS	Balanced Flue Kit Section 7.3	Balanced Flue Kit Section 7.3	Balanced Flue Kit Section 7.3	Balanced Flue Kit Section 7.3	N/A	N/A
HEARTH TEMPERATURE	Below 100°C	Below 100°C	Below 100°C	Below 100°C	Below 100°C	Below 100°C	
MAXIMUM STATIC HEAD	30m (98 ft.)	30m (98 ft.)	30m (98 ft.)	30m (98 ft.)	30m (98 ft.)	30m (98 ft.)	
PRIMARY WATER CAPACITY	20 litres (4.4 gal.)	20 litres (4.4 gal.)	23.5 litres (5.2 gal.)	29.1 litres (6.4 gal.)	44.3 litres (9.8 gal.)	54 litres (11.9 gal.)	
WEIGHT	CF	93 Kg (205 lbs)	96 Kg (212 lbs)	106 Kg (234 lbs)	138 Kg (306 lbs)	192Kg (421lbs)	244Kg (536lbs)
	RS	97 Kg (214 lbs)	100 Kg (220 lbs)	110 Kg (242 lbs)	142 Kg (313 lbs)	N/A	N/A
BURNER	Electro Oil Inter B9 A	Electro Oil Inter B9 B	Electro Oil Inter B11C	Electro Oil Sterling 40	Electro Oil Sterling 50	Electro Oil B20B	
WATER SIDE RESISTANCE 10°C Difference	7 mbar	8 mbar	18 mbar	35 mbar	66mbar	195mbar	
WATER SIDE RESISTANCE 20°C Difference	3 mbar	6 mbar	12 mbar	19 mbar	7mbar	10mbar	
EXIT FLUE GAS MASS FLOW	28 kg/hr	35 kg/hr	46 kg/hr	57 kg/hr	89 kg/hr	125 kg/hr	
CONTROL THERMOSTAT RANGE	55°C minimum cut in to 82°C maximum cut out						
CONTROL THERMOSTAT DIFFERENTIAL	5°C						
HIGH LIMIT THERMOSTAT BREAK POINT	100 + 0/ - 6°C						
MANUAL RESET THERMOSTAT BREAK POINT	110 + 0/ - 6°C						

Fig. 1. Principal Dimensions (All Dimensions are millimeters)



MODEL	A	B	C	D	E	F	G
12/14	370	600	855	780	110	92	56
15/19	370	600	855	780	110	92	56
20/25	370	600	855	780	110	92	56
26/32	520	600	855	775	110	92	56
32/50	520	775	997	917	110	120	56
50/70	520	935	997	917	110	160	56

12/14 Table 2. Electro Oil Inter B9A Burner (See Fig. 21)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.40 60°ES	135	1.11	1.41	195	9.5	8.0	13.5	46,000	12	41,000
28 Sec. Kerosene	0.50 60°ES	100	1.30	1.64	210	10.5	8.5	15.5	53,000	14	48,000

15/19 Table 3. Electro Oil Inter B9B Burner (See Fig. 21)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.50 60°ES	110	1.40	1.77	215	10.5	8.5	17	58,000	15	51,000
28 Sec. Kerosene	0.55 80°EH	100	1.59	2.01	225	10.5	8.75	19	65,000	17	58,000
28 Sec. Kerosene	0.60 60°ES	105	1.78	2.25	235	11.5	9.0	21.5	73,000	19	65,000
35 Sec. Gas Oil*	0.50 80°S	155	1.80	2.12	235	11.5	9.0	21.5	73,000	19	65,000

20/25 Table 4. Electro Oil Inter B11C Burner (See Fig. 22)

Conventional Flue Appliance (CF/LLD)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.60 80°EH	110	1.87	2.37	215	10.5	6.0	22.5	77,000	20	68,000
28 Sec. Kerosene	0.75 80°EH	115	2.10	2.66	225	10.5	7.0	25	86,000	22.5	77,000
28 Sec. Kerosene	0.75 80°EH	135	2.34	2.96	240	11.5	7.5	28	96,000	25	85,000
35 Sec. Gas Oil*	0.60 80°S	130	2.13	2.51	225	11.0	7.25	25	86,000	22.5	77,000
35 Sec. Gas Oil*	0.60 80°S	160	2.37	2.79	240	11.5	8.0	28	96,000	25	85,000

20/25 Table 5. Electro Oil Inter B11C Burner (See Fig. 22)

RS Balanced Flue Appliance

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.60 80°EH	110	1.87	2.37	215	10.5-11.0	6.0	22.5	77,000	20	68,000
28 Sec. Kerosene	0.75 80°EH	115	2.10	2.66	225	11.0-11.5	7.0	25	86,000	22.5	77,000
28 Sec. Kerosene	0.75 80°EH	135	2.34	2.96	240	11.5-12.0	7.5	28	96,000	25	85,000

26/32 Table 6. Electro Oil Sterling 40 Burner (See Fig. 23)

Conventional Flue Appliance (CF/LLD)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.85 80°EH	110	2.36	2.99	225	11.0-11.5	11	28.5	97,000	26	89,000
28 Sec. Kerosene	0.85 80°EH	145	2.66	3.37	240	11.0-11.5	12	32	109,000	29	99,000
28 Sec. Kerosene	1.00 80°EH	130	2.95	3.74	245	11.5-12.0	16	35.5	121,000	32	109,000
35 Sec. Gas Oil*	0.50 80°H	260	2.44	2.87	220	11.5-12.0	9	28.5	97,000	26	89,000
35 Sec. Gas Oil*	0.55 80°H	265	2.76	3.25	235	11.5-12.0	14	32	109,000	29	99,000
35 Sec. Gas Oil*	0.55 80°H	330	3.06	3.60	240	12.0-12.5	16	35.5	121,000	32	109,000

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene	0.85 80°EH	110	2.36	2.99	225	11.0-11.5	10	28.5	97,000	26	89,000
28 Sec. Kerosene	0.85 80°EH	130	2.66	3.37	240	11.0-11.5	15	32	109,000	29	99,000
28 Sec. Kerosene	1.00 80°EH	130	2.95	3.74	245	11.5-12.0	20	35.5	121,000	32	109,000

32/50 Table 8. Electro Oil Sterling 50 Burner (See Fig. 23)

Conventional Flue Appliance (CF)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene*	1.00 60°ES	130	2.90	3.67	185	11.5-12.0	7.50	35	119,000	32	109,000
28 Sec. Kerosene*	1.25 60°S	130	3.78	4.78	200	12.0-12.5	14.25	45	155,000	41	140,000
28 Sec. Kerosene*	1.65 60°S	115	4.64	5.87	230	12.0-12.5	23.50	56	191,000	50	171,000
35 Sec. Gas Oil*	0.65 80°S	185	2.95	3.47	190	11.0-11.5	8.75	35	119,000	32	109,000
35 Sec. Gas Oil*	0.85 60°S	200	3.83	4.51	205	11.0-11.5	17.00	45	155,000	41	140,000
35 Sec. Gas Oil*	1.10 60°S	185	4.71	5.54	235	12.0-12.5	25.00	56	191,000	50	171,000

50/70 Table 9. Electro Oil Inter B20B Burner (See Fig. 24)

Conventional Flue Appliance (CF)

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE											
Fuel	Nozzle ‡	Pump Pressure (p.s.i.) †	Fuel Flow Rate		Flue Gas Temp. (°C)**	%CO ₂	Approx. Air Setting	Appliance			
			Kg/h	l/h				Input		Output	
								kW	Btu/hr	kW	Btu/hr
28 Sec. Kerosene*	1.35 60°S	165	4.62	5.85	205	11.5-12.0	3	55.5	190,000	50	171,000
28 Sec. Kerosene*	1.75 60°S	155	5.55	7.03	225	12.0-12.5	4	67	229,000	60	205,000
~ 28 Sec. Kerosene*	2.00 60°S	145	6.47	8.19	235	12.0-12.5	4.5	78	268,000	70	239,000
35 Sec. Gas Oil*	1.00 60°S	240	4.69	5.52	205	11.0-11.5	3	55.5	190,000	50	171,000
35 Sec. Gas Oil*	1.35 60°S	180	5.63	6.62	225	12.0-12.5	4	67	229,000	60	205,000
~ 35 Sec. Gas Oil*	1.75 60°S	160	6.57	7.73	235	12.0-12.5	4.5	78	268,000	70	239,000

* NOTE: For use on conventional flue only.

** NOTE: The flue gas temperature is measured in the gas sampling hole on the flue outlet plate. The probe should be inserted to a depth of 50mm and angled towards the flue outlet. The temperature measured is not an absolute flue gas temperature and is for general guidance purposes only!

† NOTE: The pump pressure given is for general guidance only as variations in nozzle output can be up to ± 15%. It is, therefore, essential that the air is adjusted to give the correct CO₂ value.

‡ NOTE: The nozzle type used on 28 Sec. Kerosene outputs are nozzles calibrated specifically for use with 28 Sec. Kerosene which gives less variation in nozzle output than the standard 35 Sec. Gas Oil nozzles. However, if a 28 Sec. Kerosene nozzle is not available at servicing or commissioning it is appropriate to install a 35 Sec. Gas Oil nozzle providing the output, spray angle and pattern of the nozzle is the same as the 28 Sec. Kerosene nozzle (e.g. 0.75 80°EH may be replaced with a 0.75 80°H).

~ NOTE: At 70kW the air guide should be removed (See Fig. 24)

4. Siting the Appliance

4.1 The appliance is not suitable for external installation unless a suitable enclosure is provided.

4.2 The appliance should be positioned on a non-combustible solid base as near to the flue location point as possible. Care should be taken to ensure that the appliance is level; use packing at the corners where necessary.

4.3 When fitting a LLD or RS model, the rear of the appliance must be positioned against an external wall such that the flue terminal can safely discharge the flue gases as described in Section 7.

4.4 The following clearances must be left to allow access for installation and servicing:

- (a) Above 300mm
- (b) In front - 600mm
- (c) Right and left hand side – sufficient for panel removal and access to pipe connections where required.

5. Removal of the Cabinet

See Figs. 2 and 3.

For installation and servicing of the appliance the cabinet should be removed as follows:

5.1 Remove the cabinet top panel by lifting squarely upwards to release the four ball stud connections.

5.2 Remove the front panel by pulling the bottom of the panel forwards to release the ball studs and lifting the panel upwards and forwards to release from its supporting ledge.

5.3 The side panels are removed by firstly following procedures 5.1 to 5.2 as described above, then remove screw (A) from the side panel base and the three screws located in the upper flange of each side panel. Ease the panel clear of the electrical control box and slide forwards to release from the locating lugs on the base plate.

5.4 The control box can be removed by undoing the four screws in the top access cover and then removing the wing nut on the underside of the control box. The thermostat phials should be carefully removed from the phial pocket and the control box placed in a safe place taking care not to kink the thermostat capillary tubes.

5.5 On the RS balanced flue model, remove the burner box cover by pulling forwards to release the ball studs. This will be found easier by pulling on one side of the handle first to release two of the ball studs and then repeating on the other side. Take care not to pivot the remaining two ball studs too far around as this will cause damage to the spring clips.

6. Air Supply

OPEN FLUE MODEL (CF/LLD)

This includes conventional flue and standard low level and high level horizontal discharge kits.

6.1 In order to ensure clean and efficient combustion an adequate supply of air must be delivered to the combustion chamber. To provide sufficient air a suitable inlet should be provided into the room or space in which the boiler is situated, the sizes of which are given in Table 10. An air brick or other form of continuous air supply may have to be built into the installation in order to ensure an adequate supply of air.

6.2 If the appliance is to be installed in a confined space or compartment two air vents are required, one at high level and one at low level. The minimum free area of each vent is given in Table 11 and depends whether the air is taken from another room or

from outside the building. Where the air is taken from another room that room must contain an air inlet as described in 6.1.

6.3 There must be sufficient clearance around the appliance to allow proper circulation of ventilation air. The clearances required for installation and servicing will normally be adequate for ventilation. See Section 4.4.

ROOM SEALED BALANCED FLUE MODEL (RS)

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

6.5 Installation in cupboards or compartments require permanent vents for cooling purposes, 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. The minimum air vent free area is given in Table 12.

6.6 There must be sufficient clearance around the appliance to allow proper circulation of ventilation air. The clearances required for Installation and Servicing will normally be adequate for ventilation. See Section 4.4.

Table 10. Minimum Combustion Air Inlet Free Area for Open Flue appliances

APPLIANCE	AREA OF AIR INLET	
	cm ²	in. ²
12/14	77	12
15/19	105	16.5
20/25	138	21.5
26/32	176	27.5
32/50	275	43
50/70	385	60

Table 11. Minimum Air Vent Free Area for Open Flue appliances installed in a compartment.

Appliance model	Ventilation to room or internal space		Ventilation to outside	
	High Level	Low Level	High Level	Low Level
12/14	154cm ²	231cm ²	77cm ²	154cm ²
15/19	209cm ²	314cm ²	105cm ²	209cm ²
20/25	275cm ²	413cm ²	138cm ²	275cm ²
26/32	352cm ²	528cm ²	176cm ²	352cm ²
32/50	550cm ²	825cm ²	275cm ²	550cm ²
50/70	770cm ²	1155cm ²	385cm ²	770cm ²

Table 12. Minimum Air Vent Free Area for Room Sealed appliances installed in a compartment.

Appliance model	Ventilation to room or internal space		Ventilation to outside	
	High Level	Low Level	High Level	Low Level
12/14	154cm ²	154cm ²	77cm ²	77cm ²
15/19	209cm ²	209cm ²	105cm ²	105cm ²
20/25	275cm ²	275cm ²	138cm ²	138cm ²
26/32	352cm ²	352cm ²	176cm ²	176cm ²

Fig. 2. Conventional Flue Appliance (CF/LLD).

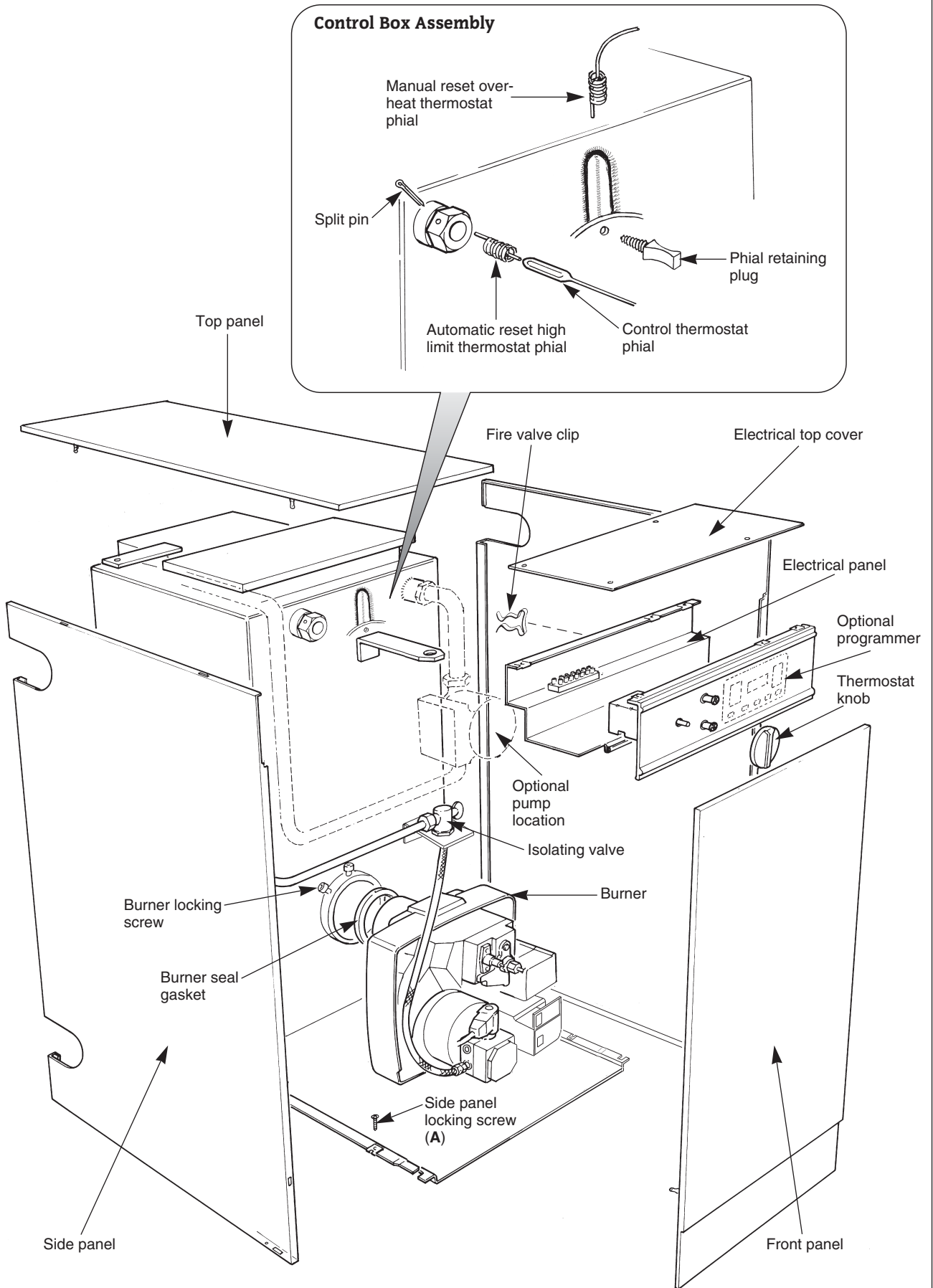
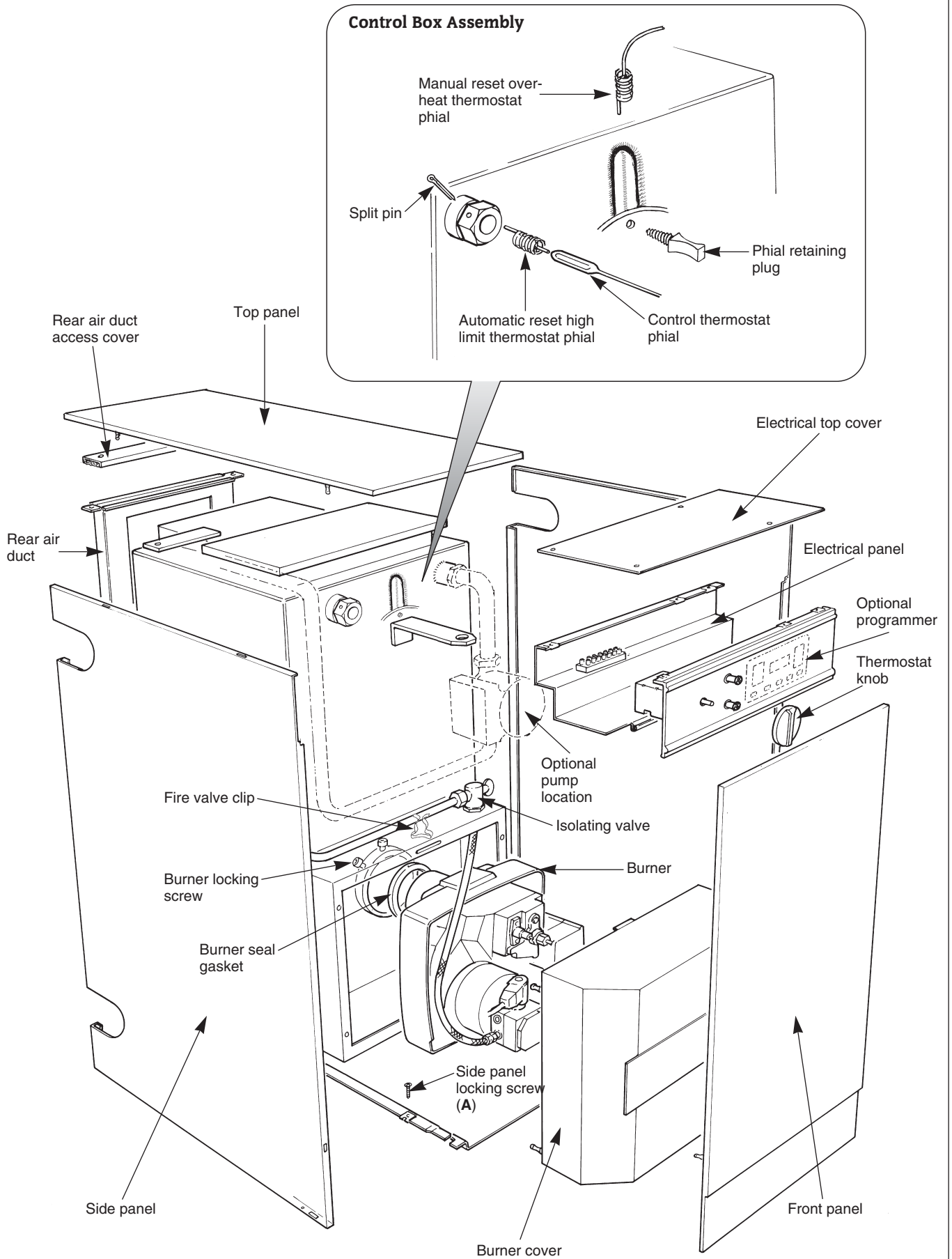


Fig. 3. Room Sealed Balanced Flue Appliance (RS).



7. Flue System

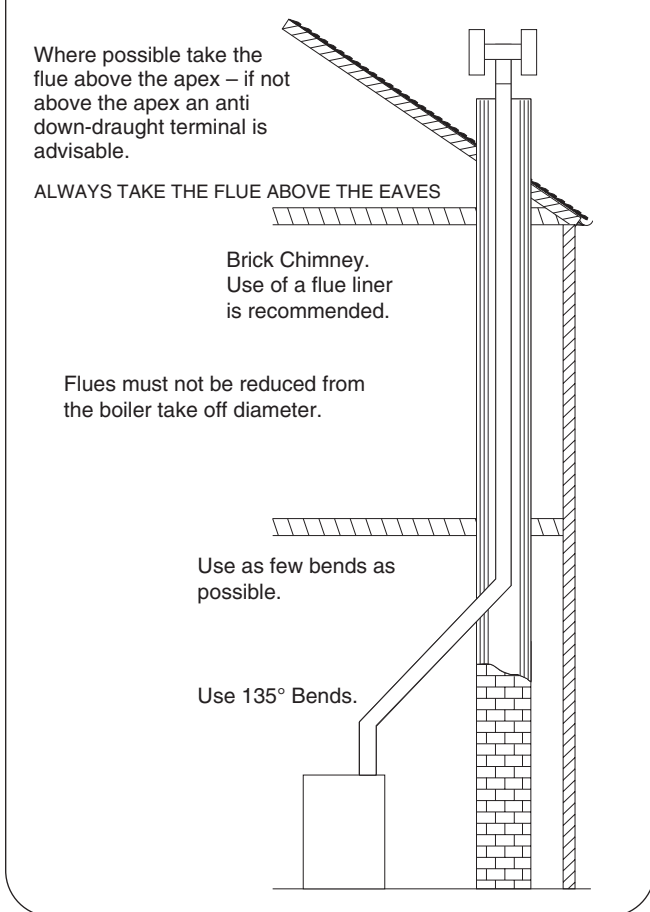
A flue system must be provided in accordance with BS5410:Part 1 and the Building Regulations, Part J, Section J2.

7.1 CONVENTIONAL FLUE (CF).

See Fig. 4.

Conventional Flue Diameters: 12/14 – 100 mm (4 in.)
 15/19 – 100 mm (4 in.)
 20/25 – 100 mm (4 in.)
 26/32 – 125 mm (5 in.)
 32/50 – 125 mm (5 in.)
 50/70 – 150 mm (6 in.)

Fig. 4. Flue Installation.



The boiler is fitted with a conventional flue locating spigot. The flue pipe fits into the spigot and should be correctly sealed with fire cement.

NOTE: The size of the flue must never be reduced from the take-off diameter. An increase in flue size is permissible provided that the joint is sealed correctly.

When installed the flue should be vertical and contain as few bends as possible. Where bends are necessary, a maximum of two are permitted and 135 degree bends should be used.

All brick and masonry chimneys should be lined with a suitable non-combustible material, properly jointed and able to withstand the effects of the working temperature of the appliance and any condensate which may form.

Down-draught conditions will adversely affect the operation of the boiler and must be avoided. Where possible the flue should be extended beyond the apex of the roof and should always be taken beyond the eaves of the building. Where down-draught is experienced a suitable anti down-draught terminal should be fitted to the flue termination.

The natural flue draught must be checked in the flue pipe immediately above the appliance or in the hole provided in the flue outlet plate. The flue draught should be no less than 0.75 mm W.g. and no greater than 5.1 mm W.g. If a flue draught greater

than 5.1 mm W.g. is experienced a draught stabiliser should be introduced into the flue and adjusted to achieve a flue draught within the specified range.

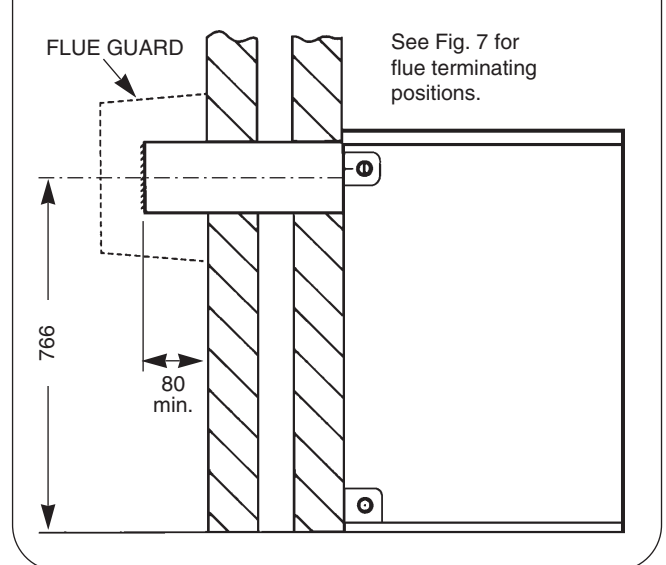
7.2 Low Level Discharge

(See Fig. 5).

The conventional flue appliance may be converted to discharge the products of combustion at low level. For this purpose a special flueless kit and associated ducting is available, allowing the conventional flue to be discarded. Detailed instructions for converting the appliance to low level discharge are supplied with the conversion kit. The flue spigot should be removed from the flue outlet plate by undoing the three retaining screws and the hole blanked off with the plate provided in the kit.

NOTE: Under no circumstances may 35 Second Gas Oil be burned with this type of flue terminal arrangement.

Fig. 5. Flue Installation (Rear Discharge).



7.3 ROOM SEALED BALANCED FLUE MODEL (RS).

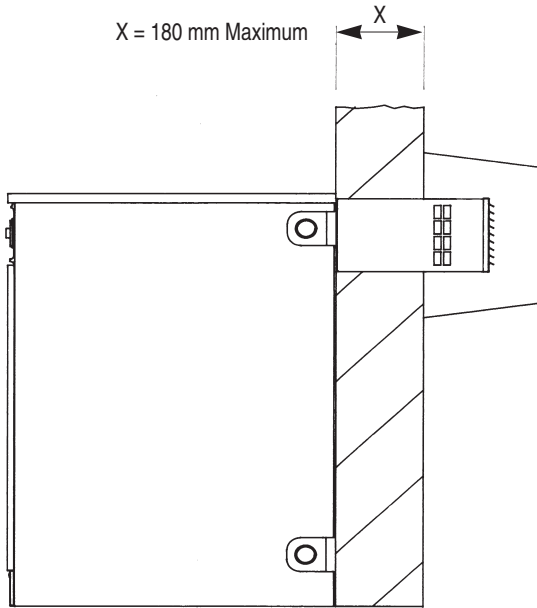
The appliance is supplied ready for installation as a low level discharge balanced flue system by the simple addition of one of the flue terminal kit options shown in Fig. 6.

Details of the installation procedure are included in the Flue Terminal Instructions supplied with the terminal kit. Alternatively, a range of room sealed balanced flue kits are available to convert the appliance to discharge the flue products to the left, right, at a higher level, or vertically up to a roof height of 4.5 metres.

7.4 Siting the flue terminal

1. The flue terminal must be located in a suitable position, as shown in Fig. 7, such that the products of combustion can be freely dispersed without the possibility of the gases entering the dwelling or that of a neighbouring dwelling.
2. Discharge of flue gases into car ports or narrow passageways is not recommended.
3. The terminal must not cause an obstruction nor the discharge cause a nuisance as a result of either flue gases or terminal noise.
4. If the terminal is fitted within 1 m of a plastic or painted gutter or within 500 mm of painted eaves then an aluminium or stainless steel shield at least 1 m long should be fitted to protect the surface.
5. If a terminal is fitted less than 2 metres above a surface to which people have access, fit a terminal guard as shown in Fig. 8. A suitable guard is available from Worcester Heat Systems, Part Number 7 716 190 009, or alternatively a proprietary terminal guard may be used provided it has the minimum dimensions shown in Fig. 8. The guard should have suitable corrosion resistance due to the acidic content of the flue gases.

Fig. 6. Room Sealed Balanced Flue Terminal Installation.

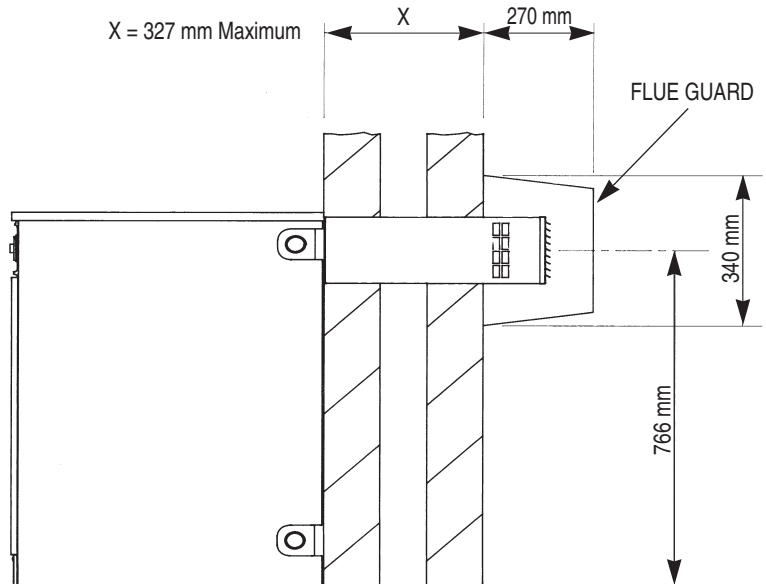


(a) Rear Discharge 4" to 7" Single Skin Wall.

For use with non-standard/single skin walls up to 182 mm thick. Where noise emission from the flue terminal is likely to be of concern, it is recommended that the standard 12 in. terminal is used and the appliance stood away from the wall to take up the extra terminal body length.

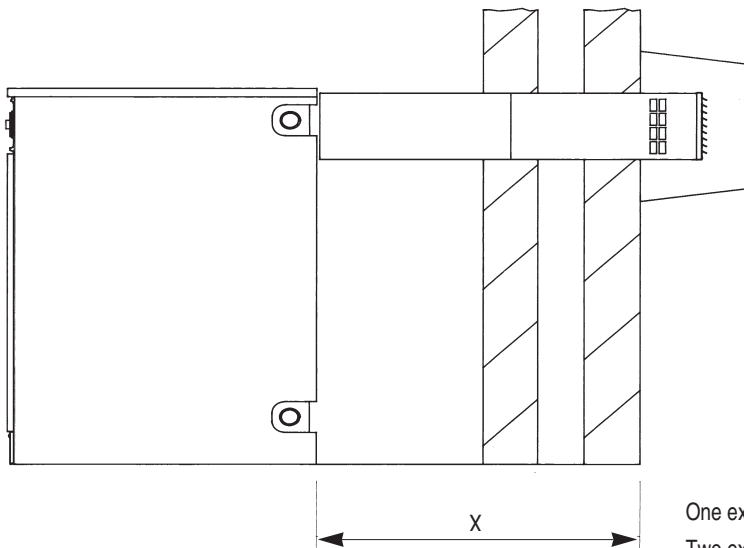
(b) Rear Discharge 7" to 12" Wall.

For use in standard cavity walls and solid walls up to 327 mm thick. This terminal offers maximum noise reduction of the flue gases. This terminal is designed for use with the extension kit.



(c) Rear Discharge Extension Kit 12" to 36" Wall.

For use where the wall thickness exceeds 327 mm or where the appliance is to be stood away from the wall as shown. The system uses a standard 12 in. RS Flue Terminal and up to two extension kits, which simply bolt together.



One extension kit – X = 638 mm Maximum
Two extension kits – X = 952 mm Maximum

- 6. The terminal guard must be evenly spaced about the flue terminal and secured using screws so that the terminal guard can be removed for maintenance to the flue terminal..
- 7. In certain weather conditions a terminal may steam and siting where this could cause a nuisance should be avoided.
- 8. Take care to ensure that combustion products do not enter ventilated roof voids.

Fig. 8. Terminal guard Minimum dimensions.

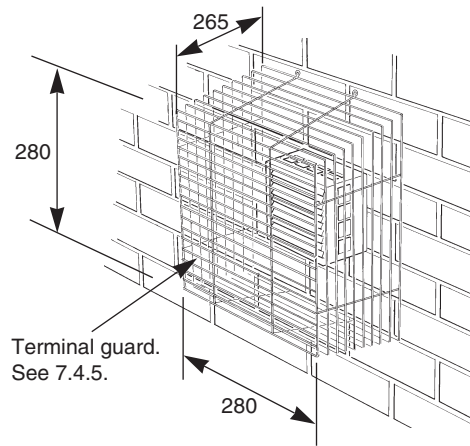
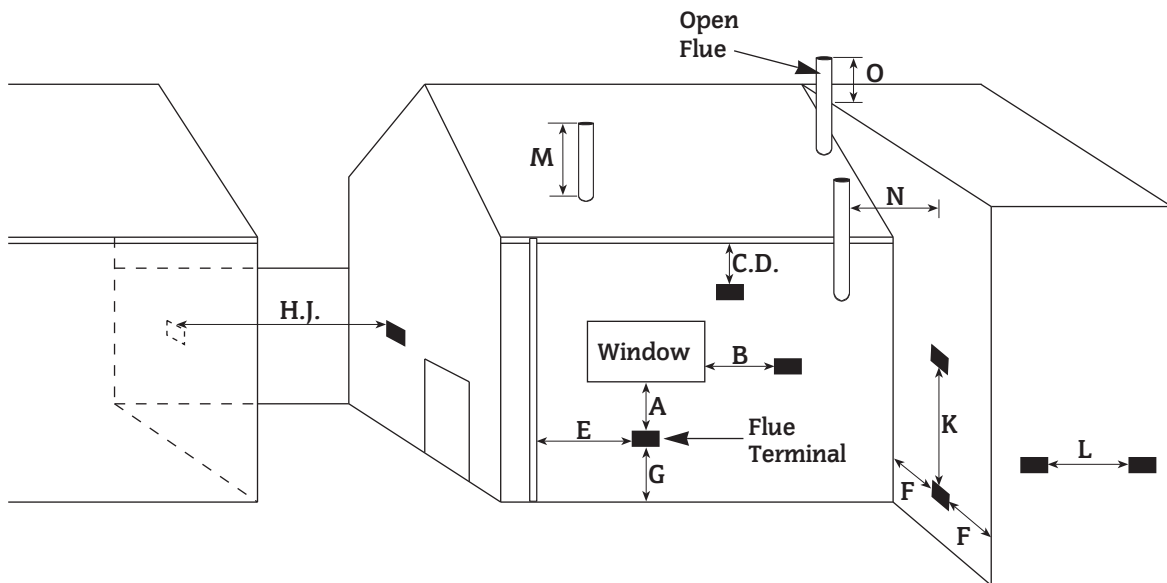


Fig. 7. Flue terminating positions for oil-fired appliances

NOTE: The dimensions given are for general guidance only. Other surrounding buildings or objects may affect the clearance of combustion products. An alternative flue terminal position should be sought when there is any possibility of a nuisance being caused by inadequate dispersal of flue products. Terminals should be positioned so as to avoid products of combustion entering into buildings.



Terminal Position	Minimum Distance (mm)	
	Open Flue	Low-Level Discharge
A Directly below an opening, air brick, window, etc.	Not allowed	600
B Horizontally to an opening, air brick, window, etc.	Not allowed	600
C Below a gutter or sanitary pipe	Not allowed	75
D Below eaves or a balcony	Not allowed	600
E From vertical sanitary pipework	Not allowed	75
F From an internal or external corner.....	Not allowed	300
G Above ground or balcony level	Not allowed	300
H From a surface facing the terminal	Not allowed	600
J From a terminal facing the terminal.....	Not allowed	1200
K Vertically from a terminal on the same wall	Not allowed	1500
L Horizontally from a terminal on the same wall	Not allowed	300
M Above an intersection with the roof	600	Not applicable
N From a vertical structure on the side of the terminal	600	Not applicable
O Above a vertical structure less than 750 mm from the side of the terminal.....	600	Not applicable

8. Oil Supply

(See Figs. 9, 10 and 11).

8.1 The oil storage tank must be installed in accordance with BS799 Part 5. The tank should be arranged with a slope of 1 in 24 away from the outlet valve with a sludge cock at its lower end.

8.2 Do not use galvanised steel tanks or pipework for the oil supply system.

8.3 Do not use soldered joints on the oil supply pipework as this could cause a hazard in the case of a fire.

8.4 The burners on all appliances are supplied so as to be connected to a single pipe gravity feed system. Details of how to convert the burners to a double-pipe sub-gravity feed system are shown in Fig. 9.

8.5 If a single pipe system is employed then the tank must be positioned such that the oil level does not exceed 4 metres above the level of the burner oil pump and in addition the oil level must be at least 0.3 metres above the level of the oil pump. Should it prove impossible to site the tank below the 4 metres maximum oil level a head breaking device must be installed between the tank and the burner.

8.6 If a double pipe system is used then the maximum suction height allowable is 3.5 metres.

8.7 The oil supply pipe diameter can be determined using Tables 13 and 14 depending on whether a single or double pipe system is being installed. Selection of the correct pipe diameter will depend on the position of the oil storage tank relative to the burner and the length of the pipe run.

8.8 The oil supply pipe should be laid as level as possible to avoid air pockets and unnecessary friction losses.

8.9 The following components should be fitted in the fuel line between the storage tank and burner:

1. A manual isolating valve installed as close to the tank as possible.

2. A fire valve in accordance with BS799: Part 2 as shown in Fig. 10. The fire valve should be fitted externally with a fire detection element located within the appliance case. Use of a capillary type valve will allow a neat and simple installation. A suitable valve is the KBB manufactured by Teddington Controls Limited. A spring clip has been provided behind the electrical panel on CF/LLD models, shown in Fig. 2, and on the burner box on RS models, shown in Fig. 3, to allow a fire valve element to be mounted. Alternatively a fusible link or electrical system may be used. Under no circumstances should a combination isolating/fire valve be used as the sole fire protection device.

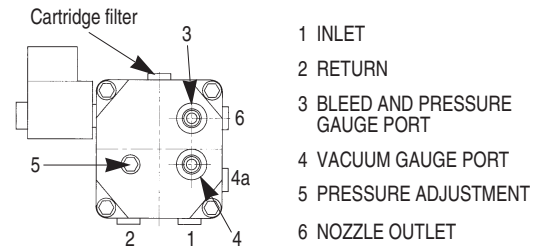
3. A paper element filter complying with the requirements of BS799, Parts 2, 3 and 4 should be fitted in the fuel line between the fire valve and the isolating valve but not within the appliance casing.

TABLE 13 Single Pipe Gravity Feed System

HEAD (metres)	MAXIMUM ALLOWABLE PIPE RUN (metres)	
	8 mm inside dia. pipe (10 mm O.D. copper)	10 mm inside dia. pipe (12 mm O.D. copper)
0.5	10	20
1.0	20	40
1.5	40	80
2.0	60	100

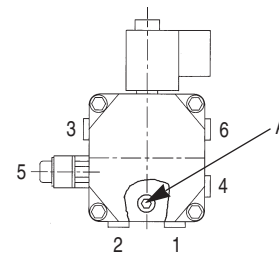
Fig. 9. Oil Pump.

A. Danfoss BFP 41.



To convert to a double pipe system, remove plug 4a and insert the grub screw provided into the threaded hole. Connect flow and return pipes to (1) and (2).

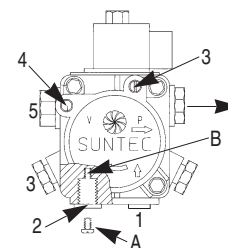
B. Danfoss BFP 11 Oil Pump.



To convert to a double pipe system: Remove the pump front cover, remove the changeover screw (A) nearest to ports 1 and 2, and the horseshoe washer underneath. Replace the changeover screw back into the threaded hole. Connect the flow and return pipes to 1 and 2.

Note: When removing the pump front cover ensure that a suitable receptacle is placed below the pump to catch the oil residue.

C. Suntec AS47C Oil Pump.



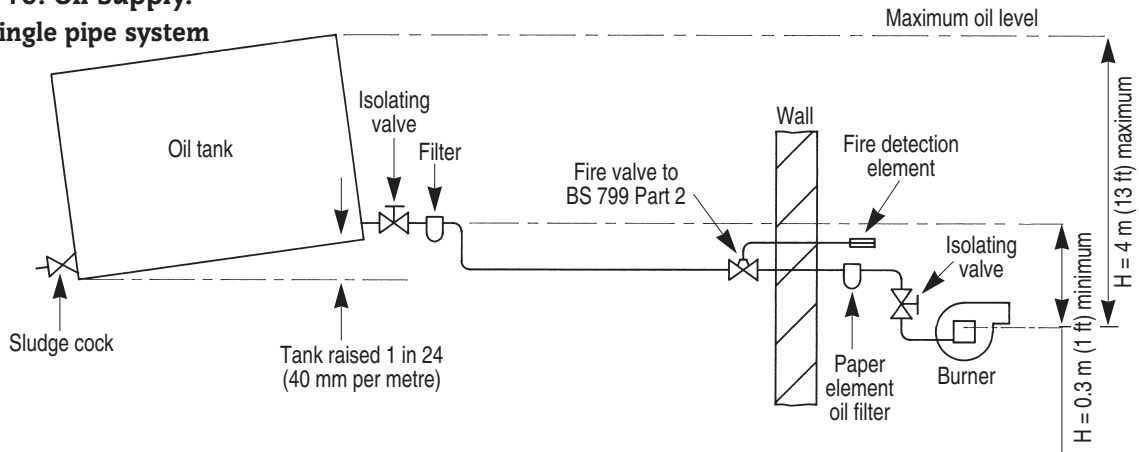
To convert to a double pipe system, remove the return port plug (2) and insert the grub screw (A) provided into the threaded hole (B). Connect flow and return pipes to (1) and (2).

TABLE 14 Double Pipe Sub-Gravity Feed System

HEAD (metres)	MAXIMUM ALLOWABLE PIPE RUN (metres)	
	8 mm inside dia. pipe (10 mm O.D. copper)	10 mm inside dia. pipe (12 mm O.D. copper)
0	35	100
0.5	30	100
1.0	25	100
1.5	20	85
2.0	15	70
2.5	11	50
3.0	8	30
3.5	6	20

Fig. 10. Oil Supply.

(a) Single pipe system



(b) Double pipe system.

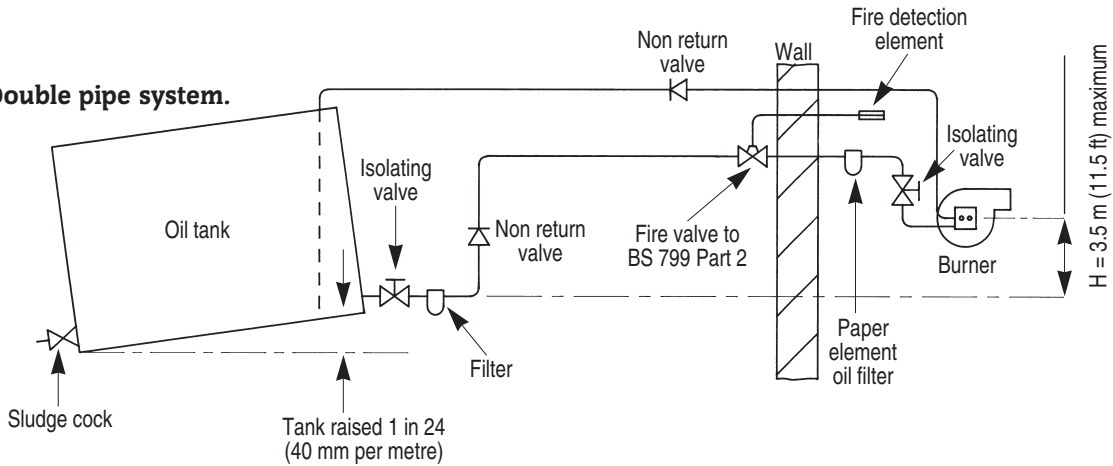
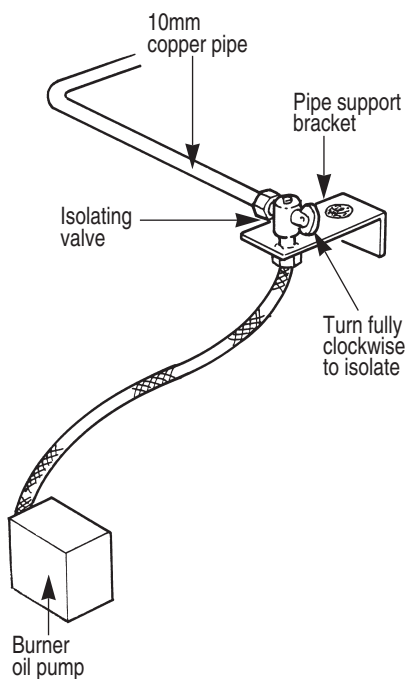


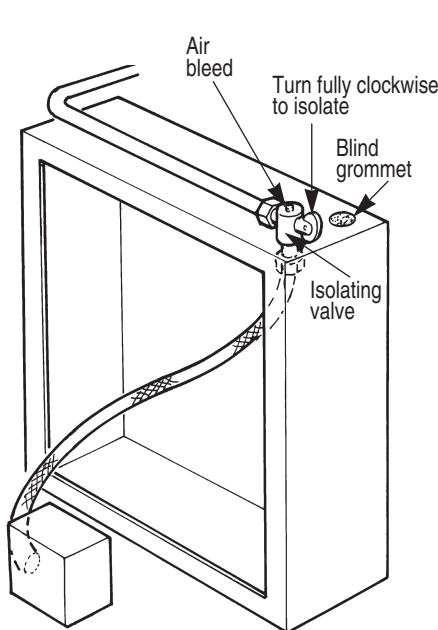
Fig. 11. Oil Pipe Installation.

(a) CF Bracket.



CF Appliance

(b) Single Pipe System.



RS Appliance

(c) Double Pipe System.

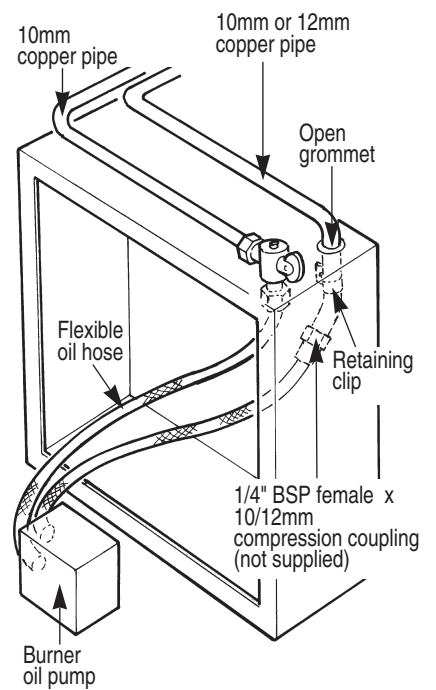


Fig. 12. Typical Open Vent Gravity Primary System.

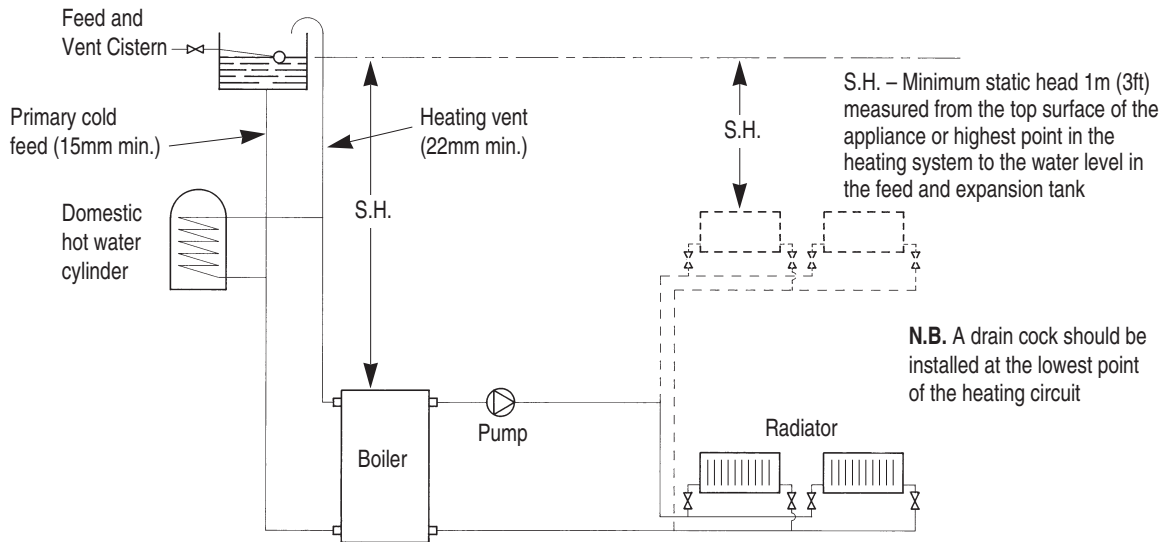
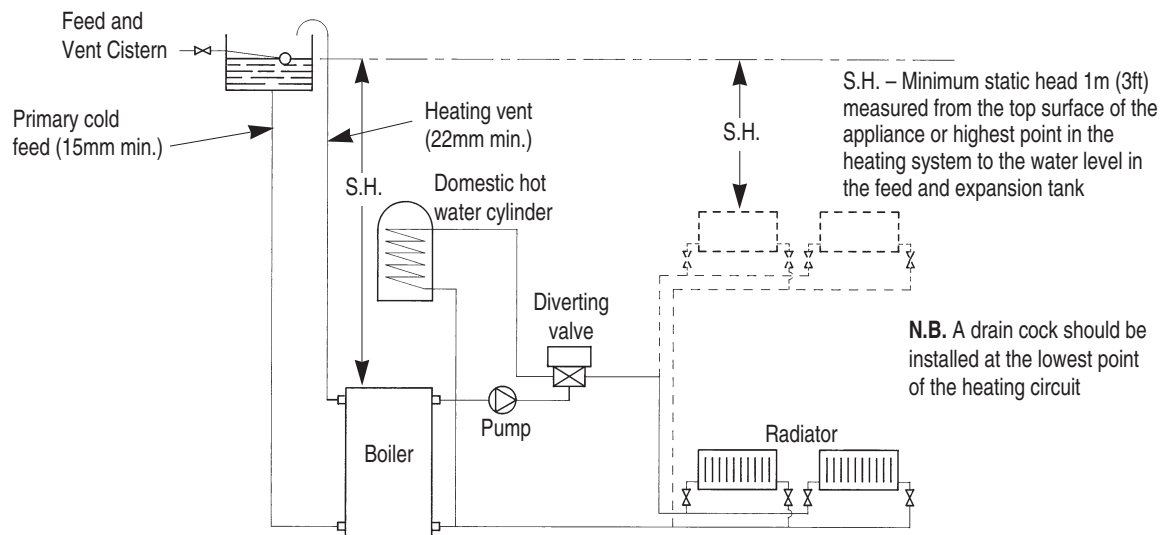


Fig. 13. Typical Open Vent Fully Pumped System (Honeywell 'Y' plan).



9. Heating and Hot Water System

9.1 The appliance is suitable for connection to all conventional indirect hot water systems utilising an indirect double feed cylinder.

9.2 The flow and return sockets are located at the rear of the appliance, two at high level (flow) and two at low level (return). Connection of the flow and return sockets can either be made on diagonally opposite sockets or on the same side of the boiler.

9.3 Provision has been made for locating the circulating pump within the appliance cabinet. If so required, the socket located in the top front of the boiler should be used and the flow pipe run either side of the boiler (See Figs. 2 and 3).

9.4 There is no requirement for a system bypass.

9.5 The pressure jet burner fitted to the appliance has full automatic control and hence there is no requirement for heat leak radiators.

9.6 Any unused boiler tappings should be plugged prior to filling. It should be noted that the flow tapping on the front of the boiler requires plugging when not used.

9.7 The primary system should be flushed and treated in accordance with the recommendations of BS 7593:1992 before the system is handed over to the user.

9.8 The pump should be set in accordance with the heating load requirements to give a flow and return differential temperature of 11°C under full load conditions.

Open Vent Primary System.

(See Figs. 12 and 13).

The following points are for guidance only. The system installation should be carried out in accordance with BS 5449: Part 1.

1. Feed and Expansion System

The feed and expansion pipes must rise continuously from the appliance and must be of the minimum diameter shown in Figs 12 and 13.

The cistern must be arranged to provide a minimum static head of 1 metre above the top of the highest point in the heating circuit.

2. Filling and Venting

Air in the appliance is expelled through the vent pipe or dissipated into the system. Manual air vents should be fitted at any high points in the system.

Sealed Primary System

The appliance is supplied with a manual reset thermostat and is suitable for use with a sealed primary system.

General

The system should be installed in compliance with the requirements of BS5449: Part 1. The boiler must be fitted with a spring loaded safety valve set to operate at 3 bar (45 psi) and the pipe connections made throughout the system must be capable of sustaining a pressure of up to 3 bar.

The following is a list of major items which must be fitted to the system:

1. Safety valve – 3 bar
2. Pressure gauge – 0 to 4 bar.
3. Expansion vessel
4. Automatic air vent.

10. Electrical

(See Figs. 14 to 20).

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

10.2 To gain access to the electrical terminal strip.

1. Isolate the mains electrical supply.
2. Remove the cabinet top panel by snatching squarely upwards.
3. Release the four screws securing the cover of the electrical control box and remove.

10.3 Mains Wiring

Mains supply – 230/240 V AC ~ 50 Hz 5A External Fuse.

LIVE - Brown, NEUTRAL - Blue, EARTH - Green/Yellow

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

The method of connection to the appliance must allow complete isolation of the appliance, preferably via a double pole isolator with a contact separation of 3 mm in all poles supplying the boiler and controls only.

The mains supply cable should be connected into the terminals marked **L** (Live), **N** (Neutral) and **E** (Earth) on the appliance terminal strip and securely held in the cable clamp located in the left-hand side of the electrical tray base. To secure the cable, remove the clamp retaining screw and pull its inner body out to allow the cable to be fed through. With the cable in position refit the screw and fully tighten to grip the cable. Feed the cable between the side panel and the boiler insulation jacket and route to the connection point avoiding any hot surfaces.

The appliance must be earthed.

10.4 Programmer

(See Fig. 15).

A plug in, colour co-ordinated, 2 channel electronic programmer is available from Worcester Heat Systems Limited. Full instructions covering installation and operation of the programmer are included with the kit. (See Fig. 15a)

The programmer will give fully independent central heating (CH) and hot water (HW) programmes when the switch on the rear of the unit is set to P.

Where the appliance is used on a gravity feed system the system will only function correctly on heating if the programmer switches the hot water programme on at the same time. To ensure that this is always the case the programmer is supplied with a gravity system switch on the rear of the unit which must be set to G.

If an external programmer is to be fitted to the boiler the link plug should be removed from the programmer terminal strip. (See Fig. 15b). The LIVE, NEUTRAL and EARTH wires should be connected to the LIVE, NEUTRAL and EARTH terminals on the main terminal strip and the switched lines connected to terminals 1 and 2. Alternatively, the LIVE, NEUTRAL and EARTH from the programmer may be connected to a separate live supply with the switched lines again connected to terminals 1 and 2. With this method it is important that the user is warned that both the boiler supply and the programmer supply must be switched off before the electrical cover is removed.

Note: The mains supply cable should not be connected to an external time switch when a frost thermostat or low-level discharge post purge unit is fitted to the Danesmoor standard wiring block.

10.5 Safety Check

In the event of an electrical fault after the installation of the appliance, the electrical system shall be checked for short circuits, fuse failure or incorrect polarity of connections.

10.6 Basic Control (Room Thermostat)

(See Fig. 16).

As supplied the boiler will give a gravity hot water output when HW is selected or a pumped heating circuit and gravity hot water supply when CH and HW is selected. The hot water and central heating temperature is controlled by the boiler control thermostat. Additional control may be obtained by the use of a room thermostat, having removed the link from terminal 2 to 4.

10.7 Off On No Demand (Room and Cylinder Thermostat)

(See Fig. 17).

This control system allows the boiler to cool when both the cylinder and room thermostats are de-energised. The boiler control thermostat must be set to a temperature above that of the cylinder thermostat for the control system to function correctly.

10.8 Honeywell “S” Plan

(See Fig. 18).

The “S” plan provides complete control on installations having pumped circulation to both the domestic hot water and radiator circuits.

The domestic hot water and radiator circuits are independently controlled by two motorised valves via a cylinder thermostat and a room thermostat. Both thermostats switch the water circulator and the boiler on and off.

10.9 Honeywell “Y” Plan

(See Fig. 19).

The “Y” Plan provides complete control on installations having pumped circulation to both the domestic hot water cylinder and radiator circuits.

The domestic hot water and radiator circuits are controlled by a 3 port motorised valve via a cylinder thermostat and a room thermostat. Water flow is diverted to either circuit or to both circuits at the same time. Both thermostats switch the water circulator and the boiler on and off.

Note: The “Y” plan requires a live feed from the hot water “off” switch position. In order to achieve this, using a WHS programmer, remove the orange wire from terminal 9 and pull back through the tie wraps. Do not attempt to cut the tie wraps. Ensure that the brown wire is firmly secured in terminal 9. Connect the orange wire to terminal 6.

10.10 Frost Protection

(See Fig. 20).

For full frost protection a single pole double switch thermostat should be fitted so that both the boiler and the circulating pump circuits are energised under frost conditions. A suitable frost thermostat is manufactured by SOPAC Ltd.

Fig. 14. Wiring Diagram (Standard).

Mains supply 230/240V 50Hz

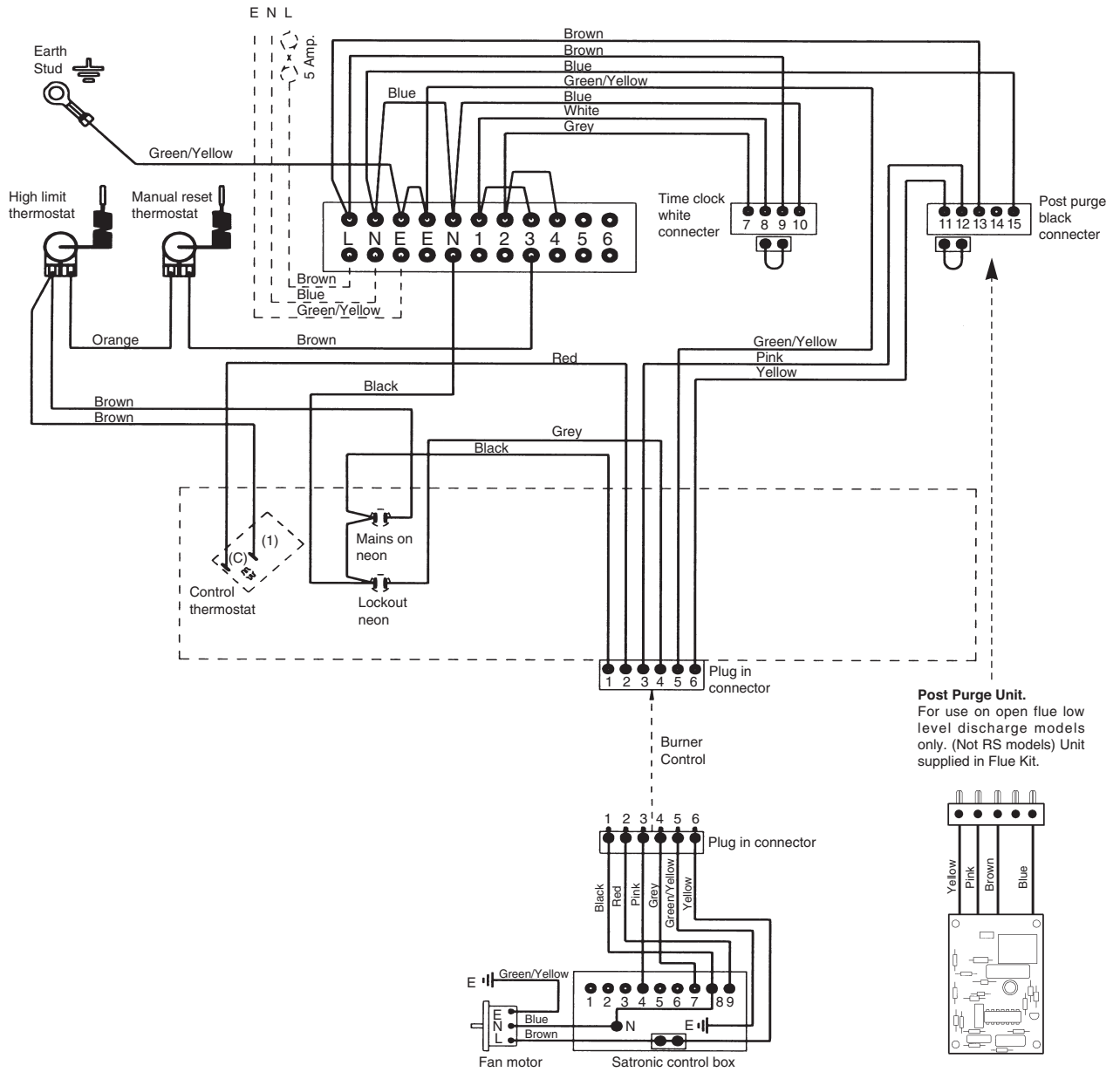
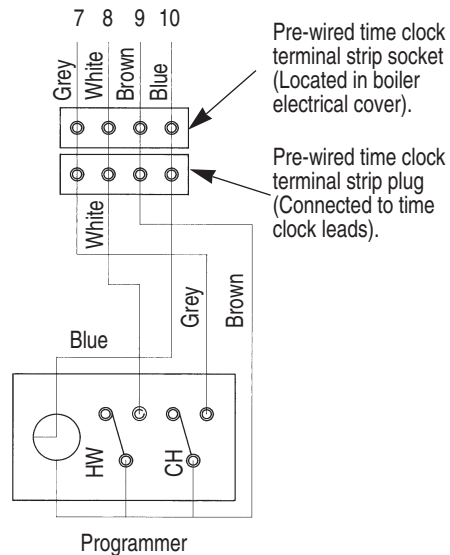


Fig. 15. Programmer Connections.

(a) Internal Programmer



(b) External Programmer

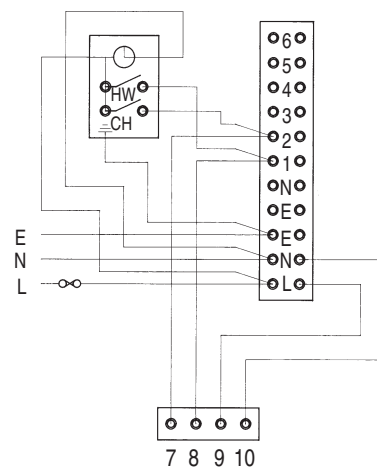


Fig. 16. Standard Wiring.

NOTE: Remove link 2 to 4 when fitting a room thermostat.

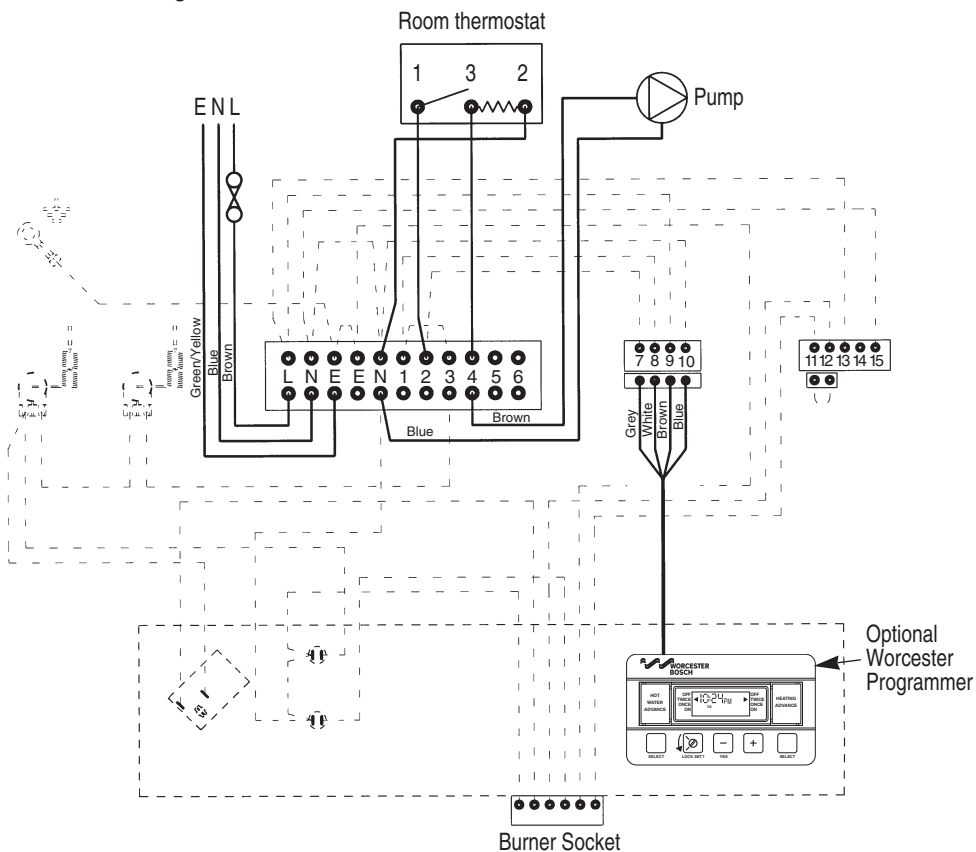


Fig. 17. Off On No Demand.

NOTE: Remove link 1 to 3 and link 2 to 4.

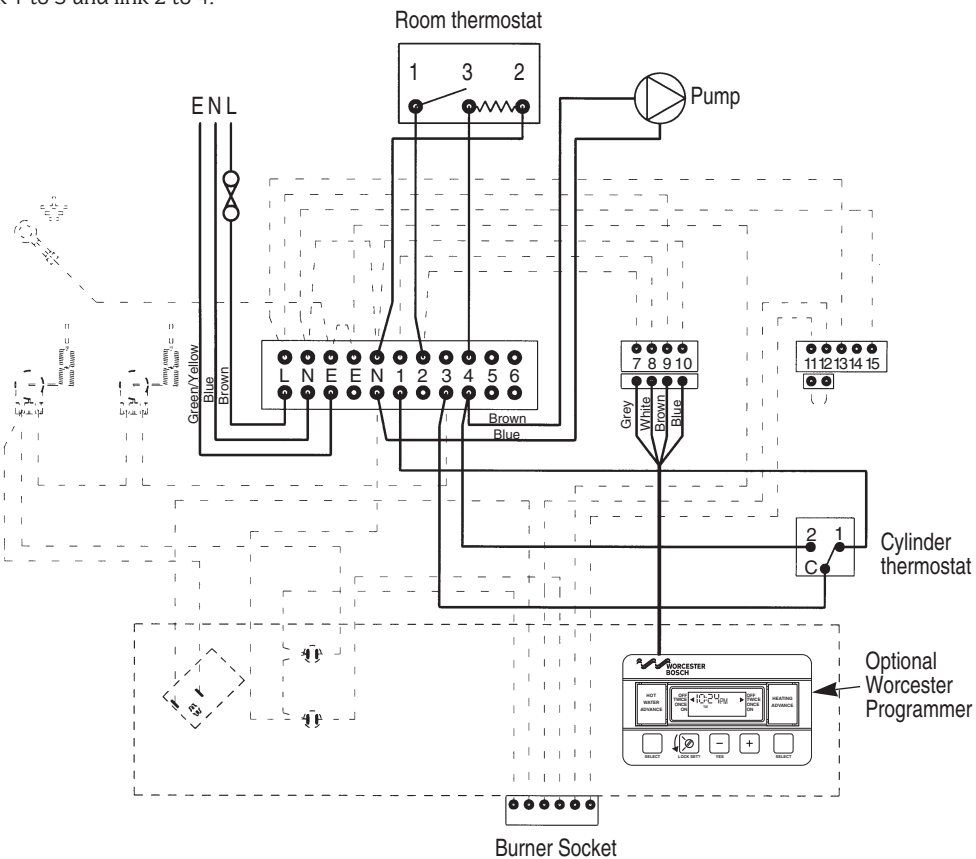


Fig. 18. Honeywell 'S' Plan.

NOTE: When using a WHS programmer set the switch on the rear of the programmer to 'P'.
Remove link 1 to 3 and link 2 to 4 and make link 3 to 4

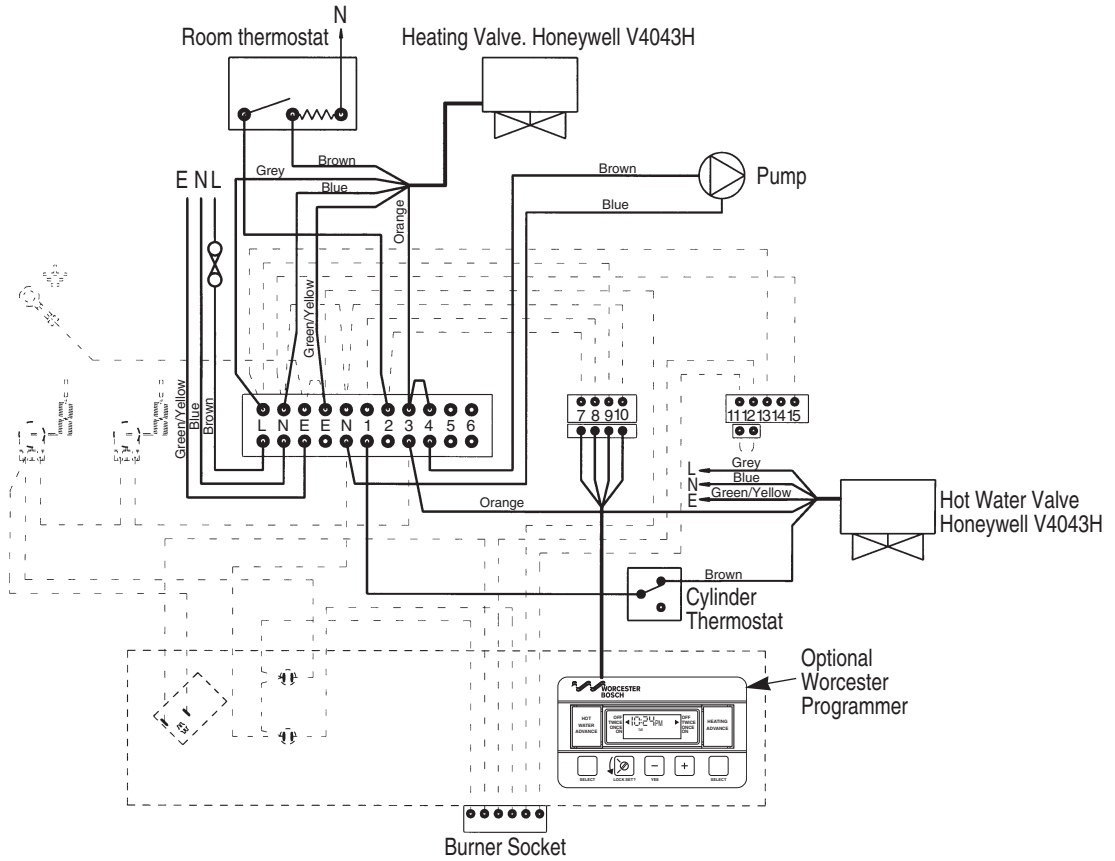


Fig. 19. Honeywell 'Y' Plan.

NOTE: When using a WHS programmer remove the orange wire from terminal 9 and connect to terminal 6. Set the switch on the rear of the programmer to 'P'. Remove link 1 to 3 and link 2 to 4 and make link 3 to 5.

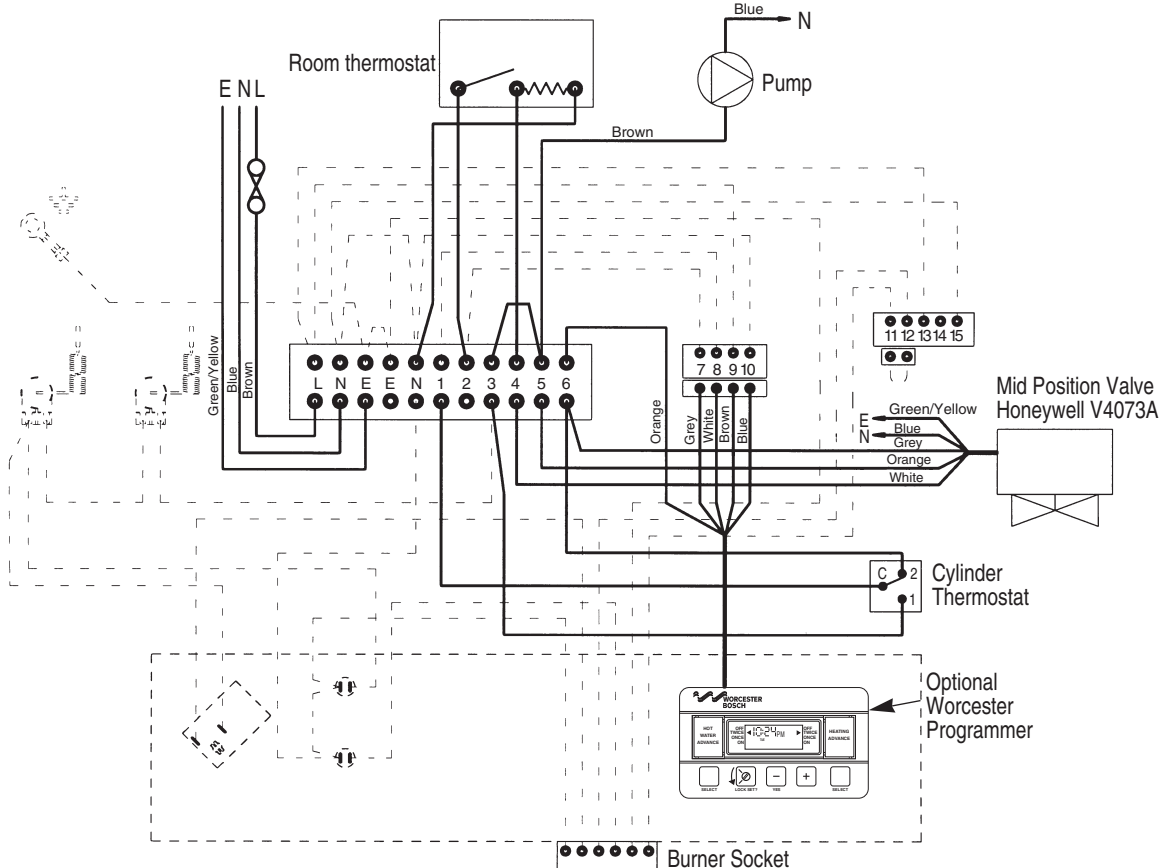
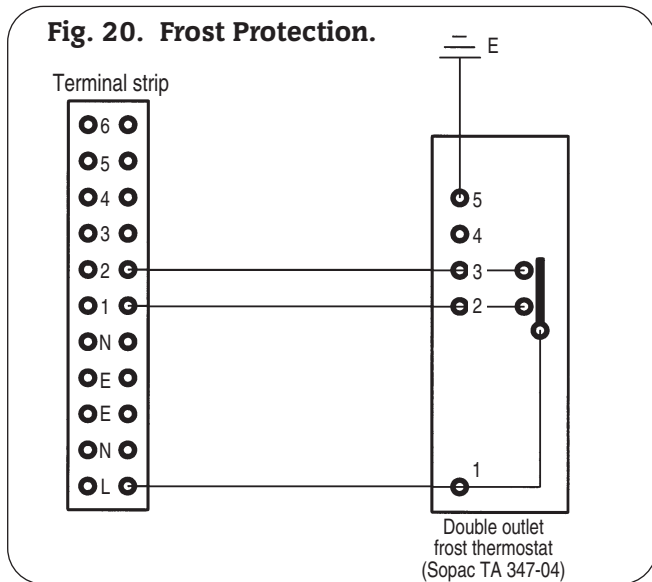


Fig. 20. Frost Protection.



11. Installation

11.1 After unpackaging the appliance it is recommended that all cabinet panels are removed, as described in Section 5, and stored in a safe place to avoid damage during installation and allow easy inspection for any leaks after the system has been filled.

11.2 Remove the burner as described below and store in a safe place until the appliance is ready for commissioning.

(a) Conventional Flue Appliance (CF/LLD).

1. Remove the electrical lead plug by depressing the two locking ears and pulling the plug downwards.

2. Remove the burner from the boiler by slackening the two M6 retaining screws located in the burner housing ring and pulling the burner clear. This will require the use of a 5mm allen key.

(b) Room Sealed Balance Flue Appliance (RS).

1. Remove the burner box cover by pulling forwards to release the ball studs. This will be found easier by pulling on the side of the handle first to release two of the ball studs and then repeating on the other side. Take care not to pivot the remaining two ball studs too far around as this will cause damage to the spring clips.

2. Remove the electrical lead plug by depressing the two locking ears and pulling the plug.

3. Push the electrical lead grommet back through the burner surround box and feed the lead through the hole.

4. Remove the burner from the boiler by slackening the two M6 retaining screws located in the burner housing ring and pulling the burner clear. This will require the use of a 5mm allen key.

11.3 Flue system installation.

Install the appliance flue system as described in Section 7.

11.4 Heating system installation.

1. Plumb the boiler into the central heating system.

2. Check that all unused sockets have been plugged.

3. Fill the system and vent all radiators and high points to remove air from the system.

4. Check the boiler and all pipework connections for leaks.

5. The primary system should be flushed and treated in accordance with the recommendations of BS 7593:1992.

11.5 Oil supply installation.

(See Figs. 9 to 11).

Note: Never route the oil supply pipe/hose directly below the combustion chamber base.

(a) Double pipe system oil return pipe.

When fitting an RS balanced flue appliance follow steps 1 to 11. When fitting a CF/LLD appliance follow step 1 and fit a bulkhead fitting to the bracket for the return pipe and continue from step 10.

1. Remove the isolating valve bulkhead fitting by unscrewing the locknut on the underside.

2. Remove the blind grommet from the fixed burner surround box and discard.

3. Replace the blind grommet with the open grommet supplied in the plastic bag.

4. Slacken the pipe retaining clip screw located directly below the grommet hole. When using 12mm copper pipe replace the clip with the larger one supplied.

5. Bend a piece of 10mm or 12mm copper tube (as selected) to the correct profile to allow the pipe to be fed down the side of the appliance. Make a slight chamfer on the end of the pipe to be fed through the grommet to facilitate easy insertion.

6. Lubricate the grommet hole with vaseline (or butter etc.) and slide the pipe through the hole, supporting the grommet on its underside to prevent it dislodging.

7. Feed the pipe through the retaining clip, allowing approximately 80 mm of pipe to project beyond the clip, and tighten the retaining screw. Take care not to overtighten the screw!

8. Hold the pipe at the retaining clip and gently pull the pipe forward sufficiently to allow a compression to 1/4 inch BSP female fitting to be fitted for connection to the oil return flexible hose.

9. Connect the fitting to the pipe and fit a 1/4 inch BSP taper thread flexible hose, ensuring a good seal using PTFE tape or suitable oil sealing compound. The flexible hose should have a 1/4 inch BSP rotating union taper fitting at the other end with a 90 degree bend and 1/4 inch BSP nipple for connection to the oil pump.

10. Replace the isolating valve bulkhead fitting.

11. Fit the oil supply pipe as described in the following section.

(b) Single pipe system oil supply pipe.

1. Bend a piece of 10mm or 12mm copper tube (as selected) to the correct profile to allow the pipe to be fed down the side of the appliance. The pipe may be routed along either the right or left hand side of the boiler as required. When using 12mm pipe fit a 12mm to 10mm compression coupling and connect to the valve with a short piece of 10 mm pipe, otherwise connect direct to the valve.

Note: never use soldered joints on oil supply pipes as this could cause a hazard in the case of a fire.

2. Route the pipe back to the oil supply tank ensuring that it is hard against the boiler, to allow installation of the side panel.

3. With the isolating valve in the correct orientation tighten the back-nut.

4. Turn the isolating cock fully clockwise to close the valve.

5. Open the main oil supply valve at the tank and check for any leaks.

6. Place a suitable container below the bulkhead fitting and open the valve.

7. Draw off at least 2.5 litres of oil until a steady flow of clear uncontaminated oil can be seen and turn off the isolating valve.

Note: This method may not be possible on some installations where a sub-gravity system is used. Where this problem arises bleed the system using the oil pump as described in Section 12 and remove and clean the oil pump filter to remove any debris collected as a result of installation.

11.6 Replace the electrical control panel and side panels in reverse order to the removal procedure of Section 5 and connect the electrical supply as described in Section 10.

12. Commissioning the Appliance

Ensure that no foreign matter is left in the system as this could cause damage to the appliance.

12.1 Check that the electrical supply to the appliance is switched off.

12.2 When commissioning the appliance after initial installation follow the procedure from 12.3, otherwise remove the burner first as described in Section 14.3.

12.3 Prepare the heating system

1. After initial installation and checking for leaks, as previously described, drain down the system sufficiently to add a flushing agent. Flush the system in accordance with BS 7593:1992.

2. Refill the system.

12.4 Check the Burner

1. Check that the nozzle and electrode settings are correct for the relevant burner. (See Figs. 21, 22, 23 and 24).

2. Check that the nozzle lies central with the combustion head hole.

3. Check for any visible defects.

12.5 Replace the burner

1. Connect the flexible oil supply hose to the isolating valve bulkhead fitting and tighten sufficiently to form a good seal. Where a double pipe system is being used refer to Fig. 9, and connect the oil return flexible hose to the return pipe fitting.

2. With the sponge O-ring gasket around the burner blast tube insert the burner into the housing tube. Push the burner firmly forward to compress the gasket and tighten the two locking screws using a 5mm Allen key.

Note: It is important that a good seal is made between the burner and the boiler to prevent re-circulation of the flue gases from the combustion chamber to the burner inlet, or the room in the case of a CF/LLD appliance.

3. On the RS balanced flue model, feed the electrical lead back through the hole in the burner surround housing and fit the grommet into the hole ensuring a seal is made.

4. Re-connect the electrical lead plug into the control box.

12.6 Check the installation

1. Check that the appliance is correctly wired as described in Section 10.

2. Check that all baffles are correctly located and the heatshield is correctly mounted (20/25, 26/32, 32/50 and 50/70 models) as shown in Fig. 25.

3. Check that the baffle retainer is correctly mounted (20/25 and 26/32, 32/50 and 50/70 models) as shown in Fig. 25c. and 25d.

4. On the 32/50 and 50/70 remove and discard the transit baffle retainer.

5. Ensure that the cap is firmly seated in position and check the cap retainer is correctly mounted (32/50 and 50/70 only) as shown in Fig. 25d and 26.

6. Check that the control thermostat and auto reset high limit thermostat phials are correctly located in the boiler thermostat pocket positioned in the top front of the boiler.

7. Check that the manual reset limit thermostat is located in the steel pocket above the electrical box mounting bracket on the front face of the boiler.

8. Check that all of the air-ways to the burner are clear of any obstruction.

12.7 Fit a pressure gauge and manifold to the burner pump at the point indicated in Fig. 9, or the pressure gauge port shown in Fig. 22 on the 20/25.

12.8 Turn on the electricity to the appliance.

12.9 Bleed the burner

Single pipe systems only

Release the fuel bleed port on the manifold and place a suitable receptacle beneath. Turn on the boiler thermostat. Set the programmer to **heating and hot water** and allow the burner to run through to lockout. Wait two minutes and reset the burner

control box. Repeat the procedure at least three times or until a steady stream of oil, without air, is exhausted from the bleed port. Re-lock the bleed port.

Two Pipe System

A two pipe system will automatically vent the air back to the oil tank. Turn on the boiler thermostat and allow the burner to run through to lockout. Wait two minutes and reset the burner control box. Repeat the procedure until the burner fires and runs in a steady state. This may take several attempts depending on the oil pipe length and height.

12.10 Adjust the air shutter and pump pressure to the settings recommended in Tables 2 to 9. After a pre-ignition period of approximately 15 seconds the burner should ignite. Flame sensing is carried out by means of a photocell mounted in the burner body. Should the boiler fail to establish a normal firing pattern (or should flame failure occur during running), the absence of a flame is sensed and the control box is monitored to a safe lockout condition and the boiler is shut down. The lockout indicator light in the boiler control panel will illuminate indicating that the burner has gone to lockout. In this instance wait two minutes and press the red lockout reset button mounted in the burner control box. Another start sequence is then initiated. Repeat the procedure until a flame is established.

Note: Persistent lockout when running indicates a fault and a Service Engineer should be consulted.

12.11 Run the boiler for approximately 3 minutes and switch off checking that there is no after-spurting from the nozzle. This can be detected by oil saturation on the blast tube. If after-spurting occurs remove the burner from the boiler, unscrew the nozzle, and while holding the burner in a vertical position, fill the nozzle holder with oil. Refit the burner and continue to run the boiler for three minute periods until after-spurting stops.

Note: In order that after-spurting is reduced to a minimum during the commissioning period it is recommended that a pressure gauge only is fitted on the external pressure gauge port on the Electro Oil B11 (See Fig. 22). Use of a "T" piece pressure gauge manifold will increase the oil line volume and hence increase the degree of after-spurting.

12.12 Run the boiler for a further 15 minute period and then finally fine tune the air shutter setting to give the CO₂ level specified in Tables 2 to 9 less 0.5% CO₂. During this period some smoke will be emitted due to the burning of the organic binder in the base insulation board. Smoke readings will therefore be inaccurate at this point.

Note: A flue gas sampling point is located on the boiler top plate.

12.13 Check that the smoke reading is in the range 0-1. If this cannot be achieved then check that the burner head is set correctly and the nozzle is in good condition.

12.14 Check that the flue temperature does not exceed the value specified in Tables 2 to 9. If this is the case then check that the baffles are correctly located. If the baffles are correctly located then reduce the pump pressure since nozzle variations of up to + or - 15% may occur.

12.15 Remove the oil pressure gauge and manifold and check all oil system joints for any signs of leakage.

12.16 On the RS balanced flue model fit the burner cover box supplied in the flue terminal kit by lining up the four ball studs and the polarising pin in the top flange of the box and firmly pushing forward. Check that the cover is properly seated by pressing forwards on the front top and then bottom face of the box to ensure a room seal is achieved.

On the CF/LLD model fit the cabinet front panel.

12.17 Allow the burner to run for a further five minutes and then recheck the CO₂ level and adjust the air setting if required. With the burner cover/panel fitted as 12.16, repeat the previous test procedure and check that the smoke number is in the range 0-1. Repeat the fine tuning procedure if found necessary.

12.18 Refit the cabinet top and front panels in the reverse order to that described in Section 5.

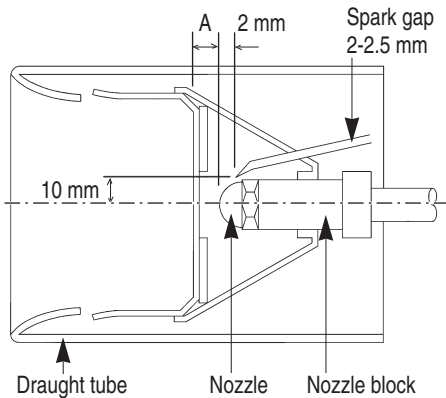
12.19 When the heating circuit has reached full operating temperature check the whole system for any leaks.

2.20 Add a suitable proprietary corrosion inhibitor such as Fernox or Sentinel. This will inhibit corrosion, protect the circulating pump and valves reducing the possibility of "kettling"

noises resulting from deposits of scale and sludge in the boiler. Refer to the product manufacturers instructions for further information.

Fig. 21. Electro Oil Inter B9 Burner.
(12/14 and 15/19 models)

Combustion Head



Output kW	Head Type	Dimension A
12	PL 6/7/21.5/10	3 mm
14	PL 6/7/21.5/10	5 mm
15	PL 6/7/21.5/10	3 mm
17	PL 6/7/21.5/10	5 mm
19	PL 6/7/21.5/10	5 mm

To adjust the nozzle position, undo the locking screw located at the rear of the nozzle line and rotate the adjusting disc one turn anti-clockwise to move forward by 1 mm.

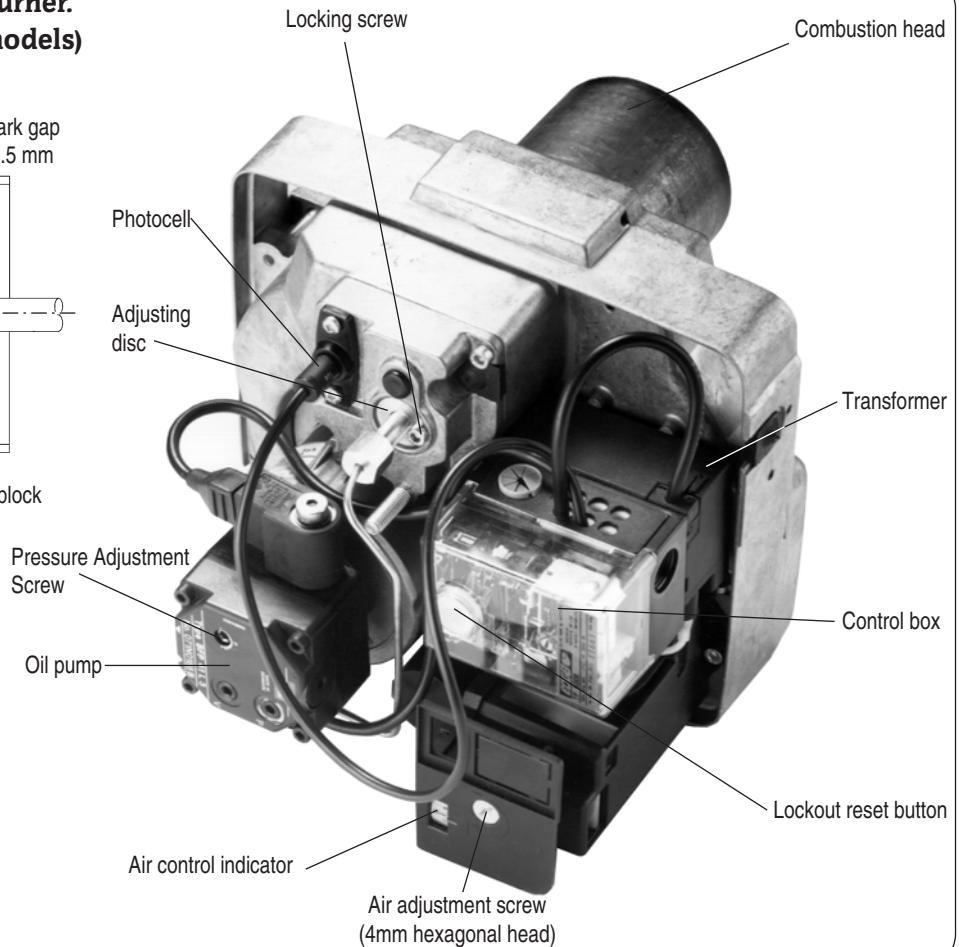
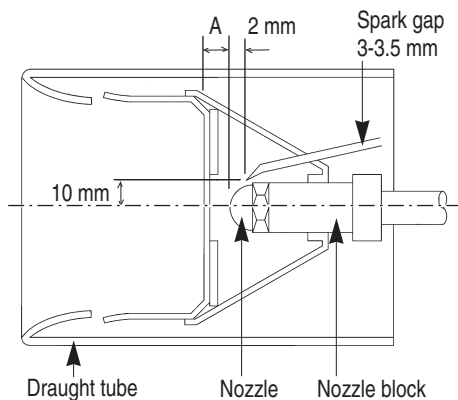


Fig. 22. Electro Oil Inter B11 Burner.
(20/25 model).

Combustion Head



Output kW	Combustion Head	Dimension A
20/25	PL 10/4/24/10 x 78 mm	5 mm

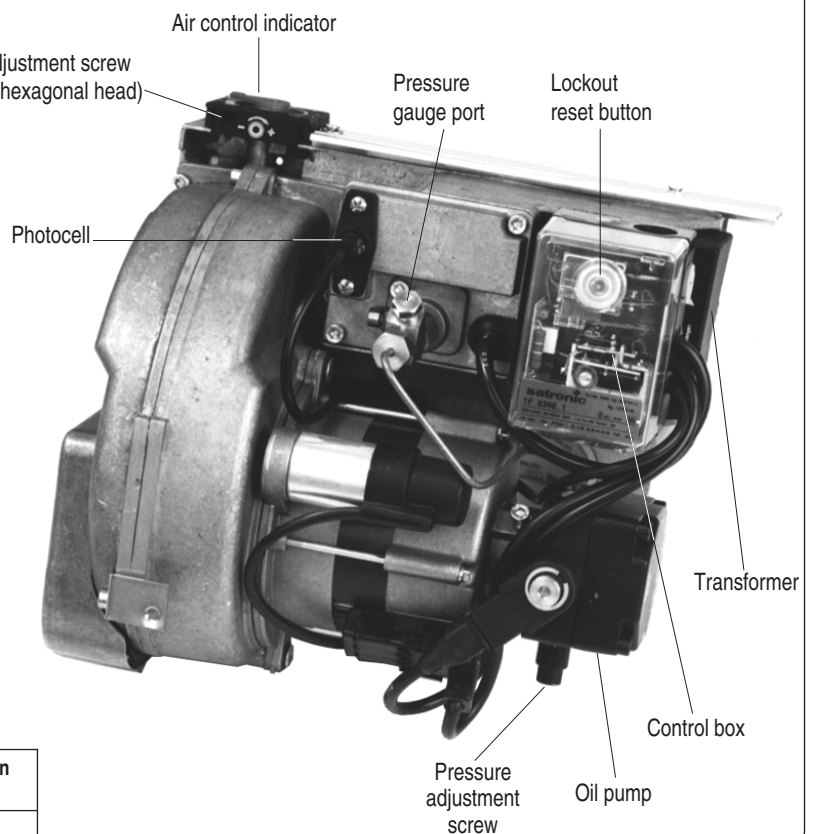
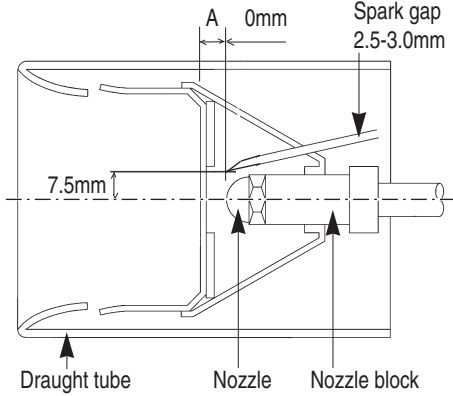


Fig. 23. Electro Oil Sterling Burner.
(26/32 and 32/50 models).

Combustion Head



Output kW	Combustion Head	Dimension A
26-32	PL 6/7/21.5/10 x 78 mm	3.5mm
32-50	PL 10/8/10/6/19/10 x 78mm	6.0mm

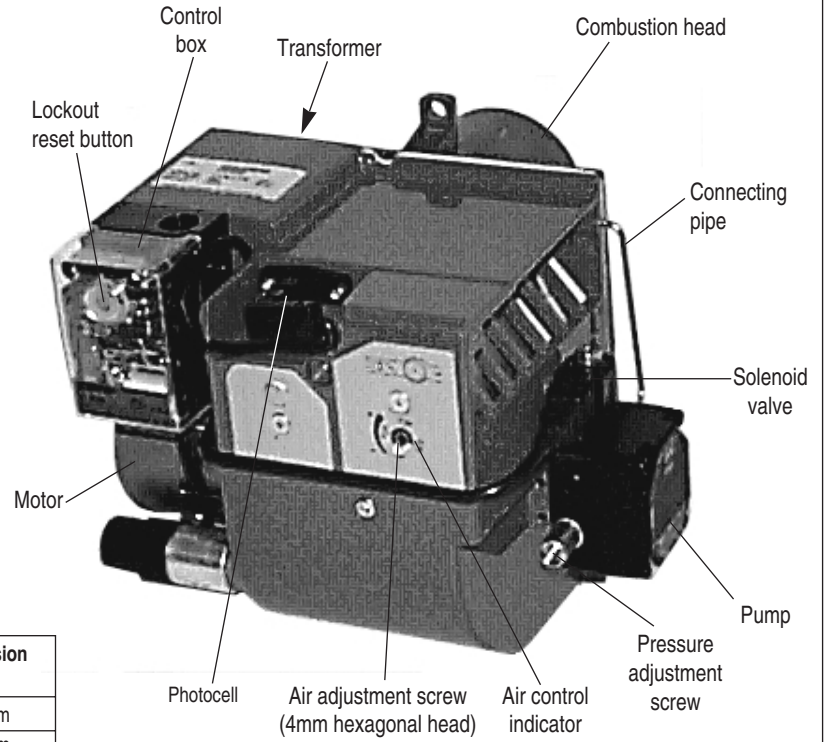
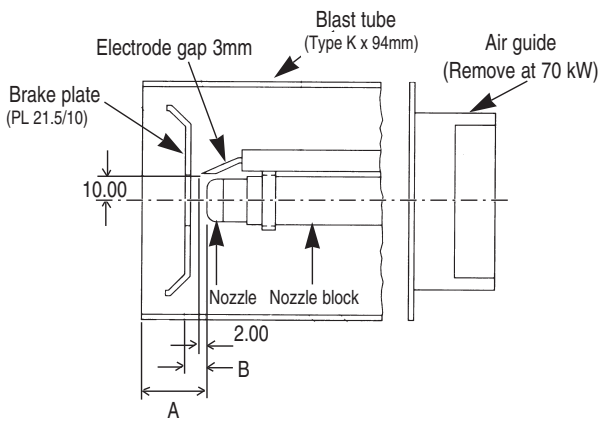
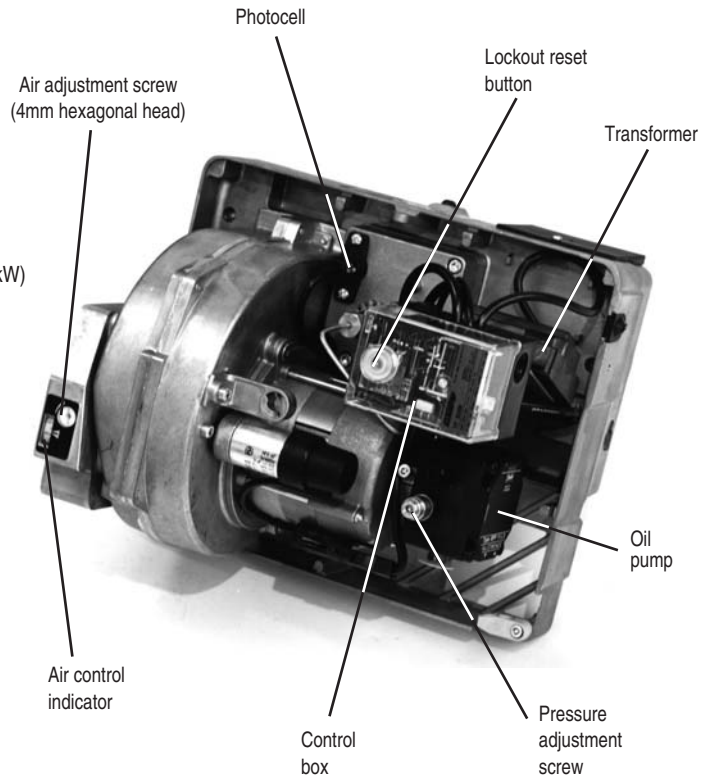


Fig. 24. Electro Oil Inter B20B Burner.
(50/70 model).

Combustion Head



Output kW	Fuel	Dimension (mm)	
		A	B
50	28sec. Kerosene	22	8
60	28sec. Kerosene	24	8
70	28sec. Kerosene	27	8
50	35sec. Gas Oil	18	6
60	35sec. Gas Oil	20	6
70	35sec. Gas Oil	22	6



13. Instructions to the User

13.1 Hand the users instructions to the user or purchaser for retention and instruct them in the efficient and safe operation of the appliance and the heating/hot water system.

13.2 Advise the user or purchaser of the precautions necessary to prevent damage to the heating/hot water system and to the building in the event of the heating system remaining inoperative during frost conditions.

13.3 Finally advise the user or purchaser that for continued efficient and safe operation of the appliance it is important that adequate servicing is carried out by a qualified engineer at least once per year.

Worcester Heat Systems Limited will be pleased to discuss and offer a comprehensive maintenance contract.

13.4 Set the system controls to the users requirements.

14. Routine Cleaning and Inspection

14.1 The following should be carried out at least once per year for 28 second Kerosene and twice per year for 35 second Gas Oil, to ensure efficient, trouble free operation.

1. Carry out a pre-service check noting any operational faults.
2. Check and clean the burner.
3. On the CF model check and clean the air intake grille located in the boiler room.
4. On the RS balanced flue model check and clean the air intake ducts at the rear and underneath the boiler and the air intake grille at the end of the terminal.
5. Check and clean the baffle retainer (20/25, 26/32, 32/50 and 50/70 models).
6. Check and clean the cap retainer (32/50 and 50/70 models).
7. Check and clean the baffles.
8. Check and clean the heat exchanger surface.
9. Check the heat shield (20/25, 26/32, 32/50 and 50/70 models).
10. Check the combustion chamber base insulation board.
11. Check that the flue system is unobstructed and clean as necessary.
12. If the appliance has been installed in a compartment check that the ventilation areas are clear.
13. Clean all oil filters.

Some of the servicing points are covered more fully in the following instructions:-

14.2 Pre-Service Check

1. Remove the cabinet front and top panels as described in section 5 .
2. On the RS balanced flue model remove the burner box cover as described in Section 5.5.
3. Operate the appliance and system, noting any faults which may need to be corrected during the service.

14.3 Cleaning the Burner

IMPORTANT: Disconnect the electrical supply at the mains before commencing any servicing. Turn off the oil at the service cock.

1. Remove the burner.
 - (a) Isolate the oil supply at both the oil tank and the isolating valve situated above the burner on the right-hand side. (See Figs. 2 and 3).
 - (b) On the RS balanced flue model remove the burner box cover by pulling forwards to release the ball studs. This will be found easier by pulling on one side of the handle first to release two of the ball studs and then repeating on the other side. Take care not to pivot the remaining two ball studs too far around as this will cause damage to the spring clips.
 - (c) Disconnect the electrical lead from the control box by depressing the two locking ears on the plug and pulling downwards.

- (d) On the RS balanced flue model feed the electrical lead back through the grommet seal to give sufficient play to allow withdrawal and inspection of the burner.

- (e) Slacken the two M6 burner locking screws, using a 5mm allen key, and remove the burner.

2. Clean the fan impeller using the following procedure:

Electro-oil Inter B9 Burner

- (a) Remove the two screws holding the combustion head in position and withdraw the combustion head and air guide collar.
- (b) Remove the three remaining screws holding the front cover plate in position and withdraw the cover to expose the fan impeller.
- (c) Clean both sides of the fan impeller and remove any debris from the burner housing.
- (d) Check that the impeller rotates freely.
- (e) Clean the air inlet passage and check that the adjustment mechanism operates freely.
- (f) Re-assemble the components.

Electro Oil Inter B11

- (a) Remove the acoustic fan inlet cover.
- (b) Remove the three screws holding the fan cowl in position and remove the cowl noting how the fan control flap is positioned.
- (c) Check that the air control flap pivots freely and ensure the air path to the burner head is clear.
- (d) Clean both sides of the fan impeller and remove any debris from the burner housing.
- (e) Check that the impeller rotates freely.
- (f) Re-assemble the components.

Electro Oil Sterling

- (a) Remove the air adjustment cover.
- (b) Separate the main body of the burner from the burner front by removing the M6 allen screw (located beneath the air adjustment screw), using a 5mm allen key.
- (c) Note the position of the air damper adjustment and check the air damper moves freely.
- (d) Check the air path to the burner head is clear.
- (e) Clean both sides of the fan impeller and remove any debris from the burner housing.
- (f) Check the impeller rotates freely.
- (g) Re-assemble the components.

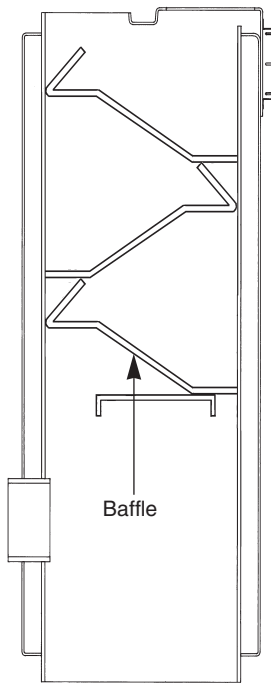
Electro Oil Inter B20B

- (a) Remove the four screws holding the fan cover and remove.
- (b) Clean both sides of the fan impeller and remove any debris from the burner housing.
- (c) Check that the impeller rotates freely.
- (d) Clean the air damper which is attached to the fan cover and check that the adjustment mechanism operates freely.
- (e) Re-assemble the complete.

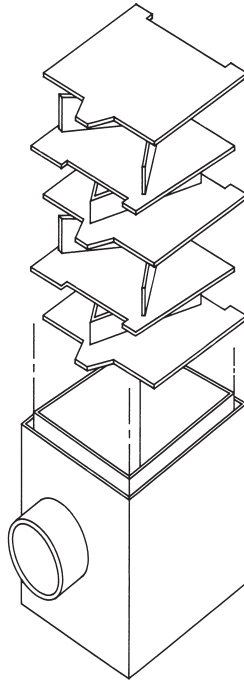
3. Remove the combustion head and thoroughly clean all deposits.

Fig. 25. Location of Boiler Flueway Baffles.

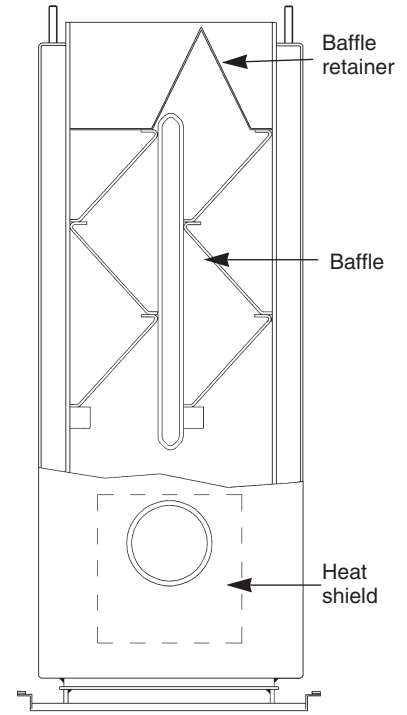
(a) 12/14



(b) 15/19



(c) 20/25 and 26/32



(d) 32/50 and 50/70

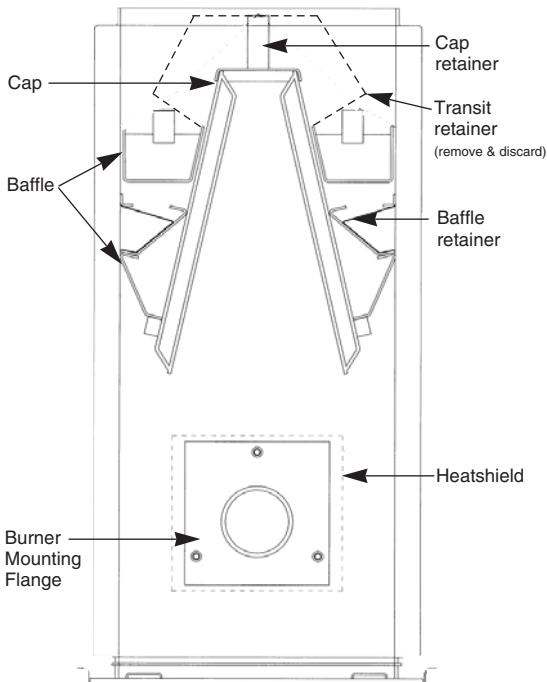
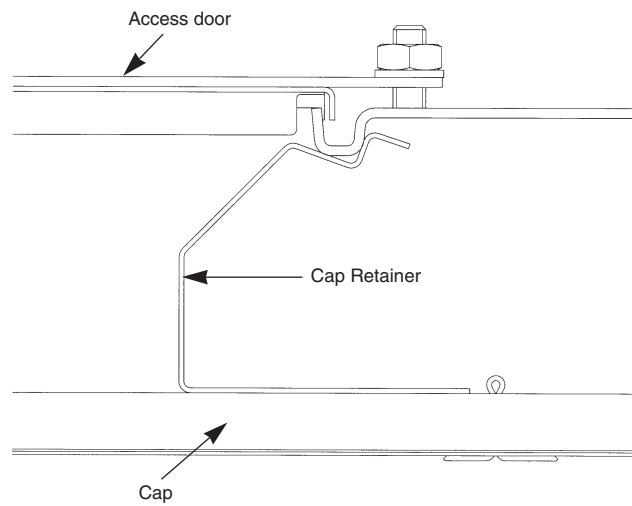
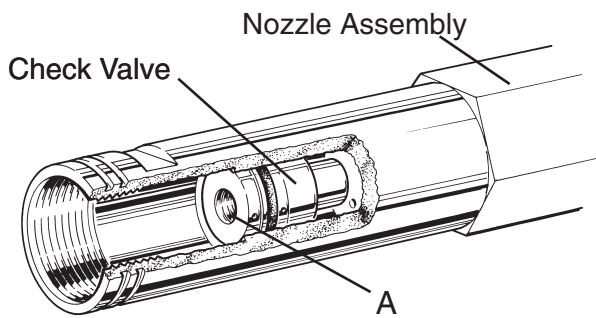


Fig. 26. Location of Cap retainer (32/50 and 50/70 models)



ENSURE THAT ALL BAFFLES ARE SEATED IN POSITION

Fig. 27. Mechanical Shut-off Valve.



4. Inspection of Mechanical Shut-off Valve. (See Fig. 27)

- a) Remove the nozzle.
- b) Fasten an M5 screw, with a minimum length of 30mm, into the threaded hole (A) and pull the screw to withdraw the check valve.
- c) Check that the nozzle holder is clear of any debris and clean if necessary.
- d) Check that the 3 holes in the check valve are clear of any debris. Discard the check valve if the holes cannot be cleared or if the unit is defective and replace with a new one.
- e) Replace in the reverse order.

5. It is strongly recommended that the oil atomising nozzle is replaced at each service. If this is not possible then remove and clean the integral filter, but under no circumstances should the nozzle be stripped into its component parts and never attempt to clean the nozzle tip.

6. Check and reset the electrodes, where necessary, as shown in Figs. 21, 22, 23 and 24.

7. Replace the combustion head and check that the nozzle lies central to the combustion head and the head settings are as shown in Figs. 21, 22, 23 and 24.

8. Withdraw the photocell from its housing and clean.

9. Remove and clean the oil pump internal filter using kerosene or white spirit. The internal filter is accessed by removing the oil pump cover on the Danfoss BFP 11 and Suntec AS47C and by unscrewing and withdrawing the cartridge on the Danfoss BFP 41 as indicated in Fig. 9.

10. It is recommended that the standard flexible oil line is replaced at each yearly service to prevent the possibility of a leak due to ageing.

11. Re-assemble the burner components.

12. Check the sponge O-ring seal located around the combustion head and replace if necessary. It is imperative that this seal is in good condition since failure will cause the flue gases to be re-circulated into the burner inlet, or the room in the case of a CF/LLD appliance.

14.4 Remove the paper element from the external oil filter and replace. If the filter contains a washable element then thoroughly clean in Kerosene or white spirit and re-assemble into the filter.

14.5 Clean the air ducts. (RS balanced flue model only).

1. Remove the rear duct top cover.
2. Shine a light down the rear duct and inspect both the rear and under duct for any sign of debris and clean where necessary using a flexible hose connected to a vacuum cleaner. A short length of garden hose would be suitable for this purpose.
3. Replace the rear duct top cover.
4. Check that the oil bleed holes are clear. These are located in the base of the burner cover box and the bottom front face of the burner housing.

14.6 Clean the Boiler

1. Remove the boiler top access door by releasing the M10 nuts and check the fibreglass rope seal. Replace the seal if necessary.
2. Remove the burner mounting flange by releasing the three

M10 nuts and check the fibre glass gasket, it is imperative that this seal is in good condition. Replace the seal if necessary (32/50 and 50/70 models only).

3. Remove and check the baffle retainer, where fitted (20/25, 26/32, 32/50 and 50/70 models). See Fig. 25.

4. Remove the baffles, clean and check their condition. Replace any baffles considered to be badly corroded.

5. Remove and check the cap retainer, where fitted (32/50 and 50/70 models only). See Fig. 25d & 26.

6. Remove the cap (32/50 and 50/70 models only) and check the 'rocksulate' gasket. Replace the seal if necessary.

7. Thoroughly clean all of the heat exchanger surfaces using a stiff wire brush and vacuum clean all loose debris from the combustion chamber. Take care not to damage the base insulation!

8. Remove and check the heat shield where fitted (20/25, 26/32, 32/50 and 50/70 models). (See Fig. 25).

9. Check the condition of the combustion chamber base insulation and replace if there is any sign of significant damage.

10. Check and clean the flue.

11. Replace the items in reverse order noting the baffle positions shown in Fig. 25.

14.7 Fire Valve.

Check that a fire valve is fitted to the incoming oil line with the body located outside the premises and the detection element located within the appliance case. A fire valve clip is provided for this purpose as shown in Figs 2 & 3. Test the operation of the fire valve to ensure that the mechanism operates and that the oil supply is completely isolated.

NOTE: The fire sensing element must be located on the top face of the burner surround box on RS balanced flue models, as shown in Fig.3, to allow quick detection of a dangerous situation.

14.8 Recommission the Burner.

1. Connect the flexible oil supply hose to the isolating valve and tighten sufficiently to form a good seal. Where a double pipe system is being used connect the oil return flexible hose to return pipe fitting.

2. With the sponge O-ring gasket around the burner blast tube insert the burner into the housing tube. Push the burner firmly forward to compress the gasket and tighten the two locking screws.

Note: It is important that a good seal is made between the burner and the boiler to prevent re-circulation of the gases from the combustion chamber to the burner inlet, or the room in the case of a CF/LLD appliance.

3. On the RS balanced flue model feed the electrical lead back through the hole in the burner surround housing (in the reverse order to that described in 11.2) and fit the grommet into the hole ensuring a seal is made.

4. Reconnect the electrical lead plug into the control box.

5. Turn on the oil supply at the service cock.

6. Recommission the burner as described in Section 12.

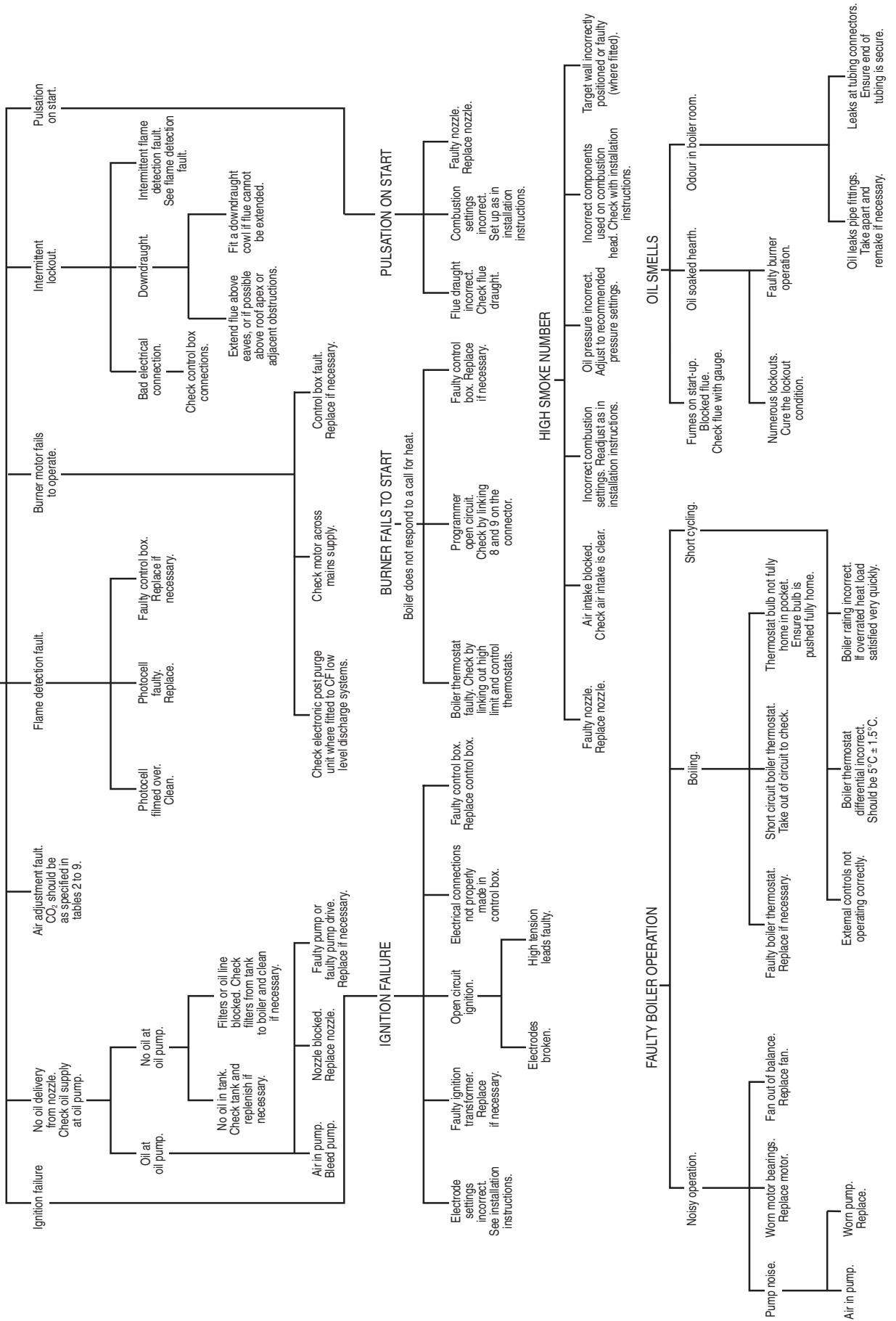
15. Short Parts List

Part	Manufacturers Reference	Qty	WHS Part No.
Burner Control 1. Box	Satronic TF830.2	1	8 716 142 781
Photocell	Satronic MZ770	1	8 716 142 735

16. Fault Finding

LOCKOUT

INDICATED BY RED LAMP ON CONTROL BOX
To Re-set wait 2 minutes and press re-set button





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PUBLICATION 8 716 145 072f (05/01)



DANESMOOR

12-14, 15-19, 20-25, 26-32, 32-50, 50-70

FLOOR-STANDING OIL-FIRED PRESSURE-JET BOILERS

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

 **WORCESTER**
Bosch Group



EXCELLENCE COMES AS STANDARD

Thank you for purchasing a Danesmoor oil-fired central heating boiler.

Danesmoor oil boilers are made by Worcester Heat Systems and the strictest quality control standards ever demanded are applied throughout every stage of production.

Indeed, Worcester Heat Systems have led the field in

innovative boiler design and performance for more than 30 years.

The result is that your new Danesmoor boiler offers you the very best of everything - quality, efficiency, economical running costs, proven reliability and value for money.

What's more, you also have the assurance of our no-nonsense 2 year parts and labour guarantee.

And it's backed up by Worcester Care Call - a

complete maintenance scheme to keep your boiler operating at peak condition and efficiency.

No wonder that more and more people are agreeing that when it has to be oil, it has to be Danesmoor.



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GENERAL INFORMATION

To ensure you get the very best from your new Worcester Danesmoor oil boiler, please read these notes and instructions carefully.

ELECTRICAL CONNECTION

A mains cable should be connected to a double pole isolator with a contact separation of 3 mm on all poles and supplying the appliance and controls only.

The mains supply for your Danesmoor boiler is 230/240 volts AC-50Hz.

Your boiler must be earthed and protected by a 5-amp fuse.

OPEN-FLUED BOILERS

Your installer will create airways (in walls or doors) to ensure an adequate supply of fresh air to the boiler for combustion. Do not block these airways, and never hang clothes or other combustible materials over the boiler or against the flue pipe.

Never place anything on top of the boiler.

ROOM-SEALED BALANCED FLUE BOILERS

Air for this type of boiler is supplied via the balanced flue terminal, and no other air supply is required, except for ventilation if the boiler is installed in a cupboard or compartment.

ROUTINE MAINTENANCE

It is essential that your boiler is installed and serviced by a competent heating engineer, and Worcester Heat Systems will be pleased to arrange regular servicing and a comprehensive maintenance contract.

Alternatively, the Oil Firing Technical Association for the petroleum industry (OFTEC) will gladly advise you of engineers trained by and registered with OFTEC.

Servicing should be carried out at least once a year for boilers which burn 28-second kerosene, and twice a year for boilers which burn 35-second gas oil.

SERIAL NUMBER

Your boiler serial number and model number should always be quoted in any contact with Worcester Heat Systems. This will help identify spare parts and also avoid confusion and delays during any service call-out. You will find these numbers on top of the electrical control box cover plate, and access can be gained by removing the top panel of the boiler casing.

TECHNICAL INFORMATION

Worcester Danesmoor oil-fired pressure-jet boilers can provide both domestic hot water and full central heating, with outputs ranging from 12kW to 70kW (40,000 to 240,000 Btu/h). Domestic hot water must be supplied via a conventional indirect hot-water system, utilising an indirect double-feed cylinder.

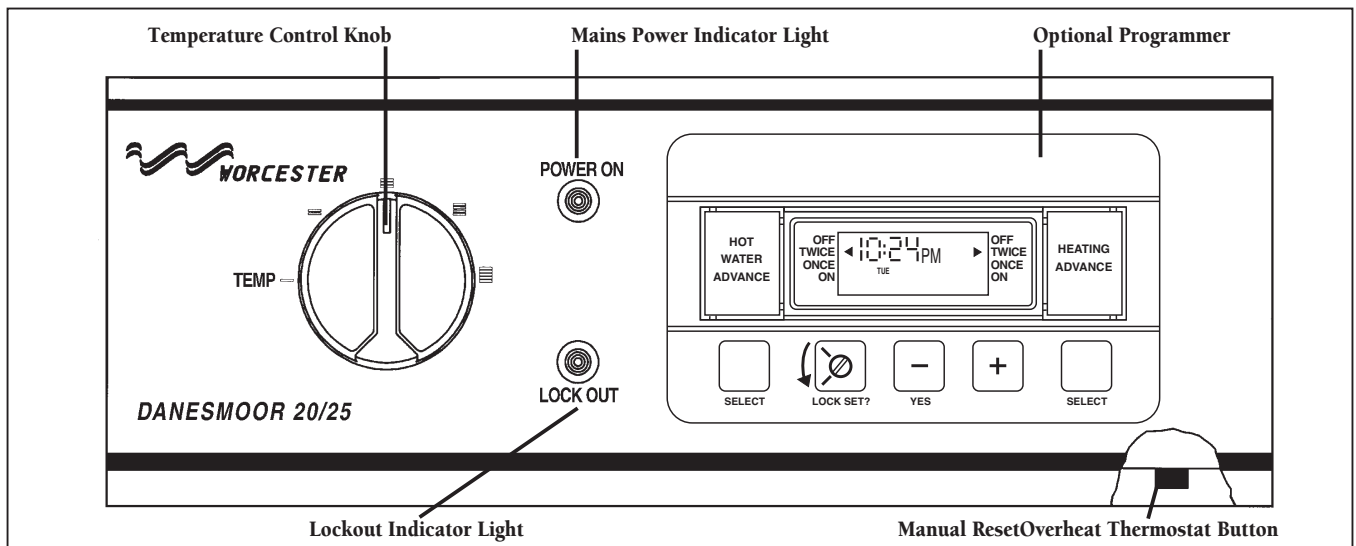
All standard Danesmoor boilers are supplied without a circulating pump, but there is provision to locate the pump within the boiler casing. All models are supplied pre-wired and may be fitted with a fascia mounted programmer (sold separately).

HOW TO START YOUR BOILER

(See Fig. 1.)

- Switch on the electrical mains supply to the boiler and the POWER ON lamp in the control fascia will light up.
- Ensure that any external controls connected to the boiler, such as a room thermostat, are on a high setting.

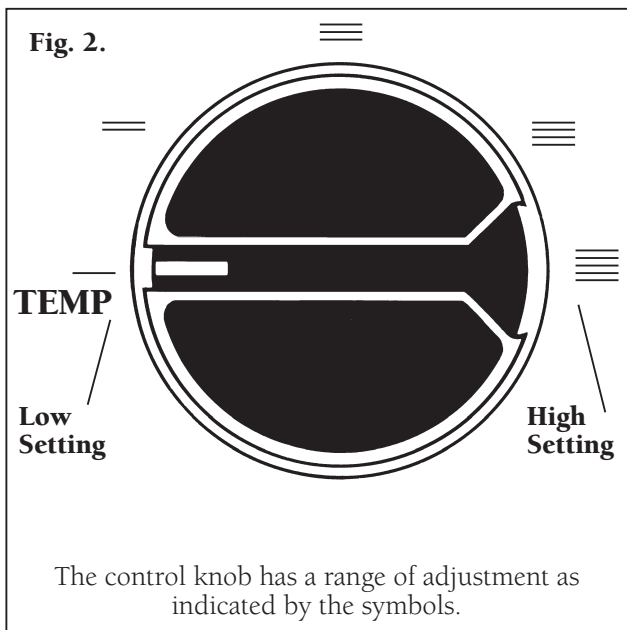
Fig. 1. Control Facia



- If a programmer is fitted, set it to the correct time of day and position the selectors to ON.

- (d) Turn the thermostat control knob to the desired position (see Fig. 2: temperature control).
- (e) Your boiler will now commence a start sequence, in which a pre-ignition period of approximately 15 seconds is followed by a supply of atomised oil being introduced into the combustion chamber. Ignition then occurs, followed by a post-ignition period of approximately 20 seconds.
- (f) Your boiler is now in a steady run condition and will remain so until the water temperature reaches the temperature set on the control thermostat. At this point the burner will stop and the boiler will shut down. The sequence will continue until the boiler is programmed - either manually or by an automatic programmer - for a period of shutdown.

TEMPERATURE CONTROL



The temperature control knob gives you control over the water temperature in your central heating radiators, and you can adjust it to any position within the indicated range (as shown in Fig. 2).

Higher settings obviously mean hotter radiators and rooms will reach the required temperature quicker. The ideal setting varies from property to property, and can only be established by trial and error and experience: a setting of medium to high should serve as a good initial guide.

PLEASE NOTE: The control knob must not be set below the first indicating bar.

SAFETY THERMOSTAT

HIGH LIMIT THERMOSTAT

Your boiler is fitted with a high limit cut out thermostat, designed to protect the central heating system in the event of the boiler running beyond a safe temperature level due to a control malfunction. This is indicated by excessive operating temperature and the mains power indicator lamp going off. The thermostat will reset itself when the boiler cools to a safe operating level.

MANUAL RESET OVERHEAT THERMOSTAT

Sealed system installations require the use of an overheat thermostat which has to be reset by hand. Your boiler is fitted with this thermostat as standard and may be reset by pressing the button shown in Fig. 1. Access is gained by removing the case front panel.

If either thermostat persistently cuts out then your boiler requires attention and you should call either your installer or a service engineer.



LOCKOUT

A flame failure device is incorporated into the control system of your boiler. So, should the flame fail for any reason, or should ignition fail to initiate a satisfactory start, the boiler is automatically locked out for safety. This lockout condition is indicated by two signal lamps coming on: one is located in the boiler fascia and the other on the burner control box.

To cancel the burner lockout condition, remove the boiler front cover (see installation and servicing instructions) and allow two minutes before pressing the illuminated lockout reset button, which is mounted on the burner control box. Provided the system is still calling for heat, the burner will then operate and commence another start cycle.

Persistent lockout indicates a fault and an engineer should be called, so do not attempt to repeatedly restart the boiler.



FUEL

Your Worcester Danesmoor pressure-jet boiler is set to burn 28-second kerosene fuel. Some appliances can be converted to burn 35-second gas oil. If this conversion has been made your installer will inform you.

PLEASE NOTE: Danesmoor room-sealed and conventional low-level discharge appliances **MUST NOT** be used with 35-second gas oil.



OPERATING YOUR PROGRAMMER CONTROLS

Full instructions on how to install and operate the optional facia-mounted programmer are included with the programmer kit.

If your boiler operates on gravity feed, the system will only function correctly on heating if the programmer switches on the hot water programme at the same time. To ensure that this is always the case, the programmer is supplied with a gravity system switch on the rear of the unit; this switch must be set to G by your installer.

The programmer gives fully independent programmes for central heating (CH) and hot water (HW) when the switch on the rear of the unit is set to P and the boiler is installed with a fully-pumped system.



FAULTS & BREAKDOWNS

Many calls made to Worcester Heat Systems to report boiler faults or breakdowns prove to be false alarms, as there is often a simple explanation for the apparent malfunction.

So, to help you save time and money - not to mention frustration and inconvenience - a quick-reference fault finder is included on page 8.

If, after checking through the points suggested, there is still a fault you should call your local Worcester Heat Systems Service Centre. Arrangements will be made for an engineer to call as soon as possible.

CALL-OUT CHARGES

All of Worcester Heat Systems' field service engineers are factory trained.

If you request a visit from an engineer and your boiler has been installed within the last 24 months, no charge will be made for parts and/or labour providing:

- The appliance was commissioned correctly on installation and a completed Guarantee Registration Card returned to Worcester Heat Systems.
- An appliance fault is found and the appliance has been installed within the past 24 months, provided that the first annual service has been carried out on a boiler which is more than 12 months old. Reasonable evidence of this must be supplied on request.

A call-out charge will be made where:

- The appliance has been installed for over 24 months
- The appliance has been installed for more than 1 year but less than 2 years and has not had a first annual service by an approved company.

OR

- Our Field Service Engineer finds no fault with the appliance (see note).

OR

- The cause of breakdown is misuse or with other parts of your plumbing/heating system, or with equipment not supplied by Worcester.

NOTE: Invoices for attendance and/or repair work carried out on your Worcester Danesmoor boiler by any third party will not be accepted.



FAULT FINDER

If your boiler is not operating, it is suggested that you go through the following simple checks before either calling your installer or Worcester Heat Systems.

SYMPTOM	POSSIBLE CAUSE	CHECK/REMEDY
Red 'Power On' Indicator is not illuminated.	There is no electricity supply to the boiler. Boiler overheat thermostat has operated	<ul style="list-style-type: none"> • Power supply is switched on. • Check the fuse has not blown. • If self resetting, allow time to reset. • If manual reset, press reset button. (See section "Safety Thermostat".)
'Power On' Indicator illuminated only.	There is no demand requiring the boiler to operate.	<ul style="list-style-type: none"> • Check boiler thermostat is set on medium to high. • Check the programmer is programmed for hot water and/or central heating and re-programme if necessary. (See programmer operating instructions.) • If the boiler is programmed for central heating, check the room thermostat is turned on.
'Power On' & 'Lockout' indicators both illuminated.	The boiler has attempted to ignite, but has gone to lockout.	<ul style="list-style-type: none"> • Remove the appliance front cover and depress the lockout reset button on the burner. (See section "Lockout".) • Check the level in your oil tank and replenish if necessary.



MAINTAINING YOUR BOILER'S EFFICIENCY & PERFORMANCE

Your new Worcester Danesmoor oil-fired boiler represents a long-term investment in a reliable, high quality product.

In order to realise its maximum working life, and to ensure it continues to operate at peak efficiency and performance, it is essential that your boiler receives regular, competent servicing and annual maintenance checks beyond the initial 24 month guarantee period.



Regular service contracts can be arranged with your installer - however if you have difficulty making a satisfactory arrangement simply contact Worcester Heat Systems on **0345 256206** for help.

If you would like to know more about Worcester's extended warranty options please tick the appropriate box on your Guarantee Registration Card.



SERVICE CENTRES

CONTACT NUMBERS:

UK Call Centre	Tel.	08457 256 206
UK Call Centre	Fax.	01905 757536
Scotland only	Fax.	01506 441 687

OPERATING HOURS:

Mon - Fri	8.00am to 6.00pm
Sat	8.30am to 1.00pm

Please contact our UK Call Centre number where our friendly operators will book your call with one of our team of nationwide engineers.

NOTE:

Sunday and Bank Holiday cover is not available

IMPORTANT

Do not touch or adjust any sealed component



YOUR WORCESTER DANESMOOR GUARANTEE

This appliance is guaranteed against faulty materials or workmanship for a period of twenty four calendar months from the date of installation subject to the following conditions and exceptions.

1. That during the currency of this guarantee any components of the unit which are proved to be faulty or defective in manufacture will be exchanged or repaired free of material charges and free of labour charges by Worcester Heat Systems Limited.
2. That the householder may be asked to prove the date of installation, that the boiler was correctly commissioned and, where appropriate, the first 12 month service has been carried out to the satisfaction of Worcester Heat Systems Limited when requested.
3. That any product or part thereof returned for servicing under the guarantee must be accompanied by a claim stating the Model, Serial Number, Date of Installation, proof of commissioning, proof where appropriate of the first 12 month service and the address of the householder.
4. That Worcester Heat Systems Limited will not accept responsibility for damage caused by faulty installation, neglect, misuse or accidental damage, the non-observance of the instructions contained in the installation and Operating Instructions Leaflets.
5. That the appliance has been used only for normal domestic purposes for which it was designed.
6. That this guarantee applies only to equipment purchased and used in mainland Great Britain and Northern Ireland.

This guarantee is given in addition to all your normal statutory rights.



GUARANTEE REGISTRATION

You should complete and return the postpaid Guarantee Registration Card within 14 days of purchase.

The card will register you as the owner of your new Worcester Danesmoor boiler and, while this will not affect your statutory rights in any way, it will assist us to maintain an effective and efficient customer service by establishing a reference and permanent record for your boiler.

FOR YOUR OWN RECORD

MODEL

SERIAL NUMBER

(See identity label inside appliance casing)

TYPE/SIZE

DATE OF INSTALLATION



**Worcester Heat Systems Limited. Cotswold Way, Warndon, Worcester WR4 9SW.
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Technical Service Helpline 08705 266241.
www.worcester-bosch.co.uk**