



## HANDBOOK AND SERVICE LOG

### Tuscan External Models

Boiler Model: 12-19 ☐ 20-25 ☐

Boiler Serial No. : \_\_\_\_\_



Dear Householder

Thank you for selecting a Hounsfield boiler, the culmination of many years experience in the design, development and manufacture of oil fired boilers.

To claim your **FREE** 5 year extended warranty complete and return the enclosed registration document, alternatively register on line at [www.hounsfieldboilers.co.uk](http://www.hounsfieldboilers.co.uk). Following registration you will receive a warranty certificate and for the duration of the warranty, a reminder each year that a boiler service is due.

Familiarise yourself with the controls and operation of the boiler, if you have any queries please contact us.

Our greatest sales generator has proved to be "word of mouth" if you are happy with the product and service we provide please tell others; if you are not tell us.

Yours faithfully

*A.M.C. Hounsfield*



Andrew Hounsfield

Managing Director

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### TECHNICAL

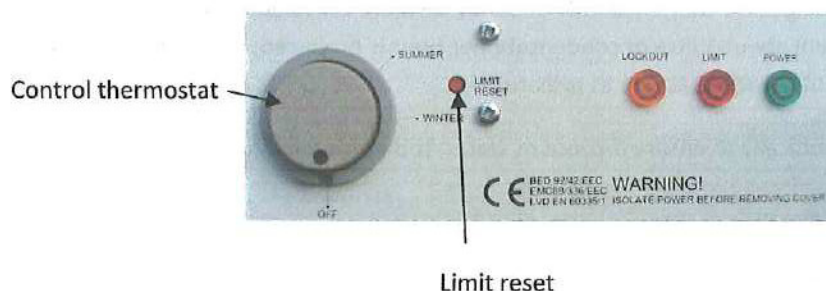
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## HOUSEHOLDER INFORMATION

### Controls



### Control thermostat

Controls the temperature of water within the boiler, set to the following positions:

- Winter when central heating and domestic hot water heating is required.
- Summer for domestic hot water only.

### Power neon

Is illuminated when there is mains power to the boiler and the programmer or time clock is calling for heat.

### Limit neon and limit reset button

Is illuminated when the boiler has over heated; to reset wait for the boiler to cool down then press the red reset button.

**IMPORTANT:** If overheating occurs regularly consult your boiler engineer; there may be a fault with the central heating system.

### Lockout neon and lockout reset button

Is illuminated when burner ignition has failed; it indicates a fault with the burner which may be caused by a lack of fuel.

To reset the burner, wait for two minutes, this allows a bimetallic strip to cool; press the lockout reset button to restart the burner ignition sequence. Note. The reset button also acts as an on/off switch for the burner; press once for off, press again to switch on.

**IMPORTANT:** If you experience continued or frequent lockouts contact your boiler engineer.

Reset button:



### **Exhaust plume**

It is normal for a condensing boiler to produce a plume of water vapour from the flue terminal; it demonstrates the boiler is working extremely efficiently and may be more prevalent when the boiler starts up. Dependant on the heating system about 1 litre of condensate per hour is produced; condensate will have a PH value in the range of 3.5-5; about the same acidity as tomato juice.

Check the condensate trap periodically to ensure it contains water, top up with fresh water if necessary.

### **Switching on the boiler**

- Turn on the oil supply.
- Switch on the electricity supply.
- Set the programmer to "on".
- Ensure the control thermostat is set as appropriate.
- The power neon on the boiler will now be illuminated and the burner will start to operate.

### **Holidays and extended periods of shutdown:**

- **Turn off the oil supply at the tank**, just in case there's an oil spillage when the property is unattended
- Have the boiler serviced.
- Switch off the electrical supply.

### **If you run out of oil**

Refer to the fuel supply section – priming the burner.

### **Oil delivery**

Over time sediment will build up in the bottom of an oil tank; to prevent its ingress into the fuel line switch off the boiler during an oil delivery and allow the fuel to settle for a period before switching on the boiler.

### **Maintenance**

Your boiler should be serviced annually. Failure to comply with this requirement could lead to inconvenient breakdown and will invalidate your warranty.

If you have difficulty in locating an engineer contact our service department who will be able to provide the name of an engineer in your area.

### **Warranty**

Your boiler is guaranteed for one year from the date of installation.

### **Warranty Conditions**

The boiler must be installed and commissioned in accordance with this handbook and appropriate regulations.

The boiler shall not be repaired, modified or tampered without the authorisation of Hounsfield Boilers Ltd... Charges incurred for any unauthorised "in warranty" work will not be accepted.



### **FREE extended warranty**

Extend your warranty **free** of charge to a total of 5 years by completing and returning the enclosed registration document; alternatively register on line via our web site [www.hounsfieldboilers.co.uk](http://www.hounsfieldboilers.co.uk).

When the registration process is completed you will receive an extended warranty certificate and a reminder each year to have the boiler serviced for the duration of the warranty period.

### **Extended Warranty Conditions**

The boiler must be maintained annually with evidence in the form of invoices and a completed service log to support this.

The paper element of oil filter supplied with the boiler must be changed each service.

### **Reporting a warranty fault**

If you suspect a boiler fault in the first instance please contact your installer who will be able to verify the cause of the problem.

If appropriate, your installer must contact Hounsfield Boilers Ltd. for authorisation to undertake remedial work or arrange for an engineer to attend. Under no circumstances should "in warranty" work be undertaken without the authorisation of Hounsfield Boilers Ltd.

If your installer is unavailable please contact our service department, please have your boiler model and serial number available.

## **BOILER INSTALLATION**

### **Regulations and codes of practice**

BS5410 Part 1: Code of Practice for the installation of oil fired boilers up to 45kW

BS5449: Forced circulation hot water central heating systems for domestic premises.

BS7593: Treatment of water in hot water in heating systems.

Building Regulations: Part L1 Part J 2002 England and Wales, Part F Scottish Regulations and Technical Booklet L Northern Ireland.

BS7671: I.E.E. Wiring Regulations.

BS7074: Code of Practice for Sealed Systems.

OFTEC: Recommendations.

### **Refurbishing an old system**

#### **WARNING! – BEFORE INSTALLING A NEW BOILER**

The system must be chemically cleaned to remove sludge that accumulates in radiators and pipe work over time. Failure to do this will result in debris adhering to the clean surfaces of a new boiler, causing kettling noises; similar to a domestic kettle boiling. It also prohibits efficient heat transfer. A cleanser such as Fernox Superfloc should be added to the system at least 48 hours prior to changing the boiler.

### **Anti Freeze**

As a precaution an antifreeze additive should be added to the system water to prevent freezing in the event of electrical power failure.

### **Corrosion inhibitor**

After installation of the new boiler the system must be flushed with a cleaner such as Fernox Superfloc to remove traces of flux residues, grease, metal swarf, solder pieces and oils used during component manufacture.

### **After flushing**

A corrosion inhibitor such as Fernox MB-1 must be added to the system. This will minimise the chemical action and chemical change that takes place in the system's primary water and system components.

### **System balancing**

The optimum performance of your condensing boiler will be achieved if the following parameters are met:

- Under floor heating system: heating flow temperature of 50°C and a return temperature of 40°C.
- Radiator system: heating flow temperature of 70°C and a return temperature of 50°C

The boiler does not normally need a bypass but some radiators on the heating circuit equal to at least 10% of the minimum boiler output, usually those where the room thermostat is located should not have thermostatic radiator valves fitted.

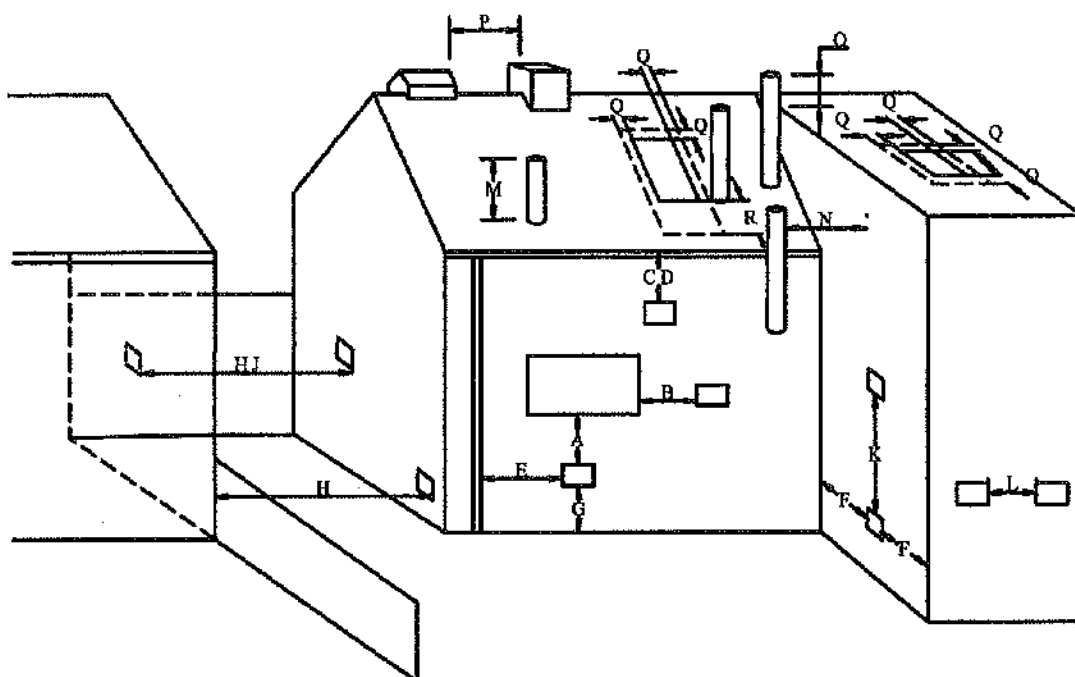
Systems incorporating zone valves which could completely cut off the flow through the system must also include a bypass.

### **Procedure**

1. Set the programmer to ON. Close all thermostatic radiator valves. Valves on radiators in the same room as the room thermostat should be fully open. Note. Radiator valves located in the same area as the room thermostat should not be of the thermostatic type.
2. Turn up the room thermostat and adjust the valves on the radiators located in the same room as the room thermostat to give a boiler flow and return temperature differential of not more than 20 °C. These valves should now be left as set.
3. Open all manual or thermostatic radiator valves and adjust the lock shield valves on the remaining radiators, to give around 15 °C temperature drop at each radiator. Adjust the room thermostat and programmer to NORMAL settings.



## Flue terminating positions

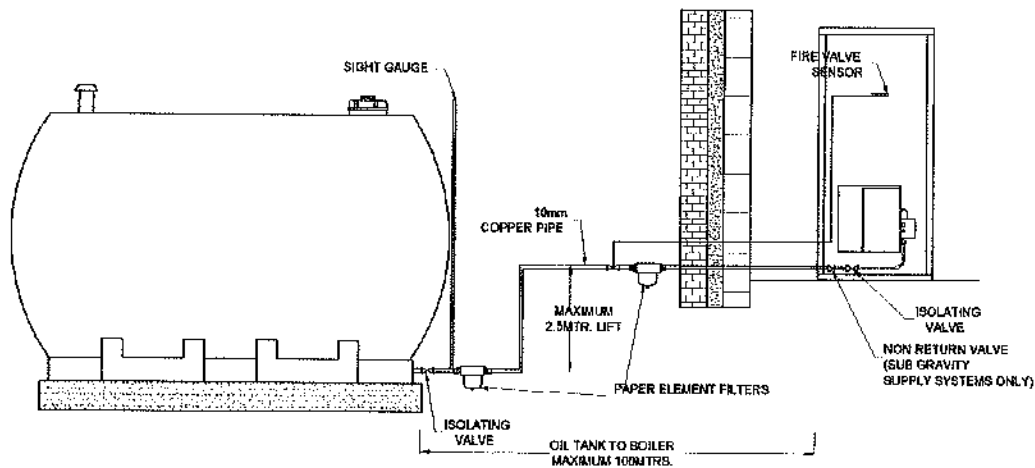


A	Directly below an opening, air brick, window etc.	600mm
B	Horizontally to an opening, air brick, window etc.	600mm
C	Below a gutter, eaves or balcony with protection	75mm
D	Below a gutter or balcony without protection	600mm
E	From vertical sanitary pipe work	300mm
F	From an internal or external corner	300mm
G	Above ground or balcony level	300mm
H	From a surface or boundary facing a terminal	600mm
J	From a terminal facing the terminal	1200mm
K	Vertically from a terminal on the same wall	1500mm
L	Horizontally from a terminal on the same wall	750mm
M	Above the highest point of an intersection with the roof	600mm
N	From a vertical structure to the side of the terminal	600mm
O	Above a vertical structure less than 750mm from the side of the terminal	600mm
P	From a ridge terminal to a vertical structure on the roof	1500mm
Q	Above or to the side of any opening on a flat or slopping roof	1500mm
R	Below any opening on a slopping roof	1000mm

### Notes.

1. Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.
2. Terminating positions must be at least 1.8 metres from an oil tank.
3. Ref. C above. Where a terminal is less than 600mm from gutters, eaves or balcony a heat shield at least 750mm wide should be fitted to protect surfaces.
4. Where a flue terminates near the boundary of a property, consideration should be given to possible noise disturbance as some people are sensitive even to low noise levels.
5. Avoid flue terminating positions where PVC windows, doors or decorative patio slabs are directly below the terminal; over time products of combustion may cause staining.
6. Condensate plumbing will occur around the terminal, positions where this could cause a nuisance should be avoided.

## Fuel supply



## Fuel supply line

A single pipe line is required for the fuel supply to the boiler; a Tiger Loop deaerator or two pipe system is unnecessary. The oil pump is designed to lift oil up to 4 metres; we recommend a maximum boiler installation height of 2 metres, the overriding consideration being to provide safe access for a service engineer. The pump's lift capacity does provide greater flexibility than most when considering the location of the oil tank; allowing it to be sited at the bottom of an incline or up to 100 metres from the boiler.

**IMPORTANT!** In a suction oil supply system particular attention is required to prevent air being sucked into the fuel line; keep the number of joints to a minimum, in particular those that are likely to be above the minimum oil level and subject to negative pressure.

With the above in mind install the oil filter, isolation valve, NRV and fire valve assembly, just above ground level and before the vertical rise of the oil line to the boiler.

For installations where the oil level in the tank, may be lower than the burner a non return valve will be required.

## Filters

A paper element filter and isolation valve is supplied with the boiler, to be installed near the boiler, an additional filter adjacent to the oil tank is recommended. Paper element filters should be installed in preference to gauze; they provide greater protection and longevity to the oil pump.

## Fire valve

A remote sensing fire valve is required, a clamp to support the phial is provided next to the boiler thermostat panel.

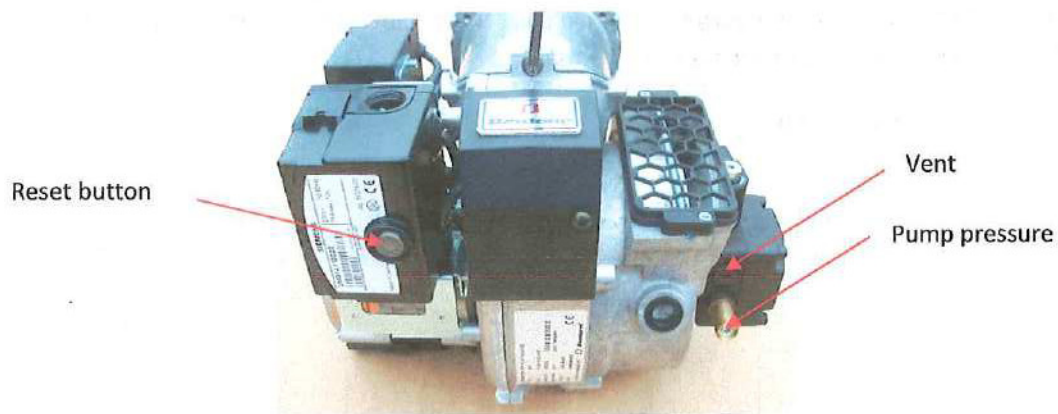
## Oil tank

If a top outlet tank is to be installed, there may be a non-return valve fitted to the oil line within the tank; this should be removed.

Ensure there is enough clearance between the tank and the concrete base to allow removal of the oil filter.

### Priming the burner

Press the burner reset button, the firing sequence will commence. During the firing sequence slacken the vent plug to purge air from the oil line. If ignition fails the burner will go to lockout; the reset button will be illuminated. Press the reset button to restart the firing sequence. The reset button also acts as an on/off switch; press once for off, press again to switch on.



### Testing the fuel supply

For wall mounted boilers fitted with a clear oil line, with the burner operating it is normal for a static air bubble to remain at the highest point of the clear flexible oil line; a continuous stream of bubbles indicates that air is being drawn in. This must be cured check all joints above the oil level in the tank.

If a non-return valve is installed, test its function by releasing the flexible oil line connection onto the pump, hold the oil line vertically; the oil level should be maintained.

### Oil line accessories

Item	Part no.
Fire valve 1.5mtr capillary 66°C	BSF1.566
Fire valve 3mtr capillary 66°C	BSF366
Fire valve 6mtr capillary 66°C	BSF666
Fire valve 9mtr capillary 66°C	BSF966
Fire valve 15mtr capillary 66°C	BSF1566
3/8" Non return valve	BS0002
3/8" Oil filter	BS0003
3/8" Oil filter element	BS0004

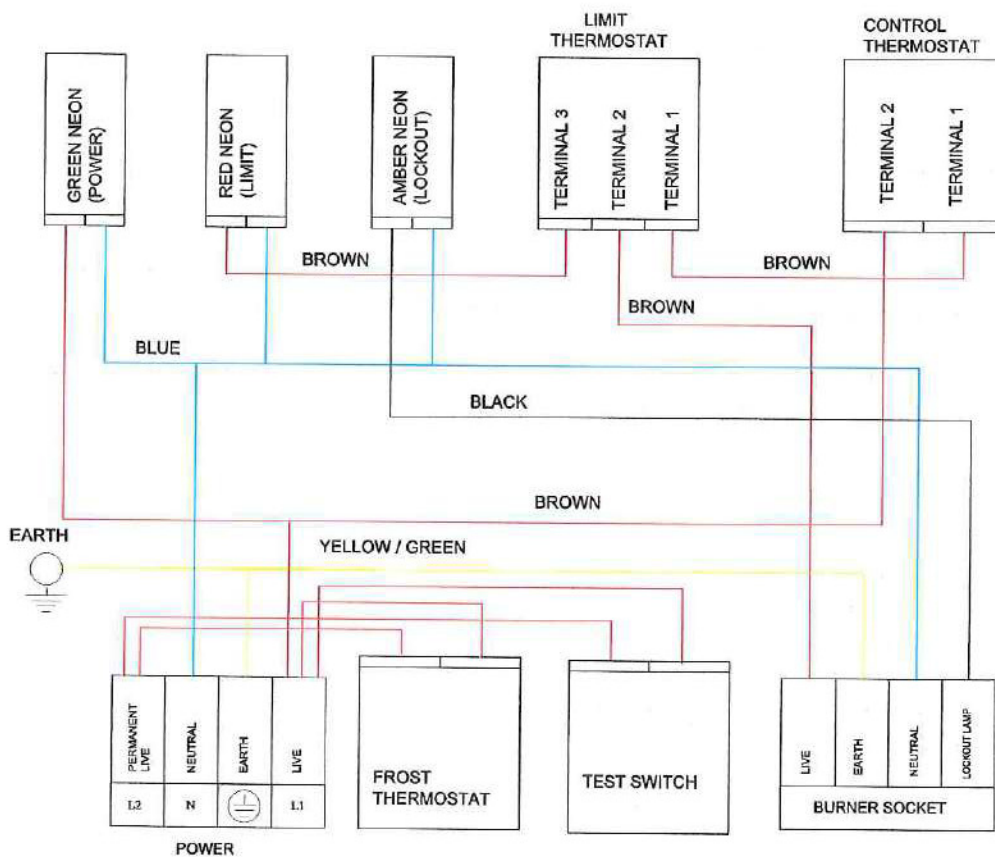
### Electrical detail

The electrical supply to the boiler must be via a fused double pole isolating switch located near the boiler in order to provide easy access to the user after installation. Fuse rating should be 5amps.

Connection to the boiler should be made using flexible three core PVC insulated cable, not less than  $0.75\text{mm}^2$  to BS6500 1990 table 16.

Route the flexible cable into the boiler via the 20mm grommet in the rear panel and connect to the three pin socket. Connect the switched live supply to the 4-pin plug, N = negative, L1 = switched live, L2 = permanent live, which powers the frost thermostat and the test switch.

### Thermostat panel wiring diagram



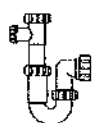
## Condensate pipe work

A 22mm condensate drain trap (code OBT1-CO) is provided with the boiler, dependant on site conditions other options may be more appropriate, see below; these fittings are available from plumber's merchants.

Condensate can be discharged into an independent soak away, soil waste or rain water disposal systems within a property.

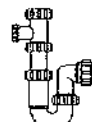
In accordance with The Building Regulations 2000 Document H a 75mm water seal is required; this will prevent flue gases exiting. Pipe work fall must be a minimum of 18mm per metre. Where pipe runs are external, consideration should be given to the consequence of potential freezing of the condensate, in this circumstance lag pipe work or increase the pipe size to 32mm.

### BASIN AND SINK TRAPS



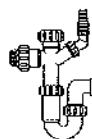
1 1/2" x 75mm Water Seal Tubular Swivel Basin Trap with Adjustable Inlet and connection for 19/22mm Pipe to receive discharge from Condensing Boiler. Supplied with Blanking Cap.

Code: ASA10-SP



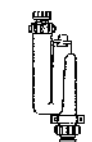
1 1/2" x 75mm Water Seal Tubular Swivel Sink Trap with Adjustable Inlet and connection for 19/22mm Pipe to receive discharge from Condensing Boiler. Supplied with Blanking Cap.

Code: ASC10-SP



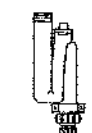
1 1/2" x 75mm Water Seal Tubular Swivel Sink Trap with Adjustable Inlet, Washing Machine Nozzle and connection for 19/22mm Pipe to receive discharge from Condensing Boiler. Supplied with Blanking Cap.

Code: ASC10-CO



19/22mm Inlet and Outlet x 75mm Water Seal Offset Trap to receive discharge from Condensing Boiler. Supplied with Support Clip.

Code: OBT1-CO



34mm Open Inlet x 76mm Water Seal Offset Trap x 19/22mm Outlet. Open Inlet to accept flexible pipe from Condensing Boiler. Supplied with Support Clip.

Code: OBT2-CO

### SOAKAWAY - CONTAINER FOR USE WITH LIME STONE CHIPPINGS



110mm diameter x 300mm x 19/22mm Pipe Inlet connection to receive discharge from Condensing Boiler.

Removal of 19/22mm Fitting provides connection for 1 1/2" / 1 1/4" Pipe to BS S254 / BS S255. For external use only and supplied with installation instructions.

Code: SOAK1GR

### AUXILIARY FITTINGS



50mm Tin Dish with 19/22mm Pipe Outlet.

Code: TUN-2



In-line vertical non-return valve with Inlet and Outlet connection for 19/22mm Pipe.

Code: CONVALVE

### AUXILIARY FITTINGS



Pipe Clamp to suit 1 1/2" / 1 1/4" Pipe to BS S254 / BS S255 with connection for 19/22mm Pipe to receive discharge from Condensing Boiler. Street Elbow Supplied. Supplied with installation instructions.

Code: (Gray) CLAMP1GR

Code: (White) CLAMP1WH



1 1/2" x 1 1/4" x 19/22mm Universal Slip Tee Piece to receive discharge from Condensing Boiler.

Code: VIMX-CO



Mechanical Soil and Rainwater Pipe Boss Connector for 19/22mm Pipe. Supplied with installation instructions.

Code: BOSSCONN-22MM



3/4" Flexible Tube x 19/22mm Rigid Pipe Straight Connector.

Code: RIM-CO

### WASTEFLOW



Wasteflow can be fitted with R11, R12 or R15 Connector (order as required) for connection to 19/22mm overflow warning pipe.

Code: WF21-SP

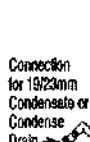
### WASTEFLOW WITH BATH POP-UP WASTE



Comprises CP Stainless Steel Flange and Plug and CP Brass Control Knob complete with SM18E Trap.

Code: PUWF2-SP

### BATH POP-UP WASTE

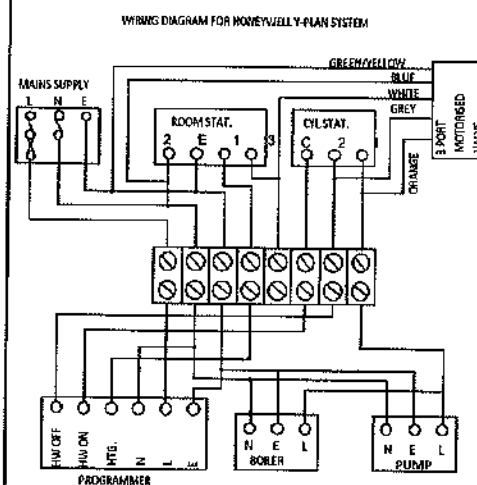
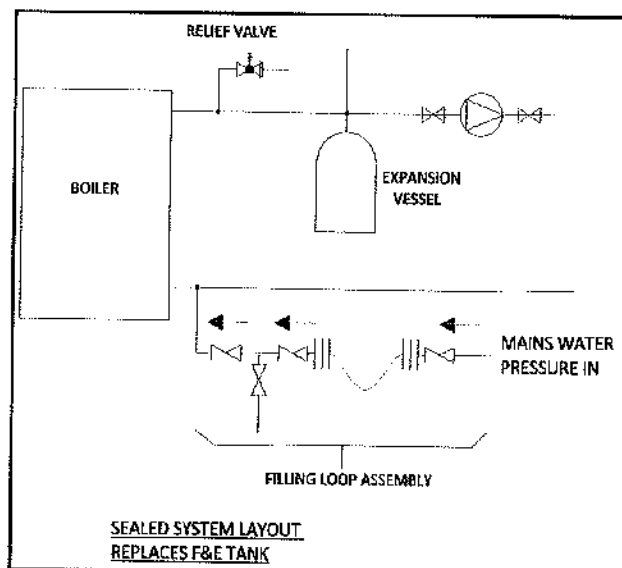
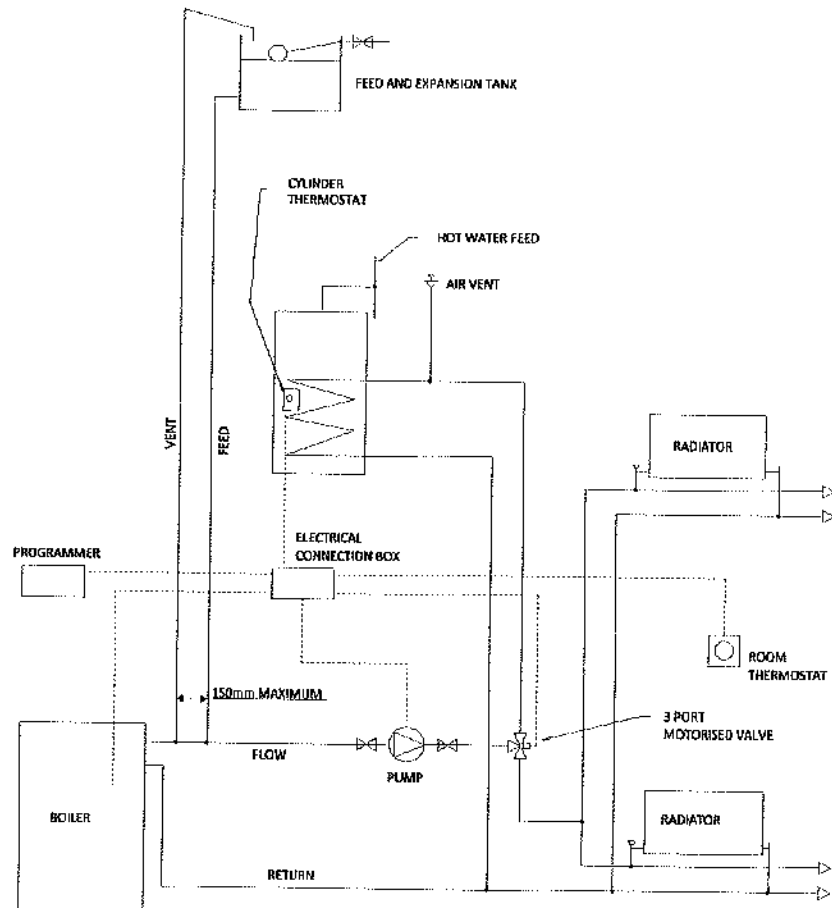


Comprises CP Brass Control Knob, CP Stainless Steel Flange and Mushroom Plug.

Code: PUBX-SP

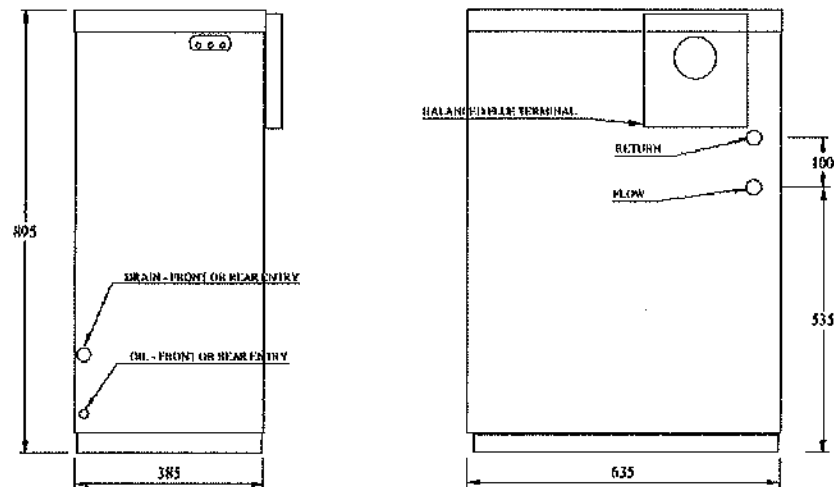
## Typical heating system layout

### FULLY PUMPED Y-PLAN HEATING SYSTEM



## TECHNICAL

### Boiler specifications



Model	Condensing model	Output kW.	Output Btu/hr. x 1000	BED Full load Efficiency		Water connections		
						Flow	Return	Drain
Tuscan 12-19	Yes	12-19	41-65	96-97%		¾" BSP	22mm	21.5mm
Tuscan 20-25	Yes	20-25	68-85	96-97%		¾" BSP	22mm	21.5mm
<b>Electrical:</b>								
Electrical Supply				230V 50Hz, - fused 5amp				
Burner motor				90W				
<b>Fuel:</b>				Class C2 (28 second kerosene)				
Oil supply connection				10mm compression				
Heating system requirements				Fully pumped, open vented or sealed system.				
<b>Operating conditions:</b>								
Maximum operating pressure				3 bar static head 28 metres (92feet)				
Operating temperature				50 to 80°C maximum				
<b>Thermostats:</b>								
Control thermostat				Range 50 to 88°C				
Limit thermostat				Manual reset, set point 100 - 4°C				
<b>Weight empty:</b>				12/19= 82kg, 20/25=89kg				
<b>Water capacity:</b>				12/19= 14ltrs, 20/25=20ltrs				
<b>Flue requirement:</b>								
Conventional flue socket				To suit 100mm flue				
Draught limits (floor standing boilers):				12 – 30 Nm2 (0.04" – 0.11" WG)				



### Service schedule

To ensure continued safe and efficient operation of the heating system the boiler should be serviced annually. Servicing should be undertaken by a competent person / OFTEC registered engineer; they will have the appropriate combustion analysis and test equipment to ensure accurate set up and efficient operation of the boiler.

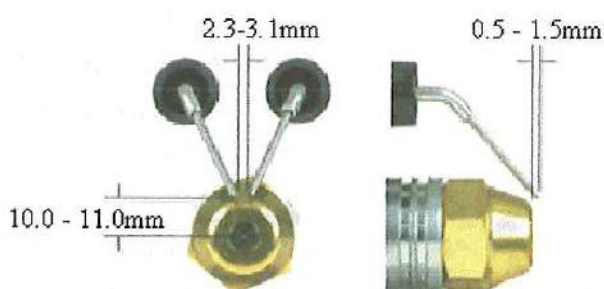
### Check list summary:

1. Carry out a pre-service combustion / operation check noting any faults.
2. Remove primary and secondary heat exchanger baffles, clean components scrape residue from the heat exchange surfaces and vacuum.
3. Check the condition of combustion chamber insulation and door seals.
4. Clean the burner and replace the injector nozzle.
5. Ensure the condensate trap is full of water.
6. Replace / clean oil filter elements as appropriate.
7. Carry out a combustion analysis test, check pump pressure, CO<sub>2</sub> & air intake settings.
8. Complete the service log.

### Burner setting

BOILER MODEL		12/19				20/25		
OUTPUT	kW	12	14	16	19	20	23	25
	Btu/hr	40,944	47,768	54,592	64,828	68,240	<b>78,476</b>	85,300
SEDBUK	Band	A	A	A	A	A	A	A
NOZZLE	Danfoss	0.30/80°H	0.35/80°H	0.40/80°EH	0.45/80°EH	0.50/80°EH	<b>0.55/80°EH</b>	0.65/80°EH
OIL PRESSURE	PSI	115	120	120	135	130	<b>120</b>	130
FIRING RATE	kg/hr	0.98	1.15	1.23	1.48	1.64	<b>2.18</b>	1.97
	Litres/hr	1.25	1.45	1.56	1.87	2.19	<b>2.52</b>	2.74
AIR SETTING		3.5	4	4	4.5	5	<b>5.5</b>	6
SMOKE NO.		0	0	0	0	0	<b>0</b>	0
CO <sup>2</sup> %		11.3-5	11.3-5	11.3-5	11.3-5	11.3-5	11.3-5	11.3-5
EFFICIENCY NETT %		96-97				96-97		
FLUE GAS TEMP. Deg.°C @ nom. 50oC return, 70oC Flow		67	69	75	82	75	80	85
FLUE GAS TEMP. Deg.°C @ nom. 60oC return, 80oC Flow		60	61	67	75	68	74	79

### Electrode setting



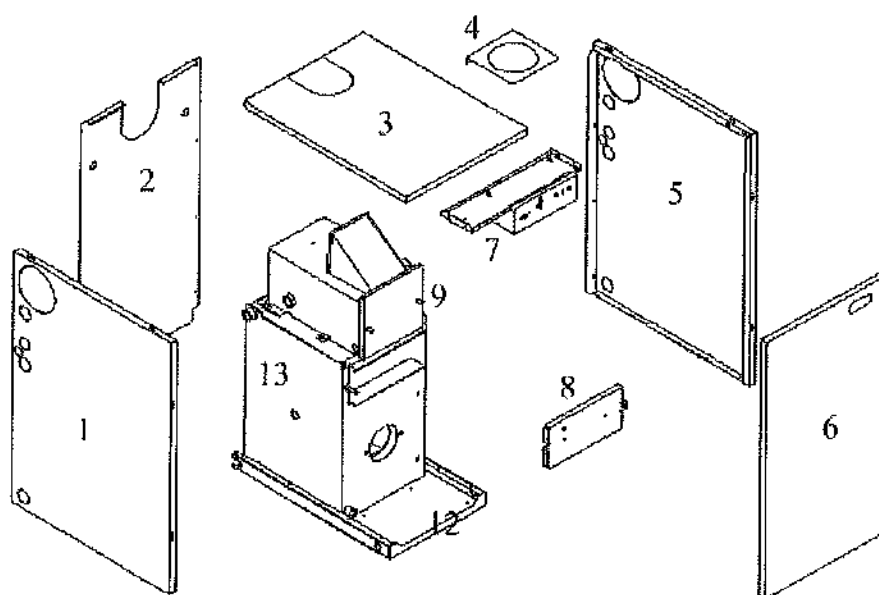
## **Fault diagnosis**

**ELECTRICITY SAFETY** – Before making any electrical checks, switch off mains supply to boiler.

The list below is not intended to be a comprehensive guide to fault analysis but resolution to identify some of the more common faults, the services of a competent boiler service engineer equipped with appropriate tools must be used.

Fault		Possible fault
High limit thermostat neon is illuminated.		Control thermostat. Lack of water circulation.
The mains neon is not illuminated.		Blown fuse. Time clock or programmer fault.
Boiler lockout lamp is illuminated.	Lack of fuel supply.	Is there fuel in the tank?
		Air in the fuel line; see bleeding the oil line section of handbook.
		Solenoid coil.
		Supply line valves closed.
		Injector nozzle.
	Flame goes out after a short period.	Fuel starvation.
		Photocell.
		Control box.
	Lack of ignition spark.	Control box.
		Ignition transformer.
		Electrodes.
		H.T. leads.
Burner lockout after a period of shutdown.		Air in the supply line; see bleeding the oil line section of the handbook. Non return valve.
Burner does not operate.		Oil pump seized or has a tight spot. Motor. Control box. Capacitor.
Radio or T.V. interference		Electrode setting. Ignition transformer. Poor earth bonding.
Sooty exhaust.		Injector nozzle. Incorrect combustion settings.
Burner ignites violently; caused by delayed ignition.		Electrode setting. Burner air setting too high.
Oil or exhaust gas odours.		Incorrect combustion settings. Fuel leak. Gaskets or seals have degraded.
Kettling boiler; sounds like a kettle boiling.		Lack of water circulation. Lack of pressure in a sealed system. Contamination of water side surfaces of the heat exchanger; a chemical clean of the system will be required.

## Boiler parts list



ITEM	DESCRIPTION	12/19	20/25	26/30
1	LHS Panel	PW50002L		
2	Rear panel	PW50003		PW20003
3	Top panel	PW20005		PW20005
4	Flue trim plate	PW20009		
5	RHS Panel	PE50002R		
6	Front panel	PW50004		PW20004
7	Control panel	PW20006		
8	Heat exchanger access door	HE40016	HE50016	HE20016
9	Condenser unit	CN40000	CN50000	
10	Top baffle	HE40019	HE50019	HE80019
11	Bottom baffle	HE40011	HE50011	HE80011
12	Base frame	PW50001	PW50001	PW50001
13	Heat exchanger	HE40014	HE50014	HE80014
	Limit thermostat	EL006		
	Control Thermostat	EL023		

Burner parts list

<p><b>Blast tube</b> Pt.no.BPPL6-7-21.5-10E 80mm</p>		<p><b>Danfoss Pump</b> BFP11L3 Pt.no.BP71N0142-(1pipe)</p>	
<p><b>Monoblock electrode</b> Pt.no. BP21593702</p>		<p><b>Control box</b> Pt.no.BPLM014.113C2E</p>	
<p><b>Burner flange gasket</b> Pt.no. BP11883002</p>		<p><b>Blast tube gasket</b> Pt.no.BP11883101</p>	
<p><b>Capacitor</b> Pt.no. BP11596501</p>		<p><b>Oil line</b> Pt.nos. braided: BP11946501 Clear: BP12745601</p>	
<p><b>Drive coupling</b> Pt.no. BP11407204</p>		<p><b>Transformer</b> Pt.no. BP12043201</p>	
<p><b>Fan</b> Pt.no.BP12051601</p>		<p><b>Solenoid</b> Pt.no. BP21587101</p>	
<p><b>Motor</b> Pt.no. BP12048902</p>		<p><b>Photocell</b> Pt.no. BP11992402</p>	

**Service log**

Date	Boiler efficiency	Parts replaced	Parts required next service



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