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1

1-1 Installer

Boiler Installed by:-

Tel: _____

Fax: _____

email: _____

Boiler Commissioned by:-

Tel: _____

Fax: _____

email: _____

To the householder.

Thank you for purchasing a Thermecon Oil Fired Boiler.

In the unlikely event of a problem arising with the Boiler please first refer to:-

Page 41 section 12 'Householders Fault Finding' of this Manual.

If you cannot rectify the problem from the information given, or if the problem persists contact the INSTALLER who will assess the problem and if necessary contact our service department.

DO NOT involve a third party that may incur you costs as this will not be covered by the Boiler Guarantee.
Any work not authorised by GAH (HEATING PRODUCTS) LTD. may also invalidate the Guarantee.
Work carried out and parts fitted by unauthorised engineers cannot be guaranteed.

1-2 Householders Information

The type of fuel required for the Boiler is

✍

Tank Capacity ✍

Note

The price of fuel has seasonal fluctuations and varies from supplier to supplier. You are advised to shop around for a good deal.

Oil Suppliers

☎

☎

☎

Boiler Service Engineer

☎

☎

☎

1-3 Service History

It is a condition of the Guarantee that the Boiler is serviced every 12 months.

	By	Date	Next Service due by	Notes
Installed			N/A	
Commissioned				
Service				
Service				
Service				
Service				
Service				
Service				
Service				

1-4 Boilers covered by this manual

My Boiler
✔ Tick box

Select Floor Standing

					QUICK REFERENCE			
Model	**S40/65**	**S60/80**	**S80/95**	**S90/120**	Wiring Diagram	Dimensions	Oil Connection	
Btu/hr x 1000	40 to 65	60 to 80	80 to 95	90 to 120				
kW	11.7 to 19.1	17.6 to 23.5	23.5 to 27.6	26.4 to 34.9				
	☐	☐	☐	☐	Page 49	Page 54	Page 11	
Model	**S100/150**	**S140/190**	**S190/240**	**S240/270**				
Btu/hr x 1000	100 to 150	140 to 190	190 to 240	240 to 270				
kW	29.3 to 44.0	41.0 to 55.7	55.7 to 70.3	70.3 to 79.1				
	☐	☐	☐	☐	Page 49	Page 54	Page 11	

Option Floor Standing

Model	**O40/65**	**O60/80**	**O80/95**	**O90/120**				
Btu/hr x 1000	40 to 65	60 to 80	80 to 95	90 to 120				
kW	11.7 to 19.1	17.6 to 23.5	23.5 to 27.6	26.4 to 34.9				
✍	☐	☐	☐	☐	Page 49	Page 54	Page 11	
Model	**O100/150**	**O140/190**	**O190/240**	**O240/270**				
Btu/hr x 1000	100 to 150	140 to 190	190 to 240	240 to 270				
kW	29.3 to 44.0	41.0 to 55.7	55.7 to 70.3	70.3 to 79.1				
✍	☐	☐	☐	☐	Page 49	Page 54	Page 11	

Option Floor Standing System

Model	**OS60/80**	**OS80/95**	**OS90/120**	**OS100/150**				
Btu/hr x 1000	60 to 80	80 to 95	90 to 120	100 to 150				
kW	17.6 to 23.5	23.5 to 27.6	26.4 to 34.9	29.3 to 44.0				
✍	☐	☐	☐	☐	Page 49	Page 54	Page 11	

Combistream & Combi 65I

Model	**C40/65**		Model	**Combi 65E C40/65E**				
Btu/hr x 1000	40 to 65		Btu/hr x 1000	40 to 65				
kW	11.7 to 19.1		kW	11.7 to 19.1				
✍	☐		✍	☐	Page 51	Page 58	Page 11	

Combistream only

Select Wall Mounted Internal

Model	**W40/50I**	**W50/80I**						
Btu/hr x 1000	40 to 50	50 to 80						
kW	11.7 to 14.7	14.7 to 23.4						
✍	☐	☐			Page 49	Page 55	Page 14	

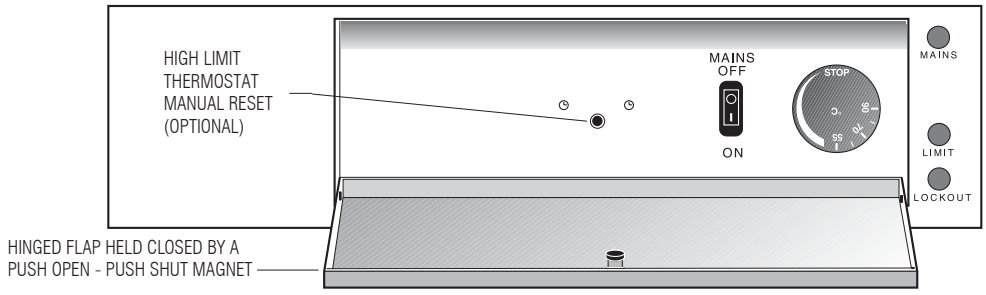
Select Wall Mounted External

Model	**W40/50E**	**W50/80E**						
Btu/hr x 1000	40 to 50	50 to 80						
kW	11.7 to 14.7	14.7 to 23.4						
✍	☐	☐			Page 50	Page 56	Page 16	

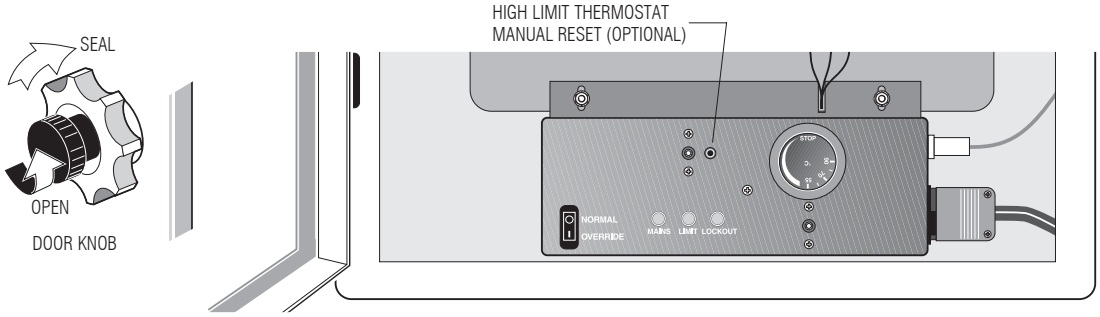
Select Free Standing External

Model	**F40/50E**	**F50/80E**						
Btu/hr x 1000	40 to 50	50 to 80						
kW	11.7 to 14.7	14.7 to 23.4						
✍	☐	☐			Page 50	Page 57	Page 17	

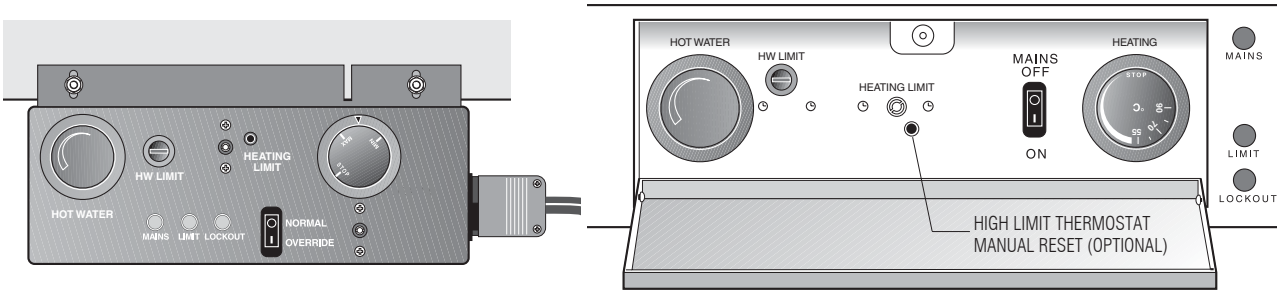
2-1 Control Panel - Select, Combistream and Combi 65



Select and Internal Wall



Wall Mounted External & Free Standing External



Combi 65 External

Combistream and Combi 65 Internal

Fig. 2-1a Control Panels



2-1.1 Boiler Thermostat Control

The Boiler Thermostat Control is used to control the temperature of the water within the Boiler Water Chamber.

The heat sensor phial of the Thermostat is on the end of a capillary tube and placed in one of the tubes on top of the Boiler waterway.

The Thermostat control has a 'STOP' position to switch the Boiler OFF.

The temperature range of the control is 55°C to 90°C.

The recommended settings of the Boiler Thermostat control are:-

1. Winter Heating and Hot Water 80°C.
2. Summer Hot Water only 65°C.

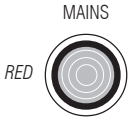
A setting below 60°C can, on some heating systems, induce corrosion and reduce the life of the Boiler.



2-1.2 Mains Switch

O = Off I = On

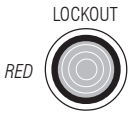
The Mains Switch switches the Boiler ON and OFF. When power to the Boiler is ON and the Mains Switch is ON the Mains Indicator Lamp will be lit.



2-1.3 Mains Indicator Lamp

The Mains Indicator Lamp will be lit when the Boiler Mains Switch is ON and the heating system control is calling for heat.

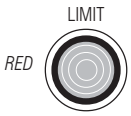
If the Lamp does not illuminate refer to Section 12 Fault Finding.



2-1.4 Lockout Indicator Lamp

When the Lockout Indicator Lamp is illuminated, it indicates that a Burner 'Lockout' has occurred and the Boiler is not operational.

Refer to 3-3 to restart Boiler.



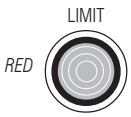
2-1.5 Limit Indicator Lamp

The Limit Indicator Lamp is illuminated when the water within the Boiler is overheated i.e. the High Limit Thermostat of the Boiler control is tripped.

Standard High Limit Thermostat with automatic reset

When the Limit Lamp is lit (High Limit Thermostat tripped), the Boiler shuts down until the water temperature falls to a satisfactory level (5°C below High Limit Thermostat setting). The High Limit Thermostat then resets automatically and normal operation should follow.

Installer tick if applicable ☐



2-1.6 Manual Limit Reset Button (Option)

A High Limit Thermostat with an integral Manual Reset button is normally fitted to System Boilers and Combistream Boilers. Boilers fitted with 'Manual Reset' High Limit Thermostats will not restart automatically after overheating has occurred.

The Limit Indicator Lamp is OFF when the Boiler is operating normally.

If the Lamp is ON the water within the Boiler is or has overheated i.e. the High Limit Thermostat of the Boiler control is tripped.

When the Limit Lamp is ON (High Limit Thermostat tripped) the Boiler shuts down. When the water temperature falls to a satisfactory level (5°C below High Limit Thermostat setting), the Manual Reset button should be pressed - this will restart the Boiler.

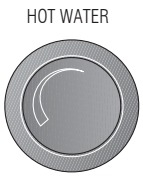
If overheating occurs check that the Boiler Heating Thermostat control is set below 80°C - see 2-1.1 If it still occurs more than occasionally, consult your installation engineer as there may be a fault within the system.

Installer tick if applicable ☐

Note

On Combistream Boilers It may also be necessary to press the Hot Water manual reset - see 2-1.8.

The following items are for Combistream and Combi 65 only.



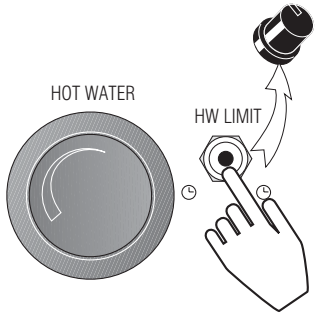
2-1.7 Hot Water Thermostat Control

With Manual Reset

The Hot Water Thermostat Control is used to set the temperature of the hot water from the Combistream to the hot water taps. The heat sensor phial of the Thermostat is on the end of a capillary tube and placed in a recess in the hot water storage cylinder.

The temperature range of the control is 30°C to 70°C. The recommended setting control is 70°C.

The temperature of the hot water at the taps is controled by the Thermostatic Mixing Valve see 2-3.



Note
It may also be necessary to press the Heating Limit manual reset - see 2-1.6.

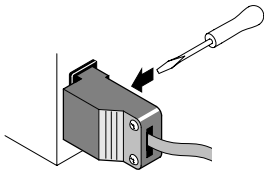
2-1.8 Hot Water High Limit Thermostat
With Manual Reset

A Hot Water High Limit Thermostat with an integral Manual Reset button is fitted to the Boiler.

When the Hot Water High Limit Thermostat has tripped the Boiler shuts down and will not restart automatically. The Limit lamp (2-1.6) will not be on as this is only for the Heating High Limit.

To reset after hot water overheating has occurred, allow time for the water to cool, or run off some hot water, then remove the plastic cap and press the HW Limit manual reset button.

If overheating of the hot water occurs, turn down the Hot Water Control - see 2-1.7. If it still occurs consult your installation engineer as there may be a fault within the system.



TO REMOVE PLUG PRESS SMALL SCREWDRIVER THROUGH HOLE IN REAR OF PLUG

The following items are for all External Boilers only.

2-1.9 Mains Plug
The Mains Plug connects power to the Boiler.

The plug must be IN for the Boiler's Frost Protection to function.



2-1.10 Normal/Override
The Normal/Override switch allows for the household heating control circuitry to be overridden by switching to the permanent live.

The switch is intended for use by service engineers to allow operation of the Boiler without the necessity of entering the household.

The switch should be set at NORMAL (O) at all other times.

2-2 Control Panel - Option

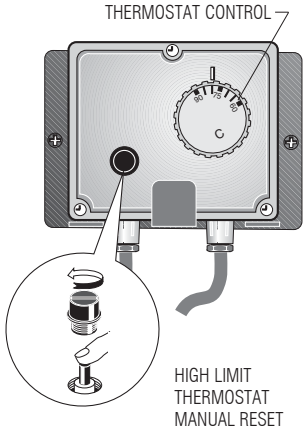


Fig. 2-2a Option Control Panel with Manual Reset

Note
Boilers fitted with Manual Reset are suitable for Sealed Systems.

2-2.1 Boiler Thermostat Control
The Boiler Thermostat Control is used to control the temperature of the water within the Boiler Water Chamber.

The temperature range of the control is 60°C to 90°C. The recommended settings of the Boiler Thermostat control are:-
Winter Heater and Hot Water 80°C - Summer Hot Water only 65°C.

A setting of 60°C or below is not recommended as this can induce corrosion and reduce the life of the Boiler.

2-2.2 High Limit Thermostat with Manual Reset
A High Limit Thermostat with an integral Manual Reset button is fitted as standard to Option Boilers.

Boilers fitted with Manual Reset High Limit Thermostats will not restart automatically after overheating has occurred.

The High Limit Thermostat will trip and shut the Boiler down when the water within the Boiler is overheated.

When the water temperature falls to a satisfactory level (10°C below High Limit Thermostat setting), the Manual Reset button (protected by a removable plastic cap) should be pressed - this will restart the Boiler.

If overheating occurs more than occasionally, consult your installation engineer as there may be a fault within the system.

2-3 Combistream and Combi 65 Thermostatic Mixing Valve

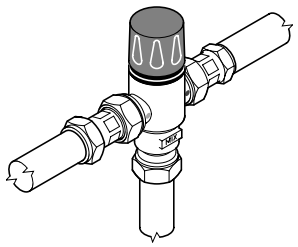


Fig. 2-3a Combistream Mixing Valve

The Mixing Valve will be positioned outside the Boiler case and may be in a different location than the Boiler. This valve mixes hot water from the Boiler with cold water to provide hot water of a constant temperature at the taps.

The recommended maximum hot water temperature at the taps is 65ºC.

The recommended setting of the valve is between No.4 and 7 (49º to 63ºC).

The Mixing Valve is factory set to the following approximate mixed outlet temperatures:-

Knob Position	Min	1	2	3	4	5	6	7	Max
Output Temp. ºC	27º	32º	38º	44º	49º	53º	58º	63º	67º

2-4 Combistream and Combi 65 Expansion Relief

Note

Either the Tundish or discharge pipe must remain in view, do not box in or cover up.

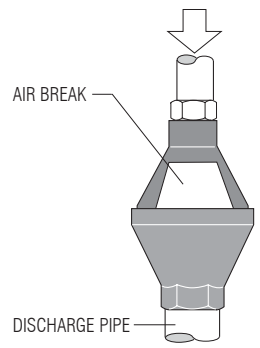


Fig. 2-4a Tundish

Note

For more information see 6-2.12.

2-4.1 Tundish

The Combi boiler's hot water system has two TPR valves, one for the hot water storage cylinder and one for the incoming cold supply. In the event of pressure within the hot water or incoming cold supply becoming too high, either of the TPR valves will vent.

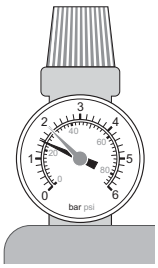
A Tundish should be fitted and located in the same space or compartment as the hot water storage cylinder. This device provides an air break when pressure is being vented.

When pressure is being vented water/steam will be evident at the Tundish and from the discharge pipe of the Tundish.

Cold water will normally only discharge when there is an increase in pressure caused by loss of air pressure in the Accumulator.

In the event of water/steam being seen at the discharge pipe or Tundish, do the following:-

1. Turn ON a hot and cold tap to relieve the pressure.
2. Turn OFF the Heating System.
3. Investigate possible cause for high pressure e.g.:-
   - i Hot Water Thermostat Control is set too high.
   - ii Mains water is not on or fully on.
   - iii Restriction in hot water pipework.
   - iv Loss of air pressure in the Accumulator.
4. Contact the installer before restarting the system.



2-4.2 Heating TPR Valve

Combi boilers have a Heating TPR valve mounted on top of the Heat Exchanger and discharging to the rear of the Boiler. In the event of the pressure within the heating system becoming too high the TPR valves will vent.

In the event of water/steam being seen at the discharge pipe or Tundish, do the following:-

1. Check that the radiators are turned on, the heating system should never be operated with all radiators OFF.
   If all radiators are fitted with thermostatic valves, these can all be in a shut condition if the temperature in the dwelling is sufficient. In this circumstance the heating system should have a bypass that should be open - see 6-1.3.
2. Turn OFF the Heating System.
3. Investigate possible cause for high pressure e.g.:-
   - i Boiler Thermostat Control is set too high.
   - ii Air in the system.
4. Contact the installer before restarting the system.

3-1 Switching the Boiler ON

To set Boiler for operation:-

Select and Combi

1. Turn fuel supply on.
2. Switch power supply to the Boiler ON.
3. Switch Mains Switch of the Boiler Control Panel ON.
4. Set Boiler Thermostat Control to the required setting.
5. Set Central Heating Control System to ON.

External

1. Turn fuel supply on.
2. Switch power supply to the Boiler ON.
3. Set Normal/Override switch to Normal.
4. Set Boiler Thermostat Control to the required setting.
5. Set Central Heating Control System to ON.

Option

1. Turn fuel supply on.
2. Switch power supply to the Boiler ON.
3. Set Boiler Thermostat Control to the required setting.
4. Set Central Heating Control System to ON.

Note

The Installer should instruct the user on operating the central heating system.

3-1.1 Boiler Operation

The Boiler Thermostat switches power to the Burner ON and OFF in response to the temperature of the water within the Heat Exchanger.

The Burner will automatically fire when the water temperature within the Boiler falls below the thermostat control setting, and will continue to run until the water temperature rises to the set °C.

The Burner has its own Control System that gives correct ignition and shut-off sequences to maintain safe operation.

3-1.2 Automatic Boiler Operation

A fully automatic central heating and hot water installation with its own remote timer and control system will switch the Boiler ON and OFF as and when heat is required.

3-2 Switching the Boiler OFF

Note

For frost protection of External Wall Mounted and External Freestanding Boilers the mains switch controlling the Boiler must be ON.

The Boiler can be switched off by any of the following means:-

1. Switch the Mains Switch on the Boiler Control Panel to OFF (not Option or External).
2. Turn the Boiler Thermostat control to STOP.
3. Switch OFF the Mains Switch controlling the Boiler.
4. Set the Central Heating Control System to OFF.

Remember

Switch on the fuel before attempting to restart the Boiler.



IMPORTANT In the event of abnormal operation:-

1. **Switch OFF the Mains Switch controlling the Boiler.**
2. **Shut OFF fuel supply.**
3. **Refer to Section 12 Fault Finding.**

3-3 Burner 'Lockout'

The Burner has its own Control System that synchronises the Burner ignition sequences. The safety system of the Burner includes a flame detector (photoresistor) which senses the light of the flame.

In the event of a failure of the flame, the Burner Control goes through a re-ignition sequence. If the flame is not evident within 15 seconds, the Burner shuts down due to its lockout circuit being energised.

The Reset Lamp in the Burner Reset button and the *Lockout Lamp on the Boiler Control Panel illuminate to indicate that 'lockout' has occurred.

*NOT ON OPTION RANGE.

In the event of a 'lockout', wait 45 seconds and restart the Burner by pressing the Reset button.

If lockouts are more than occasional, consult your service engineer as there may be a fault with the fuel supply or Burner.

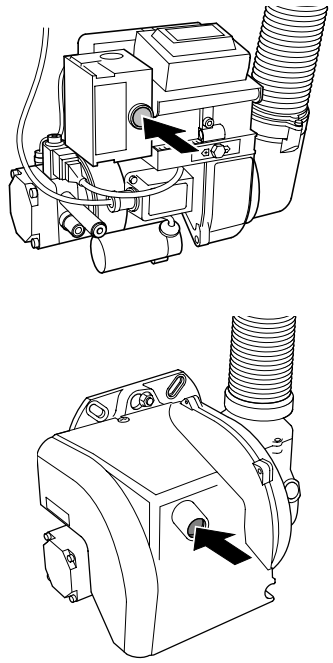


Fig. 3-3a Burner Reset Button

3-3.1 Restart Boiler after 'Lockout'

Lockouts indicate a fault in the Boiler operation and can be attributed to:-

1. A fault in the electrical supply i.e. very low voltage.
2. An interruption in the fuel supply.
3. Faulty operation of the Burner or its safety control system.
4. A component failure.
5. A fault in heating system control external to Boiler.

Before attempting to restart the Boiler, remove the front panel of the Boiler and look for any obvious problems i.e. oil leaks.

Restart Procedure:-

1. Check that there is sufficient oil in the tank and that the supply valves are open.
2. Check that the Boiler thermostat, time switch or programmer and any other system controls are set to call for heat.
3. Press and release the red glowing plunger Reset button on the Burner control box. The red light will extinguish and the Burner will commence the start sequence.

   After 15 seconds, the Burner should fire normally.

If the Burner does not fire, the lockout symptoms will persist and the Burner control box Reset button will again glow.

4. Wait at least 45 seconds and press the lockout button on the control box again.

IMPORTANT If the Boiler fails to start on the second attempt then:-
Switch off the Electricity Supply.
Refer to Section 12 Fault Finding.
DO NOT ATTEMPT TO START MORE THAN TWICE.

3-4 Care of the Boiler

3-4.1 All Internal Boilers

Occasionally wipe the casing down with a non-abrasive cleaner and vacuum out dust and cobwebs from within the casing.

3-4.2 External Wall Mounted Boilers

Occasionally wipe the casing down with a non-abrasive cleaner and vacuum out dust and cobwebs from within the casing.

Regular application of car polish to the outside of the casing will help protect the paint finish and prevent algae growth.

3-4.3 Servicing

The Boiler requires regular servicing to ensure continued reliable operation and fuel economy. Servicing at the stated intervals is a prerequisite of the Boiler Warranty.

A competent engineer should be sought to carry out the servicing at the required intervals. An OFTEC trained and registered engineer would be a good choice.

SERVICE INTERVAL

FUEL - 28 Second Viscosity Class C Kerosene - Service required once a year.

FUEL - 35 Second Viscosity Class D Heating Oil - Service required twice a year.

4-1 Compliance

The Boiler and heating system must be installed to comply with the latest Building Regulations, British Standards and OFTEC recommendations, refer to the Appendix at the back of this book.

4-1.1 System Controls

IMPORTANT
It is recommended that the Boiler is installed so that the system controls prevent the Burner firing unless there is demand for heat from a room or cylinder thermostat.
When thermally operated or motorised valves are fitted to the system and can stop adequate flow of water through the Boiler provision MUST be made to simultaneoussly switch off the electricity supply to the oil burner.

4-2 Siting and Positioning the Boiler

4-2.1 Noise Levels

Quiet operation is a design feature of Thermecon Boilers making them ideal for kitchen and utility room installations. However, consideration should be given to the noise levels of the Boiler and the following:-

1. Sound levels must be discussed with the householder as some individuals are particularly sensitive to even low levels of noise.
2. The type and position of the chimney may affect noise levels.
3. Noise from balanced flues facing neighbouring properties should be considered.
4. Draught stabilisers (when fitted) may affect the noise levels.
5. Sound levels in small rooms may appear more intrusive than the same sound pressure in a larger room.
6. Some building materials can tend to amplify the sound from Wall Mounted Boilers, using battens to space the Boiler off the wall may reduce this effect.

4-2.2 The Hearth - Floor Standing

Note
For Boiler Weight see Section 13.

The hearth temperature of Select and Option Boilers is less than 85°C. A suitable level hearth, which is impervious to kerosine, must be provided.

Where the Boiler is to stand on a floor of combustible material then protection between the Boiler and the floor should be provided by means of non-combustible material.

The floor must give adequate support to the filled Boiler. Consult the Building Regulations for safe floor loadings.

4-2.3 Frost Protection

The Boiler and the central heating system must be protected from frost.

External Free Standing Boilers have a frost thermostat fitted as standard, this must be correctly wired to provide frost protection - see wiring diagrams Section 13.

All Boilers installed in outhouses or where conditions of frost could arise must be protected by a frost protection arrangement that will fire the Burner when the temperature falls below 4°C.

A suitable antifreeze must also be used in applications where freezing can occur and should be considered for all systems.

4-2.4 Rodent Intrusion

Boilers installed in situations where rodent intrusion is possible, all pipe/cable entry holes of the Boiler must be covered, after installation, to prevent rodents entering the Boiler casing.

5-1 Select and Option Internal Floor Standing

Note
For Boiler dimensions see Section 13.
Fig. 5-1a shows recommended access.

5-1.1 Service Access

Boiler Models 40/65, 60/80, 80/95 and 90/120 can have the heat exchanger serviced from both the front or top of the Boiler. The Burner is serviced from the front.

Boiler Models 100/150, 140/190, 190/240 and 240/270 require top access for servicing the heat exchanger. The Burner is serviced from the front.

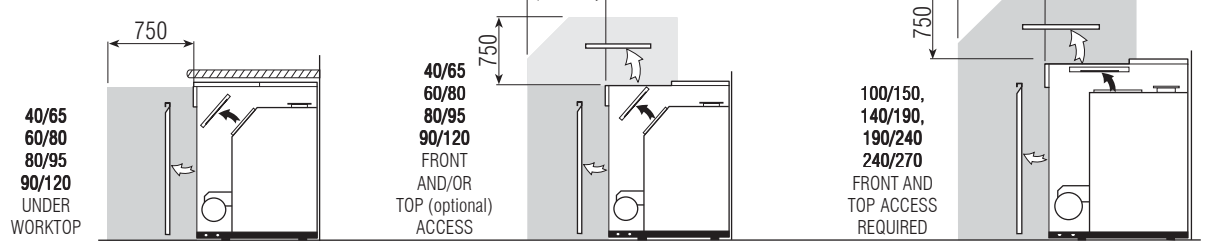


Fig. 5-1a Recommended Access

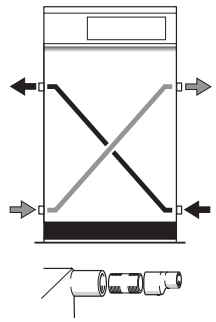


Fig. 5-1b Heating Connections

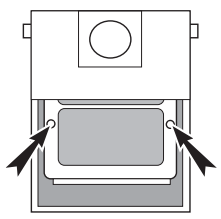


Fig. 5-1c Phial Positions

5-1.2 Heating Connections

The flow and return connections may be diagonally opposed to give maximum flow through the Boiler but this is not essential for satisfactory operation.

If the design of the heating system calls for flow pipes smaller than the Boiler flow tappings, the reduction of the outlets should be made by using excentric reducing sockets to ensure that all air can vent from the top of the Boiler waterway.

5-1.3 Connecting Control Panel (refer to wiring diagram)

Select and Option Boilers are despatched with the Control Panel fitted. The phials of the two thermostats are inserted vertically into the pockets situated on either side on the top of the Boiler heat exchanger, see fig. 5-1c.

The mains electricity supply, preferably from a spur switched and fused 5 amp socket should enter the Boiler casing through one of the holes or knockouts provided.

A plug is provided for connection to the mains supply. The plug fits into the mains connection on the underside of the Control Panel.

Select - The Burner has cable and plug that connects to underside of Control Panel.

Option - The Burner is prewired to the Control Panel.

5-1.4 Oil Connection

All Floor Standing Boilers are supplied with a pump set for single pipe oil system.

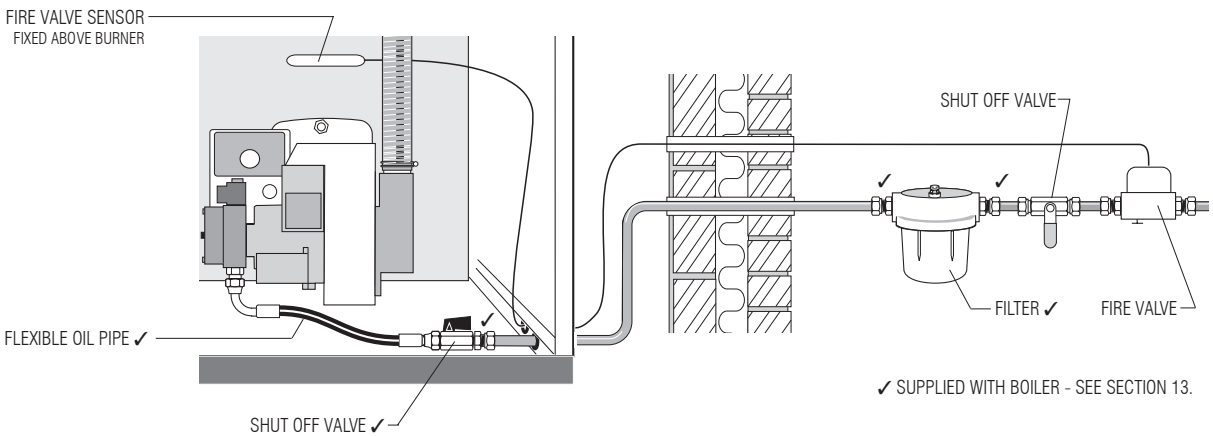


Fig. 5-1d Oil Connections

5-2 Select Internal Wall Mounted - W40/50I & W50/80I

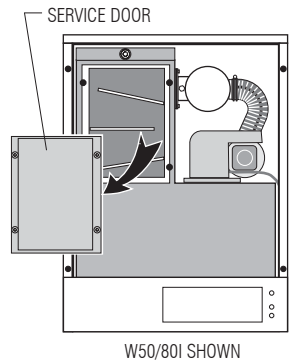


Fig. 5-2a Service Access

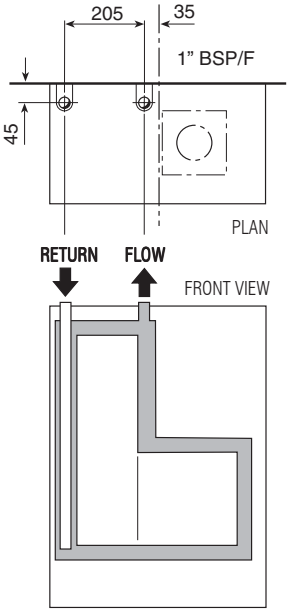


Fig. 5-2b Heating Connections

Note

For back panel dimensions, see page 55.

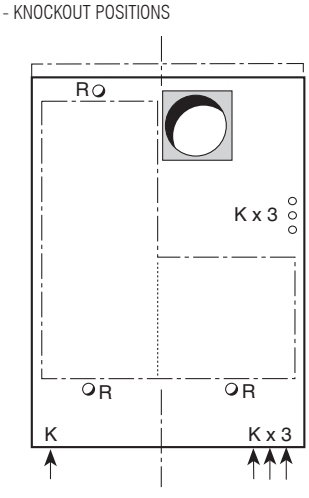


Fig. 5-2c Drilling Positions

5-2.1 Service Access

Boilers have a quick release front panel enabling all routine servicing to be carried out without the necessity of removing any other panels.

A large bolted service door is provided on the front of the heat exchanger giving easy access to the baffles and combustion chamber.

Note

Before removing side panels study the Burner position and the Boiler wall position and decide on the best oil pipe configuration, see Section 7.

5-2.2 Heating Connection

The flow and return connections are on top of the Boiler heat exchanger - 1" female BSP.

IMPORTANT
The FLOW connection is on the RIGHT HAND side, the RETURN connection is on the LEFT HAND side when facing the Boiler from the front - see fig. 5-2b.

5-2.3 Fixing the Boiler - Suggested Procedure

1. Remove carton.
2. Study the Burner position and the Boiler wall position and decide on the best oil pipe configuration, see Section 5-2.5 and Section 7.
3. Remove pull-off front panel, top panel and Control Panel.
   Unscrew and remove side panels and bottom panel.
4. Remove access door and lift out all baffles from heat exchanger.
5. Remove Boiler body from wood transport blocks - 3 screws, 1 top, 2 bottom.
6. Offer back panel to the position required on the wall and use this as a template to mark the drilling positions for the 3 mounting rawl bolts 'R'.
   Also mark the positions of any holes required through wall for oil pipes, fire check valve and electric cable.
7. Remove panel and accurately drill required holes and fit 3 rawl bolts into holes 'R'.
8. Remove required knockouts 'K' from back panel.

For top entry flues ignore steps 9 to 16 and move onto 17.

BALANCED FLUE (Rear) MODELS ONLY

Refer to Instruction Sheet supplied in flue kit.

9. Hang back panel onto rawl bolts and mark position for balanced flue.
10. Remove panel and, using a core drill, cut a NEAT hole through the wall for the flue.
11. Fit back panel onto the 3 rawl bolts - do not fit nuts.
12. Check that the hole drilled is in the middle of the square cut-out of the panel and that the flue terminal passes through the hole.
13. Clear work space and carefully lift the Boiler heat exchanger onto the 3 rawl bolts, fit nuts (the long nut is for the top bolt). Tighten nuts sufficiently to set rawl bolts in the wall.
14. Assemble the flue as per instructions supplied with the flue kit.
15. Pass the flue through the drilled hole and connect it to the Boiler with the gasket.
16. Adjust the Boiler for level and tighten the 3 rawl bolt nuts.

TOP FLUE MODELS ONLY

17. Place Back Panel onto the 3 rawl bolts - do not fit nuts.



WARNING

The weight of the Boiler Heat Exchanger bare is 50kg (110 lbs) - it is a two person job to lift it in place.

Note

Use cardboard box to protect worktop.

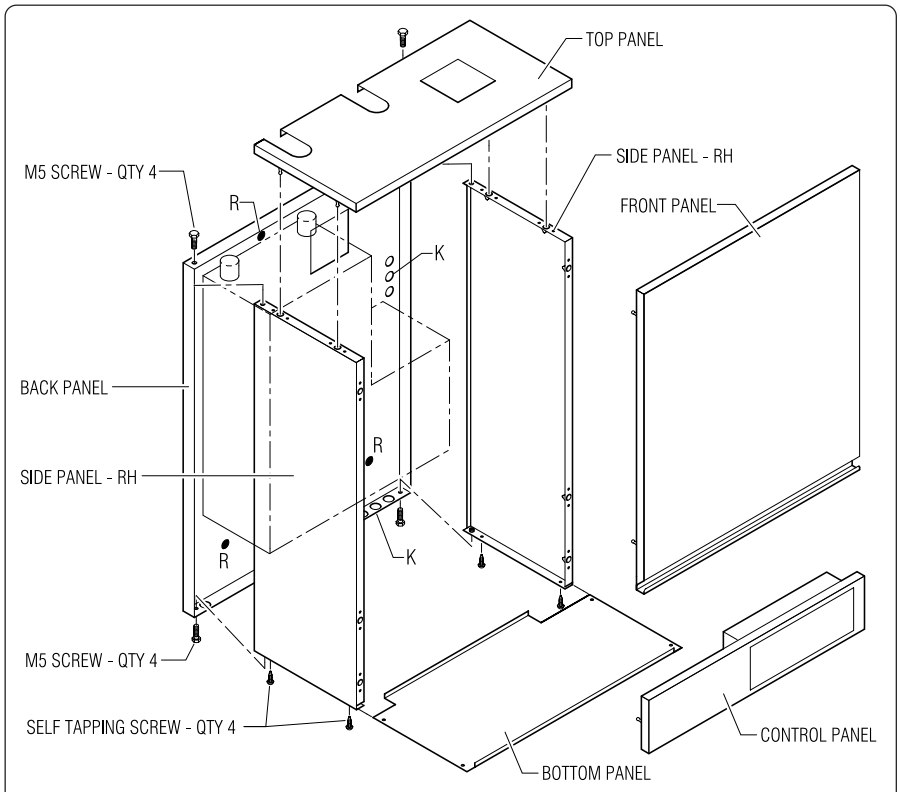


Fig. 5-2d Internal Casing Assembly

18. Clear work space and carefully lift the Boiler heat exchanger onto the 3 rawl bolts, fit nuts (the long nut is for the top bolt). Tighten nuts sufficiently to set rawl bolts in the wall.
19. Adjust for level and tighten the 3 rawl bolt nuts.
20. Fit the flue as per instructions supplied with the flue kit.

ALL MODELS

21. Make water connections.
22. Make oil pipe connections, see 5-2.5.
23. Fit side panels, bottom panel and top panel.
24. Fit Control Panel, see 5-2.4.

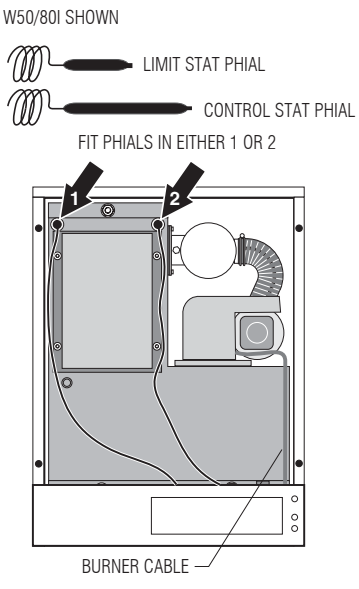


Fig. 5-2e Phial Positions

5-2.4 Connecting Control Panel

Internal Wall Mounted Boilers are despatched with the Control Panel fitted. The phials of the thermostats are inserted horizontally in the pockets situated in the heat exchanger, see fig. 5-2e.

The mains electricity supply, preferably from a spur switched and fused 5 amp, should enter the Boiler casing through one of the holes or knockouts provided - see fig. 5-2c.

The Burner is supplied with a 4 wire cable and plug. The plug fits into the Burner supply socket on the Control Panel.

A 3 pin plug is provided for connection to the mains supply. This plug fits into the socket in the rear of the Control Panel.

IMPORTANT
Do not trap phial capillary tubes behind access covers.

5-2.5 Oil Connections

All Wall Mounted Boilers are supplied with a pump set for two pipe oil system.

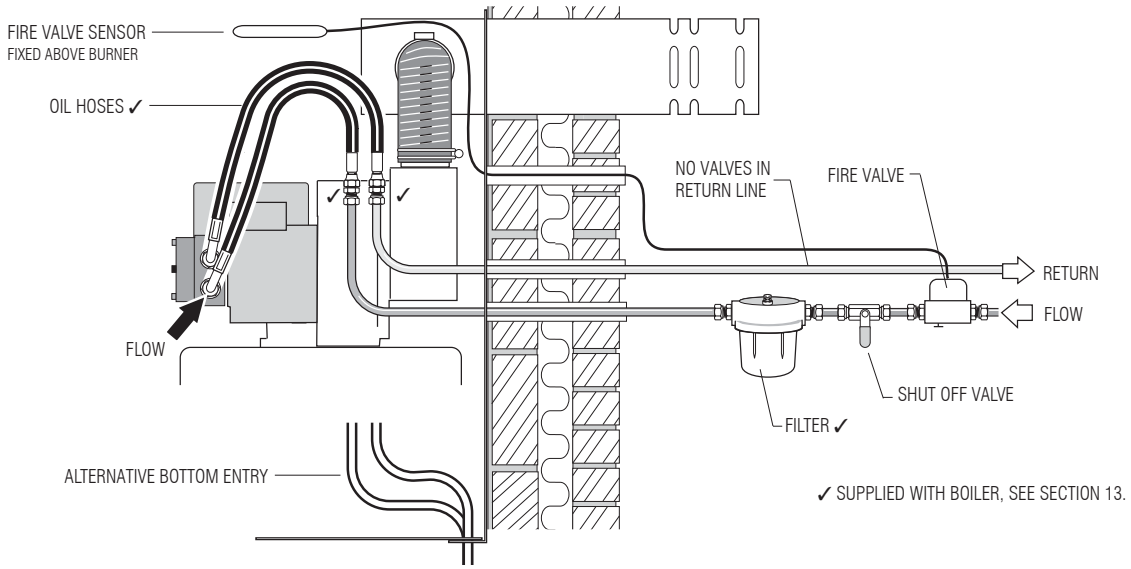


Fig. 5-2f Recommended Two Pipe Oil Connection - Wall Mounted Internal

5-3 Select External Wall Mounted W40/50E & W50/80E

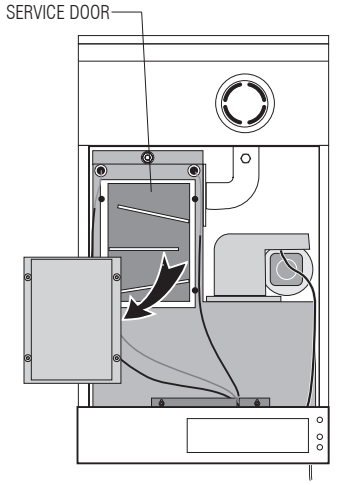


Fig. 5-3a Service Access

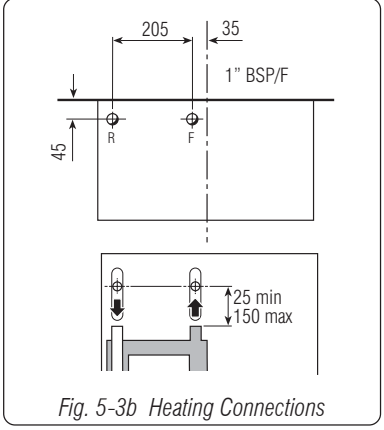


Fig. 5-3b Heating Connections

5-3.1 Service Access

External Wall Mounted Boilers have a large hinged front door that gives access to the Control Panel and enables all routine servicing to be carried out without the necessity of removing main case or flue. The door can be lifted off in windy conditions.

A large bolted service door is provided on the front of the heat exchanger giving easy access to the baffles and combustion chamber.

5-3.2 Heating Connection

The flow and return connections are on the top of the Boiler heat exchanger - 1" female BSP. The standard arrangement is to connect through the back panel as shown in fig. 5-3b.

5-3.3 Boiler at Ground Level

The External Wall Mounted range can be wall mounted at ground level, however the following conditions must be considered.

1. A terminal guard must be fitted (not supplied).
2. A 50mm free air space must be provided under the Boiler.
3. The Burner is supplied for two pipe operation and will probably require changing to single pipe operation.
4. Protection against rodent intrusion is essential.

Note

Before removing main case, study the Burner position and the Boiler wall position and decide on the best oil pipe configuration, see Section 5-3.6 and Section 7.

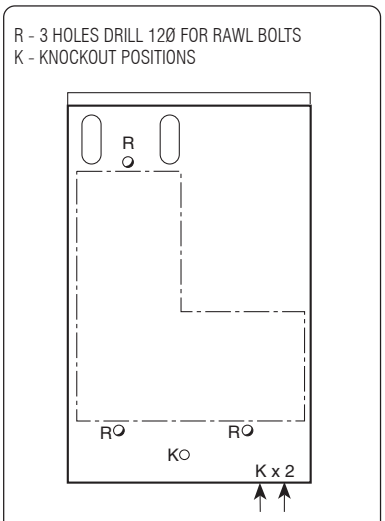


Fig. 5-3c Drilling Positions

Note

For back panel dimensions, see page 56.



WARNING

The weight of the Boiler Heat Exchanger bare is 50kg (110 lbs) - it is a two person job to lift it in place.

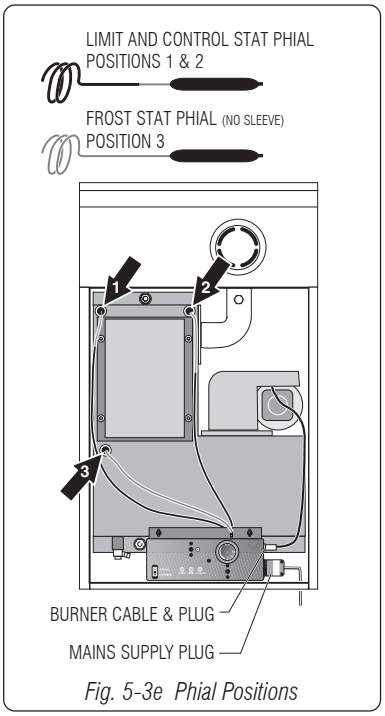


Fig. 5-3e Phial Positions

5-3.4 Fixing the Boiler - Suggested Procedure

1. Remove carton.
2. Open Boiler door and remove flue components.
3. Remove Control Panel by unplugging Burner plug and unbolt two nuts.
4. Remove main casing - 3 screws each side.
5. Remove access door and lift out all baffles from heat exchanger.
6. Remove Boiler body from wood transport blocks - 3 screws, 1 top, 2 bottom.
7. Offer back panel to the position required on the wall and use this as a template to mark the drilling positions for the 3 mounting rawl bolts 'R'.

   Also mark the positions of any holes required through the wall for water pipes, oil pipes, fire check valve and electric cable.
8. Remove panel and accurately drill required holes and fit 3 rawl bolts into holes 'R'.
9. Place back panel onto the 3 rawl bolts - do not fit nuts.
10. Clear work space and carefully lift the heat exchanger onto the 3 rawl bolts, fit nuts - do not tighten yet.
11. Adjust for level and tighten the 3 rawl bolts.
12. Make oil pipe connections, see Section 5-3.6.
13. Make water connections.
14. Fit main casing.
15. Fit flue bend with gasket to Boiler.
16. Fit seal inside flue terminal.
17. Lubricate seal with lubricant supplied and fit terminal with 4 screws.

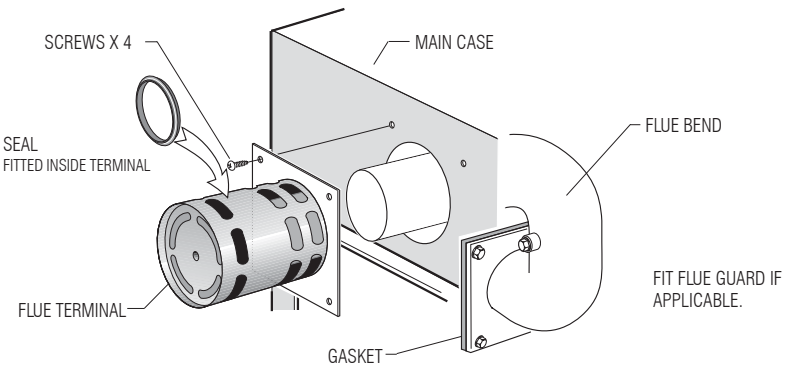


Fig. 5-3d External Boiler Flue Assembly

18. Re-fit Control Panel.
19. Re-fit Baffles and Access Cover - see page 39.
20. Finally, seal top and both sides externally with sealant provided - ensure GOOD NEAT SEAL.

IMPORTANT
Do not trap phial capillary tubes behind access cover.

5-3.5 Connecting Control Panel

The three phials of the thermostats are inserted horizontally in the pockets situated in the heat exchanger, see fig. 5-3e.

The Burner is supplied with a 4 wire cable and plug which connects into the Burner supply socket on the Control Panel.

The mains electricity supply, preferably from a spur switched and fused 5 amp, should enter the Boiler casing through one of the holes or knockouts provided, see Fig. 5-3c.

A 4 pin plug is provided for connection to the mains supply. This connects into the socket in the side of the Control Panel - for wiring see page 50,

5-3.6 Oil Connections

All Wall Mounted Boilers are supplied with a pump set for two pipe oil system.

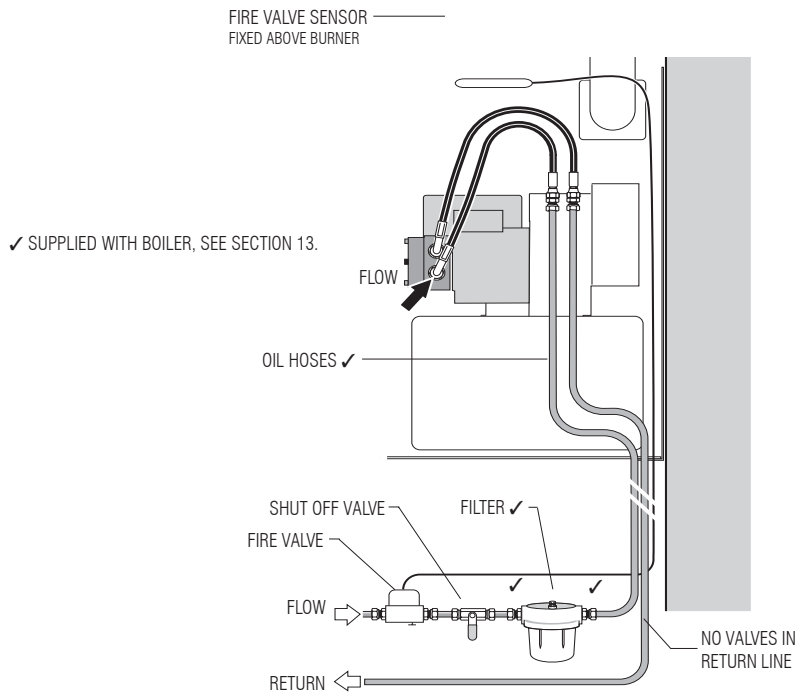


Fig. 5-3f Recommended Two Pipe Oil Connection - Wall Mounted External

5-4 Select Free Standing External - FE40/50 & FE50/80

Note

For:-

Service Access ..... see p.14
Connecting Control Panel ..... see p.15

5-4.1 Free Standing External Boilers

The Thermecon External Free Standing range of Boilers are based on the External Wall Mounted range, they have a special mounting frame to enable them to be positioned on a suitable base remote from the dwelling. They are not designed to be placed against a wall at ground level.

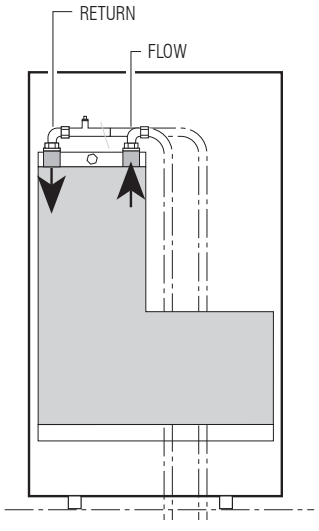


Fig. 5-4a Heating Connections

5-4.2 Heating Connections

The flow and return connections are on the top of the Boiler heat exchanger - 1" female BSP.

RETURN - 1" BSP - air bleed normally required.

FLOW - 1" BSP

Incoming pipes should enter the Boiler through the cut-outs provided in the bottom panel as shown.

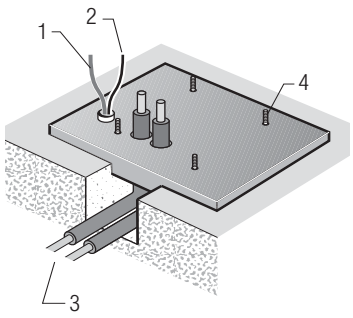
5-4.3 Base Details

See fig. 5-4b.

The Base must be level, impervious to kerosene and non-combustible.

Pipes must be fully protected and insulated.

Cables must be suitable for outside and/or underground use.



1. OIL SUPPLY
2. ELECTRICAL SUPPLY
3. FLOW AND RETURN PIPES FULLY INSULATED
4. RAWL BOLTS FOR BOILER FIXING

Fig. 5-4b Base Details

5-4.4 Oil Connection

Free Standing External Boilers are supplied with a pump set for single pipe oil system.

The oil pipe and electric cable should also enter through the cut-outs provided in the bottom panel - see fig 5-4c.

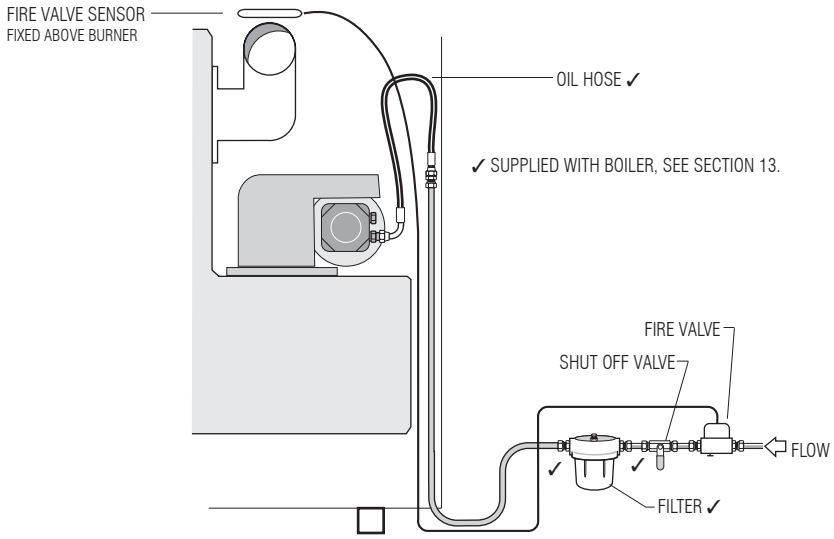


Fig. 5-4c Recommended Two Pipe Oil Connection

5-4.5 Fitting the Flue

1. Fit flue bend with gasket to Boiler.
2. Fit seal inside flue terminal.
3. Lubricate seal with lubricant supplied and fit terminal with 4 screws.
4. Fit terminal guard.

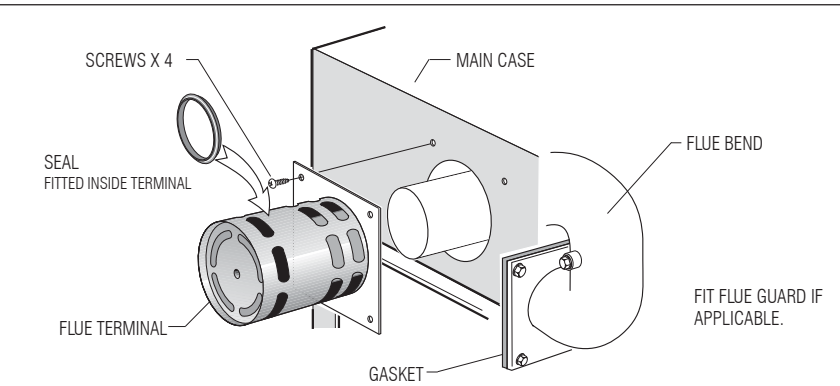


Fig. 5-4d External Boiler Flue Assembly

5-5 Option Floor Standing System Boiler - OS60/80, OS80/95, OS90/120, OS100/150

Note

For:-

Service Access ..... see 5-1.1
Heating Connections ..... see 5-1.2
Connecting Control Panel .... see 5-1.3
Oil Connection ..... see 5-1.4

5-5.1 Boiler Arrangement

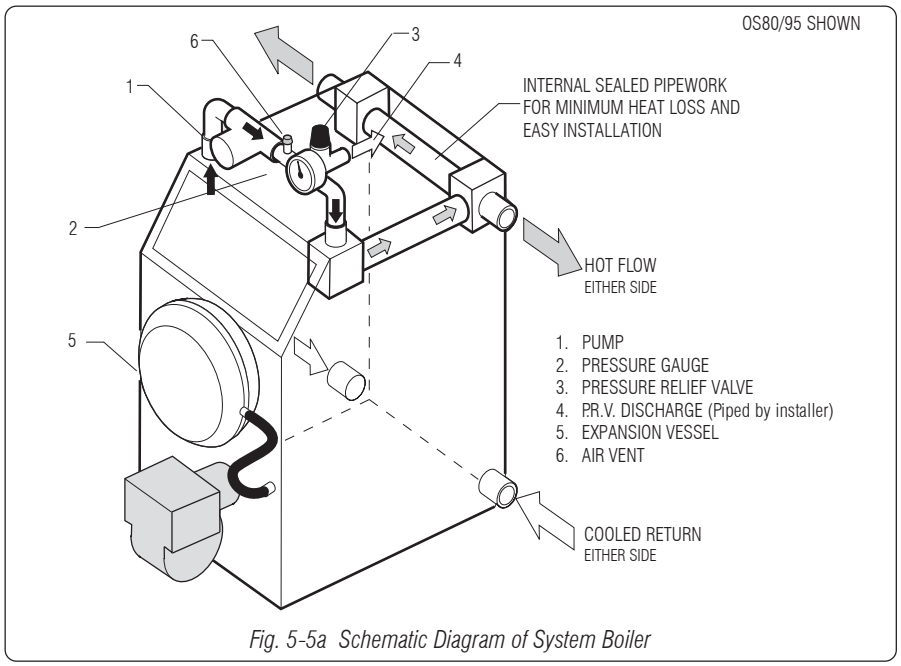


Fig. 5-5a Schematic Diagram of System Boiler

5-5.2 The Heating System

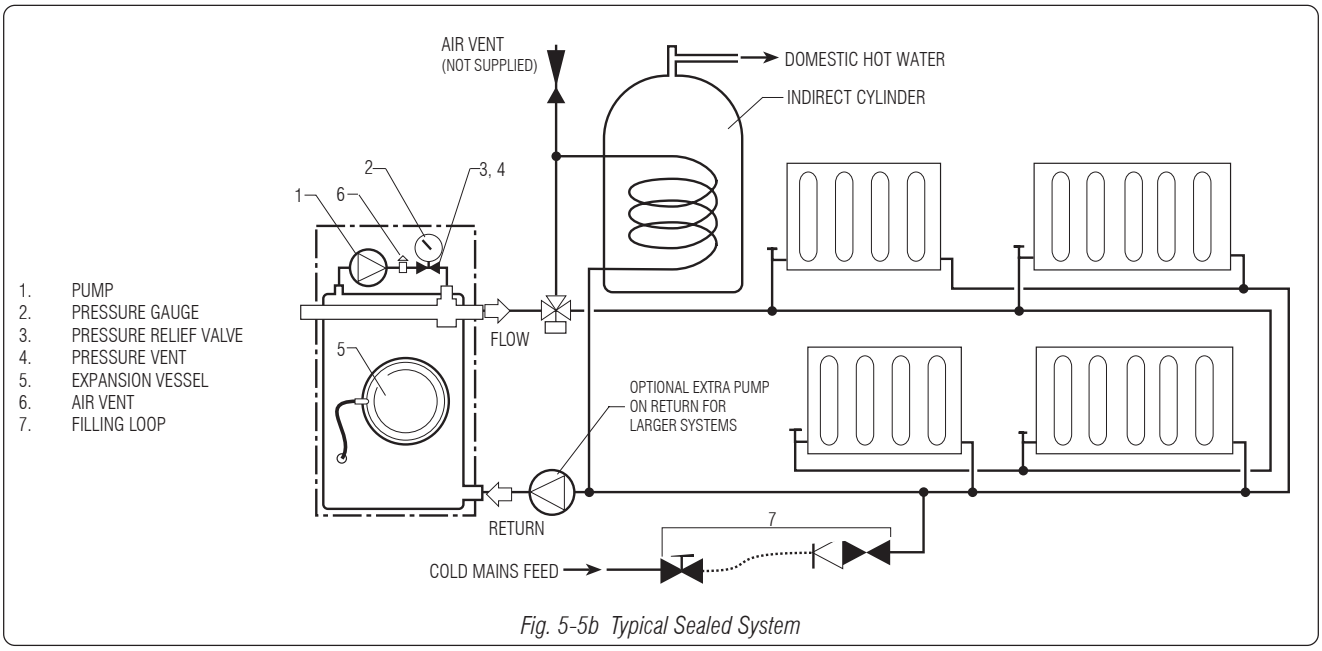


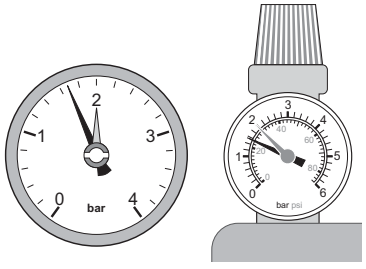
Fig. 5-5b Typical Sealed System

Note

No other pump should be fitted to the system.

5-5.3 Pump

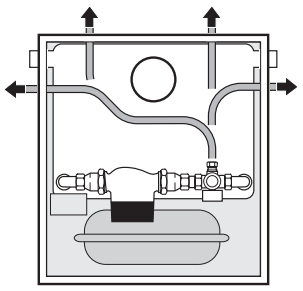
The Pump is a standard 3 speed central heating circulating pump which pumps the hot water through the system. The unique design of the Boiler enables the pump direction to be the same for both left hand and right hand flow connection.



5-5.4 Pressure Gauge

The Pressure Gauge is provided to indicate the system pressure.

When the system is full with cold water and all radiators are full, on and vented, the gauge will show the cold fill pressure. Set the red pointer to the cold fill pressure. If the system pressure, indicated by the black pointer, falls below the cold fill pressure, it indicates that the system requires topping up.



OS60/80 & OS80/95 SHOWN

Fig. 5-5c Discharge Pipe

5-5.5 Pressure Relief Valve

The Pressure Relief Valve is provided to vent excess pressure from the system. The valve will open when the pressure exceeds 3 Bar ± 10%.

The pressure relief valve can be manually opened by turning the red knob clockwise, to close the valve continue turning clockwise until it clicks.

5-5.6 Pressure Relief Valve Discharge Pipe

The outlet from the pressure relief valve must be piped using 15mm copper pipe to a visible position outside the dwelling by the installer. The pipe must have a continuous fall and ideally be terminated over a drain.

Local by-laws may require a Tundish to be fitted.

Knockouts are provided for the vent pipe in the back panel and in the flue blanking plates each side of the Boiler, see fig. 5-5c.

IMPORTANT
Scalding water and steam can be blown out of the discharge pipe. Position the discharge so that it is not a hazard to property or people (especially children).

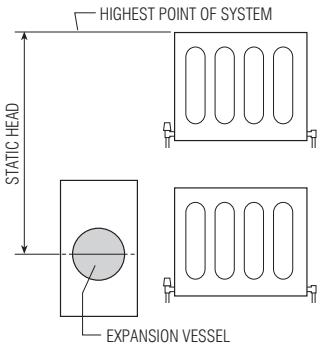


Fig. 5-5d Static Head

Note
Normally expansion requirement is 4% of the system water content including the Boiler.

5-5.7 Expansion Vessel

Maximum charge pressure	1.5 Bar	Maximum working temperature	90°C
Pre-charge pressure	1 Bar	Maximum working pressure	3Bar
Capacity			
OS60/80, OS80/95 & OS90/120	10 litres - for maximum system expansion of 9 litres.		
OS100/150	20 litres - for maximum system expansion of 18 litres.		

The expansion vessel supplied is suitable for systems with a static head of up to 5 metres. If the static head is greater than 5 metres the charge pressure of the expansion vessel will need to be increased. Increase the pressure using a standard car tyre pump and pressure gauge when the system is empty (zero pressure).

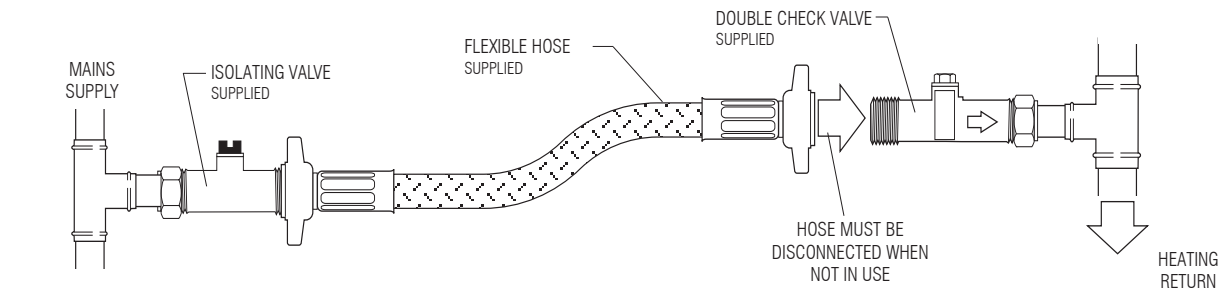
Expansion vessels are suitable for systems requiring a maximum expansion of 9 or 18 litres as detailed above. For systems requiring more expansion a second expansion vessel will be required. BS7074 Part 1 includes information on this requirement.

5-5.8 Filling Loop

A Filling Loop comprising a flexible hose, double check valve and an isolating valve is supplied for filling and topping up the system.

The filling loop should be fitted between the incoming mains and the heating system return as shown in fig. 5-5e.

When not in use one of the hose unions must be disconnected as there must not be a permanent connection to the mains supply.



TYPICAL ARRANGEMENT

Fig. 5-5e Filling Loop

5-5.9 Wiring

The wiring of the pump should be done by the installer to best suit the system timer/ programmer.

IMPORTANT
The pump MUST be wired so that it is ON at all times the Boiler is ON.

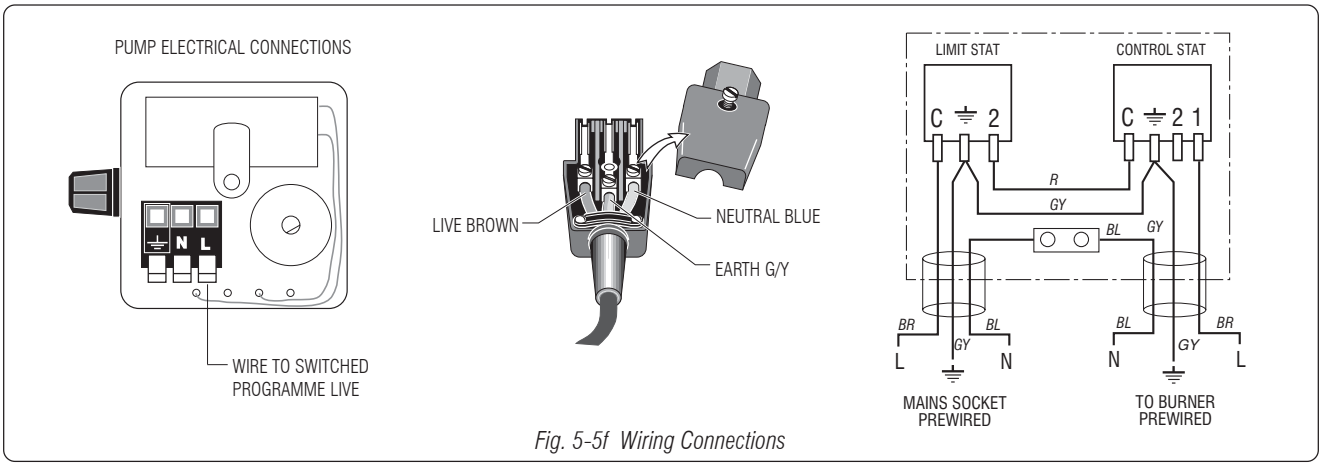


Fig. 5-5f Wiring Connections

Note
Older systems need careful checking as they will be operating at a higher pressure.

5-5.10 Cold Fill Pressure

The Cold Fill Pressure of the central heating system should be:-

Recommended Pressure - 2 Bar Max. Pressure - 3 Bar Min. Pressure - 1 Bar

It is advised to use a pressure gauge when filling the system to ensure correct pressure.

Note
The expansion vessel is factory set at 1.5 Bar.

5-5.11 Expansion Vessel Pressure

The pressure of the expansion vessel should be set at 0.5 Bar below the cold fill pressure. This should be done prior to filling the system using a conventional car tyre gauge and pump.

IMPORTANT
The pressure of the expansion vessel cannot be checked when there is water in the system.

5-5.12 Filling the System

1. Switch OFF electrical supply to the Boiler.
2. Check all drain cocks are closed.
3. Check spare sockets on the Boiler are plugged.
4. Connect the filling loop.
5. Open the filling loop isolating valve part-way so that the system fills slowly.
6. When full and vented make a note of the cold fill pressure on the Boiler pressure gauge.
7. Open drain cocks and vent to fully flush the system.
8. If required, set the expansion vessel pressure to 0.5 Bar below the cold fill pressure recorded in 6 above.
9. Check all drain cocks are closed.
10. Refill and vent the system to the correct cold fill pressure see 5-5.7.

    The correct amount of suitable corrosion inhibitor should be added to the system strictly to the manufacturer's instructions.
11. Shut filling loop isolating valve and disconnect one hose union.
12. Check for leaks.

6-1 Combistream System and Combi 65

Note

For:-

Boiler Control Panel ..... see 2-1
Connecting Control Panel ..... see p.27
Oil Connection ..... see 5-1.4

6-1.1 The Combi Boiler Design

The Burner (8) heats the water in the heat exchanger (1), heated water from there is pumped to either the heating system or the hot water system or both, controlled by a motorised valve (5) which operates in response to the system external controls.

When hot water is required, the heated water is directed through the plate heat exchanger (3), then through the coil of the indirect hot water cylinder (2), then returning to the Boiler. The plate heat exchanger (3) heats the incoming cold supply (C) before it enters the indirect hot water cylinder (2) resulting in quicker production of hot water for the taps (D).

There is 60 litres of hot water stored, therefore the production of hot water can be timed to prevent the Boiler running during periods when demand for hot water is low, e.g. at night.

A HEATING FLOW
B HEATING RETURN
C COLD MAINS SUPPLY FROM ACCUMULATOR
D HOT SUPPLY TO TAPS VIA MIXING VALVE

1. BOILER HEAT EXCHANGER
2. INDIRECT CYLINDER HOT WATER STORAGE - 60 LITRES
3. PLATE HEAT EXCHANGER
4. CIRCULATING PUMP
5. 3 WAY MOTORISED VALVE
6. HEATING SYSTEM EXPANSION VESSEL
7. HOT WATER SYSTEM EXPANSION VESSEL
9. MIXING VALVE
8. BOILER BURNER

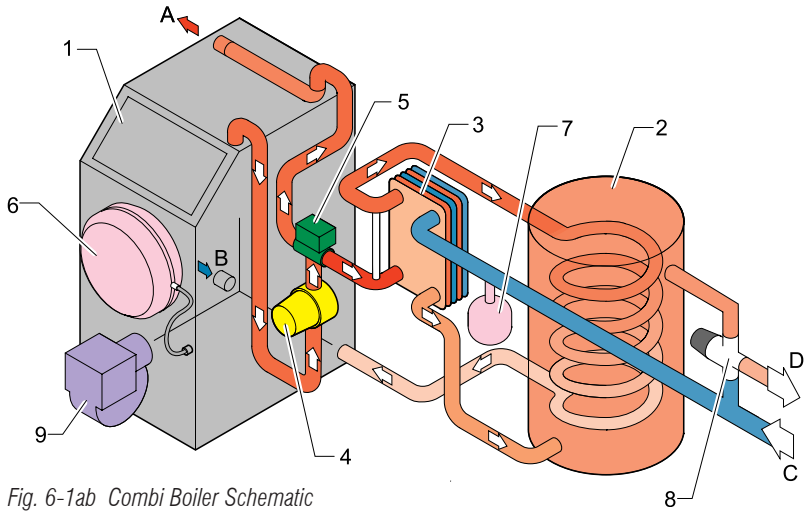
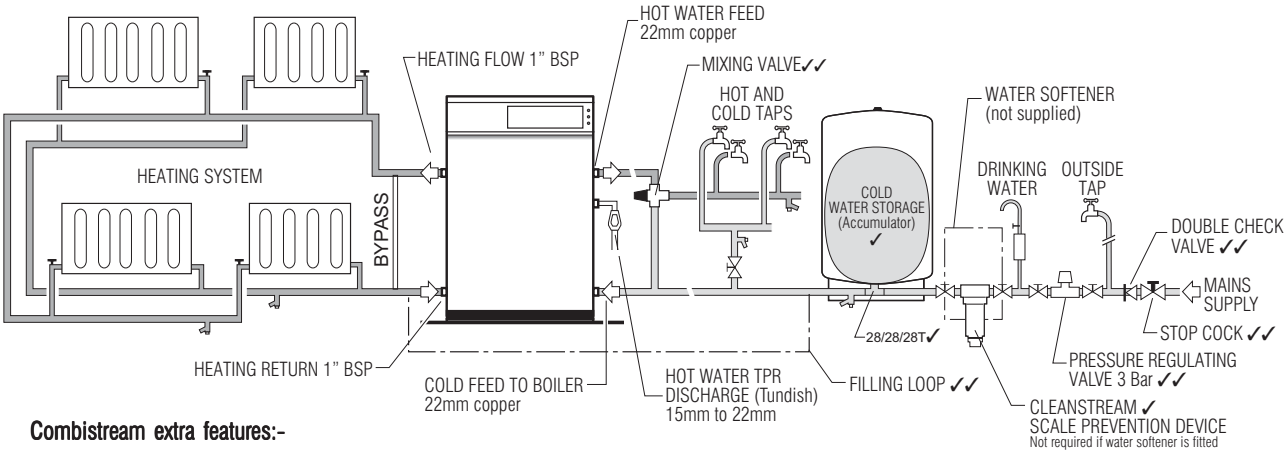


Fig. 6-1ab Combi Boiler Schematic

6-1.2 The Combistream System

✓ *Supplied with Combistream*
✓✓ *Supplied with Combistream and Combi 65*



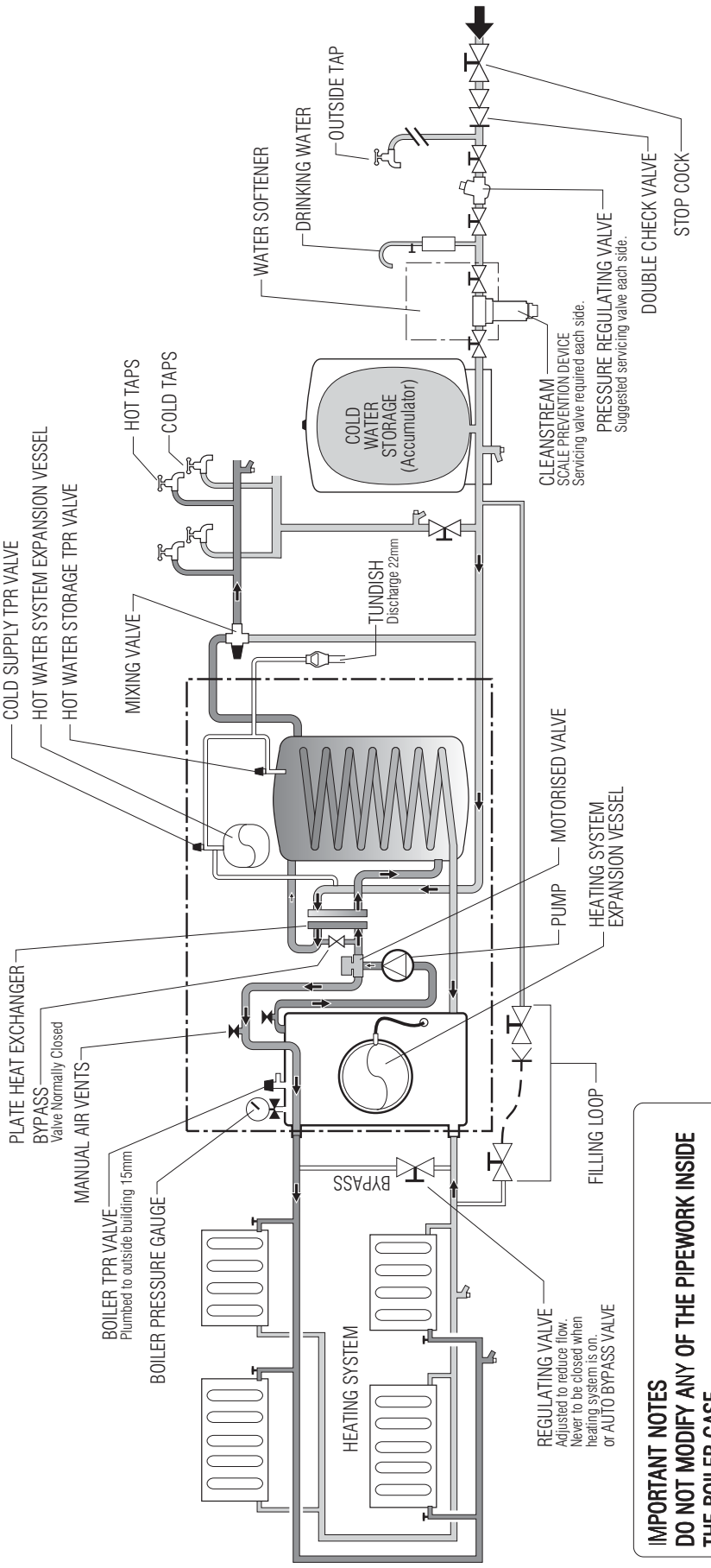
Combistream extra features:-

At least 40 litres of stored cold water.
Cold water storage (accumulator) can be located in dwelling, outhouse, garage, loft or basement.
All taps and showers are at maximum 'system pressure'.
Balanced hot and cold water supply pressures.
No pressure drop when one tap is in use.
Completely sealed hot and cold water systems.
Wholesome water to all cold taps.
No tank filling noise.
No in loft header feed tanks required.
Boiler can be located in dwelling, outhouse, garage or basement.
Minimum pipework required.
60 litres of stored hot water.
Mixing Valve ensures consistent hot water temperature.

***Combi 65E & I** are supplied without Accumulator or Cleanstream*

Fig. 6-1b Schematic of Typical Installation - Combistream

6-1.3 Combistream System Design



Boiler operation

When the system control is set for heating:-
The Boiler pump runs at all times.
The Boiler Burner will operate when the temperature of the water within the Boiler heat exchanger falls below the Boiler's heating control setting.
When the system control is set for hot water:-
The pump and Burner will run when the temperature of the water within the hot water storage cylinder falls below the Boiler hot water control setting.
The hot water temperature at the taps is controlled by the Mixing Valve.

A 'Cleanstream' scale prevention device is supplied, this must be fitted unless a water softener is fitted; if a water softener is fitted then the Cleanstream unit should not be fitted.
In areas known to have hard water, a water softener is strongly recommended.
On systems with a long return run for the central heating, a second pump can be fitted to the heating return. This must be wired independently to the Boiler pump.
A pressure regulating valve is supplied set at 3 Bar, this must be fitted and remain set at 3 Bar.
A Themostatic Mixing Valve is supplied, this must be fitted in the hot water supply to the taps, inside the dwelling.
Combi 65I & E are supplied without Accumulator or Cleanstream

IMPORTANT NOTES
DO NOT MODIFY ANY OF THE PIPEWORK INSIDE THE BOILER CASE.
Pipe runs should be kept to a minimum.
Hot water pipes to the taps should be insulated.
All cold supply pipes should be insulated.
The life of the Plate Heat Exchanger and Mixing Valve will be greatly reduced if scale is evident, scale protection MUST BE PROVIDED.
Frost protection must be provided for the Accumulator particularly when it is sited in a loft, garage or outhouse.
Frost protection must be provided for the Boiler when it is sited in a garage or outhouse.
All components must be fitted inside the dwelling.

Fig. 6-1c Combistream System Design

6-2 Combistream System and Combi 65 Components

6-2.1 Accumulator *(supplied with Combistream Only)*

The Accumulator may be installed at any convenient location within the dwelling, outhouse, garage, loft or basement.

In normal circumstances the Accumulator should be installed vertically. Where this is not possible it can be installed horizontally by supporting it in a cradle and ensuring provision is made to make it fully drainable.

Note
As Combistream is a sealed system, the pressure at the taps is not affected by the height of the cold water storage.

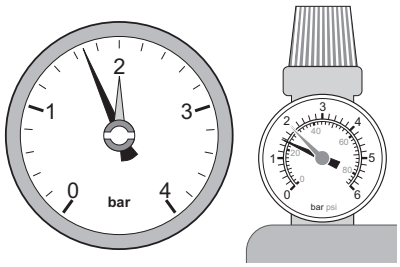
The floor must give adequate support to the filled Accumulator.

The Accumulator must be protected from frost, particularly when it is sited in a loft, outhouse or garage.

Note that access is required to the top of the vessel for pumping the pressure and changing the membrane.

Provision must be made to enable the Accumulator to be drained when required.

IMPORTANT
The Accumulator is supplied at 2 Bar pressure. It is recommended to set the air charge pressure at 1 - 1.5 Bar below the mains pressure - minimum 0.5 Bar. The system has a pressure reducing valve set at 3 Bar, therefore the maximum charge pressure should be 2 Bar.



6-2.2 Pressure Gauge

The pressure gauge is provided to indicate the heating system pressure.

When the system is full with cold water and all radiators are full, on and vented, the gauge will show the cold fill pressure.

Set the red pointer to the cold fill pressure. If the system pressure, indicated by the black pointer, falls below the cold fill pressure, it means that the system requires topping up.

6-2.3 Pump

The pump is a standard 3 speed central heating circulating pump which pumps the heated water from the Boiler through the heating system and hot water system.

Note
No other pump should be fitted to the system.

Normally the pump will be set at speed 2.

The pump is wired so that it is:-

ON at all times when the control system is set for heating ON.

ON when the control system is set for hot water ON and the temperature of the water in the cylinder is less than the setting of the hot water thermostat control setting.

6-2.4 Heating TPR Valve

The temperature pressure relief valve is provided to vent excess pressure from the system. The valve will open when the pressure exceeds 3 Bar ± 10%.

Note
One Tundish is supplied with the Boiler, this should be fitted to the hot water TPR discharge, see 6-2.12.

The TPR valve can be manually opened by turning the red knob clockwise, to close the valve continue turning clockwise until it clicks.

6-2.5 Heating TPR Valve Discharge Pipe

IMPORTANT
Scalding water and steam can be emitted from the discharge pipe. Position the discharge so there is no hazard to property or people (especially children).

The outlet from the heating TPR valve must be piped using 15mm copper pipe to a visible position outside the dwelling. The pipe must have a continuous fall and ideally be terminated over a drain.

Local by-laws may require a Tundish to be fitted - see note.

The vent pipe exits through the back panel of the Boiler.

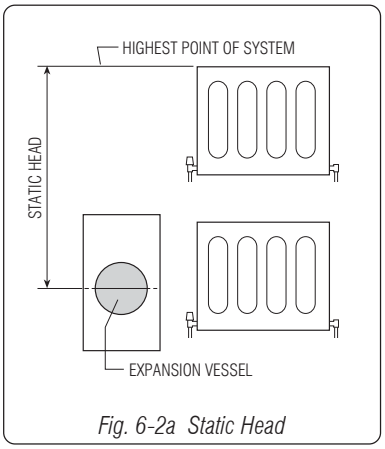


Fig. 6-2a Static Head

6-2.6 Heating Expansion Vessel

Maximum working pressure	3Bar	Maximum charge pressure	1.5Bar
Maximum working temperature	90°C	Pre-charge pressure	1Bar
Capacity	10 litres		

The heating expansion vessel fitted to the Boiler heat exchanger, is suitable for systems with a static head of up to 5 metres. If the static head is greater than 5 metres, the charge pressure of the expansion vessel will need to be increased. Increase the pressure using a standard car tyre pump and pressure gauge when the system is empty (zero pressure).

The expansion vessel is suitable for systems with up to 120 litres capacity including the Boiler. For systems over this, a second expansion vessel will be required. BS7074 Part 1 includes information on this requirement.

6-2.7 Hot Water Expansion Vessel

Maximum working pressure	10Bar	Maximum charge pressure	1.5Bar
Maximum working temperature	99°C	Pre-charge pressure	1Bar
Capacity	2 litres		

Note

The plate heat exchanger is not guaranteed against corrosion or blockage caused by excessive scale.

6-2.8 Plate Heat Exchanger

The Plate Heat Exchanger preheats the incoming cold water before it enters the hot water cylinder. A 15mm bypass pipe with an isolating valve is fitted, in the event of the plate heat exchanger becoming blocked (e.g. excessive scale) then the valve can be opened and hot water will still be produced although with less efficiency.

To maintain efficient operation the plate heat exchanger must be free of scale, it is therefore essential to have a scale prevention device fitted and in areas known to have hard water, a water softening device is strongly recommended.

If no such scale prevention is fitted, the plate heat exchanger will require replacing annually or sooner.

6-2.9 Filling Loop

A Filling Loop comprising a flexible hose, double check valve and an isolating valve is supplied for filling and topping up the system.

The filling loop should be fitted between the incoming mains and the heating system return as shown in fig. 6-2b.

When not in use one of the hose unions must be disconnected as there must not be a permanent connection to the mains supply.

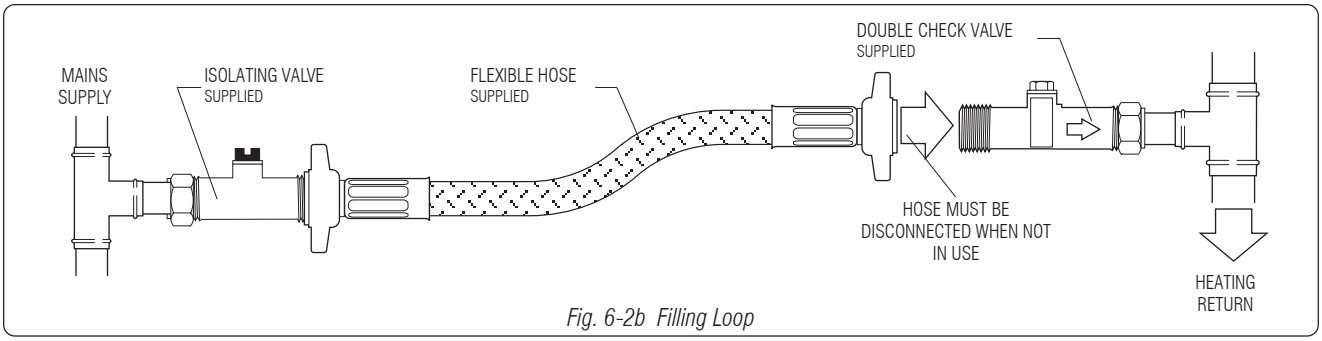


Fig. 6-2b Filling Loop

6-2.10 Pressure Regulating Valve

A Pressure Regulating Valve (PRV is supplied, this is factory set at 3 Bar as indicated by the label on the cap).

The PRV should be fitted to the incoming mains supply before the Accumulator. It is recommended to fit a service valve either side of the PRV to enable servicing.

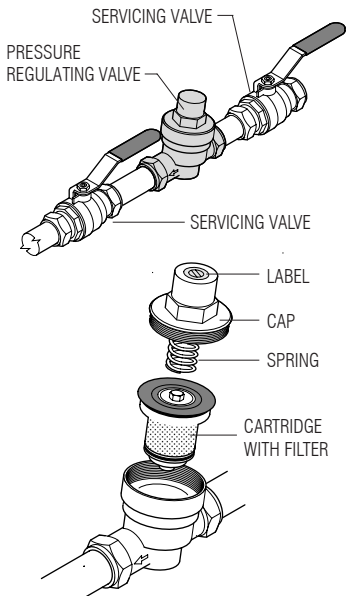


Fig. 6-2c Pressure Regulating Valve

Before fitting the valve flush the supply pipework.

Periodically clean the filter and check or replace the cartridge with filter assembly.

WARNING
Take care not to alter the setting screw which is retained in the cap, it is recommended to hold the spring in the cap as it is removed.

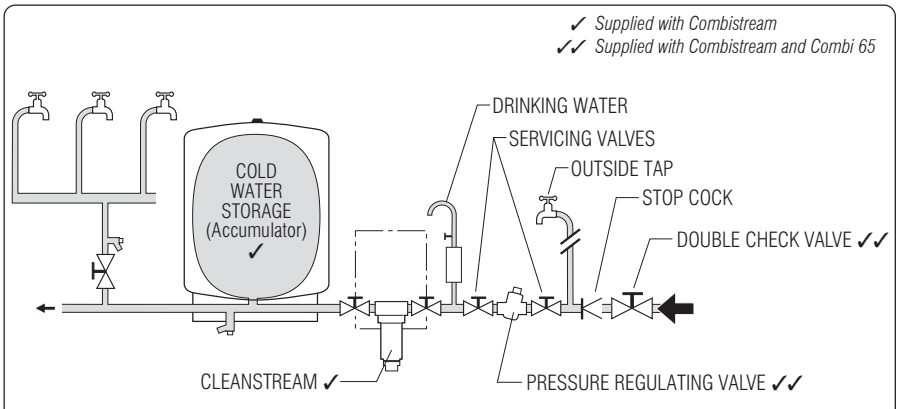


Fig. 6-2d Pressure Regulating Valve and Cleanstream Location

6-2.11 'Cleanstream' Scale Prevention Unit

A 'Cleanstream' scale prevention device is supplied with the Combistream System. This unit is effective in protecting the plumbing against both scale and corrosion.

It operates fully automatically by using the water flow to create a protective solution which is deposited as a thin film on the inside of the pipes, cylinders and around heating elements. The dose, which is proportional to the flow rate at approximately 5ppm, is provided by a patented calibration system which is an integral part of the replaceable cartridge.

The Cleanstream has a red ball that is visible through the yellow bowl of the unit, when this ball reaches the bottom of the cartridge it indicates that the cartridge should be replaced.

The Cleanstream unit should be fitted to the incoming main before the Accumulator and after any drinking water outlets as shown in fig. 6-2d.

When a water softener is fitted, the Cleanstream unit should not be necessary.

To enable cartridge change, a servicing valve should be fitted to the inlet side of the unit, a non-return valve is included in the outlet of the unit - see fig. 6-2e.

Cleanstream Specification

Normal working pressure	*0.5-10 Bar*
Pressure tested to	*25 Bar*
Temperature range	*1-40°C*
Max flow rate	*3000 ltr/hr*
Pressure loss	*0.2-0.7 Bar*
Cartridge life whole house	*6 mths*
Cartridge life heating system	*12 mths*

Note

Replacement cartridges are available from builders and plumbing merchants or from GAH.

IMPORTANT
Do not overtighten fittings as this could damage the plastic body.
Fit the unit with flow in the correct direction (as arrow).
Ensure the nut at the bottom of the unit is tight.
Allow at least 30mm under the unit for cartridge replacement.

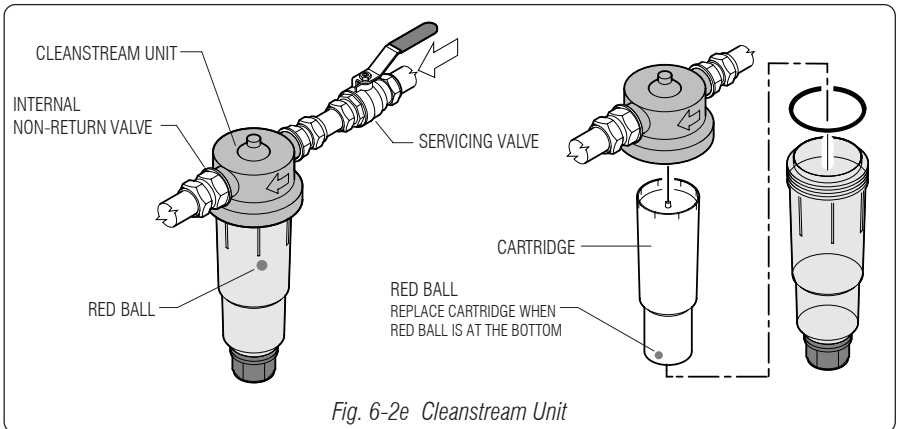


Fig. 6-2e Cleanstream Unit

6-2.12 Hot Water TPR Discharge Tundish

Specification
Outlet Pressure Factory Set ..... 3 Bar
Maximum Inlet Pressure ..... 16 Bar

One Tundish is supplied with the Boiler, this should be fitted to the hot water TPR valve discharge pipe at the right hand side of the Boiler.

The Tundish installation should have discharges visible at both the Tundish and the final point of discharge, however, if this is not possible there should be clear visibility of at least one.

WARNING
Scalding water and steam can be blown out of the discharge pipe. Position the discharge so that it is not a hazard to property or people (especially children).

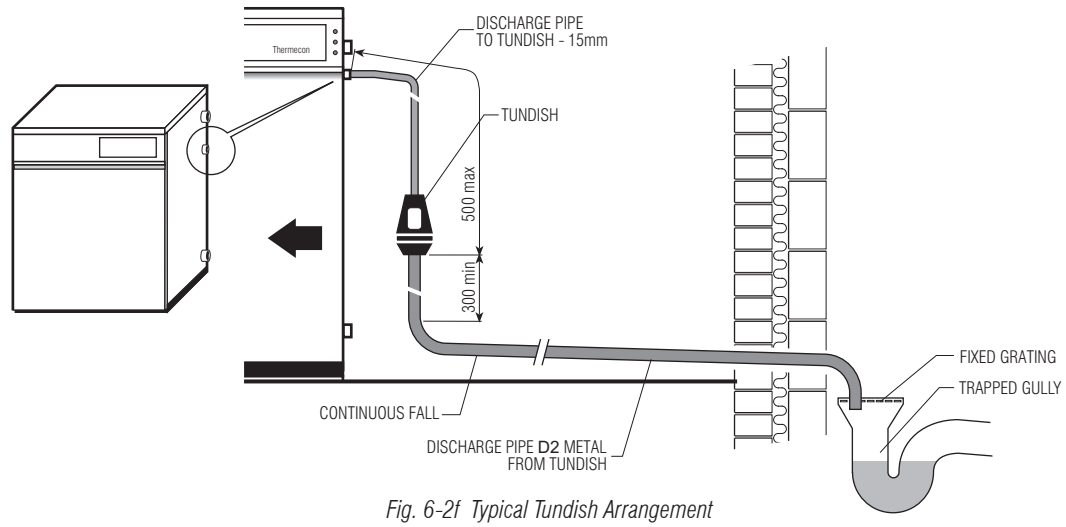


Fig. 6-2f Typical Tundish Arrangement

A typical arrangement for the Tundish discharge is shown in fig. 6-2f. Refer to the applicable Building Regulation G3 - specific details of Tundish installation.

Hydraulic resistance of discharge pipework

The equivalent hydraulic resistance of discharge pipework needs to be calculated where the length of **D2** exceeds 9m (maximum for one step up in pipe size) including resistance of elbows or bends. The following table can be used:-

Valve outlet size	Minimum size of discharge pipe to Tundish (**D1**)	Minimum size of discharge pipe from Tundish (**D2**)	Maximum resistance allowed expressed as a length of straight pipe, i.e. no elbows or bends	Resistance created by each elbow or bend
G½	15 mm	22mm	up to 9m	0.8m
		28mm	up to 18m	1.0m
		35mm	up to 27m	1.4m

6-3 Combistream and Combi 65 Connections to the Boiler

6-3.1 Heating Connection

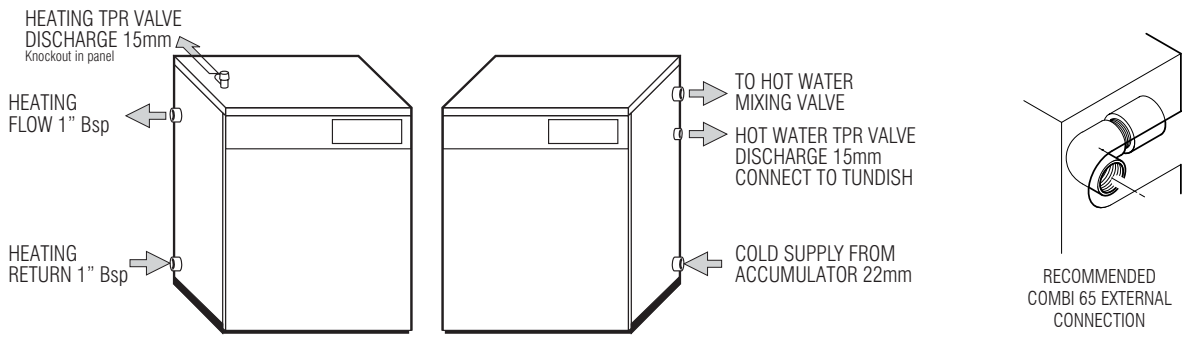


Fig. 6-3a Combistream and Combi 65 Connections

Notes

Refer to the mixing valves manufacturer's instructions supplied with the valve for further information. Put these with this manual.

The mixing valve is not guaranteed against corrosion or blockage caused by excessive scale.

6-3.2 Thermostatic Mixing Valve

A Thermstatic Mixing Valve is supplied with the Combistream system and the Combi 65. It should be fitted between the Boiler Hot Water outlet and the draw off (taps). The valve mixes hot water from the Boiler's hot water storage with cold water from the accumulator to provide hot water at the taps at a consistent temperature.

The valve is supplied with two Check Valves which must be fitted to the hot and cold supply.

It is recommended to fit a service valve on each of the three pipes to the valve.

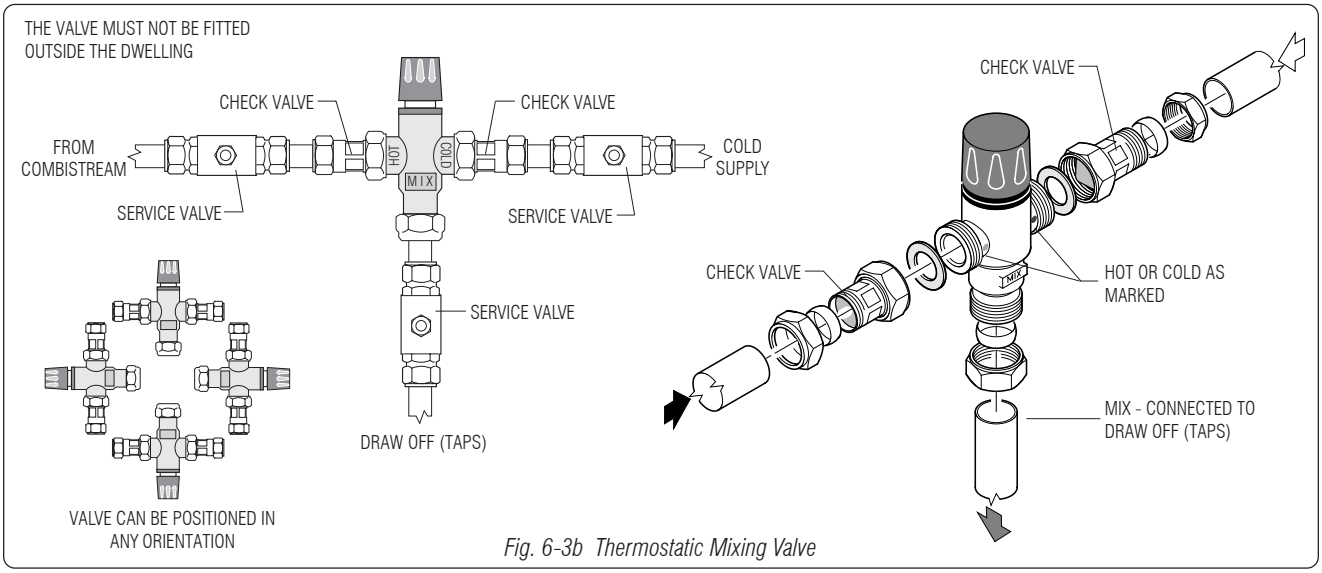


Fig. 6-3b Thermostatic Mixing Valve

6-3.3 Connection to the Boiler - Pipework

When all pipework has been installed, disconnect from the Combistream or Combi 65 components and flush all pipework thoroughly.

All Boiler components and pipework are checked at the factory prior to despatch, however always check the connections for leaks on commissioning as transportation and installation can cause joints to move.

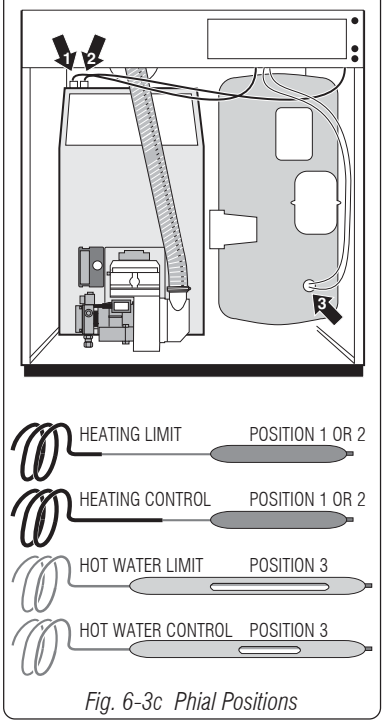


Fig. 6-3c Phial Positions

6-3.4 Connecting the Control Panel

Combi Boilers are despatched with the Control Panel fitted. The phials of the two heating thermostats are inserted vertically into the pockets situated on either side on the top of the Boiler heat exchanger. The phials of the two hot water thermostats are inserted horizontally in the hot water cylinder, see fig. 6-3c.

Connections have to be made for the remote heating and hot water control system - see wiring diagram on page 51.

6-3.5 Combi 65 External Boilers

A constant power supply is required for frost protection.

External Combi Boilers require a suitable base, this must be level, impervious to kerosene and non-combustible.

All pipes must be fully protected and insulated.

Cables must be suitable for outside and/or underground use.

The Thermostatic Mixing Valve and Pressure Regulating Valve supplied with the Boiler must be fitted inside the dwelling.

7-1 Oil Storage Tanks

Notes
Check with oil supplier for access requirements.
Refer to Appendix, page 65 for required standards for oil tanks.

7-1.1 Size and Siting of Tank

The size and site of the tank should be chosen to be least obtrusive with consideration to the following:-

1. Access for fuel delivery vehicles.
2. Distance of tank from the road. Most delivery vehicles can deliver up to 30m.
3. To obtain discounts on fuel it is normally required to purchase a delivery of 500 gallons (2,300 ltrs.), therefore a 2,500 ltr. tank is ideal.

7-1.2 Plastic Tanks

Plastic tanks are normally placed at ground level. A smooth flat surface supporting the tank across the entire base surface is all that is normally required.

7-1.3 Steel Tanks

Steel tanks should be supported above ground with brick or block piers. A waterproof membrane should be included under the tank.

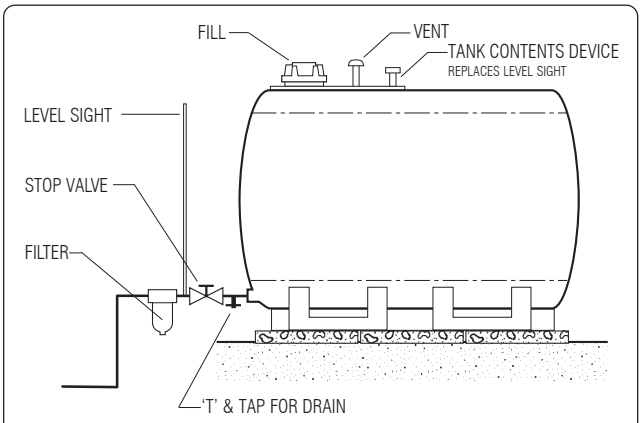


Fig. 7-1a Typical PVC Tank Arrangement (Bottom Outlet)

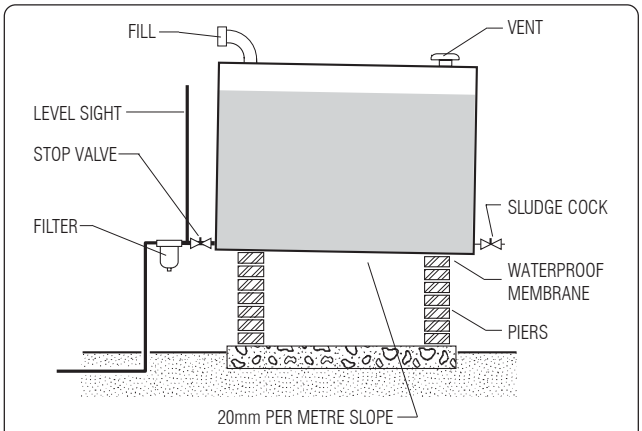
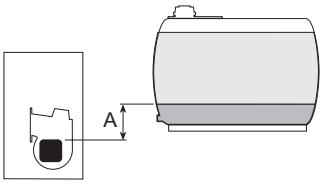
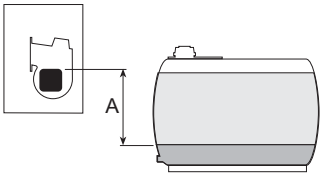


Fig. 7-1b Typical Steel Oil Tank Arrangement

7-2 Oil System

7-2.1 Oil System Selection

	A	Oil System Options	Notes
Tank Above Burner 	0 to 5m	Single pipe oil system	Refer to 7-3.1
Tank Below Burner 	0 to 1m	Single pipe oil system with non-return valve	Refer to 7-3.2
	1 to 4.0m	Single pipe oil system with *Deaerator (Tigerloop)	Refer to 7-3.3
	1m to 4.0m	Two pipe oil system	Refer to 7-3.4
	Over 4.0m	Oil lifter system	Consult GAH

Notes:- Dimension 'A' is approximate distance from the top of the Burner pump to the lowest oil level.
Details are for Danfoss pumps only. *Deaerator to have integral non-return valve.

7-2.2 Oil Supply Pipe

In ALL oil systems the vertical lift of the oil line should be 10mm diameter.

Horizontal runs should also be 10mm diameter, however it is good practice to use 15mm diameter, on the horizontal sections only, of pipe runs longer than 40 metres.

IMPORTANT
The filter must be fitted outside the Building.
Tigerloops, when fitted, must be fitted outside the building.
All joints in the oil line must be oil and air tight.
No soldered joints are permissible in supply pipe.
Always flush the complete oil supply before connecting to the Burner.
When specified always fit non-return valves in the position shown on the oil system drawings.
Walls should be sleeved where oil pipes and fire valve capillaries pass through.

7-3 Oil Supply System

7-3.1 Single Pipe System - Tank Above Burner

Where installations have the bottom of the tank above the Oil Burner, a single pipe system can be used, see fig. 7-3a.

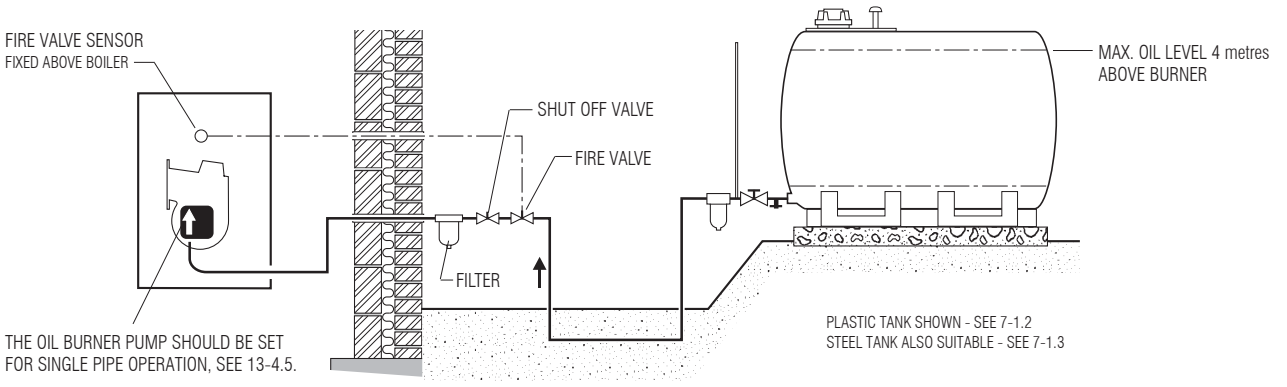


Fig. 7-3a Typical Single Pipe Oil System - Tank Above Burner

7-3.2 Single Pipe System - Tank Below Burner

Where installations have the bottom of the tank up to 1 metre below the Oil Burner, a single pipe system can be used providing a non-return valve is fitted, see fig. 7-3b.

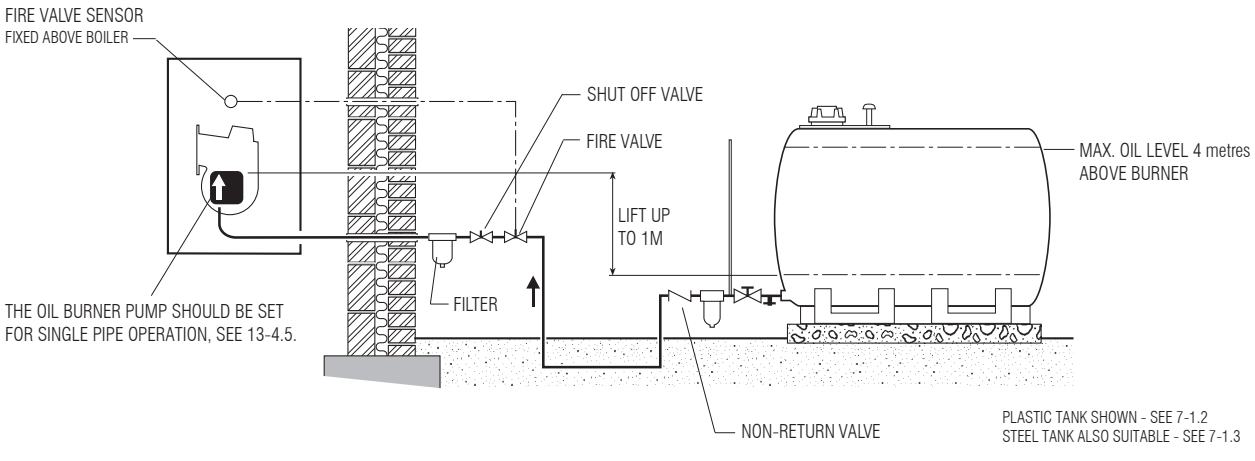


Fig. 7-3b Typical Single Pipe Oil System - Tank Below Burner

Note
Tigerloops are available from your merchant.

7-3.3 Single Pipe System - Deaerator (Tigerloop)

When the Burner is over 1 metre above the tank the installation normally requires a two pipe system, however, a 'Tigerloop' deaerator can be used which removes air from a single pipe lift oil feed. Higher lift heights can be achieved than are possible with conventional two pipe systems.

IMPORTANT
The Tigerloop must be fitted upright close to the Boiler and must be OUTSIDE the property.

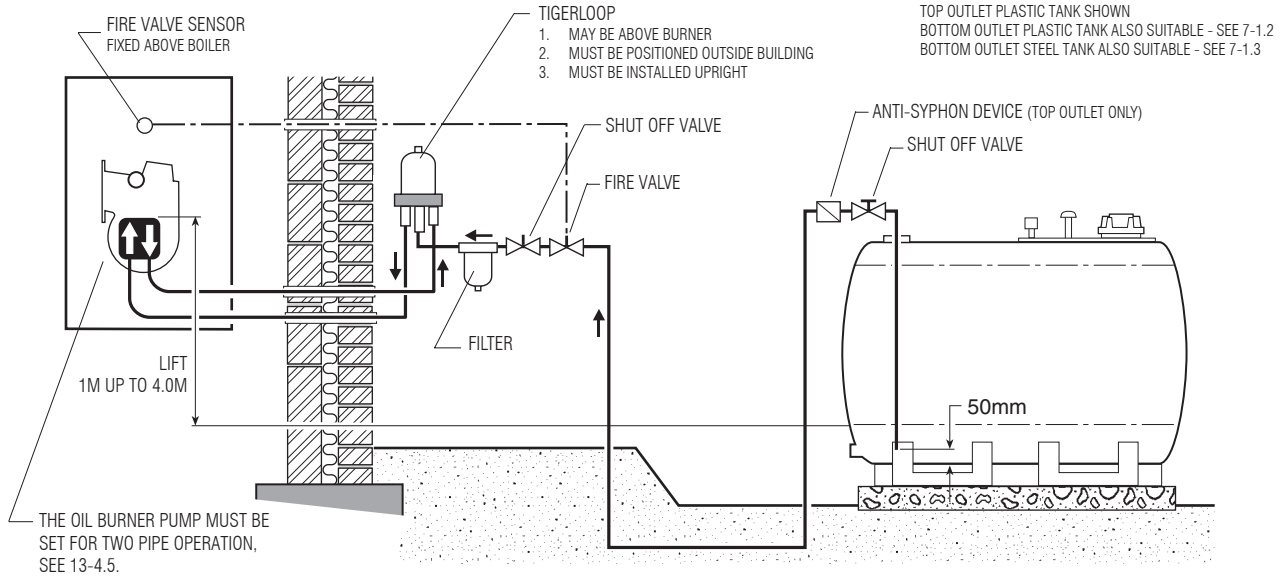


Fig. 7-3c Typical Arrangement for Tigerloop Oil System

7-3.4 Two Pipe System

Where installations have the bottom of the tank below the Oil Burner pump, it is necessary to install a two pipe system.

IMPORTANT
Ensure that valves and filters are not fitted in the return line as this must be unobstructed at all times.

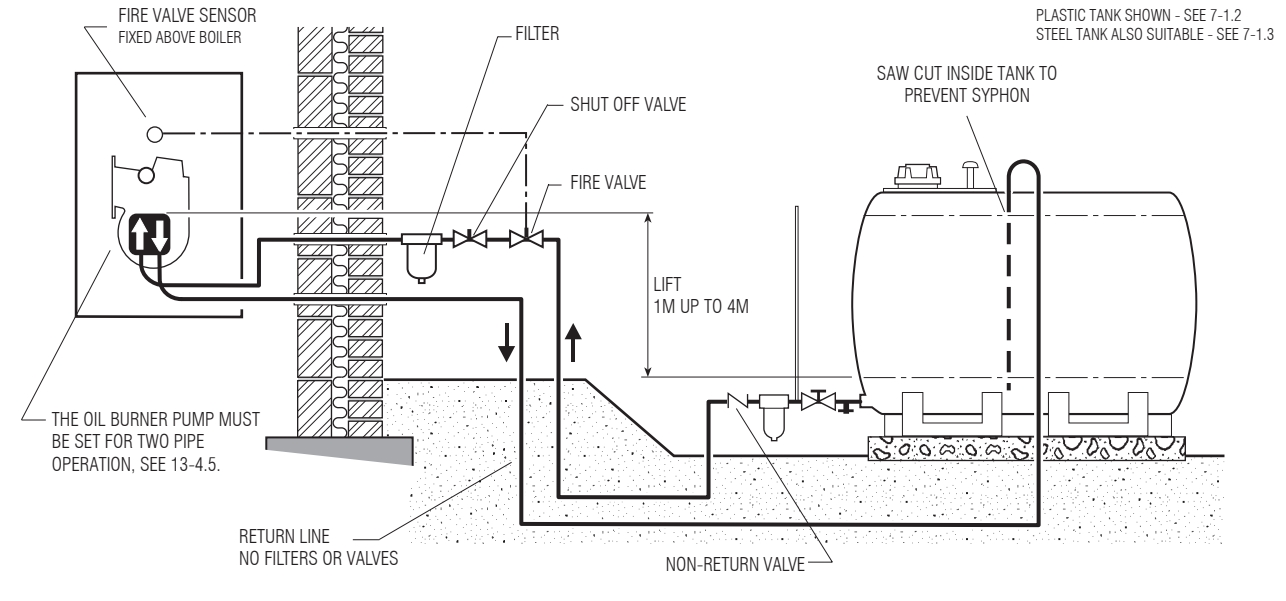


Fig. 7-3d Typical Two Pipe Oil System

8-1 Conventional Flue

Note

The chimney must comply with current Building Regulations, and BS5410 Part 1. BS4543 applies to Factory Made Insulated Chimneys, see Parts 2 and 3.

All Floor Standing Boilers are supplied with an adaptor and flexible air duct fitted for conventional flue connection.

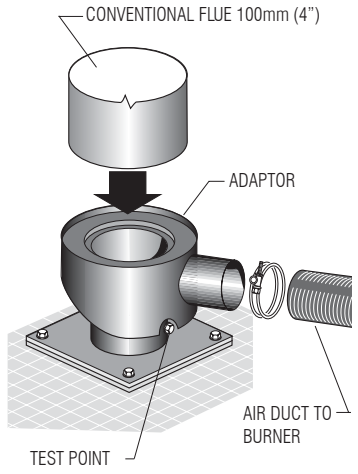
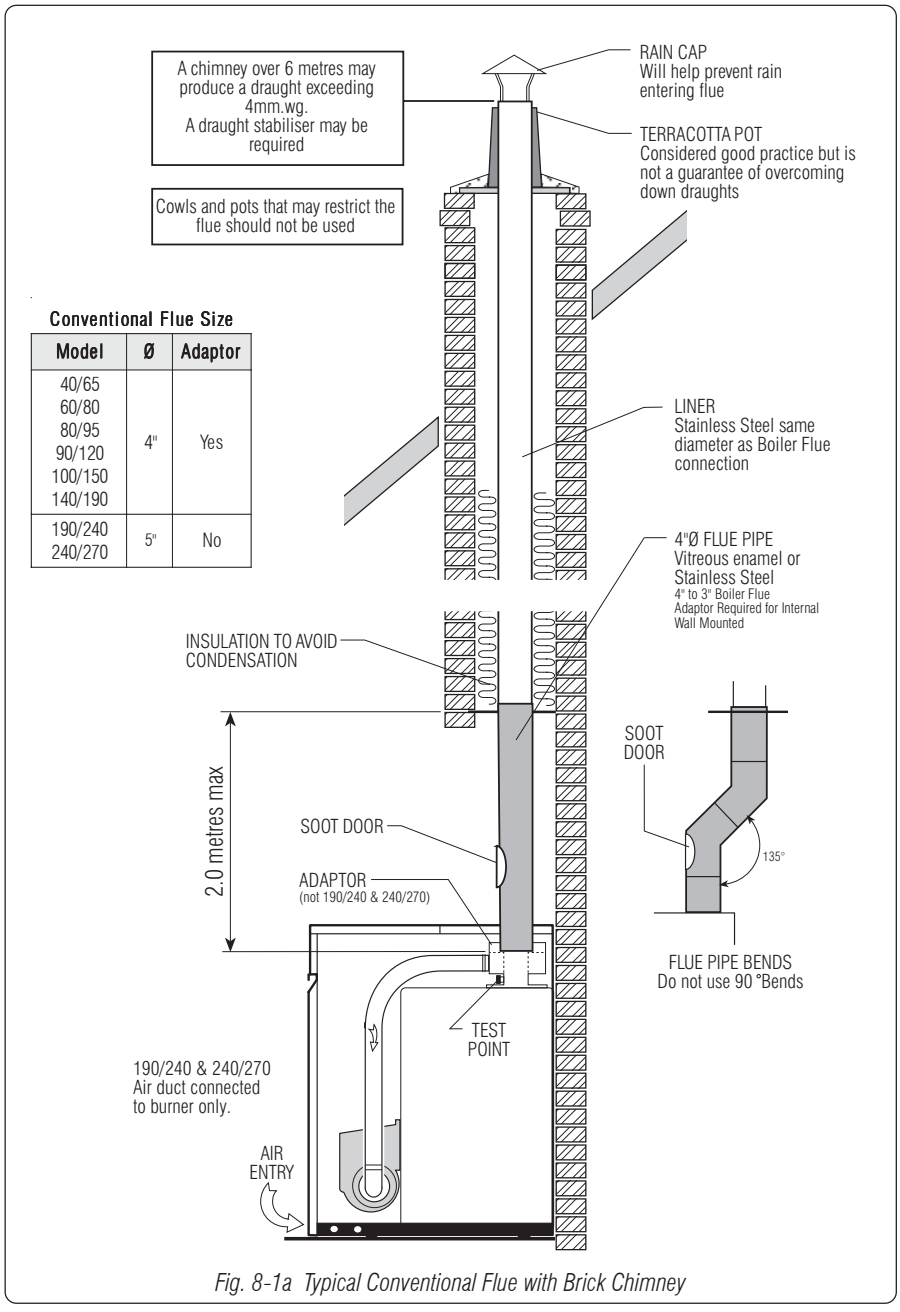


Fig. 8-1b Flue Adaptor



Conventional Flue Size

Model	Ø	Adaptor
40/65 60/80 80/95 90/120 100/150 140/190	4"	Yes
190/240 240/270	5"	No

Fig. 8-1a Typical Conventional Flue with Brick Chimney

INFORMATION SUPPLIED BY OFTEC. ***FOR FURTHER INFORMATION CONSULT THE LOCAL BUILDING CONTROL.***

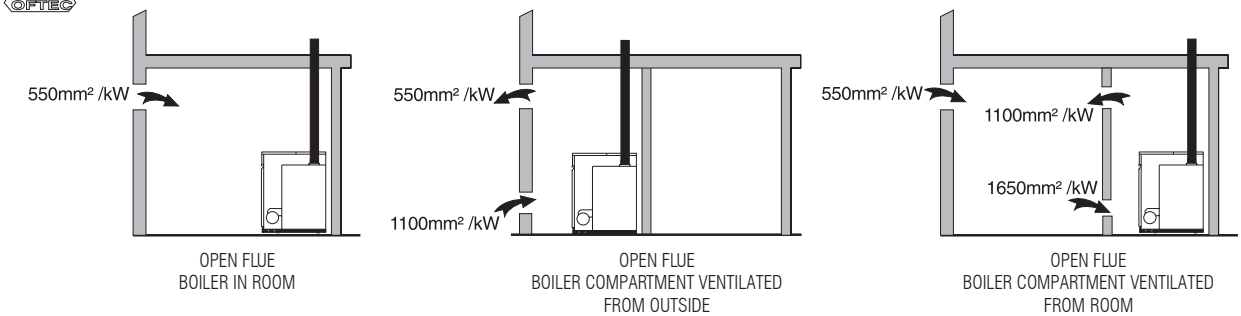


Fig. 8-1c Air Supply for Combustion and Ventilation

9-1 Balanced Flue Selection

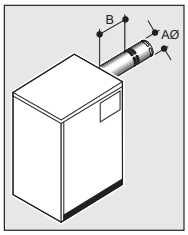
FLOOR STANDING

O100/150, O140/190, O190/240
S100/150, S140/190, S190/240

S240/270 and O240/270
only Low Level Rear is available - LLR125

O40/65, O60/80, O80/95, O90/120,
S40/65, S60/80, S80/95, S90/120, C40/65 Combi

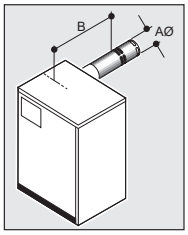
Low Level Rear



Kit	75mm	100mm
	LLR075	LLR100
AØ	100	150
B	160 to 350	160 to 350
Extensions	LLE	EXS, EXT, EXL

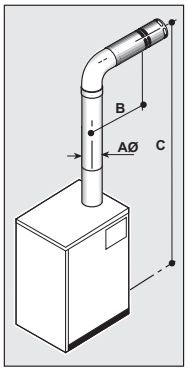
Low Level Side

Not Combi see below



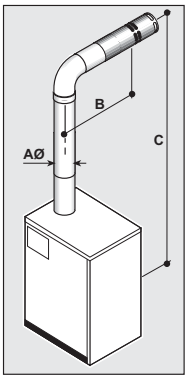
Kit	LLR075 + LLE075	LLR100 + EXS100
AØ	100	150
B	590 to 790	590 to 790
Extensions	LLE	EXS, EXT, EXL

High Level Rear



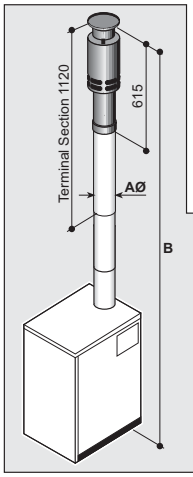
Kit	HLR075 + VBC075	HLR100 + VBC100
AØ	125	150
B	240 to 440	240 to 440
C	1600 to 2110	1760 to 2280
Extensions	EXS, EXT, EXL	EXS, EXT, EXL
	For Vertical and Horizontal	

High Level Side

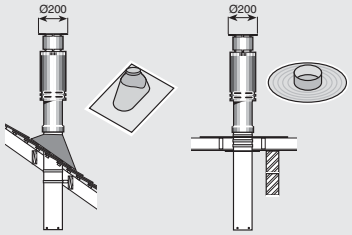


Kit	HLR075 + VBC075 + EXS075	HLR100 + VBC100 + EXS100
AØ	125	150
B	540 to 740	540 to 740
C	1600 to 2110	1760 to 2280
Extensions	EXS, EXT, EXL	EXS, EXT, EXL
	For Vertical and Horizontal	

Vertical



Kit	*VTL075 + VCB075	*VTL100 + VBC100
AØ	125	150
B	2250 to 3075	2420 to 3245
Extensions	EXS, EXT, EXL	EXS, EXT, EXL

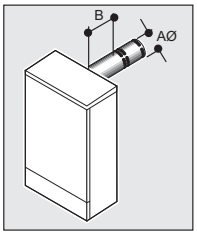


* includes Pitched Roof and Flat Roof Flashings - packed separately

WALL MOUNTED

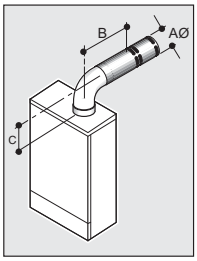
W40/50I, W50/80I

Rear



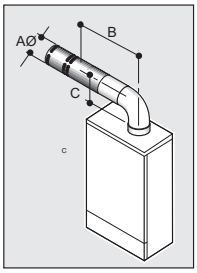
Kit	75mm
	WHL075
AØ	100
B	160 to 350
Extensions	LLE

High Level Rear



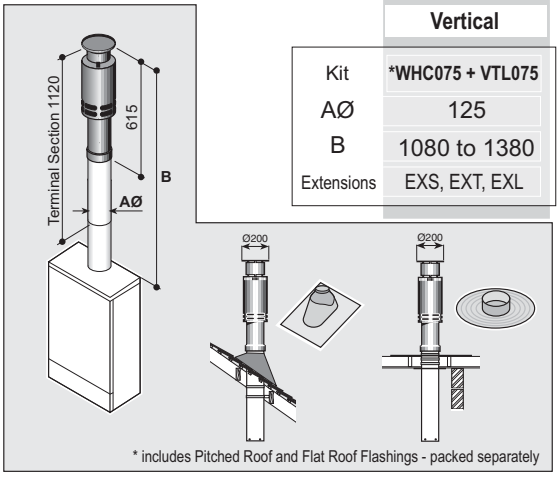
Kit	WHC075 + HLR075
AØ	125
B	240 to 440
C	200
Extensions	EXS, EXT, EXL

High Level Side



Kit	WHC075 + HLE075 + EXS075
AØ	125
B	240 to 440
C	200
Extensions	EXS, EXT, EXL
	For Vertical and Horizontal

Vertical



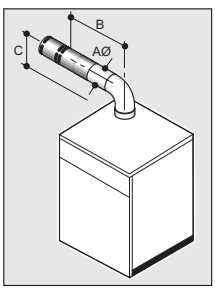
Kit	*WHC075 + VTL075
AØ	125
B	1080 to 1380
Extensions	EXS, EXT, EXL

* includes Pitched Roof and Flat Roof Flashings - packed separately

COMBI - Side

C40/65

All other Combi flues are the same as the Floor Standing 75mm



Low level Side

	75mm
	OS075 + EXS075 + VBS075
AØ	125
B	540 to 1040
C	200
Extensions	EXS, EXT, EXL

Notes
All Floor Standing Boilers are supplied with Conventional Flue Adaptor.
Extensions must be ordered separately.
External Boilers have integral flue.

9-2 Suggested Flue Siting

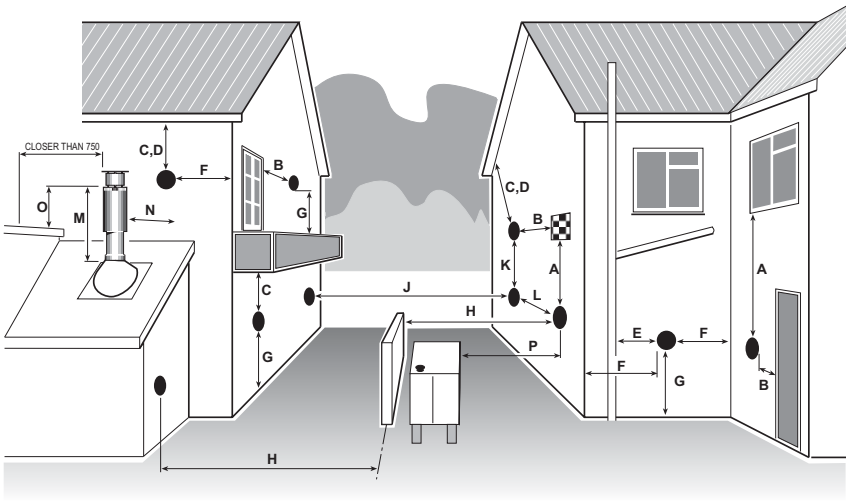


Fig. 9-2a Suggested Flue Siting

9-2.1 Positioning Balanced Flues

Fig. 9-2a and the table below shows recommended clearances when siting balanced flues for oil.

A	Directly below an opening, airbrick, opening window etc.	600*
B	Horizontal to an opening, airbrick, opening window etc.	600
C	Below a gutter, eaves or balcony with projection	75
D	Below a gutter, eaves or balcony without projection	600*
E	From vertical sanitary pipework	300
F	From an internal or external corner	300 /600 Nothern Ireland & Republic of Ireland
G	Above ground or balcony level	300
H	From a surface or a boundary facing the terminal	600
J	From a terminal facing the terminal	1200
K	Vertically from a terminal on the same wall	1500
L	Horizontally from a terminal on the same wall	750
M	Above the highest point of an intersection with the roof	600
N	From a vertical structure to the side of the terminal	750
O	Above structure less than 750 from the side of the terminal	600
P	From an oil tank	1800

Note

**When the terminal is within 1 metre of any plastic material this should be protected from the effects of combustion products of the flue.*

IMPORTANT

For situations and dimensions other than those shown contact the local building control.

9-2.2 Terminal Guard

It is recommended that a terminal guard be fitted to low level flue terminals and in applications where persons could come into contact with the terminal, or if it could be subject to damage.

A special terminal guard is supplied with Free Standing External boilers - see page 57.

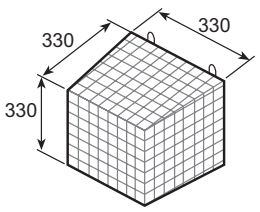


Fig. 9:2b Terminal Guard

9-3 Burner Air Supply

9-3.1 Combustion Air Supply

Boiler in room.

No combustion air inlet is required.

Boiler in compartment/small room.

Ventilation air supply is required as shown in fig. 9-3a.

INFORMATION SUPPLIED BY OFTEC. FOR FURTHER INFORMATION CONSULT THE LOCAL BUILDING CONTROL.

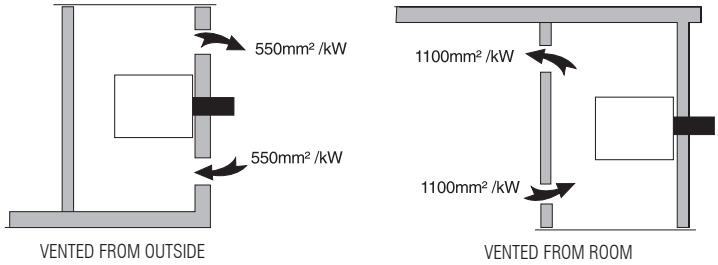


Fig. 9-3a Ventilation Air Supply for Balanced Flues in Compartments

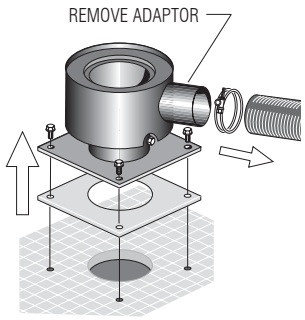


Fig. 9-3b Adaptor

9-3.2 Burner Air Duct

All Floor Standing Boilers are supplied with an adaptor and flexible air duct fitted for conventional flue connection.

For balanced flue applications, the conventional flue adaptor has to be removed, the air duct is then reconnected to the balanced flue.

Internal Wall Mounted Boilers are supplied with the flexible air duct ready to connect to a balanced flue.

Always inspect the condition of the air duct during routine maintenance and replace if it is not air sealed.

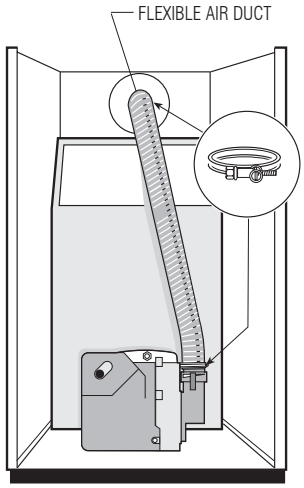


Fig. 9-3c Air Duct - Floor Standing

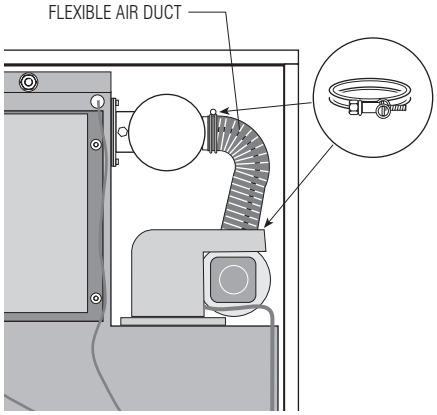


Fig. 9-3d Air Duct - Wall Mounted

10-1 Commissioning Checks

It is recommended that an O.F.T.E.C. trained and registered technician be used. It is the responsibility of the installer to ensure that the Boiler is properly commissioned, see BS5410 Part 1.

10-1.1 Oil Tank and Supply Line

The tank and supply pipe installation should comply with the details shown in Section 7 of this manual. Please check.

Check to see that a single supply pipe is used if the bottom of the tank is above the Burner and that the two pipe suction/return is installed if the level of the oil in the tank can fall below the level of the Burner.

Galvanised iron pipe should not be used, but black iron can, providing it has been adequately protected against corrosion.

Copper pipe should be correctly sized relative to the length of the run and available head or the required lift.

NO SOLDERED JOINTS. NO LEAKING JOINTS.

A remote sensing fire valve must be fitted.

Has a shut-off valve been fitted?

Disconnect the oil supply to the Burner and draw off 1 or 2 gallons of oil. Check for impurities and repeat if necessary.

IMPORTANT
Should the commissioning not be carried out, then the manufacturers 2 year guarantee and any extended warranty will become null and void. It is therefore important that the guarantee is returned to G.A.H. Heating Products completed, in the pre-paid envelope provided.

Building regulations require that the Boiler is commissioned by an OFTEC registered engineeer.

IMPORTANT
Check that there is no water in the oil filter before leaving the site. Do not run Burner if impurities are found. This will damage the Burner pump.

10-1.2 Two Pipe Oil Supply System

Check that a non-return valve is fitted in the suction line, refer to fig. 7-3d, page 30.

The return pipe should have an anti-syphon cut made just inside the top of the oil tank. This pipe must then continue to within 50mm of the bottom of the tank, preferably not near the sludge end.

10-1.3 The Boiler

Check that an imperforate hearth is used.

IMPORTANT
Check all baffles are in place, see pages 39 & 40.

Check that the system is full of water and whether a corrosion inhibitor and antifreeze has been added.

Check all seals to access covers, doors and flue connections.

Check that phial capillary tubes are not trapped behind access covers.

Note
For baffle positions see pages 39 & 40.

10-1.4 The Burner

Check that the Burner pump is correctly set for 1 or 2 pipe oil supply. See page 48 of this manual.

Check that the correct nozzle is fitted with the correct pump pressure for the output required, see pages 45 & 46.

Check available air to the Boiler room for combustion and ventilation, see pages 31 & 34.

10-1.5 Conventional Flue and Chimney

Check that the chimney has been lined/insulated to prevent condensation, is of the correct size and has no obstructions to restrict the flow of gases.

Check that the flue is of the same diameter for its entire length. A flue that steps from one size to another will affect the draw of air resulting in inefficient Burner operation or Burner malfunction.

Check that a suitable round terracotta pot has been used and that the draught stabiliser is working freely, if fitted.

Check that the flexible air duct is correctly fitted from the adaptor to the Burner.

Check that the test point bolt is fitted in the adaptor.

10-1.6 Balanced Flues

Check all balanced flues for their positioning and that the installation complies with details in this manual.

Check that the flexible air duct is correctly fitted from the balanced flue to the Burner.

Check that the test point bolt is fitted in the adaptor.

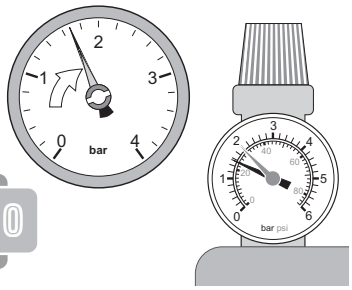
10-1.7 Electrical

Check that the wiring circuit is correctly fused and giving the appropriate supply to the Burner.

Check lockout function of the control box by removing the photoresistor from the Burner and obscuring light from it.

Check the operation of the limit stat or temperature limiter by temporarily removing the phial of the control stat from its pocket.

10-2 Extra Procedures for System Boilers



Record Cold Fill Pressure

10-2.1 Expansion Vessel Pressure

Check that the expansion vessel is adequate for the system as follows:-

Operate the system at normal temperature (80°C) with all radiators on and hot water on. The system pressure will rise above the cold fill pressure.

If the pressure rises more than 0.5 bar then an additional expansion vessel will be required. Part IBS7074 Part 1 includes information on additional expansion vessel requirements.

10-2.2 Check Pressure Relief Valve

To check operation of the pressure relief valve, temporarily increase the system pressure.

The valve should operate when the pressure increases to 3 bar ± 10%.

Reduce the pressure on completion by manually operating the pressure relief valve.

10-3 Extra Procedures for Combi Boilers

10-3.1 Expansion Vessel Pressure

Check that the expansion vessel is adequate for the system as follows:-

Operate the system at normal temperature (80°C) with all radiators on and hot water on. The system pressure will rise above the cold fill pressure.

If the pressure rises more than 0.5 Bar then an additional expansion vessel will be required. Part IBS7074 Part 1 includes information on additional expansion vessel requirements.

10-3.2 Check Pressure Relief Valve

To check operation of the pressure relief valve temporarily increase the system pressure.

The valve should operate when the pressure increases to 3 Bar ± 10%.

Reduce the pressure on completion by manually operating the pressure relief valve.

10-4 Combustion Tests

Combustion tests must be carried out using an approved test kit.

The householder should be left necessary details of the test.

To obtain the above, first fit a manifold and pressure gauge 0-300 p.s.i. to the oil pump.

Next set the Boiler control stat to 80°C and switch on. Ensure all controls are calling for heat.

Having bled the air out of the system, adjust the pump pressure.

Test holes are provided for all flues.

Check the smoke reading with the Boiler up to temperature and then measure the CO_2 and flue gas temperature.

Reducing air into the Burner decreases the flue gas temperature and increases the CO_2. See Section 13-4 for typical Burner settings and test data.



IMPORTANT
DO NOT drill any test holes in balanced flues.
Any test hole drilled in a conventional flue must be plugged.
ALWAYS refit test hole bolts.

10-5 Handing Over

Having filled in the guarantee form, this should be sent to GAH (Heating Products) Limited. The installer should next recheck the system and ensure it is completely satisfactory before demonstrating to the householder the operation of the Boiler and its controls.

The manual must be left with the householder together with a copy of the completed warranty form.

Also leave the Burner Booklet with the householder and any other manufacturer's instructions or details supplied with components.

11-1 Routine Service

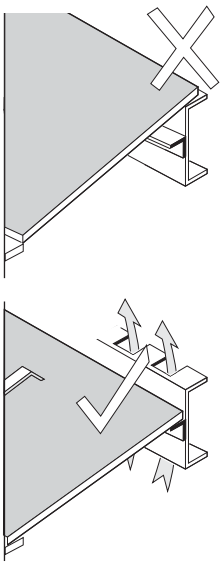


Fig. 11-1a Baffles Position

FUEL 28 Second Class C Kerosene - ONCE A YEAR.

It is good policy to measure the smoke, CO_2, flue gas temperature and oil pressure, before carrying out the routine service. At the same time, check for combustion leaks, oil leaks and any unusual noises from the Burner or system. Comparison of 'before' and 'after' results is facilitated.

IMPORTANT
Always turn off the oil supply and switch off and disconnect the electricity supply before working on the Boiler.

Paper type filter elements should be changed.

Elements of mesh type filters should be washed in kerosene. The oil tank should be de-sludged.

Remove the Burner and thoroughly clean, paying particular attention to the blast tube and its airways. Electrodes should be checked for wear and crazing of the porcelain. Ensure nozzle is of type and size for output required, see 13-3.2.

In very dusty conditions, the fan and photocell may need cleaning.

Flexible oil lines should be carefully inspected. It is recommended that flexibles are renewed every two years. If in any doubt fit new.

11-1.1 Boiler

All Boilers have a flueway door giving access to remove baffles. Baffles should be lifted out to enable the heat exchanger to be thoroughly vacuumed clean.

It is important that all flueway doors have a good rope seal and are tightened correctly. Check that the air pipe from the manifold to the Burner is in good condition and properly connected at both ends (balanced flue only).

11-1.2 Combustion Test

This must equate to the data in the manual, see pages 45 & 46.

11-2 Extra Procedure for System Boilers

In addition to the Routine Servicing detailed in Section 11-1, the following procedure should be included.

11-2.1 Cold Fill Pressure

Check the cold fill pressure is as recorded, reset the red pointer if required.

A drop in the cold fill pressure indicates that the system requires topping up. If regular topping up is required it indicates that there may be a leak in the system.

Refer to 5-5.12 Filling the System.

11-2.2 Pressure Relief Valve

Check as detailed in 5-5.5.

11-3 Extra Procedure for Combi Boilers

11-3.1 Cold Fill Pressure

Check the cold fill pressure is as recorded, reset the red pointer if required.

A drop in the cold fill pressure indicates that the system requires topping up. If regular topping up is required it indicates that there may be a leak in the system. Refer to 6-2.2.

11-3.2 TPR Valve

Check as detailed in 6-2.5.

11-4 Baffle Positions

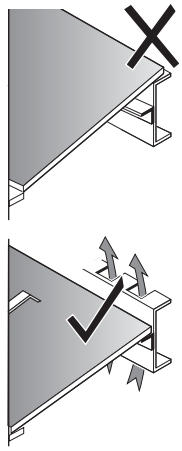


Fig. 11-4a Baffles Position

Baffles are fitted in the heat exchanger of Boilers, they provide optimum heat distribution to maintain the Boiler efficiency.

When baffles are left out, wrongly positioned or excessively distorted, the Boiler efficiency will be drastically reduced.

Baffles should be removed, cleaned and replaced during routine servicing.

Care should be taken when replacing baffles to ensure that they are correctly fitted. Fig. 11-4a shows the right and wrong way of fitting some baffles.

IMPORTANT
All baffles must be fitted.
All baffles must be correctly positioned.
Replace distorted baffles.
If baffles appear to be missing check they have not fallen to the bottom of the heat exchanger during transit.

11-4.1 Wall Mounted and Free Standing External Boilers

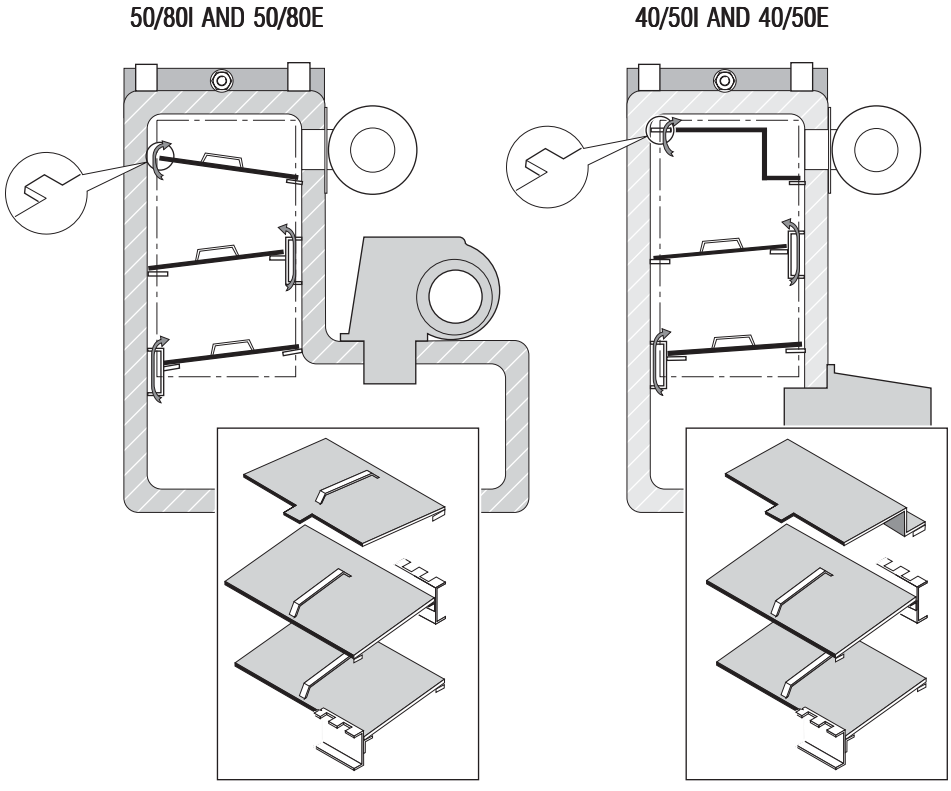
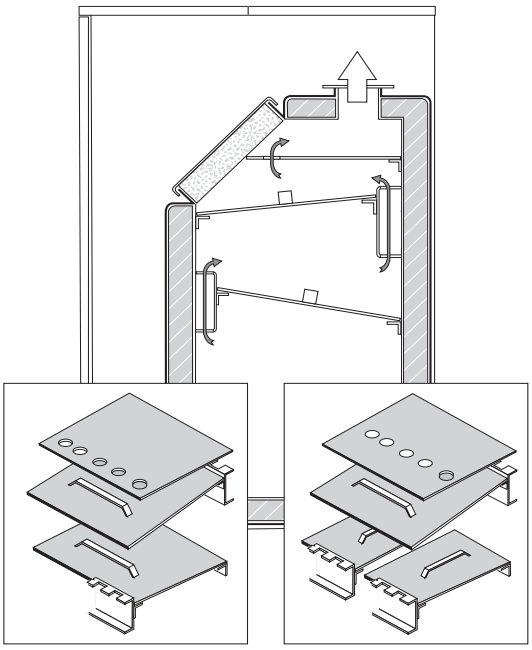


Fig. 11-4b Wall Mounted and Free Standing External Boiler Baffle Positions

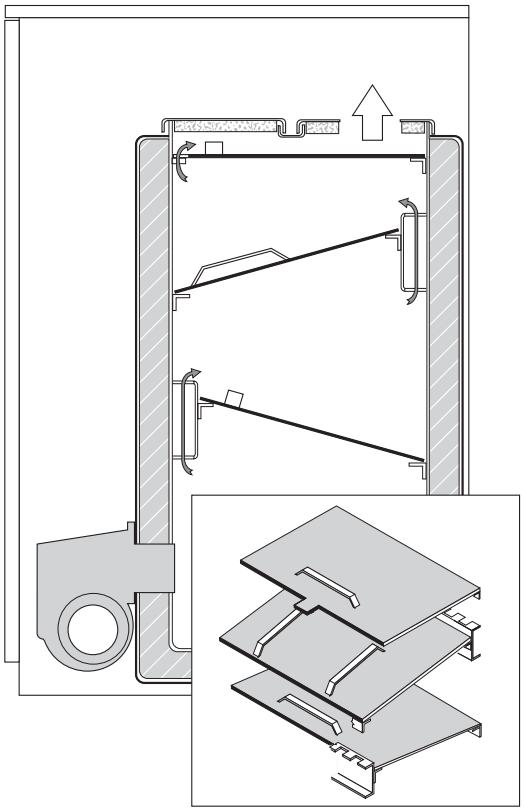
11-4.2 Floor Standing Boilers



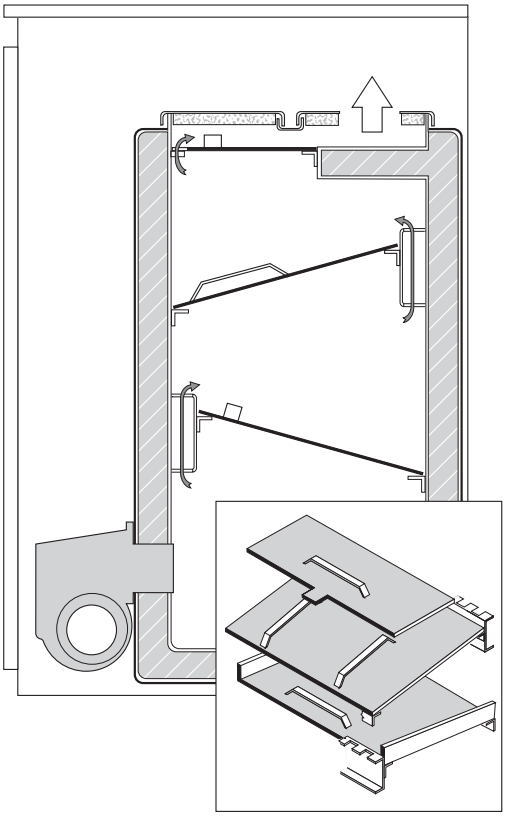
S40/65
C40/65
O40/65

S60/80
S80/95
S90/120

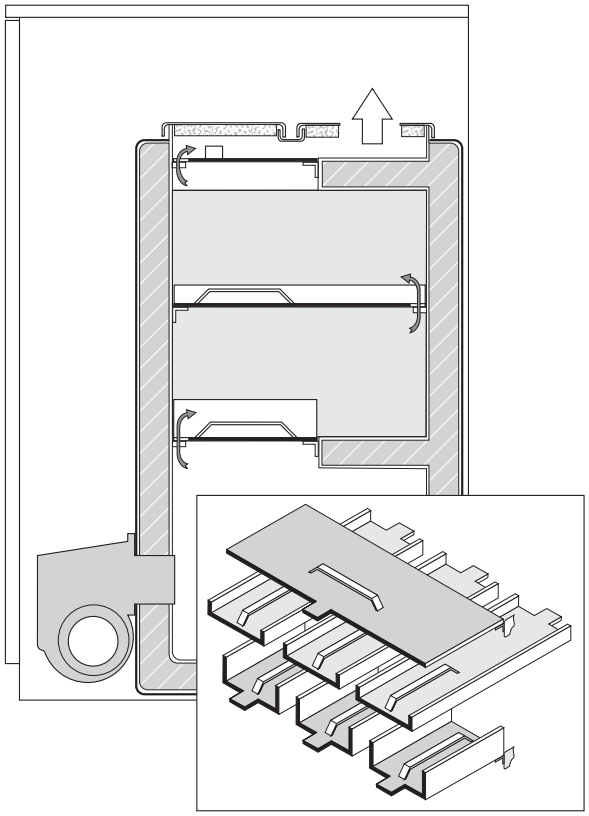
O60/80
O80/95
O90/120



S100/150 O100/150



S140/190 O140/190
S190/240 O190/240



S240/270 O240/270

Fig. 11-4c Floor Standing Boiler Baffle Positions

12-1 Householders Fault Finding - also see www.gah.co.uk

IMPORTANT
If you have not been able to rectify the problem contact the INSTALLER who will advise you further.
Do not involve a third party that may incur you costs as this will not be covered by the Boiler Guarantee and any work not authorised by the manufacturer may also invalidate the Guarantee.

Housholder Check			Possible Solution
Is Mains Lamp ON ?	No	Fault	There is no power to the Boiler. 1. Check mains switch on the Boiler control panel is ON. 2. Check power to the Boiler is switched ON. 3. Check fuses.
	Yes	Normal	
Is Lockout lamp ON ?	Yes	Fault	Lockout has occurred. 1. You may have run low on oil, check there is oil in the tank. 2. Check the oil from the tank has not been turned OFF. 3. Carry out 'Restart Boiler after Lockout' procedure, see 3-3.
	No	Normal	
Is Limit Lamp ON ?	Yes	Fault	Boiler has overheated. 1. Check that the Boiler thermostat control has not been turned fully up 2. Check that the pump is working. 3. If your Boiler does not have manual reset it will restart automatically when the Boiler cools, see 2-1 & 2-2. If your Boiler has a manual reset button, press the button to restart the Boiler See 2-1 & 2-2.
	No	Normal	
Mains lamp ON Lockout Lamp OFF Boiler Thermostat control is set to temperature. Is Boiler working ?	No	Fault	This indicates that the fault may be with the heating control system. 1. Check the programme is set for heat at the required time. 2. Check that the room thermostat is set to temperature. 3. Check power to the control system is ON.
	Yes	Normal	
Is the Boiler working but making bubbling or gurgling noise ?	Yes	Fault	This indicates that there is air in the system. 1. Bleed the radiators. 2. If you are able, check that the header tank in the loft is full of water, the ball valve may have stuck.
	No	Normal	

12-2 Householders Fault Finding - System Boilers

Housholder Check	Possible Solution
Boiler High Limit lamp ON	Check pressure gauge reading, it should be between 1 & 2 Bar. If lower, refill system see page 20. Check for air in system - with Boiler Off release bleed screws on the pipework in the boiler case and on pump. With system OFF bleed radiators. Then refill system see page 20.
Water discharging from TPR discharge pipe	Check filling loop is turned OFF and disconnected. System over pressure, consult installer.

12-3 Householders Fault Finding - Combi Boilers

Housholder Check	Possible Solution
Limited amount of hot water.	Check the hot water thermostat control is turned to maximum. Check setting of mixing valve.
Limited amount of flow to all taps.	Has accumulator been fitted/fitted correctly? Ask installer to check the accumulator charge pressure. Restriction in filters - contact installer.

12-4 Engineers Fault Finding - also see www.gah.co.uk

Engineer Check	Possible Solution
Burner Motor will not start	1. Check Mains, Limit and Lockout lights on Control Panel. 2. If mains light only is glowing:- a. Ensure thermostat, time clock and all external controls are calling for heat. b. Check for correct voltage at Burner junction box and/or control box terminals. c. If no supply, check there is a live supply to the limit thermostat. If yes, check stats for continuity. If no, check external controls. 3. If Limit light is glowing:- Check control stat for correct operation. 4. If Lockout light is glowing:- Press reset button on Burner control box. 5. If Burner motor does not start, check freedom to rotate, make direct connection of supply to motor. 6. If motor starts - change control box. 7. If motor does not start - change motor.
Burner Motor starts but flame does not establish	1. Check oil filter and that oil is freely delivered from tank to Burner. 2. Check that oil is the correct grade and not contaminated with water. 3. Check oil pump pressure, bleed pump and whether oil is being sprayed into the combustion chamber. If yes:- a. Check electrodes for correct setting, for cracked or crazed porcelain and condition of high tension leads. b. Check ignition transformer. If no:- a. Ensure solenoid valve is operating. b. Fit new nozzle.
Flame established but Burner locks out	1. Check photoresistor is clean and correctly positioned. 2. Check fuel supply is sufficient and of correct grade. 3. Check that the filter is clean with free flow to Burner and no water is present. 4. Fit new nozzle of correct size and type - reduce air shutter opening. 5. If Burner then runs normally, set oil pressure and air shutter using pressure gauge, smoke gun and CO_2 indicator to obtain correct readings. 6. If Burner still runs to lockout, suspect and check photoresistor, solenoid valve and control box for fault.
Burner fires but smoke is emitted from flue	1. Check fuel is of correct grade. 2. Check air shutter and whether increasing the opening corrects the fault. 3. Ensure air supply to Boiler is adequate. 4. Ensure flueways and chimney are not blocked. 5. Fit new nozzle of correct size and type. 6. Set oil pressure and air shutter using pressure gauge, smoke gun and CO_2 indicator.
Burner runs normally - slow to cut off flame	1. Bleed pump to ensure there is no air in pump or nozzle line. 2. Check for dirt or signs of water in solenoid valve and oil pipe.
Boiler switches OFF with Limit light glowing	1. Check that heating system radiators are hot and domestic water is hot. 2. If not very hot, check that expansion/feed tank is supplying water to the system. 3. Correct and vent system as necessary. 4. Check that circulating pump is working normally. 5. Test operation of Control Thermostat - replace if necessary.
Boiler switches OFF with Limit light on at irregular times	1. Suspect fault in system control component external to Boiler or error in wiring circuitry of external controls.

Engineer Check	Possible Solution
Lockout when starting from cold	1. Check that all combustion readings are correct when running normally. 2. Check that if oil level in tank can fall below Burner height, a two pipe suction/return system is installed and that the oil pump by-pass is correct. See Section 7. 3. If a two pipe system is fitted, check for bleed back to tank through the non-return valve and for air leaks into the suction pipe.
Boiler does not reach temperature	1. Check for correct nozzle and oil pressure and that combustion readings are correct. 2. Check Control Thermostat calibration. 3. Replace nozzle if necessary and reset pressure and air shutter to obtain correct operation.

12-5 Engineers Fault Finding - System Boilers

Engineer Check	Possible Solution
Boiler at high limit	1. Check the temperature of Boiler flow pipe, limit occurs at 93°C. 2. Check for air in the system. If present check downstream of pump for air ingress (eg. leaking TRV)
Water discharging from PRV discharge pipe	1. System over pressure check for reasons why. 2. Bladder in expansion vessel may have ruptured.

12-6 Engineers Fault Finding - Combi Boilers

Engineer Check	Possible Solution
Limited amount or no hot water at taps	1. Check filters in pressure regulating valve, Cleanstream, mixing valve etc. 2. Check mixing valve is operating correctly.
Limited amount of flow to all taps	1. Check Accumulator pressure (drain first) refer to 6-2.1. 2. Bladder in expansion vessel may have ruptured.
No water and/or no heating	1. Check programmer, is it twin channel type? If not replace. 2. Check operation of pump and motorised valve. 3. Check filters in pressure regulating valve, Cleanstream, mixing valve etc.

13-1 Boiler Specifications

		Floor Standing Internal									Free Standing External			Wall Mounted Internal		Wall Mounted External	
Select		S40/65	S60/80	S80/95	S90/120	S100/150	S140/190	S190/240	S240/270	COMBI C40/65	COMBI C40/65E	FE40/50	FE50/80	W40/50I	W50/80I	W40/50E	W50/80E
Option		O40/65	O60/80	O80/95	O90/120	O100/150	O140/190	O190/240	O240/270								
System			S60/80	S80/95	S90/120	S100/150											
Output	Btu/hr x 1000	40 to 65	60 to 80	80 to 95	90 to 120	100 to 150	140 to 190	190 to 240	240 to 270	40 to 65	40 to 65	40 to 50	50 to 80	40 to 50	50 to 80	40 to 50	50 to 80
	kW	11.7 to 19.1	17.6 to 23.4	23.4 to 27.8	26.4 to 35.2	29.3 to 43.9	41.0 to 55.7	55.7 to 70.2	70.2 to 79.1	11.7 to 19.1	11.7 to 19.1	11.7 to 14.7	14.7 to 23.4	11.7 to 14.7	14.7 to 23.4	11.7 to 14.7	14.7 to 23.4
Weight empty		103 kg	130 kg	130 kg	130 kg	198 kg	224 kg	224 kg	236 kg	157 kg	157 kg	82 kg	97 kg	82 kg	97 kg	82 kg	97 kg
Water content (litres)		25	41	41	41	35.2	44.3	44.3	67.5	28 + 60	28 + 60	14.5	19.3	14.5	19.3	14.5	19.3
Water connections		4 x 1" Bsp	4 x 1" Bsp	4 x 1" Bsp	4 x 1¼" Bsp	4 x 1¼" Bsp	4 x 1¼" Bsp	4 x 1¼" Bsp	4 x 1¼" Bsp	2 x 1" Bsp	2 x 1" Bsp	2 x 22mm copper		2 x 1" Bsp	2 x 1" Bsp	2 x 1" Bsp	2 x 1" Bsp
Fit below worktop		✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a
Front servicing		✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
Front and top servicing		✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	n/a	n/a	n/a	n/a	n/a	n/a
Water cooled base		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Balanced flue size		75mm	75mm	75mm	75mm	100mm	100mm	100mm	125mm	75mm	Integral	Integral 75mm		75mm	75mm	Integral 75mm	
Conventional flue size		100mm	100mm	100mm	100mm	100mm	100mm	125mm	125mm	100mm	n/a	n/a	n/a	100mm	100mm	n/a	n/a
Frost protection fitted		✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✓	✓
Oil system		Supplied set for single pipe oil system												Set for 2 pipe oil system			
Fuels type		All Boilers are supplied set for Kerosene 28 Second Class C fuels (some models can be converted for use with 35 Second Gas Oil).															
Suitable for fully pumped systems		✓	✓	✓	✓	✓	✓	✓	✓	n/a	n/a	✓	✓	✓	✓	✓	✓
		Select models require manual reset limit thermostat to be fitted - optional extra															
Suitable for pumped central heating with gravity to cylinder		✓	✓	✓	✓	✓	✓	✓	✓	n/a	n/a	✗	✗	✗	✗	✗	✗
			Not system range														
Operating temperature		60-90°C															
Electricity supply		240V single phase 50Hz - fused 5 amp - plug to control panel supplied															
Maximum operating pressure		2.76 bar - 40 p.s.i. - 90 feet head H_2O															
Conventional flue chimney draft limit		Minimum 1.2mm H_2O, Maximum 4.0mm H_2O															

13-2 Boiler Output Options

SELECT	S40/65		S60/80		S80/95		S90/120		S100/150		S140/190		S190/240		S240/270	
OPTION	O40/65		O60/80		O80/95		O90/120		O100/150		O140/190		O190/240		O240/270	
OUTPUT	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW
Output Minimum	40	11.7	62	18.2	80	23.4	90	26.4	100	29.3	140	41	190	55.7	240	70.3
Output Maximum	65	19	80	23.4	95	27.8	120	35.2	150	41.6	193	56.5	240	70.3	300	87.8
Output Factory Set	52	15.2	70	20.6	85	24.9	110	32.2	120	35.2	170	49.8	220	64.4	270	79.1
Ecoflam Burner	Minor 1 or **Max**		Minor 1 or **Max**		Minor 1 or **Max**		Minor 4 or **Max 1**		Minor 4 or **Max 1**		Minor 8 or **Max 12**		Minor 12 or **Max 12**		Minor 12 or **Max 12**	

WALL MOUNTED	W40/50I		W40/50E		W50/80I		W50/80E	
	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW	Btu/h x 1000	kW
Output Minimum	40	11.7	40	11.7	50	14	50	14
Output Maximum	50	14	50	14	80	23.4	80	23.4
Output Factory Set	50	14	50	14	65	19	65	19
Ecoflam Burner	Minor 1 '300' or **Max 1**		Minor 1 or **Max 1**		Minor 1 '300' or **Max 1**		Minor 1 or **Max 1**	

COMBISTREAM COMBI 65I COMBI 65E	C40/65	
	Btu/h x 1000	kW
Output Minimum	40	11.7
Output Maximum	65	19
Output Factory Set	65	19
Ecoflam Burner	Minor 1 or Max	

Factory Setting

13-3 Burner Setting Data

The following Burner settings given for all Option, Select and Wall Mounted Boilers are for Kerosene 28 Second Class C fuel.

For 35 Second Class D Gas Oil the following changes are required.

1. Fit Burner pre-heater.
2. Raise pump pressure to 9.7-10.3 bar (140-150 psi).
3. Lower nozzle size by 2 sizes.

Wall Mounted Boilers are not suitable for 35 Second Class D Gas Oil.

13-3.1 Wall Mounted Internal & External

Factory Setting

Model INTERNAL	Ecoflam Burner Type	Output		Nozzle Danfoss Type H	Burner Oil Pressure See page 48		Firing Rate	*Approx. Comb. Air Setting*	CO_2	Flue Gas Temp.	Type of Blast Tube
		Btu/h x 1000	kW	Size & Type US/GPH	psi	bar	litres/h	*Air No. on Scale See p.47*	%	Less Ambient °C	
W40/50I	Minor 1'300 or **Max 1**	40	11.7	0.4/80°	100	6.9	1.26	*2.5 Minor 1 '300' only*	10-11	195	576
		50	14.7	0.4/80°	110	6.9	1.65	*3 Minor 1 '300' only*	10-11	205	
W50/80I	Minor 1'300 or **Max 1**	50	14.7	0.5/60°	100	6.9	1.65	*6 Minor 1 '300' only*	10-11	185	576
		65	19	0.6/60°	120	8.3	2.12	*7 Minor 1 '300' only*	10-11	190	
		80	23.4	0.75/60°	110	7.6	2.59	*9 Minor 1 '300' only*	10-11	220	

13-3.2 Floor Standing SELECT & OPTION Range

☐ Factory Setting

Model SELECT & OPTION	Ecoflam Burner Type	Output		Nozzle	Burner Oil Pressure See page 48		Firing Rate	Approx. Comb. Air Setting	CO_2	Flue Gas Temp.	*Type of Blast Tube*	*Combustion Head Setting* See page 47
		Btu/h x 1000	kW	Size & Type US/GPH	psi	bar	litres/h	Air No. on Scale See p.47	%	Less Ambient °C	*Minor 1,4,8 and 12 ONLY*	
S40/65 O40/65 C40/65	Minor 1 or **Max** Factory setting for C40/65>	40	11.7	0.4/80°	100	6.9	1.26	1.5	10-11	160	*576 with D.A. Disc*	*Non Adjustable*
		52	15.2	0.5/60°	100	6.9	1.65	2.5	10-11	190		
		65	19	0.6/60°	120	8.3	1.99	6	10-11	210		
S60/80 O60/80	Minor 1 or **Max**	62	18.2	0.6/60°	120	8.3	1.99	2.0	10-11	175	*576*	*Non Adjustable*
		65	19	0.65/60°	100	6.9	2.05	3.0	10-11	180		
		70	20.6	0.75/60°	100	6.9	2.23	4.5	10-11	195		
		75	22	0.75/60°	115	7.9	2.39	5	10-11	205		
		80	23.4	0.75/60°	130	9.0	2.56	6	10-11	210		
S80/95 O80/95	Minor 1 or **Max**	80	23.4	0.75/60°	130	9.0	2.56	3	10-11	210	*578*	*Non Adjustable*
		85	24.9	.85/60°	100	6.9	2.73	5	10-11	210		
		90	26.4	.85/60°	120	8.3	2.89	6	10-11	215		
		95	27.8	1.00/60°	100	6.9	3.07	6.5	10-11	218		
S90/120 O90/120	Minor 4 or **Max 1**	90	26.4	0.85/60°	100	6.9	2.73	4	10-11	180	*102*	*Non Adjustable*
		110	32.2	1.10/60°	100	6.9	3.47	5	10-11	170		
		120	35.2	1.10/60°	120	8.3	3.78	6	10-11	190		
S100/150 O100/150	Minor 4 or **Max 1**	100	29.3	1.00/60°	105	7.2	3.18	1	10-11	175	*E6.02/1 Tube L5.01/4 Diffuser*	*14mm*
		110	32.2	1.10/60°	110	7.6	3.47	2.0	10-11	190		
		120	35.2	1.10/60°	120	8.3	3.78	4	10-11	190		
		130	38.1	1.25/60°	110	7.6	4.25	5	10-11	200		*12mm*
		140	41.6	1.25/60°	130	9.0	4.51	7	10-11	210		
		150	43.9	1.35/60°	115	7.9	4.81	5	10-11	230		
S140/190 O140/190	Minor 8 or **Max 12**	140	41	1.35/60°	100	6.9	4.48	1	10-11	165	*E6.02/1 Tube L5.01 Diffuser*	*15mm*
		150	43.9	1.35/60°	115	7.9	4.81	2	10-11	175		
		160	46.9	1.35/60°	130	9.0	5.03	4	10-11	180		
		170	49.8	1.5/60°	125	8.6	5.56	4.5	10-11	185		
		184	53.9	1.75/60°	100	6.9	5.88	5	10-11	190		*13mm*
		190	55.7	1.75/60°	110	7.6	6.16	6	10-11	195		
S190/240 O190/240	Minor 12 or **Max 12**	190	55.7	1.75/60°	110	7.6	6.16	4	10-11	195	*BFB 01.0202 Tube*	*10mm*
		200	58.6	1.75/60°	120	8.3	6.36	5	10-11	215		
		220	64.4	2.0/60°	100	6.9	6.94	6	10-11	225	*BFB 04.011 Tube*	
		240	70.2	2.0/60°	110	7.6	7.56	7.5	10-11	240		
S240/270 O240/270	Minor 12 or **Max 12**	240	70.2	2.0/60°	110	7.6	7.56	7.5	10-11	240	*BFB 01.202 Tube*	*10mm*
		270	79.0	2.5/60°	100	6.9	7.77	8.0	10-11	240		
		300	78.8	2.5/60°	120	8.3	7.98	8.5	10-11	240		

Note

There is no facility for Blast Tube adjustment on the Ecoflam Max Burner range.

13-4 Burner Settings

13-4.1 Combustion Air Setting - Minor Series Burners

Note
The recommended settings for the combustion head and combustion air are shown on pages 45 & 46.
Settings should not differ greatly from the settings given.

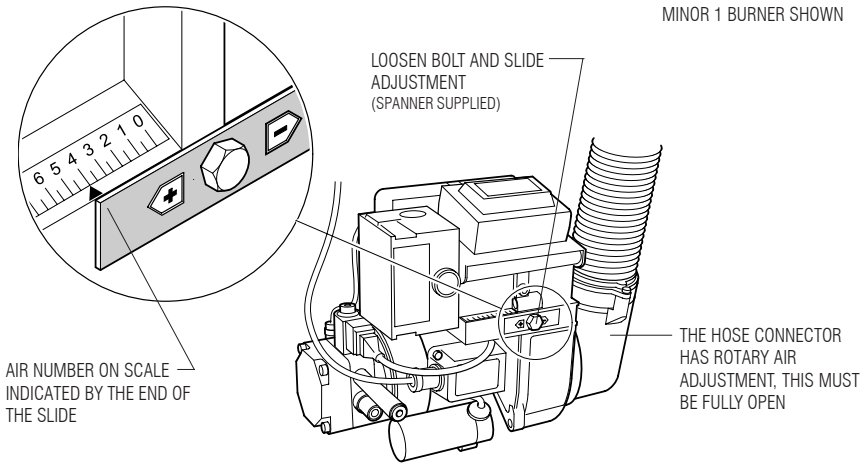


Fig. 13-4a Combustion Air Setting

13-4.2 Combustion Head Setting - Minor Series Burners

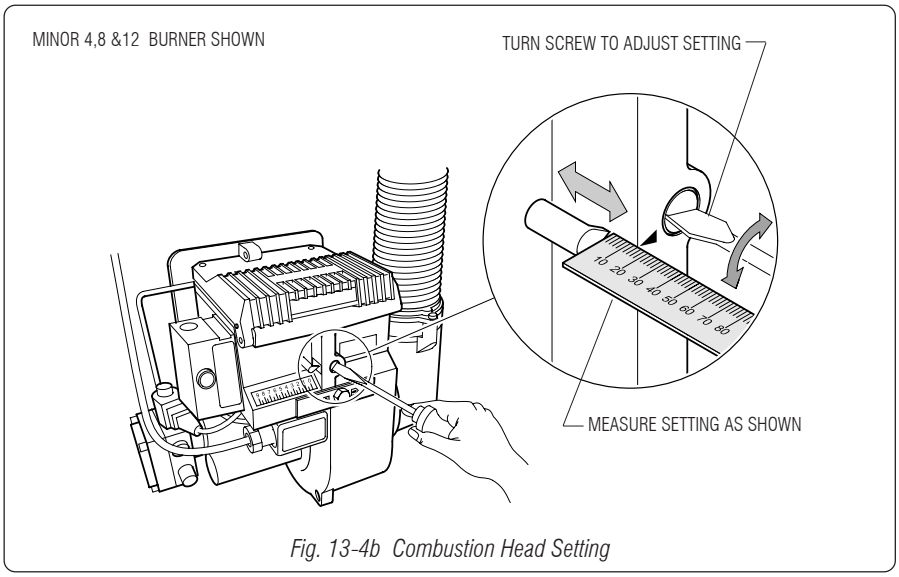


Fig. 13-4b Combustion Head Setting

13-4.3 Nozzle Electrode Settings - Minor Series Burners

Note
Always check electrodes settings after fitting nozzle.

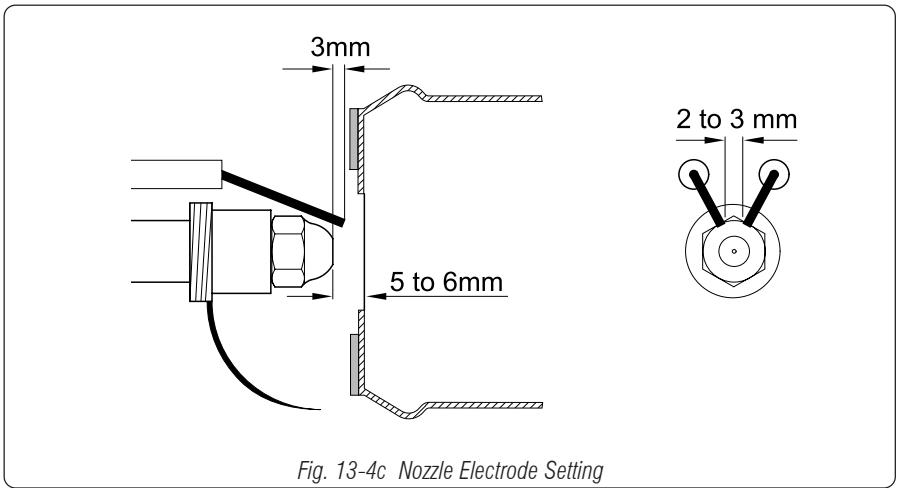
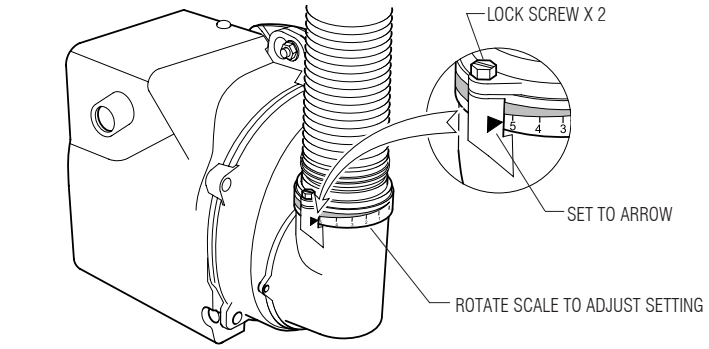


Fig. 13-4c Nozzle Electrode Setting

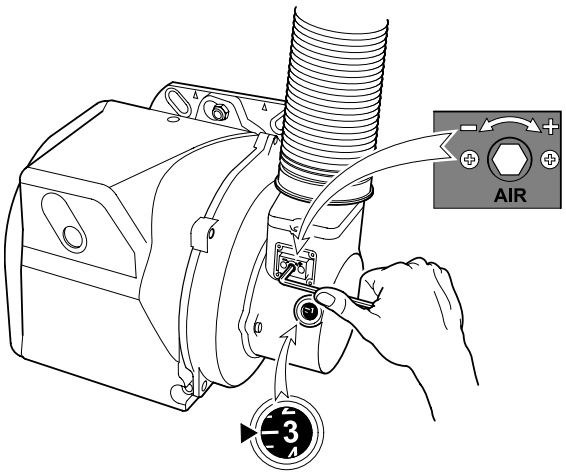
13-4.5 Combustion Air Setting - Max Series Burners

Note

The recommended settings for the combustion head and combustion air are shown on pages 45 & 46.
Settings should not differ greatly from the settings given.



MAX & MAX 1



MAX 12

Fig. 13-4d Combustion Air Setting

CAUTION
Only fit and remove pressure gauge when the Boiler is off.

13-4.6 Burner Oil Pressure

The Burner pump oil pressure is measured using a pressure gauge fitted into the bleed/ pressure gauge port of the pump. An allen key is used to set the pressure.

Do not adjust the pressure without the use of a gauge.

Note
The recommended settings for the Burner oil pressure are shown on pages 45 & 46. Settings should not differ greatly from the settings given.

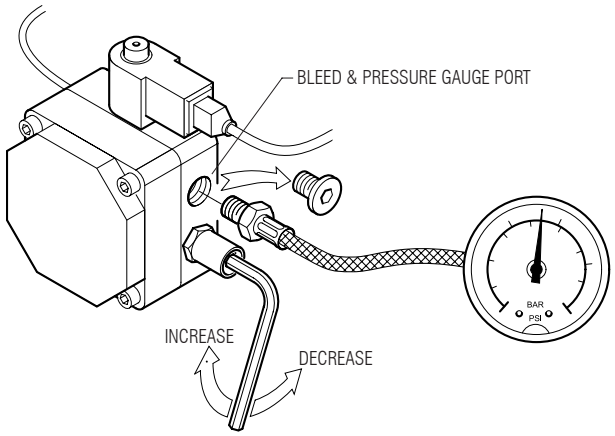


Fig. 13-4e Oil Pressure Adjustment

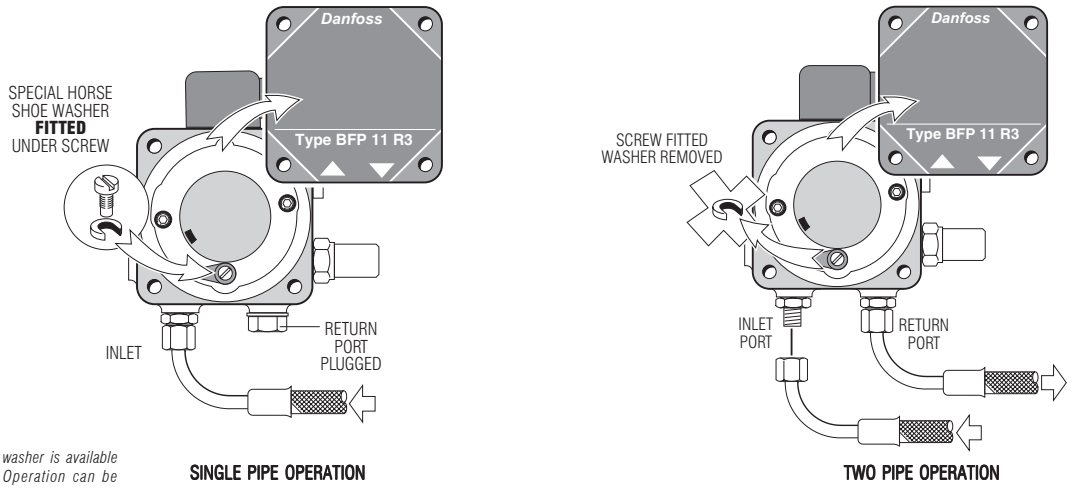
13-4.7 Burner Oil Pump

An ECOFLAM Burner with Danfoss pump is used on Thermecon Oil Boilers. Pumps can be set for single and two pipe operation.

Floor standing Boilers are supplied with the Burner pump set for single pipe operation.

Wall mounted Boilers are supplied with the Burner pump set for two pipe operation.

IMPORTANT
When cover has to be removed - do not damage filter or seal.
Ensure cover is refitted correctly and that it does not leak.



Note
If no special washer is available Single Pipe Operation can be achieved by removing screw.

Fig. 13-4f Pump Single and Two Pipe Operation

13-5 Panel Wiring Diagrams

13-5.1 Floor Standing SELECT and Wall Mounted Internal

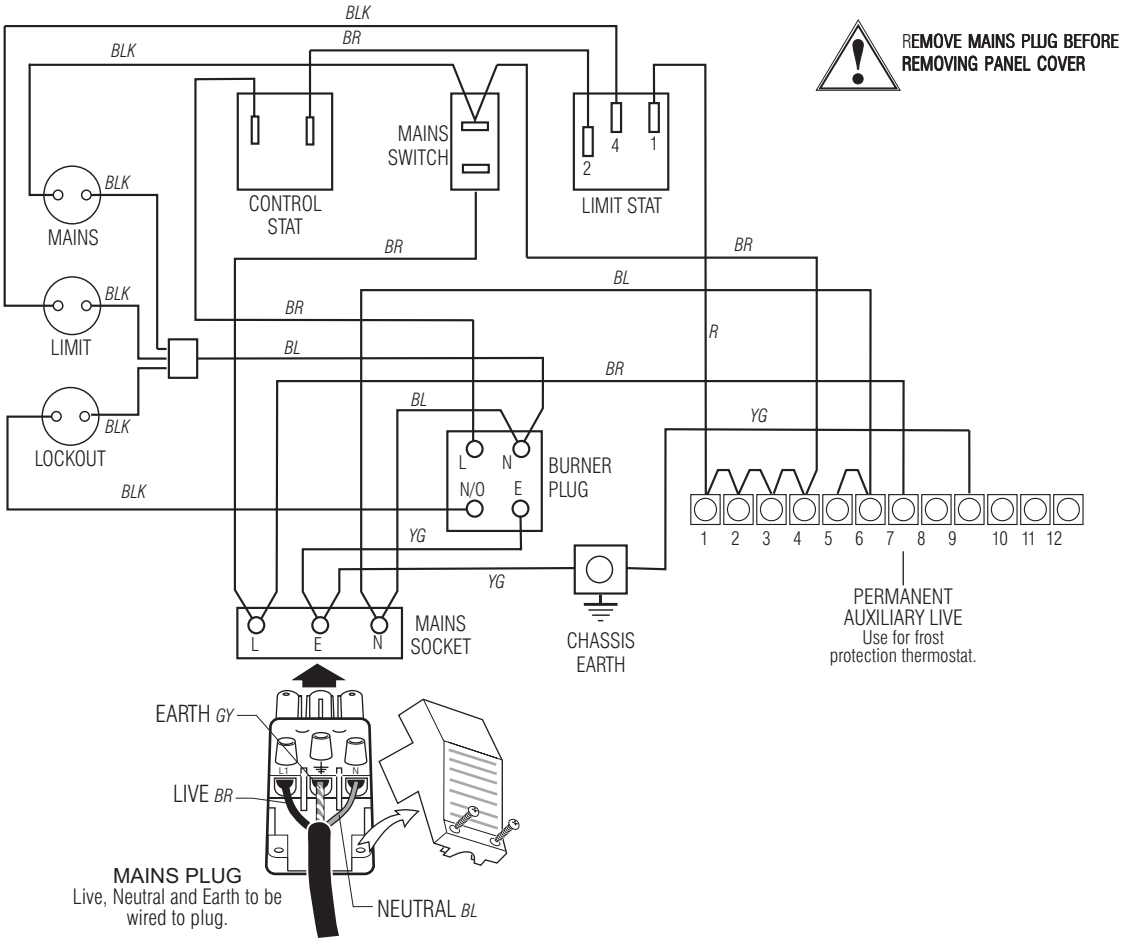


Fig. 13-5a Wiring Diagram for Floor Standing Select and Wall Mounted Internal

13-5.2 Floor Standing OPTION Range

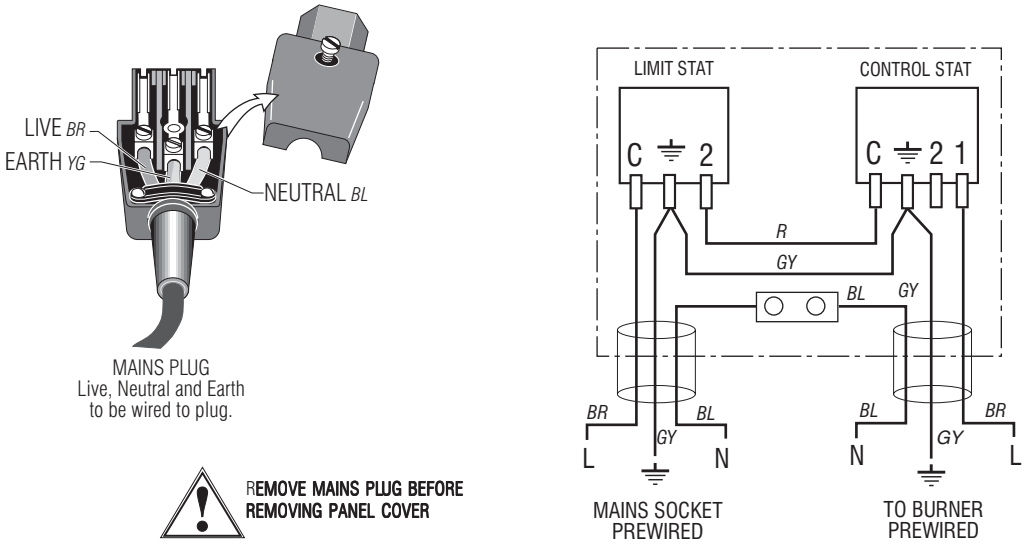


Fig. 13-5b Wiring Diagram for Option Range

13-5.3 Wall Mounted and Free Standing External Range

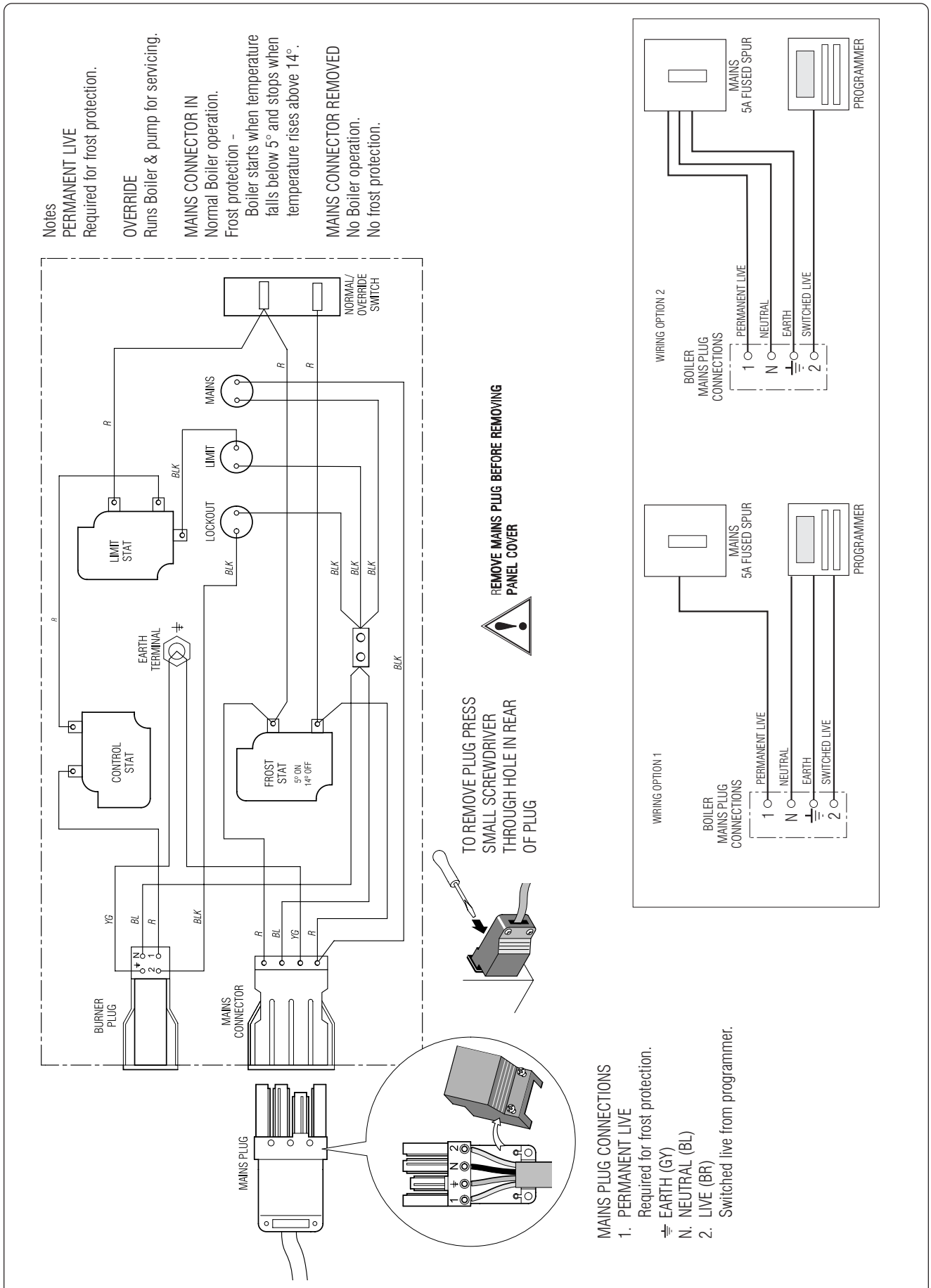


Fig. 13-5c Wiring Diagram for Wall Mounted and Free Standing External

13-5.4 Combistream and Combi 65 Internal Wiring Diagram

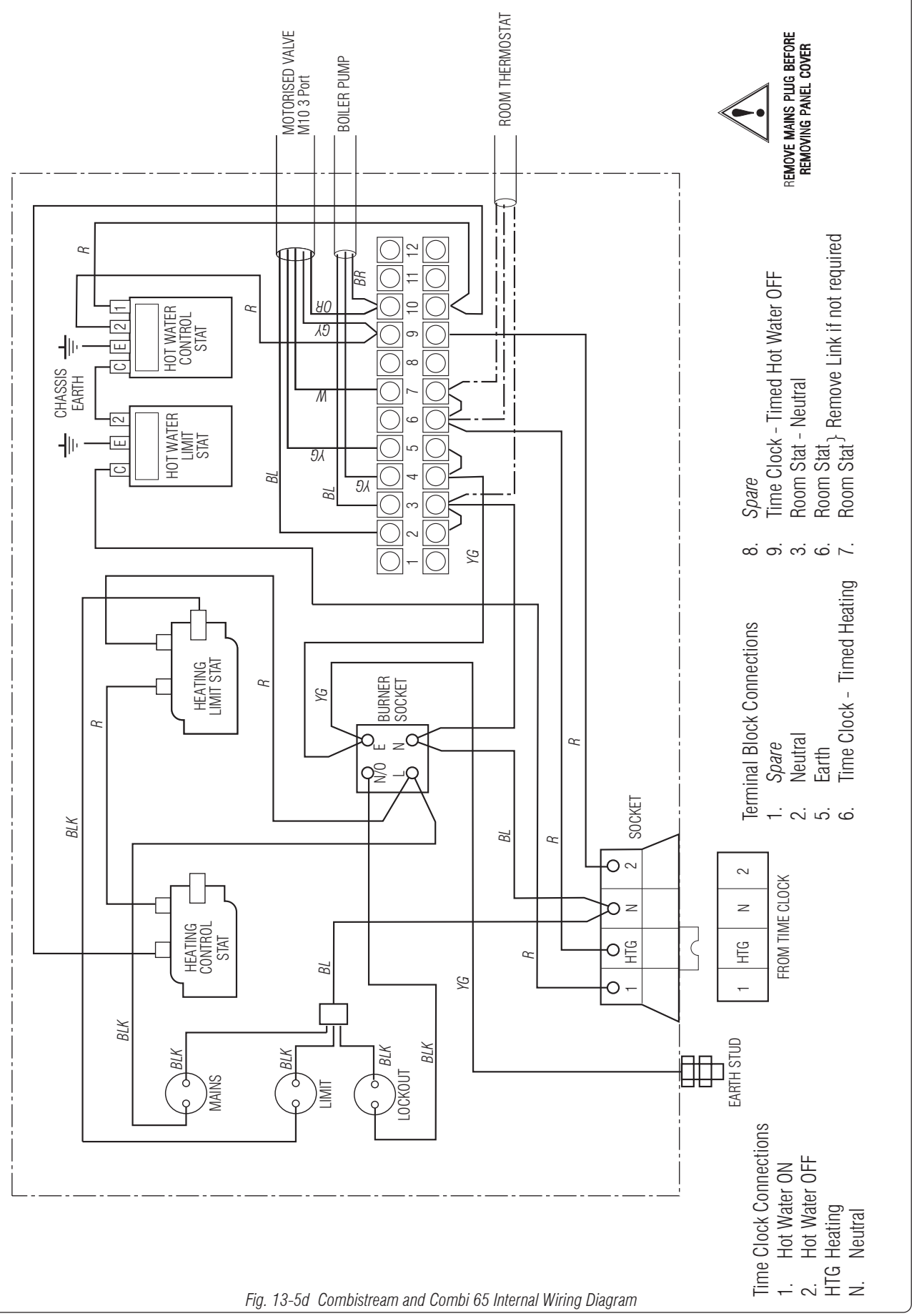


Fig. 13-5d Combistream and Combi 65 Internal Wiring Diagram

13-5.4 Combistream and Combi 65External Wiring Diagram

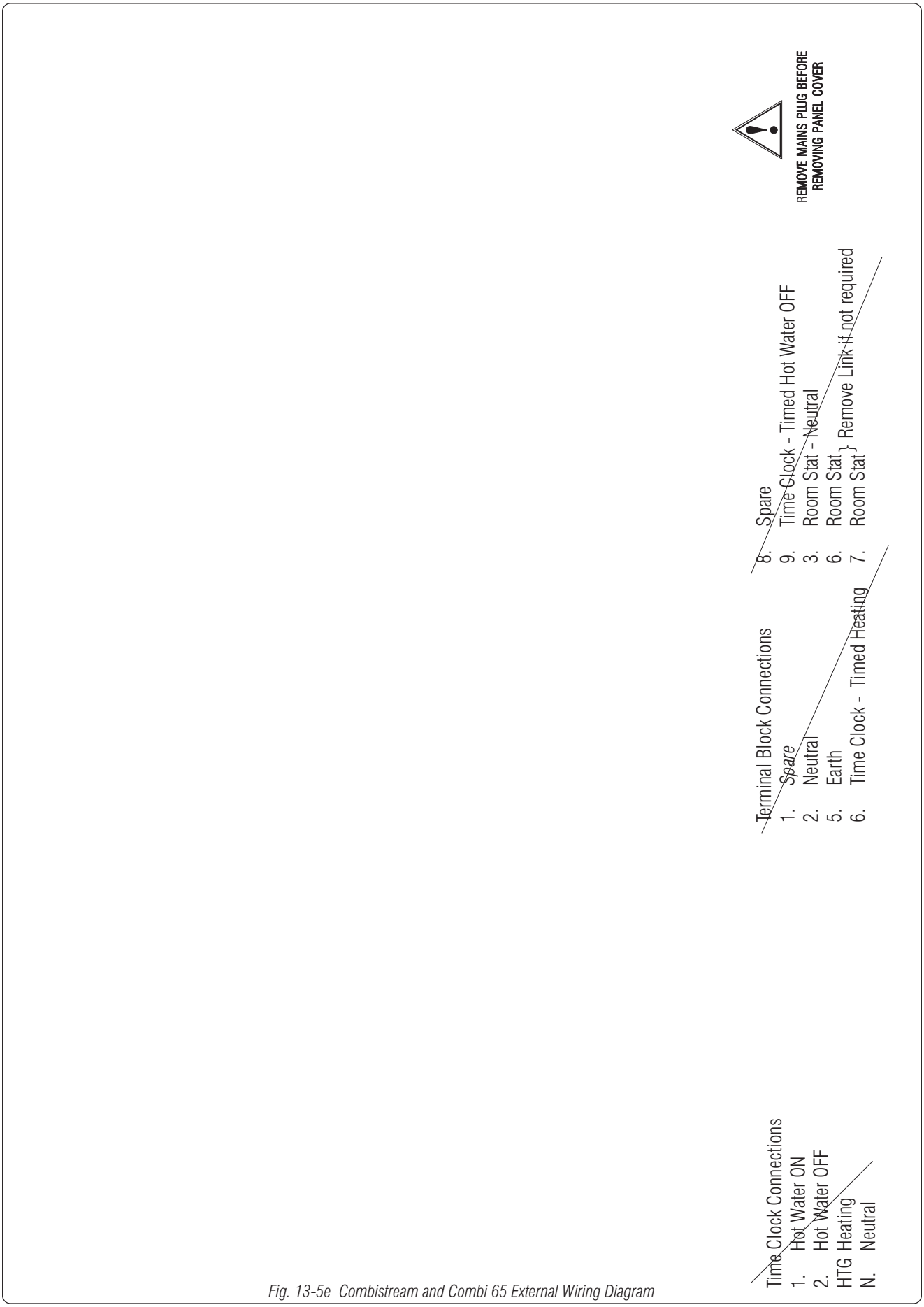


Fig. 13-5e Combistream and Combi 65 External Wiring Diagram

13-6 Parts Supplied with Boiler

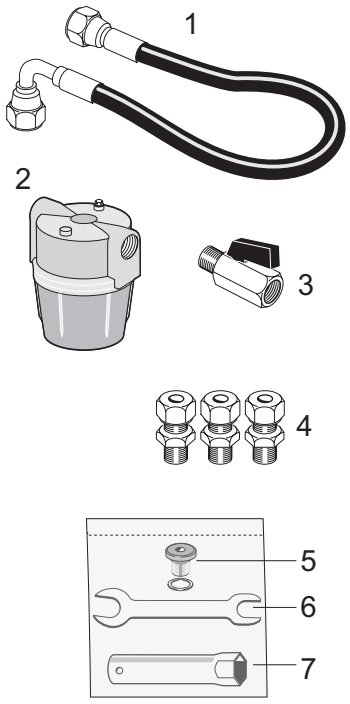


Fig. 13-6a Floor Standing

13-6.1 SELECT and OPTION Floor Standing

Item	Part	Notes
1	Hose	For two pipe installation an extra hose is available at extra cost.
2	Filter	Spare elements are available.
3	Shut Off Valve	Supplied to be fitted adjacent to flexible hose.
4	3-10mm x ¼" BSP	2 for connecting filter - item 2.
5	Plug and Washer	1 for connecting to valve - item 3.
6	Spanner	For adjusting Burner pump and air settings.
7	Box Spanner	For removing and replacing Burner nozzle.

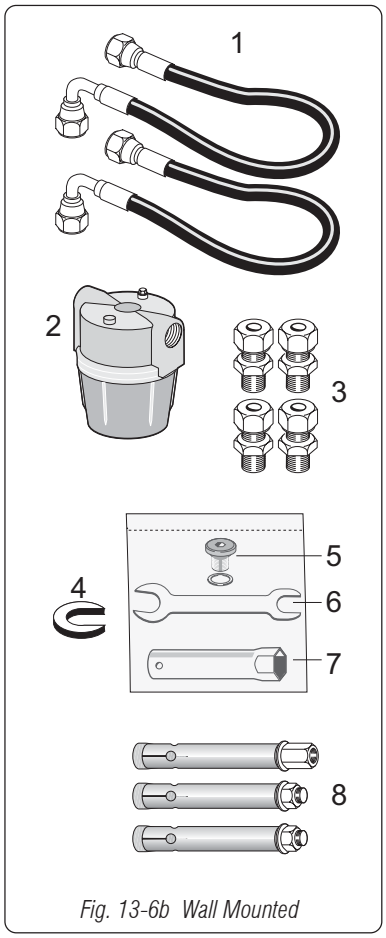


Fig. 13-6b Wall Mounted

13-6.2 SELECT WALL MOUNTED Internal & External

Item	Part	Notes
1	Hose	2 hoses are supplied as most wall mounted Boilers have a two pipe oil system.
2	Filter	Spare elements are available.
3	4-10mm x ¼" BSP	2 for connecting filter - item 2. 2 for connecting hoses - item 1.
4	Horseshoe Washer	For converting Burner pump from two pipe to one pipe oil sysem - see 13-4.5.
5	Plug and Washer	
6	Spanner	For adjusting Burner pump and air settings.
7	Box Spanner	For removing and replacing Burner nozzle.
8	Rawl Bolts	The long nut is to clear the flange on the top fixing.

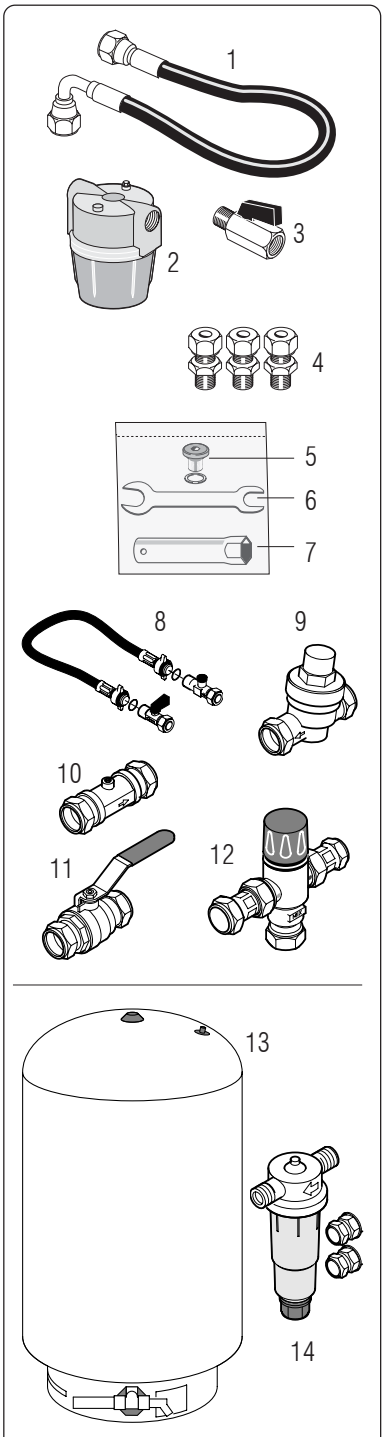


Fig. 13-6c Combistream & Combi 65

13-6.3 COMBISTREAM and COMBI 65

Item	Part	Notes
Combistream and Combi 65		
1	Hose	For two pipe installation an extra hose is available at extra cost.
2	Filter	Spare elements are available.
3	Shut Off Valve	Supplied to be fitted adjacent to flexible hose.
4	3 - 10mm x ¼" BSP	2 for connecting filter - item 2. 1 for connecting to valve - item 3.
5	Plug and Washer	Not used.
6	Spanner	For adjusting Burner pump and air settings.
7	Box Spanner	For removing and replacing Burner nozzle.
8	Filling Loop	For filling of heating system.
9	Pressure Reducing Valve - 3 Bar	For incoming mains supply.
10	Double Check Valve	For incoming mains supply 22mm.
11	Ball Valve	For cold supply to Boiler 22mm.
12	Themostatic Mixing Valve	Must be fitted in hot water supply to taps.
Combistream only		
13	Accumulator	Pre-plumbed - 28mm.
14	Cleanstream Unit	Scale prevention device. Only used when water softener is NOT fitted.

13-7 Boiler Dimensions

13-7.1 SELECT and OPTION Range

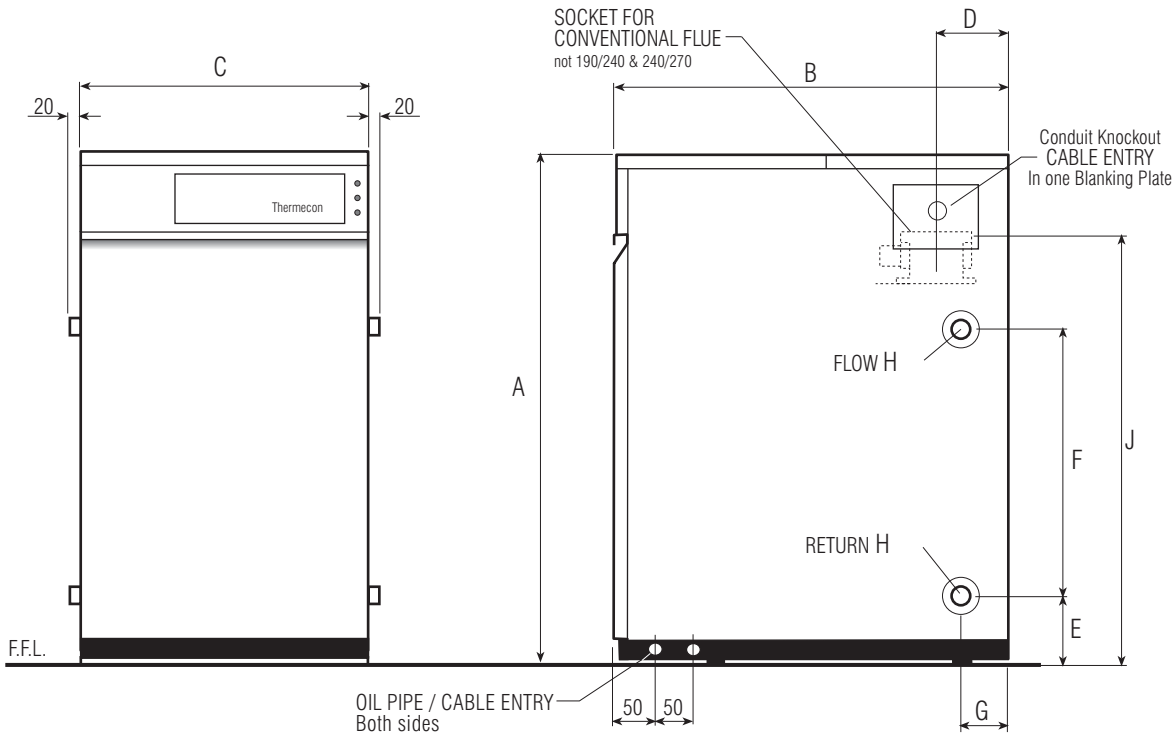


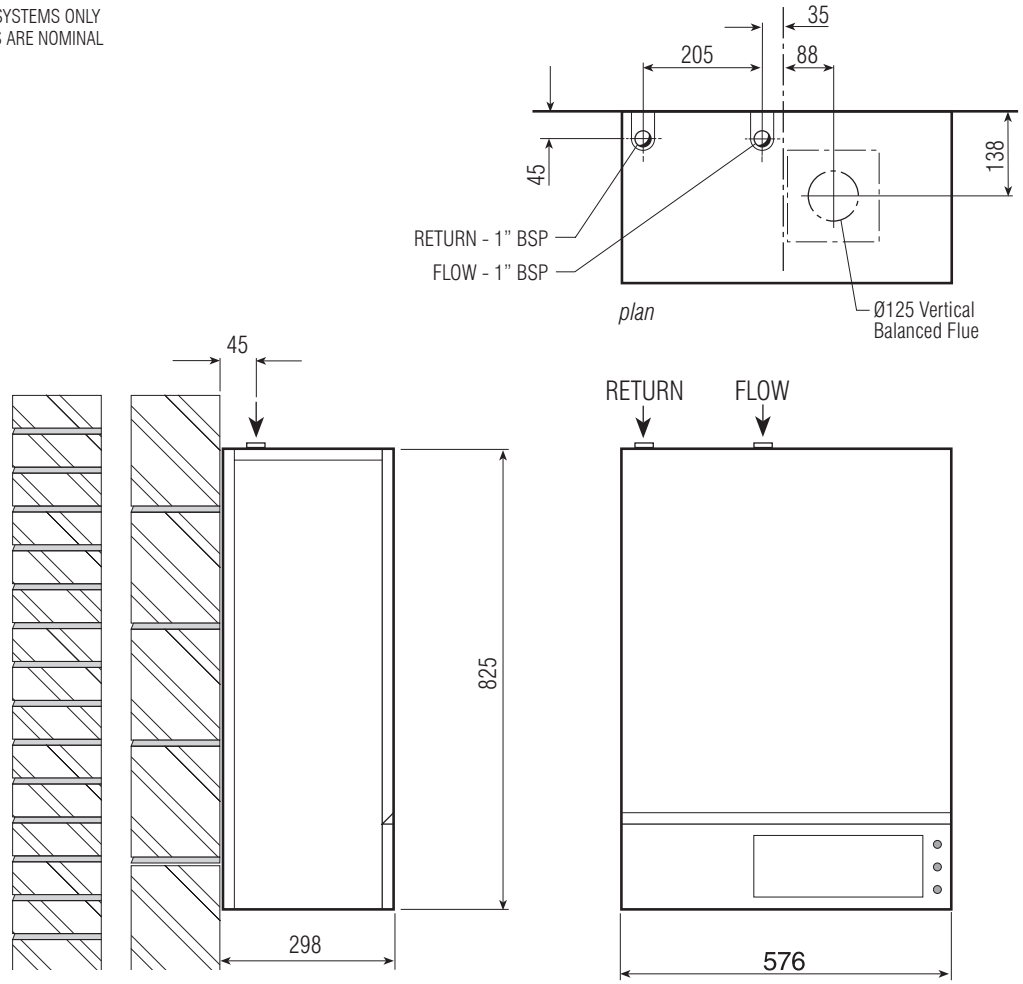
Fig. 13-7a Thermecon Boilers - Overall Dimensions (SELECT shown)

SELECT		S40/65	S60/80	S80/95	S90/120	S100/150	S140/190	S190/240	S240/270
OPTION		O40/65	O60/80	O80/95	O90/120	O100/150	O140/190	O190/240	O240/270
Output	kW	11.7/19.1	17.6/23.5	23.5/27.6	26.4/34.9	29.3/44.0	41.0/55.7	55.7/70.3	70.3/79.0
	Btu/h	40/65,000	60/80,000	80/95,000	90/120,000	100/150,000	140/190,000	190/240,000	240/270,000
A	mm	855	855			1055	1055		
B	mm	545	590			736	736		
C	mm	345	475			555	610		
D	mm	130	135			135	135		
E	mm	100	100			100	100		
F	mm	545	545			705	705		
G	mm	70	70			70	70		
H	inch	1"BSP	1"BSP		1¼"BSP				
J	mm	810	810			980	980		
Conventional Flue Size	mm	Ø100						Ø125	
Weight Empty	Kgs	99	118			198	224		
Water Contents	Litres	20.5	22.7			35.2	44.3		

ALL DIMENSIONS ARE NOMINAL

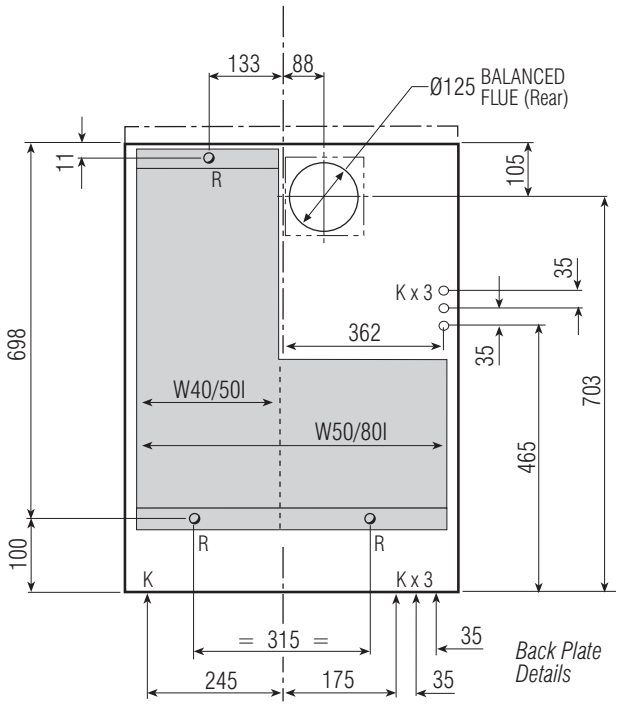
13-7.2 W40/50I & W50/80I - INTERNAL

FULLY PUMPED SYSTEMS ONLY
ALL DIMENSIONS ARE NOMINAL



R - 3 Mounting Holes 12Ø
for M10 Rawl Bolts

K - Knockouts for
Electric / Oil Pipes

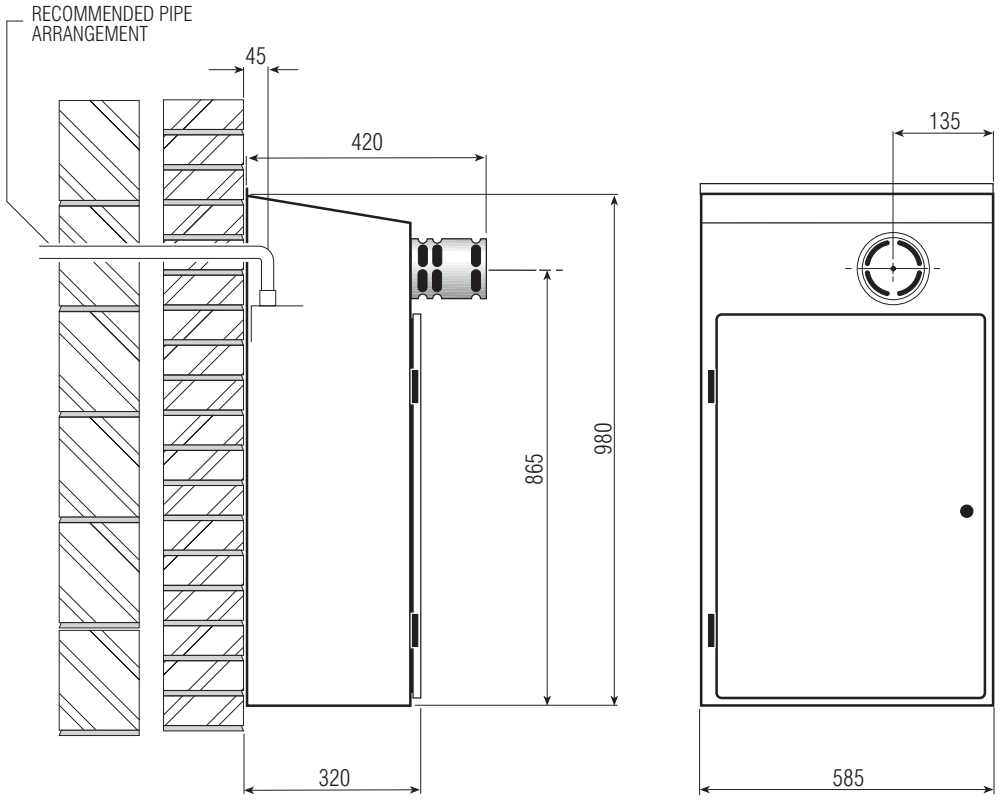


MODEL		W40/50I	W50/80I
Output	kW	11.7/14.7	14.7/23.4
	Btu/h	40/50,000	50/80,000
Weight Empty	kgs	93	111
Water Content	litres	14.5	19.3
Weight of Heat Exchanger Bare	kg	54	82

Fig. 13-7b Thermecon Boilers - Overall Dimensions INTERNAL

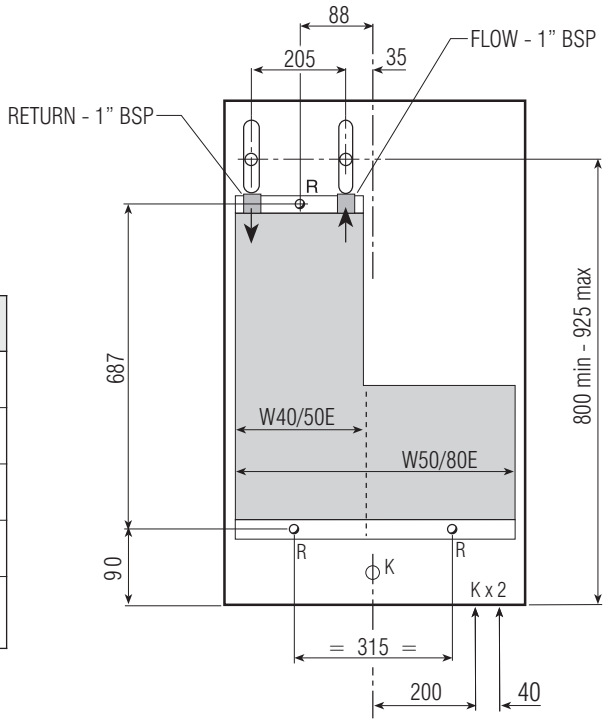
13-7.3 W40/50E & W50/80E - EXTERNAL

FULLY PUMPED SYSTEMS ONLY
ALL DIMENSIONS ARE NOMINAL



R - 3 Mounting Holes 12Ø
for M10 Rawl Bolts

K - Knockouts for
Electric / Oil Pipes



MODEL		W40/50E	W50/80E
Output	kW	11.7/14.7	14.7/23.4
	Btu/h	40/50,000	50/80,000
Weight Empty	kgs	93	111
Water Content	litres	14.5	19.3
Weight of Heat Exchanger Bare	kg	54	82

Fig. 13-7c Thermecon Boilers - Overall Dimensions EXTERNAL

13-7.4 Free Standing EXTERNAL Dimensions

FULLY PUMPED SYSTEMS ONLY
ALL DIMENSIONS ARE NOMINAL

MODEL		FEX40/50E	FEX50/80E
Output	kW	11.7/14.7	14.7/23.4
	Btu/h	40/50,000	50/80,000
Weight Empty	kgs	93	111
Water Content	litres	14.5	19.3

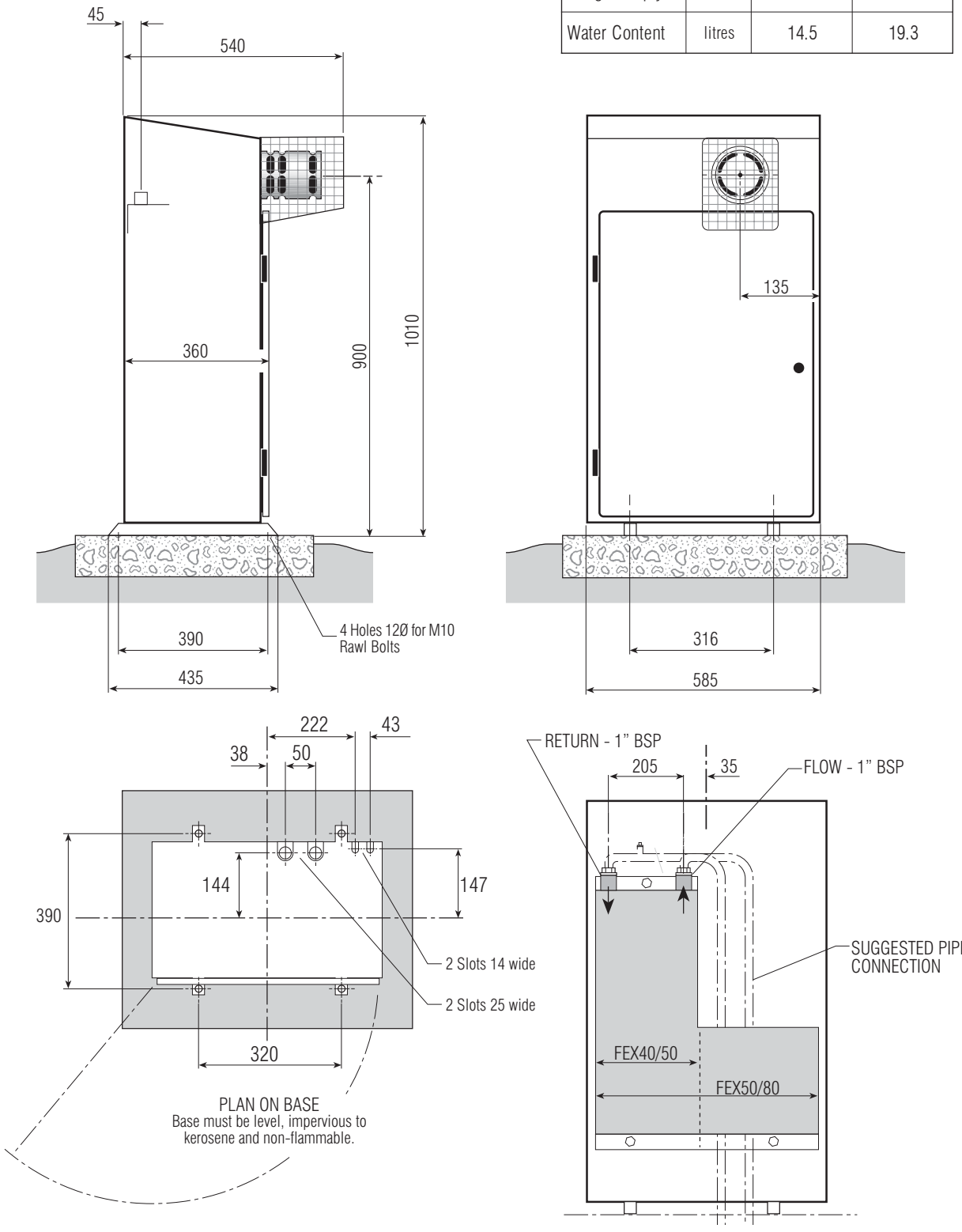
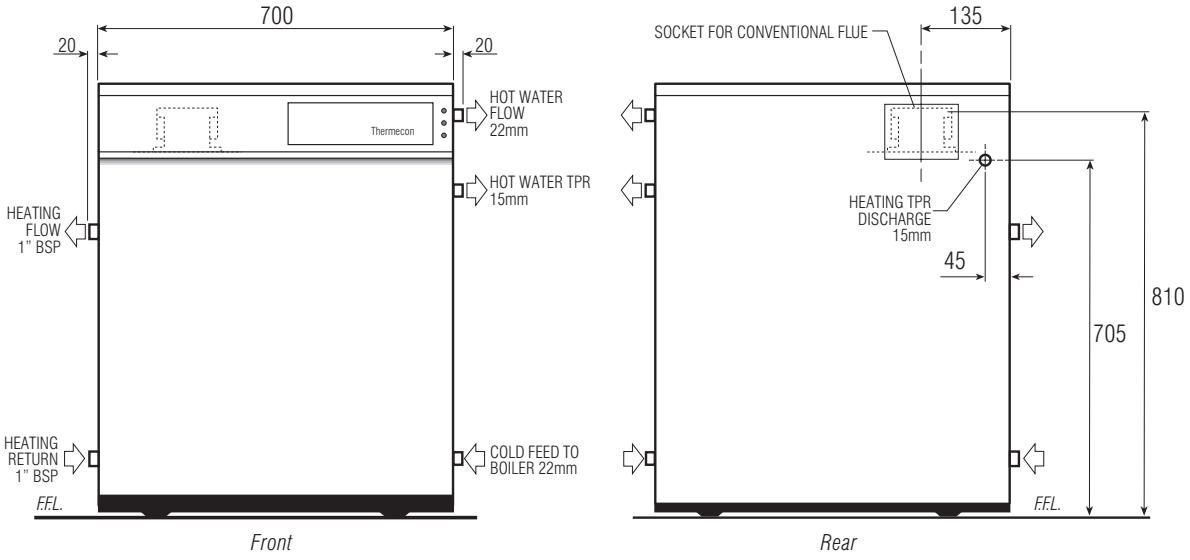
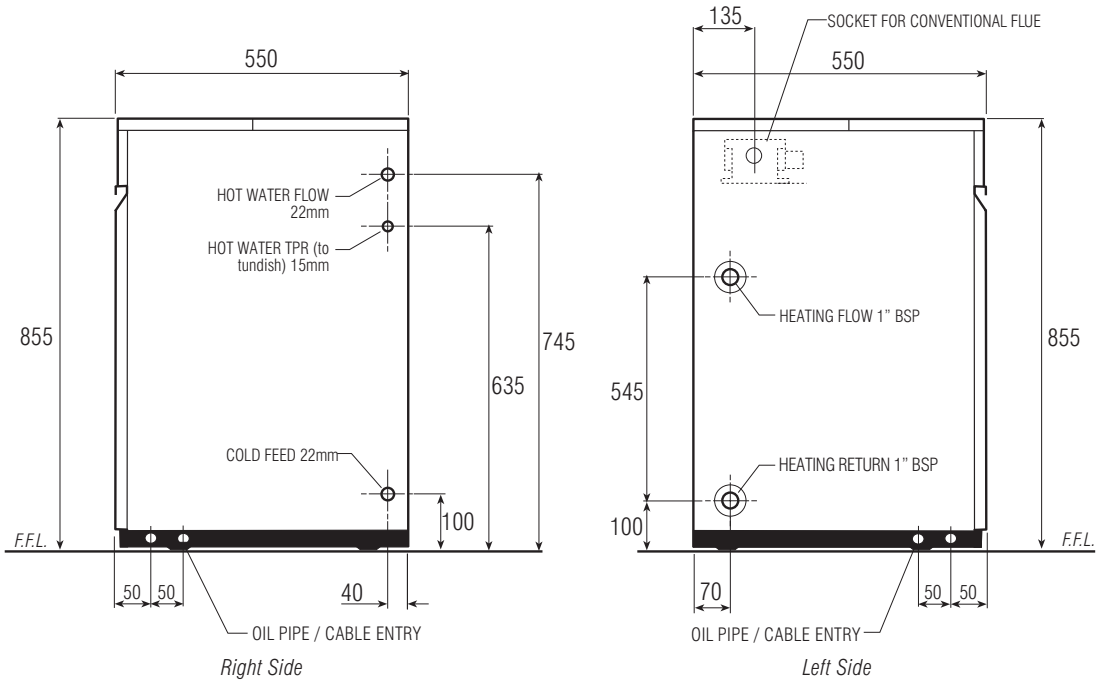


Fig. 13-7d Thermecon Boilers - Overall Dimensions EXTERNAL

13-7.5 Floor Standing Combistream and Combi 65 Internal Dimensions

FULLY PUMPED SYSTEMS ONLY
ALL DIMENSIONS ARE NOMINAL





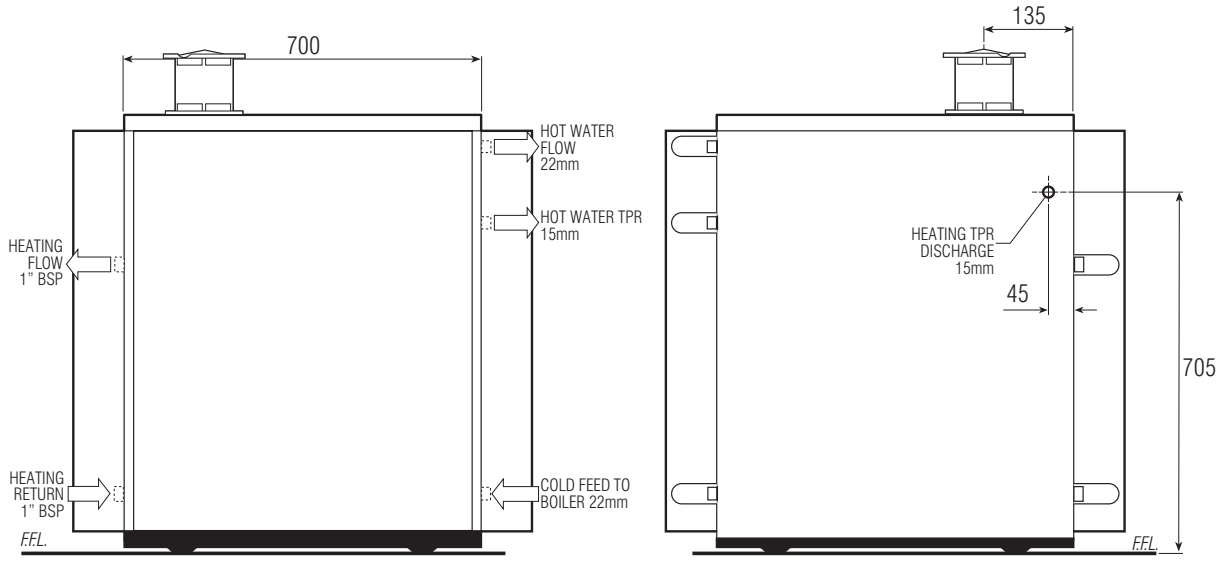
COMBISTREAM COMBI 65l		C40/65 Boiler	
		Heat Exchanger	Hot Water Cylinder
Water Content	litres	22.7	60
Weight Empty	kgs	158	

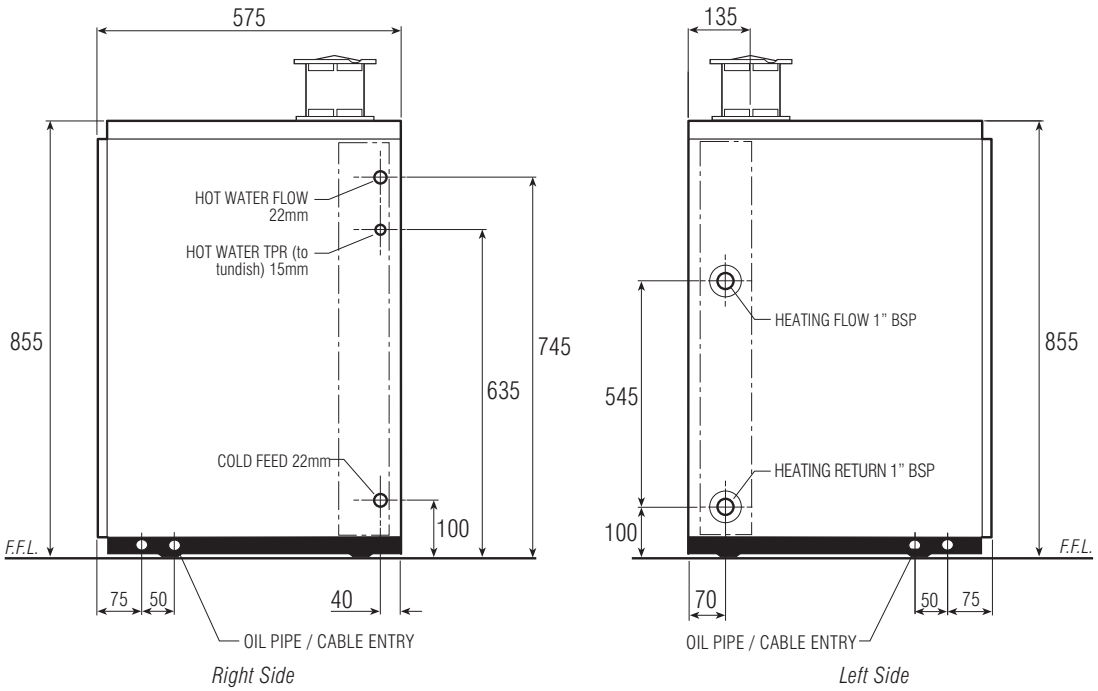
FOR ACCUMULATOR DIMENSIONS SEE PAGE 64.

Fig. 13-7e Thermecon Boilers - Overall Dimensions Combistream and Combi 65

13-7.6 Floor Standing Combi 65 External Dimensions

FULLY PUMPED SYSTEMS ONLY
ALL DIMENSIONS ARE NOMINAL





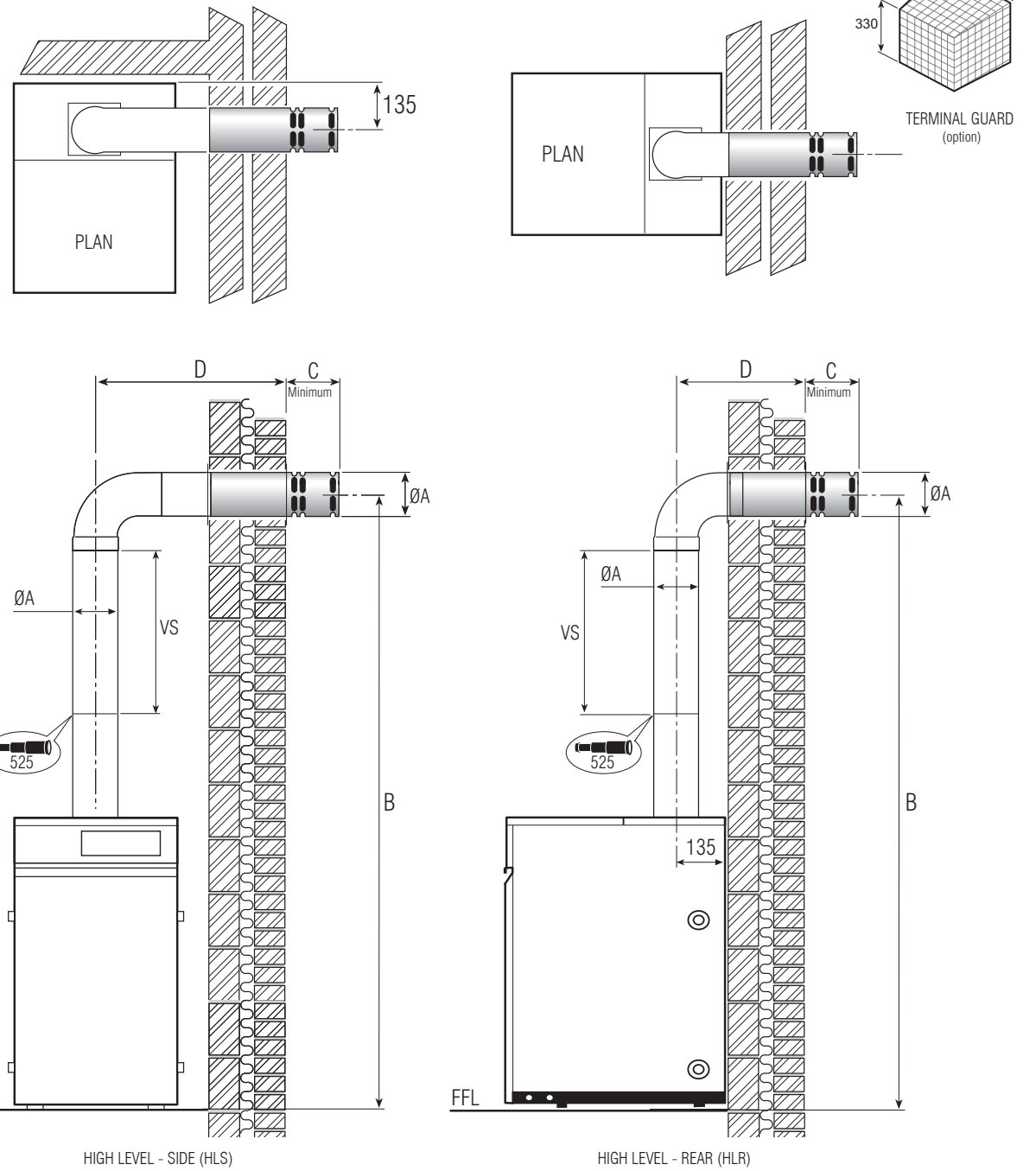
COMBI 65E		C40/65 Boiler	
		Heat Exchanger	Hot Water Cylinder
Water Content	litres	22.7	60
Weight Empty	kgs	160	

Fig. 13-7f Thermecon Boilers - Overall Dimensions Combi 65 External

13-8 Balanced Flue Dimensions

13-8.1 Floor Standing Internal inc. Combi - HIGH LEVEL SIDE & REAR

FLUES CANNOT BE CUT TO LENGTH



HIGH LEVEL - SIDE (HLS)

HIGH LEVEL - REAR (HLR)

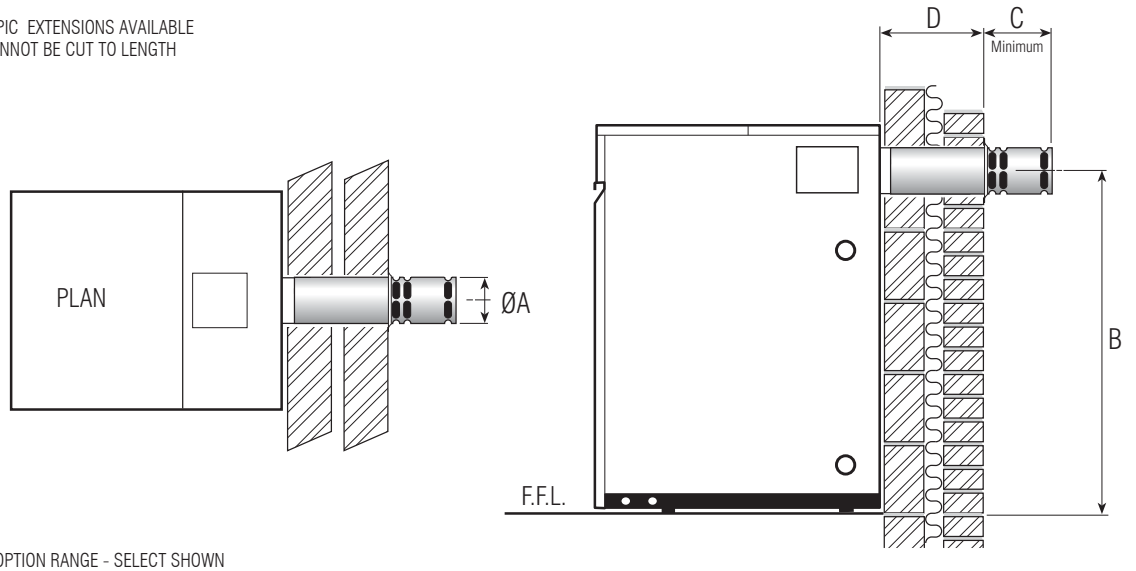
Side Outlet Model	Flue	ØA	B		C	D		Extensions available Horizontal and Vertical
			Standard Kit	Without Vertical Section VS*		Standard Kit HLR	Standard Kit HLS	
40/65 60/80 80/95 90/120 **HLR075+VBC075**	75	125	1600 to 2110	1550	160	240 to 440	540 to 740 includes 1-300 extension	300
100/150 140/190 190/240 **HLR100+VBC100**	100	150	1760 to 2280	1720	175			300, 600 & 950

*The Vertical Section VS is supplied with the Standard Kit; the flue can be assembled without it to achieve the minimum height.

Fig. 13-8a Floor Standing - High Level Balanced Flue Dimensions

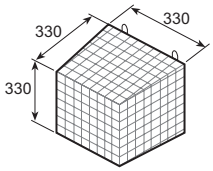
13-8.2 Floor Standing Internal inc. Combi - REAR

TELESCOPIC EXTENSIONS AVAILABLE
FLUES CANNOT BE CUT TO LENGTH



SELECT & OPTION RANGE - SELECT SHOWN

Rear Outlet Model	Flue	ØA	B	C	D		
					Standard Kit	With 1-300 Extension	Extensions Available
40/65 60/80 80/95 90/120 **LLR-075**	75	100	755	160	160 to 350	460 to 650	300
100/150 140/190 190/240 **LLR-100**	100	150	940	175			300, 600 & 950

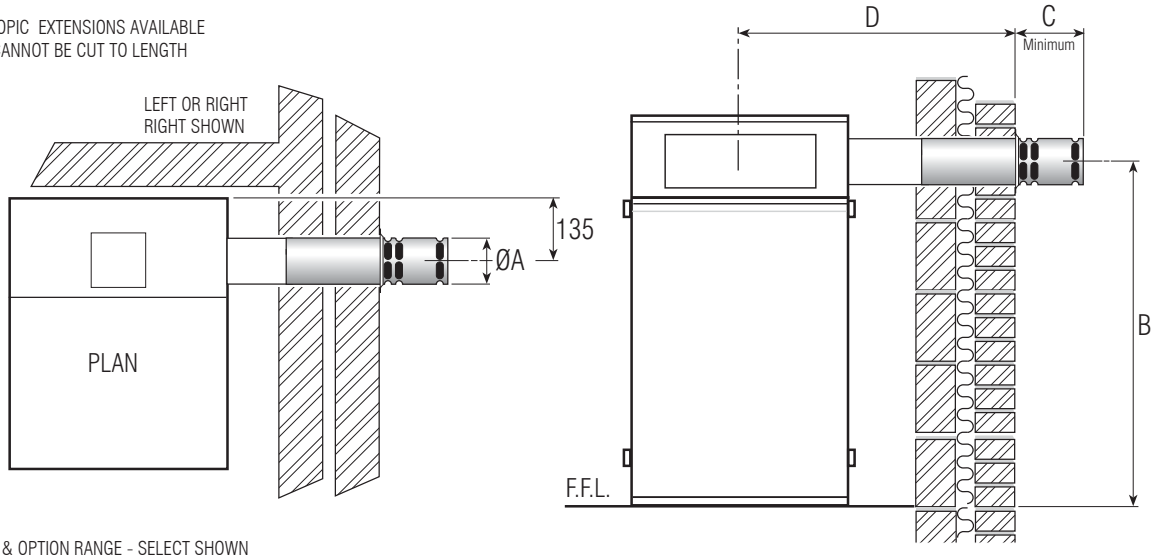


TERMINAL GUARD
(option)

Fig. 13-8b Floor Standing - Low Level Rear Balanced Flue Dimensions

13-8.3 Floor Standing Internal - SIDE

TELESCOPIC EXTENSIONS AVAILABLE
FLUES CANNOT BE CUT TO LENGTH



SELECT & OPTION RANGE - SELECT SHOWN

Side Outlet Model	Flue	ØA	B	C	D		
					Standard Kit	With 1- extra 300 Extension	Extensions Available
40/65 60/80 80/95 90/120 **LLR075+LLE075**	75	100	755	160	590 to 780 includes 1-300 extension	890 to 1080	300
100/150 140/190 190/240 **LLR100+EXS100**	100	150	925	175			300, 600 & 950

TERMINAL GUARD
(option) as above

Fig. 13-8c Floor Standing - Low Level Side Balanced Flue Dimensions

13-8.4 Floor Standing Internal inc. Combi - VERTICAL

TELESCOPIC EXTENSIONS AVAILABLE
FLUES CANNOT BE CUT TO LENGTH

Side Outlet Model	Flue	ØA	B Approx	C		Extensions Available
				VTL + VBC	Without Vertical Section VS*	
40/65 60/80 80/95 90/120 **VTL075+VCB075**	75	125	120	2250 to 3075	2200 to 2500	300, 600 & 950
100/150 140/190 190/240 **VTL100+VCB100**	100	150	150	2420 to 3245	2370 to 2670	

*The Vertical Section VS is supplied with the VBC Kit; the flue can be assembled without it to achieve the minimum height.

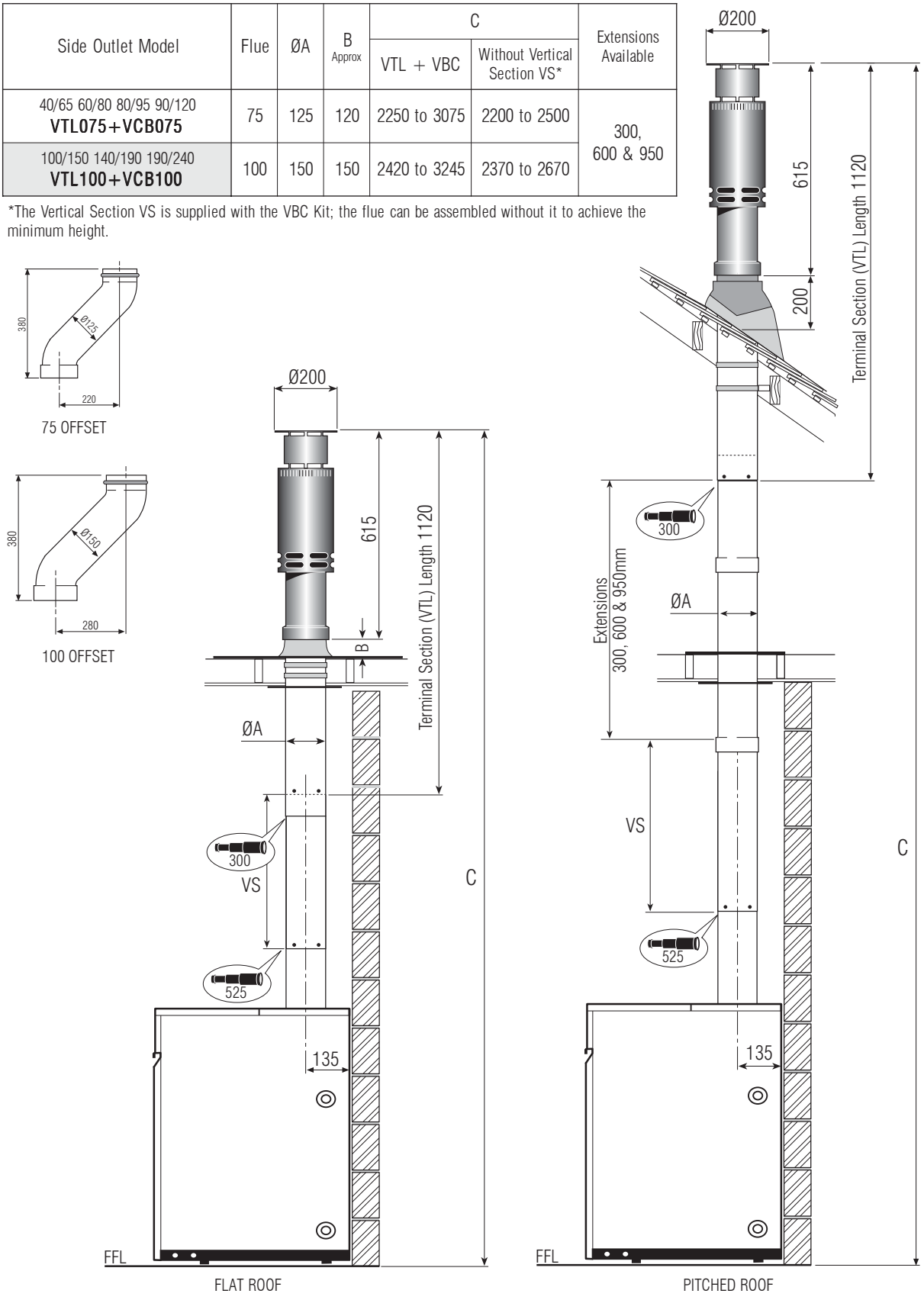


Fig. 13-8d Floor Standing - Vertical Balanced Flue Dimensions

13-8.5 Wall Mounted Internal - REAR

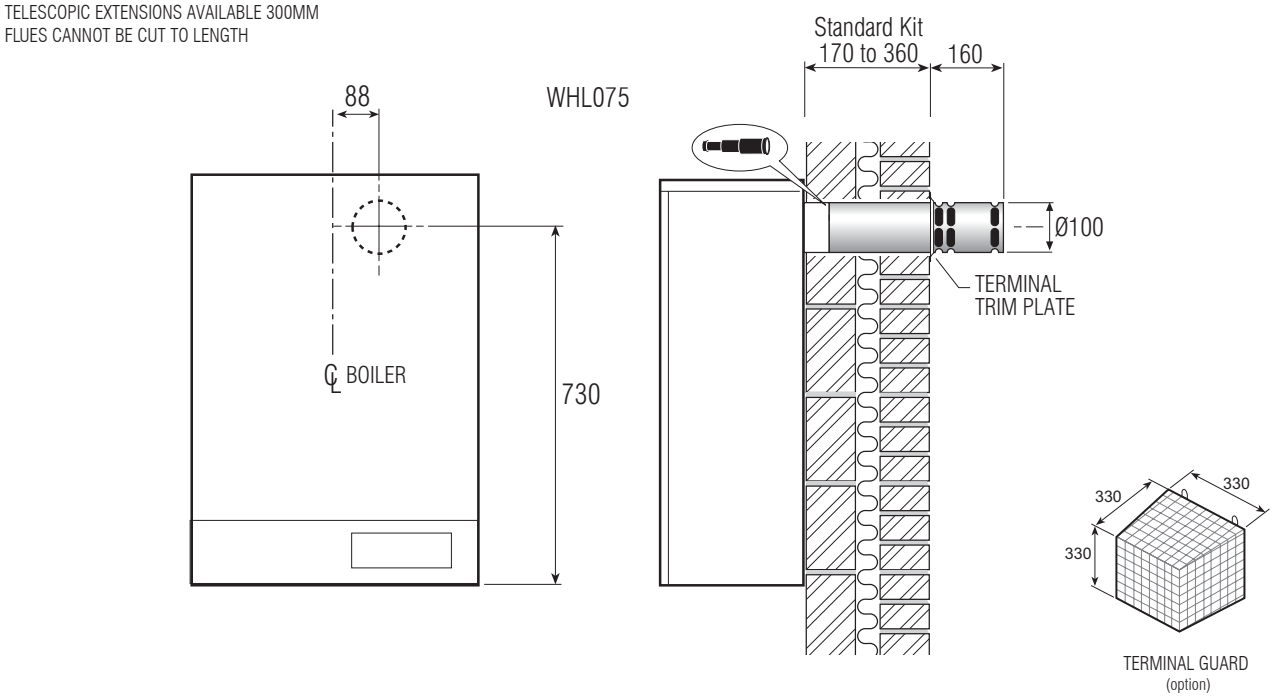
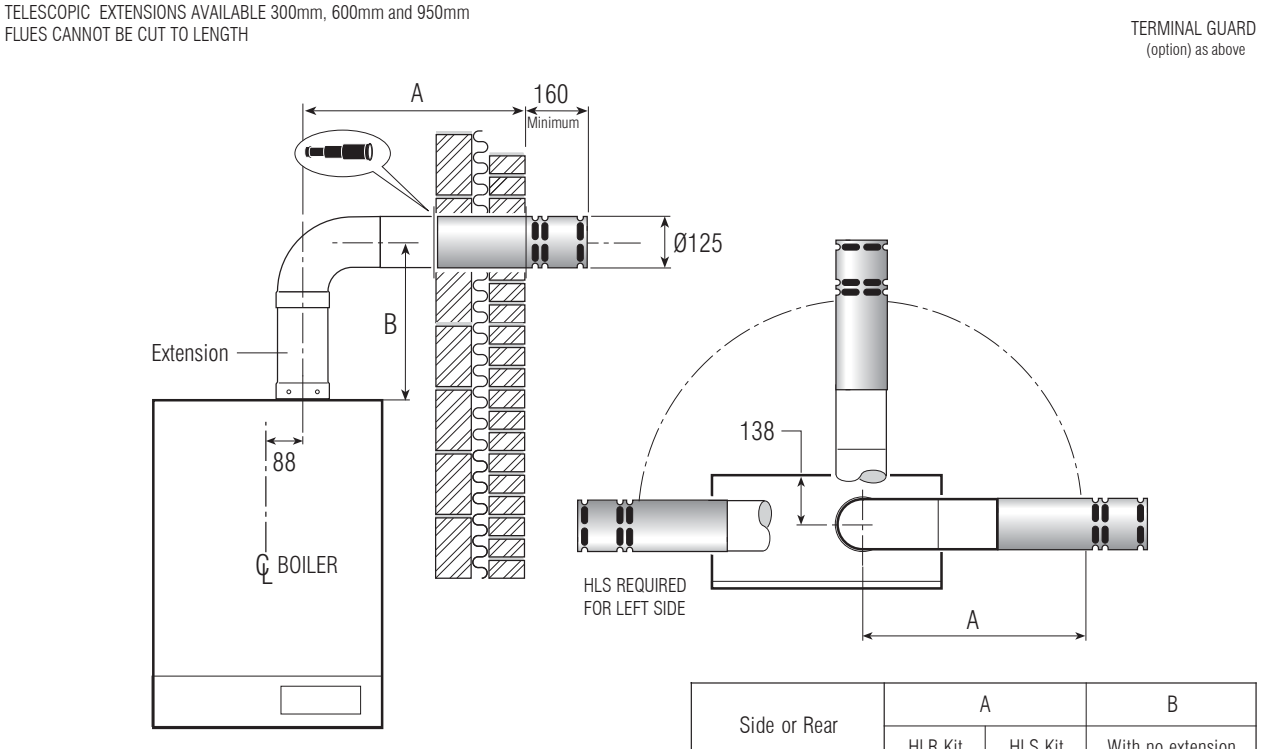


Fig. 13-8e Internal Wall Mounted - Standard Balanced Flue Dimensions

13-8.6 Wall Mounted Internal - HIGH LEVEL SIDE & REAR



Side or Rear	A		B
	HLR Kit	HLS Kit	With no extension
W40/50I W50/80I **WHC075+HLR075** **WHC075+HLS075**	240 to 440	540 to 740	200

Fig. 13-8f Internal Wall Mounted - High Level Balanced Flue Dimensions

13-8.7 Wall Mounted Internal - VERTICAL

EXTENSIONS AVAILABLE 300mm, 600mm and 950mm
FLUES CANNOT BE CUT TO LENGTH

Wall Mounted Internal	A	
	VTL Kit with 300 Extension Supplied	VTL Kit plus 1 x 950mm extra Extension
W40/50I W50/80I **WHC075+VTL075**	1080 to 1380	2030 to 2330

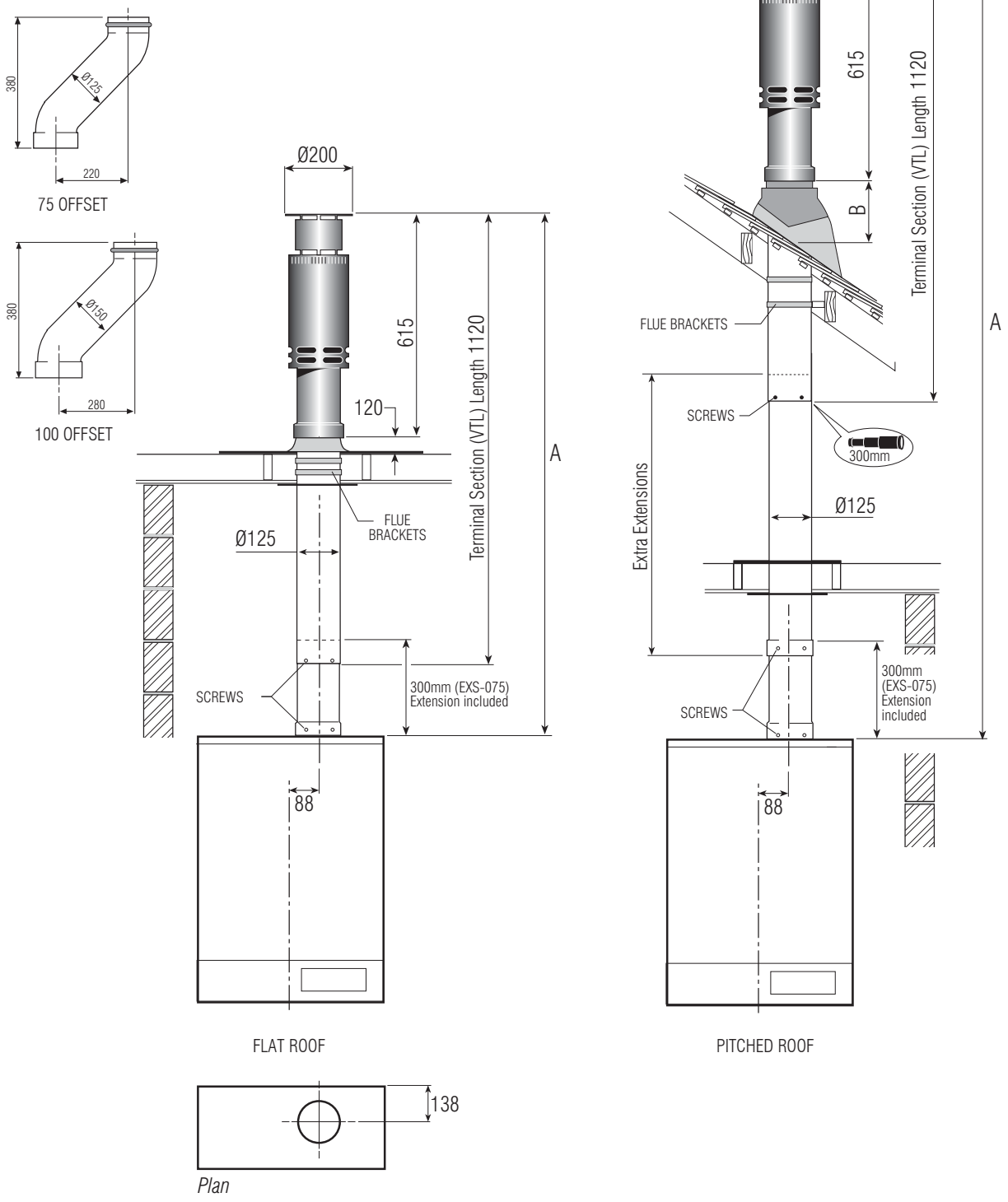


Fig. 13-8g Internal Wall Mounted - Vertical Balanced Flue Dimensions

13-8.8 Combistream and Combi 65I - REAR SIDE

TELESCPIC EXTENSIONS AVAILABLE 300mm, 600mm and 950mm
FLUES CANNOT BE CUT TO LENGTH

Side or Rear	A	B
	Combi LLS Kit	With No Extension
C40/65 HLR075+EXS075 +VS075	1190 to 1790 includes 1 to 600mm Extension	1055

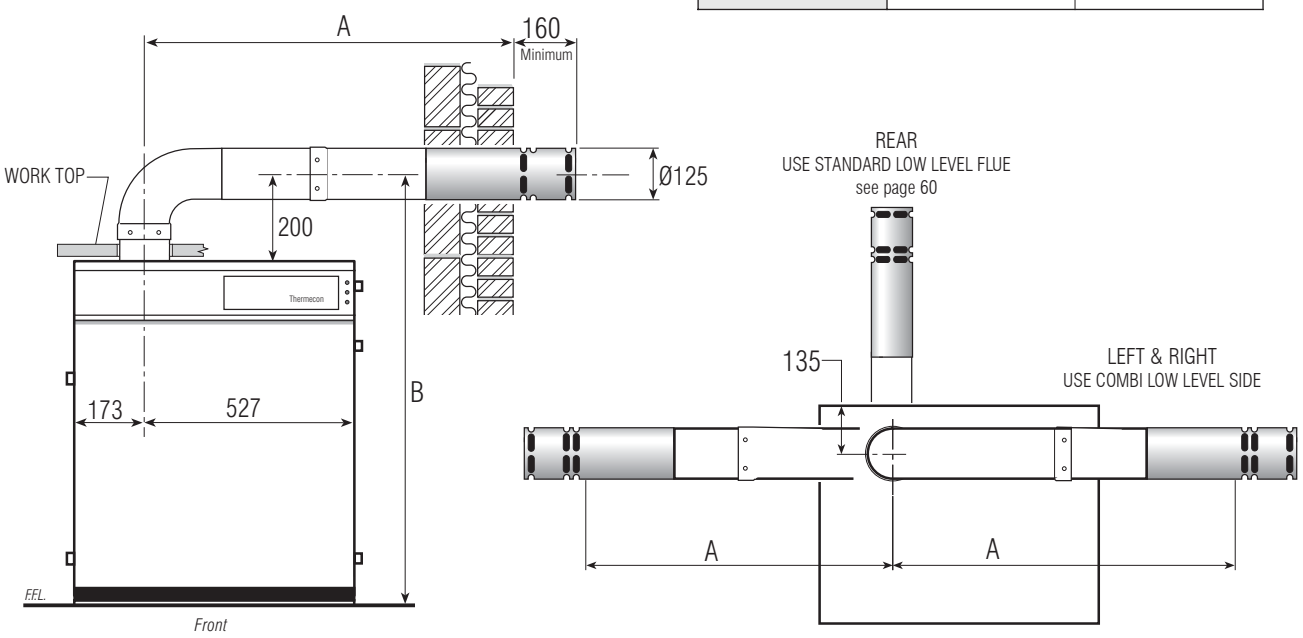
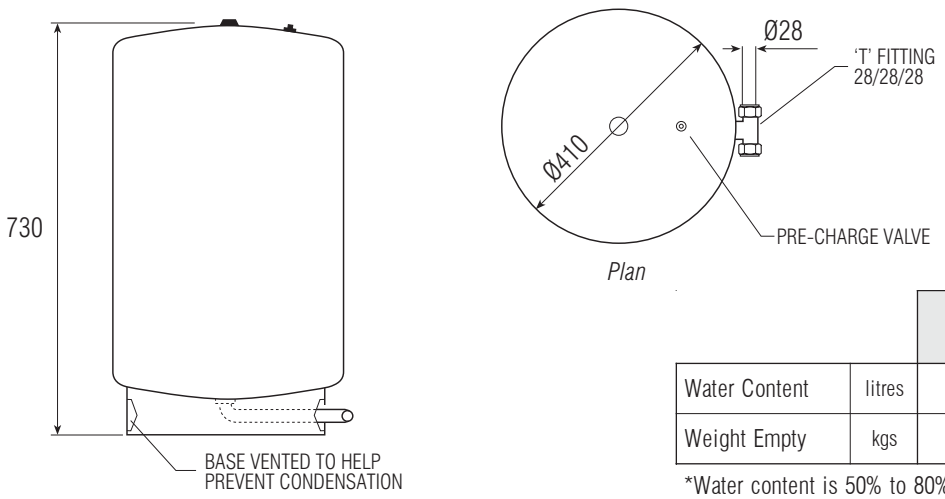


Fig. 13-8h Combi - Low Level RH Side Balanced Flue Dimensions

13-8.9 Combistream Accumulator Dimensions



		Model 80 Accumulator
Water Content	litres	40 to 65*
Weight Empty	kgs	16.3

*Water content is 50% to 80% of the volume

Fig. 13-8j Cold Water Storage - Accumulator Overall Dimensions

AP1 Regulations

AP1-1 Building Regulations

The following Standards and Codes of Practice should be considered when installing Thermecon Boilers.

BS5449 - 1990	Forced Circulation Hot Water Central Heating Systems for Domestic Use.
BS5410 Part 1:1977	Oil installations up to 45kW
BS5410 Part 2:1978	Oil installations over 45kW
BS4543 Part 1 & 3:1976	Factory made insulated chimneys.

Current Building Regulations:-

Part **J** England and Wales
Part **F** Scottish Regulations
Technical Booklet **L** Northern Ireland

Oil Boilers with Conventional Flue installed in rooms where there is an Extractor Fan, the following Building Regulations apply:-

Part **F** England and Wales (also recommended in Northern Ireland)
Part **K** Scotland

The Control of Pollution (Oil) Regulations

AP1-2 OFTEC

OFTEC publish Technical Books that summarise and illustrate the requirements of the above Standards and Regulations.

OFTEC Oil Firing Technical Association
Foxwood House,
Dobs Lane,
Kesgrave,
Ipswich.
IP5 2QQ

www.oftec.org email:- enquiries@oftec.org

AP1-3 Electrical Regulations

All wiring should be to IEE Wiring Regulations 16th Edition.

AP1-4 Oil Tanks

Plastic tanks are covered by OFTEC standard OFS T100.

Refer to BS5410 Part 1 and OFTEC Technical Book 3 for further information on tank installation.

Steel tanks should be manufactured to BS799 Pt 5.

Important Health and Safety Information for Installers and Service Engineers

Health and Safety at Work Act 1974
Consumer Protection Act 1987
COSHH Regulations 1988
The following information is given as a requirement of the above legislation.
Great care is taken by Thermecon Boilers to ensure that Boilers are designed and manufactured to meet general safety requirements when properly used and installed as recommended in this manual.
It is the responsibility of Users and Engineers to ensure that adequate protective clothing and glasses are worn when working on the Boiler.

FUEL

KEROSINE GAS & OIL FUELS (MINERAL OILS)

1. The effect of minerals oils on the skin vary according to the duration of exposure.
2. The lighter fractions also remove the protective grease normally present on the surface of the skin rendering the skin dry, liable to crack and more prone to damage caused by cuts and abrasions.
3. Skin rashes (oil Acne). Immediately seek medical attention for any rash, wart or sore developing on any part of the body, particularly on the scrotum.
4. As far as possible avoid any skin contact with mineral oil or clothing contaminated with mineral oil.
5. Never breathe any mineral oil vapours. Do not fire the Burner in the open i.e. out of the Boiler as misfire will cause unburnt oil vapours.
6. Barrier cream containing lanolin such as Rosalex Antisolv, is highly recommended together with a strict routine of personal cleansing.
7. Under no circumstances should mineral oils be taken internally - never suck or blow a pipe!

SEALS AND INSULATION

FIBREGLASS INSULATION, GLASS ROPE, MINERAL WOOL, INSULATION PADS AND CERAMIC FIBRE.

1. Avoid inhalation of fibres or dust, wear face mask.
2. Avoid eye contamination by fibres or dust - wear eye protection.
3. As far as possible avoid any skin contact with Fibreglass Insulation, Glass Rope, Mineral Wool, Insulation Pads and Ceramic Fibre.

OTHER MATERIALS

SEALANTS, ADHESIVES AND PAINTS

Sealants, Adhesives and Paints are used in the construction of Boilers. When used in the manner for which they are intended they do not present any known hazard.

ELECTRIC

All Boilers when in use have electrical supply of 240V (enough to endanger life) connected to the Panel and Burner.
Always isolate the boilers during cleaning, servicing and repair.

EXTERNAL BOILERS

In wet weather conditions due consideration should be given to the metal casing and electrical current within the Boiler casing.
Never open the front door of External Wall Mounted Boilers in conditions such that water could come in contact with any electrical component causing an immediate danger to life.

GAH Heating Products Limited will not accept responsibility for any damage or personal injury caused by not giving due consideration to the above safety recommendations.

In pursuance of a policy of constant development, GAH Heating Products Limited reserve the right to change any boiler part or design without notice, therefore certain details included in this manual may not be correct at the time of printing. Any modification and improvements detailed in this manual does not commit Thermecon to update any system previously supplied.

Manual Part No. 015-15011
Manual Ref WF3
Issue 1
Date ..... February 2005

Patents ???
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