TRIANCO

EUROSTAR

FS EuroStar Combi

TRIANCO

Please read these instructions before installing, commissioning and using this appliance

USER, INSTALLATION COMMISSIONING & SERVICING INSTRUCTIONS

Combi 50/65 ECO
Combi 70/90 ECO

CE BED 92/42 EEC
EMC 89/336 EEC

To be retained by householder

HEALTH AND SAFETY

INFORMATION FOR THE INSTALLER AND SERVICE ENGINEERS

Under the Consumer Protection Act 1987 and the Health and Safety at Work Act 1974, it is a requirement to provide information on substances hazardous to health (COSHH Regulations 1988).

The Company takes every reasonable care to ensure that these products are designed and constructed to meet these general safety requirements, when properly used and installed.

To fulfil this requirement products are comprehensively tested and examined before despatch.

This appliance may contain some of the items below.

When working on the appliance it is the Users/Engineers responsibility to ensure that any necessary personal protective clothing or equipment is worn appropriate to parts that could be considered as being hazardous to health and safety.

INSULATION AND SEALS

Glass Rope, Mineral Wool, Insulation Pads, Ceramic Fibre, Glass Insulation.

May be harmful if inhaled. May be irritating to the skin, eyes, nose or throat. When handling avoid inhalation and contact with eyes. Use (disposable) gloves, face masks and eye protection.

After handling wash hands and other exposed parts. When disposing, reduce dust with water spray, ensure parts are securely wrapped.

GLUES, SEALANTS & PAINT

Glues, Sealants and Paints are used in the product and present no known hazards when used in the manner for which they are intended.

KEROSENE & GAS OIL FUELS (MINERAL OILS)

1. The effect of mineral 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). Seek immediate medical attention for any rash, wart or sore developing on any part of the body, particularly the scrotum.

4. Avoid as far as possible any skin contact with mineral oil or with 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 a 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 cleaning.

7. Under no circumstances should mineral oils be taken internally.

CONTENTS

HOW TO USE YOUR TRIANCO BOILER

The EuroStar ECO Combi is a heat storage, Combination Boiler, which stores heat to supply hot water whenever the hot taps are turned on.

It is recommended that the boiler is switched to come on 30 minutes before you need hot water or central heating as this will allow time for the hot water store to reach the selected working temperature.

The boiler is fully automatic once switched on and the water store is up to working temperature.

TEMPERATURE CONTROL

Your Trianco Boiler is fitted with two adjustable temperature control thermostats to regulate the temperature of the domestic hot water and central heating.

The hot water thermostat controls the quantity and temperature of hot water available at the hot tap(s).

The hot water thermostat can be run at the ECO end of the scale during summer months or when high water demand is not required.

During periods of high water demand the hot water thermostat can be adjusted into the 'high' range to give higher temperature water.

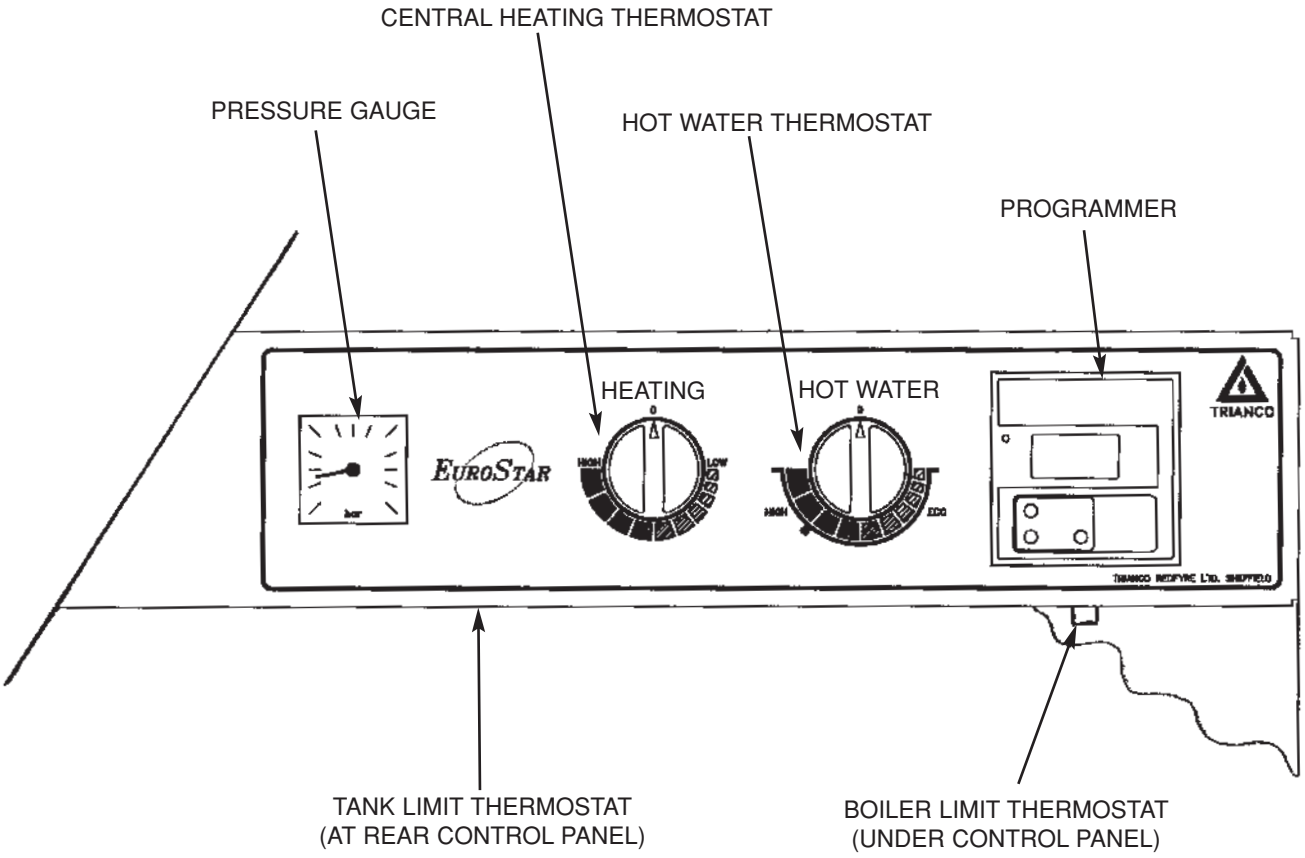
Experience will tell you which is the most economical setting to suit your household.

If you live in a hard water area it is recommended that in order to reduce scale formation on the plate heat exchanger that the hot water thermostat is only set in the ECO range. To prevent scale from forming a salt based water softener must be fitted where the temporary hardness is above 150ppm (or 10.5° clarke)

BEFORE FIRING THE BOILER

Ensure the system is full of water and vented of all air, there is sufficient oil in the storage tank and all valves are open.

1. Switch on the electrical supply.
2. Select required position on Hot Water Thermostat (check that programmer is on).
3. Select required position on Central Heating Thermostat.
4. Set the room thermostat (if fitted) calling for heat.
5. The burner heating the boiler operates automatically cutting in and out according to the heating and hot water demand.



SYSTEM CONTROLS

ROOM THERMOSTAT

The room thermostat should not be positioned near a source of heat such as a radiator or exposed to the sun as this will cause the central heating to switch off before the room is up to temperature. Follow the manufacturer's instructions for best siting position for the thermostat.

FROST PROTECTION

If the boiler and central heating is shut down for many hours during very cold weather, the water may be in danger of freezing and, as such, it is advisable to protect the installation with a frost thermostat.

Where the system is not protected, the boiler should be left switched on and the room thermostat set to a low setting e.g. 7°C (45°F) to prevent the building temperature falling too low.

If the system is shut down for a long period during very cold weather, it is advisable to completely drain the system. However, frequent draining should be avoided, especially in hard water areas, as this could lead to scaling of the boiler waterways.

OIL

The recommended oil for your boiler is 28 sec. Kerosene (BS 2869: Class C2)

OIL TANK

Always ensure the tank is topped up at regular intervals: do not wait until the tank is nearly empty before refilling, otherwise sludge and water could be sucked into the oil pipe to affect the burner's operation and reduce pump life.

After a delivery of oil, it is recommended that the oil is allowed to settle in the tank for about half an hour before restarting the burner.

Sludge and water caused by condensation should be drawn off at the drain-cock annually.

SIMPLE FAULT FINDING

NOTE: Before removing any components or insulation please read the advice on Health and Safety in the Insulation & Servicing Instructions.

If the burner fails to start for no apparent reason, make the following checks before calling your Service Engineer.

1 Check for failure in the electrical supply, e.g. a power cut.

2 Check for a blown fuse. If the fuse has blown and on replacement blows again, switch off the mains electrical supply to boiler and call your Service Engineer.

3 Check that there is adequate oil in the tank and the shut-off valves are open.

4. Check for burner lock-out. Press the reset button and burner should fire.
DO NOT PRESS MORE THAN TWICE. Refer to 'Burner lock-out' for further advice.

5. Check for excess water temperature (Refer to 'High Limit Thermostat' for advice).

SERVICING

To ensure efficient and reliable operation of the boiler, it is essential that the oil burner is initially commissioned by an OFTEC trained and registered engineer and an annual service is given thereafter.

Notes:
ELECTRICAL SAFETY CHECKS SHOULD BE CARRIED OUT BY A QUALIFIED ELECTRICAL ENGINEER

(a) It is the responsibility of the Installer to ensure proper commissioning is carried out.

(b) It is a requirement of the boiler's guarantee and any extended warranty that an annual service is carried out by a qualified engineer.

Commissioning Engineer

Signature .....

Company Name .....

.....

Address .....

.....

.....

.....

Tel. No: .....

HARD WATER AREAS

If you live in a hard water area, and you have a salt based water softener fitted, please ensure that the recommended salt levels are maintained. This is to prevent scale forming on your plate heat exchanger and ultimately the loss of hot water performance.

TRIANCO
CUSTOMER AFTER SALES SERVICE INFORMATION

A step by step guide to reporting a fault with your appliance

A qualified field SERVICE ENGINEER is available to attend a breakdown or manufacturing fault occurring whilst the appliance is under guarantee.

The appliance must be made available for service during normal working hours, Monday to Friday (no weekend work is accepted).

A charge will be made where:

- Our Field Service Engineer finds no fault with the appliance

  or

- The cause of a breakdown is due to other parts of the plumbing/heating system (including oil line/lack of oil), or with equipment not supplied by Trianco.

  or

- Where the appliance falls outside the guarantee period (see terms and conditions enclosed).

  or

- The appliance has not been correctly installed, commissioned or serviced as recommended (see commissioning, installation and servicing instructions)

  or

- The breakdown occurs immediately following an annual service visit. In this instance your appointed Service Agent must check all his work PRIOR to requesting Trianco to attend.

NOTE: Burner nozzles are currently guaranteed until the first service.

Over 50% of all service calls made are found to have no appliance fault.

What to do in the event of an appliance fault or breakdown:

Step 1: Always contact your installer or commissioning engineer in the first instance, who must thoroughly check all his work PRIOR to requesting a service visit from Trianco.

Step 2: If your appliance has developed an in-guarantee fault your installer should contact Trianco Service Centre for assistance.

What happens if my installer/engineer is unavailable?

Step 3: Contact Trianco Direct. We will provide you with the name and telephone number of our Service Agent. However, a charge may apply if the fault is not covered by the appliance guarantee (payment will be requested on site by our independent Service Agent).

PLEASE NOTE:
Unauthorised invoices for attendance and repair work carried out on this appliance by any third party will not be accepted by Trianco.

SERVICE CENTRE AND TECHNICAL SUPPORT

Tel: 0114 257 2300 Fax: 0114 257 2338

Hours of business Monday to Thursday 8.30am - 4.45pm

Friday 8.30am - 2.30pm

INSTALLATION

IRN 101 - Byelaw 25

Water supplies shall be at reasonably balanced pressures from a common source (both from storage or both from a supply pipe). Where the fitting is installed in domestic premises, supplies may be taken from separate sources provided a **'Listed' single check valve** or some other no less effective backflow prevention device is fitted immediately upstream of both hot and cold water inlets.

IRN 116 - Byelaws 90 and 91

Sealed primary circuits and/or secondary hot water systems shall incorporate a means for accommodating the thermal expansion of water to prevent any discharge from the circuit and/or system except in an emergency situation.

IRN 302 - Byelaw 14

Unvented primary circuits may be filled or replenished by means of a temporary connection between the circuit and a supply pipe provided a 'Listed' double check valve or some other no less effective backflow prevention device is permanently connected at the inlet to the circuit and the temporary connection is removed after use.

2. INTRODUCTION

The Trianco EuroStar Combi Boiler has been designed to conform to European Directive/Standards BED 92/42 EEC LVD EN 60335-1 EMC 89/336/EEC.

Balanced Flue Kits

The boilers are supplied suitably equipped for connection to a conventional chimney, but can readily be converted into a room-sealed balanced flue appliance by using a Trianco balanced flue kit. These kits allow the boiler to be installed in a wide variety of site conditions, from low- level discharge through the wall, to high-level discharge (see balanced flue kit details – section 6).

Two distinct styles of flue kit are available. The circular balanced flue kit is available in both low-level horizontal and vertical set-ups. The square balanced flue kit is available in a low-level horizontal format and a high-level horizontal format (in conjunction with a circular vertical adaptor kit).

Note: The square horizontal balanced flue kit can be used for rear and right-hand side exhaust. The circular horizontal balanced flue kit can only be used for rear exhaust.

As a balanced flue boiler the EuroStar Combi is a room sealed appliance which conforms to the requirements specified in OFSA100. Both flue types are suitable for installation in a garage.

3. TECHNICAL INFORMATION

The EuroStar Combi boiler is suitable for all normal open vented central heating and indirect hot water systems and can also be used with sealed systems up to a working pressure of 3 bar with the appropriate sealed system safety equipment.

Flow and return pipe connections are provided to facilitate connection to the heating and hot water systems.

All annual routine servicing can be carried out from the front of the boiler, but if the front of the boiler is to be installed below a worktop this must be made removable for the provision of fitting replacement parts in the future.

The boiler is fully automatic in operation and incorporate all necessary safety controls to ensure safe and reliable operation.

The Trianco EuroStar Combi boiler is supplied with the burner set for Kerosene 28 sec. BS 2869 Class C fuel to meet the Building Regulation requirements for low level flue discharge. It is recommended this fuel is also used when the boiler is connected to a conventional chimney because of the clean burning characteristics of Kerosene.

DHW Flow Rate

Flow rate is affected by pressure drop in pipework, therefore if 15mm pipework is more than 3 metres from the tap to the boiler 22mm should be used instead to achieve flow rates.

IMPORTANT

IF THE APPLIANCE IS TO BE INSTALLED WHERE THE TEMPORARY HARDNESS OF THE WATER SUPPLY IS HIGH, THEN A SALT BASED WATER SOFTENER MUST BE FITTED TO REDUCE THE HARDNESS TO BELOW 150PPM OR (10.5° CLARKE), IF IN DOUBT CONSULT THE LOCAL WATER AUTHORITY.

TO OBTAIN THE TEMPORARY HARDNESS FIGURE TELEPHONE YOUR LOCAL WATER AUTHORITY QUOTING YOUR POSTAL CODE.

UNDER NO CIRCUMSTANCES MUST THIS APPLIANCE BE INSTALLED IF THE CUSTOMER IS NOT AWARE OF THIS REQUIREMENT.

NOTE: FAILURE TO ENSURE THE CORRECT VESSEL SIZE COULD RESULT IN PREMATURE FAILURE OF THE EXPANSION VESSEL, WHICH IN TURN MAY ADVERSELY AFFECT OTHER COMPONENTS ON THE BOILER IE CIRCULATING PUMP AND DIVERTER VALVE.

REFER TO PAGES 9 & 10.

Important Notice:

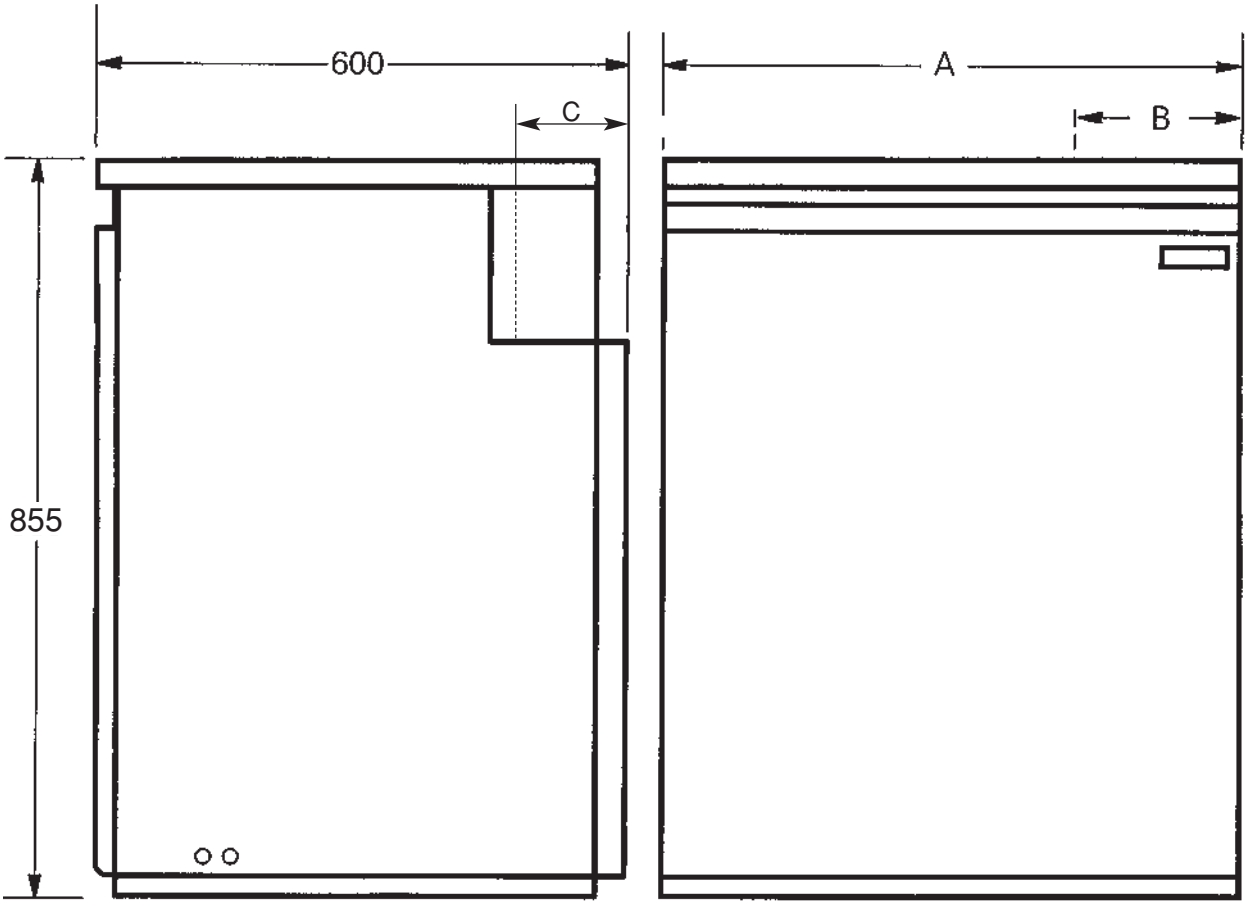
To comply with regulations in force, your new boiler must be installed and commissioned by an *OFTEC*-registered engineer. The installation must also comply with current *Building Regulations, Part L.*

Failure to meet the terms of these requirements may invalidate your guarantee.

THE PERSON(S) WHO INSTALLS THIS APPLIANCE, COMMISSIONS, SERVICES OR CARRIES OUT ANY REMEDIAL WORK, IE ELECTRICAL FAULT FINDING, MUST HAVE SUITABLE ENGINEERING QUALIFICATIONS

TECHNICAL DATA

	COMBI 50/65		COMBI 70/90	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Rated Input	22.2kw	75,700Btu/h	30kw	102,800Btu/h
Rated Output	19.5kw	66,500Btu/h	27.5kw	93,800Btu/h
Oil Burner	See Burner detail leaflet			
Weight (empty)	147kg	324lb	170kg	375lb
Water content	82.3L	18.5 gallons	90 L	20.5 gallons
C H Flow & Return	22mm		22mm	
DHW Inlet & Outlet	15mm		15mm	
Maximum operating pressure	3 bar	43.5psi	3 bar	43.5 psi
Test Pressure	4.5 bar	65.3 psi	4.5 bar	65.3 psi
Water side resistance 10 °C diff.	64 mbar	25.6 in wg	85 mbar	34 in wg
Water side Resistance 20 °C diff	22 m bar	8.8 wg	22.5 mbar	9 wg
Overall Height	860mm	34 in	860mm	34 in
Overall Width	585mm	23 in	685mm	30 in
Overall Depth mm (in)	600 mm	23.6 in	600mm	23.6 in
Control Thermostat	Ranco ODD Type K36		Ranco ODD Type K36	
Overheat Thermostat	Ranco LM 7 (Manual Reset)		Ranco LM 7 (Manual Reset)	
Tank Control Thermostat	Ranco ODD Type K36		Ranco ODD Type K36	
Tank Economy Thermostats	Ranco ODD Type K36		Ranco ODD Type K36	
DHW Thermostat	Ranco ODD Type K36		Ranco ODD Type K36	
Electricity Supply	230V - 50 Hz Fused at 5A		230V - 50 Hz Fused at 5A	
Pump	Grundfos		Grundfos	
Priority Valve	Danfoss Randall HS A3ND		Danfoss Randall HS A3ND	
Expansion Vessel	Zilmet 10L charge 0.5mba		Zilmet 10L charge 0.5mbar	
Tank Overheat Thermostat	Ranco LM 7 (Manual Reset)		Ranco LM 7 (Manual Reset)	
Pressure Gauge	0-4 bar		0-4 bar	
Flow Switch	SIKA		SIKA	
Pressure Relief Valve	3 bar		3 bar	
Max. Flow Temp CH	75°C		75°C	
Flow Rate DHW @ 1.8 BAR	-		20 litres	
Flow Rate DHW @ 1.5 BAR	17 litres		-	
Total DHW Draw Off	100 litres		100 litres	
Available Head System	3 m	9.75 ft	3m	9.75 ft
Flue Gas Temperature	215 C		215 C	
Required flue draught	12.5mm	0.05 in	12.5mm	0.05 in
Fuel	Kerosene 28s BS 2869 Class C2		Kerosene 28s BS 2869 Class C2	
Flue Gas Mass Flow Rates	0.0089864 kg/sec		0.0126569 kg/sec	
Starting Current	5.5 amp		5.5 amp	
Running Current	1.2 amp		1.2 amps	
Flue Dia.	100 - 125mm		100 - 125mm	



EuroStar Combi	50/65	70/90
DIM A	585	685
DIM B (to flue socket)	200	226
DIM C (to flue socket)	106	106

SPACE REQUIRED FOR INSTALLATION AND MAINTENANCE		
REAR	NIL (mm)	NIL (in)
SIDE LH/RH	20 (mm)	3/4 (in)
FRONT	600 (mm)	24 (in)
TOP	450 (mm)	18 (in)
BASE	NIL (mm)	NIL (in)

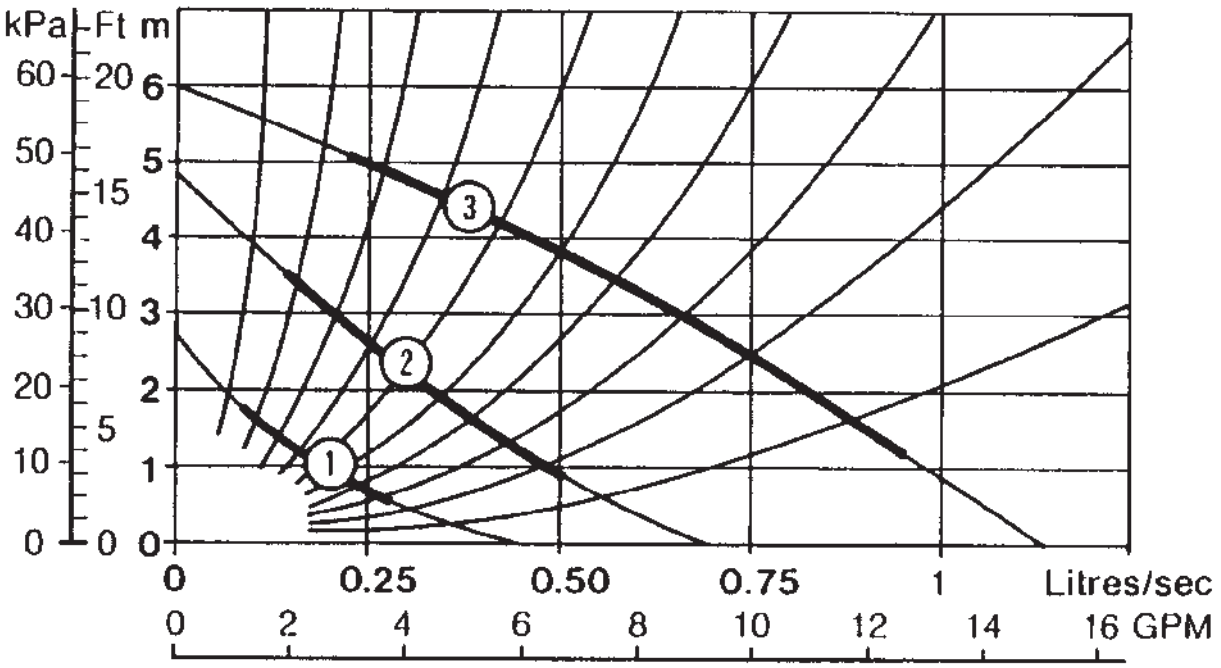
THE BOILER MAY BE INSTALLED BELOW A KITCHEN WORK SURFACE SO LONG AS THE SECTION IS REMOVABLE AND THE MAINTENANCE CLEARANCE IS MAINTAINED.

CLEARANCE UNDER WORK SURFACE 5mm MINIMUM

Fig 1 **OUTLINE DIMENSIONS/CLEARANCE**

Grundfos 15/60 (EuroStar Combi 90)

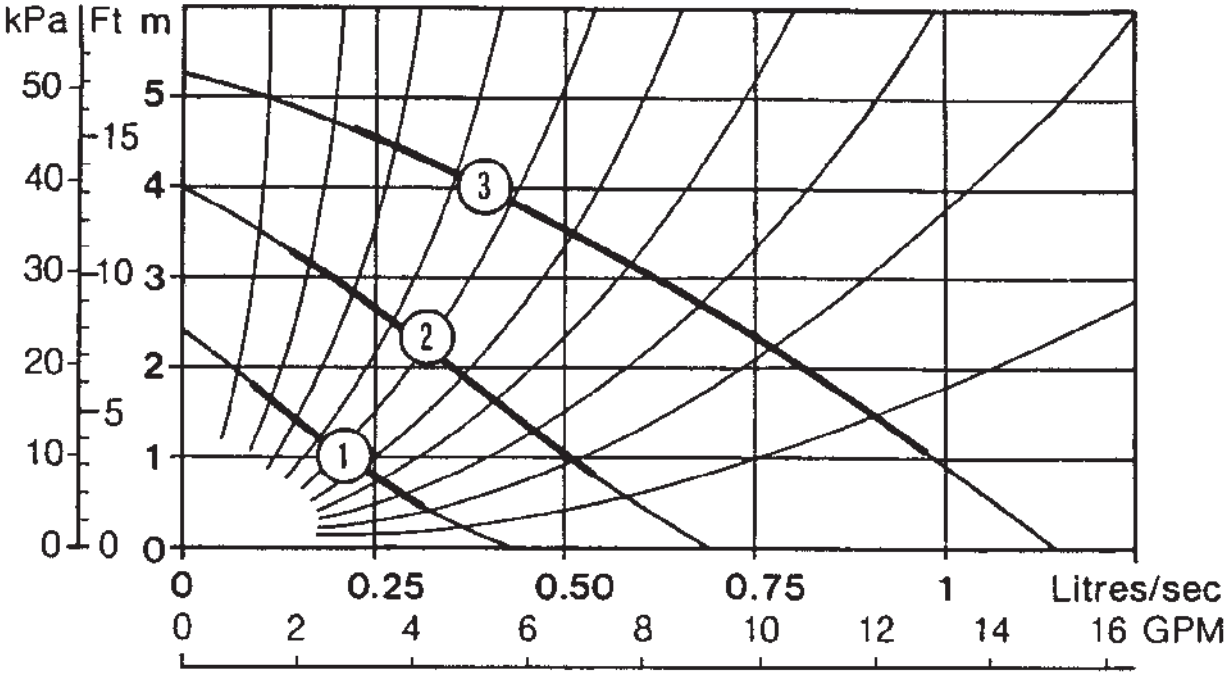
PUMP FLOW CURVE



Note: If the pump is run on speed setting 1, domestic hot water availability is impaired.

Grundfos 15/50 (EuroStar Combi 65)

PUMP FLOW CURVE



Note: If the pump is run on speed setting 1, domestic hot water availability is impaired.

Fig 2

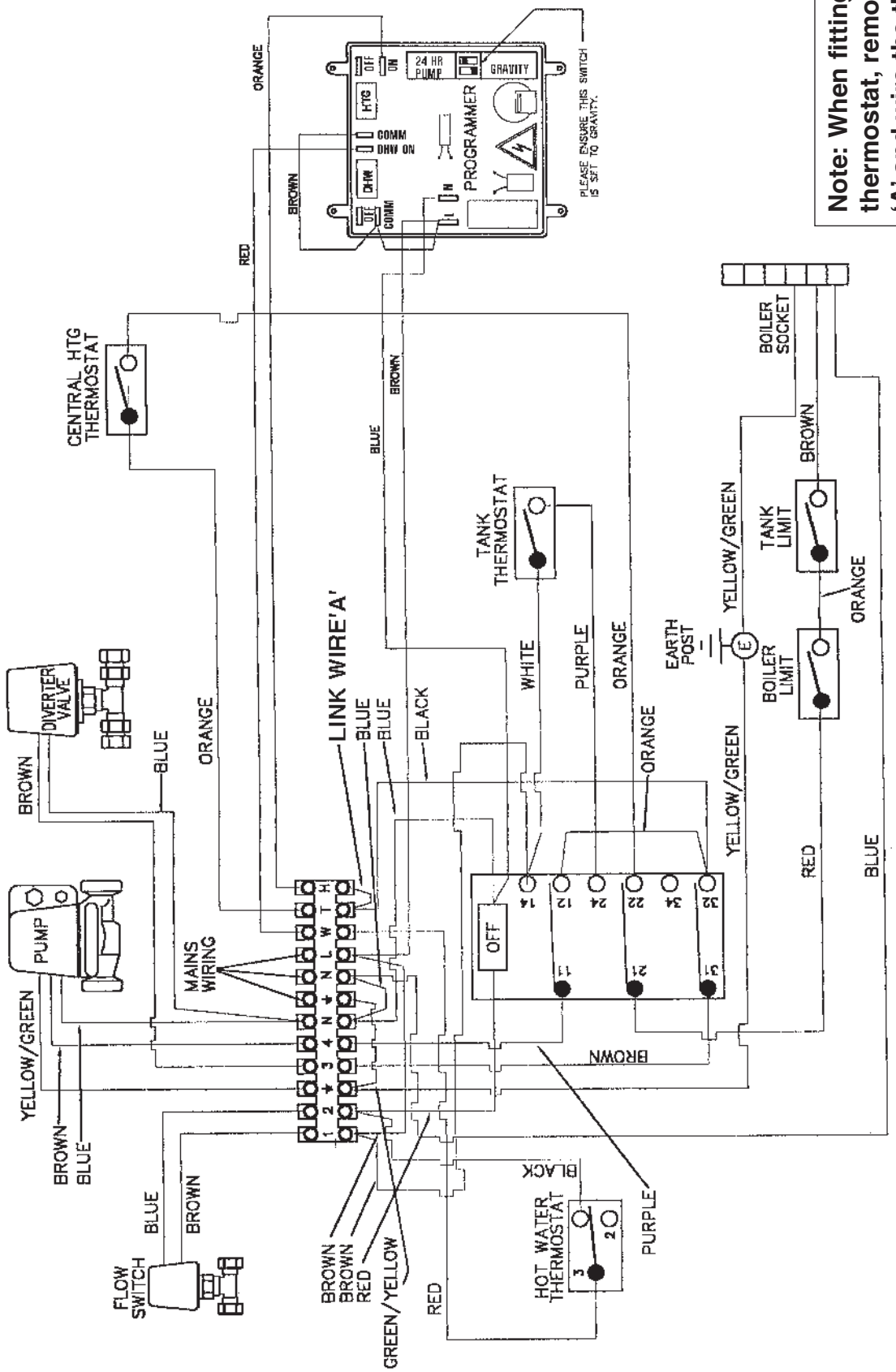

Note: When fitting a room thermostat, remove link wire 'A' and wire the thermostat into terminals 'T' and 'H'.
PLEASE ENSURE THIS SWITCH IS SET TO GRAVITY.
PROGRAMMER
24 HR PUMP
GRAVITY
HTG
DHW
COMM
DHW ON
CENTRAL HTG THERMOSTAT
DIVERTER VALVE
PUMP
MAINS WIRING
LINK WIRE 'A'
TANK THERMOSTAT
HOT WATER THERMOSTAT
FLOW SWITCH
BOILER SOCKET
TANK LIMIT
BOILER LIMIT
EARTH POST
OFF
ORANGE
BLUE
BROWN
WHITE
PURPLE
BLACK
RED
YELLOW/GREEN
GREEN/YELLOW

Fig 3

4. INSTALLATION

Regulations

Installation of the boiler must comply with the following British Standards and Regulations:

BS 5410: Part 1 - Code of Practice for Oil Firing.

BS 5449 - Forced Circulation Hot Water Central Heating Systems.

The Building Regulations -
Part 'G' & 'J' (England and Wales)
Part 'F' Section 111 (Scotland)
Part 'L'

BS 7671
Local Water Undertakings By-laws
OFTEC Installation Requirements for Oil Fired Boilers and Oil Storage Tanks.

Health and Safety at Work Act

The installer should be aware of his responsibilities under the Act and provide, where necessary, appropriate protection for persons carrying out the installation.

In the interest of safety, the boiler should be installed and commissioned by a competent engineer, preferably OFTEC trained and registered.

A useful guide to 'Safe Working Practices for Oil Firing Technicians' is published by OFTEC.

The installer of the boiler must be registered as competent UDHWSS installer.

ELECTRICAL WORK SHOULD BE CARRIED OUT BY A QUALIFIED ELECTRICAL ENGINEER

Siting the Boiler

Sound Levels

Whilst the low sound level of the Trianco EuroStar Combi boiler makes it eminently suitable for kitchen and utility room installation, the following aspects should be considered before installation:

(a) Some people are particularly sensitive to even low noise levels so this aspect should be discussed with the householder.

(b) Small rooms tend to amplify noise, particularly if the wall construction is hollow or the surface tiled.

(c) A chimney passing through a bedroom can sometimes transmit noise.

(d) Low level flue terminals produce some exhaust noise, so care should be taken when siting adjacent to a neighbouring property.

Clearance and service access

When siting the boiler, ensure adequate clearance is allowed for making water and flue connections. The boiler can be fully serviced from the front, but if fitted below a worktop this must be made removable for the provision of fitting replacement parts in the future.

Hearth

The boiler **MUST** be fitted on a suitable non-combustible base.

WATER SYSTEMS

Heating

The installation must comply with the requirements of BS 6798 and BS 5499. Maximum water temperature is 86 C. The appliance is supplied with 2 stop valves (flow and return) terminating in compression connections (22mm). The appliance also incorporates the following components:-

Pump	On the return to the boiler
Expansion Vessel	10 litres, pre-charged to 0.5 bar
Pressure Relief Valve	Set to operate at 3 bar

A system schematic is given in Fig. 4 & 5.

Drain Cock

Drain cock(s) should be fitted at the lowest point in the system to enable the water to be drained. A drain cock is fitted to the front lower section of the storage tank.

Expansion Vessel Requirements

The boiler is supplied with a 10 litre expansion vessel, capable of accepting the 82 litre stored water expansion at a cold fill of up to 1 bar.

An additional expansion vessel must be fitted if a system water volume exceeds 42 litres not including boiler or if the initial system pressure is above 0.75 bar.

For systems having a larger capacity, multiply the total water content (boiler and system) by the factor to obtain vessel size in litres.

ADDITIONAL E. VESSEL REQUIREMENT

VESSEL CHARGE AND INITIAL SYSTEM PRESSURE	0.5 bar	1.0 bar	1.5 bar
MULTIPLICATION FACTOR TO GIVE TOTAL EXPANSION VESSEL VOLUME	0.08 bar	0.11 bar	0.16 bar

EXAMPLE

A system to be filled to 1 bar cold fill (vessel to be charged 1 bar) has 82 litres of stored water and 60 litres of water in the central heating system, requires a total expansion vessel of:
82 + 60 = 142 litres
Multiply by factor 0.11 (from chart)
= 15.62 litres = Total expansion volume
Expansion vessel supplied = 10 litres
We therefore need 15.62 - 10 litres = 5.62 of extra expansion.

An additional vessel of at least 5.62 litres would therefore be required to be fitted.

Note: if the appliance pressure gauge indicates a rise of pressure to 2.6 bar or higher with the radiator circuit operating at full output of the boiler, an additional expansion vessel will be required in the system.

System Filling

The appliance is designed for connection to sealed central heating water systems. Fig 6 shows a typical system design.

A sealed system must only be fitted by a competent person using one of the approved methods shown in Fig. 6 (A or B). The system should incorporate the connections appropriate to one of these methods.

METHOD OF MAKEUP:

Water loss from the system should be replaced from a makeup vessel connected to the system through a non return valve on the return side of the heating circuit. This vessel should be higher than the top of the system.
Alternatively provision for makeup can be made by pre-pressurisation of the system via a temporary hose connection and through a double check valve (non return) and stop valve.

FILLING:
There shall be no direct connection to the mains water supply, even though a non return water valve, without the approval of the Local Water Authority.

System Cleaning and Inhibitor Treatment Before commissioning the appliance it is essential to clean the installation in accordance with the procedure set out in BS 7593. This involves the application of a cleanser, and allowing it to circulate around the whole system for a specified time, then flushing to drain. It is important to select the cleanser appropriate to the situation, i.e. for a new installation, or for an existing system where the boiler is being replaced. In the case of boiler replacement, it is good practice to clean the system prior to the installation of the new boiler.

It is recommended that an inhibitor is added to protect the system. The Inhibitor should be added at the time of the final fill, in accordance with the manufacturer's instructions.

Domestic Hot Water

The mains supply pressure should be between 1 and 5 bar but if in excess of 5 bar, then a pressure reducing valve must be fitted before the inlet valve. The final 600mm (24in) of the mains water supply pipe to the boiler must be copper. If the appliance is installed in an area where the temporary hardness of the water supply is high, say over 150 ppm. A water softener (salt based) must be fitted. Consult the Local Water Authority if in doubt.
For specific information relating to fittings (e.g. showers, washing machines, etc.) suitable connection in the DHW circuit, consult the Local Water Authority if in doubt.

DOMESTIC HOT/COLD WATER SUPPLY TAPS AND MIXING TAPS:

All equipment designed for use at mains are suitable.

SHOWERS AND BIDETS:

Any mains pressure shower or bidet complying with the Local Water Authority byelaws are suitable.

Water System Connections

Heating

Connect the appliance to the water system using the two stop valves
supplied (copper compression fittings 22mm).
The flow connection is on the right.
Using not less than 15mm copper pipe work, the pressure relief valve must be piped to the tundish, in accordance with details given in fig. 12 and section G3 of the Building Regulations 1991 approved document.

NOTE: Failure to ensure the correct vessel size could result in premature failure of the expansion vessel, which in turn may adversely affect other components on the boiler ie circulating pump and diverter valve.

Domestic Hot Water

Connect the incoming cold water using the ball valve supplied (copper compression fitting 15mm).

Connect the DHW flow to the hot water system (copper compression fitting 15mm).

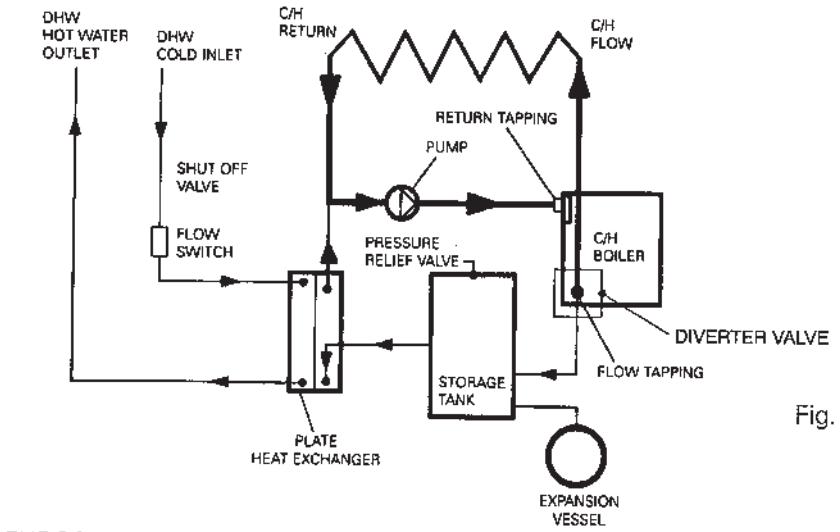


Fig. 5a

EUROSTAR COMBI SCHEMATIC LAYOUT CENTRAL HEATING MODE

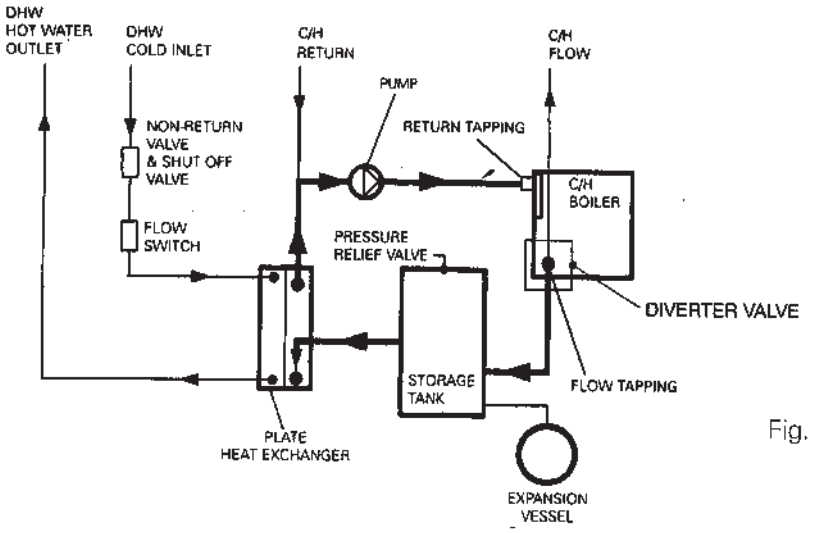


Fig. 5b

EUROSTAR COMBI SCHEMATIC LAYOUT DOMESTIC HOT WATER MODE

Fig 4 **EUROSTAR COMBI SCHEMATIC LAYOUT**

Note: appliance incorporates Pump Expansion Vessel, Pressure Gauge, Air Vent and Safety Valve.

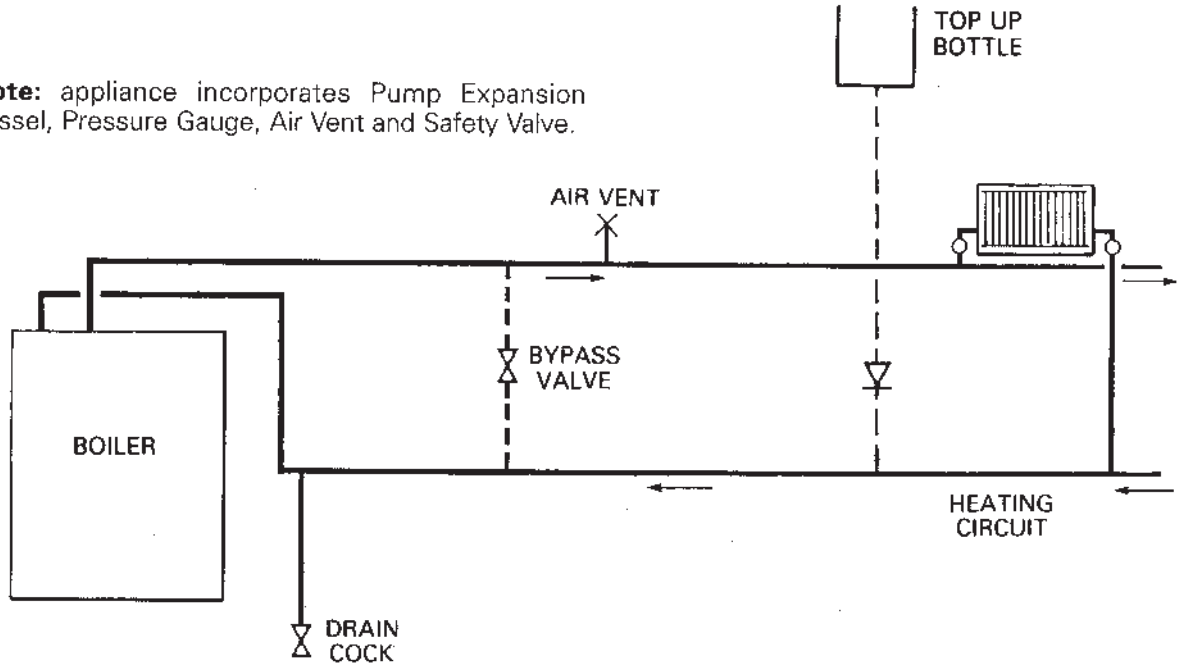


Fig 5 **SEALED SYSTEM PIPING SCHEMATIC DIAGRAM**

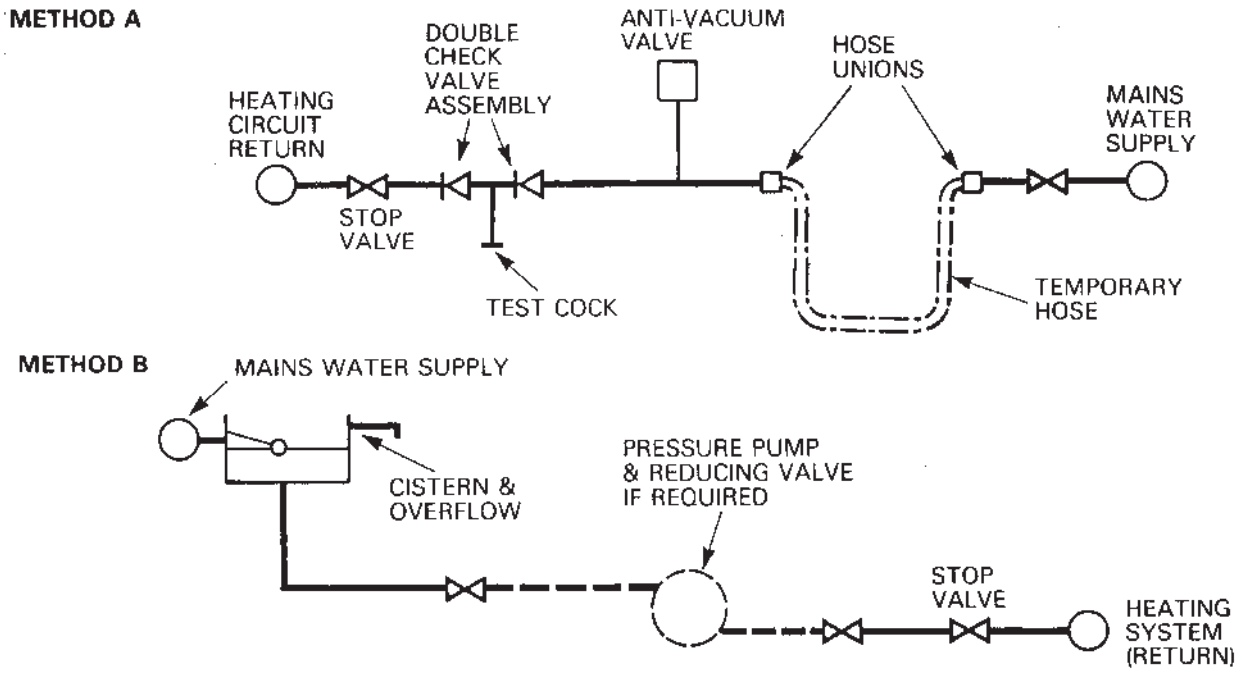


Fig 6 **ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM**

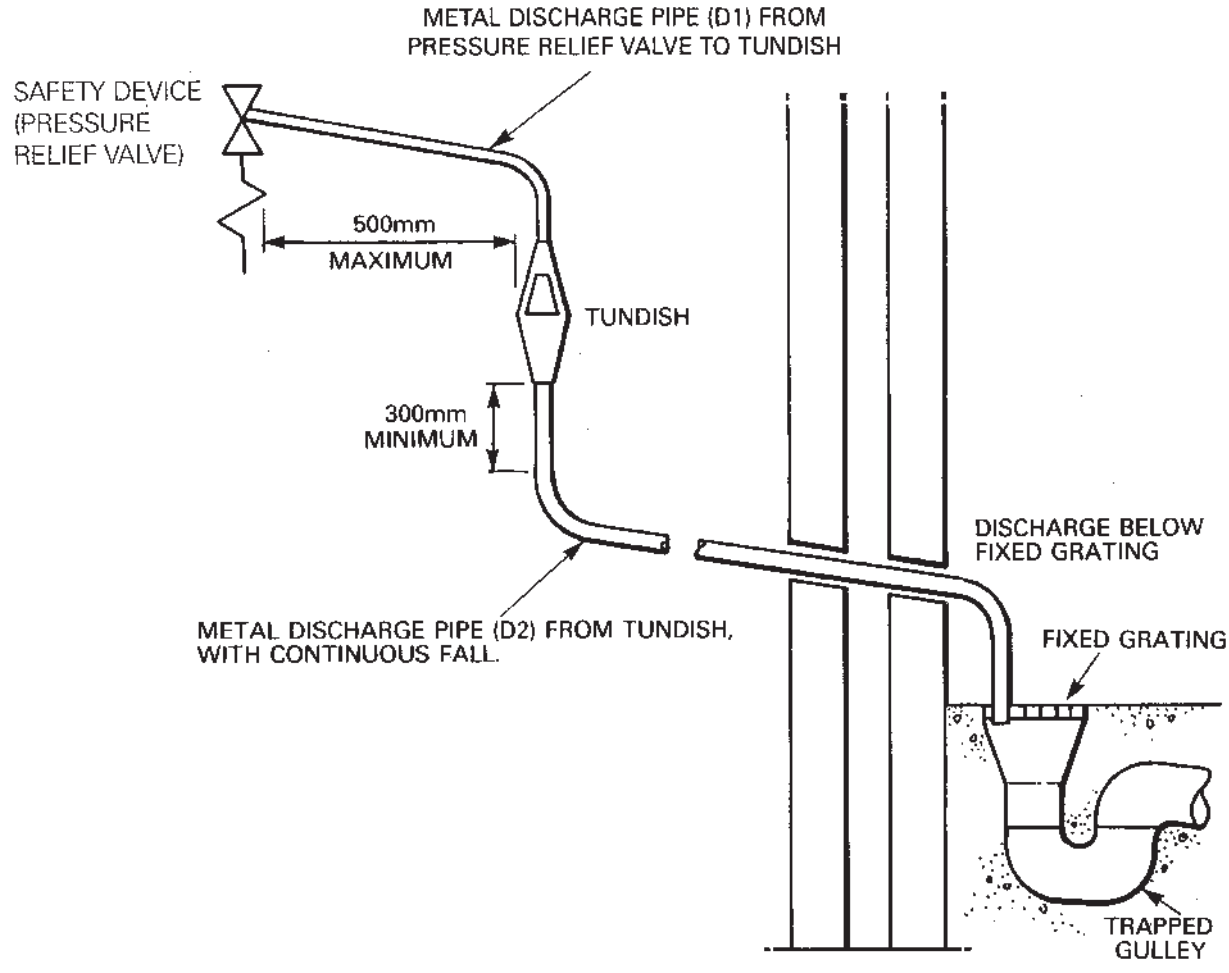


Fig 7 **TYPICAL DISCHARGE PIPE ARRANGEMENT**

Combustion Air (Conventional flue boilers)

The provision of an adequate supply of combustion air is essential for the efficient and safe operation of the boiler. The air opening should be positioned so as to cause the least possible draught to the occupants and located so it is not liable to be accidentally blocked.

British Standard Code of Practice for Oil Firing BS 5410: Part 1 requires a permanent air inlet opening of 550mm^2 per kW of boiler rated output above 5kW.

The following air openings are therefore required for Trianco EuroStar Combi boilers:

Minimum FREE Area Opening opening 'A'=113cm^2 (18in^2)

EuroStar Combi	Minimum FREE Area
65	7730mm^2
90	11760mm^2

Ventilation (Conventional flue boilers)

Where the boiler is installed in a compartment or a confined space, ventilation openings are also required to prevent overheating of the appliance controls (the ventilation areas are shown in Fig 8).

Extractor Fan (conventional flue boilers)

If the boiler room has an extractor fan, the combustion performance of the appliance must not be affected when the fan is running and all doors and windows are closed. A flue gas check on the CO2% and smoke must be carried out to provide that combustion is satisfactory.

Ventilation (Room sealed balanced flue boilers)

Although no openings are required for the supply of combustion air (this comes from outside through the air duct system direct to the burner), ventilation is, however, necessary if the boiler is installed in a compartment or a confined space in order to prevent overheating of the boiler controls (See Fig. 9) for ventilation openings.

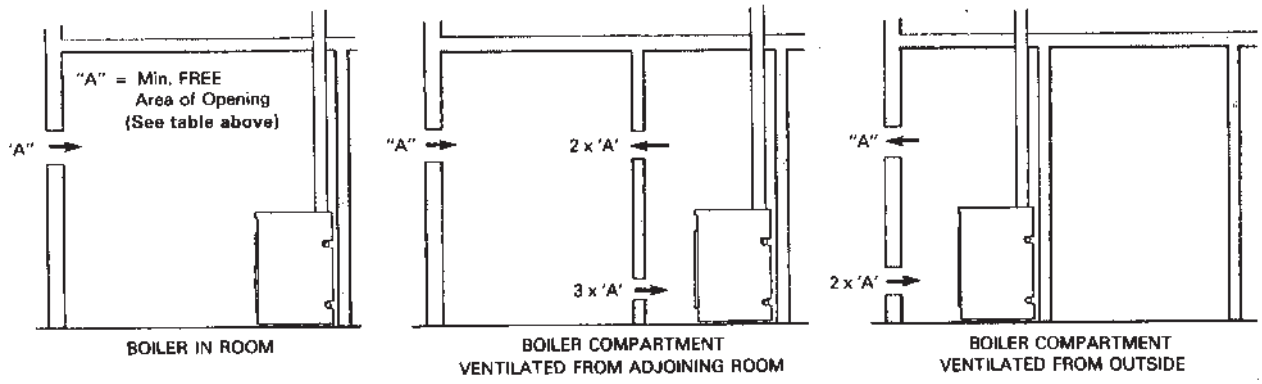


Fig 8 **AIR SUPPLY & VENTILATION FOR CONVENTIONAL FLUE BOILERS**

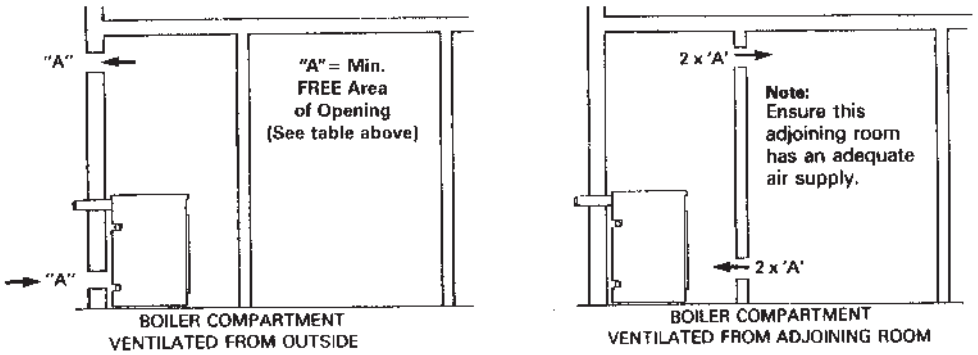
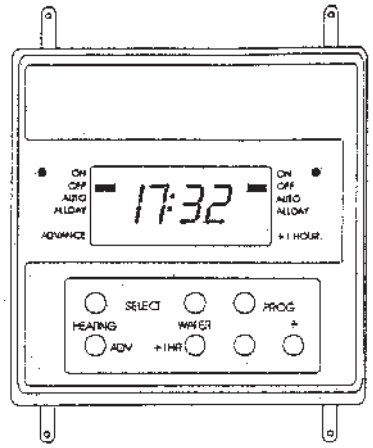


Fig 9 **VENTILATION FOR ROOM SEALED BALANCED FLUE BOILERS IN A COMPARTMENT**

Trianco Electronic Programmer - 2 Channel Version

Specification

Power Supply	:	220/240Vac, 50/60 Hz
Switching Action	:	2 x2 SPDT, Type 1b
Switch Rating	:	220/240Vac, 50/60 Hz, 3(1)A
Timing Accuracy	:	± 1min/month
Power Reserve	:	14 days
Enclosure Rating	:	IP30
Maximum Ambient Temp	:	45°C
Designed to meet BS3955 and BS E60730-2-7		
Overall Dimensions	:	Width: 86.5mm
		Height: 88mm
		Depth: 35mm
Control Pollution Situation:		Normal



Programmer with programming cover

Initial Power-Up

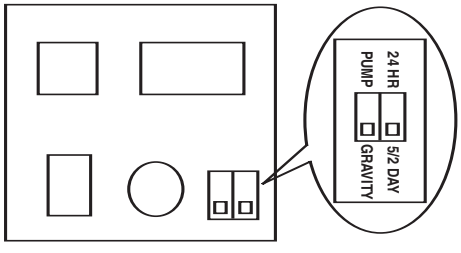
This unit may be in its 'Sleep Mode'. After the unit is installed press the four buttons: 'SELECT / ADVANCE / - / +' all at the same time to 'Wake up' the unit before programming.

General

The programmer has been pre-installed in the boiler during manufacture. During installation the programmer will have been correctly configured for the boiler and been set up as a 24 hour unit, repeating its programme each day.

However should the consumer prefer to have 5 day/2 day operation, the unit can be re-configured on site by altering the position of a DIL switch on the rear of the programmer.

Caution: This should only be undertaken by a competent person. If in any doubt, consult a qualified electrician.



Rear view of unit

Location and setting of DIL Switches

The DIL switches are located on the bottom right hand side of the rear of the unit.

Factory Settings

Boiler Type: Eurostar Combi 65	
Switch Legend	Factory Setting
24 Hour - 5/2 Day	24 Hour
Pump Gravity	G

Changes to factory settings

24 Hour or 5/2 day operation
This can be changed to suit the needs of the end user.

Pump or Gravity
This should be left at the setting applicable to the boiler type (see above for details).

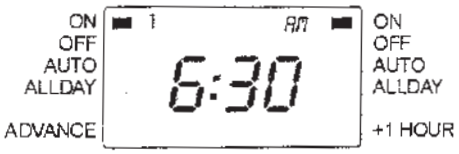
Setting the time Danfoss OEM5

1. Remove white protective cover from base of programmer.
2. Activate programmer, pressing four buttons (select, advance and +Plus -Minus) together.
3. 12.00 will appear in window either-12.00a.m. or 12.00 p.m.
4. Press programmer button.
5. Press +Plus or Minus buttons to adjust time to AM or PM.
6. Press programmer button.
7. To set on/off times refer to Setting event times

Setting event times

Step A

Press PROG to advance to the next step. The display will be as in figure 5.

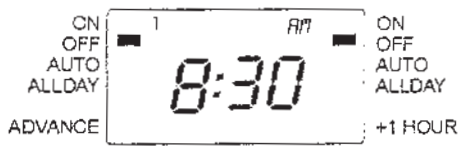


Step B

Press and release the + or - buttons to change event 1 ON time in increments of 1 minute.
Note: If buttons are held down, the time will change in increments of 10 minutes.

Step C

Press PROG again to select event 1 OFF time. The display will be as in figure 10.



Repeats Steps A, B and C above for event 2 ON/OFF times and again for event 3 ON/OFF times before pressing PROG again to return to RUN mode.

Having finished programming, replace the programming button cover.

Additional Programming Steps for 5 Day/2 Day Operation

If the unit has been set for 5 Day/2 Day operation, the following additional steps must be made.

Setting day of week

Having set time of day in Step 2, press PROG, then + or - to set the day of the week. This is displayed at the bottom of the LCD.

Setting weekend programmes

Having set the 3 ON/OFF events for the week days, repeat Steps A, B and C for the three weekend ON/OFF events before pressing PROG again to return to RUN mode.

Having finished programming, replace the programming button cover.

Using Water and Heating Select Buttons

Use the WATER and HEATING SELECT buttons to select between:

- ON run continuously
- OFF off continuously
- AUTO follows programme
- ALLDAY turns on at first programmed ON event and off at end of last programmed OFF event.
- Use ADV or +1HR override programmes.
  ADV advances unit next event
- +1HR adds 1 hour on to end of current programme

Battery back-up

In the event of a power failure the time and programmed events will be retained for up to 14 days, after which the unit will go into sleep mode, and will need to be reprogrammed when the power is restored (refer to “Initial Power-Up” at beginning of document)

Electrical Supply
230V 1 Phase 50Hz (Fused 5 Amp)

Note: THIS APPLIANCE MUST BE EARTHED

All electrical wiring must be carried out by a qualified electrician in accordance with current I.E.E. Regulations and any Local Regulations that may apply.

The 230v - 50Hz electrical supply must be fused by a double pole switch with a contact separation of at least 3mm in both poles, and shuttered socket outlet (both complying with the requirements of BS 1363) adjacent to the boiler. Fuse supply at 5A. The minimum requirement for the power supply cable should be a PVC sheathed flexible cord, at least 0.75mm (24 x 0.2mm) (code designation H05 VV - For H05 VVH2-F) as specified in table 16 of BS 6500.

This appliance MUST be earthed and electrical supply earth cable must be of greater length than the current carrying conductor cables (i.e., live and neutral supply cables).

Terminal connections are also provided in the control panel for ancillary controls. See wiring diagram. (Fig 3.)

Warning - High and Low Voltage

In certain parts of the country, where there is a known risk of high or low voltage fluctuations, the oil burner shall be prevented from starting by the use of a voltage sensitive device if the voltage drops or increases sufficiently to endanger the installation.

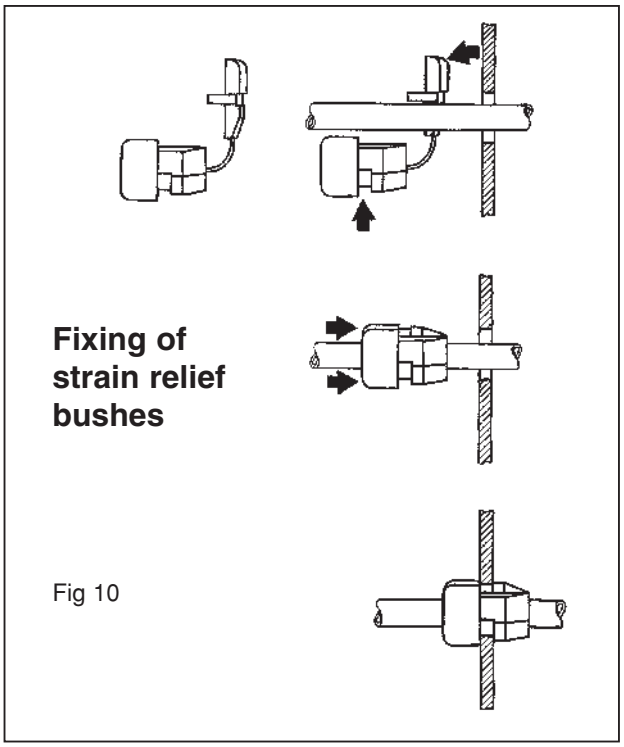


Fig 10

5. OIL SUPPLY

The oil burner is factory set to burn 28 sec. Kerosene.

Note: Only kerosene is permitted for low level flue discharge.

Oil Storage Tanks

Size and Location of Tanks

The tank should be large enough to allow for economic deliveries and be located in the most unobtrusive position, having regard to the need for safety, filling, maintenance (if steel tank) and the head of oil required.

Whilst it is highly unlikely that a fire could start from a domestic oil tank, it does however need to be protected form a fire that may originate in a nearby building therefore should not be located nearer than 1.8 metres form a site boundary. Where a tank has to be less than 1.8 metres, the building wall must not have any openings other than small ventilation openings. The wall shall have a half hour resistance to an internal fire and extend 1.8 metres from any part of the tank.

Alternatively, a non-combustible radiation barrier must be provided which meets the requirements of BS 5410 Part 1: 1977. This standard applies to tanks up to a capacity of 3,400 litres which is deemed the maximum size for a single family dwelling.

Steel Tanks

Steel tanks should comply with the requirements of BS799, Pt.5: 1987 and mounted on brick or block piers with a waterproof membrane between the piers and tank.

The tank should be fitted with the fill and vent connection (weather protected), a drain-off cock, shut off valve and an oil level indicator.

Plastic Tanks

Polyethylene tanks are now widely used because of their advantages over traditional steel tanks:

a) They do not need pier supports and can be mounted directly on any flat surface giving uniform support for the tank base

b) They do not corrode and therefore never need painting.

c) They are easier to handle because of their weight.

Plastic tanks should be fitted with similar components to those used with steel tanks.

Fire Protection

To comply with building regulation **Section J5:**

1 Where a storage tank is close to a dwelling, fire cladding must be provided to the eaves, if less than 1.8m from the top of the tank.

2 The cladding must extend 300mm beyond the tank.

3 The tank must be sited on a non-combustible base.

Pollution Protection

To comply with building regulation **section J6**, the tank must be 'bunded' (i.e. double walled) if:

1 The tank is less than 10m from a stream.

2 The tank is less than 50m from a well, spring, or drinking water.

3 The tank cannot be viewed from the delivery point.

4 In the event of a leak, there is a risk of oil reaching a manhole cover or drain.

5 The tank capacity exceeds 2500 Litres.

Oil Supply Line

A long life flexible oil hose is supplied with the boiler, a filter and shut-off valve are required.

The oil shut-off valve should be fitted as close to the burner as practicable to enable the burner to be disconnected without undue loss of oil. The filter must be connected in the oil supply pipe and positioned outside the building.

Fire Valve

A fire-valve must be fitted in the oil line outside the building with its sensing phial positioned within the boiler casing below the control panel. A clip is provided for retaining the phial.

All oil joints must be completely sealed and the total pipe run thoroughly flushed out before connecting to the burner. No soldered joints are permitted in the oil line.

The oil line can be fed into the back of the boiler base tray or through the holes at the side.

Single pipe oil supply (Fig 11)

When, the bottom of the oil supply tank is above the burner, a single pipe gravity system can be used. The oil supply pipe must be connected to the suction port on the burner pump via the flexible hose.

Two pipe Oil Supply (Fig 12)

Where, the bottom of the oil storage tank is below the burner, a two-pipe suction lift system is necessary.

On the BFP II pump remove the end cover and filter, then remove the 'U' washer by unscrewing the bottom screw, then replace the screw ensuring it is fully inserted. An additional flexible hose is also required.

A spring loaded non-return must be fitted in the suction line to stop the oil running back to the tank. A filter, shut-off valve and fire valve must be fitted in the line.

No valves are permitted in the return line which must remain unobstructed at all times.

Notes:

(1) The pump suction should not exceed 0.4 bar, other wise dissolved gas will be released form the oil to affect combustion.

(2) The return pipe must end at the same level as the suction outlet to prevent loss of prime.

(3) The outlet from the tank should be approximately 75mm (3 in) above the bottom to prevent sediment and water being drawn into the supply pipe.

Oil De-aerator- Single Pipe Supply (Fig. 13)

Where a two-pipe suction lift system is required , but the return pipe is too long, or impractical to run., a de-aerator can be used. The burner is piped as for a two-pipe system up to the De-aerator but only a single pipe is required to be run back to the oil storage tank. A non-return valve is not required with this system but the bypass plug must be fitted in the pump as for two pipe systems.

The Oil De-aerator should be fitted external to the building close to the boiler but should not be fitted inside the boiler casing.

Oil De-aerators are available from most Builders Merchants and some Oil Tank manufacturers.

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

HEAD 'H' METRES		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
PIPE 6mm ID	MAXIMUM LENGTH (METRES)	10	21	31	41	52	62	73	83
PIPE 8mmID		33	66	98	100	100	100	100	100

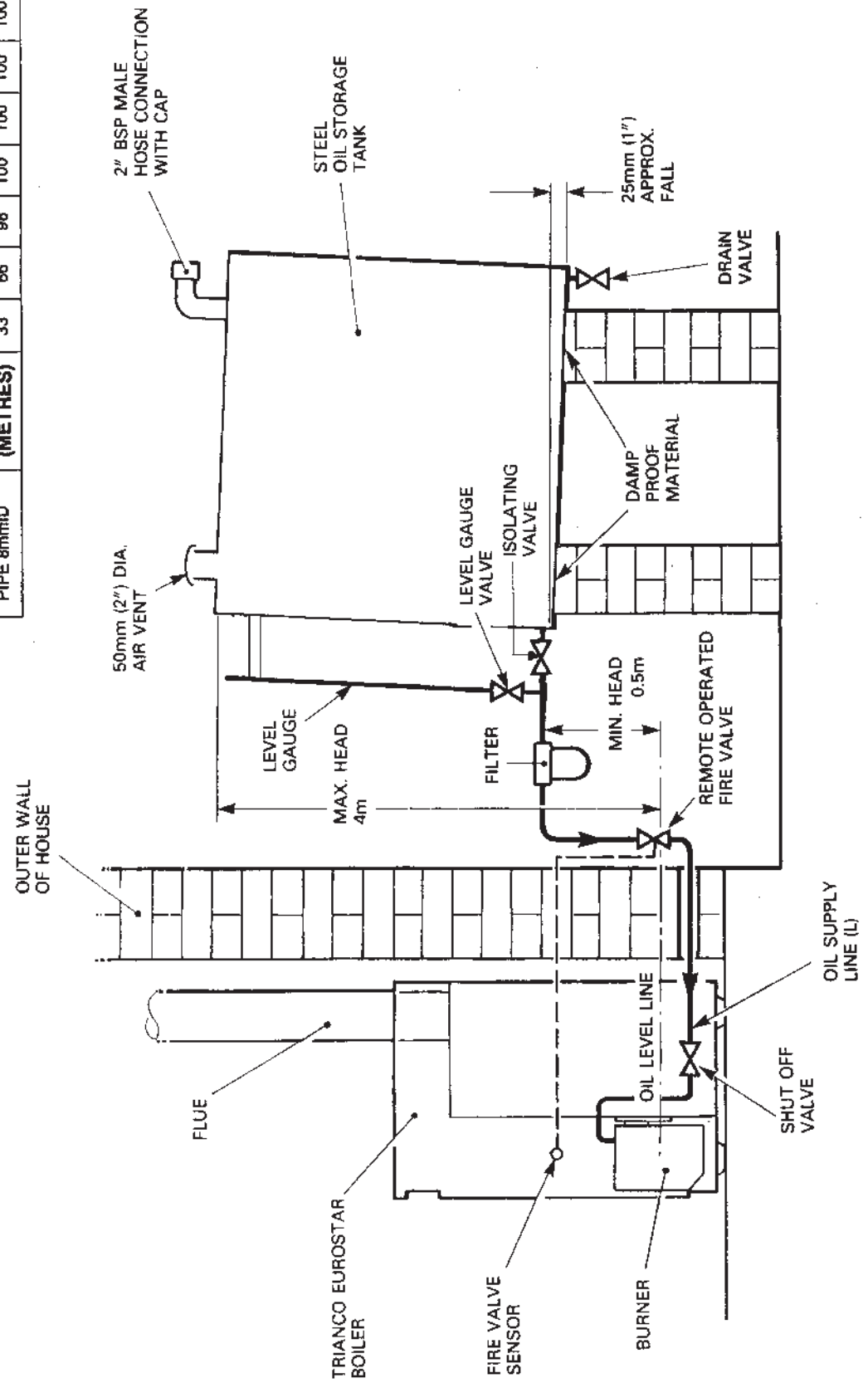


Fig 11 **SINGLE PIPE OIL SUPPLY**

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

LIFT 'H' METRES.		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
PIPE 6mm ID	MAXIMUM LENGTH (METRES)	48	42	36	30	24	18	11	5
PIPE 8mmID		100	100	100	84	75	55	36	16
PIPE 10MM ID		100	100	100	100	100	100	88	40

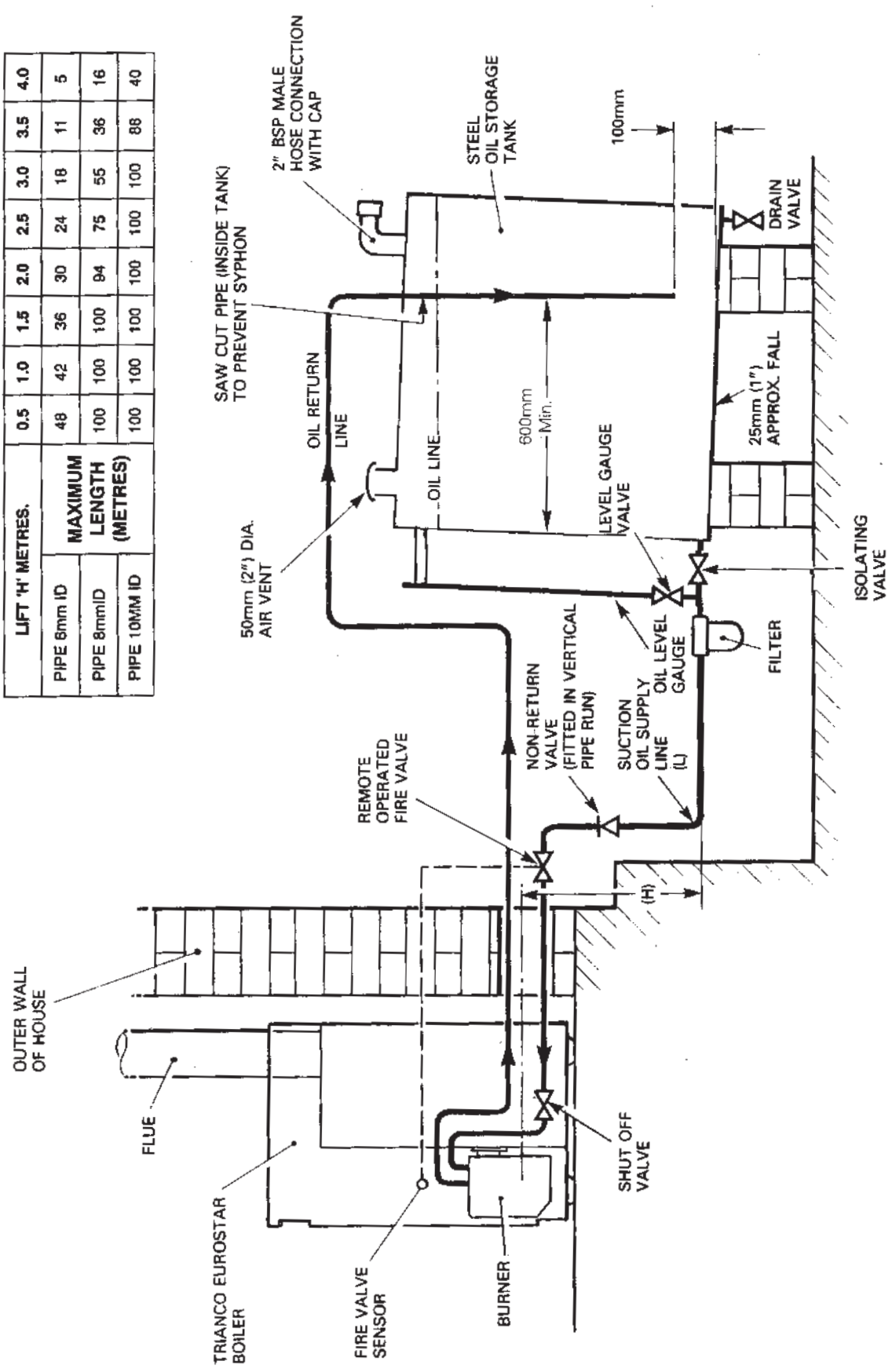


Fig 12 **TWO PIPE OIL SUPPLY**

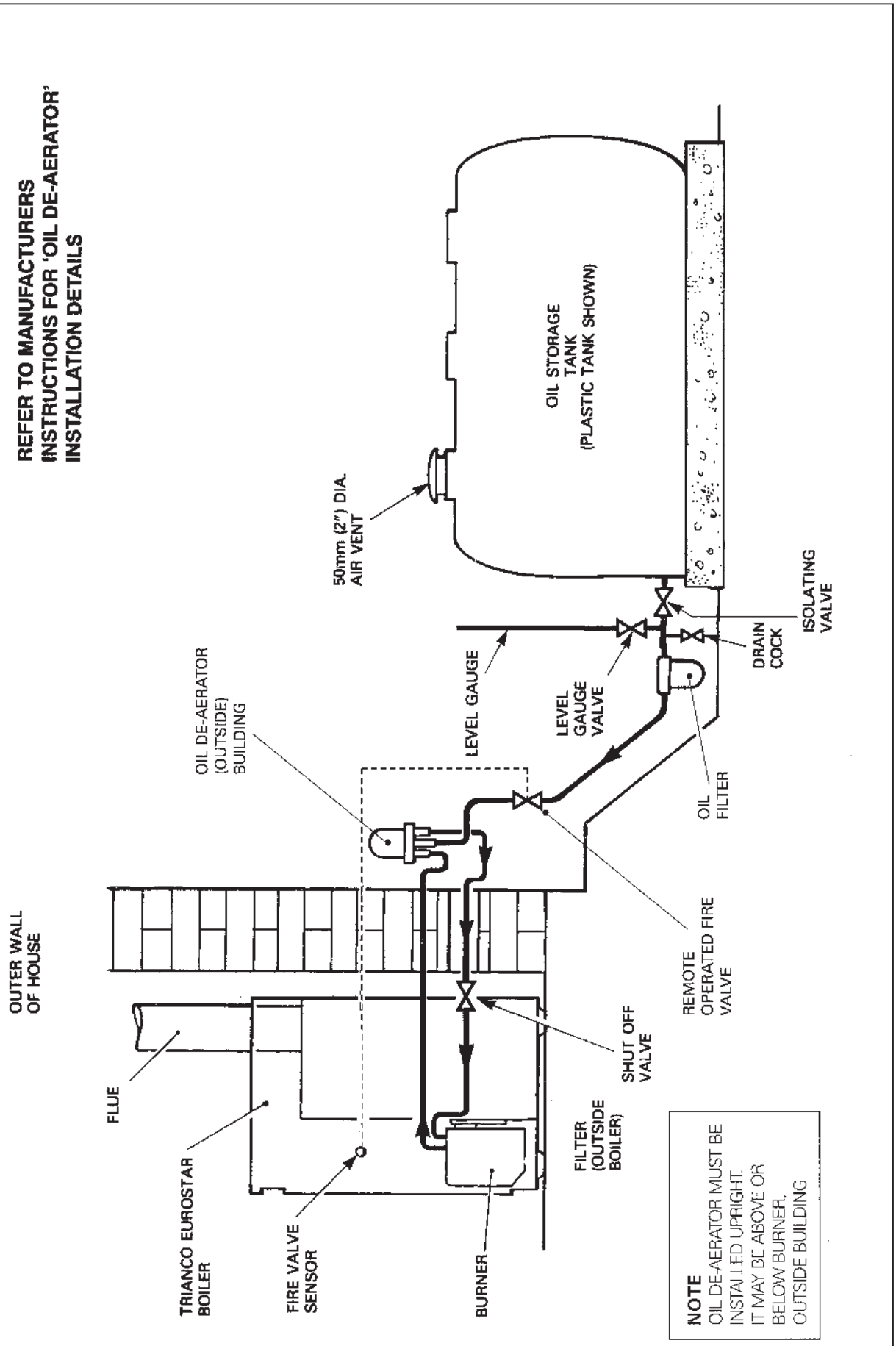


Fig 13 **DE-AERATED OIL SUPPLY INSTALLATION**

6. FLUE SYSTEM

To evacuate the products of combustion safely and thoroughly, the boiler must have an efficient flue system. The design and construction of the Trianco Balanced Flue Kits already takes these factors into account so the following guidance notes are for conventional chimneys. Reference should also be made to BS 5410 Part 1 if further information is required on conventional chimneys.

Conventional chimney (See Fig. 14)

(a) The chimney should rise as vertically as possible and terminate at a point not subject to down draughts or wind eddies.

(b) Brick and masonry chimneys must be lined with a moisture and acid resistant liner. The use of a flexible stainless steel liner is a convenient method of lining an existing chimney and this should be back filled with 'Vermiculite' or similar insulating material to retain heat.

Flexible liner must be suitable for Kerosene 28 sec.

A flexible liner should also be used in chimneys fitted with large diameter clay liners to reduce the flue bore and improve the thermal insulation.

Notes:

(1) In view of the EuroStar's high thermal efficiency, it is important that a liner is fitted, otherwise condensation problems will result.

(2) Before fitting a liner, the chimney must be thoroughly cleaned free from all traces of soot and scale.

(c) A factory made insulated chimney complying with BS 4543 Part 3 may be considered as an alternative to a structural chimney both for new and existing buildings.

(d) The in-built flue gas resistance of the EuroStar is such that it allows the boiler to operate reliably over the wide range of chimney draughts. The use of a draught-stabiliser should not be necessary nor is it desirable since it allows flue noise to be emitted into the room and it could cool the chimney condensing conditions.

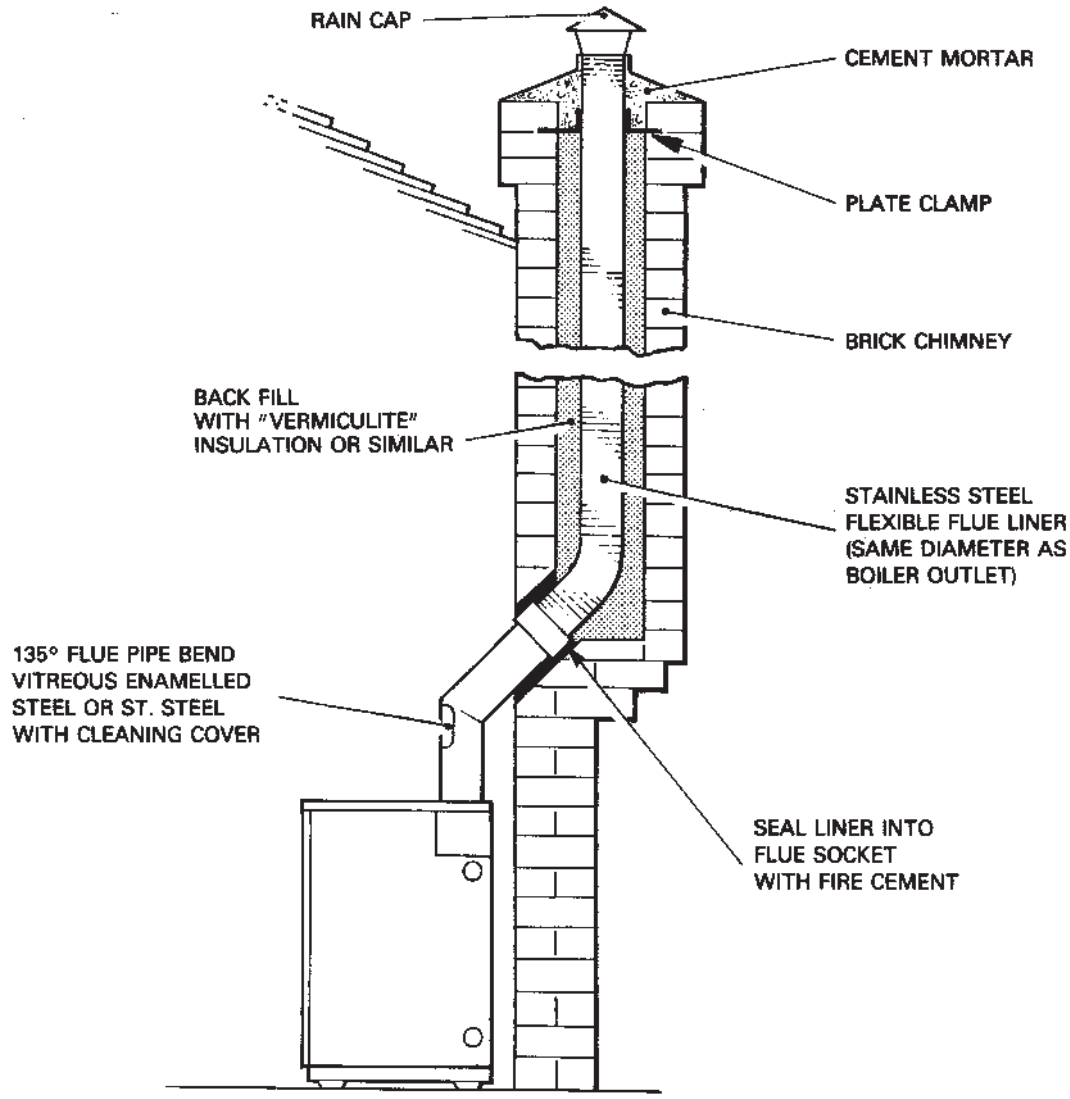


Fig 14 **CONVENTIONAL BRICK CHIMNEY WITH LINER**

Balanced Flue Systems (optional extra)

The Trianco balanced flue system offers much greater flexibility for siting, the boiler compared with a conventional chimney. The only requirement is for a suitable outside wall to fit the horizontal discharge terminal or, alternatively, a single storey roof for a vertical discharge.

In additional to the siting benefit, the performance of balanced flue boilers is virtually unaffected by high wind conditions since the wind pressures are applied equally to both air intake and flue gas discharge, thus creating a balanced condition.

Whereas some balanced flue boilers rely on case sealing to achieve a room seal, Trianco boilers have a sealed air duct system which maintains the room sealed performance even when the casing door is removed for burner commissioning or adjustments.

The use of the balanced flue principle also enhances the overall thermal efficiency of the boiler since the incoming air extracts waste heat from the flue and returns it as pre-heated air to the burner where it aids combustion.

The high-level kits have an additional benefit in that the flue noise is reduced due to the coaxial arrangements of the air and flue pipes - the flue being surrounded by an air space forms an effective acoustic barrier.

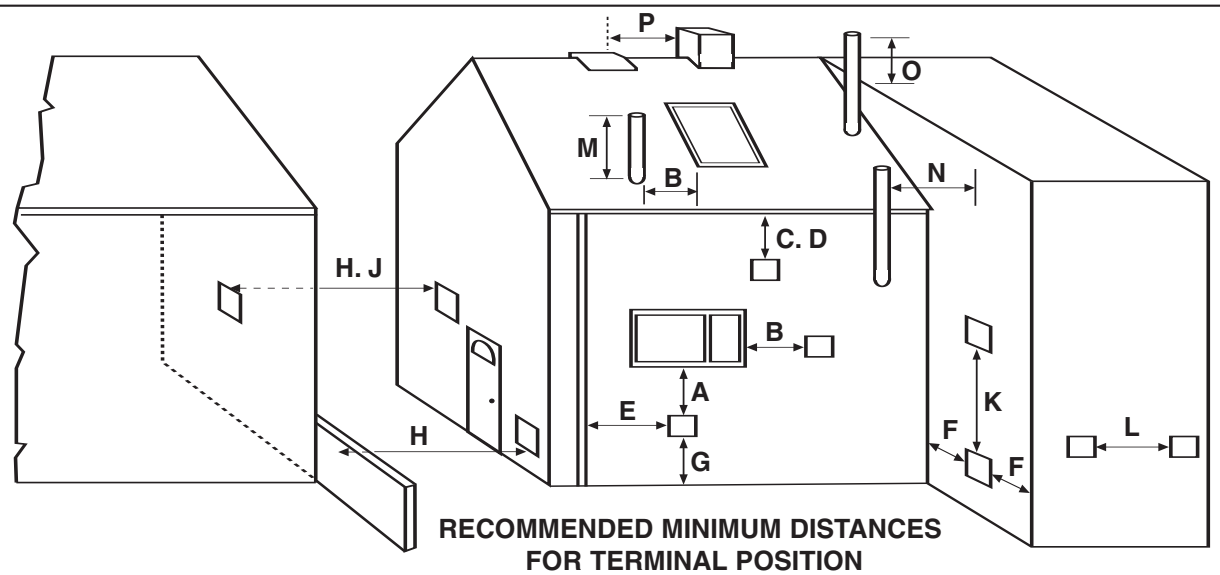
INSTALLATION NOTES

(a) Location.
Modern balanced flue boilers are designed to operate at low noise levels. However, when positioning your boiler, it is not recommended to have the terminal facing a neighbours property or patio etc. It should also be positioned to avoid products of combustion entering the building. A distance of at least 600mm must be allowed between the terminal and any window, door or other opening into the building, (see diagram for recommended terminal positions Fig 15).

(b) Flue Sealing
As the flue system operates under positive pressure, it is essential to seal all flue joints. Apply a thin bead of silicone sealant (supplied) around flue pipe spigot before inserting into socket.

(c) Fuel
Only Kerosene 28 sec. Class C2 is permitted for boilers using low level flue discharge.

(d) Important
Trianco Flue Kits have been designed primarily to use with Trianco EuroStar boilers and as such compatibility with other makes of boiler cannot be guaranteed.



RECOMMENDED MINIMUM DISTANCES FOR TERMINAL POSITION

Appliance burner type - Pressure Jet

Minimum distances to terminals in millimetres as measured from top of chimney or the rim of a low level discharge opening

A	Directly below an opening, air brick, window etc		600
B	Horizontally to an opening, air brick, window etc		600
C	Below a gutter, eaves or balcony with protection		600
D	Below a gutter or balcony without protection		600
E	From vertical sanitary pipework	(*600)	300
F	From an internal or external corner	(*600)	300
G	Above ground or balcony level	(*600)	300
H	From a surface or 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 on the side of the terminal		750
O	Above a vertical structure less than 750mm from the side of the terminal		600
P	From a ridge terminal to a vertical structure on the roof		1500

Note (1) **The terminal should be positioned so as to avoid products of combustion entering the building.**

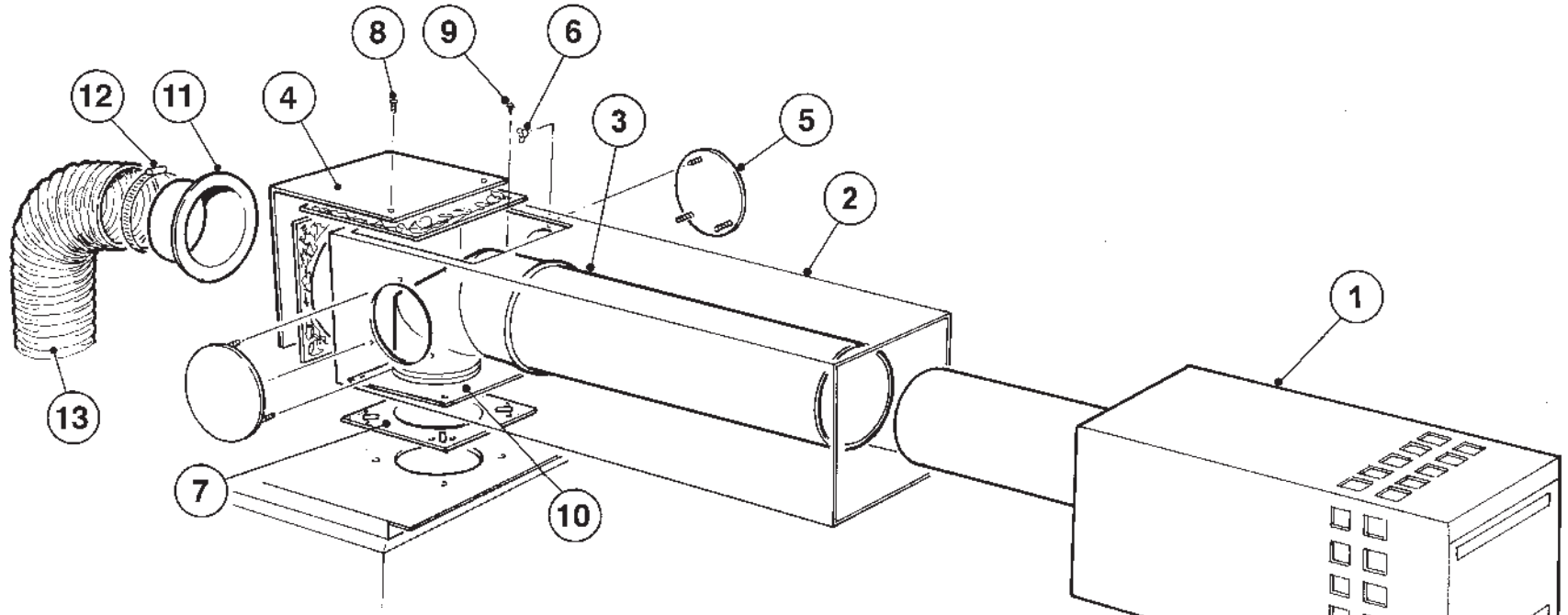
Note (2) **If the terminal is less than 2 metres above the ground level, balcony or place to which any person has access, the terminal must be protected by a guard.**

Note (3) **The flue must be positioned so that it does not cause nuisance and permits the dispersal of combustion products.**

*Scotland 1990

Fig 15

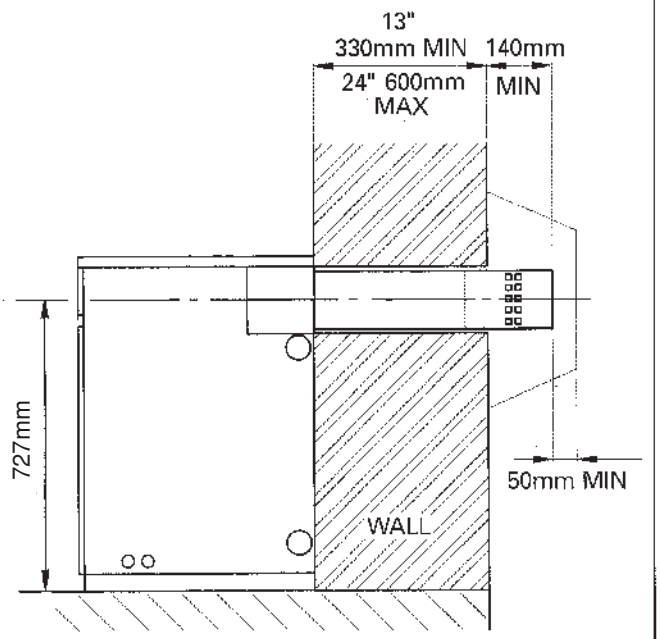
Fig 16



Item	Description	Part no.	No. Off
1	Flue terminal	208540	1
2	Flue Box	208555	1
3	Flue elbow	208547	1
4	Blanking plate	208554	1
5	Round sealing plates	208551	3
6	M4 wing nut	94380	9
7	Blanking plate gasket	208559	3
8	No. 6 x 12mm STS Hex. HD	91601	2
9	No. 6 x 12mm STS Pozi. HD	91523	6
10	Inner flue pipe spigot plate	208566	1
11	Air hose spigot	206933	1
12	Clip	95256	2
13	Hose	20693	1

- 208575 on 2271 kit only
- 221731 on 2271 kit only

2270 600mm Horizontal Telescopic BF Kit

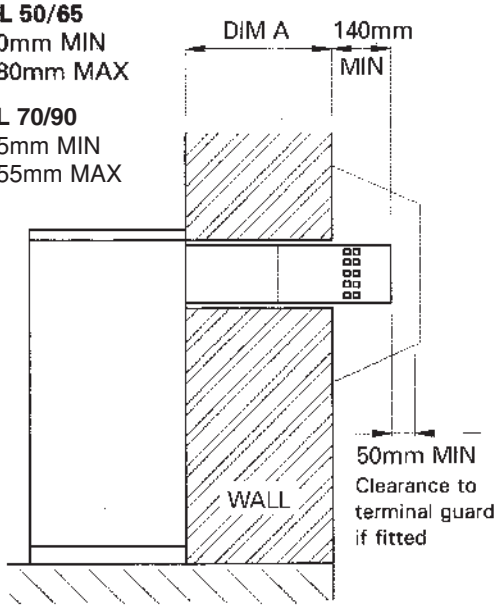


HOLE REQUIRED 170mm SQUARE
THROUGH WALL TO TAKE TERMINAL

REAR OUTLET

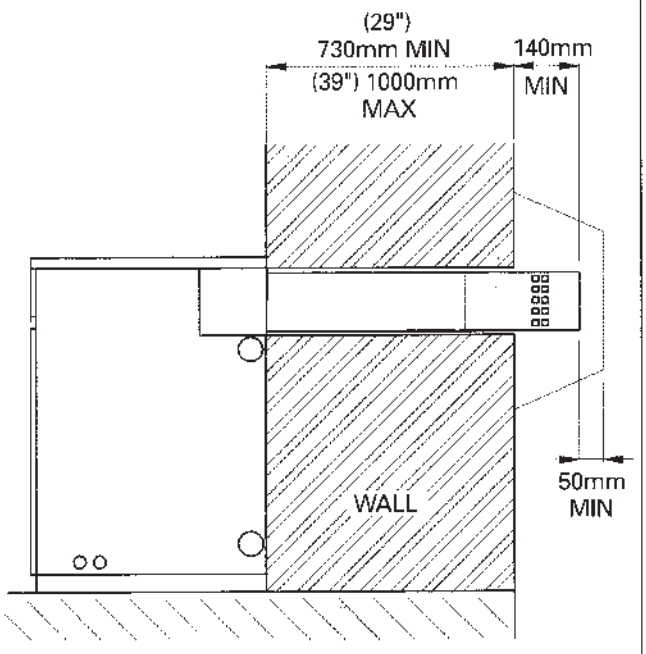
(Dimension 'A')
KIT 2270
MODEL 50/65
(8") 200mm MIN
(19") 480mm MAX

MODEL 70/90
(7") 175mm MIN
(18") 455mm MAX



SIDE OUTLET

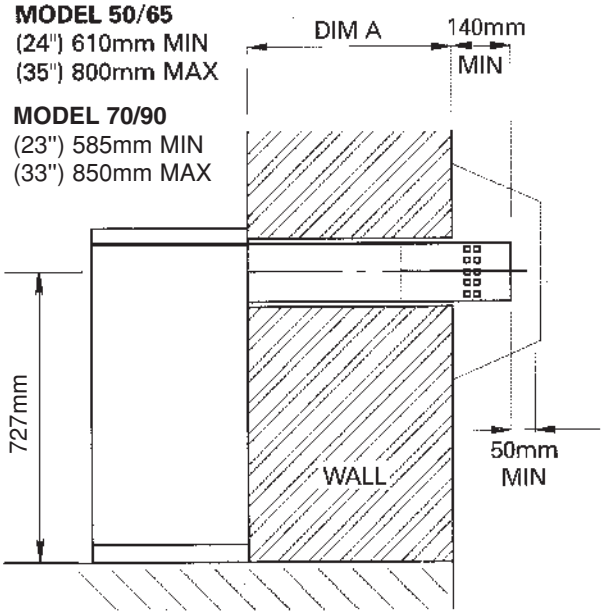
2271 1000mm Horizontal Telescopic BF Kit



REAR OUTLET

(Dimension 'A')
KIT 2271
MODEL 50/65
(24") 610mm MIN
(35") 800mm MAX

MODEL 70/90
(23") 585mm MIN
(33") 850mm MAX



SIDE OUTLET

Fig 17

Trianco flue kits are designed to incorporate the latest 'O'-ring seals.
Before commencing assembly, please make sure that all 'O'-rings seals are in position.

600mm HORIZONTAL TELESCOPIC BF KIT

ASSEMBLY METHOD (Fig 16/17)

1. Having decided the position of the boiler, cut a hole 170mm square in the wall.

2. Remove the top casing and the flue socket from the top of the boiler. Ensure that the gasket is on top of the boiler and then place the white flue box on top of the gasket. Fit the stainless steel flue spigot plate into flue box and screw to the top of the boiler, trapping the gasket and box in position.

3. Fit the flue elbow to the stainless steel pipe on the terminal. Slide the terminal into the flue box from the outside and locate the elbow over the spigot plate.

4. Measure from the face of the outside wall to the end of the terminal. Subtract 140mm. This will give the length that requires cutting from the terminal inner pipe.

5. Remove the terminal form the flue box, remove the elbow from the pipe and then cut the terminal pipe to the required length. Replace the elbow in the end of the pipe and slide the terminal into the flue box, locating the elbow securely onto the spigot.

6. When terminating from the rear of the boiler, fit the air hose spigot over the hole in the L-shaped blanking plate, securing it with the M4 wing nuts provided. When terminating from the side of the boiler, fit the air hose spigot to the side of the flue box.

7. Fit the L-shaped blanking plate to the flue box. Blank off the remaining holes with the round sealing plates, using silicone sealant and the M4 wing nuts.

8. Fit the air hose between the burner and the spigot on the flue box, securing it using the clips provided.

9. Close any gaps around the terminal on both sides of the wall and replace the top casing.

TERMINAL GUARDS

When the terminal is positioned where there is the possibility of accidental contact by persons, or of damage to the terminal, an approved guard is necessary.

Generally, exhaust 2 metres above ground level alleviates the necessity for a guard.

A suitable guard is available from Trianco,
part NO. 204123

1000mm HORIZONTAL TELESCOPIC BF KIT

ASSEMBLY METHOD (Fig 16/17)

1. Having decided the position of the boiler, cut a hole 170mm square in the wall.

2. Remove the top casing and the flue socket from the top of the boiler. Ensure that the gasket is on top of the boiler and then place the white flue box on top of the gasket. Fit the stainless steel flue spigot plate into the flue box and screw to the top of the boiler, trapping the gasket and box in position.

3. Fix the flue elbow to the stainless steel pipe on the terminal. Slide the terminal into the flue box from the outside and locate the elbow over the spigot plate.

4. Slide the terminal inwards over the elbow pipe until it is in the position required, making sure that there is a minimum distance of 140mm from the outside wall to the end of the terminal.

5. When terminating from the rear of the boiler, fit the air hose spigot over the hole in the L-shaped blanking plate, securing it with the M4 wing nuts provided. When terminating from the side of the boiler, fit the air hose spigot to the side of the flue box.

6. Fit the L-shaped blanking plate to the flue box. Blank off the remaining holes with round sealing plates, using silicone sealant and the M4 wing nuts.

7. Fit the air hose between the burner and the spigot on the flue box, securing it using the clips provided.

8. Close any gaps around the terminal on both sides of the wall and replace the top casing.

IMPORTANT: TO AID ASSEMBLY, IT IS NECESSARY TO APPLY A THIN BEAD OF LUBRICANT (E.G. WASHING - UP LIQUID OR VASELINE) TO ALL FLUE JOINTS THAT INCORPORATE 'O'- RING SEALS.

AS THE FLUE SYSTEM OPERATES UNDER POSITIVE PRESSURE, ALL FLUE JOINTS THAT DO NOT INCORPORATE 'O'- RING SEALS SHOULD BE SEALED WITH SILICONE SEALANT.

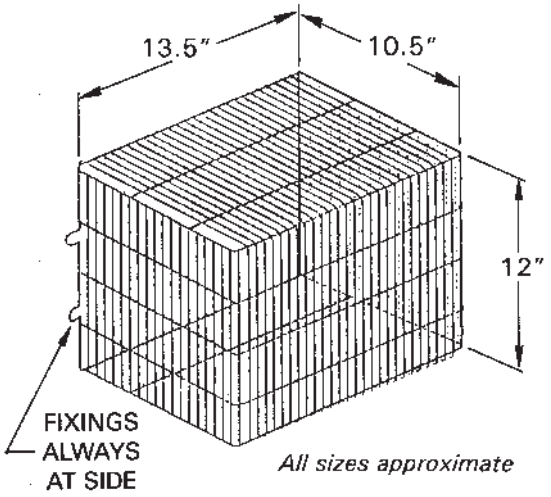
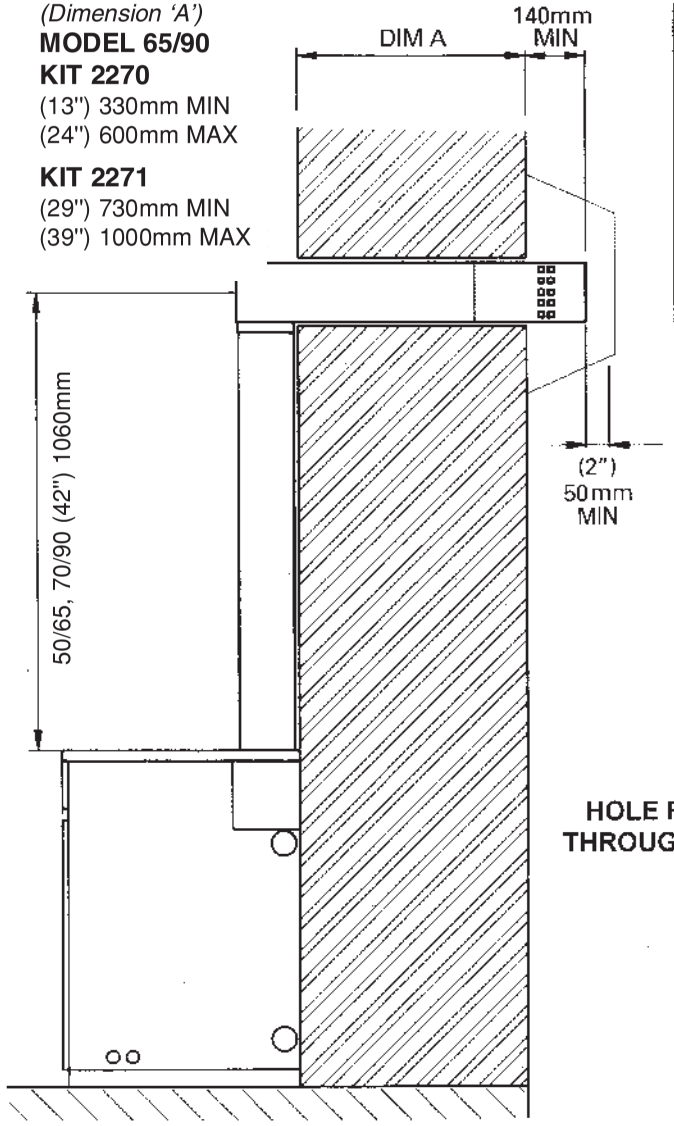


Fig 18

2272 HIGH LEVEL ADAPTOR KIT USED IN CONJUNCTION WITH 2270 OR 2271

(Dimension 'A')
MODEL 65/90
KIT 2270
(13") 330mm MIN
(24") 600mm MAX

KIT 2271
(29") 730mm MIN
(39") 1000mm MAX



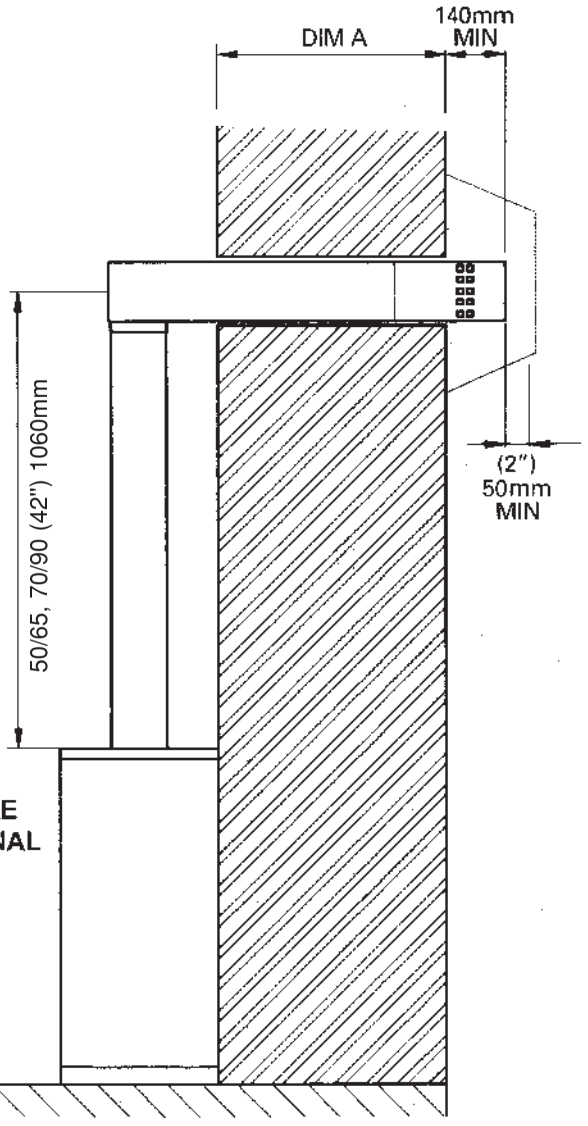
REAR OUTLET

(Dimension 'A')
MODEL 50/65
KIT 2270
(9") 200mm MIN
(19") 480mm MAX

KIT 2271
(24") 610mm MIN
(35") 890mm MAX

MODEL 70/90
KIT 2270
(7") 175mm MIN
(18") 455mm MAX

KIT 2271
(23") 585mm MIN
(33") 850mm MAX



SIDE OUTLET

HOLE REQUIRED 170mm SQUARE THROUGH WALL TO TAKE TERMINAL

Trianco flue kits are designed to incorporate the latest 'O'-ring seals.
Before commencing assembly, please make sure that all 'O'-rings seals are in position.

ASSEMBLY METHOD (Fig 18/19) - High Level Adaptor Kit used with 600mm Horizontal Telescopic BF Kit

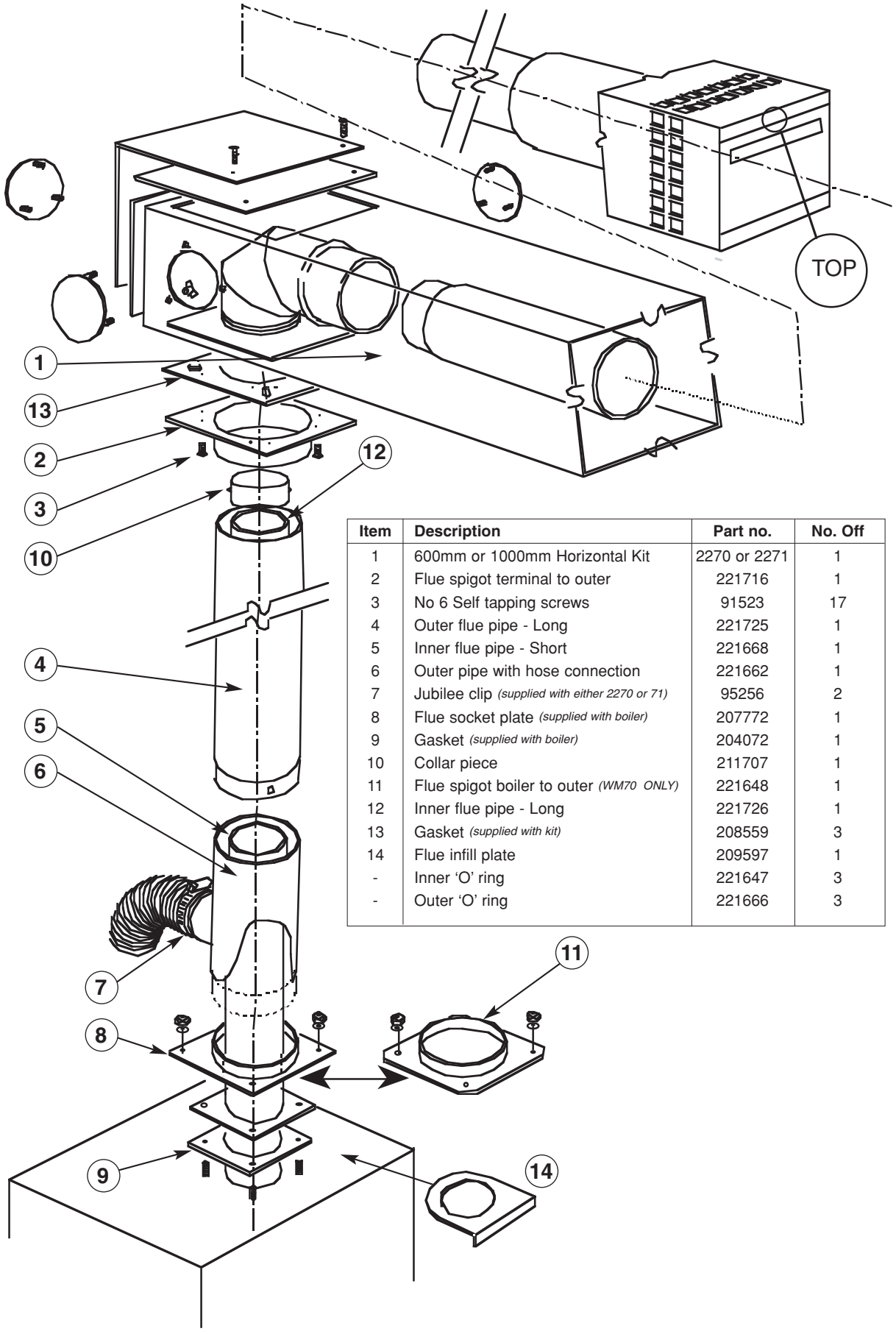
1. Having decided the position of the boiler, cut a 170mm square hole in the wall.
2. Take the collar piece and slide onto the top inner flue pipe (identified by *lack* of plate connection piece at base), making sure that the stop pieces are closest to the top of the collar. Line up the holes in the collar with the holes in the flue pipe and screw the collar into position using self-tapping screws.
3. Remove the top casing and remove the spigot plate from the top of the boiler. Place gasket on top of the boiler and then the inner flue pipe over the gasket. Use spigot plate (previously removed) as a clamping plate. Screw it down on top of the boiler, trapping the pipe and gasket in position.
4. Place outer lower pipe (identified by hose connection piece) over inner lower pipe (identified by flat spigot connection at base) and fit onto spigot plate.
5. Fit top inner flue pipe to lower flue pipe, using holes provided. Fit outer pipes together in same manner. making sure that top outer and inner pipes are level with each other.
6. Take the flue box and to the underside of the box (identified by twelve holes around the square cut out), fit the flue pipe spigot and gasket.
7. Slide the flue box through the cut out in the wall and locate outer flue pipe to the spigot on the flue box.
8. Fix flue elbow onto flue box inner pipe and slide terminal into the flue box from outside, locating elbow over collar piece.
9. Measure from the face of the outside wall to the end of the terminal and subtract 140mm. This will give the length of pipe to be cut off of the flue terminal inner pipe.
10. Remove the flue terminal from the flue box and remove the elbow. Cut the terminal inner pipe to the desired length and reassemble flue.
11. Fit round sealing plate in position on flue box using silicone sealant and M4 wing nuts.
12. Fit round sealing plate onto blanking plate and secure using four self-tapping screws.
13. Make good wall inside and outside.
14. Use clip provided to secure air hose from burner to connection on flue pipe.
15. Replace top casing.

ASSEMBLY METHOD (Fig 18/19) - High Level Adaptor Kit used with 1000mm Horizontal Telescopic BF Kit

1. Having decided the position of the boiler, cut a 170mm square hole in the wall.
2. Take the collar piece and slide onto the top inner flue pipe (identified by *lack* of plate connection piece at base), making sure that the stop pieces are closest to the top of the collar. Line up the holes in the collar with the holes in the flue pipe and screw the collar into position using self-tapping screws.
3. Remove the top casing and remove the spigot plate from the top of the boiler. Place gasket on top of the boiler and then the inner flue pipe over the gasket. Use spigot plate (previously removed) as a clamping plate. Screw it down on top of the boiler, trapping the pipe and gasket in position.
4. Place outer lower pipe (identified by hose connection piece) over inner lower pipe (identified by flat spigot connection at base) and fit onto spigot plate.
5. Fit top inner flue pipe to lower flue pipe, using holes provided. Fit outer pipes together in same manner, making sure that top outer and inner pipes are level with each other.
6. Take the flue box and to the underside of the box (identified by twelve holes around the square cut out), fit the flue pipe spigot and gasket.
7. Slide the flue box through the cut out in the wall and locate outer flue pipe to the spigot on the flue box.
8. Slide telescopic inner flue pipe over inner flue pipe of flue terminal. Fix flue elbow onto end of telescopic inner pipe and slide terminal into the flue box from outside, locating elbow over collar piece.
9. Push terminal inwards. A minimum dimension of 140mm from the wall to the end of the terminal is required.
10. Fit round sealing plate in position on flue box using silicone sealant and M4 wing nuts.
11. Fit round sealing plate onto blanking plate and secure using four self-tapping screws.
12. Make good wall inside and outside.
13. Use clip provided to secure air hose from burner to connection on flue pipe.
14. Replace top casing.

Supplied with the kit are two spigots. Use the spigot that does *not* have chamfered corners. The other spigot is not required for this installation. Each vertical section of pipe has a different diameter. The lowermost pipes have the smallest diameter, the uppermost the largest.

To aid assembly, it is necessary to apply a thin bead of lubricant (e.g. washing up liquid or Vaseline) to all flue joints that incorporate 'O'-ring seals. As the flue system operates under positive pressure, all flue joints that *do not* incorporate 'O'-ring seals should be sealed with silicone sealant.



Item	Description	Part no.	No. Off
1	600mm or 1000mm Horizontal Kit	2270 or 2271	1
2	Flue spigot terminal to outer	221716	1
3	No 6 Self tapping screws	91523	17
4	Outer flue pipe - Long	221725	1
5	Inner flue pipe - Short	221668	1
6	Outer pipe with hose connection	221662	1
7	Jubilee clip *(supplied with either 2270 or 71)*	95256	2
8	Flue socket plate *(supplied with boiler)*	207772	1
9	Gasket *(supplied with boiler)*	204072	1
10	Collar piece	211707	1
11	Flue spigot boiler to outer *(WM70 ONLY)*	221648	1
12	Inner flue pipe - Long	221726	1
13	Gasket *(supplied with kit)*	208559	3
14	Flue infill plate	209597	1
-	Inner 'O' ring	221647	3
-	Outer 'O' ring	221666	3

Fig. 19 2272 UNIVERSAL HIGH-LEVEL B/F ADAPTOR KIT

Vertical Balanced Flue Kit

The vertical balanced flue kit is designed to be telescopic in nature and incorporates the latest 'O'ring seals. It is therefore unnecessary for any 'cutting down' of pieces to the required size.

Please note that to facilitate the connection process, each section of pipe has a different diameter. The lowermost pipes have the smallest diameter, the size increasing with each subsequent section of pipe. The lowermost pipes are also the shortest, with the susequent inner and outer sections being the next shortest. The next sections are all the same length, however the highest inner and outer pipes have a single hole at the top above the 'O' ring seal. Before commencing the assembly process, please make sure that you have correctly identified the placement of each pipe section and that all 'O' ring seals are in position.

ASSEMBLY METHOD (Fig.20/21)

1. Having secured the boiler in position cut a hole 175mm diameter or square in the ceiling and roof.

2. Remove top casing of boiler and remove the flue socket from the top of the boiler body.

3. Determine the flue length required, ensuring that the top outer flue pipe will finish above the roof flashing line. If possible, pre-assemble the entire flue on a flat surface. Use the pre drilled holes at the base of each pipe to drill 2.8mm diameter holes near the top of each pipe for use with the self-tapping screws.

Note: The lowermost inner pipe will protrude from the top of the lowermost outer pipe by approximately 40mm to ensure easy accessibility when fixing the inner pipes together. The bottom sections already have pre-drilled holes, located near to the top of the pipes.

The flue spigot plate must fit over the inner lower pipe before the outer lower pipe is put in position.

The flue infill plate is placed on the top casing (once replaced), however it should be fitted around the outer pipe before the full flue is assembled.

4. If possible to do so, lift the entire assembled flue through the ceiling and secure in position on top of the boiler.

5. Fasten down with existing nuts and washers. If this is not possible, then fit the flue piece by piece, being aware that none of the flue joints should be situated within the joist space.

Note: The air inlet holes on the terminal must not be blocked on the outside, or on the inside by the upper flue pipe.

6. Fit ceiling plate centrally over hole, ensuring that the outer flue pipe has a minimum clearance of 25mm from any combustible material. Pack space with glass fibre insulation.

7. Fix pipe bracket (where necessary) to roof space and fit waterproof flashing (not supplied) around outer flue pipe at roof line.

8. Fit clamping strap (supplied) around joint line of terminal and upper flue pipe. Use foam sealing strip inside clamping strap.

9. Fit the apron cravat (air inlet cover) to the terminal using 4 self-tapping screws (supplied).

10. Use clip provided to secure air hose from burner to connection on the outer lower pipe.

11. Replace top casing.

IMPORTANT: FLUE SEALING

TO FIT FLUE PIPES TOGETHER THAT INCORPORATE 'O' RING SEALS, IT IS ESSENTIAL TO APPLY A THIN BEAD OF LUBRICANT (E.G. WASHING UP LIQUID, VASELINE) AROUND ALL RUBBER SEALING RINGS.

AS THE FLUE SYSTEM OPERATES UNDER POSITIVE PRESSURE, IT IS ESSENTIAL TO ACHIEVE A TOTAL SEAL ON FLUE JOINTS. APPLY A THIN BEAD OF SILICONE SEALANT AROUND THE BASE OF FLUE PIPE BEFORE INSERTING INTO BOILER SPIGOT.

EXPOSED PIPE:

ANY PIPE EXPOSED TO THE ELEMENTS SHOULD BE PROTECTED WITH A SUITABLE MATERIAL. WHEN ASSEMBLING THIS KIT, PLACE ALL WELD SEAMS TO THE REAR.

2273 Vertical Balanced Flue Kit

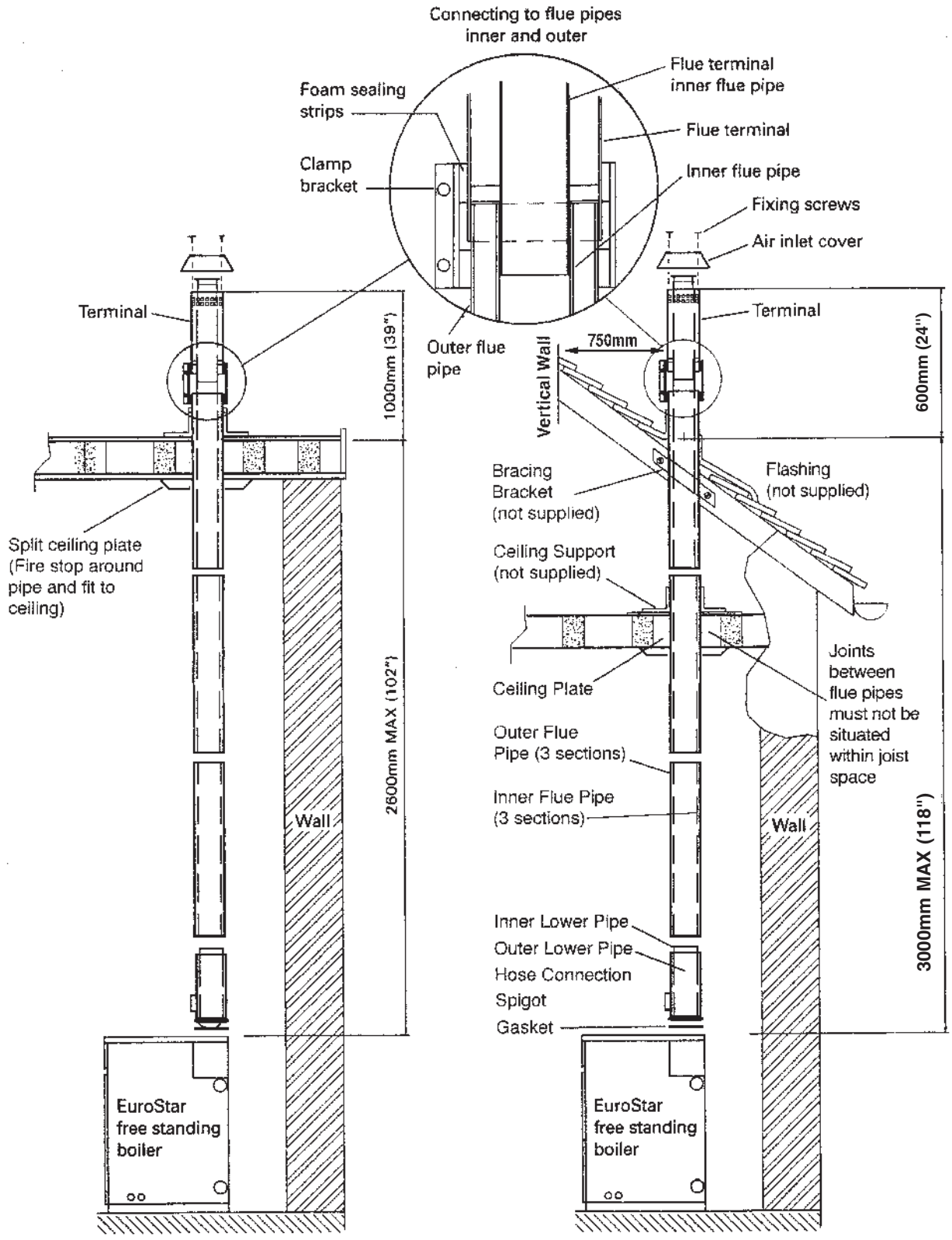
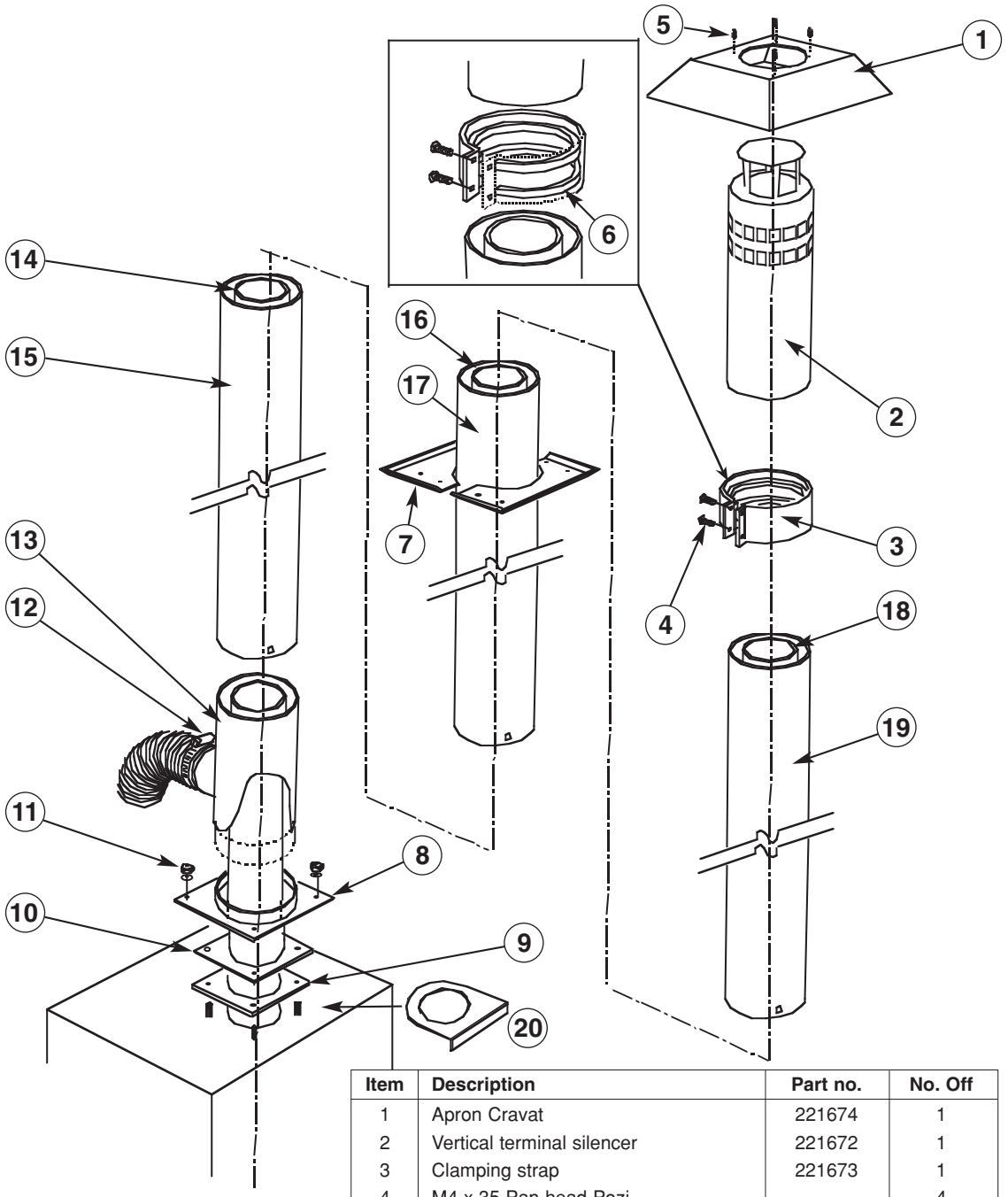


Fig 20

2273 VERTICAL B/F KIT



Item	Description	Part no.	No. Off
1	Apron Cravat	221674	1
2	Vertical terminal silencer	221672	1
3	Clamping strap	221673	1
4	M4 x 35 Pan head Pozi	-	4
5	No. 8 Self tapping screw	-	4
6	Silicone sponge	98112	2pcs
7	Ceiling plate half	208583	2
8	Flue socket plate *(supplied with boiler)*	207772	1
	Flue socket plate *(WH70 only)*	221648	1
9	Gasket *(supplied with boiler)*	204072	1
10	Inner pipe bottom lower section	221668	1
11	M6 nuts & washers	-	4
12	Jubilee clip	95256	2
13	Outer flue pipe with hose connection	221662	1
14	Inner pipe lower section	221726	1
15	Outer pipe lower section	221725	1
16	Inner pipe middle section	221669	1
17	Outer pipe middle section	221665	1
18	Inner pipe top section	221670	1
19	Outer pipe top section	221667	
20	Flue infill plate	209597	1
-	Inner 'O' ring	221647	4
-	Outer 'O' ring	221666	4

FIG. 21
UNIVERSAL VERTICAL BALANCED FLUE KIT

7 COMMISSIONING

Open the CH flow and CH return valves. Remove the front casing panel by pulling away the top and lifting clear of the bottom retaining tabs. Pull off the casing top panel form the spring pins.Fill the system with water using one of the approved methods in Section 3 to about 2.0 bar. Vent the system via the radiator valves and system air vents in accordance with normal practice.

The water system must be thoroughly flushed out, initially with cold water, ensuring that all valves are open. Refill the system and vent all air from the system to ensure removal of all air locks (including the pump).

Examine the system for water leaks, after pressurising to 1.5 bar - rectify where necessary. At this stage the operation of the safety valve should be checked by allowing the water pressure to increase until the valve operates - this should be between 2.7 bar and 3.3 bar.

Release the cold water to achieve the initial (cold fill) system design pressure. The marker on the pressure gauge should be set to the initial design pressure.

Note: Special care is required where the boiler is used on an old system, which should be drained and flushed out, using the correct cleaning/flushing agent, ensuring that all radiators are drained. The use of a corrosion inhibitor suitable for copper based boilers is recommended.

It is essential that the boiler/burner unit is commissioned by a qualified technician, preferably OFTEC trained and registered.

It is the responsibility of the installer to ensure the boiler is properly commissioned, failure to do so will make the boiler and any extended warranty invalid.

Although all burners are factory tested before despatch, they will usually need further air adjustment to achieve the readings indicated in 'Burner detail leaflet' because of site variations in flue draught and back pressure.

Procedure

1. Switch off all electrical supply to boiler.
2. Ensure boiler is full of water and all valves are open.
3. Remove flue-cover and check that flue-baffles are correctly positioned (see Fig. 22 for baffle arrangement).
4. Disconnect oil hose from burner, open shut-off valve and run off a quantity of oil into a container to check for a clean air free supply then reconnect the hose. (This applies to a single pipe gravity system only).
5. Check that the time-switch (if fitted) is in the ON position and room and boiler thermostats are calling for heat.
6. Switch on electrical supply and the burner should start.

Note : The burner may lock-out on first firing due to air in the pump, if this happens, wait about a minute before pressing reset button to restart burner. If a further lock-out occurs, the air should be bled form the pump pressure gauge connection.

7. Start and stop the burner two or three times until; the flame cuts off sharply - this indicates any remaining air has been dispersed.
8. Allow the burner to run for about 15 minutes, then take a CO_2 reading through the sampling hole in the flue cover . Compare the reading with that given under 'Burner Settings' and adjust the air setting if necessary to achieve the required CO2%. Also, check smoke, flue gas temperature and pump pressure which may be found in the 'Burner Details' leaflet.

Handing Over

After completing the boiler installation, the installer should make a thorough check of the system to ensure it is completely satisfactory and demonstrate to the user the operation of the boiler and any system controls.

All instructions should be handed to the user for retention and advice regarding the need for annual servicing. Guarantee should be completed and returned.

8. SERVICING

IMPORTANT: ISOLATE ELECTRICAL SUPPLY TO THE BOILER BEFORE SERVICING

To maintain the boilers high thermal efficiency and reliable operation, it should be serviced annually by a qualified engineer preferably OFTEC trained and registered. Electrical work should be carried out by a qualified engineer.

Note: It is a requirement of the boiler's guarantee that an annual service is carried out by a qualified engineer.

If the boiler is used to provide central heating and hot water all year round, the best time for its annual service is just before the start of the heating season. Where the boiler is shut down for the summer months, the service should be carried out as soon as possible after the end of the heating season.

Oil tank
Open drain-cock to draw off any accumulated water and sludge.

Line filters
Turn off oil supply and remove filter bowl. Wash filter element clean with kerosene.

Servicing the Burner
See separate leaflet 'Burner Details'.

Servicing the Boiler
(Burner removed)

1. Remove the flue-cover and lift out flue-baffles (See diagram below).
2. Brush all deposits from flue-baffles and internal surfaces of the boiler.
3. Remove flue deposits from the combustion chamber floor using a vacuum cleaner.
4. Replace flue baffles in the correct arrangement (See diagram below for order of assembly). Refit the flue-cover and fully tighten wing-nuts to make a gas tight seal.
5. Refit burner to boiler, connect flexible air hose (balanced flue boilers only) and plug-in burner lead.
6. Turn on oil supply, switch on electricity and burner should fire.
7. Finally check the combustion readings with those given under 'Burner Settings' and make any air or pressure adjustments necessary.

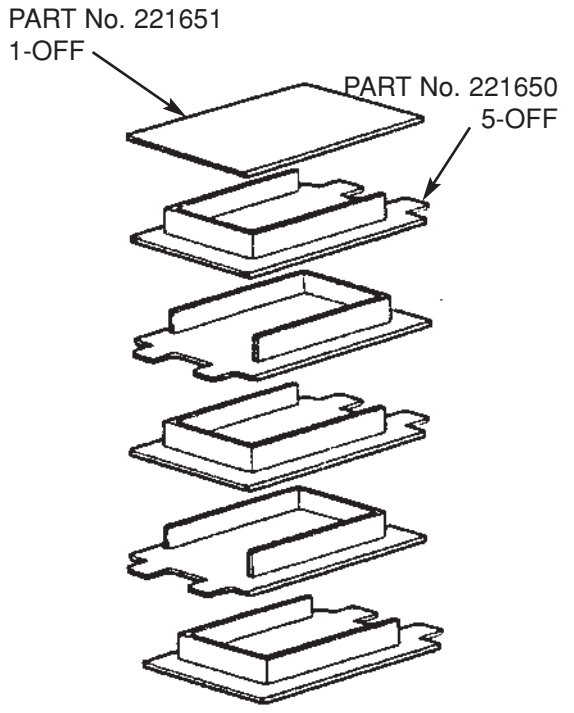


Fig 22

Combi 65 Baffle Arrangement

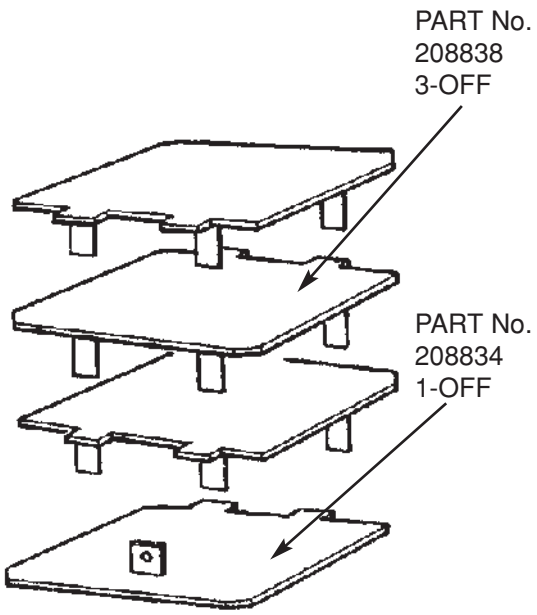


Fig 22a

Combi 90 Baffle Arrangement

9. FAULT FINDING

Burner

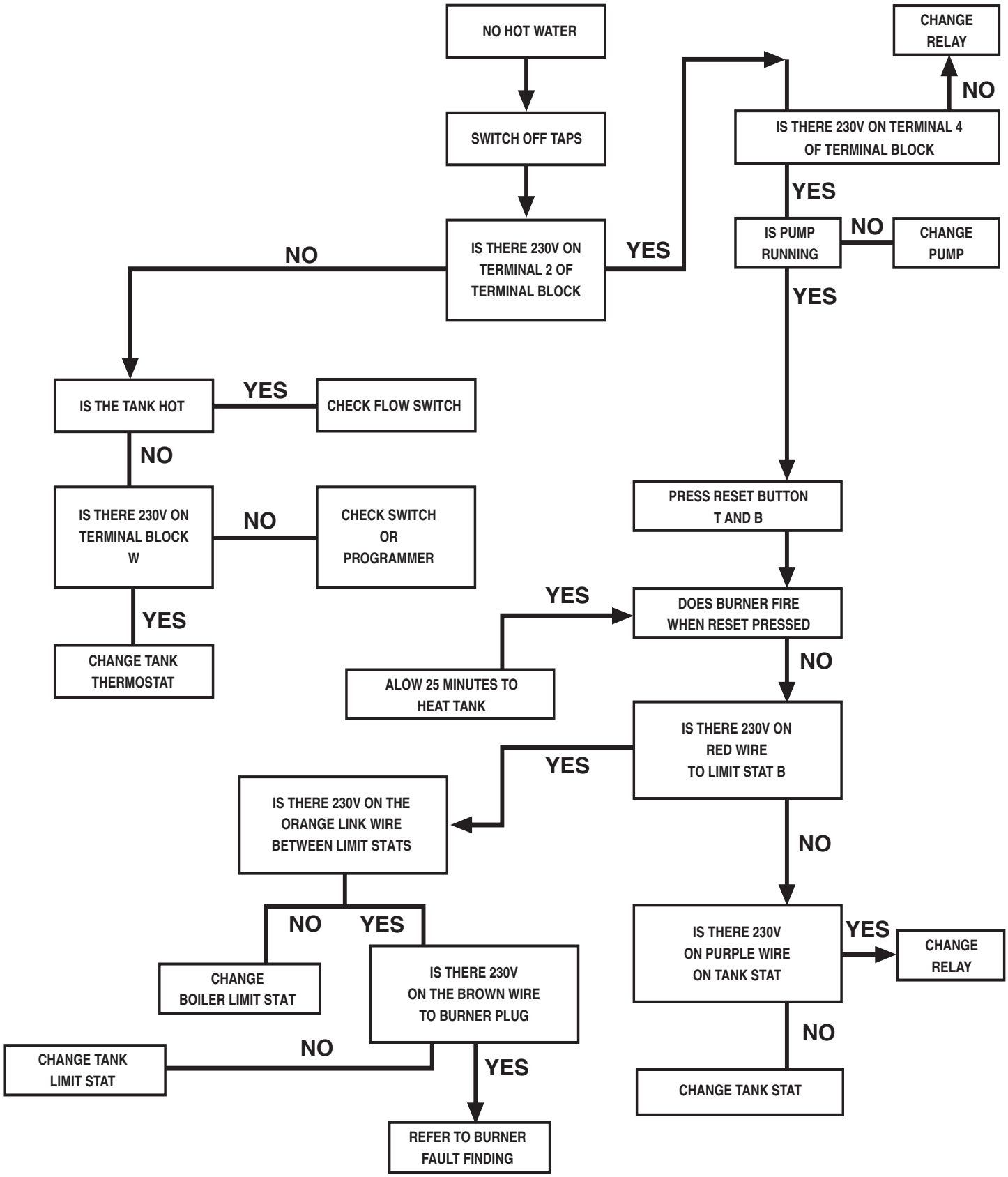
ELECTRICITY SUPPLY - before making any electrical checks, switch off mains supply to boiler.

FAULT	POSSIBLE CAUSE	ACTION
BURNER FAILS TO START	Control box locked out - Light on	Press control box reset button NB only try twice
	Limit-stat tripped	Press reset button under control panel and check function of boiler control thermostat.
	Boiler thermostat or other system controls satisfied.	Ensure all controls are calling for heat.
	Fuse blown	Fit new 5 amp fuse, if it blows again, check for short circuit in wiring.
	Check for live supply continuity up to burner	If live supply confirmed, change control box.
	Motor or pump seized	Check for rotation and replace as necessary.
BURNER STARTS BUT FLAME NOT ESTABLISHED	No oil supply	Check oil level in tank and feed to burner.
	Photo-cell not seeing flame	Clean photo cell and ensure it is fully plugged in.
	Air trapped in pump	Bleed air through pressure gauge tapping.
	Solenoid valve faulty	Check coil for continuity and replace if faulty.
	Nozzle blocked	Replace nozzle with one of same specification.
	Electrodes incorrectly set	Reset gap and position electrodes as shown in burner diagram.
	Electrode insulator cracked	Check and replace if insulator cracked or crazed.
	Ignition transformer and H.T. leads faulty contacts	Check for spark and condition of H.T. contacts. Replace as necessary.
	Low oil pressure	Check pump pressure and adjust to correct setting.
FLAME ESTABLISHED BUT BURNER LOCKS OUT AFTER FEW SECONDS	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank.
	Oil filter partially blocked	Wash filter clean with kerosene.
	Photo cell fault	Clean photo-cell and ensure it is fully plugged in. Replace if faulty.
	Oil pressure low	Check pump pressure and adjust to correct setting.

FAULT	POSSIBLE CAUSE	ACTION
POOR FLAME CUT-OFF	Air in pump or at back of nozzle	Bleed pump through pressure gauge port, also check for leaks in oil line if 2-pipe system.
	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank.
	Dirt in solenoid valve	Clean or replace valve.
	Pump shut-off piston sticking	Replace pump.
MORNING START LOCK-OUT	Faulty non-return valve or air leak in two pipe system	Replace non-return valve and cure leak.
	Low voltage	Check with Electricity Board.
	Combustion readings incorrect	Check combustion under normal running conditions and compare readings with those given under 'Burner Settings'.
	Oil level in tank falling below burner	Raise tank or fit a 2-pipe system.
DELAYED IGNITION - BURNER PULSATES ON START UP	Nozzle partially blocked	Replace nozzle
	Oil pressure too low	Check and recommission
	Flue blocked or damaged	Check and rectify
	Fan slipping on shaft	Check and retighten
	Pump coupling loose or worn	Check and replace
BURNER STARTS VIOLENTLY	Delayed ignition	Check electrode setting and adjust to correct gap Check electrode for damage Check H.T. leads for damage and positive connection

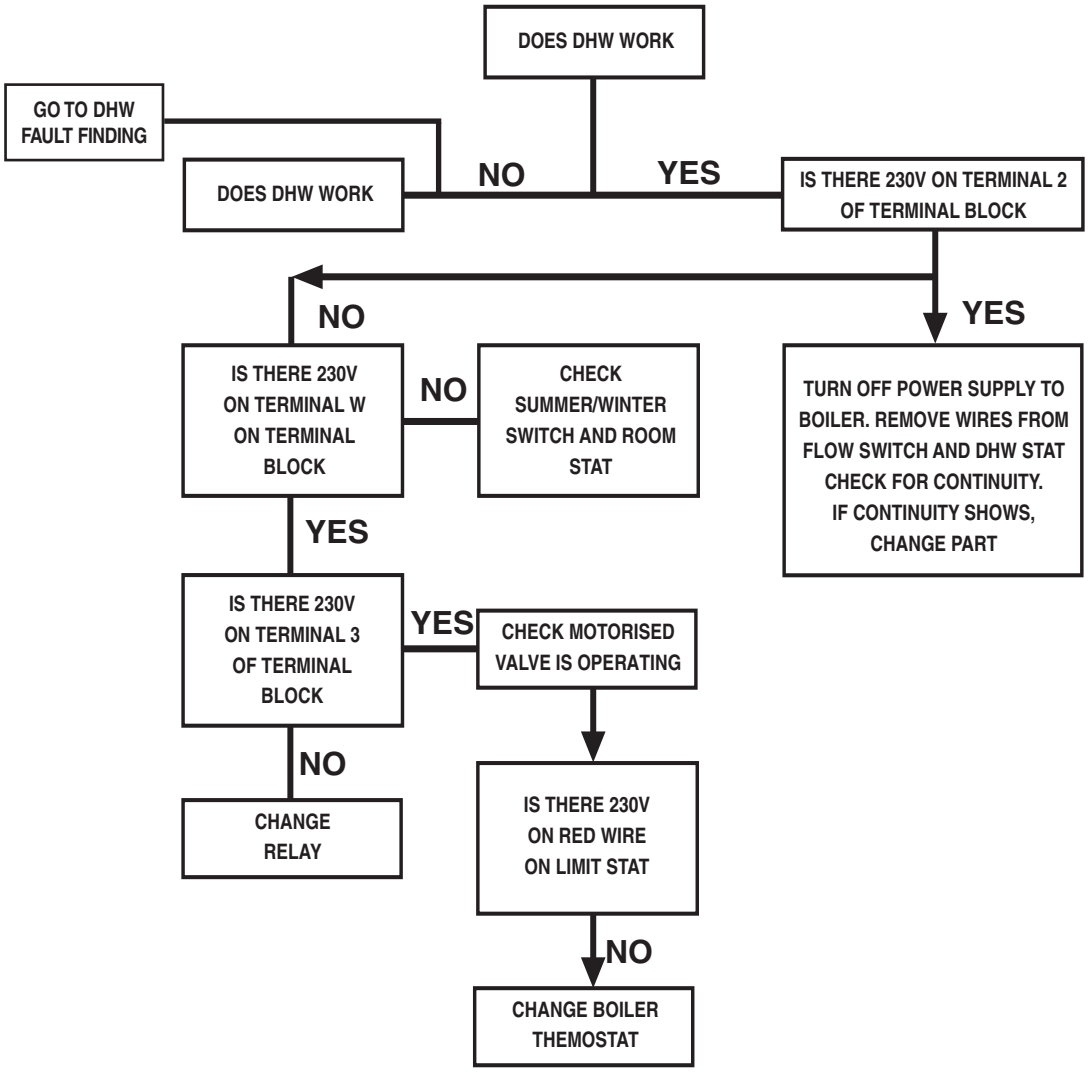
Hot Water Fault Finding

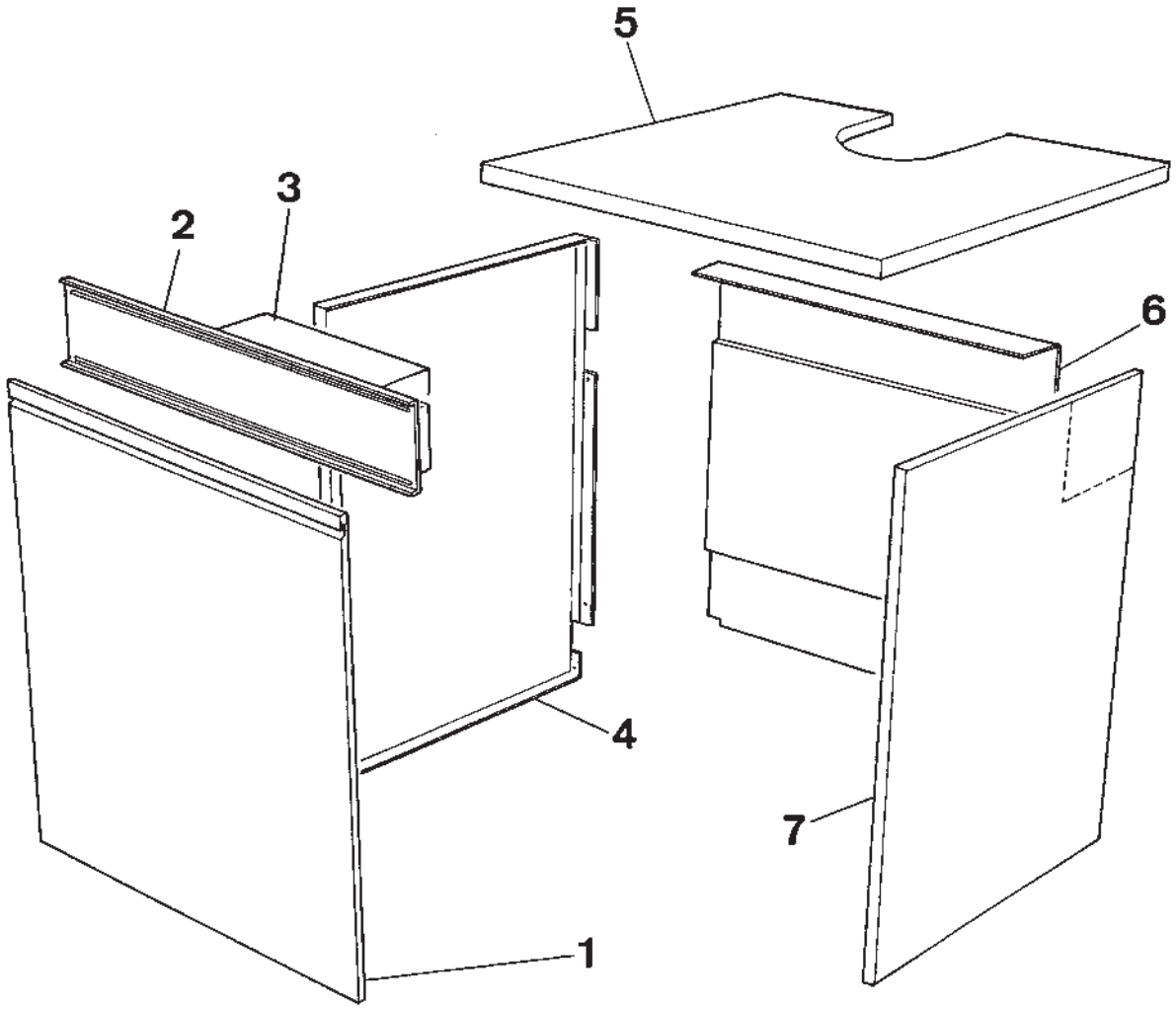
Turn to HW only switch DHW stat to max
Allow 25 minutes from initial switch on for tank to heat



Central Heating Fault Finding

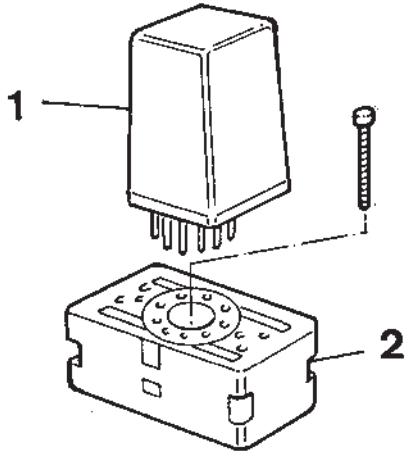
Allow 25 minutes from initial switch on for tank to heat

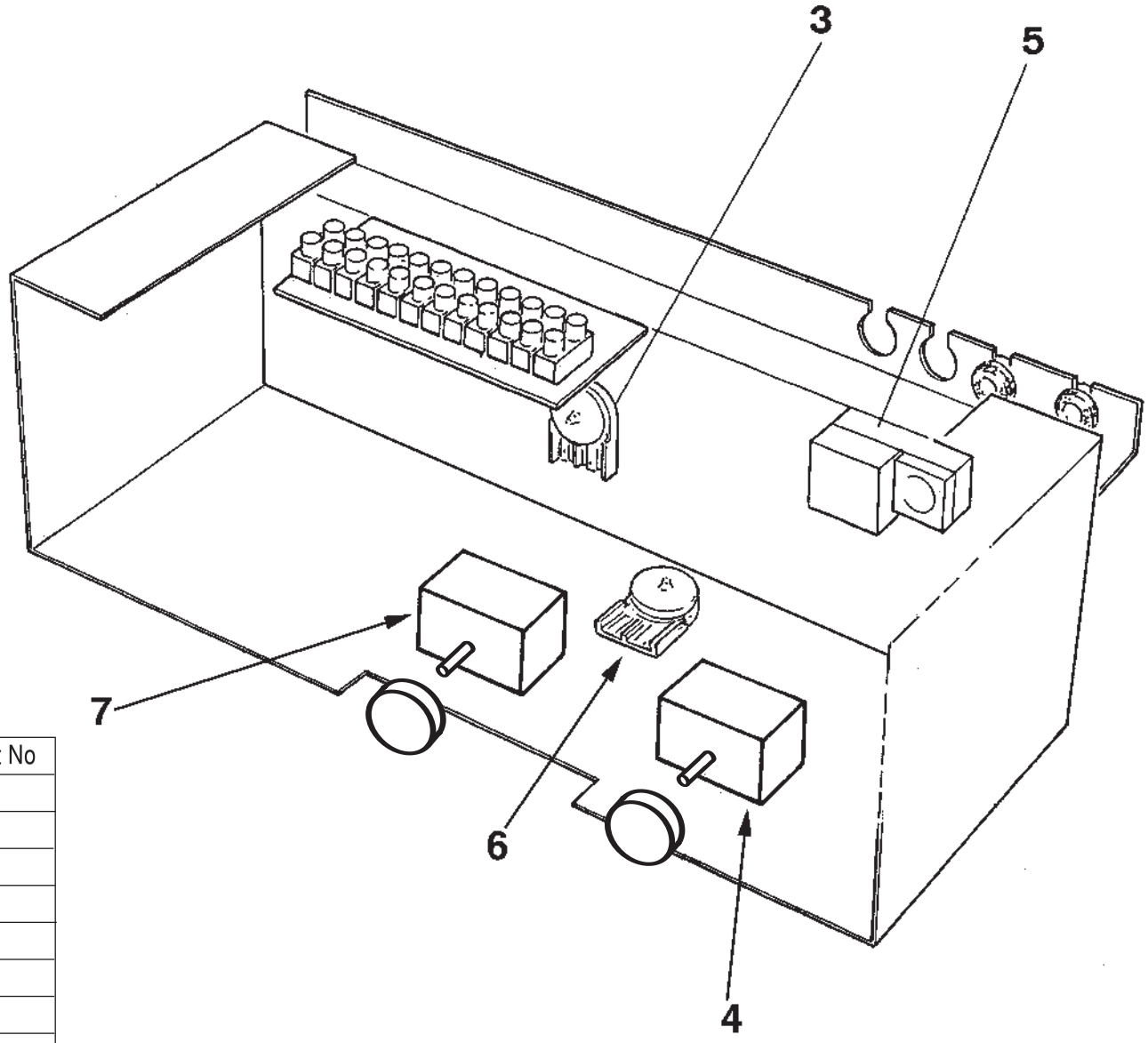




Casing Assembly

Item	Description	50/65	70/90
1	Door Assembly	222331	222321
2	Control Facia Assembly	222334	222324
3	Control Box Assembly	221599	221599
4	Side Casing Assembly L/H	209888	209888
5	Top Panel Assembly	208730	208100
6	Back Panel	208734	208129
7	Side Casing R/H Assembly	209889	209889

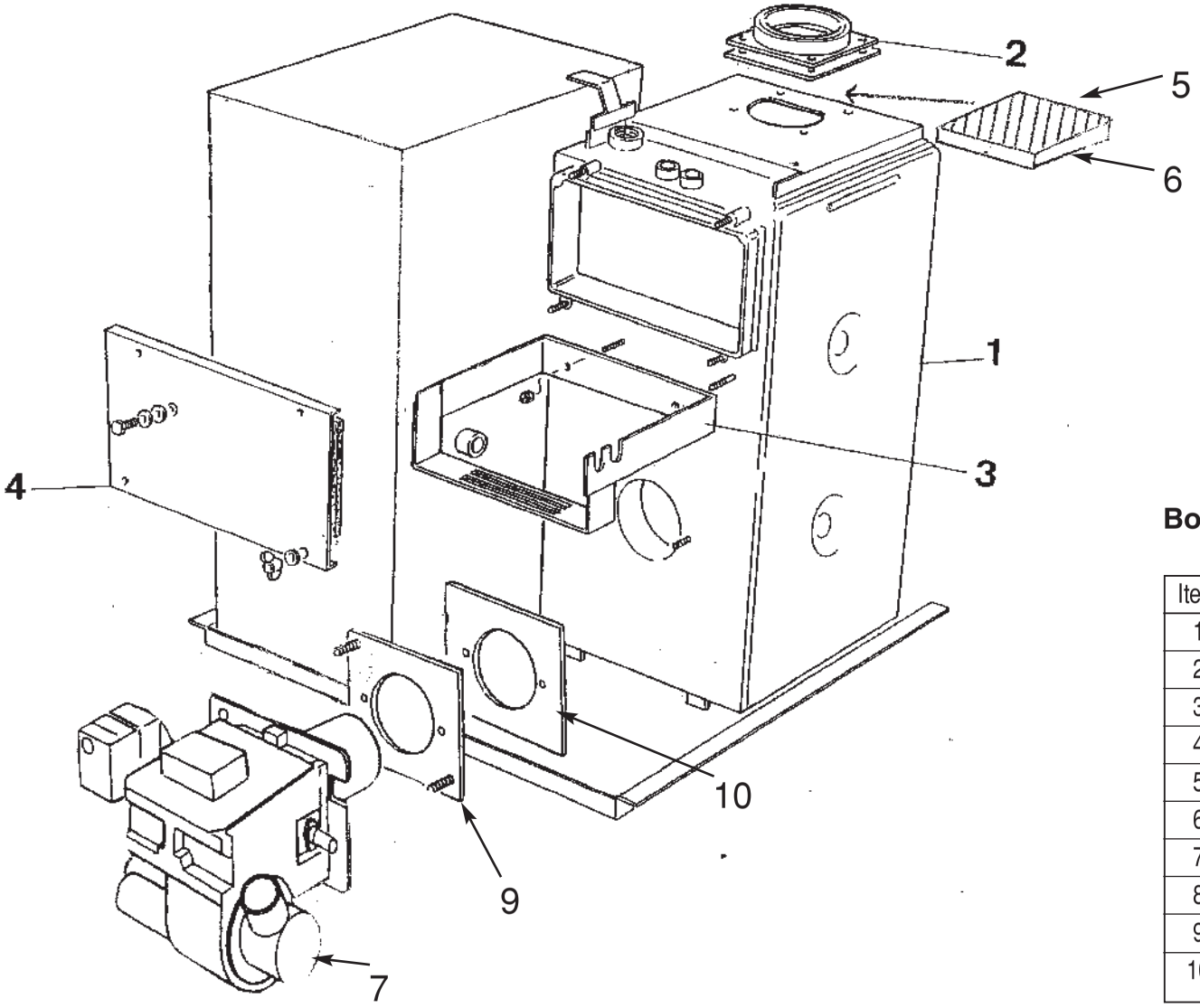




Control Box Assembly

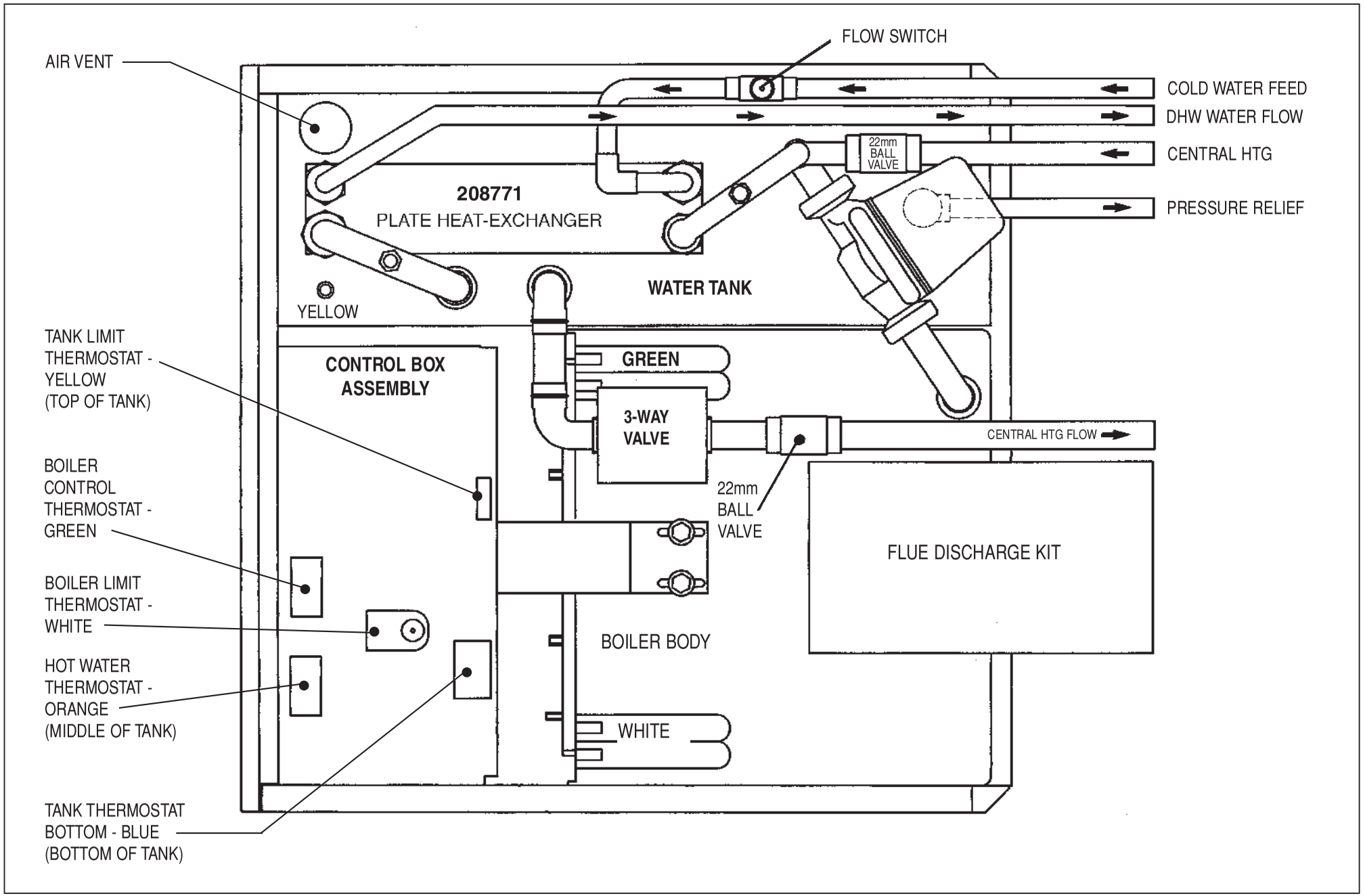
Item	Description	Trianco Part No
	Control Box Assembly	221599
1	Relay	54572
2	Relay Base	501765
3	Tank Limit Stat	208096
4	DHW Stat	221572
5	Tank Stat	500039
6	Boiler Limit Stat	206892
7	Boiler Control Stat	206896
8	Programmer	207110 not shown

SEE PAGE 32 FOR BAFFLE CONFIGURATIONS



Boiler Parts

Item	Description	50/65	70/90
1	Boiler & Tank W.U.	208750	209750
2	Flue Spigot	207772	207772
3	Expansion Vessel Bracket	207274	207274
4	Flue Cover	208780	208803
5	Flue Mount	222219	222219
6	Flue Mount Insulation	222197	222197
7	Burner Assembly	221300	221330
8	Oil Line (not shown)	207019	207019
9	Burner Mounting Gasket	221173	208799
10	Burner Mounting Flange	221333	-


AIR VENT
FLOW SWITCH
COLD WATER FEED
DHW WATER FLOW
CENTRAL HTG
PRESSURE RELIEF
22mm
BALL
VALVE
208771
PLATE HEAT-EXCHANGER
WATER TANK
YELLOW
TANK LIMIT
THERMOSTAT -
YELLOW
(TOP OF TANK)
CONTROL BOX
ASSEMBLY
GREEN
3-WAY
VALVE
CENTRAL HTG FLOW
22mm
BALL
VALVE
BOILER
CONTROL
THERMOSTAT -
GREEN
FLUE DISCHARGE KIT
BOILER LIMIT
THERMOSTAT -
WHITE
BOILER BODY
HOT WATER
THERMOSTAT -
ORANGE
(MIDDLE OF TANK)
WHITE
TANK THERMOSTAT
BOTTOM - BLUE
(BOTTOM OF TANK)

By appointment to H.M. Queen Elizabeth
The Queen Mother
Manufacturers of Domestic Boilers

TRIANCO

TRIANCO LIMITED
Thorncliffe, Chapeltown, Sheffield S35 2PH
Tel: Sheffield (0114) 257 2300
Fax: (0114) 257 1419
www.trianco.co.uk

OFTEC

Trianco Limited's policy is one of continuous research and development. This may necessitate alterations to this specification.

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