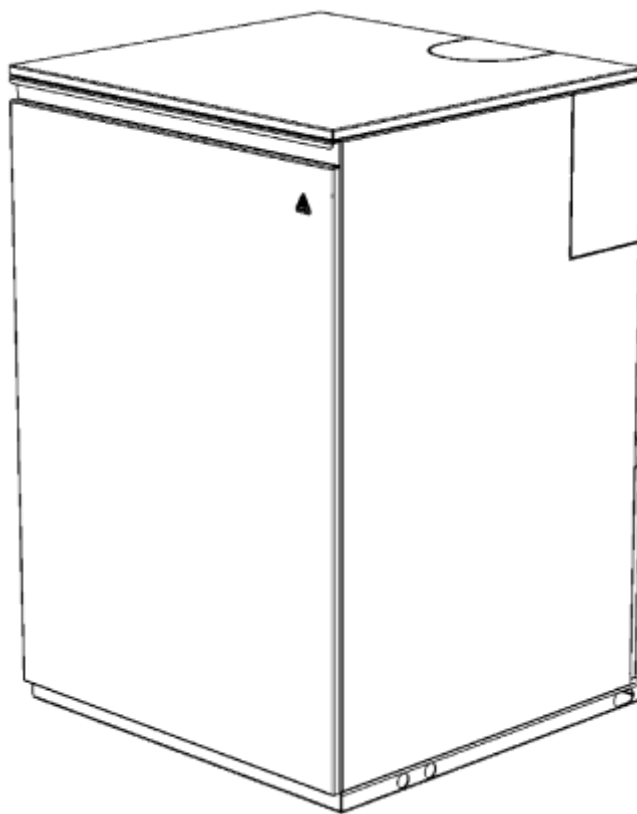




TRIANCO COMBI 15/20 & 20/26 BAND A

For Balanced or Conventional Flue



OPERATION, INSTALLATION, COMMISSIONING AND SERVICING INSTRUCTIONS

**Please read these instructions carefully before installing,
Commissioning and using this appliance.**

To be retained by the householder.

CONTENTS	PAGE
HEALTH AND SAFETY INFORMATION	3
HOW TO USE YOUR BOILER	4
Boiler and System Control	4
Oil	4
Simple Fault Finding	4
Commissioning and Servicing	4
AFTER SALES SERVICE INFORMATION	6
TECHNICAL INFORMATION	7
Outline Dimensions	8
Technical Data	9
Pump Curve	10
Wiring Diagram	11
INSTALLATION	12
Regulations	12
Health and Safety	12
Siting the Boiler	12
Combustion Air Conventional Flue	13
Ventilation for Conventional Flue Boiler	14
Water Systems	14
Water Systems Connection	15
Programmer Instructions	18-19
Electrical Supply	19
Condensate Drain Connections	20
OIL STORAGE TANK	21
Supply	21
Storage and Protection	22
FLUE SYSTEMS	23
Conventional Chimneys	23
Balanced Flues	23-33
COMMISSIONING	34
Procedure	34
Handing Over	34
SERVICING	34
Oil Tanks	35
Line Filters	35
Boiler	35-36
FAULT FINDING	37-38
SPARES	39
Casing Assembly	40
Control Box Assembly	41
Boiler	42
Pipe work	43

INFORMATION FOR THE USER, INSTALLER AND SERVICE ENGINEER

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 1998).

TR Engineering takes every reasonable care to ensure that its products are designed and constructed to meet these safety requirements when the products are properly installed and used. To fulfil the requirements, products are comprehensively tested and examined before despatch.

When working on the appliance, it is the responsibility of the user or engineer to ensure that personal protective clothing or equipment appropriate to parts that could be considered hazardous or harmful is worn.

This appliance may contain some of the items below:

Insulation and seals

Glass rope, mineral wool, insulation pads, ceramic fibre and glass insulation.

When handling, avoid inhalation and contact with eyes. These may be harmful and cause irritation to the skin, eyes, nose or throat. Use disposable gloves, facemasks and eye protection.

After handling, wash hands and other exposed areas. When disposing of materials, limit dust and the risk of inhalation by using water spray. Ensure materials are securely wrapped.

Seek urgent medical attention if inhaled or ingested. Exposure to eyes and skin should be followed by immediate cleansing of the affected areas and medical attention if necessary.

Glues, Sealants and Paints.

The glues, sealants and paints used present no known hazards when the appliance is used in the manner for which it is intended.

Minerals Oils.

The appliance is designed to run on 28 sec. Kerosene class C2. The effects of mineral oils on the skin will vary depending on the length of exposure.

Avoid any skin contact with oil or clothing contaminated with oil. Kerosene will remove the protective grease normally present on the surface of the skin, rendering it dry, liable to cracking and more prone to damage caused by cuts and abrasions. Seek immediate medical attention for any rash, wart or sore that develops on any part of the body.

Barrier cream that contains lanolin, such as Rosalex Antisolv is recommended together with a strict regime of personal cleaning.

Do not breathe oil vapours. Do not fire the burner in the open (i.e. out of the boiler), as a misfire will produce unburned oil vapours. Under no circumstances should minerals be taken internally.

HOW TO USE YOUR BOILER

The EuroStar Band A 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 EuroStar 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 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 water temperature.

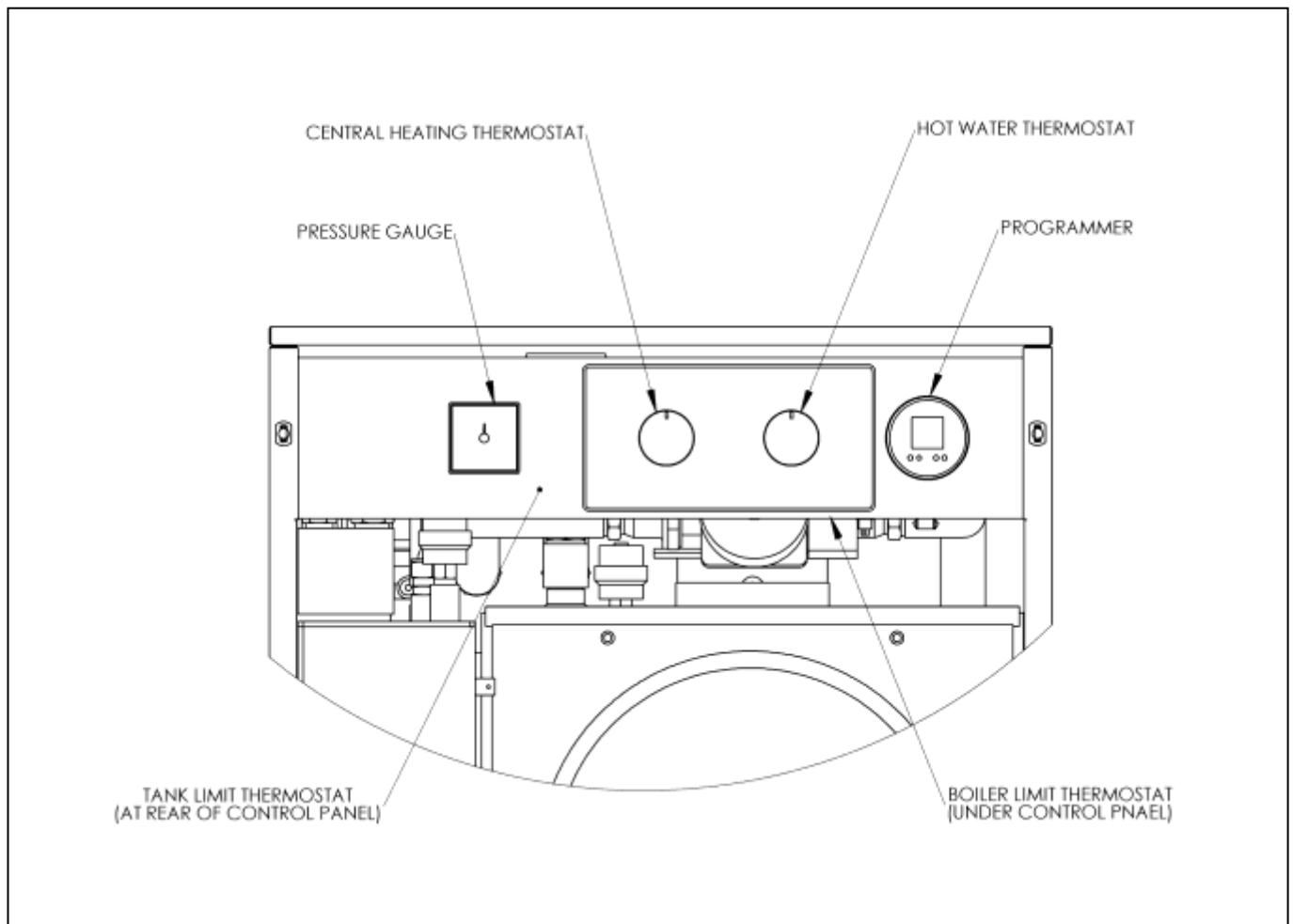
Experience will tell you which is the most economical setting to suit your household.

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.



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 and 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 the boiler and call your service engineer.
3. Check that there is adequate oil in the tank and the shut off valve is open.
4. Check for burner lock out. Press the reset button and the 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.

NOTE:

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, a device for preventing scale formation should be installed, such as a softener. And regularly checked for effective operation.

AFTER SALES SERVICE INFORMATION

A qualified field service engineer is available to attend a breakdown occurring during the boiler's guarantee period.

The boiler must be made available for attendance during normal working hours, Monday to Friday.

How to report a fault.

Step 1

Contact your installation or service engineer, who should assess the unit and works carried out on the appliance prior to requesting the attendance of an engineer from TR Engineering.

Step 2

Please note that upon attendance by an engineer, a charge will be made where:

The engineer finds no fault with the boiler.

The cause of the breakdown is due to parts of the system not supplied by the manufacturer.

The cause of the breakdown is due to incorrectly fitted spare parts, or third-party spares not designed for use with the boiler.

The appliance has not been installed and commissioned by a qualified engineer as described in these instructions.

The stove has not been serviced annually since installation.

The breakdown occurs outside the guarantee period.

The appliance has not been maintained correctly.

The breakdown occurs due to use of the appliance not sanctioned by these instructions.

The breakdown occurs as a result of work on the appliance by an unauthorised third party.

IMPORTANT

Invoices for attendance and repair work by any third party will not be accepted unless authorised in advance by TR Engineering Ltd.

Technical Assistance

A team of trained technical advisors is available to discuss any problem with the appliance. In many cases, the problem may be solved over the telephone, eliminating the need for an engineer's visit.

Before making contact, please have the following information ready:

1. The appliance serial number or your unique customer identification number (issued upon registration of the appliance). The serial number is located on the flue access cover.
2. A description of the fault and any unusual behaviour by the appliance before the failure occurred.
3. The installation and commissioning dates, and the details of any annual services.

Appliance Serial No: _____
Customer ID No.: _____
Installation Date: ____/____/____

Important note:

As a replaceable item, burner nozzles are only guaranteed until the first service.

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

Service Centre and Technical Support

Tel: 0114 257 2300 Fax: 0114 257 1419

Hours of Business

Monday – Thursday: 8:30am – 17:00pm

Friday: 8:30am – 14:30pm

INSTALLATION

IRN 101 – Byelaw 25

Water supplies shall be at reasonably balanced pressures from a common source (either from storage or 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 back flow 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 back flow prevention device is permanently connected at the inlet to the circuit and the temporary connection is removed after use.

INTRODUCTION

The Trianco EuroStar Combi Boiler has been designed to conform to European Directive/Standards BED 92/42/EEC, LVD 73/23/EEC, EMC 89/336/EEC.

The boiler design incorporates a secondary stainless steel heat exchanger to recover heat from the flue gases that is normally lost in conventional oil fired boilers.

The matched pressure-jet burner is quiet in operation and ensures clean and efficient combustion, with low NOx emissions.

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

Two flow and return sockets are provided to facilitate connections to the heating and hot water circuits.

Due to the high efficiency of the boiler, and to comply with the Building Regulations (Part L), it must be fitted to fully pumped systems only.

The front-mounted access cover permits easy access for removal of the baffles and cleaning of the heating surfaces. If the boiler is installed under a kitchen worktop, this should be made removable to give easier access to the flue gas sample point and condensate cleaning port (see **page 28**).

The only heating oil suitable for use on this boiler is kerosene class C2. **DO NOT** use any other heating oil or a mixture of heating oils. Failure to use the correct oil will invalidate the warranty.

Flues

The boilers are supplied suitably equipped for connection to a conventional chimney, but when installed with a TR Engineering balanced flue kit it becomes a room-sealed appliance. These kits allow the boiler to be installed in a wide variety of site conditions. The balanced flue is available in horizontal, high level horizontal and vertical formats. All flues are suitable for installation in garages, and conform to the requirements of OFSA100. See pages 17-26 for balanced flue options.

Note: The low level balanced flue kit can only be used for rear and right-hand side exhaust.

Flushing and water treatment

The performance of the boiler could be impaired by system debris or the effects of corrosion. New systems must be thoroughly flushed to remove metal filings, solder, machining oils and any other corrosive fluxes or greases before connecting the boiler.

When fitting the boiler to an existing system, clean the system by using an appropriate flushing and descaling agent. Refer to BS 7593 (1992) for guidance.

The system must be protected with a corrosion inhibitor. Flushing agents and corrosion inhibitors must be suitable for use with mild steel boilers and comply with BS 7593 requirements. It is strongly recommended that a suitable anti-freeze product is applied to the system after flushing.

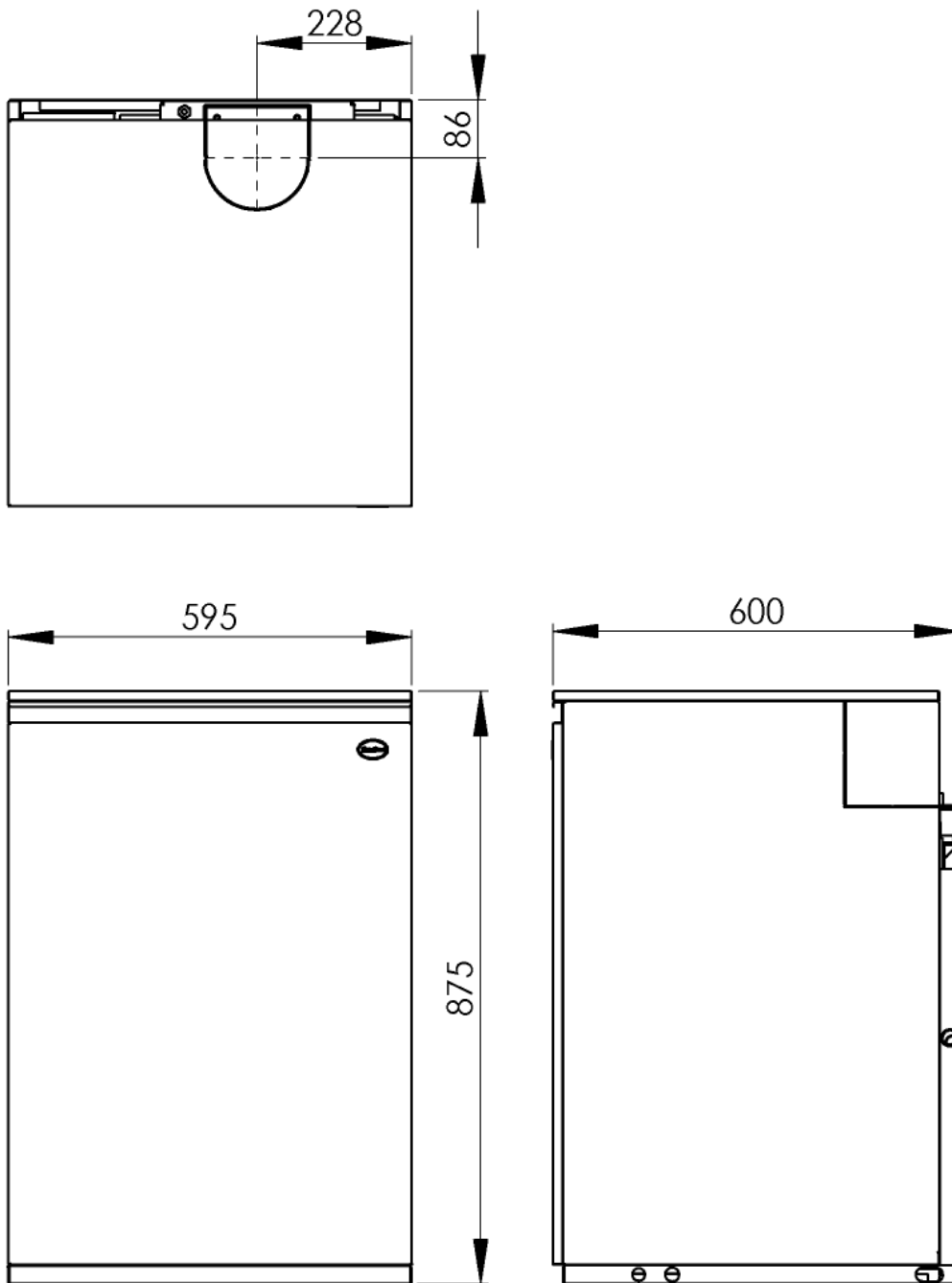
Failure to flush the system and add a corrosion inhibitor may reduce the life span of the boiler and will invalidate the guarantee and any extended warranty.

Failure to fit the boiler to a fully pumped system will impede its correct operation and invalidate the guarantee and any extended warranty.

The boiler must not be run without water in the system.

It is the installation engineer's responsibility to ensure that the boiler's output matches the heat requirements of the system. Failure to do so may impede the boiler's correct operation and invalidate its guarantee and any extended warranty.

OUTLINE DIMENSIONS AND CLEARANCES



SPACE REQUIRED FOR INSTALLATION AND MAINTENANCE		
Rear	0 mm	0 in
Side LH/RH	20 mm	0.75 in
Front	600 mm	24 in
Top	450 mm	18 in

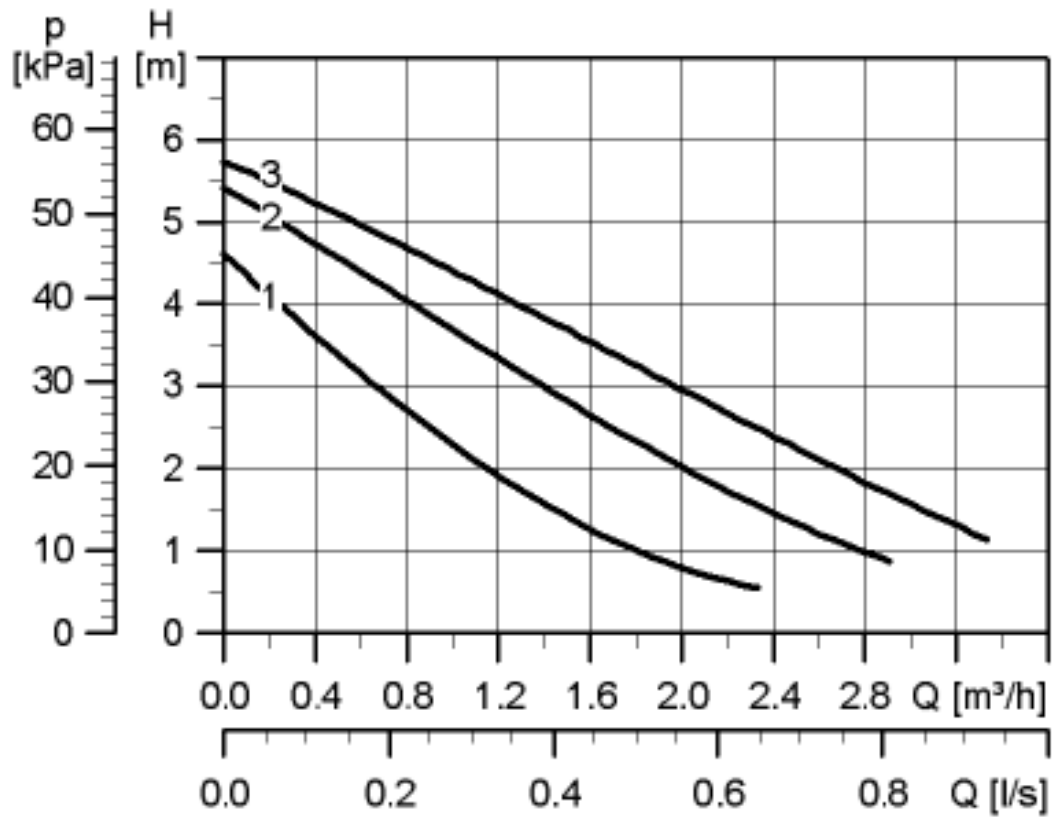
THE BOILER MAY BE INSTALLED BELOW A KITCHEN WORK SURFACE
 SO LONG AS THE SECTION IS REMOVABLE AND THE MAINTENANCE
 CLEARANCE IS MAINTAINED.
 CLEARANCE UNDER WORK SURFACE 5mm MINIMUM.

TECHNICAL DATA

	COMBI 20	COMBI 26
Rated Input	22.1 kW	28.3 kW
Rated Output	20.5 kW	26.3 kW
Oil Burner	Riello RDB	Riello RDB
Weight (empty)	147 kg	147 kg
Water Content	82.3 litres	82.3 litres
C/H Flow and Return	22mm	
DHW Inlet & Outlet	15mm	
Maximum Operating Pressure	3 Bar – 43.5psi	
Test Pressure	4.5 Bar – 65.3 psi	
Water Side Resistance 10°C diff.	64 mbar	85 mbar
Water Side Resistance 20°C diff.	22 mbar	22.5 mbar
Control Thermostat	Ranco ODD Type K36	
Overheat Thermostat	Ranco LM 7 (Manual Reset)	
Tank Control Thermostat	Ranco ODD Type K36	
Tank Economy Thermostat	Ranco ODD Type K36	
DHW Thermostat	Ranco ODD Type K36	
Tank Overheat Thermostat	Ranco LM 7 (Manual Reset)	
Electricity supply	230V – 50Hz Fused at 5A	
Pump	Grundfos	
Priority Valve	Danfoss Randall HS A3ND	
Expansion Vessel	Zilmet 10Ltr charge 0.5mba	
Pressure Gauge	0 – 4 Bar	
Flow Switch	Sika	
Pressure Relief Valve	3 Bar	
Max. Flow Temp. C/H	75°C	
Flow Rate DHW @ 1.5 BAR	-	20 litres
Flow Rate DHW @ 1.5 BAR	17 litres	-
Total DHW Draw Off	100 litres	
Available Head System	3m – 9.75ft	
Flue Gas Temperature	71.5°C	71.5°C
Required Flue Draught	12.5mm – 0.05in	
Fuel	28 sec Kerosene BS 2869 Class C2	
Flue Gas Mass Flow Rates		
Starting Current	5.5 amp	
Running Current	1.2 amp	
Flue Dia.	100mm – 4 in	

Grundfos 25/60 (Eurostar Combi 20 and Combi 26)

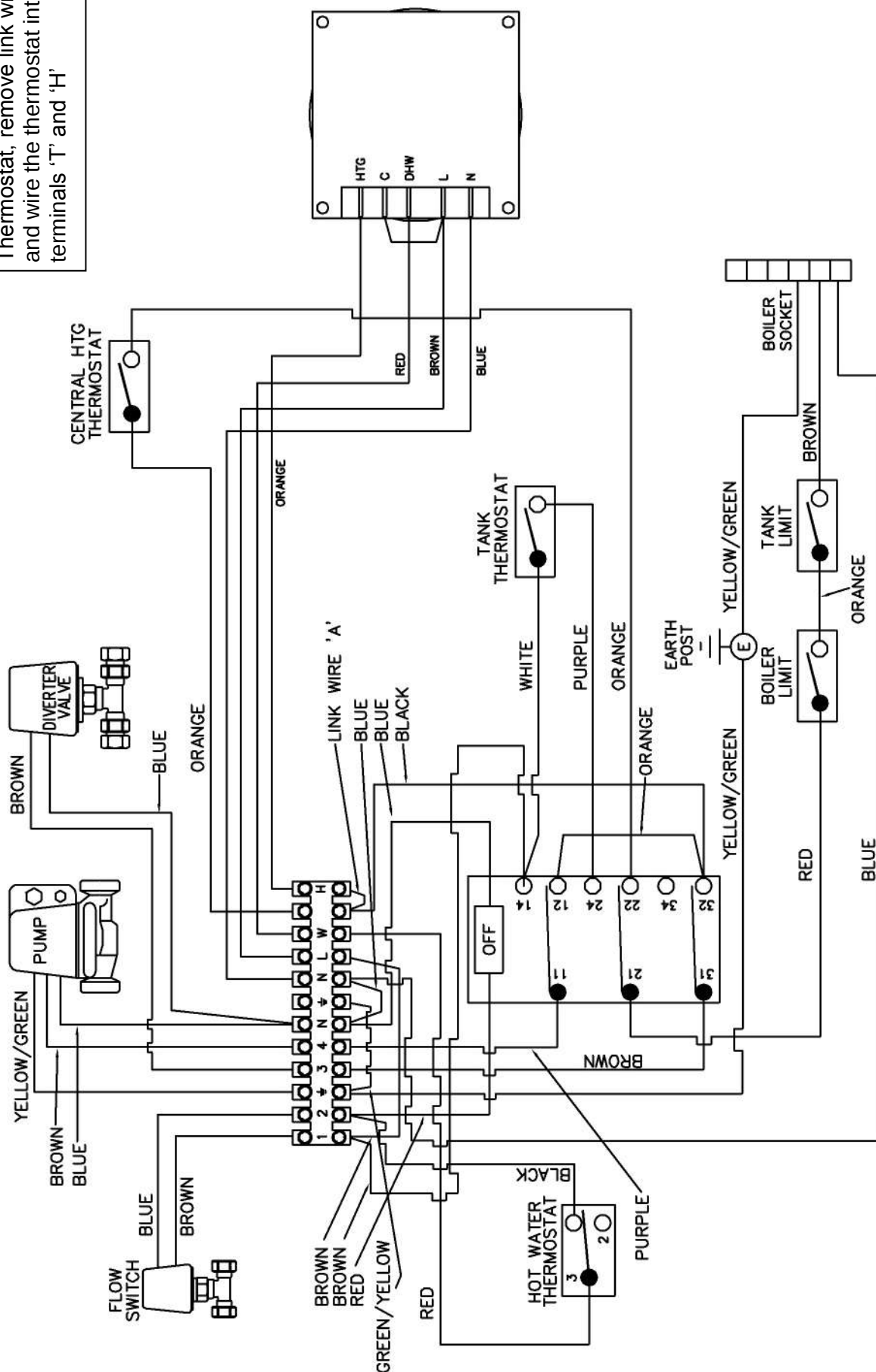
PUMP FLOW CURVE



Note

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

Note: When fitting a room Thermostat, remove link wire 'A' and wire the thermostat into terminals 'T' and 'H'



INSTALLATION

Regulations

Installation of the boiler must comply with the following:

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

BS 5449: Forced Circulation Hot Water Central Heating Systems.

Building Regulations Part J (England and Wales), Part F section 111 (Scotland), Part L.

Control of Pollution (Oil) Regulations

IEE Regulations (BS 7671).

Local water Undertakings Bylaws.

OFTEC Requirements for oil fired Boilers and Oil Storage tanks, OFST 100 & OFST 200.

Health and Safety at Work

The installation engineer should be aware of his or her responsibilities under the Act and provide where necessary appropriate protection for all persons carrying out the installation.

In the interests of safety, the boiler must only be installed, commissioned and serviced by a qualified engineer, preferably OFTEC-trained and registered. A guide to safe working practices for oil engineers is available from OFTEC.

Electrical work should be carried out in accordance with BS 7671 by a qualified electrical engineer.

Siting the Boiler

Sound Levels

While the low sound level of the boiler makes it suitable for utility room or kitchen installation, the following factors should be taken into consideration before installation:

- a) Some people are particularly sensitive to noise levels than others – discuss with the householder.
- b) Small rooms tend to amplify noise, particularly if the room's construction is hollow or the surface is tiled.
- c) A chimney passing through a bedroom will transmit noise.
- d) Low level flue terminals produce some exhaust noise, so care should be taken when siting adjacent to neighbouring properties, patios and play areas.

Plumbing

Due to the condensing nature of the boiler, a plume of water vapour will occasionally discharge from the flue; this should be taken into account when siting the terminal. Refer to pages 16–17 for details.

Clearance and service access

Ensure adequate clearance is allowed for making the water and flue connections (Fig 3). If the boiler is installed under a kitchen worktop, this should be made removable to give access to the flue gas sample point and condensate cleaning port (page 28). About 750mm should be left at the front of the boiler for service access.

Hearth

The boiler must be installed on a level, non-combustible base that is capable of supporting the installed weight of the boiler, including its water content.

Combustion and Ventilation Air

The provision of an adequate combustion air supply is essential for the safe and efficient operation of the boiler. The air opening should be positioned to cause the least possible nuisance to the end user, and located in a place that will reduce its likelihood of being accidentally blocked.

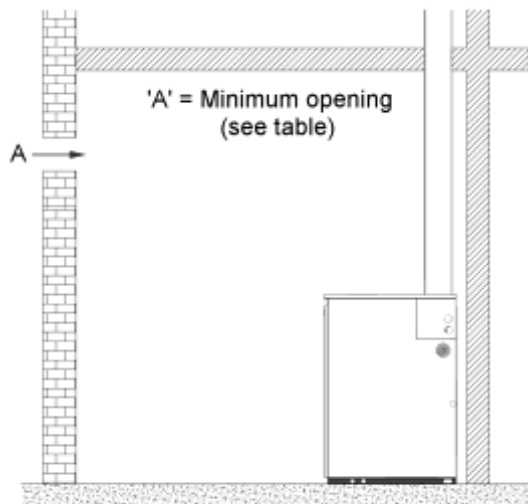
As per BS 5410 Part 1 (Code of Practice for Oil), for conventionally flued boilers a permanent opening of 550mm² per kW of boiler rated output above 5kW is required (see table below and Fig 5).

Although no combustion air openings are required for balanced flue boilers, ventilation is required to prevent overheating of the boiler controls if installed in a compartment or other confined space (see Fig 6).

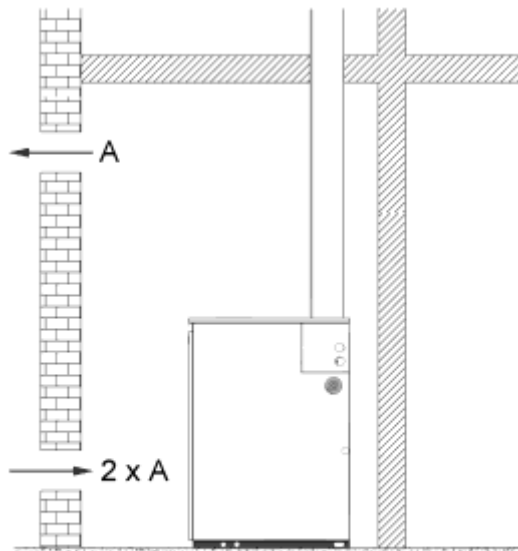
If the boiler room has an extractor fan, the combustion performance of the boiler must not be affected when the fan is running and all doors and windows are closed. A flue gas analysis on the smoke and CO₂ levels should be carried out to prove that combustion is taking place satisfactorily.

Output (kW)	Detail 'A' (fig 5 & fig 6)
20	83cm ²
26	115cm ²

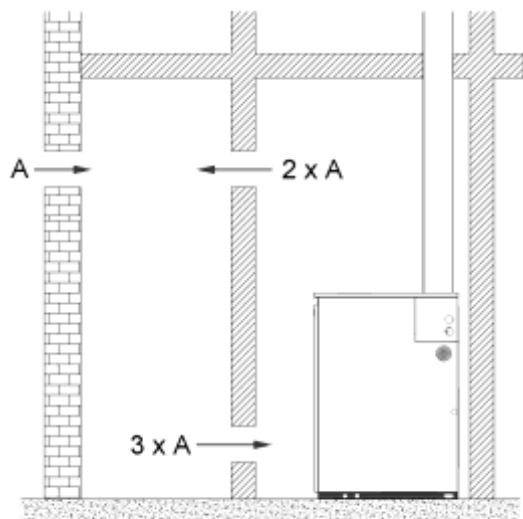
Fig. 5 Conventional Flue



Boiler in a room; combustion air provided direct from the outside

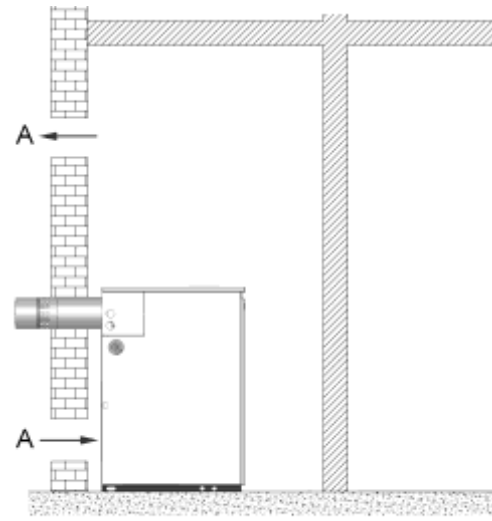


Boiler in a compartment; combustion air provided direct from the outside

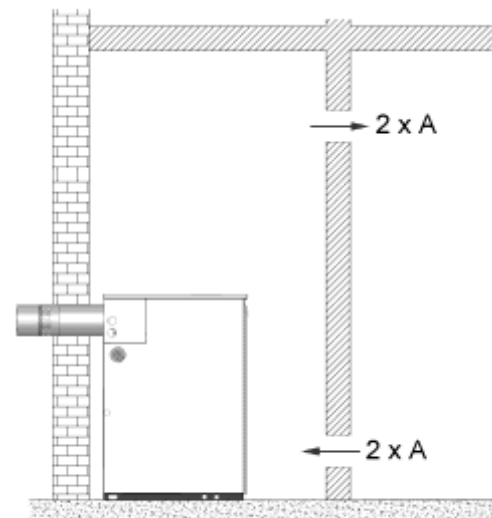


Boiler in a compartment; combustion air provided from adjoining room

Fig. 6 Balanced Flue



Boiler in a compartment; ventilation air provided direct from outside



Boiler in a compartment; ventilation air provided from adjoining room

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 two 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	10ltrs, pre-charged to 0.5 Bar
Pressure Relief Valve	Set to operate at 3 Bar

A system schematic is given in Fig. * and *.

Drain cock

Drain cock(s) should be fitted at the lowest point in the system to enable the water to be drained. A drain 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 Expansion Vessel Requirement

	Bar	Bar	Bar
Vessel Charge and Initial System Pressure	0.5	1.0	1.5
Multiplication Factor to Give Total Expansion Vessel Volume	0.08	0.11	0.16

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 $15.62 - 10 = 5.62$ 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 will be required in the system.

System Filling

The appliance is designed for connection to sealed central heating water systems Fig. * 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. * or * (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 through a non-return valve, without the approval of the local water authority.

System Cleaning and Inhibitor Treatment

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 be 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 150ppm. 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 is suitable.

Showers and Bidets

Any mains pressure shower or bidet complying with the Local Water Authority bylaws is suitable.

Water System Connections

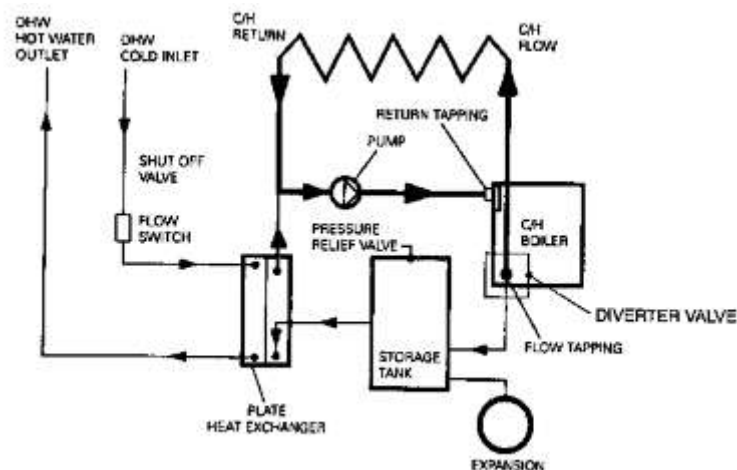
Heating

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 must be piped to the tundish, in accordance with details given in Fig ** and section G3 of the Building Regulations 1991 approved document.

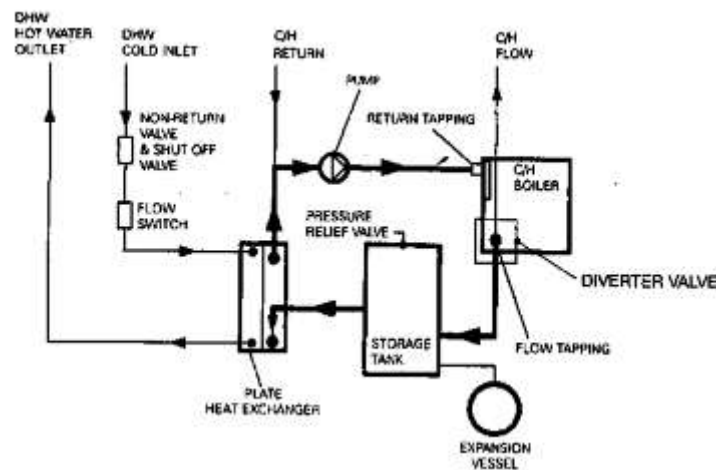
NOTE: Failure to ensure the correct vessel size could result in premature failure of the expansion vessel, which in turn may adversely affect other components on the boiler i.e. circulating pump and diverter valve.

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).

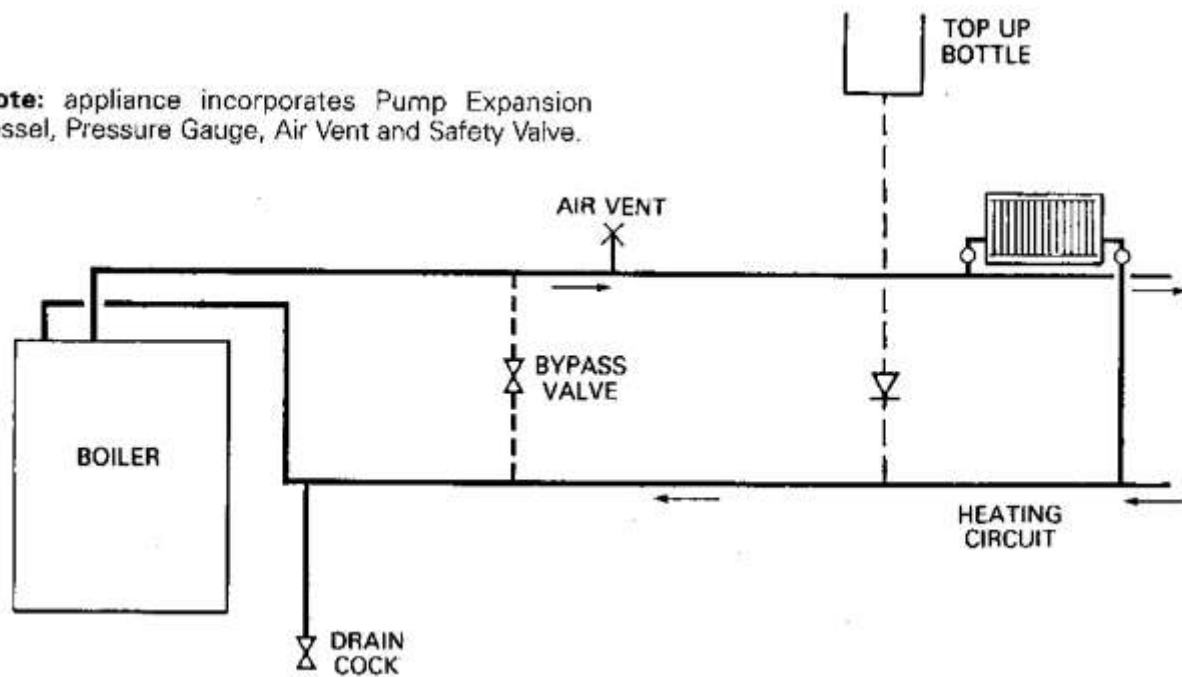


EUROSTAR COMBI SCHEMATIC LAYOUT CENTRAL HEATING MODE



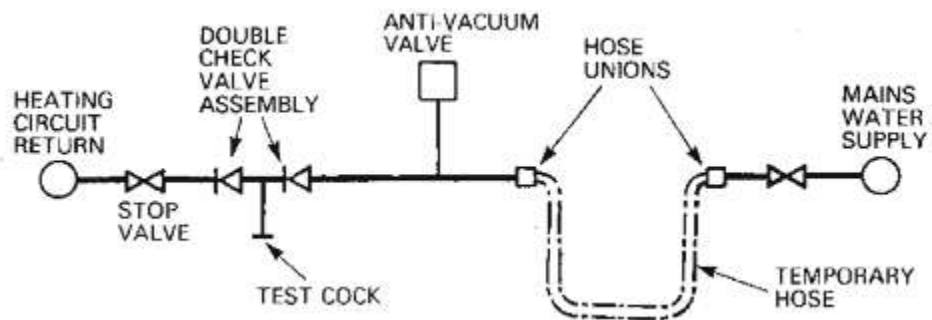
EUROSTAR COMBI SCHEMATIC LAYOUT DOMESTIC HOT WATER MODE

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

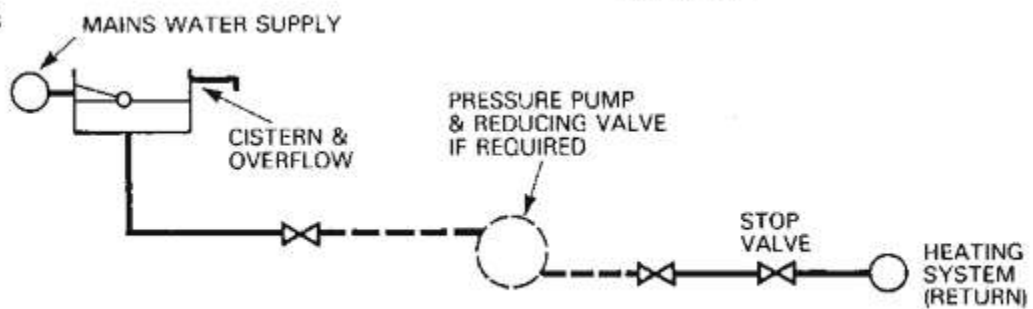


SEALED SYSTEM PIPING SCHEMATIC DIAGRAM

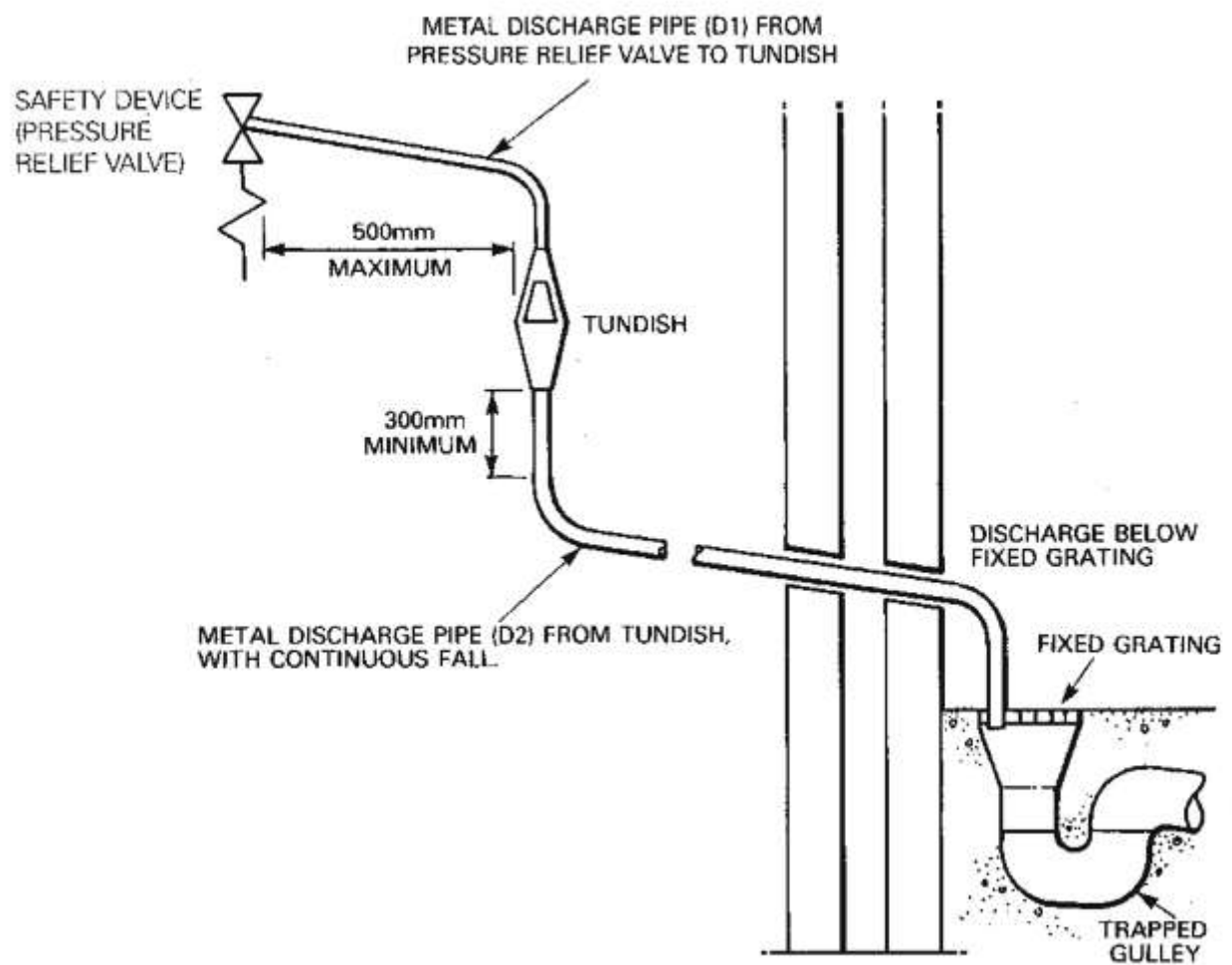
METHOD A



METHOD B



ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM



TYPICAL DISCHARGE PIPE ARRANGEMENT

Factory Fitted Electronic Programmer

The unit is fitted with a twin channel 7 day programmer, to control the heating and hot water.

Programming Sequence

- 1** : Overview of daily switching program
- 24h/pm** : Setting of 24h or am/pm
- +1h** : Summer/winter clock changes
- ◀** : Weekday display
- ⏻** : Switching status display ON/OFF
- ⏻** : Manual operation / fixed ON / fixed OFF
- ⏻** : Automatic operation



- +/-** : Adjustment keys: By pressing the key longer than 2 sec. you can adjust the timer in steps of 5 units
- Res.** : Reset
- Menu** : By pressing the menu key programming is terminated and the system reverts to automatic operation
- OK** : Confirmation of programming

Setting of this programmable timer is depending of the user preference to use pre-set programs or defining own programming.

Using Pre-set programs (first time installation)



Using **Reset** key you can adjust the following values:

- 24h or am/pm:
- Time (hour and minutes):
- Week day:
- Pre-set programs P01 to P03:

User defined programming by Menu mode



Using **Menu** key you can adjust / review the following values:

- 24h or am/pm:
- Time (hour and minutes):
- Week day:
- Programs P--:

Sequence to follow after selecting programming by pre-set programs or Menu mode.



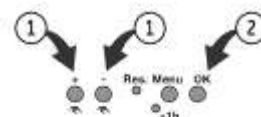
Set display format 24h or am/pm



Select 24h or am/pm (+/-) and confirm with **OK**.



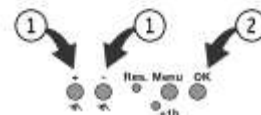
Set hour



Select hour (+/-) and confirm with **OK**.



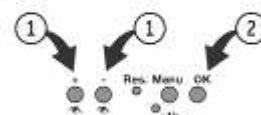
Set minutes



Select minutes (+/-) and confirm with **OK**.



Set week day



Select week day (+/-) and confirm with **OK**.

- 1 = Monday
- 2 = Tuesday
- 3 = Wednesday
- 4 = Thursday
- 5 = Friday
- 6 = Saturday
- 7 = Sunday

P01: Mo - Su, 1 x ON/OFF



P01: Mo - Su, 2 x ON/OFF



P01: Mo - Su, 3 x ON/OFF



Programs P01-03

The switching on and off times for programs P01 to P03 are preset (pre). The user can change these programs.

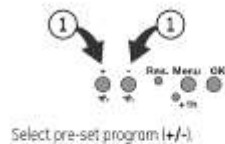
Individual program, P--

Under the menu option P-- you have the option of creating a user-defined program. This program can be changed at any time. There are up to 20 memory locations available for 10 OFF and 10 ON commands. You can allocate a corresponding weekday or week block to each memory location.

Note:

For two channels version pre-set program is established in the two channels.

Sequence to follow after setting time in the Reset mode.



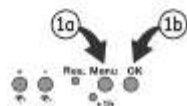
Select pre-set program (+/-).



Set week day ON



Select week day (+/-) and confirm with OK.



Once selected the program desired there are following options:

Menu: terminate programming

OK: Going through pre-set programs to modify selection (any program ON or OFF can be modified by using '+' or '-' keys and confirming with OK) or accept it with OK key to go the next free memory location in order to add new user defined programs (see pg 30).

e.g. after selecting P02 you should also program:

Sa-Su 22:30 ON (prog05)
23:00 OFF (prog06)



Possible week blocks and individual days

Day	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

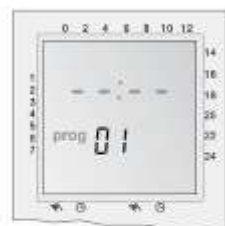
Set Channel

(only for 2 Channel version)



Select Ch1 or Ch2 (+/-) and confirm with OK.

Sequence to follow after setting time and week day while running Menu mode or adding programs to the pre-set P01 to P03.



Select program ON



and confirm with OK.



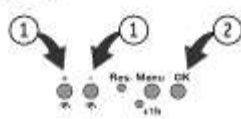
Set hour OFF



Select hour (+/-) and confirm with OK.



Set hour ON



Select hour (+/-) and confirm with OK.



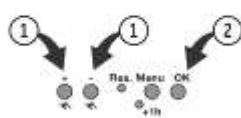
Set minutes OFF



Select minutes (+/-) and confirm with OK.



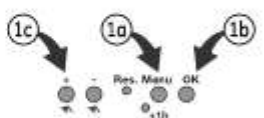
Set minutes ON



Select minutes (+/-) and confirm with OK.



Set week day OFF



Should the OFF command be the same day of ON command then select **Menu** to terminate programming or select **OK** to go to a new program ON setting.

Shift

Should the OFF command be the following day of ON command then select "+" key then select Menu or OK.

Example:

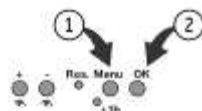
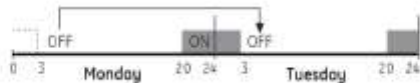
Mo-Fr

20:00 p.m. - 03:00 a.m. ON
03:00 a.m. - 20:00 p.m. OFF

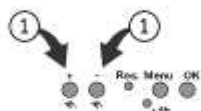


Tu-Sa

20:00 p.m. - 03:00 a.m. ON
03:00 a.m. - 20:00 p.m. OFF



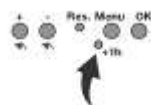
Select Menu, then select OK key until getting onto the ON time of the program you want to delete.



Select "-" with (+/-) key and confirm with OK.



Note:
Switching programmes are deleted in ON-OFF pairs. If you delete a single ON instruction, the corresponding OFF instruction is also deleted.



The +1h key is for the changeover from summer to winter time.

- By pressing the +1h key 1 hour is added to the current time.
- +1h is shown on the display.
- By pressing +1h again 1 hour is subtracted from the current time.



The "+" key serves to change over between automatic ⌚, fixed ON 🔌 and fixed OFF ⏻ operations (Ch1).

The "-" key serves to change over between automatic ⌚, fixed ON 🔌 and fixed OFF ⏻ operations (Ch2).

Electrical Supply

All electrical wiring must be carried out by a qualified electrician in accordance with current IEE Regulations and any local regulations that apply.

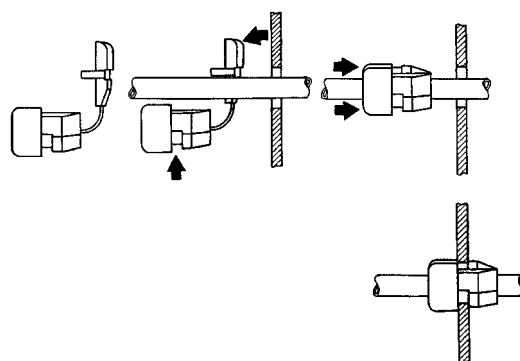
The boiler must be earthed and the supply cables must be longer than the current-carrying conductor cables (i.e. live and neutral supply cables). The minimum requirement for the power supply is PVC sheathed flexible cord, 0.75mm² (24x0.2mm, code designation H05 VV-F or H05 VVH2-F), as specified in table 16 of BS 6500.

The 230V, 50Hz electrical supply must be fused via a double-pole switch—with contact separation of at

least 3mm in both sides, and via a shuttered socket adjacent to the boiler (both devices must meet the requirements of BS 1363).

All external cables entering the control box must be secured in position through use of the strain-relief bushes (supplied, see Fig 7).

In certain areas, there may be a known risk of high and low voltage fluctuations, though use of a voltage sensitive device, the burner should be prevented from starting if the voltage drops or rises to a level sufficient to endanger the installation.



FIXING OF STRAIN RELIEF BUSHES

Condensate Drain Connections

The boiler comes equipped with its own condensate trap in the form of a 22mm 'U' shaped pipe connected to the secondary heat exchanger. The pipe can be run to the left or right of the boiler; for ease of installation, it should be fitted before the boiler is positioned.

To install the condensate pipe, remove the boiler back casing. After deciding the direction in which to run the pipe, feed the long end through the side casing from inside. Attach the short end (with the connecting nut) to the rear underside of the secondary heat exchanger, ensuring a watertight seal is made (Fig 8).

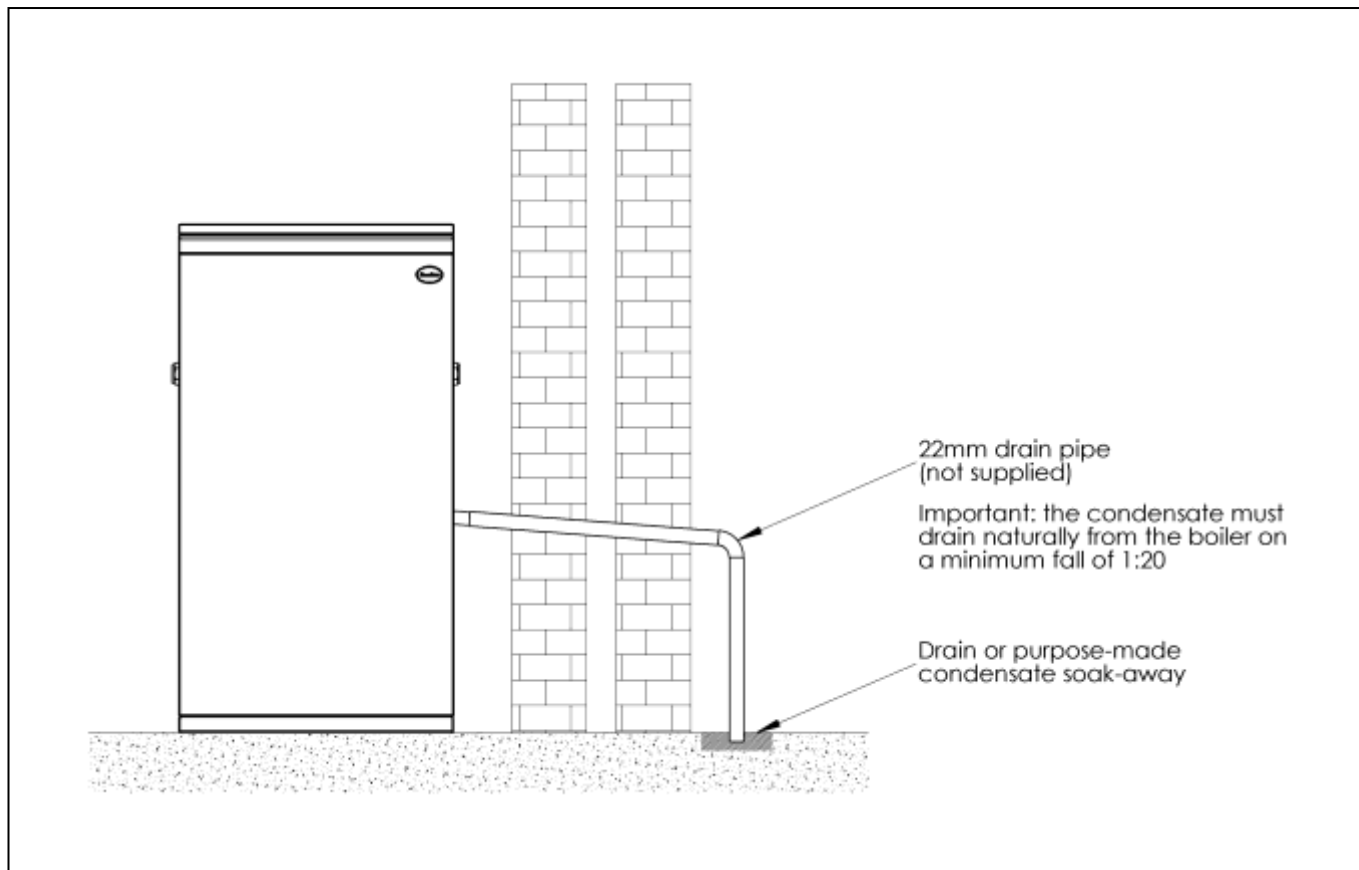
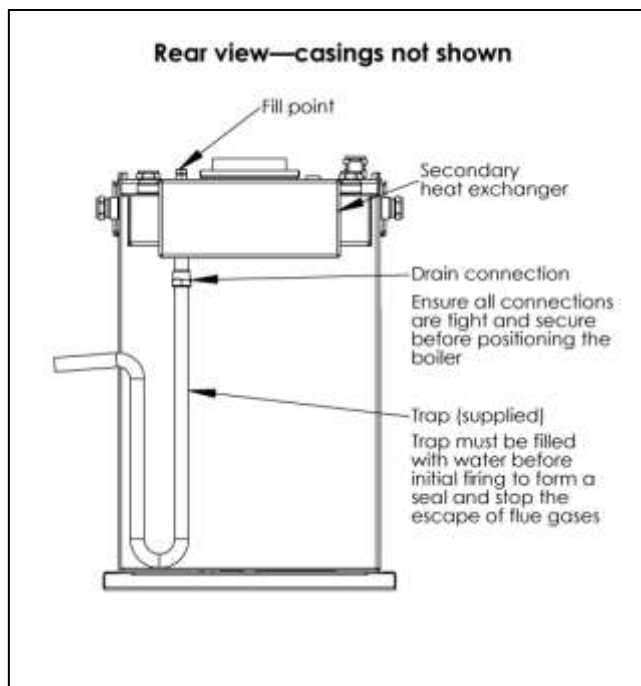
After the boiler has been positioned, the trap should be connected to a 22mm plastic or stainless steel pipe (not supplied) to take the excess condensate to a drain or soakaway (where possible, an external drain should be used). The drainpipe should be installed to allow the condensate to drain naturally from the boiler, on a minimum fall of 1:20 (Fig 9). Insulate any external pipe work to prevent the condensate from freezing. **DO NOT** use copper pipe work for the condensate drain.

If the boiler is installed below ground level, and there are no internal drains, a condensate pump can be fitted. Refer to manufacturers' instructions for best practise.

The trap must be filled with water to create a seal that stops the escape of flue gases through the drainage pipe work. To fill the trap, remove the cleaning port plug from the top of the boiler and pour a small amount of water inside. The trap will have sufficient water when water emerges from the drainage pipe.

DO NOT fire the boiler without first ensuring the condensate trap is filled with water. Failure to do so may result in damage to the pipe work, allowing flue gases to escape. Any damage caused as a result of not filling the trap will not be covered by the guarantee.

Examine the pipe work and rectify any leaks. The trap should be inspected at regular intervals to ensure correct operation, and it should be checked as part of the annual service schedule.



Oil

The burner will only run on kerosene class C2 to BS 2869. Failure to use the correct oil or use of a heating oil mixture will invalidate the warranty.

Storage Tank

The oil storage tank should be large enough to allow for an economic delivery schedule. It should be located in an unobtrusive position that nevertheless provides easy access for deliveries and pays regard to safety issues, maintenance and the head of oil required.

The tank should be fitted with weather protected fill and vent connections, a drain-off and an oil level indicator.

Plastic or Steel tanks may be used, and must comply with the requirements of BS 799 Part 5 (Specification for Oil Storage Tanks). Steel tanks must be mounted on brick or block piers, with a waterproof membrane fitted between the piers and tank.

Fire Protection

While it is highly unlikely that a fire could start from a domestic oil tank, protection is required from a fire that may originate elsewhere. The tank should be at least 1.8 metres from any building and 750mm from a site boundary. Where it is not feasible to adhere to these limits, the building wall must not have any openings other than those required for ventilation, and the wall must have a fire resistance of half an hour extending at least 1.8 metres from any part of the tank.

Alternatively, a non-combustible radiation barrier meeting the requirements of BS 5410 Part 1 can be fitted. This applies to tanks of up to 3,500 litres capacity.

Fire protection must be provided to the eaves if less than 1.8 metres from the top of the tank. Cladding must extend at least 300 beyond the tank, which must be mounted on a non-combustible base.

Pollution Protection

The tank must be bunded (double walled) if:

- a) The tank is less than 10 metres from a stream.
- b) The tank is less than 50 metres from a well, spring or other source of drinking water.
- c) The tank cannot be seen from the point of delivery.
- d) There is a risk of oil reaching a manhole cover or drain in the event of a leak.
- e) The tank capacity exceeds 2,500 litres.

Supply

A long-life flexible oil hose is supplied with the boiler. A filter and shut-off valve are also required. These should be fitted in the positions shown on Figs 10, 11 and 12.

All oil line joints must be completely sealed and the total pipe run should be thoroughly flushed before connection is made to the burner. **DO NOT** use soldered joints in the oil line.

A remote-operated fire valve must be fitted in the oil supply line, externally to the premises, with the sensing phial located at a point within the boiler casings above the burner.

Single Oil Pipe Supplies (Fig 10)

Where the lowermost part of the tank is above the level of the oil pump on the burner, a single-pipe gravity system can be used. The supply pipe should be connected to the suction port on the burner pump via the flexible hose (supplied).

Two Oil Pipe Supplies (Fig 11)

Where the lowermost part of the tank is below the level of the burner, a two-pipe suction lift is necessary. A second flexible hose will be required, and the oil pump must first be converted for use. See the burner leaflet for details.

A spring-loaded non-return valve must be fitted in the suction line to prevent the back-flow of oil when the burner is not running. No valves are to be fitted to the return line.

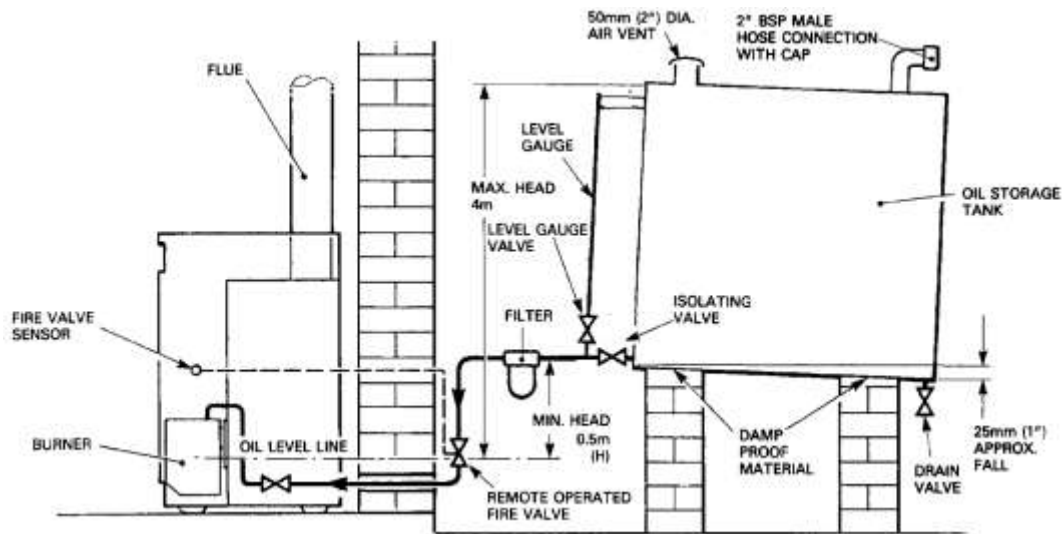
The pump suction must not exceed 0.4 bar, as dissolved gas may be released from the oil, affecting combustion. The return pipe must end at the same level as the suction outlet to prevent loss of prime. The tank outlet should be approximately 75mm above the bottom of the tank to prevent the drawing off of sediment and water when the oil begins to run low.

Single Pipe Oil Supplies with a De-aerator (Fig 12)

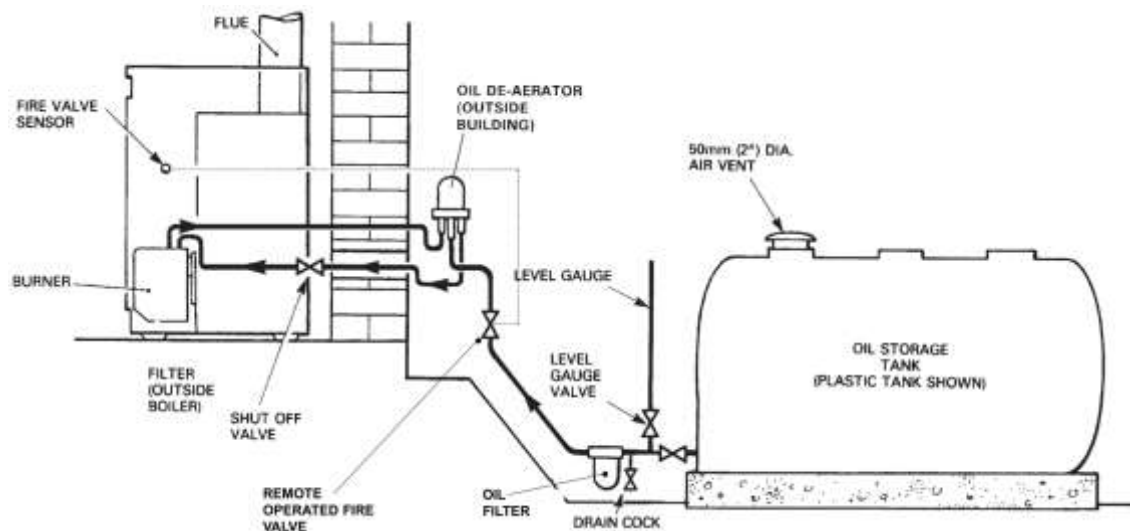
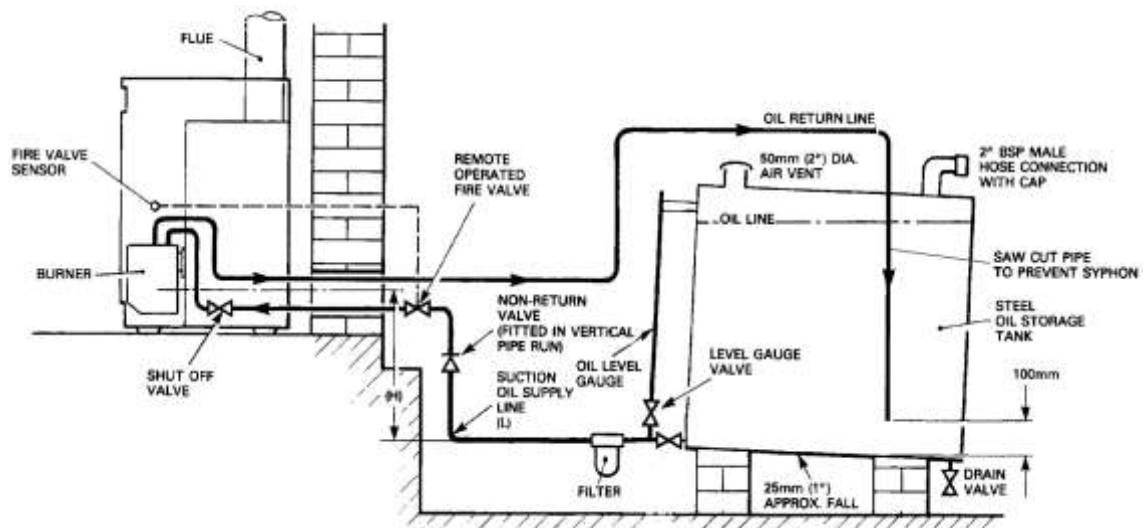
Where a two-pipe suction lift is required, but it is not feasible to fit a return pipe, an oil de-aerator can be used. The burner should be piped and the pump converted as for a two-pipe system, up to the de-aerator, at which point a single pipe can be taken to the storage tank. The de-aerator should be fitted as close to the boiler as possible though externally to the premises at a height no lower than the oil pump.

A non-return valve is not required.

Lift (H)		0.5	1.0	1.5	2.0
8mm ID Supply	Maximum Run (Metres)	10	20	40	60
10mm ID Supply		20	40	80	100



Lift (H)		0	0.5	1.0	1.5	2.0	3.0	3.5
8mm ID Supply	Maximum Run (Metres)	35	30	25	20	15	8	6
10mm ID Supply		100	100	100	90	70	30	20



Flue Systems

To evacuate the products of combustion safely and thoroughly, the boiler must have an efficient flue system. **DO NOT** fit a new boiler to an older flue system.

Conventional Chimneys

The Contractor boilers operate at high efficiencies, with low flue gas temperatures. All components used in the flue system must be suitable for wet flues, and approved for use with condensing oil boilers.

The flue should rise as vertically as possible, and terminate at a point not subject to downdraughts and adverse wind effects. The condensation produced in the flue should be allowed to run back into the boiler; no separate drain in the base of the flue is required.

Where a chimney is used, it must be lined with a stainless steel liner suitable for use with oil-fired condensing boilers. Before the liner is installed, the chimney must be thoroughly cleaned of all traces of soot and scale.

If a rigid flue is to be fitted externally, a twin-walled flue must be used. The flue must be constructed of a stainless steel inner skin (suitable for use with oil-fired condensing boilers). It must also be insulated, incorporate seals and be weather protected.

The internal flue diameter must be 100mm (4").

Aluminium or plastic must not be used on any part of the flue system.

The boiler will operate reliably over a wide range of chimney draughts; as such, under normal circumstances the flue should terminate with a standard cowl.

Ensure that all joints on the flue system are adequately sealed, and that no gases or condensation can escape.

Balanced Flues

The TR Engineering balanced flue system offers greater flexibility for siting than a conventional flue. In addition to the siting benefit, the performance of balanced flue boilers is virtually unaffected by high wind conditions, as the wind pressures are applied equally to both the air intake and flue gas discharge sections, creating the balanced condition. Balanced flue condensing boilers are also designed to operate at low noise levels.

Some boilers rely on case sealing TR Engineering boilers do not require case sealing as they have a sealed air duct system that maintains the room sealed performance even when the front casing is removed for burner commissioning or adjustment.

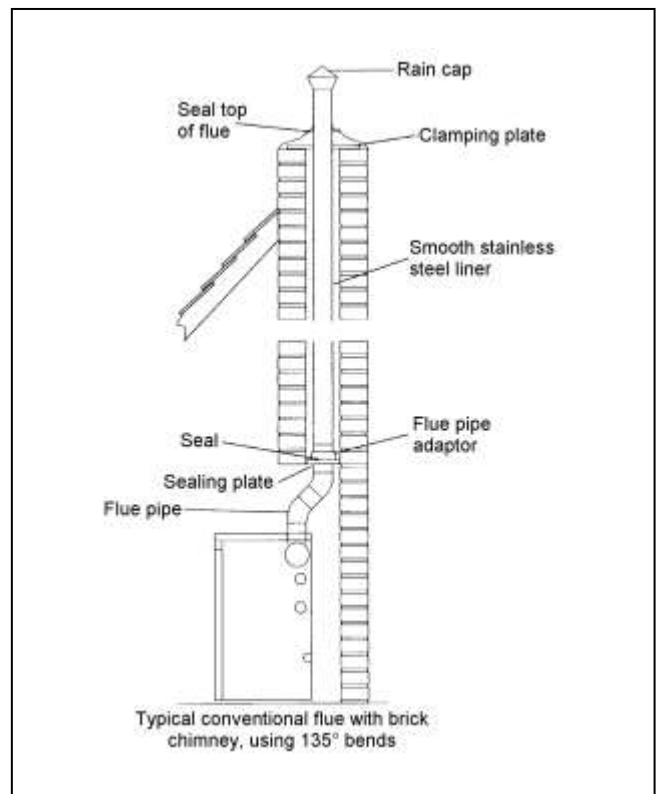
The use of the balanced flue principle also enhances the overall thermal efficiency of the boiler, as the incoming air extracts waste heat from the flue and returns it as pre-heated air to the burner, aiding combustion.

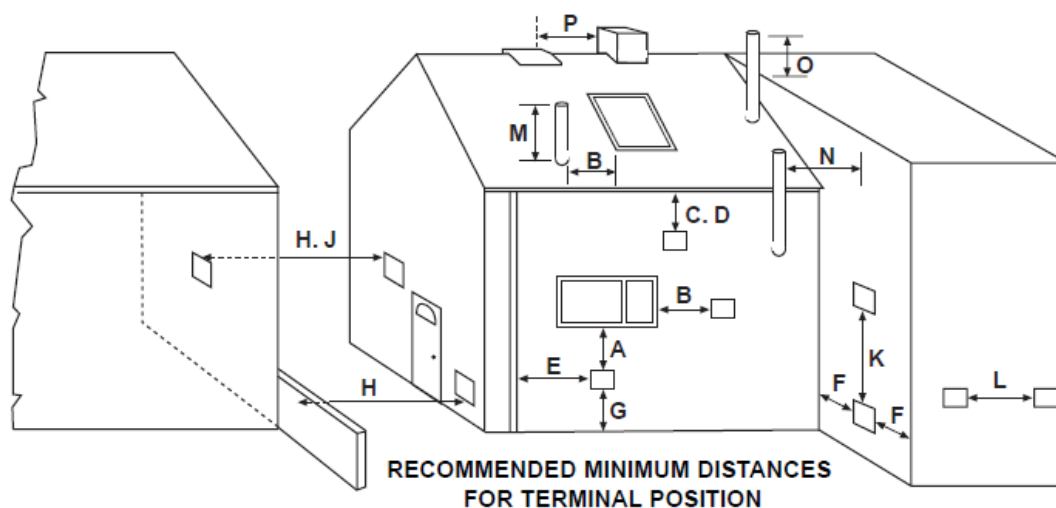
Three types of balanced flue can be fitted to the boiler: horizontal (pages 18–19), high-level horizontal (pages 20–22), or vertical (pages 23–25). Bends can be fitted to the vertical or high-level kits for further siting flexibility (page 26).

During operation, a plume of condensation will frequently discharge from the flue terminal. As such, care should be taken when siting the flue to avoid a nuisance to neighbouring properties. Keep the terminal clear of infrared sensing devices, such as those used to control security lighting or alarms. Positioning of flues under balconies and within carports should also be avoided.

The flue terminal should not be positioned where the products of combustion could enter the building (see Fig 14). Additional clearances may be allowed to prevent plume nuisance (Fig 15). If the terminal is less than 2 metres above ground level or any other place to which a person has access, the terminal must be protected by an appropriate guard. As the system operates under positive pressure, it is essential that all flue joints are sealed.

TR Engineering balanced flue kits have been designed for exclusive use with TR Engineering boilers as such, compatibility with other manufacturers' boilers cannot be guaranteed.

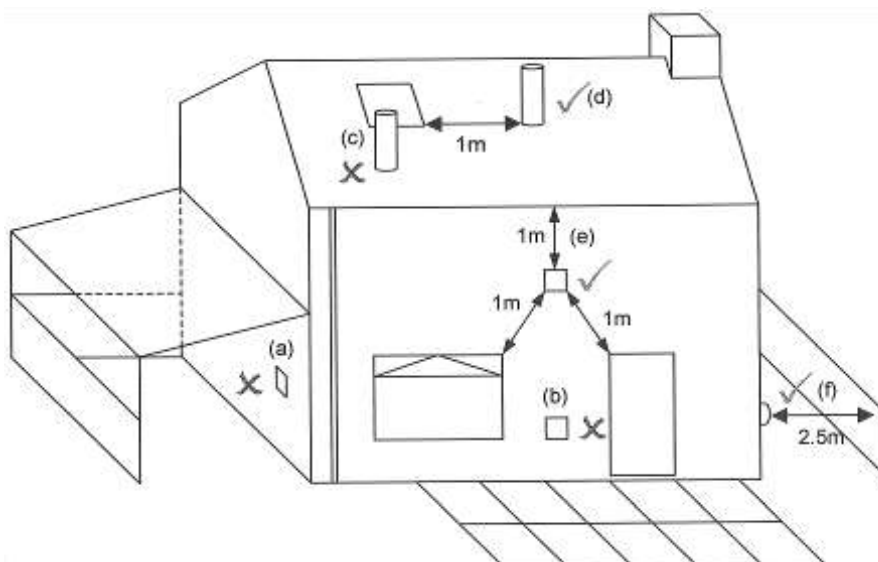




**Minimum clearances as measured from top of chimney
or rim of low-level discharge terminal. All distances in mm.**

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

* Scotland



Where plumbing may cause a nuisance, additional clearances can be observed

- (a) Do not site within carports
- (b) Terminals under 2.1 metres from ground level should not be positioned near paths, access routes, patios, or parking areas closer than 2.5 metres to the terminal.
- (c) Terminals should not be positioned under a roof.
- (d) Terminals should be positioned at least 1 metre from any side or top of a roof window.
- (e) Terminals should be positioned at least 1 metre from an opening or below a gutter, eaves or balcony.
- (f) Horizontal terminals should be a minimum of 2.5 metres from a facing wall, building or boundary.

Horizontal Balanced Flue Assembly (Kits 2334 & 2335)

Before starting, ensure the placement of each section has been identified and that all 'o' ring seals are in position and well lubricated.

Important: it is essential that the flue inclines slightly up from the boiler to allow condensation to run to the drain.

Having decided the position of the boiler, mark out the position of the terminal and cut a circular hole 130mm diameter in the wall (see Figs 17–18).

Remove the boiler top casing and the four nuts that hold the flue socket and gasket to the top of the heat exchanger. Remove the flue socket, but leave the gasket in place.

Fit the sealing plate (item 4, Fig 16) over the four studs and place the terminal gasket (3) over the sealing plate. Position the boiler.

Assemble the flue by sliding the terminal section (2) into the elbow section (1), ensuring that all 'o' rings (6) are in position. Slide the completed assembly through the wall from the inside.

Slide the flue mounting plate on the elbow section over the four studs on the top of the heat exchanger and secure in position using the four nuts previously removed.

Adjust the terminal length as required, ensuring a minimum distance of 140mm is kept from the end of the terminal to the external face of the wall. See Figs 18–19 for allowable distances.

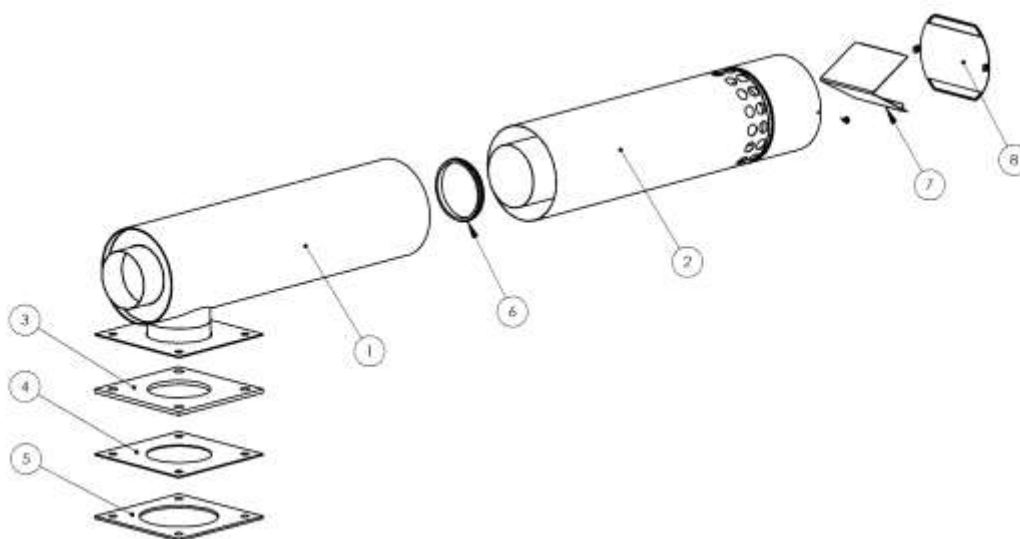
Connect the air hose from the burner to the socket on the near end of the flue, using the jubilee clip provided.

To ensure that any condensate produced in the flue drains away correctly, incline the flue 1° upwards from the boiler. Seal around the terminal on the inside and outside wall with an appropriate material.

As the flue operates under positive pressure, all flue joints must be well sealed. To aid assembly, it may be necessary to apply a thin bead of silicone grease to all flue joints that incorporate 'o' ring seals. All joints that do not incorporate 'o' ring seals should be sealed with silicone sealant.

As the boiler produces condensate during normal running, it is important that all seals are made and the correct gaskets used.

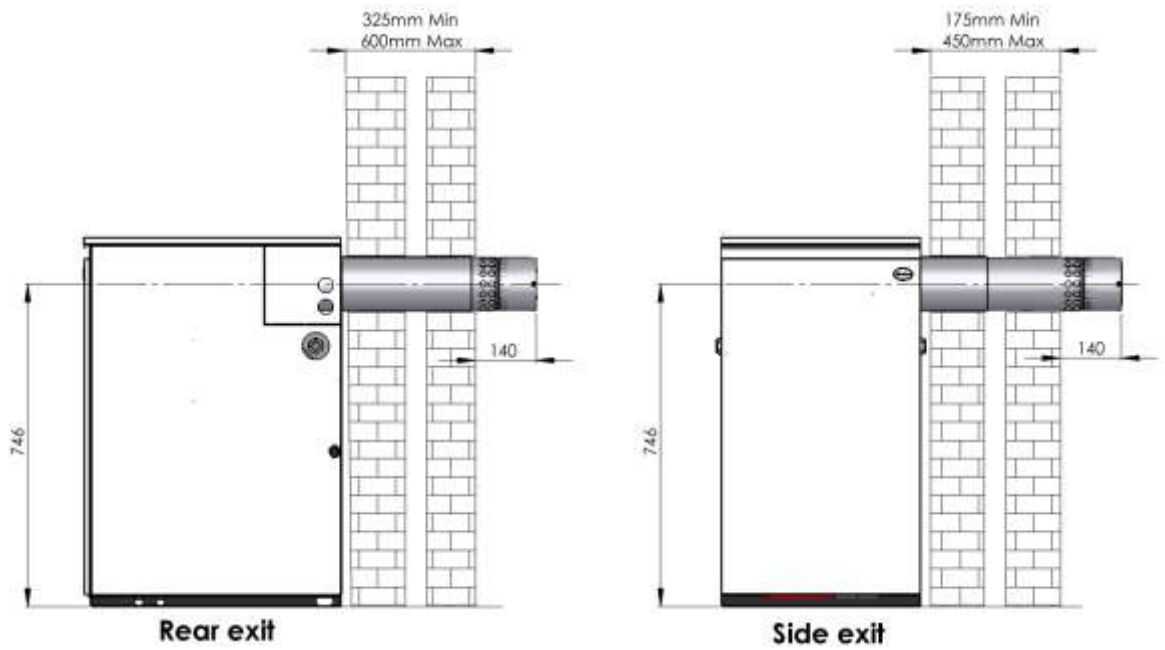
Where the terminal is positioned below 2 metres, or in a place accessible to people, an approved terminal guard will be required. A suitable stainless steel terminal guard is available from TR Engineering (part code 223920).



Item	Description	Kit 2334	Kit 2335	Qty
1	Elbow Section	221770	221770	1
2	Terminal	222915	222920	1
3	Gasket	221776	221776	1
4	Sealing Plate	221777	221777	1
5	Gasket (supplied with boiler)	223071	223071	-
6	'O'-Ring Seal	221647	221647	1
7	Deflector	223193	223193	1
8	End Cap	223192	223192	1

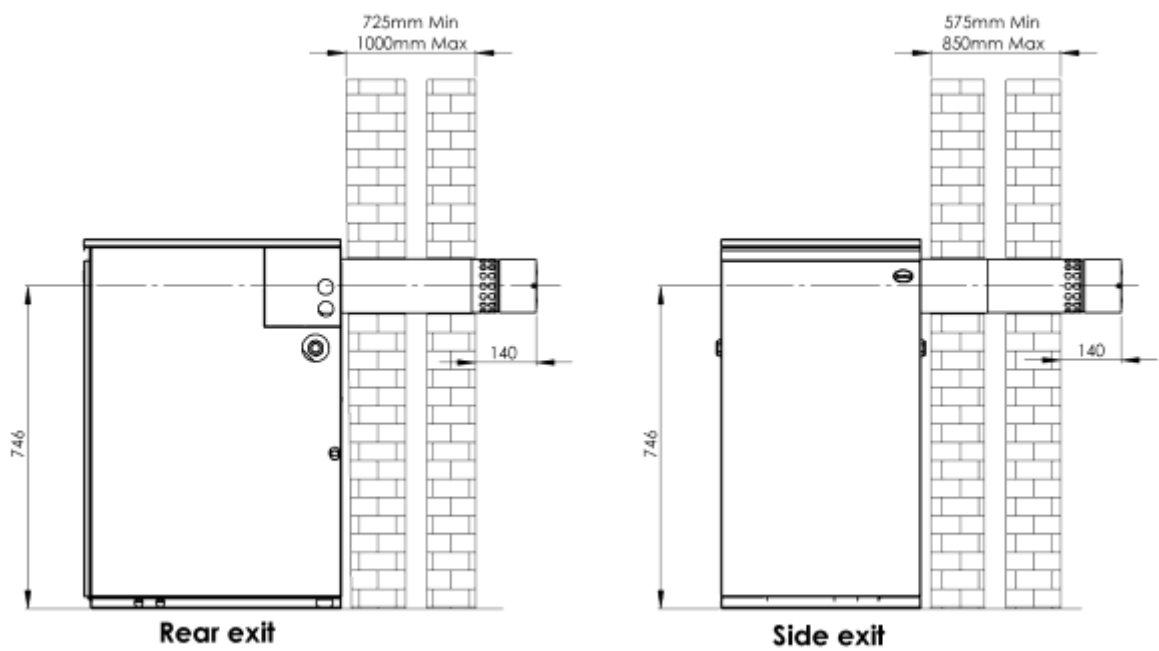
2334 – 600mm Horizontal Balanced Flue Kit

Model	Dim 'A'
15–20	746mm
20–26	746mm



2335 – 1000mm Horizontal Balanced Flue Kit

Model	Dim 'A'
15–20	746mm
20–26	746mm



High Level Balanced Flue Assembly (Kits 2357 in conjunction with 2355 or 2356)

Before starting, ensure the placement of each pipe section has been identified (Fig 19), and that all 'o'-rings are in position and are well lubricated. Any white pipe exposed to the elements should be protected with a suitable material. Place all weld seams to the rear.

Important: it is essential that the horizontal flue section inclines slightly up from the boiler to allow condensation to run back to the drain.

Before assembly, determine the length of flue required and if necessary discard the middle section. See adjacent for details of different available flue lengths.

Having decided the position of the boiler, mark the position of the terminal and cut a circular hole 130mm diameter through the wall.

Remove the boiler top casing and the four nuts that hold the flue socket and gasket to the top of the heat exchanger. Remove the flue socket, but leave the gasket in place.

Referring to Fig 19, secure items 8, 7, 6 & 5 in order on to the top of the heat exchanger, using the nuts previously removed.

Fit the lower flue section (4) to the spigot (6) now situated on top of the heat exchanger and ensure the hose connection is directed to the front.

Fit the flue mid-section (3) and any other optional flue lengths to the preceding flue lengths in the same manner, pushing firmly down until the outer sections meet (but do not overlap). Use the clamping strap (2) to secure the outer sections together.

Fit the horizontal flue elbow (item 1, Fig 20) to the top of the flue mid-section. Push firmly together until the outers meet and secure with the clamping strap.

Slide the terminal (4) into the horizontal mid-section (2). Adjust the horizontal length as required, ensuring a minimum distance of 140mm is kept from the end of the terminal to the external face of the wall. Seal the outer horizontal sections together with a suitable material. See Figs 21–22 for allowable distances.

Slide the completed terminal assembly through the wall from the inside and fit to the flue elbow. Push firmly together until the outers meet and secure with the remaining clamping strap.

Use the jubilee clip provided to secure the air hose from the burner to the hose connection on the lower flue section.

Remove the tabs from the cut out in the boiler top casing and fit the casing in position around the flue.

Perform a final check of the flue. Ensure clamping straps are located over all relevant flue joints.

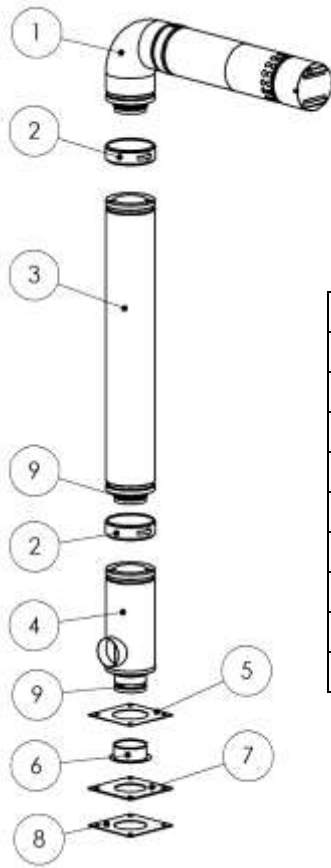
To ensure that any condensate produced in the flue drains away correctly, incline the flue 1° upwards from the boiler. Seal any remaining gaps in the wall around the flue with a suitable material.

Should the height of the flue (Figs 21–22) not meet your requirements, alternative heights can be achieved by discarding and adding different lengths. The vertical mid-section (item 3, Fig 19) can be discarded to subtract 750mm from the total height. In this case, the horizontal elbow should instead be fitted to the lower flue section (4) in the same manner.

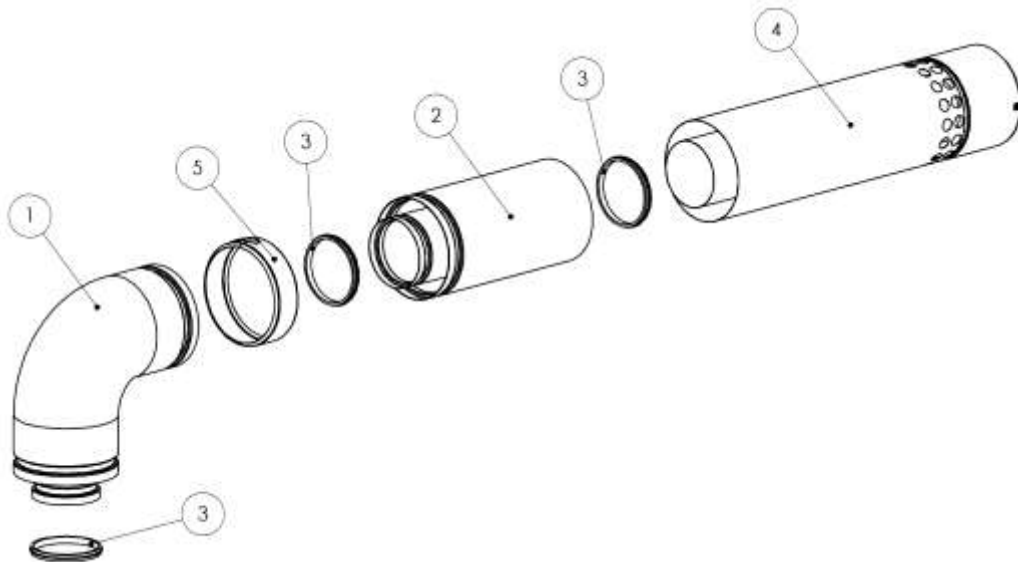
Alternatively, additional sections of pipe can be purchased to meet more specific requirements. Additional 45° elbows can also be purchased to offset the vertical flue run. See page 26 for details.

For outputs 15–26 kW, the total flue run vertical and horizontal must not exceed 6000mm. Any 45° elbows contribute 500mm each to the calculation. The 90° bend contributes 1000mm.

Where the terminal is positioned below 2 metres, or in a place accessible to people, an approved terminal guard will be required. A suitable stainless steel terminal guard is available from TR Engineering (part code 223920).



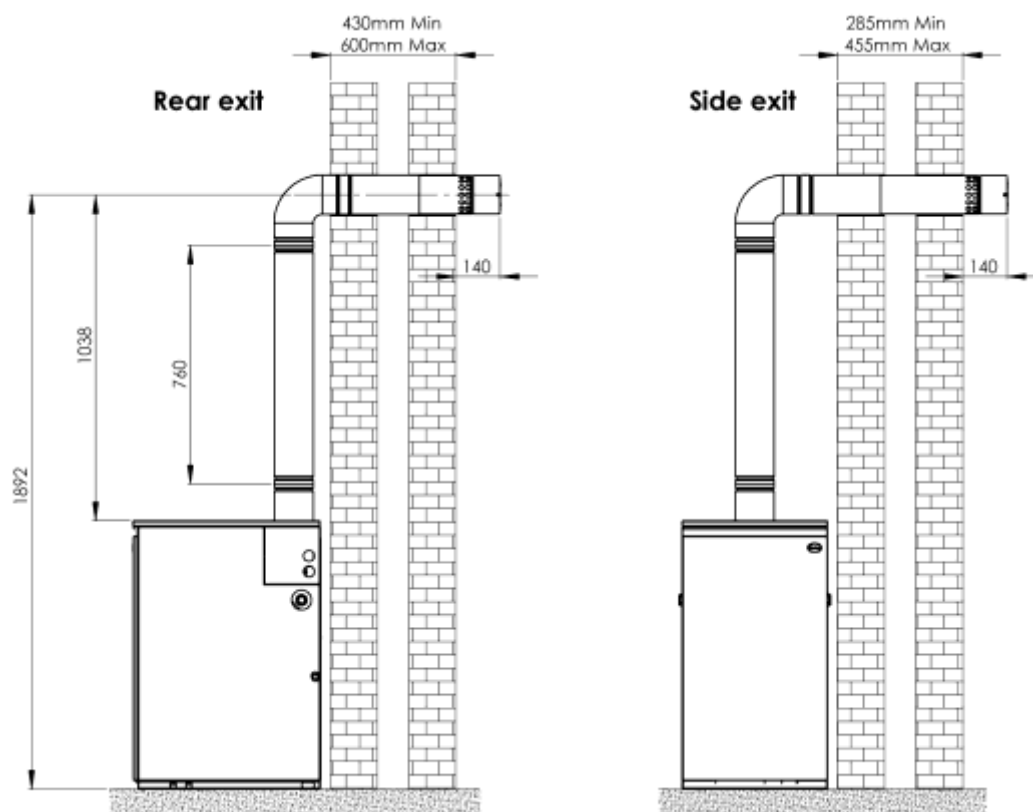
Item	Description	Part No.	Qty
1	Horizontal Flue	2355 or 2356	1
2	Clamping Strap	222899	2
3	Vertical Flue Mid-Section	222867	1
4	Vertical Flue Bottom Section	222820	1
5	Spigot Sealing Plate	222825	1
6	Spigot	222819	1
7	Sealing Plate Gasket	223198	1
8	Flue Sealing Plate	223191	1
9	'O'-Ring Seal	221647	2



Item	Description	Part No. (Kit 2355)	Part No. (Kit 2356)	Qty
1	Elbow	222826	222826	1
2	Mid-Section	222818	222818	1
3	'O'-Ring Seal	221647	221647	3
4	Terminal	222915	222920	1
5	Clamp	222899	222899	1

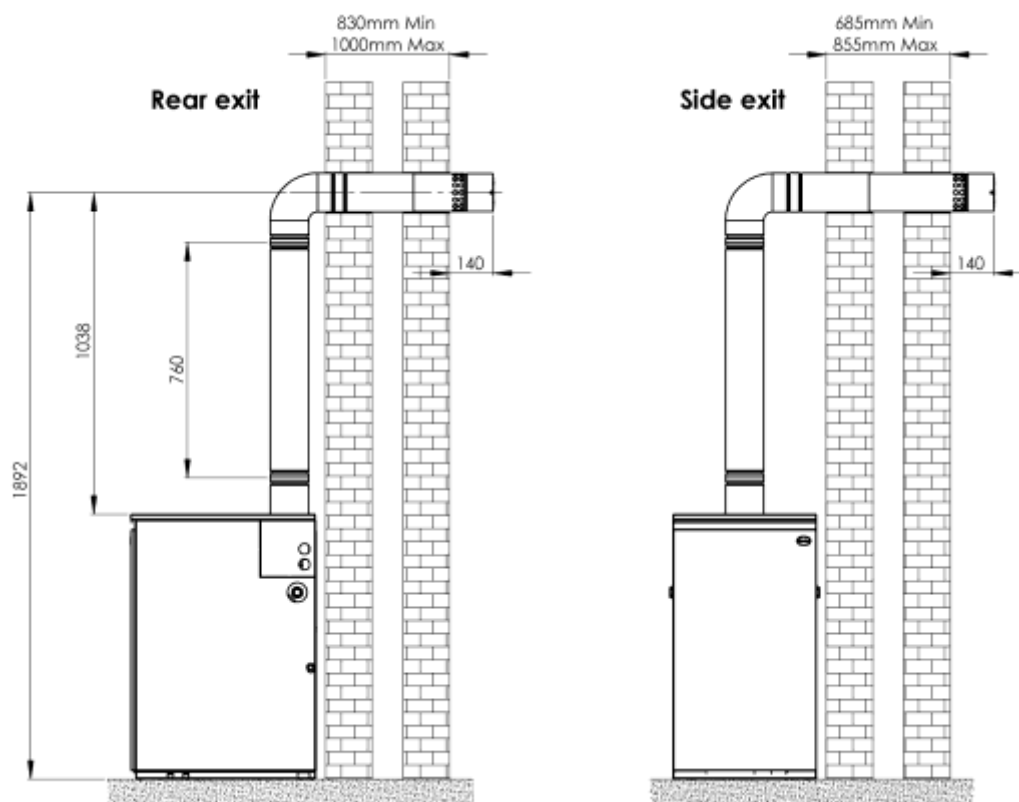
Model	A	B
15-20	1892	1038
20-26	1892	1038

2357 – High Level Adaptor Kit used with
2355 – 600mm Horizontal Balanced Flue kit



Model	A	B
15-20	1892	1038
20-26	1892	1038

2357 – High Level Adaptor Kit used with
2356 – 1000mm Horizontal Balanced Flue Kit



Vertical Balanced Flue Assembly (Kit 2360)

Before starting, ensure the placement of each pipe section has been identified (Fig 23), and that all 'o'-rings (item 5) are in position and are well lubricated. Any white pipe exposed to the elements should be protected with a suitable material. Place all weld seams to the rear.

It may be useful to fully assemble the flue on the ground before fitting to the boiler. Before assembly, determine the length of flue required and if necessary discard the midsections (item 7, Fig 23). See Fig 25 for flue dimensions; see adjacent for details of different available flue lengths.

Having decided the position of the boiler, mark the position of the terminal and cut a circular hole 175mm diameter in the ceiling and roof. Ensure the flue will have a minimum clearance of 25mm from any combustible material.

Remove the boiler top casing and the four nuts that hold the flue socket and gasket to the top of the heat exchanger. Remove the flue socket, but leave the gasket in place.

Referring to Fig 23, secure items 1, 2, 3 & 4 in order on to the top of the heat exchanger, using the nuts previously removed.

Fit the lower flue section (6) to the spigot (3) now situated on top of the heat exchanger and ensure the hose connection is directed to the front.

Fit the first flue mid-section (7) to the lower flue section, pushing firmly down until the outer sections meet (but do not overlap). Use the clamping strap (11) to secure the outer sections together.

Fit the second flue mid-section (7) and the third flue section (8) to the previous sections in the same manner.

Note: Both instances of item 7 can be discarded if they are not required. Of the main flue lengths, only 6 & 8 are mandatory.

Fit the terminal extension (9) over the preceding flue section. This section does not make use of a clamping strap to allow greater flue length variation the fit is telescopic. When the position has been set, drill through the outer pipes only and secure with self-tapping screws.

If necessary, fit the terminal (10) to the terminal extension before it is attached to the third flue section (8). Push firmly down until the outer sections meet and secure with the stainless steel clamping strap (12).

Fit the ceiling plate's (13) centrally over the hole in the ceiling. Pack the space around the flue with a suitable insulation.

Secure the flue in the roof space and fit waterproof flashing (not supplied) around the flue at the roofline.

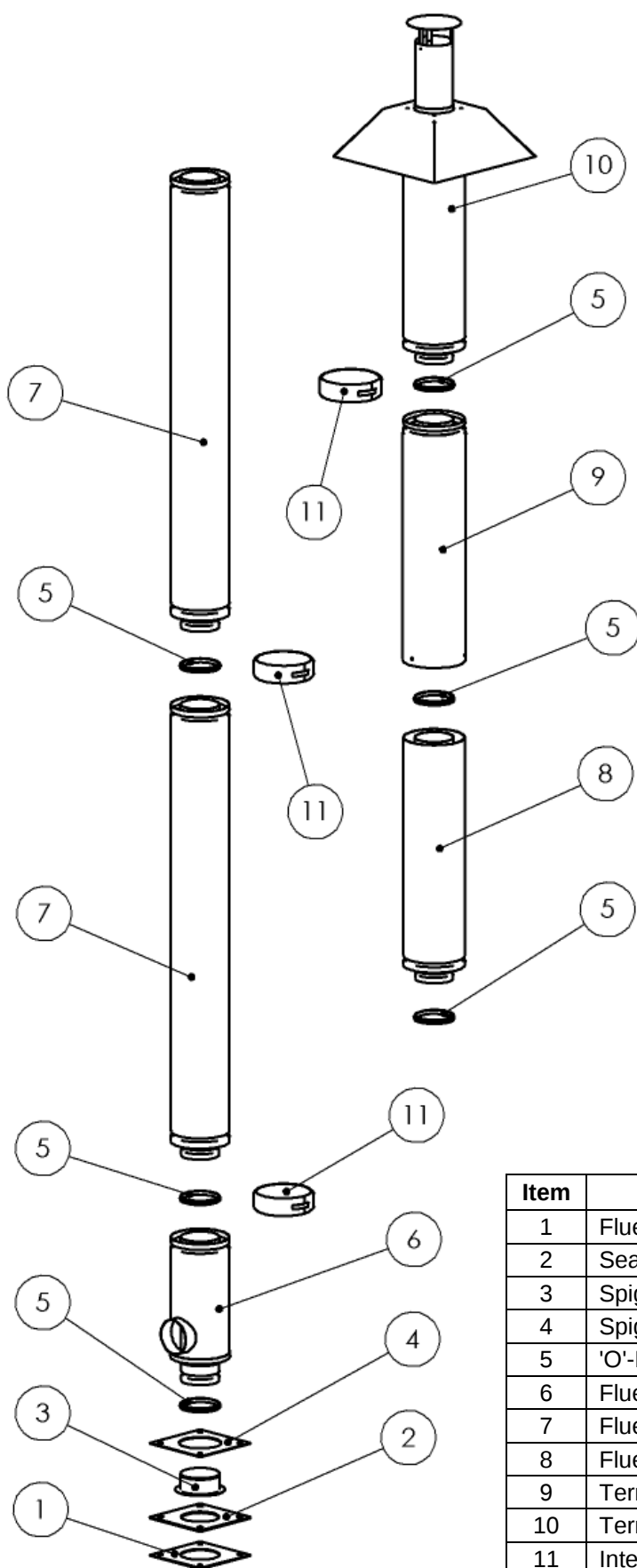
Use the jubilee clip provided to secure the air hose from the burner to the hose connection on the lower flue section.

Remove the tabs from the cut out in the boiler top casing and fit the casing in position around the flue.

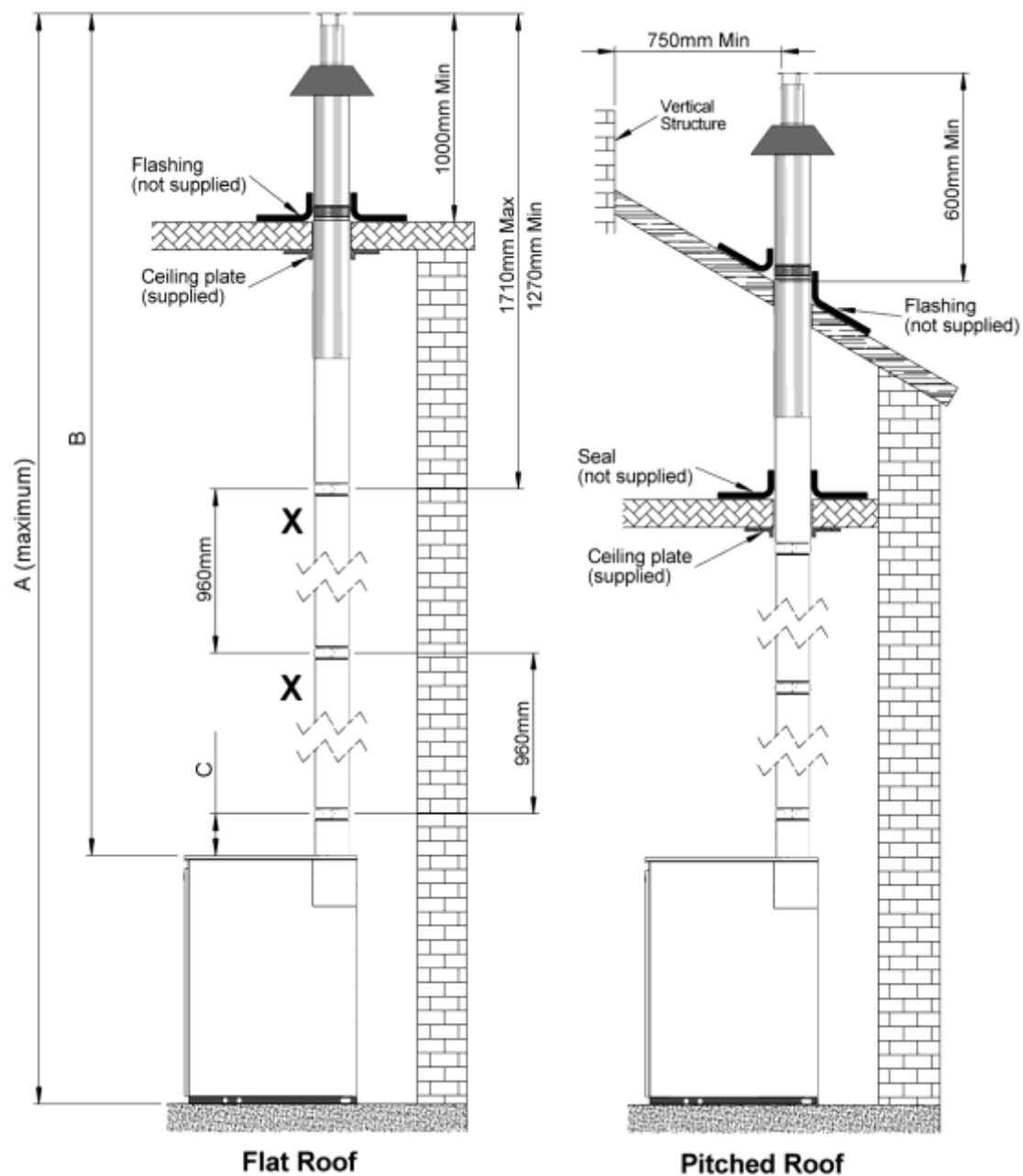
Perform a final check of the flue. Ensure clamping straps are located over all relevant flue joints.

Should the height of the flue (Fig 24) not meet your requirements, alternative heights can be achieved by discarding and adding different lengths. The midsection (7) can be discarded, or additional sections of pipe can be purchased to meet more specific requirements. Additional 45° elbows can be purchased to offset the vertical flue run. See page 26 for details.

For outputs 15–26 kW, the total flue run must not exceed 6000mm. Any 45° elbows contribute 500mm each to the calculation.



Item	Description	Part No.	Qty
1	Flue Sealing Plate	223191	1
2	Sealing Plate Gasket	223198	1
3	Spigot	222819	1
4	Spigot Sealing Plate	222825	1
5	'O'-Ring Seal	221647	6
6	Flue Lower Section	222820	1
7	Flue Middle Section	222829	2
8	Flue Top Section	222877	1
9	Terminal Lower Section	222880	1
10	Terminal	222850	1
11	Internal Clamping Strap	222899	3
12	External Clamping Strap	222894	1
13	Ceiling Plate (not shown)	208583	2



	A	B		C
		Min	Max	
15-20	4600	1390	3750	120
20-26	4600	1390	3750	120

Note 'X': Shorter flue runs can be achieved by discarding the marked sections. Longer runs can be achieved by purchasing additional sections of pipe. Permanent obstructions may be avoided by the use of 45° elbows. See **page 26** for details.

Extensions and Elbows

When fitting the high-level adapter kit (2357) or the vertical flue kit (2360), combinations of the following items can be used to create alternative configurations:

2361 - 500mm short flue extension

2362 - 960mm flue extension

2363 - 45° elbow

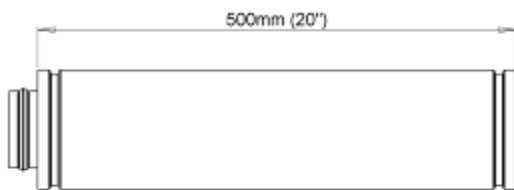
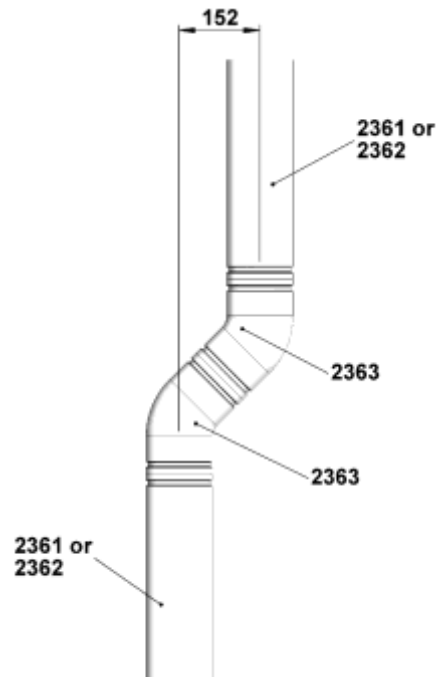
These items should be used to divert or extend vertical sections only. Each is supplied with its own clamping strap and 'o' ring.

For outputs 15-26 kW, the total flue run must not exceed 6000mm. For outputs 29-36 kW, the total flue run must not exceed 4000mm. Any 45° elbows contribute 500mm each to the calculation. The 90° bend in the vertical balanced flue kit contributes 1000mm.

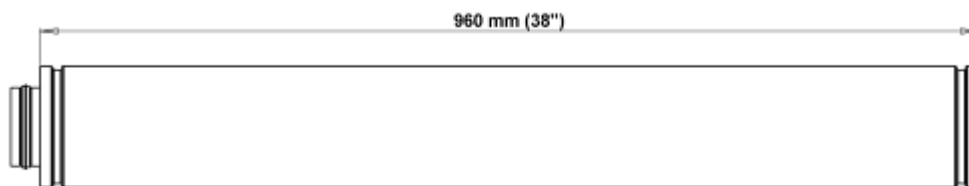
The 45° elbows can be used to offset the vertical sections of flue on both the high-level and vertical flue kits (Fig 25). Ensure all 'o' ring seals are in position and well lubricated; push the elbow and flue pipe firmly together, securing with the clamping strap provided. The extension pieces (2361 and 2362) can be used between the elbows to extend the diagonal run.

Example:

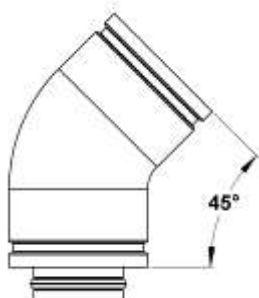
2 x 45° elbows to offset vertical flue extensions.



2361



2362



2363

These items are only to be used with the vertical sections of the high-level adaptor kit (2357) and the vertical flue kit (2360).

Each item is supplied complete with its own clamping strap and 'o' ring.

COMMISSIONING

Although all burners are tested before despatch, individual site conditions such as oil supply pressures and deviations in the draught mean that the burner will require adjustment after installation to achieve optimal performance. As such, the boiler **MUST** be commissioned by qualified engineer, preferably OFTEC-trained and registered. See the burner setup leaflet for further information.

It is the responsibility of the installation engineer to ensure the boiler is commissioned. Failure to do so will invalidate the guarantee and any extended warranty.

Procedure

- 1) Switch off the electrical supply to the boiler.
- 2) Ensure the boiler is full of water and that all isolation valves are open.
- 3) Remove the combustion chamber access cover and check the baffle positions (Figs 29 & 30).
- 4) For single-pipe oil supplies, disconnect the supply line from the burner. Open the shut-off valve and run a small quantity of oil into a container to ensure it is clean and free of air. Reconnect the oil supply.
- 5) Check that the programmer is in the **ON** position and that any thermostats are calling for heat.
- 6) Switch on the electrical supply to the boiler, which should now fire.

Note: upon first firing, the burner may lockout due to the retention of air in the oil pump. Should this occur, wait for one minute before pressing the reset button. Should the burner lockout again, the air can be bled from the oil pump via the pressure gauge connection.

- 7) Start and stop the burner several times. When the flame cuts off sharply, this indicates that the remaining air has been dispersed.
- 8) Set the pump pressure to the correct level. Run the boiler for 15 minutes and measure CO₂ levels at the flue gas sample port (page 28). Compare the readings with those given in the burner set up leaflet and if necessary adjust the intake of air into the burner.
- 9) Check the smoke number and flue gas temperature.
- 10) If the boiler is not going to be put to immediate use, isolate the oil and electrical supplies. If the boiler is not going to be run during freezing conditions, the system should be drained of water.

Handing Over

After completing the boiler installation, the engineer should check the system to ensure it is satisfactory and works according to these instructions. The use of the boiler and other system controls should be demonstrated to the end user.

All instructions should be handed to the user for retention. Advice should be given on the requirement for an annual service. For householder reference, the form on page 35 should be completed.

A CD/10 installation completion form (or non-OFTEC equivalent) should be completed and a copy left with the end-user. The registration card should be completed in full and returned to TR Engineering. Failure to do so may delay any subsequent warranty work.

All installations must be registered with the local authority's Building Control, either through OFTEC or directly through Building Control. **This is a legal requirement.** After registration, the local council will issue a Works Notification Certificate.

SERVICING

To maintain the boiler's high thermal efficiency and to ensure continued, reliable operation the boiler **must** be serviced annually by a qualified engineer, preferably OFTEC trained and registered. Any electrical work should be carried out by a suitably qualified engineer.

A CD/11 commissioning form (or non OFTEC equivalent) should be completed and a copy left with the end-user. The CD/11 enables the engineer to demonstrate compliance with building, health and safety, and efficiency requirements.

If the boiler provides central heating and hot water all year round, the best time for the annual service is just before the start of the heating season.

Before starting the service, review the health and safety information on page 2.

Pre Service Checks

Ensure the air inlets on the flue terminal are clear.

Ensure the external controls are working.

Ensure the ventilation openings are clear and adequate for the size of the boiler (pages 10–11).

Ensure all water and oil connections are secure.

Inspect the flexible oil lines replace if necessary.

Oil Tank and Line Filters

Open the tanks drain cock and draw off any accumulated water and sludge.

Turn off the oil supply. Remove the filter bowl and clean the filter element with Kerosene.

Condensing System

The secondary heat exchanger and condensate trap must be inspected and cleaned as part of the annual service schedule. The secondary heat exchanger is built into the boiler and can only be accessed for cleaning from the combustion chamber access cover. See Fig 27.

Remove the combustion chamber cover and remove each of the baffle strips from the flue-ways.

Clean the baffle strips. The flue-ways can be cleaned using a wire brush before vacuuming any remaining deposits.

Remove the cleaning port plug from the top of the boiler and clean within using a wire brush or similar.

Check the condensate drainage system is not blocked and retains a small quantity of water. If the trap requires refilling, pour a small amount of water into the cleaning port. The trap will have sufficient water when water emerges from the drainage pipe.

Replace the baffle strips, ensuring each is firmly pushed into the flue-ways. See Figs 28 & 29.

Burner and Combustion Chamber

Ensure the electrical supply is switched off and remove the burner. If the boiler uses a balanced flue, remove the air hose first.

Remove the main combustion chamber baffles.

Using a wire brush, clean all carbon deposits from the baffles and the internal surfaces of the combustion chamber. Vacuum any remaining deposits from the floor of the chamber.

Check the flue-sealing gasket and the combustion chamber cover gasket and replace if necessary.

Replace the baffles in the correct order. Failure to do so will impede the correct operation of the boiler. See Figs 28 & 29 for correct placement.

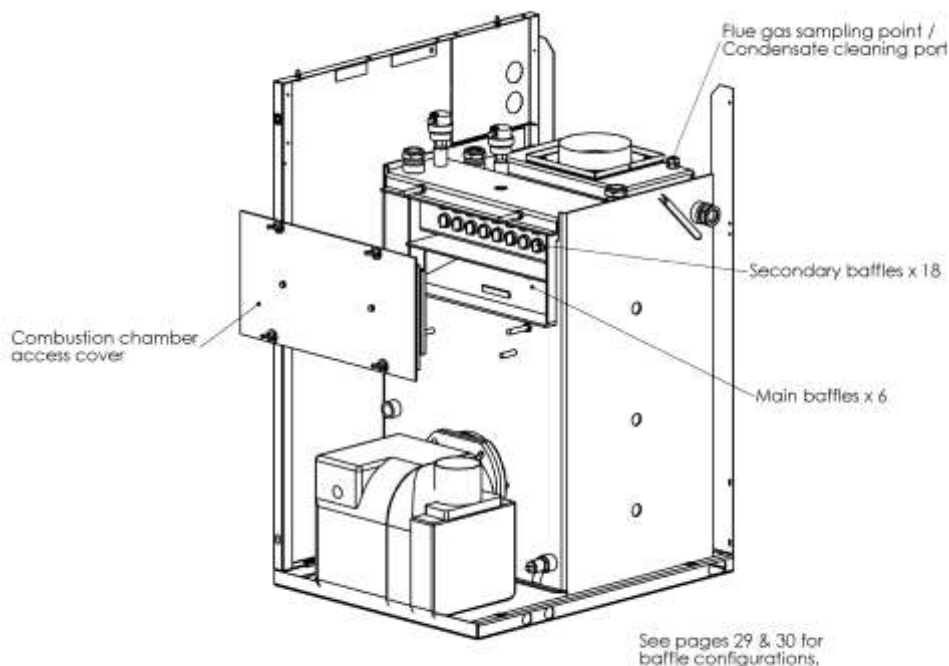
Replace the combustion chamber cover, ensuring a gas-tight seal is formed.

Replace the burner nozzle (see the burner setup leaflet for method).

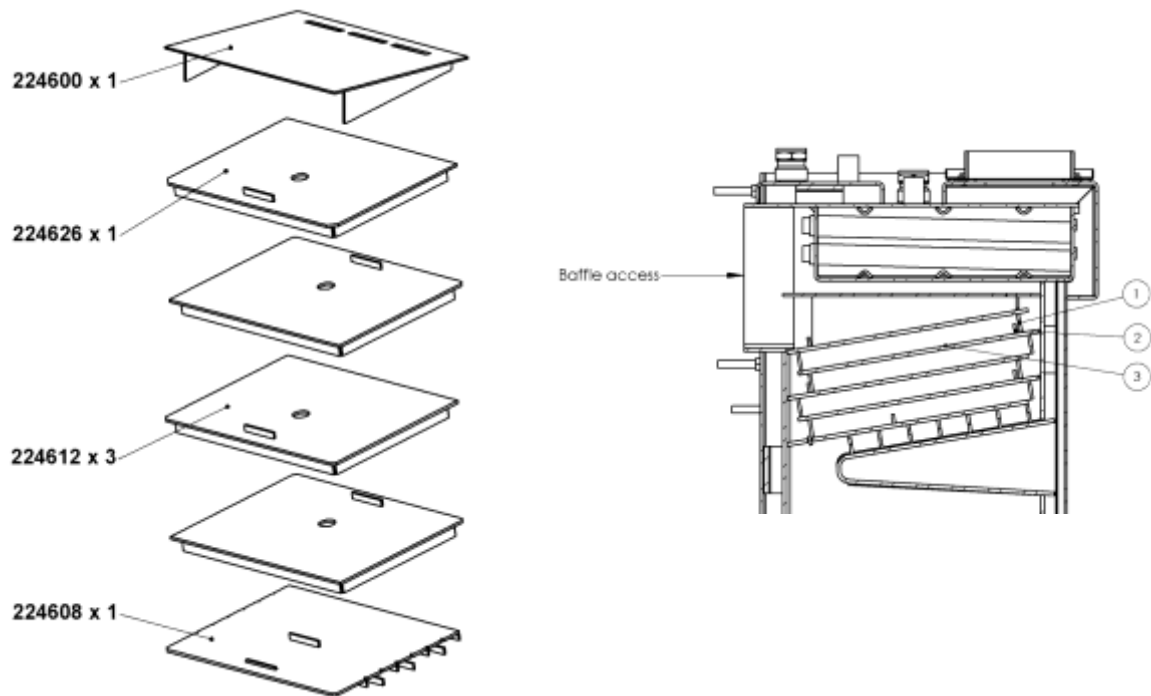
Refit the burner and air hose (if removed).

Ensure the system is full of water and switch on the electrical supply. If the system controls are calling for heat the burner should now fire.

Check the combustion settings against those in the burner set up leaflet. Adjust the air intake levels and oil pressure as necessary.

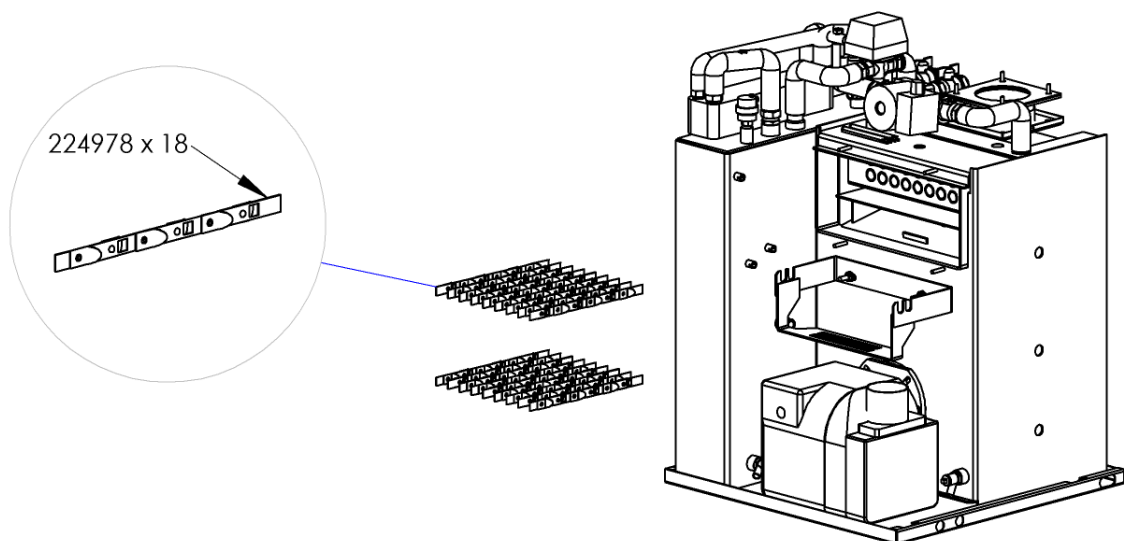


Baffle Configurations (15/20 kW & 20/26kW) Main Baffles



Important: As shown above, the 'skirt' (1) on the underside of each baffle must be hooked over the rear of the lug (2) on the baffle immediately below. The use of a tool may be required to lift the third baffle (3) from the combustion chamber. Insert a screwdriver or similar into the lifting hole in the centre of the baffle and raise above the lip of the baffle access channel. Failure to ensure the correct placement of the baffles will result in incorrect combustion and may invalidate the appliance warranty.

Secondary Baffles



BURNER FAULT FINDING

Note: before making any electrical checks or modifications, ensure the mains supply to the boilers is switched off.

Fault	Possible cause	Action
Burner will not start	Control box locked out High limit thermostat tripped System controls satisfied Blown fuse Motor or pump seized	Press red reset button on burner Press red reset button on rear of control panel; check function of boiler thermostat Ensure that all controls are calling for heat Fit new fuse (5A); if problem persists, look for short circuits in the wiring Check for rotation; replace as necessary
Burner starts but flame will not establish	No oil supply Air trapped in pump or oil line Solenoid coil not opening Blocked nozzle Electrodes incorrectly set Electrode insulation cracked Faulty ignition leads Low oil pressure	Check oil levels in storage tank; check for adequate flow through the oil supply pipes Bleed excess air from the pump via the pressure gauge connection Check coil for continuity; replace as necessary Replace the nozzle Reset gap and position to dimensions given Replace as necessary Replace as necessary Check pump pressure and adjust to level given
Flame establishes but cuts out after a few seconds	Oil contaminated with water Oil filter partially blocked Faulty photocell or photocell not seeing flame Low oil pressure	Run oil from drain cock at tank until free of water Wash filter clean with kerosene Clean photocell; check for damage; ensure it is fully inserted; replace as necessary Check pump pressure and adjust
Morning start lock-out	Faulty non-return valve or air leak Low voltage to the boiler Incorrect combustion settings Oil in storage tank below level of burner	Replace non-return valve; repair leak Check with electricity supplier to remedy Check combustion under normal running conditions; set air intake and oil pressure Raise tank or fit two-pipe oil supply
Delayed ignition (burner pulsates)	Nozzle partially blocked Low oil pressure Flue blocked or damaged Fan slipping on shaft Pump coupling loose or worn	Replace nozzle Check pump pressure and adjust Check flue; replace/repair as necessary Check fan; replace/repair as necessary Check coupling; replace/repair as necessary
Burner starts violently	Electrodes incorrectly set Electrodes damaged Faulty ignition leads	Reset electrode gap and position to dimensions given in burner details leaflet Replace as necessary Replace as necessary
Burner repeatedly attempts to fire (balanced-flue only)	Exhaust gas in combustion air	Repair/replace leaking flue sections as necessary check for obstructions close to the terminal
Combustion fumes smell	Combustion chamber access cover not secure Burner incorrectly fitted or gasket damaged Flue incorrectly fitted or gasket damaged	Tighten nuts; replace seal as necessary Tighten burner to boiler; replace seal as necessary Tighten mounting nuts; replace seal as necessary

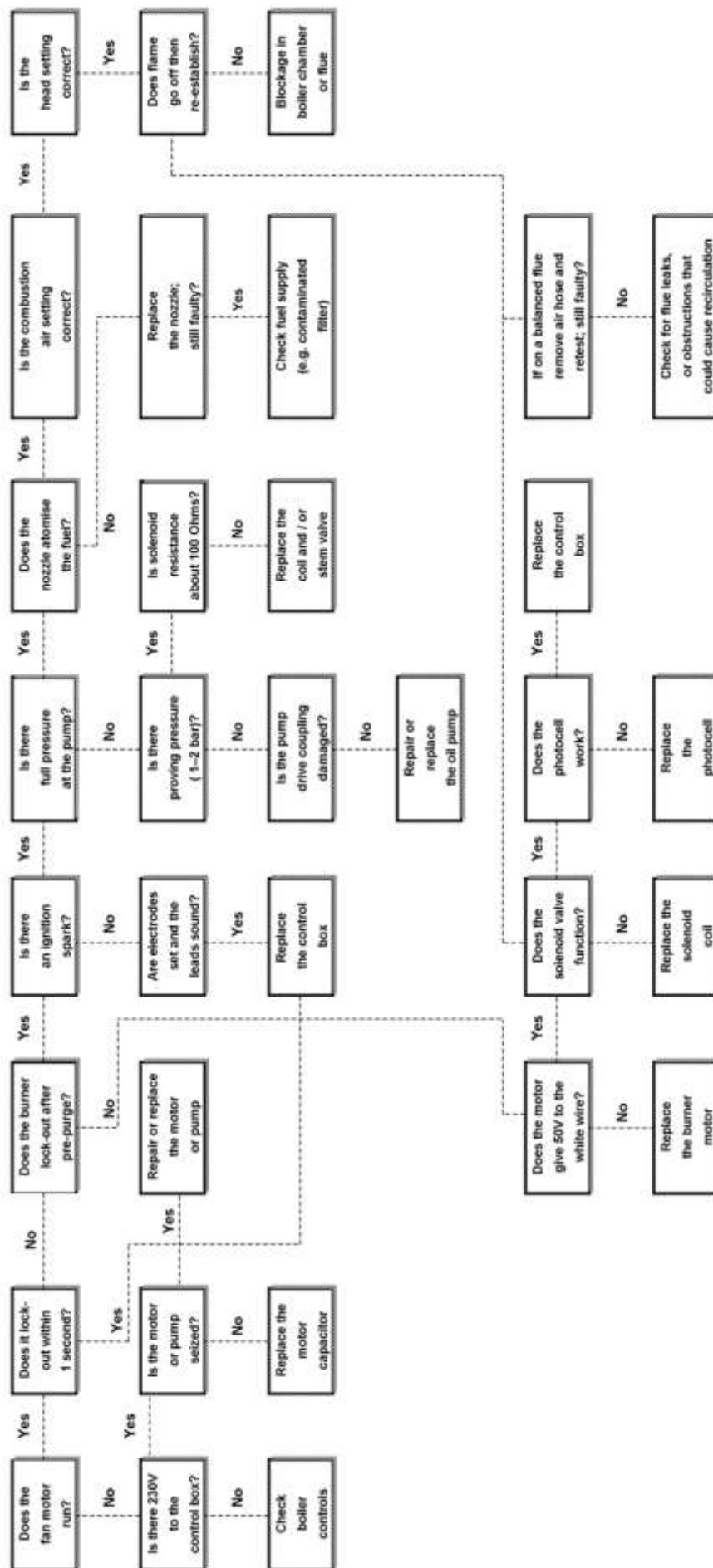
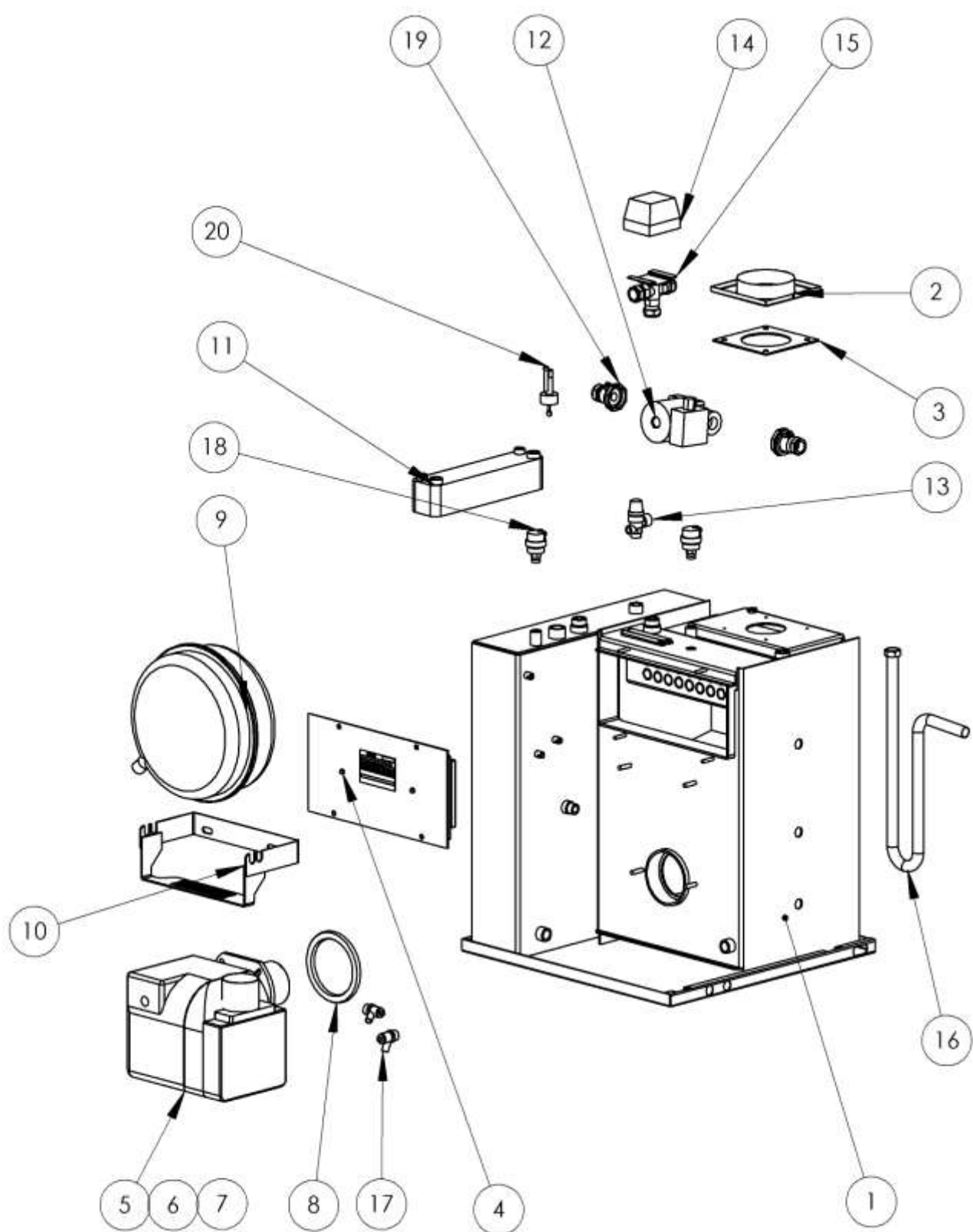


FIG. 30
Burner Fault Finding Logic Chart



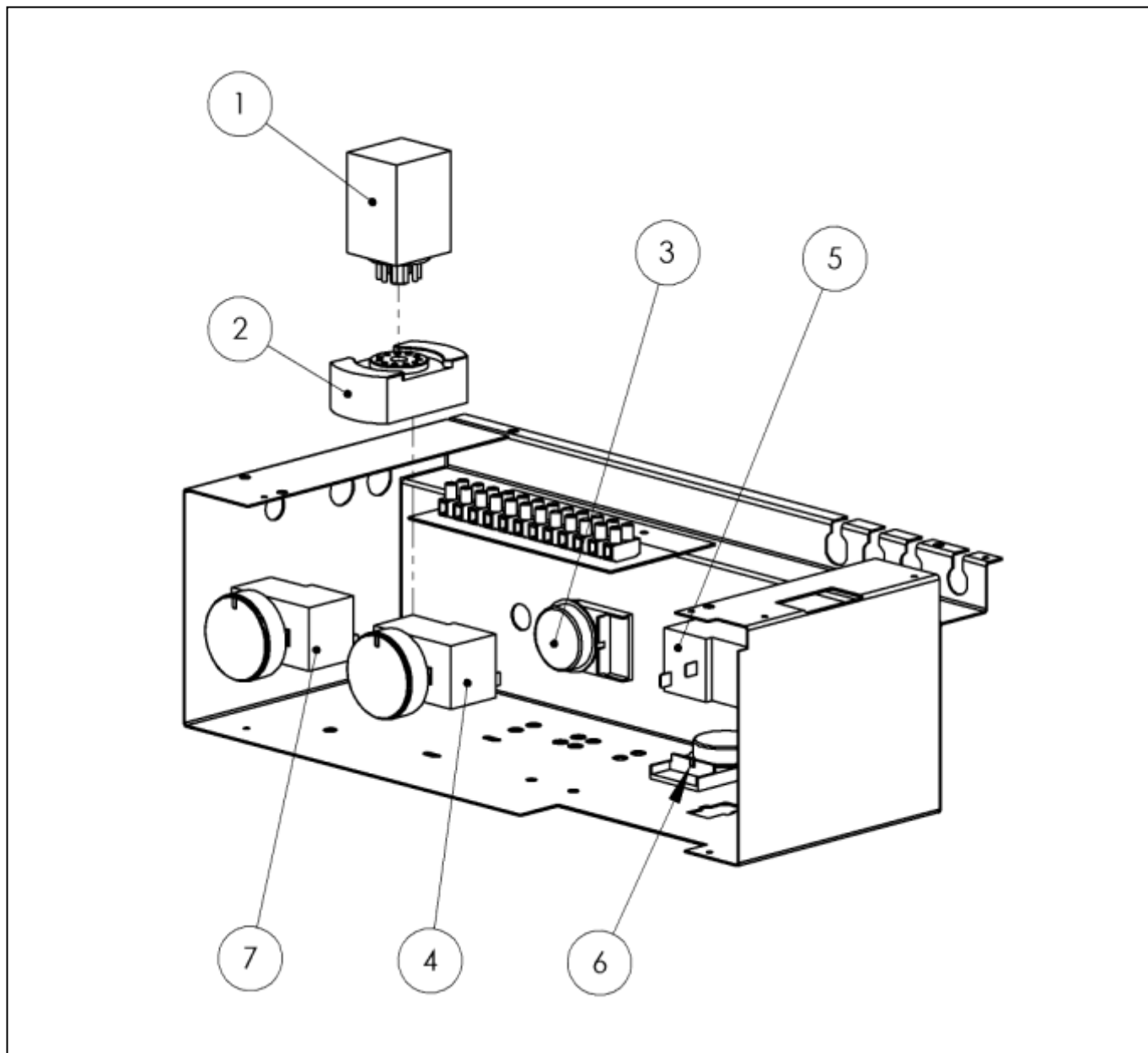
SPARES (Fig 31)

Item	Description	Combi 20	Qty	Combi 26	Qty
1	Boiler Body and Tank Assembly	224560	1	224560	1
2	Flue Socket	223135	1	223135	1
3	Flue Socket Gasket	223071	1	223071	1
4	Combustion Chamber Access Cover	224670	1	224670	1
5	Burner	224820	1	224821	1
6	Burner Mounting Flange Gasket	224941	1	224941	1
7	Burner Mounting Flange	224942	1	224942	1
8	Burner Mounting Gasket	223108	1	223108	1
9	Expansion Vessel	207291	1	207291	1
10	Expansion Vessel Bracket	223164	1	223164	1
11	Plate Heat Exchanger	208771	1	208771	1
12	Pump	26224	1	26224	1
13	Pressure Relief Valve	221920	1	221920	1
14	Hydraulic Valve Actuator	501938	1	501938	1
15	Hydraulic Actuator Body	209824	1	209824	1
16	Condensate Drain Pipe	224686	1	224686	1
17	Drain Cock	99592	2	99592	2
18	Automatic Air Vent	207296	2	207296	2
19	Pump Isolation Valve	99461	2	99461	2
20	Flow Switch	208651	1	208651	1
21	Air Intake Hose	209576	1	209576	1
22	Top Baffle	224600	1	224600	1
23	Second Baffle	224626	1	224626	1
24	Middle Baffle	224612	3	224612	3
25	Bottom Baffle	224608	1	224608	1
26	Condensing Unit Blade Baffle	224978	18	224978	18
27	Flexible Oil Line	207019	1	207019	1

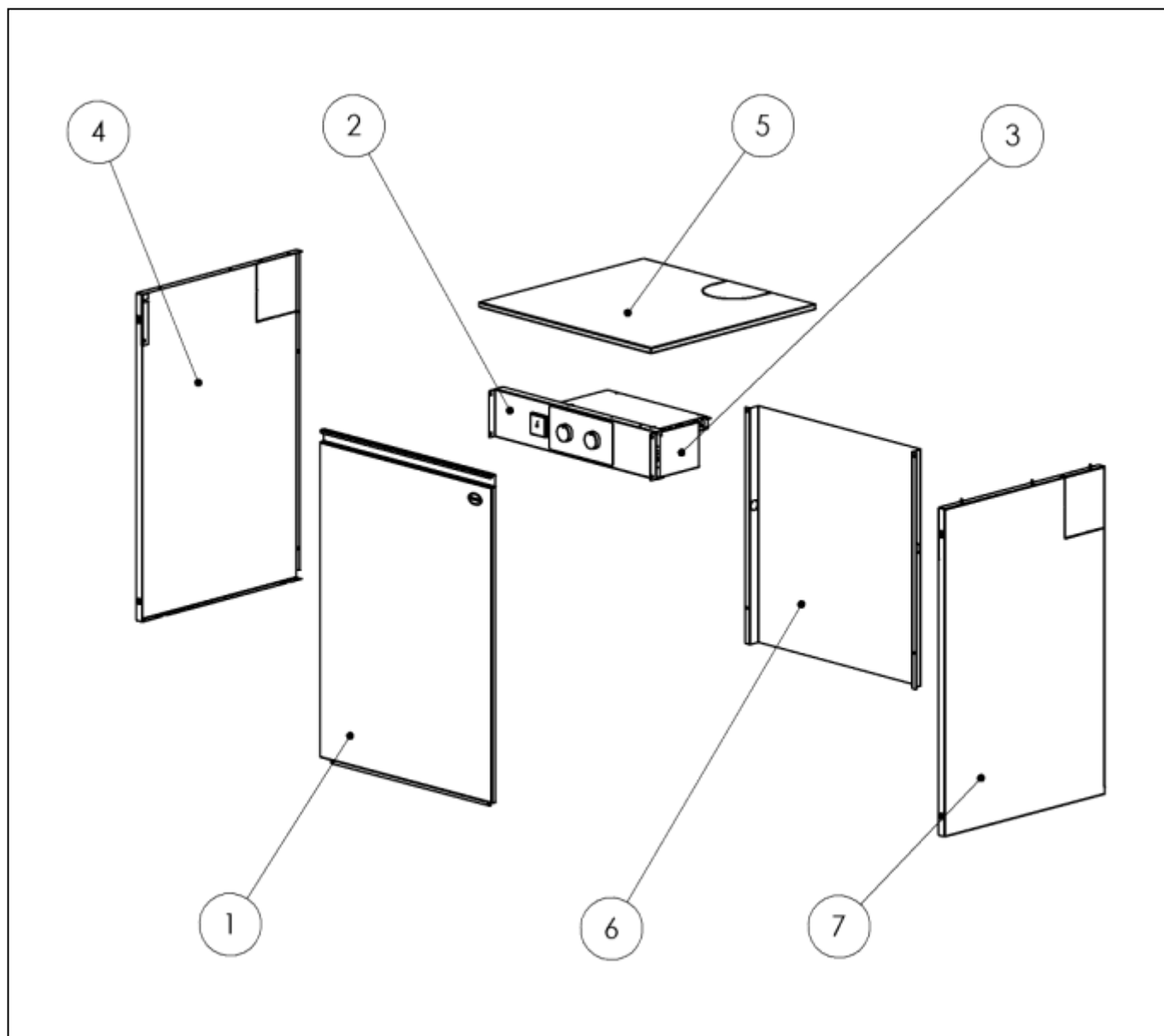
Note: Item 21 not shown for clarity.

Note: Item's 22 to 26 not shown see fig's 28 & 29 for baffle configurations.

Note: Item 21 not shown see burner set up leaflet for further information.



Item	Description	Part No.	Qty
	Control Box Assy	221599	1
1	Relay	54572	1
2	Relay Base	501765	1
3	Tank Limit Thermostat	208096	1
4	DHW Thermostat	221572	1
5	Tank Thermostat	500039	1
6	Boiler Limit Thermostat	206892	1
7	Boiler Control Thermostat	206896	1
8	Programmer (Not Shown)	224960	1



Item	Description	Part No.	Qty
1	Door Panel Assembly	224661	1
2	Control Panel Assembly	224664	1
3	Control Box Assembly	221599	1
4	Left Side Panel Assembly	224564	1
5	Top Panel Assembly	224567	1
6	Back Panel	224657	1
7	Right Hand Panel Assembly	224561	1

The following information should be provided upon installation of the appliance for householder reference:

Installation Engineer:

Company:

Company Address:

Company Tel. No:



TR ENGINEERING LTD
Thorncliffe, Chapeltown,
Sheffield, S35 2PH.
Tel: (0114) 2572300
Fax: (0114) 2571419
www.trianco.co.uk

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September 2011

Item 224961 Issue 1