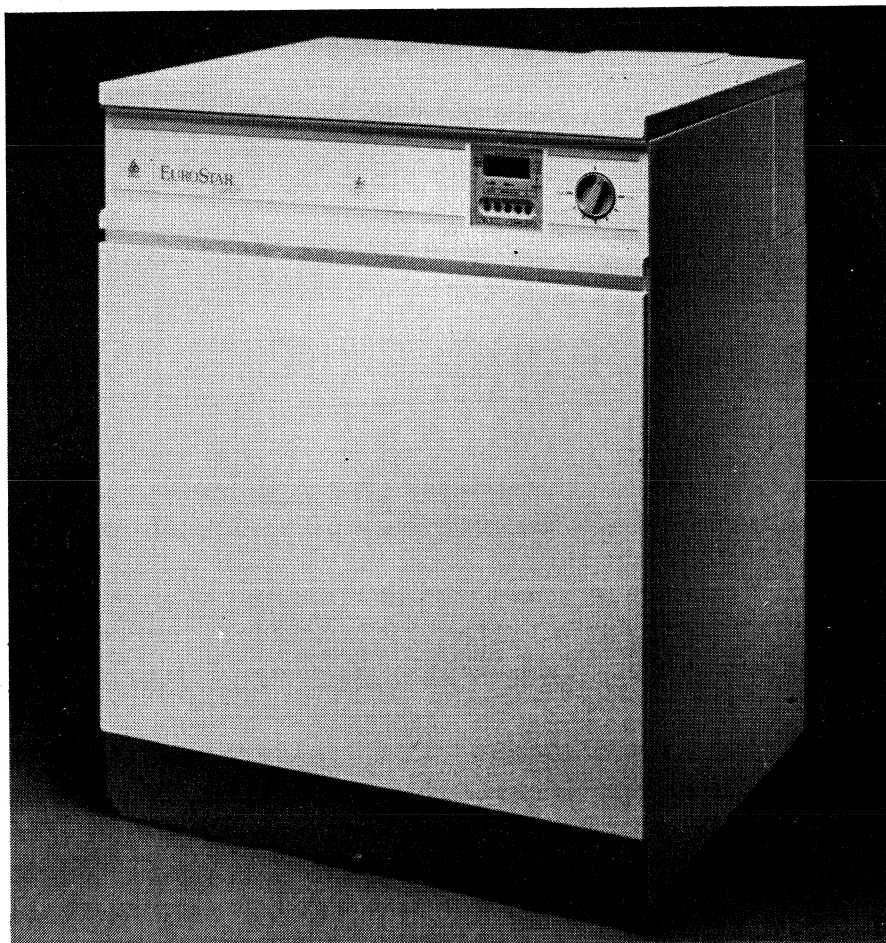


1996

TRIANCO

Eurostar Combi



Model shown with optional programmer kit

USER INSTALLATION COMMISSIONING & SERVICING INSTRUCTIONS

CE BED 92/42 EEC
EMC 89/336 EEC

To be retained by householder

65 + 90

HEALTH AND SAFETY

INFORMATION FOR THE INSTALLER AND SERVICE ENGINEER

Under the current issue of the Consumer Protection Act and the Health and safety at Work Act, it is a requirement to provide information on substances hazardous to health (COSSH Regulations).

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/Installers 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, Fire Cement.

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 which are used in the product 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 breath any mineral oil vapours. do not fire the Burner in the open i.e. out of the Boiler as a miss fire will cause unburnt oil vapours.
6. Barrier cream containing lanolin such as Rosalex Antisol, is highly recommended together with a strict routine of personal cleaning.
7. Under no circumstances should mineral oils be taken internally.

| PAGE | |
|----------------------------------------|------------|
| 1. USER INSTRUCTIONS | 1/2 |
| After sales service information | 3 |
| 2. INTRODUCTION | 4 |
| 3. TECHNICAL INFORMATION | 4 |
| Technical data | 5 |
| Outline Dimensions | 6 |
| Pump curves | 7 |
| D.H.W flow | 8 |
| Wiring Diagram | 9 |
| 4. INSTALLATION | 10 |
| Regulations | 10 |
| Health and Safety | 10 |
| Siting the Boiler | 10 |
| Water systems | 10 |
| Water system connection | 11 |
| Functions of water circulating pump | 12 |
| Combustion air conventional flue | 14 |
| Ventilation (conventional flue boiler) | 14 |
| Extraction fan | 14 |
| Electrical supply | 15 |
| 5. OIL STORAGE TANK | 16 |
| Oil supply line | 16 |
| Single pipe oil supply | 17 |
| Two pipe oil supply | 18 |
| Oil De-aerator - Single pipe supply | 19 |
| 6. FLUE SYSTEM | 20 |
| Conventional chimney | 21 |
| Balanced flue options | 22 |
| 7. COMMISSIONING | 23 |
| Procedure | 23 |
| Handing over | 23 |
| 8. SERVICING | 24 |
| Oil Tank | 24 |
| Line Filters | 24 |
| Boiler | 24 |
| 9. FAULT FINDING | 25 |
| 10. SPARES | |
| Casing assembly | 29 |
| Control box assembly | 30 |
| Boiler | 31 |
| Pipework | 32 |

HOW TO USE YOUR TRIANCO BOILER

The boiler is designed to give 24 hour response to domestic hot water with switch in summer/winter position. If a programmer is fitted the system is designed to override any settings giving priority to domestic hot water when the hot water tap is turned on.

It is also recommended that you programme your boiler to come on 30 minutes before you need hot water or central heating as this is the time your boiler will require to allow the hot water store to reach its working temperature.

The boiler is fully automatic once switched on and the water store is up to working temperature, and will supply hot water whenever a tap(s) are turned on.

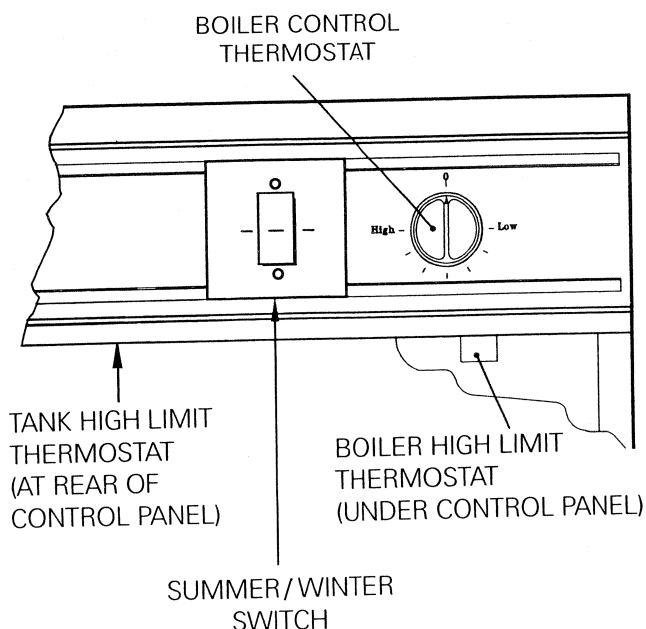
BEFORE FIRING THE BOILER

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 summer/winter switch (check that programmer is on if fitted).
3. Set the boiler thermostat to the desired setting and room thermostat (if fitted) calling for heat.
4. The burner heating the boiler operates automatically cutting in and out according to the heating and hot water demand.

TO TURN THE BOILER OFF

1. Isolate, i.e. switch off the electrical supply to the boiler.



BOILER CONTROL THERMOSTAT

The heating control thermostat enables you to select the temperature of the water leaving the boiler for CH heating. It is calibrated between High and Low in five intermediate settings, corresponding to a temperature range of 82°C (high) to 57°C (low) in increments of approximately 4°C.

Set the thermostat by turning the knob to the required temperature, typically:

Setting 5 (80°C) for Winter Heating and Hot Water

It is recommended the thermostat is not operated below Setting 1 (61°C) otherwise condensation could occur within the boiler.

The thermostat is switched OFF when the knob is turned fully anti-clockwise with pointer opposite '0'.

HIGH LIMIT THERMOSTAT (Hand Reset)

The boiler is fitted with 2 high limit thermostats. Should one of the control thermostats malfunction, the limit stats will take over and shut down the boiler.

To reset the limit stats, remove the front door casing and press the reset button on both limit thermostats.

The boiler control limit thermostat is located under the control panel.

Tank high limit thermostat is located at the rear of the control box.

If limit thermostats operate more frequently, consult your service engineer as there may be a fault in the system.

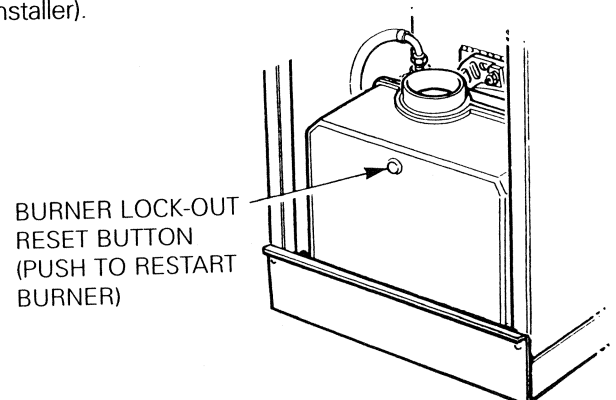
BURNER LOCK-OUT

If the burner fails to light, it will go to lock-out. If this occurs, wait about one minute then remove the front panel and press the reset button to start the burner.

In the event of the burner not firing, wait a further minute and then press the reset button again. If the burner still fails to start, switch off the electrical supply to the boiler.

WARNING - DO NOT ATTEMPT TO START BURNER MORE THAN TWICE.

(See 'Simple Fault Finding' before contacting your Installer).



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 manufacturers 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 : 1983 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 tank drain-cock annually.

SIMPLE FAULT FINDING

NOTE: Before removing any components or insulation please read the advice on Health & 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/Installer.

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 a qualified engineer and an annual service is given thereafter, preferably by an OFTEC trained and registered engineer.

NOTES:

- (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:.....

TRIANCO REDFYRE

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.

No charge will be made for parts and/or labour providing:

- An appliance fault is found and the appliance has been installed and commissioned within the past 24 months. Reasonable evidence of this must be supplied on request. A full service must be carried out every 12 months in order for the guarantee to be valid.

A charge will be made where:

- Our Field Service Engineer finds no fault with the appliance (see note below).
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 Redfyre.
or
- The appliance has been installed for over 24 months and has no extended warranty agreement.
or
- The appliance has not been correctly installed, commissioned or serviced as recommended (see commissioning, installation and service 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 Redfyre to attend.

NOTE: Burner nozzles are excluded from the manufacturers guarantee.

Over 50% of all services 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 Redfyre.

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

What happens if my installer/engineer is unavailable?

Step 3: Contact Trianco Redfyre 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 Redfyre.

SERVICE CENTRE

Tel: 0114 257 2300

Service Desk Ext. 220

Customer Services Manager Ext. 232

TECHNICAL SUPPORT

Technical Helpline

Direct Line 0114 257 2301

Hours of business Monday to Friday 8.30am-5.00pm

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.

The boiler is supplied suitably equipped for connection to a conventional chimney or they can be converted into a room sealed balanced flue appliance by using any of the Trianco Balanced Flue kits

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 roof discharge. (See Balanced Flue Kits for details - Section 6).

As a balance and flue version of 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 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.

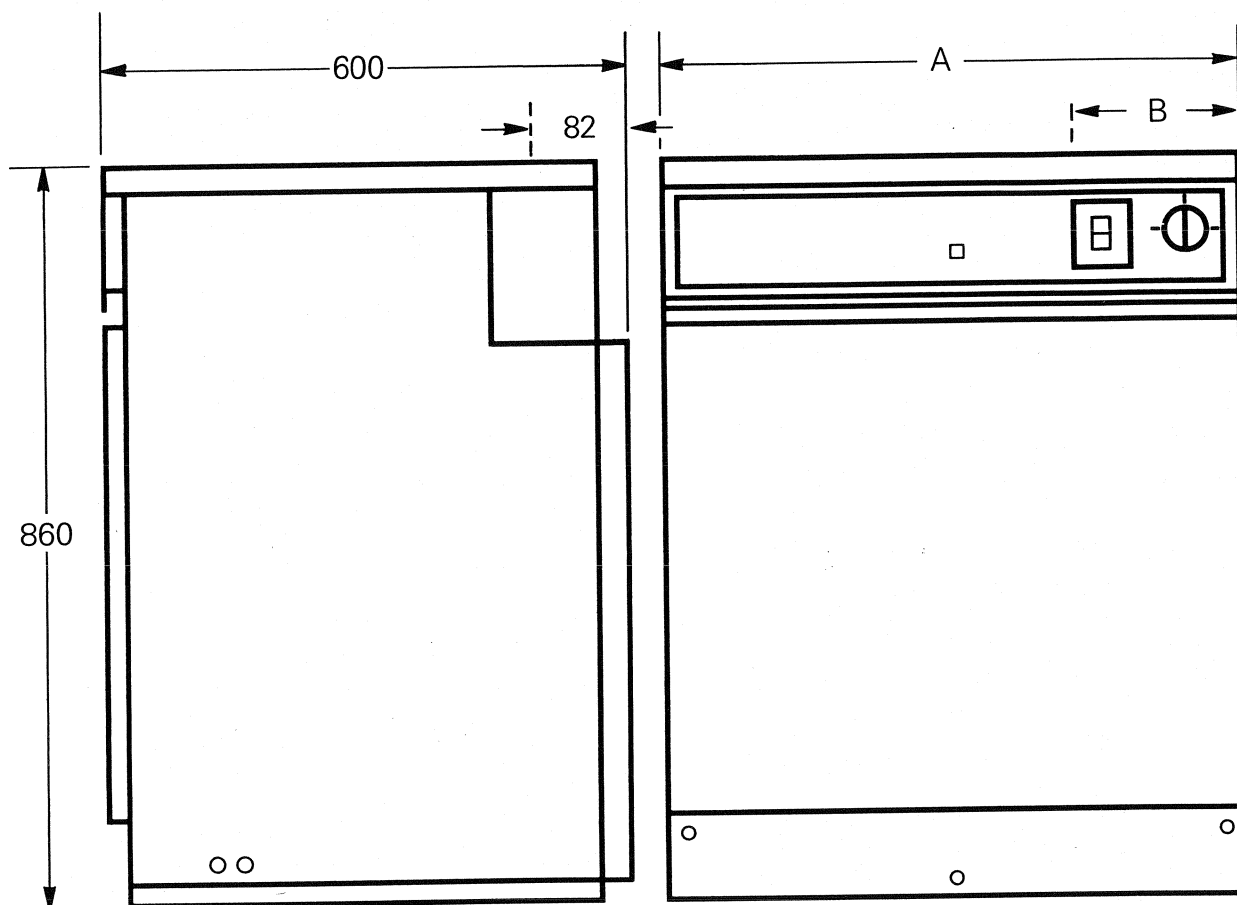
The Trianco EuroStar Combi boiler is supplied with the burner set for Kerosene 28 sec.BS 2869 Class C fuel to meet the Building Regulation requirements for low level flue discharge. It is recommended this fuel is also used when the boiler is connected to a conventional chimney because of the clean burning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

TECHNICAL DATA

| | COMBI 65 | | COMBI 90 | |
|----------------------------------|-------------------------------|--------------|-------------------------------|--------------|
| | METRIC | IMPERIAL | METRIC | IMPERIAL |
| Rated Input | 21 kw | 75,000 Btu/h | 26 kw | 89,000 Btu/h |
| Rated Output | 19 kw | 65,000 Btu/h | 23.4 kw | 80,000 Btu/h |
| Oil Burner | See Burner detail leaflet | | | |
| Weight (empty) | 147 kg | 324 lb | 170 kg | 375 lb |
| Water Content | 82.3 L | 18.5 gallons | 82.3 L | 18.5 gallons |
| C H Flow & Return | 22 mm | | 22 mm | |
| DHW Inlet & Outlet | 15 mm | | 15 mm | |
| Drain off socket | 1/2" BSP | | 1/2" BSP | |
| Flue Socket Dia (C F) | 100 & 125 mm | 4 & 5 in | 100 & 125 mm | 4 & 5 in |
| Maximum Operating Pressure | 3 bar | 43.5 psi | 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 mbar | 8.8 wg | 22.5 mbar | 9 wg |
| Overall Height | 860 mm | 34 in | 860 mm | 34 in |
| Overall Width | 585 mm | 23 in | 685 mm | 30 in |
| Overall Depth mm (in) | 600 mm | 23.6 in | 600 mm | 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 | |
| High Flow Thermostat | Ranco ODD Type K36 | | Ranco ODD Type K36 | |
| Pump Overrun 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 V3 | | Danfoss Randall HS V3 | |
| Expansion Vessel | Zilmet 10L charge 0.5 bar | | Zilmet 10L charge 0.5 bar | |
| 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 | Brefco 3 bar | | Brefco 3 bar | |
| Max. Flow Temp. CH | 82°C | | 82°C | |
| Flow Rate DHW @ 3 bar | | | 22 Litre | 4.9 gal |
| Flow Rate DHW @ 1.2 bar | 18.2 Litre | 4 gal | | |
| Available Head System | 3 m | 9.75 ft | 3 m | 9.75 ft |
| Flue Gas Temperature | 215°C | | 215°C | |
| Required Flue Draught | 12.5 mm | 0.05 in | 12.5 mm | 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 amps | | 1.2 amps | |
| | | | | |
| | | | | |



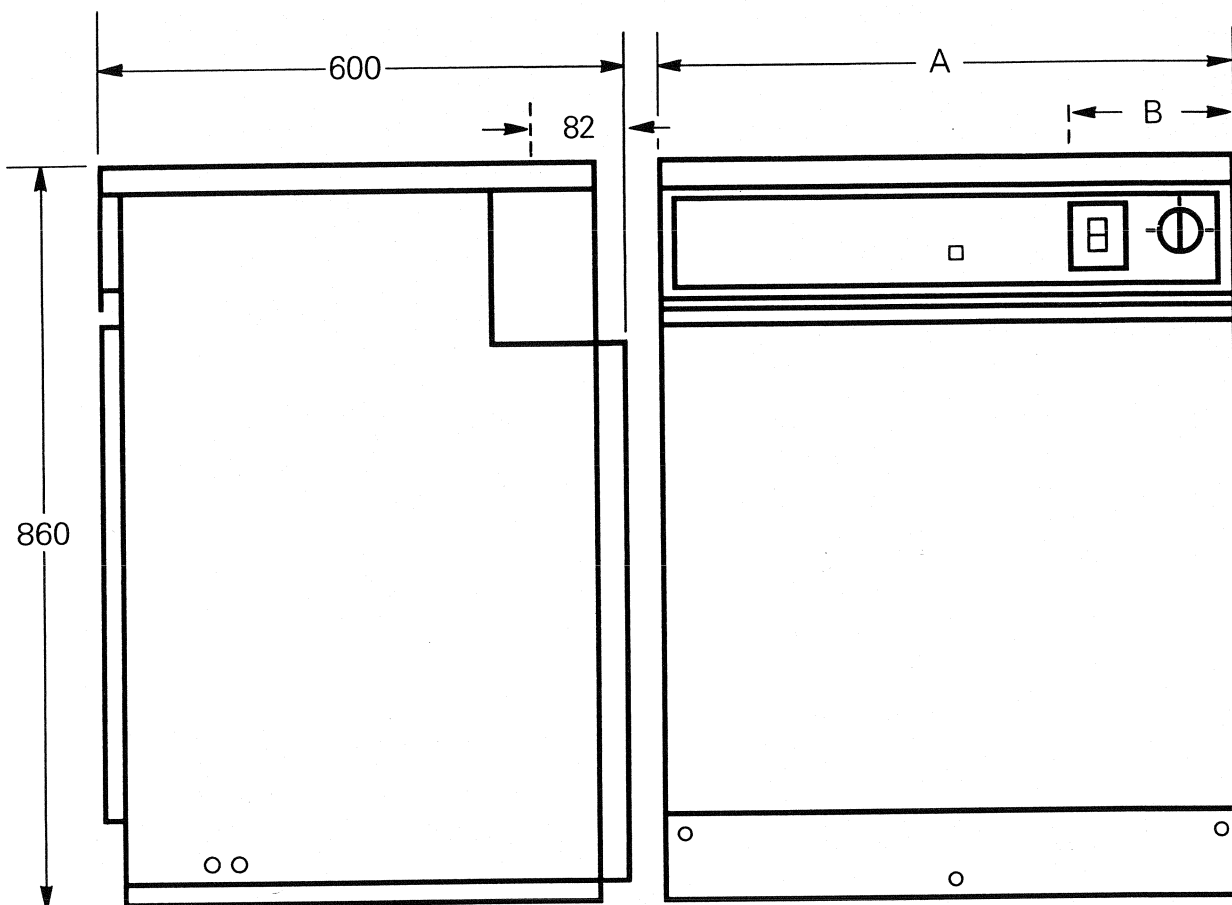
| | | |
|----------------|-----|-----|
| EuroStar Combi | 65 | 90 |
| DIM A | 585 | 685 |
| DIM B | 200 | 226 |

| SPACE REQUIRED FOR INSTALLATION AND MAINTENANCE | | |
|-------------------------------------------------|----------|--------------------|
| REAR | NIL (mm) | NIL (in) |
| SIDE LH/RH | 20 (mm) | $\frac{3}{4}$ (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/CLEARANCES



| | | |
|----------------|-----|-----|
| EuroStar Combi | 65 | 90 |
| DIM A | 585 | 685 |
| DIM B | 200 | 226 |

| SPACE REQUIRED FOR INSTALLATION AND MAINTENANCE | | |
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| REAR | NIL (mm) | NIL (in) |
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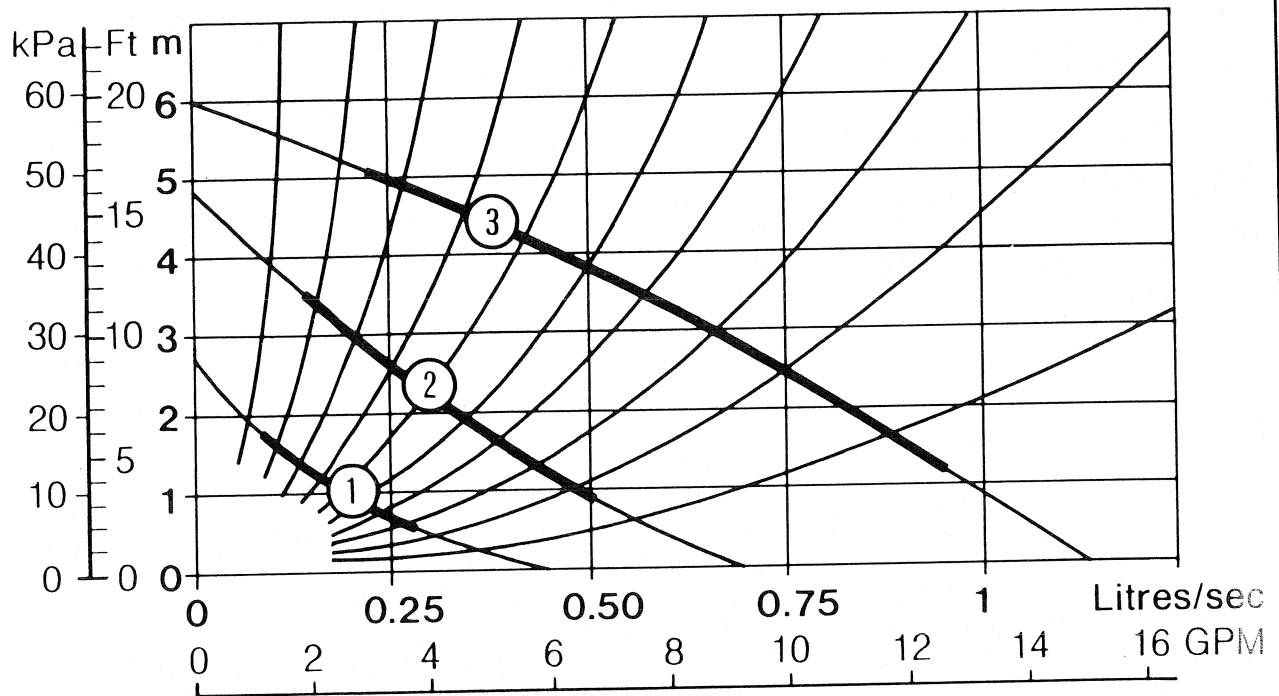
THE BOILER MAY BE INSTALLED
BELOW A KITCHEN WORK SURFACE
SO LONG AS THE SECTION IS
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CLEARANCE IS MAINTAINED
CLEARANCE UNDER WORK SURFACE
5mm MINIMUM

Fig.1

OUTLINE DIMENSIONS/CLEARANCES

Grundfos 15/60 (EuroStar Combi 90)

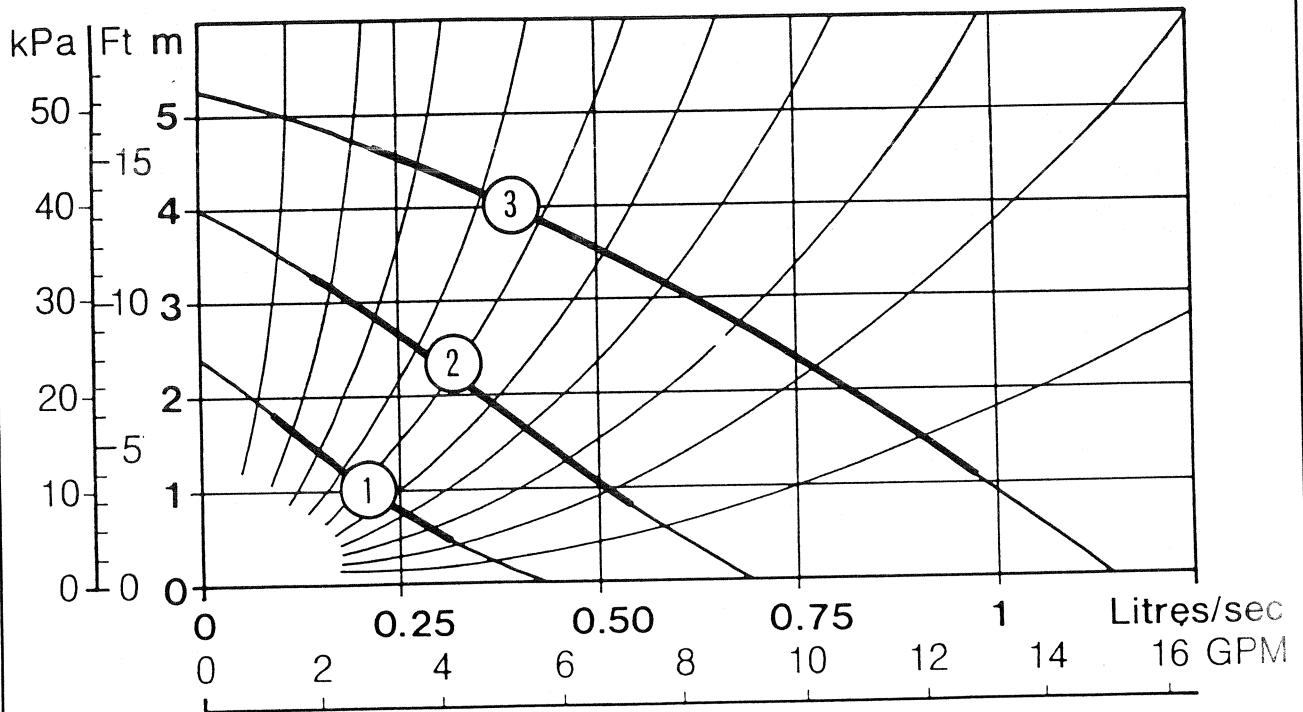
PUMP FLOW CURVE



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

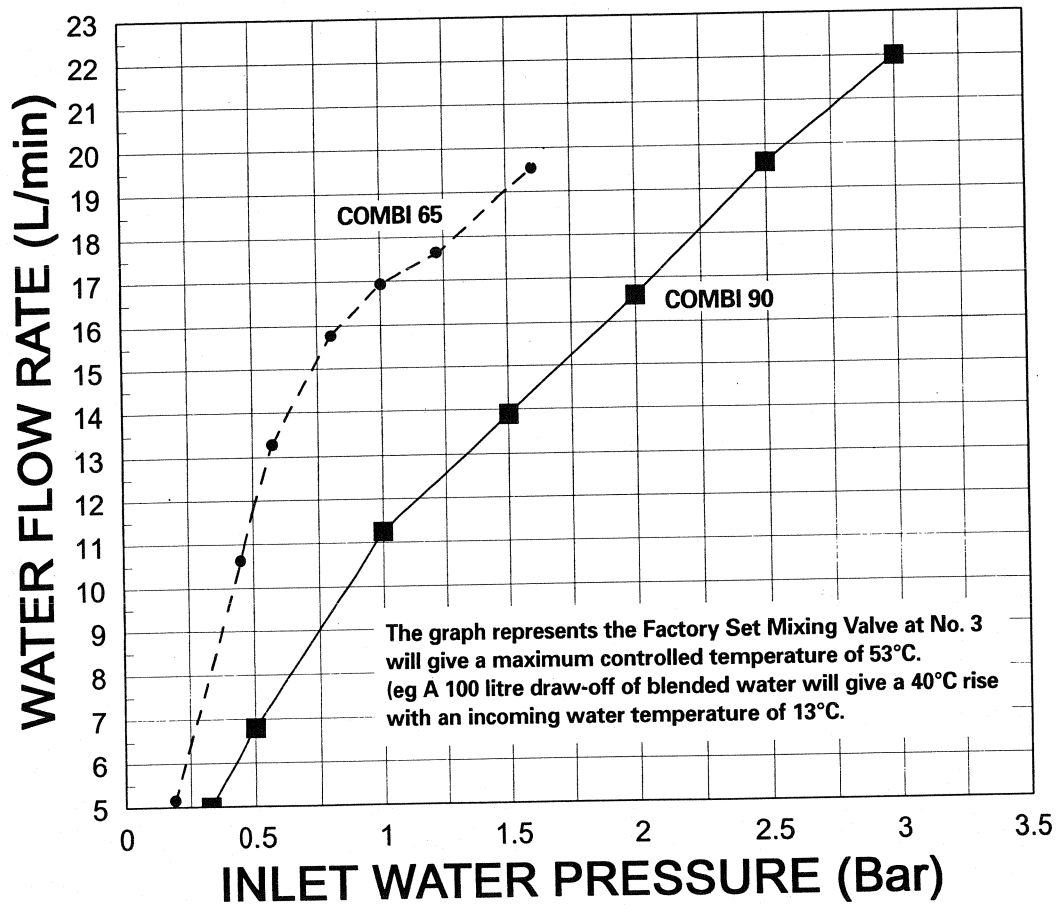
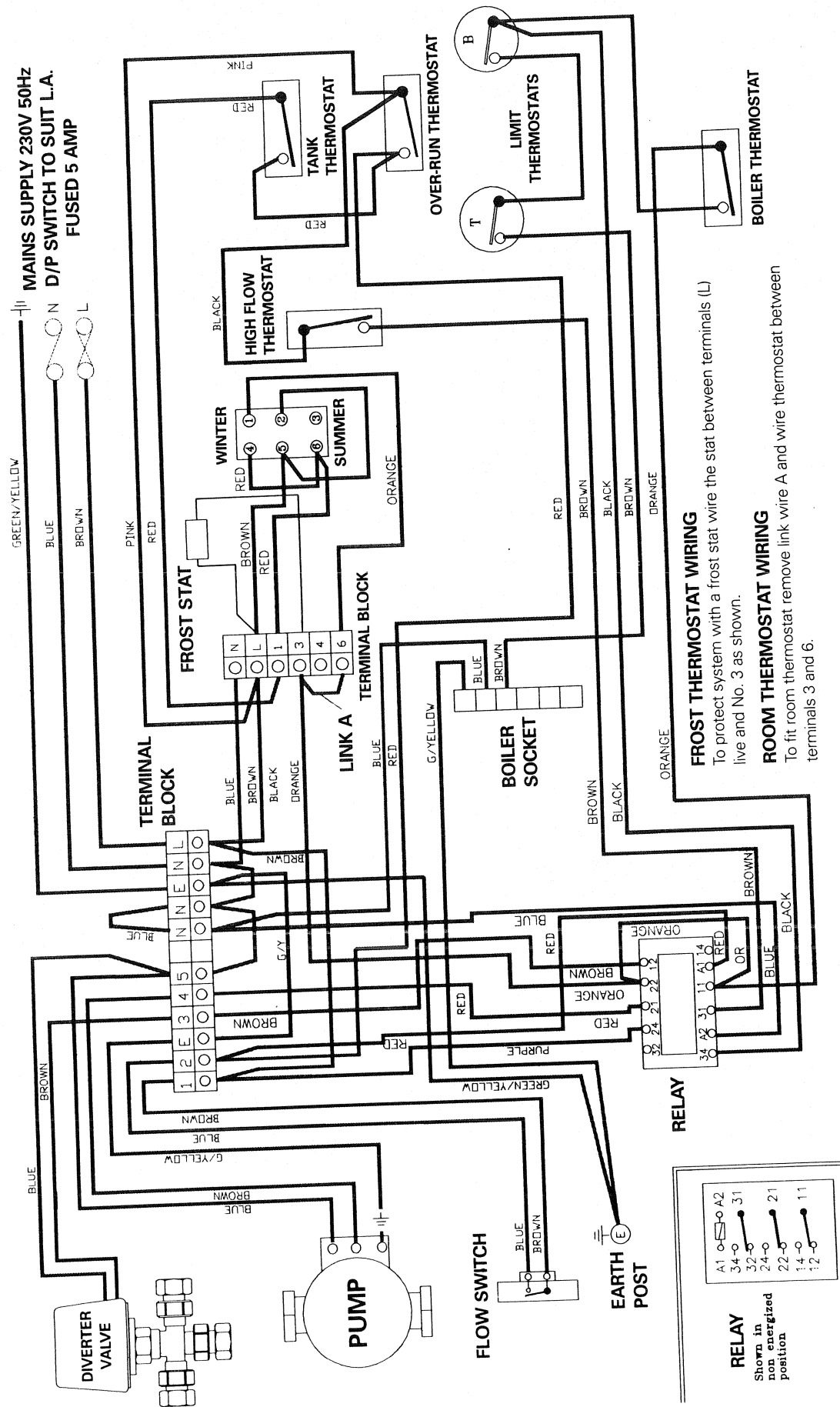


Fig. 3

FLOW GRAPH

Fig. 4



WIRING DIAGRAM

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 III (Scotland)

Part 'L' (Northern Ireland)

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 a competent UDHWS installer.

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.

- Some people are particularly sensitive to even low noise levels so this aspect should be discussed with the householder.
- Small rooms tend to amplify noise, particularly if the wall construction is hollow or the surface tiled.
- A chimney passing through a bed room can sometimes transmit noise.
- Low level flue terminals produce some exhaust noise, so care should be taken when siting adjacent to 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 thermal insulation provided in the boiler base ensures the floor temperature is kept below 80°C and, as such, a non-combustible hearth is required. However, the floor must be level and capable of supporting the installed weight of the boiler, including its water content.

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. 5 & 6.

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 content exceeds 42 litres 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 total 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:

$$82 + 60 = 142 \text{ litres}$$

Multiply by factor 0.11 (from chart)

$$= 15.62 \text{ litres} = \text{Total expansion volume}$$

Expansion vessel supplied = 10 litres

We therefore need $15.62 - 10 \text{ litres} = 5.62$ 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. 7 & 8.

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

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, then fitting of an inline scale inhibitor 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 22mm copper pipe work, the pressure and temperature valve must be piped to the tundish, which is supplied as a loose item, in accordance with details given in fig. 12 and Section G3 of the Building Regulations 1991 approved document.

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).

Connect oil and flue system as detailed in Sections 4.OIL SUPPLY and 5. FLUE SYSTEM.

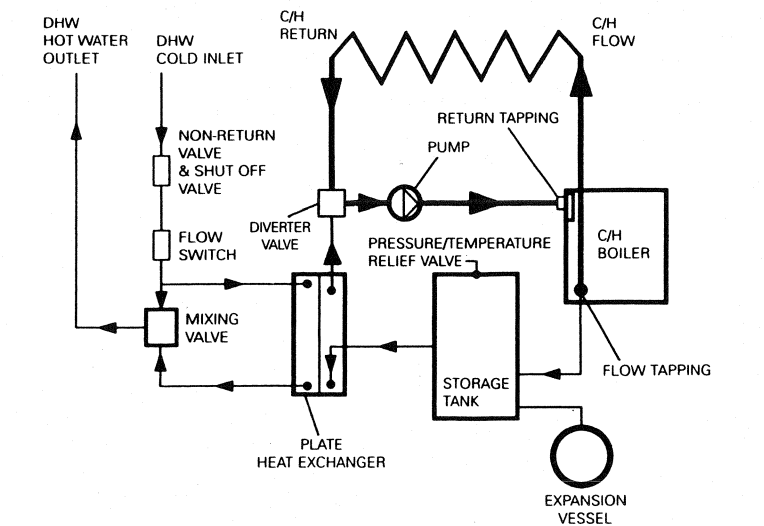


Fig. 5a

EUROSTAR COMBI SCHEMATIC LAYOUT CENTRAL HEATING MODE

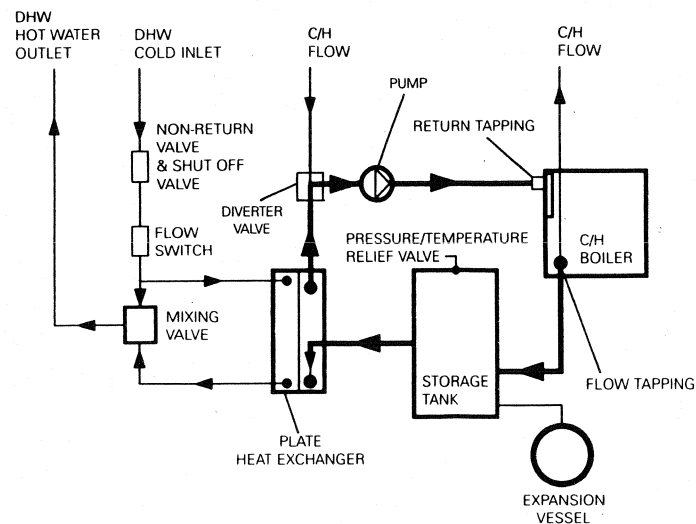


Fig. 5b

EUROSTAR COMBI SCHEMATIC LAYOUT DOMESTIC HOT WATER MODE

Fig. 5

EUROSTAR COMBI SCHEMATIC LAYOUT

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

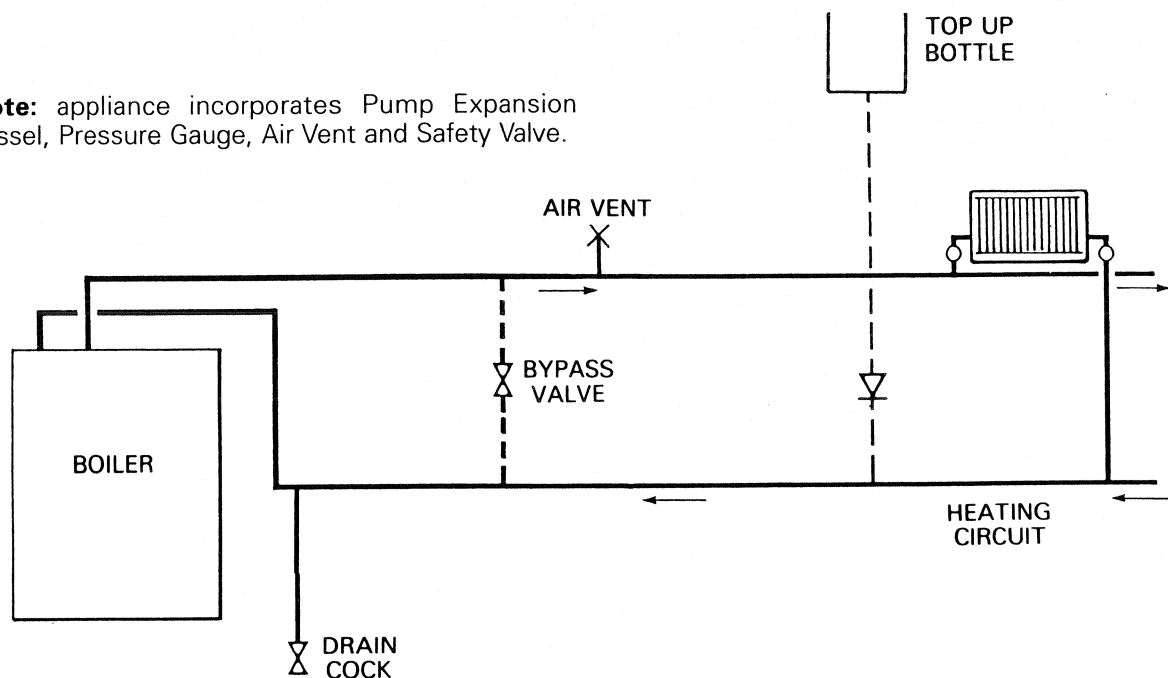
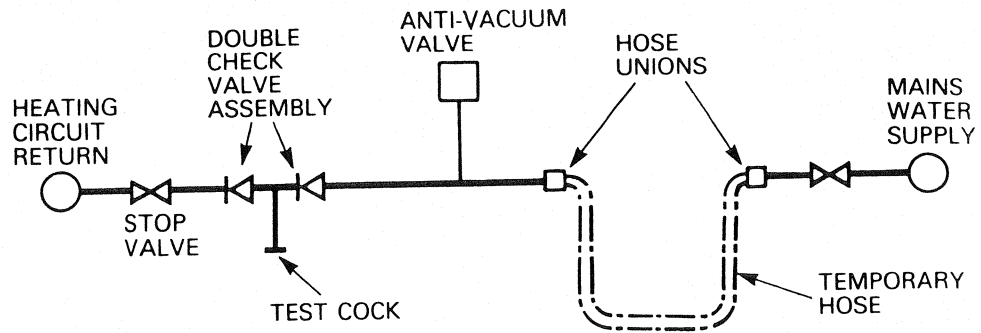


Fig. 6

SEALED SYSTEM PIPING SCHEMATIC DIAGRAM

METHOD A



METHOD B

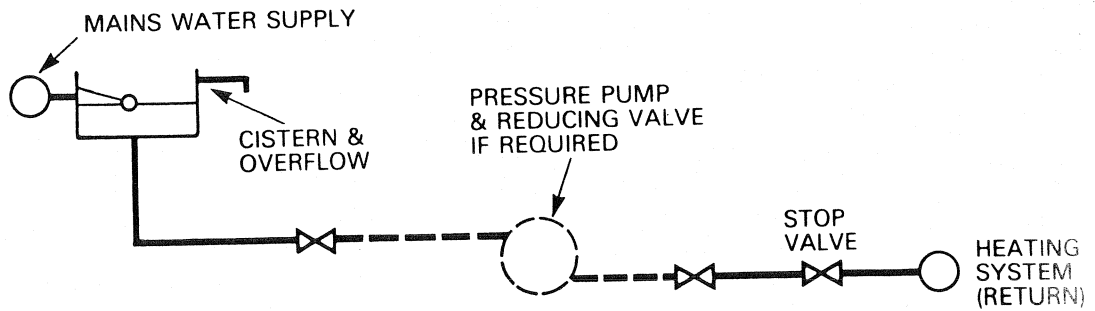


Fig. 7

ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

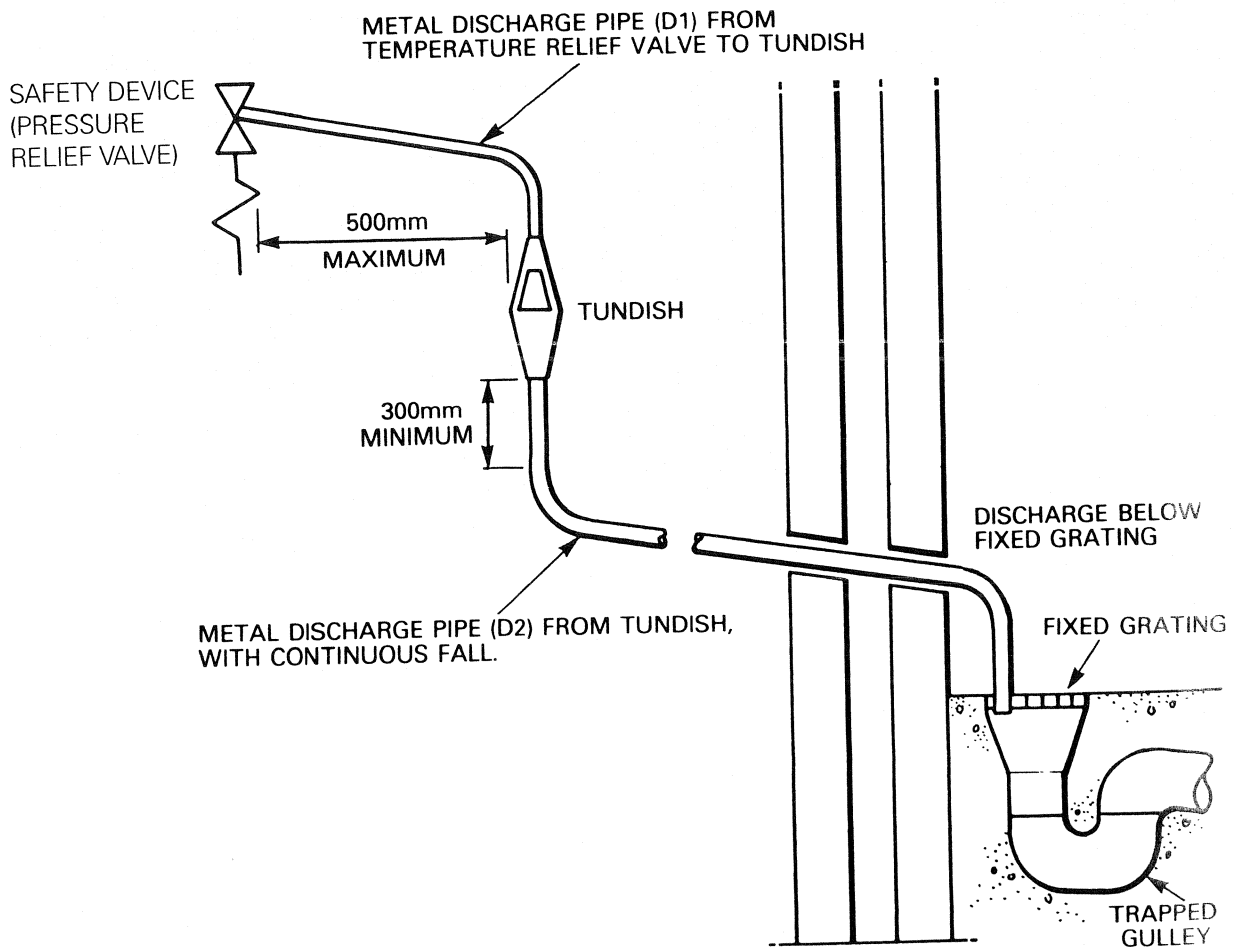


Fig. 8

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 Code of practice for Oil Firing BS 5410 : Part 1 requires a permanent air inlet opening of 550mm² per kW of boiler rated output.

The following air opening is required for the Trianco EuroStar Combi boiler

Minimum FREE Air Opening 'A' = 113cm² (18in²)

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 appliance controls. (The ventilation areas are shown in Fig. 9).

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. 10) for ventilation openings.

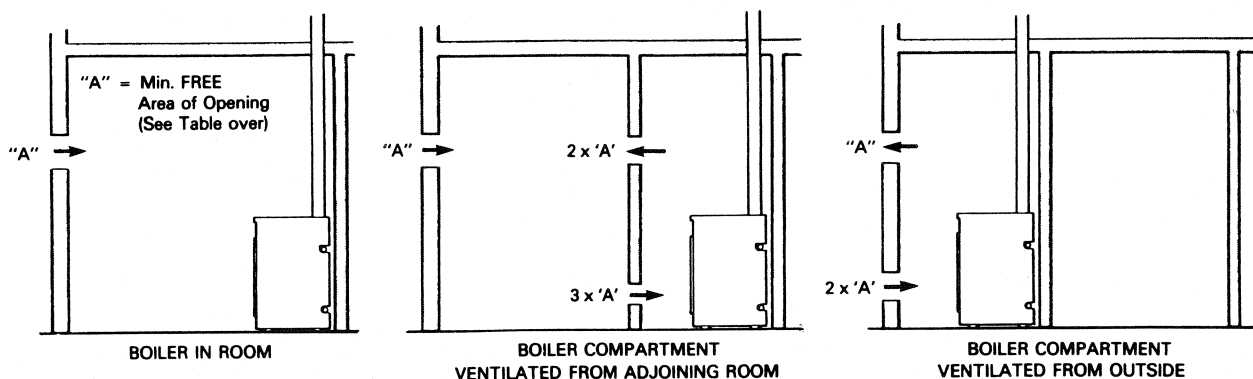


Fig. 9

AIR SUPPLY & VENTILATION FOR CONVENTIONAL FLUE BOILERS

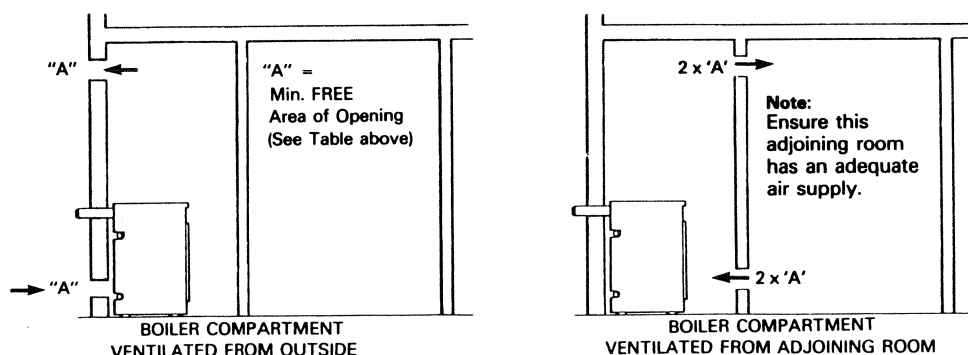


Fig. 10

VENTILATION FOR ROOM SEALED BALANCED FLUE BOILERS IN A COMPARTMENT

Electrical Supply

230v 50Hz (Fused 5 Amp)

Note: THIS APPLIANCE MUST BE EARTHED

All electrical wiring must be carried out by a qualified electrician in accordance with BS 7671 and any Local Regulations that may apply.

The mains electrical supply can be taken from a double pole isolating switch (fused 5 amp) situated near the boiler. The cable should be heat resisting and routed either along the top side of the casing in the cable clip provided or run from the bottom side through the hole in the side panels. It should finally be secured with the strain bush in the control panel.

See wiring diagram Fig. 4

Warning - High and Low Voltage

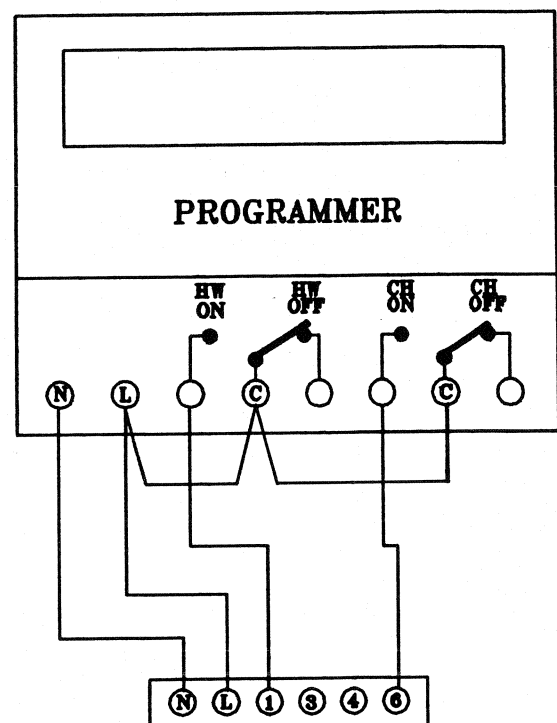
In certain parts of the country, where there is a known risk of high or low voltage fluctuations, the oil burner shall be prevented from starting by the use of a voltage sensitive device if the voltage drops or increases sufficiently to endanger the installation.

EURO-COMBI

PROGRAMMER FITTING INSTRUCTIONS

1. Disconnect summer/winter switch by removing wires from terminal block.
2. Rewire external programmer unit into terminal block ensuring identical connections are made (refer to wiring diagram).
3. Programmer must be suitable for gravity systems and set to operate in gravity mode.

(IF UNCERTAIN CONTACT TRIANCO SERVICE DEPARTMENT).



5. OIL SUPPLY

Oil

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 Tank

The tank should be large enough to allow for economic deliveries and be located in the most unobstructive 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 from a fire that may originate in a nearby building, therefore the tank should not be located nearer than 1.8 metres from a building, nor closer than 760mm from a combustible 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 integral 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, Clause 28. This Standard applies to tanks up to a capacity of 3400 litres which is deemed the maximum size for a single family dwelling.

Steel Tanks

Steel tanks should comply with the requirements of BS 799, Part 5 : 1987 and mounted on brick or brick piers and tank.

The tank should be fitted with fill and vent connections (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 lower weight.
- (d) They have a 10 year manufacturers guarantee.

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

Oil Supply line

An oil shut-off valve should be fitted as close to the burner as practicable to enable the burner to be disconnected without loss of oil. A filter must be

connected in the oil supply pipe and positioned either inside or outside the building.

A fire-valve must be fitted in the oil line outside the building with its sensing phial located in the clips on the underside of the boiler control panel.

All oil line 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.

A rigid 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. When using a two pipe system, it is important that the by-pass plug (supplied with burner) is fitted in the pump as shown in 'Burner Details' Leaflet. It is also necessary to fit an additional flexible hose to the return port.

A spring loaded non-return valve must be fitted in suction line to stop oil running back to the tank. A filter shut-off valve and remote type fire valve must also 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, otherwise dissolved gas will be released from 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 (3in) 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 is required, but the return pipe is too long, or impractical to run, a oil de-aerator can be used. The burner is piped as for a two pipe system up to the oil 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 a by-pass plug must be fitted in the pump as for a two pipe system.

The oil de-aerator, which should be fitted close to but not inside the boiler casing, is available from most Builders Merchants and some Oil Tank manufacturers.

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

| 'H' METRES | | .5 | 1.0 | 1.5 | 2.0 |
|--------------|-----------|----|-----|-----|-----|
| PIPE 10mm OD | MAXIMUM L | 10 | 20 | 40 | 60 |
| | (METRES) | | | | |
| PIPE 12mm OD | MAXIMUM L | 20 | 40 | 80 | 100 |
| | (METRES) | | | | |

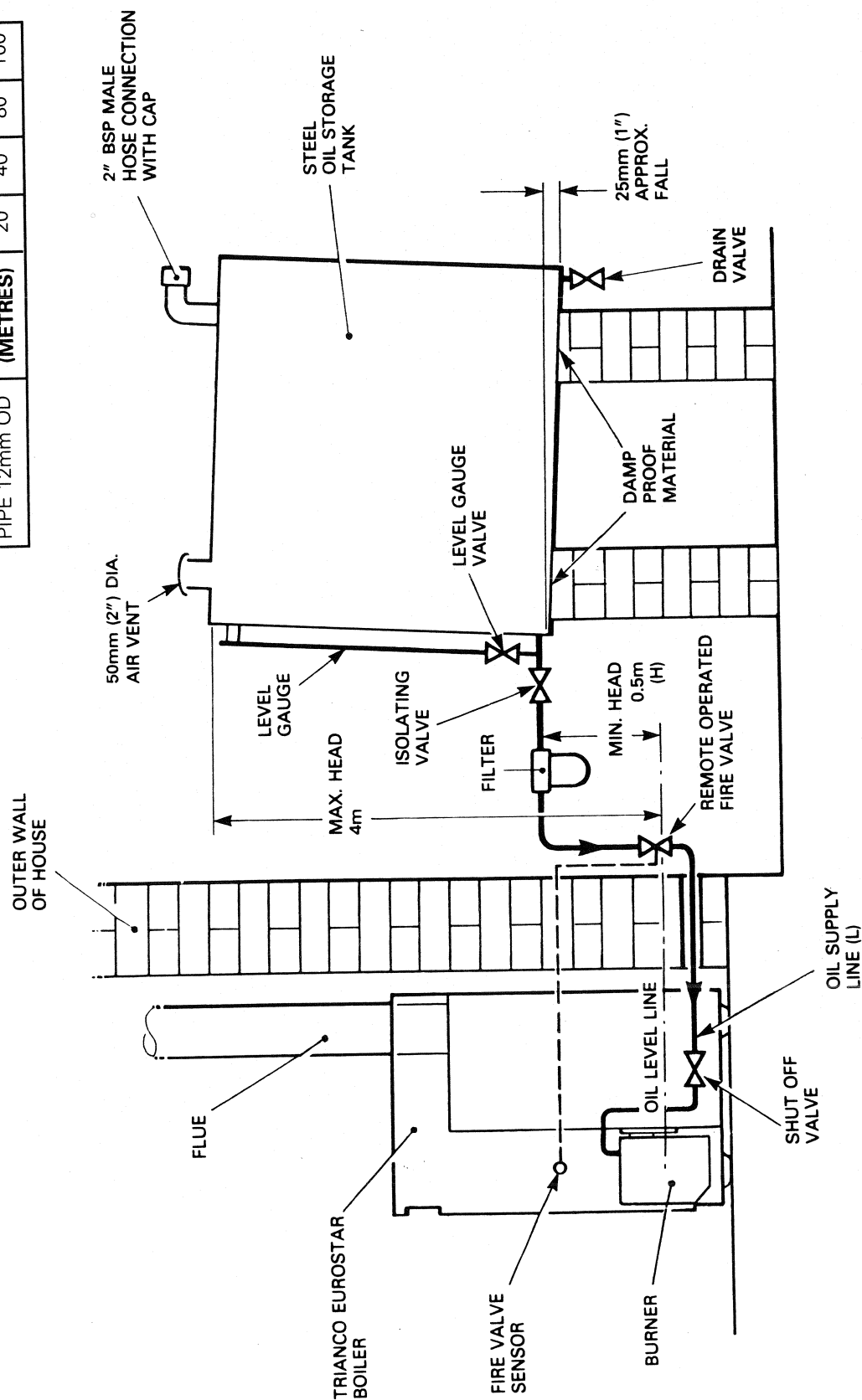


Fig. 11

SINGLE PIPE OIL SUPPLY INSTALLATION

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

| LIFT 'H' METRES | | 0 | 0.5 | 1.0 | 1.5 | 2.0 | 3.0 | 3.5 |
|-----------------|--------------------|-----|-----|-----|-----|-----|-----|-----|
| PIPE 10mm OD | MAXIMUM L (METRES) | 35 | 30 | 25 | 20 | 15 | 8 | 6 |
| | PIPE 12mm OD | 100 | 100 | 100 | 90 | 70 | 30 | 20 |

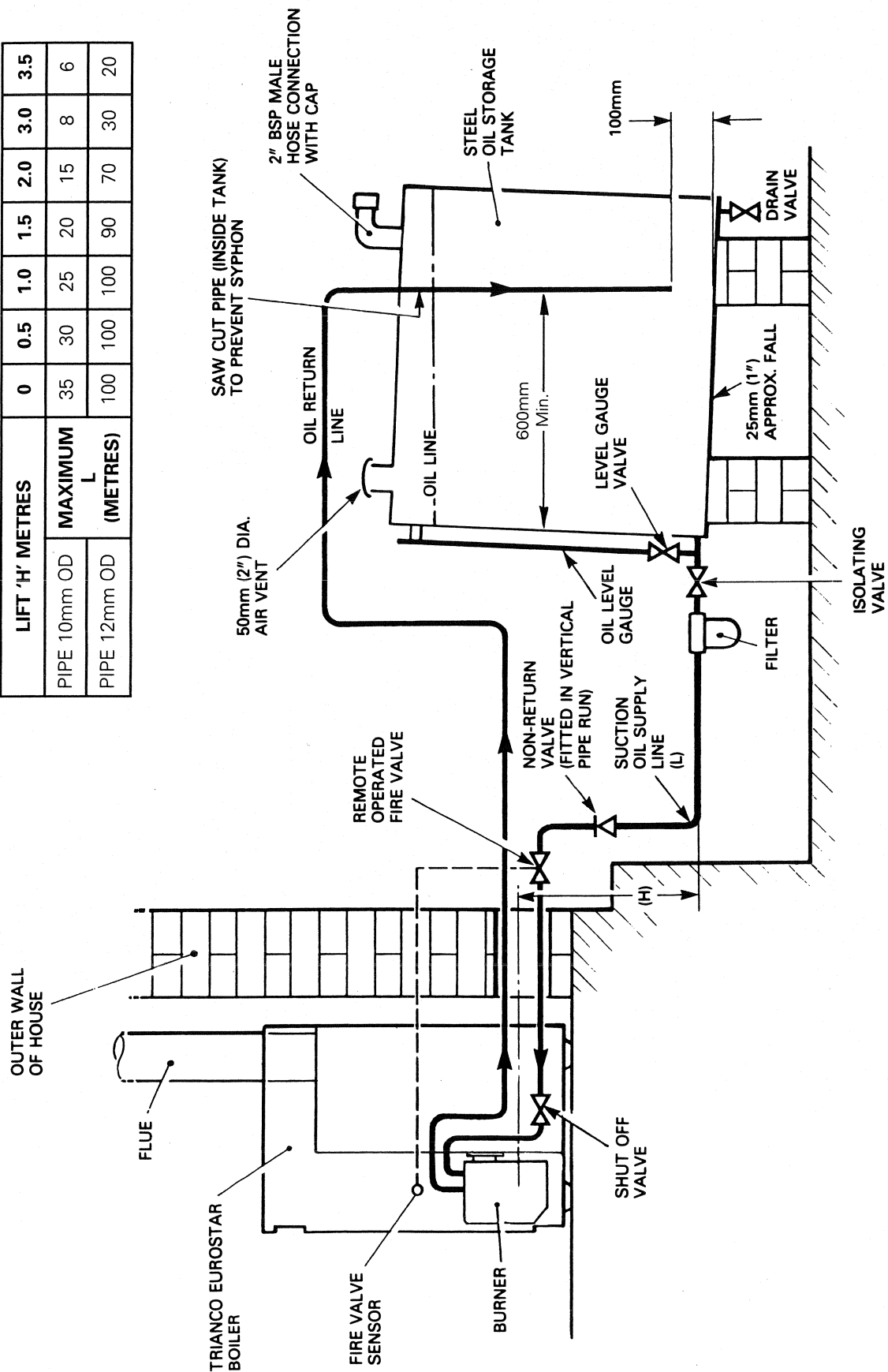


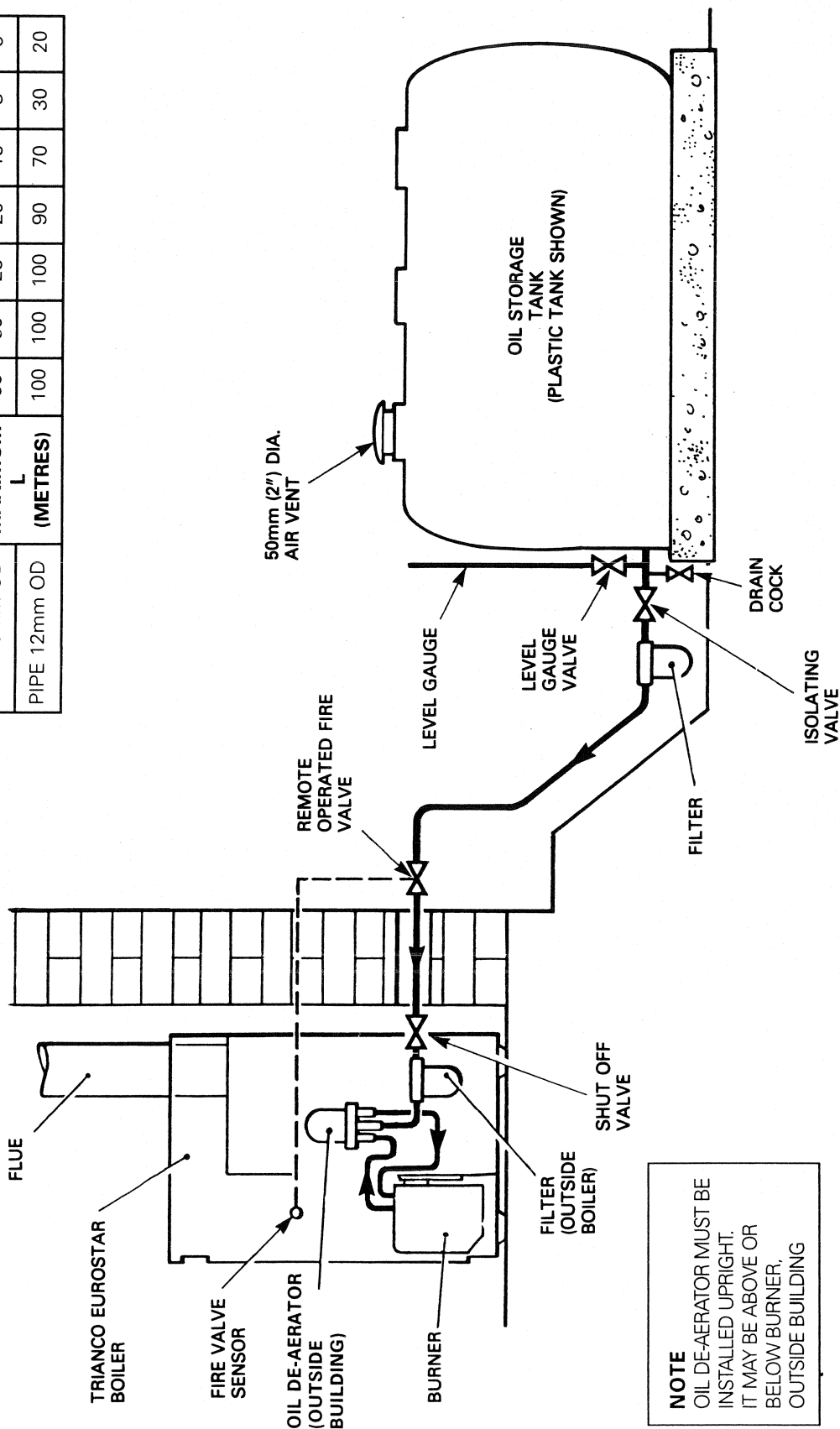
Fig. 12

TWO PIPE OIL SUPPLY INSTALLATION

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

| LIFT 'H' METRES | | 0 | 0.5 | 1.0 | 1.5 | 2.0 | 3.0 | 3.5 |
|-----------------|--------------------|-----|-----|-----|-----|-----|-----|-----|
| PIPE 10mm OD | MAXIMUM L (METRES) | 35 | 30 | 25 | 20 | 15 | 8 | 6 |
| | PIPE 12mm OD | 100 | 100 | 100 | 90 | 70 | 30 | 20 |

OUTER WALL OF HOUSE



NOTE

OIL DE-AERATOR MUST BE INSTALLED UPRIGHT. IT MAY BE ABOVE OR BELOW BURNER, OUTSIDE BUILDING

REFER TO MANUFACTURERS INSTRUCTIONS FOR DE-AERATOR INSTALLATION DETAILS

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 Low Level 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 of the same diameter as boiler flue outlet.

The use of a flexible stainless steel liner is a convenient way of lining an existing chimney and this should be back filled with 'Vermiculite' or similar insulating material to retain the heat.

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:

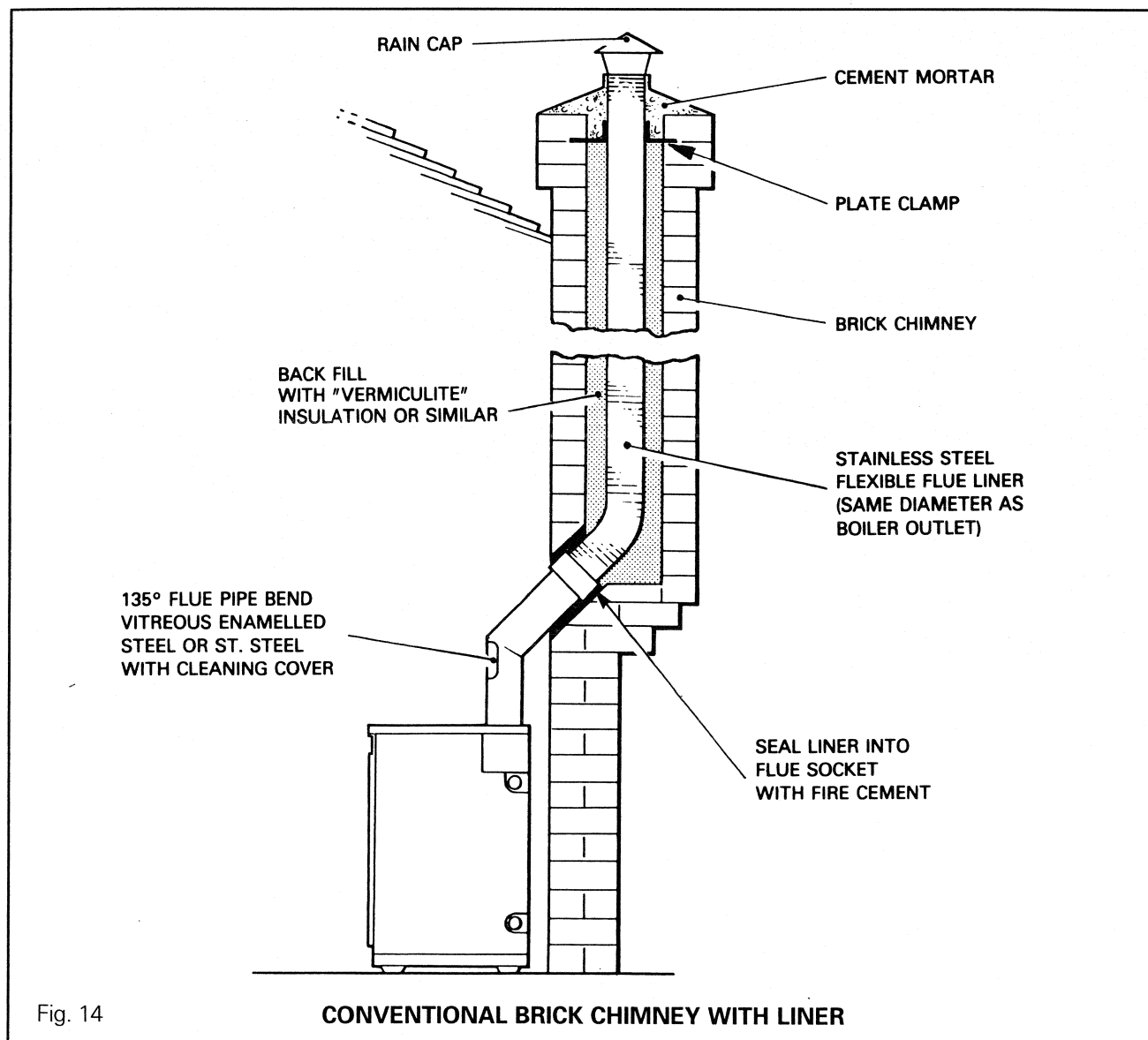
(1) In view of the EuroStar Combis high thermal efficiency, it is important that a liner is fitted, otherwise condensation problems will result.

(2) Before fitting a liner, the chimney must be thoroughly cleaned free of 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 inbuilt flue gas resistance of the EuroStar is such that it allows the boiler to operate reliably over the wide range of chimney draughts encountered from typical domestic chimneys.

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 and create condensing conditions.



Balanced Flue (Room sealed) 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 addition to the siting benefit, the performance of balanced flue boilers is virtually unaffected by high wind conditions since wind pressures are applied equally to both air intake and flue gas discharge, thus creating a balanced condition.

Whereas some balanced flue boiler rely on case sealing to achieve a room seal, Trianco EuroStar Combi 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 (Fig. 15)

The Terminal silencer must be positioned so as 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 position).

(b) Flue Sealing

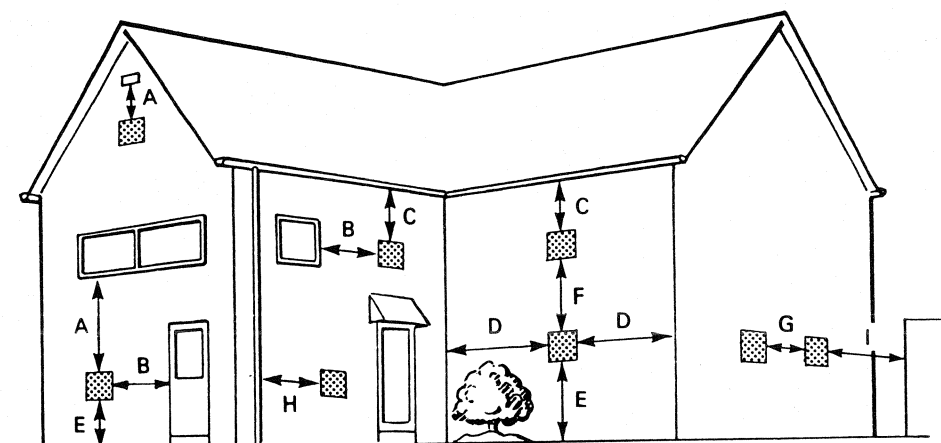
As the flue system operates under positive pressure, it is essential to seal all flue joints. Apply a thin bead of silicone sealant (supplied) around flue pipe spigot before inserting into socket.

(c) Fuel

Only Kerosene 28 sec. BS 2869 Class C2 is permitted for boilers using low level discharge

(d) Important

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



RECOMMENDED MINIMUM DISTANCES FOR TERMINAL POSITION

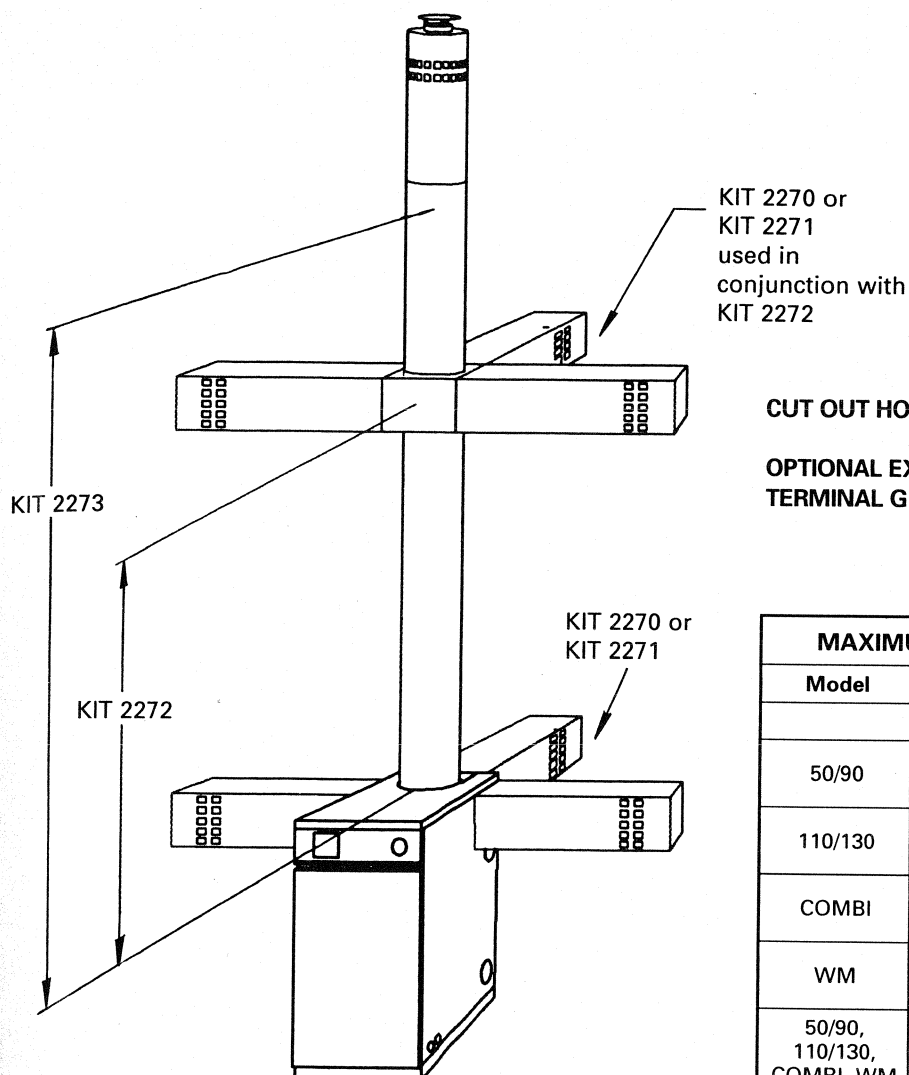
| location | Minimum Distance (mm) |
|---------------------------------------------------------|-----------------------|
| a Directly below an opening, window or air brick | 600 |
| B horizontally to an opening, window, door or air brick | 600 |
| C Below a gutter, drainpipe, eaves or balcony | 600 |
| D From internal or external corners | 300 |
| E Above ground level | 600 |
| F Vertically from a terminal on the same wall | 1500 |
| G Horizontally from terminals on the same wall | 900 |
| H From a vertical drainpipe | 300 |
| J From a surface facing the terminal | 1000 |

- Note (i) The terminal should be positioned so as to avoid products of combustion entering the building.
- Note (ii) 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 (iii) If the terminal is fitted within 850mm of plastic or painted gutter or within 450mm of painted eaves a heat protection shield should be fitted to the underside of the gutter or eaves.

Fig. 15

TERMINAL POSITION

EuroStar Balanced Flue Options For EuroStar Boilers up to 130,000 Btu/h



CUT OUT HOLE REQUIRED IN WALL 175MM SQUARE

**OPTIONAL EXTRA
TERMINAL GUARD 204123**

| MAXIMUM HEIGHT FROM TOP OF BOILER | | | | |
|-----------------------------------|---------------|--|------------|--------------|
| Model | Product Codes | | Max Height | |
| 50/90 | 2272 | | mm | 1140 |
| | | | ins | 45 |
| 110/130 | 2272 | | mm | 1115 |
| | | | ins | 44 |
| COMBI | 2272 | | mm | 1140 |
| | | | ins | 45 |
| WM | 2272 | | mm | 1170 |
| | | | ins | 46 |
| 50/90, 110/130, COMBI, WM | 2273 | | mm | 2600 approx. |
| | | | ins | 102 approx. |

| MINIMUM AND MAXIMUM WALL THICKNESS | | | | | | | | | |
|------------------------------------|---------------|--|-----|----------|-----|------|------|----------|-----|
| MODEL | PRODUCT CODES | | | R/H SIDE | | REAR | | L/H SIDE | |
| | | | | Min | Max | Min | Max | Min | Max |
| 50/90 | 2270 | | mm | 200 | 485 | 330 | 600 | 200 | 480 |
| | | | ins | 8 | 19 | 13 | 24 | 8 | 19 |
| | 2271 | | mm | 610 | 890 | 730 | 1000 | 610 | 890 |
| | | | ins | 24 | 35 | 29 | 39 | 24 | 35 |
| 110/130 | 2270 | | mm | 175 | 455 | 330 | 600 | 175 | 455 |
| | | | ins | 7 | 18 | 13 | 24 | 7 | 18 |
| | 2271 | | mm | 585 | 850 | 730 | 1000 | 585 | 850 |
| | | | ins | 23 | 34 | 29 | 39 | 23 | 34 |
| COMBI 65 | 2270 | | mm | 175 | 455 | 330 | 600 | - | - |
| | | | ins | 7 | 18 | 13 | 24 | - | - |
| | 2271 | | mm | 585 | 850 | 730 | 1000 | - | - |
| | | | ins | 23 | 34 | 29 | 39 | - | - |
| COMBI 90 | 2270 | | mm | 200 | 430 | 330 | 600 | - | - |
| | | | ins | 8 | 17 | 13 | 24 | - | - |
| | 2271 | | mm | 610 | 840 | 730 | 1000 | - | - |
| | | | ins | 24 | 33 | 29 | 39 | - | - |
| WM | 2270 | | mm | 100 | 380 | 255 | 530 | 100 | 380 |
| | | | ins | 4 | 15 | 10 | 21 | 4 | 15 |
| | 2271 | | mm | 485 | 780 | 560 | 930 | 495 | 780 |
| | | | ins | 19 | 30 | 22 | 36 | 19 | 30 |

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 from 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 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 guarantee 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 under 'Burner Settings' which may be found in the 'Burner Details' 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. 16 and Fig. 16a 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 supply then reconnect 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 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 from 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 CO₂ reading through the sampling hole in 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 advise given 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.

Note: It is a requirement of the boilers 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

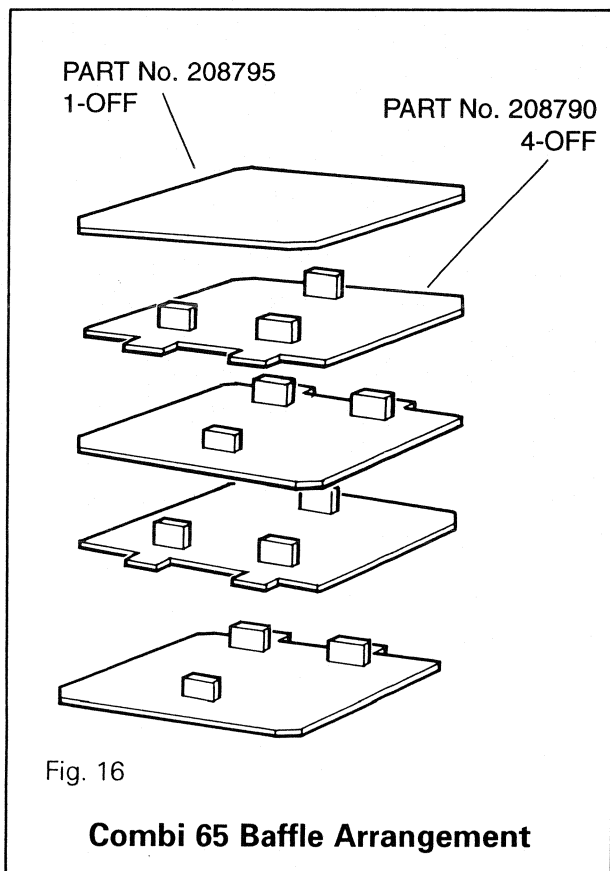
Open drain-cock to draw off any accumulated water and sludge.

Line filters

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

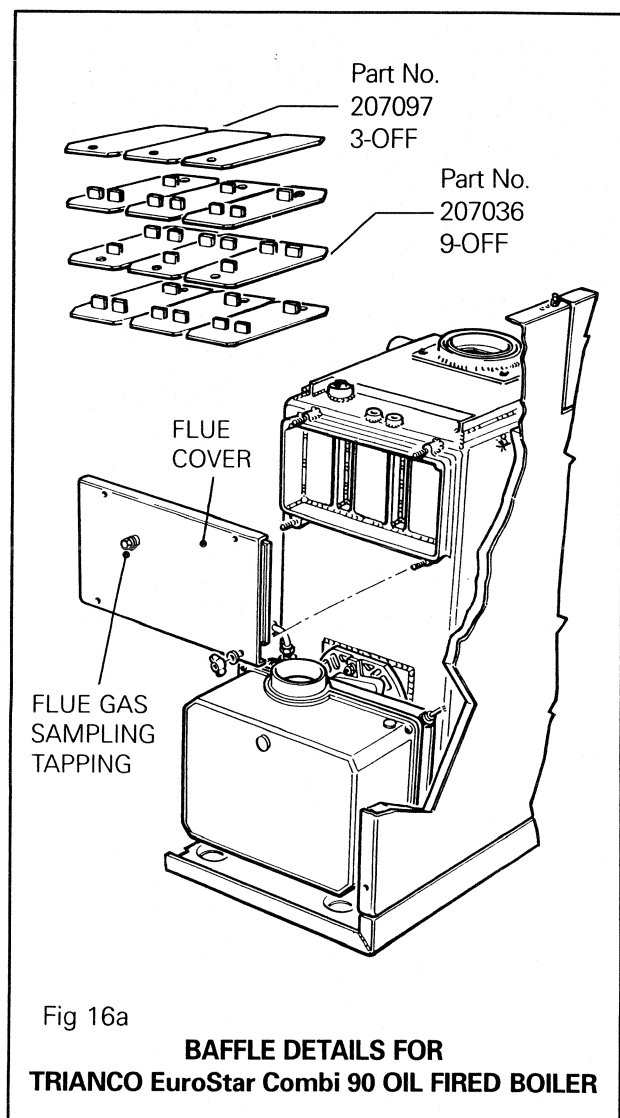
Servicing the Burner

See separate leaflet 'Burner Details'.



Servicing the boiler (Burner removed)

1. Remove the flue cover and lift out flue baffles. (see diagrams 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 correct arrangement (see diagram below for order of assembly). Refit flue cover and fully tighten wing-nuts to make a gas tight seal.
5. Re-fit 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



9. FAULT FINDING

Burner

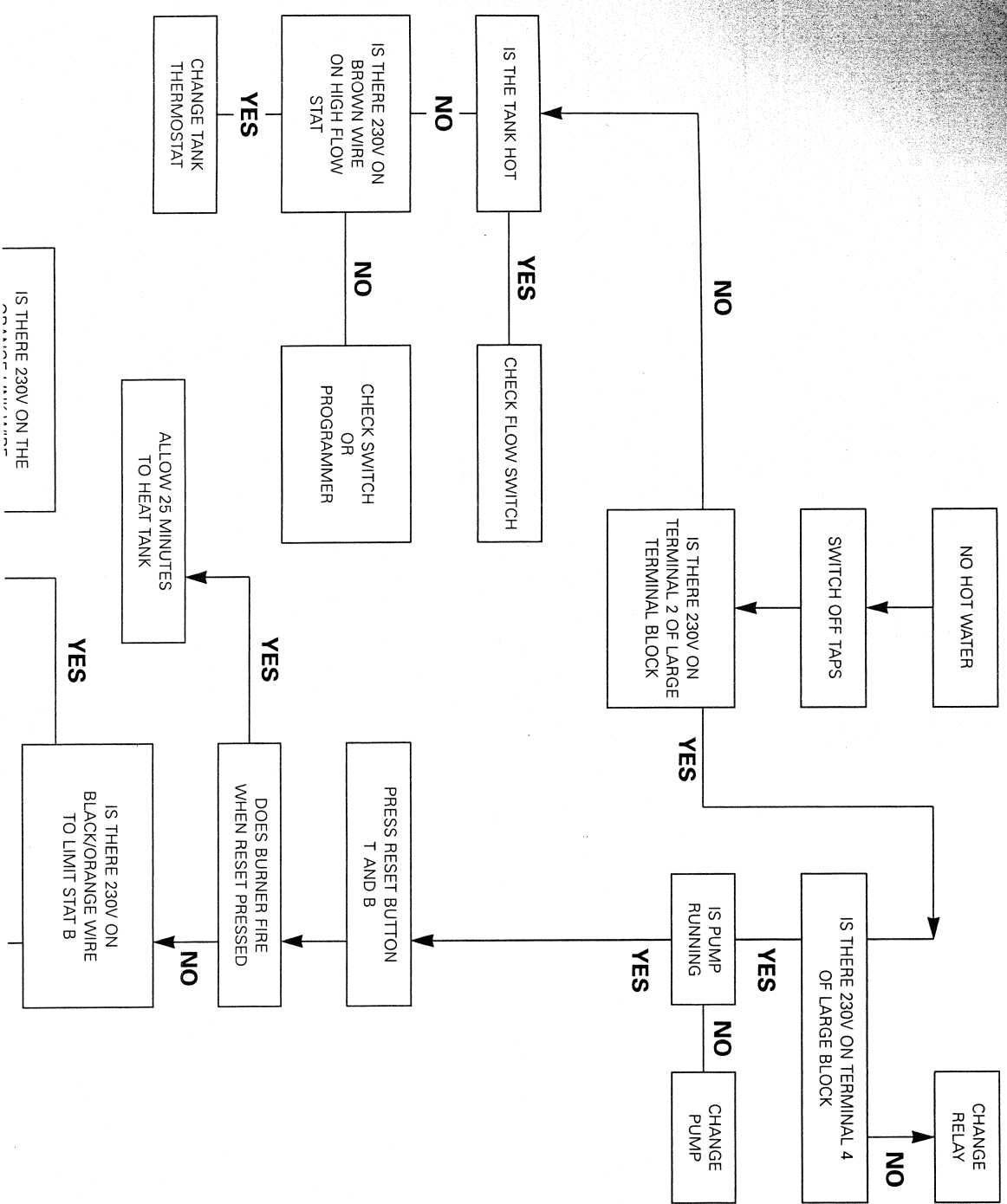
ELECTRICAL SUPPLY - before making any electrical checks, switch off mains supply to boiler

| FAULT | POSSIBLE CAUSE | ACTION |
|-----------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------|
| BURNER FAILS TO START | Control box locked out - Light on | Press control box reset button. N.B. only try twice |
| | Limit - stat tripped | Press reset button on 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 5amp fuse, if it blows again, check for short circuit in wiring |
| | Check for live 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 insulators cracked | Check and replace if insulators cracked or crazed |
| | Ignition transformer and H.T. leads faulty | Check for spark and condition of H.T. leads. Replace as necessary |
| FLAME ESTABLISHED BUT BURNER LOCKS OUT AFTER FEW SECONDS | Low oil pressure | Check pump pressure and adjust to correct setting |
| | Oil contaminated with water | Run off oil at burner until free of water and drain condensate 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 condensate from tank |
| | Dirt in solenoid valve | Clean or replace valve |
| | Pump shut-off piston clicking | Replace pump |
| MORNING START LOCK OUT | Faulty non-return valve or air leak in 2 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 below burner | Raise tank or fit 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 electrodes for damage |
| | | Check H.T. leads for damage and positive connection |

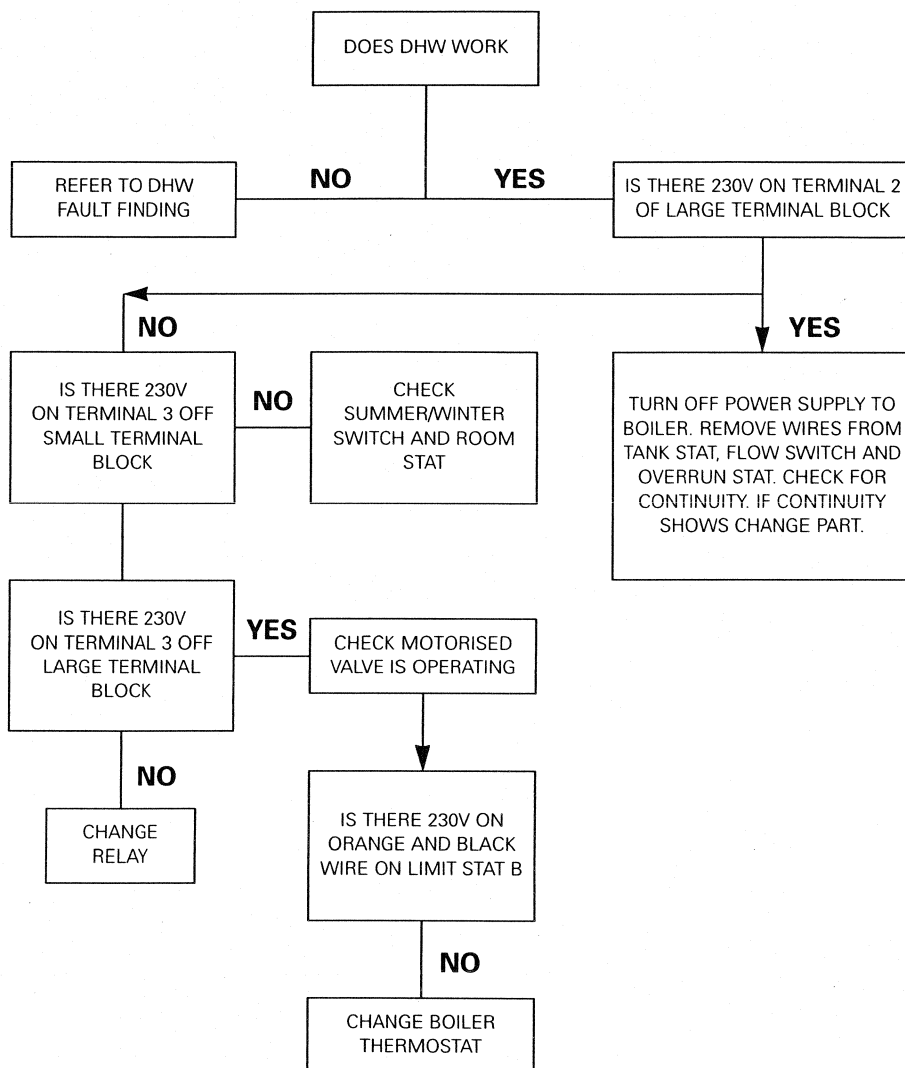
It Finding

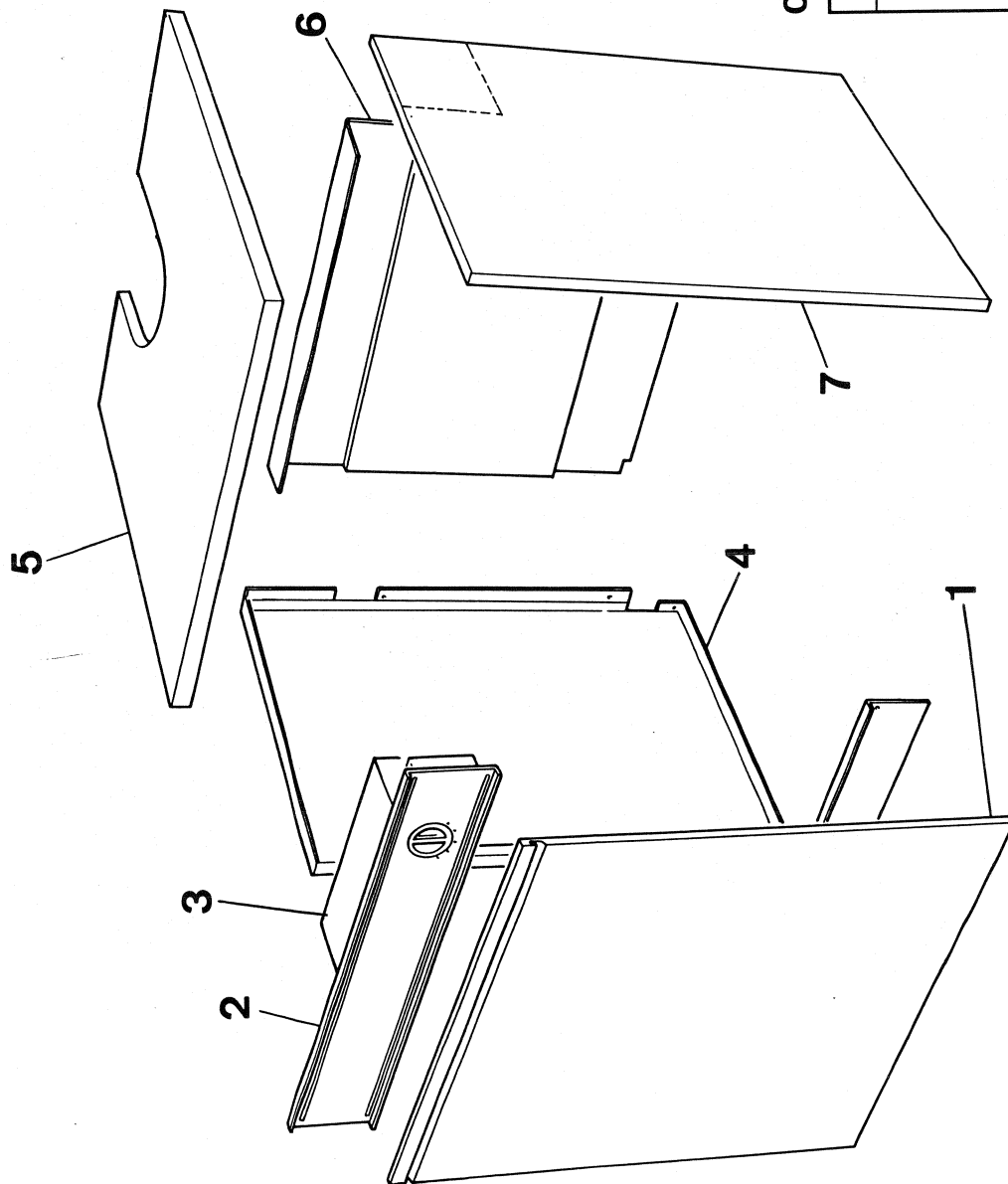
minutes from initial switch on for tank to heat.



Central Heating Fault Finding Chart

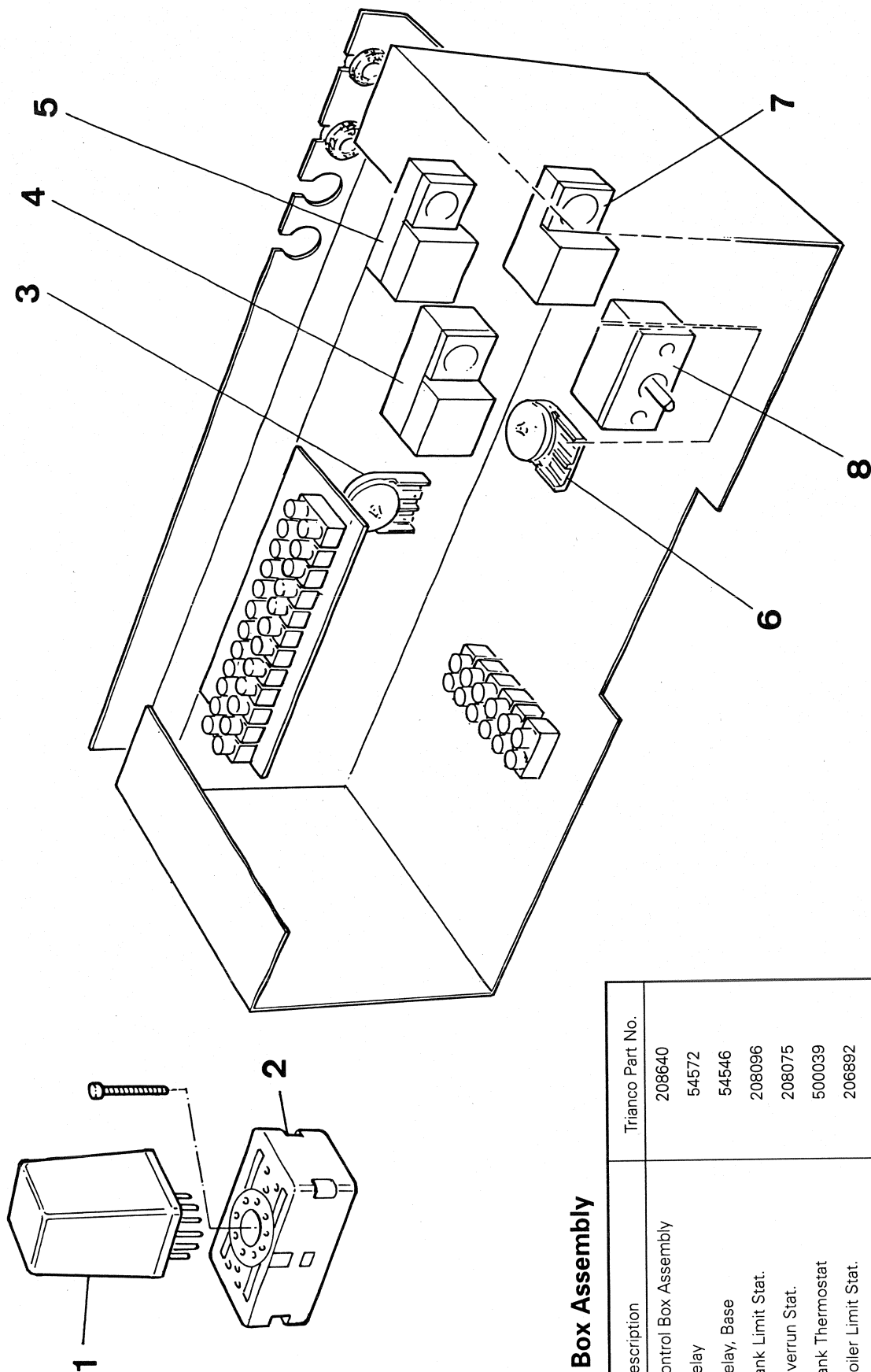
Allow 25 minutes from cold for the boiler to satisfy DHW priority.





Casing Assembly

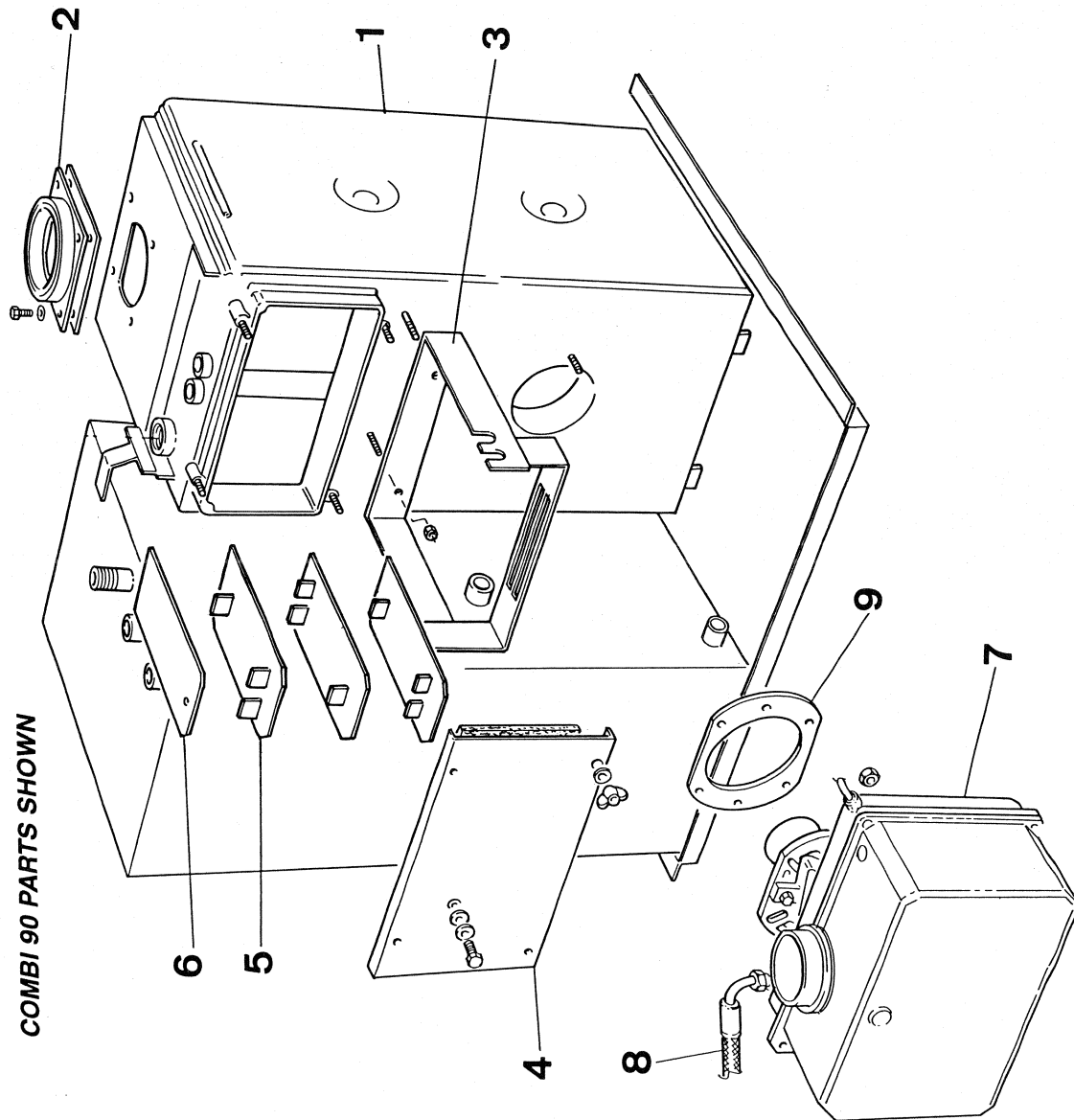
| Item | Description | 65 | 90 |
|------|--------------------------|--------|--------|
| 1 | Door Assembly | 208736 | 501878 |
| 2 | Control Facia Assembly | 208740 | 208083 |
| 3 | Control Box Assembly | 208120 | 208120 |
| 4 | Side Casing Assembly L/H | 208110 | 208110 |
| 5 | Top Panel Assembly | 208730 | 208100 |
| 6 | Back Panel | 208734 | 208129 |
| 7 | Side Casing R/H Assembly | 208105 | 208105 |



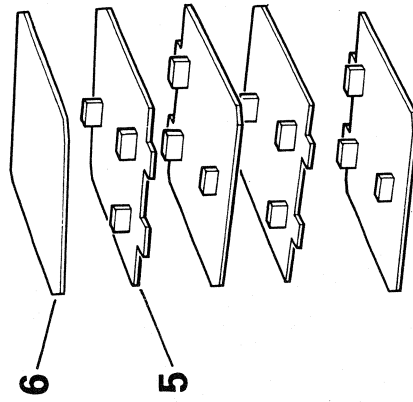
Control Box Assembly

| Item | Description | Trianco Part No. |
|------|----------------------|------------------|
| 1 | Control Box Assembly | 208640 |
| 2 | Relay | 54572 |
| 3 | Relay, Base | 54546 |
| 4 | Tank Limit Stat. | 208096 |
| 5 | Overrun Stat. | 208075 |
| 6 | Tank Thermostat | 500039 |
| 7 | Boiler Limit Stat. | 206892 |
| 8 | Flow Stat. | 501767 |
| | Boiler Control Stat. | 206896 |

COMBI 90 PARTS SHOWN



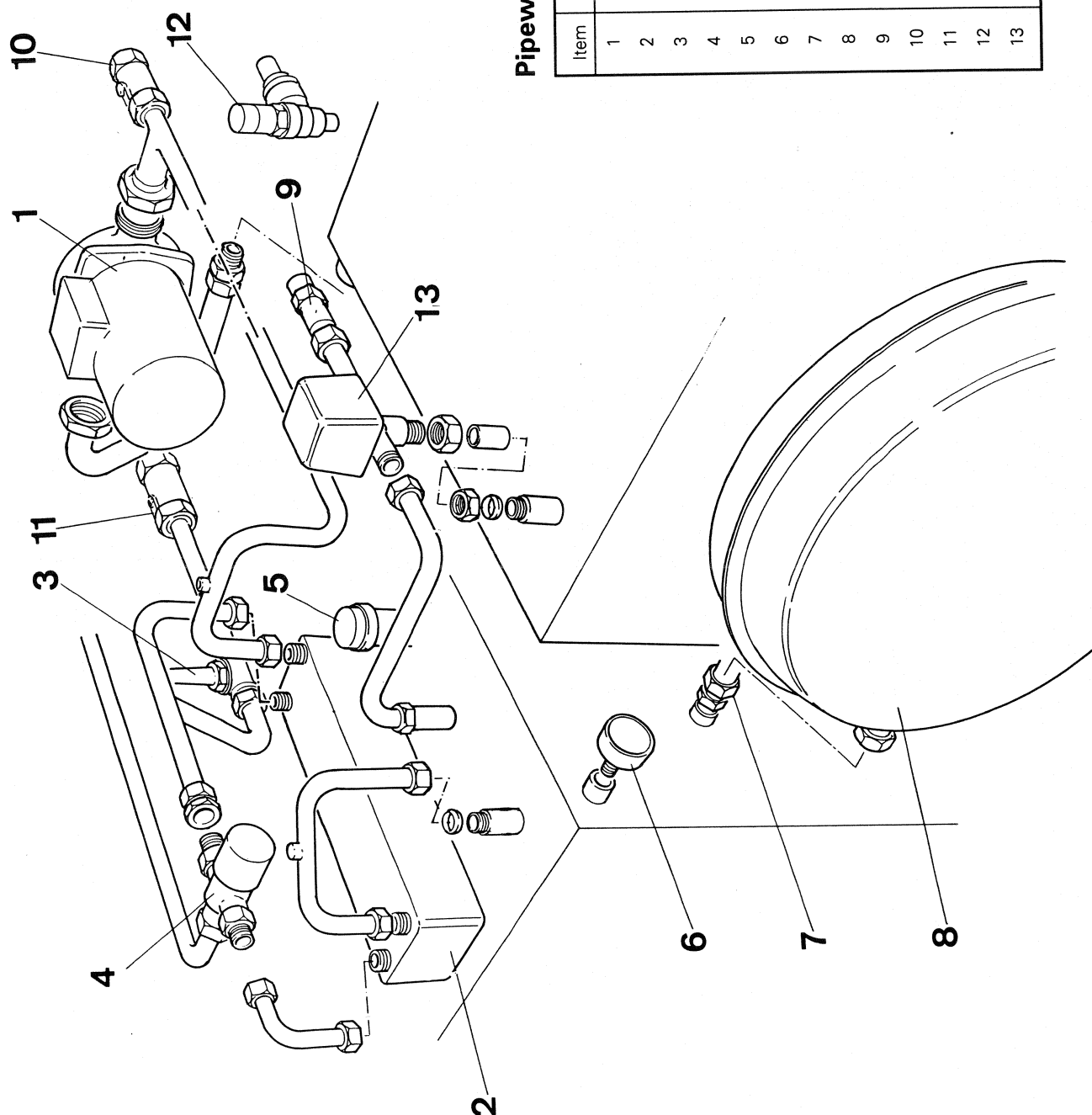
COMBI 65 BAFFLES



Boiler Parts

| Item | Description | 65 | 90 |
|------|--------------------------|--------|--------|
| 1 | Boiler & Tank W.U. | 208750 | 208601 |
| 2 | Flue off-take | 207772 | 207772 |
| 3 | Expansion Vessel Bracket | 207274 | 207274 |
| 4 | Cleaning Door | 208780 | 207030 |
| 5 | Baffle (1 off) | 208790 | 207036 |
| 6 | Baffle Top Plate (1 off) | 208795 | 207097 |
| 7 | Burner Assembly | 208800 | 206964 |
| 8 | Oil Line | 207029 | 207029 |
| 9 | Burner Flange Gasket | 28005 | 28005 |

COMBI 90 PIPEWORK SHOWN



Pipework

| Item | Description | 65 | 90 |
|------|----------------------|--------|--------|
| 1 | Circulating Pump | 26224 | 500014 |
| 2 | Plate Heat Exchanger | 208771 | 208071 |
| 3 | Flow Switch | 208651 | 208651 |
| 4 | Mixer Valve | 208078 | 208078 |
| 5 | Automatic Air Vent | 207296 | 207296 |
| 6 | Pressure Gauge | 501808 | 501808 |
| 7 | Flexible Pipe | 207292 | 207292 |
| 8 | Expansion Vessel | 207291 | 207291 |
| 9 | 22mm Ball Valve | 99460 | 99460 |
| 10 | 22mm Ball Valve | 99460 | 99460 |
| 11 | 15mm Ball Valve | 99494 | 99494 |
| 12 | Safety Valve | 208069 | 208069 |
| 13 | 3 Way Valve | 501935 | 501935 |



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



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