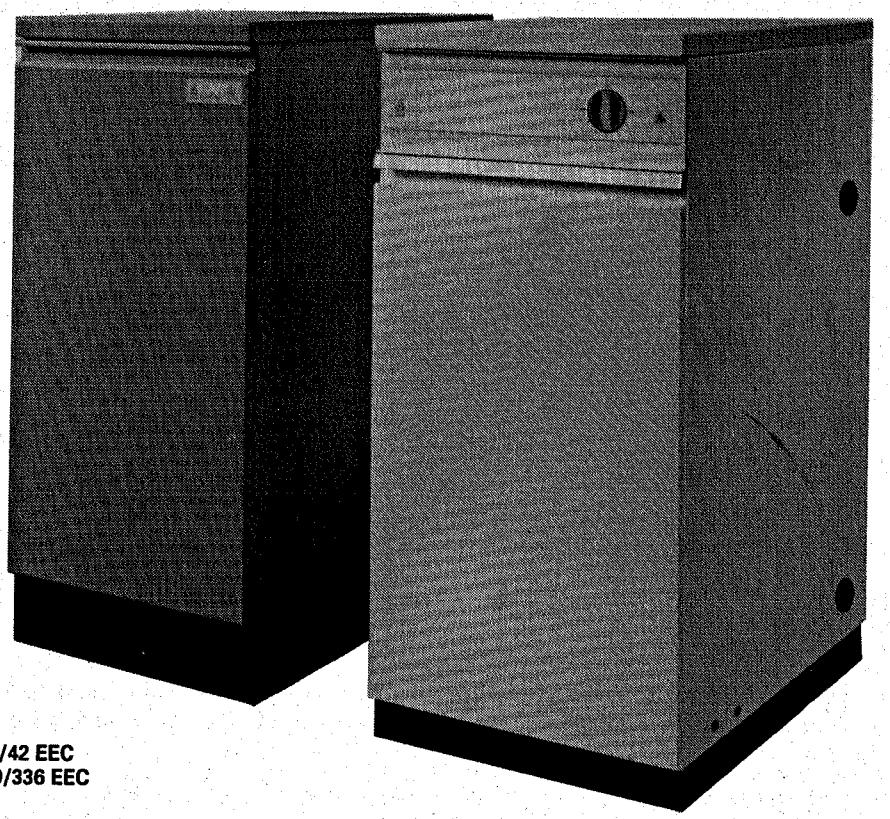
TRIANCO
EuroStar

OIL FIRED CENTRAL HEATING

SEALED SYSTEM BOILERS

BALANCED OR CONVENTIONAL FLUE



CE BED 92/42 EEC
EMC 89/336 EEC

USER, INSTALLATION COMMISSIONING & SERVICING INSTRUCTIONS

Standard & Boiler-House Models

EuroStar 40-50 (S)

EuroStar 50-60 (S)

EuroStar 60-70 (S)

EuroStar 70-90 (S)

To be retained by householder

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HOW TO USE YOUR TRIANCO BOILER

The Trianco EuroStar has been designed and constructed to give years of trouble free service and these instructions are provided to assist you in obtaining the best performance with the least trouble and cost.

The boiler is fully automatic in operation and requires little attention other than the setting of the thermostat and any system controls such as a room thermostat and time-switch.

TO FIRE THE BOILER

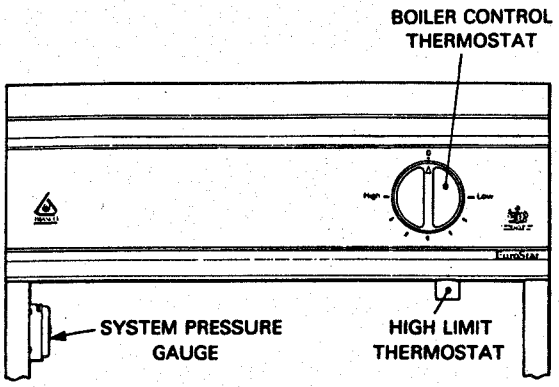
Before firing the boiler, ensure the system is full of water, there is sufficient oil in the storage tank and all valves are open.

1. Check that the Time-switch/Programmer (if fitted) is ON and the room thermostat is calling for heat.
2. Set the boiler thermostat to the desired temperature.
3. Switch on the electrical supply to the boiler and the burner should fire after a few seconds of fan pre-purge.
4. Set the Time-switch/Programmer (if fitted) to the times and programme required.
5. The boiler will now operate automatically, cutting in and out according to the heat demand.

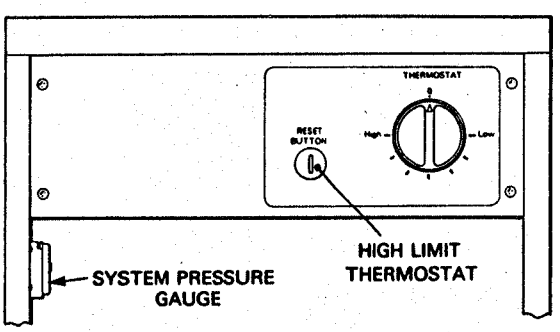
TO STOP THE BURNER

The burner may be stopped by turning the Boiler Control Thermostat fully anti-clockwise to the OFF position '0'.

If the boiler is to be off for a long time, it is recommended that the mains supply to the boiler is switched off or the Time-switch/Programmer (if fitted) is switched to the OFF position.



BOILER CONTROL PANEL (STANDARD MODEL) (FRONT COVER REMOVED)



BOILER CONTROL PANEL (BOILER HOUSE MODEL) (FRONT COVER REMOVED)

BOILER CONTROL THERMOSTAT

The boiler control thermostat enables you to select the temperature of the water leaving the boiler. It is calibrated between High and Low in five intermediate settings, corresponding to a temperature range of 82°C (high) to 55°C (low).

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

Setting 5 (75°C) for Winter Heating and Hot Water
Setting 2 (65°C) for Summer Hot Water only

It is recommended the thermostat is not operated below Setting 1 (60°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 high limit thermostat is factory set and requires no adjustment. Should the boiler thermostat malfunction, the limit thermostat will take over and shut down the boiler.

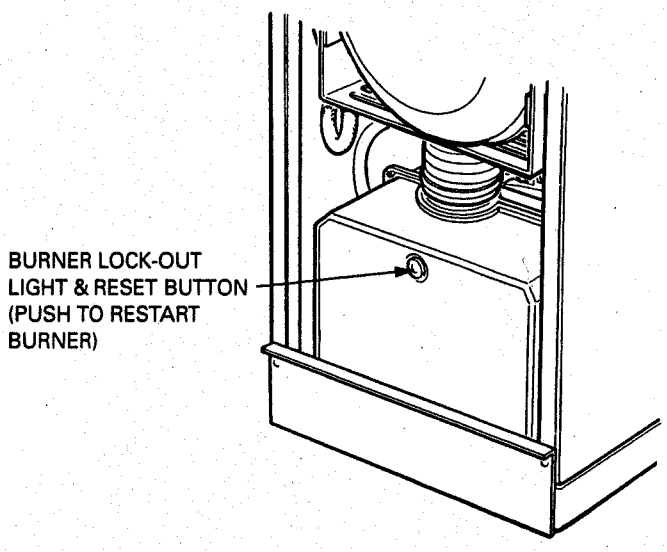
If the limit thermostat operates frequently, consult your Service Engineer as there may be a fault in the system.

To reset the limit thermostat, remove the front panel and push in button.

Note: The limit thermostat can only be reset when the water temperature has dropped at least 20°C.

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 illuminated reset button to start 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 Service Engineer).

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.

TIME-SWITCH/PROGRAMMER

When choosing the operating times for your boiler, it is useful to remember that central heating usually takes between half an hour to an hour before it becomes effective.

It is suggested that the Time-Switch/Programmer is set to bring on the heating about an hour before heating is required.

It is also worth noting that the heating system will usually remain effective for up to half an hour after boiler shut down. The timer can therefore be switched off earlier as an economy measure.

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.

SHUTTING DOWN FOR THE SUMMER

If the boiler is shut down for the summer months, it is advisable to have it serviced and thoroughly cleaned as soon as possible to minimise corrosion of the heating surfaces.

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

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

1. Check for failure in the electrical supply e.g. a power cut.
2. Check for a blown fuse. If the fuse has blown and on replacement blows again, switch off the mains electrical supply to boiler and call your Service Engineer.
3. Check that there is adequate oil in the tank and the shut-off valves are open.
4. Check for burner lock-out. Press the reset button and burner should fire. DO NOT PRESS MORE THAN TWICE. Refer to 'Burner lock-out' for further advice.
5. Check for excess water temperature (Refer to 'High Limit Thermostat' for advice).

Note: If the boiler has been off as a result of à power failure, it will be necessary to re-set the Time-Switch/Programmer to the correct time unless it has a built-in power reserve.

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's

Signature.....

Company Name.....

.....

Address .....

Tel. No:.....

See page 30 for customer after sales service information.

2. INTRODUCTION

The Trianco EuroStar meets the CE European requirements of BED 92/42 EEC EMC 89/336 EEC.

Trianco EuroStar SYSTEM Boilers are fully equipped for use in a SEALED WATER SYSTEM and come complete with all necessary components and safety controls viz. expansion vessel, circulating pump, automatic air vent, safety-valve, hand reset limit thermostat and pressure gauge.

They are supplied for use with a conventional chimney but can readily 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 arrangements, from low level discharge through the wall to high level roof discharge. (See Balanced Flue Kits for details – Section 6).

The matched pressure jet burner, which is exceptionally quiet in operation, ensures clean and efficient combustion with low NO_X emissions.

As the EuroStar balanced flue boiler is a truly room sealed appliance, it is also eminently suitable for installation in a garage.

The standard model comes in a white enamelled casing for kitchen installation or a blue cased model is available for boiler-house locations.

All servicing can be carried out from the front of the boiler, thus allowing the boiler to be fitted under a kitchen work top if required. The front mounted flue-cover permits easy access for the removal of the flue-baffles and cleaning of heating surfaces.

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

An electronic 7 day programmer is available as an optional extra.

Trianco EuroStar boilers are supplied with the burner set for Kerosene 28 sec. 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.

3. TECHNICAL INFORMATION

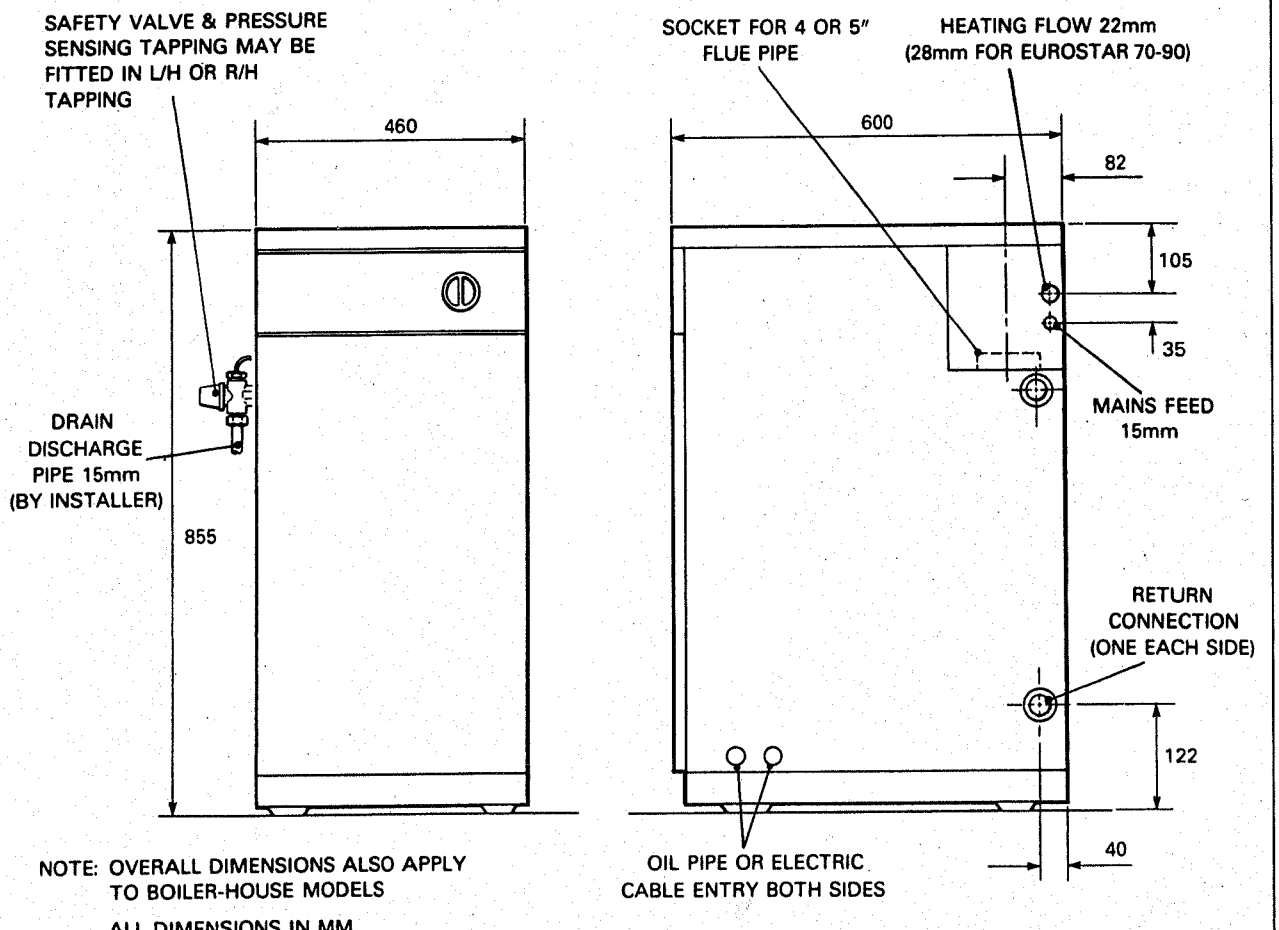


FIG. 1 OUTLINE DIMENSIONS

Technical Specification

EuroStar Boiler Models		40-50	50-60	60-70	70-90
Rated Input	(Btu/h) (kW)	58,000 17.0	70,000 20.5	75,000 22.0	100,000 29.3
Rated Output	(Btu/h) (kW)	50,000 14.7	60,000 17.6	70,000 20.5	90,000 26.4
Riello Oil Burner		G5 BF	G5 BF	G5 BF	G5 BF
Weight (empty)	(kg) (lb)	91 200	93 205	98 216	102 224
Water content	(litre) (gal)	12.2 2.7	12.2 2.7	14.8 3.3	18.6 4.1
Flow & return sockets	(in.)	4 x 1 BSP	4 x 1 BSP	4 x 1 BSP	4 x 1 BSP
Pump socket	(in.)	¾ BSP	¾ BSP	¾ BSP	¾ BSP
Drain-off socket	(in.)	½ BSP	½ BSP	½ BSP	½ BSP
Flue Socket Dia. (C.F.)	(in.)	4 or 5	4 or 5	4 or 5	4 or 5
Max. operating pressure	(bar) (psi)	3 43.5	3 43.5	3 43.5	3 43.5
Test Pressure	(bar) (psi)	4.5 65.3	4.5 65.3	4.5 65.3	4.5 65.3
Water side resistance 10° diff 20° diff	 (mbar) (in. w.g.) (mbar) (in. w.g.)	 11 4.4 2.7 1.1	 13.3 5.3 3.2 1.3	 21.3 8.5 5.2 2.1	 25.0 9.7 8.3 3.2
Starting Current	(amp)	3.5	3.5	3.5	3.5
Running Current	(amp)	0.77	0.77	0.77	0.77

Control Thermostat	– Adjustable between 55°C and 82°C
Limit Thermostat	– Factory set at 110°C $^{+0}_{-6}$°C (hand reset)
Expansion Vessel	– 10 litre capacity – Factory charged to 0.5 bar
Circulating Pump	– Grundfos UPS 15-50, 3 speed
Automatic Air Vent	– ⅜" BSP
Safety Valve	– Factory set at 3 bar
Pressure Gauge	– Calibrated 0 to 4 bar
Casing Finish	– Stove enamelled white with coloured facia trim (Standard Model) – Stove enamelled blue (Boiler House Model)
Thermal Insulation	– Boiler shell insulated with fibre glass
Option Extras	– Programmer (Standard Model only) Trianco Balanced Flue Kits

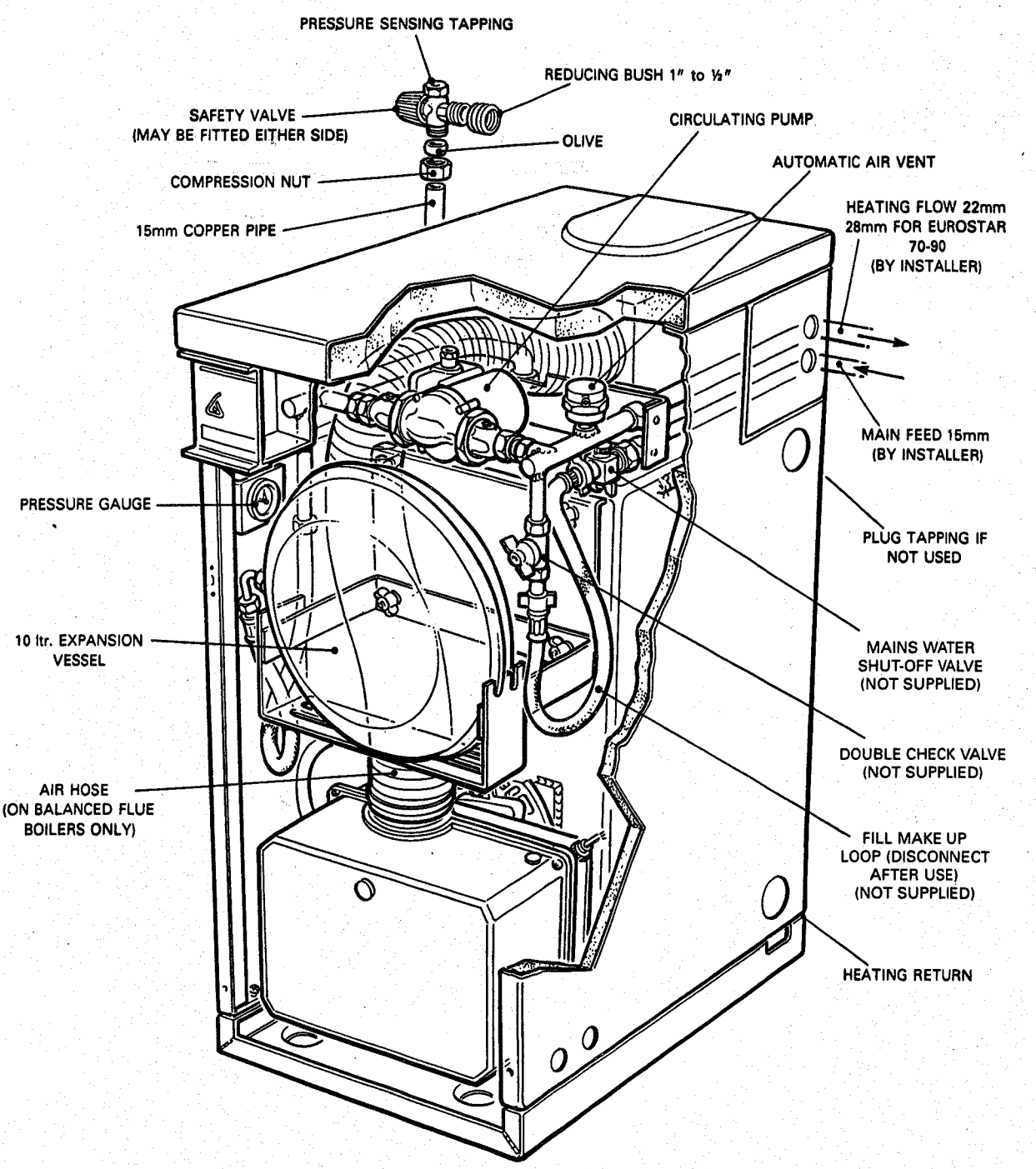


FIG. 2 TRIANCO EUROSTAR SYSTEM BOILER

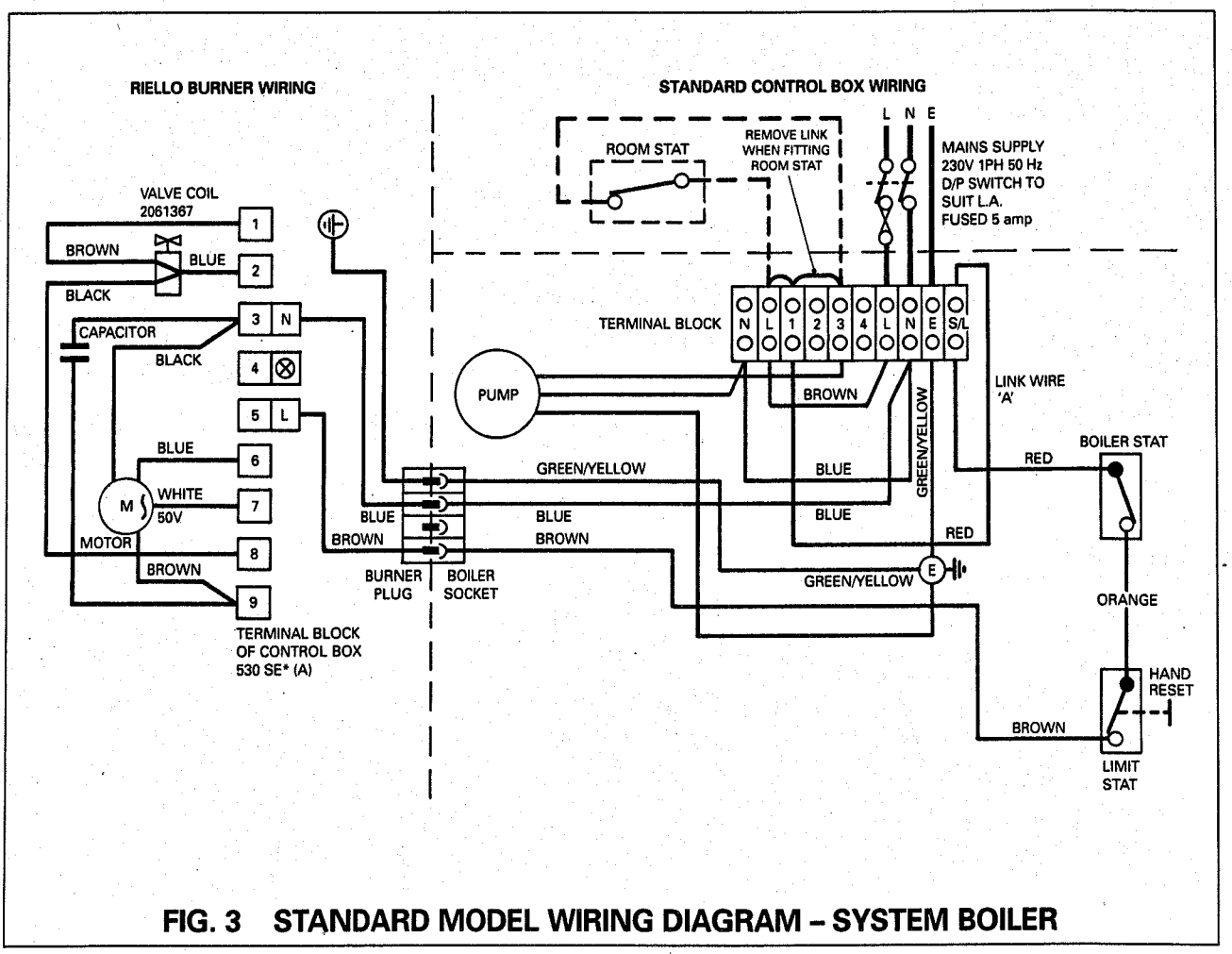


FIG. 3 STANDARD MODEL WIRING DIAGRAM – SYSTEM BOILER

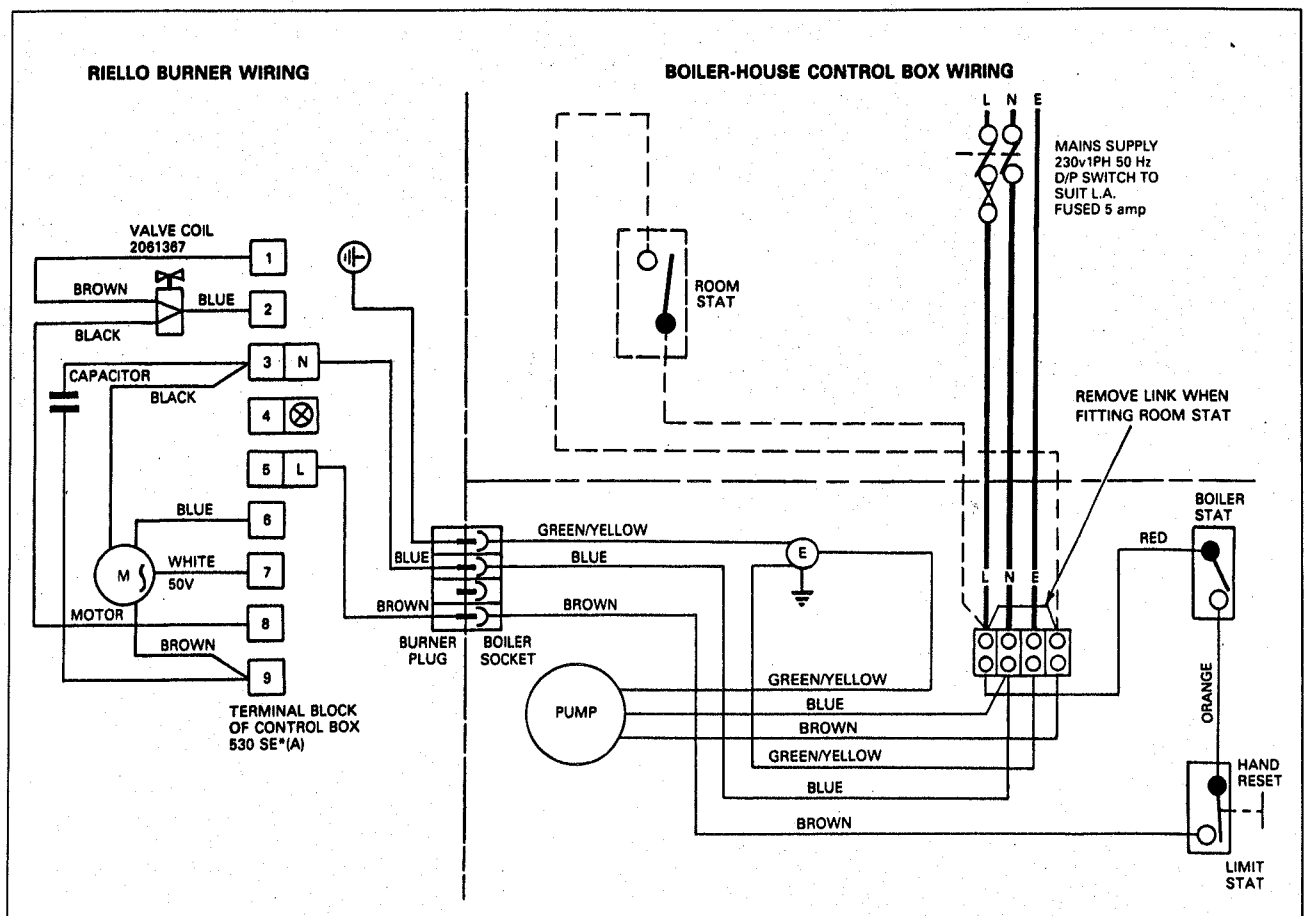
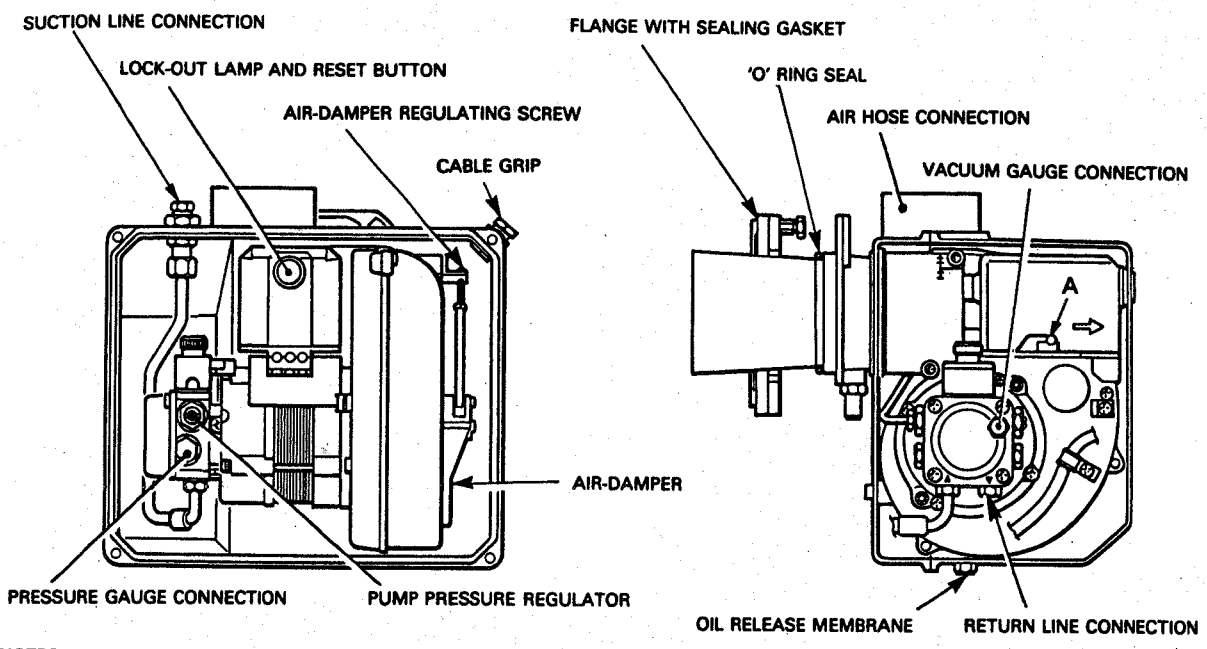


FIG. 4 BOILER HOUSE MODEL WIRING DIAGRAM – SYSTEM BOILER



NOTES:

(a) TO REMOVE THE CONTROL-BOX FROM THE BURNER, LOOSEN SCREW (A) AND PULL TOWARDS THE ARROW.

(b) THE PHOTO-CELL IS FITTED DIRECTLY INTO THE CONTROL-BOX (UNDERNEATH THE IGNITION-TRANSFORMER) ON A PLUG-IN SUPPORT.

FIG. 5 BURNER GENERAL ASSEMBLY

BURNER SETTINGS

Boiler	Riello Burner Model	Comb. Head	Danfoss Nozzle USG/H	Pump Pressure P.S.I.	Firing Rate ml/min	Air Setting		CO_2%	Smoke No.	Flue Gas Temp. °C
						CF	BF			
EUROSTAR 40-50	G5 BF	3007716	0.5 x 80° S	110	30	2.8	3.2	12.3	0	200
EUROSTAR 50-60	G5 BF	3007716	0.6 x 80° S	110	35	3.8	4.2	12.4	0	215
EUROSTAR 60-70	G5 BF	3005775	0.65 x 80° S	130	41.5	3.8	4.2	12.6	0	215
EUROSTAR 70-90	G5 BF	3006001	0.75 x 80° S	150	53	3.6	4.0	12.0	0	200

Note: The EuroStar 70-90 is factory set for a mid output of 80,000 Btu/h. If the maximum output of 90,000 Btu/h is required, increase pump pressure to 150 psi and open air damper to 4.5.

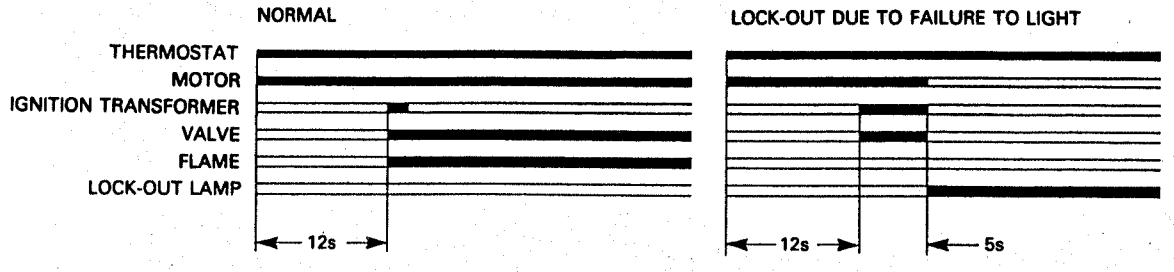


FIG. 6 BURNER START-UP CYCLE

Burner Settings

Air Damper Settings (Fig. 7)

The air damper is factory set to a nominal position to suit the boiler output. However, adjustment of the damper may be required to achieve the CO_2 level indicated in the Burner Settings table.

This can be carried out by removing plug B and rotating screw 'C' with a screwdriver, in the positive (+) direction to increase air (for lower CO_2) and in the negative (–) direction to reduce air (for increased CO_2).

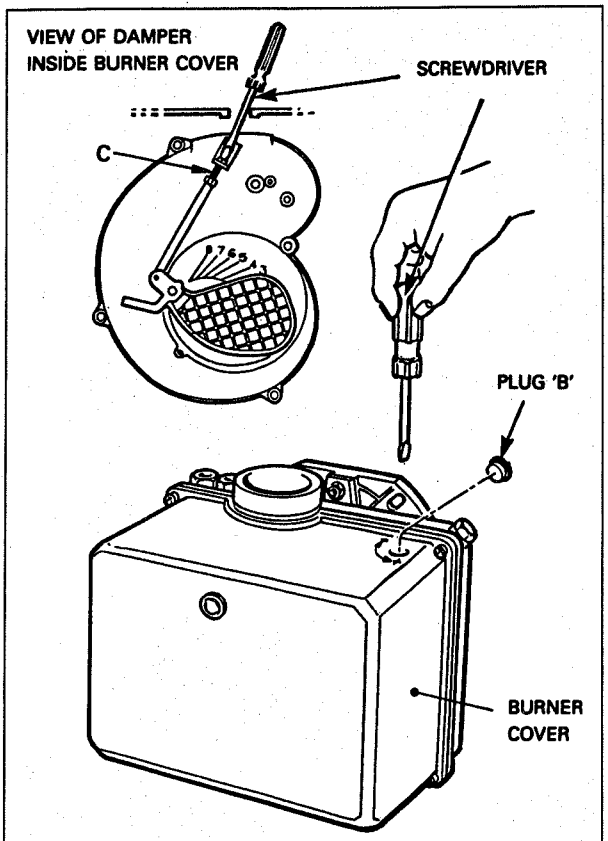


FIG. 7 AIR DAMPER ADJUSTMENT

Oil Pipe Connections (Fig. 8 and 9)

The burner is supplied for use with a one pipe system. If used on a two pipe system, it is necessary to fit the by-pass plug (supplied) into the return connection (See Fig. 8). It is also necessary to fit the return pipe (see Fig. 9).

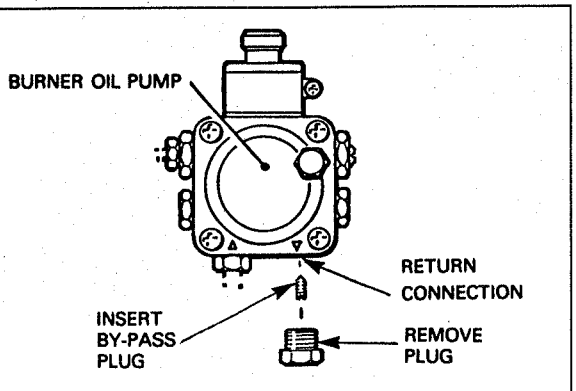


FIG. 8 OIL PUMP BY-PASS PLUG

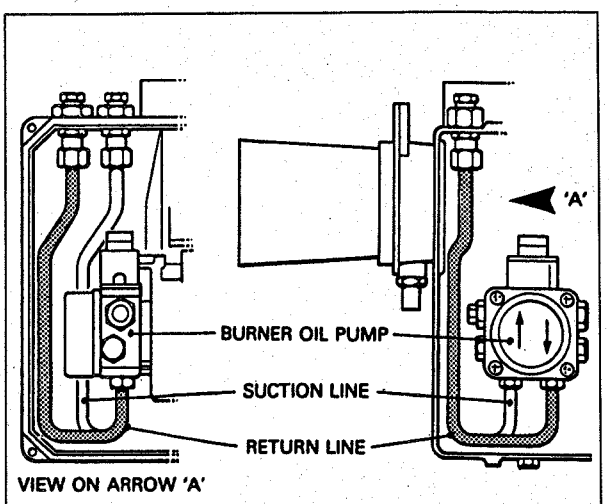


FIG. 9 RETURN PIPE CONNECTION (TWO PIPE SYSTEM)

Flexible Oil Hose

Check hose periodically for leaks and replace as necessary.

Oil Release Membrane

In the rare event of an oil leak occuring inside the burner cover an Oil Release Membrane allows oil to drop out into the boiler base tray where it can be readily detected. After curing the leak a new Oil Release Membrane must be fitted if the boiler is fitted with a room sealed balanced flue. Replacement is not necessary if the boiler is used with a conventional chimney (Trianco Part No. 28008).

Nozzle Replacement (Fig. 10)

Before assembling or removing the nozzle, loosen screw C and move electrodes forward.

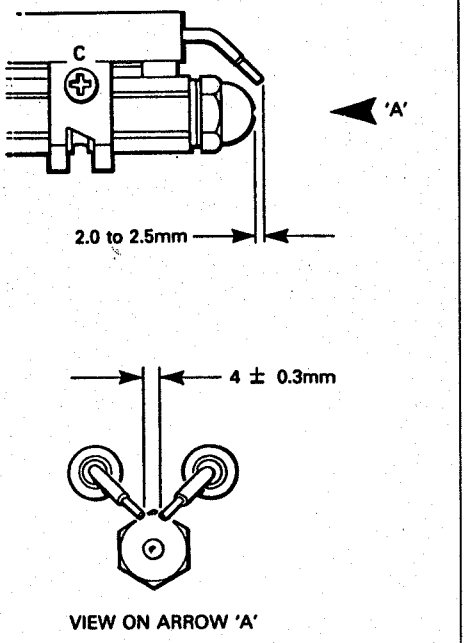


FIG. 10 ELECTRODE SETTING

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.

BS 7074: Part 1 – Code of Practice for Sealed Water Systems.

BS 4543: Part 3 – Factory made insulated Chimneys.

The Building Regulations – Part 'J' (England and Wales)
Part 'F' Section III (Scotland)
Part 'L' (Northern Ireland)

Current I.E.E. Regulations
Local Water Undertakings By-laws
OFTEC Installation Requirements for Oil Fired Boilers and Oil Storage Tanks.

Note: Manufacturer's instructions must not be taken in any way as overriding Statutory Regulations.

Health and Safety at Work Act

This 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.

Siting the Boiler

Sound Levels

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

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

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

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

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

Clearance and Service Access

When siting the boiler, ensure adequate clearance is allowed for making water and flue connections. As the boiler can be fully serviced from the front, there is no need for a headroom allowance nor provision for removal of the kitchen work top but a clearance of at least 750mm is required at the front of the boiler.

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.

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.

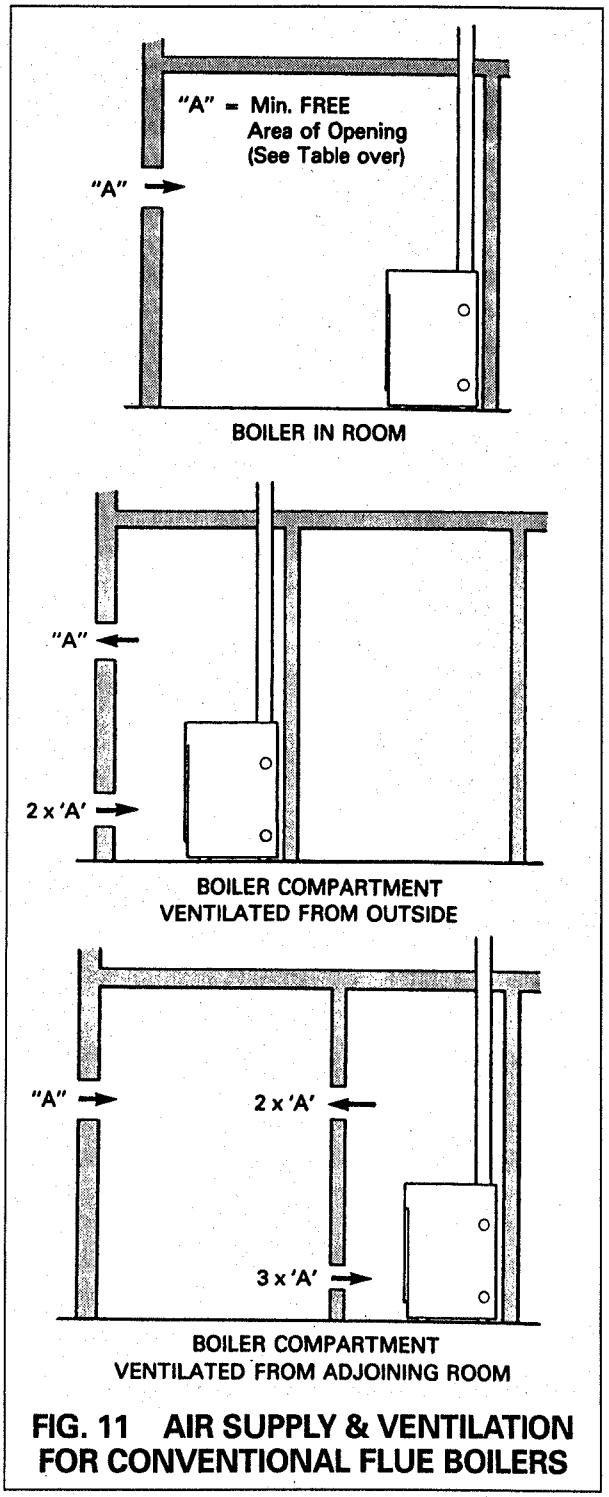


FIG. 11 AIR SUPPLY & VENTILATION FOR CONVENTIONAL FLUE BOILERS

British Standard 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 openings are therefore required for Trianco EuroStar boilers:

EuroStar Model	Minimum FREE Area Opening 'A'
40-50	80 cm² (12 in²)
50-60	97 cm² (15 in²)
60-70	113 cm² (18 in²)
70-90	145 cm² (22 in²)

Ventilation (Conventional flue boilers)

Where the boiler is installed in a compartment or a confined space, ventilation openings are also required to prevent overheating of the appliance controls (the ventilation areas are shown in Fig. 11).

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. 12 for ventilation openings).

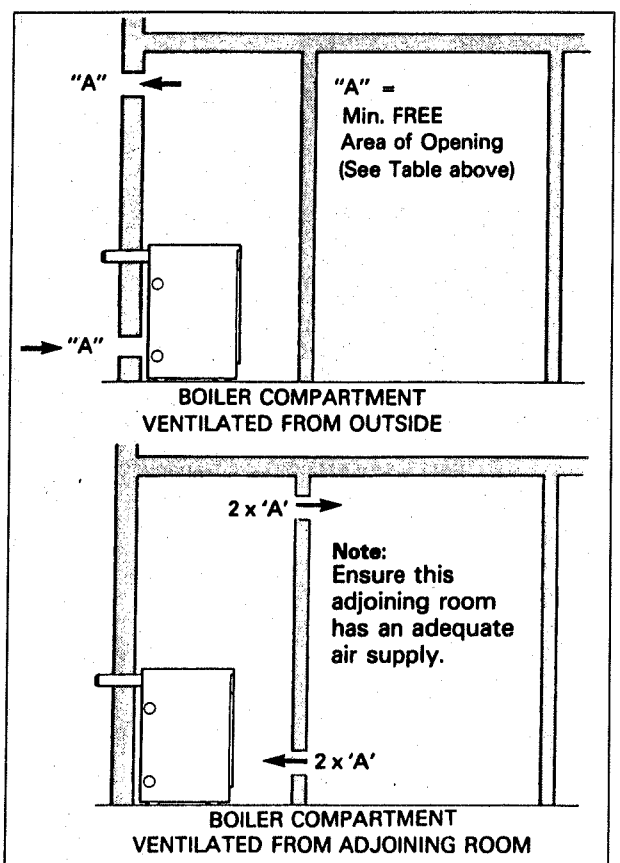


FIG. 12 VENTILATION FOR ROOM SEALED BALANCED FLUE BOILERS IN A COMPARTMENT

Extractor Fan

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 CO_2% and smoke number should be carried out to prove that combustion is satisfactory.

Water System

The installation must comply with the requirements of the following Codes of Practice:

BS 5449 Part 1: Forced Circulation Hot Water Systems.

BS 7074 Part 1: Code of Practice for Sealed Water Systems.

The boiler is fitted with all necessary components to enable it to be used in a SEALED WATER SYSTEM.

The following SYSTEM components are incorporated:

(a) Expansion vessel 10 litre capacity – pre-charged to 0.5 bar (7 p.s.i.).

(b) Circulating pump – 3 speed, variable head.

(c) Automatic air vent.

(d) Safety valve – factory set at 3 bar (45 p.s.i.).

(e) Limit thermostat – cut-out at 106°C ±4°C (hand reset).

(f) Pressure gauge – 0 to 4 bar range.

(See Fig. 2 for location of components).

PIPE CONNECTIONS (See Fig. 13)

The system flow pipe and mains cold feed are connected to the tail end pipes within the boiler casing.

Routing of the pipework up to this point is dependent upon the type of flue system used. Where a low level flue terminal is fitted to the right side of boiler, the pipework must be taken across the boiler in front of the air-box and along the left hand side of boiler.

All other flue system arrangements allow pipe connections to be made on right hand side of boiler.

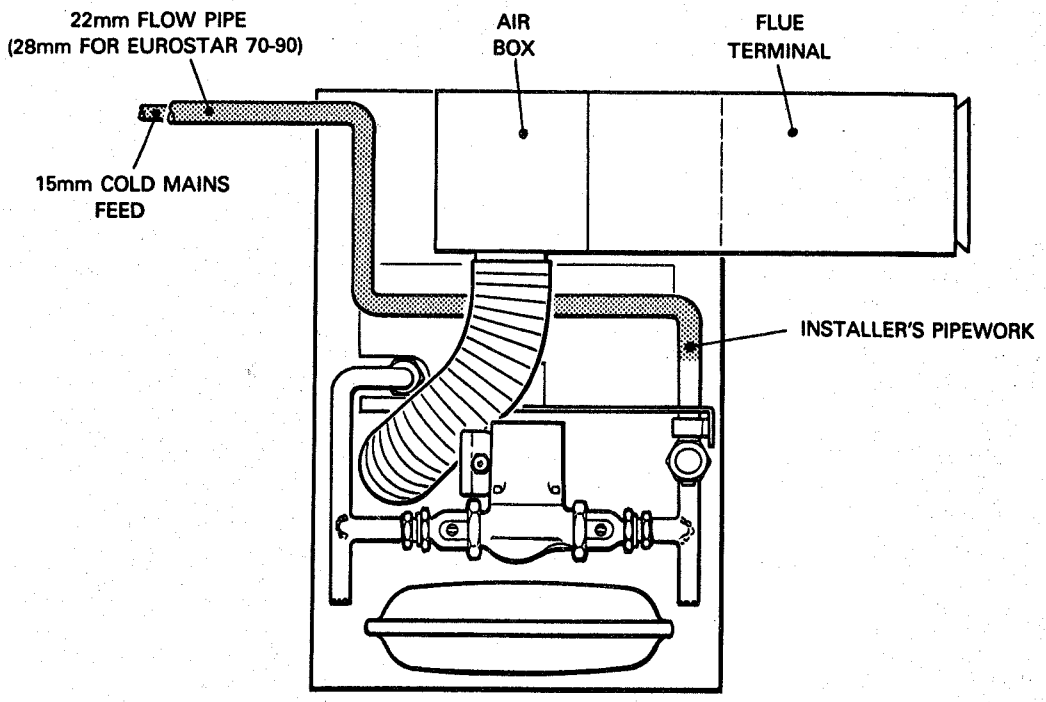
The top rear side casing panel has a cut-out for the pipework and this can be fitted either side, according to pipe run.

One or both of the return tappings can be used.

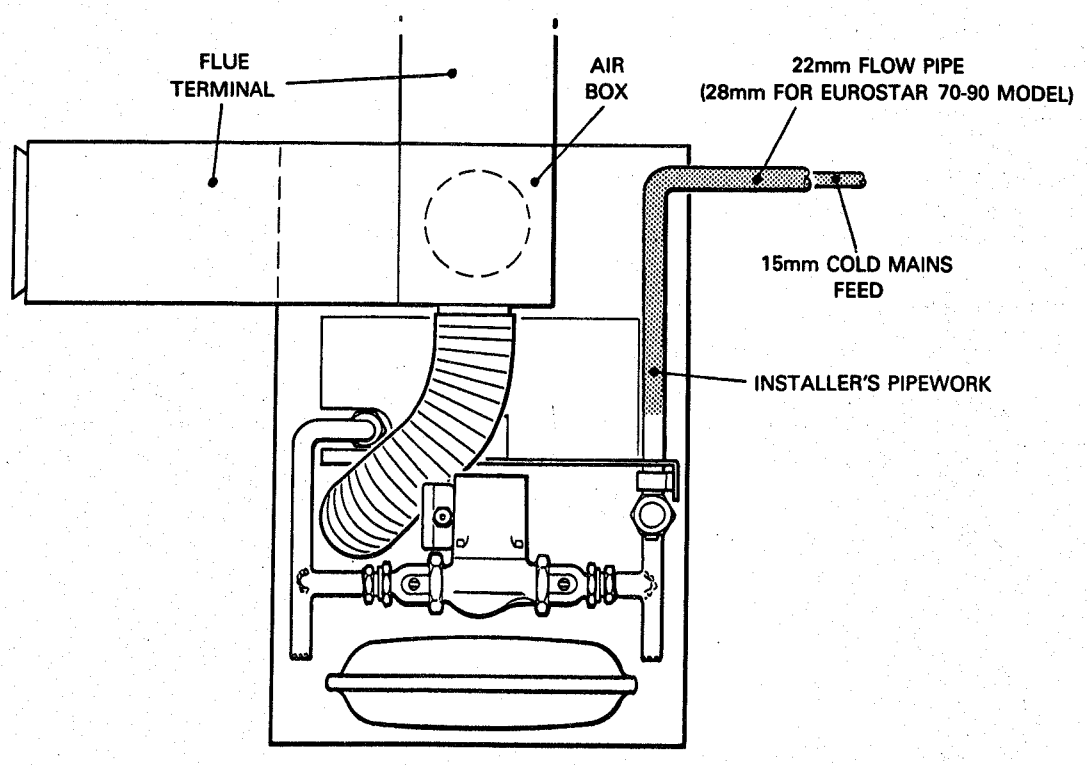
Expansion Vessel

The expansion vessel is suitable for systems with a static head of up to 5 metres (16.5ft) i.e. the vertical distance between expansion vessel and highest point of system, usually the top of bedroom radiators. If the static head is greater than 5 metres, then the air charge in the vessel must be increased to equal this higher static pressure. The pressure can be increased by simply pumping up the vessel with a standard type pump and checking the pressure with a tyre gauge. A schraider type valve is provided on the vessel for this purpose (see note below).

Note: The air charge should not exceed a pressure of 1.5 bar (22 p.s.i.).



PIPEWORK ARRANGEMENT USING R/H
FLUE TERMINAL CONNECTION
(PLAN VIEW)



PIPEWORK ARRANGEMENT FOR ALL OTHER FLUE CONNECTIONS

FIG. 13 PIPE CONNECTIONS

1 ft. head = 0.434 p.s.i.
1 metre head = 1.4 p.s.i.
1 bar = 14.5 p.s.i.

The capacity of the expansion vessel is suitable for systems with a water content of up to 120 litres (this includes the boiler). A check should be made to ensure the system volume comes within this capacity but if it is greater, then an additional expansion vessel will be needed. Refer to BS 7074 Part 1 for information on the size of additional vessel required.

Circulating Pump

As the pressure loss through the boiler is negligible, virtually all the pressure head developed by the pump can be used for the system. The pump has 3 settings.

Automatic Air Vent

The air vent automatically expels any air-released from the water and thereby keeps the boiler fully charged.

Safety-Valve

This is supplied loose for fitting into the boiler's top left or right hand tappings by means of the reducing bush supplied.

Discharge Pipe

A 15mm copper discharge pipe must be fitted to the safety-valve and arranged to discharge in a visible position outside the building, preferably over a drain.

The pipe should have a continuous fall and terminate in a position such that any discharge of hot water or steam does note create a hazard to persons or damage to property.

The safety-valve is pre-set to 3 bar ±0.3 bar so it is necessary to keep the system operating pressure below about 2.5 bar, otherwise water could be discharged.

Pressure Gauge

The pressure gauge provides visual indication of the system water pressure and the red pointer which must be set to the cold fill pressure, allows any water loss to be easily seen and made-up as necessary.

Te capillary tube nut must be screwed into the safety valve top tapping and the capillary tubing run in the conduit on inside of side casing.

Domestic Hot Water Cylinder

The domestic hot water cylinder must be of the indirect coil type and suitable for working at a gauge pressure of 0.35 bar above the safety valve setting, i.e. 3.65 bar.

FILLING THE SYSTEM

First, ensure any unused boiler tappings are plugged.

Filling is carried out by connecting a temporary flexible hose between the incoming mains supply and boiler flow pipe. Three methods are shown in the diagram. There must be no permanent connection to the mains water supply, even through a non-return valve. Provision for replacing water lost from the system can be made by the flexible hose. Thoroughly flush out the system to remove any swarf and residues in the pipework and check the function of the safety valve by raising the water pressure until the valve operates – this should be between 2.7 and 3.3 bar.

Reduce the water pressure to achieve the initial 'cold fill' system design pressure which will usually be about 1 bar if the standard expansion vessel pre-charge of 0.5 bar is used. The red pointer on the pressure gauge should then be set to 1 bar.

Thoroughly vent all parts of the system of air and examine for leaks; this is particularly important on old systems which may have operated on a low pressure head.

The use of a corrosion inhibitor is recommended for the water system.

Note: When the system water is heated, the pressure will rise above the cold fill setting. If the pressure reaches 2.5 bar when the boiler is operated at its highest temperature with all radiators in circulation, then an additional expansion vessel must be fitted in the system. Refer to BS 7074 Part 1 for information on sizing of the additional expansion vessel.

IMPORTANT

After filling the system, ensure both shut-off valves on the filling loop are turned off and disconnect the flexible hose from the mains supply shut-off valve.

Electrical Supply

230V 1 Phase 50Hz (Fused 5 Amp)

Note: THIS APPLIANCE MUST BE EARTHED

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

The 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 base tray. It should finally be secured with the strain bush in the back of the control panel.

Terminal connections are also provided in the control panel for ancillary controls.

See wiring diagram Fig. 3 and 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.

Thermostats

The boiler is fitted with a variable setting control thermostat and a pre-set limit thermostat. Should the boiler thermostat malfunction, the limit thermostat will take over control and shut down the boiler.

Programmer (optional extra)

A seven day, twin circuit electronic programmer is available for fitting to the boiler facia panel (see separate instructions supplied with programmer).

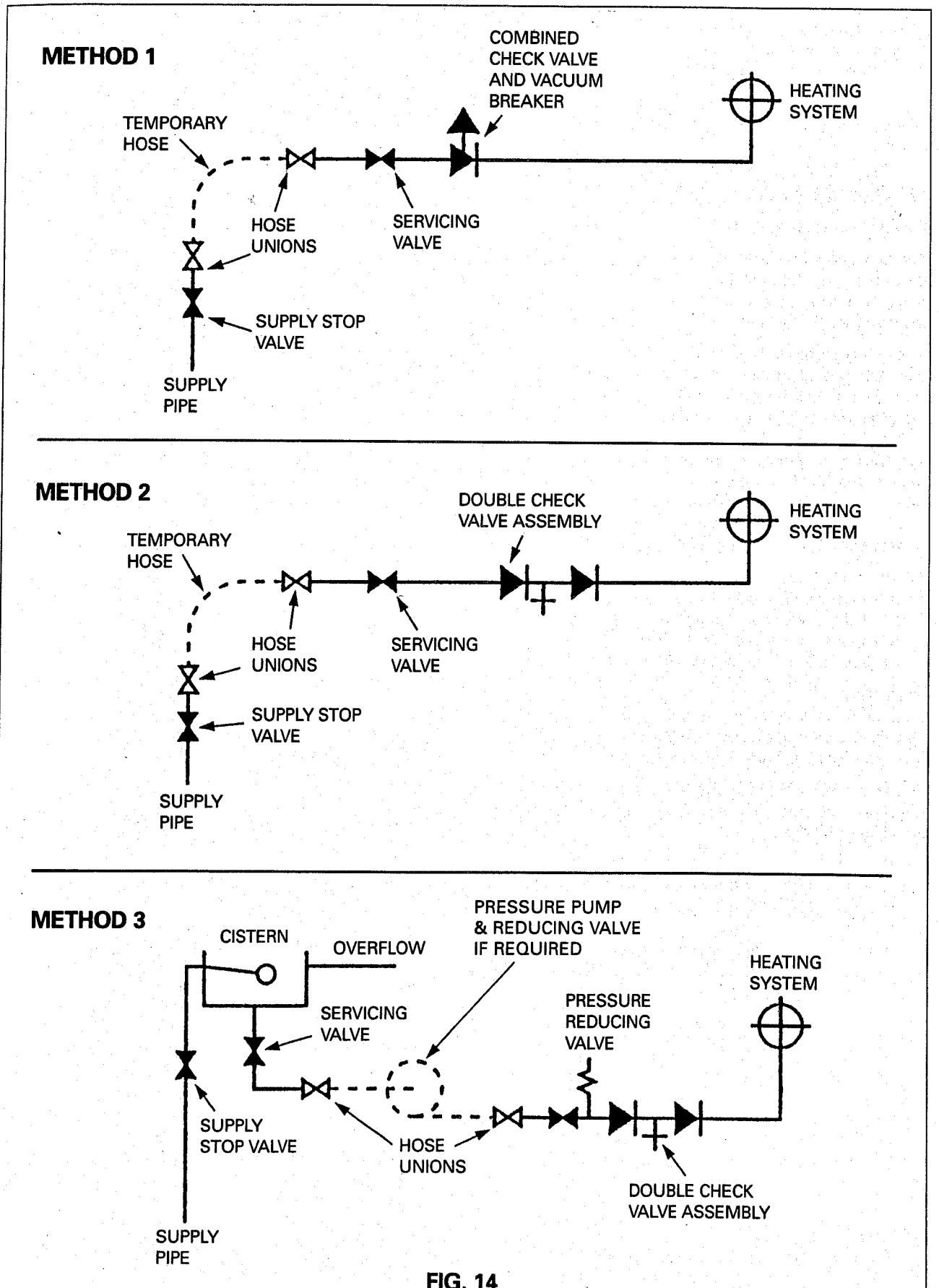


FIG. 14

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.

Gas oil (35 sec) can be used with the EuroStar 60/70 and 70/90 boilers when connected to a conventional chimney but it is essential that a nozzle line oil pre-heater is fitted to the burner.

Gas oil is not recommended for use with the EuroStar 40/50 and 50/60 models.

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 unobtrusive position, having regard to the need for safety, filling, maintenance (if steel tank) and the head of oil required.

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

Alternatively, a non-combustible radiation barrier must be provided which meets the requirements of BS 5410 Part 1 : 1977, Clause 28. This standard applies to tanks up to a capacity of 3,400 litres which is deemed the maximum size for a single family dwelling.

Steel Tanks

Steel tanks should comply with the requirements of BS 799, Pt. 5: 1987 and mounted on brick or block piers with a waterproof membrane between the piers and tank.

The tank should be fitted with 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 manufacturer's guarantee.

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

Oil supply line

A long life flexible oil hose is supplied with the boiler, a filter and shut-off valve are required. These should be fitted as shown in Figs. 15, 16 & 17.

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

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

All oil 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.

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

Single pipe oil supply (Fig. 15)

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. 16)

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 Fig. 7. It is also necessary to connect a return pipe between the pump and burner front-plate as shown in Fig. 8. An additional flexible hose is also required.

A spring loaded non-return valve must be fitted in the suction line to stop the oil running back to the tank. A filter, shut-off valve and fire valve must 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 (3 in) above the bottom to prevent sediment and water being drawn into the supply pipe.

Oil De-aerator – single pipe supply (Fig. 17)

Where a two pipe suction lift system 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 the 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	0.5	1.0	1.5	2.0
MAXIMUM L METRES	PIPE 10mmOD	10	20	40	60
	PIPE 12mmOD	20	40	80	100

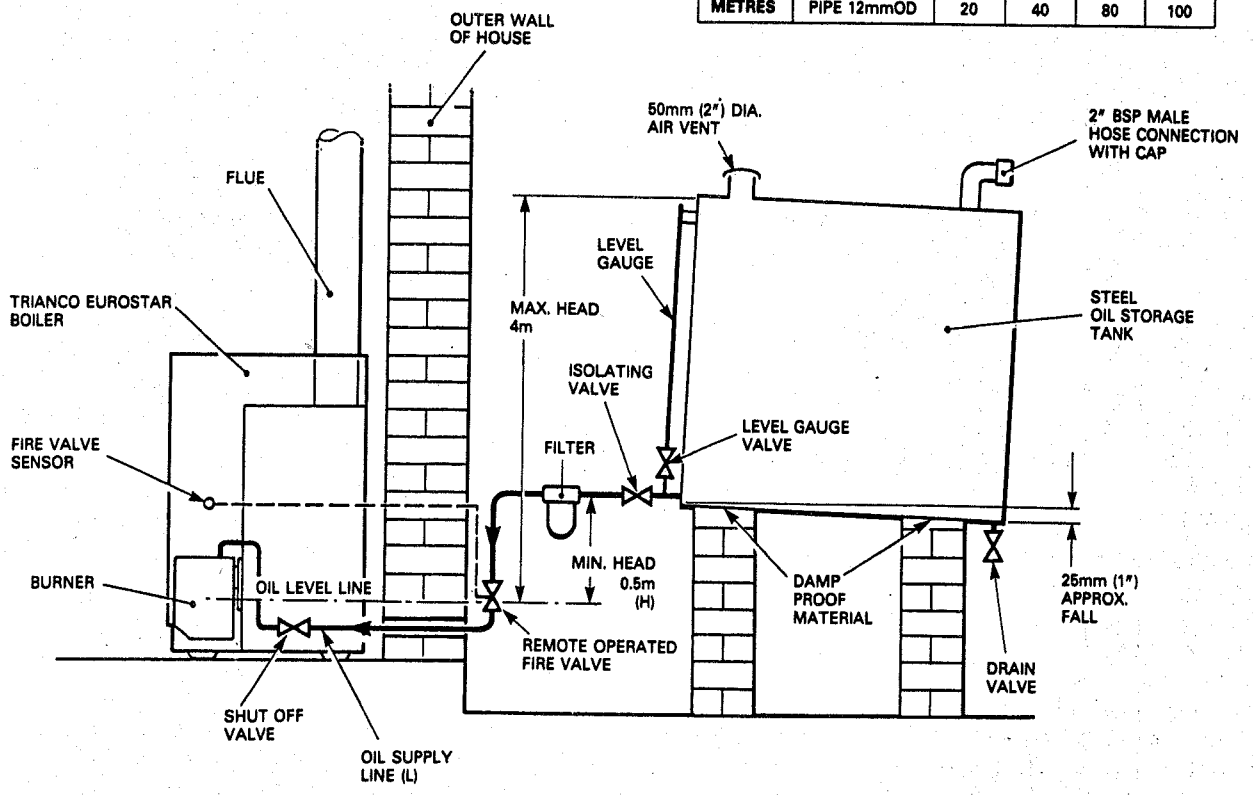


FIG. 15 SINGLE PIPE OIL SUPPLY INSTALLATION

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

	(H) METRES	0	0.5	1.0	1.5	2.0	3.0	3.5
MAXIMUM (L) METRES	PIPE 10mmOD	35	30	25	20	15	8	6
	PIPE 12mmOD	100	100	100	90	70	30	20

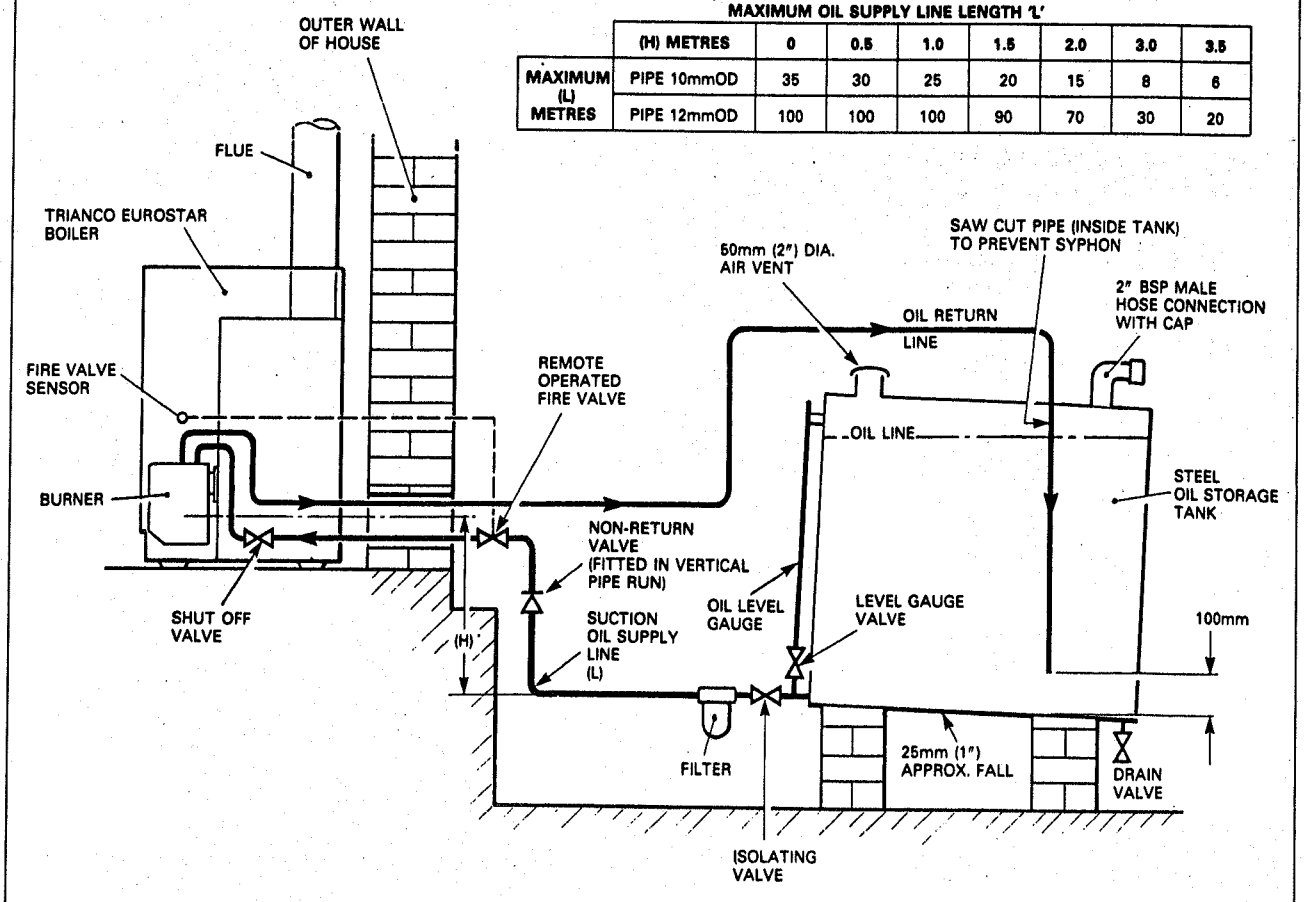


FIG. 16 TWO PIPE OIL SUPPLY INSTALLATION

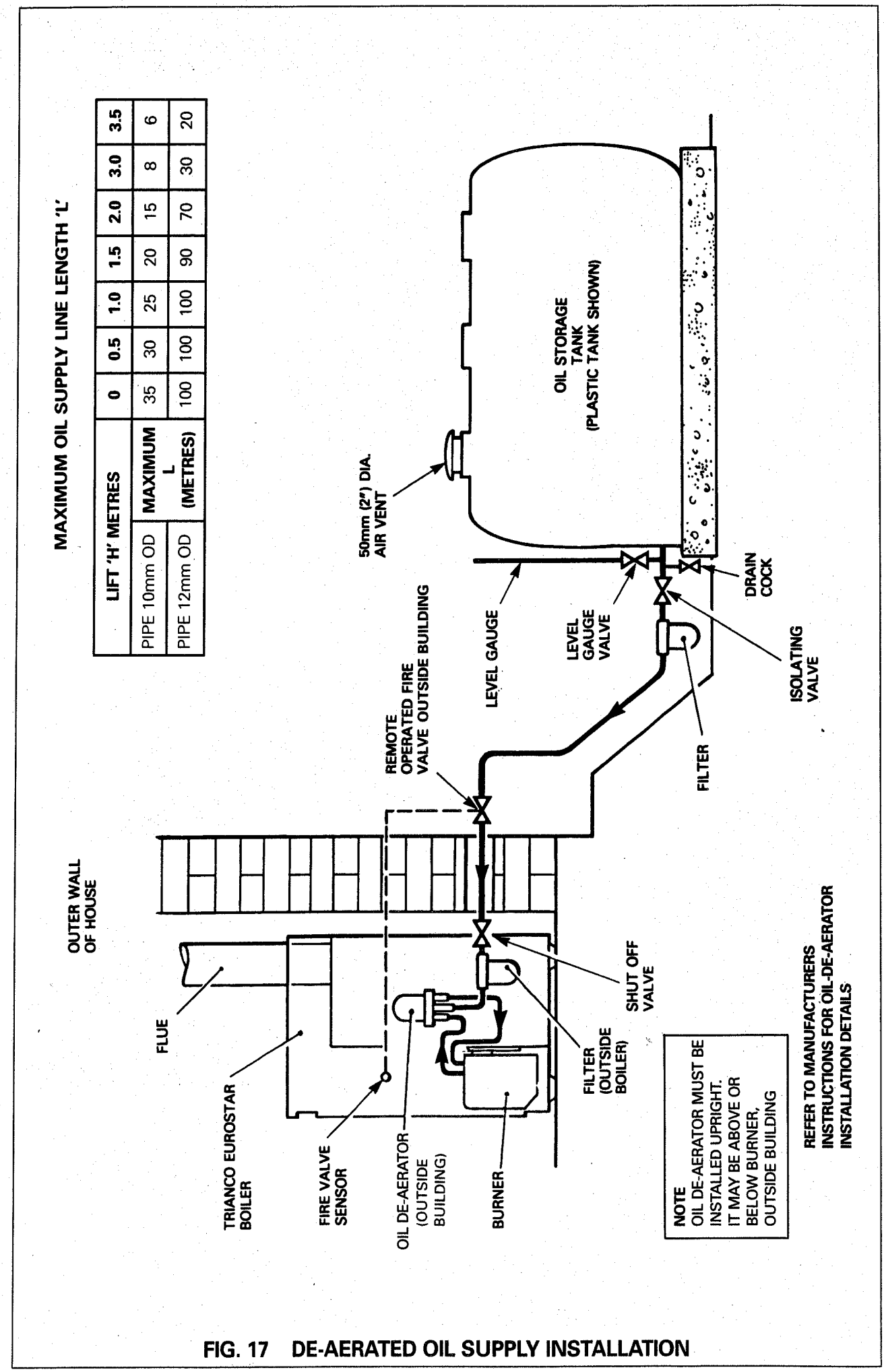


FIG. 17 DE-AERATED OIL SUPPLY INSTALLATION

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 Discharger 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 (Fig. 18)

(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 method 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's high thermal efficiency, it is important that a liner is fitted, otherwise condensation problems could result.

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

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

(d) The in-built flue gas resistance of the EuroStar is such that it allows the boiler to operate reliably over the wide range of chimney draughts 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.

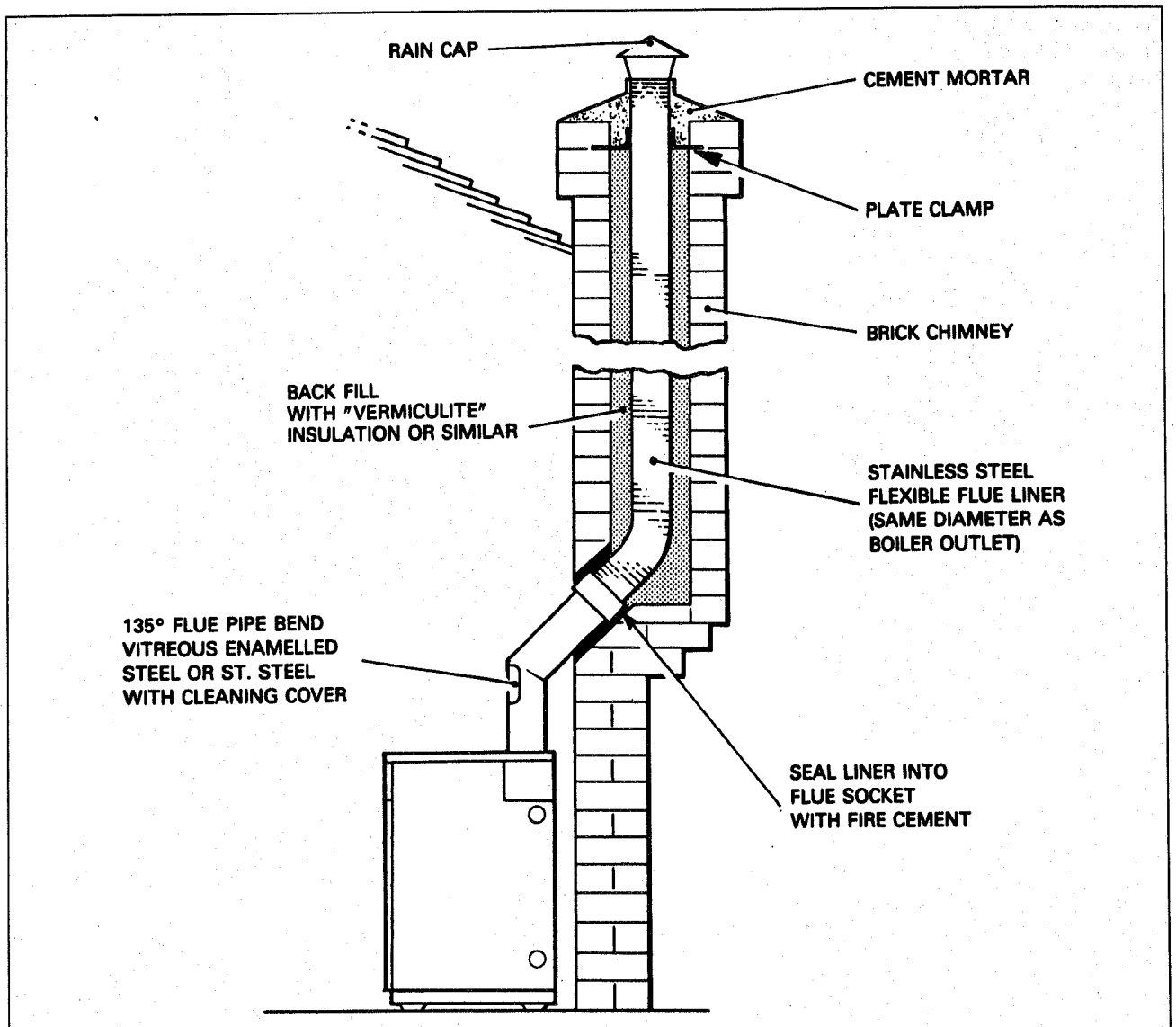


FIG. 18 CONVENTIONAL BRICK CHIMNEY WITH LINER

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 boilers rely on case sealing to achieve a room seal, Trianco EuroStar 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.

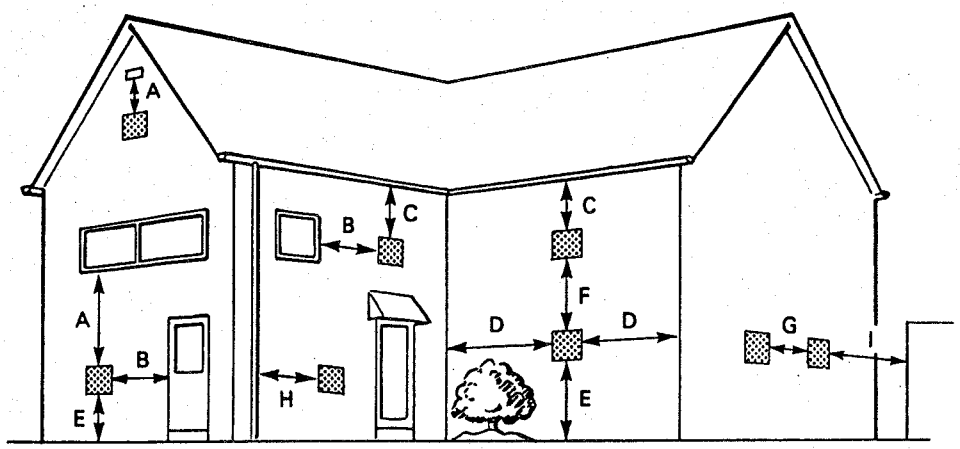
INSTALLATION NOTES

(a) **Location (Fig. 19)**
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. Class C2 is permitted for boilers using low level flue discharge.

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



RECOMMENDED MINIMUM DISTANCES FOR TERMINAL POSITION

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 drain pipe	300
I	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. 19 TERMINAL POSITION

EuroStar Balanced Flue Options

For EuroStar Boilers up to 130,000 Btu/h

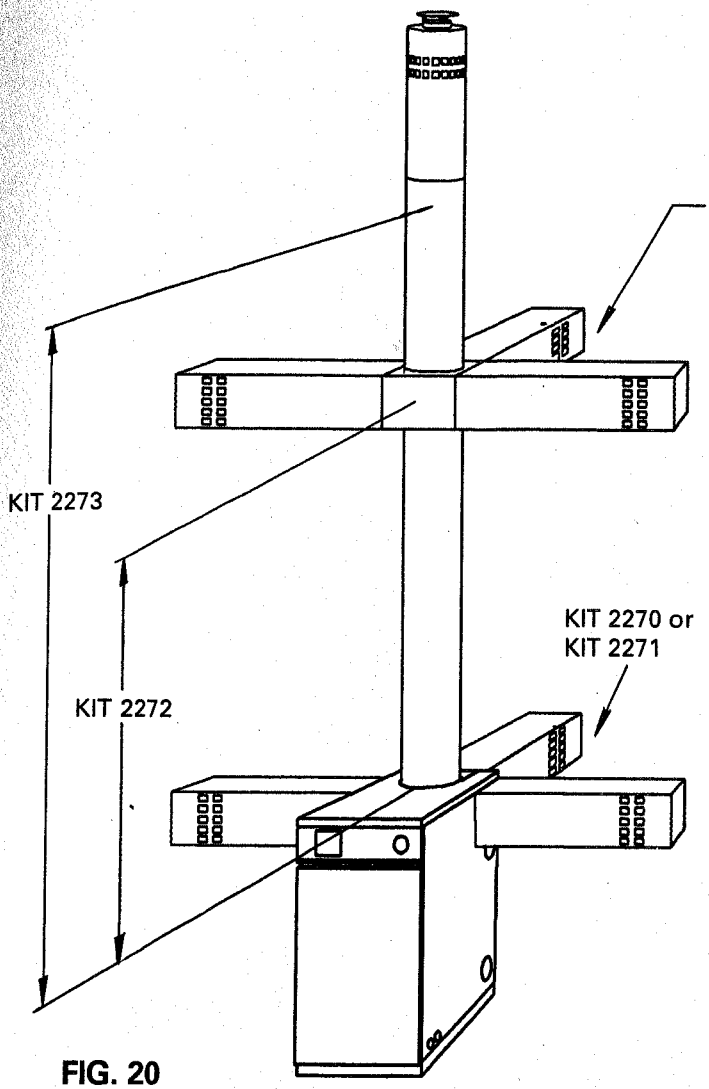


FIG. 20

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 THICKNESSES									
MODEL	**PRODUCT CODES**			**R/H SIDE**		**REAR**		**L/H SIDE**	
				Min	**Max**	**Min**	**Max**	**Min**	**Max**
50/70	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
90/130	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	2270		mm	175	455	330	600	–	–
			ins	7	18	13	24	–	–
	2271		mm	585	850	730	1000	–	–
			ins	23	34	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

5. Clean ignition electrodes and check their settings in relation to nozzle tip. Also, inspect the porcelain insulation and replace electrode assembly if there are cracks or signs of crazing.
6. Remove burner-cover, pull out control-box (after releasing side screw) and clean photo-cell.
7. Remove R/H side of fan casing and check impeller for deposits – clean blades as necessary.
8. Remove end cap from oil pump and take out filter. Wash clean with kerosene and replace.
9. Check flexible oil hose(s) for oil leaks and replace where necessary with a similar 'long life' hose supplied with boiler.
10. Reassemble all parts but do not refit burner to boiler until flue-ways have been cleaned.

Servicing the Boiler (Burner removed)

1. Remove flue-cover and lift out flue-baffles (Fig. 21).
2. Brush all deposits from flue-baffles and internal surfaces of the boiler.
3. Remove flue deposits from the combustion chamber floor using a vacuum cleaner.
4. Replace flue-baffles in the correct arrangement (see Fig. 21 for order of assembly). Refit flue-cover and fully tighten wing-nuts to make a gas tight seal.
5. Refit burner to boiler, connect flexible air hose (balanced flue boilers only) and plug-in burner lead.
6. Turn on oil supply, switch on electricity and burner should fire.
7. Finally check the combustion readings with those given under 'Burner Settings' and make any air or oil pressure adjustments necessary.

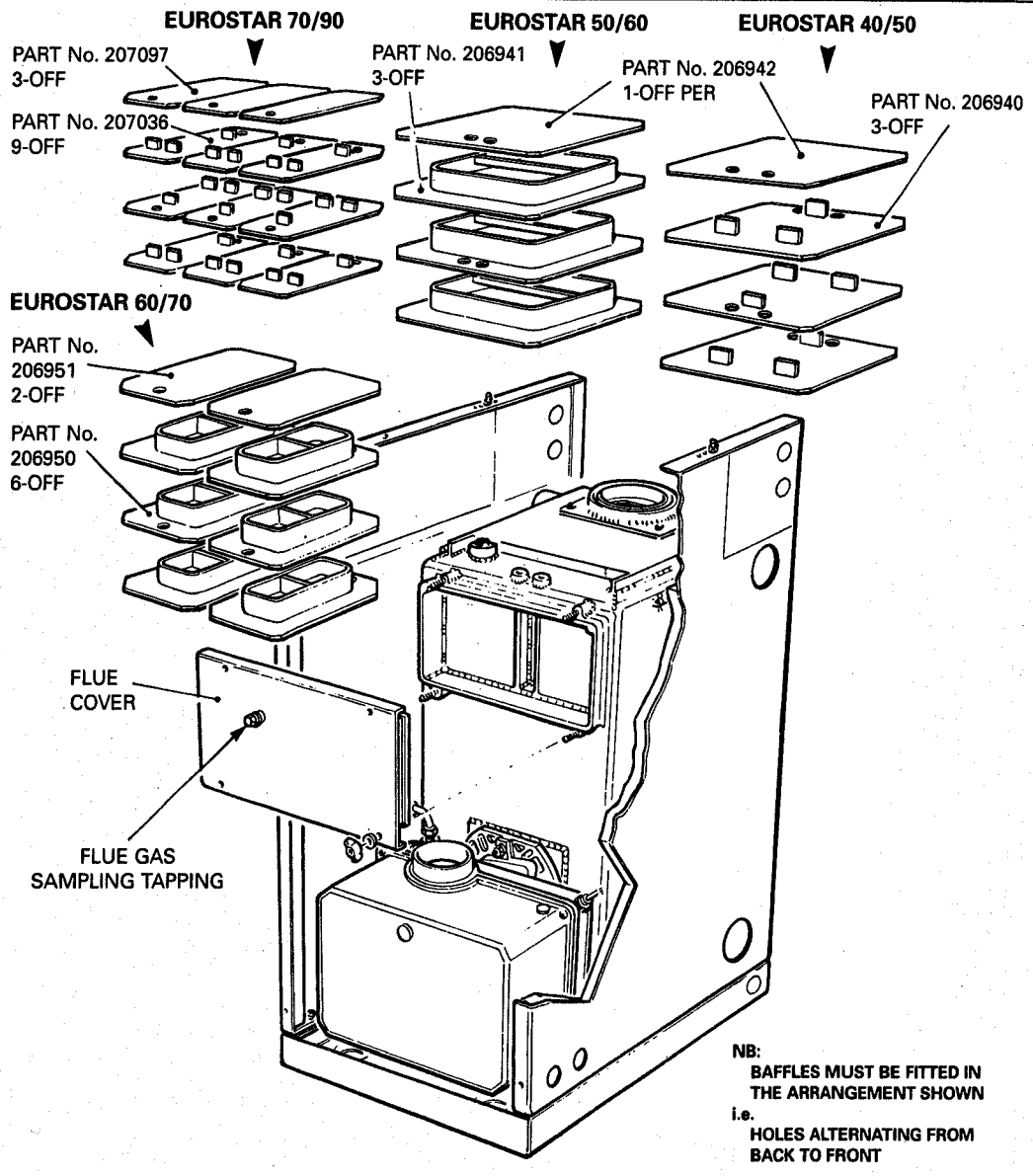


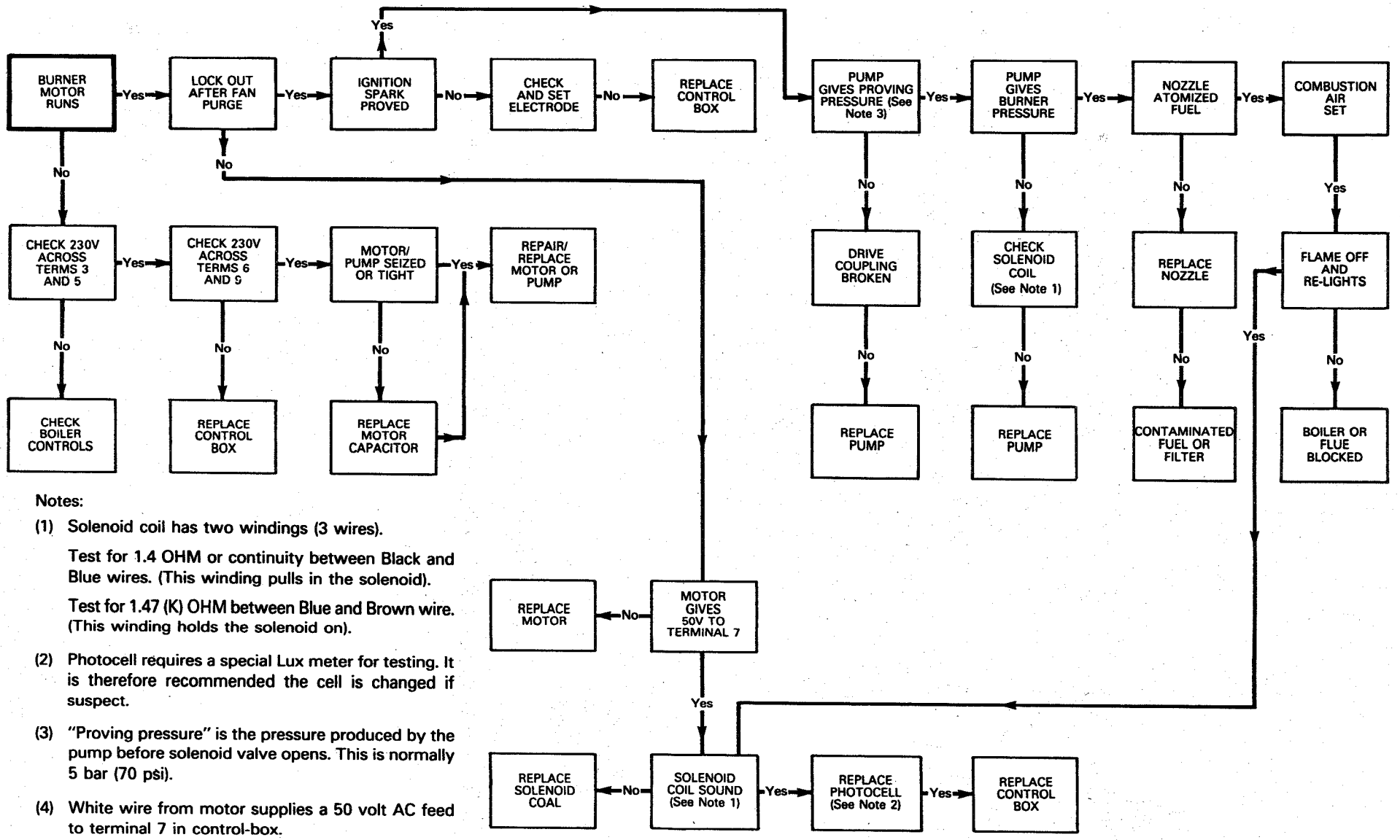
FIG. 21 BAFFLE DETAILS FOR TRIANCO REDFYRE 'EUROSTAR' OIL FIRED BOILERS

9. FAULT FINDING

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

FAULT	POSSIBLE CAUSE	ACTION
BURNER WILL NOT START	Control box locked out	Press reset button on front of burner. N.B. ONLY TRY TWICE
	Limit-stat tripped	Press reset button under control panel and check function of boiler control thermostat.
	Boiler thermostat or other system controls satisfied	Ensure all controls are calling for heat.
	Fuse blown	Fit new 5 amp fuse, if it blows again, check for short circuit in wiring.
	Check for live supply continuity up to burner	If live supply confirmed, change control box.
	Motor or pump seized	Check for rotation and replace as necessary.
BURNER STARTS BUT FLAME NOT ESTABLISHED	No oil supply	Check oil level in tank and feed to burner.
	Photo-cell not seeing flame	Clean photo-cell and ensure it is fully plugged in.
	Air trapped in pump	Bleed off air through pressure gauge tapping.
	Solenoid valve faulty	Check coil for continuity and replace if faulty.
	Nozzle blocked	Replace nozzle with one of same specification.
	Electrodes incorrectly set	Reset gap and position electrodes as shown in Burner diagram.
	Electrode insulator cracked	Check and replace if insulator cracked or crazed.
	Ignition transformer and H.T. contacts	Check for spark and condition of H.T. contacts. Replace as necessary.
	Low oil pressure	Check pump pressure and adjust to correct setting.
FLAME ESTABLISHED BUT BURNER LOCKS OUT AFTER FEW SECONDS	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank.
	Oil filter partially blocked	Wash filter clean with kerosene.
	Photo-cell fault	Clean photo-cell and ensure it is fully plugged in. Replace if faulty.
	Oil pressure low	Check pump pressure and adjust to correct setting.
POOR FLAME CUT-OFF	Air in pump or at back of nozzle	Bleed pump through pressure gauge port, also check for leaks in oil line if 2-pipe system.
	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank.
	Dirt in solenoid valve	Clean or replace valve.
	Pump shut-off piston sticking	Replace pump.
MORNING START LOCK-OUT	Faulty non-return valve or air leak in two pipe system	Replace non-return valve and cure leak.
	Low voltage	Check with local Electricity Board.
	Combustion readings incorrect	Check combustion under normal running conditions and compare readings with those given under 'Burner Settings'.
	Oil level in tank falling below burner	Raise tank or fit a 2-pipe system.

FAULT FINDING LOGIC FOR RIELLO G5 BF OIL BURNER WITH TYPE 530 SE/A CONTROL BOX



Notes:

(1) Solenoid coil has two windings (3 wires).

Test for 1.4 OHM or continuity between Black and Blue wires. (This winding pulls in the solenoid).

Test for 1.47 (K) OHM between Blue and Brown wire. (This winding holds the solenoid on).

(2) Photocell requires a special Lux meter for testing. It is therefore recommended the cell is changed if suspect.

(3) "Proving pressure" is the pressure produced by the pump before solenoid valve opens. This is normally 5 bar (70 psi).

(4) White wire from motor supplies a 50 volt AC feed to terminal 7 in control-box.

10. SPARES

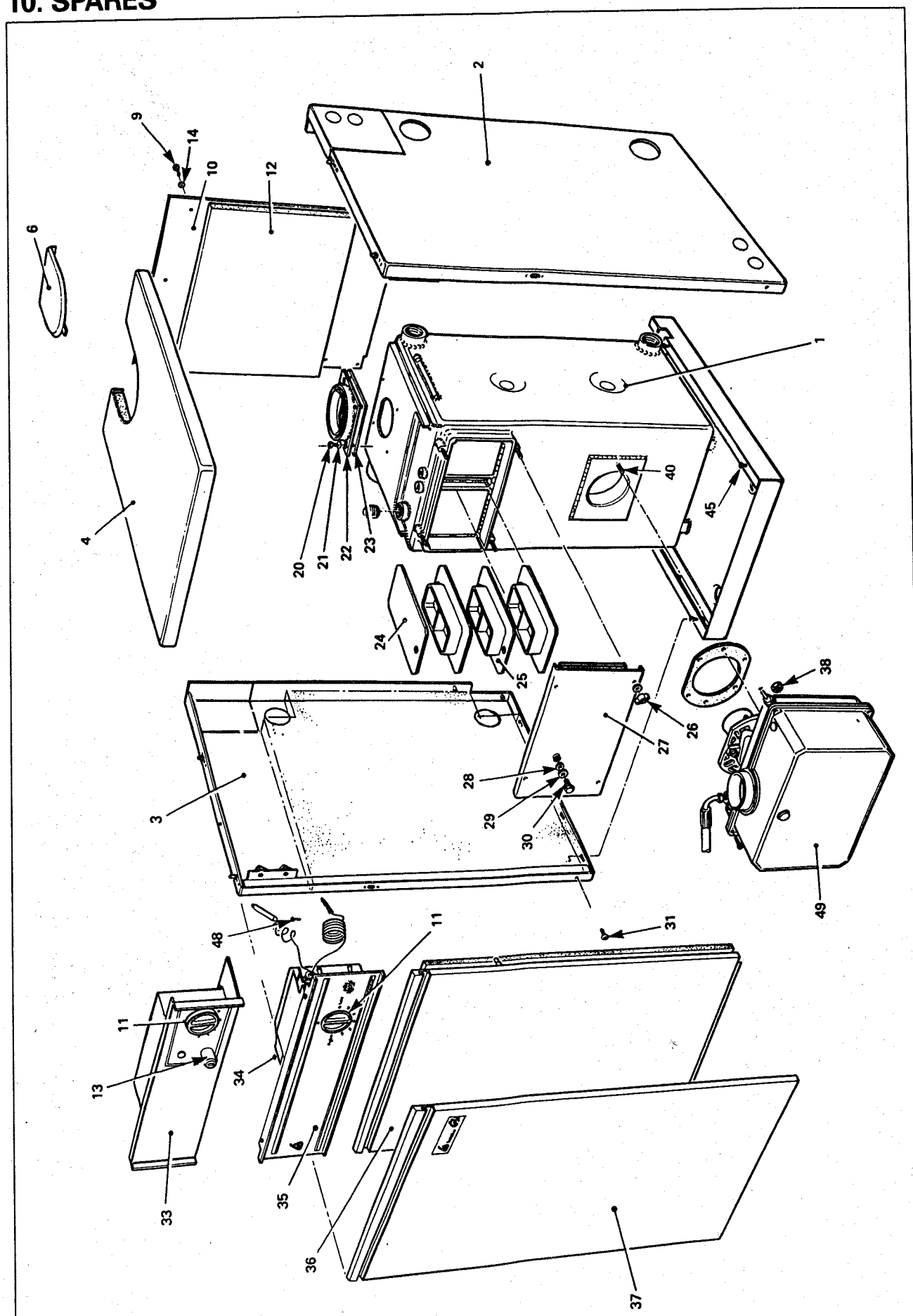


FIG. 22 BOILER EXPLODED VIEW

EuroStar Boiler parts

Item	Description	No. Off	40-50	50-60	60-70	70-90
1	Boiler Body	1	207985	207985	207990	207995
2	R/H Side Panel Assembly (Standard)	1	207785	207785	207785	207785
	R/H Side Panel Assembly (Boiler House)	1	207795	207795	207795	207795
3	L/H Side Panel Assembly (Standard)	1	207780	207780	207780	207780
	L/H Side Panel Assembly (Boiler House)	1	207790	207790	207790	207790
4	Top Panel Assembly (Standard)	1	207810	207810	207810	207830
	Top Panel Assembly (Boiler House)	1	207814	207814	207814	207834
6	Flue Cover Plate (Boiler House Model)		204167	204167	204167	204167
9	No. 6 x 12 Flange HD Pozi S/Tap	4	91523	91523	91523	91523
10	Back Panel	1	206864	206864	206864	207037
11	Boiler Control Thermostat	1	206896	206896	206896	206896
12	Back Insulation	1	206911	206911	206911	207054
13	Limit Thermostat	1	206892	206892	206892	206892
14	M5 Washer	10	92188	92188	92188	92188
20	M6 x 12 Hex HD Setscrew	4	91007	91007	91007	91007
21	M6 Washer	4	92189	92189	92189	92189
22	Flue Socket Plate	1	205105	205105	205105	205105
23	Gasket	1	204073	204073	204073	204073
24	Baffle Plate	1	206942	206942	–	–
	Baffle Plate	2	–	–	206951	–
	Baffle Plate	3	–	–	–	207097
25	Baffle W.U.	3	206940	206941	–	–
	Baffle W.U.	6	–	–	206950	–
	Baffle W.U.	9	–	–	–	207036
26	M6 Wing Nut	4	94225	94225	94225	94225
27	Flue Cover Assembly	1	206900	206900	206900	207030
28	Sealing Washer	1	92278	92278	92278	92278
29	M10 Washer	1	92210	92210	92210	92210
30	M10 x 16 Hex HD Setscrew	1	91333	91333	91333	91333
33	Boiler/House Control Box Assembly	1	207210	207210	207210	207232
34	Control Box Assembly (Standard Model)	1	207949	207949	207949	207949
35	Facia Panel (Standard Model)	1	207893	207893	207893	207903
36	Front Door Assembly (Standard Model)	1	207800	207800	207800	207820
37	Front Door Assembly (Boiler House Model)	1	207805	207805	207805	207825
38	M8 Flange Nut	4	94396	94396	94396	94396
40	M8 x 23 Stud	4	91593	91593	91593	91593
45	M5 x 10 Pan HD Pozi Setscrew	6	91184	91184	91184	91184
49	Burner Assembly	1	206961	206962	206963	206964

Riello Burner parts

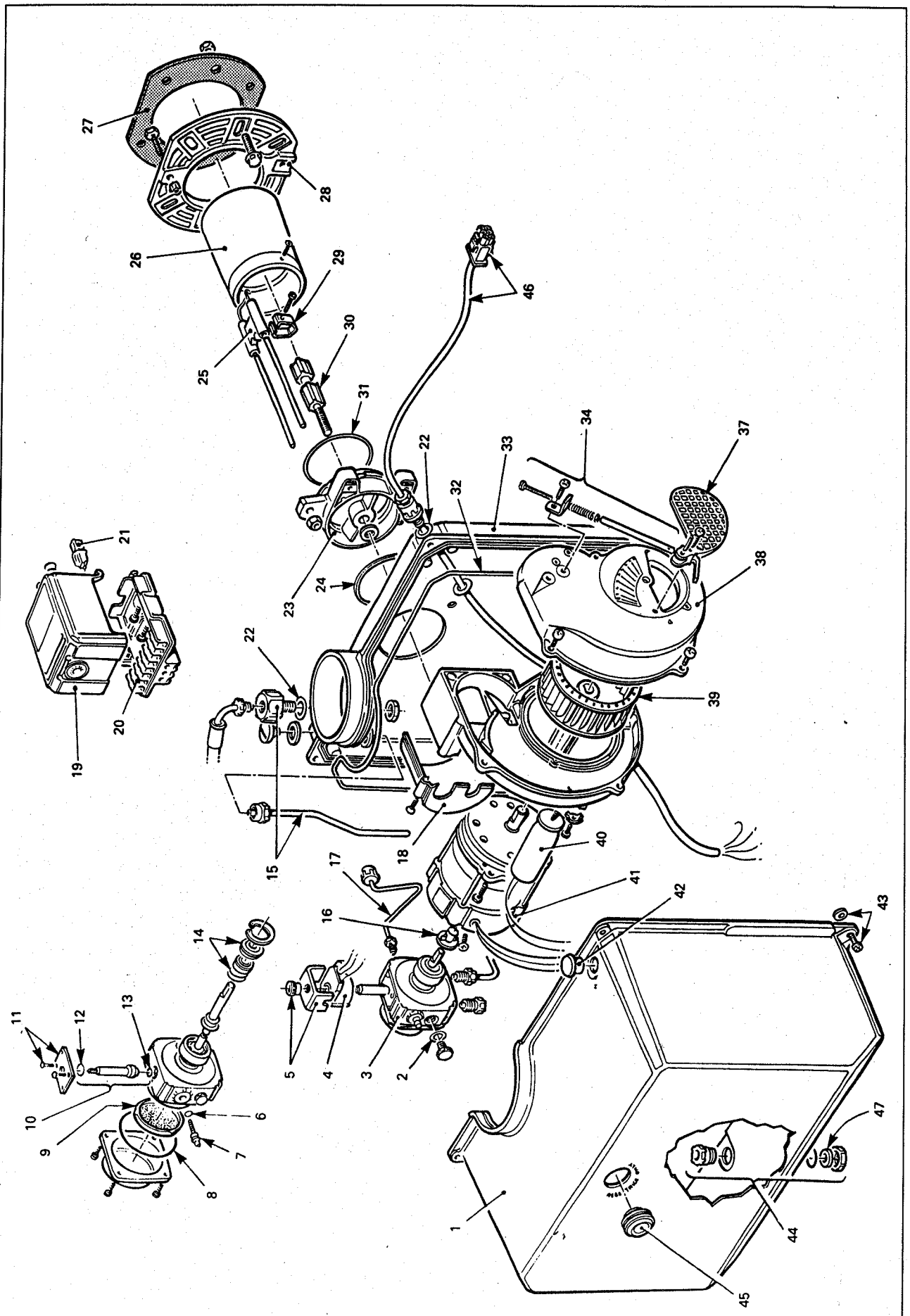


FIG. 23 RIELLO BURNER EXPLODED VIEW

Riello Burner parts

EuroStar 40-50 – G5BF 206961
EuroStar 50-60 – G5BF 206962
EuroStar 60-70 – G5BF 206963
EuroStar 70-90 – G5BF 206964

Item	Description	Trianco Part No.
3	Oil Pump	204345
4	Solenoid Coil	27937
16	Drive Coupling	27949
17	Oil Pipe	28018
19	Control box 530SE * (A)	28004
21	P. E. Cell	27944
25	Electrode assembly (40/70)	28007
25A	Electrode assembly (70/90)	206969
26	Cup-Shaped head (EuroStar 50)	206971
26	Cup-Shaped head (EuroStar 60)	206971
26	Cup-Shaped head (EuroStar 70)	206972
26	Cup-Shaped head (EuroStar 90)	206973
27	Gasket	28005
40	Capacitor 4 uF	27979
41	Motor	27932
47	Oil Release Membrane	28025
–	Danfoss 0.5 x 80°s Nozzle (EuroStar 50)	26549
–	Danfoss 0.6 x 80°s Nozzle (EuroStar 60)	26550
–	Danfoss 0.65 x 80°s Nozzle (EuroStar 70)	26858
–	Danfoss 0.75 x 80°s Nozzle (EuroStar 90)	203473

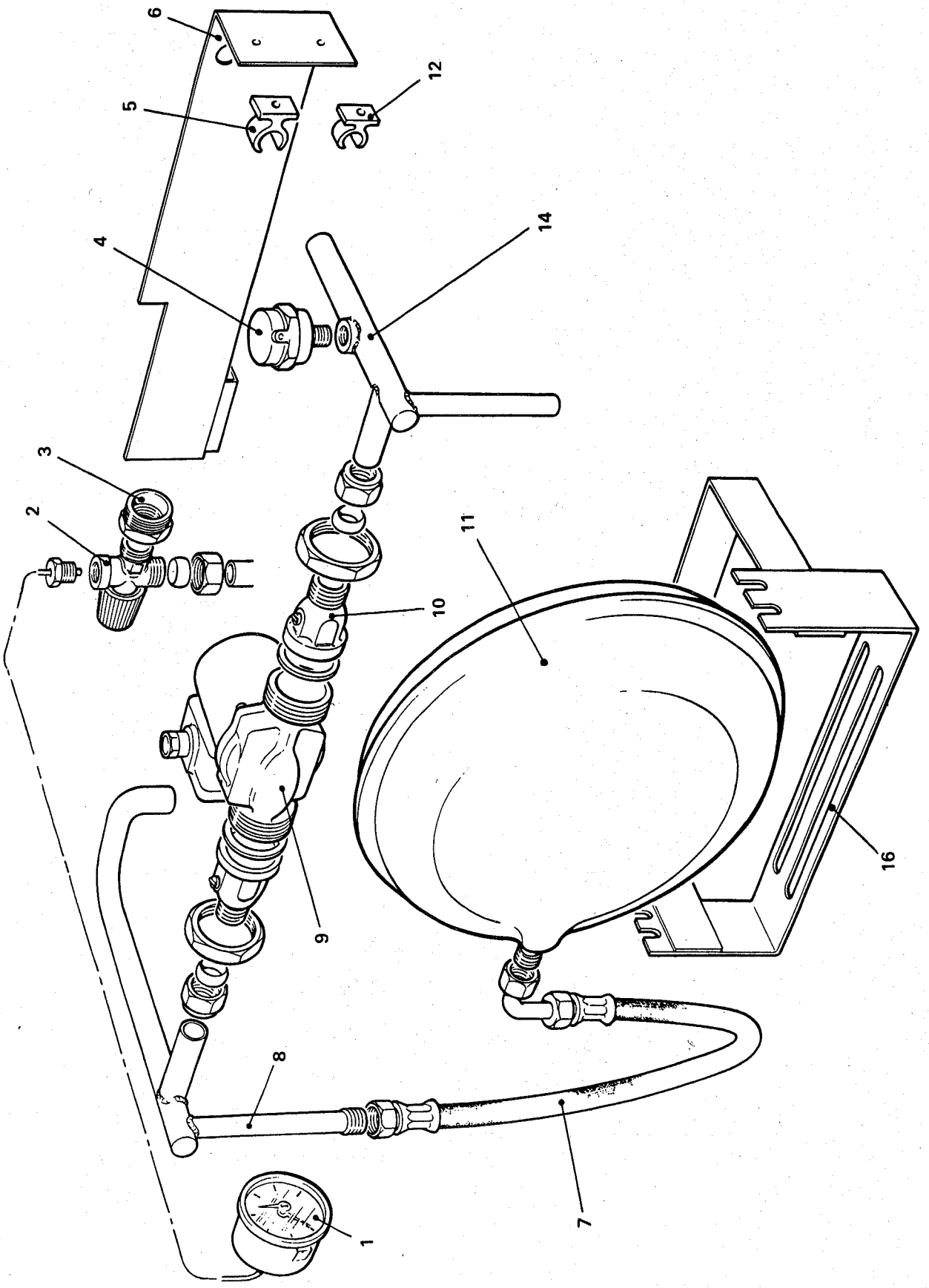


FIG. 24 SYSTEM COMPONENTS EXPLODED VIEW

Trianco EuroStar SYSTEM Components

Item	Description	Trianco Part No.	No. Off
1	Pressure Gauge	501565	1
2	Safety Valve	26775	1
3	Reducing Bush 1" BSP to 1/2" BSP	99500	1
4	Automatic Air Vent	207296	1
5	Plastic Pipe Clip 22mm	99495	1
6	Pipe Bracket	207262	1
7	Flexible Hose	207292	1
8	Flow Pipe to Pump	207283	1
9	Circulating Pump	26224	1
10	Shut-off Valve	99461	2
11	Expansion Vessel 10 ltr	207291	1
12	Plastic Pipe Clip 15mm	99496	1
14	Flow Pipe from Pump	207284	1
16	Support Bracket	207274	1

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

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

TRIANCO REDFYRE LIMITED

Thorncliffe, Chapeltown, Sheffield S30 4PZ
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Fax: (0114) 245 3021

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

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