

# **TRIANCO**



**FS PREMIER EXTERNAL 50/90  
FS PREMIER EXTERNAL 100/125  
CONDENSING BOILER**

**OIL FIRED CENTRAL HEATING BOILERS  
FOR BALANCED OR CONVENTIONAL FLUE**



# **TRIANCO**

**CE** BED 92/42 EEC  
EMC 89/336 EEC



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**USER, INSTALLATION  
COMMISSIONING & SERVICING  
INSTRUCTIONS**

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*To be retained by householder*

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## HEALTH AND SAFETY

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### INFORMATION FOR THE INSTALLER AND SERVICE ENGINEERS

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

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

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

This appliance may contain some of the items below.

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

#### INSULATION AND SEALS

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

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

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

#### GLUES, SEALANTS & PAINT

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

#### KEROSENE & GAS OIL FUELS (MINERAL OILS)

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

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## 1. USER INSTRUCTIONS

Please note, to assist Trianco in improving customer service, it is important that the guarantee/registration card is returned.

### INTRODUCTION

The Trianco Eurostar External Premier condensing boiler 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 will provide both domestic hot water and central heating with the simplest of controls. It is supplied with an adjustable boiler control thermostat, and a manual-reset high limit thermostat, requiring little attention, other than the setting of any system controls (such as a room thermostat or programmer).

### TO FIRE THE BOILER

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

Check that the time-switch/programmer (if fitted) is on and the room thermostat is calling for heat.

Set the boiler thermostat (**fig. 1**) to the desired temperature.

Switch on the electrical supply to the boiler. The burner should fire after a few seconds.

Set the time-switch/programmer (if fitted) to the times and programme required.

The boiler should now operate automatically, cutting in and out according to the heat demand.

### TO STOP THE BOILER

The boiler may be switched off by turning off the boiler control thermostat (**fig. 1**) fully anti-clockwise to the off position, 'O'.

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

### BOILER CONTROL THERMOSTAT

The boiler control thermostat allows 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 between 82°C (High) and 55°C (Low). The thermostat is switched off when the knob is turned fully anti-clockwise to position 'O'.

**Note:** Where a cylinder thermostat or room thermostat is fitted, ensure that the boiler thermostat is set above or equal to the highest setting.

### HIGH-LIMIT THERMOSTAT

The high-limit thermostat is factory-set and requires no adjustment. Should the boiler thermostat malfunction and the water temperature rise to 110°C, the limit thermostat will take over and shut down the appliance.

The limit thermostat is located on the rear of the control box and can be reset by pushing in the button. If the thermostat operates frequently, consult your service engineer, as there may be a fault in the system.

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

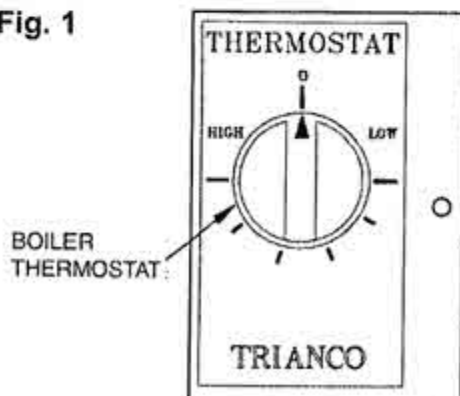
### BURNER LOCK-OUT

If the burner fails to light for any reason, the boiler will go into lock-out mode, indicated by the illumination of the reset button on the burner control box (**fig. 2**). To reset the burner, press this button. If the burner returns to lock-out, wait for one minute before pressing the button again.

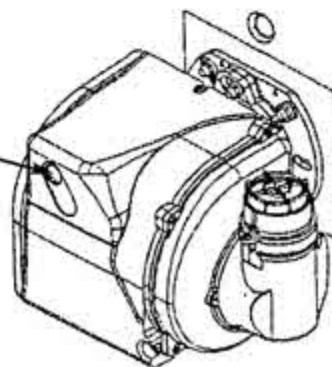
If the burner still fails to light, follow the simple fault-finding guide (**page 5**), before switching off the electrical supply to the boiler and contacting your service engineer if the failure persists.

**Important:** do not attempt to reset the burner more than twice - constant attempts to do so may cause permanent damage to components within the burner.

**Fig. 1**



**BURNER  
LOCK-OUT LIGHT  
& RESET BUTTON**



**Fig. 2**

## SYSTEMS CONTROLS

### ROOM THERMOSTAT

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

### TIME-SWITCH/PROGRAMMER

When choosing the operating times for your boiler, it is useful to remember that central heating systems usually take between half an hour and an hour before becoming effective and usually remain warm for up to half an hour after boiler shut-down. The timer can therefore be switched off earlier as an economy measure.

### FROST PROTECTION

As the boiler will be located externally to the property being heated, the water in the system may be in danger of freezing and, as such, the boiler is protected by a factory-fitted frost thermostat, which will cause the boiler to fire should the temperature within the casings drop to below 7°C.

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

See page 7 for flushing and water treatment.

### 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 oil for your boiler is 28 sec. Kerosene class C2 to BS 2869.

Always ensure the oil storage tank is topped up regularly; do not wait until the tank is nearly empty before refilling, as sludge and water could be sucked into the oil pipe, affecting the operation of the burner and potentially reducing the life of the pump.

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 boiler.

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

### SIMPLE FAULT FINDING

If the boiler fails to start for no apparent reason, carry out the following checks before calling your service engineer.

1. Check for failure in the electrical supply
2. Check for a blown fuse. If the fuse has blown and the replacement subsequently blows again, switch off the mains electrical supply to the boiler and contact your service engineer.
3. Check that there is adequate oil in the tank and that all isolation valves are fully open.
4. Check for burner lock-out (see page 4).
5. Check for excess water temperature (see high-limit thermostat details, page 4, for further details).

**Note:** If the boiler has been shut down due to a failure of the power supply, it may be necessary to reset the time-switch or programmer to the correct time, unless the device has an in-built power reserve.

### SERVICING

To ensure the efficient and reliable operation of the boiler it is essential that the burner be **commissioned** immediately after installation, and prior to first use. The boiler requires an annual service thereafter.

### IMPORTANT NOTES

1. Only a OFTEC-trained and registered engineer can carry out commissioning and service work.
2. Electrical safety checks should be carried out by a qualified electrical engineer.
3. It is the responsibility of the installer to ensure proper commissioning is carried out.
4. It is a requirement of the guarantee and any extended warranty that an annual service is carried out.
5. The system water must always be protected by a corrosion inhibitor.

## TRIANCO CUSTOMER AFTER SALES SERVICE INFORMATION

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

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

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

### A charge will be made where:

- Our Field Service Engineer finds no fault with the appliance  
or
- The cause of a breakdown is due to other parts of the plumbing/heating system (including oil line/lack of oil), or with equipment not supplied by Trianco.  
or
- Where the appliance falls outside the guarantee period (see terms and conditions enclosed).  
or
- The appliance has not been correctly installed, commissioned or serviced as recommended (see commissioning, installation and servicing instructions)  
or
- The breakdown occurs immediately following an annual service visit. In this instance your appointed Service Agent must check all his work PRIOR to requesting Trianco to attend.

### PLEASE NOTE:

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

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

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

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

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

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

### What happens if my installer/engineer is unavailable?

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

**Note:** Before contacting Trianco, please have the following information ready:

- 1) Boiler serial number or your customer ID number (issued upon registration of the boiler with Trianco).
- 2) Date of appliance installation.

Boiler Serial Number: \_\_\_\_\_

Cust ID Number: \_\_\_\_\_

Installation Date: \_\_\_\_\_

### SERVICE CENTRE AND TECHNICAL SUPPORT

Tel: 0114 257 2300 Fax: 0114 257 2338

Hours of business Monday to Thursday 8.30am - 5.00pm

Friday 8.30am - 2.30pm



# INSTALLATION INSTRUCTIONS

## 2. INTRODUCTION

The Trianco Eurostar External Premier condensing boiler has been designed to conform to European Directive/Standards BED 92/42 EEC LVD 73/23/EEC EMC 89/336/EEC.

The boiler design incorporates a secondary stainless steel heat exchanger, which recovers heat from the flue gases which would normally be lost when using conventional oil fired boilers.

The matched pressure-jet burner is exceptionally quiet in operation and ensures clean and efficient combustion, with low NO<sub>x</sub> emissions

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

One flow and two return sockets are provided to facilitate connection to the heating and hot water systems.

To ensure the boiler is operating at maximum efficiency, the central heating return temperature should be 40°C or above. Maximum performance will be achieved by maintaining a differential of 10°- 30°C between the flow and return water temperatures.

Due to the high efficiency of this range of boilers, and to comply with Building Regulations, Part L, it is essential that the appliance be fitted on fully-pumped systems only.

All servicing can be carried out from the front of the boiler. The front-mounted flue-cover permits easy access for removal of the flue-baffles and cleaning of heating surfaces.

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

The boiler is supplied with the burner set for 28 sec. Kerosene Class C2 to BS 2869 fuel to meet the Building Regulation requirements for low level flue discharge.

### FLUSHING AND WATER TREATMENT

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

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

System additives - corrosion inhibitors and all flushing agents/descalers should be suitable for steel boilers and comply with BS 7593 requirements. It is strongly recommended that a suitable anti-freeze product is applied to the system after flushing.

Always refer to the manufacturers' instructions.

**Failure to flush and add inhibitors to the system will invalidate the appliance warranty.**

**The appliance is designed to be fitted to fully-pumped systems only. Failure to do so will invalidate the warranty.**

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

### Important Notice:

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

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

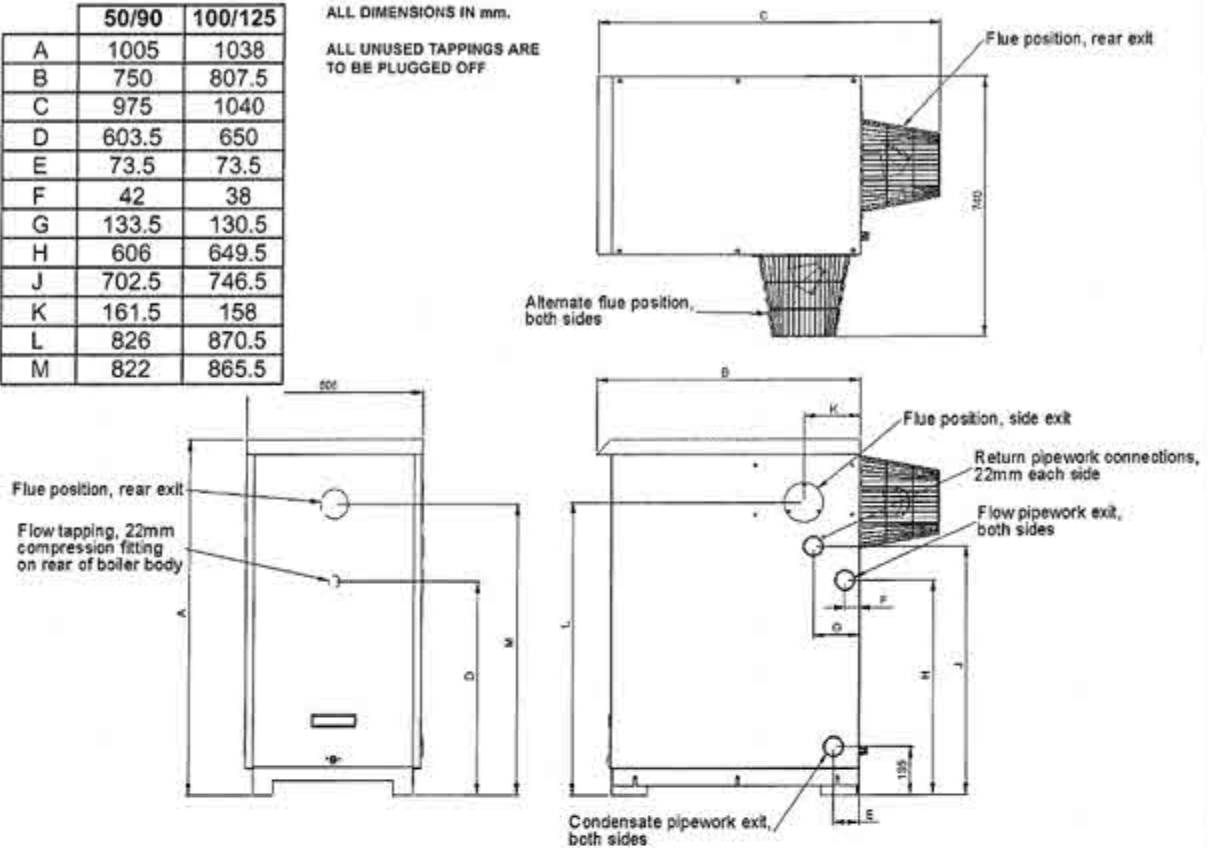
**THE PERSON(S) WHO INSTALLS THIS APPLIANCE, COMMISSIONS, SERVICES OR CARRIES OUT ANY REMEDIAL WORK, IE ELECTRICAL FAULT FINDING, MUST HAVE SUITABLE ENGINEERING QUALIFICATIONS**

### 3. TECHNICAL INFORMATION

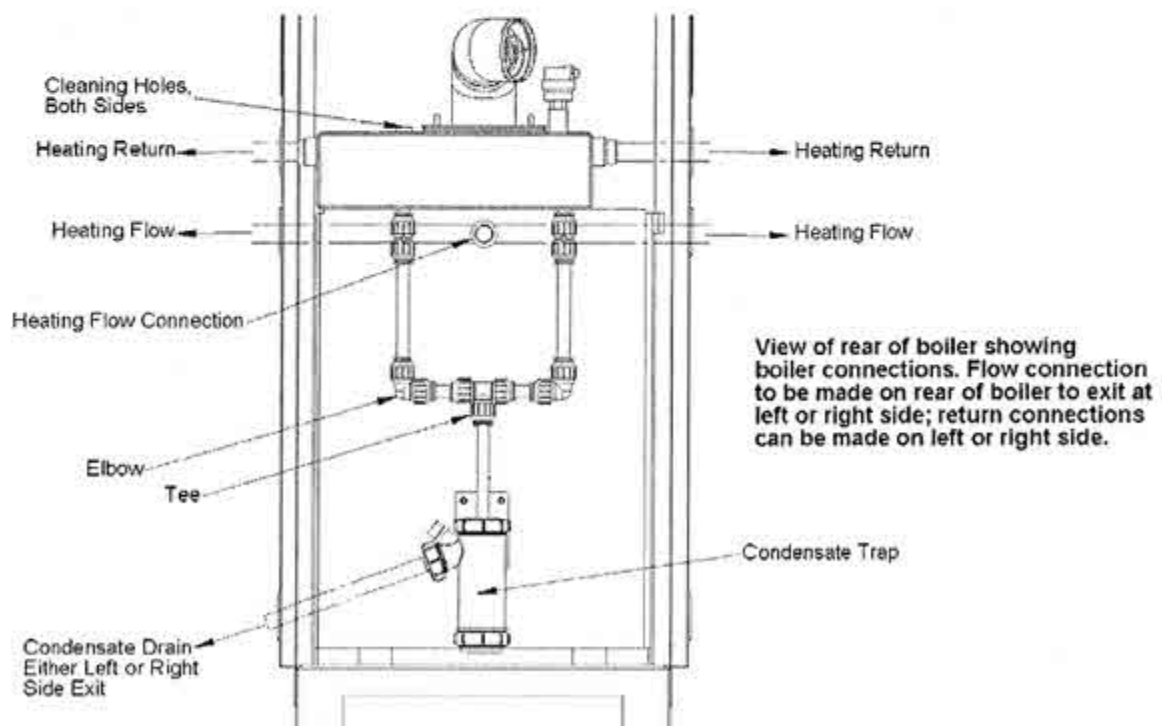
	50/90	100/125
A	1005	1038
B	750	807.5
C	975	1040
D	603.5	650
E	73.5	73.5
F	42	38
G	133.5	130.5
H	606	649.5
J	702.5	746.5
K	161.5	158
L	826	870.5
M	822	865.5

ALL DIMENSIONS IN mm.

ALL UNUSED TAPPINGS ARE TO BE PLUGGED OFF



**Fig. 3 OUTLINE DIMENSIONS**



**Fig. 4 PIPEWORK CONNECTIONS**



## TECHNICAL SPECIFICATION

Boiler Models		50/90	100/125
Weight (empty)	Kg	140	170
Water Content	litres	26	32
Flow & Return Connections	-	22mm Compression	
Flue	-	Supplied With Boiler	
Max. Operating Pressure	bar psi	3 43.5	
Test Pressure	bar psi	4.5 65.3	
Water Side Resistance 10 diff 20 diff	mbar mbar	25 8.3	25.4 8.2
Starting Current	amp	3.5	
Running Current	amp	0.77	
Control Thermostat	- Adjustable up to 82° C		
Limit Thermostat	- Factory set at 110° C (hand reset)		
Frost Thermostat	- Factory set at 7° C (automatic reset)		
Casing Finish	- Galvanised steel, stove enamel painted green		
Thermal Insulation	- Boiler shell insulated with glass fibre		
Electricity Supply	- 230/280V - 50Hz fused at 5 AMP.		

Boiler	Model Output (non-condensing)	Output (Condensing)	Input	Nozzle	Pump Pressure (psi)	CO <sub>2</sub> (%)
<b>Eurostar Premier 50/90</b>	50,000 btu's 14.65 kW	53,400 btu's 15.65 kW	52,700 btu's 15.42 kW	0.45 x 80°EH	120	12.0
	60,000 btu's 17.58 kW	64,000 btu's 18.74 kW	63,000 btu's 18.46 kW	0.5 x 80°EH	140	12.5
	70,000 btu's 20.51 kW	74,400 btu's 21.8 kW	73,300 btu's 21.48 kW	0.6 x 80°EH	125	12.5-13.0
	80,000 btu's 23.44 kW	84,800 btu's 24.85 kW	83,600 btu's 24.49 kW	0.65 x 80°EH	130	13.0
	90,000 btu's 26.37 kW	95,200 btu's 27.89 kW	93,800 btu's 27.49 kW	0.75 x 80°EH	125	13.0-13.5
<b>Eurostar Premier 100/125</b>	100,000 btu's 29.3 kW	104,700 btu's 30.69 kW	104,700 btu's 30.69 kW	1.0 x 80°EH	100	12.0
	110,000 btu's 32.2 kW	115,000 btu's 33.76 kW	115,200 btu's 33.76 kW	1.1 x 80°EH	105	11.5
	120,000 btu's 35.2 kW	125,000 btu's 36.84 kW	125,700 btu's 36.84 kW	1.1 x 80°EH	110	12.5
	125,000 btu's 36.6 kW	130,900 btu's 38.36 kW	130,900 btu's 38.36 kW	1.1 x 80°EH	115	12.5

## 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 'J' (England and Wales)  
Part 'F' Section 111(Scotland)  
Part 'L'

The Control of Pollution (Oil) Regulations  
Current I.E.E. Regulations  
Local Water Undertakings By-laws  
OFTEC Installation Requirements for Oil Fired Boilers  
and Oil Storage Tanks. OFST 100 and OFST 200.

### HEALTH AND SAFETY AT WORK ACT

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

In the interest of safety, it is required that the appliance is installed, commissioned and serviced by an OFTEC registered technician.

A guide to safe working practices for oil-firing technicians is available from OFTEC.

**Electrical work should be carried out in accordance with BS 7671:2001 by a qualified electrical engineer.**

### SITING THE BOILER

#### Sound Levels

Whilst the low sound level of the boiler, the following factors should be taken into consideration before installation:

- (a) Some people are particularly sensitive to low noise levels - discuss with the householder.
- (b) Low-level flue terminals produce some exhaust noise, so care should be taken when siting adjacent to neighbouring property, patios and play areas.
- (c) Due to the condensing nature of the boiler, a plume of water vapour will be discharged from the flue. This should be taken into account when siting the flue terminal. Refer to section on flue systems.

#### Hearth

The boiler **must** be fitted on a non-combustible base, which is level and capable of supporting the installed weight of the boiler, including its full water content. The base level should be above ground level to prevent water damage.

#### 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 headroom. However, a clearance of at least 750mm is required at the front of the boiler for future service access.

### SYSTEM DESIGN

To achieve the maximum system efficiencies, the heating system should be designed to the following parameters

Boiler Flow Temperature	-50°C to 80°C
Flow Differential Temperature	-10°C to 30°C

### COMBUSTION AND VENTILATION AIR

The provision of an adequate supply of combustion air is essential for the efficient and safe operation of the boiler. The combustion air inlet is located at the top of the front door of the appliance. Under no circumstances should this be covered or blocked.

### HEATING AND DOMESTIC HOT WATER SYSTEMS

The heating system should be installed in accordance with current HVCA Codes of Practice and BS 5449 Part 1 - Forced Circulation Hot Water Central Heating Systems.

The return water connections can be made to the boiler by using the tapings on the left or right hand side of the boiler. The flow connection is located on the rear of the boiler and can run to either the left or right side.

All exposed pipework connecting the boiler to the heating system **must** be lagged.

A drain-off cock should be fitted in the lowest part of the system.

Where the boiler is also used for providing domestic hot water, a double-feed indirect cylinder to BS 1566 Part 1 must be used.

Flush out the system to remove any residue before fitting circulating pump.

**Make sure all unused boiler tappings are plugged before filling the system.**

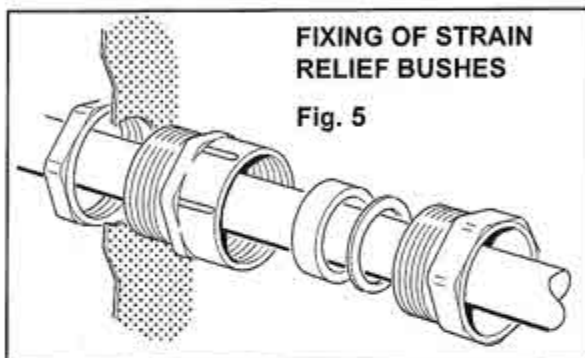
## ELECTRICAL SUPPLY

### 230V 1 Phase 50Hz (fused 5 Amp)

**Note:** this appliance must be earthed and the electrical supply cable must be of a greater length than the current-carrying conductor cables (i.e. live and neutral supply cables).

All electrical wiring must be carried out by a qualified electrician, in accordance with current I.E.E. Regulations and any local regulations which may apply.

The 230V - 50Hz electrical supply must be fused by a double-pole switch, with a contact separation of at least 3mm in both poles, and by a shuttered socket adjacent to the boiler (both devices must meet the requirements of BS 1363).



The minimum requirement for the power supply cable is PVC sheathed flexible cord, 0.75mm<sup>2</sup> (24x0.2mm, code designation H05 VV-F or H05 VVH2-F), as specified in table 16 of BS 6500.

All external cables entering the control box must be secured in position by the use of strain-relief bushes (supplied, see Fig. 5 for fitting instructions) in the back panel.

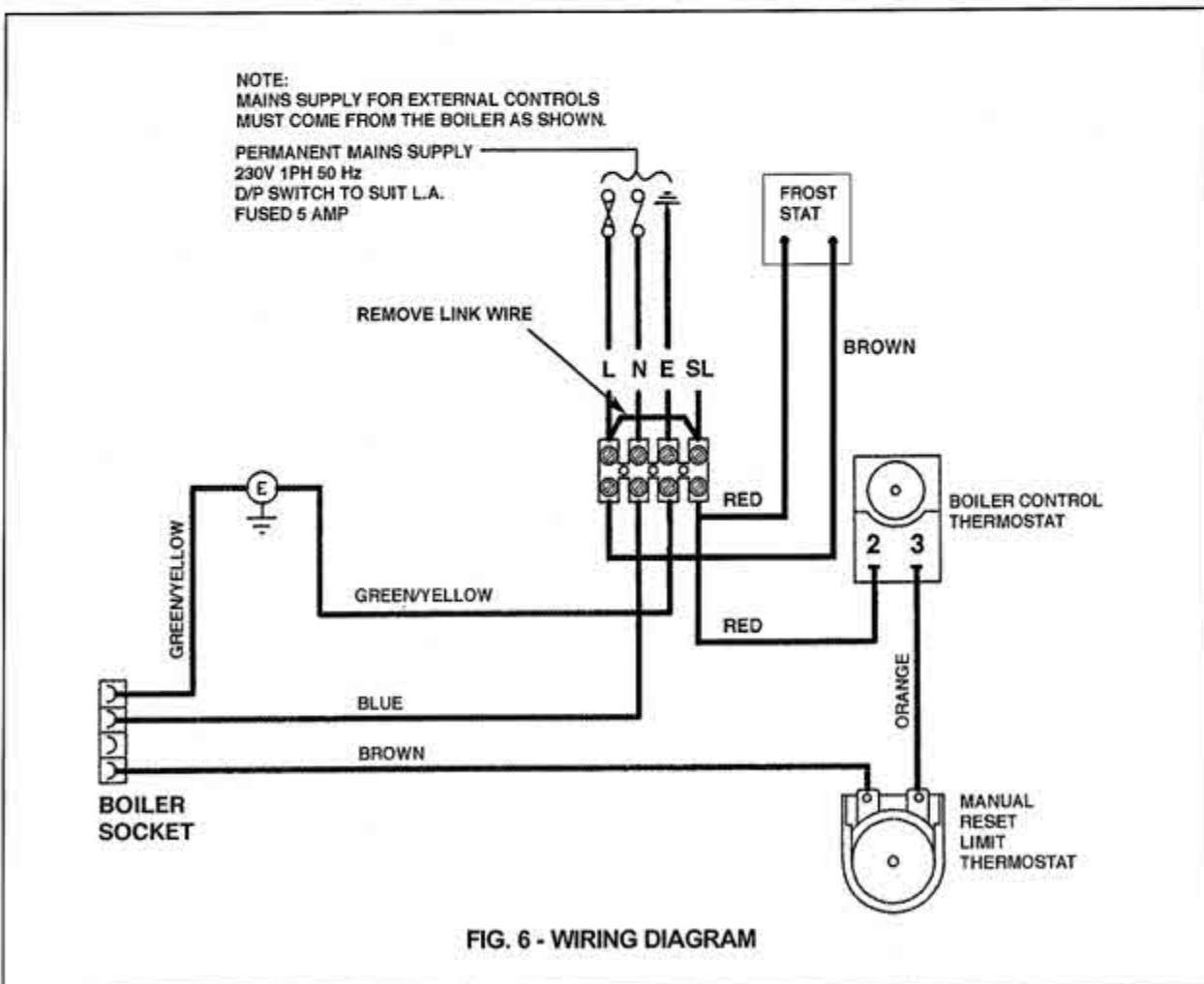
Terminal connections are also provided in the control box for the ancillary controls.

See wiring diagram Fig. 6, for further details.

It is strongly recommended that an RCD is fitted in the boiler supply circuit.

### High and Low Voltage Warning

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



## CONDENSATE DRAIN CONNECTIONS

The condensate trap can be run to either the left or the right side of the boiler.

To install the condensate pipe, after deciding the position of the trap, cut two pieces of plastic pipe to 165mm long and insert one into each of the plastic straight connectors on the rear underside of the condensing unit. Fit the elbows onto the end of the each pipe. Cut two pieces of pipe to 78mm long and insert into each of the elbows. Join together via the plastic tee connector.

Cut a further pipe to 165mm long (50/90 model) or 210mm long (100/125 model) and place into the tee fitting. Insert the other end of this pipe into the top of the condensate trap. The trap should be mounted via the use of the bracket on the rear of the boiler.

Decide which side to exit the boiler from and use a further piece of pipe (not supplied) to run from the condensate trap through the hole provided in the side casing. A rubber grommet is provided to ensure the boiler casing is sealed against the elements and should not be removed. Instead, cut a small hole in the grommet to pass the pipework through.

Where possible, connect the condensate pipework to an external waste drain.

If the boiler is to be fitted in a position where the drain level is higher than the boiler, a condensate pump can be fitted (refer to manufacturers' instructions).

The drain pipe must be installed to allow the condensate to drain naturally for the boiler, on a minimum fall of 1:20.

The pipework from the condensate trap to the external drain is not supplied with the boiler.

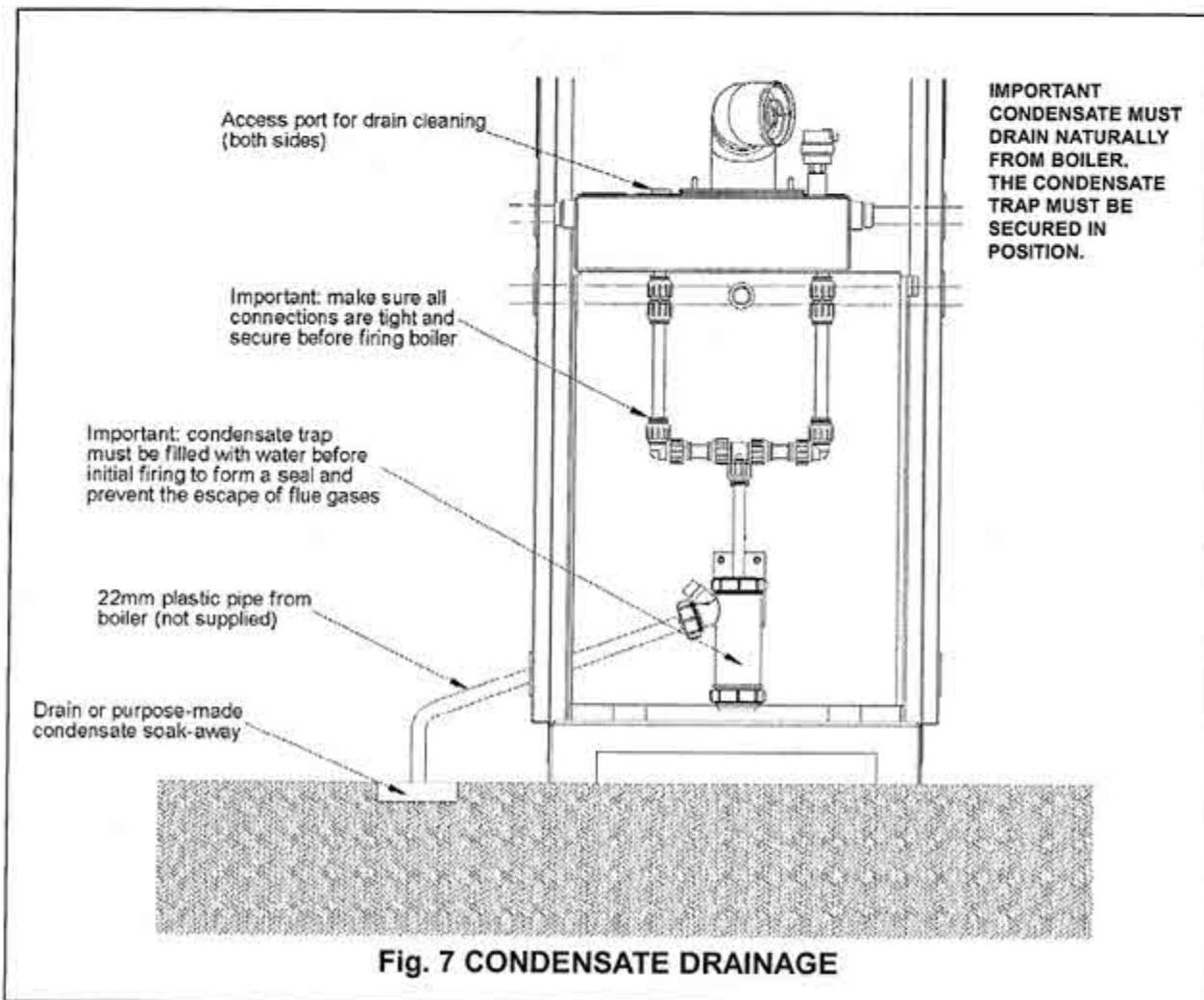
### IMPORTANT NOTES:

**Before initial firing, the condensate trap must be filled with water to prevent the escape of flue gases.**

When running any external pipework from the trap to the drain, it is essential that the pipework is kept to a minimum and is insulated to prevent the condensate from freezing.

### MAINTENANCE

The trap should be inspected at regular intervals to ensure correct operation, and should be checked as part of the regular annual schedule. The 2 x screws at the rear of the top face of the boiler can be removed to give access for cleaning the drain holes in the condensing unit.



## 5. OIL SUPPLY

### OIL

The oil burner is factory-set to burn 28 sec. Kerosene C2 to BS 2869.

Trianco makes no guarantee as to the satisfactory operation of the boiler using fuels other than which is stated above.

### STORAGE TANK

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

#### Size and Location of Tank

The tank should be large enough to allow for economic deliveries and be located in an unobtrusive position, having regard to the need for safety, filling, maintenance, and head of oil required. (see Fig. 8).

#### Steel Tanks

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

#### Plastic Tanks

Polyethylene tanks may be used, having several advantages over traditional steel tanks:

- (a) Pier supports are not required; the tank may be fitted directly onto a flat surface.
- (b) They do not corrode; therefore never require repainting.
- (c) They are easier to handle because of their lower weight.
- (d) They are supplied with a 10 year manufacturer's guarantee.

#### Fire Protection

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

The tank should also be at least 3 metres from any part of the boiler terminal.

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

See current OFTEC regulations for further details.

To comply with Building Regulations **section J5**:

- 1 Where the tank is close to a dwelling, fire protection must be provided to the eaves, if less than 1.8m from the top of the tank.
- 2 Cladding must extend at least 300mm beyond the tank.
- 3 The tank must be sited on a non-combustible base.

#### Pollution Protection

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

- 1 The tank is less than 10m from a stream.
- 2 The tank is less than 50m from a well, spring, or other source of drinking water.
- 3 The tank cannot be viewed from the point of delivery.
- 4 There is a risk of oil reaching a manhole cover or drain in the event of a leak.
- 5 The tank capacity exceeds 2,500 Litres.

## SUPPLY

A long-life flexible oil hose is supplied with the boiler. A filter and shut-off valve are also required. These should be fitted as shown in **Figs. 8, 9 & 10**.

The oil line joints must be completely sealed and the total pipe run should be flushed thoroughly before connection is made to the burner. No soldered joints are permitted in the oil line.

#### Fire Valve

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

## OIL SUPPLY (cont.)

### Single-Pipe Oil Supply (Fig. 9 )

Where the lowermost part of the tank is above the level of 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 supplied.

### Two-Pipe Oil Supply (Fig. 10)

Where the lowermost part of the tank is below the level of the burner, a two-pipe suction lift system is necessary.

When using the two-pipe system, it is important to convert the suction pump on the burner to operate as such; remove the end cover and filter, then remove the bottom screw and the 'U' washer. Replace the screw, making sure it is fully inserted. See the burner details leaflet for further information.

A spring-loaded non-return valve must be fitted in the suction line to prevent the oil running back to the tank. No valves are permitted in the return line.

An additional flexible hose is also required.

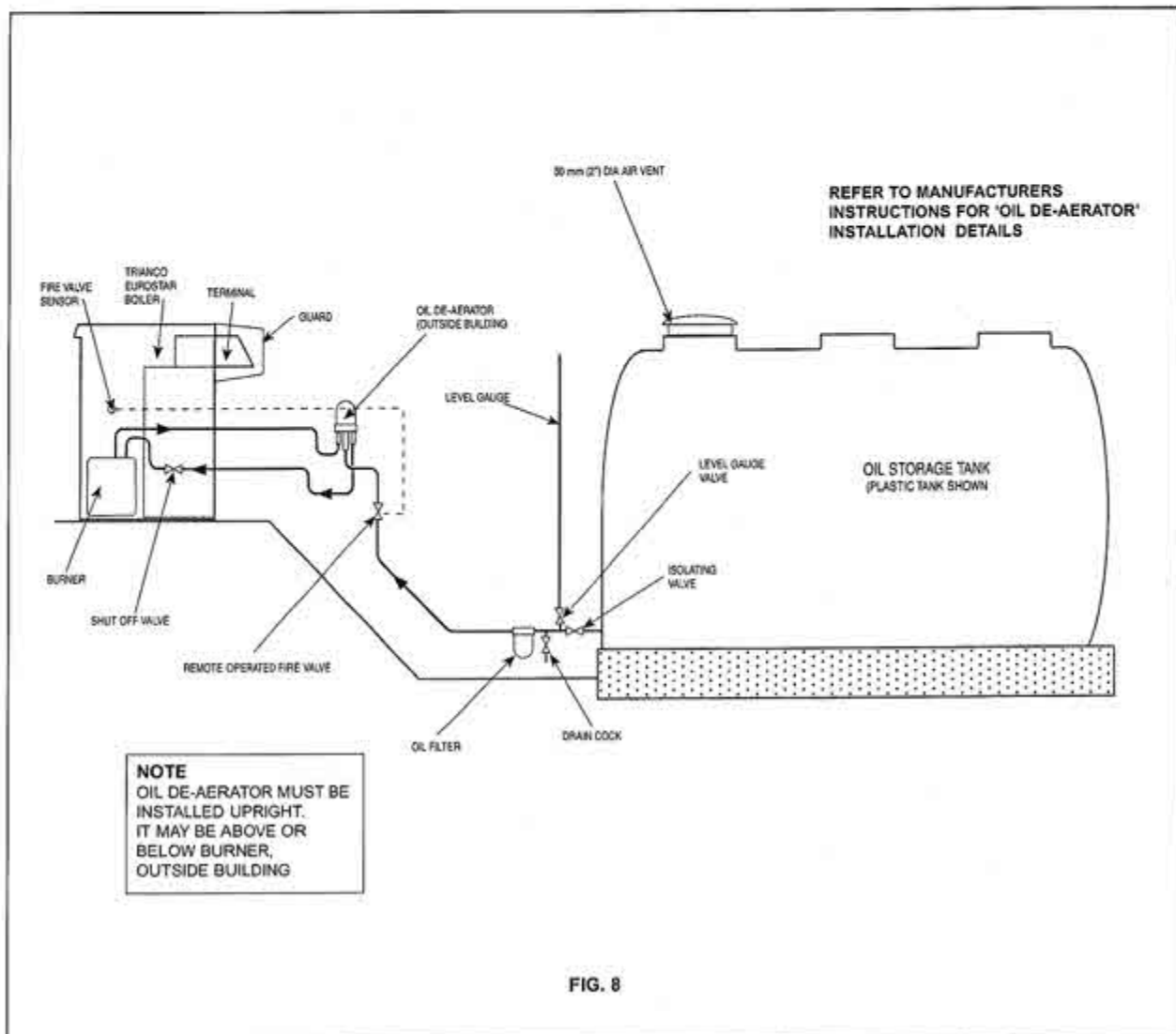
### Notes:

1. The pump suction should not exceed 0.4bar, as dissolved gas may be released from the oil, affecting 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 line.

### Single-Pipe supply with De-aerator (Fig. 8)

Where a two-pipe suction lift is required, but the return pipe requirement is too long, or impractical to run, an oil de-aerator can be used. The burner should be piped as for a two-pipe system, up until the oil de-aerator, when a single pipe can be taken the remaining distance to the storage tank. The de-aerator should be fitted at the closest point to the boiler, externally to the boiler.

A non-return valve is not required with this system, but the 'U' washer must be removed in the same manner as a standard two-pipe system.





MAXIMUM OIL SUPPLY LINE LENGTH 'L'

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

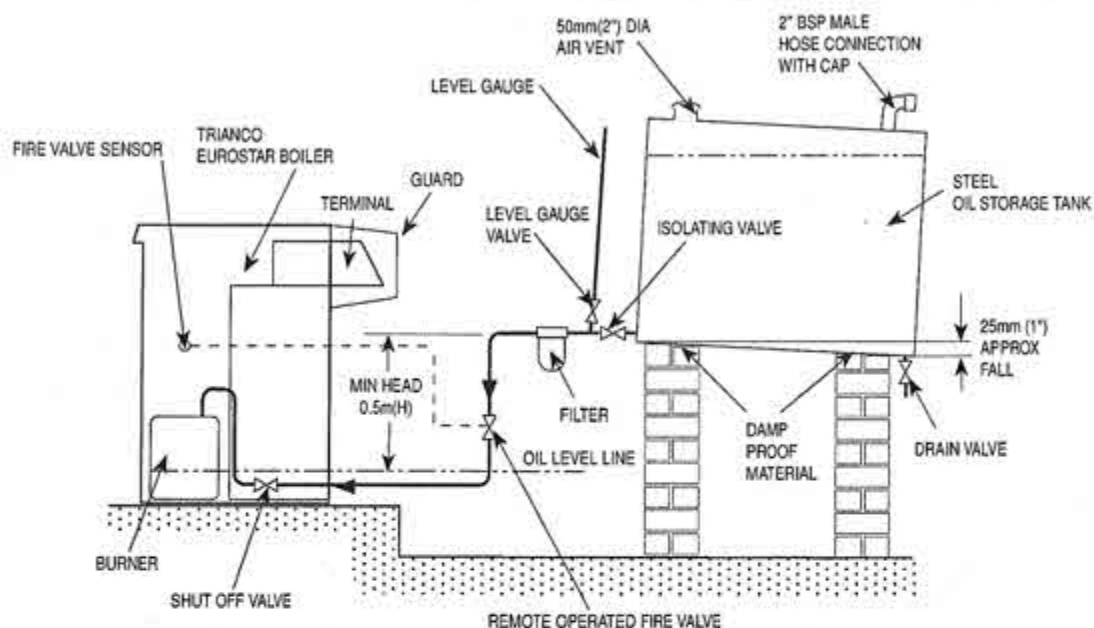


FIG. 9 SINGLE PIPE OIL SUPPLY INSTALLATION

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

LIFT 'L' METRES.		.0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
PIPE 6mm ID	MAXIMUM LENGTH (METRES)	48	42	36	30	24	18	11	5
PIPE 8mm ID		100	100	100	94	75	55	36	16
PIPE 10MM ID		100	100	100	100	100	100	88	40

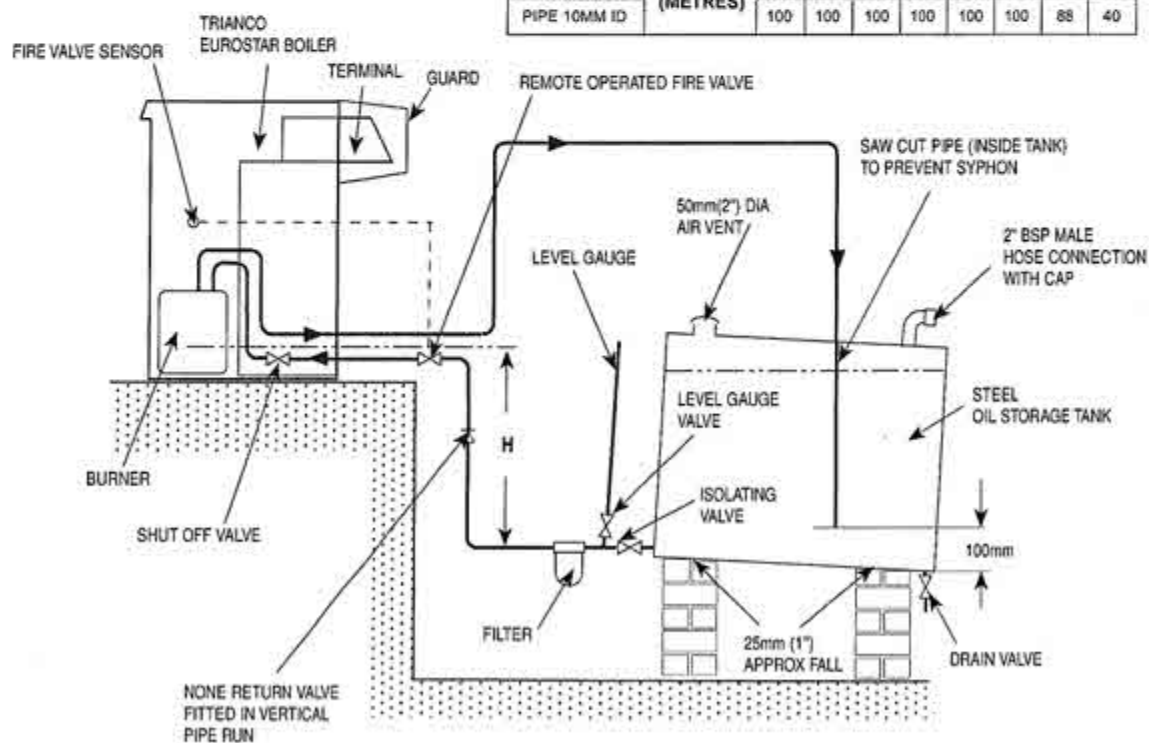


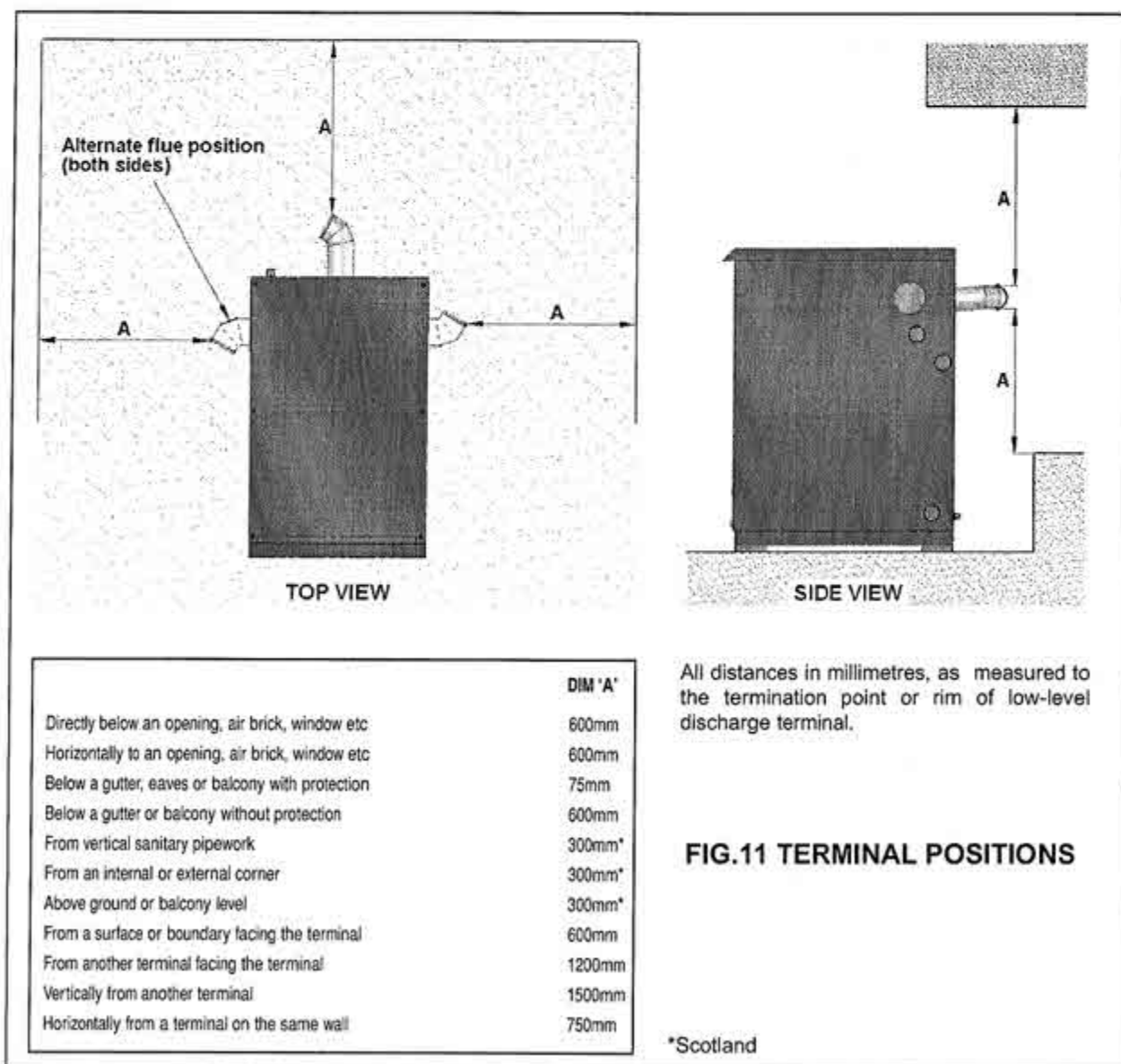
FIG. 10 TWO PIPE OIL SUPPLY INSTALLATION

## 6. FLUE DISCHARGE

To evacuate the products of combustion safely and thoroughly, the boiler has a highly efficient integral flue system and there is no need to fit the boiler to a separate flue. See page 17 for flue fitting instructions.

### INSTALLATION NOTES

- a) Trianco condensing boilers operate at high efficiencies with low flue gas temperatures. The flue system used on this boiler is suitable for low flue gas temperatures and condensation.
- b) Ensure that all the joints on the flue system are adequately sealed, and that no condensation can escape. It may be necessary to apply a thin bead of silicone sealant or other lubricating substance around the flue joints and 'o'-ring seals before assembling the flue.
- c) Only 28 sec. Kerosene class C2 to BS 2869 is permitted for boilers using low-level flue discharge.
- d) Positioning of flues under balconies and carports is to be avoided
- e) Modern low-level flue boilers are designed to operate at low noise levels. However, when positioning the boiler, it is not recommended to have the terminal facing a neighbour's property or patio, etc.
- f) The boiler should also be positioned to avoid the 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 fig. 11) for recommended terminal positions.
- g) At certain times during operation, a plume of condensation will be produced from the terminal. When positioning the boiler, this should be taken into consideration to ensure that it does not cause a nuisance to neighbouring properties.
- h) Keep the terminal clear of infra-red sensing devices, such as those used to control security lighting.
- i) The terminal must be protected by the guard supplied.



## FLUE ASSEMBLY

The flue terminal pack (supplied) should contain the following items. Check all components are present before fitting:

- 1 x Flue Terminal Assembly
- 1 x Elbow & Sealing Plate Assembly
- 1 x 'O'-Ring Seal
- 1 x Tube of Silicone Sealant

The flue may exit from the rear, right or left side of the boiler. The termination point is angled, and can be rotated to enable the combustion fumes to be directed away from areas where they could cause a nuisance.

### FITTING INSTRUCTIONS

- 1) Decide which direction the flue is to be pointed. Remove the top panel and using the nuts provided, fit the elbow/sealing plate assembly (**item 1**) onto the rubber gasket on top of the boiler via the 4 x studs, ensuring that the open end is pointed in the direction required.
- 2) Fit the 'o'-ring seal (**item 2**) into the groove on the flue terminal (**item 3**), ensuring that the flat, ribbed face is to the inside.
- 3) Smear a thin bead of silicone sealant (supplied) around the 'o'-ring seal and slide the terminal into the elbow from the outside of the boiler casing, being careful to ensure that the 'o'-ring remains in place. The rotation of the terminal should be decided before applying the silicone sealant.
- 4) Place the terminal in the desired position and angle of rotation. Ensure that a minimum distance of 50mm is kept from the termination point to the face of the boiler casing.
- 5) Slide one of the sealing rubbers (**item 4**) over the terminal to meet the boiler casing, ensuring the holes line up with those in the casing.
- 6) Fit the collar plate (**item 6**) over the flue terminal and secure to the boiler casing with the screws provided, clamping the sealing rubber firmly in place.
- 7) Blank off the 2 x unused flue openings on the boiler casings with the remaining sealing rubbers and blanking plates (**item 5**).
- 8) Replace the top casing and fit the terminal guard (**item 7**) over the flue, securing in position with the screws provided.

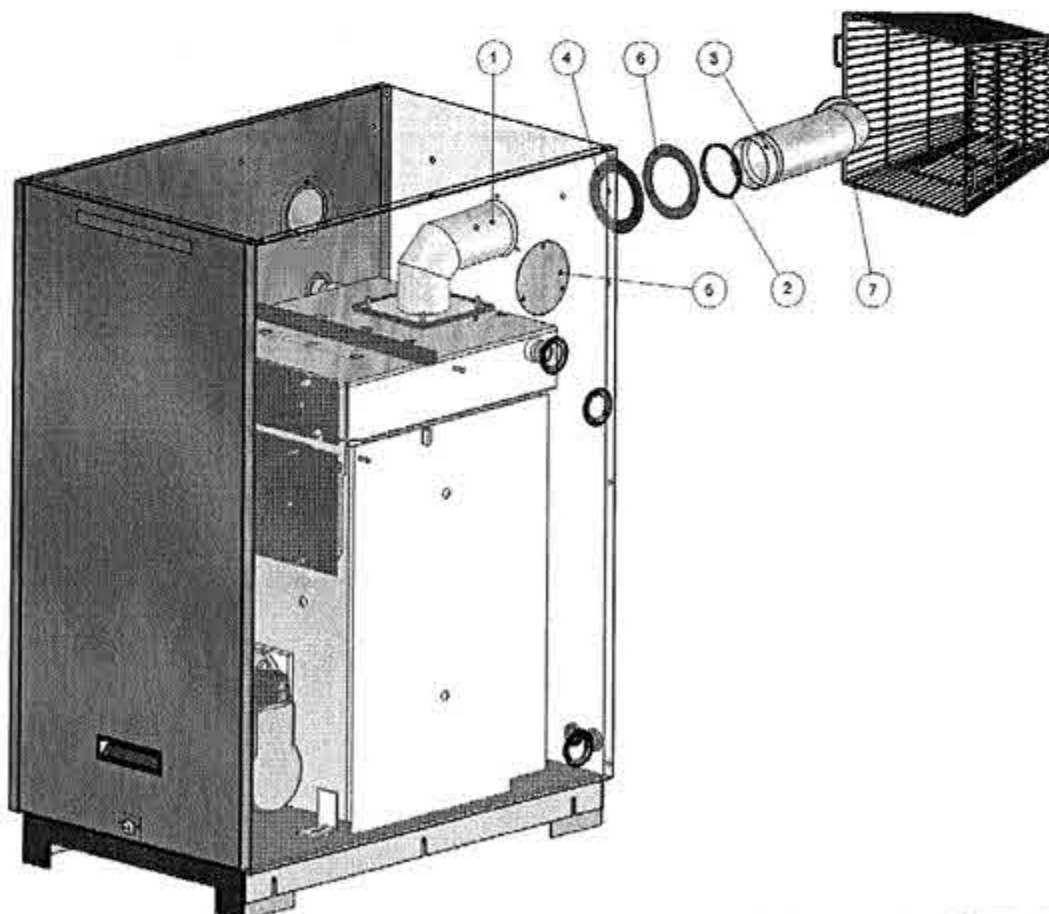


FIG. 12 FLUE ASSEMBLY

## 7. COMMISSIONING

The boiler/burner **MUST** be commissioned by a qualified OFTEC-Registered technician, and a CD/10 form completed.

It is the responsibility of the installer to ensure the boiler is properly commissioned, failure to do so will make the boiler's guarantee and any extended warranty null and void.

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

### Procedure

1. Switch off electrical supply to the 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 20 for baffle arrangement).
4. Disconnect oil hose from burner, open shut-off valve and run off a quantity of oil into a container to check for a clean air free supply then reconnect hose. (This applies to single pipe gravity system only).
5. Check that the time-switch (if fitted) is in the ON position and room and boiler thermostats are calling for heat.
6. Switch on electrical supply and the burner should start.

**Note:** The burner may lock-out on first firing due to air in the pump, if this happens, wait about a minute before pressing reset button to restart burner. If a further lock-out occurs, the air should be bled 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 CO<sub>2</sub> 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 CO<sub>2</sub>%. Also, check the smoke and flue gas temperature.
9. If the system is not going to be put into immediate operation, the fuel supply and electricity supply should be isolated.  
If there is a possibility that the boiler will not be running during freezing conditions, the system should be drained down.

### Handing Over

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

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

## 8. SERVICING

### IMPORTANT: ISOLATE ELECTRICAL SUPPLY TO THE BOILER BEFORE SERVICING

To maintain the boiler's high thermal efficiency and reliable operation, it should be serviced annually by a qualified and registered OFTEC engineer. Electrical work should be carried out by a qualified engineer. A CD/11 commissioning form should be completed and left with the appliance on-site.

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 tank 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.

### Important

**Before commencing with service work on either the boiler or the fuel supply please read the health and safety information.**

Before servicing the boiler carry out the following checks.

1. Ensure the air inlets on the flue terminal are not blocked or obstructed.
2. Check to ensure external controls are working correctly.
3. Check ventilation openings are not obstructed and are adequate for the size of the boiler.
4. Inspect all connections to boiler to ensure they are sound, remake any joints that are showing signs of leakage.
5. Inspect flexible oil supply lines and replace where necessary.

### Condensate Trap

The condensate trap should be inspected as part of the annual service schedule.

Ensure there are no blockages within the condensate pipework and the trap itself, and clean all deposits from within.

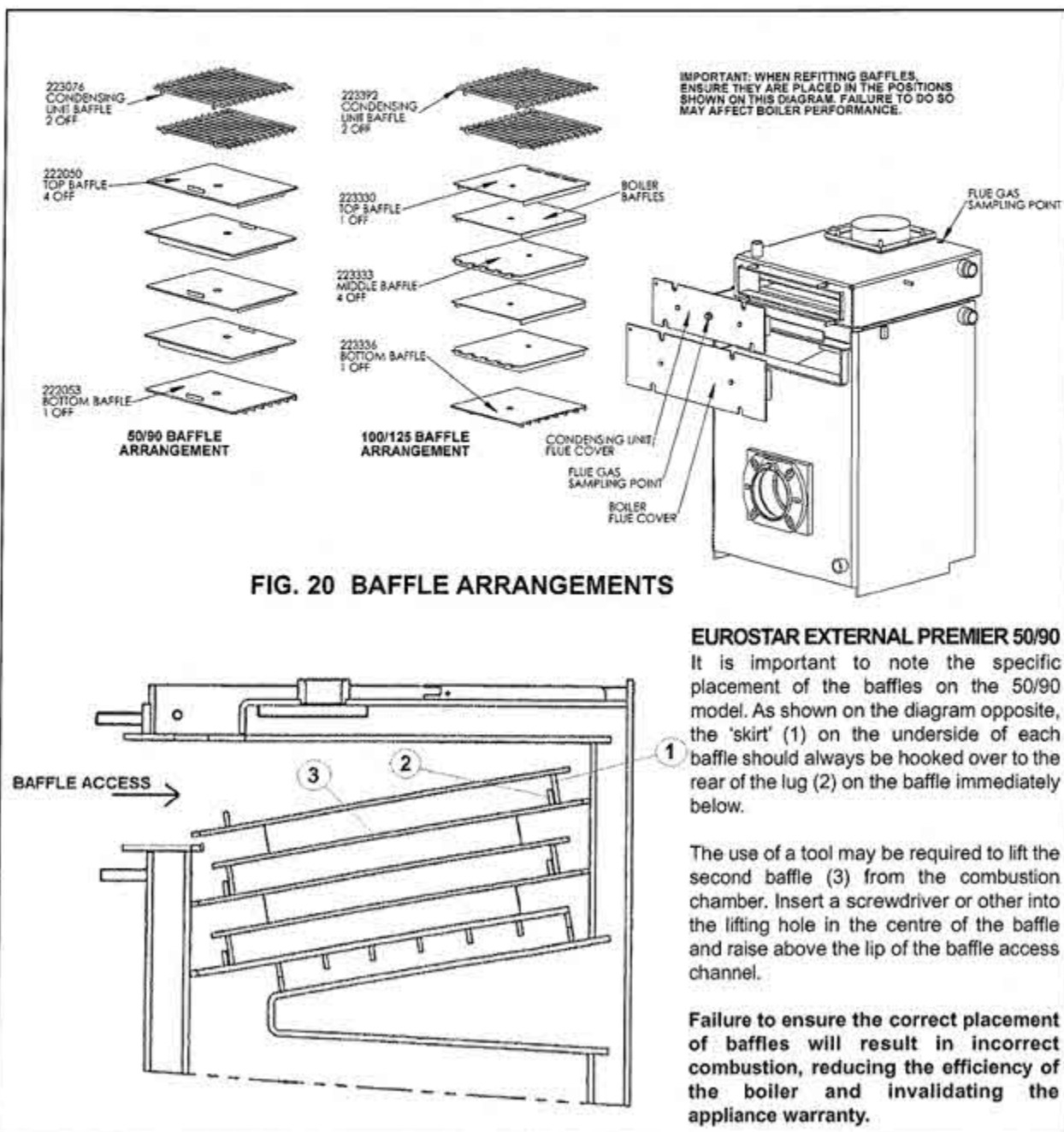
The drain ports in the condensing unit should be also be cleaned. This is achieved by removing the 2 x screws on the top face at the rear of the unit and using a tool to remove the deposits from within. Replace screws once complete.

### Casing

Check the external surfaces of the casing for corrosion. If corroding, clean down and apply a suitable protective material.

## Servicing the Boiler

- 1 Remove the flexible air supply hose.
- 2 Remove burner ensure that if flexible oil supply hose has to be disconnected that there is no spillage of oil.
- 3 Remove both flue-cleaning covers from front of boiler lift out flue baffles from boiler then slide baffles out of condensing unit.
- 4 Brush all deposits from the flue baffles and clean the internal surfaces of the boiler.
- 5 Remove any flue deposits from the combustion chamber floor using a vacuum cleaner.
- 6 Clean the flue way surfaces of the condenser unit removing any deposits.
- 7 Check flue sealing gasket.
- 8 Inspect flue cleaning door seals and replace if necessary.
- 9 Replace the nozzle.
- 10 Check to ensure that the condensate drain is working and not blocked by pouring a small amount of water into condenser unit and checking to see that water discharges from condensate port.
- 11 Replace flue baffles in correct arrangement (see diagram) Refit both flue covers securing in position making gas tight seal using washers and wing nuts previously removed.
- 12 Check condensate trap to ensure the outlet is not obstructed.
- 13 Refit the burner securing the air hose in position using the clips provided.
- 14 Reconnect the flexible oil line to the burner (if removed).
- 15 Turn on oil supply, switch on electricity ensure system is calling for heat, boiler should now fire.
- 16 Finally check the combustion settings to those given under Burner Settings and make any adjustments where necessary.





## 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.
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 condensation from tank
	Oil filter partially blocked	Wash filter clean with kerosene.
	Photo-cell fault	Clean photo-cell and ensure it is fully plugged in. Replace if faulty.
	Oil pressure low	Check pump pressure and adjust to correct setting.



## FAULT FINDING (Cont'd)

FAULT	POSSIBLE CAUSE	ACTION
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.
	Faulty oil de-aerator	Check and replace as necessary.
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 HT leads for damage and positive connection.
BURNER REPEATEDLY	Door not secure	Tighten wing nuts securing door in position
	Seals on cleaning covers	Change door seals
	Burner incorrectly fitted	Check burner gaskets and replace if damaged, tighten burner fixing nuts
	Flue gasket	Check flue is correctly sealed to boiler flue outlet

## SPARES

Item	Description	50/90	Qty	100/125	Qty
1	Boiler Body	223460	1	223464	1
2	Right Panel	223496	1	223506	1
3	Left Panel	223495	1	223505	1
4	Top Panel	210952	1	221712	1
5	Front Door	223493	1	223503	1
6	Back Panel	223497	1	223507	1
7	Condensing Unit Clamp	223133	1	223133	1
8	Control Box	210799	1	210799	1
9	Boiler Thermostat	206896	1	206896	1
10	High-Limit Thermostat	206892	1	209892	1
11	Frost Thermostat	209735	1	209735	1
12	Flue Gasket	223071	1	223071	1
13	Flue Assembly	223470	1	223470	1
14	Boiler Top Baffle <sup>1</sup>	223050	4	223330	1
15	Boiler Bottom Baffle <sup>1</sup>	223053	1	223336	1
16	Boiler Middle Baffle <sup>1</sup>	N/A	-	223333	4
17	Condensing Unit Baffle <sup>1</sup>	223076	2	223392	2
18	Boiler Access Cover	223019	1	223378	1
19	Condensing Unit Access Cover	223130	1	223398	1
20	Burner	223120	1	223230	1
21	Burner Mounting Flange	223151	1	223151	1
22	Burner Gasket	223152	1	223152	1
23	Boiler Gasket	223108	1	223108	1
24	Acoustic Hose	209491	1	209491	1
25	Condensing Unit	223020	1	223380	1
26	Flue Seal Clamping Collar	223458	1	223458	1
27	Flue Sealing Rubber	223456	3	223456	3
28	Blanking Plate	223457	2	223457	2
29	Casing Grommet	210787	6	210787	6
30	Automatic Air Vent	207296	1	207296	1
31	Terminal Guard	223479	1	223479	1
32	Flexible Oil line <sup>2</sup>	207019	1	207019	1

<sup>1</sup> Not Shown; see Fig 13 (page 19) for baffle configurations.

<sup>2</sup> Not Shown; see burner details leaflet for further information.

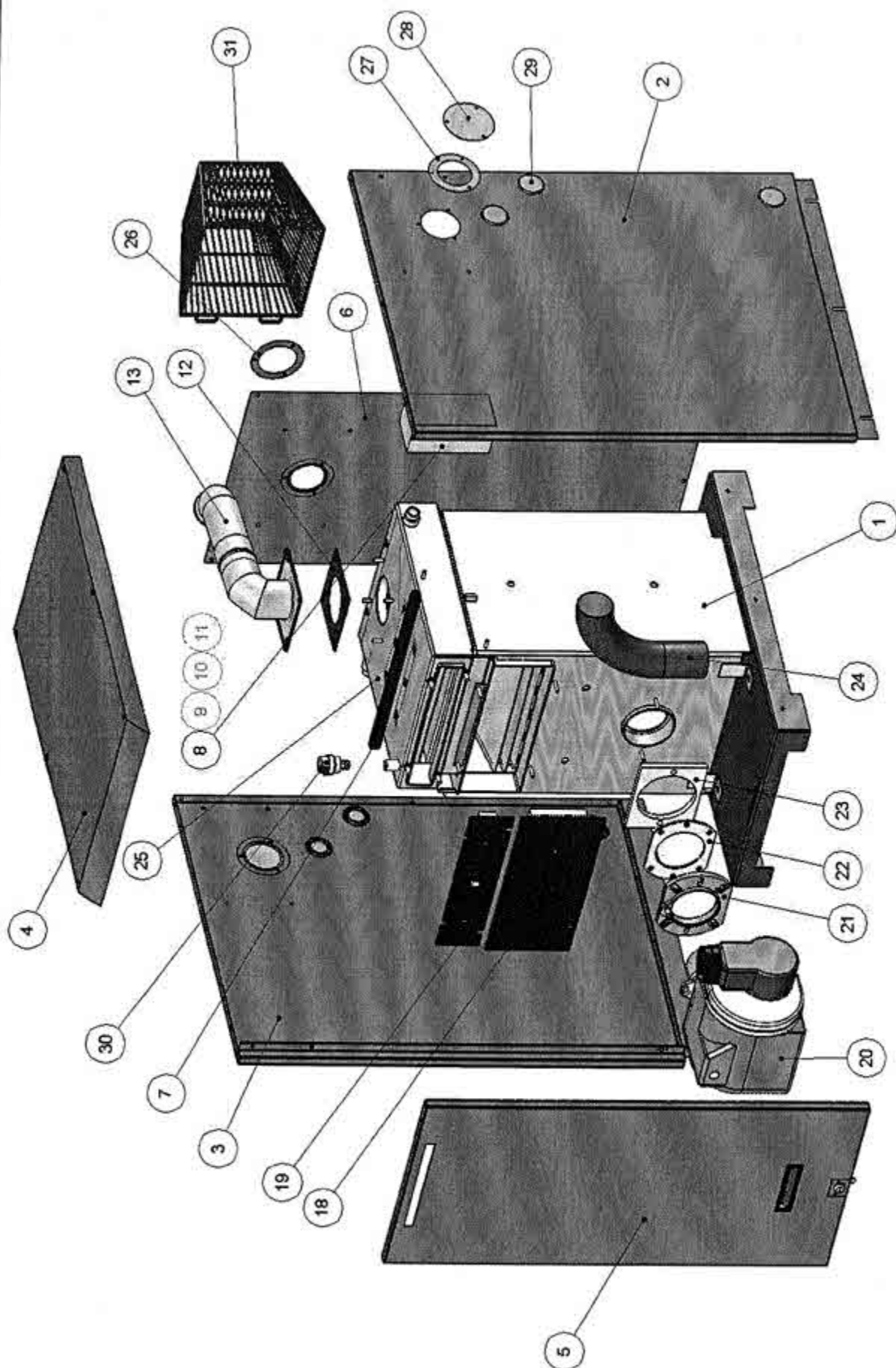


FIG. 14 BOILER ASSEMBLY



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