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

TRIANCO

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OFTEC

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

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TRIANCO

Contractor

OIL FIRED CENTRAL HEATING BOILERS FOR BALANCED OR CONVENTIONAL FLUE

TRIANCO

CE BED 92/42 EEC
EMC 89/336 EEC

USER, INSTALLATION COMMISSIONING & SERVICING INSTRUCTIONS

Contractor WM 70

To be retained by householder

HEALTH AND SAFETY

INFORMATION FOR THE INSTALLER AND SERVICE ENGINEERS

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

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

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

This appliance may contain some of the items below.

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

INSULATION AND SEALS

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

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

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

GLUES, SEALANTS & PAINT

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

KEROSENE & GAS OIL FUELS (MINERAL OILS)

1. The effect of mineral oils on the skin vary according to the duration of exposure.

2. The lighter fractions also remove the protective grease normally present on the surface of the skin rendering the skin dry, liable to crack and more prone to damage caused by cuts and abrasions.

3. Skin rashes (oil acne). Seek immediate medical attention for any rash, wart or sore developing on any part of the body, particularly the scrotum.

4. Avoid as far as possible any skin contact with mineral oil or with clothing contaminated with mineral oil.

5. Never breathe any mineral oil vapours. Do not fire the Burner in the open i.e. out of the Boiler as a misfire will cause unburnt oil vapours.

6. Barrier cream containing lanolin such as Rosalex Antisolv, is highly recommended together with a strict routine of personal cleaning.

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

CONTENTS

1. HOW TO USE YOUR TRIANCO BOILER

Your Trianco 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 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 Timeswitch / 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 'O'

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 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 temperature by turning the knob to the required temperature. However, the installer should take into consideration that the return water temperature **must not** drop below 56°C when the appliance is up to full operating temperature.

The thermostat is switched off when the knob is turned fully anti-clockwise with pointer opposite 'O'

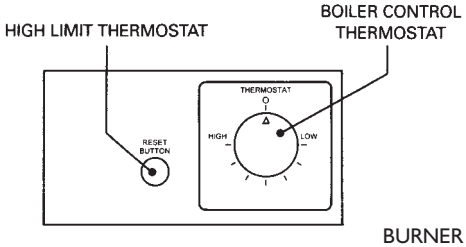
HIGH LIMIT THERMOSTAT (Hand Reset)

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.



BOILER CONTROL PANEL (FRONT COVER REMOVED)

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).

SYSTEMS CONTROLS

ROOM THERMOSTAT

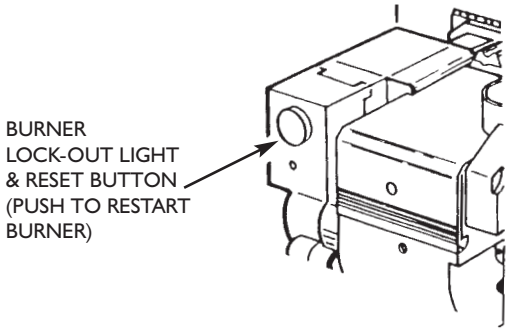
The room thermostat should not be positioned near a source of heat such as a radiator or exposed to the sun as this will cause the central heating to switch off before the room is up to temperature. Follow the manufacturer's instructions for best siting position for the thermostat.

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 shutdown. 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 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

This boiler is designed to use 28 sec Kerosene only (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 the 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 a power failure, it will be necessary to reset 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 an OFTEC trained and registered engineer and an annual service is given thereafter.

Notes:

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

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

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

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

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

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

Commissioning Engineer's Signature .....

Company Name .....

Address .....

.....

Tel. No: .....

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.

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 with the boiler.

  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 a call-out.

NOTE: Burner nozzle is guaranteed up to the first 12 months 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.

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

What happens if my installer/engineer is unavailable?

Step 3 **Contact the Service Centre. 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.

SERVICE CENTRE AND TECHNICAL SUPPORT

Tel: 0114 257 2300
Fax: 0114 257 2338

Hours of business Monday to Thursday 8.30am - 4.45pm
Friday 8.30am - 2.30pm

2. INTRODUCTION

Trianco boilers have been designed to conform to European Directive/Standards BED 92/42 EEC LVD 73/23/EEC EMC 89/336/EEC.

The boilers are supplied for fitting to horizontal rear outlet balanced flue only. The balanced flue is supplied with the boiler.

The matched pressure jet burner which is exceptionally quiet in operation, ensures clean and efficient combustion with low NOx emissions. As the Trianco balanced flue boiler is a truly room sealed appliance, it is also eminently suitable for installation in a garage.

This boiler is suitable for all normal open vented central heating and indirect hot water systems and can also be used with sealed systems up to a working pressure of 3 bar with the appropriate sealed system safety equipment. The boiler is supplied with 22mm compression fittings. Due to high efficiency of this boiler it must be fitted on a fully pumped system

All servicing can be carried out from the front of the boiler. 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.

Trianco 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.

IMPORTANT SAFETY NOTES

Read these instructions before installing your boiler.

The heating system must comply with the latest editions of British Standards 5410 and The Building Regulation, and Electrical Wiring Regulations BS 7671.

Please note: It is essential in the interest of boiler efficiency and reliable performance that once the boiler has been installed it is commissioned by an OFTEC registered engineer. It is the responsibility of the installer to ensure that the boiler is commissioned.

Always switch off the electrical supply before removing any of the covers for cleaning.

If any part of the boiler or its flue is modified, then the guarantee/warranty will be invalidated.

We recommend that you keep these instructions in a place near your appliance for easy reference.

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 SPECIFICATION

Boiler Models		WM 70	Factory set at
Rated Input	(Btu/h) (kW)	77,800 22.8	66,666 19.5
Rated Output	(Btu/h) (kW)	70,000 20.5	60,000 17.5
Burner	Model	Ecoflam Minor 1	
Weight (empty)	(kg) (lb)	83 183	
Water content	(litre) (gal)	14.5 3.2	
Flow & return sockets		22mm Compression	
Flue Gas Temp.	°C	225	205
Max. operating pressure	(bar) (psi)	4,5 43.5	
Test Pressure	(bar) (psi)	4.5 65.3	
Water side resistance 10° diff 20° diff	 (mbar) (in. w.g.) (mbar) (in. w.g.)	 23.0 9.2 6.4 2.5	
Starting Current	(amp)	3.5	
Running Current	(amp)	0.77	

Control Thermostat - Adjustable up to 82° C
Limit Thermostat - Factory set at 110° C -6 °C (hand reset)
Flue Type - Balanced Flue
Thermal Insulation - Insulated with fibre glass

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 System.

BS4543: Part 3 - Factory made insulated chimneys.

The Building Regulations:
Part 'L'
Current I.E.E. Regulations
Local water undertaking By-Laws
OFTEC Installation Requirements for Oil Fired Boilers and Oil Storage Tanks.

Health and Safety at Work Act

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

In the interest of safety, the boiler should be commissioned by an OFTEC trained and registered engineer.

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

ELECTRICAL WORK SHOULD BE CARRIED OUT BY A QUALIFIED ELECTRICAL ENGINEER

Siting the Boiler

Sound Levels

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 some times transmit noise.

(d) Low level BF 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.

Unpacking the Boiler

(a) Cut through straps and remove carton

(b) Remove the front door, remove pack of parts, lift outer casing from boiler and move to a safe place to avoid damaging.

(c) Remove securing screws fixing boiler to pallet.

(d) The boiler can now be removed from pallet

Fixing the Boiler to the wall

(a) The boiler should be fixed to a suitable load bearing wall using fasteners supplied. If these are not suitable, then a equally strong and secure fastening may be used.

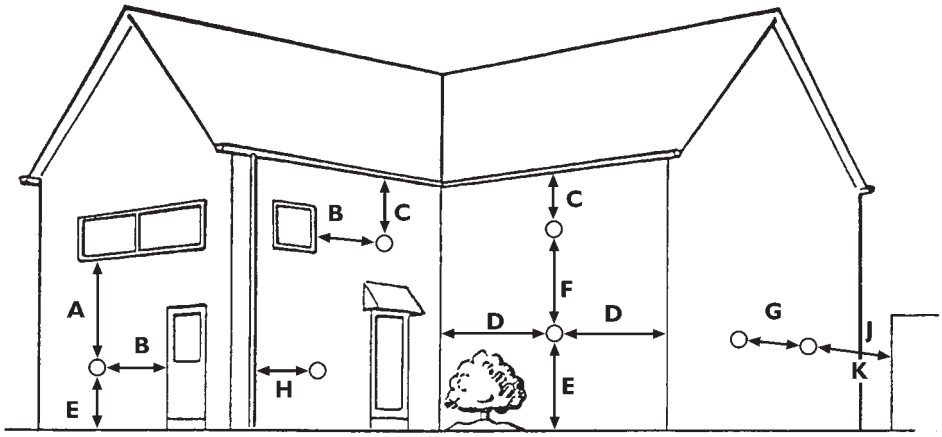
(b) Using the template supplied, work out the position of the boiler, fix template to the wall and drill 3 holes, diameter 6mm to a depth of 38mm. Fit plastic plugs provided, cut hole 100mm dia. to take flue pipe and hole 75mm dia. to take plastic wall pipe, remove template and fit wall mounting bracket to wall using screws provided.

(c) Removing burner from boiler will make it easier for hanging the boiler on to the wall mounting bracket.

(d) Hang the boiler onto the 2 lugs on the wall mounting bracket, then drill through 1 of the 2 mounting holes.

On the oil pipe bracket, fit a plastic wall plug and screw back to the wall.

(e) Re-assemble burner, connect all oil lines.



RECOMMENDED MINIMUM DISTANCES EXHAUST TERMINAL POSITION

Location		Minimum Distance (mm)
A	Directly below an opening, window or air brick	600
B	Horizontally to an opening, window, door air brick	600
C	Below a gutter, drainpipe, eaves or balcony	600
D	From internal or external corners	600
E	Above ground level	1100
F	Vertically from a terminal on the same wall	1500
G	Horizontally from terminals on the same wall	750
H	From a vertical drain pipe	600
J	From a surface facing the terminal	3000
K	From a terminal facing the terminal	3000

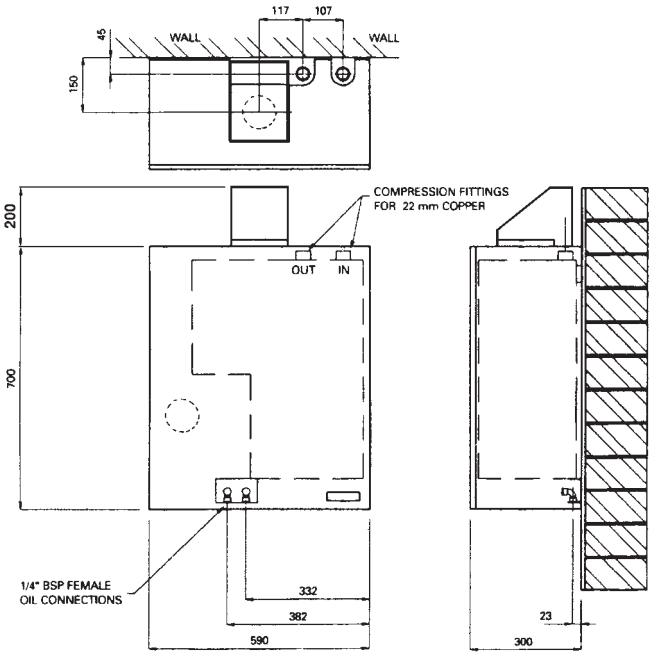
Note (1) **The terminal should be positioned so as to avoid products of combustion entering the building.**

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

Note (3) **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.**

Note (4) **The flue must be positioned so that it does not cause nuisance and permits the dispersal of combustion products.**

Note (5) **Min distance from ground level to centre of air vent 300mm.**



BOILER CLEARANCE REQUIRED	
TOP	25mm
SIDE	5mm
BOTTOM	60mm

Fixing Flue Terminal

a) Place gasket on top of boiler body locating over 4 studs, fit flue box on top of gasket and secure in position using M6 nuts.

(b) Slide terminal gasket over flue terminal. Then slide terminal through flue box and Dia 100mm hole (cut through wall). Secure flue terminal in position using M6 nuts, trapping gasket between flue box and terminal mounting flange.

(c) Fit flue box cover and gasket in position using M6 nuts.

(d) On outside of building slide wall plate over flue terminal, mark mounting holes in wall, remove wall plate and drill 2 holes in wall, slide wall plate back into position and fix using screws and plugs provided.

(e) Slide flue terminal back (min distance from wall to end of terminal 100mm (4"). Secure in position by drilling 2 Dia 3mm holes through wall plate and fix with self tapping screws.

(f) A flue box cover is supplied to fit over flue box. Fit this part when casings are in position (see page 8 and 21).

<u>IMPORTANT</u> ENSURE ALL SEALS ON FLUE SYSTEM ARE GOOD.

WHEN INSTALLING THIS FLUE THERE MUST BE AT LEAST 25mm BETWEEN THE FLUE AND ANY COMBUSTIBLE MATERIAL.

Fixing Air Duct

(a) Slide plastic tube through Dia 75mm hole, mark off to depth of wall, remove and cut to size.

(b) Slide plastic tube back through wall, position air vent on outside wall mark mounting holes and drill. Insert plastic wall plugs and screw air vent in position, (make good wall before fixing in position).

(c) Position hose connection plate over other end of plastic tube on inside of property, mark mounting holes drill and secure connection plate in position.

(d) Secure one end of flexible hose to connection plate and the other end to burner.

Fixing Casing to the boiler

(a) With boiler in position, fit casing support bracket to the wall mounting bracket (see diag. page 7).

(b) Casing support bracket can be adjusted using the 2 fixing screws.

(c) Fit casing over the boiler, locating the back top return of the casing over the casing support bracket.

(d) On bottom casing back return there are 3 holes, mark through the center hole, remove the casing, drill and plug the hole, fit casing and screw back to the wall.

(e) Fit door casing.

IMPORTANT

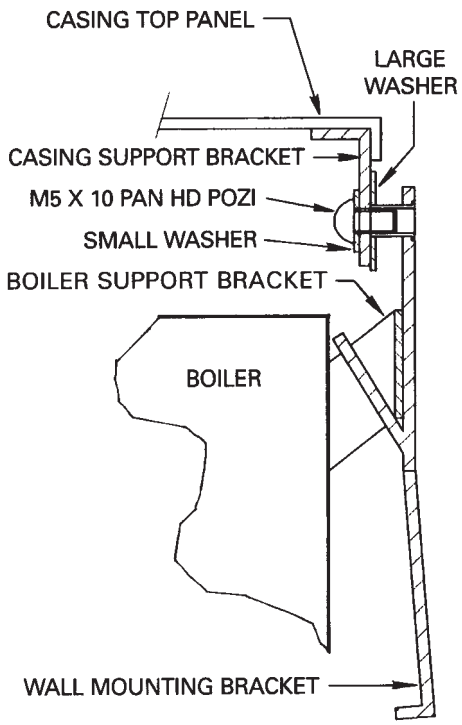
Before securing casings in position, ensure squareness and alignment of door casing.

Water System

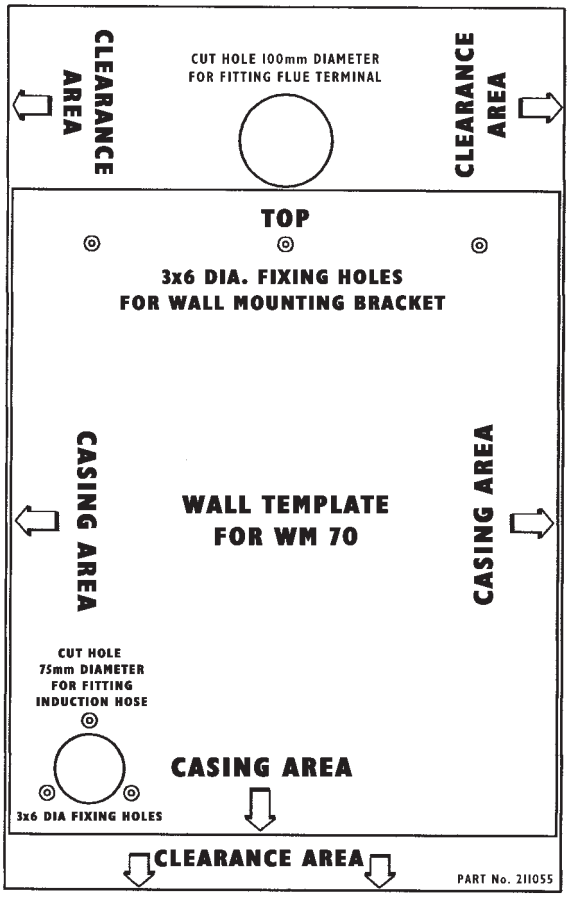
The installation must comply with the requirements of the following Codes of Practice:

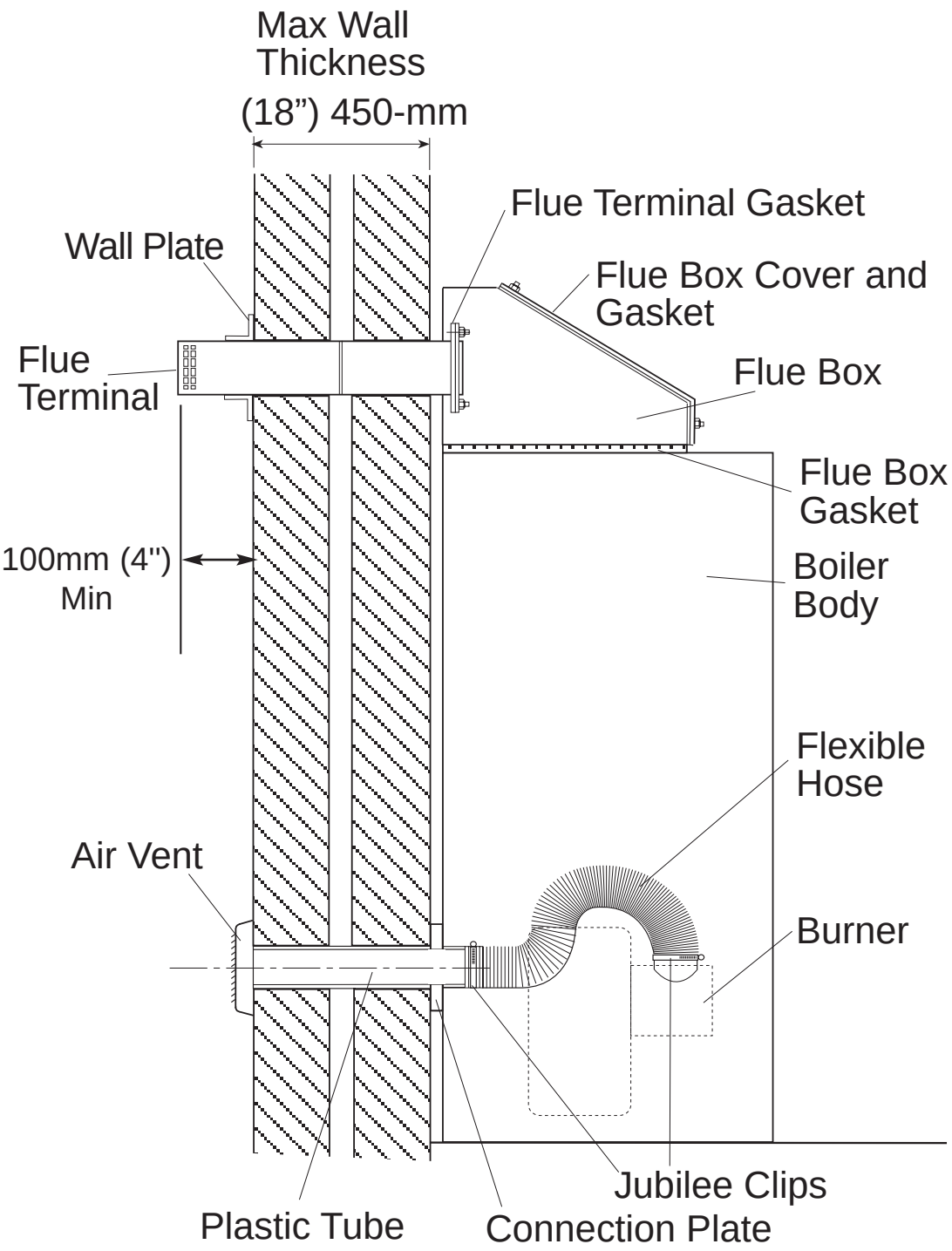
BS 5449: Part 1 - Forced Circulation Hot Water Systems.

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



<u>IMPORTANT</u> WHEN INSTALLING THIS FLUE THERE MUST BE AT LEAST 25mm BETWEEN THE FLUE AND ANY COMBUSTIBLE MATERIAL.




Max Wall
Thickness
(18”) 450-mm
Flue Terminal Gasket
Wall Plate
Flue Box Cover and
Gasket
Flue
Terminal
Flue Box
Flue Box
Gasket
100mm (4")
Min
Boiler
Body
Flexible
Hose
Air Vent
Burner
Jubilee Clips
Plastic Tube
Connection Plate

5. OIL SUPPLY

Oil

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

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

Oil Storage Tanks

Size and Location of Tank

The tank should be large enough to allow for economic deliveries and be located in the most 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: 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 BS 799, Pt. 5: 1987 and mounted on brick or block piers with a waterproof membrane between the piers and tank. (See pages 10 and 11).

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.

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 pages 10 and 11.

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.

Fire Valve

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

All oil 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

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. The return port must be blanked off with plug supplied and by-pass washer fitted (see ref. page 16).

Two pipe oil supply

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

Burners are supplied set for use on 2 pipe systems.

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 -

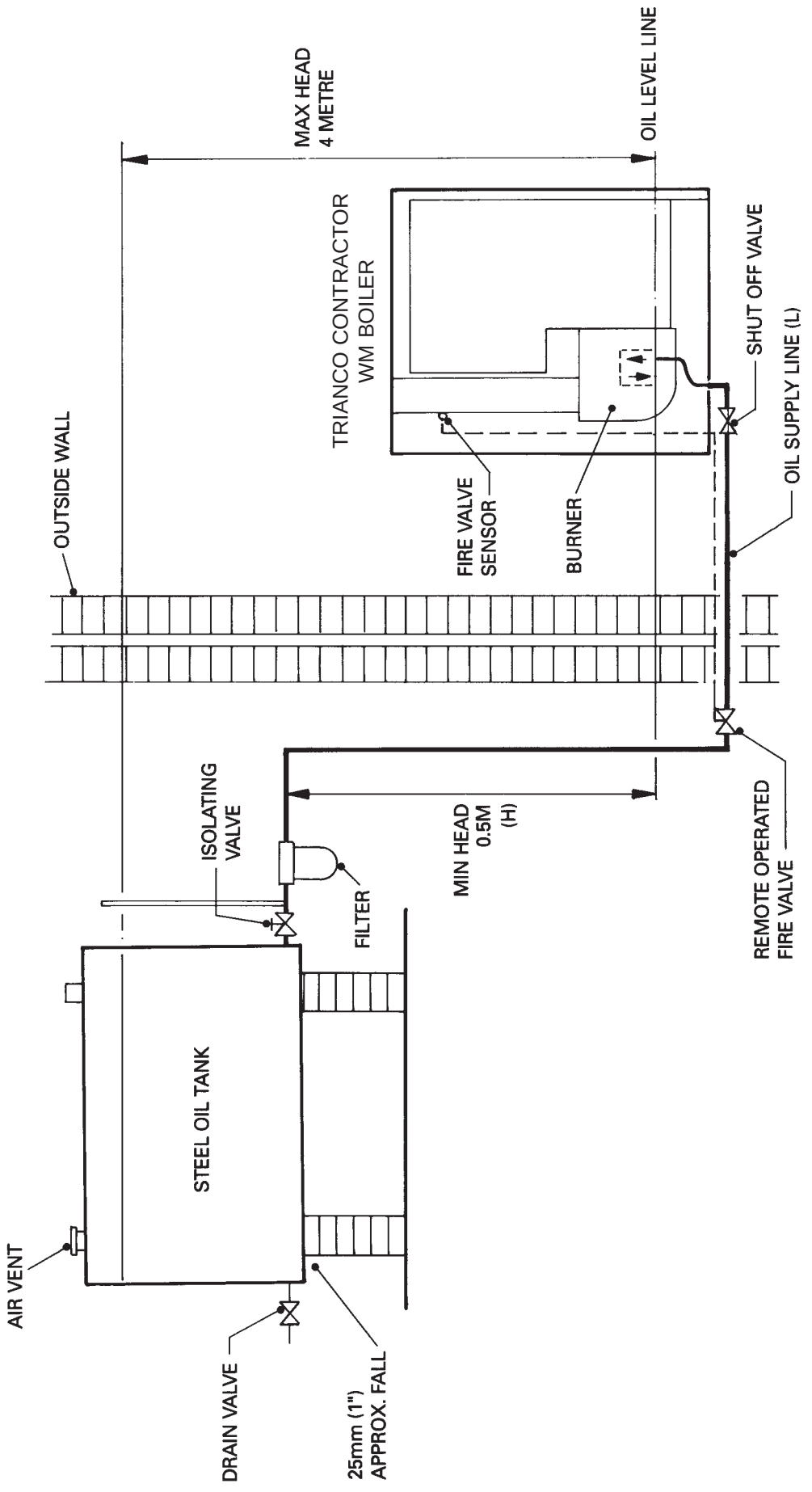
Single pipe oil supply

Where a two pipe suction lift system is required, but the return pipe is too long, or impractical to run, an 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. The pump must be set up as for a two pipe system.

The Oil De-aerator should be fitted close to the boiler and outside the dwelling. It is available from most Builders Merchants and some Oil Tank manufacturers (see page 12).

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

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

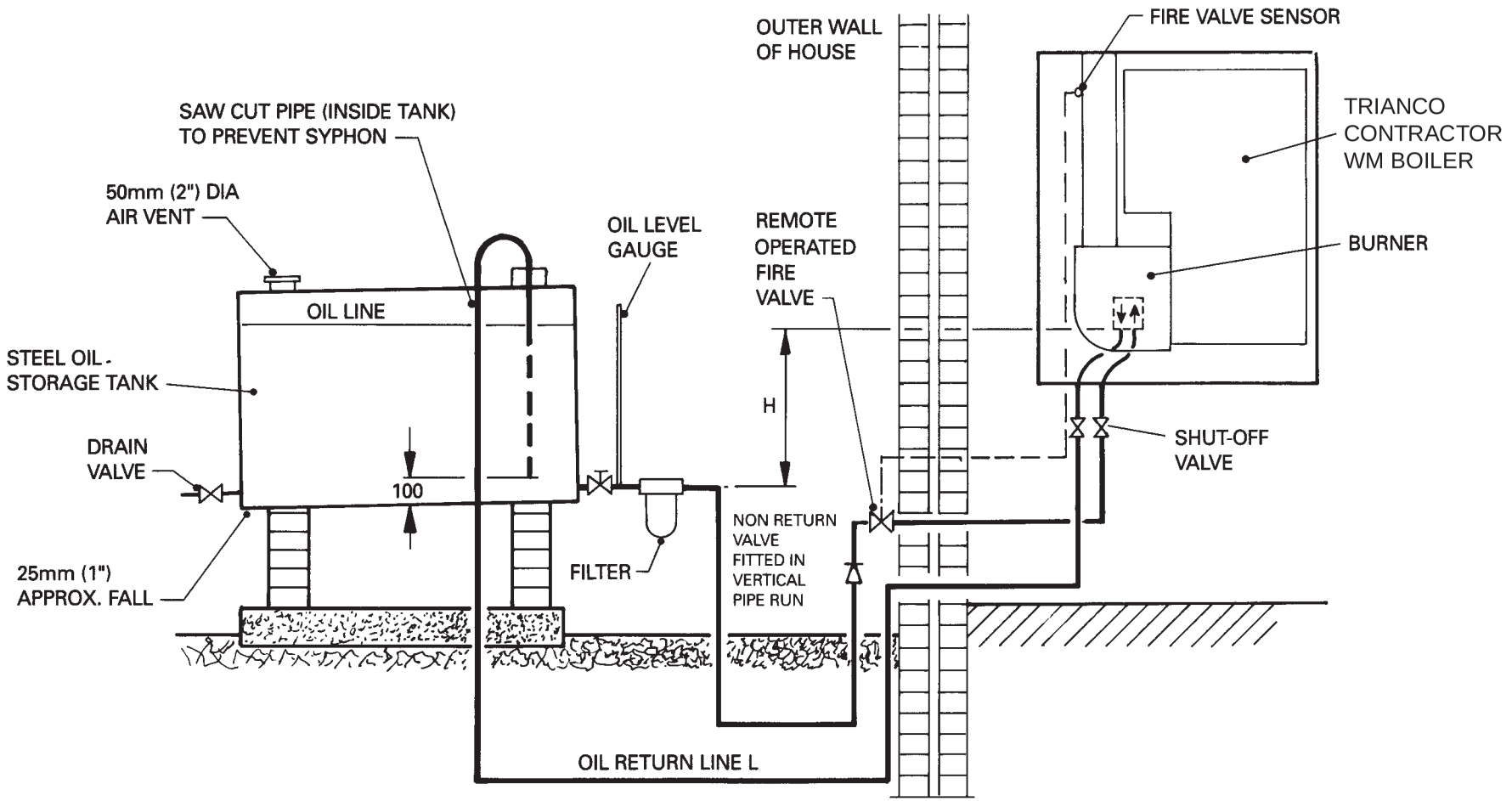


SINGLE PIPE OIL SUPPLY INSTALLATION

TWO PIPE OIL SUPPLY INSTALLATION

MAXIMUM OIL SUPPLY LINE LENGTH 'L'

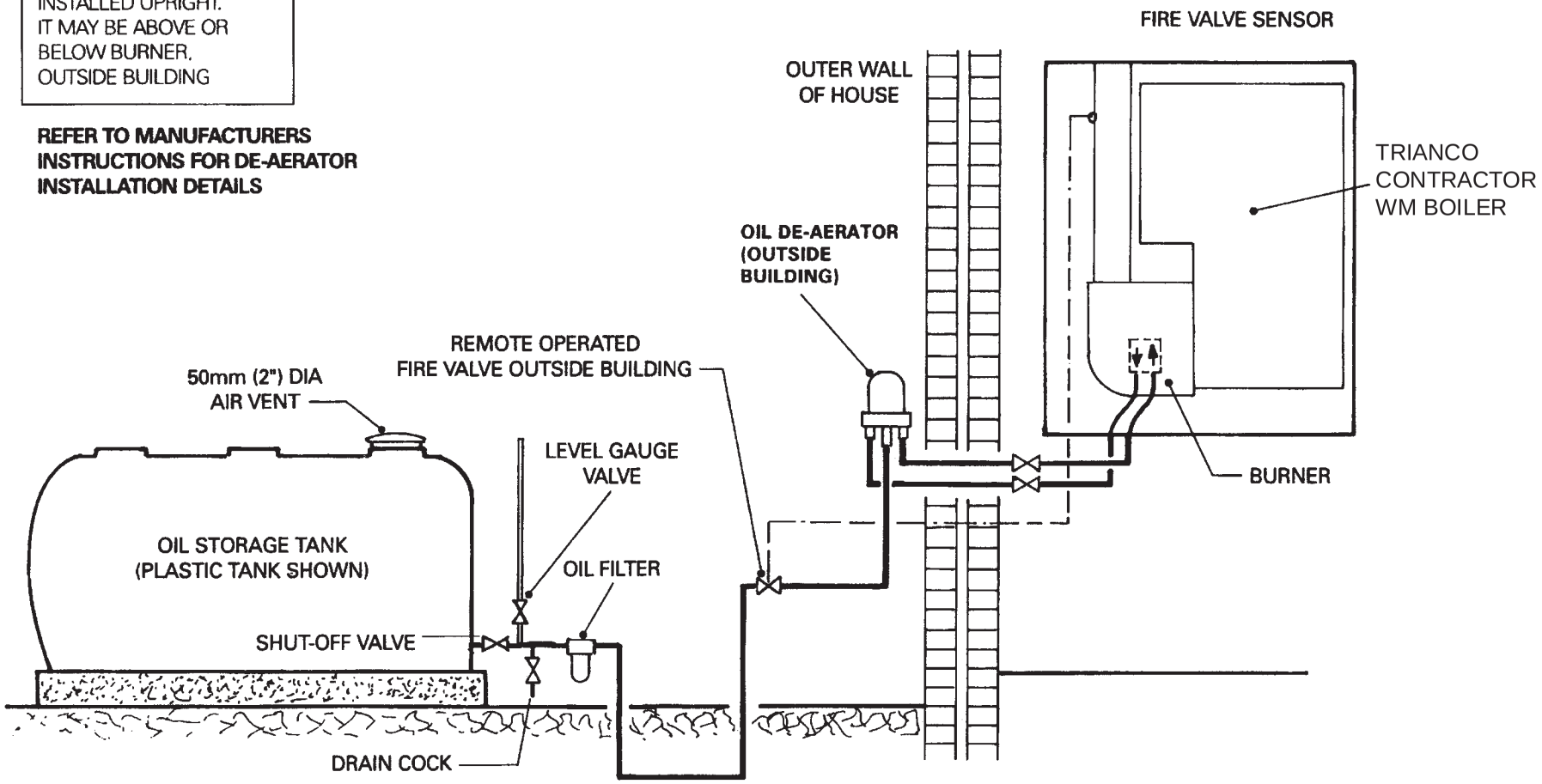
'H' METRES.		.0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
PIPE 6mm ID	MAXIMUM LENGTH (METRES)	48	42	36	30	24	18	11	5
PIPE 8mmID		100	100	100	94	75	55	36	16
PIPE 10MM ID		100	100	100	100	100	100	88	40



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

REFER TO MANUFACTURERS INSTRUCTIONS FOR DE-AERATOR INSTALLATION DETAILS

REFER TO MANUFACTURERS INSTRUCTIONS FOR 'OIL DE-AERATOR' INSTALLATION DETAILS

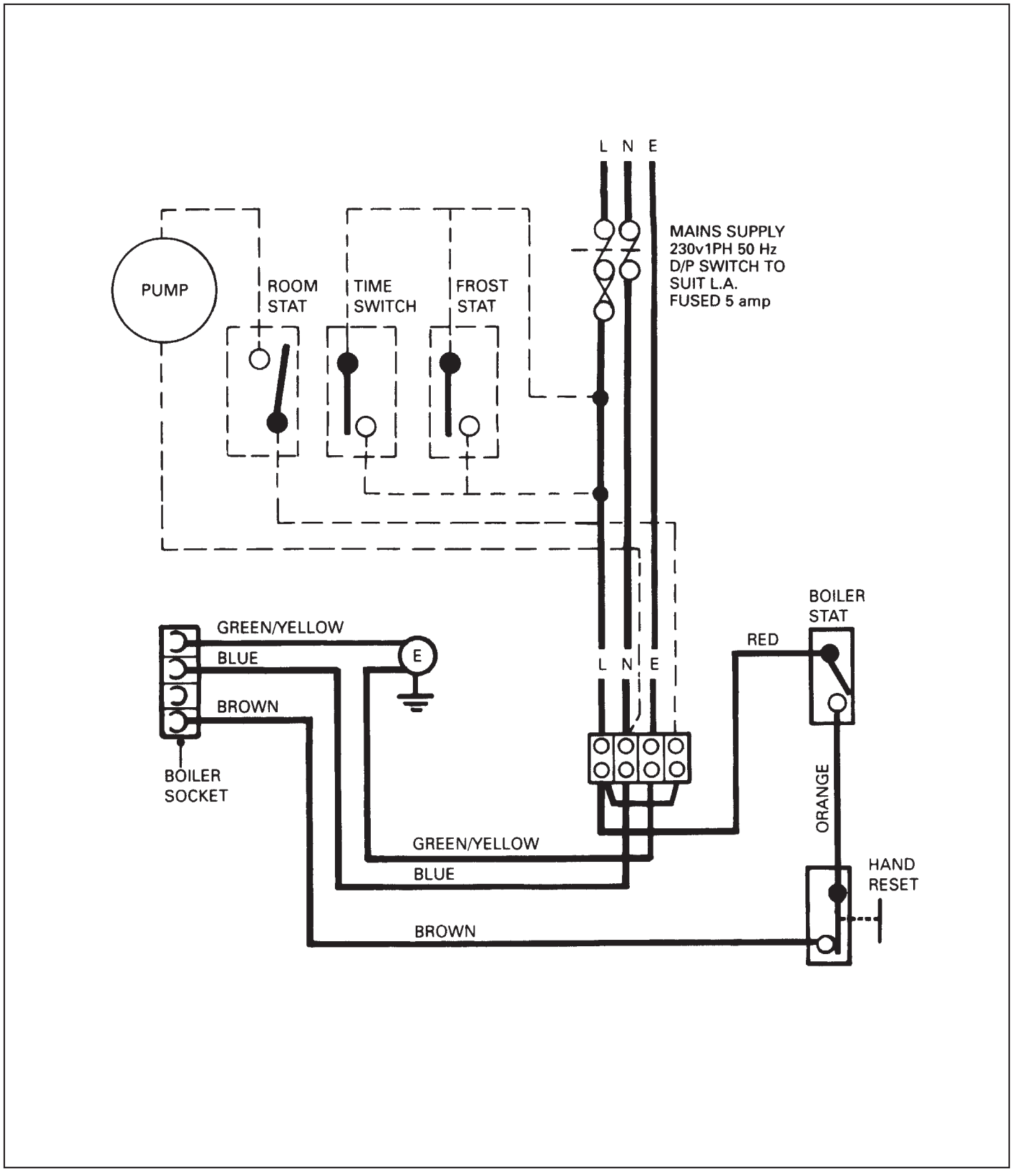


6. ELECTRICAL

Control Box Installation

Electricity Supply 230V, Single Phase 50Hz

All wiring to supply and all system components external to the boiler must comply with the latest edition BS 7671 IEE Wiring Regulations.



7. COMMISSIONING

Commissioning must be carried out by an OFTEC trained and registered engineer.

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 details' 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
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 CO2 reading through the sampling hole in flue-cover. Compare the reading with that given under 'Burner Settings' and adjust the air setting if necessary to achieve the required CO2%. Also, check the smoke and flue gas temperature.

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 an OFTEC trained and registered engineer. Electrical work should be carried out by a qualified engineer.

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

Where the boiler is shut down for the summer months, the service should be carried out as soon as possible after the end of the heating season.

Oil tank

Open 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.

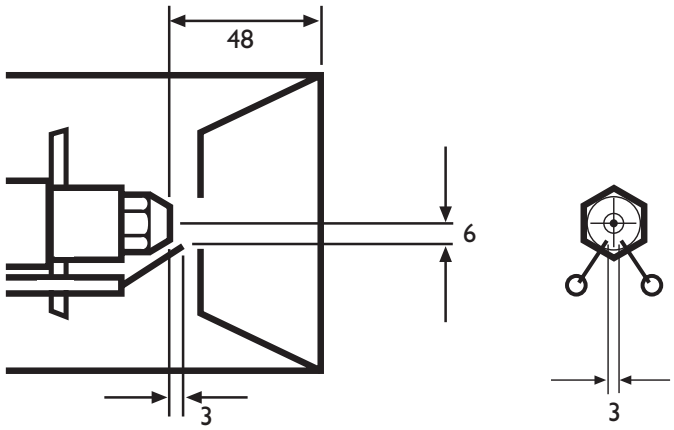
Servicing the Boiler (Burner removed)

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

Burner Service Plate

A plate is supplied with this boiler for supporting the burner during servicing. The plate is to be bolted to the front face of the boiler using the 2 studs provided. After servicing remove the plate and store inside casing.

COMBUSTION HEAD SETTINGS



NOZZLE REPLACEMENT

1 Switch off electrical supply to boiler and turn off oil

3 Remove burner plug from control box.

3 Burner can now be removed from boiler

4 Remove blast tube from burner exposing nozzle holder assembly.

5 The nozzle can now be carefully removed taking great care not to damage the electrodes. (see Diag.)

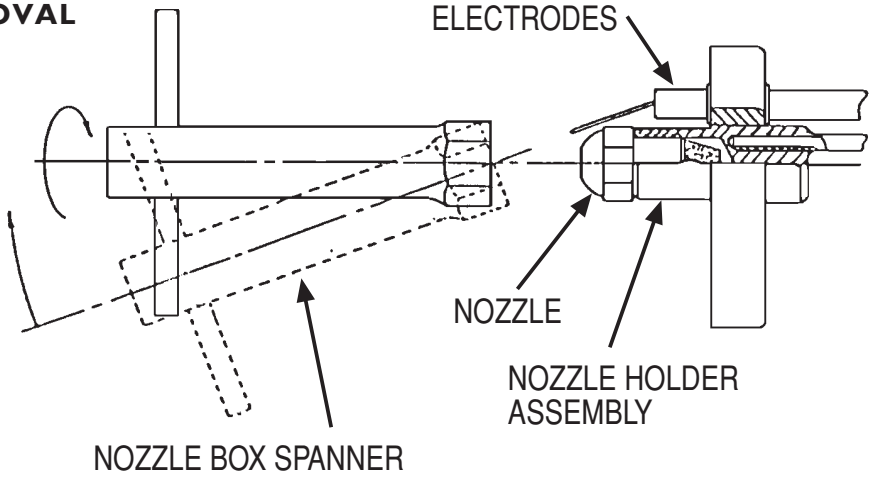
6 Fit a new nozzle of the same specification taking the same care.

7 Check the position of the electrodes after replacing the nozzle to ensure they have not moved.

8 Refit the blast tube to the burner.

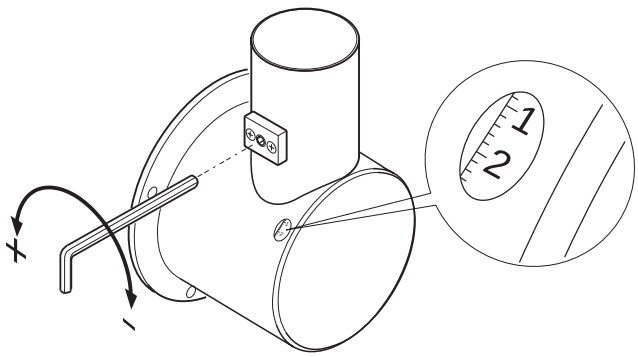
IMPORTANT -
BURNER NOZZLES ARE EXCLUDED FROM THE MANUFACTURERS GUARANTEE!

NOZZLE REMOVAL



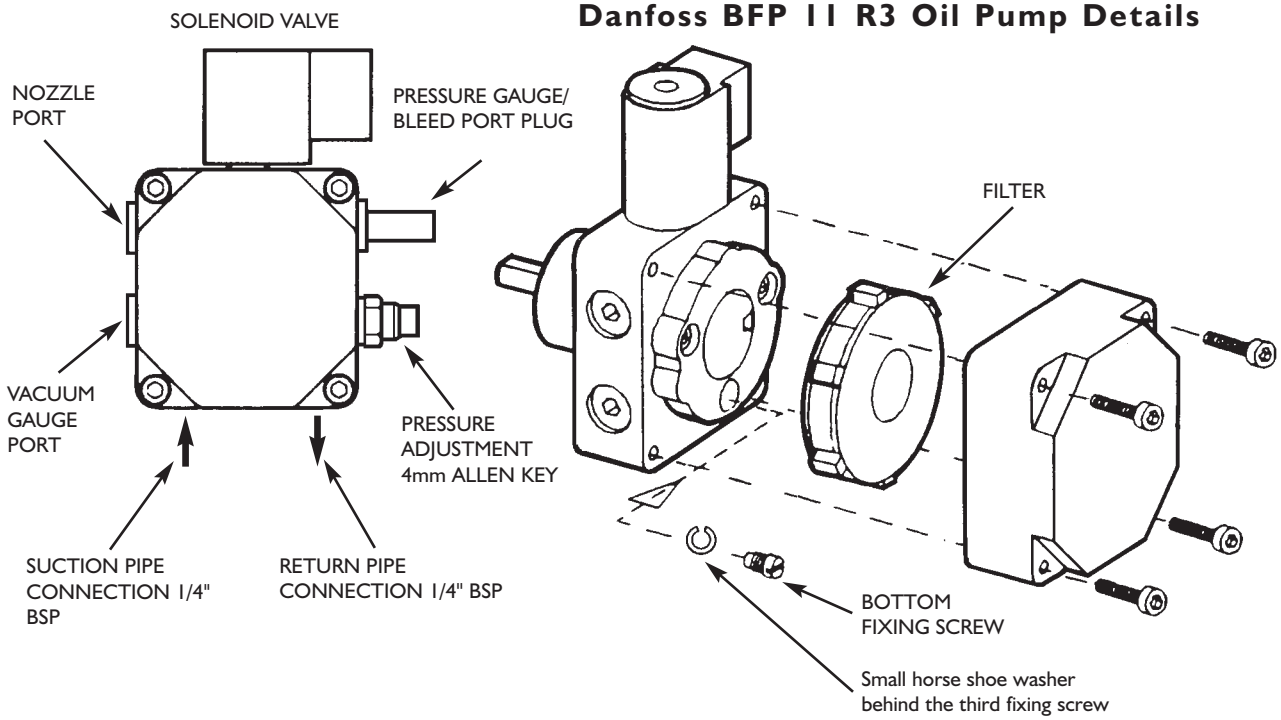
AIR REGULATION

The air regulator may have to be adjusted to obtain the correct combustion figures.



PRIMING AND ADJUSTING THE PUMP

Danfoss BFP 11 R3 Oil Pump Details



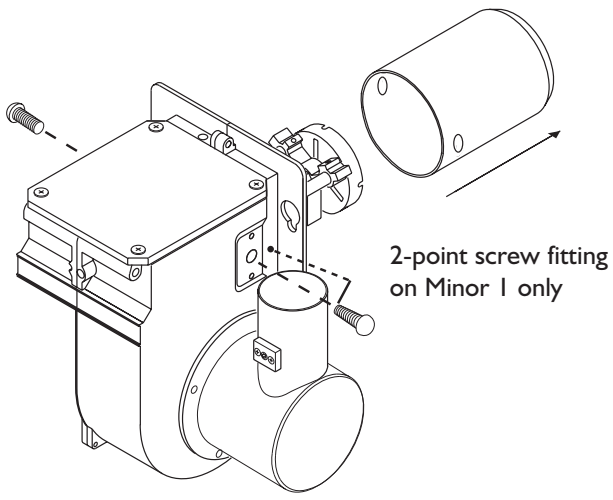
NOTE
To prime the pump first of all remove the pressure gauge bleed port plug until oil is seen to be present. Replace the pressure gauge/bleed port plug. If the burner goes to lock out after the prepurging time due to lack of pressure in the oil pump restart the burner

ONE PIPE SYSTEM
To convert the BFP 11R3 pump to a one pipe system fit the small horse shoe washer behind the third fixing screw and fit the return port plug. This allows oil to circulate around the pump on one pipe installations.

TWO PIPE SYSTEMS
The BFP 11R3 pump on this burner is already set for 2 pipe systems.

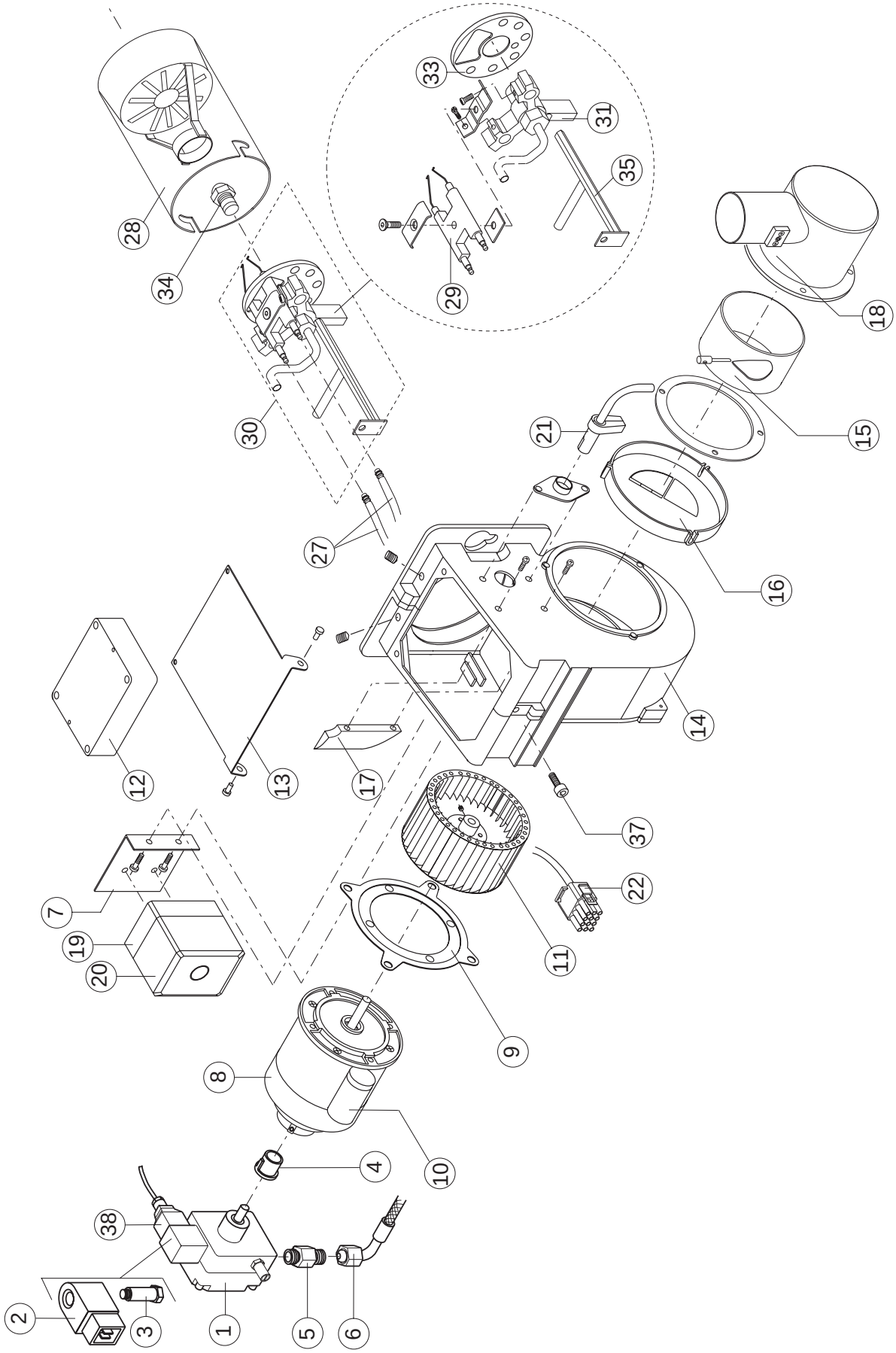
NOTE WM 70 BURNER IS SUPPLIED FOR USE ON 2 PIPE SYSTEM

BLAST TUBE DISASSEMBLY



MODELS CONTRACTOR WM 70		BURNER MINOR 1
Voltage single phase 50Hz	V	240
Motor	W	70
Rpm	No	2800
Capacitor	uF	3
Ignition Transformer	kV/mA	8/20
Control box	SATRONIC	TF 830.3
Fuel: Kerosene	Mj/kg	43.3
Nozzle	(USgal/h)	DANFOSS 0.6 (CEN) 80° EH
Pump Pressure		7.5 bar (110psi)
CO^2 (%)		11.0

No.	DESCRIPTION		Minor I CONTRACTOR W.M. 70 Code 221320
1 -	**OIL PUMP DANFOSS BFP11 R3**		221329
2 -	**COIL**	DANFOSS	203082
3 -	**OIL VALVE**	DANFOSS	221303
4 -	**COUPLING**		221304
5 -	**NIPPLE**		221305
6 -	**HOSES**		207019
7 -	**SUPPORT**		221306
8 -	**MOTOR**	70W SIMEL	221307
9 -	**SUPPORT (Recessed Flange)**		221308
10 -	**CAPACITOR**	3.5uF	221309
11 -	**FAN**	ø 99x43mm	221311
12 -	**IGNITION TRANSFORMER**	DANFOSS	221312
13 -	**COVER**		221310
14 -	**FAN HOUSING**		221313
15 -	**AIR DAMPER**		221314
16 -	**AIR CONVEYOR**		221315
17 -	**GASKET**		221316
18 -	**COVER AIR INLET**		221317
19 -	CONTROL BOX BASE	SATRONIC TF 830.3	207628
20 -	**CONTROL BOX**	SATRONIC TF 830.3	29064
21 -	**PHOTORESISTOR**	SATRONIC	221318
22 -	**PLUG and LEAD**		207625
23 -	**SOCKET**		
24 -	**GASKET**		
25 -	**FLANGE**		
26 -	**O-RING**		
27 -	**IGNITOR LEADS**	**TC**	221319
28 -	**BLAST TUBE**	**TC**	221321
29 -	**ELECTRODES**		221322
30 -	**FIRING HEAD ASS/Y TC**		221323
31 -	**NOZZLE HOLDER**	**TC**	221324
32 -			
33 -	**REAR DISC**		221325
34 -	**NOZZLE**		26213
35 -	**ROD**	**TC**	221326
37 -	**SCREW**		221327
38 -	**CABLE**	DANFOSS	221328



MINOR I Contractor WM70 (Two Pipe System)

9. FAULT FINDING

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

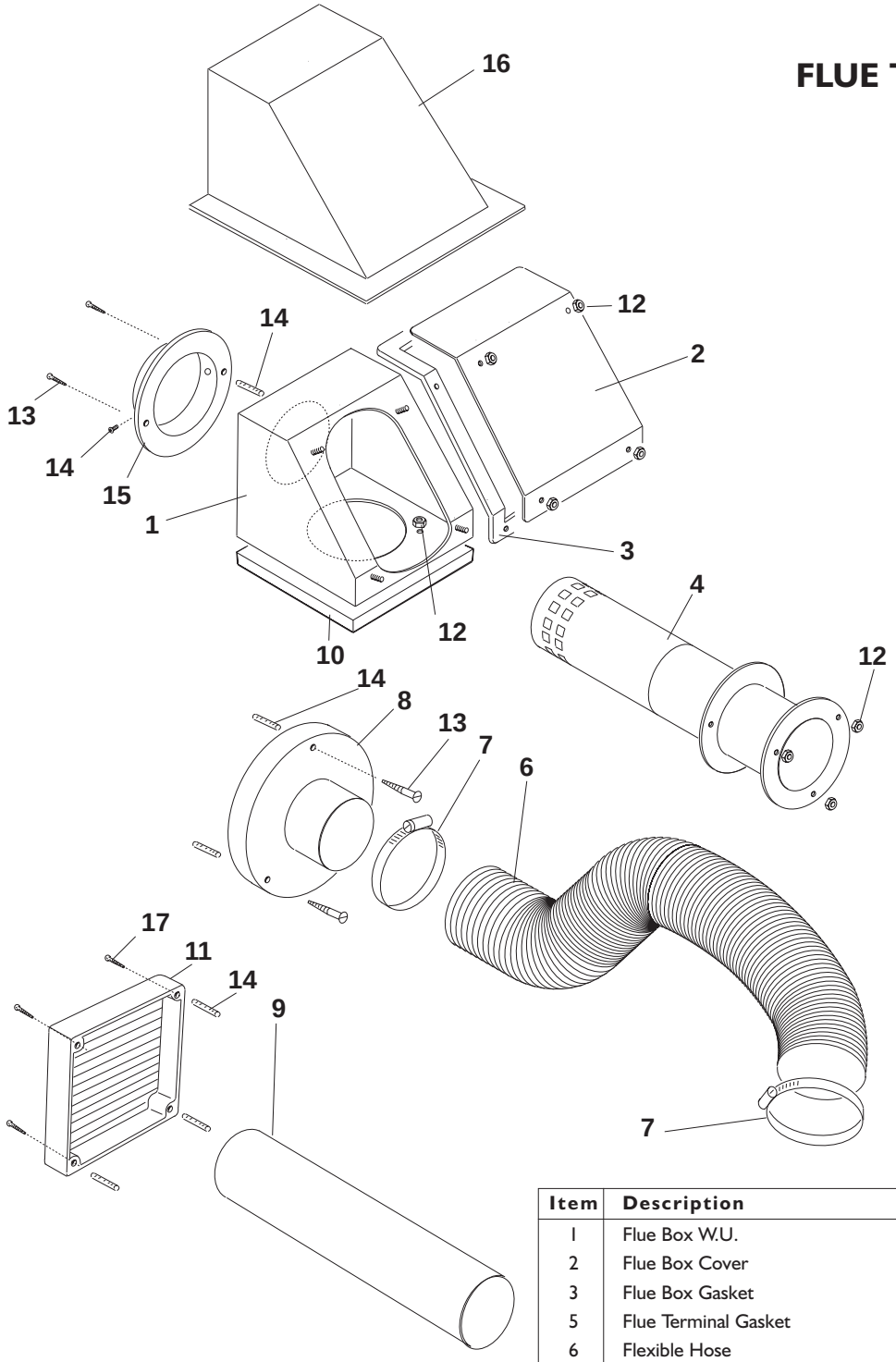
FAULT	POSSIBLE CAUSE	ACTION
BURNER WILL NOT START	Control box locked out - Light on	Press reset button on front of burner. N.B. ONLY TRY TWICE
	Boiler over heat thermostat or other system controls satisfied	Ensure all controls are calling for heat and over heat thermostat reset.
	Fuse blown	Fit new 5 amp fuse, if it blows again, check for short circuit in wiring.
	Check for live continuity up to burner	If live supply confirmed, change control box
	Motor or pump seized	Check for rotation and replace as necessary.
BURNER STARTS BUT FLAME NOT ESTABLISHED	No oil supply	Check oil level in tank and feed to burner.
	Photo-cell not seeing flame	Clean photo-cell and ensure it is fully plugged in.
	Air trapped in pump	Bleed 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 faulty	Check for spark and condition of H.T. contacts. Replace as necessary.
	Low oil pressure	Check pump pressure and adjust to correct setting.
FLAME ESTABLISHED BUT BURNER LOCKS OUT AFTER FEW SECONDS	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank
	Oil filter partially blocked	Wash filter clean with kerosene.
	Photo-cell fault	Clean photo-cell and ensure it is fully plugged in. Replace if faulty.
	Oil pressure low	Check pump pressure and adjust to correct setting.

FAULT FINDING (continued)

FAULT	POSSIBLE CAUSE	ACTION
POOR FLAME CUT-OFF	Air in pump or at back of nozzle	Bleed pump through pressure gauge port, also check for leaks in oil line if 2-pipe system
	Oil contaminated with water	Run off oil at burner until free of water and drain condensation from tank.
	Dirt in solenoid valve	Clean or replace valve.
	Pump shut-off piston sticking	Replace pump.
MORNING START LOCK-OUT	Faulty non-return valve or air leak in two pipe system.	Replace none-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 on page 16.
	Oil level in tank falling below burner.	Raise tank or fit a 2-pipe system.
DELAYED IGNITION - BURNER PULSATES ON START UP	Nozzle partially blocked	Replace nozzle
	Oil pressure too low	Check and recommission
	Flue blocked or damaged	Check and rectify
	Pump coupling loose or worn	Check and replace
BURNER STARTS VIOLENTLY	Delayed ignition	Check electrode setting and adjust to correct gap
		Check electrodes for damage
		Check H.T. leads for damage and positive connection

10. SPARES

FLUE TERMINAL



Item	Description	Part no.	No. Off
1	Flue Box W.U.	211030	1
2	Flue Box Cover	211029	1
3	Flue Box Gasket	211051	1
5	Flue Terminal Gasket	211053	1
6	Flexible Hose	211063	1
7	Jubilee Clip	95256	2
8	Hose Connection Plate	211050	1
9	Plastic Tube	211064	1
10	Gasket	211052	1
11	Air Vent	211065	1
12	M6 Nut	94217	8
13	Wood Screw No. 6 x 1 1/2"	91700	4
14	Plastic Wall Plug	99733	9
15	External Wall Fixing Plate	211049	1
16	Flue Box Cover	211038	1
17	Wood Screw No.6 3/4"	91701	5

Item	Description	Part no.	No. Off
1	Boiler Body	208310	1
3	Air Hose	211063	1
4	Burner assembly	221320	1
5	Cleaning Cover door	208331	1
6a	Baffle Box	208320	4
6b	Bottom Baffle	208324	1
7	Compression Nut	99369	2
8	Olive 22mm ø	99370	2
9	Flexible Oil Line (not shown)	208351	2
10	Wall Mounting Bracket Assembly	208327	1
11	Casing Support Bracket	208336	1
12	Burner Support Plate	208352	1
13	Outer Casing Assembly	211061	1
14	Door Casing Assembly	211060	1
15	Control Box Assembly	211062	1
16	Boiler Thermostat	206896	1
17	Boiler Limit Thermostat	206892	1

CONTRACTOR WM BOILER PARTS