



**HANDBOOK
AND SERVICE LOG**

HRM

WALLSTAR

15/20 SYSTEM



Your Boiler Serial Number is:

to be found on the Burner Cover.



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• Tel No: 01953 455400	
• Freephone No: 0800 0282529	
• Fax No: 01953 454483	
• E-mail: sales@hrmboilers.co.uk technical@hrmboilers.co.uk	

Dear Householder

Thank you, for selecting a boiler from HRM. Your boiler is the culmination of years of experience in the development, testing and manufacture of oil fired equipment.

Our boilers are independently tested and comply with the latest European Boiler Efficiency Directive; our quality assurance procedures are also approved and comply with the International Standard, ISO9000.

Each boiler is manufactured and tested with care by a member of our production team; you will find their name on the top of the white casing.

Your boiler will provide you with a long and trouble free service life provided that a few essential steps are addressed. Please take the time to read the "householder information" section of this handbook.

In the unlikely event of a fault, please contact your installer who should be able to identify the cause of the problem, if appropriate your installer will contact us.

Hedley Mickleburgh

Hedley Mickleburgh
Chief Executive



HOUSEHOLDER INFORMATION

IMPORTANT!

Your boiler must be commissioned, in order to:

- ensure the boiler has been installed correctly and avoid premature failure.
- set the boiler to its optimum efficiency. Operating conditions for the boiler will vary from site to site, your commissioning engineer has specialised equipment to check the oil pressure and analyse the exhaust gasses for "temperature", "smoke" and "CO2" content.
- your installer will organise commissioning of your boiler. Should you experience any difficulty locating an engineer our service department may be able to provide you with the name of an engineer in your area.

"Benchmark" Installation, Commissioning and Service Record Log book

Please ensure that your installer has completed all sections of the log book. The details in the log book will be required in the event of any warranty work. Ensure that the service record is completed.

WARRANTY

Your HRM boiler is under warranty for 2 years from the date of installation.

Warranty conditions

- The boiler must be installed and commissioned in accordance with our handbook.
- The boiler must not be repaired, modified or tampered with by any person not authorised by HRM.

EXTENDED WARRANTY

The **"Benchmark" and warranty registration document inside the rear cover** should be completed as appropriate by your installer / engineer, this is your record that the boiler has been correctly installed in accordance with our recommendations. Return the copy to HRM in order to qualify for a **further 3 years warranty** of the heat exchanger - **a total of 5 years**.

Extended warranty conditions

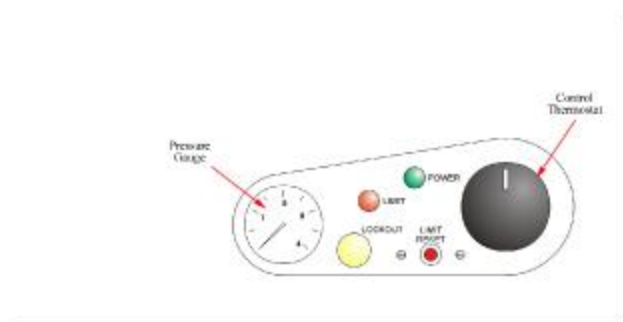
- The boiler must be serviced annually and maintained in accordance with the handbook. A "Benchmark" service log is located on the inside rear cover of this book.
- This warranty is in addition to your statutory and other legal rights.

AFTER SALES SERVICE

- If your boiler fails during the warranty period contact your installer, who will be able to identify the cause of the problem. If appropriate, your installer will contact us.
- Under no circumstances should "in warranty" work be undertaken without authorisation from our service department.
- If you are unable to contact your installer please contact our service department. Please quote your boiler's serial number when phoning - this can be found on the cover of this handbook and below the control panel inside the boiler.

BOILER CONTROLS

Control panel



Temperature control thermostat

The control thermostat regulates the temperature of the water within the boiler.

The recommended settings are "MAX" for heating and hot water and "MIN" for hot water only.

Do not operate the boiler below the minimum setting, this will induce corrosion and reduce the life of the boiler.

Boiler overheat (limit) thermostat

If the boiler overheats the reset button will trip and cut the power supply to the boiler. Allow the boiler to cool then press the reset button to reset the thermostat. To gain access to the reset button, switch off the power supply and remove the white casing.

IMPORTANT - If overheating occurs, other than very occasionally, consult your installation engineer. There may be a fault with the central heating system.

Power neon lamp

The lamp is illuminated when there is power to the control thermostat, and the control system (time clock) is calling for heat.

Limit neon lamp

The lamp is illuminated when there is power to the controls, but the boiler has overheated, when the limit reset is pressed this lamp should extinguish.

Lockout neon lamp

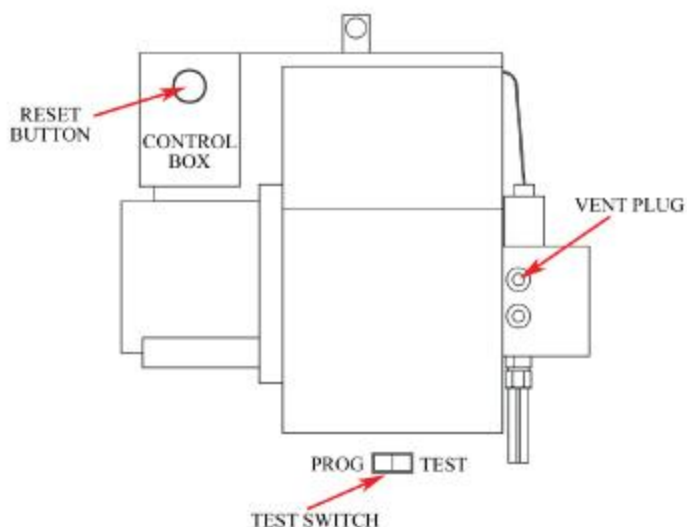
The lamp is illuminated when there is power to the controls, but the burner has not fired correctly. When the lockout reset is pressed this lamp should extinguish. The lamp is also a switch which acts as an alternative to pressing the reset on the burner itself.

IMPORTANT - Consult your service/installation engineer if the burner frequently locks out. There may be a fault with the burner.

Pressure Gauge

The heating system should be pressurised to approximately 1 bar when cold. Check the pressure occasionally, as loss of pressure may cause the boiler to overheat. Please refer to note 7 in the installation procedure section for instructions on pressuring the system.

Burner lockout



The burner is equipped with a flame failure device. When activated the reset button on the burner control box panel is illuminated. Refer to the fault finding section of the handbook to identify possible causes.

The test switch is provided for the service engineer, in normal operation the switch should be left in the PROG position.

Switching the boiler on

- Turn on the oil supply
- Switch on the mains supply
- Set the timer control to “on”
- Set the boiler control thermostat to the required setting

Switching the boiler off for long periods

- Have the boiler serviced
- Switch off the mains supply
- Turn off the oil at the tank

Oil delivery

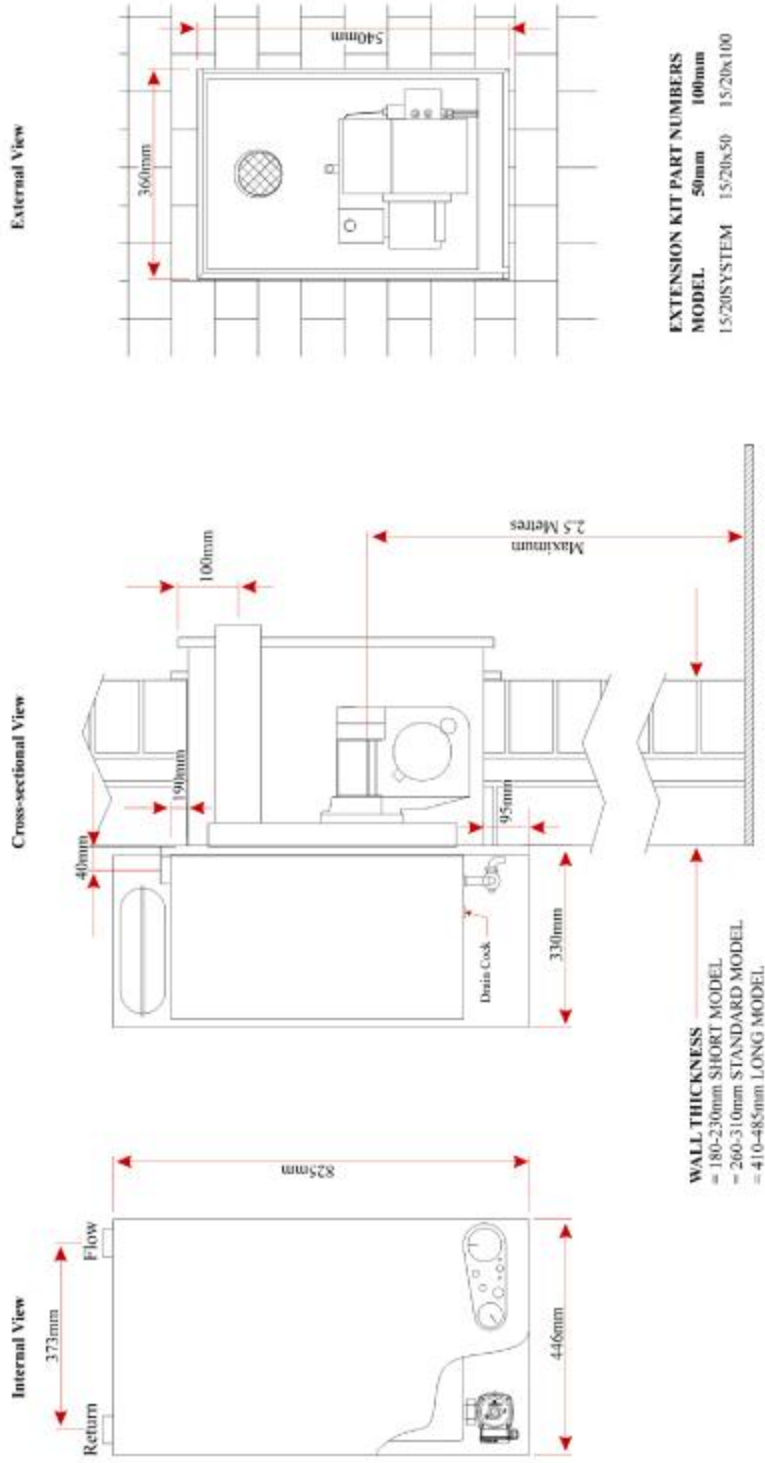
Switch the boiler off during an oil delivery; wait for a short period before switching the boiler back on to allow sediment in the bottom of the tank to settle.

Maintenance

Your boiler should be serviced annually. Failure to have this done will invalidate your warranty and also lead to inconvenient breakdowns. A “Benchmark” service log is provided inside the rear cover of this handbook.

If you have difficulty in locating a service engineer, please contact our service department who may be able to provide you with the name of an engineer in your area.

TECHNICAL SPECIFICATIONS - BOILER DIMENSIONS



NOTES

1. ALLOW 100mm CLEARANCE ABOVE CASING FOR ACCESS TO CASE RETAINING SCREWS.
2. FOR A WALL THICKNESS BELOW 180mm EITHER CONSTRUCT STUDWORK ON THE INSIDE FACE OF THE WALL OR ALLOW THE BOILER TO PROTRUDE EXTERNALLY.
3. ALLOW 10mm CLEARANCE EITHER SIDE OF THE INTERNAL WHITE CASING.
4. ALLOW SOME CLEARANCE UNDER THE CASING TO ACCESS THE ACCESS FLAP

TECHNICAL SPECIFICATIONS

Maximum operating pressure:	3bar (43.5psi) static head 30.59 metres (100 feet)
Operating temperature:	60°C to 80°C Maximum
Resistance to water flow:	@10°C temperature rise across the boiler = 35mm W.G.
Thermostats:	Control thermostat range = 58-88°C Limit thermostat, manual reset, set point = 110-6°C
Electrical supply:	230V single phase 50Hz, fused 5amp.
Burner:	Sterling 40
Fuel:	Class C2 (28 second kerosene).
Oil supply connection:	1/4" BSP
Water capacity:	19.25 litres.

BURNER SETTINGS

BOILER MODEL		15/20 SYSTEM		
OUTPUT	Btu/h	54,600	61,400	68,200
	kW	16	18	20
NOZZLE	US-GPH Size & Type	Danfoss 0.50 x 80° EH	Danfoss 0.55 x 80° EH	Danfoss 0.65 x 80° EH
OIL PRESSURE	BAR	8	8.25	7.25
	PSI	115	120	105
FIRING RATE	Kg/hr	1.5	1.69	1.86
	Litres/hr	1.9	2.14	2.35
AIR SETTING	Scale	5.5	6.5	7.5
SMOKE NO	Bacharach Scale	0	0	0
CO2	%	11	11.5	11.5
FLUE GAS TEMP.	Less Ambient °C	140	150	160
SEDBUK	Band	-	-	C
SEDBUK	Rating	-	-	85.7
EFFICIENCY NETT	B.E.D. Test	-	-	92.4

BOILER INSTALLATION

REGULATIONS

The installation of oil fired boilers must comply with the following Standards and Codes of Practice.

BS 5410 - Part 1	Oil installations up to 45kW
BS 5449	Forced circulation hot water central heating systems for domestic premises
BS 4543 - Part 1 & 3	Factory made insulated chimneys
BS 7593: 1992	Treatment of water in hot water central heating systems
Building Regulations	Part L1 Part J 2002 England and Wales, Part F Scottish Regulations and Technical Booklet L Northern Ireland
BS 7671: 1992	Electrical Regulations

BOILER SIZING

It is important to establish the correct size of boiler required. Boiler output will depend on a number of factors including:

- the preferred room temperatures
- the design winter temperature
- structural and ventilation heat losses
- domestic hot water requirements

This is a complicated calculation. We recommend you employ the services of a heating engineer, who will determine the correct size of boiler required for your property.

REFURBISHING AN OLD SYSTEM

WARNING! - BEFORE INSTALLING A NEW BOILER:

The system should be chemically cleaned to remove debris, in the form of black magnetite sludge and lime scale that accumulates in radiators and pipe work. Failure to do this will result in debris adhering to the clean surfaces of a new boiler, causing kettling or knocking noises. It also prohibits efficient heat transfer. A cleanser such as Fernox Superfloc should be added to the system 48 hours prior to changing the boiler.

SYSTEM PROTECTION

After installation

Flush the system with a cleanser such as Fernox Superfloc to remove traces of flux residues, grease, metal swarf, solder pieces and oils used during component manufacture.

After flushing

Add a corrosion inhibitor such as Fernox MB-1. This will minimize the chemical action and chemical change that takes place in the system's primary water and system components.

Note. The manufacturer's usage instructions for chemical cleaners and inhibitors should always be followed. Please refer to BS7593 1992 for a detailed explanation of cleansing procedures.

BOILER LOCATION

Noise levels - consideration should be given to the following:

- small rooms will accentuate noise levels
- where a flue terminates near the boundary of an adjoining property, consideration should be given to possible noise disturbance as some people are sensitive to even low noise levels.

Roof space, bathroom and bedroom installation should only be considered where there is no alternative.

WALL CONSTRUCTION

The boiler must be installed in a suitable load bearing external wall.

For walls constructed of timber, Stramit or similar material, the structural material must support the weight of the boiler when filled with water. A stud work frame should be constructed when appropriate.

It is not necessary to construct a heat barrier around the wall duct.

Where the external cladding is of weatherboard or similar, construct a "picture frame" for the wall duct trim to seat against.

WALL THICKNESS

The standard Wallstar models are designed to fit through exterior walls 260-310mm thick but for walls of differing thickness it is still possible to install and benefit from a Wallstar boiler.

- The short flue version is suitable for 180-230mm thick walls. For a wall below 180mm, either construct stud work on the internal face of the wall or allow the boiler to protrude externally.
- For thicker walls between 410 and 485mm a long version is available in each model. Walls that fall outside this measurement range may require a 50mm or 100mm wall duct and flue extension kit meaning the Wallstar can be fitted through walls up to 585mm (23") thick.
- The 50mm and 100mm kits can be used in order to extend the length of the wall duct and flue.

IMPORTANT - Be sure to measure your wall thickness before purchase!

WALL DUCT AND FLUE EXTENSION KIT OPTIONS

Notes. Only one extension kit per boiler is permitted (see part nos. below).

The extension kit is fitted at the wall plate / interior end of the supplied wall duct. It cannot be fitted at the access door / exterior end of the wall duct.

DESCRIPTION	SIZE	PART CODE
Wallstar 15/20 duct and flue extension	50mm (2")	15/20X50
Wallstar 15/20 duct and flue extension	100mm (4")	15/20X100

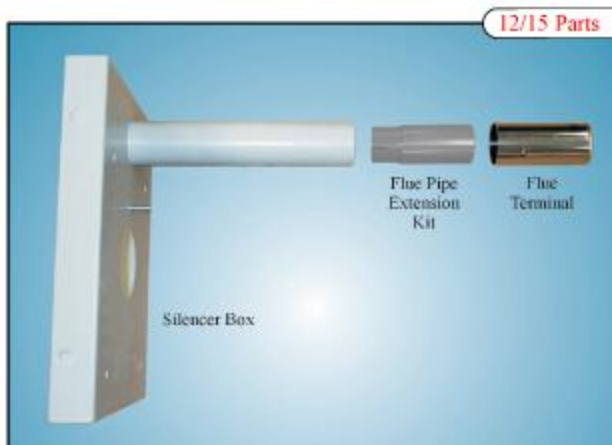
WALLDUCT AND FLUE EXTENSION KIT ASSEMBLY INSTRUCTIONS

The wall duct should protrude from the outside wall by a minimum of 30mm to allow sufficient air to be drawn in by the burner.



Extending the wall duct

1. Remove the wall duct from the wall plate.
2. Fit the extension piece to the wall duct using the screws and nuts provided
3. Refit the extended wall duct to the wall plate using the original screws and nuts.



Extending the flue pipe

1. Remove the screw holding the stainless steel flue terminal in place.
2. Pull the terminal off and replace with the flue pipe extension kit provided.
3. Refit the stainless steel terminal and secure using the original fixing method.

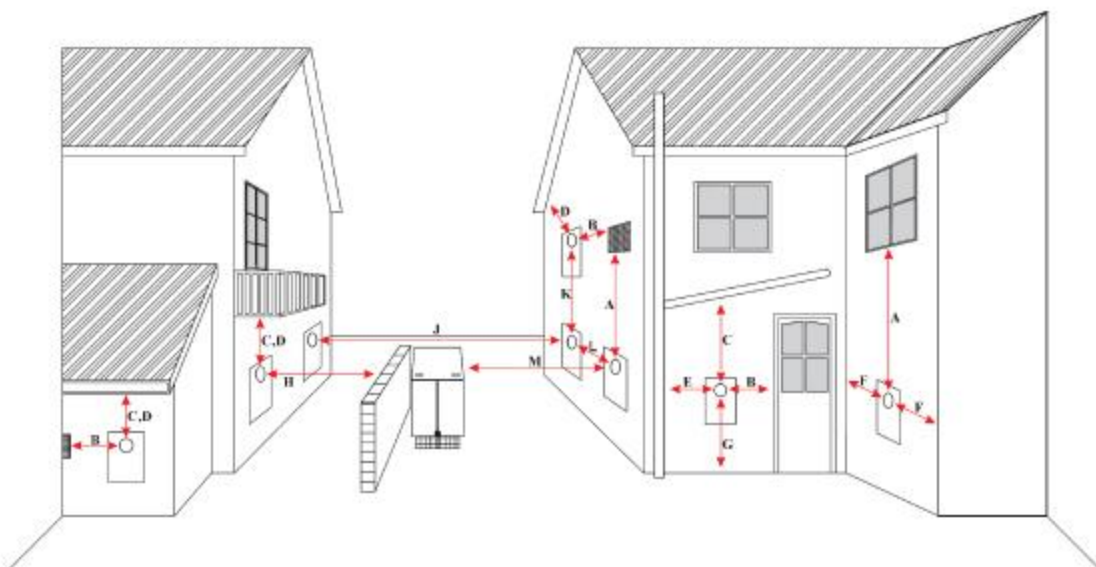
WALLSTAR ACCESSORIES



Terminal guards

It is recommended that a terminal guard is fitted in situations where the flue height is less than 2 metres. HRM's custom-made stainless steel flue terminal guard comes in one size to fit all Wallstar models and is quickly and easily installed with no drilling or screwing required.

FLUE TERMINATING POSITIONS



A	Directly below an opening. (air brick, window, etc).	600mm
B	Horizontally to an opening. (air brick, window, door, etc).	600mm
C	Below a gutter, eaves or balcony with protection (note 2).	75mm
D	Below a gutter, eaves or balcony with out protection.	600mm
E	From vertical sanitary pipework.	300mm
F	From an internal or external corner.	300mm
G	Above ground or balcony level.	300mm
H	From a surface or boundary facing the terminal.	600mm
J	From a terminal facing a terminal.	1200mm
K	Vertical from a terminal on the same wall.	1500mm
L	Horizontally from a terminal on the same wall.	750mm
M	From an oil tank.	1800mm

Information from BS5410: Part 1: 1997 and The Building Regulations: Approved Document J.

Notes.

1. Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.
2. Where a flue is terminated less than 600mm away from a projection above it and the projection consists of plastics or has a combustible or painted surface, then a shield of at least 750mm should be fitted to protect these surfaces.
3. If the lowest part of the terminal is less than 2m above the ground, balcony, flat roof or other place to which any person has access, the terminal should be protected by a guard.
4. Where a flue terminates near the boundary of an adjoining property, consideration should be given to possible noise disturbance as some people are sensitive to even low noise levels.

FUEL SUPPLY SYSTEM

Oil tank

We recommend the use of plastic oil tanks as they require less maintenance than steel tanks and are longer lasting.

A bunded oil tank may be required on any environmentally sensitive site where spillage of oil could pollute rivers, ponds, or any other water courses. **Reference should be made to the: Control of Pollution (Oil Storage) Regulations 2001.**

A concrete base 100mm high is sufficient support for the tank. Alternatively use paving slabs of 42mm thickness. Ensure enough clearance is provided to allow removal of the oil filter bowl.

OIL SUPPLY

Fuel tank below the burner

The fuel pump can lift fuel to a height of 2.5 metres. A two pipe system or a deaerator (Tiger loop, 3K or similar) is not required. For heights above 2.5 metres, please consult our technical department.

Pipework

Soldered fittings should not be used, as the joints will fail in the event of fire. Flux deposits may damage the pump and fuel may deteriorate the solder within the joint. Galvanised pipe and fittings must not be used. The aggressive action of the fuel will erode the zinc and damage the fuel pump.

Keep the number of pipe joints to a minimum, form bends rather than using compression fittings.

Jointing compounds

Jointing compounds should be used with care. Excessive amounts can cause blockages, and fragments may cause failure of the fuel pump or the non-return valve. We recommend the use of a non-setting PTFE liquid pipe sealant.

Automatic isolation of the fuel supply in the event of fire

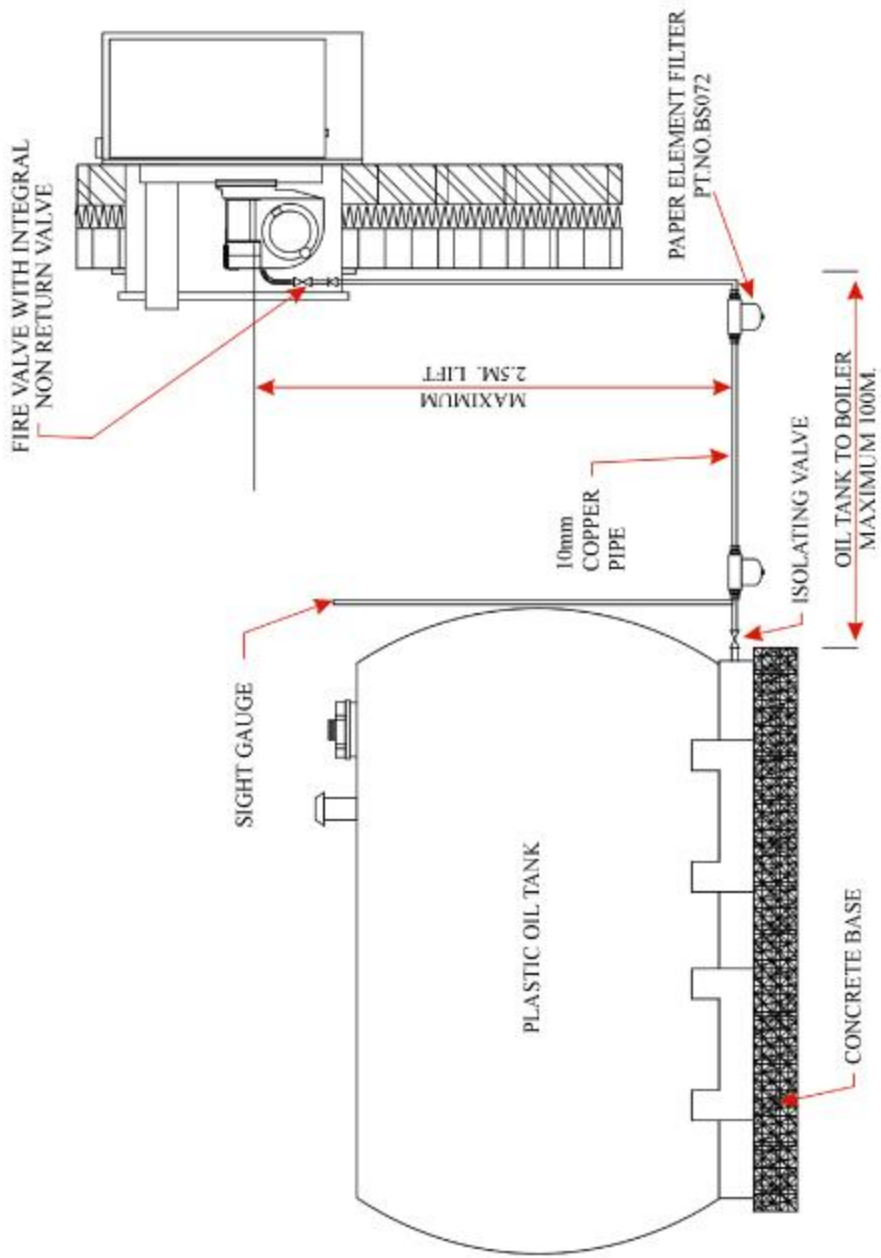
In accordance with Document J of the Building Regulations we provide "a means of automatic isolation of the fuel supply" in the form of a fusible hand wheel fire valve.

In the majority of installations fuel supply is under suction, i.e. the burner is above the oil level in the tank. For installations where the oil level is above the burner we recommend the installation of a remote acting fire valve in accordance with BS5410 Part 1, 1997.

Oil filtration

The paper element filter supplied must be installed adjacent to the boiler. Where a steel oil tank is installed we recommend a further paper element filter is also fitted adjacent to the oil tank, replacement elements are available (Pt. No. BS076).

FUEL SYSTEM SUPPLY DIAGRAM



INSTALLATION PROCEDURE

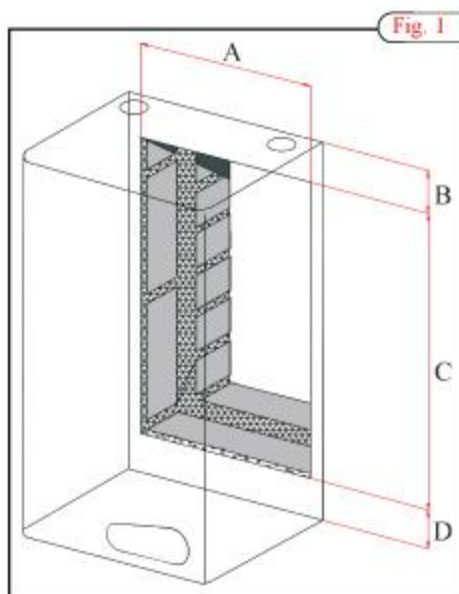
Unpack the boiler, remove the burner and silencer box from the heat exchanger.

1. CUT A HOLE IN THE WALL

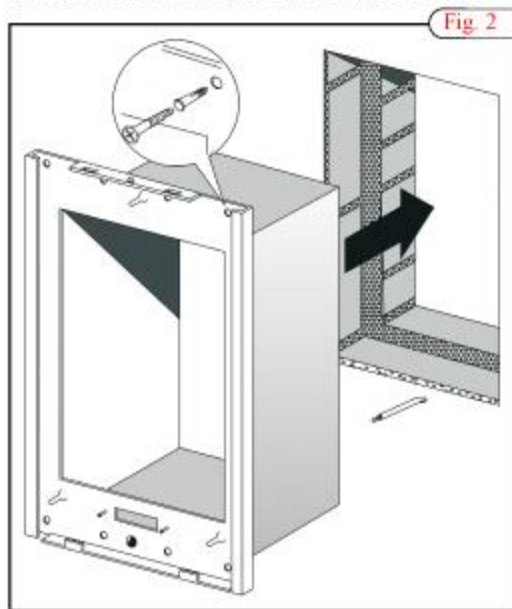
Dimension	A	B	C	D
15/20 System	380	180	560	85

Hole sizes stated allow for a 10mm clearance around the wall duct.

For 15/20 System, allow 75mm clearance above the casing, for access to the case retaining screws.



2. WALL PLATE AND DUCT ASSEMBLY



Drill through the holes in the wall plate and wall duct, and secure the assembly to the interior wall using the eight wall plugs and screws provided. (See Fig. 13 and Fig. 22 at the back of this manual).

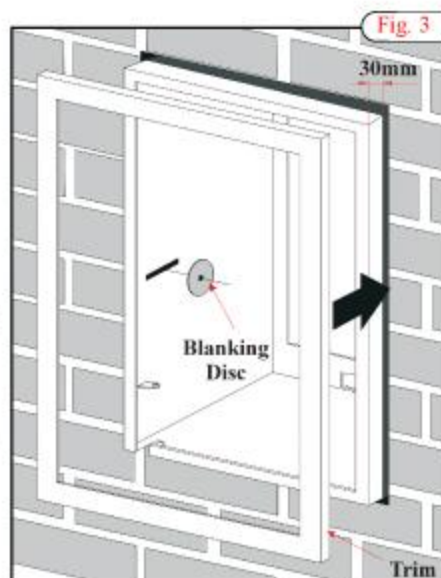
If the wall is uneven, avoid distortion of the wall plate. Place packing behind the wall plate, ensure the rubber foam on the rear of the wall plate forms an air tight seal against the wall. Use silicone sealant to fill any gaps if necessary.

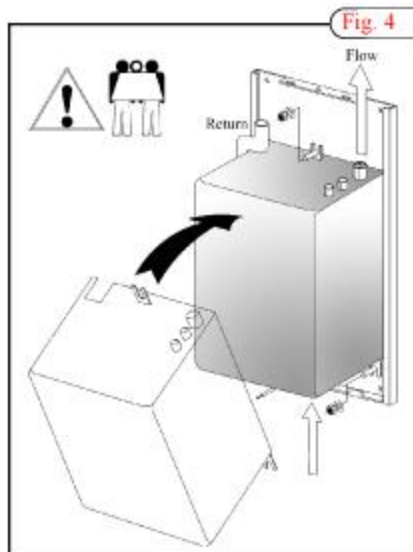
3. WALL DUCT TRIM

Secure the trim with the blanking discs and screws provided. (See Fig. 22 at the back of this manual).

Note. The wall duct must protrude a minimum of 30mm from the face of the wall. If it is less than this an extension kit should be fitted. (See Page 9-10).

Do not recess the trim into the wall, as this will restrict combustion air supply.





4. HEAT EXCHANGER

Fit 1" BSP pipe fitting to the flow socket and a drain cock to the 1/2" BSP socket.

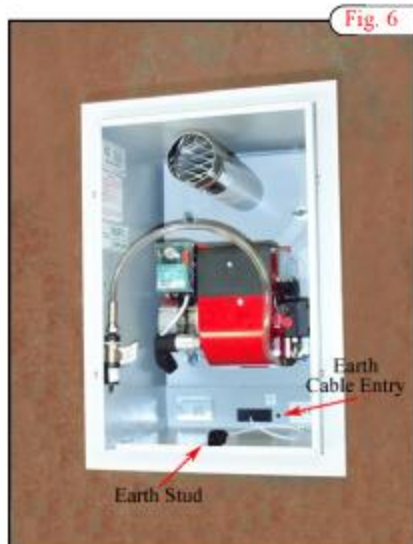
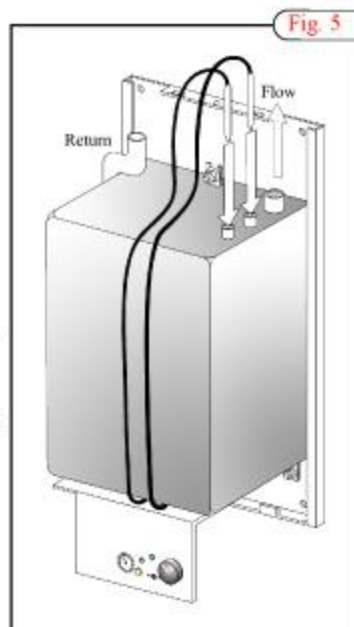
Lift the heat exchanger into position, secure with nuts and washers provided. Re-fit expansion vessel.

Safety: The heat exchanger is heavy, two people will be required to lift it into position.

5. CONTROL PANEL

Fit the control panel onto the wall plate and place the thermostat phials into their pockets. (Fig. 5).

Safety: Ensure the thermostat capillary tubes are kept clear of any possible electrical contact on the control panel.



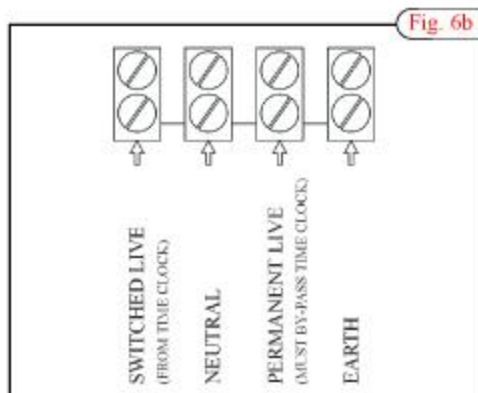
6. ELECTRICAL CONNECTIONS

A 20mm hole is provided in the wall plate for concealed cable entry. Alternatively use plastic ducting to either of the 20mm gromets at the base of the wallplate

The earth bonding cable can be passed through an 8mm hole, adjacent to the test switch, and secured to the 6mm stud provided in the wall duct.

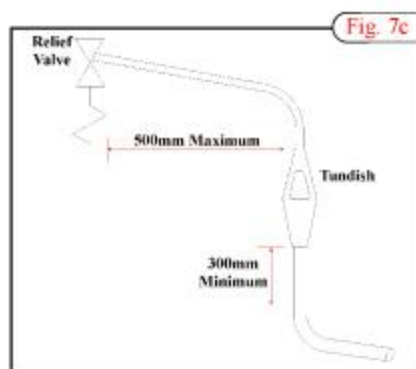
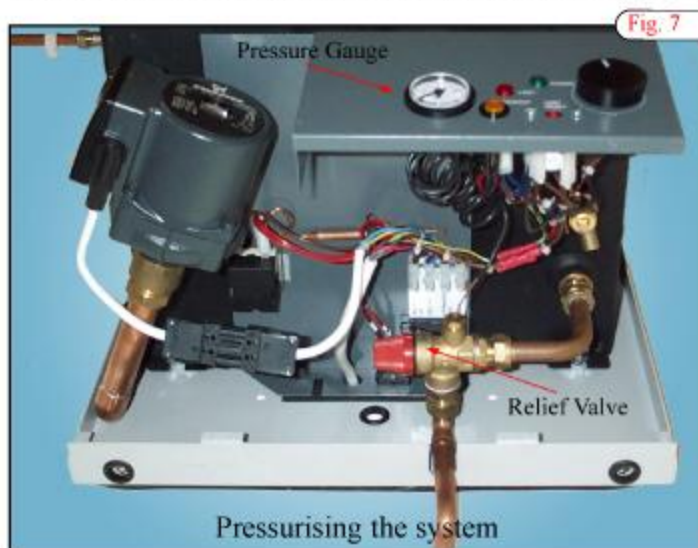
Note. The power supply to the boiler should be fitted with a 5 amp fuse. The electrical supply to the boiler should be made via a switched and fused spur located near the boiler, fitted with a 5 amp fuse.

A frost thermostat is fitted as standard to protect the boiler. Where appropriate an additional frost thermostat may be required to protect the rest of the heating system.



7. PRESSURE RELIEF VALVE

The flow from the pressure relief valve should be plumbed away as shown in figure 7.



Note. A Tundish must be installed in accordance with Building Regulations: G3.

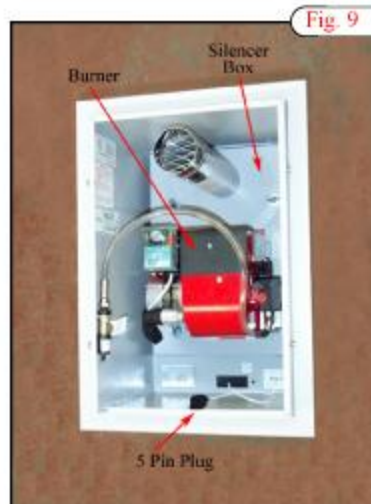
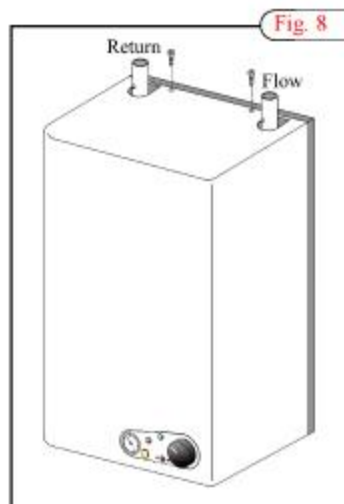
Filling the system

Open the filling loop valve and pressurise the system until 1 bar is showing on the gauge.

It may be necessary, initially, to repeat this operation a number of times in order to fill the system correctly.

8. FIT THE WHITE CASING

Lift the cover into position, ensure the tabs and slots are aligned, tighten the retaining screws.



9. SILENCER BOX AND BURNER

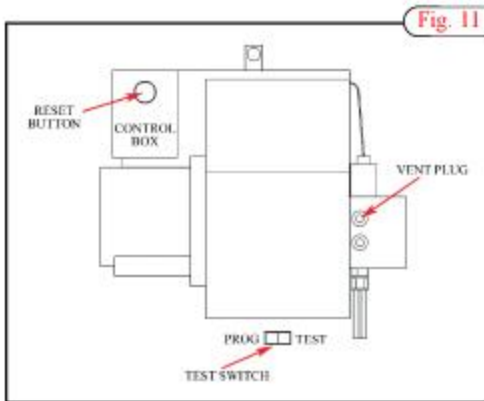
Fit the silencer box and burner. Connect the 5-pin plug and socket.

10. CONNECT THE FUEL LINE

Fit the paper element filter, that now comes included in the fitting kit. Gauze strainers commonly used do not provide adequate protection. (1/4" filter Pt. No. BS072).

Do not use soldered or galvanised fittings.

Please refer to page 12/13 of this handbook for oil tank installation recommendations.



11. PRIMING THE BURNER

Ensure both power and fuel supplies to the boiler are switched on. Press the reset button, the burner will start its firing sequence. To release air from the oil line slacken the vent plug during this period. If ignition fails the burner will go to lock out. Wait 60 seconds and repeat the procedure.

12. TEST THE FUEL SUPPLY

With the burner running, check the fuel supply for air leaks. It is normal for a static air bubble to remain at the highest point of the oil line, but a continuous stream of bubbles through the oil line indicates that air is being drawn in. This must be cured before proceeding.

13. COMMISSIONING THE BOILER

Installation is complete. The boiler must now be commissioned by a competent engineer. The "Benchmark" log book should be completed and warranty documentation returned to HRM Boilers Ltd.



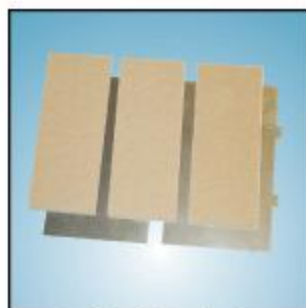
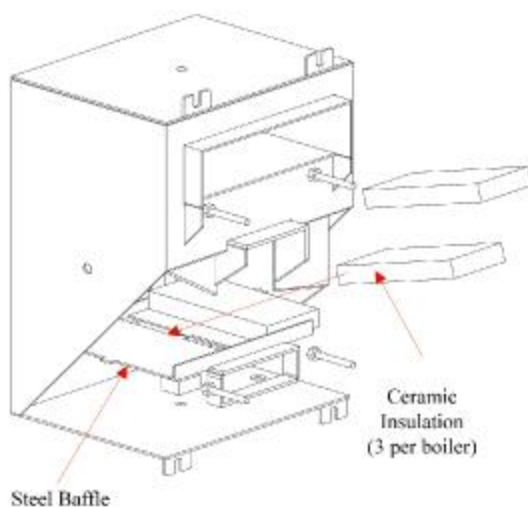
BOILER MAINTENANCE

The boiler should be serviced annually. Should you experience any difficulty in locating an engineer our service department may be able to provide you with the name of an engineer in your area.

WARNING! ISOLATE THE POWER SUPPLY BEFORE SERVICING THE BOILER.

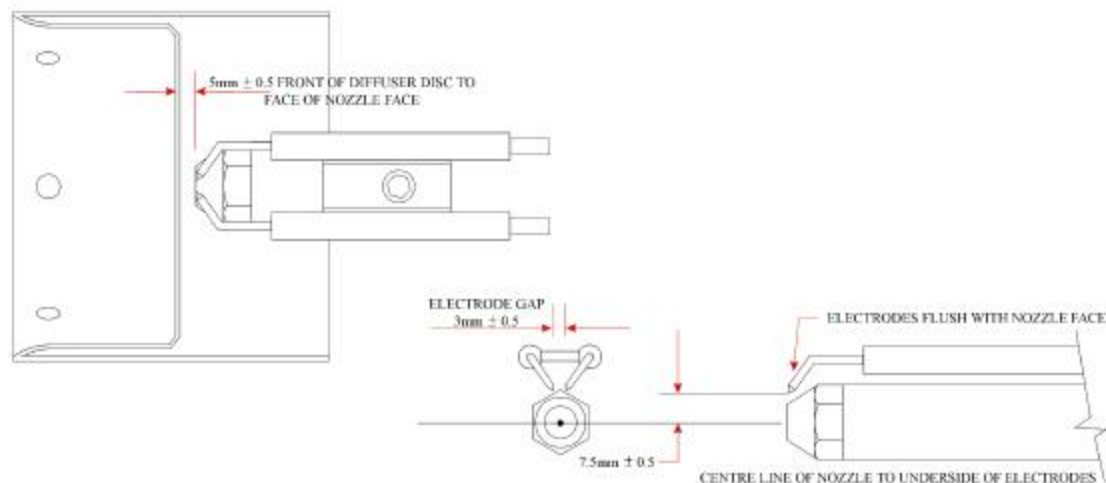
1. Remove the burner and combustion chamber baffles, clean the internal heat exchanger surfaces and components.
2. Check and replace seals and gaskets as appropriate.
3. Clean/replace filter elements and de-sludge the oil tank.
4. Dismantle the burner assembly and clean. Fit a new nozzle.
5. Check the oil pressure and flue gas analysis, adjust the burner settings as appropriate.

BAFFLE REMOVAL

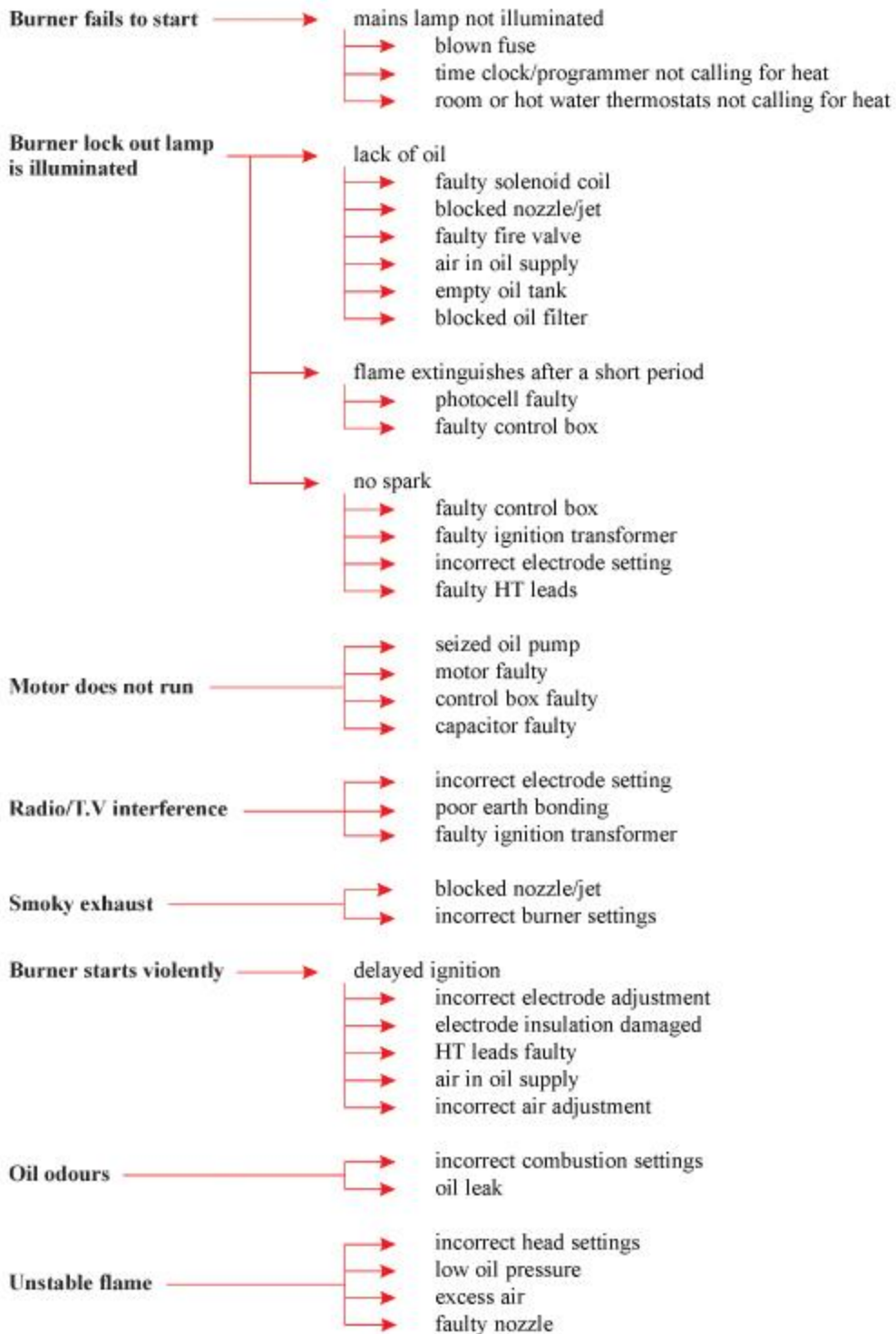


Baffles & Insulation

BURNER HEAD SETTINGS

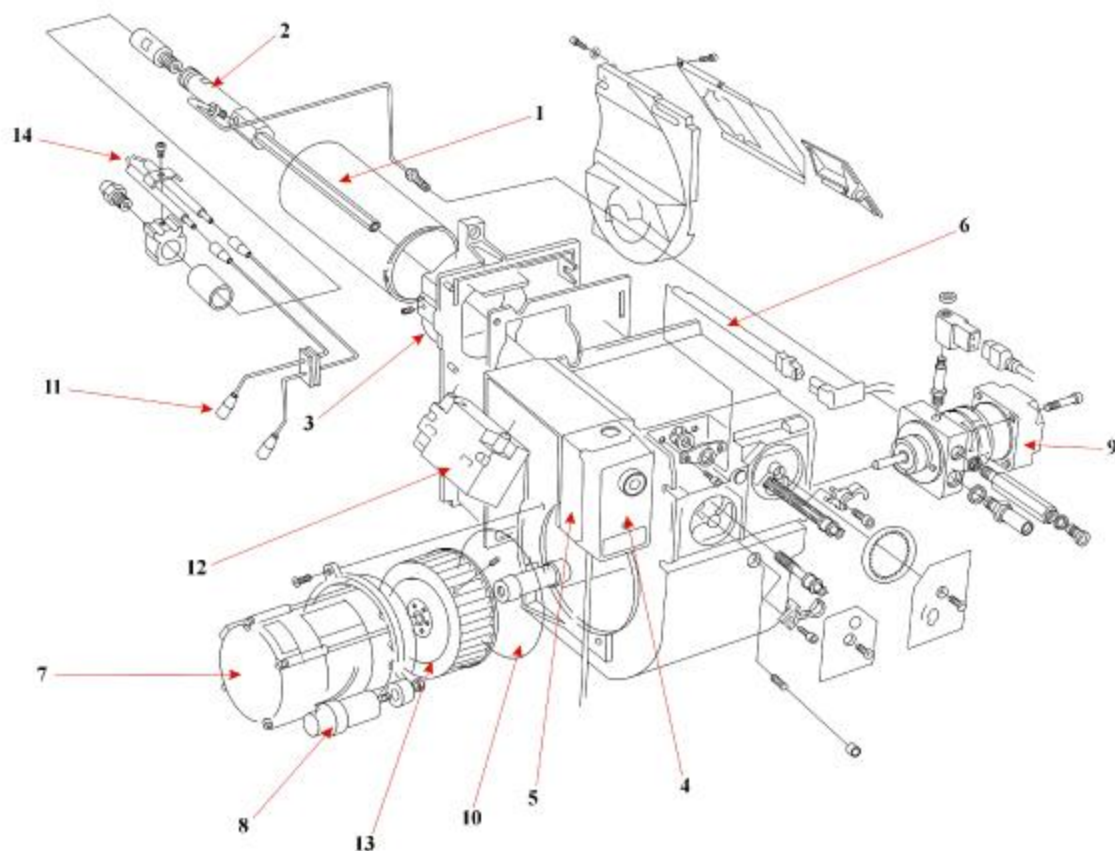


FAULT DIAGNOSIS



PARTS LIST/COMPONENT IDENTIFICATION

STERLING BURNER



ITEM	DESCRIPTION	BENTONE Ref.	PART No.
1	Blast tube 15/20	B03-960-D0212	BS014
2	Nozzle assembly	118-538-01	BS046
3	Intermediate gasket	04-390-120-27	BS047
4	Satronic control box	DK0970	BS041
5	Control box base	390-109-01	BS091
6	Photocell MZ770S	118-00301	BS065
7	Motor	M02-1-90-11	BS050
8	Capacitor	B03-00-118-95201	BS051
9	Danfoss Pump BFP11 L3	117-586-02	BS052
10	Pump coupling	CO-1-00-115-94201	BS064
11	HT leads	B03-00-117-06402	BS054
12	Transformer EB1	115-977-01	BS055
13	Fan 15/20	114-176-04	BS056
14	Ignition electrode (new style one piece)	113-867-01	BS067
	Clear flexible oil line (not shown)	N/A	BS012
	Burner flange gasket (not shown)	N/A	RP021

BOILER COMPONENTS



White Casing
(WA060)



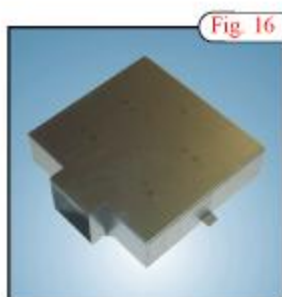
Wall Duct & Wall Plate (WA063)
Std (WA065 - B)
Short (WA065 - A)
Long (WA065 - C)



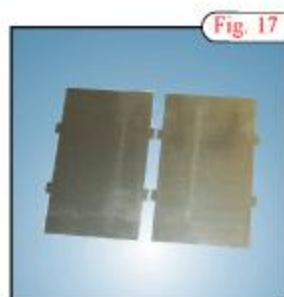
Silencer Box
Std (WA090 - 20)
Short (WA090 - 19)
Long (WA090 - 21)



Silencer Insulation
(WS090 - 17)



Flue Baffles
(WS090 - 22)



Bottom Baffles
(WS090 - 15)



Ceraboard Insulation
(WS090 - 16)



Access Door (Outside) & Wall Trim
(WA061 - A)



Heat Exchanger
(WA140)



Burner
(WA15/20)

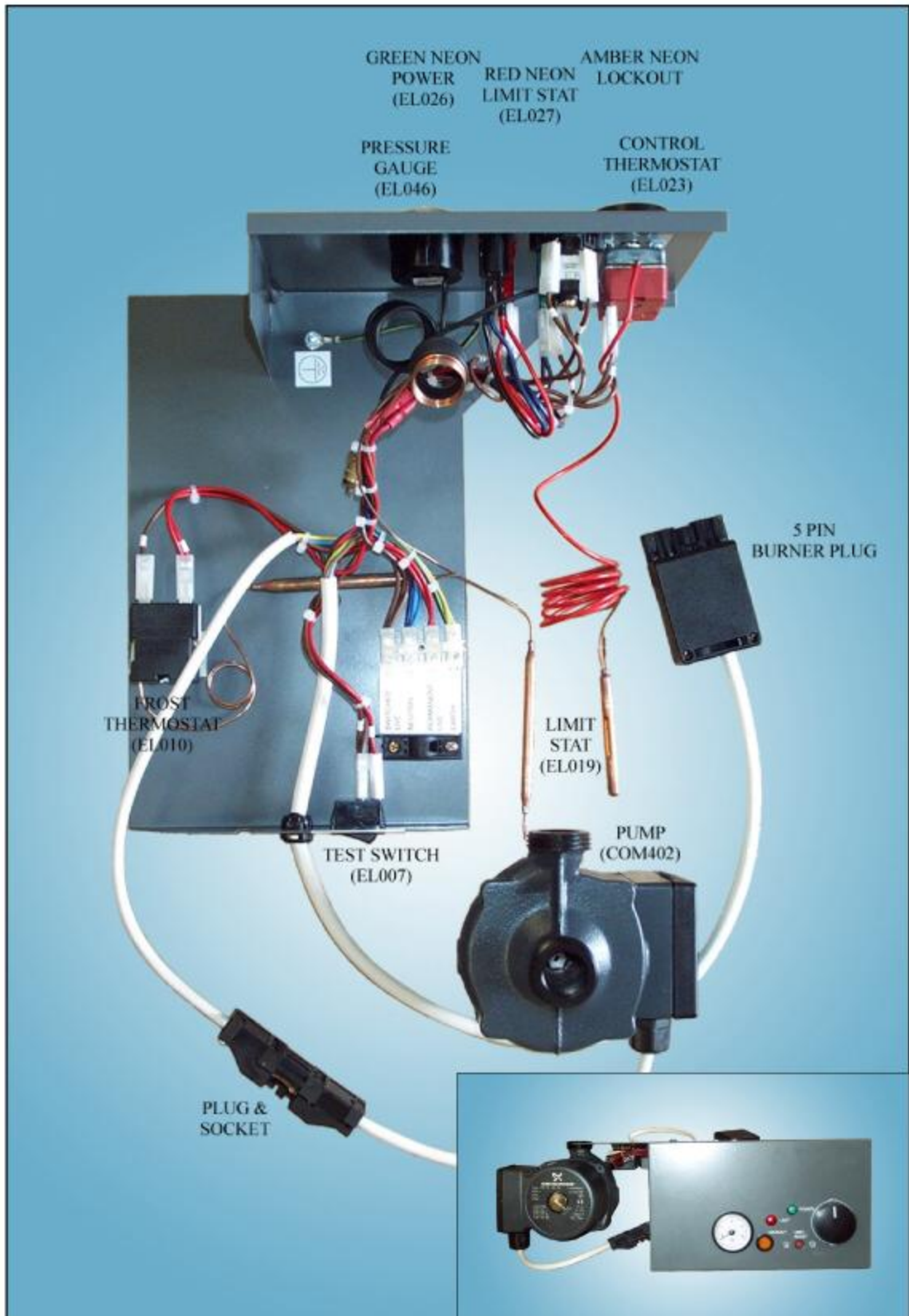


Fixing Kit Set

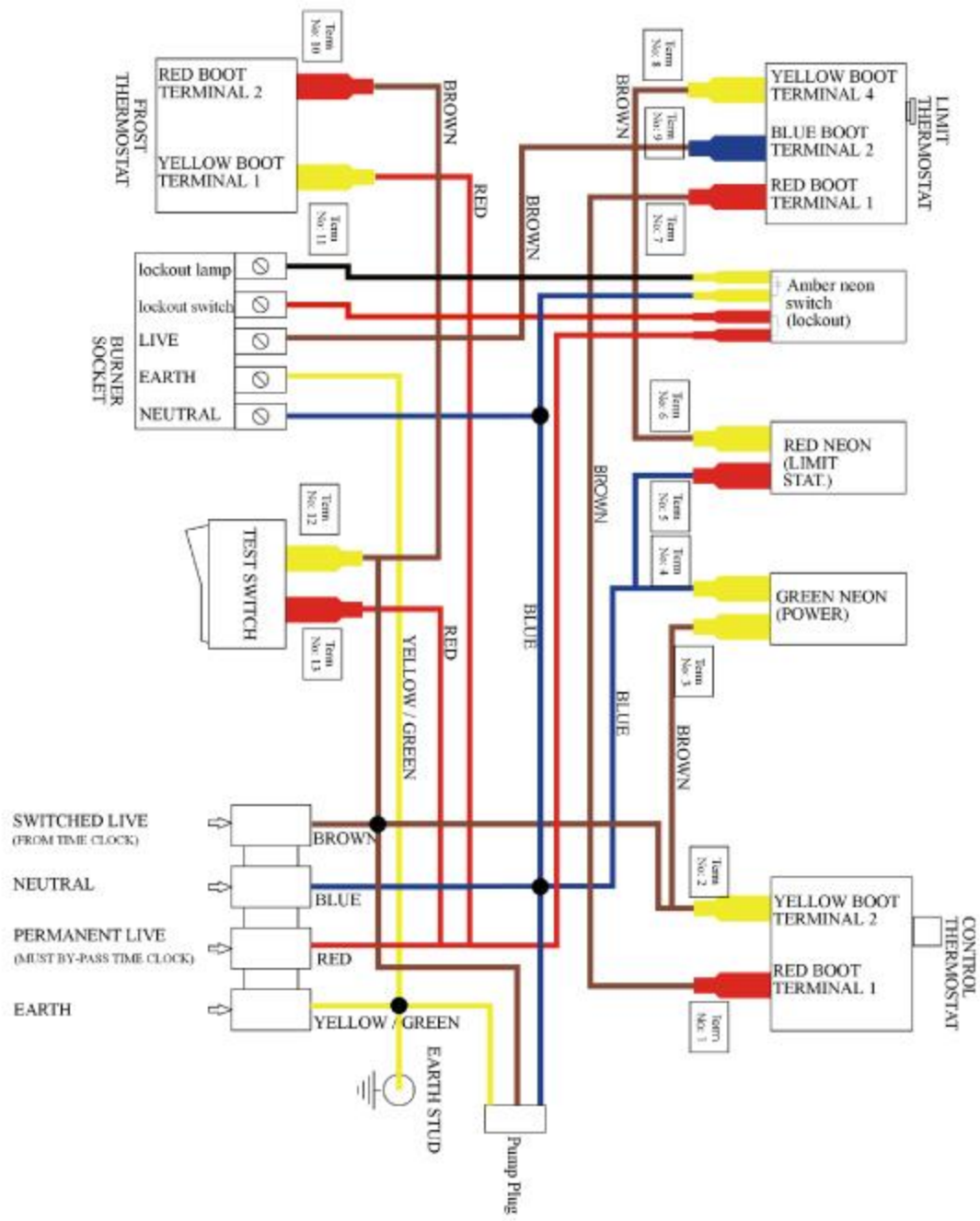


Oil Line, Non Return Valve/Fire Valve & Fuel Filter Element

CONTROL PANEL (WA044)



WIRING DIAGRAM - ISSUE 5



NOTES

