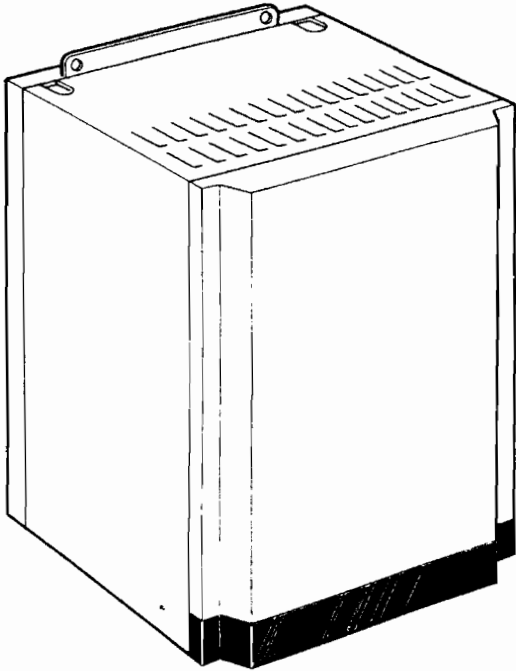


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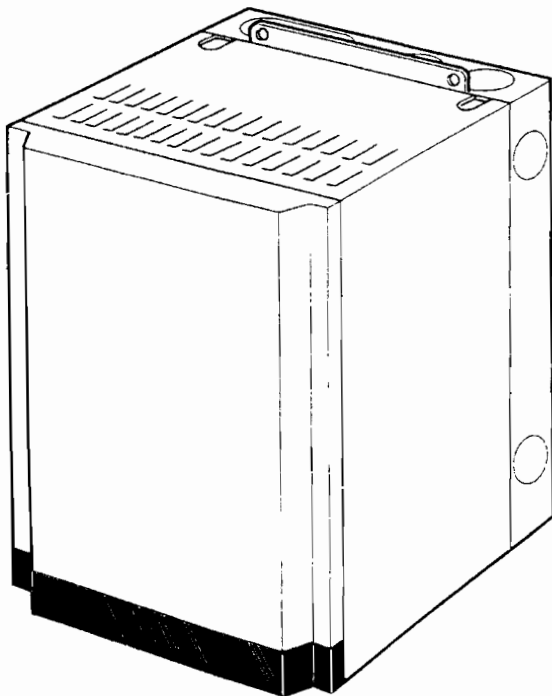


RF

MICROTURBO 402, 502

Installation and Servicing Instructions

Wall Mounted,
Room Sealed,
Fanned Flue,
Gas Boiler



MDF

*Leave these instructions
with the user.*

*This appliance is for use
with Natural Gas only.*

benchmark™

**The code of practice for the
installation, commissioning &
servicing of central heating systems**

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1. Introduction

The Maxol Microturbo is a wall mounted, room sealed, fan flued, central heating boiler designed for ease of installation, with a range of flueing options. The casing is attractively styled and the boiler incorporates the latest in gas appliance technology.

1.1 Features

- Outputs: Microturbo 402 - 11.7 kW (40,000 Btu/h); Microturbo 502 - 14.6 kW (50,000 Btu/h) suitable for most heating and domestic hot water requirements.
 - Size: 300w x 460h x 280d MDF (215d RF). Compact size enables it to be easily fitted into a kitchen unit.
 - Automatic control - Specially designed electronic controls with electronic ignition (no pilot), boiler thermostat and neon display all mounted behind an attractive plinth.
 - Suitable for fully pumped sealed and open vented systems - Overheat thermostat fitted as standard. (Not suitable for gravity systems).
 - Suitable for Thermal Store.
 - 2 Pipe Unbalanced Flueing System. MDF Models: The Pipes may be connected at the top, base or sides of the appliance and in any direction up to 9 metres (straight) or with the introduction of bends which reduce the flueing length by 1.5 metres for 90° and 0.75 metres for 135° Bends, for each bend. R.F. Models: 180mm to 610mm through a rear wall. Pipe diameters are 51mm with unobtrusive flue terminals.
- Suitable for SE Duct and 'U' Duct.
 - Vertical flue kits available for pitched or flat roof application up to 10 metres and 2 bends.
 - Latest pre-mixed burner technology gives low Nitrous Oxide values - meets all proposed EC requirements and helps reduce acid gas emissions and environmental damage. NOx for Microturbo 402 - 29ppm. Class 4 NOx for Microturbo 502- 17ppm. Class 5
 - Light weight 15.5Kg (34 lb) - High efficiency copper heat exchanger.
 - The appliance meets all the essential requirements of the Gas Directive and carries the CE Mark.

2. Safety and General Information

2.1 General Safety

Prior to installation ensure that the local distributions conditions (nature of gas and gas pressure) and the adjustment of the appliance are compatible. The adjustment conditions are stated on the data badge.

This appliance shall be installed and connected in accordance with the current installation regulations. Particular attention should be given to the relevant requirements regarding ventilation. In the United Kingdom the installation must be in accordance with the regulations and codes of practice as detailed.

- **Current Gas Safety Regulations (Installation & Use)** - The installation of this appliance must be carried out by a competent C.O.R.G.I. registered person in accordance with the above regulation, Local Building Regulations, Building Standards (Scotland) Regulations, current I.E.E. regulations on wiring, BS 7671, the Bye laws of the Local Water Undertaking, Health & Safety Document No. 635 "The Electricity at work regs. 1989".

It should also be in accordance with the relevant recommendations of the following British Standard Codes of Practice.

BS 5440 Pt. 1	Flues (for gas appliances under 60kW).
BS 5440 Pt. 2	Ventilation (For gas appliances under 60kW).
BS 5449	Forced circulation - hot water systems.
BS 5546	Installation of gas hot water supplies for domestic purposes.
BS 6798	Installation of gas hot water boilers for gas appliances under 60kW.
BS 6891	Low pressure installation pipes.
BS 7593	Code of Practice for the treatment of water in CH systems.



The **benchmark** log book supplied with this boiler must be completed by the installer and commissioning engineer, and at service intervals by the service provider. This log book must be kept with the boiler at all times. Failure to comply with the above will invalidate the manufacturers guarantee.

2.2 Water System

- Maximum head** - 30 metres (100 ft.) - with open vent.
- Minimum Head** - 1 metre (3 ft.) (Static).

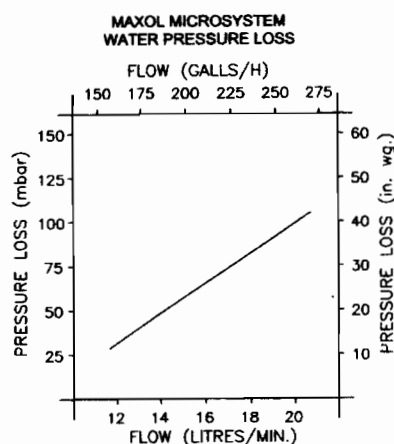


Diagram 2.1

- The hot water cylinder must be of the indirect type.
- Suitable for **fully pumped systems** only.
- System design temperature** - approx. 11°C temperature rise across the boiler under any conditions of use.
- Systems with flow and return pipes dropping to floor level** - The boiler is fitted with an overheat thermostat, but adequate provision must be incorporated to ensure air is vented from the system by an open vent or automatic air vents at the highest positions on the flow and return pipes.
- Bypass**- A bypass must be fitted in 15mm pipe with a valve (not adjustable by the user). Adjust the valve setting to obtain a temperature rise across the boiler of approximately 11°C. This is performed with the system fully heated, starting with the valve almost fully closed with the pump at its optimum speed. The valve is progressively opened to achieve the required temperature rise.
- Pump position** - The pump should be sited in the flow for open vented systems. Isolating valves should be fitted as close to the pump as possible. Pump manufacturers installation requirements must be followed. A suitable pump would be the Grundfos UPS 15/60 or other high head pump.

- i. **Flow and Return Connections** - These are suitable for 22mm copper pipework with compression fittings integral with the appliance. The **flow** is the left hand connection and the **return** is the right hand connection. Both flow and return connections are situated at the top rear of the appliance with the boiler casing.

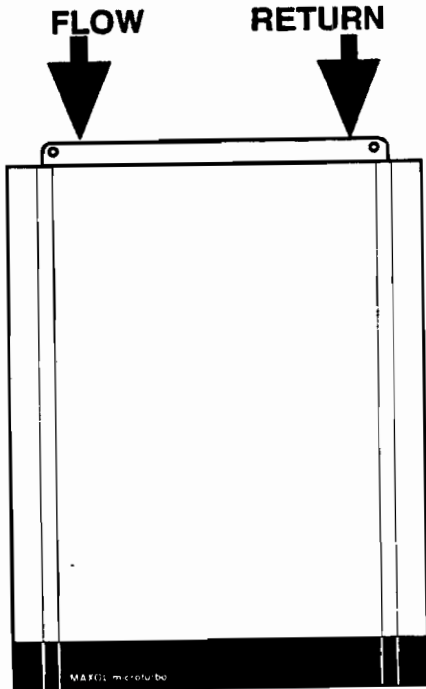
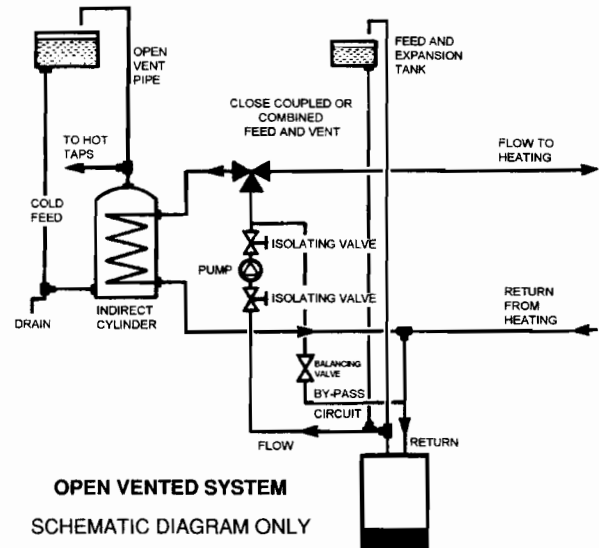


Diagram 2.2

- j. **System Cleaning and Inhibiting** - Before commissioning the appliance it is **essential** to clean all installations in accordance with the procedure set out in BS 7593. This involves the application of a cleanser, circulating it around the whole system for the specified time and flushing to drain. It is important to select a cleanser appropriate to the situation, i.e. for a new installation, or for an existing system where the boiler is being replaced. In the case of boiler replacement it is good practice to clean the system prior to the installation of the new boiler. It is recommended that an inhibitor is added to protect the system. Product should be added in accordance with the manufacturer's instructions at the time of the final fill. We recommend products manufactured by: Sentinel or Fernox.



A close coupled or combined feed and vent pipe arrangement should be connected as in the above schematic.

Diagram 2.3

2.3 Sealed System Requirements

The system must comply with the following British Standards and any local Building Regulations which may apply. BS 6700, BS 6798, BS 5449, BS 7074: Part 1.

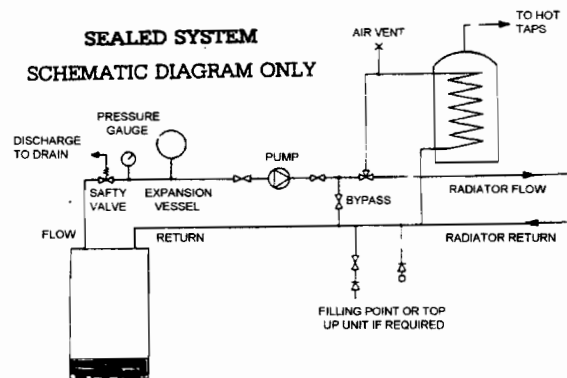


Diagram 2.4

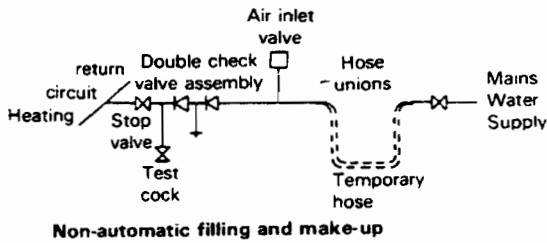
The maximum boiler flow temperature is 82°C (180°C).

The installation should be designed in accordance with the schematic diagram and the following points must be adhered to:

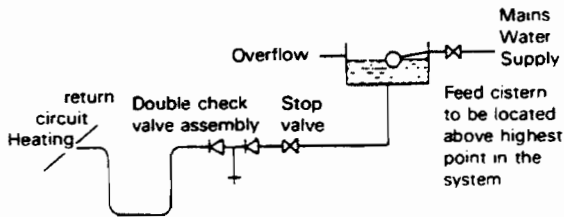
- a. A safety valve shall be fitted on the flow as close to the boiler as possible. No valve or restriction may be placed between the boiler and the valve. The valve must be piped to drain so that any discharge will not cause a hazard to the user, electrical components or wiring. The safety valve must be set to operate at 3 bar. The safety valve shall conform to BS6759.

- b. An expansion vessel conforming to BS4814 shall be fitted and positioned as in the schematic diagram. The method of sizing the expansion vessel can be found in BS5449: Part 1 or BS7074: Part 1 as appropriate. The required basic parameters are water content of the system and the operating pressure. For example with a vessel charge and initial system pressure of 1.0 bar a total system water content of 100 l a vessel volume of 10.9 l will be required. For any system a more accurate calculation of vessel size detailed in BS7074: Part 1, Section 7.2.

FILLING AND MAKE UP DIAGRAM



Non-automatic filling and make-up



Automatic filling and make-up

Diagram 2.5

- c. A pressure gauge shall be fitted in the system preferably in the flow on the suction side of the pump. The gauge, must be capable of measuring 0 to 4 bar and be fitted with an adjustable pointer.
- d. Any method of top up must comply with local water bylaws (see filling and make up diagram).
- e. Air vents should be fitted at any point where air is likely to collect.
- f. Filling methods must comply with local water bylaws. The methods are outlined in filling and make up diagrams.
- g. An indirect cylinder must be used suitable for operation at a pressure of 3.35 bar.

2.4 Air Supply Requirements

If the appliance is mounted in a compartment/cupboard which conforms to the minimum service clearances (See Page 5), no purpose made ventilation is required.

2.5 Gas Supply

Installation pipes should be fitted in accordance with BS 6891. Pipework from the meter to the appliance must be of adequate size. Pipes of a size smaller than the appliance inlet gas connection should not be used.

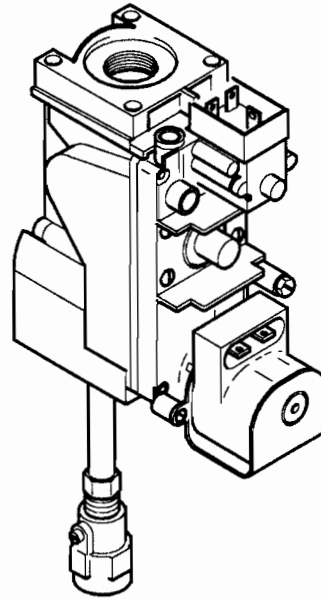


Diagram 2.6

The complete installation including the meter must be tested for soundness and purged as described in the above code. The gas connection to the appliance is Rc 1/2 (1/2 in. BSP) and is situated at the rear of the base at the left hand side.

2.6 Electrical Supply

- a. Wiring external to the appliance must be installed in accordance with current I.E.E. Wiring Regulations and any Local Regulations which apply.

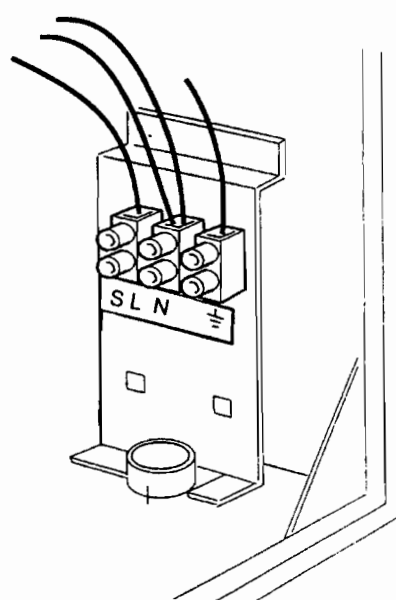


Diagram 2.7

- b. The supply cable must be PVC insulated 3-core 0.75mm (24/0.2mm) to BS 6500 Table 16.
- c. Power consumption of the appliance is 55W (max.). The supply must be 230V • 50Hz fused 3 amp.
- d. Any means for disconnecting the appliance from the electricity supply must have a contact separation of at least 3mm in all poles.
- e. The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations, and in Scotland, the electrical provisions of the Building Regulations in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower. Where a room-sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising electricity should be so situated that it cannot be touched by a person using the bath or shower.
- f. Wiring connection is made through the grommet at the rear of the base at the right hand side.
- g. This appliance must be earthed using the terminals supplied.
- h. An all pole isolating switch with a minimum contact separation of 3mm in each pole must be fitted adjacent to the appliance to facilitate local isolation.

2.7 Technical Data

- a. HEAT INPUT & OUTPUTS.
Microturbo 402.

- b. MDF - 300mm Flue
Nominal heat input = 14.5kW
Nominal heat output = 11.7kW
Burner press (hot) = 6.5mb ± 0.5mb

- c. MDF Max Flue Length
Nominal heat input = 13.63kW
Nominal heat output = 11.0kW
Burner press (hot) = 5.5mb ± 0.5mb

Mean heat output = 40,000 Btu/h

- d. Time for 100L of Gas = 4 min 32 secs.
Time for 1Ft³ of Gas = 77 secs.
CV = 38 MJ/Cubic Metre
Mean gas rate = 1.37M³/hr.

- e. Flue Duct Diameter = 51mm
Projection through wall = 25mm.

- f. Injector RF - 1 x 3.7mm Dia.
Stamped 402
Injector MDF 1 x 3.7mm Dia.
Stamped 402.

- a. HEAT INPUT & OUTPUTS
Microturbo 502.

- b. MDF - 300mm Flue
Nominal heat input = 18.2kW
Nominal heat output = 14.74kW
Burner Press (Hot) = 7.9 ± 0.5mb

- c. MDF Max Flue Length
Nominal heat Input = 17.1 kW
Nominal heat output = 13.85kW
Burner Press (Hot) = 6.9mb ± 0.5mb

Mean heat output = 50,000 Btu/h.

- d. Time for 100L of gas = 3 min 27 secs.
Time for 1Ft³ of Gas = 61 secs.
CV = 38MJ/Cubic Metre
Mean Gas Rate = 1.72M³/hr.

- e. Flue duct diameters = 51mm
Projection through the wall = 25mm.

- f. Injector RF - 1 x 4.05mm Dia.
Stamped 502
Injector MDF 1 x 4.05mm Dia.
Stamped 502.

HEAT INPUT & OUTPUTS

Microturbo 402 RF

Nominal heat input = 14.51kW
Nominal heat output = 11.72kW
Burner press (hot) = 7.5mb ± 1mb

HEAT INPUTS & OUTPUTS

Microturbo 502 RF

Nominal heat input = 18.2kW
Nominal heat output = 14.6kW
Burner press (hot) = 8.1 ± 1mb

GENERAL (402/502)

- a. Core drill diameter required for flues -
65mm MDF
65mm SRF.

- b. Weight - 15.5 kg (34 lb)
Water Capacity - 0.4 l (0.09 gal.)
Static Head - Min. 1m (3ft)
- Max. 30m (100 ft)

- c. Thermostat Settings
Min. (Posn. 1) - 58°C
Max. (Posn. 5) - 90°C
The recommended flow through the boiler is 16 l/minute minimum.

- d. Minimum Clearance Required for Servicing.
Top - 50mm (2 in)
Base - 25mm (1 in)
Sides - 50mm (2 in)*
Front - 600mm (24 in)
5mm (0.21 in) - behind
openable cupboard door.

- e. **Additional Minimum Clearance Required for Flueing (MDF).**
 This clearance depends on the direction of the incoming flue pipes.

Note: If the appliance is to be fitted in a kitchen cabinet see Section 5.2.5.

Flue pipes from: minimum distance to wall or surface

- LHS 250mm between RHS & wall
- RHS 150mm between LHS & wall
- Top 300mm between Top & ceiling
- Bottom 400mm between Bottom & floor.

**Note: The minimum flue length with the MDF is 300mm. This must be taken into consideration when installing the appliance with wall thickness of less than 250mm as the minimum side clearance of 50mm required for servicing will increase correspondingly. E.g. Wall thickness 100mm minimum, clearance is 200mm.*

- f. The data badge is located on the inside of the case and has the information shown on Page 7.
- g. This boiler requires external controls to work at its optimum and prevent wasteful cycling at the boiler thermostat. Maxol recommend a timer control with separate room and cylinder thermostats. The boiler is suitable for use with thermal storage systems also.
- h. Average flue temperatures of the combustion products = 130°C above ambient temperature.
- i. The maximum vertical flue length on the MDF is 1.5 metres to the first 90° bend.

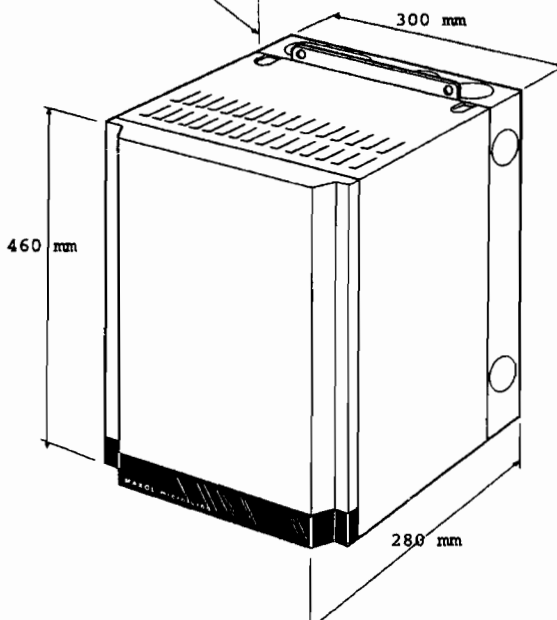
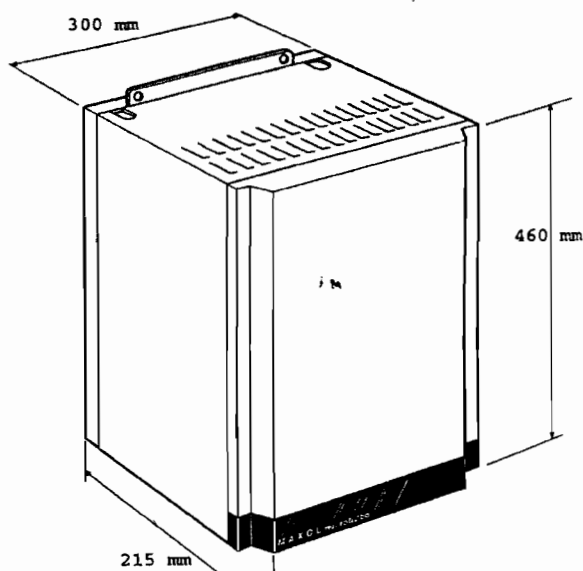
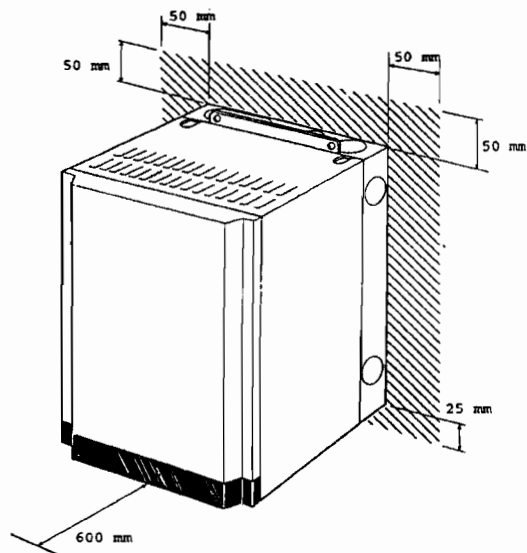


Diagram 2.8

MAXOL	
MICROTURBO 502 RF (REAR FLUE) FANNED FLUED CENTRAL HEATING BOILER Part No: 59375 Issue D.	
GAS INLET PRESSURE: 20mbar.	BURNER PRESSURE: 8.1mbar ±1.0mbar.
ELECTRICAL DATA: 230V~ 50Hz.	NOMINAL INPUT: 18.2kW. NOMINAL OUTPUT: 14.6kW.
NOx value – 17ppm Class 5	
FUSED AT 3A. RATED 55W	INJECTOR: 1 x 4.1mm Dia. – 502
MAXIMUM HEAD: 30m MINIMUM HEAD: 1m	
SERIAL No: 259–	2002 NATURAL GAS ONLY
This appliance is NOT adjustable for heat input.	
Burco Dean Appliances Ltd., Burnley, Lancashire. BB12 6AL.	
CE 86/AO/017 0086	GBIE GAS TYPE CAT. I _{2H} FLUE TYPE CAT. C ₁₂
BED 92/42/EEC GAD 90/396/EEC	

MAXOL	
MICROTURBO 402 RF (REAR FLUE) FANNED FLUED CENTRAL HEATING BOILER Part No: 59388 Issue E.	
GAS INLET PRESSURE: 20mbar.	BURNER PRESSURE: 7.5mbar ±1.0mbar.
ELECTRICAL DATA: 230V~ 50Hz.	NOMINAL INPUT: 14.51kW. NOMINAL OUTPUT: 11.72kW.
NOx value – 29ppm Class 4	
FUSED AT 3A. RATED 55W	INJECTOR: 1 x 3.7mm Dia. – 402
MAXIMUM HEAD: 30m MINIMUM HEAD: 1m	
SERIAL No: 261–	2002 NATURAL GAS ONLY
This appliance is NOT adjustable for heat input.	
Burco Dean Appliances Ltd., Burnley, Lancashire. BB12 6AL.	
CE 86/AP/032 0086	GBIE GAS TYPE CAT. I _{2H} FLUE TYPE CAT. C ₁₂
BED 92/42/EEC GAD 90/396/EEC	

MAXOL	
MICROTURBO 502 MDF (MULTI-DIRECTIONAL FLUE) FANNED FLUED CENTRAL HEATING BOILER Part No: 59387 Issue E.	
GAS INLET PRESSURE: 20mbar.	BURNER PRESSURE: MIN. FLUE 7.9mbar ±0.5mbar.
	BURNER PRESSURE: MAX. FLUE 6.9mbar ±0.5mbar.
ELECTRICAL DATA: 230V~ 50Hz.	NOMINAL INPUT: 18.2kW. NOMINAL OUTPUT: 14.6kW.
NOx value – 17ppm Class 5	
FUSED AT 3A. RATED 55W	INJECTOR: 1 x 4.1mm Dia. – 502
MAXIMUM HEAD: 30m MINIMUM HEAD: 1m	
SERIAL No: 260–	2002 NATURAL GAS ONLY
This appliance is NOT adjustable for heat input.	
Burco Dean Appliances Ltd., Burnley, Lancashire. BB12 6AL.	
CE 86/AO/017 0086	GBIE GAS TYPE CAT. I _{2H} FLUE TYPE CAT. C ₁₂
BED 92/42/EEC GAD 90/396/EEC	

MAXOL	
MICROTURBO 402 MDF (MULTI-DIRECTIONAL FLUE) FANNED FLUED CENTRAL HEATING BOILER Part No: 59389 Issue F.	
GAS INLET PRESSURE: 20mbar.	BURNER PRESSURE: MIN. FLUE 6.5mbar ±0.5mbar.
	BURNER PRESSURE: MAX. FLUE 5.5mbar ±0.5mbar.
ELECTRICAL DATA: 230V~ 50Hz.	NOMINAL INPUT: 14.51kW. NOMINAL OUTPUT: 11.72kW.
NOx value – 29ppm Class 4	
FUSED AT 3A. RATED 55W	INJECTOR: 1 x 3.7mm Dia. – 402
MAXIMUM HEAD: 30m MINIMUM HEAD: 1m	
SERIAL No: 262–	2002 NATURAL GAS ONLY
This appliance is NOT adjustable for heat input.	
Burco Dean Appliances Ltd., Burnley, Lancashire. BB12 6AL.	
CE 86/AP/054 0086	GBIE GAS TYPE CAT. I _{2H} FLUE TYPE CAT. C ₁₂
BED 92/42/EEC GAD 90/396/EEC	

3. Air Inlet/Flue Exit Terminal Location

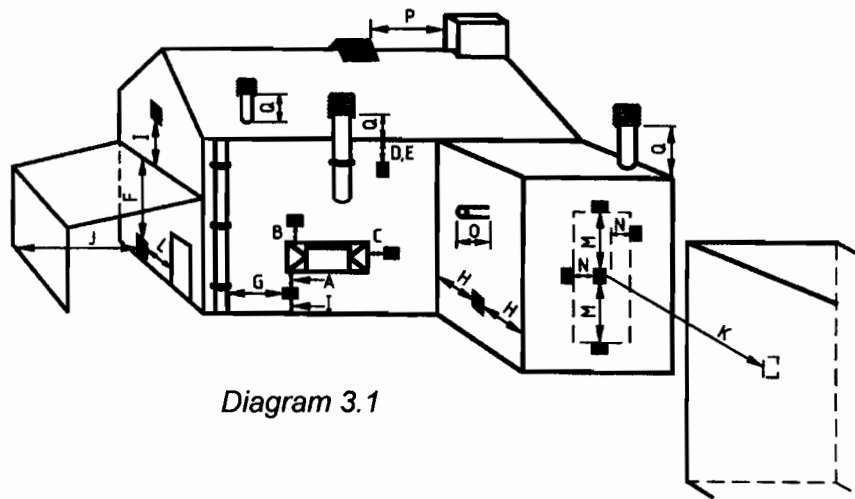


Diagram 3.1

AIR INLET / FLUE EXIT MINIMUM TERMINAL LOCATIONS

TERMINAL POSITIONS

- A.a Directly below an opening, air brick, opening window, etc.
- B.a Above an opening, air brick, opening window, etc
- C.a Horizontally to an opening, air brick, opening window, etc.
- D. Below gutters, 8011 pipes or drain pipes.
- E. Below eaves.
- F. Below balconies or car port roof.
- G. From vertical drain pipe or 8011 pipe.
- H.b From an internal or external corner.
- I. Above ground, roof or balcony level.
- J. From a surface facing the terminal. (also see 6.1.2)
- K. From a vertical facing the terminal
- L From an opening in the car port (e.g. door, window) into the dwelling.
- M. Vertically from a terminal on the same wall.
- N. Horizontally from a terminal on the same wall.
- O. From the wall on which the terminal is mounted.
- P. From a vertical structure on the roof.
- Q. Above intersection with roof.

MINIMUM DISTANCE

- 300mm
- 300mm
- 300mm
- 75mm
- 200mm
- 200mm
- 150mm b
- 300mm
- 300mm
- 600mm
- 1200mm
- 1200mm
- 1500mm
- 300mm
- N/A
- N/A
- To manufacturer's Instructions

NOTES N/A. = Not applicable

a/. In addition, the terminal should not be nearer than 150mm (fan draught) to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame.

b/. The reference to external corners does not apply to building protrusions not exceeding 450mm, such as disused chimneys on external walls for fanned draught appliances.

Note: For siting of vertical flues see separate Section 5.9.

- a. The air inlet and flue exit terminals must be installed according to the recommendations of BS 5440 Part 1 and be installed sufficiently close to each other on the same wall to be located in sensibly similar wind conditions.
- b. The terminals must be positioned on the outside of the building and must allow the free passage of air across them at all times.
- c. Avoid positions where the terminals are adjacent to projections; particularly under a balcony or immediately adjacent to a drain pipe.
- d. The position of the outlet terminal must ensure that products of combustion produced from the boiler cannot enter the building or any adjacent building through windows, doors or any other means.
- e. Acceptable flue terminal positions are indicated in Diagram 3.1.
- f. Both terminals must be positioned on the same wall.
- g. The minimum distance between centres of the terminals (MDF only) is 150mm. There is no maximum distance.

h. If the boiler is fitted into a timber framed building - consult British Gas publication "Guide for Gas Installations in Timber Framed Housing DM2" or your local Gas Region.

i. Where the lowest part of either flue terminal is fitted less than 2 metres (6.6 ft.) above ground, a balcony, or above a flat roof to which there is access then the flue terminal/terminals must be protected by a terminal guard, available from Maxol. Ensure the terminal guard is fitted centrally.

j. The terminal guard is supplied with three fixing screws and rawlplugs. Fit the guard centrally over the flue pipe and secure with the plugs and screws provided.

Note: With the minimum flue outlet/inlet distance of 150mm the flue terminal guards will touch if both are fitted.

k. The outlet flue terminal will produce a plume of water vapour and also moisture droplets. This should be considered when positioning the flue terminal, e.g. over a door. This is a normal feature of a high efficiency appliance.

4. Packaging

The boiler is available in two forms:

4.1 RF Rear Flueing Model

178mm (7 in) - 381mm (15 in).

The standard carton includes:

- i. Boiler
- ii. Flue Terminals - 2 off 381mm (15")
- iii. Installation & Servicing Instructions
- iv. Users Instructions
- v. Plastic Bag Assembly

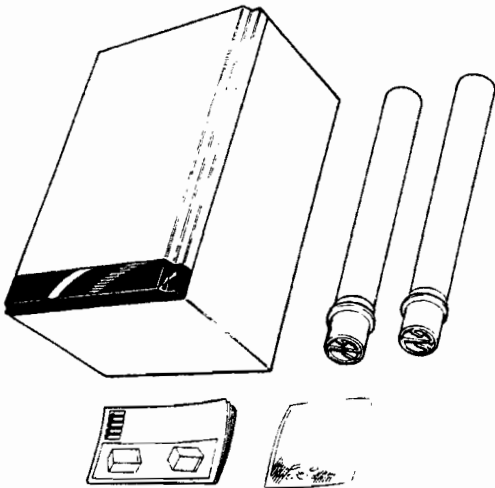


Diagram 4.1

4.2 MDF Side/Top/Base Flue Model

Packaged in one carton including:

- i. Boiler
- ii. Rear flue box
- iii. Installation & Servicing Instructions
- iv. Users Instructions
- v. Plastic Bag Assembly
- vi. Inlet Elbow
- vii. Exhaust Elbow.

All flues and flue terminal are available from Burco Maxol. Flues and flue terminals must be ordered separately.

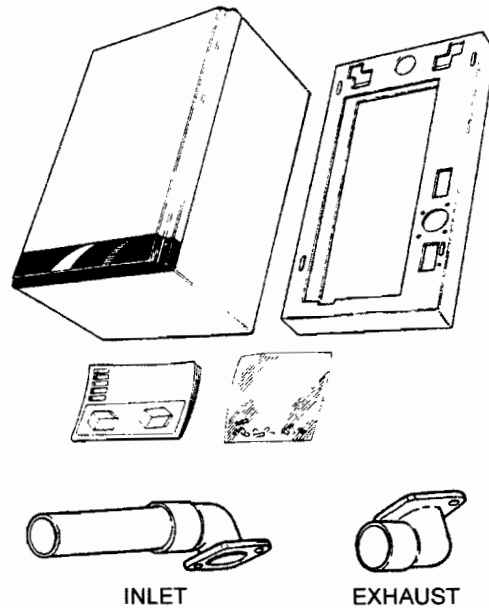


Diagram 4.2

Flue Kit Cartons Available for MDF Model:

4.2.1. Flue Terminal Kit

Including:

- i. Flue terminals - 2 off 381mm (15").

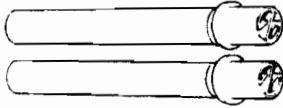


Diagram 4.2.1

4.2.2. 0.5m (19.7") Extension Kit

Including:

- i. Flue pipe (socketed).
- ii. Plastic Bag Assembly.

4.2.3. 1m (3'3") Extension Kit

Including:

- i. Flue pipe (socketed) - 2 off
- ii. Plastic Bag Assembly - 1 off.

4.2.4. 2m (6'6") Extension Kit

Including:

- i. Flue pipe (socketed) - 4 off
- ii. Plastic Bag Assembly - 1 off.

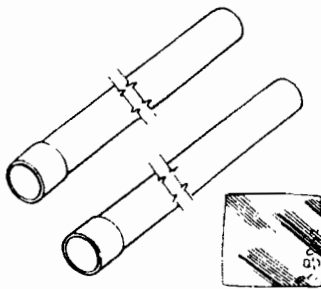


Diagram 4.2.2, 4.2.3, 4.2.4

4.2.5. 90° Bend Kit

Including:

- i. 90° Bend (socketed) - 2 off
- ii. Plastic Bag Assembly - 1 off.

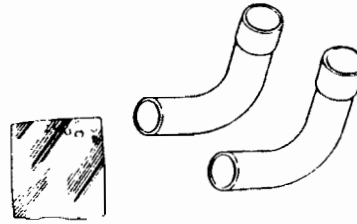


Diagram 4.2.5

4.2.6. 135° Bend Kit

Including:

- i. 135° Bend (socketed) - 2 off
- ii. Plastic Bag Assembly - 1 off.

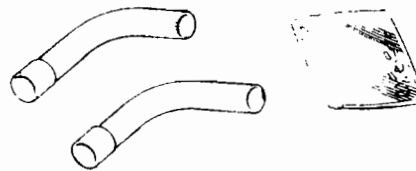


Diagram 4.2.6

4.3 Other Optional Extras

- i. Flue Terminal Guard.

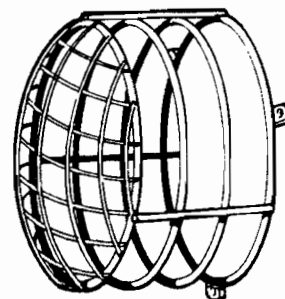


Diagram 4.3

5. Installation of MDF Model

For vertical flue options see separate Section 5.9, for RF model see Section 5.4.

NOTE: MAKE SURE FLUE PIPES ARE FREE FROM ANY OBSTRUCTION PRIOR TO ASSEMBLY.

Remember to remove any burrs on both inside and outside of the flue pipes and ensure they are clear and free of oil, grease or swarf. (Silicone should only be applied to male end of pipes).

5.1 Siting the Boiler and Routing the Flue

Any flue length can be installed up to a maximum of 9m straight flue pipe.

For each bend (either 90° or 135°) added you must reduce the overall flue length by 1.5m.

e.g. Max Flue Length	No. of Bends
9m	0
7.5m	1
6m	2
4.5m	3
3m	4

Note: The minimum flue length possible is 300mm from flue terminal to boiler case. Some flueing examples are shown below.

Note: **Noise:** - This appliance utilises a high pressure fan. This should be considered when siting the boiler, e.g. in a bedroom.

CAUTION: It is recommended that the boiler not be installed on a studded or similar type wall as it is possible that the vibration from the fan would be amplified and transmitted to other parts of the building.

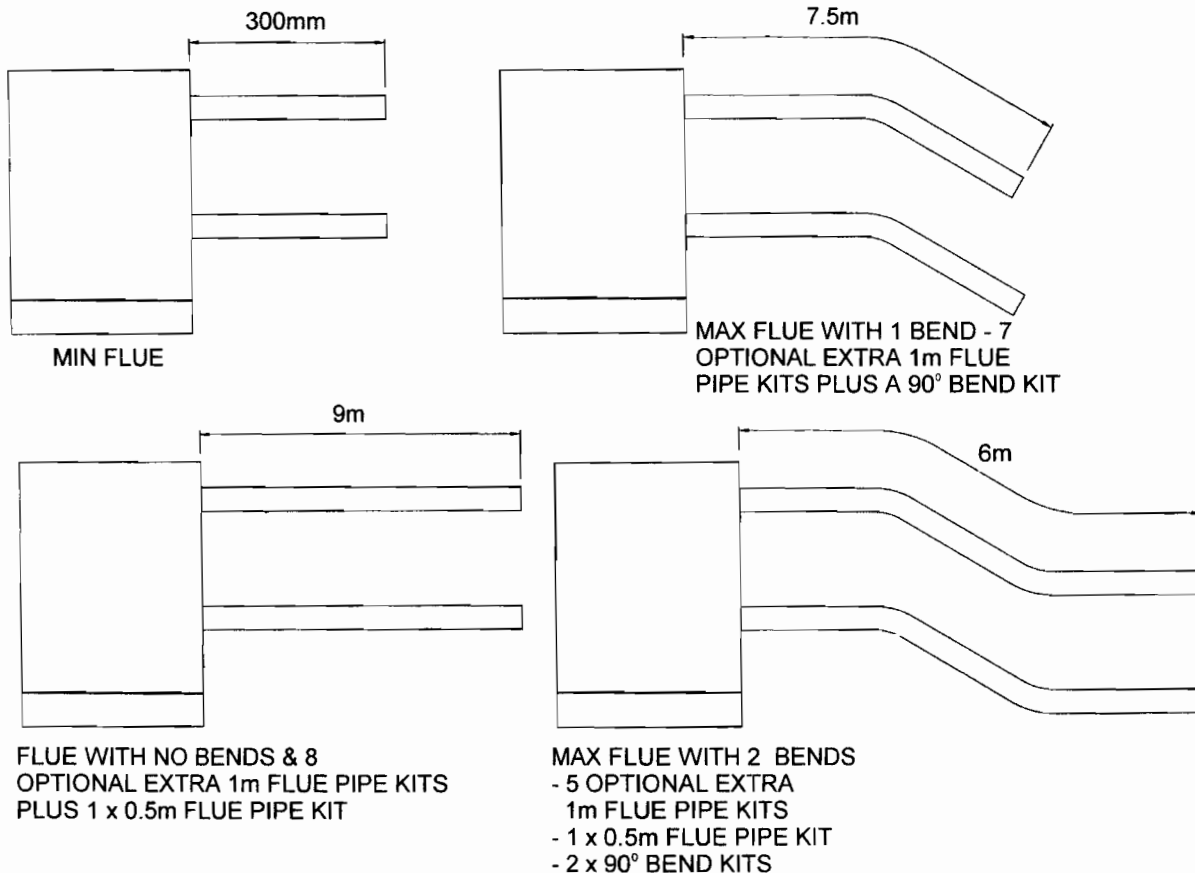


Diagram 5.1

5.1.1. Design Requirements for Routing the Flue

1. Both flue pipes must enter the appliance in the same direction. The flues must terminate in a horizontal position and on the same wall of the building.
2. The minimum distance between inlet and outlet flues is 150mm between centres at the outlet of the wall.
3. If the inlet and outlet pipes are required to be different lengths a ratio of 2:1 should be used as a maximum, i.e. 2m inlet 4m outlet or vice versa, but it is recommended that the flue lengths are kept to similar lengths if at all possible.

The illustrations give some examples of flue installation:

Note: When routing the flues around an external corner it is necessary to chase into the wall using a chisel etc. to allow the bends to follow the centre lines for the fixing clips. 20mm will be sufficient for the flue only. If protective ducting is used 60mm is necessary.

4. It is recommended that on longer flueing installations a sketch is made of the flue runs as a guide to cutting the pipes.
5. The exhaust flue pipe must not be closer than 25mm (1in) to combustible material. Additional

clearance must be provided when passing the flue through timber walls.

Detailed recommendations on protection of combustible materials are given in BS 5440: Part 1. (Specifically Section 8.2.3). Where the outlet flue is to be routed along or adjacent to a combustible wall a ducting kit is available to protect the wall. The kit is available in 1m lengths and also a 90° bend.

6. The exhaust flue pipe must be routed so that it cannot be touched by the user. If this is unavoidable a ducting kit is available from Maxol to protect the flue pipe.
7. Remember both flue pipes must enter the appliance in the same direction.
8. Remember the flues must terminate in a horizontal position and on the same wall of the building.
9. Installations with long flue runs may give rise to a build up of condensation in the outlet flue pipe. This must not be allowed to run back into the boiler. When installing long flue runs angle the flue AWAY from the boiler using a 25mm drop for every 4m horizontal run.
10. The maximum vertical flue run is 1.5 metres to the first 90° bend.

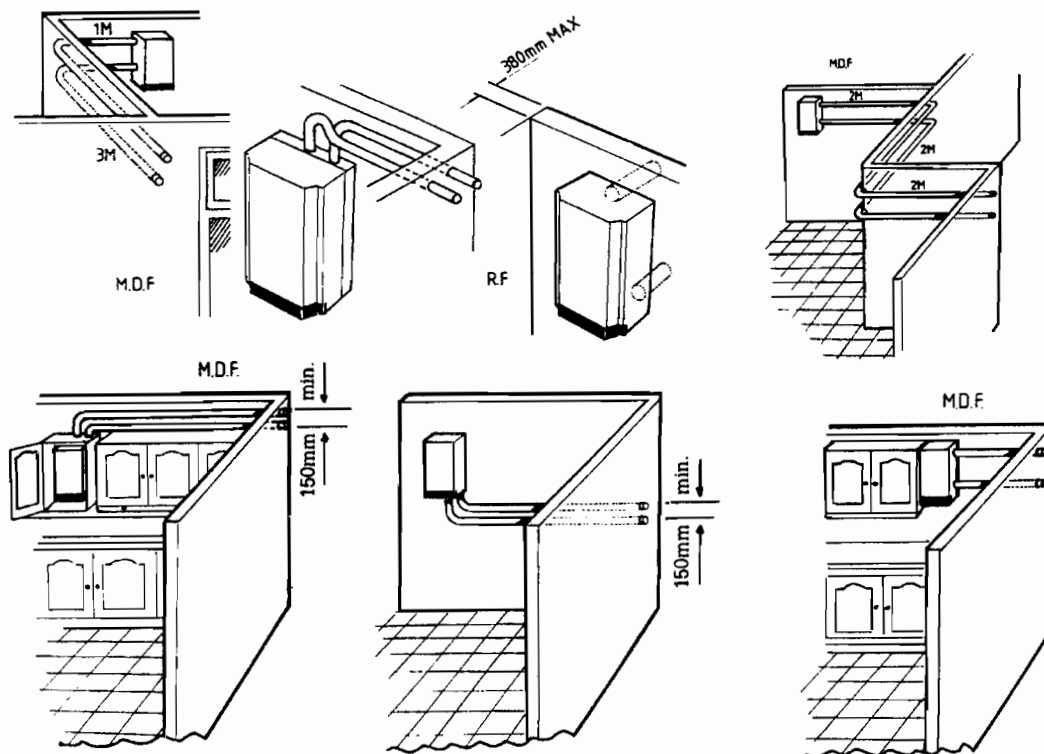


Diagram 5.2

5.2 Base/Side/Top Flueing Arrangements (MDF)

5.2.1. Installing the Flue Box

For a kitchen cupboard installation see Section 5.2.5.

- i. The flue box template must be positioned at a minimum dimension from any wall or surface depending on the direction of incoming flue pipes - see below.

Flue pipes from: Minimum distance from edge of template to wall or surface.

LHS	250mm between RHS and wall
RHS	150mm between LHS and wall
Top	400mm between bottom and floor
Bottom	300mm between top and ceiling.

- ii. Position and fix the template provided for fixing the flue box, drill and plug where marked using the plugs and screws provided in the plastic bag. Ensure the template is horizontal and on a flat sound wall. Note that the flue pipes should terminate at the positions shown on the template.

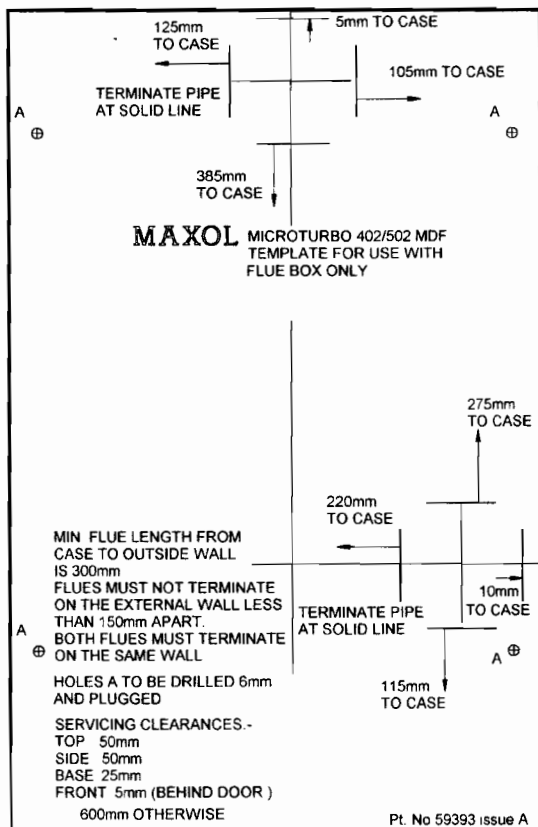


Diagram 5.3

5.2.2. Installing the Flue Pipes

- i. Remember the minimum distance between inlet and outlet flues is 150mm (6in) in any direction at the outlet of wall - between centres.

- ii. The vertical distance between the side flue connections on the boiler is 270.4mm. The horizontal distance between Base/Top connections is 95mm.
- iii. There is no maximum distance required between the flue terminals.
- iv. After deciding where the flues will terminate drill the two flue openings using a core drill if possible. Ensure no breakout or if possible make good externally. CORE DRILL DIAMETER 65mm.

If the flues exit close to a corner it may be easier to:

- a) drill a pilot hole from inside the property and carry out the core drill operation from outside.
- or b) use a masonry chisel to make the flue openings and make good afterwards.

Ensure that during the cutting operation the masonry produced does not cause any damage to property or injury to persons.

- v. Fix the pipe support clips along the pipe routes or fit the optional protective ducting (see separate instructions). Ensure that any bends are securely held at each end by the clips provided.

Note: No. 6 wood screws and plugs are supplied for fixing the clips.

MAKE SURE THAT THE FLUE PIPES ARE FREE OF ANY OBSTRUCTION BEFORE ASSEMBLY.

5.2.3. Assembling the Flue Pipes

IMPORTANT:

- The flue pipes must be assembled with plain end of pipe (or bend) nearest the appliance and the female socket end furthest from the appliance.

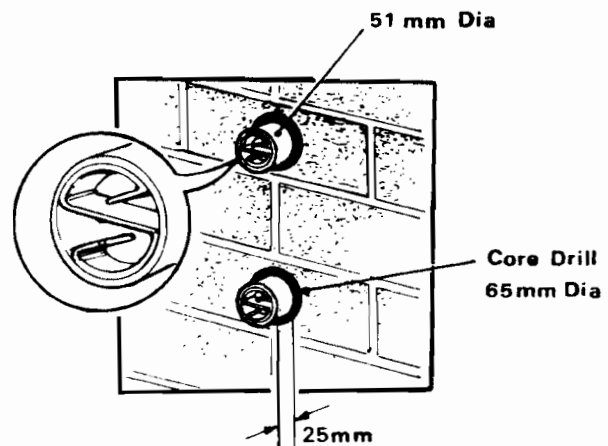


Diagram 5.4

- Always adjust the length of pipes by cutting the plain end. Remove any burrs both inside and out.
- Keep the flue pipes clean and free of oil or grease or swarf.
- i. **ALWAYS START AT THE WALL.** Take the two lengths of flue pipe that have the flue terminal inserts and lipseals (in boiler pack). Measure the wall thickness. Then measure from the lip seal at the end nearest the outlet, and mark the wall thickness onto the pipe minus 10mm. Minimum flue length is 300mm (12in) from appliance to external wall. Check minimum service clearances laid out in Section 2.7 Technical Data.

Do not cut at this stage unless the flue run requires only one length of flue pipe, - then mark and cut the ducts so that they terminate at the appropriate position on the template, as in Section 5.2.4. If more than one length of flue pipe is required continue.

- ii. Push the tubes through the wall up to the mark. Visually check that the pipes have protruded through the wall by 25mm and that the lip seal is located in the wall around its circumference. If there are any gaps present make good at this stage externally.
- iii. Smear a film of silicone sealant (approx. 0.5mm thick) onto the male end of the pipes (approx. 40mm along). For safe use of the silicone rubber solution see Section 5.2.4.1.

Repeat this operation with every male pipe end, (except the final pieces of flue pipe) as the flue pipe runs are assembled.

- iv. Cut the next lengths of flue pipe or elbows for inlet and outlet, (if required) and slide into the female end towards the wall.

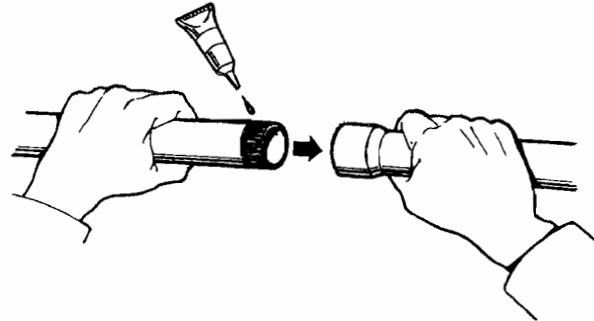


Diagram 5.5

- v. Push the flue pipes firmly together **ENSURING** the pipes do not protrude further through the wall.
- vi. Continue this procedure until the flue runs are complete except for the last length to the flue box.
- vii. Remember on long horizontal flue runs to angle the outlet flue **AWAY** from the boiler so any condensate will run out from the boiler.

Note: ENSURE LIPSEAL IS POSITIONED INSIDE WALL (SEE DIAGRAM 5.6).

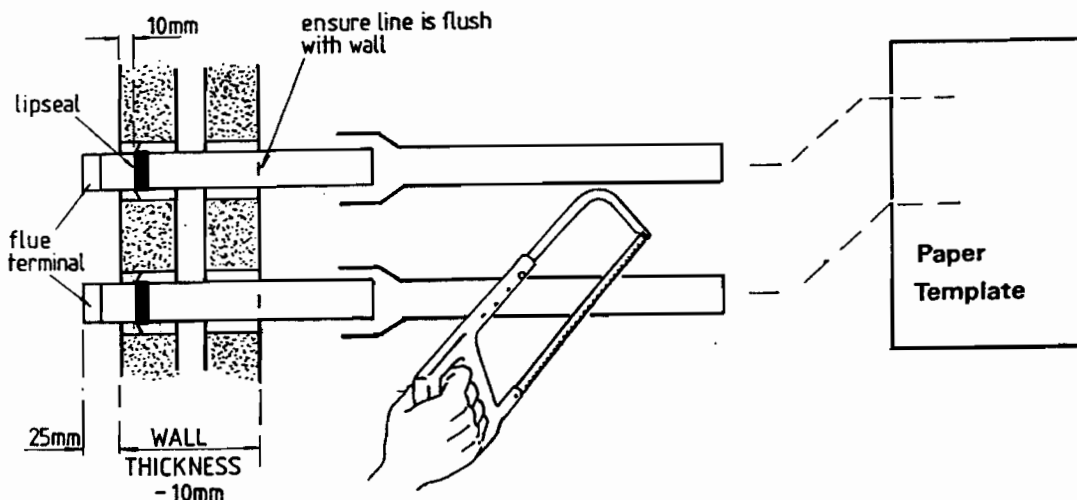


Diagram 5.6

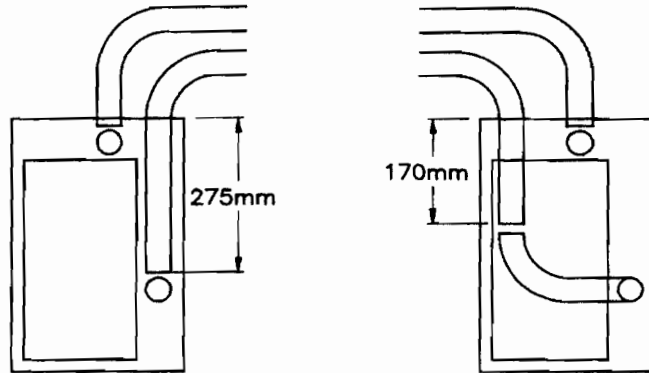
5.2.4. Connecting the Flues to the Flue Box

Depending on the directions of the flue entry the following are the dimensions for flue length from elbow to case. (See Diagram 5.7).

Add on the dimensions from the diagrams below to the last flue lengths before cutting and fixing (depending on the incoming flue directions).

At this stage you should have the template fixed to the wall and both flue runs completed and terminating at the positions marked on the template as required.

TOP ENTRY (PIPES RUNNING TO RHS) OUTLET (LOWER CONNECTION) 275mm TOP ENTRY (PIPES RUNNING TO LHS) OUTLET (UPPER CONNECTION) 170mm



LEFT HAND SIDE ENTRY OUTLET 220mm RIGHT HAND SIDE ENTRY OUTLET 10mm BOTTOM ENTRY INLET 252mm OUTLET 115mm

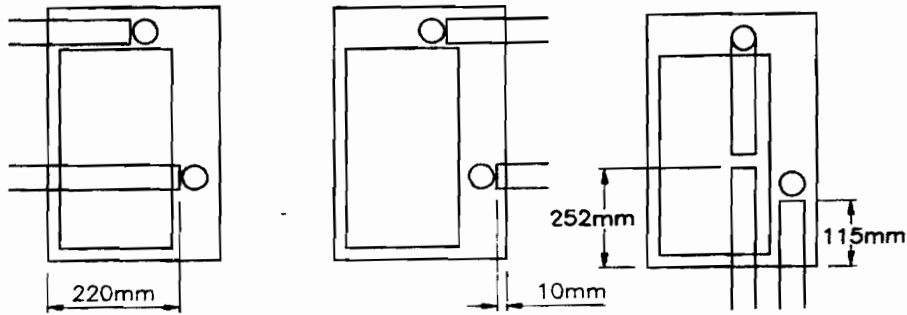


Diagram 5.7

5.2.4.1. Elbows

Ensure you have the correct elbows in your kit.

Using the silicone rubber solution:

1. Wear gloves and/or goggles where there is a risk of accidental contact.
2. Store below 30°C and use in a well ventilated area.
3. If any silicone is spilt wipe any excess up with a soft cloth and allow to cure. Then scrape up any excess.
 - i. Smear a film of silicone (approx. 0.5mm thick) onto the ends of the pipes, (approx. 20mm along).
 - ii. Remove the template.
 - iii. Take the flue box, take the elbows and align the elbows to their required orientation with the two fixing screws. Inlet elbow at the TOP, outlet elbow at the BOTTOM.

IMPORTANT:

The Inlet elbow includes a section of pipe. Do not place this elbow in the outlet elbow position.

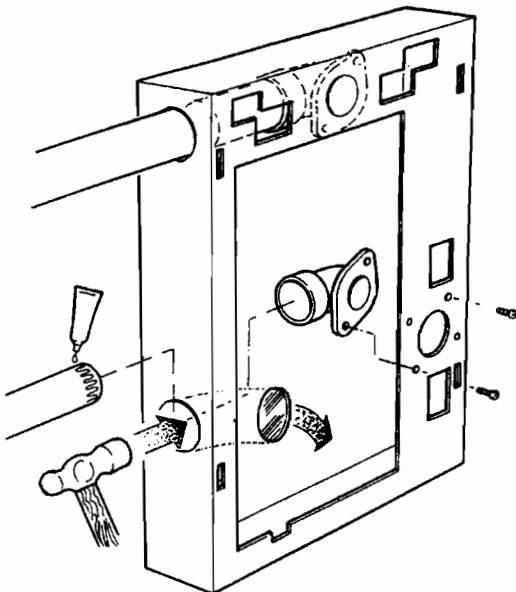


Diagram 5.8

- iv. Carefully knock out the two plates where the flues will be entering the box and discard. This is best achieved by tapping the disc with a hammer away from the joining tabs then twist loose with finger and thumb.

- v. Slide the flue box over the flue pipes and locate the flue pipes fully into the elbows ensuring a good seal. Secure the flue box to the wall using the screws provided. The elbows may be viewed through the front box to ensure correct location.

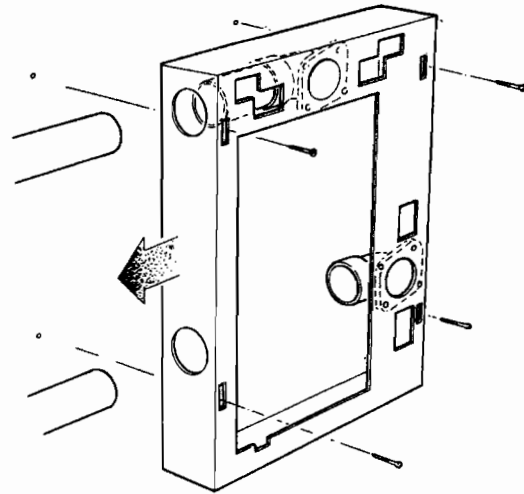
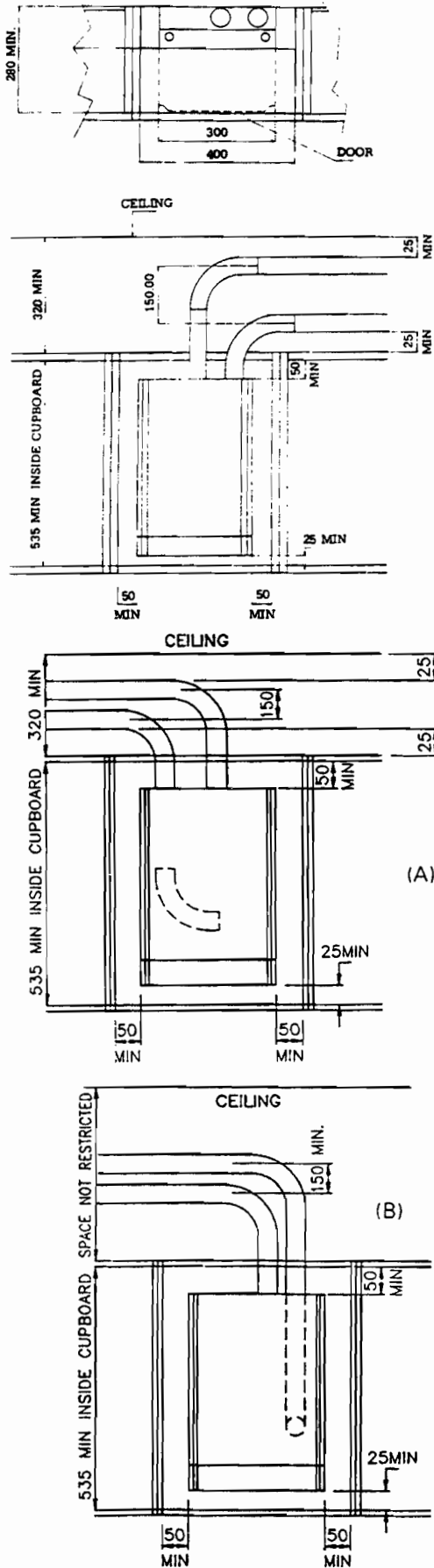


Diagram 5.9

5.2.5. Additional Requirements for the Installation of the Microturbo MDF in a Kitchen Cabinet

The Microturbo MDF has been specifically designed to fit into a kitchen wall cabinet which must be at least 535mm high (internally) and 400mm wide (internally). The boiler must be fixed to the rear wall and **not** the back panel of the unit. (See Diagram 5.10).

If the flues are to be routed along the top of the kitchen unit a minimum distance of 320mm is required between the ceiling and the unit top. The flue outlet pipe must be kept a minimum distance of 25mm from any combustible surface.



5.2.5.1. Installing the Flue Pipes and Box MDF (Kitchen Cabinet Only)

1. As there may be insufficient room to enable the flue box to be installed as in the previous text, it may be easier to introduce the last flue lengths into the elbows/flue box assembly before fixing the flue box to the wall. In this case leave sufficient room to enable these flue lengths to fit into the flues fitted previously. These requirements must be taken into consideration before finalising the flue positions. The flue box must be positioned in the cabinet to cover the minimum clearances required for servicing – Section 3.
2. If the pipes are to be run from the left hand side (LHS) and into the boiler from the top (see Diagram 5.10, 'A') where the space above the boiler is restricted then the following should be done:
 - a. Install the Exhaust elbow facing the LHS.
 - b. Install a 90° elbow into the exhaust elbow.
 - c. Knock out the plate in the top left cut out hole.
 - d. The exhaust flue can now be taken out through this cut out hole.
 - e. Where the space above the boiler is not restricted (See Diagram 5.10, 'B').

Diagram 5.10

5.3 Fixing the Boiler to the Flue Box – MDF

- i. Remove the boiler plinth. Remove two screws behind the plinth and two screws at the top/rear of the boiler. Remove the boiler case.

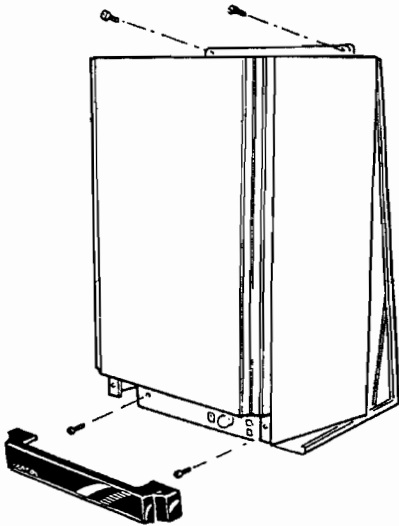


Diagram 5.11

- ii. Remove the two screws securing the tray (1) and the plug in connector (3).
- iii. Unscrew the phial clipscrew and remove both thermostat phials (4).
- iv. Pull out the spark ignitor lead from the control box (2).

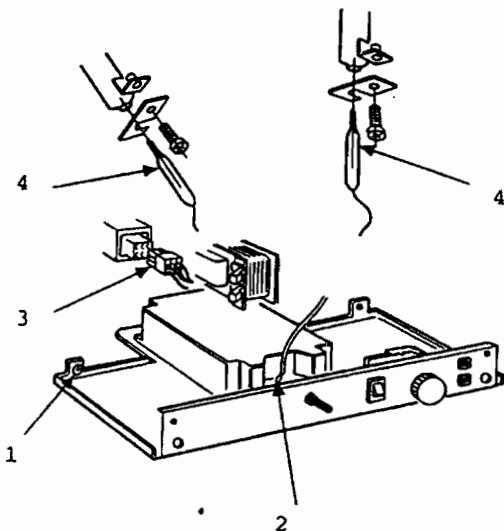


Diagram 5.12

- v. Remove tray.

- vi. Pick up the boiler and line up with the two studs on the flue box. Push the boiler into position checking that the inlet and outlet pipes enter the elbows and make a seal. Secure with the two pillar nuts and two screws provided in the boiler plastic bag assembly.

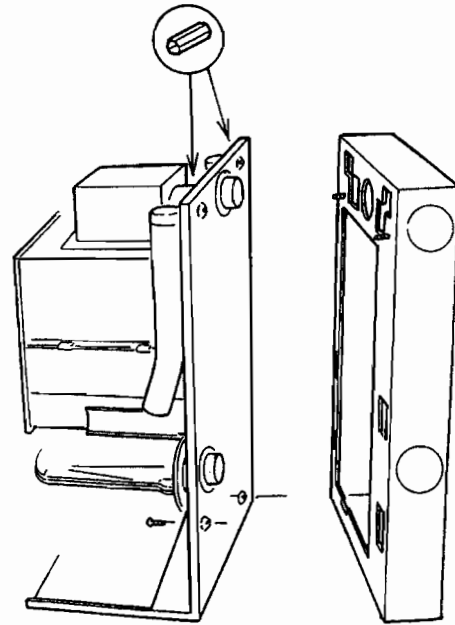


Diagram 5.13

5.4 Installation of Rear Flue Model (RF)

NOTE: MAKE SURE THAT FLUE PIPES ARE FREE FROM ANY OBSTRUCTION PRIOR TO ASSEMBLY.

Remember to remove any burrs on both inside and outside of the flue pipes and ensure they are clear and free of oil, grease or swarf. (Silicone should only be applied to male end of pipes).

This model has the option of rear flueing only. The flues can be run from 180mm (7in) to 380mm (15in) as supplied with a maximum length of 610mm (24in).

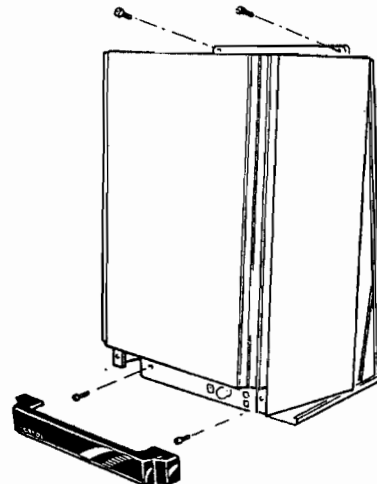


Diagram 5.14

5.5 Prepare the Boiler

- i. Remove the boiler plinth, and remove four screws to remove the boiler case.
- ii. Unscrew the two tray captive screws a quarter turn each (1). Pull the tray forward. Remove the spark ignitor (2) and plug in connector (3).
- iii. Unscrew the phial clip screws and remove the clip (4). Remove both phials.

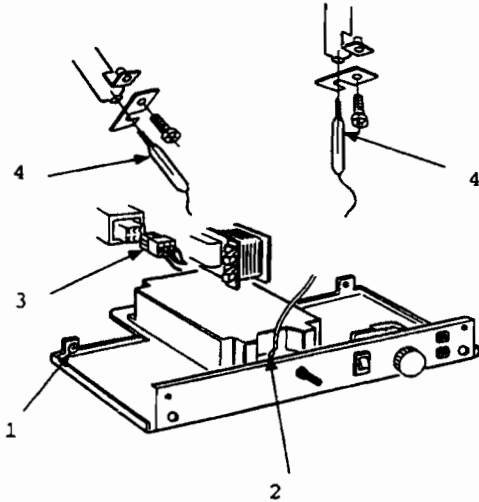


Diagram 5.15

- iv. Remove tray.

5.6 Wall Mounting Template

- i. Tape the template into position taking into account the minimum installation requirements detailed in Section 3. Ensure the template is square.

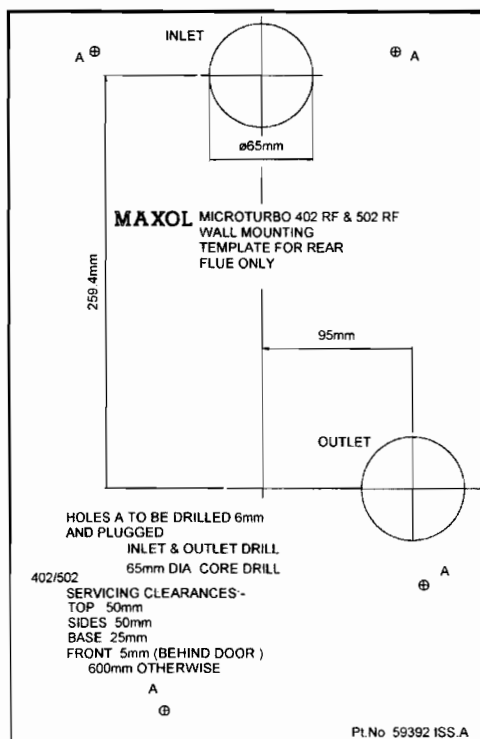


Diagram 5.16

- ii. Drill and plug the fixing holes in the positions marked using the plugs provided in the fixing kit.
- iii. Cut the two flue holes (preferably using a 65mm – 2.5in core drill) in the positions marked. Ensure both faces are clean and free from breakout – make good if necessary.
- iv. Remove template.

5.7 Fixing the Flue Terminals

- i. Two lengths of flue pipe are provided of lengths 381mm (15in) with flue terminals at one end.
- ii. Measure the wall thickness and mark it onto the flue pipes **W**.
- iii. Cut the flue pipes and remove the burrs both inside and outside. CUT AT OPPOSITE END TO THE FLUE TERMINAL. Ensure any swarf is removed.
- iv. Smear a film of silicone sealant (approx. 0.5mm thick) onto the ends of the pipes (approx. 40mm along).
- v. Push the plain ends of the pipes into the two connections at the rear of the boiler. Drill through the sides of the socket with a 2.8mm drill and secure the pipes with the two No. 6 screws provided.

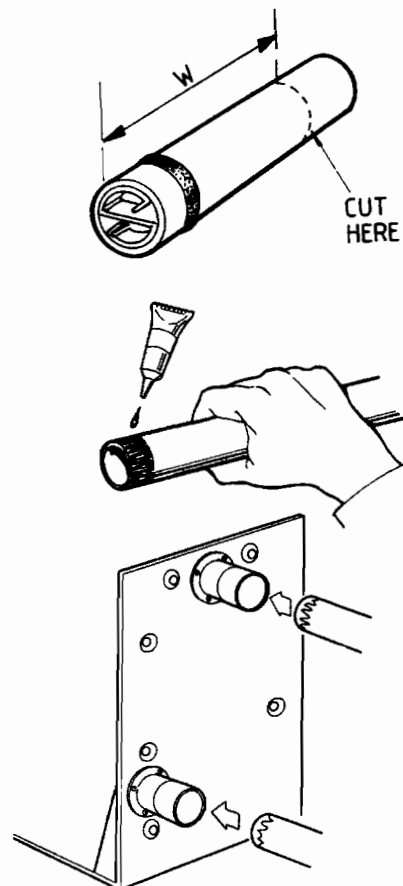


Diagram 5.17

5.8 Wall Mounting the Boiler

- i. Offer the boiler and flue pipes assembly to the wall and push the flues and flue seals through until the boiler meets the wall. Secure with the four screws provided in the plastic bag assembly.
- ii. Visually check that the flue terminals project 25mm on the outside wall.

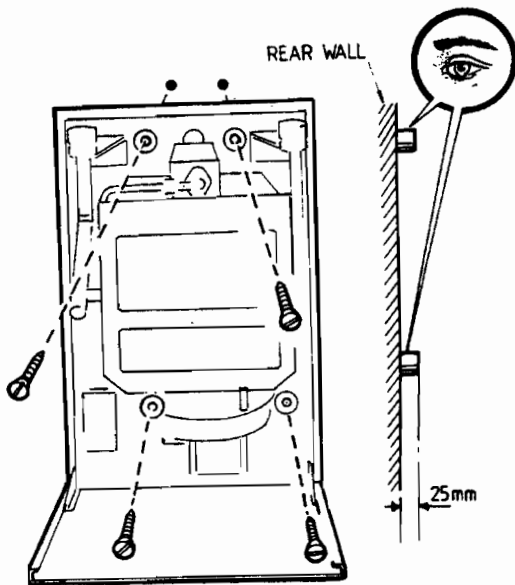


Diagram 5.18

FLUE TERMINATION (S.E. DUCT.)/U' DUCT SIDE ENTRY MDF

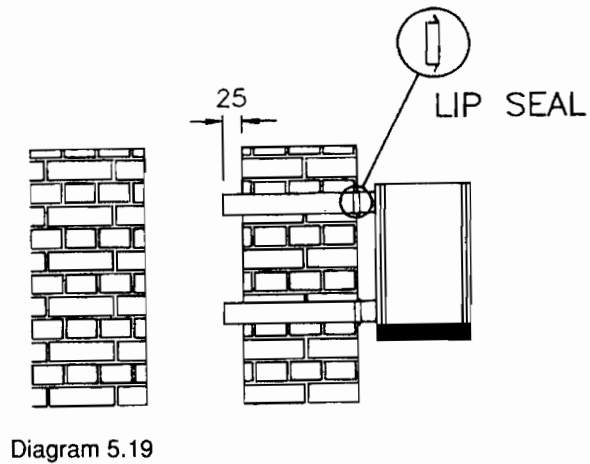


Diagram 5.19

FLUE TERMINATION (S.E. DUCT.)/U' DUCT REAR FLUE MODEL RF

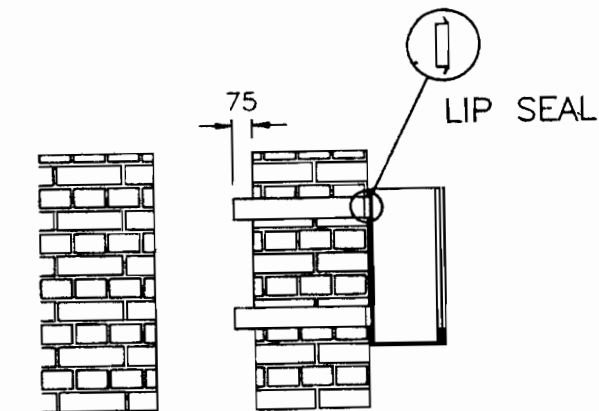


Diagram 5.20

5.9 Installation of RF/MDF into a S.E./U. Duct Flue

NOTE: MAKE SURE THAT FLUE PIPES ARE FREE FROM ANY OBSTRUCTION PRIOR TO ASSEMBLY.

Remember to remove any burrs on both inside and outside of the flue pipes and ensure they are clear and free of oil, grease or swarf. (Silicone should only be applied to male end of pipes).

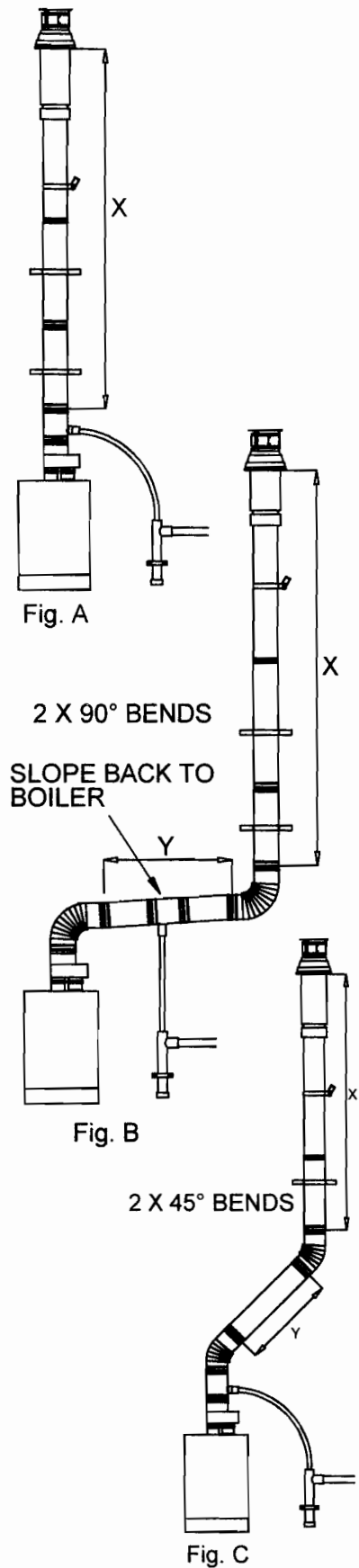
Note: See Installation Instructions for Service Clearances, flue core drill size, hanging the boiler and connecting the flue pipes to RF and MDF Models.

- i. Remove the lip seal from the flue terminals and refit the other way round (see enlarged view).
- ii. The flue should be cut so that they protrude into the SE Duct 25mm MDF Models and 75mm RF Models (see Diagrams 5.19 & 5.20).
- iii. After assembly of the flue pipes to the boiler apply a small amount of silicone sealant to the inside face of the lipseal – push firmly up to the wall making sure a good seal has been made.

5.10 Vertical Flue Options (MDF Boilers only)

NOTE: MAKE SURE THAT FLUE PIPES ARE FREE FROM ANY OBSTRUCTION PRIOR TO ASSEMBLY.

MICROTURBO VERTICAL FLUE SYSTEM OPTIONS



Max Flue Length	Description of Parts Req'd	Part No.
Fig.A X = 9M	Vertical Flue Starter Kit	142658
	Vertical Flue Terminal	142504
	Lead tile roof adaptor flat	142603
	Lead tile roof adaptor pitched	142597
	Flue Pipe 0.5M (Adjustable)	142528
	Flue Pipe 0.5M	142511
	Flue Pipe 1.0M	142535
	Flue Pipe 2.0M	142542
	Wall Clamp (1 Per Pipe)	142610

Fig.B X + Y = 9M 2 x Flue Bends	Vertical Flue Starter Kit	142658
	Vertical Flue Terminal	142504
	Lead tile roof adaptor flat	142603
	Lead tile roof adaptor pitched	142597
	Flue Pipe 0.5M (Adjustable)	142528
	Flue Pipe 0.5M	142511
	Flue Pipe 1.0M	142535
	Flue Pipe 2.0M	142542
	90° Bends	142634
	Wall Clamp (1 Per Pipe)	142610

Fig.C X + Y = 9 M 2 x Flue Bends	Vertical Flue Starter Kit	142658
	Vertical Flue Terminal	142504
	Lead tile roof adaptor flat	142603
	Lead tile roof adaptor pitched	142597
	Flue Pipe 0.5M (Adjustable)	142528
	Flue Pipe 0.5M	142511
	Flue Pipe 1.0M	142535
	Flue Pipe 2.0M	142542
	45° Flue Bends	142641
	Wall Clamp (1 Per Pipe)	142610

- Flue condensate trap must be fitted within 1M of the Boiler.
- Maximum flue length including 2 x 90° or 2 x 45° Bends is 9M.
- All horizontal flue runs must slope slightly back to boiler to allow condensate to be collected and run to drain.

Diagram 5.21

VERTICAL FLUE

• Installation of Vertical Flue Starter Kit

1. Remove the 'Inlet' Elbow from the Boiler Poly Bag Assembly (marked I) and discard. Fit the 'Inlet' Elbow from the Vertical Flue Starter Kit and the 'Exhaust' Elbow from the Boiler Poly Bag Assembly to the Flue Box as shown in Diagram 5.22, Fig. 1, making sure the Elbow Marked 'I' is fixed to the top (Inlet Connection) and the Elbow Marked 'E' is fixed to the bottom (Exhaust Connection).
2. Take the flue box and carefully knock out the top middle plate, and remove the top left hand plate and discard.
3. Take out the 80mm long pipe and smear with a film of silicone (Approx. 1.0mm thick) around the male end and push fully into the **INLET** Elbow. Repeat the above with 120mm long pipe and push fully into the **EXHAUST** Elbow. (Diagram 5.22, Fig. 2.)
4. Take out the flue outlet bend and fit to the bottom connection (Diagram 5.22, Fig. 3).
5. Take out the long flue pipe and fit to the outlet bend connection (Diagram 5.22, Fig. 4).
6. Take out the flue transmission piece and fit to the two flue pipes (Diagram 5.22, Fig. 5).
7. Take out the condensate flue trap and fit to the transmission piece (Diagram 5.22, Fig. 6) and secure with connection piece with integrate joint.

Note: The condensate flue trap can be fitted in the horizontal or vertical section of the flue, up to 1m away from the boiler.

• Condensate Deep Trap Assembly

1. Take out the Flex Tube and push firmly into the outlet adaptor of the condensate flue trap and seal with the silicone adhesive supplied Diagram 5.22, Fig. 7).
2. Take out the condensate deep trap assembly and secure with the clip provided to a convenient place near the boiler, making sure the trap assembly is below the condensate flue trap (Diagram 5.22, Fig. 7).
3. Take the other end of the flex tube and push into the deep trap assembly making sure the tube is pushed all the way to the bottom of the trap (See Diagram 5.22, Fig. 7).
4. Connect the overflow pipe into the deep trap branch and take to drain, making sure the pipe runs away from the trap assembly.

TO FIT THE REMAINING FLUE ITEMS SEE VERTICAL FLUE INSTRUCTIONS.

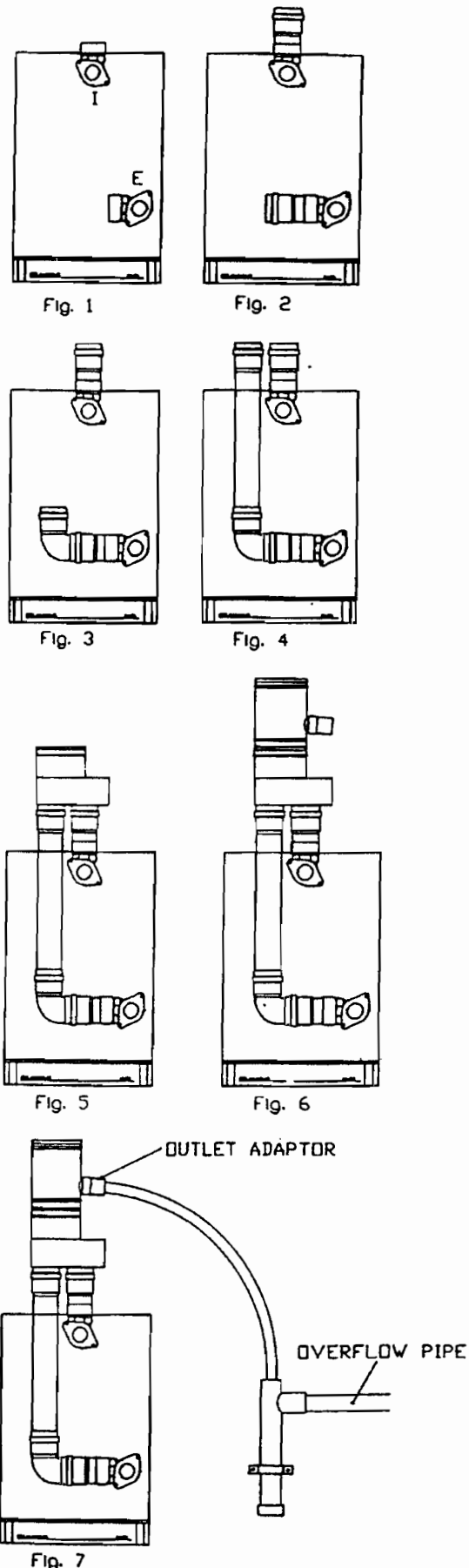


Diagram 5.22

VERTICAL FLUE INSTRUCTIONS

The Maxol Microturbo Room Sealed Vertical Flue Terminal Assembly is intended for use where a horizontal flue outlet is not possible or desired.

It can be used with either a flat or pitched roof (max. pitch 60°) See Diagram 5.23, Figs. D, E, F.

The siting of the flue terminal through a roof is shown on the following page.

The vertical flue assembly consists of a Vertical Flue Starter Kit Part No. 142658, Flue Terminal Part No. 142504 and a combination of parts on the following page.

As supplied, the Flue Terminal is 1240mm long overall and must not be cut to shorter dimensions, but may be extended using the Flue Extension Pipes to a maximum overall dimension of 9.0 Metres (see Diagram 5.23, Figs. A, B, C).

A maximum of two flue bends may be added to the overall dimension of 9.0 metres.

The assembly must be installed in accordance with BS 5440 Part 1.

NOTES: IF THE FLUE PIPE NEEDS TO BE CUT TO LENGTH ONLY THE 0.5M ADJUSTABLE PIPE, PART NO. 142528 CAN BE CUT.

ALL HORIZONTAL FLUE RUNS MUST SLOPE SLIGHTLY BACK TO BOILER TO ALLOW CONDENSATE TO BE COLLECTED AND RUN TO DRAIN, SEE DIAGRAM 5.23, FIG. D.

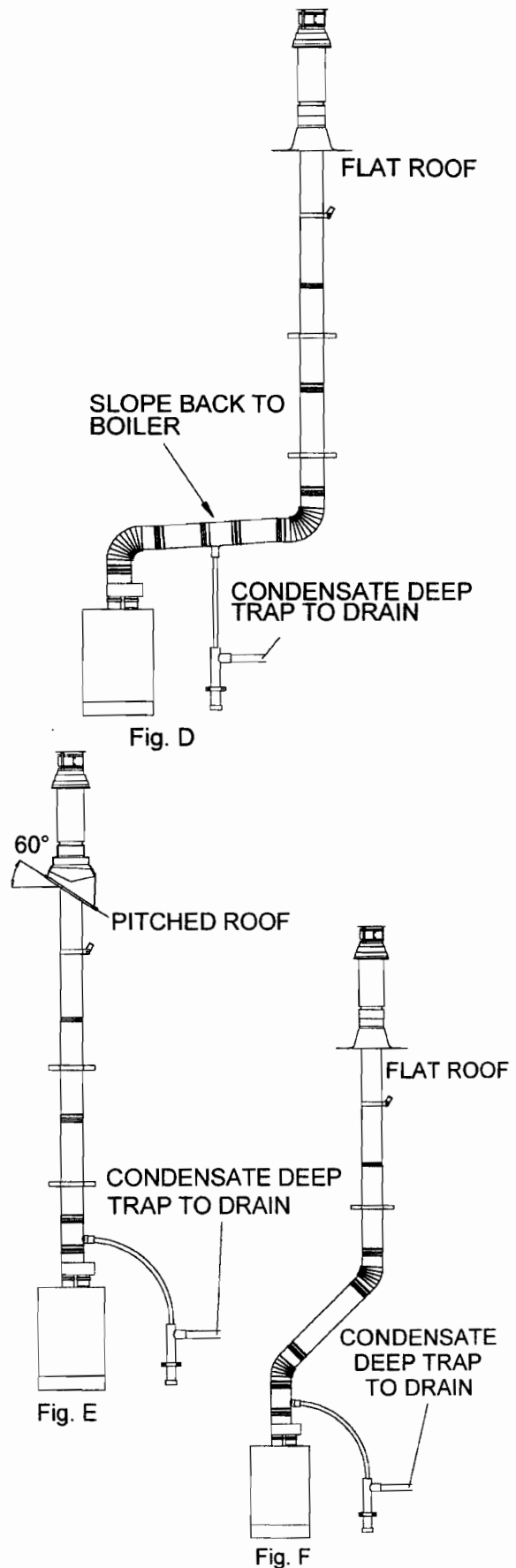
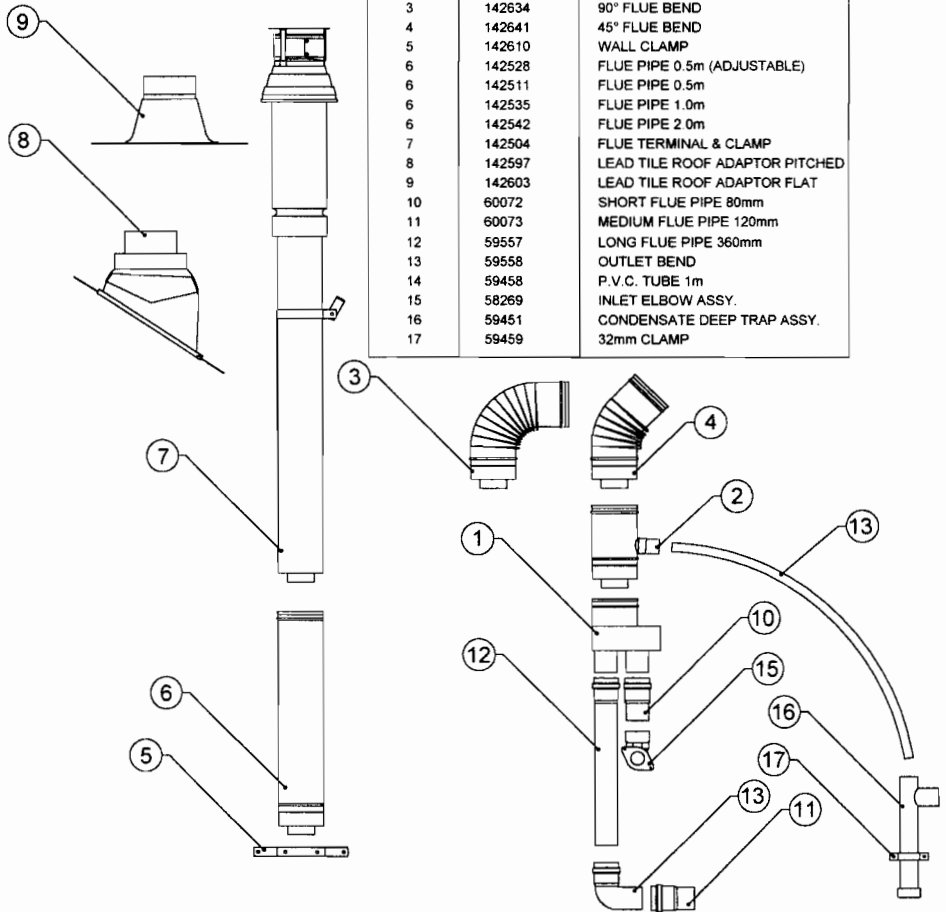


Diagram 5.23

KEY No.	Part No.	DESCRIPTION
1	142573	FLUE TRANSMISSION PIECE
2	142559	CONDENSATE FLUE TRAP
3	142634	90° FLUE BEND
4	142641	45° FLUE BEND
5	142610	WALL CLAMP
6	142528	FLUE PIPE 0.5m (ADJUSTABLE)
6	142511	FLUE PIPE 0.5m
6	142535	FLUE PIPE 1.0m
6	142542	FLUE PIPE 2.0m
7	142504	FLUE TERMINAL & CLAMP
8	142597	LEAD TILE ROOF ADAPTOR PITCHED
9	142603	LEAD TILE ROOF ADAPTOR FLAT
10	60072	SHORT FLUE PIPE 80mm
11	60073	MEDIUM FLUE PIPE 120mm
12	59557	LONG FLUE PIPE 360mm
13	59558	OUTLET BEND
14	59458	P.V.C. TUBE 1m
15	58269	INLET ELBOW ASSY.
16	59451	CONDENSATE DEEP TRAP ASSY.
17	59459	32mm CLAMP



VERTICAL FLUE TERMINAL POSITIONS

Min. DISTANCE mm

- | | | |
|----|---|-----------------|
| A. | DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT OR ANY OTHER VENTILATION OPENING. | 300 |
| B. | ABOVE ROOF LEVEL (TO BASE OF TERMINAL). | 300 |
| C. | FROM ADJACENT WALL TO FLUE. | 300 |
| D. | FROM INTERNAL CORNER TO FLUE. | 400 |
| E. | FROM FACING TERMINAL. | 1200 |
| F. | BETWEEN TERMINALS. | 300 |
| * | BELOW EAVES OR BALCONY. | NOT RECOMMENDED |

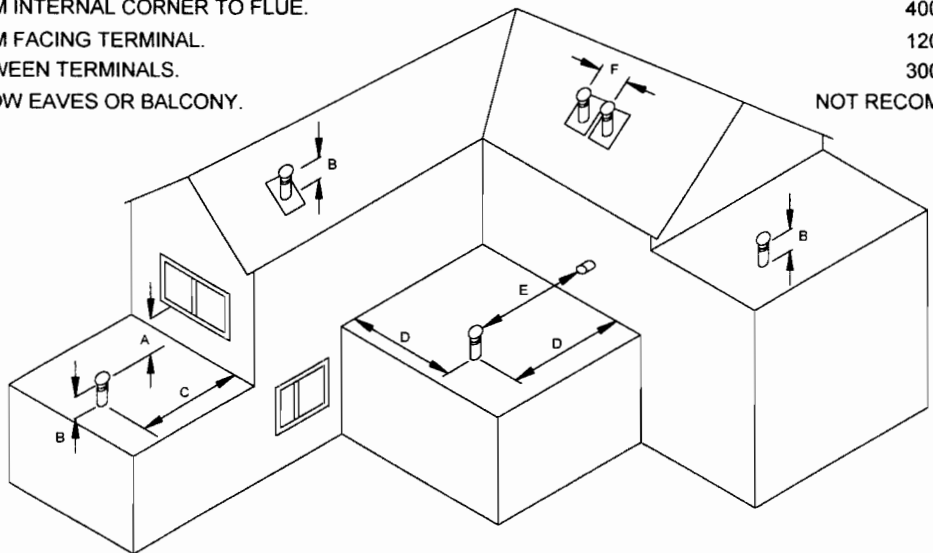


Diagram 5.24

6. Water Connections

The Flow and Return Connections

These are suitable for 22mm copper pipework with compression fittings integral with the heater.
(Note: as despatched the ends are blanked with plastic or metal discs. These must be removed by unscrewing the nuts and substituted with the olives supplied in the ancillary components (Plastic bag)).
The flow is the L.H. connection and both are situated at the top rear of the case.

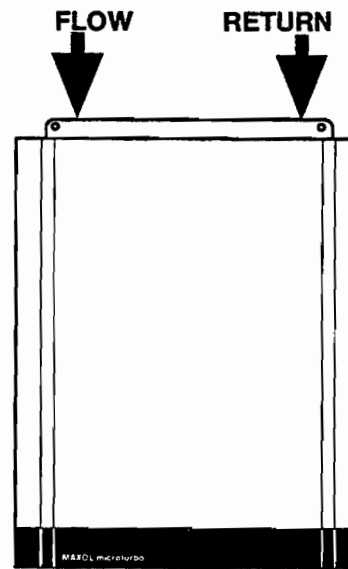


Diagram 6.1

7. Gas Connection

The gas connection to the appliance is Rc ½ (½ in B.S.P.) and is situated at the rear left hand side of the base.

The Neva cock is supplied separately in the fitting kit.

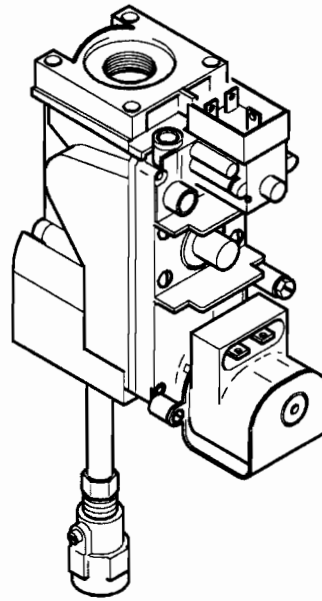


Diagram 7.1

8. Electrical Connection

The electrical connection to this appliance must come from external controls, ie programmer or room thermostat, and must be connected to the boiler electrical switch live connection.

- i. Route the incoming external cable to the bottom, rear, right hand side through the grommet provided.
- ii. Connect the electricity supply cable to the terminal block and clamp.

NOTES:

- a. The incoming switch live mains cable is connected to the terminal SL-switch live (Brown wire), N-neutral (Blue wire), E-earth (Green/Yellow wire)
- b. The length of the conductors between the cord anchorage and the terminals must be such that the current carrying conductors become taut before the earth conductor (i.e. the earth wire must be slightly longer than, both live and neutral when connecting into the terminal block).
- c. The pump should be wired in parallel with the boiler.

- iii. Refit the controls tray and secure using two screws (1) as in Section 5.3 MDF, Section 5.4 RF.
- iv. Join together the plug in connector (3).
- v. Connect the spark ignitor lead to the control box (2).
- vi. Replace thermostat phials and retaining clips.
- vii. Fault Finding - see fault finding chart.

On completion of an installation service/fault finding task which has required the breaking and making of electrical connections complete the following electrical safety checks with a suitable meter.

- A - Earth Continuity
- B - Polarity
- C - Resistance to earth must be replaced
- D - Short Circuit.

SCHEMATIC WIRING DIAGRAM

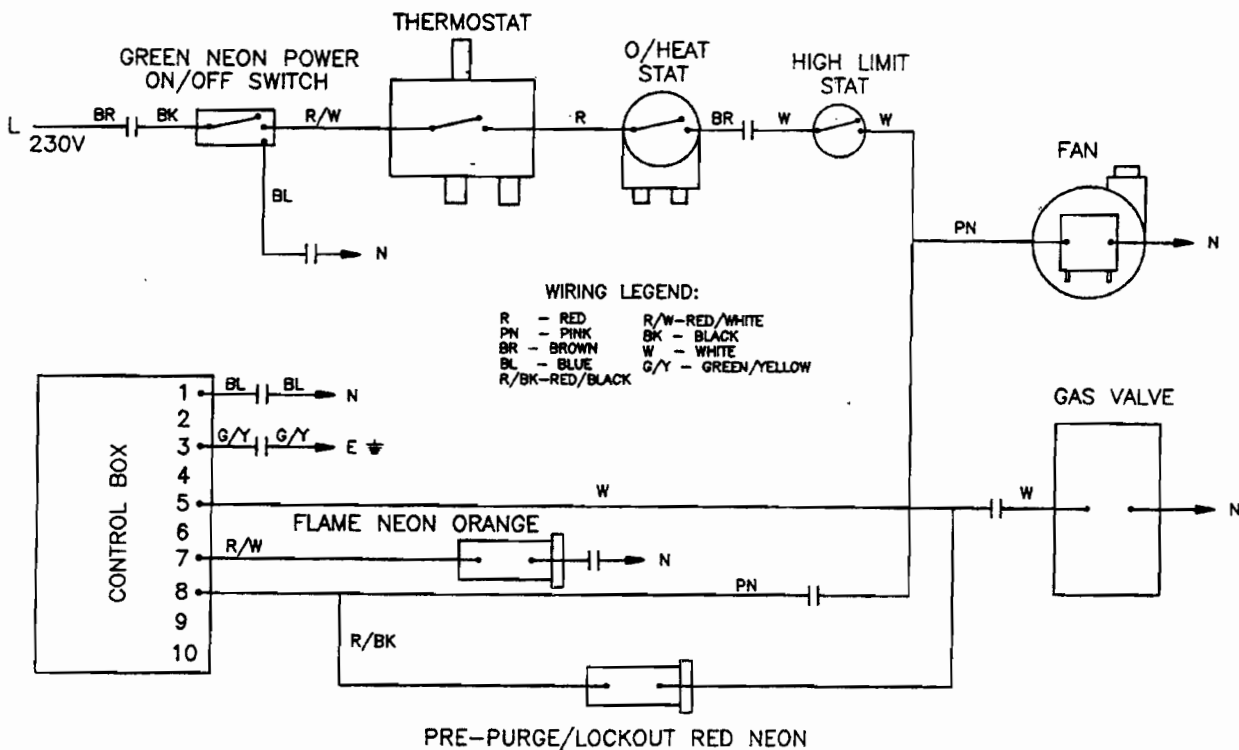


Diagram 8.1

Wiring Schedule for the Burco Maxol Boiler

Wire Number	Wire Description	Wire Type	Wire Colour
1	Connector block to high limit stat	live	white
2	Connector block to high limit stat	live	white
3	Connector block to fan	live	pink
4	Connector block to fan	neutral	blue
5	Connector block to Gas Valve	live	white
6	Live link between gas valve solenoids	live	white
7	Neutral link between gas valve solenoids	neutral	blue
8	Earth link for gas valve solenoid	earth	green/yellow
9	Terminal block to connector block	live	brown
10	Earth from terminal block to stud	earth	green/yellow
11	Neutral for gas valve solenoid	neutral	blue
12	Neutral from terminal block to connector block	neutral	blue
13	Earth from stud to connector block	earth	green/yellow
14a	Earth on fan from connector block	earth	green/yellow
14b	Live from O/H stat to connector block	live	brown
15	Live from connector block to control box	live	pink
16	Connector block to red neon	live	red/black
17	Control box to connector block (feed to gas valve)	live	white
18	Connector block to red neon	live	black
19	Connector block to on/off switch	live	black
20	Neutral feed from connector block to control box	neutral	blue
21	Neutral feed from connector block to on/off switch	neutral	blue
22	Earth from connector block to control box	earth	green/yellow
23	Earth from connector block to boiler thermostat	earth	green/yellow
24	Live from control box to orange neon	live	white/red
25	Live from boiler seat to o/h stat	live	red
26	Live feed from on/off switch to boiler thermostat	live	white/red
27	Neutral link from on/off switch to orange neon	neutral	blue

WIRING DIAGRAM LABEL – MICROTURBO 402 & 502

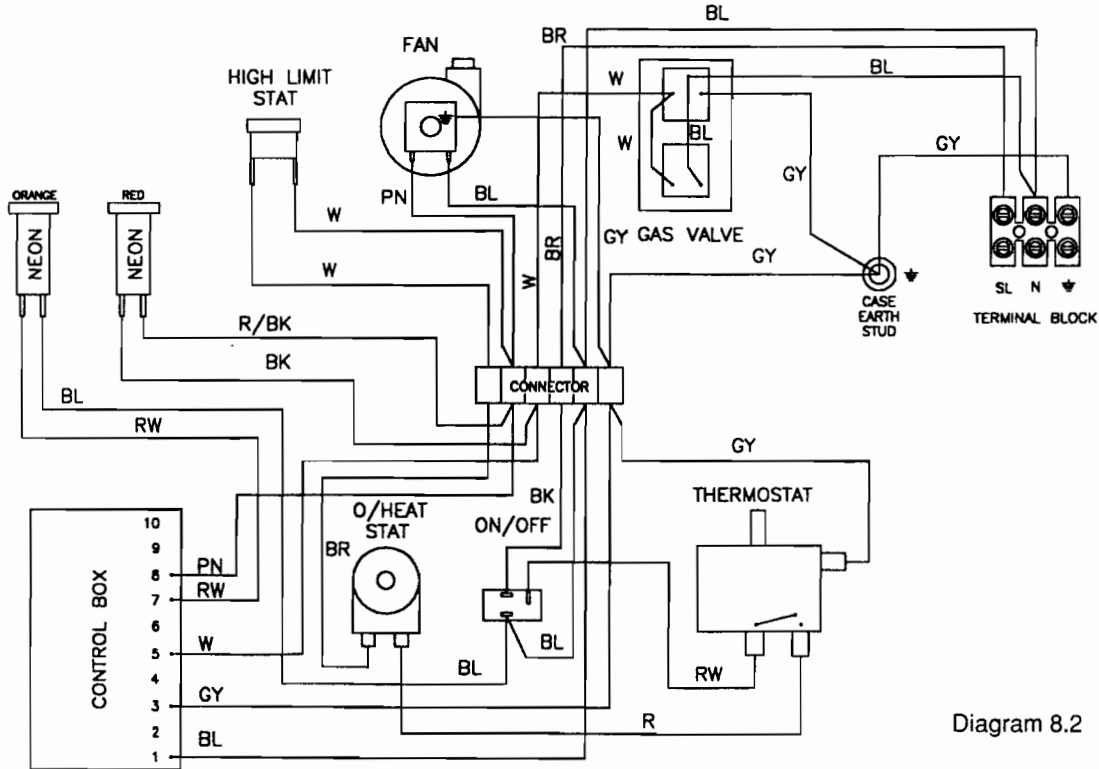


Diagram 8.2

- WIRING LEGEND:
- R - RED
 - PN - PINK
 - BR - BROWN
 - BL - BLUE
 - R/BK - RED/BLACK
 - RW - RED/WHITE
 - BK - BLACK
 - W - WHITE
 - GY - GREEN/YELLOW

ELECTRICAL DATA - 240V ~ 50Hz - 55W - 3A FUSED.
 WARNING - DISCONNECT MAINS POWER SUPPLY BEFORE ATTEMPTING ELECTRICAL MAINTENANCE.

9. Commissioning the Boiler

- a. Ensure the system is filled with water.
- b. Check that all drain cocks are closed and any valves in the flow and return are open.
- c. Remove the screw on the pressure test point on the gas valve marked 'out' and connect a pressure gauge.
- d. Turn ON the electricity mains supply.
- e. Switch the boiler mains ON/OFF switch to ON. Ensure that all external controls are calling for heat.
- f. The boiler mains switch should illuminate and the fan will start running. The red pre-purge/lockout light should also illuminate at this time. After a few seconds the solenoid valve will open and the red pre-purge lockout light will go out and the intermittent spark will commence until the main burner ignites.
- g. Once the main burner is lit the amber neon (burner on) will illuminate.
- h. If for any reason the main burner fails to light the amber neon will extinguish and the red pre-purge/lockout neon will illuminate indicating that the boiler has locked out. To restart, switch the boiler off and then on again. The appliance will restart from (f). See fault finding chart if this does not happen. If the appliance

still fails to ignite contact the manufacturer for advice.

- i. Test for gas soundness around all the boiler gas carrying components.
- j. After 10 minutes the burner pressure can be checked. The boiler is factory set and sealed and should not normally require adjustment.

Note: For burner pressures and heat inputs and outputs see technical data on Page 5.

- k. Temporarily switch off, remove the pressure gauge and retighten test point screw. Re-light and check for gas soundness at test point screw.
- l. Turn OFF boiler ON/OFF switch.

NOTE! AFTER COMMISSIONING THE *benchmark* LOG BOOK MUST BE COMPLETED AND LEFT WITH THE BOILER.

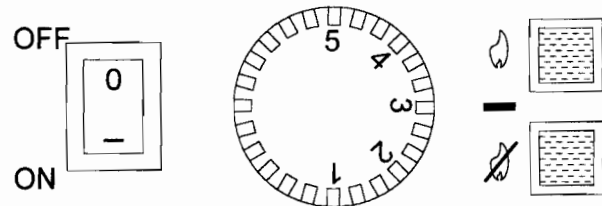


Diagram 9.1

10. Fitting the Case

- a. Lift the boiler case up to the boiler and hang the case on the top back rail at an angle.
- b. Position the case at the bottom and secure with the 4 screws provided at top and bottom.
- c. Push back the plinth onto the guide rails.

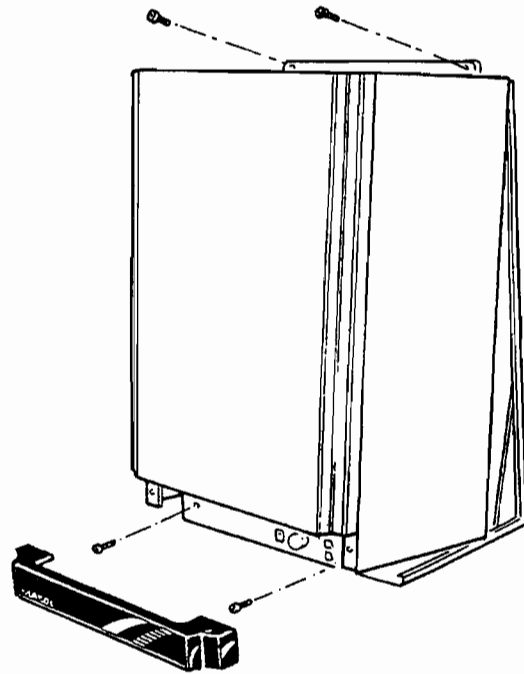
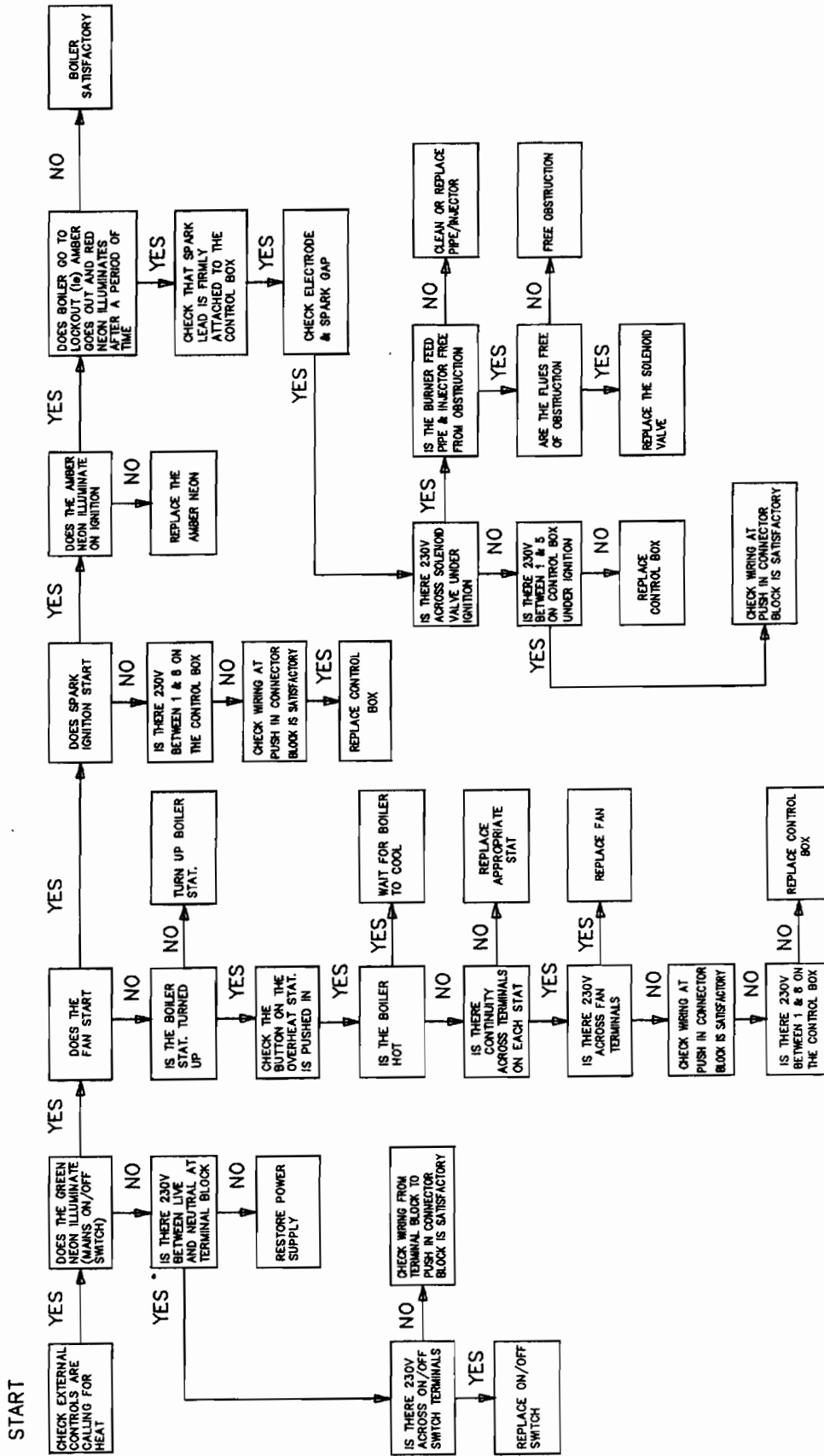


Diagram 10.1

11. General Checks

- a. With the water system **hot** check all water connections for soundness, rectifying where necessary.
- b. Add the appropriate cleanser (see 2.2j) in accordance with the manufacturer's instructions. Turn off gas, water and electricity supplies and drain down completely to flush the system. A drain cock is fitted on the return pipe.
- c. Refill the system including a corrosion inhibitor (see 2.2j) in accordance with the manufacturer's instructions, and vent.
- d. Balance the system and correctly set the by pass for the correct design temperature rise (11°C temperature rise across the boiler under any conditions of use).
- e. Set the boiler thermostat to the systems required setting. Normally position 3.
- f. Handing over - Instruct the user in the operation of the boiler and any system controls that are relevant. Hand over both the Users and Installation and Service Instructions and the **benchmark** Log Book and stress the necessity of regular annual servicing.

Fault Finding Chart



FAULT FINDING CHART
MAXOL MICROTURBO

Servicing Instructions

To ensure safe, efficient operation of the appliance, it is necessary to carry out routine servicing at regular intervals. But in general, once a year should be adequate. Follow the **benchmark** Code of Practice, log book supplied.

IMPORTANT:

Before commencing any servicing or exchange of components always turn off the gas supply and isolate the electricity supply. After completing any service work always check for gas soundness. Ensure the appliance is cold.

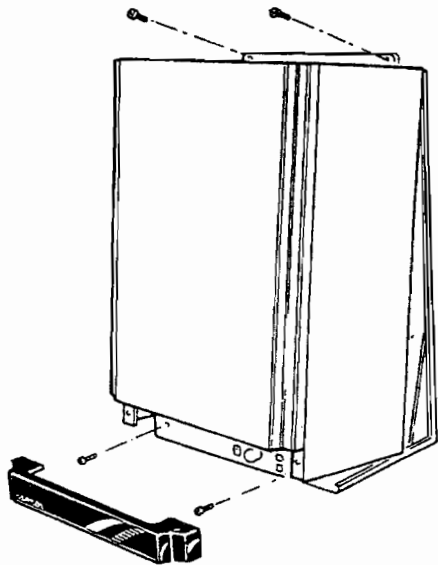


Diagram 13.1

1.0 Routine Annual Servicing

1.1 Remove the Case (Diagram 13.1)

- i. Remove the boiler plinth, remove two screws behind the plinth and two screws at the top/rear of the boiler. Remove the boiler case.
- ii. Put the case in a safe position.

A combustion sampling point has been provided on the front cover bottom section. Remove the hex. screw to access. See Diagram 13.2.

1.2 Remove Combustion Chamber Cover (Diagram 13.2)

- i. Remove the 2 brass wing nuts and 5 screws securing the front cover (1).
- ii. Carefully remove the front cover and check the insulation panel (2) and also the fibre sealing gasket (3) – replace if necessary.

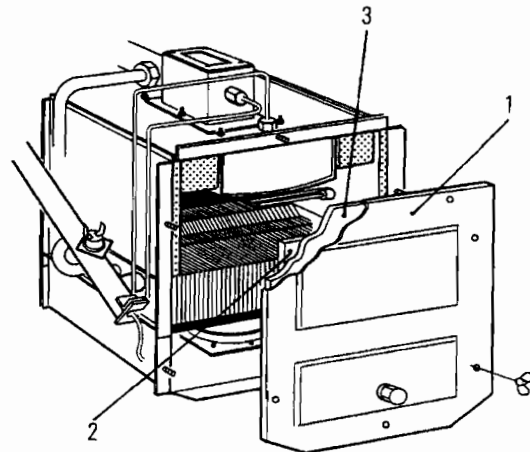


Diagram 13.2

1.3 Cleaning the Combustion Chamber (Diagram 13.3)

- i. Check the LH, RH side and rear (1,2 & 3) insulation panels – replace if necessary.
- ii. Check the upper insulation panels (4) – replace if necessary.
- iii. Inspect and clean the burner (5) - lightly brush away any debris with a soft brush and ensure that all ports are free from obstruction.
- iv. Inspect and clean the heat exchanger (6) from above and below using a soft brush to remove any debris.
- v. Slide out the baffle (7) and inspect and clean, ensuring that the mesh is clear from obstruction.
- vi. Inspect the fan rotor (8) and fan seal (9) and clean with a soft brush if necessary.
- vii. Replace the baffle (7) sliding it between the combustion chamber base and the four screws (10).

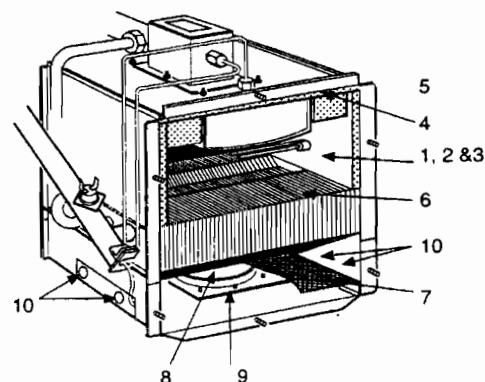


Diagram 13.3

1.4 Check the Spark Position (Diagram 13.4)

Ensure that the dimensions stated in Diagram 13.4 are still in tolerance, if necessary re-position carefully the probe taking care not to damage the ceramic insulation.

It may be necessary to remove the spark electrode to set the gap - see section 2.5.

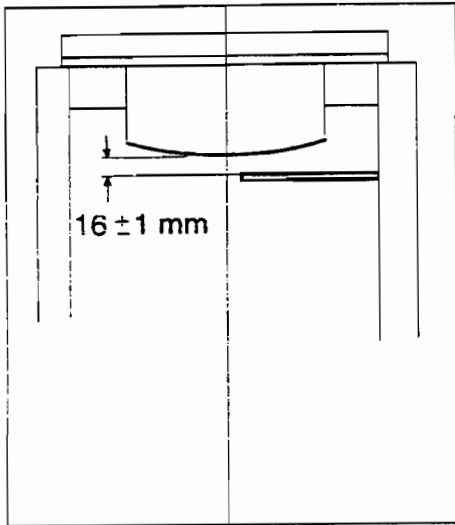


Diagram 13.4

1.5 Replace the Combustion Chamber Cover

- i. Carefully locate the door on the two studs and push back to the combustion chamber taking care not to damage the threads.
- ii. Re-locate the 2 wing nuts and 5 screws and tighten fully. Check that the door is sealed completely around the combustion chamber front.

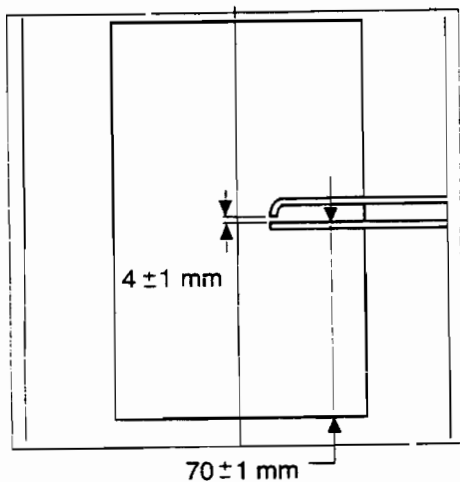


Diagram 13.5

1.6 Check and Clean the Injector (Diagram 13.6)

- i. Disconnect the gas feed pipe from the injector. The injector is screwed into the gas valve.
- ii. Disconnect the gas feed pipe from the mixing box.
- iii. Clean or replace if necessary.
- iv. Re-assemble in reverse order.
- v. Check for gas soundness.

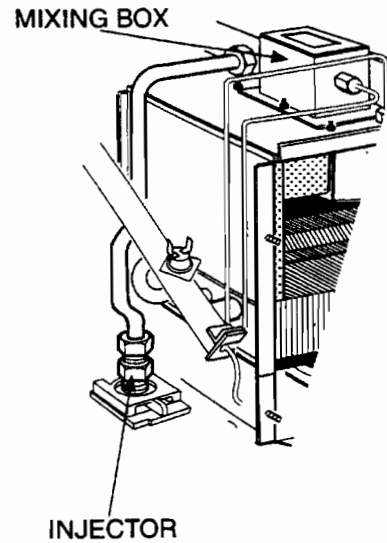


Diagram 13.6

2.0 Component Exchange

2.1 Control Tray Removal (Diagram 13.7)

The following components are mounted on a slide out tray:

1. Control box
2. Boiler thermostat.
3. On/Off switch.
4. Overheat Stat. reset switch.
5. Amber neon and Red I.e.d. indicator lights.

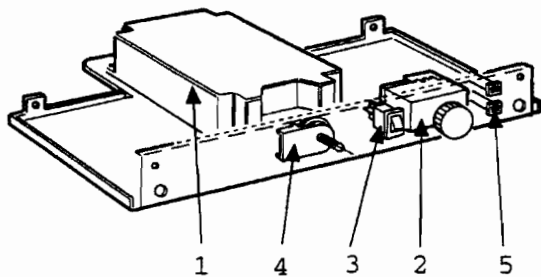


Diagram 13.7

To remove the tray: Diagram 13.8

- i. Unscrew the two tray captive screws a quarter turn each (1). Pull the tray forward.
- ii. Remove the spark ignitor from the control box (2).
- iii. Remove the plug in connector (3).
- iv. Unscrew the phial clip screws. Remove the retaining clips (4) and pull out both thermostat phials.

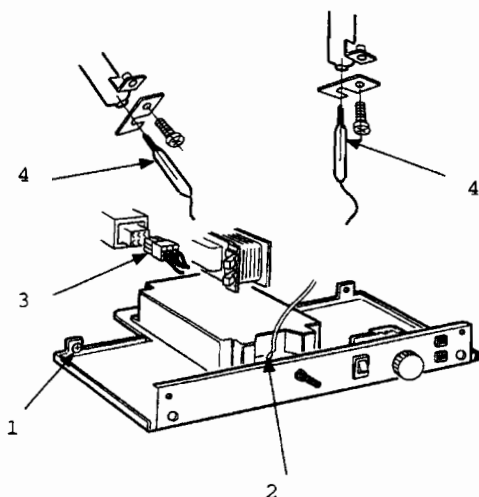


Diagram 13.8

- v. Slide out the tray with the thermostat phials and move to a convenient place.
- vi. After completion of task re-assemble the tray in reverse order.

*Note: The SRF model contains a Sifan fan.
The MDF model contains an EBM fan.*

2.1.1 Control Box (Diagram 13.9)

- i. Remove the control tray.
- ii. Remove the plug in connector (1).
- iii. Remove the electrode lead (2).
- iv. Remove the two M4 screws (3).
- v. Remove the box.
- vi. Replace in reverse order.

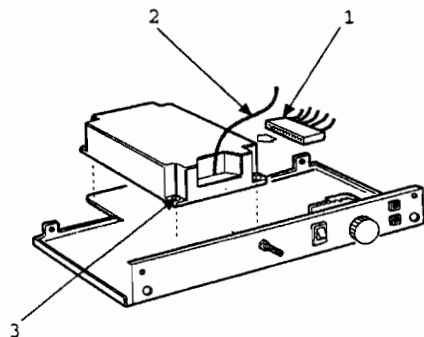


Diagram 13.9

*Note: The RF model contains a Sifan fan
The MDF model contains an EBM fan.*

2.1.2 Boiler Thermostat (Diagram 13.10)

- i. Pull off the thermostat knob (4).
- ii. Remove the two screws securing the thermostat body (5).
- iii. Re-assemble in reverse order ensuring the phial tube is not kinked.

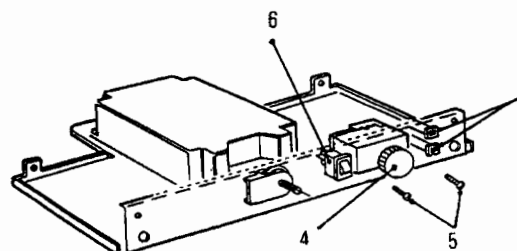


Diagram 13.10

2.1.3 Appliance Switch (Diagram 13.10)

- i. Press out the switch assembly and note the position of the leads (6).
- ii. Remove the leads and replace the switch in the correct orientation.
- iii. Re-assemble in the reverse order using the wiring diagram if necessary to re-locate the wiring correctly.

2.1.4 Indicator Lights (Diagram 13.10)

- i. Push out the indicator assembly (7).
- ii. Remove the tags – noting position of the wires.
- iii. Replace the indicators ensuring correct polarity (plastic pip to the top).
- iv. Replace the tags ensuring correct polarity.
- v. Push back the indicators.

2.2 Double Solenoid Valve (Diagram 13.11)

- i. Remove the control tray assembly as detailed in Section 2.1.
- ii. Disconnect the nuts fixing the sensing pipes to the Mixing box and the combustion chamber.
- iii. Disconnect the inlet gas connection at the Neva cock.
- iv. Disconnect the burner feed pipe at the valve and at the mixing box. Remove the burner feed pipe.
- v. Remove the wiring tags (3) noting their positions.
- vi. Remove the two fixing screws holding the bracket to the boiler.
- vii. Remove the valve and sensing pipes complete.
- viii. Remove the valve mounting bracket two screws.
- ix. Remove the sensing pipes by unscrewing the fixing nuts (2).
- x. Unscrew the injector from the gas valve. The injector is screwed in at 1.
- xi. Replace in the reverse order.
- xii. Remove the pressure test point on the valve (5) and fit a manometer.
- xiii. Follow the commissioning procedure (Sect. 9 a) to h)) – once the amber neon illuminates set the burner pressure as on the data badge. The burner pressure is adjusted by turning the offset screw anti-clockwise to increase (4). If the pressures specified in the commissioning section cannot be achieved contact the manufacturers.
- xiv. Check for gas soundness at this stage.
- xv. Turn off the mains on/off switch. Remove the pressure gauge and re-tighten test point screw.
- xvi. Place the thread sealing solution provided on the offset screw and replace.

- xvii. Re-light and test for gas soundness at the test point screw.

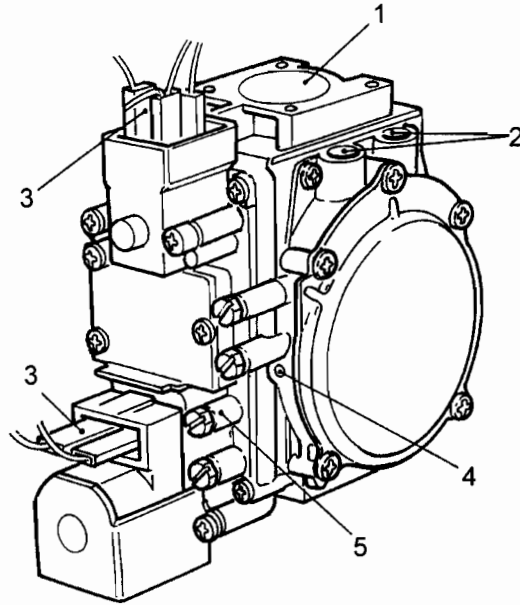


Diagram 13.11

2.3 High Limit Thermostat (Diagram 13.12)

- i. Remove the two electrical tags (1).
- ii. Remove two screws securing the thermostat (2).
- iii. Replace the high limit thermostat.
- iv. Re-assemble in reverse order.

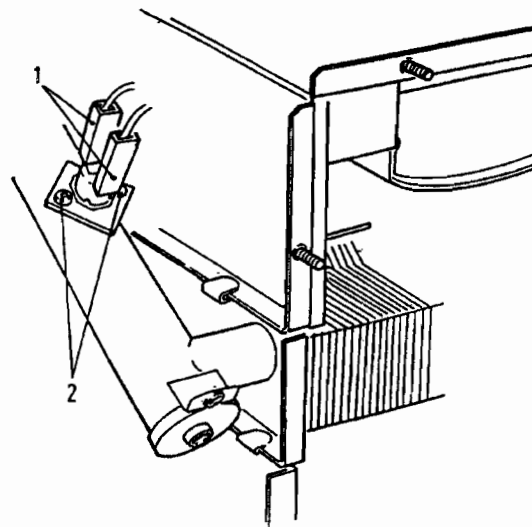


Diagram 13.12

2.4 Overheat Thermostat

- i. Remove the two electrical tags.
- ii. Remove the nut at the front of the tray.
- iii. Remove the phial from its retaining pocket (Diagram 13.13).
- iv. Replace overheat thermostat.
- v. Re-assemble in the reverse order.

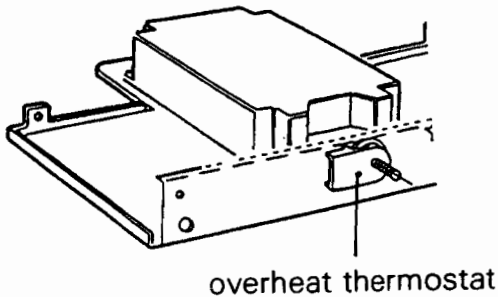


Diagram 13.13

2.5 Spark Electrode (Diagram 13.14)

- i. Remove the 2 wing nuts and 5 screws securing the combustion chamber front cover and carefully remove taking care not to damage the fibre seal. (Diagram 13.2).
- ii. Remove the two screws securing the probe.
- iii. Remove the probe taking care not to damage the insulation.
- iv. Re-assemble in reverse order and then re-set the positions as in Diagram 13.4.

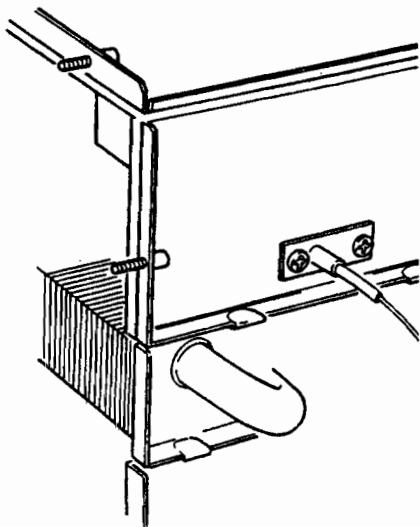


Diagram 13.14

2.6 Burner (Diagram 13.15)

- i. Remove the 2 wing nuts and 5 screws securing the combustion chamber front cover and carefully remove taking care not to damage the fibre seal. (Diagram 13.2).

- ii. Remove the top insulation panels (1). Remove the spark probe (Section 2.5).
- iii. Remove the 6 nuts on the top of the combustion chamber (2). Remove sensing tube.
- iv. Pull the burner down carefully and pull out taking care not to damage the top fibre seal.
- v. Re-assemble in reverse order and reset the probe positions as in Diagram 13.4.

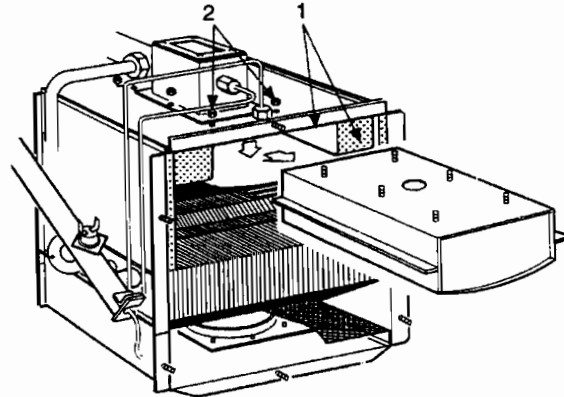


Diagram 13.15

2.7 Insulation Panels

- i. Remove the probe as in Section 2.5.
- ii. Remove the burner as in Section 2.6.
- iii. Pull out the left hand and right hand side insulation panels noting the cut outs at the back.
- iv. Pull out the rear panel.
- v. Unscrew the nut and washer on the front door and remove the door panel and fibre seal.
- vi. Re-assemble in reverse order taking care to align front door panels correctly and also to locate the rear panel correctly (cut out locations to the bottom).

2.8 Fan (Diagram 13.16) MDF Only

- i. Remove the 2 wing nuts and 5 screws securing the combustion chamber front cover and carefully remove taking care not to damage the fibre seal. (Diagram 13.2).
- ii. Slide out the baffle (1) from between the four screws (2) and combustion chamber base.
- iii. Remove controls tray as detailed in Section 2.1.
- iv. Remove the wiring tags including the earth lead from the fan.
- v. Remove the four screws (2) from combustion chamber sides.

- vi. Pull the fan assembly out of the inlet and outlet seals and remove.
- vii. Remove the two screws holding the fan mounting bracket and transfer to the replacement fan.
- viii. Pull off the fan outlet reducer and transfer to the replacement fan.
- ix. Re-assemble in the reverse order.

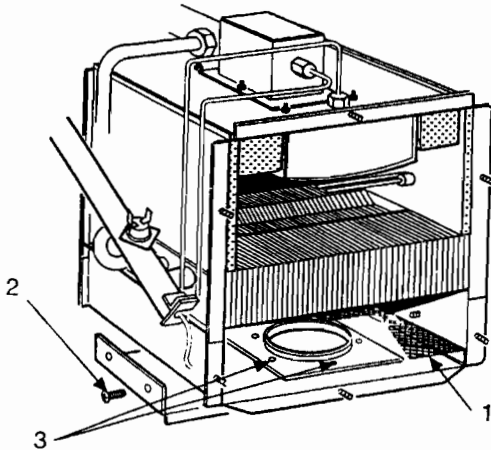


Diagram 13.16

2.9 Heat Exchanger (Diagram 13.16) MDF Only

- i. Remove the controls tray.
- ii. Remove the gas valve. Section 2.2.
- iii. Remove Spark Electrode. Section 2.5.
- iv. Remove Burner. Section 2.6.
- v. Remove Insulation Panels. Section 2.7.
- vi. Remove Fan. Section 2.8.
- vii. Drain the water system and disconnect at the flow and return union connections.
- viii. Disconnect the two locknuts from the heat exchanger brackets and remove.
- ix. Remove the four combustion chamber retaining screws and remove the heat exchanger assembly.
- x. Remove the six screws (3) on the fan seal clamp and transfer the seal and clamp to the replacement heat exchanger assembly.
- xi. Re-assemble in reverse order.
- xii. Check for water soundness.

2.8A Fan RF Only

- i. Remove controls tray as detailed in Section 2.1.

- ii. Remove the wiring tags including the earth lead from the fan.
- iii. Remove the two screws holding the RHS fan mounting bracket to the RHS of the combustion chamber.
- iv. Remove the screw holding the LHS fan mounting bracket to the bottom of the combustion chamber.
- v. Withdraw the fan and seal assembly.
- vi. Remove the two screws holding the RHS fan mounting bracket and seal to the fan. Transfer the seal and the RHS fan mounting bracket to the new fan.
- vii. Re-assemble in the reverse order.

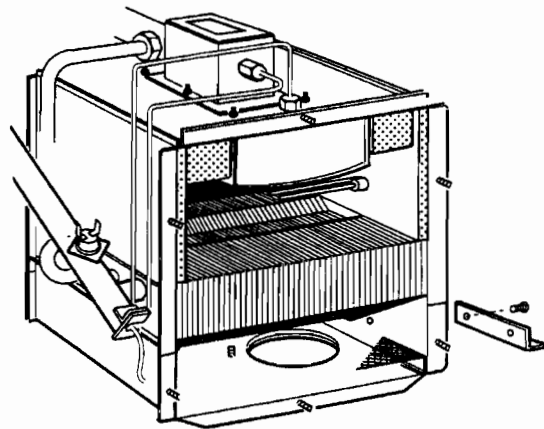
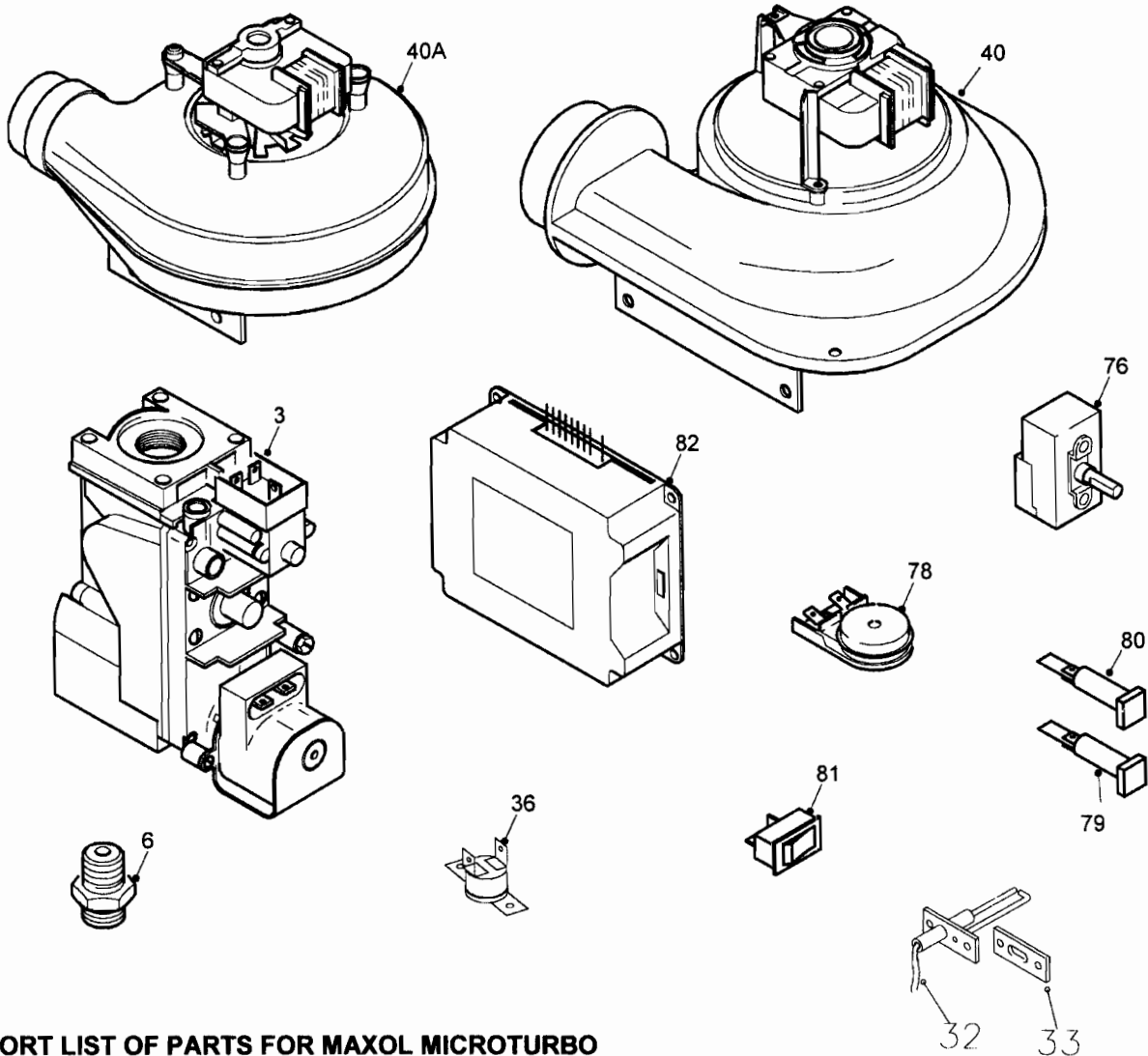


Diagram 13.17

2.9A Heat Exchanger RF Only

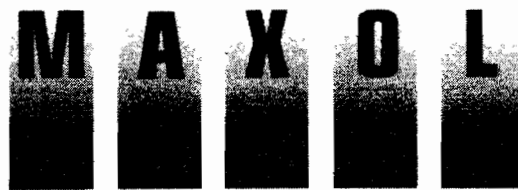
- i. Remove the controls tray.
- ii. Remove the gas valve. Section 2.2.
- iii. Remove Spark Electrode. Section 2.5.
- iv. Remove Burner. Section 2.6.
- v. Remove Insulation Panels. Section 2.7.
- vi. Remove Fan. Section 2.8.
- vii. Drain the water system and disconnect at the flow and return union connections.
- viii. Disconnect the two locknuts from the heat exchanger brackets and remove.
- ix. Remove the four combustion chamber retaining screws and remove the heat exchanger assembly.
- x. Re-assemble in reverse order.
- i. Check for water soundness.



SHORT LIST OF PARTS FOR MAXOL MICROTURBO

Key No.	Part No.	Description
3	3/21272/0	Gas Valve SIT
6	3/21274/0	Gas Injector 502
6	3/21281/1	Gas Injector 402
36	3/21268/0	High Limit Thermostat
40	57431	Fan EBM inc. "0" Ring (MDF)
40A	62074	Fan Sifan (RF)
76	3/21270/0	Thermostat RANCO
78	3/21456/0	Overheat Thermostat RANCO
79	57219	Neon Orange ARCO
80	58264	Neon Red ARCO
81	56874	Neon Switch
82	3/21360/0	Control Box PEKTRON
32	3/21273/0	Spark Electrode
33	57414	Gasket

Diagram 13.18



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