



UltraDor

UD10

Installation and Servicing Instructions

WARNING: THIS APPLIANCE MUST BE EARTHED

£2.50 When supplied separately.

UltraDor Issue 1 July 2003

1. INTRODUCTION

The UltraDor UD10 is a gas fired, fanned circulation door curtain heater with a heat output of 10kW, that has a closed combustion circuit and is supplied complete with a flue system. It is for use on Natural Gas, Group H - G20 only and the appliance categories is Cat I2H.

The heater is designed to be suspended from suitable ceiling points or alternatively to be mounted on purpose designed brackets and are intended primarily as a door curtain heater for retail and commercial premises. They may be used where the atmosphere inside the premises could be contaminated e.g. Dust, oil mist etc. but the heaters are not airtight and therefore may not be used in areas classified as hazardous as defined in BS 5345: Part 2 or areas subjected to significant negative pressures due to extract systems.

The UltraDor UD10 has an integral centrifugal fan assembly fitted to circulate the air being heated past the folded tube heat exchanger.

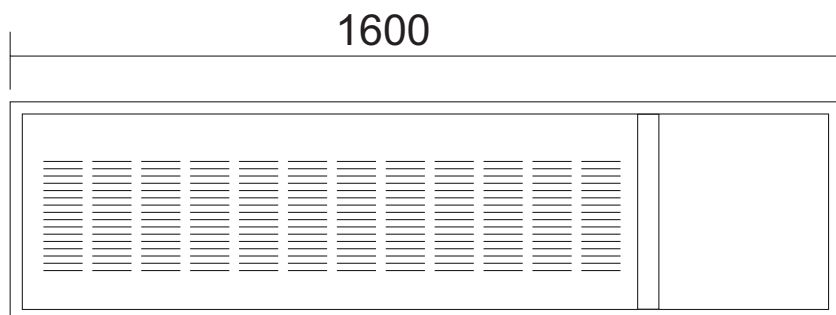
Heaters are fitted as standard with inshot burners, a fully automatic control for ignition, flame sensing, gas supply control and safety functions, an internal exhaust fan, main air fan, fan thermostat and limit thermostat.

Gas Safety (Installation & Use) Regulations 1997

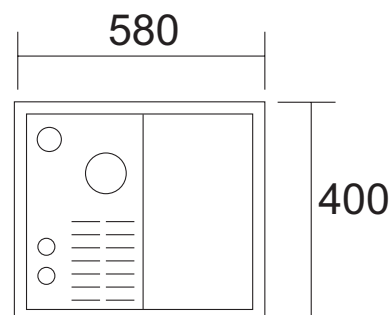
It is law that all gas appliances are installed, adjusted and, if necessary, converted by qualified persons* in accordance with the above regulations. Failure to install appliances correctly can lead to prosecution. It is in your own interests and that of safety to ensure that the law is complied with.

* e.g. Corgi Registered

2 Technical Data



Front View



Side View

Weight	83kg
Heat Input	10.81kW
Heat Output	10.00kW
Efficiency	92.5% net
Gas Rate	1.14m ³ /h (G20)
Burner Pressure	12.8mbar
Injector Size	1.94mm (Cat 10/500) Natural Gas - Group H - G20 Net CV (Hi) = 34.02MJ/m ³
Air Velocity (average)	5.1m/s
Air Volume	936m ³ /h
Flue Size	50mm
Flue Type	C13, C32

3. General Requirements

3.1 Related Documents

The installation of the air heater(s) must be in accordance with the rules in force and the relevant requirements of the Gas Safety Regulations, Building Regulations and the I.E.E. Regulations for Electrical Installations.

It should be in accordance also with any relevant requirements of the local gas region, local authority and fire authority and the relevant recommendations of the following documents.

British Gas Plc Publications

IM/16 : 1988 Guidance notes for the installation of gas pipework, boosters and compressors in Customer's premises (excluding domestic installation of 25mm and below).

British Standards Code of Practice

BS 5588 Fire precautions in the design and construction of buildings.

Part 2 : 1985 Code of Practice for Shops

Part 3 : 1983 Code of Practice for Office Buildings

BS 6230: 1991 Installation of Gas Fired Forced Convection Air Heaters for Commercial and Industrial Space Heating.

When the appliance, which has a gross input rating not exceeding 60kW, is installed so as to take its combustion air from within the building it must be installed in accordance with the relevant recommendations of the following document.

BS 5440 Flues and Air Supply for gas appliances of rated input

not exceeding 60kW (1st and 2nd family gases).
Part 2 - Air Supply

3.2 Location

The location chosen for the air heater must permit the provision of a satisfactory flue system and an adequate air supply. The location must also provide adequate space for servicing and air circulation around the air heater.

The heater(s) must not be installed in conditions for which it is not specifically designed e.g. where the atmosphere is corrosive or salty and they are not suitable for outdoor use. Where the location of the air heater is such that it might suffer external mechanical damage e.g. from overhead cranes, fork lift trucks, it must be suitably protected.

The UltraDor unit is designed to operate in a maximum ambient temperature of 25 °C.

3.3 Gas Supply

3.3.1 Service Pipes

The local gas undertaking should be consulted at the installation planning stage in order to establish the availability of an adequate supply of gas. An existing service pipe must not be used without prior consultation with the local gas undertaking.

3.3.2 Meters

A gas meter is connected to the service pipe by the local gas undertaking or a local gas undertaking contractor. An existing meter should be checked, preferably by the gas undertaking, to

ensure that the meter is adequate to deal with the total rate of gas supply required.

3.3.3. Installation Pipes

Installation pipes should be fitted in accordance with IM/16:1988. Pipework from the meter to the air heater must be of adequate size. Do not use pipes of a smaller size than the inlet gas connection of the heater. The complete installation must be tested for soundness as described in the above Code. The complete installation must be tested for soundness as described in BS 6230.

3.3.4. Boosted Supplies

Where it is necessary to employ a gas pressure booster the controls must include a low pressure cut off switch at the booster inlet. The local gas undertaking must be consulted before a gas pressure booster is fitted.

3.4 Flue System

The UltraDor UD10 features a closed combustion circuit and has an internal exhaust fan, mounted downstream of the heat exchanger, to both assist the evacuation of the products of combustion and to draw in air for combustion.

The air heater must be connected to the flue system that is provided by Powrmatic Ltd.

The flue should terminate in a freely exposed position and must be so situated as to prevent the products of combustion entering any opening in a building in such concentration as to be prejudicial to health or a nuisance.

3.5 Air Supply

As the air for combustion is taken from within the space being heated then for buildings having a design air change rate of less than 0.5 /h, and where units are to be installed in heated spaces having a volume less than 4.7 m³ /kW of total rated heat input grilles shall be provided at low level as follows:-

- (1) for heaters of heat input less than 60 kW, the total minimum free area shall not be less than 4.5 cm² per kilowatt of rated heat input.
- (2) for heaters of heat input 60 kW or more, the total minimum free area shall not be less than 270cm² plus 2.25 cm² per kilowatt in excess of 60 kW rated heat input.

All air vents should have negligible resistance and must not be sited in any position where they are likely to be easily blocked or flooded or in any position adjacent to an extraction system which is carrying flammable vapour.

3.6 Electrical Supply

Wiring external to the air heater must be installed in accordance with the I.E.E. Regulations for Electrical Installations and any local regulations which apply. Wiring should be completed in flexible conduit.

All standard heaters are supplied by 230V - 1ph, 50Hz. The method of connection to the main electricity supply must facilitate the complete electrical isolation of the air heater(s) and the supply should serve only the air heater(s). It must have a contact separation of at least 3mm in all poles. The method of connection should be provided adjacent to the air heater(s) in a readily accessible position.

See the accompanying wiring diagram for the heater electrical connections.

4. Installation of Air Heater(s)

4.1 General

Before installation, check that the local distribution conditions,

nature of gas and pressure, and adjustment of the appliance are compatible.

The air heater must be installed in accordance with the rules in force and the relevant requirements of any fire regulations or insurance company's requirements appertaining to the area in which the heater is located, particularly where special risks are involved such as areas where petrol vehicles are housed, where cellulose spraying is carried out, in wood working departments etc.

Whichever method of mounting the air heater is used the following minimum clearances for installation and servicing must be observed.

RHS Clearance (looking at front of heater)	1.00m
LHS Clearance (looking at front of heater)	0.1m
Top of the heater to ceiling	0.1m
Rear of heater to nearest wall	0.05m

Recommended mounting heights, floor level to the underside of the unit, are 2.5m - 3m

Units must not be installed at a height of less than 2.5m to the base of the unit.

Any combustible material adjacent to the air heater and the flue system must be so placed or shielded as to ensure that its temperature does not exceed 65 °C.

Heaters shall not be installed in:-

a) Those parts of spaces within buildings that have been classified as hazardous areas as defined in BS 5345 : Part 2.

b) Where there is a foreseeable risk of flammable particles or gases or corrosion inducing gases or vapours being drawn into either the heated air stream or the air for combustion.

c) In areas subjected to significant negative pressures due to extract systems.

4.2 Fitting the Air Heater

The air heater may be installed either:

- a) suspended from suitable vertical drop rods, chains or straps.
- b) on specifically designed cantilever brackets from a non-combustible wall.

Whatever method of installation is used it must be capable of adequately supporting the weight of the unit (*See Table 2, Page 3*) and allowance must be made for any ancillary equipment. Before installing the heater any existing trusses, walls, brackets etc., must be inspected to ensure they are suitable. All supports should be protected against the effects of rust or corrosion. If noise levels are of particular importance the heater should be insulated from the structure of the building by installing it on suitable anti-vibration mountings. In all such cases and, in addition, when the heater is suspended it is essential that all gas and electrical connections to the heater are made with flexible connections to maintain continuity of connection.

4.3 Flue Duct System

In all cases the flue outlet spigot must be connected via the provided flue system to outside air.

The maximum permitted length of flue system is 6m. The minimum flue length (end of flue terminal to back or top of heater) shall not be less than 0.5m.

All joints must be finished with a silicon sealant and fitted with jubilee retention clips. The flue must be supported independently of the air heater. The flue terminal must not be installed so as to be less than:-

300mm below an opening e.g. window, air brick etc.
200mm below eaves or gutter.

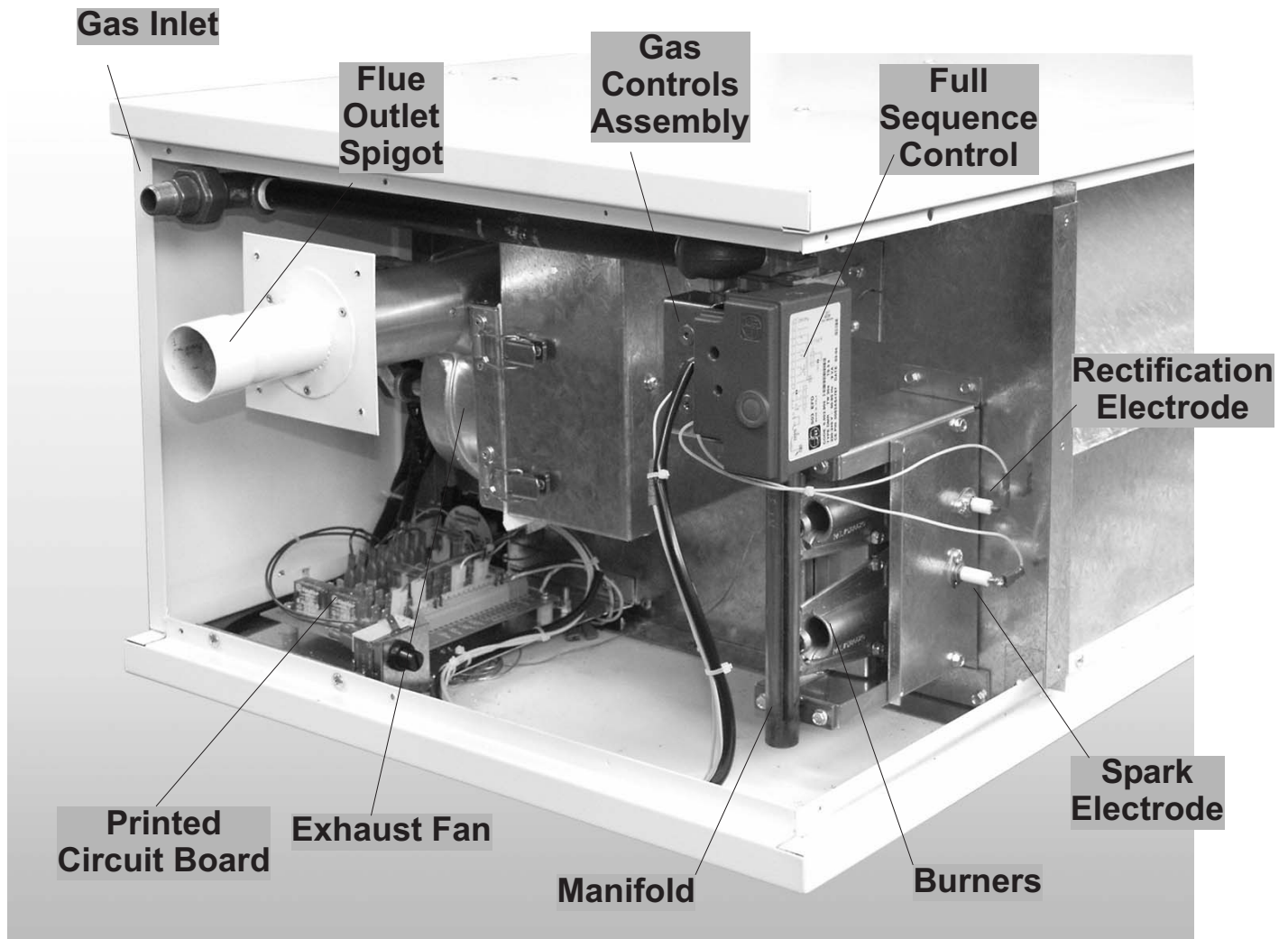
300mm from an internal or external corner.

1200mm from a surface facing the terminal.

1500mm vertically from another terminal on the same wall.

300mm horizontally from another terminal on the same wall.

Controls Layout



2000mm from ground level.

4.4 Installation of Flue System

1. Locate the position of the flue terminal, allowing for a slight gradient down from the heater (2° - 3°) and cut a hole to suit.
2. Trim the flue terminal stub to suit the wall thickness so that the spigot will be completely exposed on the inside when the terminal is fitted.
3. Fit the flue terminal, securing via the wall plate and weather with silicon sealant or similar.
4. Connect from the heater flue outlet spigot to the flue terminal spigot using the 50mm flexible flue using the most direct route. Do not try to bend the flexible flue to a radius less than 200mm. Clamp the flexible flue onto both the heater flue spigot and the flue terminal spigot using jubilee clips. seal joints with silicon sealant.

4.5 Gas Connection

To facilitate removal of the burner for servicing purposes a servicing valve and downstream union must be fitted at the inlet to the air heater. The gas supply to the air heater must be completed in solid pipework and be adequately supported. Heaters suspended by drop rods, straps or chains must have a flexible connection as the final link between the gas supply pipework and the heater. Sufficient slack must be left in the connection to take account of normal movement of the heater.

Warning

When completing the final gas connection to the heater do not place undue strain on the gas pipework of the heater.

4.5 Electrical Connections

All units are fully prewired and only require final connections for the incoming mains supply and completion of the control circuit (230V) via a room thermostat, time clock etc. and the remote low level lockout reset. The electrical supply must be run to a point adjacent to the heater and be suitably terminated to provide an isolation point that will prevent remote activation of the unit during servicing. Reference must be made to the technical data to ascertain the electrical loading of the air heater (so that cables of adequate cross-sectional area are used for the electrical installation. 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 if the cable or cord slips out of the cord anchorage. All external controls must be of an approved type. See the wiring diagram accompanying these instructions.

4.6 Room Thermostat Siting

The room thermostat should be fitted at a point which will be generally representative of the heated area as far as temperature is concerned. Draughty areas, areas subjected to direct heat e.g. from the sun, and areas where the air movement is relatively stagnant e.g. in recesses, are all positions to be avoided for siting the thermostat.

The thermostat should be mounted about 1.5m from the floor. Any room thermostat, frost thermostat, time clock etc. must be suitable for switching 230V, 5A and must be of the 'snap action' type to minimise contact bounce. For electrical connections of external controls see the accompanying wiring diagram.

5. Commissioning & Testing

5.1 Electrical Installation

Checks to ensure electrical safety must be carried out by a qualified person.

5.2 Gas Installation

The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of IM/16:1988.

5.3 Checks before lighting the Air Heater

The following preliminary checks should be made before lighting the heater(s)

- a) Ensure that the ELECTRICAL supply to the heater is switched OFF.
- b) Check that all warm air delivery outlets are open.
- c) Check that the thermostat is set at MAX.
- d) Check that the clock control is set to an ON period.
- e) Check that any other controls are calling for heat.
- f) If a Eurotrol or Powtrol is being used ensure that the Summer/Winter switch is in the Winter position.
- g) Check that the overheat reset button has not operated.

5.4 Lighting the Air Heater

NOTES:

1. On initial lighting of the heater(s), it may take some time to purge the internal pipework of air.

IMPORTANT:

The internal pipework of the appliance has been tested for soundness before leaving the factory. After establishing the main burners test round the gas inlet connection using a leak detection fluid e.g. soap solution.

2. Switch on the electrical supply at the isolator and after the internal exhaust fan air flow has been proved by the pressure switch the ignition sequence will commence. After a delay of approximately 30 seconds the ignition spark will be generated and the main gas valves energized. The burners will then light.

3. If the burners fail to light the control box will go to lockout and the lockout light on the low level remote reset will be illuminated. To restart the ignition sequence depress the reset button on the low level reset or control box if a low level reset is not fitted.

4. SHUT OFF

Switch OFF the electrical supply to the heater or set the clock control to OFF or set the room thermostat to MIN.

5.5 Adjustments

5.5.1 Burner Gas Pressure

This is set for the required heat input before despatch. Pressures should be checked in the following manner.

1. Set external controls to ensure that the main burner is off. Open the side access panel and connect a pressure gauge to the burner pressure test point on the multifunctional control.
2. Set external controls so as to turn on the main burner. Compare the measured burner gas pressure to that stated in Section 2. If necessary adjust the burner gas pressure by turning the regulator screw (Anticlockwise to decrease the pressure, or clockwise to increase the pressure).
3. In addition it is advisable to check the gas rate using the gas meter dial pointer. Ensure that no other appliances supplied through the meter are in operation.
4. Turn off the main burner and disconnect the pressure gauge and replace the sealing screw. Turn on the main burner as in 5.5.1.2. above and test for gas soundness around pressure test joint using a leak detection fluid e.g. soap solution.

5.7 Air Heater Controls

1. Close the gas service tap and ensure that the gas valve is heard to close within 1 second and that the lockout light is illuminated. Note that the heater may attempt one reignition before going to lockout. Open the gas service tap and reset the unit from lockout.
2. Check that the room thermostat and all automatic controls are operating satisfactorily.

5.8 Handing over the Air Heater

Hand the Users Instructions to the user or purchaser for retention and instruct in the efficient and safe operation of the air heater and associated controls.

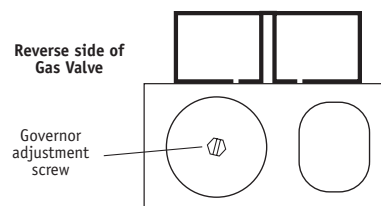
Adjust the automatic controls to those values required by the User.

Finally, advise the user or purchaser that, for continued efficient and safe operation of the air heater, it is important that servicing is carried out annually.

In the event that the premises are not yet occupied turn off the gas and electricity supplies and leave instructional literature adjacent to gas meter.

6. Servicing

Gas Valve Pressure Adjustment



WARNING: Always switch off and disconnect electricity supply and close the gas service valve before carrying out any servicing work or replacement of failed components.

NOTE:

1. If a suspended air heater is to be serviced do not lean ladders against the heater. Ensure that an access tower or equivalent is used.

6.1 General

Full maintenance should be undertaken not less than once per year by a qualified person. After any servicing work has been complete or any component replaced the air heater(s) must be fully commissioned and tested for soundness as described in Section 6.

6.2 Main Burner Assembly Removal

1. Ensure that the gas service valve is turned OFF and then unscrew the union nut situated immediately down stream of it.
2. Open the side access panel. Disconnect the spark and rectification leads from the electrodes and remove the control box from the top of the gas control valve assembly. Remove the manifold by removing the four screws securing it to the burner assembly.
3. Remove the two screws that secure the top of the burner assembly to the bulkhead and lift out burner assembly
4. Using a stiff brush, not a wire brush, brush the burners to dislodge accumulated deposits. Inspect the burners both internally and externally to ensure that they are clean. Examine the injectors and if damaged or deteriorated, replace with new ones of the correct size and marking. If deemed necessary, clean the injectors. Do not broach out with wire.
5. Reassemble the injectors, manifold and burners in reverse order to that above.

6.3 Ignition and Rectification Electrodes

1. Inspect the electrodes, making sure that they are in a sound and clean condition. In particular check that the ignition electrode is clean, undamaged. Check that the spark gap is 3.0 - 4.0mm.

6.4 Main Fan Assembly/Air Filters

1. Remove the three screws securing the louvred front panel and lift panel out.
2. Inspect filters and clean as necessary.
3. Check the fan blades to see that they are not damaged and that there is no excessive build up of deposits that could give rise to an imbalance. Should it be necessary clean the fan blades using a stiff brush
6. Reassemble in reverse order.

6.5 Replacement of Faulty Components

6.5.1 Full Sequence Control Box

1. Remove the spark and rectification leads and electrical connections from the control box.
2. Remove the control box from the gas controls assembly and fit replacement in reverse order.

6.5.2 Gas controls Assembly

1. Remove the spark and rectification leads and electrical connections from the control box.
2. Remove the control box from the gas controls assembly.
3. Remove gas controls assembly and fit replacement in reverse order.

6.5.3 Burners

1. Remove the burner assembly and dismantle it as previously

described in Sections 7.2

2. Exchange those burner bars as required and reassemble components in reverse order.
3. Re-commission the appliance as described in Section 5.

6.5.4 Electrode Assembly

1. Disconnect the ignition lead from the control box and the rectification lead from the terminal strip.
2. Remove the screws securing the electrode assemblies to the burner side plate and withdraw the assembly.
3. Fit replacement and reassemble in reverse order. Check that the spark gap is 3.0 - 4.0mm and the rectification electrode is 10 - 12mm above the burner.

6.5.4 Fan and Limit Thermostat

NB. Ensure that the thermostats are set correctly before fitment
Fan Thermostat - all units - 30° C (preset)
Limit Thermostat - all units - 100° C (preset)

1. Remove the securing screws from the thermostat phial mounting plate, remove plate and unclip the appropriate phial.
2. Remove the securing screws of the appropriate thermostat and remove thermostat from the back of the mounting panel. Remove the electrical connections.
3. Fit replacement thermostat in reverse order.

6.5.5 Exhaust Fan Run On Thermostat

1. Disconnect the electrical connections from the thermostat.
2. Remove the securing screws of the thermostat and remove t h e r m o s t a t .
3. Fit replacement thermostat in reverse order.

6.5.6 Exhaust Fan

1. Disconnect exhaust fan from the printed circuit board.
2. Disconnect the flue from the outlet spigot.
3. Remove the four screws securing the exhaust fan mounting plate to the side panel and remove the side panel.
4. Unclip and remove the fan
5. Fit replacement exhaust fan and reassemble in reverse order.

6.5.7 Pressure Switch

1. Remove pressure switch cover and disconnect electrical connections.
2. Pull off the sensing tube from the air pressure switch.
3. Remove the screws fixing the air pressure switch and remove switch.
4. Fit replacement in reverse order refitting the sensing tube to the negative (-) tapping on the pressure switch.

6.5.8 Fan Assembly

1. Remove the three screws securing the louvred front panel and lift out panel.
2. Remove fan electrical connections from the printed circuit board.
2. Remove nuts securing fan deck to the inner bulkhead and remove complete fan assembly
2. Refit fan assembly to the heater in reverse order.

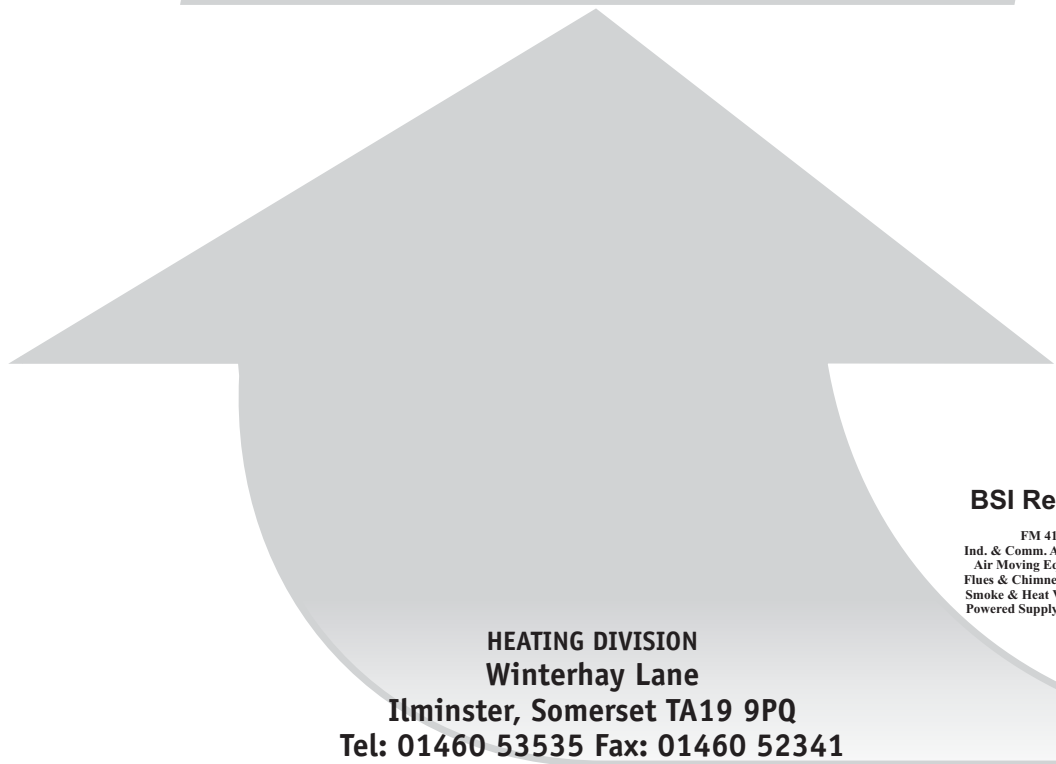
8. Fault Finding

Fault	Cause	Action
Internal exhaust fan does not run	Electrical	<ol style="list-style-type: none"> 1. Check that there is an electrical supply to the unit and that external control circuit is made. 2. Unit at lockout - reset. 3. Limit thermostat tripped - reset. 4. Faulty control box. 5. Faulty fan relay. 6. Faulty exhaust fan.
Internal exhaust fan runs but ignition sequence does not start.	Electrical	<ol style="list-style-type: none"> 1. Check that air pressure switch is changing over as exhaust fan starts. 2. Faulty control box.
Internal exhaust fan runs, ignition spark is observed but burners do not light.	Electrical	<ol style="list-style-type: none"> 1. Ignition spark gap wrong or ignition electrode / lead shorting to earth. 2. Faulty control box. 3. Faulty gas control valve.
	Gas	<ol style="list-style-type: none"> 1. Check that gas is available to the unit.
Burners light but go out almost immediately.	Electrical	<ol style="list-style-type: none"> 1. Rectification electrode position wrong. electrode/lead damaged - check flame signal.
Burners light but go out after 2 - 3 minutes, main fan does not run.	Electrical	<ol style="list-style-type: none"> 1. Fan thermostat faulty or set too high. 2. Main air fan faulty - If Summer/Winter switch fitted check that on Summer setting the fan runs.
Main fan runs continuously	Electrical	<ol style="list-style-type: none"> 1. External controls (or Summer/Winter switch if fitted) set to Summer position. 2. Faulty fan thermostat - check setting <i>See Section 7.6.5.</i>
Main fan fails to run	Electrical	<ol style="list-style-type: none"> 1. Fan motor or capacitor failed - replace. 2. Fan thermostat faulty - replace. 3. Fan contactor failed - replace (3ph units)

8. Short List of Parts

Refer to Powrmatic Ltd for the details of any parts not listed here.

ITEM	PART NUMBER
Gas Valve - SIT 830 Tandem 0833033 - 1/2" BSP.	142400444
Full Sequence Control - SIT 503EFD	145601045
Thermostat - Exhaust Fan -RS 331-540	147600001
Exhaust Fan - Sifan WFFB 0223-006	140210499
Pressure Switch - Honeywell C6065A1028:2	146522170
Electrode - Rectification -	TBA
Electrode - Ignition -	TBA



BSI Registered Firm

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