

Bullfinch

Owner's Manual and Operating Instructions.

Model: MH 25 Forced Air Space Heater for use in marquee's and other well ventilated spaces.



<u>Model</u>	<u>Output (KW)</u>	<u>Fuel</u>
MH 25 CLASSIC	25	Propane Vapour @ 1Bar
3.5 Amp start up 1.5Amp continuous		

CE 2726

Congratulations you have purchased the very best forced air space heater available in the market today.

Your new Bullfinch heater benefits from being manufactured by the oldest LPG appliance manufacture in the UK, using state of the art technologies.

Attention all users.

This heater has been designed and developed specifically as a forced air circulation heater for marquees and other well-ventilated spaces.

It conforms to the essential requirements of Regulation (EU) 2016/426 (Gas Appliance Regulations). It also complies with the Gas Appliances (Enforcement) and Miscellaneous Amendments Regulations 2018 (UK Statutory Instrument 2018 No. 389).

The Low Voltage Directive and Automatic/remote Control standards for gas equipment.

If you are considering using this appliance for any other type of installation please consult your local dealer or Bullfinch Gas Equipment Ltd directly before us.

To ensure that the heater continues to function correctly, it is essential that the heater is serviced annually.

For all service and repair or replacement of faulty components, it is recommended that the heater should be returned to Bullfinch (Gas Equipment) Limited.

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Warning Gas Equipment

Proper gas supply pressure must be supplied to the inlet of the heater.

Refer to appliance data-plate for supply pressure.

Incorrect gas pressure supplied to the inlet could result in fire or explosion.

Fire and or explosions may lead to serious injury, death and or property loss and damage.

Improper combustion due to incorrect gas pressure at the inlet may lead to asphyxiation or carbon monoxide poisoning, serious injury to humans and live stock may also result.

Warning

Fire and Explosion Hazard

Keep all combustible materials a safe distance from the heater.

Do not use the heater in combustible atmospheres due to air born contaminations.

The heater is not to be use in the home, motorhome, caravan or any other recreational vehicular not mention here.

Do store or use flammable vapour or liquids near the heater.

Failure to adhere to these instructions may result in fire, explosion leading to loss of life serious injuries and or loss or damage to property.

Warning Notice

1. Failure to comply with the instructions provided with this heater, may result in:
 1. Death
 2. Serious injury and or burns
 3. Property damage or loss due to fire and or explosions
 4. Asphyxiation due to incorrect installation and or use including carbon monoxide poisoning
2. Read this owners manual before installation and use of the product.
3. Only certified installers should service and install tis product.
4. Retain the owner's manual for reference in the future.

Safety Notice

1. If you smell gas:
 1. Open windows doors etc.
 2. Don't touch electrical switches
 3. Extinguish any open flames.
 4. Leave the building / marquee.
 5. Call appropriate services and or engineer

Electrical Safety Notice

For additional safety it is recommended that an RCD adaptor is used when connecting the heater to a 220/240 volt electric supply.

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General Information

This Owners Manual covers information for the most common accessories used with the heater.

When calling for technical support always have the serial number ready, (this can be found on the data-plate) the specific details of the fault, the configuration of the unit e.g. does it have ducting fitted is it connected to a generator or mains power, voltage of the mains power. Etc.

This manual will instruct you on the correct care and installation of the heater, ensure a suitable competent person reads through the information contained herein before installation and use.

Only a suitably qualified and competent person should connect this appliance to a gas and electrical supply. The heater has been designed to affect ease of operation and installation.

If you have any issue with suitability of the heater/ appliance for your application please contact Bullfinch Gas Equipment or one of its distributors for further specific information.

Bullfinch (Gas Equipment) Limited reserve the right to change, modify and upgrade the heater/appliance as required without notice. This may include functionality and specification.

Heater Specification

		Model
Specifications		MH 25 CLASSIC
Nominal Input (KW)		25 (±1.25)
Inlet gas pressure	Propane	1 Bar (+.5 - 0)
Motor	230 Volts @0.18Kw	1380Rpm
Protection rating (IP)		<= IP13
Electrical Supply Voltage	Voltage/Hz/Phase	230/50/1
Current	Start	3.5A
	Continuous	1.4A
Min Distance from combustible materials	Top	0.3 m
	Sides	0.3 m
	Back	0.3 m
	Gas Feed	0.3 m
	Air Outlet	0.5m
Min Ambient Temperature at which the heater may be operated		-20 C
Dimensions L x W x H mm		860 x 600 x 565 mm
Air Delivery Temperature at 1.5m Arc		35 Degrees C (Max)

Technical Data

Appliance Category:	I3P (1Bar)
Operating Pressure:	1 Bar (+0.5 -0)
Max. Gas Consumption:	1.8 Kg/h
Nom. Heat Input:	25 kW
EC Destination Countries:	IE, NL, CH, FR, PT

Safety Precautions

Warning

- This Heater has been designed to be used in marquee's/tent's with temporary human occupancy.
 - Do **NOT** use the heater for human living space.
- Do **NOT** use in unventilated areas, the Heater has been designed for use in well ventilated areas.
- The flow combustion or ventilation air must never be obstructed.
- Proper ventilation air must be provided to support the correct combustion air requirements of the heater.
- Refer to data plate for combustion air ventilation requirements.
- Lack of ventilation air will lead to improper combustion and thus lead and may lead to death or serious injury or respiratory issues.
- Improper combustion could lead to carbon monoxide poisoning in humans which can lead to death, be aware of dizziness, headaches, difficulty breathing.

Safety Precautions (Continued)

Fuel Gas Odour

LPG has been given a manmade odour specifically to aid leak detection.
In the event of a leak you should be able to smell it in the first instance.
This is your chance to take immediate action.

- Do not take action that inadvertently could ignite the gas.
 - Do not operate socket or light switches for example.
 - Do light any naked flames such as matches.
 - Do not use your telephone.
 - Get people away from the area as soon as is possible.
 - Turn off all LPG tanks/cylinders at source as soon as possible.
 - Propane is heavier than air so can settle in pockets in undulating surfaces.
 - If in the event you or your appointed person/s are unable to smell this manmade odour it is possible to buy "gas sniffer" equipment, it is advisable to obtain one of these devices and use it during each installation. For further advice contact your local bottled gas suppliers for assistance.
-
- Do not attempt to install, repair or service this heater unless you have specific gas qualification and expertise to do so.
 - You must be "Gas Safe" registered in the UK to be deemed suitably qualified.
 - If outside the UK you must adhere to the local regulation / legislation appertaining to Gas Safety and installations, repairs.
 - All users of Bullfinch Gas Equipment Ltd Heaters must ensure the installation and use meets all local, regional & national codes of practice.
 - The heater must not be moved or repaired / serviced while still connected to Fuel gas or electrical supplies.
 - Do not water wash the heater externally or internally, compressed air is recommended as a suitable cleaning medium for the internal parts.
 - For your safety this heater has been fitted with air flow and over heater switches never operate this heater with safety systems that have been bypassed.
 - Do not operate the heater when the doors are open or control panels have been removed.
 - This heater must be located 1.8 meters away from the propane cylinder.
 - Never operate the heater when air inlet and or outlets have been blocked or restricted in anyway. Doing so may lead to property loss or damage.
 - Visually inspect the hose assembly prior to use, look for excessive abrasion, deep cuts, and visible wear. The hose shall be protected from hot surfaces during use, traffic and building material at all times.
 - Check for gas leaks using appropriate methods, prior to use.
 - This heater shall be inspected by a suitably qualified person post installation and at least annually.
 - Never leave gas or electrical supplies active when not in use.
 - This heater is designed to be connected to a conventional 3 wire (live, Neutral and Earth) the heater may or may not be fitted with a plug it is the users responsibility to ensure the heater is suitably earthed failure to do so may result in electric shock and or death. The heater will not work correctly if no earth is present.
 - This heater has been designed to work on 230Volt single-phase supply failure to achieve this may result in intermittent or failure to ignite. After three attempts the heater will return a "lockout" state allow 5 minutes before trying this is to allow any unlit gas to disperse. If this continues check the supply voltage and or contact the manufactures or distributors.
 - Minimum Gas supply will be one 47Kg propane cylinder.
 - The hot air discharge and or its ducting outlets shall not be directed at propane cylinders with 6 metres.

Installation Instructions

General

Installation should always be carried out by a **competent** person(s)

A risk assessment and method statements should be carried out and recorded by the installer to ensure safe

Warning
Fire and Explosion Hazard
Can cause proper damage, severe injury or death.

- Disconnect power supply before wiring to prevent shock or equipment damage.
- To avoid dangerous accumulation of fuel gas, turn off gas supply at the appliance service valve before starting installation.
- Perform gas leak test after completion of installation.
- Use only approved leak detection devices. DO NOT use open flame (i.e. matches, tapers etc.) to check for gas leaks.
- Failure to follow these warnings can lead to fires or explosions.
- Fires or explosions can lead to property damage, personal injury or loss of life.

installation and safe operation of the appliance.

You will need a suitable power supply as stated within the operation instructions, you will need a 47Kg propane cylinder (ideally full) as set out within the operation instructions. Suitable leak detection liquid and spanner suitable for attaching the regulator to the cylinder as set out by the cylinder suppliers(manufacturers) it is recommended that you follow all necessary codes of practice appertaining to safe installation and use of propane cylinders. These can be obtained from the suppliers of the cylinders.

Read all safety precautions before installing this heater. If during the installation or relocating of heater, you suspect that a part is damaged or defective, call a qualified service agency for repair or replacement.

Ensure that any accessories that are supplied with the heater are removed from inside the heater and installed correctly.

Site the heater on level non-combustible ground with clearance as instructed within operation instructions, ensure that the heater is sited away from the area to be heated to avoid any undue noise.

Ensure that the heater is isolated from persons using or visiting the temporary structure.

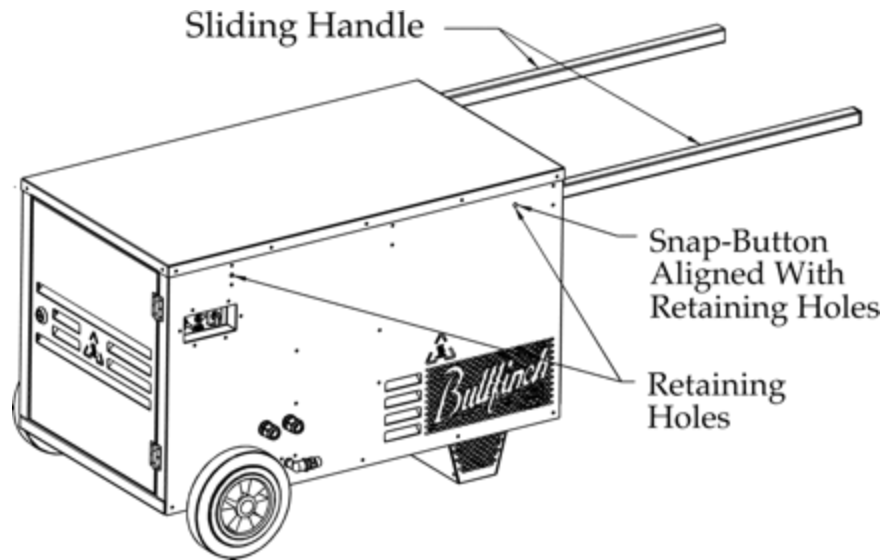
Connect the gas supply as recommended by the gas suppliers. Connect the power supply and follow operator instructions.

Protect any electrical cable, gas hose or ducting from equipment or people traffic.

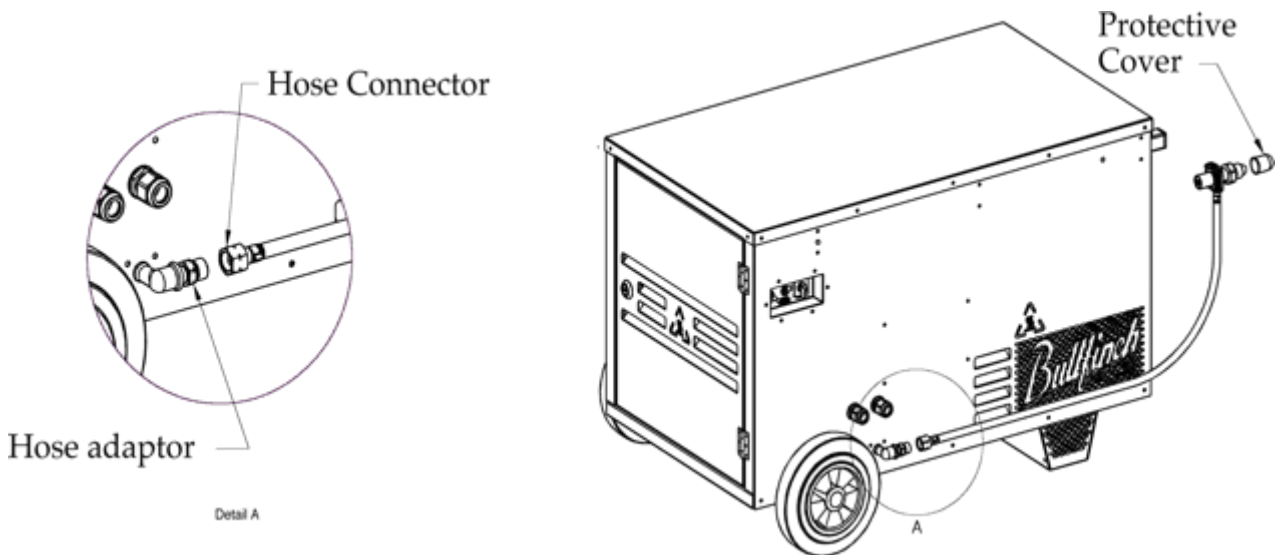
For accessories follow instructions for connection and use supplied with the accessories.

Moving the Heater

The MH 25 CLASSIC heater is equipped with handles for convenient mobility. Sliding handles are pre-assembled and installed within the heater casing. For shipping and storage purposes the handles are recessed. To make the handles operative depress the snap-button and pull out the handle until the snap-button engages with the forward retaining hole. To recess the handle, press the snap-button and push the handle in until it engages with the rear retaining hole.



Connection to the Gas Supply



To Connect the Hose and Regulator Assembly:

- Check that both the sealing surfaces of the Hose Adaptor and the Hose Connector are free from damage, then attach the Hose Connector to the Hose Adaptor and secure the joint spanner tight (the joint has a left hand thread).
- Check that the joint is leak free prior to using the heater.

Connecting to the gas supply:

- Remove the protective cover from the regulator.
- Check the sealing surfaces of the gas cylinder valve and the regulator are free from and damage.
- Connect the regulator to the gas cylinder valve and secure the joint spanner tight (the joint has a left hand thread).

Gas Safety Checks

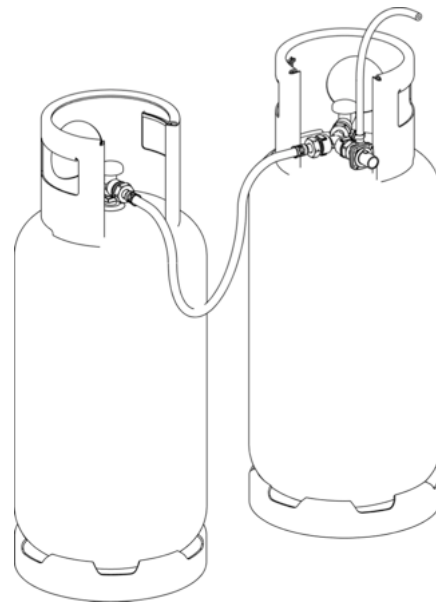
After connecting the heater to the gas supply, check to ensure that the installation is free from any leaks.

- Ensure all gas joints made during installation are spanner tight.
 - All fuel gas joints have left hand threads.
- With the heater set to the OFF position, open the gas cylinder valve and using an approved leak detector check each joint to ensure that it leak free.
- In the event of a gas leak being detected, turn off the gas cylinder valve.
- Tighten the affected joint and repeat the above procedure.
- If the leak cannot be rectified, disconnect the heater and have the heater and/or the regulator and hose assembly serviced or replaced.
- Recheck all joints are leak free.
- Once all the joints have been checked, light the heater according to the lighting instructions and check heater for correct operation.
- If a further leak is detected, immediately turn off the heater at the gas cylinder and have the heater checked by a qualified service agency.
- Do not use the heater until it has been repaired.

Cylinder Selection Guide

At least one 47 kg cylinder is required for the heater. Alternatively, 2 x 19 kg cylinders may be used, linked together by a pigtail hose assembly – 500 mm long (Bullfinch No. 1494) and a 'Y' manifold (Bullfinch No. 1506).

Where longer continuous use is required, it would be better to link multiple 47 kg cylinders together.



Heater Sizing Guide

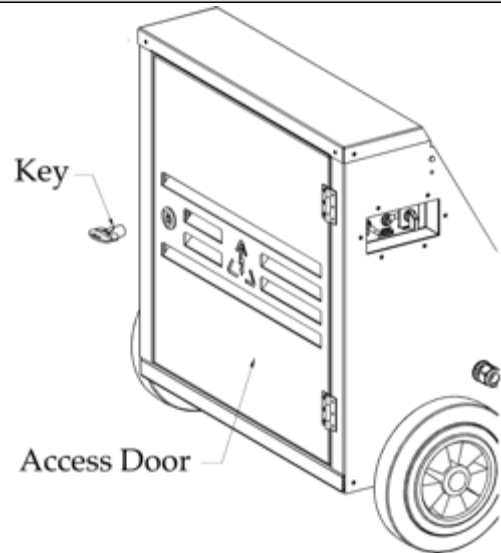
The following is a guide for the number of heaters required for a 20°C temperature rise in a 4 metre high marquee (approximate figures as a guide only – on warmer days you will not need so many heaters).

Example:

- 100 sq m (1000 sq ft) – 1 MH25 heater No. 2510
- 250 sq m (2500 sq ft) – 2 MH25 heaters No. 2510
- 400 sq m (4500 sq ft) – 4 MH25 heaters No. 2510
- 500 sq m (5000 sq ft) – 5 MH25 heaters No. 2510

Access to Fuses and LED Display

Access to the fuse holders and the LED display is through the heater access door. The heater doors are secured by a quarter turn latch, activated by the key supplied with the heater. Access through the burner door is only required during servicing, if this door is opened while the heater is running it will shut down immediately. The heater can only be restarted once the door has been closed and the heater reset. To open the door, insert key and rotate 90° clockwise. To close door, insert key and rotate 90° Anti-clockwise.

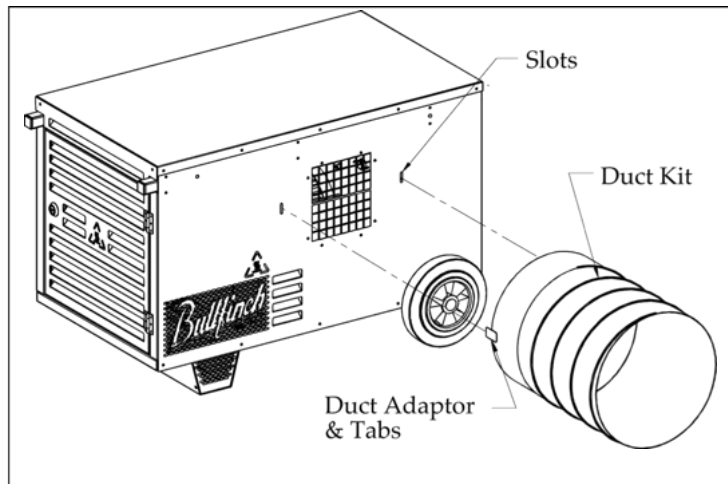


Duct Kit/End Diffuser Assembly

Duct Kit No. 2511
End Diffuser No. 2512

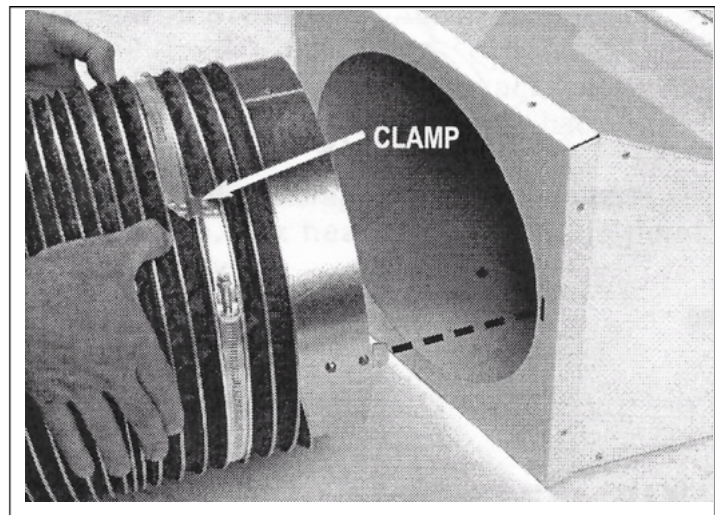
To fit the Duct Kit:

1. Extend the duct kit.
2. Insert the tabs on the duct adaptor into the slots each side of the heat outlet. Push down to secure in position.
3. Place open end of duct kit under the outer wall of the tent/marquee and drape tent material over ducting.



To fit the Duct diffuser:

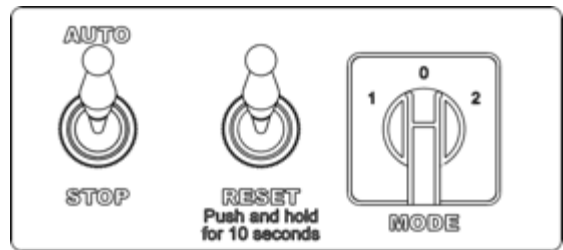
1. Insert collar into duct. Tabs must be facing away from the ducting.
2. Wrap duct clamp around duct and collar. Saddle of clamp lays over duct coil. Connect clamp ends together and tighten securely.
3. Insert tabs of collar into slots at air inlet of duct diffuser. Push down to secure in place.
4. Tent material may be laid within the channel of the duct diffuser to give a finished look to the installation.



Start Up/Shut Down Instructions

Start Up Sequence

- Select mode (Heater or Fan)
 - Position '0' Off
 - Position '1' Heat
 - Position '2' Fan
- If Fan is selected the unit will just have the fan running (Position '2').
- If heater mode is selected (Position '1') . Turn the room thermostat up to desired temperature, heater should start automatically.
 - If the heater doesn't start press the reset switch for > 10Sec.
 - If the heater doesn't start straight away open the access door and check the LED fault indicator for the Flash code.
 - Reset the heater.
- The heater will now work automatically based on room temperature.



LED Legend

Yellow: Heater on.
Green: Flame established.
Red: Fault.

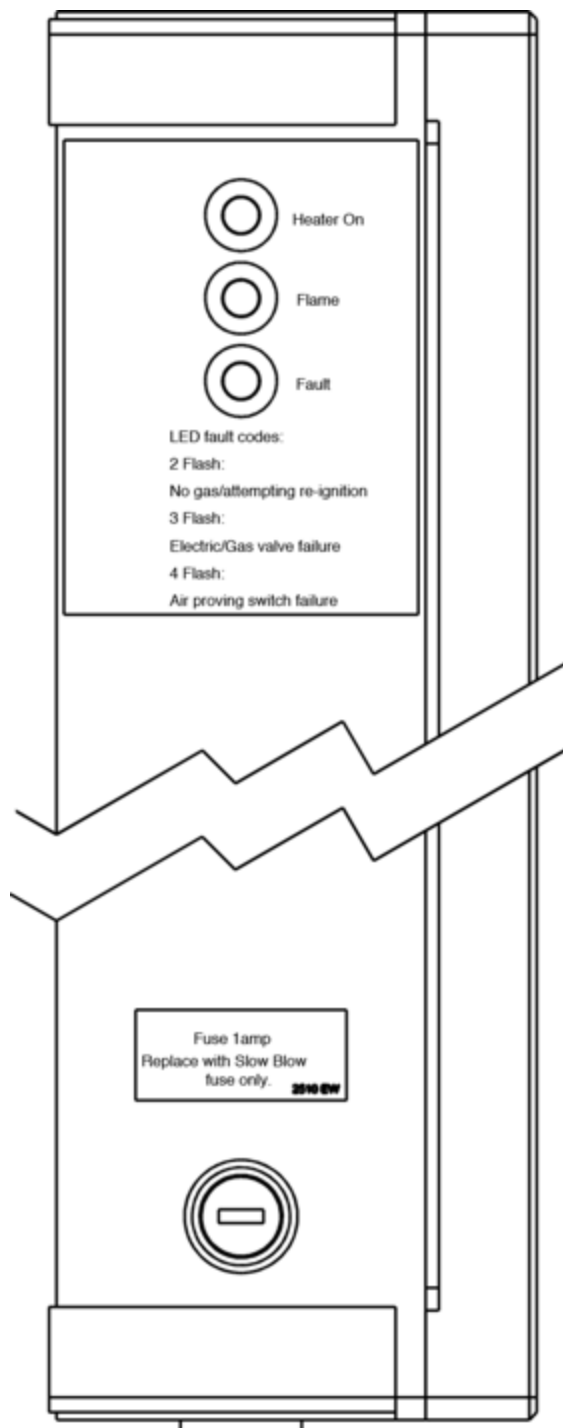
Fault Codes:

- 2 Flash:- No gas or gas cylinder empty.
- Heater will attempt to restart 3 times, if unsuccessful the heater will go into a 3 flash lockout.
- 3 Flash:- Electrical/ Gas Valve failure or a running lockout that will not reset.
- 4 Flash:- Air Proving Switch failure.

In the event of a 3 or 4 flash lockout seek service or repair to rectify fault.

Shut Down Sequence

- For normal shut down (when further use is anticipated) To stop the heater after use:
 - Turn room thermostat down and then turn of the unit
 - Or press stop on the panel.
 - Move the mode switch to off (center position).
- To shut down the heater for relocation, maintenance or service:
 - Position the mode switch to OFF and disconnect the heater's electrical supply.
 - Close the gas cylinder valve.
 - Disconnect the regulator from the gas cylinder. There may be a minimal amount of gas left in the hose that will escape once the regulator has been disconnected, this is normal and will not cause an unsafe condition.
 - Replace the protective cover over the regulator inlet connector and replace the plug (if supplied) in the gas cylinder.



Cleaning Instructions

WARNING

Fire, Burn and Explosion Hazard

- This heater contains electrical and mechanical components in the gas control, safety and airflow systems.
- Such components may become inoperative or fail due to aging, wear and the ingress of dust and dirt.
- To ensure that the heater functions correctly, periodic cleaning and inspection as well as proper maintenance should be carried out.

WARNING

The use of pressure washer, water or liquid cleaning solution on this heater can cause severe personal injury or property damage:

- In electrical components, connections and wires causing electric shock or component failure.
 - On gas control valves causing corrosion which can result in gas leaks and fire or explosion from the leak.
-
- Before cleaning, shut off all gas supply valves and disconnect the electrical supply.
 - The heater should have dirt or dust removed periodically:
 - a. After each use, give the heater a general clean using compressed air or a soft brush.
 - b. Use a soft brush or dry cloth to clean the interior of the heater.
 - c. Use a damp cloth to clean exterior painted surfaces.
 - d. When cleaning, observe and follow all the warnings within these cleaning instructions.

General Maintenance Instructions

It is recommended that the following instructions are carried out at regular intervals or each time the heater is re-sited.

- The area surrounding the heater shall be kept clear and free from combustible materials including flammable liquids and vapours.
- Gas regulators must be periodically checked to ensure that the regulator vent hole is not blocked, debris, water and ice can block the vent hole causing the regulator to malfunction.
- Check the high pressure gas hose at regular intervals for damage or general wear. Replace the hose immediately if it is worn or damaged. NOTE: Gas hose should be replaced if it has been in service for 3 years regardless of its condition. (Make sure that the replacement hose conforms to the same specification as the hose that it is replacing).
- Before connecting the regulator to a gas cylinder, inspect the gas sealing surface of the regulator to ensure that it is free from damage. Replace the regulator if damage is detected. Also inspect the sealing surfaces of the gas cylinder valve, if it is damaged, do not use the cylinder and have it replaced. NOTE: Gas regulators should be replaced after 10 years service, regardless of condition.
- Check all wiring, associated terminals and electrical components within the heater for corrosion, frayed or cut insulation, tight connections, etc. Repair or replace as necessary.
- Review all heater markings and labels for legibility. Ensure that non are cut, torn or otherwise damaged. Any damaged labels must be replaced immediately.

Service Instructions

Servicing should only be carried out by Bullfinch (Gas Equipment) Ltd. Or by a qualified service agent. For replacement of the Ignition Control Module or the Motor, the heater MUST be returned to Bullfinch (Gas Equipment) Limited.

General

WARNING

- Do not disassemble or attempt to repair any heater or gas train components.
- All component parts must be replaced if defects are found.
- Failure to follow warning will result in fire or explosion, causing property damage, injury or death.

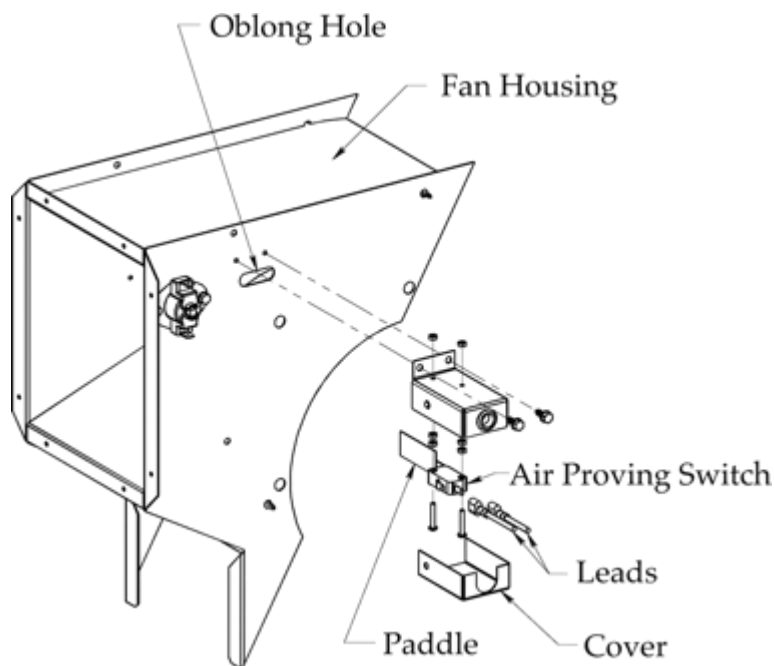
CAUTION

Heater surfaces remain hot for a period of time after the heater has been shut down. Allow the heater to cool down before performing any service or maintenance.

1. Before servicing, unless it is necessary for the servicing procedure, close the gas cylinder valve and disconnect the regulator, disconnect the mains electrical supply.
2. Open the service access door panel for the servicing of the heater components.
3. Disconnect the appropriate electrical leads when servicing the heater components.
4. For re-assembly, reverse the respective service procedure. Ensure all gas connections tightened securely.
5. After servicing, thoroughly check the heater for any gas leaks before starting the heater.
6. Clean the heaters injector jet with compressed air or use a mild solvent to dissolve any blockage, do not use and mechanical means to clean the orifice as this could cause combustion problems in the heater. Replace the injector if it cannot be cleaned properly.

Air Proving Switch

- Remove the two screws holding the air Proving Switch to the fan housing.
- Rotate switch through 90° to enable the paddle and switch to be withdrawn through the oblong hole in the housing.
- Remove the cover from the air proving switch bracket
- Unscrew retaining nuts and screws from the switch body.
- Disconnect the leads from the switch body.
- Replace faulty switch and reassemble in reverse order.



High Limit Switch

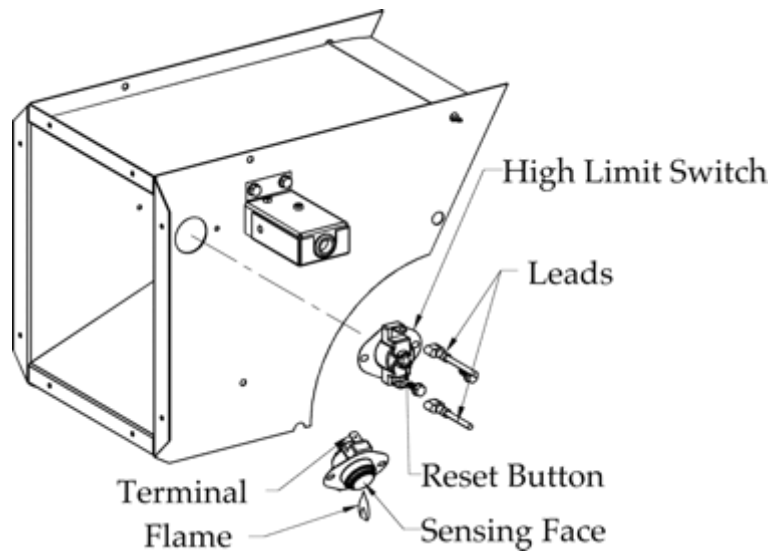
WARNING

Do not operate the heater with the high limit switch bypassed, operating the heater in this way may lead to overheating and possibly resulting in a fire with subsequent damage to the heater or property.

- Remove the two screws holding the high limit switch to the fan housing.
- Disconnect the leads from the switch body.

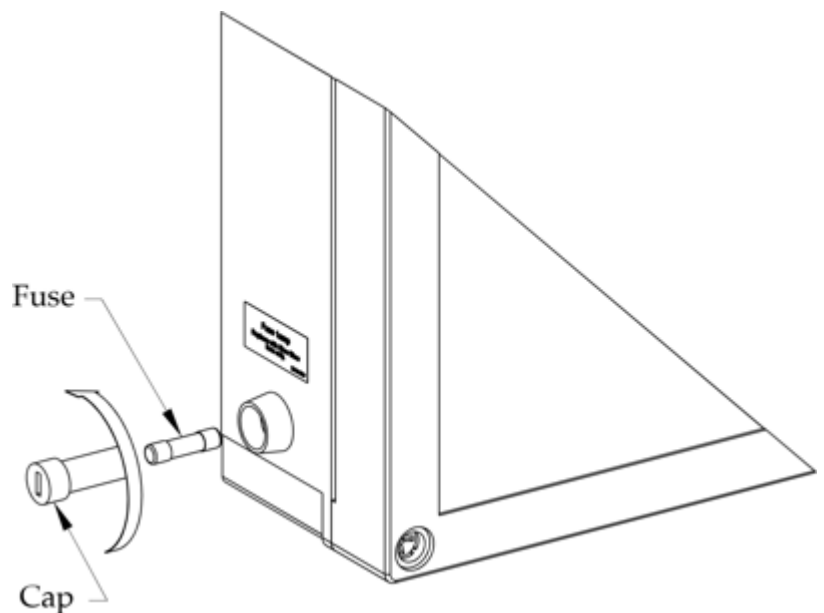
To test the manual reset:

- Holding the switch by the mounting flange, apply a small flame to the sensing face of the switch. Take care not to melt the plastic housing of the switch when conducting this test.
- Within a minute you should hear a 'click' coming from the switch, indicating that the contacts of the switch have opened.
- Allow the switch to cool down for about a minute before firmly pressing the reset button on the switch.
- Check for electrical continuity across the switch terminals to make sure the switch contacts have closed.
- Reassembly the switch in reverse order.



Fuse Holder and Fuse

- Using a suitable screwdriver, rotate and remove fuse cap.
- Replace fuse with a 1 Amp Slow Blow Fuse. DO NOT use a fuse of a different type or rating as this could cause the heater to malfunction.

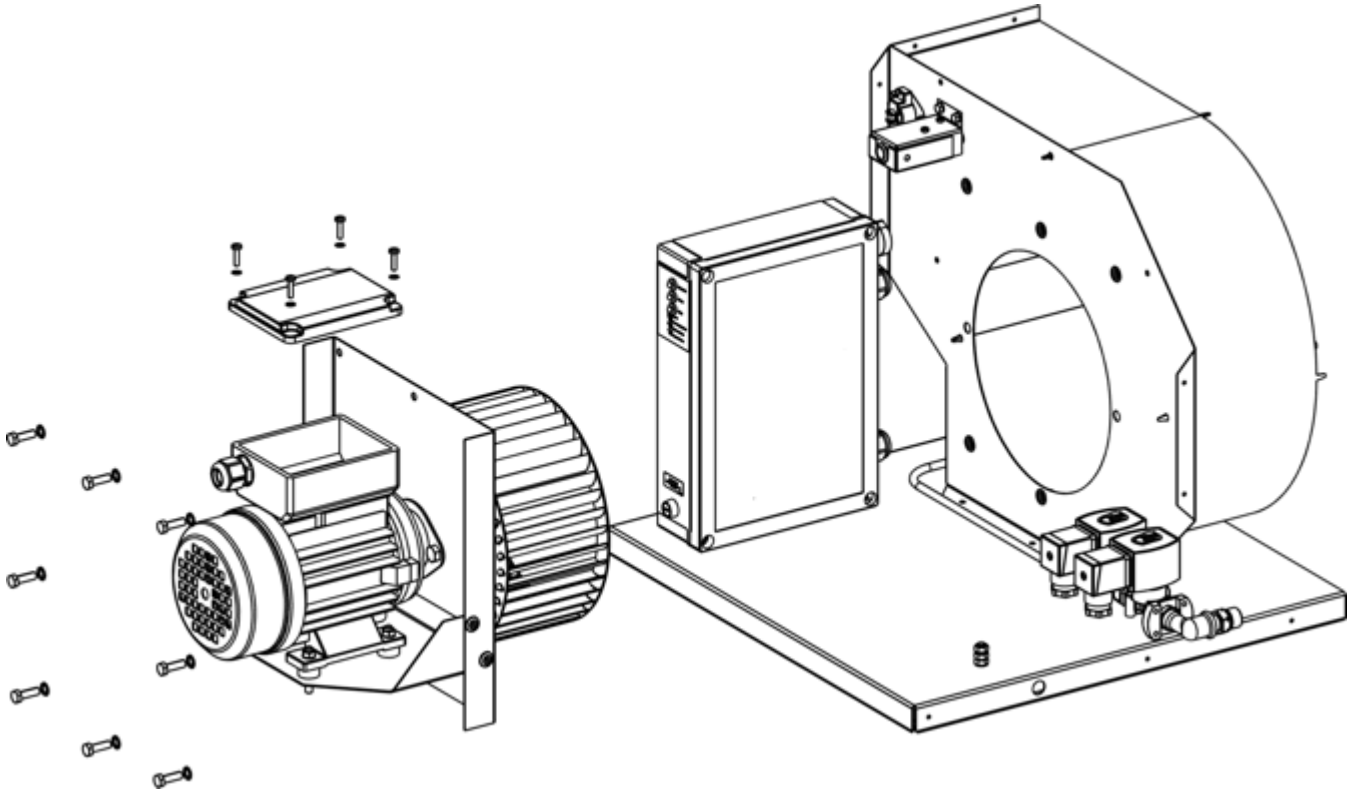


Motor & Impeller

The motor & Impeller Assembly is a factory balanced unit and can only be replaced as a single assembled unit.

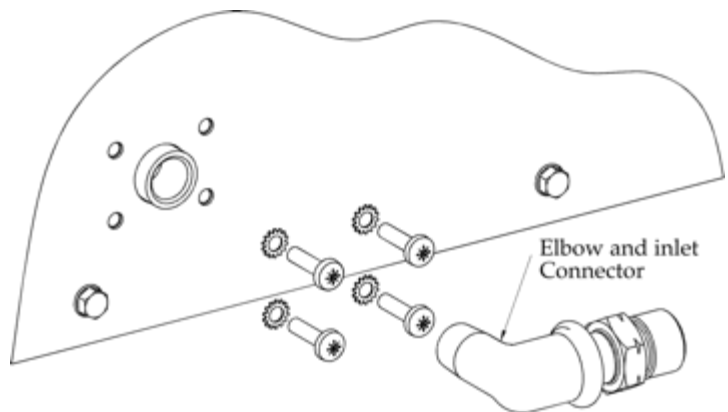
Faulty assemblies may be exchanged for new or refurbished assemblies. Contact our sales department for further details.

- Isolate the heater from the mains electric supply,
- Open Access door.
- Remove 8 hexagon headed screws from the motor mounting plate, support the plate during this operation.
- Withdraw the Motor & Impeller Assembly from the heater.
- Remove the electrical connection cover plate from the motor.
- Disconnect the conductors from the motor.
- Reassemble in reverse order.



Safety Valve Arrangement

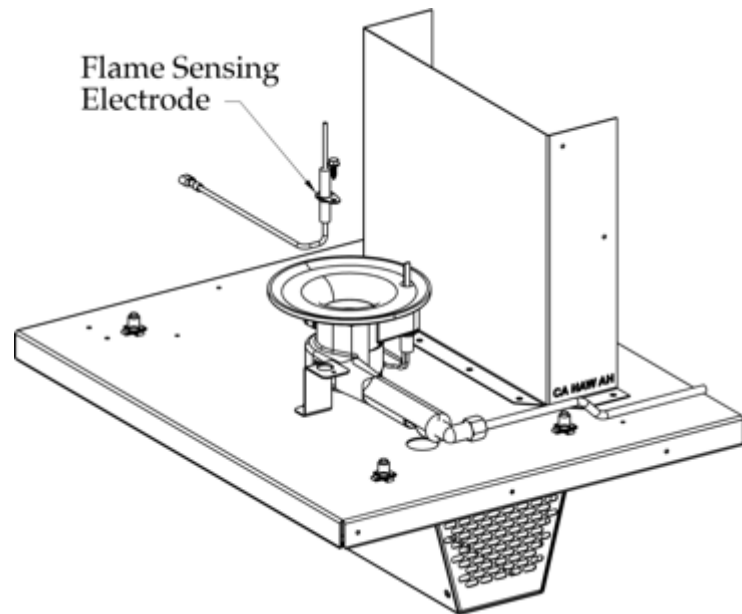
- Isolate the heater from the main electric supply.
- Remove the gas supply hose from the heater.
- Open access door.
- Disconnect the gas feed tube compression nut from the gas safety valve arrangement.
- Remove the Elbow and inlet connector
- Remove 4 screws retaining the gas safety valve arrangement.
- Disconnect the electrical connections from both valves.
- Withdraw the gas safety valve arrangement from the heater.
- Reassemble in reverse order.
- Remove all traces of any sealing compound / PTFE tape from the external thread of the inlet elbow.
- Wrap the external thread in a clockwise direction with a single thickness sufficiently overlapped by ½ turn with PTFE tape to BS EN 751-3 Class G. Prior to reassembly.



The following operations require the heater to be dismantled before carrying out any work.

Flame Sensing Electrode

- Disconnect the electrode terminal from the wiring harness.
- Using a suitable spanner or nut runner remove the securing screw and withdraw the electrode from the bracket.
- Reassemble in reverse order taking care not to bend or damage the electrode.
- Test fire the heater in order to ensure that the electrode is in the correct position.
- With the burner alight, the electrode should be within the flame, keeping the burner ignited.
- If the burner does not remain alight, it may be necessary to adjust the electrode to ensure that it is within the flame.
- Using a pair of pliers, carefully bend the probe towards the burner, taking care not to damage the ceramic body of the electrode.



Hot Surface Igniter/Injector Jet

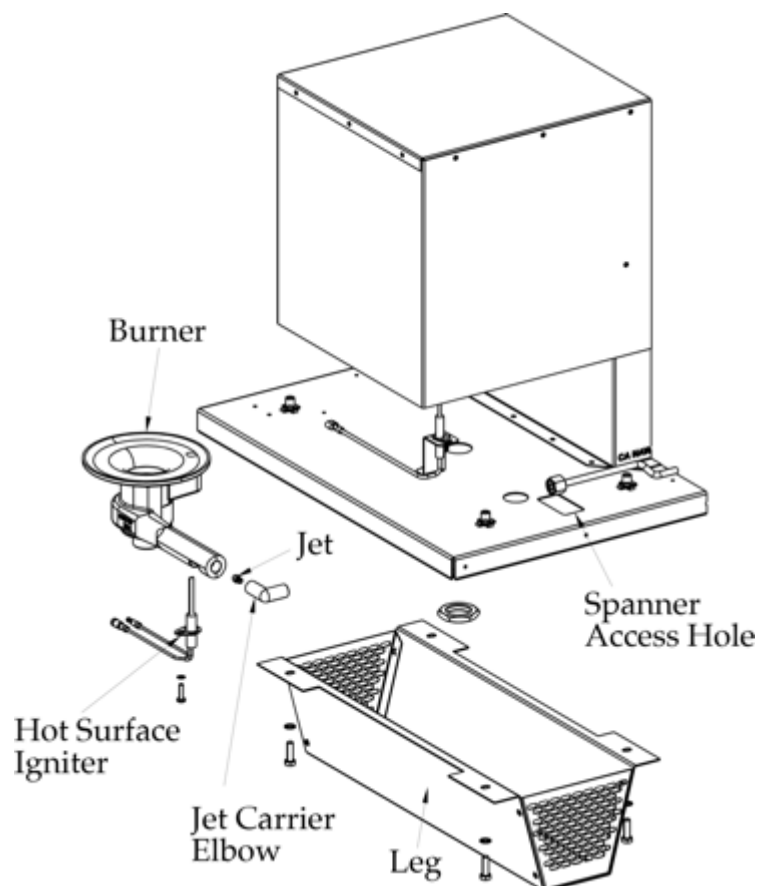
- Disconnect both hot Surface Igniter leads from the wiring harness.
- Remove 4 screws securing the leg to the chassis – remove leg.
- Disconnect the gas feed from the jet carrier elbow – access to the compression nut is from below the chassis through the spanner access hole shown.
- Remove the large hexagon nut from the burner.
- Carefully withdraw the burner from the chassis.

To Remove the Hot Surface Igniter:

- Remove screw and serrated washer securing the Hot Surface Igniter (HIS) to the burner and withdraw the HIS from the burner.
- Reassemble in reverse order.

To Replace the Injector Jet:

- Unscrew the Jet Carrier Elbow from the burner.
- Unscrew the Jet from the elbow.
- Assemble new Jet into the elbow using a small amount of sealing compound. Care should be taken not to obstruct the jet orifice with sealing compound as this will affect the operation of the heater and could cause incorrect combustion.
- Reassemble in reverse order.



Trouble Shooting Guide

READ THIS ENTIRE SECTION BEFORE BEGINNING TO TROUBLESHOOT PROBLEMS.

WARNING

Electric Shock and Burn Hazard

- Troubleshooting the system in this heater may require operating the heater with line voltage present and gas on. Use extreme caution when working on the heater.
- Failure to follow this warning may result in property damage, personal injury or death.

The following troubleshooting flow charts provide systematic procedures for isolating problems with the heater. The charts are intended for use by Qualified Gas Heater Service Personnel.

DO NOT Service these heaters unless you have received proper training.

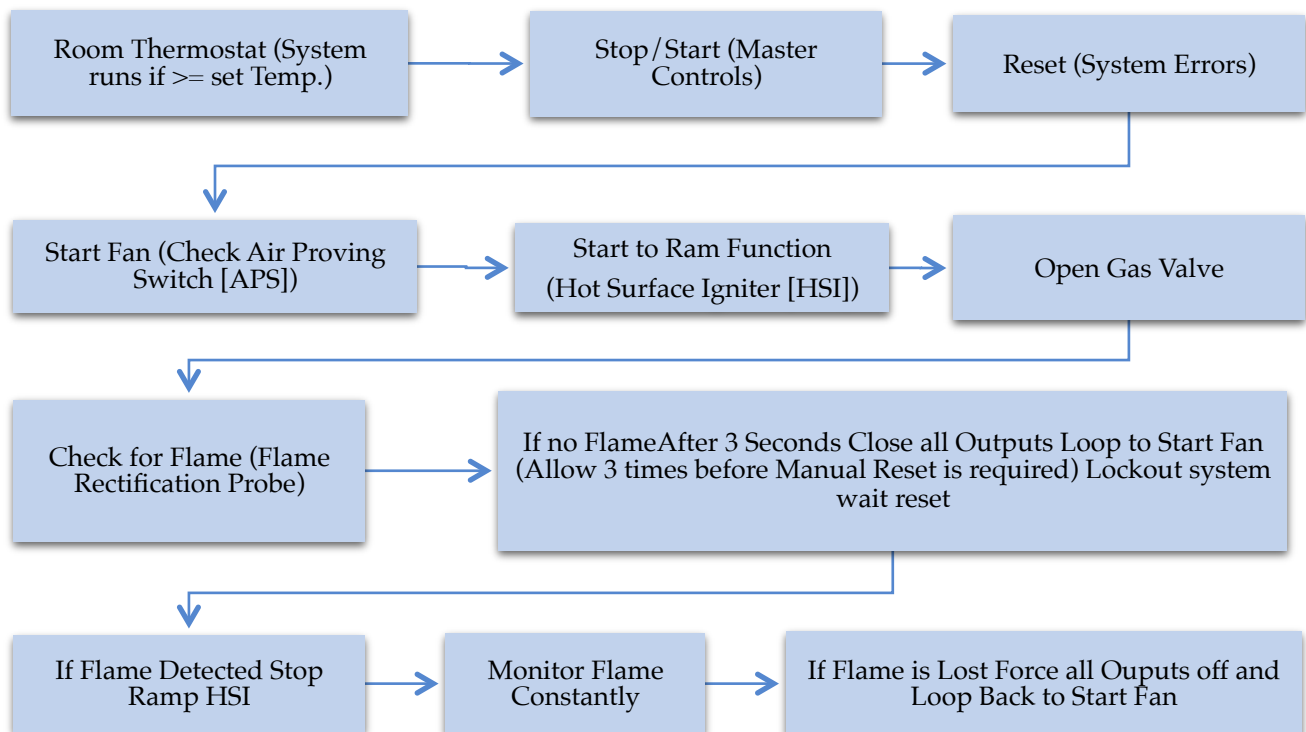
A Digital Multimeter will be required for measuring AC and DC voltage and resistance.

Initial Preparation:

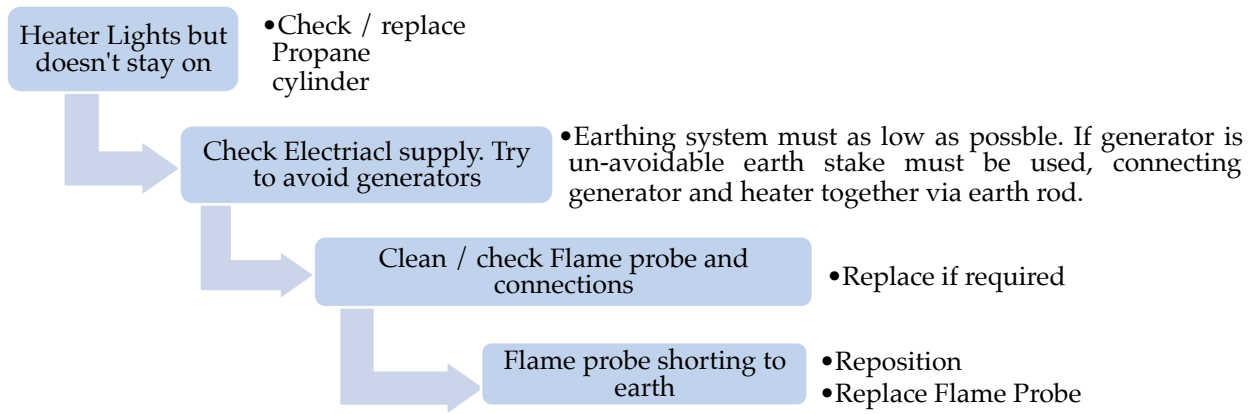
- Visually inspect the heater for apparent damage.
- Check all wiring for loose connections and worn insulation.

If the heater is not operational, push and release the reset switch to restart the heater. Observe the heater operation. Identify the problem and refer to the appropriate troubleshooting flow chart for problem solving.

Heater Control Sequence:

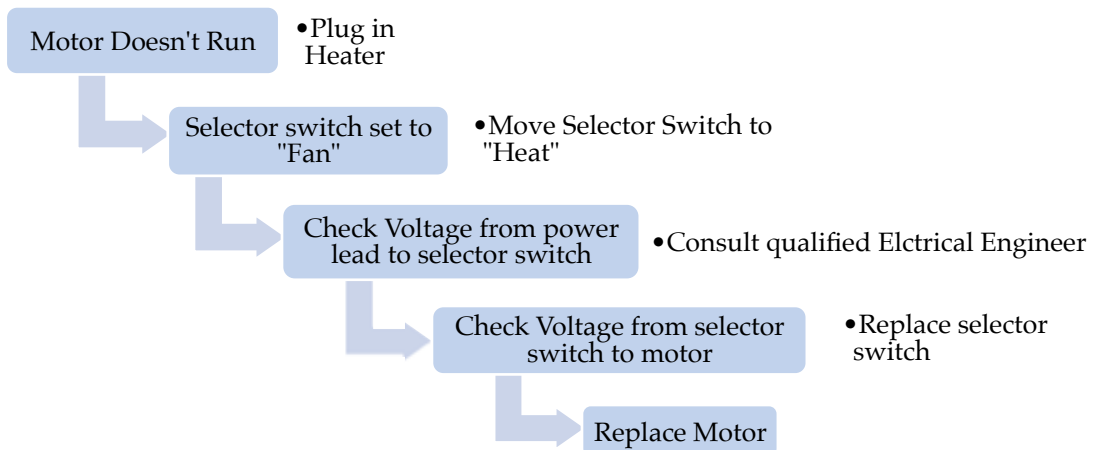


Ventilation Mode

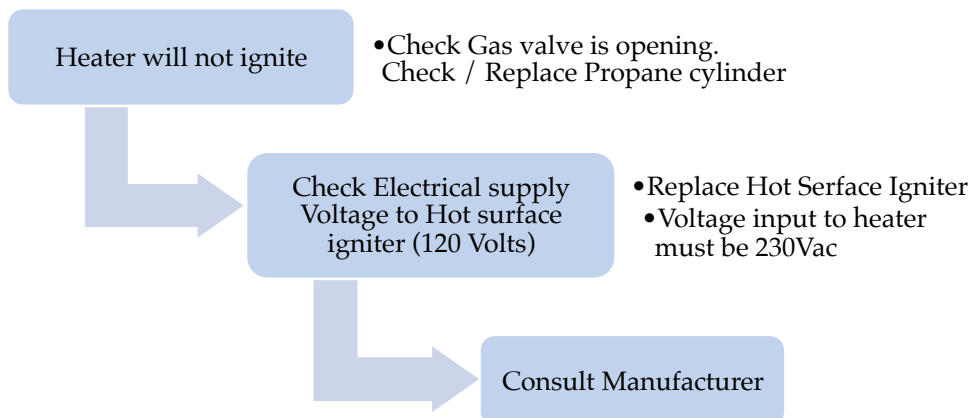


Heating Mode

- Heater does not remain lit for more than 3 seconds.

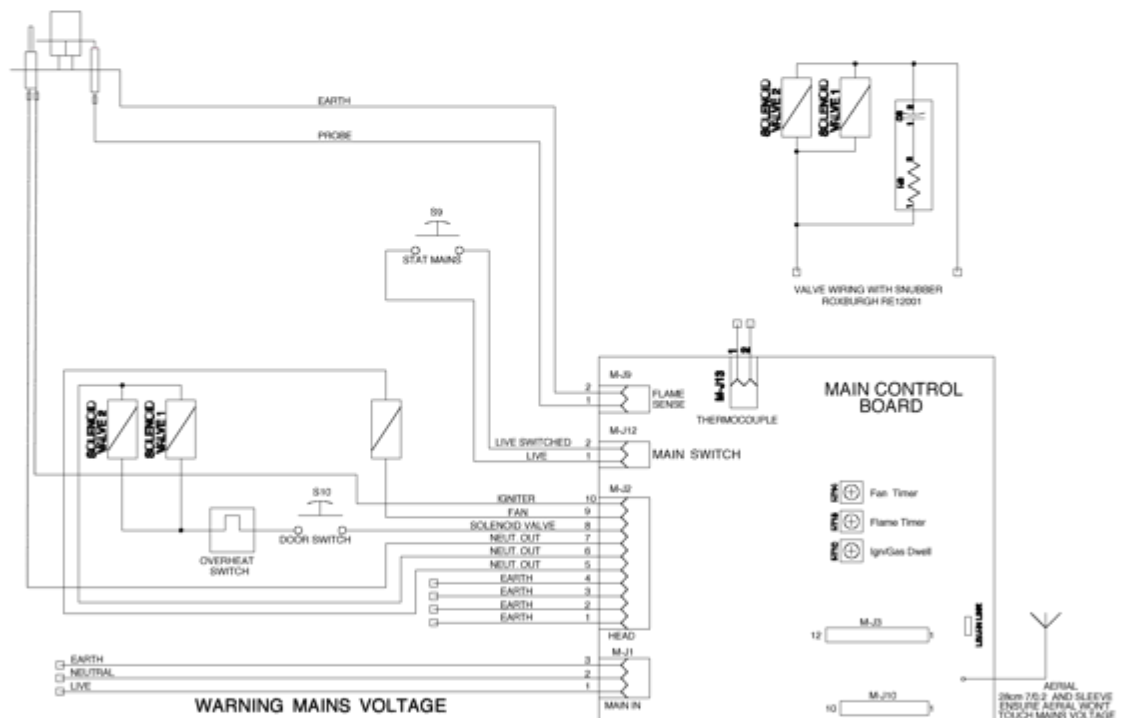
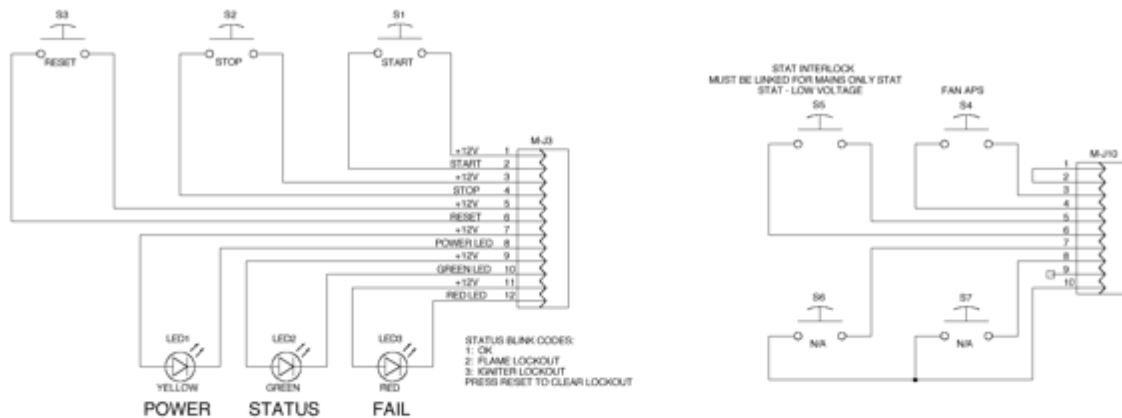


- Heater will not ignite.



All components should be replaced only after each step within the flow chart has been completed and replacement suggested in the flow chart. Refer to the servicing sections as necessary to obtain details of disassembly and replacement procedures of the specific components. Verify correct heater operation after servicing.

Electrical Connections and Wiring Diagram

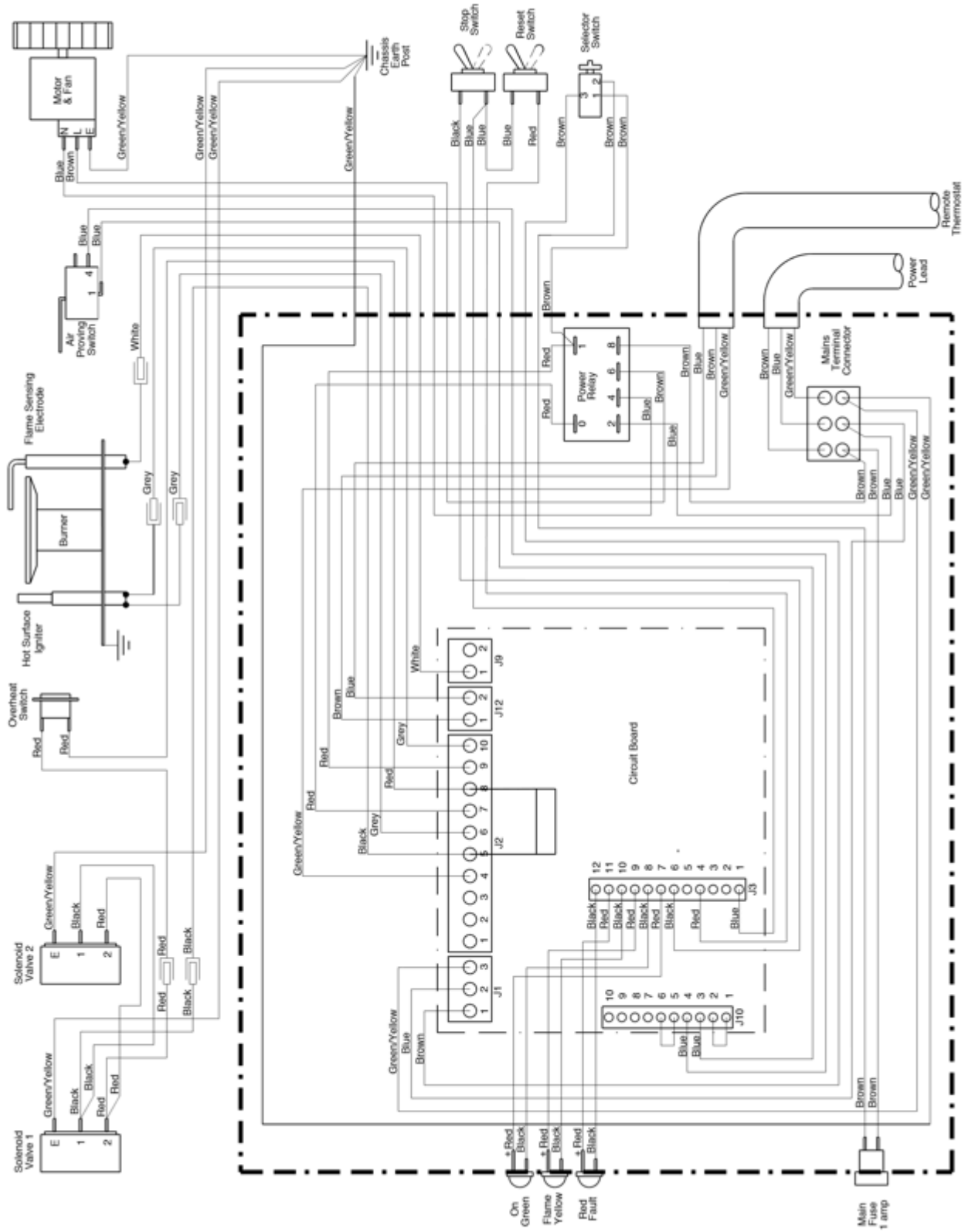


- SW101 - MODES
 MODE0 - 120VAC BASE MODE
 MODE1 - 120VAC BASE MODE+FLAME RESTORATION
 MODE2 - 240VAC BASE MODE
 MODE3...7 - A-F - NOT DEFINED 120 VAC BASE MODE
 MODE8 - 120VAC HEATER MODE
 MODE9 - 240VAC HEATER MODE
 MODE14 - TEST MODE 120VAC IGNITER
 MODE15 - TEST MODE 240VAC IGNITER

FLAME SETTINGS

- T1 (1-10sec)R114 Igniter on to valve(s) on delay
 T2 (2sec) Valve on to check igniter current+igniter off delay
 T3 (1-10sec)R115 Check igniter current to valve off delay
 T4 (1-10sec)R116 Valve off to valve on+check flame delay
 T5 (1sec) Retest delay
 T6 (1sec) Recycling delay
 T7 (1sec) Flame restoration. Igniter on to flame check
 Recycle count 3

Electrical Connections and Wiring Diagram (Continued)



Parts Function

Air Proving Switch/Paddle:

Safety device used to insure that the proper air flow is being achieved before gas valve is opened.

Burner:

Cast Iron part used to provide an ignitable mixture of gas and air to support combustion at a specific rate.

Ignition Control Module:

Electronic circuit board which sends and receives impulses to various controls in an automatic ignition system. An important safety feature of the control module is that it will shut down the entire heater by shutting off the flow of fuel gas if the flame is extinguished.

Fan Housing:

The volute chamber used for delivering air for efficient heating/cooling.

Motor:

Electrical device used to drive the fan impeller.

Fan Impeller:

Component used in conjunction with the motor and fan housing to draw the heated air from the heater and deliver it into the area to be heated.

Flame Sensor:

Also called the Flame Rectification Probe, this part works with the ignition control module in proving that the burner flame has been established.

Gas Control Valve:

An arrangement of two electrical solenoid valves used to control the gas flow to the burner. A feature of the valves is that if there is an electrical power failure, the valves will automatically close and shut down the gas supply.

Gas Supply Hose:

A flexible rubber or plastic hose of 4.8 mm bore conforming to BS EN 16436 Class 2. Used to deliver the gas supply to the heater.

Heat Chamber:

Enclosed area where the burner flame mixes with combustion air to provide heat.

High Limit Switch:

Safety device used to break the electrical circuit to the gas control valve in the event of an overheat situation.

Hot Surface Igniter:

Device used on automatic ignition control systems. Ignites gas by generating intense localised heated surface.

Fuse:

Safety device which protects the electrical system from a power overload.

Mode Switch:

Electrical device used to allow operator to use the heater in either a heating or ventilating application.

Reset Switch:

Electrical device used for resetting the heater if a problem occurs.

Stop Switch:

Electrical device for shutting off the heater in an emergency.

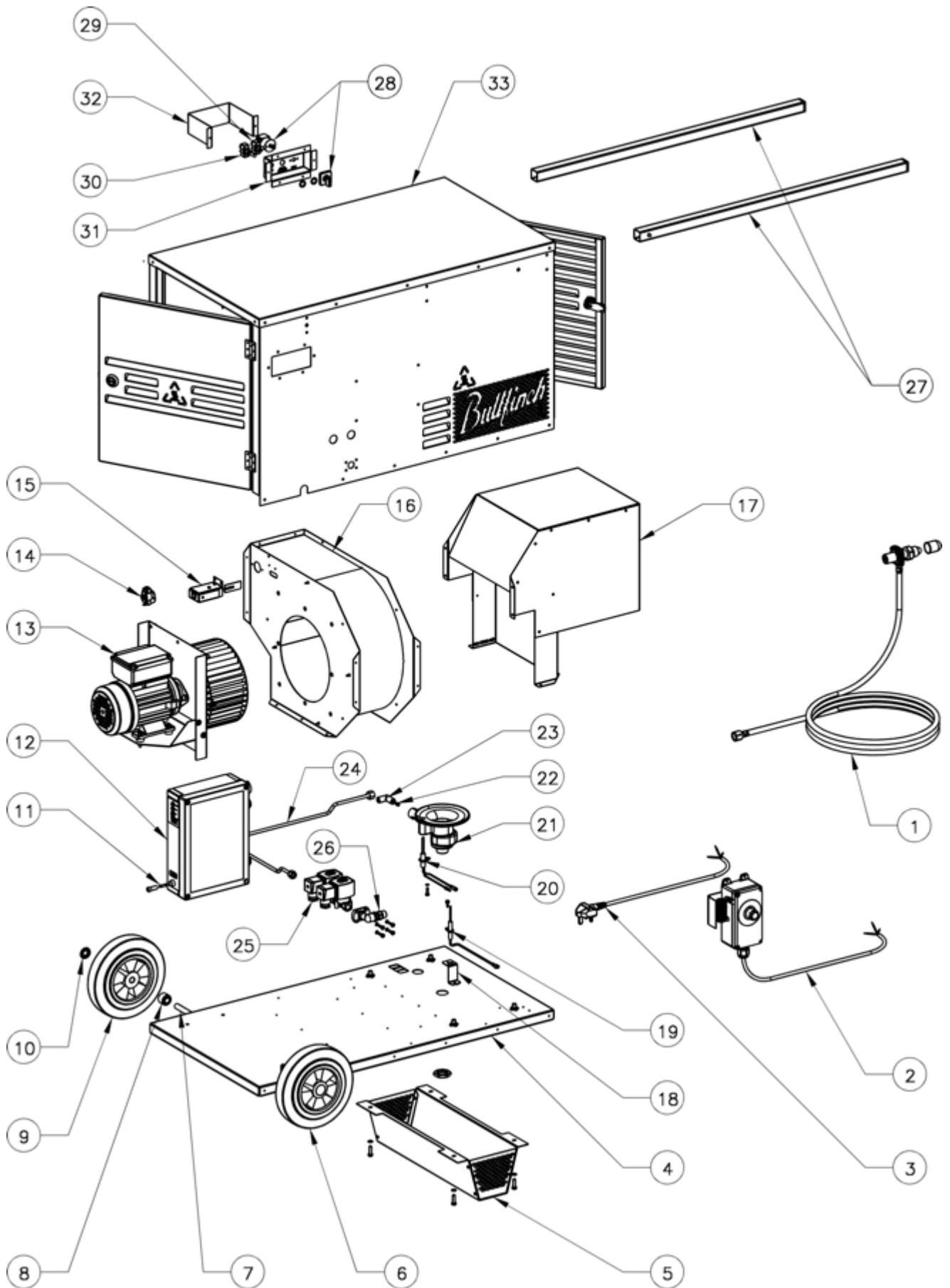
Thermostat:

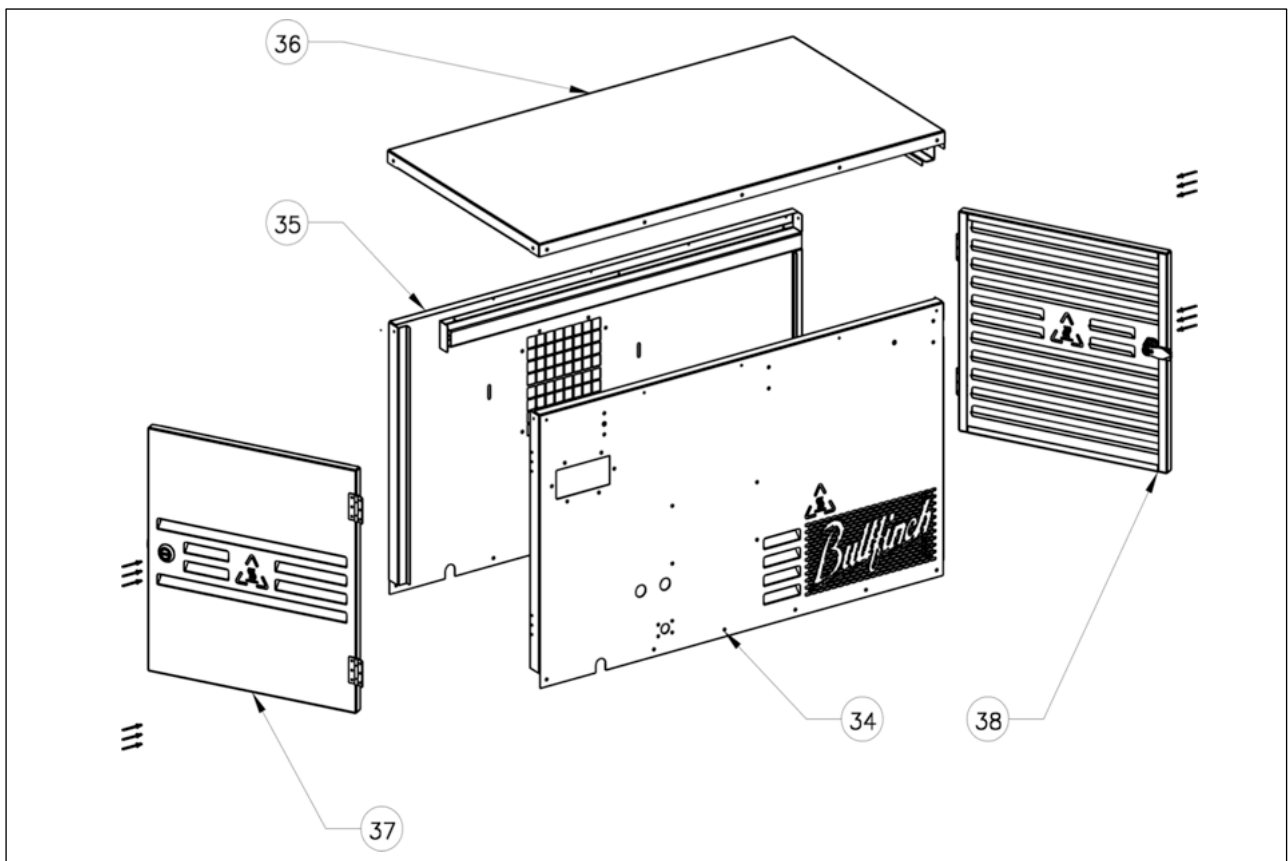
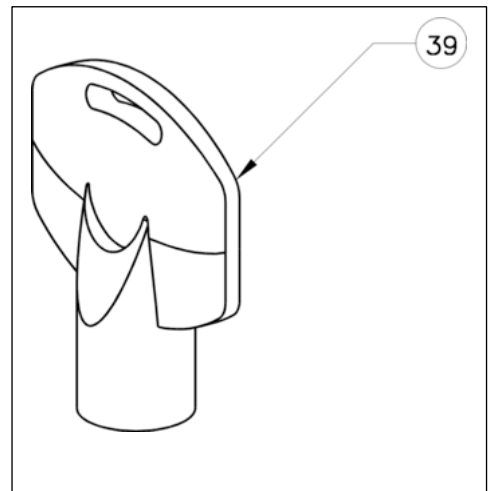
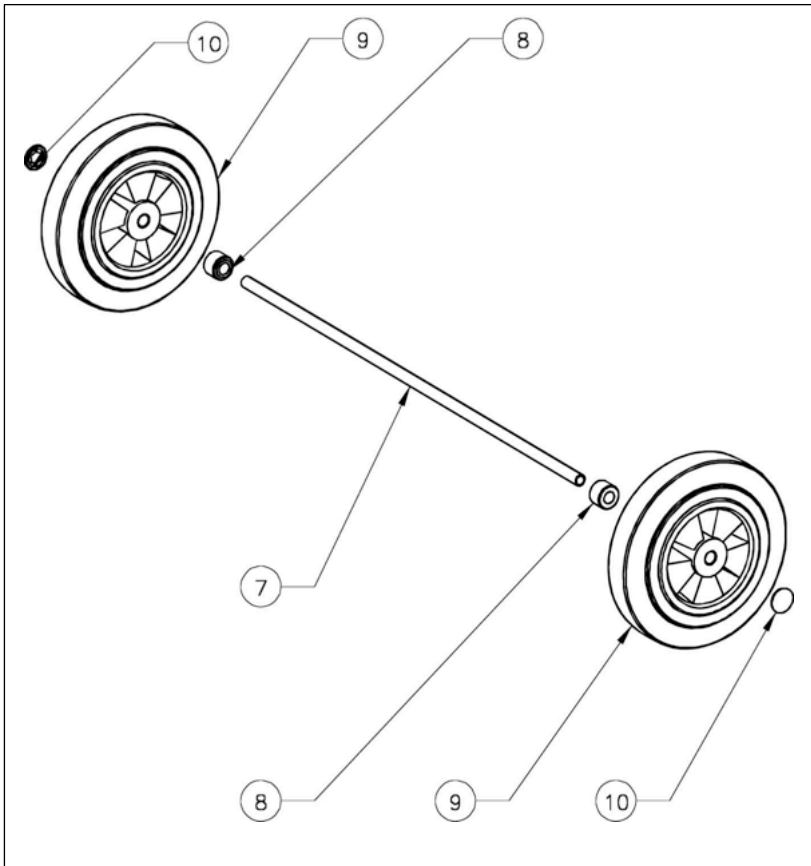
A component which senses the temperature of a given area and turns the heater on and off in order to maintain the desired temperature set by the user.

Pressure Regulator:

Mechanical device used in LPG distribution systems to reduce a higher inlet pressure to a pre-set lower operating pressure. The regulator supplies a constant outlet pressure to the heater(s) regardless of any changes in the inlet pressure.

Parts Diagram





Spare Parts List

Item	Description	Part Number
1	Hose and Regulator	SP 2510 GA
2	Thermostat and lead	SP 2510 GB
3	Power Lead	SP 2500 GC
4	Chassis	SP 2510 GD
5	Leg	SP 2510 GE
6	Wheel Kit	SP 2510 GF
7	Axle	SP 2510 GG
8	Axle Bush	SP 2510 GH
9	Wheel	SP 2510 GJ
10	Axle Cap	SP 2510 GK
11	Fuse 1 Amp	SP 2510 GL
12	Ignition Control Module	SP 2510 GM
13	Motor and Impeller Assembly	SP 2510 GN
14	Switch - High Limit	SP 2510 GP
15	Air Proving Switch Assembly	SP 2510 GQ
16	Impeller Housing Assembly	SP 2510 GR
17	Heat Chamber Assembly	SP 2510 GS
18	Bracket - Flame Sensing Electrode	SP 2510 GT
19	Flame Sensing Electrode	SP 2510 GU
20	Hot Surface Igniter	SP 2510 GV
21	Burner c/w Mounting Nut	SP 2510 GW
22	Injector Jet No. 170	SP 170
23	Elbow - Jet Carrier	SP 2510 GY
24	Gas Feed Tube Assembly	SP 2510 HA
25	Safety Valve Arrangement	SP 2510 HB
26	Inlet Connection Kit	SP 2510 HC
27	Handle	SP 2510 HD
28	Switch - Mode Selector	SP 2510 HE
29	Toggle Switch - Reset	SP 2510 HF
30	Toggle Switch - Stop	SP 2510 HG
31	Switch Panel	SP 2510 HH
32	Guard - Switch	SP 2510 HJ
33	Case Assembly	SP 2510 HK
34	Side Panel Assembly - Controls	SP 2510 HL
35	Side Panel Assembly - Duct	SP 2510 HM
36	Top Panel - Case	SP 2510 HN
37	Door Assembly/Rivet Kit - Controls	SP 2510 HP
38	Door Assembly/Rivet Kit - Burner	SP 2510 HQ
39	Door Key	SP 2510 HR

Warranty Policy

Equipment

BULLFINCH (GAS EQUIPMENT) LIMITED guarantee this heater for 12 months from the date of purchase by the end user against faulty components and workmanship. This guarantee covers the cost of replacement parts and labour in our factory. It does not cover normal wear and tear, misuse of or tampering with the product by the user. We accept no responsibility for costs incurred as a result of works done by the customer, or a third party, or consequential damage or loss.

Parts

Please note that the warranty on our products covers repair (or replacement at our discretion) and it is the customer's responsibility to get the product back to our premises. We regret we cannot offer on site repair.

New replacement parts purchased from the company and used on the appropriate BULLFINCH equipment are guaranteed for a period of 12 months from the date code marked on the part or its packaging. Refurbished parts will only be guaranteed for 6 months.

Replacement Parts and Service

For service and replacement parts, please call BULLFINCH (GAS EQUIPMENT) LIMITED at sales@bullfinch-gas.co.uk or telephone +44 121 765 2000 for assistance. Be sure to have the heater model number and serial number when calling.

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