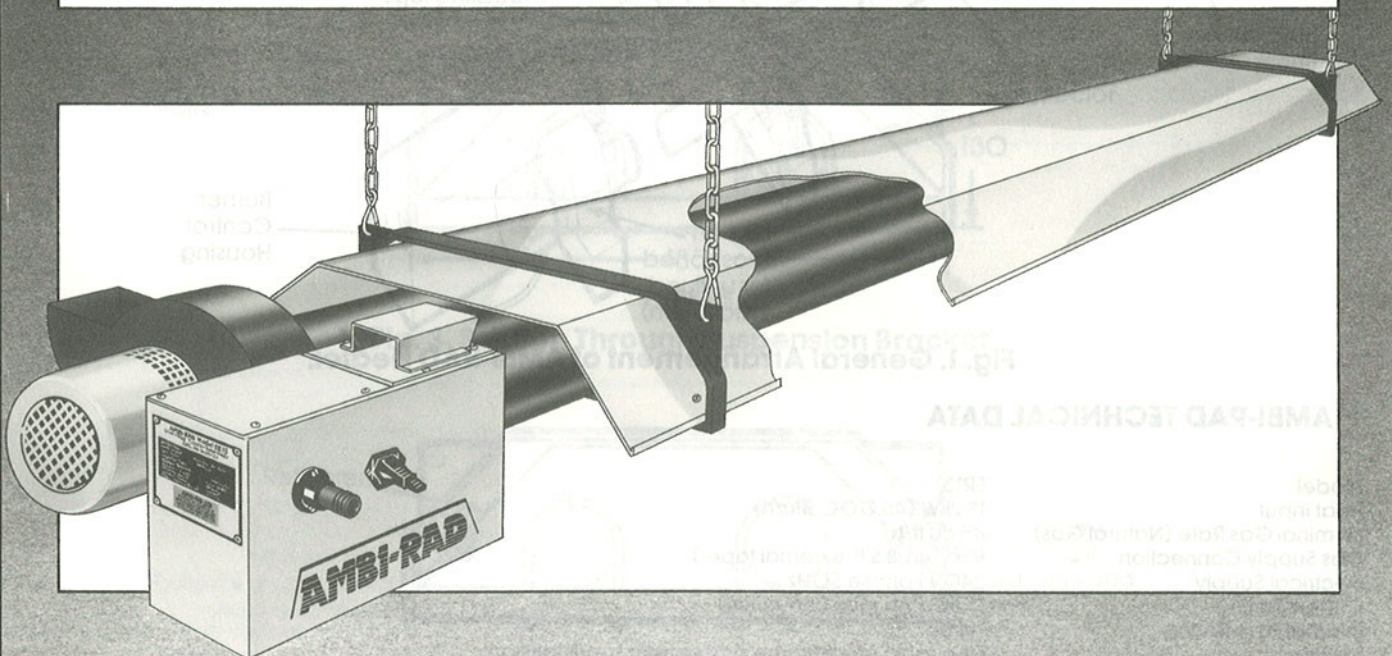


USERS INSTRUCTIONS. INSTALLATION AND SERVICING INSTRUCTIONS.



MODEL ER13

Approved by British Gas for use on Natural Gas. G.C. No. 36.229.O3.
This appliance must be installed and serviced by a competent
person as stated in the Gas Safety Regulations 1972.

AMBI-RAD
radiant heating systems

INSTALLATION INSTRUCTIONS FOR AMBI-RAD MODEL ER 13

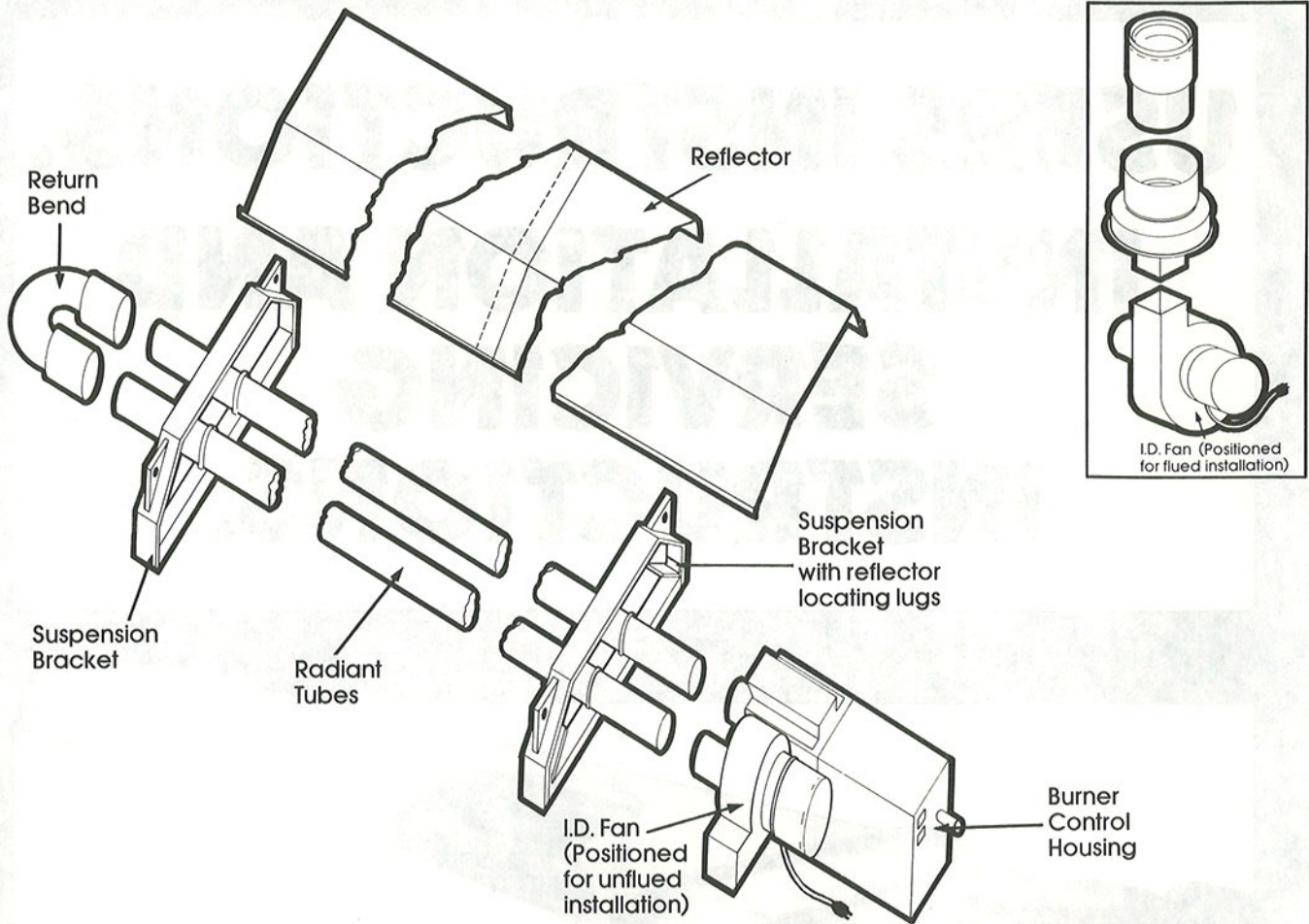


Fig. 1. General Arrangement of AMBI-RAD Heater.

1 AMBI-RAD TECHNICAL DATA

| | |
|--------------------------------|---|
| Model | ER13 |
| Heat Input | 13.2kW (45,000 Btu/h) |
| Nominal Gas Rate (Natural Gas) | 45 cu.ft/h |
| Gas Supply Connection | R $\frac{3}{8}$ (3/8in. B.S.P. external taper). |
| Electrical Supply | 240v 1 phase 50Hz |
| Current Rating | 0.33 amp max (inductive) |
| Internal Fuse Rating | 1 amp |
| Ignition | Electronic programme start up with spark ignition |
| Total installed Weight | 56 kg (123.5 lb) |
| Exhaust flue (Optional) | 100mm (4 in.) dia. |

Note: The AMBI-RAD heater must only be installed in compliance with the Gas Safety Regulations, The Health and Safety at Work Act, National and Local Building Regulations and the recommendations of all relevant British Standard Codes of Practice.

2 UNPACKING

Each radiant heater is supplied as follows:
 2 radiant tubes 60mm (2 3/8in.) outside diameter, 2,896m (9ft. 6in.) long.
 1 stainless steel reflector 3048mm (10ft.) long.
 1 carton containing: burner/control assembly
 induced draught fan
 return bend
 brackets and sundry components

3 ASSEMBLY

Support radiant tubes on blocks, trestles etc. at least 150mm (6in.) above floor level preferably under the position of installation. Ensure tubes are clear internally. Space the tubes 165mm (6 1/2in.) apart. Slip the return bend on to the tubes with the two pinch screws facing downwards. Ensure that each tube enters fully. Tighten the pinch screws to secure the return bend.

Slip the two suspension brackets onto the tube assembly and attach by means of 'U' bolts and nuts, noting that one suspension bracket is fitted with two reflector locating lugs. This bracket should be fitted nearest to the burner. The position of the other bracket is adjustable within the limits shown in Fig. 2. Tighten the nuts to secure the tubes within the brackets. See Fig. 3.

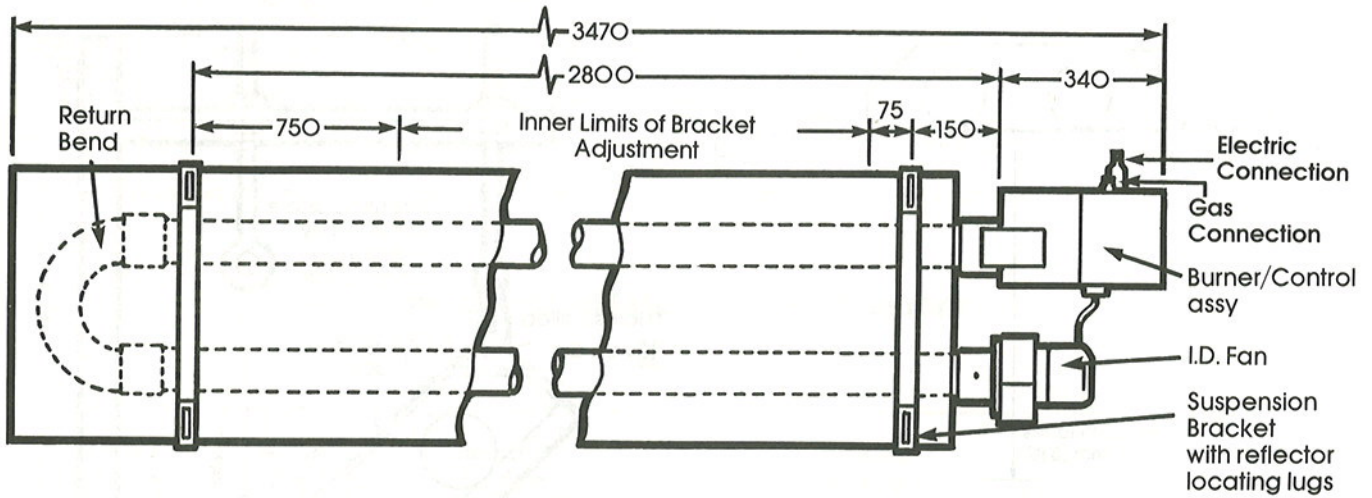


Fig. 2. Location of Suspension Brackets and Centre Support Plate

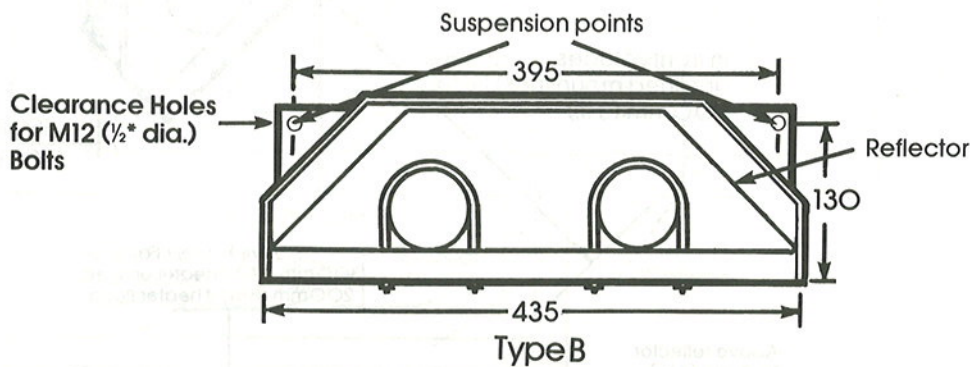


Fig. 3. Section Through Suspension Bracket.

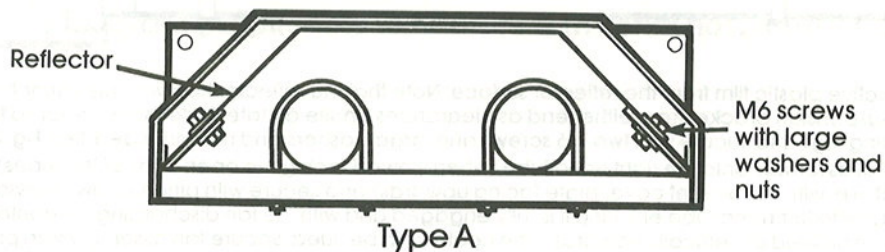


Fig. 4. Section Through Suspension Bracket with reflector locating lugs

4 INSTALLATION

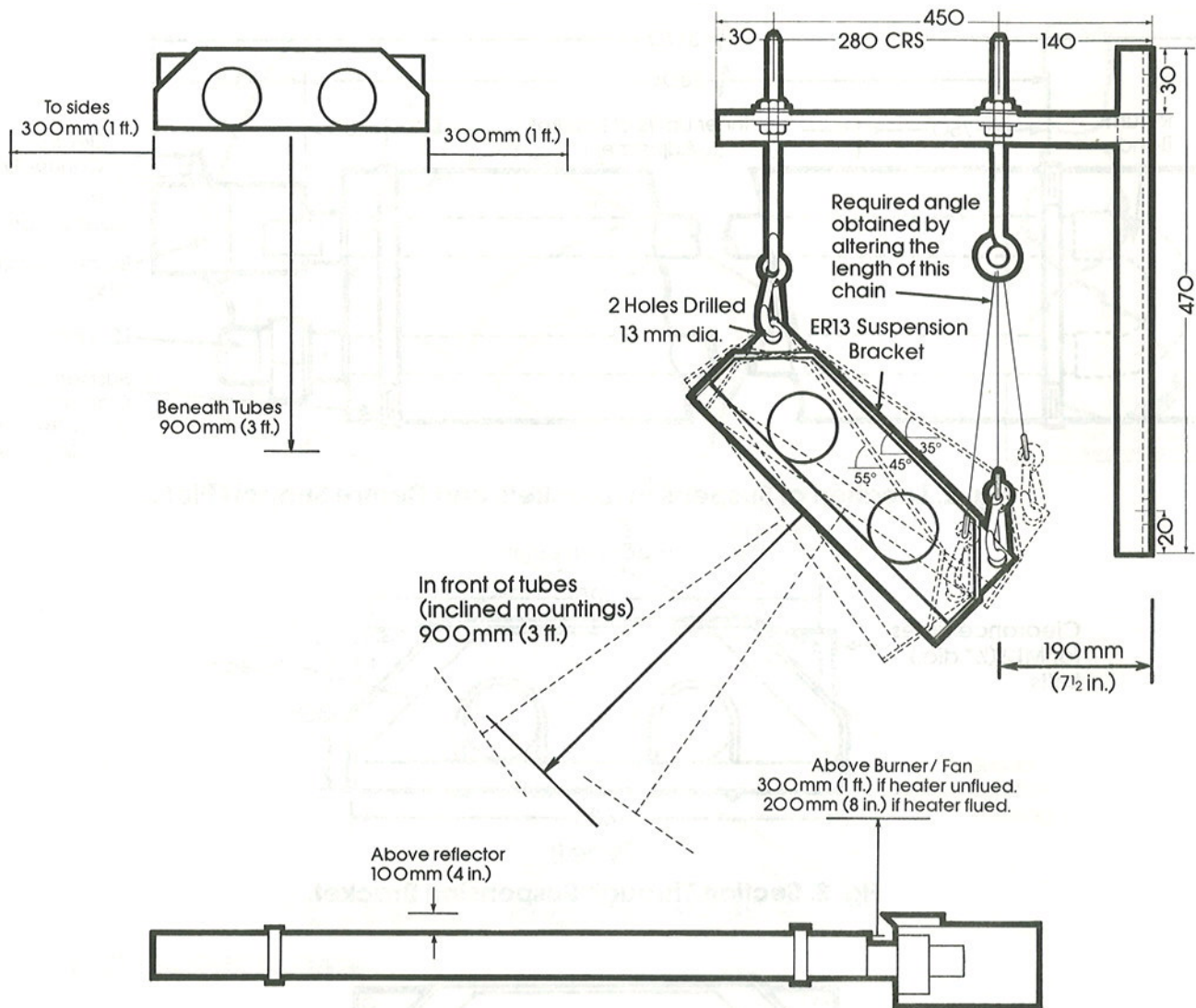
We recommend, at this stage the tube assembly is raised into position and suspended from previously fixed chains (of 4mm gauge galvanised, welded link construction) or 10mm dia mild steel drop rods (suitably protected from corrosion) or fixed to wall mounting brackets. Wall mounting brackets must support the heater at an angle of inclination of between 35° and 55° from the horizontal. Suitable brackets, adjustable between 35° and 55° are available from the manufacturer. N.B. if the heater is to be wall mounted, the return bend must be on the left-hand side when viewed facing the wall.

The recommended minimum and preferred mounting heights for the AMBI-RAD Model ER13 heater are as follows.

| Mounting position | Recommended Minimum Mounting Height | Preferred Mounting Height |
|-----------------------|-------------------------------------|---------------------------|
| Horizontal | 3m (10 ft.) | 3.6m (12 ft.) |
| Inclined/Wall Mounted | 2.7m (9 ft.) | 3m (10 ft.) |

The proposed position of the heater should be selected so that the following clearance distances to combustible materials will be ensured.

Fig. 5. MINIMUM CLEARANCE DISTANCES



Remove the protective plastic film from the reflector surface. Note that the reflector has two holes punched at one end. Enter the reflector into the first suspension bracket from either end as clearances on site dictate. Slide the reflector so that the holes coincide with those in the locating lugs and secure with two M6 screws and large washers and nuts provided. See Fig. 4.

Slide burner/control assembly onto the right hand tube (when viewed facing the open ends of the tubes) ensuring it is fully engaged and upright, (i.e. with the air inlet cover plate facing upwards) and secure with pinch screws provided.

Slide fan assembly onto left-hand tube ensuring it is fully engaged and with the fan discharging horizontally away from the control box if the heater is to be unflued or vertically upwards if the heater is to be flued. Secure fan assembly with pinch screw provided.

Normally the fan support flange is supplied bolted to the fan casing in a position suitable for horizontal mounting of the heater with the fan discharging either vertically or horizontally, or with the heater inclined up to 55° from the horizontal with the fan discharging horizontally. If the heater is to be installed in an inclined position with the fan discharging vertically for flueing then the support flange must be reorientated on the fan casing in order to avoid contact with the burner housing. Remove the three M5 set pins securing the support flange to the fan casing and rotate the support flange through 120° clockwise when viewed facing the support flange. Refit the flange in this new position.

Insert three pin fan connection plug in socket on burner housing.

5 GAS CONNECTION

The gas connection on the AMBI-RAD heater is R2 $\frac{3}{8}$ (3/8 in. B.S.P. external taper)

| | Natural Gas | Propane |
|---|--------------------------|-----------------------|
| Injector size (stamped on hexagonal part) | 3.3mm | 1.9mm |
| Maximum supply pressure | 40 mbar (16 in. w.g.) | 40 mbar (16 in. w.g.) |
| Minimum supply pressure | 13 mbar (5 in. w.g.) | 30 mbar (12 in. w.g.) |
| Burner setting pressure | 10.2 mbar (4.1 in. w.g.) | 29.2 mbar (11.5 w.g.) |

A gas meter is connected to the service pipe by the local Gas Region or local Gas Region contractor. An existing meter should be checked, preferably by the Region, to ensure that the meter is adequate to deal with the rate of gas supply required. Installation pipes should be fitted in accordance with CP331:Pt 3, 1974 such that the minimum pressure at least, as stated above will be achieved. Pipes of a smaller size than the heater inlet gas connection should not be used. The complete installation must be tested for soundness as described in the above Code.

A gas isolation valve and union or gas union service cock must be fitted in the gas supply close to the heater.

It is essential to provide some flexibility in the final gas connection preferably by use of an approved armoured flexible connector or copper expansion loop.

NOTE: Take care when making a gas connection to the heater not to apply excessive turning force to the internal controls.

6 ELECTRICAL CONNECTION

IMPORTANT. This appliance must be earthed
 Supply 240V 50Hz Single phase
 Current Rating 0.33 amp max (inductive)
 Fuse: internal 1 amp

All electrical work should be carried out to I.E.E. standards by a competent electrician.

The electrical connection to the heater is made by means of a three pole plug-in power connector. Live, Neutral and Earth connections should be made via a flexible supply cable to the power connector. The flexible supply cable should be 0.5 sq. mm complying with BS 6500, 1975.

It is recommended that the electrical circuit controlling the heater or group of heaters incorporates thermostats, a time switch and if required manual control switches and a frost thermostat. See Fig. 6. IMPORTANT: All such controls and switch gear must be rated to handle the total inductive load of the circuit they control. The inductive load per AMBI-RAD Model ER13 is given above. For large installations the use of relays or contactors should be considered.

Where a plug and socket are used to supply the heater only an unswitched socket should be used.

Fig. 6. Typical External Wiring Diagram

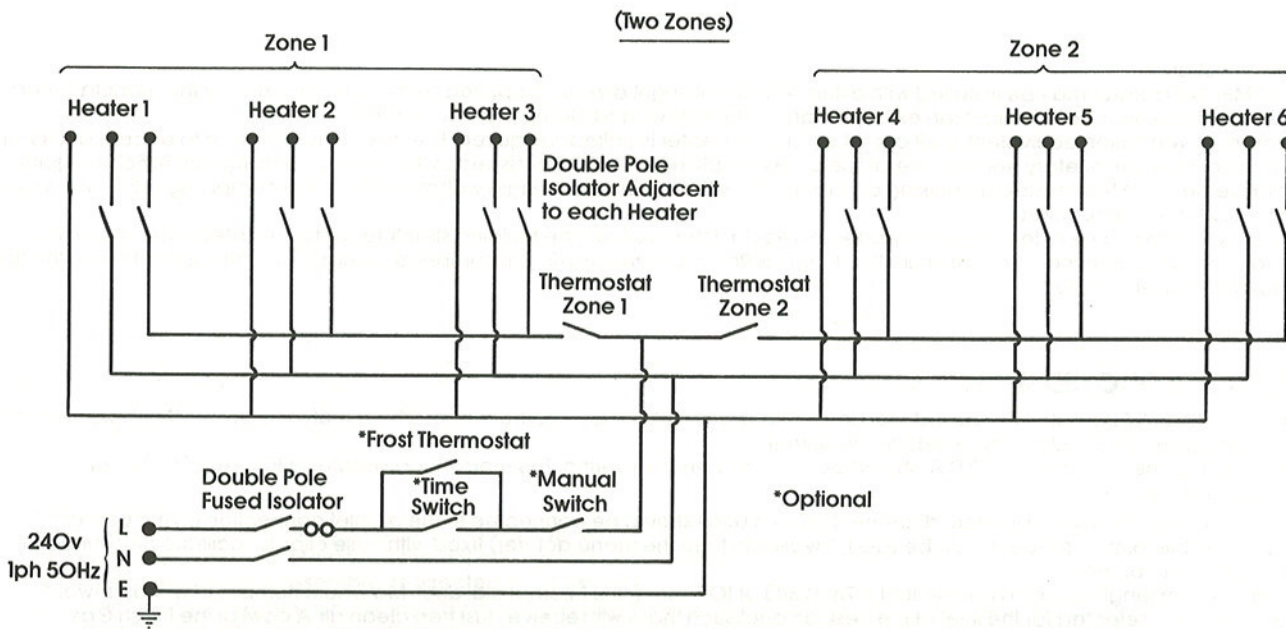
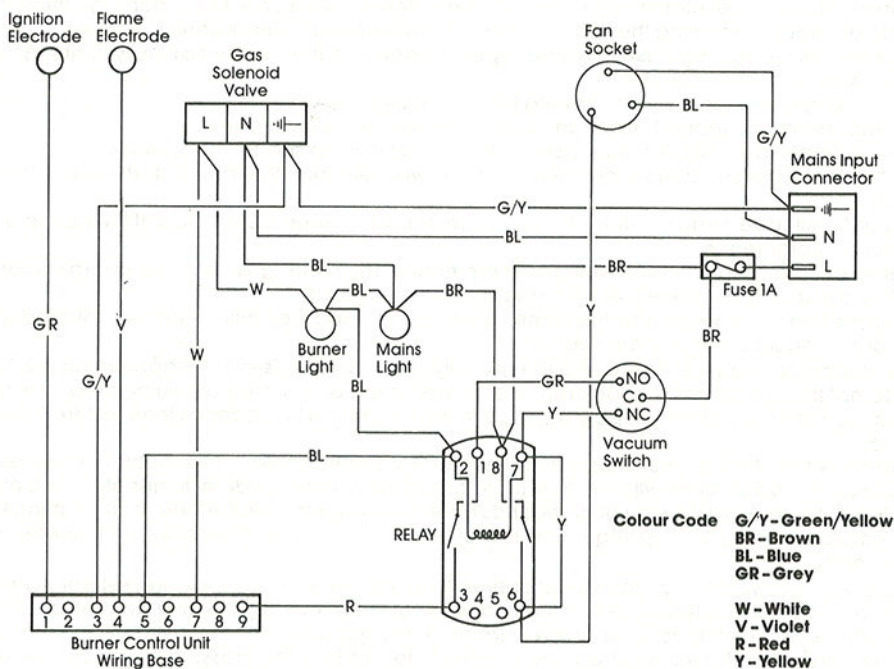


Fig. 7. Internal Wiring Diagram (Applicable to heaters with serial nos. from 8310501 onwards)



7 Flue Connection

7.1 Unflued Installation

The AMBI RAD heater may be installed without flue to atmosphere providing the air supply and building ventilation requirements as stated in the British Standards specification BS6896:1987 are complied with and providing due consideration is given to the possibilities of condensation forming on cold surfaces.

For guidance to the designer the following are required. Where the air change rate is known to be below 37.5m³/hour per kilowatt of total rated heat input additional low level ventilation to be provided as follows.

- 1.4cm² for each 1m³/hour per kilowatt below 37.5m³/hour per kilowatt; or
- 52cm² per kilowatt of total rated heat input.

High level ventilation must also be provided at a position above likely personnel working areas as follows: Up to and including 60kW total heat input, permanent ventilation area required 4.5cm² per kilowatt; over 60kW, permanent ventilation area to be 270cm² plus 2.25cm² per kilowatt in excess of 60kW.

If the heater is installed without flue, ensure that combustion gases do not impinge on combustible materials. The maximum permitted temperature for such materials is 65°C (BS2561).

7.2 Flued Installation

The AMBI RAD heater may be installed with a flue. A down draught diverter (supplied as an optional extra by the manufacturer) must be fitted to the induced draught fan exit by means of the screws and clamp plated provided. The diverter is designed to accept a 100mm (4in) nominal bore proprietary twin wall metal flue pipe complying with BS715 or asbestos flue pipe complying with BS567. The joint should be sealed with heat resistant caulking and faced off with fire cement. If single wall metal flue pipe complying with BS715 is used then an adaptor will be required.

The flue pipe should be adequately supported at regular intervals from the building structure and terminated externally with a British Gas approved terminal, the maximum flue length is 9m (30ft) and maximum number of bends is two. All connections in the flue pipe must be properly sealed.

Permanent ventilation openings preferably at low level (below heater) should be provided as follows: Up to and including 60kW total heat input ventilation area required 4.5cm² per kilowatt; Over 60kW, ventilation area required 270cm² plus 2.25cm² per kilowatt in excess of 60kW.

8 FRESH AIR DUCTED INLET

When the AMBI-RAD heater is to be installed in locations where there is airborne dust or where there is a polluted atmosphere, a ducted fresh air supply should be provided to the burner.

The AMBI-RAD heater, Model ER13 D.A. should be specified when ordering. This model incorporates a 100mm (4in.) duct connection at the burner.

A fresh air duct of minimum internal diameter 100mm (4in.) should be connected to the air inlet connection on the burner housing. A flexible jointing piece should be used, (available from the manufacturer) fixed with hose clips to facilitate disconnection when servicing the burner.

The maximum length of fresh air inlet duct is 7m (23ft.) of 100mm (4in.) internal dia. duct. Maximum number of bends is two. A position should be selected for the inlet of the fresh air duct such that it will receive dust free clean air. A cowl of the British Gas Approved type such as the G.C.I. or G.L.C. terminal should be fitted at the inlet of the duct. If the duct inlet is located on a roof the underside of the cowl must be at least 600mm (2ft.) above roof level and at least 250mm (10in.) higher than any projection on the roof within a two metre radius of the cowl.

9 COMMISSIONING

Inspect installation and ensure that it has been carried out in accordance with these instructions. Ensure that electrical and gas supplies are isolated.

The gas supply should be purged and tested for soundness in accordance with the British Standards Code of Practice CP 331, Part 3 and B.G.C. report 1M/2.

Open isolating gas valve and test gas connections for soundness using soap solution.

Remove combustion chamber cover plate by unscrewing 6 fixing screws. Take care not to damage the sealing gasket. Inspect the burner and electrode assemblies ensuring these are securely fixed and all electrical connections securely made. Replace the burner cover plate ensuring that the sealing gasket is correctly positioned and the 6 screws are fully tightened. The heater will not operate until this plate is refitted.

Remove the control housing cover plate by unscrewing the 5 securing screws.

Ensure all internal components are securely fixed and all connections securely made.

Switch on the electrical supply to the heater and observe the correct start up sequence as follows.

The mains lamp will illuminate, the vacuum switch checking relay will pull in and the fan will start to run. Safe-start checks are carried out automatically.

After the fan has run up to full speed and a satisfactory vacuum condition been established at the burner a purge period of approximately 9 seconds will commence.

At the end of the purge period the ignition sequence will commence. The spark ignition will be energised producing a spark at the ignition electrode. The gas solenoid valve will at the same time be energised.

If ignition is successful the flame is detected by the flame sensing probe and the ignition spark is switched off. The "burner on" lamp indicates that the gas solenoid valve is energised.

If ignition is unsuccessful the gas valve is closed and the spark ignition de-energised after approximately 9 seconds. After an unsuccessful ignition attempt the control unit will "lock-out", the "power" lamp only will remain illuminated and the fan will continue to run. To reset this "lock-out" condition switch off the power supply to the heater, wait 15 seconds then restore it. If repeated lock-out occurs investigate cause.

To shut down the heater switch off the power supply to the heater. Automatic control of the heater or a series of heaters may be achieved by incorporating thermostats, timeswitches, frost thermostats, manual over-ride switches etc. in the electrical supply to the heater(s). See Fig. 6. It is essential to allow a delay of 15 seconds after switching off a heater before attempting to restart.

If at any time after completion of the start up sequence, loss of flame should occur the control unit will attempt to reignite. If this is unsuccessful lock-out will occur.

Set burner gas pressure as follows. Unplug mains input connector to heater. Remove pressure test point screw and connect a 'U' tube manometer to the pressure test nipple located on the underside of the solenoid gas valve. Remove the slotted screw from the top of the pressure regulator revealing the adjustable screw. Replace main input connector and start the heater and using a suitable screwdriver adjust the pressure regulator, turning the screw clockwise to increase the pressure or anti-clockwise to decrease the pressure. Set the pressure to 10.2 mbar (4.1 in. w.g.). Switch off the heater by pulling out the mains input connector. Disconnect 'U' tube manometer and securely replace screw in pressure test nipple. Replace slotted screw on pressure regulator.

If the heater is flued check that there is adequate updraught at the down-draught diverter by means of a smoking taper.

Check the operation of the flame safeguard equipment as follows. With the heater running normally switch off the gas supply at the appliance isolating valve. Observe that the "burner on" lamp extinguishes within one second. After a purge period of

approximately 9 seconds, the heater should attempt to relight and if the gas isolating valve has been left off lock-out should occur indicated by power light only being illuminated and fan running.

Check the operation of the vacuum proving switch as follows. With the heater running normally, pull out the three pin fan connection plug thus causing the fan to slow down and stop. Within 3 seconds the burner should shut off. Observe for at least 20 seconds that there is no attempt to reignite. Then replace the three pin plug and observe that the heater proceeds to ignite in the normal way.

Replace the controls cover securing the 5 fixing screws.

Hand the Users Instructions to the user and explain how to operate the heater.

Leave the Installation and Servicing Instructions at the users meter or, preferably with the service/maintenance engineer/manager for use on future service calls.

10 SERVICING INSTRUCTIONS

Under normal working conditions, it is recommended that the AMBI-RAD heater is serviced once per year. In exceptionally dirty or dusty conditions such as may occur in a foundry, more frequent servicing may be desirable. Servicing work should be carried out by a qualified gas service engineer.

IMPORTANT:

1. Never rest anything, especially ladders, against the heater.
2. Isolate gas and electrical supplies before commencing any servicing work or component exchange.
3. Unless otherwise instructed, reassemble parts in reverse order to the instructions given below.
4. Always test for gas soundness after completing any servicing or exchange of gas carrying components.

11 ROUTINE SERVICE

11.1 Fan

Remove fan by unplugging its electrical connection from the control box and slackening the M8 fan securing pinch bolt. If a flue is fitted, this must also be disconnected. The fan will now slip off the emitter tube.

Inspect the main fan impeller and remove any dust by brushing with a soft brush. Similarly remove any dust from the finger guard covering the secondary (cooling) impeller and the mesh aperture in the motor cover. Ensure that the impeller turns freely and that there is not excessive play in the bearings.

Do not replace fan until radiant tube inspection has been completed.

11.2 Radiant Tubes

Brush away any dust on the exterior of the radiant tubes.

Inspect the radiant tube internally. If there is any appreciable build up of dust or deposits the tubes should be cleaned internally. Remove the burner/control assembly as directed in 11.4 below.

The radiant tubes may now be cleaned by use of an industrial vacuum cleaner with a long extension tube which is passed down each limb of the radiant tubes. Alternatively, the return bend may be detached after releasing the two M10 pinch bolts. The two tubes can then be cleaned by passing rods and a suitable scraper through them.

11.3 Reflector

Although not considered part of the annual routine service, the condition of the reflector should be noted and the users attention drawn to any cleaning necessary. The reflector can be simply removed for cleaning by removing the two retaining screws and large washers securing it at the suspension bracket and sliding it out of the suspension brackets.

The reflector can be cleaned with a soft cloth and detergent in water.

A mild non abrasive metal polish may be used in cases of extreme discolouration.

11.4 Removal of Burner/Control Assembly

Remove the burner/control assembly by disconnecting the gas and electrical supply (and fresh air inlet duct if fitted). Slacken the burner fixing pinch screws and draw the assembly off the radiant tube.

11.5 Burner/Electrode Assembly

Inspect the burner and electrode assembly by removing the 6 dome head screws securing the combustion chamber cover plate on the top of the control box, taking care not to damage the sealing gasket. Remove the burner head by unscrewing it from the injector, taking care not to drop it onto the leads of the ignition electrodes.

Renew the electrode assembly if it is not in good condition. The assembly is removed by removing the 2 B.A. screws which attach it to the side wall of the combustion chamber. The assembly is then lifted out of the combustion chamber and the two connecting cables disconnected.

If the electrode assembly is not in good order check the spark electrode gap. This should be $3.5\text{mm} \pm 0.5\text{mm}$. Adjust the gap if necessary by bending the earth rod. Ensure that the electrical connections to the electrodes are secure, before refitting the electrode assembly.

Inspect the injector and clean as necessary using a soft bristle brush. To remove or replace the injector, with the burner head removed, unscrew the injector from its carrier using a spanner on the hexagon portion of its body. When replacing the injector ensure that it is fully tightened in its carrier.

Replace the burner head. Replace the combustion chamber top cover, renewing the rubber sealing gasket if this is not in good condition.

Inspect the burner fresh air inlet duct if fitted and ensure that this is free of any blockage or obstruction. Inspect the air inlet terminal and ensure that this is not liable to obstruction.

Replace the burner/control and fan assemblies engaging them fully on their tubes and secure by tightening the pinch screws, ensuring that both items are squarely and neatly positioned. The burner should be positioned with the air intake upper most and the fan discharge should face vertically upwards for flued heaters or horizontally away from the burner for unflued heaters, as detailed in Fig. 1 of these instructions.

Recommission the heater by following the procedure for commissioning, page 6 taking care to check that the burner gas pressure is correctly set, and that the vacuum switch and flame safeguard equipment function correctly.

11.6 Auxiliary Controls

Check that auxiliary controls such as room thermostats, time switches, frost thermostats etc. function correctly and are set to operate at the desired temperatures. Ensure that the user is aware of the functions of the auxiliary controls and their correct settings. For most efficient operation of the heating system the time switch if fitted should be set to switch on normally between ¼ hour and 1 hour before commencement of occupation of the building, depending on local conditions. The correct setting of the room thermostat can only be determined by experience in cold weather when it should be set to shut off the heaters when a comfortable level of warmth has been achieved. This setting will normally be several degrees below that which would be required with a convective heating system.

12 REPLACEMENT OF COMPONENTS

WARNING: Isolate gas and electrical supplies before carrying out any repair work.

12.1 To Replace Fan

Withdraw fan connecting plug from control housing. Disconnect flue if any. Slacken pinch screw securing fan to emitter tube. Draw fan off tube. Remove three M5 set pins securing fan support flange to casing. Refit support flange to the new fan ensuring that its original orientation is maintained. (See Sec. 4, Installation). Refit the fan to the heater ensuring that the fan discharge faces vertically upwards for flued or horizontally away from the heater for unflued heaters, as detailed in Fig. 1 of these instructions.

12.2 To Replace any Components in the Burner/Control Assembly

This assembly should be removed from the heater by disconnecting the gas and electrical supplies (and the fresh air inlet duct if fitted). Slacken the M8 burner fixing pinch screw and draw the burner/control assembly off the radiant tube.

12.3 To Replace Electrode Assembly

Remove top cover of combustion chamber by removing the 6 dome headed fixing screws. Remove the two 2BA screws securing the electrode assembly to the side wall of the combustion chamber and pull off the two electrode cable connectors after lifting out the assembly. Reconnect the cable connections to the new electrode assembly (the two connectors are non interchangeable) and refit the electrode assembly. Refit the combustion chamber cover plate, replacing the rubber gasket if this is damaged.

12.4 To Replace The Burner Head

Remove combustion chamber cover as in paragraph 12.3. Unscrew burner head from injector. Refit new burner head and replace combustion chamber cover, replacing the rubber gasket if this is damaged.

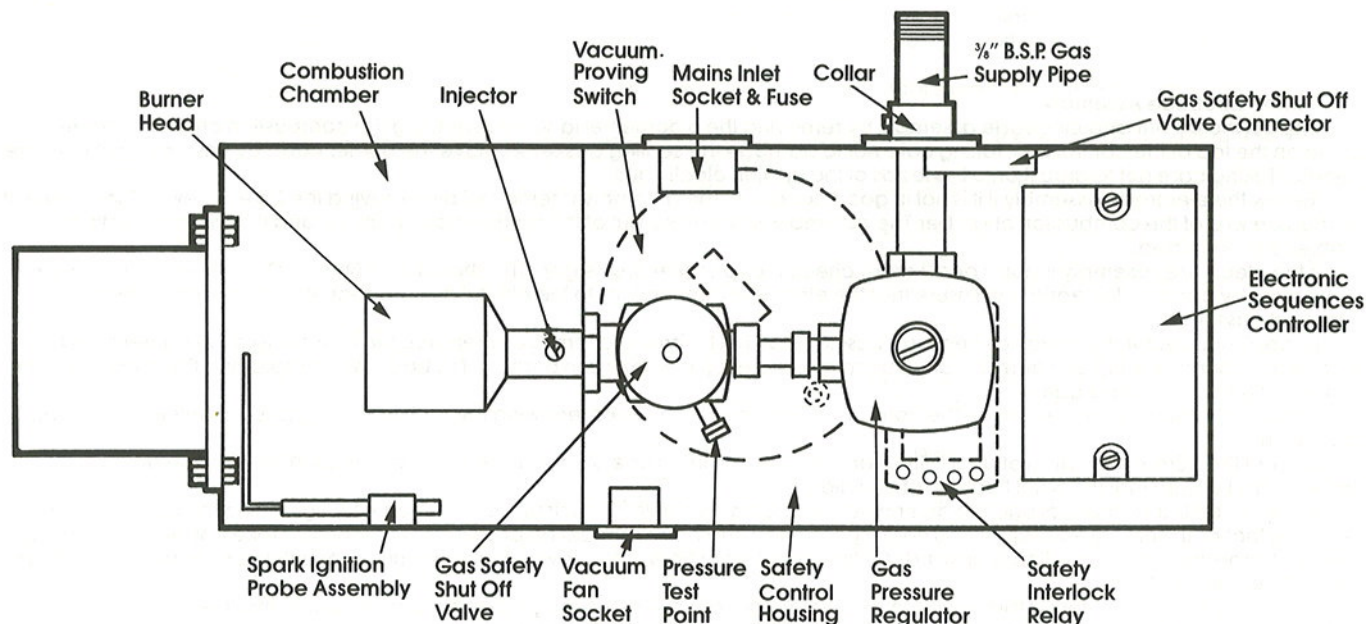
12.5 To Replace The Injector

Refer to 11.5 above. The injector size for Natural Gas is 3.3mm or 1.9mm for Propane. The size is stamped on the hexagonal part of the injector.

12.6 To Replace Regulator, Solenoid Valve or Injector

Remove combustion chamber cover as in paragraph 12.3. Remove control housing cover plate by unscrewing the 5 securing screws. Using a 3mm socket screw wrench loosen the grub screw securing the ½in B.S.P. gas supply pipe in its flanged collar. Unscrew the ½in B.S.P. gas supply pipe entering the regulator. Remove burner head as in paragraph 12.4. Unplug the three pin solenoid valve electrical connection. The regulator, solenoid valve and injector can now be removed as an assembly. Renew any defective component and reassemble using approved pipe jointing compound on pipe threads.

Fig. 8 Layout of Gas Controls (Viewed from top of Control Housing)



12.7 To Replace the Burner Control Unit

Remove the control housing cover plate by unscrewing the 5 securing screws. Remove the two long screws visible on top of the burner control unit. Gently unplug the entire control unit from its wiring base. Plug in the new control unit and replace the securing screws.

12.8 To Replace the Vacuum Switch

Remove the regulator/solenoid valve/injector assembly as in paragraph 12.6. Unplug the relay as in paragraph 12.9. Disconnect the rubber tube connection at the vacuum switch. Remove the two screws securing the vacuum switch and carefully slip the vacuum switch out of its bracket. Disconnect the three push on connectors from the vacuum switch. Refitting is a reversal of the above taking care to correctly reconnect the three cables. See Fig. 9 below.

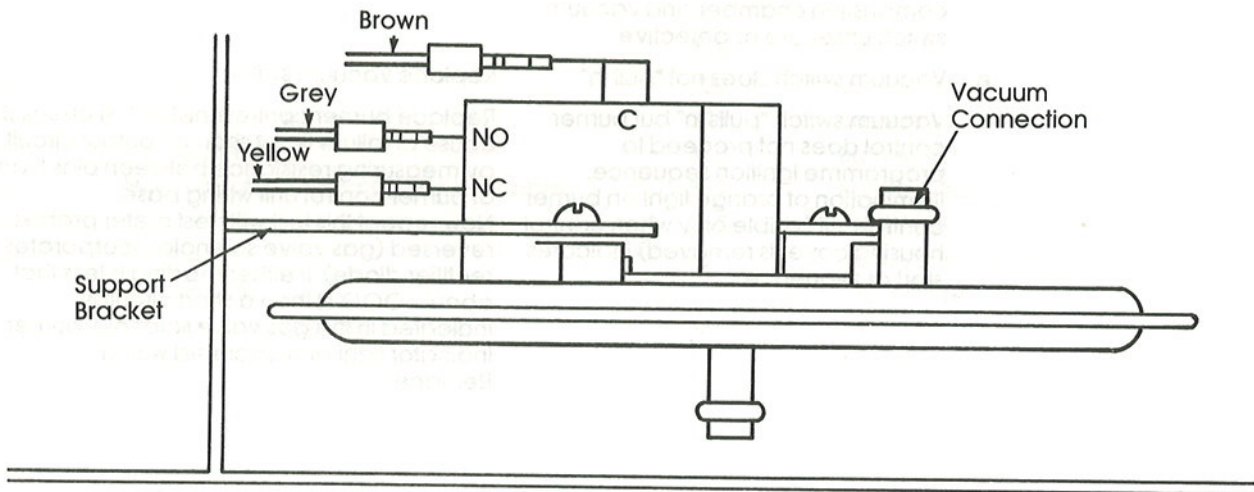


Fig. 9 Vacuum Switch (viewed from front)

12.9 To Replace the Relay

Remove control housing cover by unscrewing the 5 securing screws. The relay is a plug type and can be changed without removing other components.

12.10 To Replace Fuse

Withdraw fuse carrier by compressing slightly from above and below between first finger and thumb and then pulling it out, slip the old fuse from the carrier and replace with a new fuse of 1 amp rating.

TROUBLE SHOOT CHECK LIST

| Symptoms | Possible Causes | Remedy |
|---|---|--|
| 1. BURNER WILL NOT START | | |
| 1.1 Red "Mains on" light does not illuminate. | a. External controls, thermostat, time switch etc. not calling for heat. b. Fuse blown | Adjust controls Check for short circuit in wiring or individual electrical components. |
| 1.2 Red light illuminates | a. Fan connector plug not fully engaged b. Loose electrical connection c. Fan seized or burnt out d. Relay failing to pull e. Vacuum switch not returning to normal (switched off) position | Engage securely. Check all connections. Replace fan, recommission heater especially checking gas pressure setting. Check 1.2e below and if satisfactory replace relay. Replace vacuum switch |

| Symptoms | Possible Causes | Remedy |
|---|--|---|
| 1.3 Fan starts but burner does not attempt ignition | a. Insufficient vacuum generated by fan | Clean fan blades with soft bristle brush |
| | b. Blocked emitter tube | Clean emitter tube internally |
| | c. Combustion chamber cover permitting air in leakage. | Examine condition of rubber gasket, tighten down lid securely. |
| | d. Vacuum impulse line between combustion chamber and vacuum switch unsecure or defective | Fix securely or replace |
| | e. Vacuum switch does not "pull in" | Replace vacuum switch |
| | f. Vacuum switch "pulls in" but burner control does not proceed to programme ignition sequence. Illumination of orange light on burner control unit (visible only when control housing cover is removed) indicates start of sequence | Replace burner control unit. but first check that cause of failure is not short on output circuit, by measuring resistance between pins 5 and 7 of burner control unit wiring base. Now repeat this test with test meter probes reversed (gas valve solenoid incorporates rectifier diode). If either reading is less than about 5000 Ω then a short circuit is indicated in the gas valve solenoid, burner indicator light or associated wiring. Replace. |
| 1.4 Burner Control proceeds to ignition stage (normally indicated by audible spark gas valve energised and "burner on" light illuminated) but burner does not light | a. No spark | Check electrode for cracks – replace if necessary. Check high tension – connection are secure. Check spark gap is $3.5 \pm 0.5\text{mm}$ If no high tension output from burner control replace control. |
| | b. Gas control valve burnt out or defective | Replace solenoid operator section of gas valve. |
| | c. Insufficient gas pressure | Set burner gas pressure 10.2 mbar. (See commissioning instructions.) |
| | d. Burner injector blocked | Clean burner injector. |
| 2. BURNER LIGHTS, BUT SHUTS DOWN AFTER A FEW SECONDS | a. Inadequate flame signal. This can be verified by connecting a sensitive microammeter in series with the violet wire which passes through the combustion bulkhead. The correct reading should be $5\mu\text{A} \pm 1\mu\text{A}$ | Replace flame electrode. Check connections to electrodes and terminal 4 of burner control unit plug. Replace burner control unit. |
| | b. Flame unstable | Check cleanliness of burner and set burner gas pressure 10.2 mbar. |
| | c. Inadequate gas supply Observe burner gas pressure setting with all heaters operating | If gas pressure drops below 10.2 mbar examine gas supply pipework for excessive pressure loss. |
| | d. Insufficient vacuum at combustion chamber causing vacuum switch to cut off | Clean fan blades with soft bristle. Inspect tube internally and clean if necessary (see servicing instructions). If problem persists replace vacuum switch. |
| 3. HEATER SHUTS DOWN AFTER OPERATING FOR A PERIOD OF TIME | Refer to 2a and 2d above. | |

SPARES PARTS LIST

Radiant Heater Model ER13

| Part No. | Description | Part No. | Description |
|----------|--|----------|----------------------------|
| 103 | Mild Steel Emitter Tubes | | Rectification Lead |
| 122 | Reflector, 10 ft section | | Burner Assembly |
| | Fan Assembly complete | 337 | Governor |
| 270 | I.D. Fan | 347 | Electrode Assembly |
| 209 | Vacuum Switch | 315 | Burner Head |
| 219 | Relay | 329 | Burner Injector |
| 202 | CSS-O1 Control | 328 | Burner Injector Carrier |
| 208 | Solenoid Valve | 310 | Burner/Fan Support Casting |
| 233 | Mains input connector & flexible cable | 359 | Burner Gasket |
| 236 | Fuse | 360 | Joint Seals |
| 252 | Red Lamp | 330 | Impulse Line Assembly |
| 251 | Amber Lamp | | End Bracket |
| | H.T. Lead to burner control unit | 345 | Return Bend |
| | H.T. Lead to ignition electrode | | |

USERS INSTRUCTIONS FOR AMBI-RAD HEATERS MODEL ER 13

AMBI-RAD is an overhead radiant heating system for industrial and commercial buildings. The AMBI-RAD heater is suspended from the roof or mounted at an angle on the wall and heats by radiation in the same way as the sun.

IMPORTANT:

1. This appliance must only be installed by a qualified person in accordance with the requirements of the Gas Safety Regulations and The Health and Safety at Work Act.
2. This appliance must be earthed.
3. Never rest anything especially ladders, against the heater.

To Start the AMBI-RAD Heater:

1. First ensure that the gas supply to the heater is turned on.
2. Ensure that the settings of any time-switch and thermostat are such that the heating system will be required to operate.
3. Switch on electrical supply to heater. Mains light, coloured red, will illuminate and ignition sequence commence.
4. After completion of an air purge period, ignition of the burner will occur and burner light, coloured orange, will illuminate.
5. If ignition attempt fails, burner controller will lock out with mains light only illuminated.
6. If lock out occurs switch off electrical supply wait 15 seconds then switch on again. If lock out occurs again switch off heater and call service engineer.

To Switch Off The AMBI-RAD Heater:

Switch off the electrical supply to the heater. The burner will shut off and the fan will stop.

If the heater is switched off for periods in excess of one week it is highly recommended that both gas and electrical supplies are turned off.

Servicing

To ensure continued efficient and safe operation it is recommended that the heater is serviced regularly by a qualified person e.g. every year in normal working conditions but in exceptionally dusty or polluted conditions more frequent servicing may be required. The manufacturers whose address is given below offer a maintenance service, details available on request.

USERS INSTRUCTIONS FOR AMBI - RAD HEATERS MODEL ER22

AMBI - RAD is an overhead radiant heating system for industrial and commercial buildings. The AMBI - RAD heater is suspended from the roof or mounted at an angle on the wall and heats by radiation in the same way as the sun.

IMPORTANT :

1. This appliance must only be installed by a competent person in accordance with the requirements of the Gas Safety Regulations and The Health and Safety at Work Act.
2. **THIS APPLIANCE MUST BE EARTHED.**
3. Never rest anything especially ladders, against the heater.

To Start the AMBI - RAD Heater:

1. First ensure that the gas supply to the heater is turned on.
2. Ensure that the settings of any time - switch and thermostat are such that the heating system will be required to operate.
3. Switch on electrical supply to heater. Mains light, coloured red, will illuminate and ignition sequence will commence.
4. After completion of an air purge period, ignition of the burner will occur and burner light, green will illuminate.
5. If ignition attempt fails, burner sequence controller will lock out with mains light only illuminated.
6. If lock out occurs switch off electrical supply, wait 15 seconds then switch on again. If lock out occurs again switch of heater and call service engineer.

N.B. Heater will have tendency to bow when hot, but this is quite acceptable.

To Switch Off AMBI - RAD Heater:

Switch off electrical supply to the heater. The burner will shut off and the fan will stop.

If the heater is switched off for periods in excess of one week it is highly recommended that both gas and electrical supplies are turned off.

Servicing :

To ensure continued efficient and safe operation it is recommended that the heater is serviced regularly by a competent person eg. every year in normal working conditions but in exceptionally dusty or polluted conditions more frequent servicing may be required. The manufacturers whose address is given below offer a maintenance service, details available on request.

Because of our policy of continuous development Ambi-Rad Ltd. reserve the right to vary the equipment specification without notice

AMBI-RAD

radiant heating systems

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