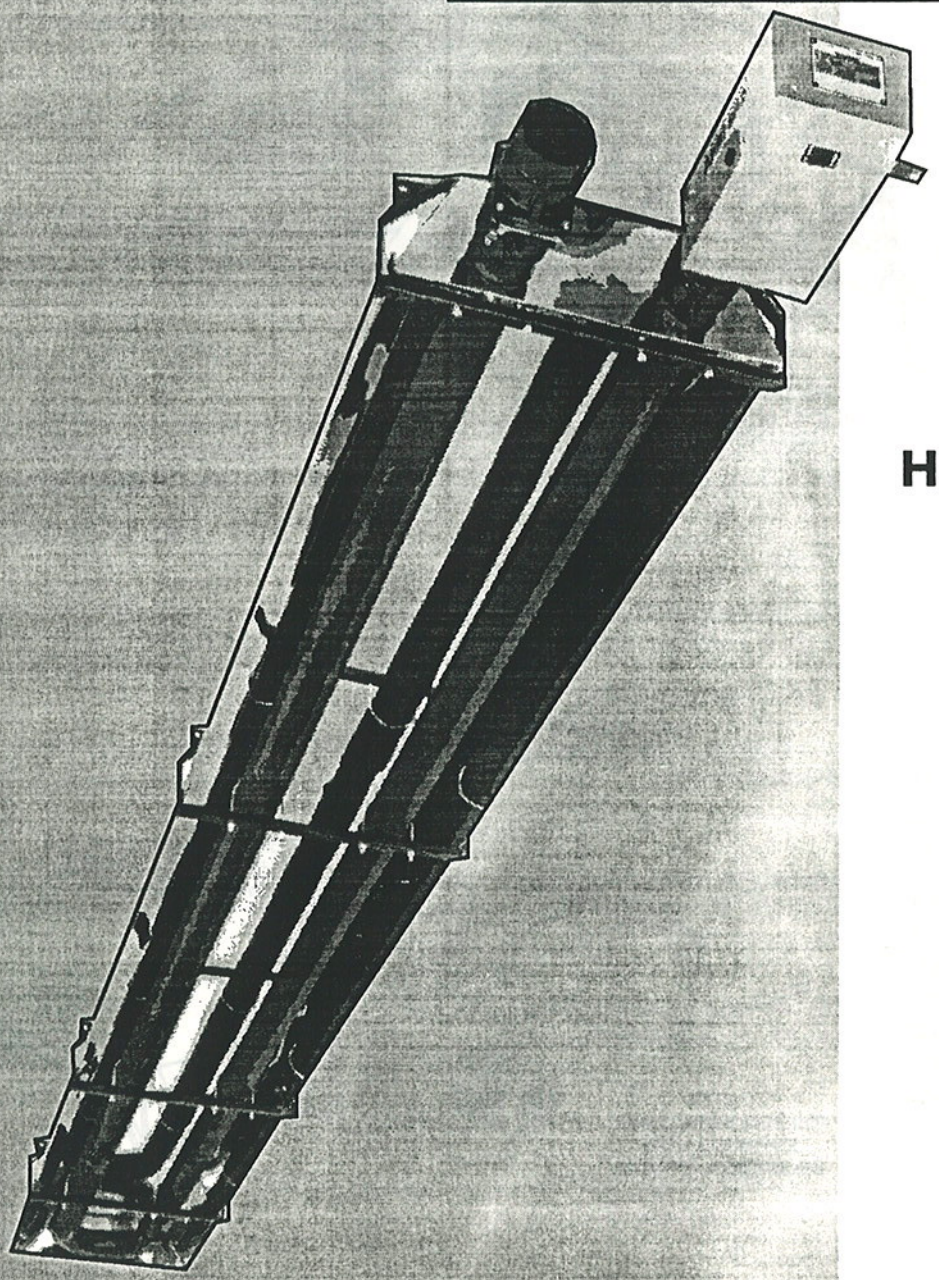
AMBI-RAD
radiant heating systems

INSTRUCTION AND INSTALLATION MANUAL



FOR | THE | HERRINGBONE | COMBINED | FLUE | HEATING | SYSTEM

Doc ref:134/6/92

INSTALLATION INSTRUCTIONS FOR AMBI-RAD HERRINGBONE HEATING SYSTEM.

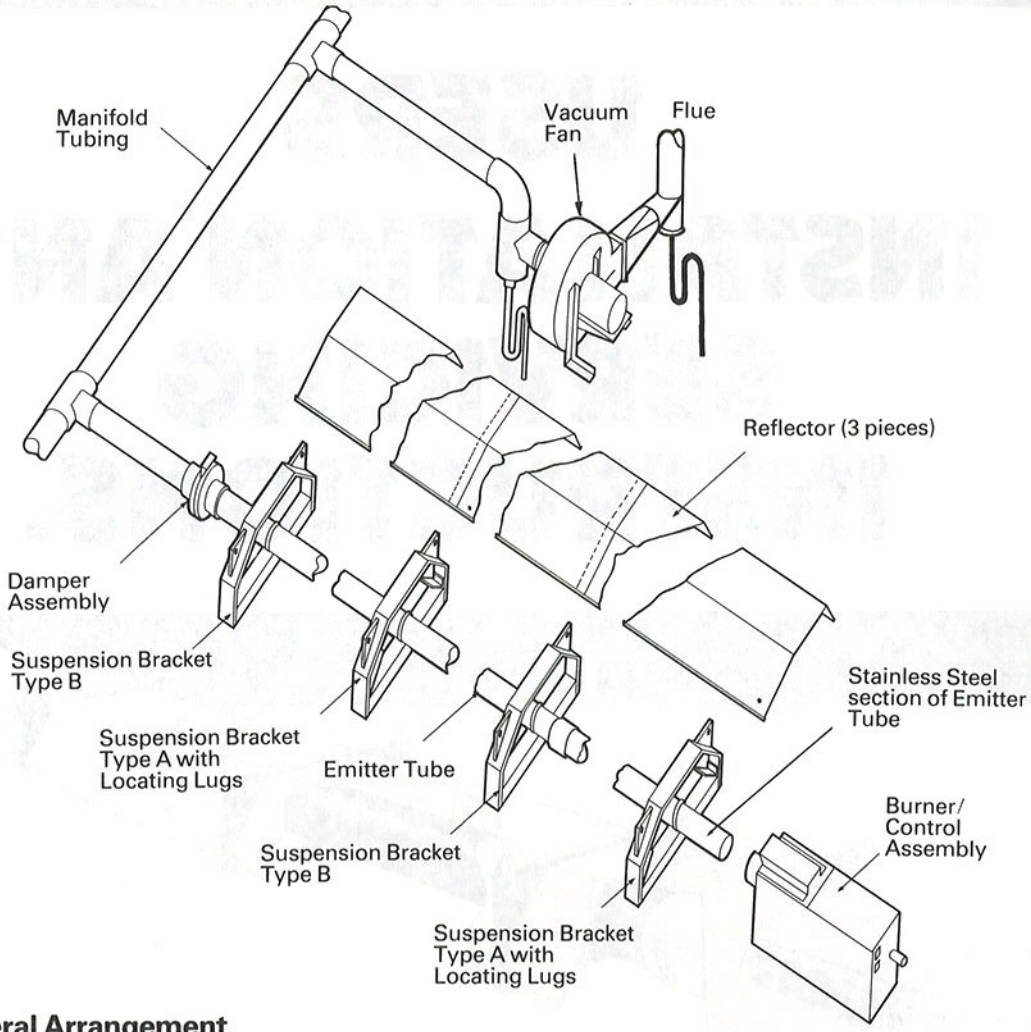


Fig.1. General Arrangement of AMBI-RAD Herringbone System

1 AMBI-RAD TECHNICAL DATA

Model	H B 22
Heat Input	Max: 22 kw (75, 100 Btu/h)
Nominal Gas Rate (Natural Gas)	Max: 2.12 m^3/h (75ft^3/h)
Gas Supply Connection	R½ (½'' B.S.P. external)
Electrical Supply	240 v 1 phase 50Hz
Power Absorbed	14 VA
Internal Fuse Rating	1 amp External Fuse 3 amp
Ignition	Electronic programme start up with spark ignition
Total Installed Weight	89 Kg (196 lb)

Standards

The Ambi-Rad heater must be installed in accordance with the relevant provisions of the Gas Safety (Installations and Use) Regulations 1984. Due account should alaso be taken of any obligations arising from the Health and Safety at Work Act 1984. In addition the installation must be carried out in accordance with the current I.E.E. Regulations, the requirements of BS 5440: part 1, BS 6896 and any other relevant British Standards and Codes of practice.

2 UNPACKING

The AMBI-RAD Herringbone System is supplied as follows for each heating unit:
1 radiant tube 76 mm (3 in.) outside diameter 7620 mm (25 ft) long Supplied in two sections.
3 stainless steel reflectors 2438 mm (8 ft) long
1 carton containing: Burner/control assembly
Damper assembly
Sundry components
2 suspension brackets with reflector locating lugs - Type A
2 suspension brackets without reflector locating lugs - Type B
1 electrical connector socket
1 manifold kit to individual specification but including aluminium manifold tubing, manifold tees, connectors, bends etc.
1 jointing compound gun and quantity of jointing compound
1 vacuum fan complete with inlet flexible connector 4 in. (for up to five heaters) or 6 in. dia. (for up to ten heaters)
1 square to round exhaust flue transition piece (square telescopic wall flue available upon request)
1 lockable control panel see page 6 for logic sequence and wiring diagrams.

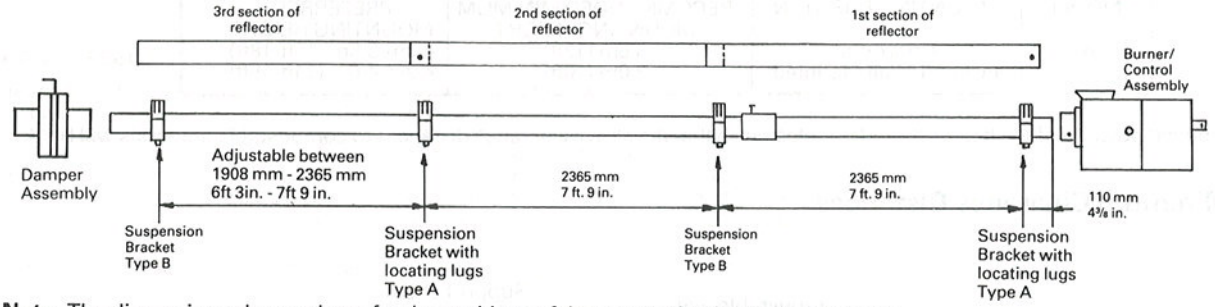
3 ASSEMBLY

Each heating unit is assembled as follows:

Support radiant tube on blocks or trestles etc. at least 250 mm (6 in.) above floor level, preferably under position of installation. Ensure that the tube is clear internally. **Note: Stainless steel section to be at burner end.**

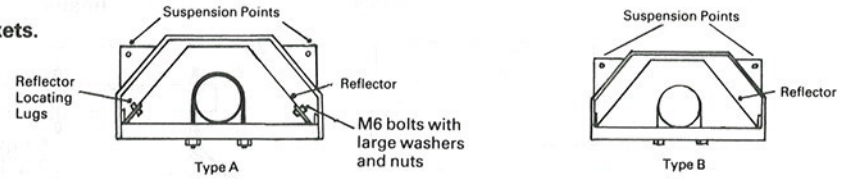
Slip four suspension brackets onto the tube noting that there are two distinct types of suspension bracket. Type A and Type B. Two are fitted with reflector locating lugs, Type A and two are without, Type B. These must be fitted alternatively along the length of the emitter tube. The bracket nearest the burner should be with locating lugs, the second without, the third with and the bracket furthest from the burner without locating lugs. See Fig. 3. Position the brackets in the positions shown in Fig. 2. These positions are critical. Tighten the nuts to secure the brackets to the tubes and ensuring that all brackets have the same orientation on the tube. A spirit level may conveniently be used for this purpose if the tube is firmly located so that it cannot move.

Fig. 2. Location of the Suspension Brackets.



Note: The dimensions shown above for the positions of the suspension brackets are critical.

Fig. 3. Section through Suspension Brackets.



4 INSTALLATION

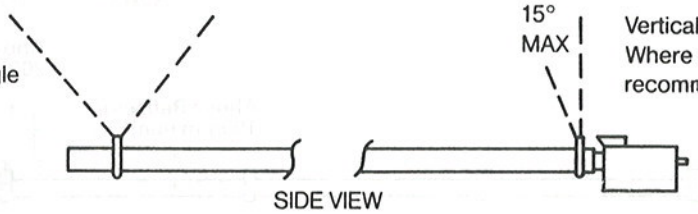
We recommend that at this stage the tube assembly is raised into position and suspended by all 4 suspension brackets from previously fixed chains (of 4 mm gauge galvanised, welding link construction) or 10 mm diameter mild steel drop rods, suitably protected from corrosion or fixed to wall mounting brackets. Wall mounting brackets must support the heater at an angle of inclination of beween 35° and 55° from the horizontal. Suitable brackets, adjustable to angles of 35°, 45° and 55° are available from the manufacturer. N.B. If the heater is to be wall mounted, the burner/control assembly must be on the right hand side when viewed facing the wall.

It is recommended that the heater is arranged to slope very slightly downwards to the I. D. Fan but not more than 25 mm (1 in.).

Note: Due allowance must be made for linear expansion of approximately 50mm (2in) when suspending the heater and fitting flexible gas connection at burner.

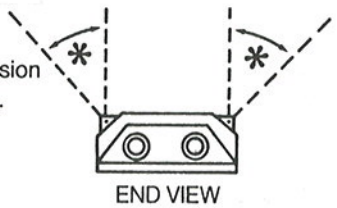
Attachment to the heater bracket support lugs should be made by either a spring hook, 'D' shackle, nut, bolt and large washers, or in the case of drop rods, a formed hook and due allowance must be made for thermal expansion of the heater.

When chain supports have an angle of inclination greater that 15° on equal and opposite support is recommended.

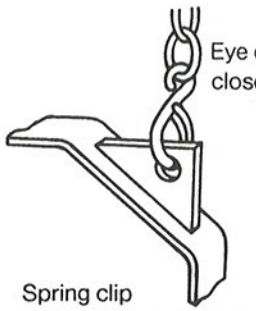


Vertical suspension chain ideal. Where supports are inclined max. recommended angle of inclination 15°.

Vertical or Inclined suspension on this plane is acceptable.



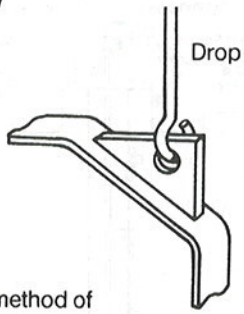
*These angles to be equal and not more than 45°



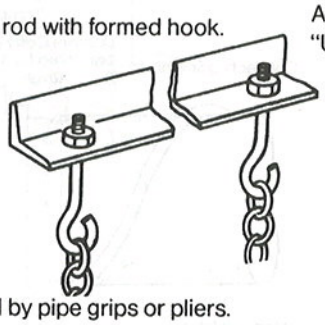
Eye on spring clip must be closed over chain link.

Spring clip method of attachment.

Shackle method of attachment. Pin must be tightened by pipe grips or pliers.



Drop rod with formed hook.



Alternative method of suspension for "U" Tubes and linear type heaters.

The hanging attatchments to overhead steelwork etc. must be purpose made to good sound engineering practice or of a proprietary type fixing.

They must be adequately fixed and designed to carry the whole weight of the heater and to permit free movement due to linear expansion.

In the event of suitable roof steelwork not being available, additional steelwork should be fitted to enable vertical hangers to be used for suspending the heaters.

If there is any doubt as to the strength or suitability of roof steelwork to which heaters are to be suspended, please refer to consultant/architect/Client owner of the building.

The recommended minimum and preferred mounting heights for the AMBI-RAD heaters are as follows:

MODEL	MOUNTING POSITION	RECOMMENDED MINIMUM MOUNTING HEIGHT	PREFERRED MOUNTING HEIGHT
HB22	Horizontal	3.6m (12ft)	4.8m-5.5m (16ft-18ft)
	Inclined/Wall Mounted	3.0m (10ft)	4.2m-4.6m (14ft-15ft)

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

Fig.4. Minimum Clearance Distances

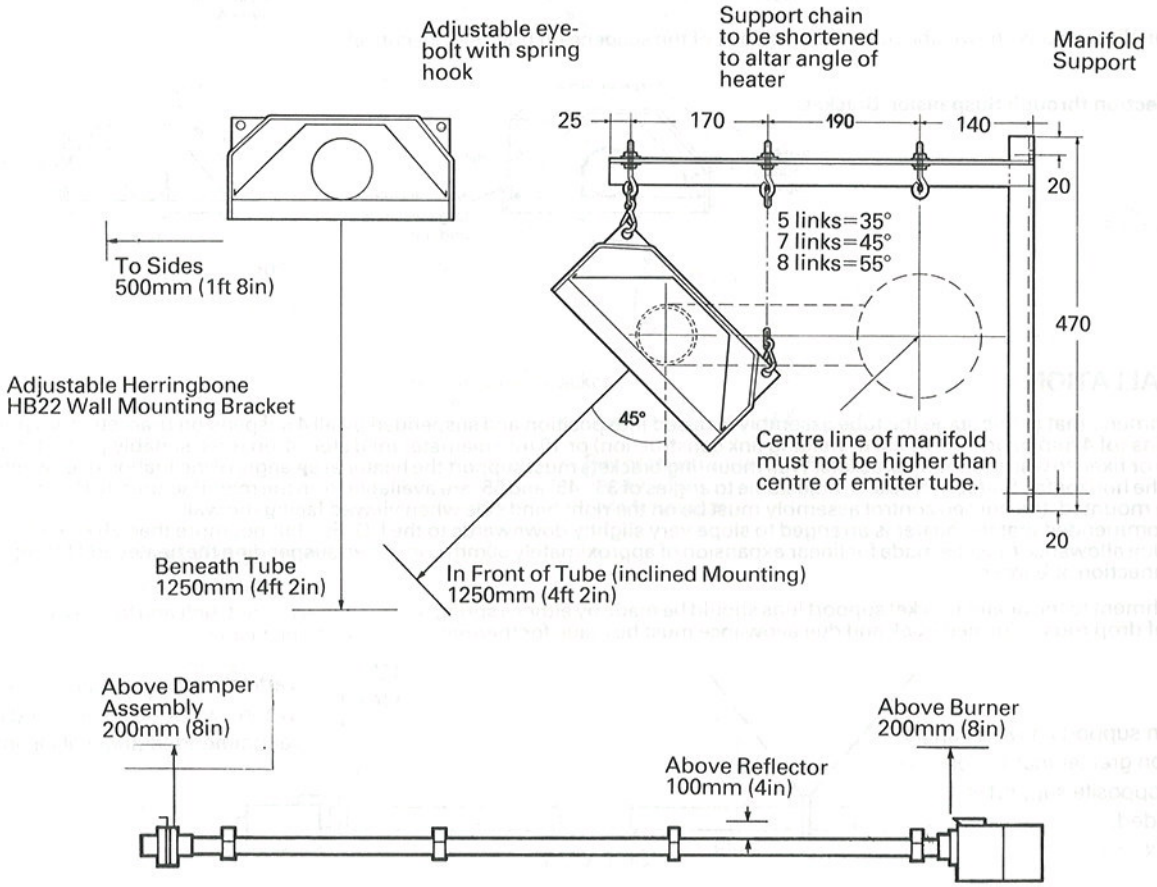
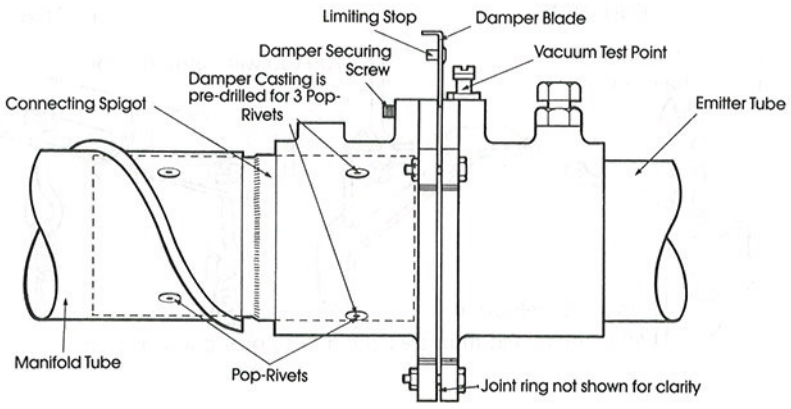


Fig.5. Damper Assembly



Remove the protective plastic film from the reflector surface. Note: When removing protective covering from reflector do not stand on inside face of reflector. Each section of the reflector has two holes punched at one end. This end is firmly fixed by bolting to the lugs provided on suspension bracket Type A. The other end of each reflector section is free floating in suspension bracket type B thereby allowing for thermal expansion.

Position the first reflector section and secure it with M6 bolts, nuts and large washers provided to the suspension bracket nearest the burner.

Position the second and third sections of reflector so that they overlap with the punched holes in line with the lugs provided on the third suspension bracket from the burner. Secure using M6 bolts, nuts and large washers passing through both reflectors.

Slide burner/control assembly onto the burner end of the emitter tube (nearest to suspension bracket, Type A), see Fig 2, ensuring it is fully engaged and upright, (i.e. with the air inlet plate facing upwards) and secure with locking screws provided.

Slide damper assembly onto the tube ensuring it is fully engaged and withthe damper blade in the vertical plane. Secure damper assembly with locking screw provided.

Manifold Assembly

The manifold connecting the exit end of each heater to the vacuum fan should now be erected.

The layout and sizing of the manifold must follow the design criteria given in the appendix and the Ambi-Rad design manual. The manifold should be as compact as possible with a minimum of bends and fittings and preferably but not essentially with the final exit connection to the vacuum fan approximately central in the manifold length.

The manifold should be arranged to fall slightly in the direction of the fan, care being taken to ensure that any condensate formed in the pipe on cold start up will flow towards the fan and will not be trapped or drain back into the heater unit.

The manifold should be supported at the following centres by chains, stainless steel flexible wire or other semi flexible means from roof structure.

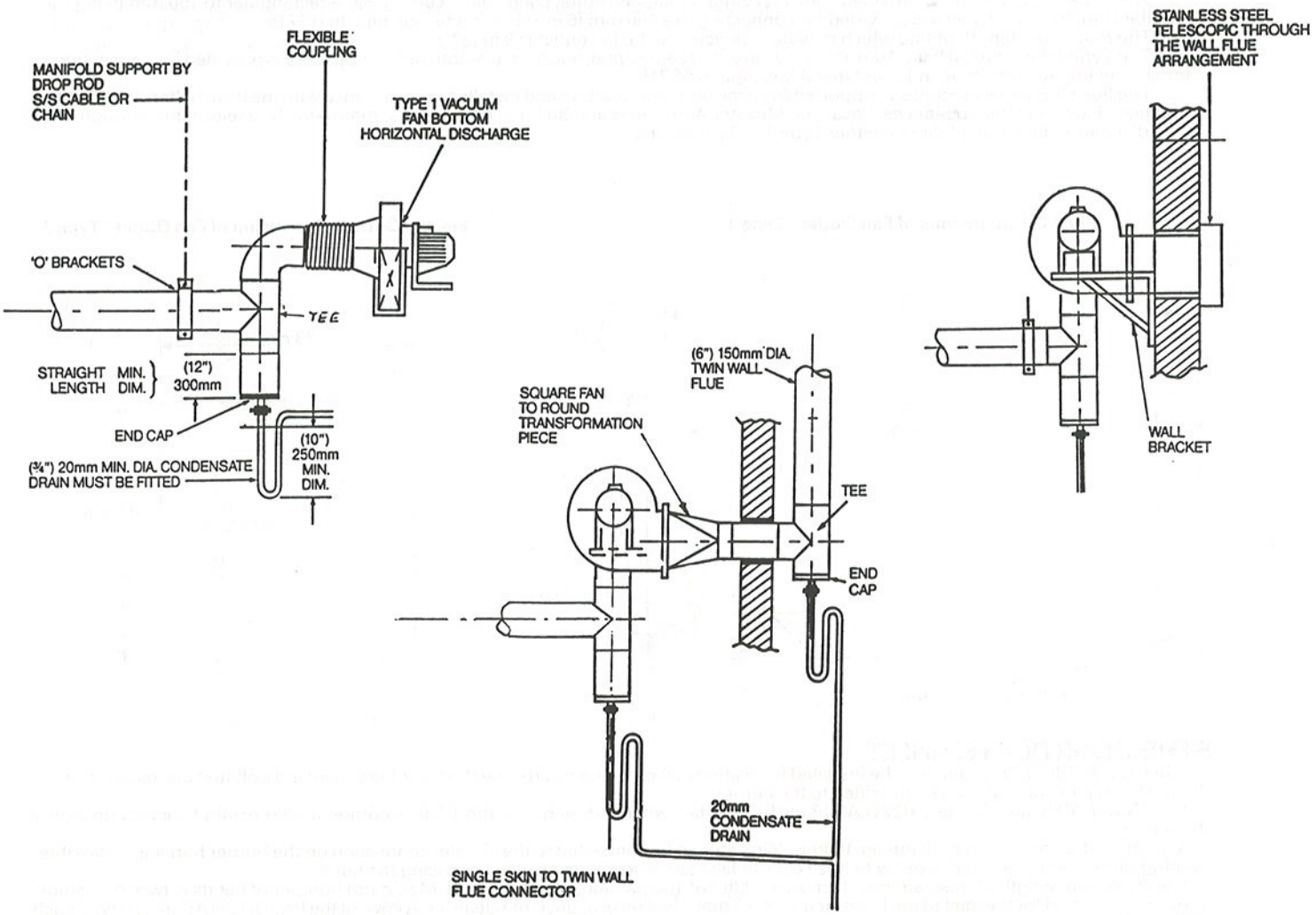
Flexible couplers (suplied by manufacturer) must be inserted within the manifold system to allow linear expansion to take place and prevent stress and strain.

Manifold pipe size	Maximum distance between supports
75 mm	2.4 m (8 ft)
100 mm	2.4 m (8 ft)
150 mm	3 m (10 ft)
200 mm	3 m (10 ft)

At the exit from the manifold before entering the fan, provision should be made for the collection of condenstate and for the drainage of condenstate to a drain via a deep 'U' shaped trap. (Minimum depth 250 mm (10 in.). A suitable arrangement for this is shown in Fig. 6.

Note: The fan casing can be arranged to give either a vertical or horizontal discharge be removing the four nuts attaching it to the motor support frame and rotating it through 90 degrees one way or the other. Bottom discharge is prefered from the fan to prevent condenstate lying in the fan and causing corrosion.

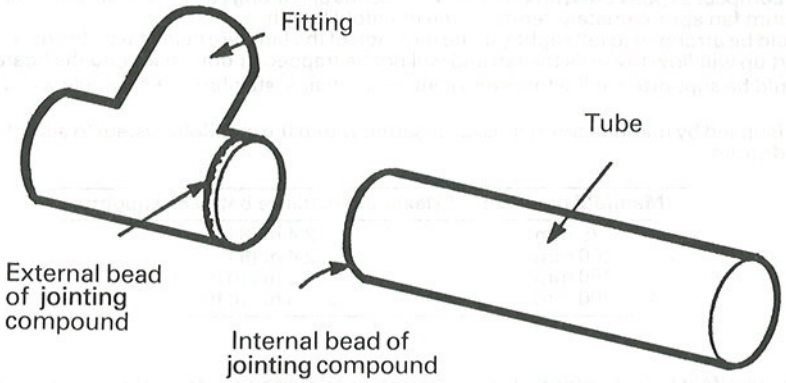
Fig. 6. Recommended Manifold to Fan to Flue Arrangements For Type 1 and Type 2 Fan.



Method of Jointing Aluminium Tube

All fittings (bends, tees, couplers etc.) are dimensioned to be a close internal slip fit in the manifold tubing. The method of jointing is as follows. Cut the tube to correct length allowing for minimum 50 mm (2 in.) of penetration of the fitting into the tube. Remove any burrs from the end of fitting and tube. Wipe off any grease of oil with a clean rag. Using the mastic gun and high temperature silicone jointing compound provided, exude a 4 mm dia. bead of compound externally round the end of the fitting and internally round the end of the tube. Enter the fitting into the tube using a slight rotating movement to spread the compound uniformly until a penetration of 50 mm (2 in.) is achieved. The jointing compound remains workable after application for only five minutes. Secure the joint by drilling through the tube and fitting with a 5 mm ($^3/_{16}$ in.) dia drill, and fixing $3^3/_{16}$ in pop rivets in the 12 o'clock, 4 o'clock and 8 o'clock positions. Do not fix rivets in the underside of the tube in order to avoid risk of leakage of condensate. Where the heater damper assembly connects to the manifold a special connecting spigot supplied with the damper assembly should be used.

Fig. 7. Method of Jointing Manifold Tube.



Flue Connection to Fan Outlet

The Type 1 vacuum fan is provided with a rectangular flanged outlet connection, see Fig. 8a. A rectangular to 150 mm (6 in.) circular transformation piece is provided for connecting to a 150 mm (6 in.) sheet metal flue pipe to BS715.

The maximum length of flue which may be connected to the fan outlet is 9 m (30 ft).

The Type 2 vacuum fan has a 100 mm (4 in.) fan outlet connection, and a circular transformation piece is provided for connection for connecting to 150 mm (6 in.) sheet metal flue pipe to BS715.

The flue should be adequately supported from the building structure and installed in accordance with the British Standard Code of Practice - Flues for Gas Appliances, Local and Ministry Authorities and Building Regulations. Alternatively, a telescopic through the wall discharge duct is available for either Type 1 or Type 2 Fans.

Fig. 8a. Dimensions of Fan Outlet - Type 1.

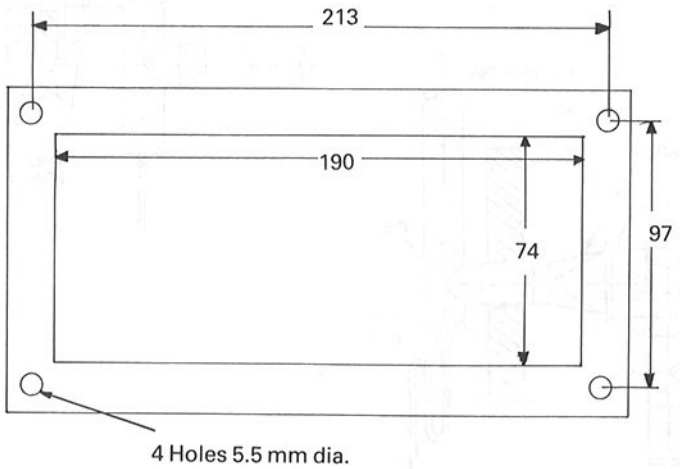
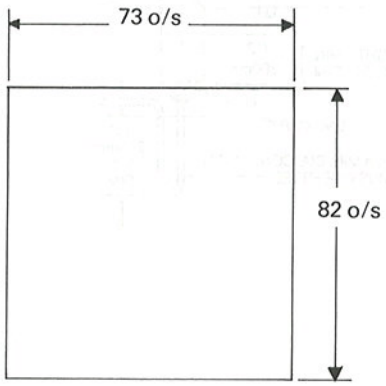


Fig. 8b. Outside Dimension of Fan Outlet - Type 2.



5 FRESH AIR DUCTED INLET

When the AMBI-RAD system 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 HB22 D.A. should be specified when ordering. This model incorporates a 100mm (4in.) duct connection at the burner.

A fresh air duct of minimum diameter 100mm (4in.) should be connected to the air inlet connection on the burner housing. A flexible jointing piece should be used, 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.) diameter 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.1 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 inlet cowl must be at least 600mm (2ft.) above the roof level and at least 250mm (10in.) higher than any projection on the roof within a two metre radius of the cowl.

6 GAS CONNECTION

The gas connection on the AMBI-RAD heater is R½ (½" B.S.P. external thread).

GAS	NATURAL GAS	PROPANE
Maximum supply pressure	40 mbar (16 in. wg)	40 mbar (16 in. wg)
Minimum supply pressure	13 mbar (5 in. wg)	30 mbar (12 in. wg)
Burner setting pressure	10.6 mbar (4.2 in. wg)	28.7 mbar (11.5 in. wg)

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 BS 6891: 1988 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.

The gas supply must not be in a position where it is subject to overheating.

A gas union service cock MUST be fitted in the gas supply close to the heater, but not onto the burner itself.

It is essential to provide some flexibility in the final gas connection by use of a tested and certified metallic hose to BS 6501: Part 1, 1984 (minimum acceptable quality Type B Class 1) or copper expansion loop. When stainless steel flexible hoses are used the hose should be connected in a 180° bend without any strain or torsion. See Leaflet 410/12/88 for details.

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

7 ELECTRICAL CONNECTION

WARNING: THIS APPLIANCE MUST BE EARTHED.
Supply 240 v 50 Hz Single Phase.
Power Absorbed 14VA.
Fuse: Internal 1 amp. External 3 amp.

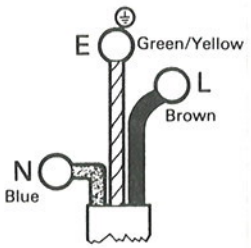
All electrical work should be carried out to I.E.E. standards by a competent electrician.

The electrical connection to the heater is made by means of a three pin plug-in power connector. Live, Neutral and Earth connections should be made via a flexible supply cable to the power connector and routed clear of the heater or tubes. The flexible supply cable should be of 0.5 mm² complying with BS 6500, 1975.

IMPORTANT

The wires in the mains lead are coloured in accordance with the following code:

Green and Yellow	- Earth
Blue	- Neutral
Brown	- Live



Instructions for connecting mains lead to plug:
Connect Green and Yellow to plug terminal marked E or Green or Green and Yellow.
Connect Blue wire to terminal marked N or Black or Blue.
Connect Brown wire to terminal marked L or Red or Brown.

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 See Fig. 10.

Important: All such controls and switchgear must be rated to handle the total inductive load of the circuit they control. The inductive load per AMBI-RAD Model HB22 is given above. For large installations the use of relays or contractors should be considered.

The method of connection to the electricity supply must facilitate complete isolation and should be made via a fused double pole isolation having a contact separation of at least 3 mm in all poles and suppling the appliance only.

Alternatively connection may be made via a fused three pin plug and unswitched shuttered socket both complying with the requirements of BS 1363.

Ensure that a copy of the lighting instructions (back page of user manual) is affixed adjacent to the electricity supply switch. Should this switch serve more than one heater it is only necessary to fit one plate per service switch.

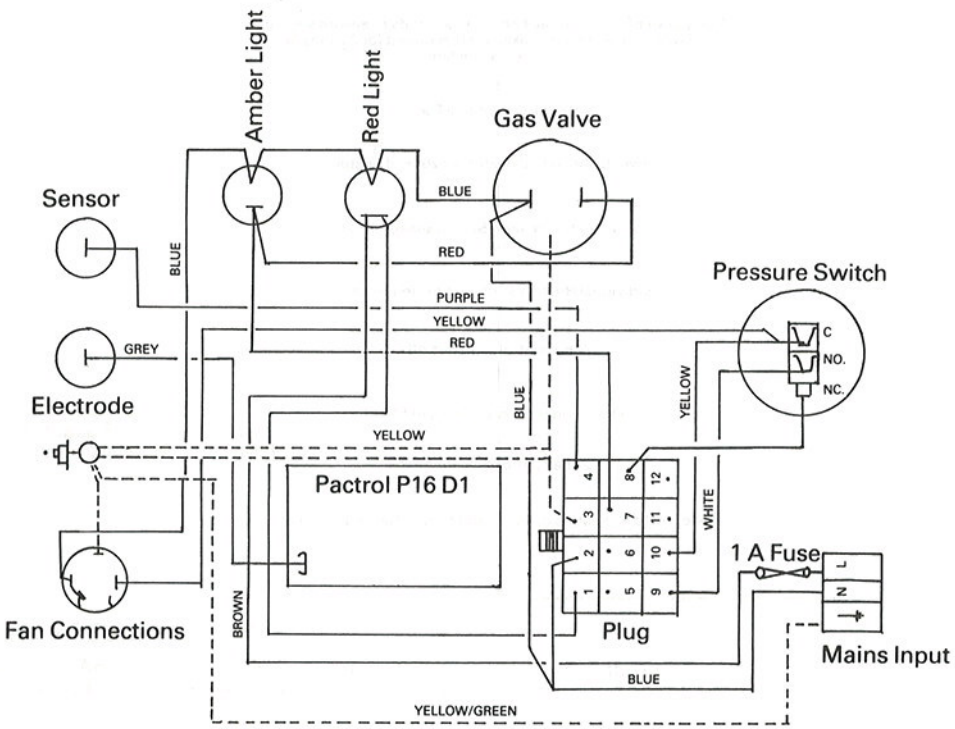


Fig 8. Wiring Diagram HB22 Control Housing.

4.0 Commissioning

Inspect installation and ensure 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 Standard BS 6891: 1988, BG1M/16 BGC Report IM/2 and any other British Standards and Codes of Practice.
Ensure that the settings of any time switch and thermostat are such that the heating system will be required to operate (or put the mode switch to 'constant').
Before attempting to start up the heating system it is essential to perform the preliminary balancing of the vacuum level at each burner unit.

Isolate each heater unit by unplugging each electrical connector and closing each gas isolating valve.
Adjust the damper at exit of each heater using a 4mm hexagon wrench in the M8 locking screw. Observing the vacuum reading using a 'U' tube manometer connected to the vacuum test point (see Fig. 5.), set each damper in turn to give a hot conditions reading as below.

Fig.12 Damper Settings.

HEATER TYPE	DAMPER SETTING HOT CONDITIONS	
	mbar	in. w.g.
ER13HB	1.67	0.67
HB13	1.52	0.61
ER22HB	1.22	0.49
HB22	1.00	0.40
ER38HB	1.12	0.45
HB38	1.00	0.40
AR13HB	1.67	0.67
HB13AR and A13/DL	1.52	0.61
AR22HB	1.49	0.60
HB22AR and AR22DL	1.25	0.50
AR35HB	1.02	0.41
HB35AR and AR35/DL	1.00	0.40
RB18HB	1.40	0.55
HB18RB and RB18DL	1.40	0.55
RB30HB	1.40	0.55
HB30RB and RB30/DL	1.00	0.44

After initial setting of damper re-check when system is at equilibrium.

Referring Now to Each Individual Heater Unit

Open isolating valve and test gas connections for soundness using leak detecting solution. Remove the combustion chamber cover plate by unscrewing the 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 cover plate ensuring that the sealing gasket is correctly positioned and the screws are fully tightened. The heater will not operate until this plate is refitted.

Remove the safety control housing cover plate by unscrewing the securing screws and folding down/lifting off the plate.
Ensure all internal components are securely fixed and all connections securely made.
Reinsert the electrical connector to the burner control assembly.
To allow the heater to start up it is necessary to switch off the whole system at the timeswitch or manual switch and to allow the fan to stop completely before switching on again. At this point the individual heater unit will start up with the following sequence.

The red "mains on" lamp will illuminate and the main 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 is energised and will open.
If ignition is successful the flame is detected by the flame sensing probe and the ignition spark is switched off. The amber "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 4 seconds. After unsuccessful ignition attempt the electronic sequence controller will "lock out", the red "mains on" lamp only will remain illuminated. To re-set this "lock out" condition, switch the power supply to the system, wait until the fan stops completely then re-start it. If repeated lock-out occurs, investigate the cause.
Note that if an individual burner assembly unit is switched off and re-connected it cannot restart. The fan must stop running before the burner can be restarted.

To shut down the heaters switch off the power supply to the system. Automatic control of the heating system is achieved through the lockable control panel, incorporated in the electrical supply, which may contain a time switch, Black Bulb Controller with day and night settings, a 3 position mode switch giving constant on/off auto control and fan starter. It is essential to allow a delay of 30 seconds after switching off heaters before attempting to re-start the system.

If at any time after completion of the start up sequence loss of flame should occur, the electronic sequence controller will attempt to re-ignite. If this is unsuccessful, heater lock-out will occur.

To set the burner gas pressure: Close gas valve. Unplug mains input connector to heater. Unscrew the fixing screws of the safety control housing lid and remove pressure test point screw and connect a 'U' tube manometer to the pressure test nipple (located between the pressure regulator and solenoid gas valve). Remove the cover from the pressure regulator to reveal the adjusting screw.
Replace mains input connector, open gas valve and start system.
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 burner pressure to the required figure given on the data label. Switch off the heater by pulling out the mains connector. Disconnect 'U' tube manometer and refit screw in pressure test nipple. Refit cover of pressure regulator. Replace cover plate on safety control housing and refit screws.

To re-ignite heater, switch system off at control panel. Wait until fan stops completely and then re-start system.

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 valves have 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 mains input connector. Pull off the silicone tube connecting the vacuum switch to the combustion chamber. Observe for at least 20 seconds that there is no attempt to re-ignite. Then replace the silicone tube.
Replace the safety control housing lid and re-connect the mains input connector.
To re-ignite each heater in the system, the fan must stop running. Switch system off at the control panel. Wait until fan stops completely and then restart system.

Repeat the above procedure for each of the heater units in the heating system.

IMPORTANT
When all the heaters have been commissioned as above, the vacuum settings must be finally balanced in the hot condition. Start all burners up and allow them to run for at least 20 minutes. With the use of a 'U' tube manometer determine vacuum reading at the damper assembly on each heater. See Fig. 5. for vacuum test point. The damper should be re-adjusted and set at a hot conditions reading as shown in Fig.12 for the appropriate size heater and model.
It will be noted that the emitter tube has a tendency to bow when hot, this is normal and quite acceptable.

5.0 CONTROL SYSTEMS.

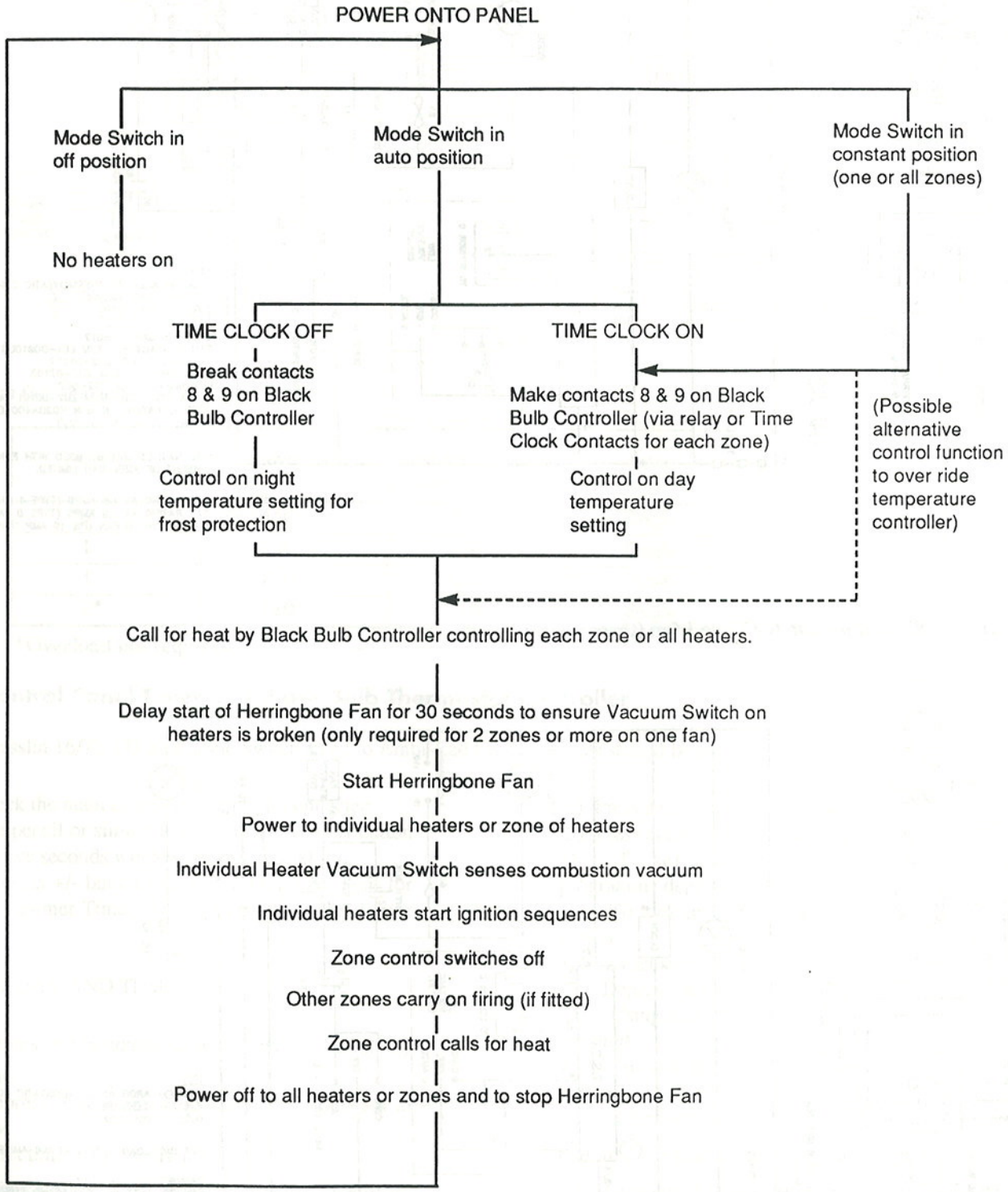
The control system must be installed in accordance with the design specification.

5.1 Control Panel Design

Ambi-Rad control panels are available either as standard units to control single or multiple zones of heaters utilising the Ambi-Rad Black Bulb radiant thermostat. Special control functions are available on request.

If a Herringbone control panel is used the following logic to operate in a safe and satisfactory manner is necessary:-

Fig.13. Logic Sequence for Herringbone Control Panel.



5.2 Installation of Control Panel

To Install the Ambi-Rad control panel remove the plastic plugs from the four 9mm diameter holes in the back of the control box. Using these holes fix the box in a convenient position to a suitable plugged wall or solid structure with No. 10 gauge woodscrews or 6mm diameter bolts or set screws. Access to the holes may be gained from the inside of the box without the necessity of removing the wiring chassis. Make the electrical connections in accordance with Fig.14 and cut holes in the removable gland plate provided in the box. Conduit or strain relief glands should be used.

Fig 14 External wiring diagrams.

Fig.14a Herringbone Control Panel wiring diagram for Type 0 and Type 1 fans (single phase) incorporating the ARBB65 Black Bulb Control Thermostat.

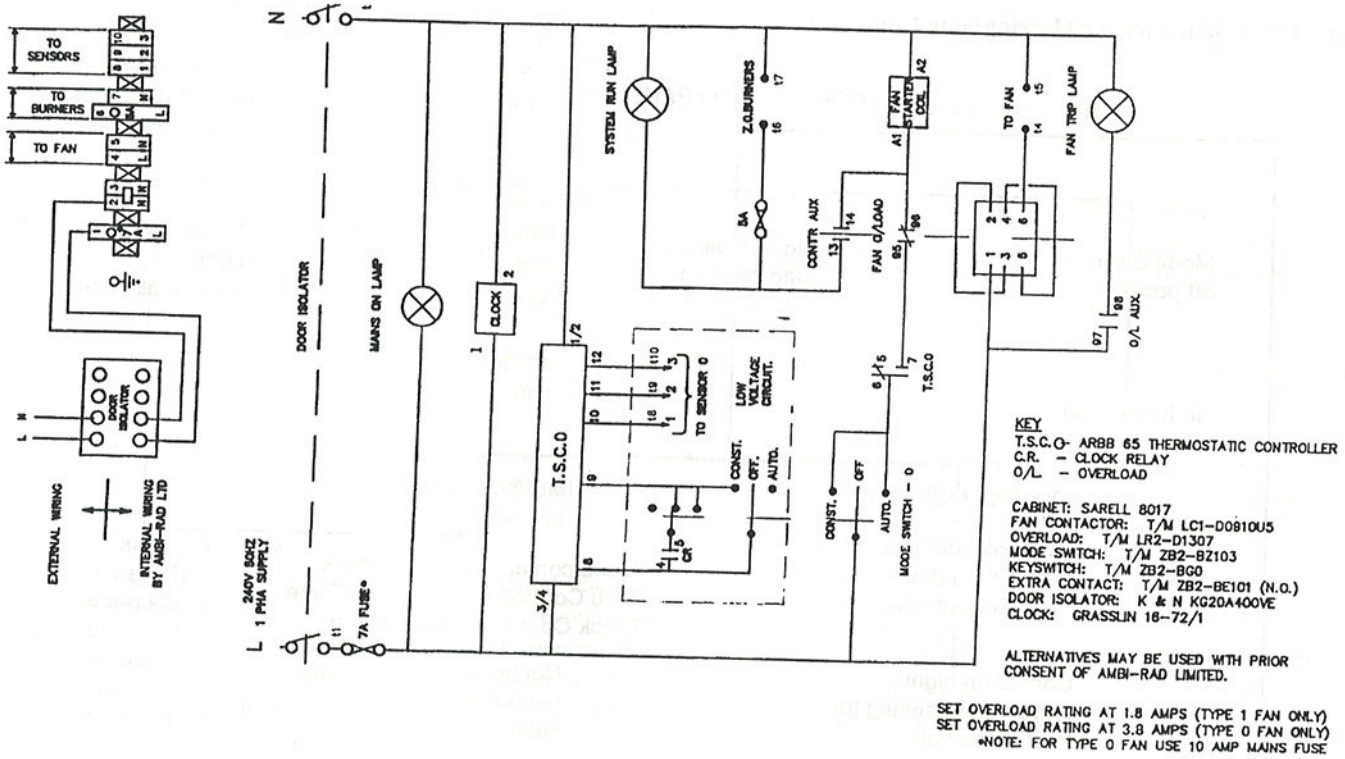


Fig.14b. Wiring diagram for Type 1 fan (three phase).

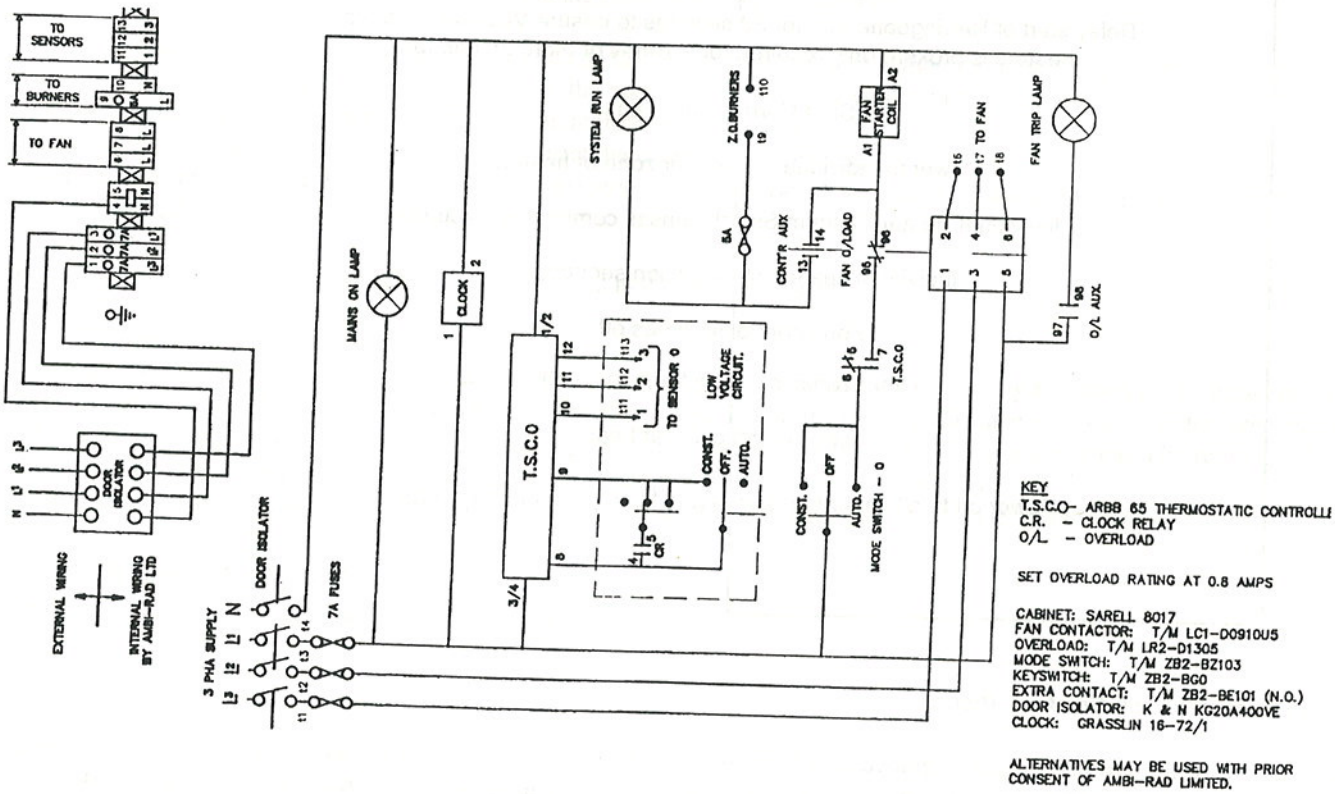
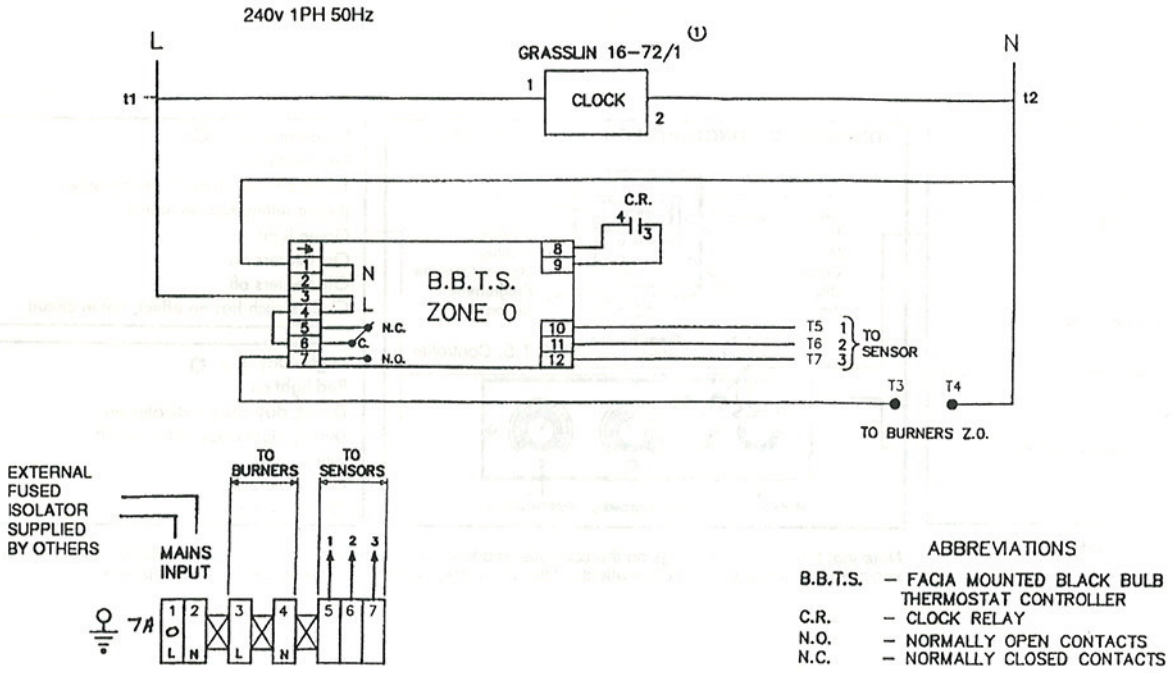


Fig.14c. Wiring diagram for Type 2 fan (single phase).



Vacuum fan characteristics.

FAN TYPE	POWER kW	RUNNING CURRENT A (overload rating)	PHASE	VOLTAGE V
'0'	550	3.8	Single	240
1	430	1.8	Single	240
1	250	0.8	Three	415
2*	120	0.8	Single	240

***Overload not required.**

5.3 Control Panel Timer and Black Bulb Thermostat Controller

The Grasslin 16/72/1 Digital Time Switch fitted to Ambi-Rad Control Panels should be set as follows:-

1. Check the main electricity supply is connected.
2. Use pencil or similar instrument, press reset button - After five seconds window displays 00:00.
3. Depress +/- button to advance time by 1 hour for British Summer Time. Depress once to cancel 1 hour advance.

TO SET DAY AND TIME

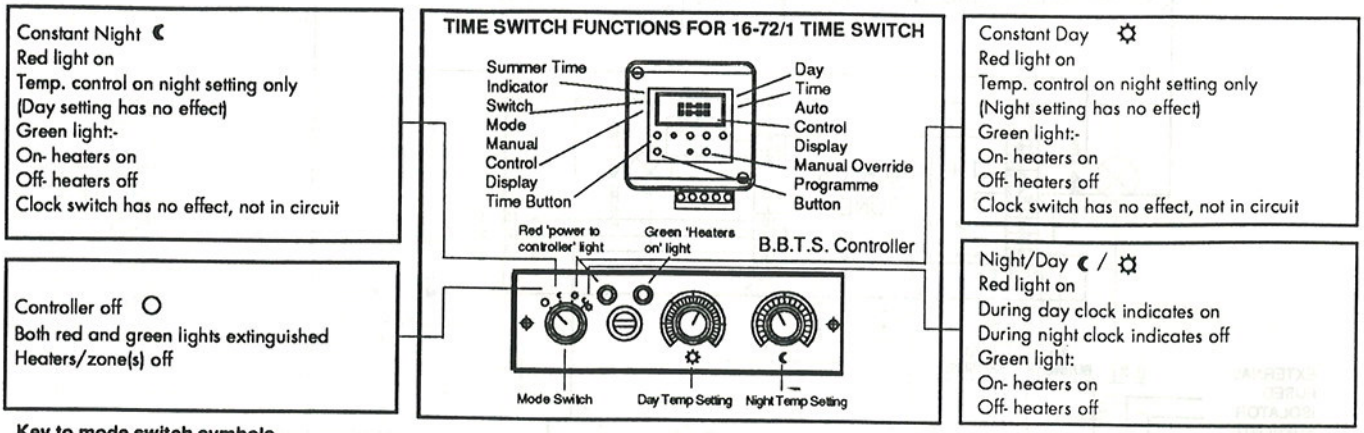
4. Depress ⏲ button continuously whilst setting day and time.
5. Depress day button until correct day appears in window.
6. To set time - depress h+ m+.
7. After setting day and time release ⏲ button. Clock will commence working after five seconds.

PROGRAMMING

8. Depress button CH1 - window will display..:..
9. Depress day button to set "on" days required.
(a) Press once for 7 day display.
(b) Press again for 5 day display.
(c) Press again for Sat. and Sun only.
(d) Press again for individual days.
10. To set switching "on" times to suit day programme depress h+ m+ button.
11. To lock in the "on" programme - depress CH1 button.
12. To set switching "off" time depress CH1 button.
13. Depress day button to set "off" days required.
14. Using buttons h+ m+ set switching "off" days required.
15. To lock in the "off" programme depress CH1 button.
16. After setting "on-off" programme, depress button ⏲ to reinstate day and time window.
17. To manually override programme, depress ⛷ 1 button - "on" or "off" will be displayed in window.

NOTE: If buttons h+ m+ are depressed for longer than 2 seconds rapid advance will take place.
FOR FULL OPERATING INSTRUCTIONS REFER TO MANUFACTURER'S OPERATING INSTRUCTIONS.

Fig.15. Time Switch and Facia Mounted Black Bulb Controller



Key to mode switch symbols
○ Off ☾ Night ☼ Day

Note that the ☾ and ☼ settings on the controller mode switch override the operation of the clock. The ☾ / ☼ settings only brings the clock into effect. The ○ setting switches off the heaters/zone completely.

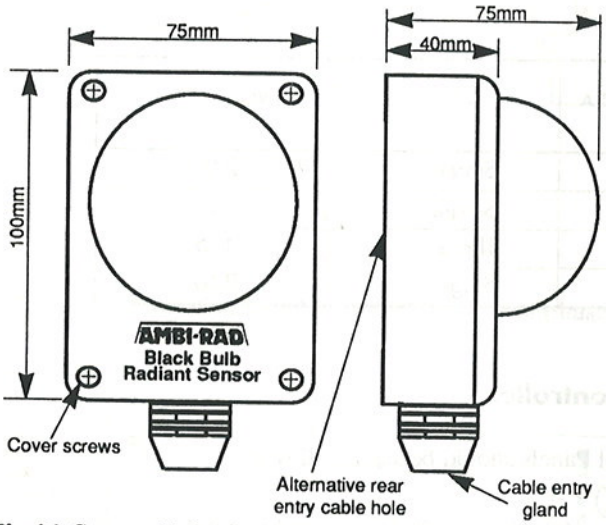


Fig.16. Sensor Unit.

Instructions for fixing Sensor unit.

1. A position should be selected 1.5m from the floor where the sensor will be free from undue draughts and if necessary between 4 and 5m from one of the heaters to be controlled. Avoid placing the sensor where it will be in an area shadowed from radiant heat (behind racking etc.).
2. Remove the cover of the sensor unit by undoing the four screws.
3. Fix the base to the wall with two screws.
4. Connect the sensor using a three core cable of not less than 0.5mm². Maximum length of cable is 200m if 0.5mm² is used. Secure wires in the cable gland provided (alternative rear cable entry available - remove gland and seal with grommet if rear entry used).
5. Wire sensor to controller in accordance with wiring diagram. See section (5).
6. Refit the sensor to the base.

5.3 Fan Starter Overload

The red "reset" button on the fan starter is used only to restart the fan should it cut out due to overload or malfunction. Should repeated lock-out occur, then a qualified electrician should be consulted.

6.0 SERVICE INSTRUCTIONS

Under normal working conditions, it is recommended that the Ambi-Rad heater has a routine service once per year. In exceptionally dirty or dusty conditions, more frequent servicing may be desirable. Servicing work should be carried out by a qualified gas servicing engineer.

For heater routine service, trouble shooting checklist and spares list, please refer to the appropriate ER, AR or RB heater model section.

USERS INSTRUCTIONS FOR AMBI-RAD HEATERS MODEL HB22

AMBI-RAD is an overhead radiant heating system for industrial and commercial buildings. The AMBI-RAD system 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 system must only be installed by a qualified person in accordance with the requirements of the Gas Safety Regulations 1972 and The Health and Safety at Work Act.
2. Each burner , the central control unit and the fan must be earthed.
3. Never rest anything especially ladders, against the heater units or manifold ducting.

To Start the AMBI-RAD Heating System

1. First ensure that the gas supply to each heater unit 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 the system. Mains lights, coloured red, at each burner will illuminate and ignition sequence commence.
4. After completion of an air purge period, ignition of each burner will occur and burner lights, coloured orange, will illuminate.
5. If ignition attempt fails individual burner controller will lock out with mains light only illuminated.
6. If lock out occurs switch off electrical supply to the system, wait 30 seconds then switch on again. If lock out occurs again switch off individual burner unit and call service engineer. The overall system may continue in operation in this condition if no other fault is evident.

To Switch Off the AMBI-RAD System

Switch off the electrical supply to the system using the timeswitch, the thermostat or the mode switch. The burners will shut off and the fan will stop.

Servicing:

To ensure continued efficient and safe operation it is recommended that the system 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.

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

Southern Office
Unit 18c, Chapman Way
Haslemere Highbrooms Estate
Tunbridge Wells, Kent, TN2 3EF
Tel: (0892) 512760 Fax (0892) 512788

**Ambi-Rad Limited, PO Box 30,
Enfield Works, Mucklow Hill,
Halesowen,
West Midlands B62 8DS, England.
Tel: 021-503 0707 Telex: 333003 AMBI G
Fax: 021-501 2955**

Northern Office
Unit 27, Etherow Industrial Estate,
Woolley Bridge Road, Hollingsworth,
Cheshire SK14 8NS
Tel (04574) 60080 Fax (04574) 60045

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