

OPTIMA SUPER EFFICIENCY (SE) OVERHEAD RADIANT TUBE HEATER HEATER INSTALLATION

CONTENTS:

- 1 STANDARDS
- 2 IMPORTANT CONSIDERATIONS
- 3 FLUE CONNECTION & VENTILATION REQUIREMENTS
- 4 FRESH AIR DUCTED INLET
- 5 HEATER SUSPENSION
- 6 GAS SUPPLY
- 7 ELECTRICAL SUPPLY
- 8 ASSEMBLY OF 2 MODULE HEATER (SE15,SE20,SE25)
- 9 ASSEMBLY OF 3 MODULE HEATER (SE28,SE33,SE35,SE38)

AMBI-RAD[®]
Energy Efficient Heating Systems

1 STANDARDS

AMBI-RAD Optima heaters must be installed in accordance with the relevant provisions of the Gas Safety (Installations and Use) Regulations 1994, or the rules in force. Due account should also be taken of any obligations arising from the Health and Safety at Work etc. Act 1974. In addition the installation must be carried out in accordance with the I.E.E. Regulations, the Building Standards (Scotland) Consolidation Regulations, the requirements of BS 5440 : Part 1, BS 6891 : 1988, BS 6896 : 1991, BS 6501 : Part 1 1984, BS 6500 : 1975 and any other relevant British Standards and Codes of Practice.

These heaters are for use in the United Kingdom (GB) and Ireland (IE) on Natural Gas (G20) at 20 mbar and Propane (G31) at 37 mbar supply pressure.

2 IMPORTANT CONSIDERATIONS

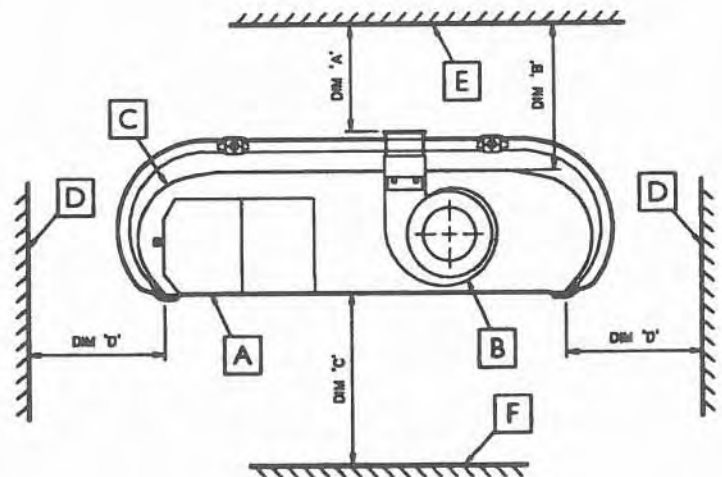
- 2.1 Clearances from Combustibles must be maintained.. (See fig. 1).
- 2.2 There must be a minimum clearance distance of 1000mm between any part of the heating system and the building wall. (See Fig. 2a).
- 2.3 For ease of servicing and burner removal minimum clearances must be maintained. (see fig. 2a and 2b).
- 2.4 Ensure that the suspension is sufficiently flexible to allow for thermal expansion. (See fig. 5)
- 2.5 All heaters must slope towards the return bend by approximately 25mm.
- 2.6 The end covers are an optional item and are not included in a standard SE heater specification.

FIG. 1 CLEARANCE FROM COMBUSTIBLES

BURNER MODEL	SE 11 - 15	SE 16 - 20	SE 21 - 25	SE 26 - 28	SE 29 - 33	SE 34 - 35	SE 36 - 38
	DISTANCE FROM COMBUSTIBLES MM (50°C rise in temperature above ambient of a black surface)						
ABOVE FAN	DIM. A	400	400	400	400	400	400
ABOVE CANOPY	DIM. B	100	100	100	100	100	100
BELOW REFLECTOR EDGE	DIM. C	1300	1490	1675	1820	2060	2300
HORIZONTALLY TO SIDES	DIM. D	450	520	580	500	550	730
ABOVE CANOPY (INCL. MOUNTING)	DIM. B	100	100	100	200	200	200
BELOW REFLECTOR EDGE (INCL. MOUNTING)	DIM. C	1000	1200	1400	1500	1650	1910

For dimensions see Fig 1b

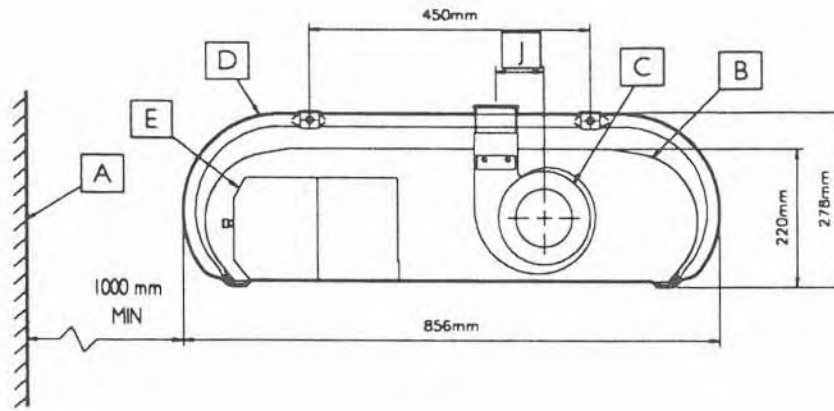
1a



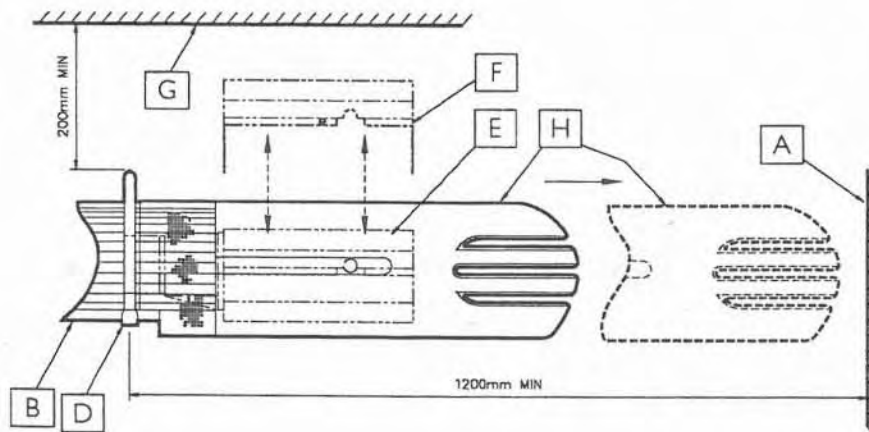
1b

- A Burner
- B Fan
- C Canopy
- D Combustible Material on side
- E Combustible Material Above
- F Combustible Material Below

FIG. 2 OVERALL DIMENSIONS/CLEARANCES TO WALLS ETC.



2a



2b

- | | |
|-----------------------|------------------------------|
| A Side Wall | F Burner Lid |
| B Canopy | G Obstacle above heater |
| C Induced Draught Fan | H End Moulding |
| D Suspension Bracket | J 73580 Type Fan - Dim. 80mm |
| E Burner | 76634 Type Fan - Dim. 85mm |

3 FLUE CONNECTION AND VENTILATION REQUIREMENTS

The AMBI-RAD Optima heater may be installed with or without a flue to atmosphere providing the air supply and building ventilation requirements as stated in BS6896:1991 are complied with and providing due consideration is given to the possibilities of condensation forming on cold surfaces when using an unflued heater.

3.1 UNFLUED INSTALLATION

Permanent ventilation required is as follows:

3.1.1 Natural Ventilation (to be fitted at high and low level with minimum distance of 3m).

Low Level - When air change rate is less than $33\text{m}^3/\text{h}$ per kW of total rated input. Either: 1.4cm^2 for each $1\text{m}^3/\text{h}$ per kW below $33\text{m}^3/\text{h}$ per kW.

Or $52\text{cm}^2/\text{kW}$ of total rated input.

High Level - Above areas where personnel are working. As above.

3.1.2 MECHANICAL VENTILATION

Minimum proven air flow - $33\text{m}^3/\text{h}$ per kW of total rated heat input.

For detailed information please refer to AMBI-RAD design manual. If the heater is installed without a flue, ensure that combustion gases do not impinge on combustible materials. The maximum permitted temperature rise for such materials is 50°C (BS7186), (Fig. 1).

3.2 FLUED INSTALLATION (SEE FIG. 3)

The AMBI-RAD Optima heater may be installed with a flue. A down-draught diverter (B) (supplied as an optional extra by the manufacturer) must be fitted to the induced draught fan exit by means of the screws and clamp plates provided. The diverter is designed to accept a 125mm (5in.) nominal bore proprietary twin wall metal flue pipe (A) complying with BS715.

If a down draught diverter is not used, a square to round adaptor (E) (Fig. 3b) is fitted to the outlet of the fan by means of the clamp plates and screws provided (D). 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.

A flue pipe should be adequately supported at regular intervals from the building structure and terminated externally with a British Gas Tested and Certified 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 is required as follows:-

3.2.1 NATURAL VENTILATION (PREFERABLY AT LOW LEVEL).

Up to and including 60kW - $4.5\text{cm}^2/\text{kW}$. Over 60 kW - $270\text{cm}^2 + 2.25\text{cm}^2/\text{kW}$ in excess of 60 kW total rated input.

3.3 FORCED VENTILATION

Minimum proven air flow - $2.35\text{m}^3/\text{h}$ per kW of total rated input. For detailed information please refer to Section 7 BS 6896, 1991, Installation of Gas fired Overhead Radiant Heaters for Industrial and Commercial Heating (2nd and 3rd family gases).

FIG. 3 FLUE INSTALLATION

FIG. 3a CONNECTION FOR FLUE INSTALLATION WITH DOWN-DRAUGHT DIVERTER

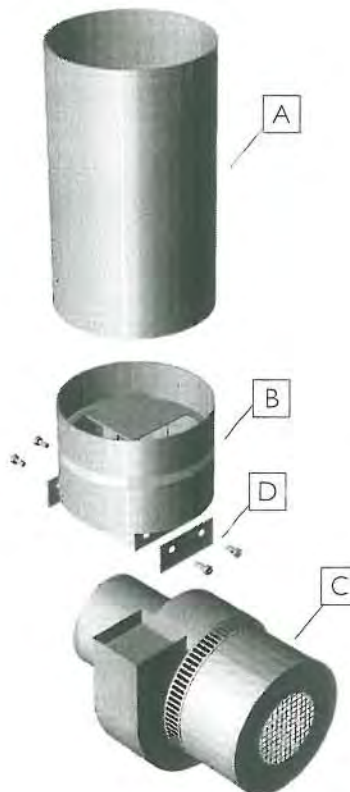
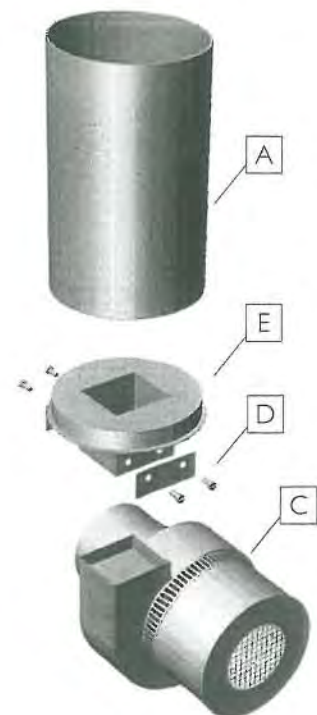


FIG. 3b CONNECTION FOR FLUE INSTALLATION WITHOUT DOWN-DRAUGHT DIVERTER



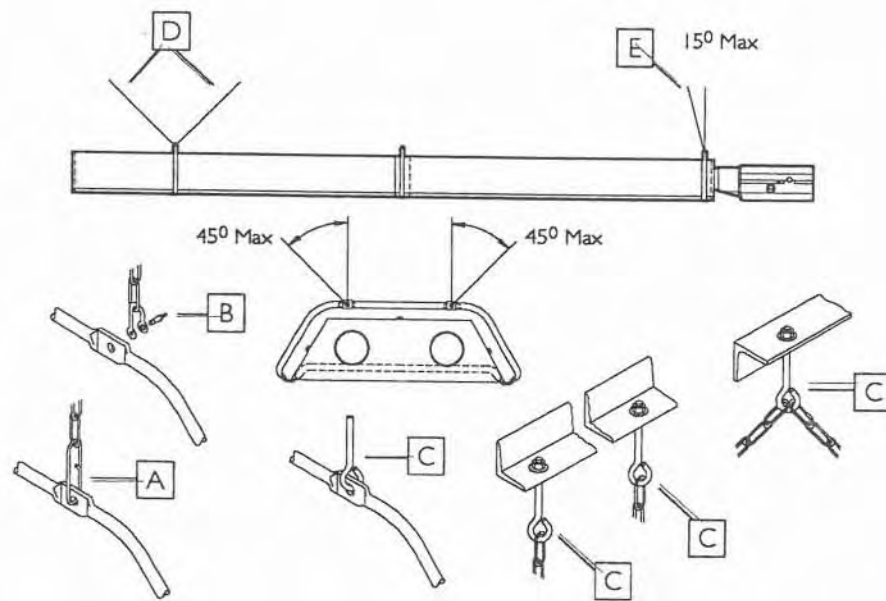
A 125mm Bore Twin Wall Flue
B Down-draught Diverter
C Fan

D Clamp Plate and Screws
E Square to Round Adaptor

5 SUGGESTED METHODS OF HEATER SUSPENSION

- 5.1 Attachment to the heater suspension bracket should be made by either a speedlink, or in the case of drop rods, a closed ring. Due allowance must be made for thermal expansion of the heater.
- 5.2 The hanging attachments to overhead steelwork etc., must be purpose made to good sound engineering practice or of a proprietary type fixing.
- 5.3 They must be adequately fixed and designed to carry the whole weight of the heater and to permit free movement due to linear expansion.
- 5.4 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.
- 5.5 If there are any doubts as to the strength or suitability of roof steelwork to which heaters are to be suspended, please refer to the consultant/architect/owner of the building.

FIG. 5 SUGGESTED HEATER SUSPENSION



A Speedlink
 B Shackle
 C Drop Rod with Formed Hook

D Equal and opposite chain support
 when angle of inclination is greater
 than 15°.
 E Vertical chain support when angle of
 inclination is less than 15°

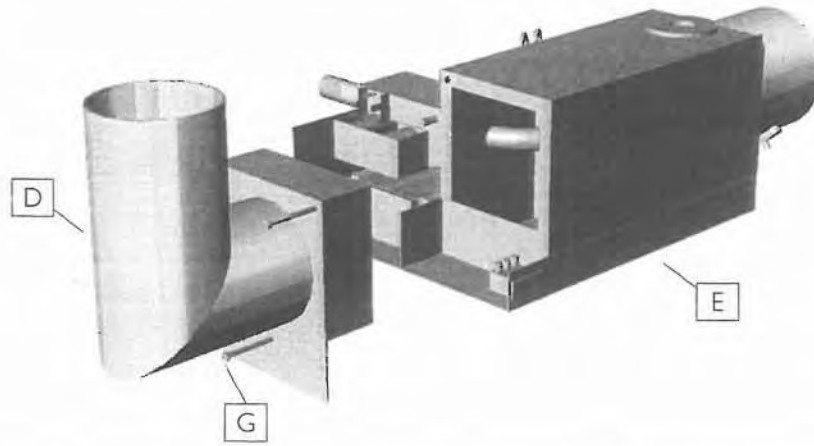
4 FRESH AIR DUCTED INLET

(See Fig. 4).

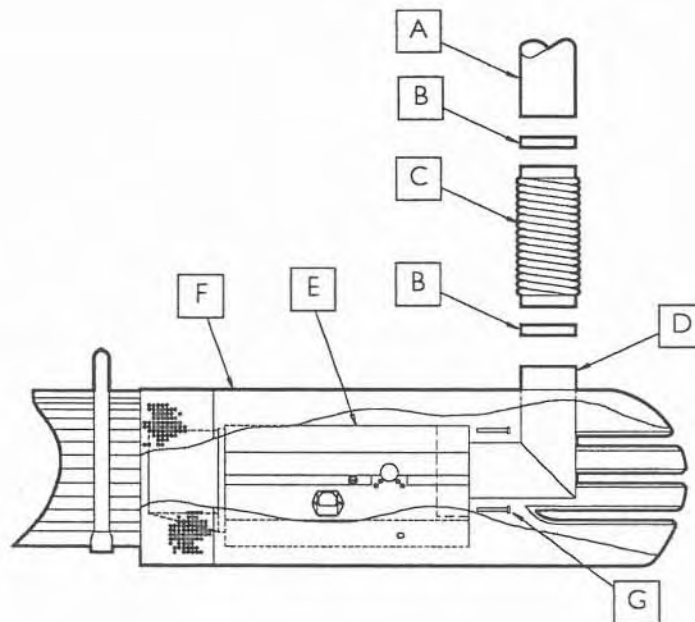
When the AMBI-RAD Optima heater is to be installed in locations where there is airborne dust or where there is a polluted atmosphere eg. chlorinated vapours, process dust etc., a ducted fresh air supply must be provided to the burner as follows:

- 4.1 Remove existing air intake grille from burner.
- 4.2 Fit ducted air adaptor (D) to air inlet flange on the rear of the air intake chamber using the 2 captivated screws (G).
- 4.3 Attach 100mm Ø flexible duct (C) to the ducted air adaptor (D) using jubilee clip (B).
- 4.4 Attach main 100mm Ø supply duct (A) to free end of flexible duct (C) with jubilee clip (B).

FIG. 4 ATTACHMENT OF DUCTED AIR ASSEMBLY TO SE SERIES HEATER



4a



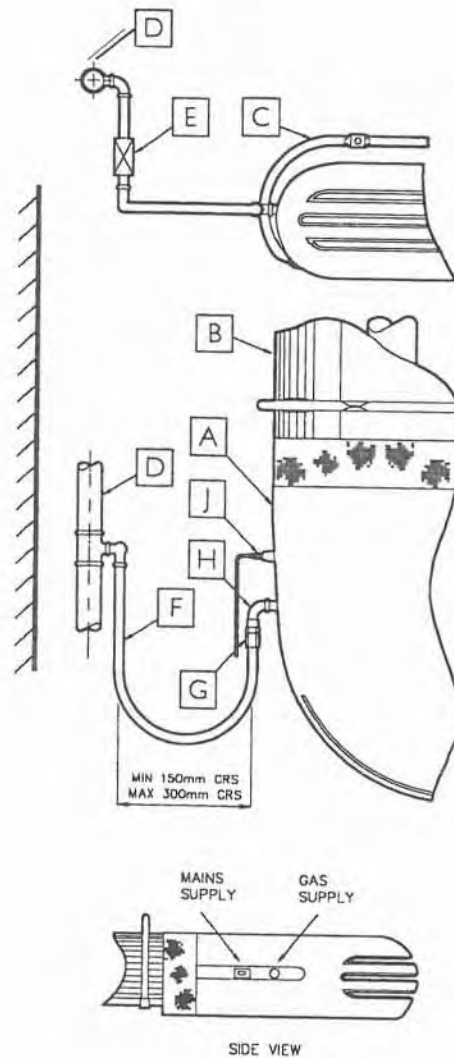
4b

- A Supply Duct - 100mm Ø
- B Jubilee Clip - 100mm Ø
- C Flexible Duct - 100mm Ø
- D Ducted Air Adaptor
- E Burner
- F End Moulding
- G Set Pins M5 x 60

6 GAS SUPPLY

- 6.1 Gas connection to each burner is made using a flexible metallic hose (F) tested and certified to BS 6501 Part 1, 1991.
- 6.2 The connection is made to the 1/2" BSP male gas inlet connection on the burner assembly.
- 6.3 The gas supply pipe (D) must terminate at each burner with a service cock (E).
- 6.4 A gas union (G) must be fitted at burner end between the service cock (E) and the burner gas inlet connection.
- 6.5 The linear expansion of the heating system will move the burners relative to the gas piping and it is therefore necessary at each burner connection to form an expansion loop with the flexible metallic hose (F) provided to permit this movement.
- 6.6 Do not overbend the flexible hose. Elbows must be fitted to eliminate sharp bends near end fittings. It must be in line without torsion or twisting.
- 6.7 Jointing compound resistant to the action of liquid petroleum gas should be used on all pipe threads.
- 6.8 Under no circumstances should the gas controls of the burner be subjected to more than 50mbar (20in. w.g.), otherwise rupture of the control diaphragms and other damage will result.

FIG. 6 INSTALLATION OF GAS SUPPLY



7 ELECTRICAL SUPPLY

- 7.1 Each component carrying an electrical supply must be earthed.
- 7.2 For burners a 230v 50Hz single phase supply is required.
- 7.3 The electrical connection to the burners 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.
- 7.4 The flexible cable should be of 0.5mm² dia. The current rating per burner is 0.55amp (inductive). Each burner must be fused externally at 3 amps. All electrical work should be carried out to IEE standards by a competent electrician.

A	End Moulding	F	Flexible Gas Hose
B	Canopy	G	Gas Union
C	Suspension Bracket	H	90° Elbow
D	Main Gas Supply Pipe	J	Mains Lead
E	Service Cock		

- 7.5 All controls and switchgear must be rated to handle the total inductive load of the circuit they control. For large installations, the use of relays or contactors should be considered. The method of connection to the electrical supply must facilitate complete isolation and should be made via a fused double pole isolator having contact separation of at least 3mm in all poles and supplying the appliance only. Alternatively, connection may be made via a fused three pin plug and unswitched shuttered socket, both complying with the requirements of BS1361. Ensure that a copy of the lighting instructions label is

affixed adjacent to the electricity supply switch. Should this switch serve more than one heater it is only necessary to affix one copy per service switch.

FIG. 7 TYPICAL EXTERNAL WIRING DIAGRAM

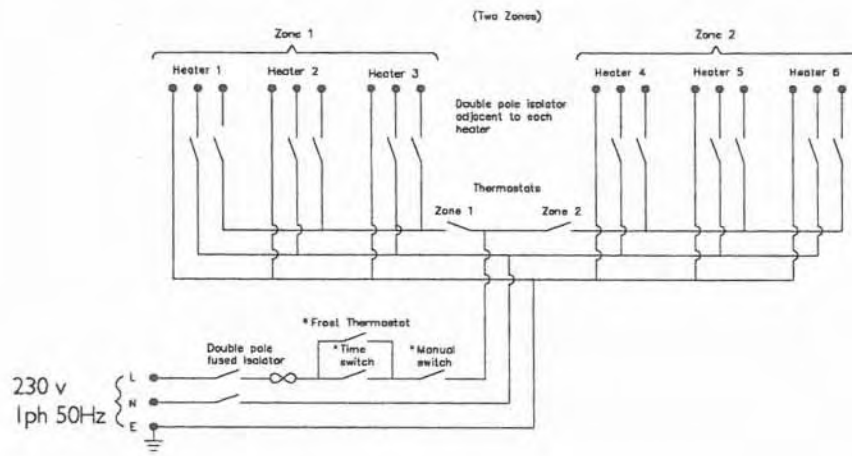
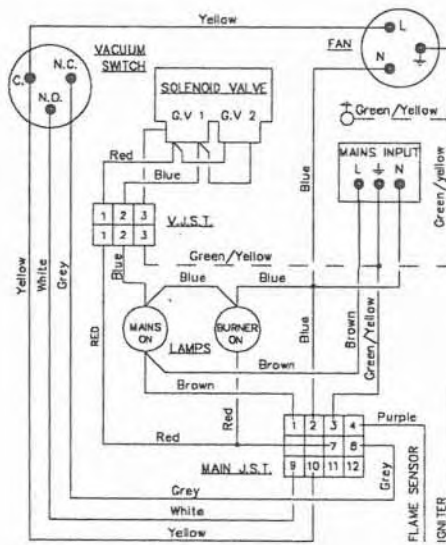


FIG. 8 INTERNAL WIRING DIAGRAM



8 ASSEMBLY OF 2 MODULE HEATER (SE15, SE20, SE25)

8.1 ASSEMBLY OF TUBES, TURBULATORS, RETURN BEND AND BRACKETS. (SEE FIG. 9)

8.1.1 Support radiant tubes on blocks or trestles. Assemble two sections of stainless steel firing leg (F) & (G) by means of pins (J) as in Fig. 9b. Ensuring pins (J) are located in holes in end of first tube (F). Do not fully tighten pins (J) but fully tighten lock nuts (K).

8.1.2 Insert turbulators depending on heater model as per Fig. 9a. (See Selection Chart)

8.1.3 Connect return bend (C) onto tubes with locking pins facing vertically upwards. Tighten securely taking care not to over tighten and distort the 'U' bend.

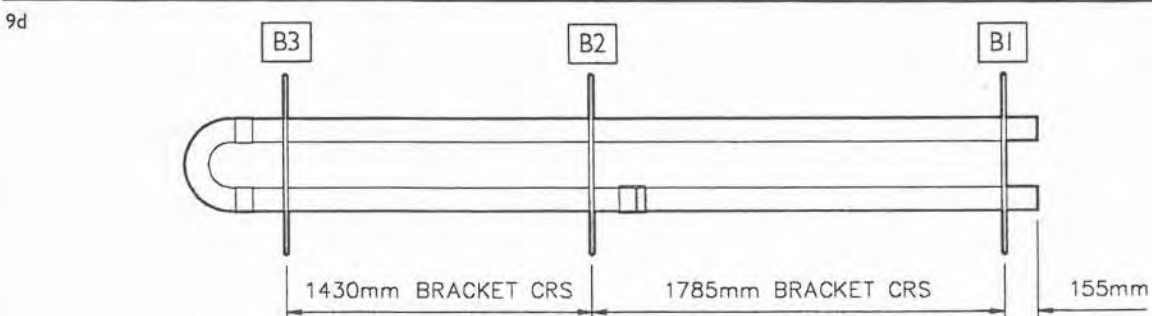
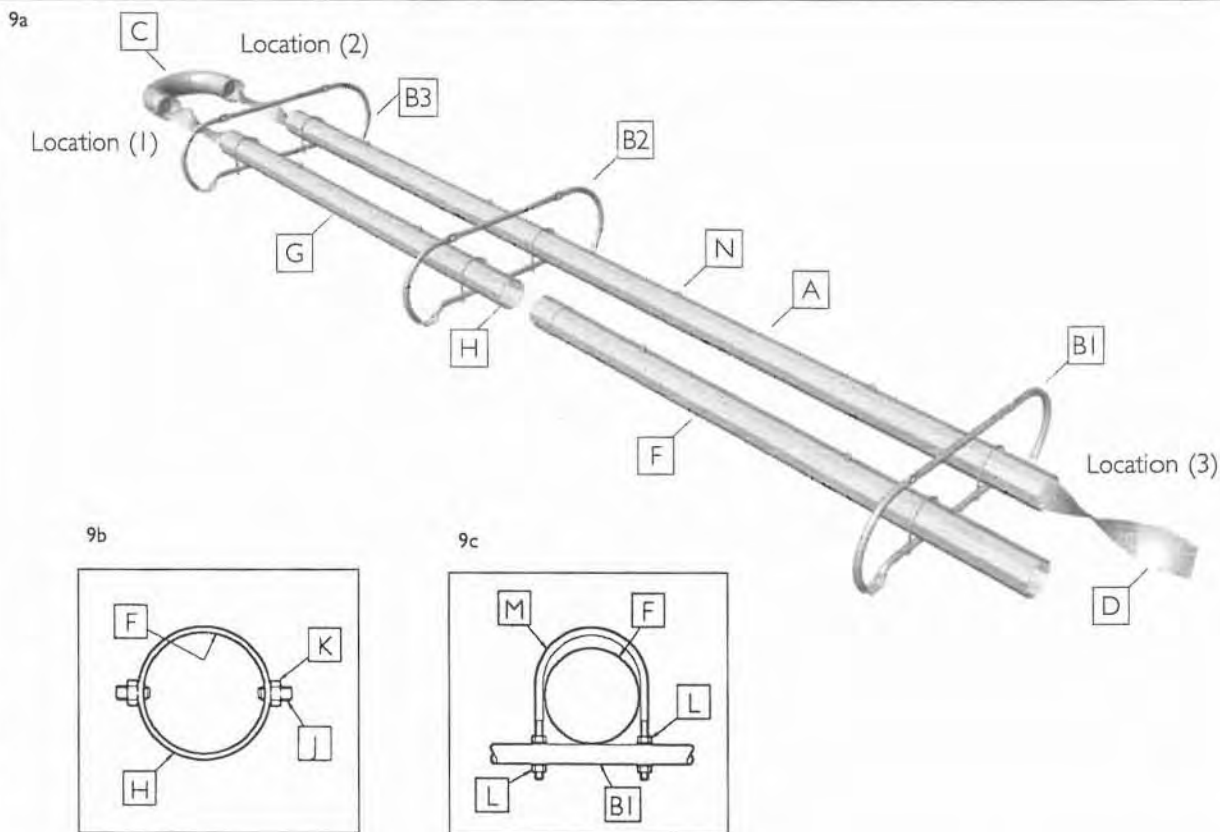
8.1.4 Slide suspension brackets along tubes into position as shown in Fig 9d., taking care not to damage the paint finish.

8.1.5 Six 'U' bolts are supplied with this heater. One 'U' bolt is stainless steel and the others are zinc plated steel. The stainless steel 'U' bolt is identified by having locknuts and fixing nuts pre-fitted

and this 'U' bolt is fitted to the firing tube on bracket B1. A clearance distance of 3mm must be provided around the tube to allow for thermal expansion on the first 'U' Bolt. See Fig. 9C

8.1.6 Tighten all 'U' bolts to tube, until thread disappears from above bracket.

FIG. 9 ASSEMBLY OF TUBES, TURBULATORS, RETURN BEND, BRACKETS



A Return Leg Radiant Tube (m/s) 3.48m long
 B1 1st Suspension Bracket
 B2 2nd Suspension Bracket
 B3 3rd Suspension Bracket
 C Return Bend
 D Turbulator (See Selection chart)
 E Turbulator

F 1st Section Firing Leg Radiant Tube (S/S) 1.74m long
 G 2nd Section Firing Leg Radiant Tube (S/S) 1.81m long
 H Joint
 J Grub Screw
 K Locknut M12
 L Nut M8
 M 'U' Bolt M8

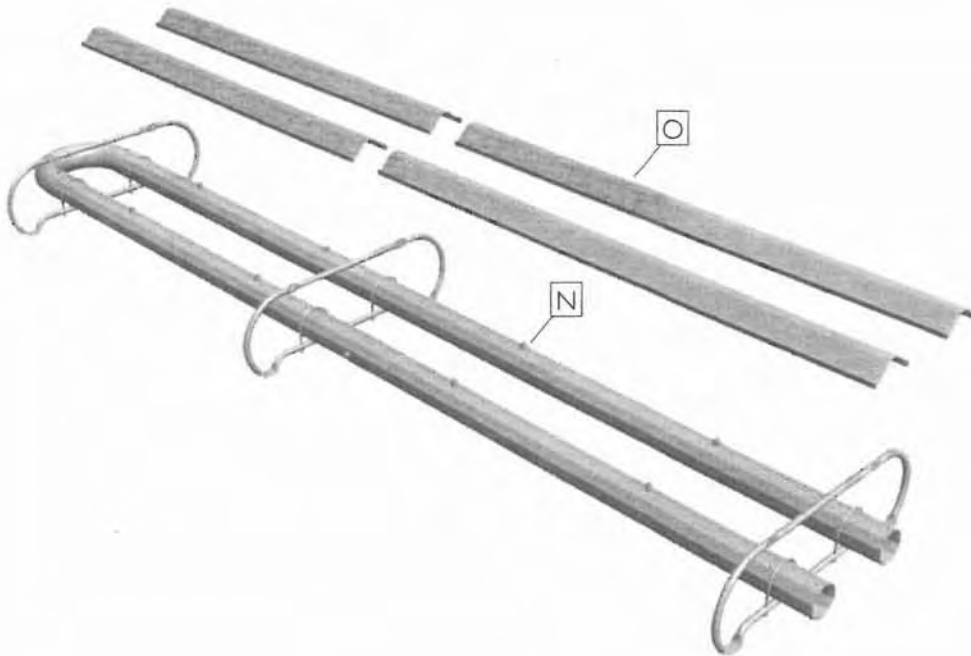
Heater Model	Turbulators	Insert at Location
SE 11-20 UT 2 Module	2 x 860 1 x 2600	(1) and (2) (3)
SE 16-20 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)
SE 21-25 UT 2 Module	2 x 860 1 x 2600	(1) and (2) (3)
SE 21-25 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)
SE 26-35 UT 3 Module	1 x 976	(3)
SE 36-38 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)

8.2 FITTING OVERSHIELDS
(SEE FIG. 10)

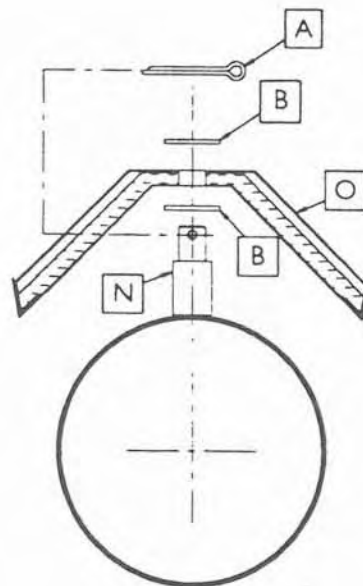
8.2.1 Each of the 4 overshields (O) are connected to the radiant tube via 2 fixing pins (N).

8.2.2 A washer (B) is placed either side of the overshield (O) and secured using the M3 stainless steel split pins (A) (See Fig. 10b).

FIG. 10 FITTING OVERSHIELDS



10a



10b

- A M3 Stainless Steel Split Pins
- B M10 Washer
- N Overshield fixing Pins
- O Overshield

8.3 ASSEMBLY OF INSULATED FIRST MODULE (SEE FIG. 11)

8.3.1 Support reflector (RI) on its flat area, from below. See Fig. 11a. Remove plastic film from reflectors and canopies.

8.3.2 Lay an insulation pad (INS) on top of reflector (RI). See Fig. 11a.

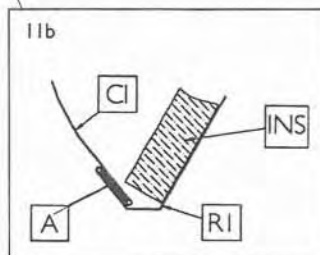
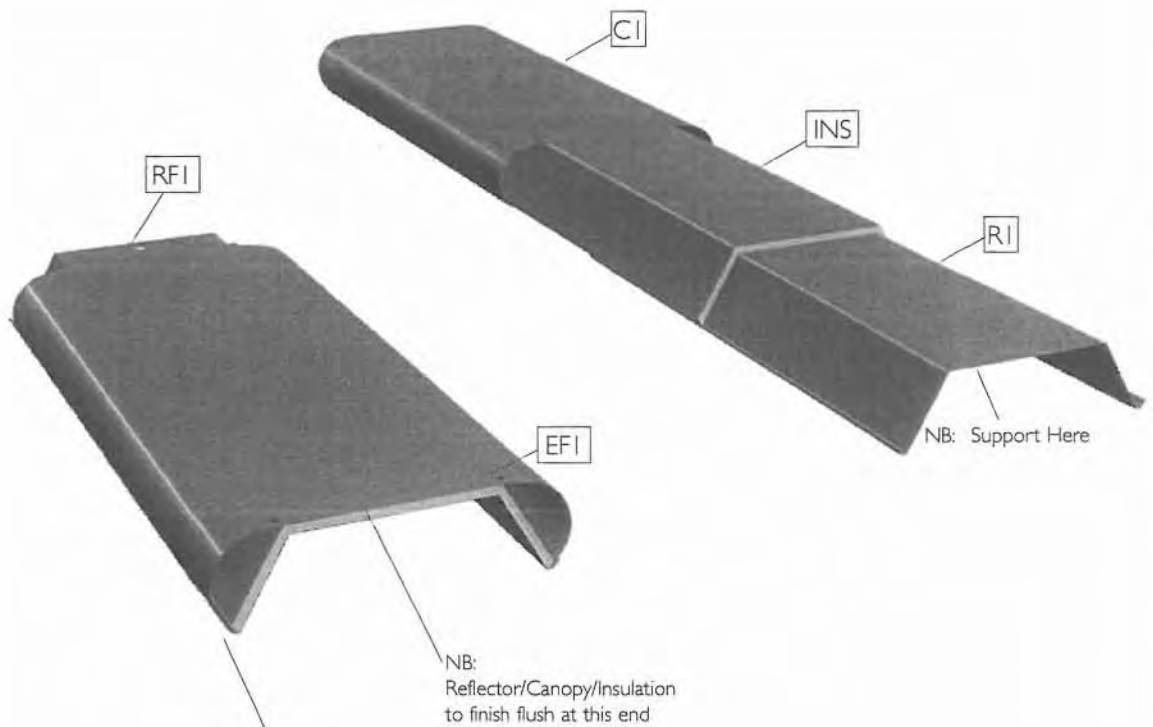
8.3.3 Slide canopy (CI) into reflector (RI) using dutch bends at edges. (See Fig. 11b).

8.3.4 Ensure that reflector canopy and insulation are flush at end cap fixing holes (EFI).

8.3.5 This will ensure that the reflector fixing hole (RFI) is in the correct position as shown in the final module assembly drawing on Fig. 11a.

FIG. 11 ASSEMBLY OF INSULATED MODULES M1

11a



- A Dutch Bend
- RFI Reflector Fixing Holes
- CI Canopy
- RI Reflector
- INS Insulation Pad
- EFI Endcap Fixing Holes

8.4 ASSEMBLY OF INSULATED SECOND MODULE (SEE FIG. 12)

8.4.1 Support reflector (R2) on its flat area from below. See Fig. 12a.

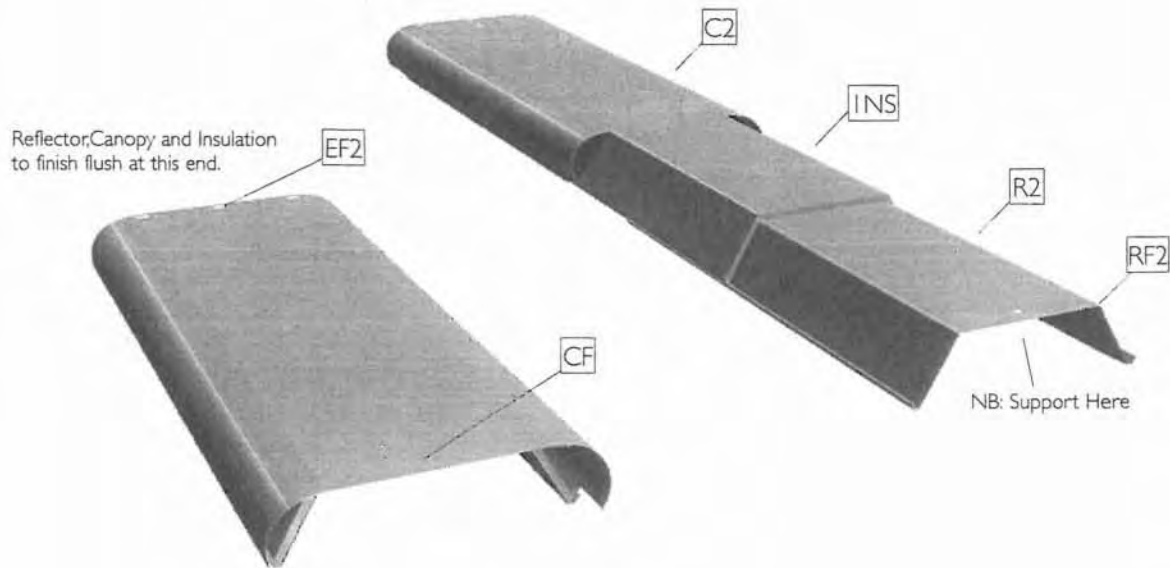
8.4.2 Lay insulation pad (INS) on top of reflector (R2).

8.4.3 Slide canopy (C2) into reflector (R2) using dutch bends at edges. (See Fig. 12b).

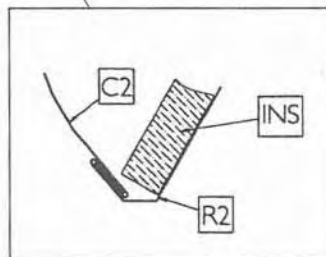
8.4.4 Ensure that reflector canopy and insulation are flush at the end cap fixing holes (EF2)

FIG. 12 ASSEMBLY OF INSULATED SECOND MODULE FOR 2 MODULE HEATER

12a



12b



- RF2 Reflector Fixing Hole
- C2 Canopy
- R2 Reflector
- INS2 Insulation Pad
- EF2 Endcap Fixing Hole
- CF Canopy Fixing Holes
- (NB: CF2 is used for 2 Module Unit).

8.5 FITTING INSULATED MODULES TO HEATER. (SEE FIG. 13)

8.5.1 Support heater on underside of brackets. Slide first module through bracket (B1) at the burner end of the heater.

8.5.2 Slide second module through bracket (B3) at other end of heater.

8.5.3 Ensure end cap fixing holes EF1 and EF2 are at heater ends.

8.5.4 At the overlap position, temporarily push the outer canopy of second module away from burner end by approx. 100mm leaving reflector and insulation exposed.

Reflector from first module should now sit on reflector from second module.

8.5.5 Slide back outer canopy of second module, ensuring overlay of first

module canopy until end cap fixing holes (EF2) are again flush.

8.5.6 The two modules are fixed together using a single shoulder pin (F) which is inserted through the reflector fixing hole RF1 from underneath the reflector. The shoulder pin (F) passes through the outer canopy fixing hole (CF) and then through the suspension bracket (B2). The pin (F) is secured using a washer (D) (E) and locknut (A). (See Fig. 13b).

FIG. 13 FITTING INSULATED MODULES TO HEATER

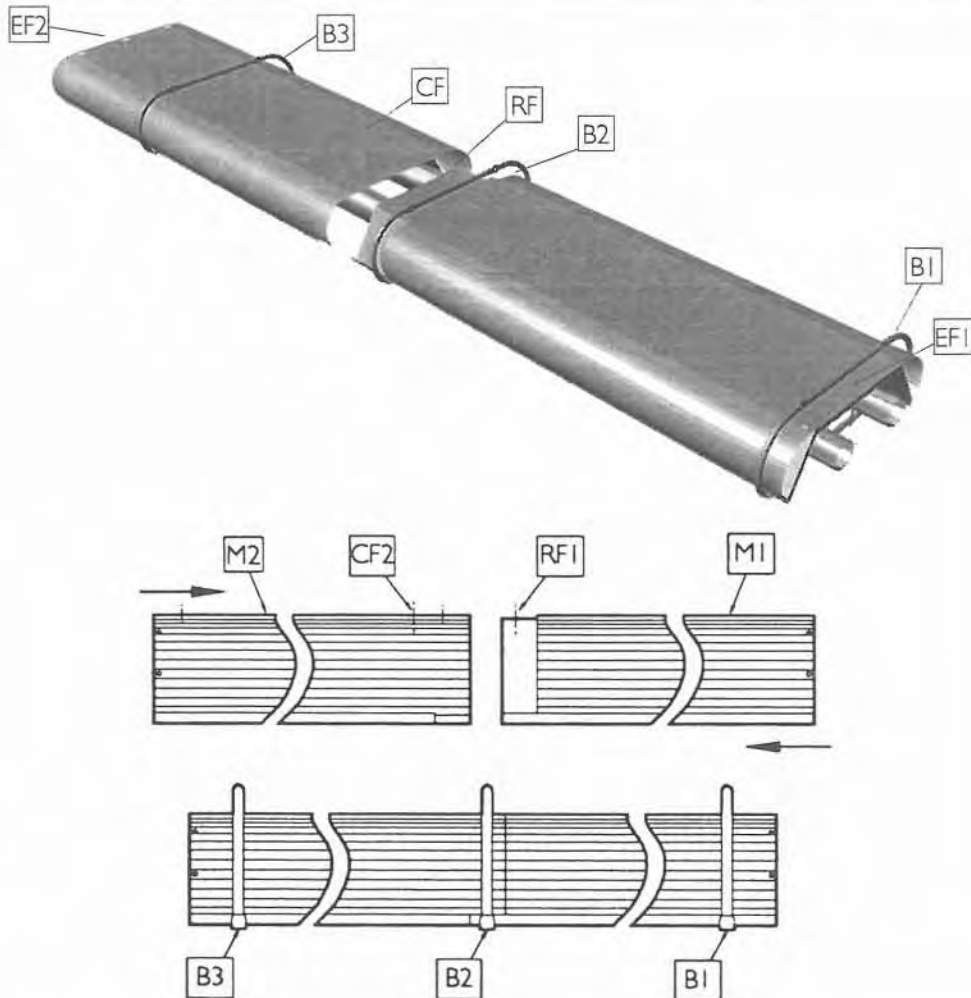


Fig.13a

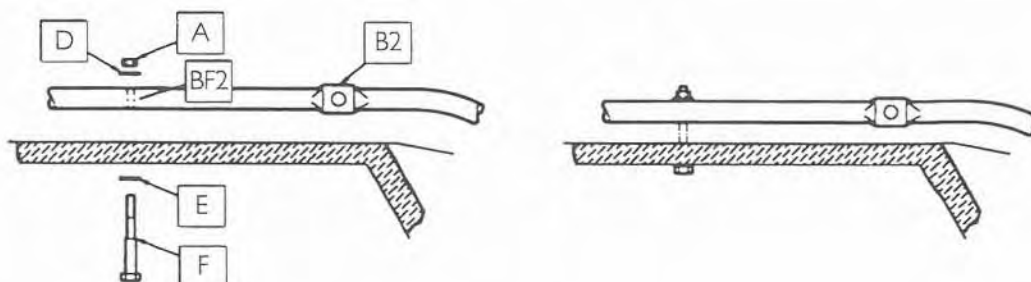


Fig.13b Fitting Fixing Pin

- A M6 Nylock Locknut
- D M6 Washer
- F Shoulder Pin
- BF2 Bracket Fixing Hole
- E M8 Washer
- CF Canopy Fixing Holes

8.6 FITTING END CAPS (SEE FIG. 14 AND FIG. 15)
 (Note : if optional end mouldings and thermal break are to be fitted please refer to 8.10)

8.6.1 Fit end caps to burner and return end of heater using the set screws and washers supplied

8.7 FITTING BURNER TO TUBE

8.7.1 The burner is fitted to the end of the stainless steel radiant tube and the M6 grub screws tightened in the support casting.

8.8 FITTING FAN TO TUBE

8.8.1 The fan is fitted to the end of the black radiant tube and secured using the grub screw on the support spinning

Ensure fan discharge is horizontal (away from the burner).

8.9 SUSPENSION OF HEATER

8.9.1 The heater must be suspended on all three brackets.

8.9.2 All 'U' tube heaters must be suspended with the 'U' bend end of the heater 25mm lower than the burner end of the heater.

FIG. 14 FITTING END CAP FOR BURNER END

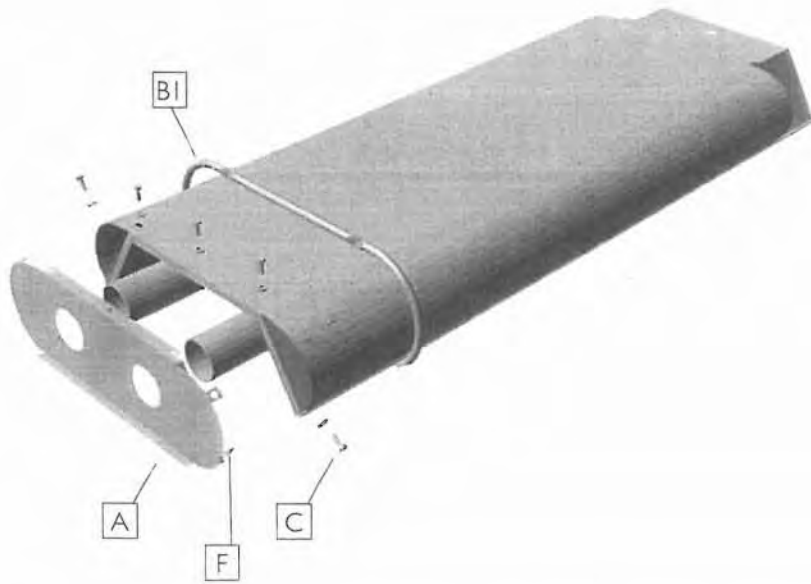
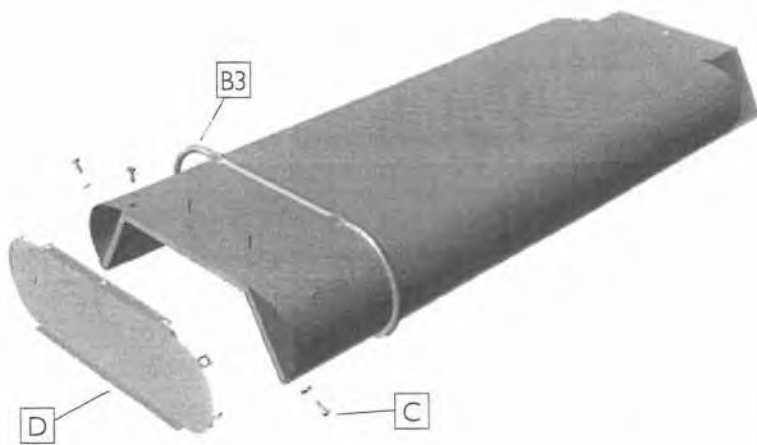


Fig.15 FITTING END CAP FOR RETURN BEND END



- A End Cap for Burner End
- B1 1st Suspension Bracket
- B3 3rd Suspension Bracket
- C M4 x 20 Set Pins and washers
- D End Cap for Return Bend End
- F Hankbushed Lugs

THE FOLLOWING SECTIONS 8.10 TO 8.15 RELATE ONLY TO HEATERS WITH OPTIONAL END MOULDINGS AND THERMAL BREAK.

8.10 FITTING END CAP AND THERMAL BREAK. (SEE FIG. 17)

A thermal break is only fitted to heaters which have end mouldings.

8.10.1 The end cap (C) is positioned so that the hankbushed lugs (F)(Fig. 14) rest inside the end of the canopy (G).

8.10.2 The top section of thermal break (A) is positioned on top of the canopy end (G) and the fixing slots are aligned.

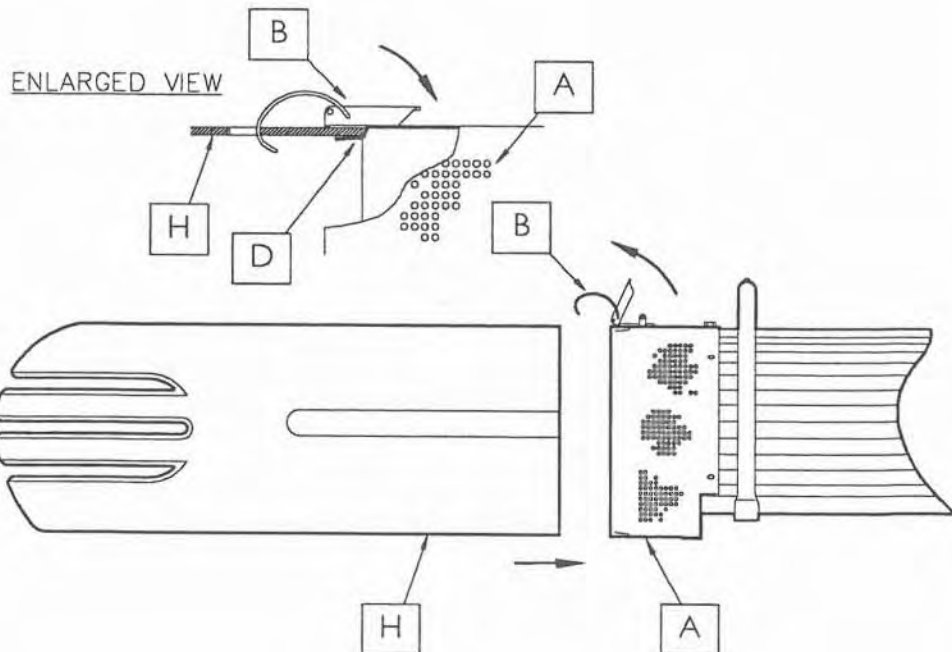
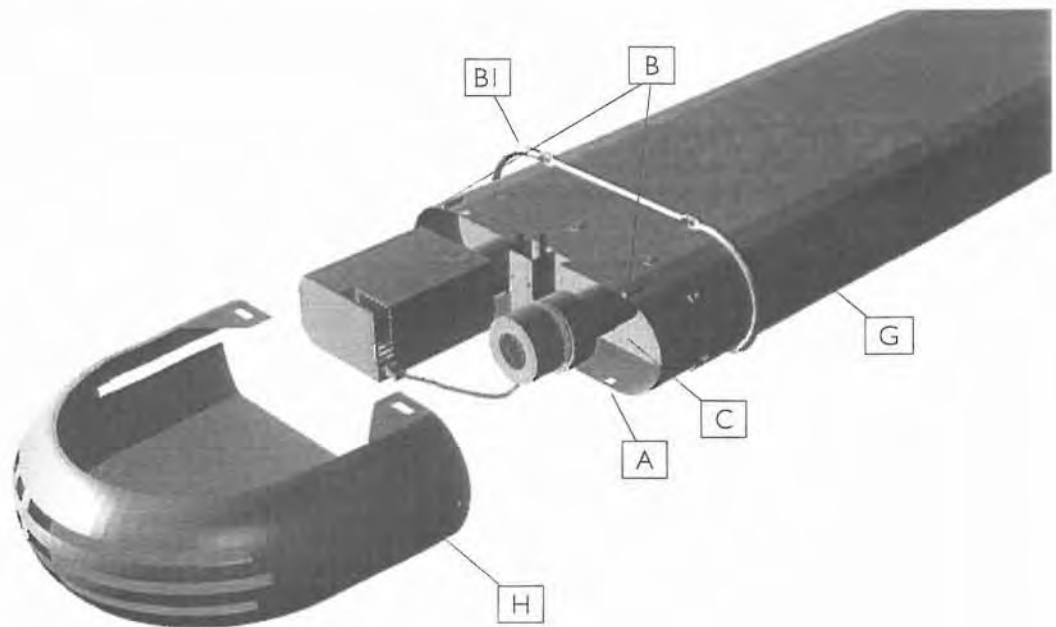
The thermal break (A) and End Cap (C) are fixed to the canopy end (G) using 7 off M4 washers and set pins provided.

8.10.3 The bottom section of thermal break rests inside the lip at the bottom of the end cap (See Fig. 17b), and is affixed to top section (A) using 4 off M4 washers and set pins.

8.10.4 The end cap and thermal break are fitted to the return bend end of the heater in the same way as above.

FIG. 17 FITTING THERMAL BREAK & ENDCAP

17a



17b

- A Thermal Break
- B Quick Release Catch
- BI 1st Suspension Bracket
- C Insulated End Cap
- D Location Stops
- G Canopy
- H End Moulding

**8.11 FITTING BURNER TO TUBE.
(SEE FIG. 18).**

8.11.1 The burner is fitted to the end of the stainless steel radiant tube and the M6 grub screws tightened in the support casting (using the holes in the bottom section of thermal break (A)).

**8.12 FITTING FAN PROTECTION
BAFFLE. (SEE FIG. 18C).**

8.12.1 The fan protection baffle is fitted to the outlet of the fan using the pins provided. To ease assembly attach the baffle before securing the fan to the radiant tube.

**8.13 FITTING FAN TO TUBE.
(SEE FIG. 18).**

8.13.1 The fan is fitted to the end of the radiant tube and secured using the grub screw on the support spinning. Ensure fan discharge is pointing vertically upwards.

**8.14 FITTING END MOULDING TO
HEATER. (SEE FIG. 18).**

8.14.1 The end moulding is usually fitted after the heater is suspended.

8.14.2 The front section of the end cover (F) is located inside thermal break against four metal stops,

8.14.3 The end moulding is fixed with two quick release clips mounted on the top of the thermal break. (See Fig. 18b)

8.14.4 The end mouldings are fitted to the return end of the heater in the same way as above.

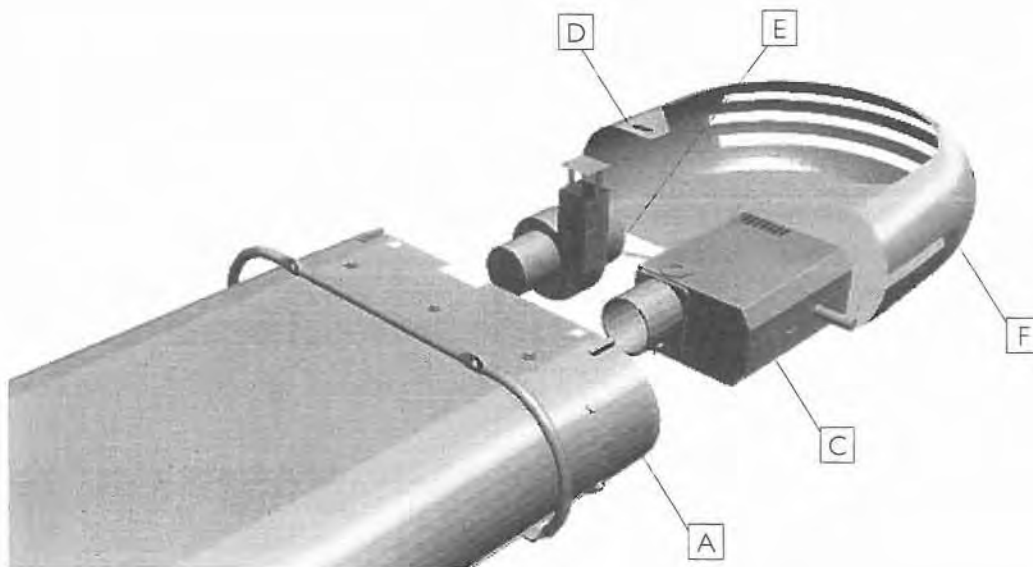
8.15 SUSPENSION OF HEATER

8.15.1 The heater must be suspended on all three brackets.

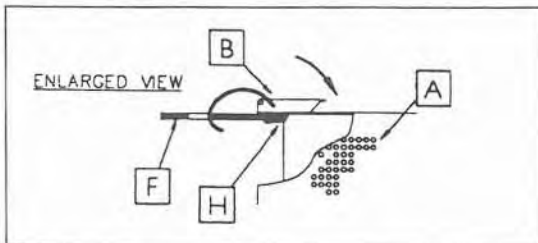
8.15.2 All 'U' tube heaters must be suspended with the 'U' bend end of the heater 25mm lower than the burner end of the heater.

FIG. 18 FITTING END COVER & FAN PROTECTION CAP

18a



18b



18c



- A Thermal Break
- B Quick Release Fastener
- C Burner
- D Quick Release Fastener Receptacle
- E Connection Lug
- F End Moulding
- G Fan Outlet Protection Baffle
- H End Cover Location Lip

9 ASSEMBLY OF 3 MODULE HEATER (SE28,SE33,SE35,SE38)

9.1 ASSEMBLY OF TUBES, TURBULATORS, RETURN BEND, BRACKETS. (SEE FIG. 19).

9.1.1 Support radiant tubes on blocks or trestles. Assemble two sections of stainless steel firing leg (F) and (G) by means of pins (J) as in Fig. 19b. Ensuring pins (J) are located in holes in end of second tube (G).

Do not fully tighten pins (J) but fully tighten lock nuts (K).

9.1.2 Insert turbulators depending on heater model as per Fig. 19a. (See Selection Chart)

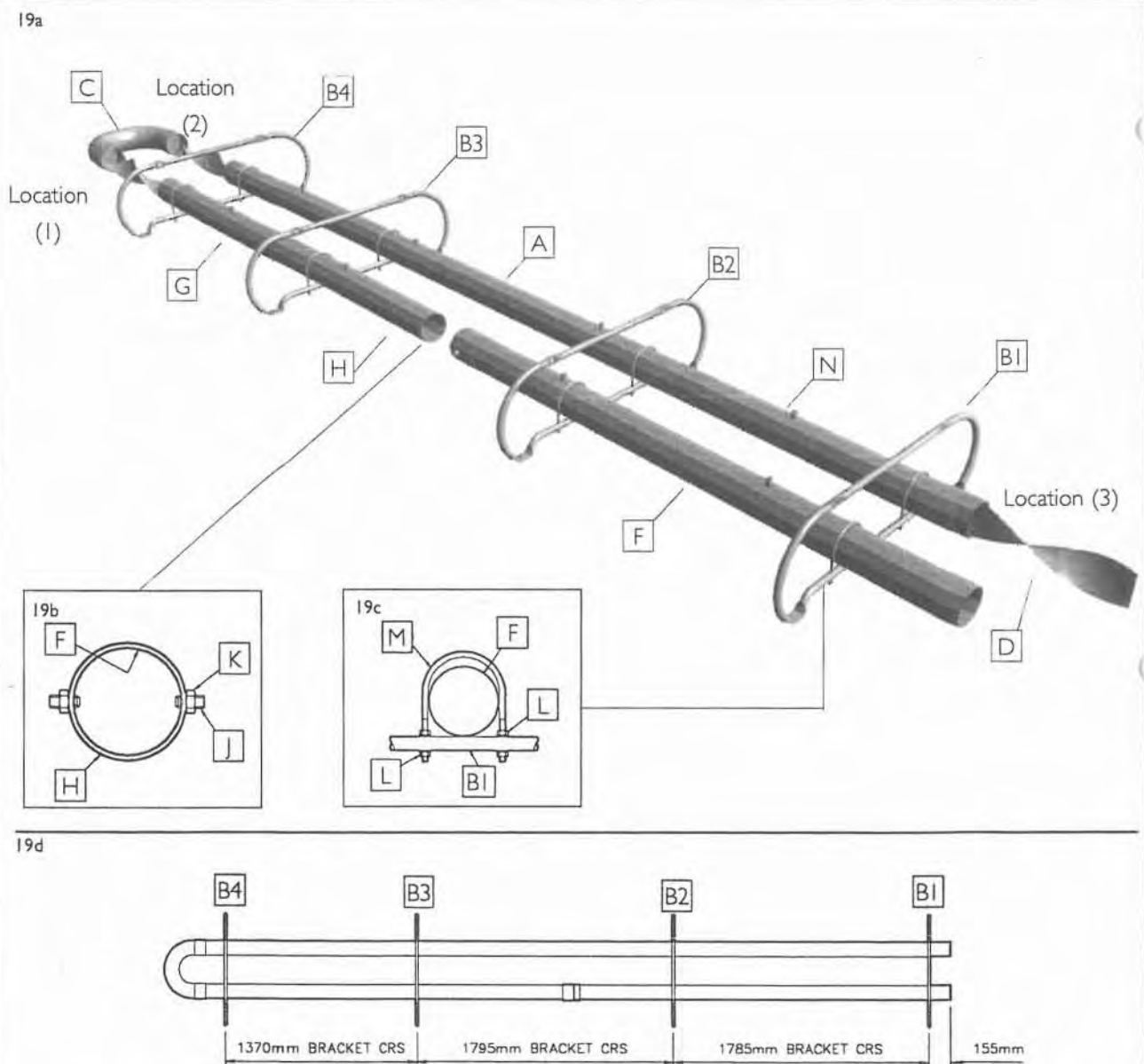
9.1.3 Connect return bend (C) onto tubes with locking pins facing vertically upwards noting position of burner and fan. Tighten securely taking care not to over tighten and distort the 'U' Bend..

9.1.4 Slide suspension brackets along tubes into position as shown in Fig. 19d, taking care not to damage the paint finish.

9.1.6 Eight 'U' bolts are supplied with this heater. Two 'U' bolts are stainless steel and six are zinc plated steel. The stainless steel 'U' bolts are identified by having locknuts and fixing nuts pre-fitted and these two 'U' bolts are fitted to the firing tube on brackets B1 and B2.

9.1.7 Tighten all 'U' bolts to tube (until thread disappears from above bracket) A clearance distance of 3mm must be provided around the tube to allow for thermal expansion on the first two 'U' bolts. See Fig. 19c.

FIG. 19 ASSEMBLY OF TUBES, TURBULATORS, RETURN BEND, BRACKETS



A Return Leg Radiant Tube (m/s) 5.22 m long
 B1 1st Suspension Bracket
 B2 2nd Suspension Bracket
 B3 3rd Suspension bracket
 B4 4th Suspension Bracket
 C Return Bend
 D Turbulator (See selection chart)

F 1st Section Firing Leg Radiant Tube (s/s) 2.61 m long
 G 2nd Section Firing Leg Radiant Tube (s/s) 2.68 m long
 H Joint
 J Grub Screw
 K M 12locknut
 L M8 Nut
 M 'U' Bolt M8
 N Overshield fixing socket

Heater Model	Turbulators	Insert at Location
SE 11-20 UT 2 Module	2 x 860 1 x 2600	(1) and (2) (3)
SE 16-20 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)
SE 21-25 UT 2 Module	2 x 860 1 x 2600	(1) and (2) (3)
SE 21-25 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)
SE 26-35 UT 3 Module	1 x 976	(3)
SE 36-38 UT 3 Module	1 x 976 2 x 2600	(1) (2) and (3)

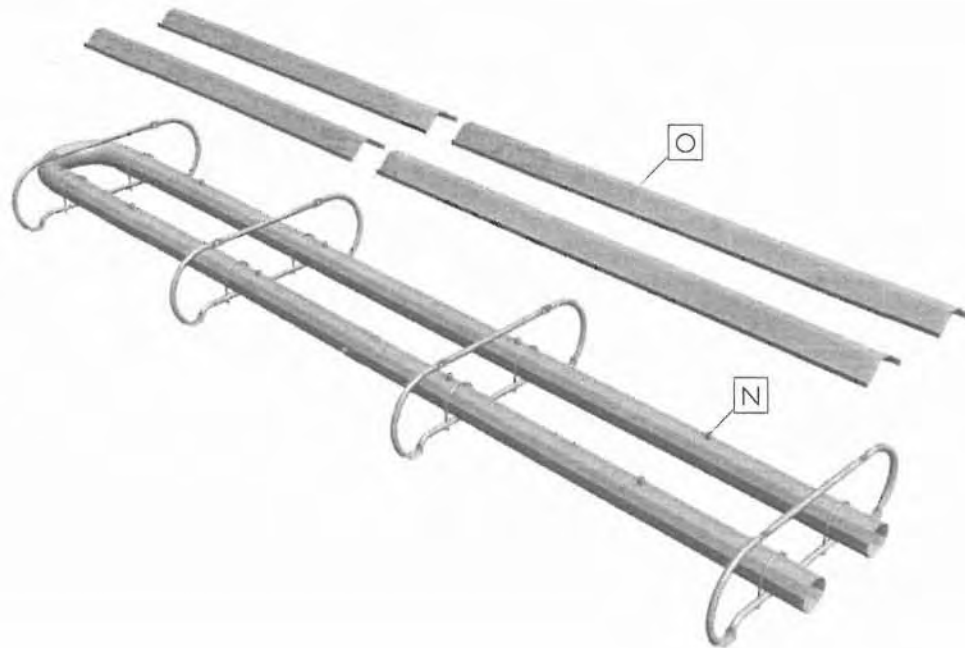
9.2 FITTING OVERSHIELDS.
(SEE FIG. 20)

9.2.1 Each of the 4 overshields (O) are connected to the radiant tube via 2 fixing pins (N).

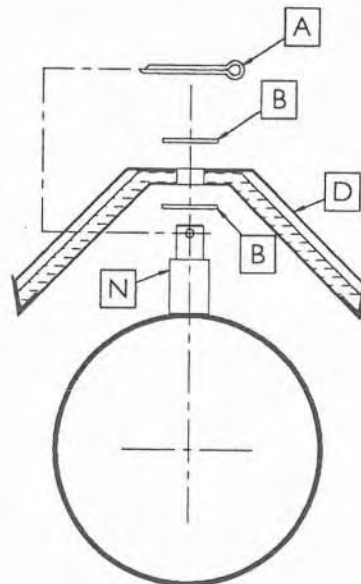
9.2.2 A washer (B) is placed either side of the overshield (O) and secured using the M3 stainless steel split pins.(A)

FIG. 20 FITTING OVERSHIELDS

20a



20b



- A M3 Stainless Steel Split Pins
- B M10 Washer
- N Overshield Fixing Pins
- O Overshield

9.3 ASSEMBLY OF INSULATED MODULES MI AND M3. (SEE FIG. 21).

9.3.1 Support reflector (RI) on its flat area, from below. Remove plastic film from reflectors and canopies. See Fig. 21a

9.3.2 Lay an insulation pad (INS) on top of reflector (RI).

9.3.3 Slide canopy CI into reflector RI using dutch bends at edges. (See Fig. 21b).

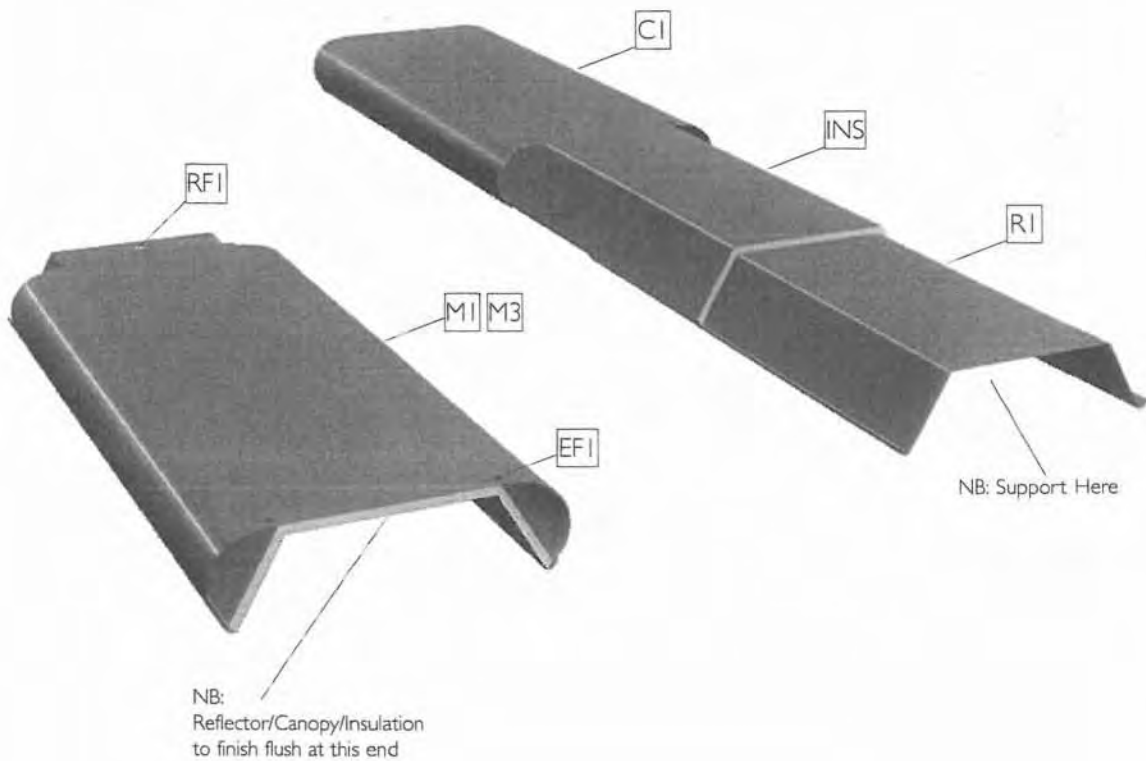
9.3.4 Ensure that reflector canopy and insulation are flush at end cap fixing holes (EFI).

9.3.5 This will ensure that the reflector fixing hole (RFI) is in the correct position

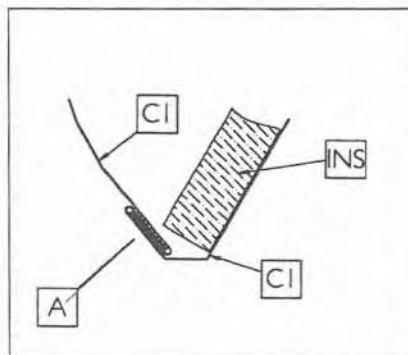
as shown in the final module assembly drawing on Fig. 21a.

FIG. 21 ASSEMBLY OF INSULATED MODULES MI & M3

21a



21b



- A Dutch Bend
- RFI Reflector Fixing Hole
- CI Canopy
- RI Reflector
- INS Insulation Pad
- MI Insulated Module
- EFI Endcap Fixing Hole

9.4 ASSEMBLY OF INSULATED MODULE M2. (SEE FIG. 22).

9.4.1 Support reflector (R2) on its flat area from below. See Fig. 22a.

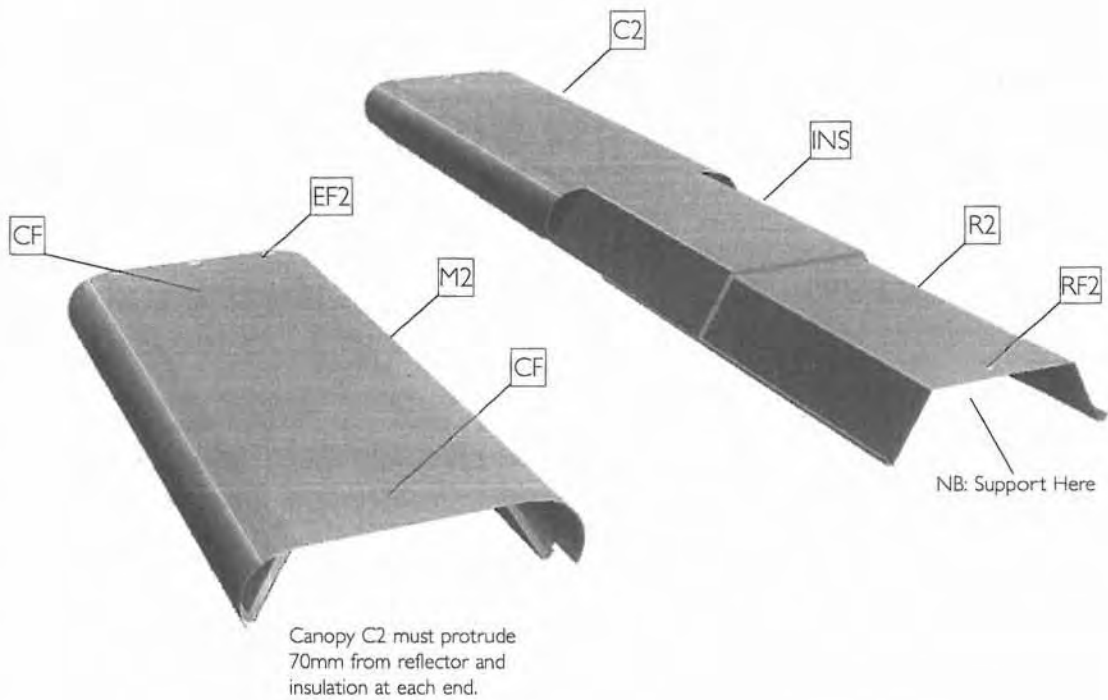
9.4.2 Lay insulation pad (INS) on top of reflector (R2).

9.4.3 Slide canopy C2 into reflector R2 using dutch bends at edges. (See Fig. 22b).

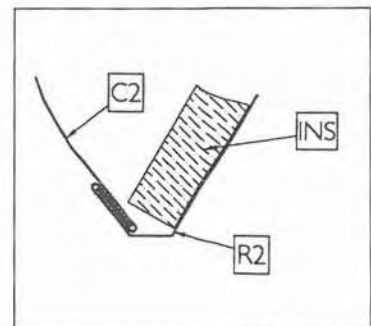
Ensure that canopy C2 protrudes 70mm from reflector R2 at each end when fully assembled. Check by the alignment of holes through top of both components (CF). (See 22a).

FIG. 22 ASSEMBLY OF INSULATED MODULE FOR 3 MODULE HEATER

22a



22b



RF2 Reflector Fixing Hole
C2 Canopy
R2 Reflector
INS Insulation Pad
M2 Insulated Module

EF2 End Cap Fixing Hole
CF Canopy Fixing Holes

9.5 FITTING INSULATED MODULES TO HEATER. (SEE FIG. 23).

9.5.1 Support heater on underside of brackets. Slide Module (M2) through brackets (B1) and (B2). See Fig. 23.

9.5.2 Slide Module M1 through bracket B1 ensuring end cap fixing holes (EF1) are at heater end.

9.5.3 At the overlap position, temporarily push the outer canopy of second module away from burner end by approx. 100mm leaving reflector and insulation exposed.

Reflector from first module should now sit on reflector from second module.

9.5.4 Slide back outer canopy of second module, ensuring overlay of first module canopy until end cap fixing holes (EF2) are again flush.

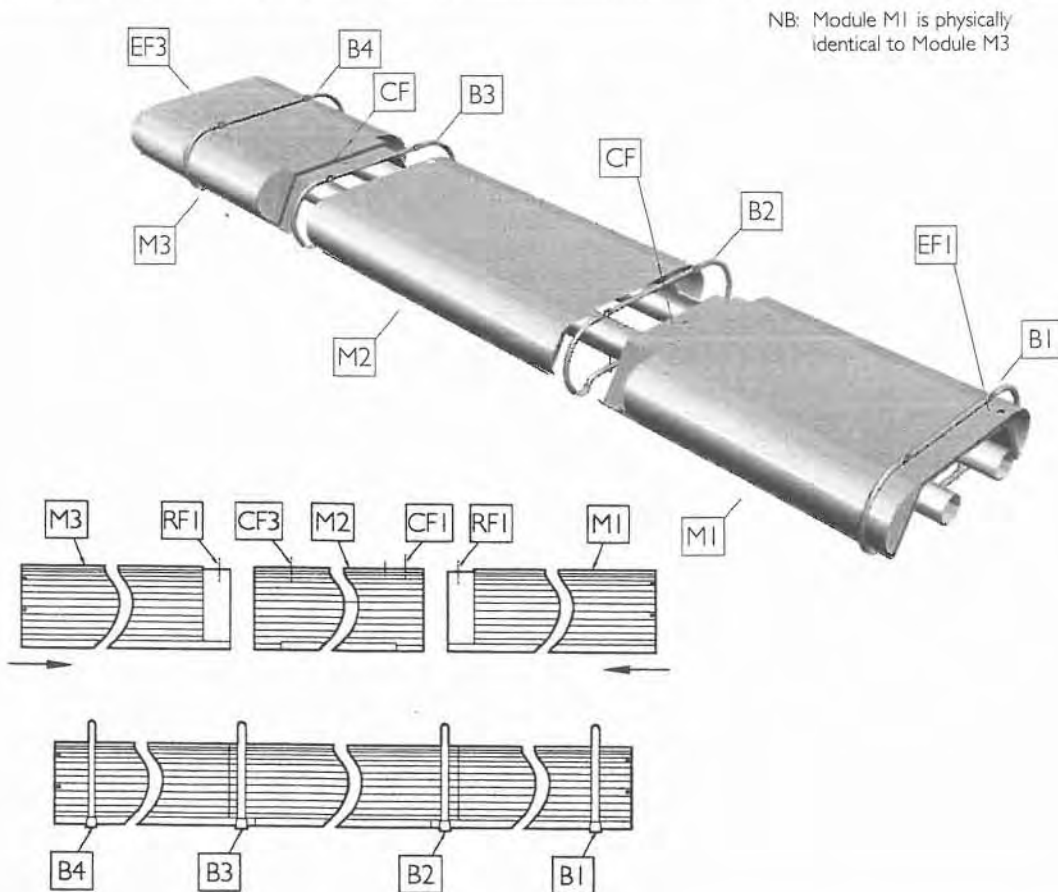
9.5.5 Modules M1 and M2 are fixed together using a single pin (F) which is inserted through the reflector fixing hole (RF1) and then through the suspension bracket (B2). The pin (F) is secured using washers (D & E) and locknut (A). (See Fig. 23b).

9.5.6 With Modules M1 and M2 firmly fixed to bracket B1 slide module M3 through bracket B4 ensuring end cap fixing holes (EF3) are at heater end.

9.5.7 Repeat Stages 9.5.3 - 9.5.5

9.5.8 The two modules are fixed together using a single shoulder pin (F) which is inserted through the reflector fixing hole RFI from underneath the reflector. The shoulder pin (F) passes through the outer canopy fixing hole (CF) and then through the suspension bracket (B2). The pin (F) is secured using a washer (D) (E) and locknut (A). (See Fig. 23b).

FIG. 23 FITTING INSULATED MODULES TO HEATER



NB: Module M1 is physically identical to Module M3

FIG 23a

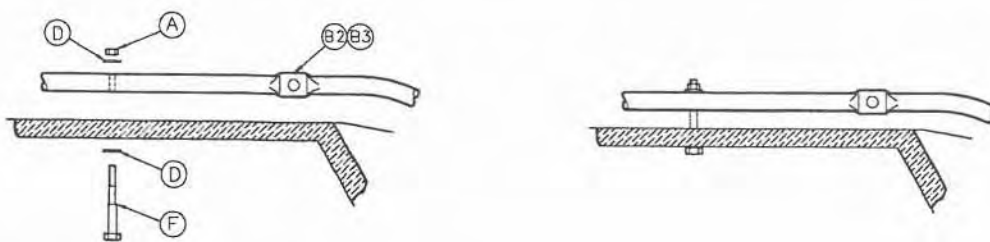


FIG 23b FITTING FIXING PIN

- | | |
|-------------------|--------------------------|
| A M6 Locknut | BF2 Bracket Fixing Holes |
| B M6 Washer | D M8 Washer |
| F M6 Shoulder Pin | E M6 Washer |

9.6 FITTING END CAPS (SEE FIG. 24 AND FIG. 25)
 (Note: if optional end mouldings and thermal break are to be fitted please refer to 9.10)

9.6.1 Fit end caps to burner end and return end of heater using the set screws as supplied

9.7 FITTING BURNER TO TUBE

9.7.1 The burner is fitted to the end of the stainless steel radiant tube and the M6 grub screws tightened in the support casting.

9.8 FITTING FAN TO TUBE

9.8.1 The fan is fitted to the end of the black radiant tube and secured using the grub screw on the support spinning. Ensure fan discharge is horizontal (away from the burner).

9.9.1 SUSPENSION OF HEATER
 See section 5 and 8.9

FIG. 24 FITTING END CAP FOR BURNER END

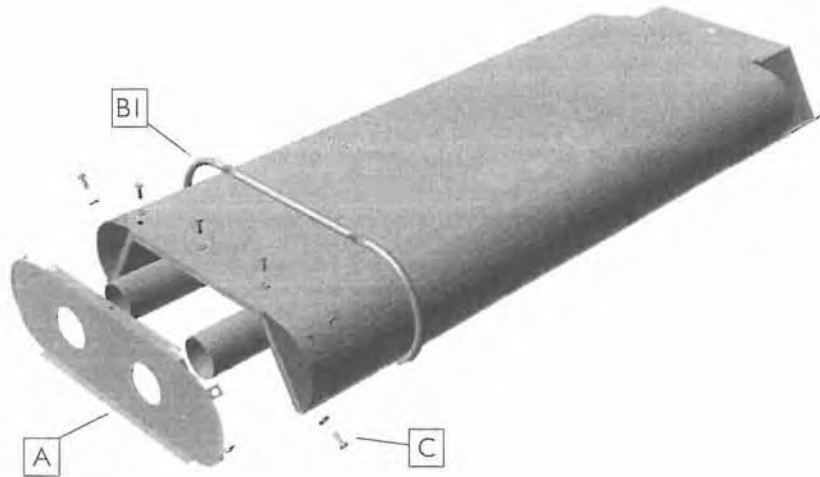
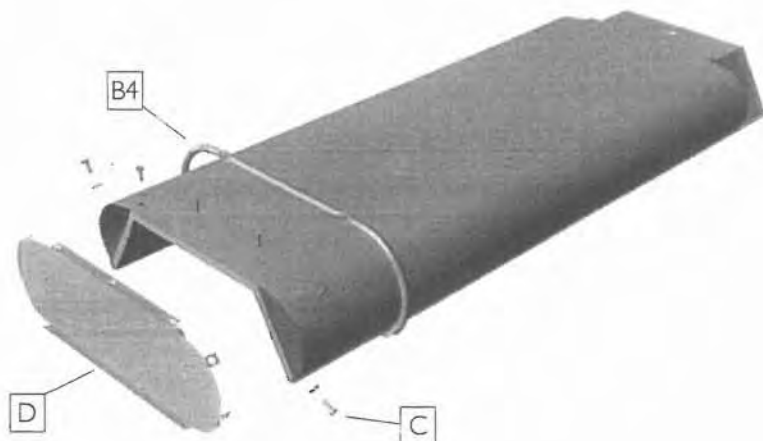


Fig.25 FITTING END CAP FOR RETURN BEND END



- A End Cap for Burner End
- B1 1st Suspension Bracket
- B4 3rd Suspension Bracket
- C M4 x 10 Set Pins
- D End Cap for Return Bend End

THE FOLLOWING SECTIONS 9.10 TO 9.15 RELATE ONLY TO HEATERS WITH OPTIONAL END MOULDINGS AND THERMAL BREAK.

9.10 FITTING END CAP AND THERMAL BREAK. (SEE FIG. 26).
A thermal break is only fitted to heaters which have end covers.

9.10.1 The end cap (C) is positioned so that the hankbushed lugs (F) rest inside the end of the canopy (G).

9.10.2 The top section of thermal break (A) is positioned on top of the canopy end (G) and the fixing slots are aligned.

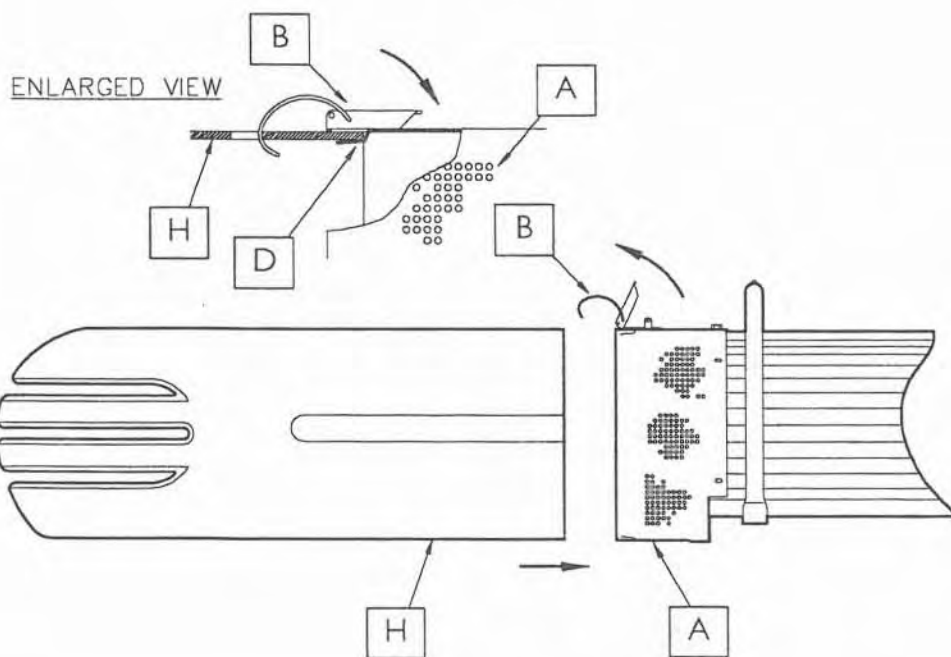
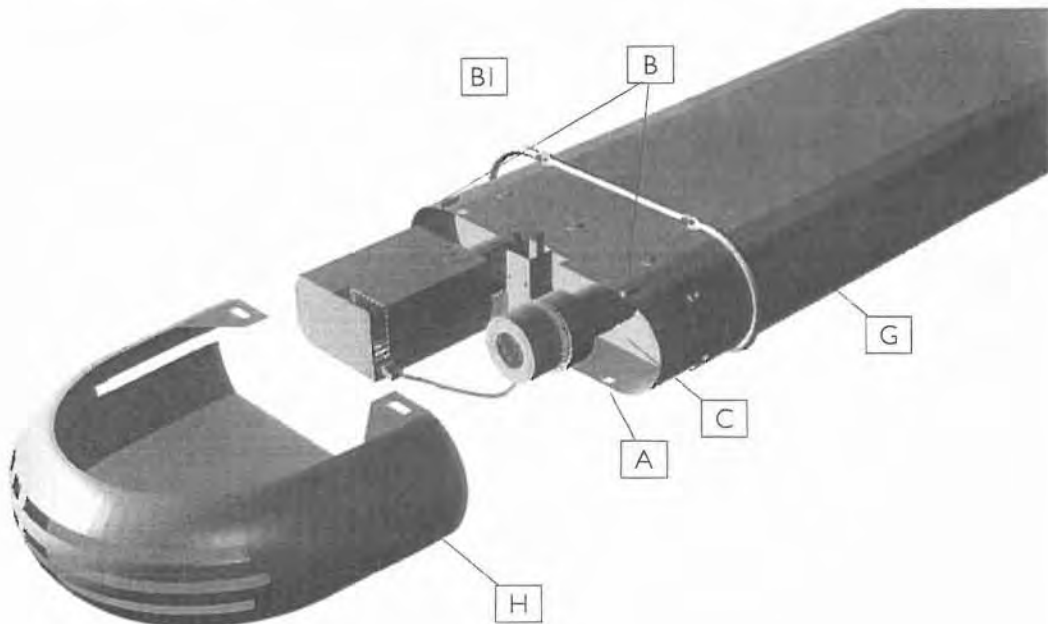
The thermal break (A) and End Cap (C) are fixed to the canopy end (G) using 7 off M4 washers and set pins provided.

9.10.3 The bottom section of thermal break rests inside the lip at the bottom of the end cap, (See Fig. 26b) and is affixed to top section (A) using 4 off M4 washers and set pins.

9.10.4 The end cap and thermal break are fitted to the return end of the heater in the same way as above.

FIG. 26 FITTING THERMAL BREAK & ENDCAP

26a



26b

- A Thermal Break
- B Quick Release Catch
- BI 1st Suspension Bracket
- C Insulated End Cap
- D Location Stops
- G Canopy
- H End Moulding

**9.11 FITTING BURNER TO TUBE
(SEE FIG. 28).**

9.11.1 The burner is fitted to the end of the stainless steel radiant tube and the m6 grub screws tightened in the support casting (using the holes in the bottom section of thermal break (B)).

**9.12 FITTING FAN PROTECTION
BAFFLE. (SEE FIG. 27C).**

9.12.1 The fan protection baffle is fitted to the outlet of the fan using the plates and pins provided. To ease assembly attach the baffle before securing the fan to the radiant tube.

**9.13 FITTING FAN TO TUBE.
(SEE FIG. 27).**

9.13.1 The fan is fitted to the end of the radiant tube and secured using the grub screw on the support spinning. Ensure fan discharge is pointing vertically upwards.

**9.14 FITTING END MOULDING TO
HEATER.
(SEE FIG. 27).**

9.14.1 The end moulding is usually fitted after the heater is suspended.

9.14.2 The front section of the end moulding (F) is located inside thermal break against four metal stops.

9.14.3 The end moulding is fixed with two quick release clips mounted on the top of the thermal break. (SEE FIG. 27b).

9.14.4 The end moulding is fitted to the return end of the heater in the same way as above.

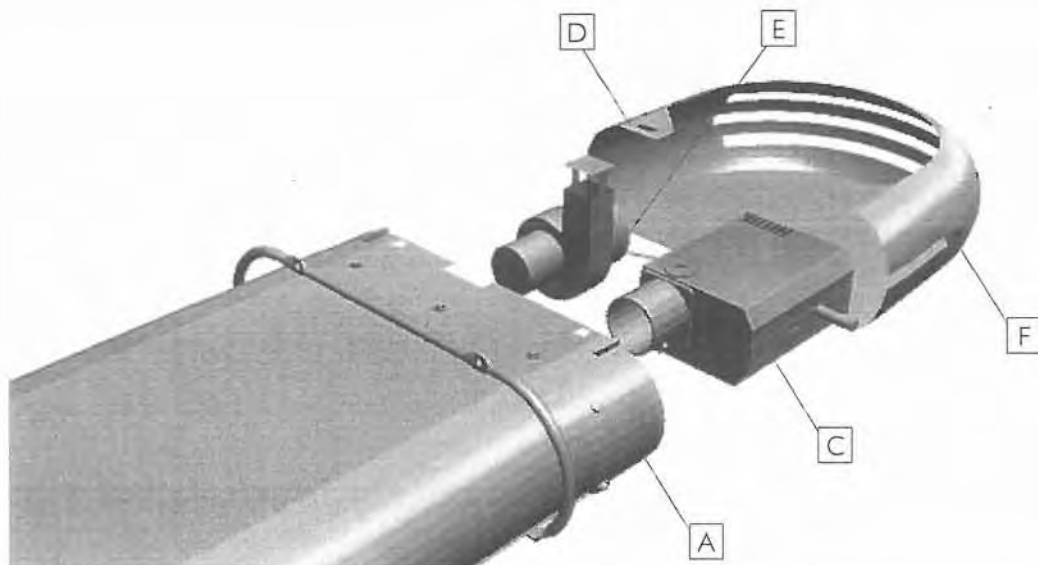
9.15 SUSPENSION OF HEATER

9.15.1 The heater must be suspended on all three brackets.

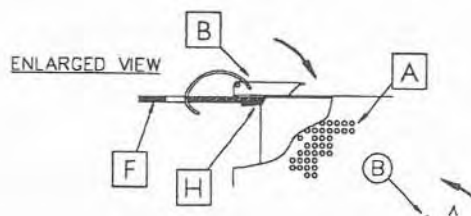
9.15.2 All 'U' tube heaters must be suspended with the 'U' bend end of the heater 25mm lower than the burner end of the heater.

FIG. 27 FITTING END COVER & FAN PROTECTION CAP

27a



27b



27c



- A Thermal Break
- B Quick Release Fastener
- C Burner
- D Quick Release Fastener Receptacle
- E Connection Lug
- F End Moulding
- G Fan Outlet Protection Baffle
- H End Cover Location Lip

AMBI-RAD[®]

Energy Efficient Heating Systems



AMBI-RAD Limited , P.O. Box No 30, Mucklow Hill, Halesowen, West Midlands B62 8DS

Tel: **0121-503 0707**. Fax 0121-501 2955 Sales Office Fax: **0121-585 6376**

E Mail: sales@ambirad.co.uk

<http://www.ambirad.co.uk>

