FEBRUARY 1977

Revision 1

VULCAN OIL HEATING

INSTALLATION INSTRUCTIONS

40 SERIES OIL HEATERS

INDEX

INSTALLATION INSTRUCTIONS

40 SERIES

PRE-INSTALLATION CHECK LIST

Installation Requirements

The appliance is subject to the manufacturer's guaranty only if installation, test firing and service are carried out by a Registered Vulcan Installer.

The installation must conform with S.A.A. Oil Heating Appliances Installation Codes 1690, 1691 and 1692, and any other local statutory regulations.

Notification of intention to install must be lodged with the appropriate local statutory body.

For an inbuilt installation the following should be checked :

(a) Sufficient clearance for the flue in the chimney.

(b) Chimney to be swept if solid fuel heater or wood fire previously used.

(c) Removal of the sloping bricks at the back of the fireplace to provide clearance for the case, if applicable.

(d) Whether the lintel bar has to be re-positioned.

(e) Where the oil tank is to be sited.

(f) Whether cementing is required to level or fill a hole in the hearth or to provide for a fresh air intake or aperture for 40 Series ducted model.

(g) Proximity of the mantel above the intended installation.

(h) Location of the electrical isolation switch.

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

1. UNPACKING

CAREFULLY TURN THE CARTON UPSIDE DOWN.
CUT ALONG THREE SIDES AS SHOWN.
DO NOT INSERT CUTTING BLADE MORE THAN 1".

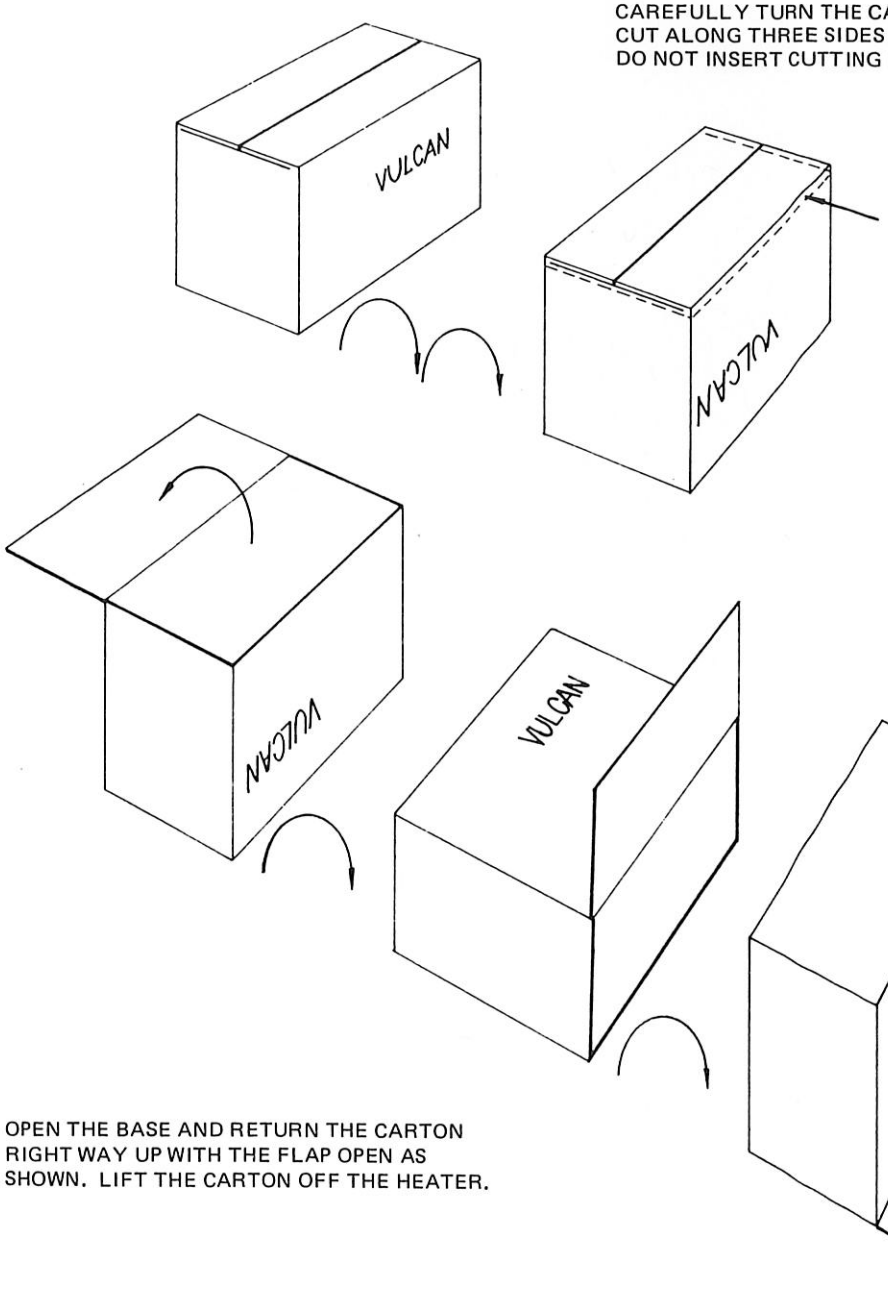


FIG. 1

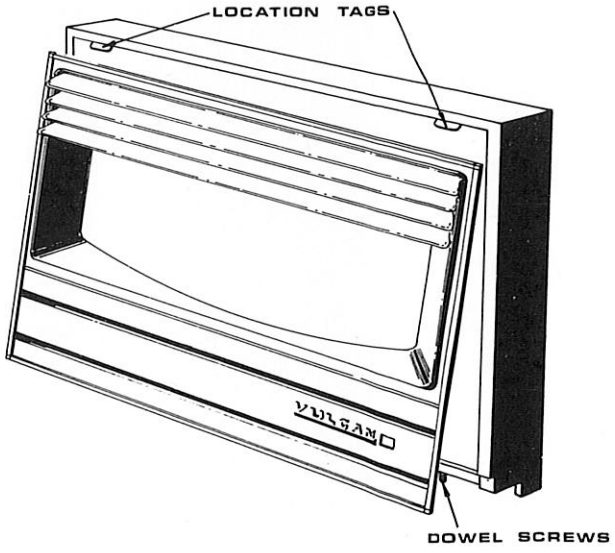
OPEN THE BASE AND RETURN THE CARTON RIGHT WAY UP WITH THE FLAP OPEN AS SHOWN. LIFT THE CARTON OFF THE HEATER.

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

2. PREPARING THE HEATER FOR INSTALLATION

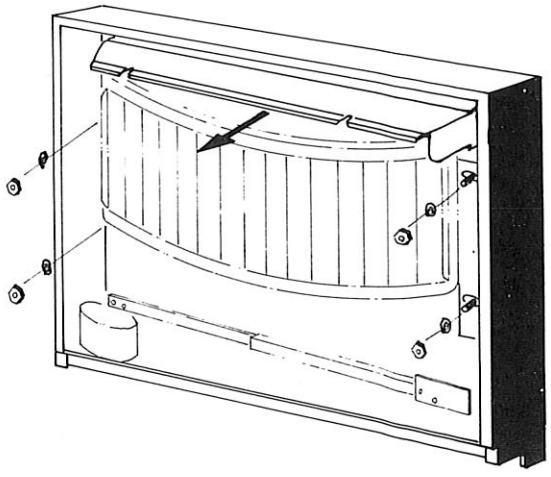
(a) Remove the front panel [Fig. 2] :
- Loosen off the two captive dowel screws at the bottom of the front frame.
- Swing bottom of front frame out, then lower slightly to clear the top locating tags.
- Put the front to one side while installation is carried out.

FIG. 2



(b) Remove top air guide assembly [Fig. 3].
- Lift up and pull out.

FIG. 3



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

2. PREPARING THE HEATER FOR INSTALLATION (cont.)

(c) To remove the heater complete from the case:
- Remove 4 nuts and washers and slide out [Fig. 3].
- Place to one side while installation is carried out.

3. INSTALLING THE CASE

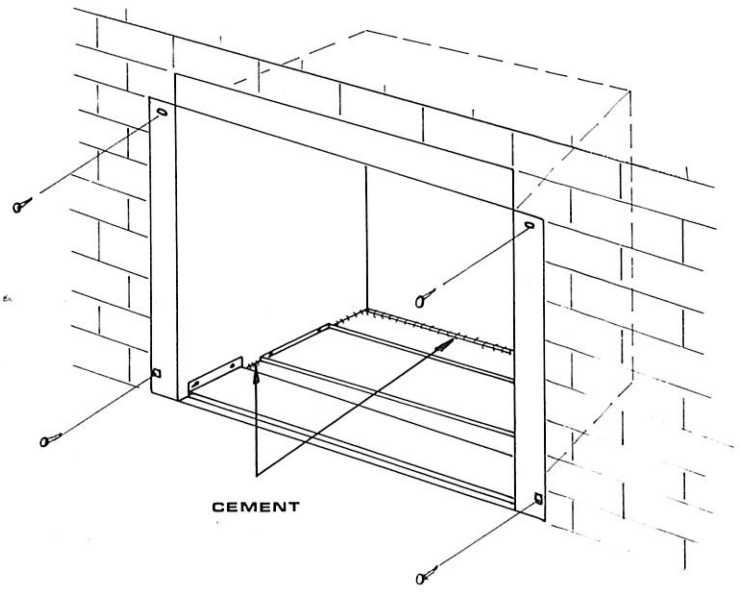
(a) Prepare the opening, observing the case dimensions and opening sizes listed on blueprint.

(b) Fit the case into the prepared opening :
- Ensure hearth is level in **both** directions.

  DOUBLE CHECK THAT THE CASE IS LEVEL IN BOTH DIRECTIONS AFTER IT IS INSTALLED.
- Secure case by fixing flanges with 4 screws minimum [Fig. 4].

Note: On timber installations insulation kit must be used and 1/2" millboard must be fitted under heater.

FIG. 4



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

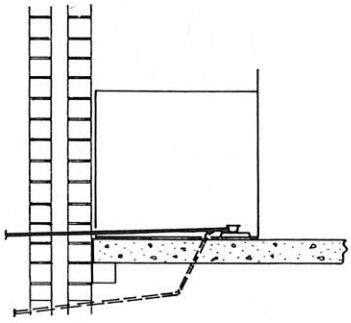
4. RUNNING THE OIL LINES AND THE POWER FLEX

(a) Oil lines enter under rear of case along right hand side, see Fig. 6.

– Bring the 3/8" diameter oil overflow pipe through, and connect to the oil tray. The pipe should run parallel with fuel supply line.

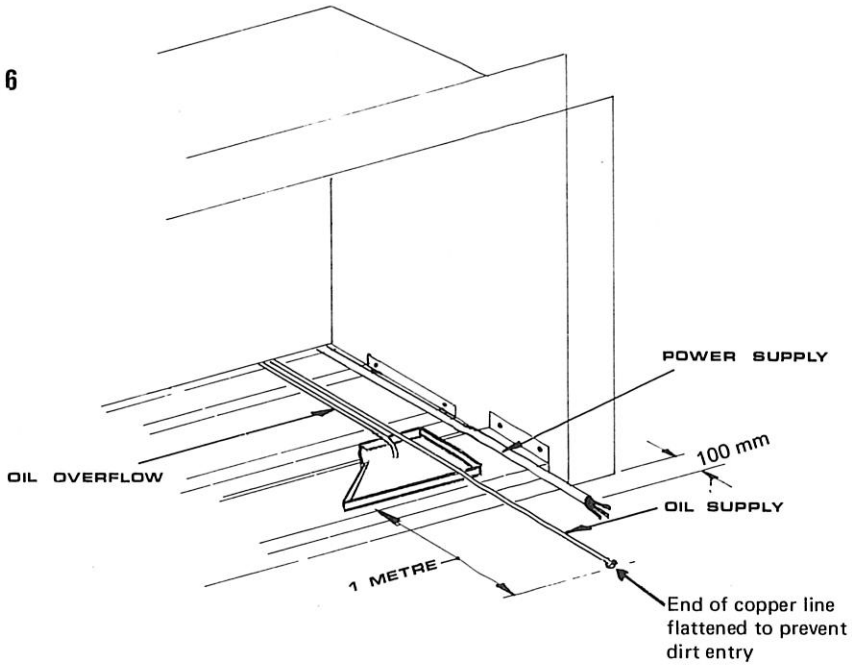
N.B. The overflow pipe must have a constant fall [Fig. 5]. The correct operation of the overflow should be checked by pouring 1 pint of water into tray and ensuring that it discharges properly.

FIG. 5



(b) – Bring 1 metre of 5/16" diameter oil supply pipe through, and leave straight, as per Fig. 6.

FIG. 6



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

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4. RUNNING THE OIL LINES AND THE POWER FLEX (cont.)

IMPORTANT : BEFORE RUNNING THE FUEL LINE UNDER THE HOUSE, SQUASH THE COPPER PIPE ENDS SO THAT NO DIRT OR RUBBISH CAN LODGE INSIDE. FAILURE TO DO THIS WILL RESULT IN VALVE MALFUNCTION DUE TO FOREIGN MATTER INGRESS.

ELECTRICIAN : Run the electrical cable through, to project approximately 100 mm past the front of the case. Lay along right hand side of case. [Fig. 6]

5. INSTALLING THE FLUE

40 Series oil heaters are supplied with a 5" x 5" (125 mm) elbow. The majority of units will be fitted with 5" flue but in the event this is not possible a 5" x 4" reducer is used and a 4" flue can be utilised where the chimney is too small to accept 5".

The prime advantage in 5" flueing is that the overall length can be reduced to a 4 metre minimum, in certain instances.

- The flue system should be assembled before installing.
- The assembled length must be no shorter than 4 metres (13') when using 5" (125 mm) and not shorter than 5½ metres when 4" (100 mm) is used, to achieve sufficient draught.
- Assemble the flue system and flue adaptor together with pop rivets or self tapping screws sealing the joints with masking tape.
- Fit flexible flue if necessary to overcome offsets in chimney.
- Flue must terminate a minimum of 12" (300 mm) above chimney or 3' (1 metre), see blueprint, above the nearest point of the roof line. Under some conditions it may be necessary to extend the flue if it terminates inside a pressure area.

NOTE : If flue is shorter than the minimum specified, it may not be possible to obtain the necessary .06" – .065" W.G. draught reading.

Insulation of flue in very cold ambient temperature regions :

In cold areas (temperature below 10°C) it is often advantageous to insulate between the active flue and its casing, particularly on console models where a significant height above the flashing exposes a large area of flue casing.

In these cases chilling of the flue reduces the available draught and causes –

(a) **Hard Starting** due to reduced air flow through the burner (evidenced by rolling vapour on ignition or delayed ignition) and failure to ignite under cold wind conditions or very cold still air conditions.

5. INSTALLING THE FLUE (cont.)

(b) **Flaring Flame Pattern** and fumes evident in the house due to a column of cold air dropping down on occasions giving a negative draught reading. A cold dense column of air can also "sit on" the hot flue gases from the heat exchanger resulting in zero draught – causing flaring.

Both conditions (a) and (b) can take place on ignition, or on extended use of Lo fire setting where the amount of warm air rising in the flue is at its minimum.

Cowl – The only cowl suitable for 40 Series oil heaters is Vulcan Part No. 11-01.

> NOTE:
> Although the part number has not changed, the latest cowls produced are marked 6" and 5" GALVANISED FLUE on the carton. This cowl will suit both 4" (100 mm) and 5" (125 mm) active flue using 5" (125 mm) and 6" (150 mm) casing respectively.

Old stock cowls will only suit 4" active flue with 5" casing, and these are in cartons marked 5" GALVANISED FLUE.

Vulcan cowls are specifically designed to minimise draught fluctuations to within the operating limits of the heater's draught breaker, under most wind conditions of direction and velocity.

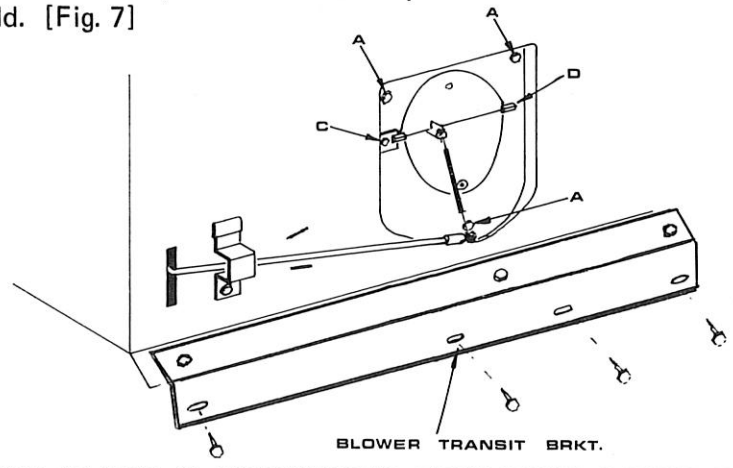
NOTE:
A cowl located in a pressure area cannot overcome negative draught characteristics. This is not a cowl problem and is covered on page 6, Section 5, "INSTALLING THE FLUE" and blueprint.

6. INSTALLING THE HEAT EXCHANGER IN THE CASE

(a) The following should be checked before the heat exchanger is slid back into the case:

(1) Check that the overflow pipe **works**.
(2) Ensure that electric cable is in right hand corner of case [Fig. 6].
(3) Remove fan transit bracket screws and discard bracket.
(4) Draught breaker must swing freely [Fig. 7].
(5) Control knob must rotate smoothly. The movement of the draught breaker arm must also be checked, to ensure that it operates between the lines marked on the heatshield. [Fig. 7]

FIG. 7



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

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6. INSTALLING THE HEAT EXCHANGER IN THE CASE (cont.)

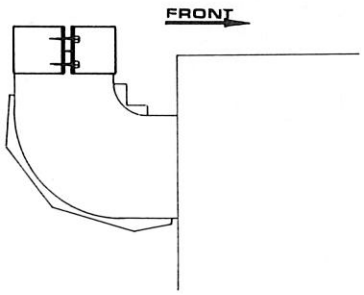
(6) Dashpot rod must be released from its transport position [Fig. 8]. **FAILURE TO DO THIS WILL RESULT IN CONTINUOUS OVERDRAUGHTING.** Movement must be smooth without sticking. Check by watching the draught breaker arm descent. (Time to descend 1 to 3 minutes cold.)

FIG. 8

(b) Fit the flue clamp to the flue elbow, with screw heads facing the **front** of the unit. [Fig. 9]

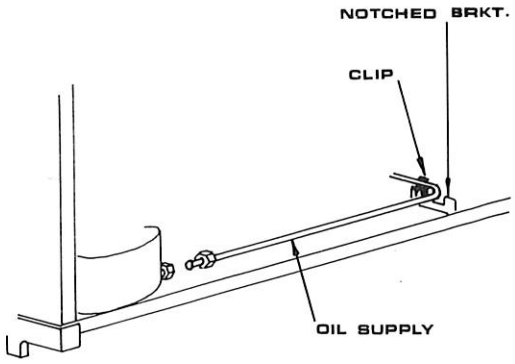
- Slide heat exchanger assembly back into case. Locate flue clamp around flue adaptor.
- Secure heat exchanger assembly to case with 4 nuts [Fig. 3, page 3].
- Tighten flue clamp to seal flue between flue adaptor and elbow [Fig. 9].

FIG. 9



- Bend oil supply line in smooth radius to align with oil valve. Fit the line into the notch provided in the oil tray [Fig. 10], and clip in position.

FIG. 10



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

6. INSTALLING THE HEAT EXCHANGER IN THE CASE (cont.)

– Fit oil filter to oil tank (must be vertical). [Fig. 11]

– Cut off flattened end of copper oil supply line (see page 5, Fig. 6). Fit oil valve compression nut, and flare the end [Fig. 12].

FIG. 11

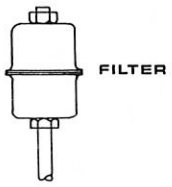
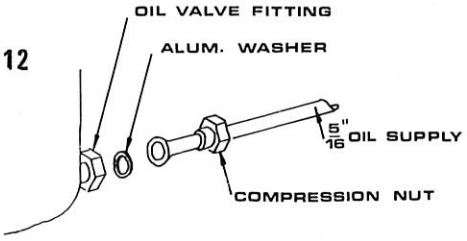


FIG. 12



– Flush out fuel line with heating oil.

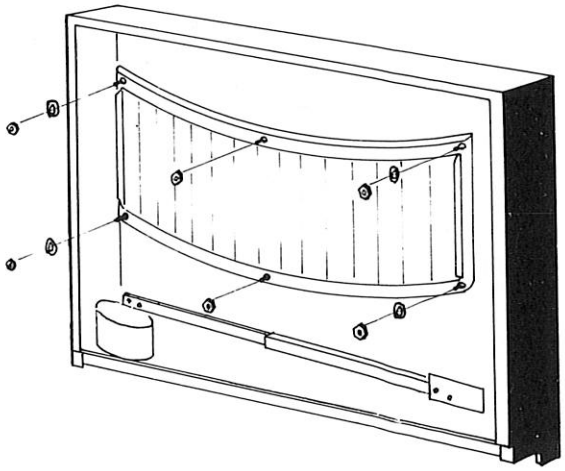
IMPORTANT

When absolutely sure the oil supply line is clean, connect to valve. Check that the aluminium sealing washer is in position. [Fig. 12]

7. FITTING OF RADIANTS

– Remove door assembly: 6 nuts, washers, on 4 corner studs. [Fig. 13]

FIG. 13

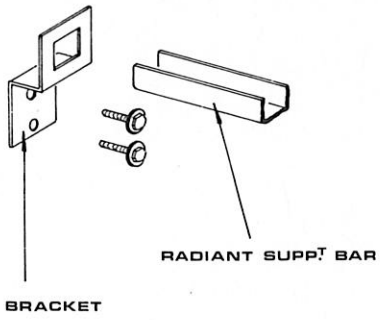


MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

7. FITTING OF RADIANTS (cont.)

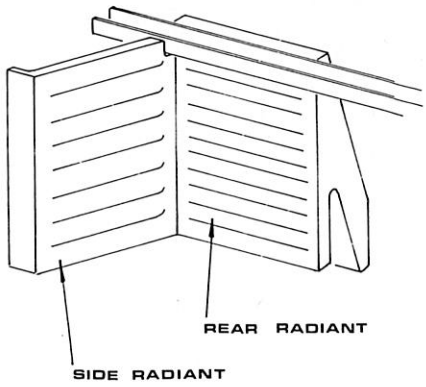
– Carefully lift out radiant packs, radiant support bar and oil filter.
– Fit radiant support bar, U-shape uppermost [Fig. 14].

FIG. 14



– Fit radiants, positioning side radiant first then the rear radiant adjacent to it. This holds the side radiant in. Repeat for other side radiant. [Fig. 15]

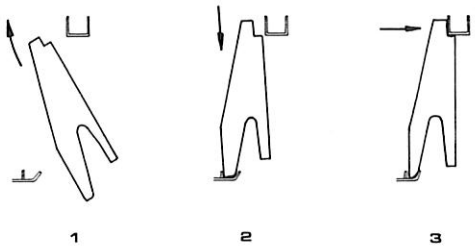
FIG. 15



– Rear radiants are fitted as in Fig. 16.

FIG. 16

FITTING REAR RADIANTS



MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

7. FITTING OF RADIANTS (cont.)

- Refit door, tightening centre nuts first. The four corner nuts must have washers underneath them. Tighten nuts just sufficiently to seal gasket. Do not overtighten.
- Replace top air guide, locating rear flange in heat shield V-form. [Fig. 17]

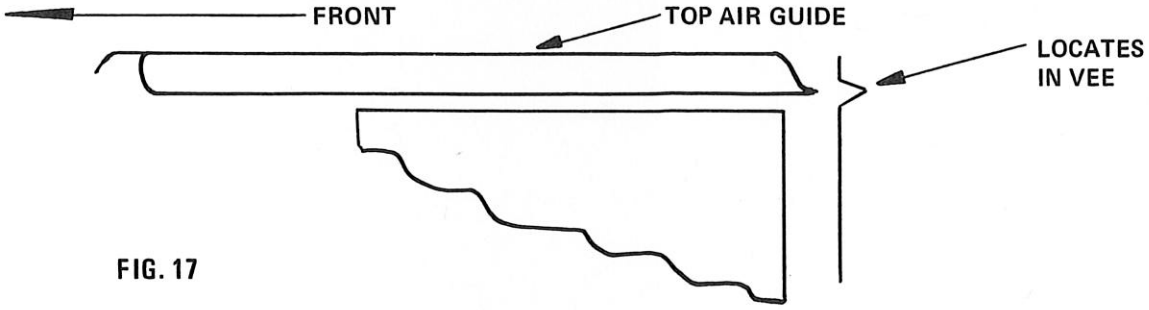
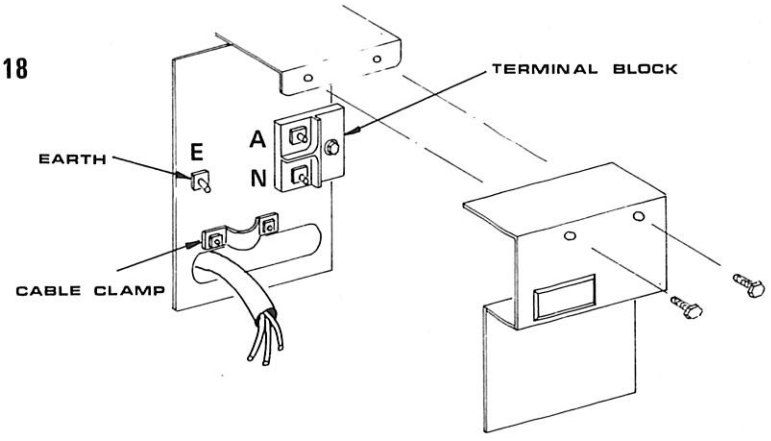


FIG. 17

8. WIRING IN THE UNIT (TO BE OBSERVED BY REGISTERED ELECTRICIAN)

- Ensure that flex is routed alongside right hand side of case (behind heat shield).
- Remove the electrics cover (2 self tapping screws). [Fig. 18]
- Pull the flex through the hole in the electrics bracket, and secure the flex with the cable clamp. [Fig. 18]
- Wire in the flex to the terminal block and the earth connections [Fig. 18]. Active, neutral and earth connections are clearly marked.

FIG. 18



- Replace the electrics cover.

NOTE:
An isolating switch MUST be provided adjacent to the heater, to facilitate servicing of the unit.

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

9. TEST FIRING

(a) Check for free operation of the pressure relief lid. Raise it and see that it falls smoothly back into place and seals the opening. [Fig. 19]

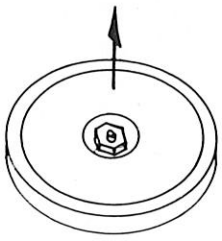


FIG. 19

(b) Double check you have released dashpot rod from transit position [Fig. 8].

(c) Turn on the oil at the oil tank.

(d) Turn on oil at valve switch by selecting the "ON" position. (Left hand side of heater front frame.) [Fig. 20]

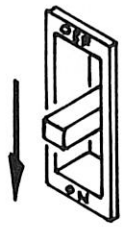


FIG. 20

(e) Check for oil leaks at all connections.

(f) Switch on the power to the unit.

(g) Turn the oil control knob to the "IGNITE" position [Fig. 21]. Check starting draught – should be .02" W.G.

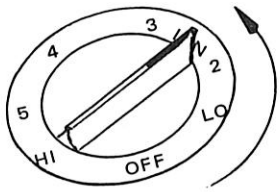


FIG. 21

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

9. TEST FIRING (cont.)

(h) Observe the ignition cycle. Time to ignition – 2 to 3 minutes. Time to neon light out – 5 to 6 minutes. If not, refer to Service Manual.

(i) Let the flame pattern stabilise 15 minutes once the ignition cycle is completed, then turn to Lo fire.
(After 15 minutes on Lo fire adjust the draught screw anti-clockwise for more yellow content in flame – for less draught, and clockwise to reduce yellow content – more draught.) Flame pattern should have a yellow content when adjustment is complete on .01" W.G.

NOTE:
Adjustment of the air screw should be accomplished one-eighth of a turn at a time. Total screw rotation should not exceed half turn in either direction.

Check mid range and adjust cam if necessary.

For valve and linkage adjustments see Service Manual.

> **IMPORTANT**
> **Providing this manual has been followed faithfully, no adjustment will be necessary to the heater. Fine tuning of the air screw as in paragraph (i) above may be required.**

(j) INSTRUCT CUSTOMER ON OPERATION OF HEATER.

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

INSTALLATION INSTRUCTIONS

DUAL ROOM MODELS 40-08 & 40-09

1. Select position for heater and prepare opening as per sizes on blueprint.

   Take into consideration clearances of flue from combustible material, and available power supply. [See Fig. 1]

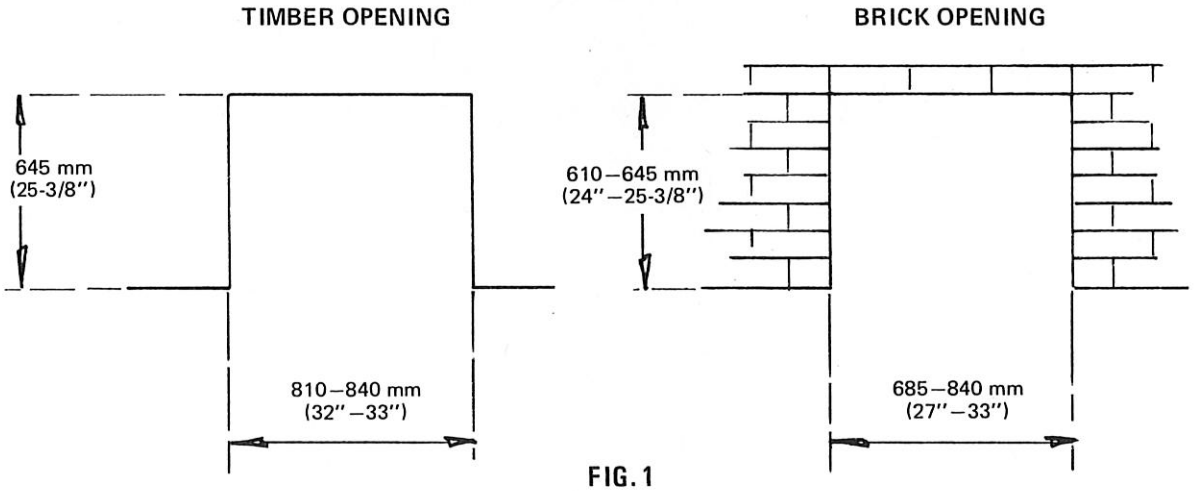


FIG. 1

   Note: On timber floor add 12 mm (½") to height to accommodate millboard. If surrounds are fitted maximum width is 990 mm (39"), maximum height 715 mm (28").

2. Fit front case to opening and secure.

   Note: On timber installations, insulation wrap must be fitted to case.

3. (a) Remove blower transit bracket. (Note on dual room models blower is fitted opposite way round to that of 40-01.)

   (b) Bring in and connect oil supply, drain line and electrics supply approximately in position shown. [See Fig. 2]

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

DUAL ROOM MODELS (cont.)

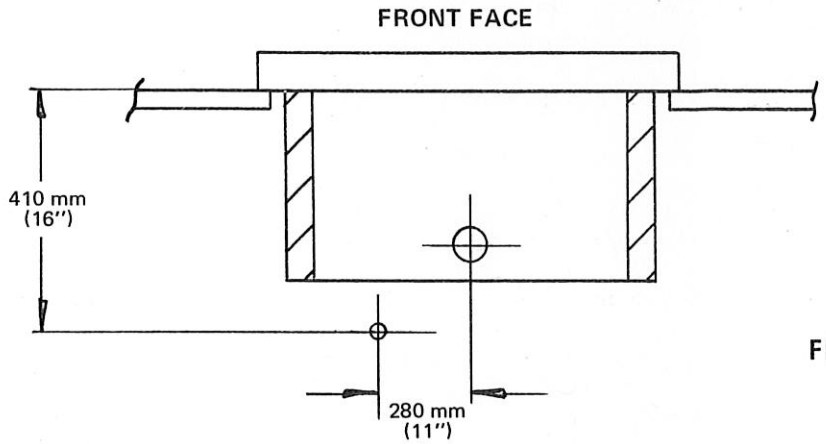


FIG. 2

4. Fit rear case over front case and secure through case sides (4 places minimum).

5. Fit rear air-guides on 40-08 models. On 40-09 models air-guides are fitted, but will require bending at 90° to provide a smooth passage for the exit of the warm air. [See Fig. 3]

   Note: On installations where wall is less than 5½" thick it may be necessary to increase the depth of the cut-out in the air-guides by up to 1" to clear the flue outlet. This will not be necessary after Serial No. 591000.

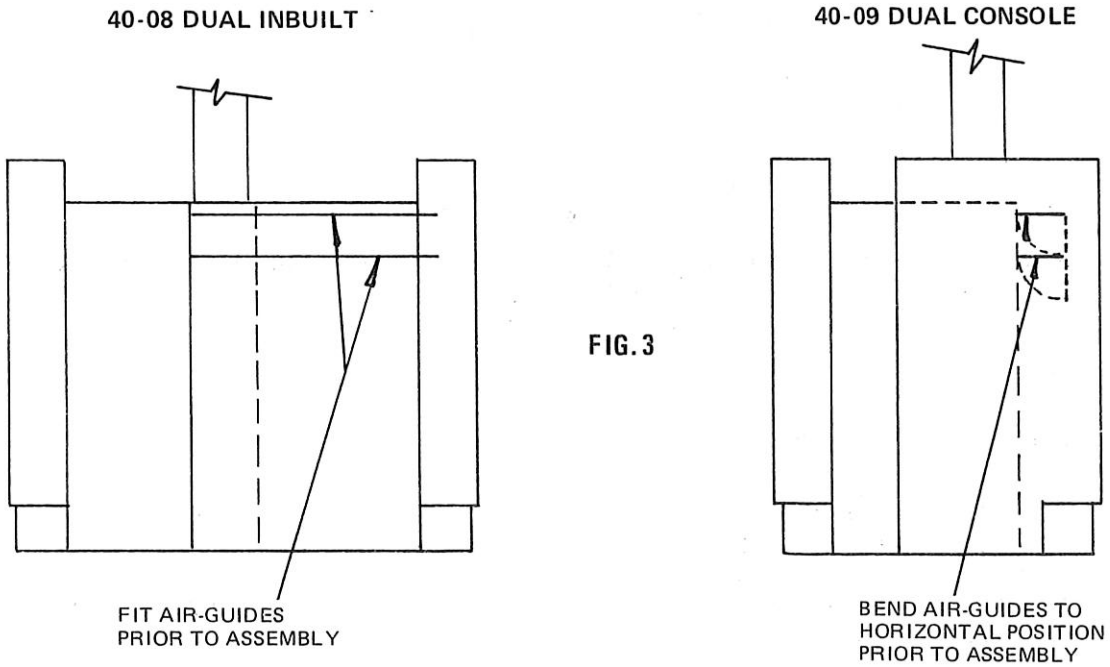


FIG. 3

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS

DUAL ROOM MODELS (cont.)

6. Connect flue to flue outlet using clamp and flue support supplied with unit. [See Fig. 4]

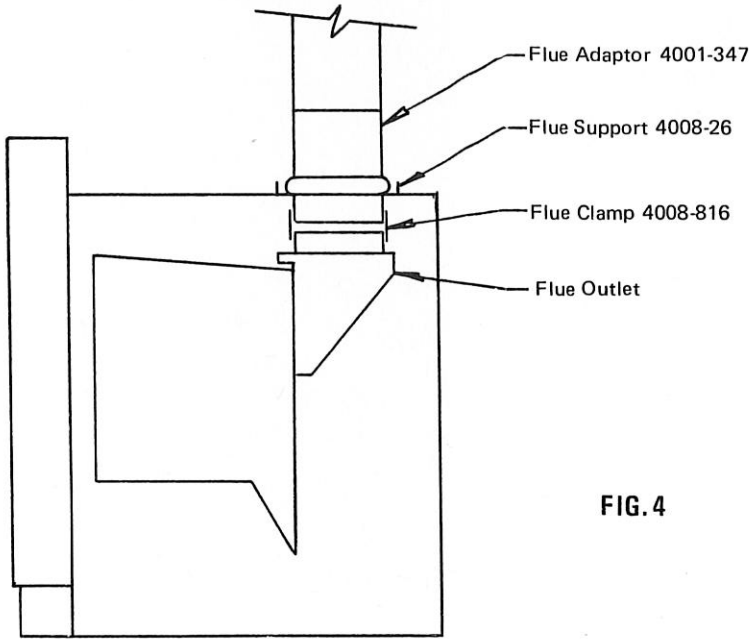


FIG. 4

7. Carry out normal test fire procedure on unit, re-fit front and rear grille assemblies. Instruct customer in operation of unit.

Lever up – air to front	Lever down – air to rear

MAKE ABSOLUTELY SURE HEATER IS DISCONNECTED FROM POWER BEFORE REMOVING OR REPLACING ANY COMPONENTS