Ambiair Fan Convectors

Installation, Operation & Maintenance

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INSTALLER: Please leave these instructions, heater wiring diagram & access panel keys with the user.

INTRODUCTION

This booklet provides guidance to identify, handle, install, commission, operate and maintain the MHS Ambiair fan convectors. The instructions apply to the standard range of 3 models shown on pages 1 and 2. Please study the instructions carefully before commencing any installation work.

IDENTIFICATION

The fan convector serial number, model description, (size) are displayed on a label found on the inside of the heater access panel. If specified, a stencil reference may also be marked on the heater on-site identification.

DESCRIPTION

Each Ambiair fan convector comprises a sheet steel metal casing with a lockable access panel, fan/motor assemblies, air filter and hot water heating coil.

Heaters can be supplied for two speed fan operation pre-set to low/medium. Fan control is by means of switches and/or thermostats, listed in Accessories.

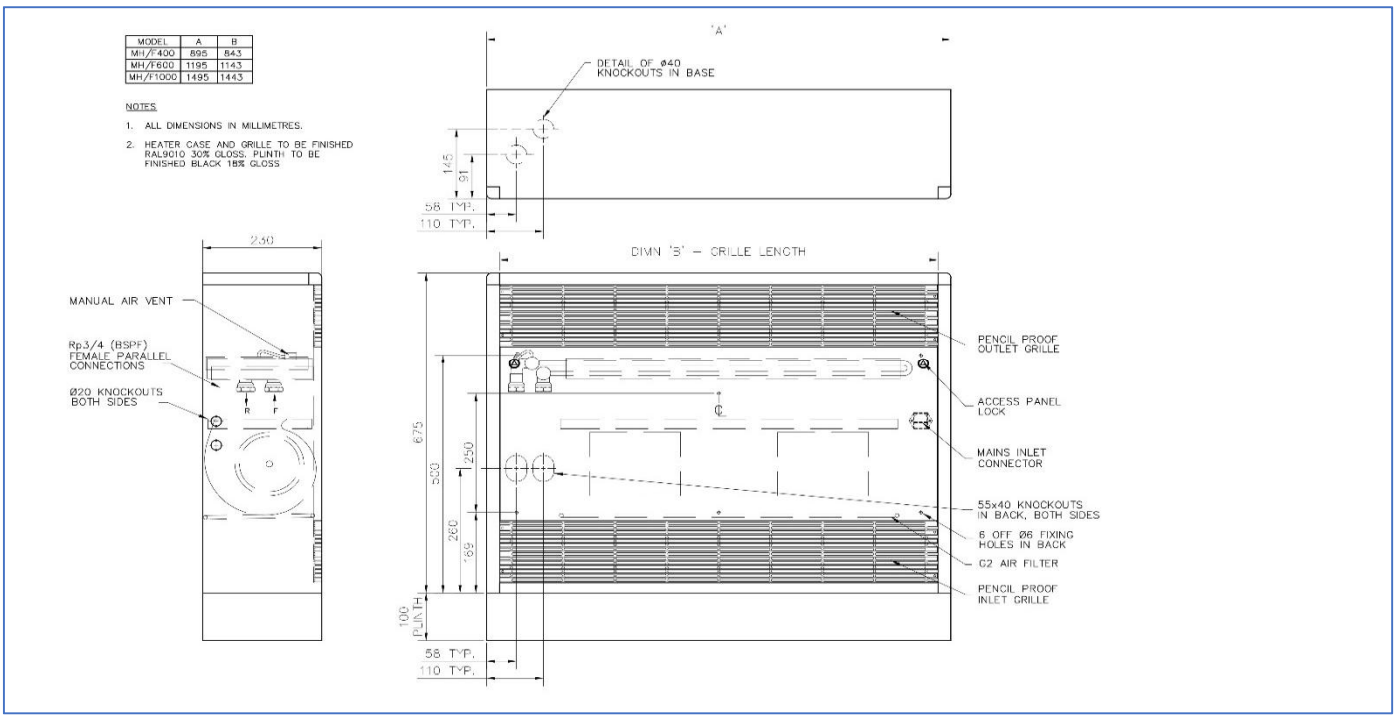


Diagram 1: Model MH/F

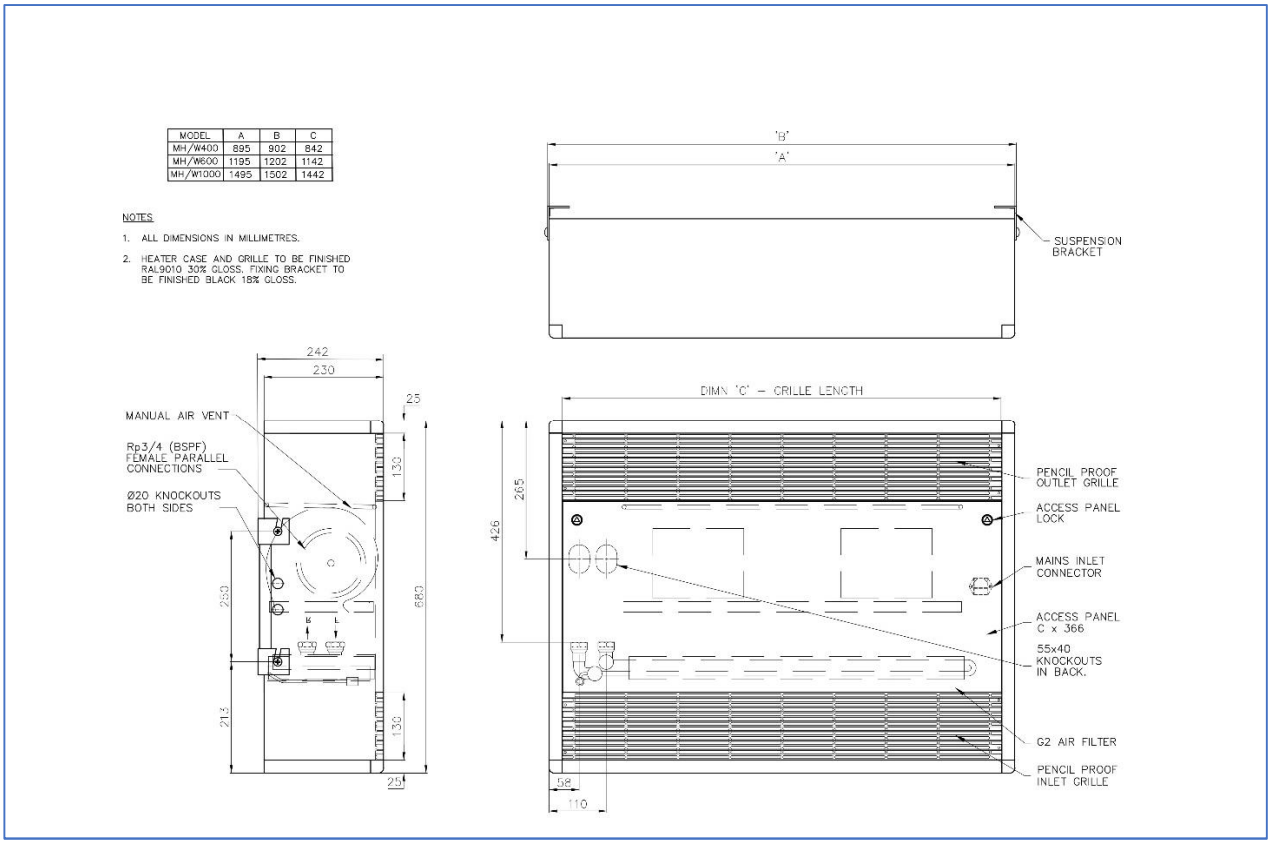


Diagram 2: Model MH/W

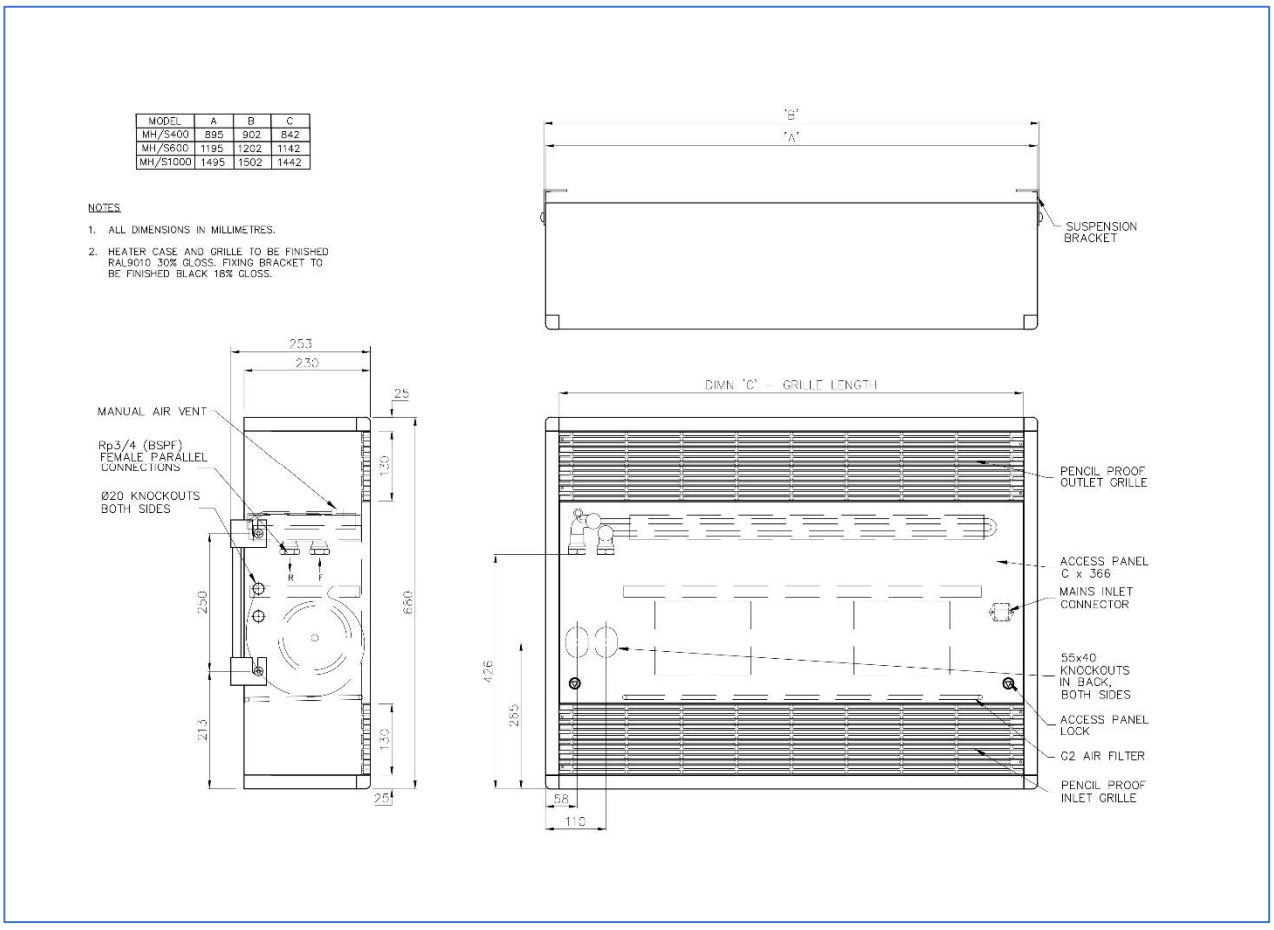


Diagram 3: Model MH/S

RANGE

The standard range comprises 3 standard models, floor standing, ducted floor standing, wall mounted and ceiling mounted.

Model	Nominal output (kW)	Casing width (mm)
400	4	895
600	6	1195
1000	9	1495

CONTROLS

Fan motors
Efficient EC motors

Air thermostats
Air thermostats are fitted as standard to automatically switch the heater on/off and to change the fan speed/heat output, in response to a fall or rise in ambient air temperature. Thermostats can be fitted or remote as follows:-

Model MH/F Only

Diagram 4: Fitted on/off & high/low thermostats

Remote thermostats – Models MH/W & MH/F Only
Standard or tamper resistant room thermostats with an accelerator heater, are provided for on/off and speed change.

Low temperature cut-out (LTC) thermostat
A low temperature cut-out thermostat is fitted to operate the heater when hot water is supplied to the coil. This will automatically stop the heater at the end of a normal operating period e.g. when the boiler plant shuts down:-
Type 2 (adjustable) range 30 - 90°C

Switches
Remote switches (for surface wall mounting) can be provided to switch the heater on/off, change fan speed and/or override any thermostats.


Remote on/off switch


Remote manual/off/auto switch


Remote manual/off/auto and low/medium switch

The man/off/auto switch allows the fans to circulate room air when the boiler plant is shutdown during the summer.

INSTALLATION

1. Remove the packaging.
2. Unlock and remove the access panel with the key provided with the heater. On ceiling models, safety screws retain the access panel in a hinged position.
3. Re-check the identity of the heater, from the serial number on the nameplate.
4. The inner cover, fans/motors pipework cover plate, filter and grilles can all be removed to provide better access when making pipework connections and to allow easier lifting of wall and ceiling models. (See Diagram 6)
5. Disengage the line connector to disconnect the wiring harness to the fan platform. On ceiling models, remove the platform retaining brackets before removing the platform.
6. Remove the casing knockouts, as necessary, to suit pipework and conduit entry.

Diagram 5: Mains inlet plug and fuse holder

Diagram 6: Fan and inner side plate removed

Model MH/F

1. Note the position of the Ø5 fixing holes in the heater back plate; mark-out, drill and plug.
3. Position and fix the heater.
4. Pipe up as detail in *Pipework Connections* on page 5.
6. Wire up as detailed in *Electrical Connections and Controls* on page 5.
7. Fit the adjustable (type 2) low temperature cut-out thermostat to the LTHW flow pipe.**
8. After filling the system, check for leaks (see *Commissioning* on page 5).
9. Replace all components previously removed.
10. When ordered with the heater, a plinth will be fitted at our works; pipework can enter the plinth through knockouts provided (see Diagram 9 on page 6).

**** NOTE: For correct operation the back face of the Type 2 adjustable low temperature cut-off thermostat needs to be in contact with a straight length of pipe not less than four inches (100mm) in length.**

Ceiling models MH/S

1. Loosen the M8 screws which attach the suspension brackets to the heater casing and remove the brackets.
2. Position and fix the suspension brackets to the ceiling or wall.
3. Lift the heater into position and secure the heater to the suspension brackets by the four M8 screws.
4. Connect pipework to the coil as described in *Pipework Connections*.
5. Wire up as detailed in *Electrical Connections and Controls*.
6. Fit the adjustable (type 2) low temperature cut-out thermostat to the LTHW flow pipe.
7. After filling the system, check for leaks (see *Commissioning* on page 5).
8. Replace all components previously removed.

Pipework connections

Coil connections are DN20 (3/4" BSP.) female parallel. Local isolating and regulating valves are recommended. Observe the correct flow and return positions, to ensure the rated heat output, see Diagram 7 page 5. Fill the system and check for leaks.

Coils fitted with :-	*Cold test pressure (bar g)*	*Working pressure (bar g)*
Type M air vent	10.5	7.0
Type A air vent	9.0	7.0

Table 2: Site test and working pressures

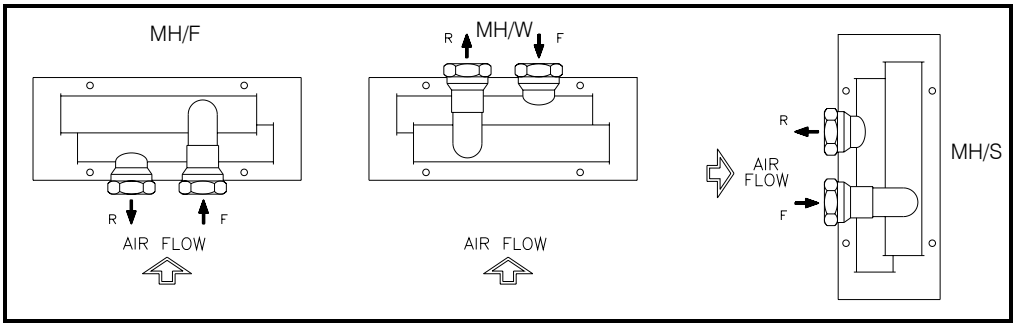


Diagram 7: Hot water coil connections, as viewed on the header/connection end of the coil.

Electrical Connections and Controls

1. Connect a 230v/1ph 50 Hertz supply to the IEC mains inlet connector. (See Diagram 5 on page 4).
2. Fix any remote accessories-switches or thermostats in the appropriate locations and connected to the 12 way terminal block, **as shown on the wiring diagram supplied with the unit** (N.B. the 12 way terminal block is fitted only when remote accessories are ordered and shown on our wiring diagram).When supplied the terminal block is located behind the plate on which the mains inlet connector is fitted.

COMMISSIONING

General

1. Purge air from the coil using the manual or automatic air vent, or through the mains above the coil if applicable. Balance the water flow rate through the system to accepted practice.
2. Where an LTC thermostat is fitted, the fans will run when water in the flow pipe reaches the required temperature. For type 2 (adjustable setting) 30-90°C. A setting of 20K less than the mean water temperature is recommended). In the absence of hot water, a temporary link can be used.
3. Where supplied, adjust air thermostats to the specified temperatures. If no settings are specified, typical settings are:
   a) on/off thermostat - set to 20°C
   b) high/low thermostat - set to 16°C.
4. Check the operation of all thermostats by varying their settings to achieve the desired effect on the fan.
5. If switches are supplied check for satisfactory operation.
6. A manual/off/auto switch will bypass all thermostats when in the manual position. This allows the fan to circulate room air when no hot water is present.
7. Leave this document and all wiring diagrams with the end user.

Fan Speed Adjustment (EC Motors)

1. Heaters fitted with EC motors are available as one standard option:-*EC2 - single or dual fan speed with speed control using switches or thermostats via a fitted speed controller.*
2. In the unlikely event that fan speeds require adjustment, refer to the wiring diagram supplied with the heater. Contact MHS for guidance on adjusting fan speeds and selecting appropriate DC signal voltages.
3. The EC speed controller is located underneath the fan/motor platform and comprises electronic controls with inputs from thermostats and/or switches and a single analogue 2-12VDC output signal to the motor(s).
4. Refer to Diagram 8 below; single speed heaters will use one of three available speeds and dual speed heaters will use two of three available speeds, which can be varied by adjusting the appropriate potentiometers; signal voltage can be measured across 0V and CTRL terminals on the speed control board.
5. Avoid setting fan speeds too low: - low fan speeds can cause stratification of heated air within the room, reducing effective comfort.

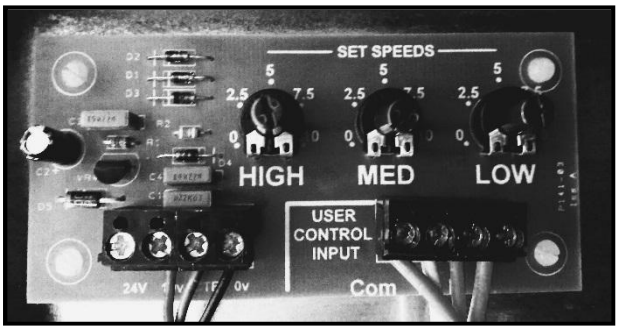
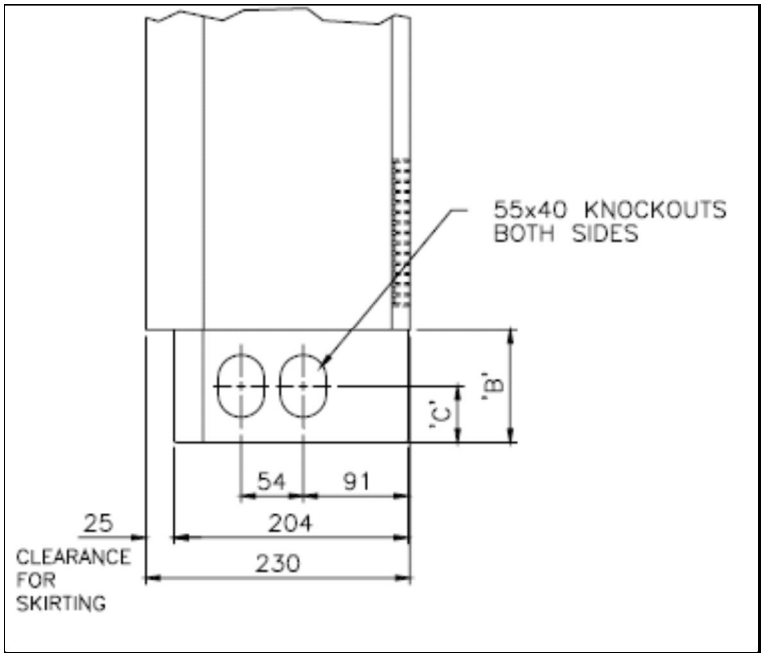


Diagram 8: Fitted 3 speed EC fan controller *N.B. All connections are safe low voltage of 10VDC or less.*



'B'	'C'
100	50

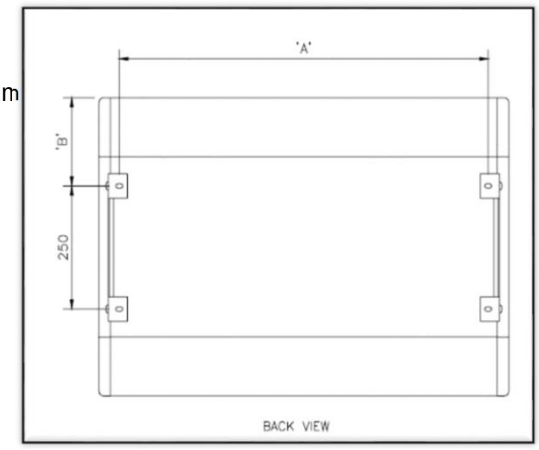
Notes:-

1. Plinth Finish Powder coating 10% gloss BS4800.1989 colour- 00-E-53- BLACK.
2. Bottom of plinth open.
3. When ordered MH/F style the plinth will be fitted at works.

Diagram 9: Fixing detail for plinth for models MH/F

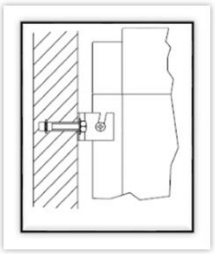
Wall Mounted Models

Dimension B = 213mm



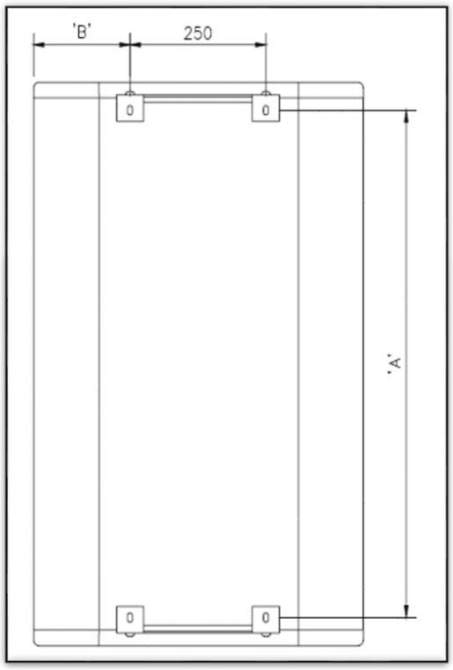
Notes
1. Refer to sales outline drawings for unit dimensions.

Detail of fixing for wall mounted applications- Typical anchor bolt fixing (by others)

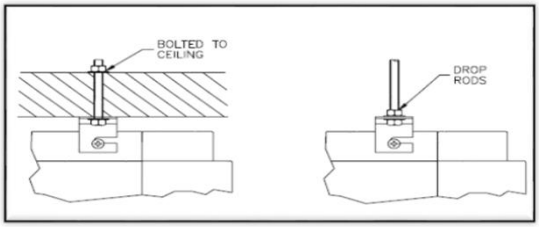


Ceiling Mounted Models

Dimension B = 213mm



Details of fixings for ceiling mounted applications
Typical fixings (by others)



Notes:
1. Refer to sales outline drawings for unit dimensions.
2. Suspension brackets have 15mm x 9mm slots for suitable fixings by others.
3. Ceiling models can be fixed to the underside of a ceiling or suspended on drop rods.

Diagram 10; Fixing detail for suspension brackets models MH/W & MH/S

CLEANING AND MAINTENANCE

WARNING:
Prior to undertaking any cleaning or maintenance, ensure that all electrical supplies are disconnected from the heater via local isolators. Some internal components may have sharp edges. Protective gloves should be worn.

Inspection
The frequency of cleaning and inspection depends upon the conditions in which the heater operates. Initially, it is suggested that the air filter is inspected after 6-8 weeks normal operation, and cleaned as required at regular intervals. Cleaning the air filter ensures that the heater delivers the required air flow rate, and hence heat output. The heater should not be operated without a filter, since the heater coil fins will become clogged with fluff and dust particles, resulting in reduced performance.

Filter access and removal
To gain access to the air filter, unlock and remove the access panel with the special key provided.

Floor, wall and duct models, pull the access panel at the top and lift clear. Ceiling models, hinge the access panel down and allow it to hang from the safety screws (note: access panel can be removed by removing the safety screws).

Cleaning
1. Air filters can be cleaned by tapping out excess dust and washing in warm water (up to 40°C), using detergent if necessary. The filter must be rinsed and allow to dry naturally before replacing. Do not use a vacuum cleaner, as it can damage the filter media. Filters should be replaced after approximately 20 washes.
2. Because the air filter retains most of the dusty particles, it will only be necessary to clean the fan/motor assemblies and heater coil annually. An industrial vacuum cleaner can used to clean the inside of the heater,in particular the heater coil(or electric element) and fans, with the air being sucked through the heater coil in the opposite direction to normal air flow. All accessible surfaces can be wiped with a dry cloth.

Maintenance
1. *Coil* - Purge any air from the coil using the manual air vent (using a suitable key).
2. *Motors* - The fan motor has 'sealed for life' bearings which do not require any maintenance, other than visual inspection.
3. *Fuse* - The mains inlet connector on the electrical connections box incorporates a 2A anti-surge fuse. A spare fuse is supplied in a slide out fuse holder next to the socket.
4. *Controls* - see accessories. A wiring diagram is supplied with each heater. Further copies are available on request, please quote the serial number from the nameplate, located inside the heater.

Please note:

1. If fitted, the LTC thermostat will switch power to the fan only when the thermostat reaches the required temperature. For type 2 (adjustable setting) 30-90°C (the recommended setting is 20K less than the mean water temperature)
2. If air thermostats are fitted (either to the heater or remote mounted on a wall), adjust to the specified temperatures. Typical settings are:
   a) on/off thermostat - set to 20°C
   b) high/low thermostat - set to 16°C.
3. If fitted or remote switches are being used, check that they operate correctly. Note: if manual/off/auto switch is provided, all thermostats are by-passed in the manual position, which allows the fans to circulate room air when the boiler plant is shutdown.