Series UH Unit Heaters

Installation, Operation and Maintenance Instructions.

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NOTE: PLEASE LEAVE COPIES OF THESE INSTRUCTIONS AND ANY WIRING DIAGRAMS AND OTHER RELEVANT LITERATURE WITH THE END USER.

INTRODUCTION
This booklet provides guidance to identify, handle, install and commission Dunham-Bush Series UH Unit Heaters as well as guidance for operation and maintenance.

These instructions are to be read in conjunction with the wiring diagram supplied with the unit.

The instructions apply to units from the standard range only. Please study the instructions carefully before commencing any installation work.

IDENTIFICATION
The unit heater unit serial number, description, basic unit size are displayed on a label found on the side of the unit. If specified, a stencil reference may also be marked on the unit for on-site identification.

DESCRIPTION
Each basic heater consists of a casing, heating coil, discharge louvre with individual adjustable blades and a fan plate assembly, comprising an electric motor, axial fan and guard. A wide range of accessories are offered. Series UH unit heaters are suitable for horizontal and vertical applications.

STANDARD RANGE MODELS & SIZES
Series UH heaters are offered in four casing sizes, 1, 2, 3 and 4. Each casing is offered with a choice of four hot water coils, type A, B, C, D and one steam coil type S.
All Series UH unit heaters are fitted with single phase high efficiency variable speed EC motors.

Diagram 1 - Series UH Unit Heater Size 2
ACCESSORIES

A wide range of accessories are offered, including filter box, mixing box, inlet box, wall/ceiling brackets, widespread discharge and four way discharge. Series UH unit heaters provide warm air heating when used in conjunction with a pumped hot water or steam system and an electrical supply. When the system is functioning and any associated controls such as room thermostats sense the temperature changing, the motor will operate. Air is blown through the coil by the action of the axial fan and it is heated indirectly by the hot water or steam passing through the coil tubes which conduct heat to the fins. Controls vary according to the original specification. A room thermostat is usually installed to control the space temperature. Where outlet louvres are fitted, they are adjustable. For horizontal application, ensure that the warm air reaches working level but will not cause discomfort. For vertical applications, ensure that the optimum spread/throw is achieved. Note, louvres in vertical position, will give maximum downward throw, and minimum spread. Angling the louvres will give the opposite effect.

DELIVERY AND STORAGE

Delivery
The purchaser is responsible for off-loading, and must examine the unit heater units promptly upon receipt. Any claims for damage will only be accepted if, at the time of delivery, the consignment note is endorsed with the details and counter-signed by the transport driver. Each unit heater unit is marked to show the model, basic unit size, serial number and stencil reference if specified.

Handling and Storage
Series UH unit heaters are individually packed and two/three persons can usually handle the heaviest unit (See diagram 7 for unit masses). When a significant quantity of unit heaters is delivered, they may be palletised and shrink-wrapped, so a fork-lift or similar will be required for lifting. The unit heater unit must not be dropped or suffer impact in any circumstances and should never be lifted or handled by their coil connections.

Unit heater units should be stored in clean, dry conditions. Any packaging should not be removed until the unit heater unit is required for installation. Packaging should only be removed if damage is suspected at the time of delivery.

Diagram 2: Series UH LPHW coil screwed BSP connections.
Diagram 3: Series UH HPHW coil flanged PN16 connections.

Diagram 4: Series UH Steam coil flanged PN16 connections.
Horizontal applications - Basic unit, no accessories (top) and Unit with inlet box (bottom)

Vertical applications - Basic unit, no accessories (left) and Unit with inlet box (right)

<table>
<thead>
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<th>SIZE</th>
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<tr>
<td>C</td>
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</table>

Diagram 5: Series UH Hanging plate positions and hole centres.
Diagram 6: Series UH Wall bracket positions and hole centres

INSTALLATION

**WARNING:** Series UH Unit Heaters are designed with minimal sharp edges on the chassis. Some internal components on the unit heater may have sharp edges. Care must be taken when handling the product; protective gloves should be worn.

**General**

If applicable before removing any packaging, check the identity of the unit heater against the stencil reference marked on the access panel. Packaging should be retained to protect the unit heater from damage by other works after installation.

**Fitting**

1. Prepare either drop rods to accept the unit if to be suspended by the hanging plates or appropriate bolts or anchors to take the wall/ceiling brackets.
2. Fit any supplied inlet/outlet accessories if not already fitted.
3. Suspend/attach the unit heater unit and ensure it is level in both directions.

**Pipework Connections**

1. The coil is fitted with either threaded BSP male connections of flanged connections as applicable (see diagrams 2, 3 and 4 for sizes). Always observe the correct direction of flow.
2. The unit heater coil does not incorporate an air vent, hence if required it will need to be provided in the pipework on site.
3. Local isolating and regulating valves are recommended, as well as strainers to filter out foreign matter in the water.
4. After filling the hot water system, check for leaks.

**NOTE:** For vertical mounting applications where the flow temperature is in excess of 70°C it is recommended a valve and actuator (by others) should be fitted to the pipework to isolate the unit when the fan is not running so as to prevent convected heat overheating the fan motor.
Electrical connections and controls

1. The electrical connections and control box is located on the side of the unit heater unit, and incorporates a lid, fastened with retained screws.

2. Connect a 230V/1ph/50Hz supply via a flying lead (by others) to the electrical connections box as shown in wiring diagrams enclosed with the unit heater unit. A hole will need to be made into the side of the electrical connections and controls box and suitable sized glad (by others) should be used.

3. Fit any remote accessories in their appropriate locations and connect terminal block inside the electrical connections box as shown in wiring diagrams enclosed with the unit heater unit.

4. All wiring should comply with IEE regulations (BS 7671) and local bye-laws.

Commissioning

1. On units with fitted fan speed controls the fan speed is factory set. Adjustment can be made (if required) on the fan speed potentiometer located in the electrical connections and controls box.

2. Units with remote fan speed controls, or speed control by others may require commissioning to set the air flow rate required.

3. Avoid very low fan speeds as this will lead to higher air off temperatures and air stratification.

4. For details of air volume flow rates and outputs please see the relevant technical literature which may be downloaded from the website www.dunham-bush.co.uk or contact Dunham-Bush.

Diagram 7: Electrical connections and Controls box with fitted speed potentiometer

Diagram 8: Heating coil can be accessed via the coil access panel.

For further information on any unit heater unit - contact Dunham-Bush, quoting the serial number on the label on the access panel.

Diagram 9: Approximate masses of Series UH Unit Heaters and accessories (kg)

<table>
<thead>
<tr>
<th>BASIC UNIT SIZE</th>
<th>Description</th>
<th>Basic Unit Coil A</th>
<th>Basic Unit Coil B</th>
<th>Basic Unit Coil C</th>
<th>Basic Unit Coil D</th>
<th>Basic Unit Coil S</th>
<th>Ceiling/Wall Brackets (1)</th>
<th>Ceiling/Wall Brackets (2)</th>
<th>Inlet Box</th>
<th>Filter Box</th>
<th>Mixing Box</th>
<th>Discharge Cone</th>
<th>Discharge Nozzle</th>
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OPERATION
Series UH unit heaters provide heating of air when used in conjunction with low temperature hot water systems. They are designed for mounting in a ceiling or roof void, connected to ductwork.

When the fan is running, air is drawn through the optional inlet screen and filter (where specified) and over the finned tubes of a heating coil. The air is then discharged through louvres or other optional outlet accessory into the room.

Depending upon the particular type of controls fitted, user control may be provided by thermostats and/or fan speed control.

CONTROLS
Series UH Unit Heaters are fitted with high efficiency EC motors. The control of which may comprise of the following:-

N: - None (0-10v fan speed control by others)
F: - Fitted speed potentiometer (contained in the connections box)
R: - Remote speed potentiometer (remote potentiometer wired back to unit and fitted potentiometer disconnected)

Additional control may be provided by:-

RS: - Remote room thermostat.
RT: - Tamperproof remote room thermostat.
S1: - Remote mounted on/off switch.
LTC: - Adjustable low temperature cut off thermostat. (supplied loose for fitting by others)

Dunham-Bush may also fit non-standard controls supplied by others; refer to the wiring diagram supplied with the unit.

CLEANING & INSPECTION

Inspection
Basic units should be cleaned annually. When filter boxes are fitted, they should be inspected and if necessary, at 6-8 week intervals.

Cleaning
1. Heating Coil - Remove the side panel opposite the connections to gain access to the back or top of the coil (see diagram 8). Vacuum in opposite directions to normal air flow.
2. Casing - Remove all accessible dust and fluff with a damp cloth to prevent the build of dirt.
3. Motor/Fan Assembly - The motor is maintenance free. The fan and motor should, if necessary, be wiped clean.

Optional Filter
a) Remove the filter access panel quick release fasteners and remove the panel.
b) Slide out the filter assembly, noting that the impregnated surface of the filter is located on the air discharge side.
c) Tap out and vacuum any dust and foreign matter. Wash the filter under clean running water.
d) If the filter is extremely dirty, it should be washed in warm water, up to 40°C, using house-hold detergent.
e) Allow filter to dry naturally. Artificial heat should not be applied.
f) Replace filter assembly correctly, see paragraph (b)

Optional Mixing Box
Wipe all damper blades clean and remove any foreign matter from the mixing box.

MAINTENANCE

Hot Water Coil
Ensure coil is not air-locked by purging at a high point above the unit, in the connecting pipe work.

Steam Coil
Clean the strainer and scale pocket. Check that the steam trap and non-return valve are in good order.

WARNING
1. Prior to undertaking any cleaning or maintenance, ensure that the unit is isolated from the electrical supply, and that under no circumstances can it be re-started manually or automatically. The recommended method of ensuring this is to turn off the isolating switch and remove the appropriate fuses.
2. Some internal components may have sharp edges. Care must be taken when working on the fan coil unit, and protective gloves should be worn.
SPARES/SERVICE

PLEASE WRITE THE DETAILS OF THE UNIT HERE.
These details will be required when ordering spares for you Dunham-Bush Series UH Unit heater Unit

UNIT TYPE AND MODEL INFORMATION

SERIAL NUMBER

DATE OF INSTALLATION

Spare parts/service – Please contact our office, contact information shown below.
Manufacturer reserves the right to change any product specification without notice.

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