INTRODUCTION

This booklet provides guidance for the site activities necessary to identify, handle, install, commission and service Dunham-Bush Aerocourse Trench Heating. Where necessary, Aerocourse Trench heating orders are supplied with baseboard layout drawings (BL drawings), which show the location of all runs of equipment relative to the building.

These instructions are to be read in conjunction with the supplied wiring diagram and, where applicable, the customer approved base layout drawing (BL drawing).

The instructions refer to the standard product only: please refer to drawings and wiring diagrams supplied for details of any special features. Please study all documentation carefully before commencing installation work.

IDENTIFICATION

Refer to diagrams for exploded views and identification of the main parts. On majority of schemes, there will be a customer approved layout drawing, which details each run, its overall length and individual part numbers.

DESCRIPTION

The system comprises casings formed from black powder coated steel, aluminium finned copper tube element, integrated EC/DC cross-flow fans and rigid or roll-up grilles.

HANDLING

Small orders are usually packed in boxes and can usually be off-loaded by hand. Larger orders are usually palletised and lifting equipment should be provided by the buyer. Care should be taken when handling to avoid damage.

STORAGE

Aerocourse Trench components should be stored under dry, clean conditions. Any protective packing should not be removed until the components are required for installation, unless damage in transit is suspected. (Note: The buyer must examine the goods promptly upon arrival and is not entitled to make any claim against the Company in respect of damaged goods, unless at the time of delivery the ‘delivery note’ is endorsed by the buyer and countersigned by the carrier or shipping agent with a note detailing the damage).
STANDARD RANGE

Models
Casings are available in a range of eight models to suit outputs as well as accommodate flow and return pipe work. Four model types are available, each with an optional 40mm increase in width incorporating support brackets for flow and return pipe work.

- **AFA1**: 180mm wide x 110mm deep
- **AFA1-P**: 220mm wide x 110mm deep c/w F&R pipe supports
- **AFA2**: 270mm wide x 110mm deep
- **AFA2-P**: 310mm wide x 110mm deep c/w F&R pipe supports
- **AFA3**: 340mm wide x 110mm deep
- **AFA3-P**: 380mm wide x 110mm deep c/w F&R pipe supports
- **AFA4**: 400mm wide x 110mm deep
- **AFA4-P**: 440mm wide x 110mm deep c/w F&R pipe supports

Casing Length
Casings are available in 5 standard lengths for active heating, with a range of dummy, telescopic and corner casings for continuous runs of trench heating.

- **1250**: 1250mm overall casing length
- **1750**: 1750mm overall casing length
- **2250**: 2250mm overall casing length
- **2750**: 2750mm overall casing length
- **3250**: 3250mm overall casing length

Controls
Aerocourse is available with an extensive range of control options, ranging from simple single speed on/off control to comprehensive fan speed and waterside modulating controls and BMS enable relays.

- **P1**: Internal 1 off fan speed potentiometer (single speed)
- **P3**: Internal 3 off fan speed potentiometers (three speeds)
- **F3**: Room on/off & 3 speed switches
- **F3-T1**: Room on/off & 3 speed switches c/w 0/1 thermostat
- **F3-SC**: Room on/off & 3 speed switches c/w set point controller
- **T1**: Room on/off thermostat
- **V1**: Fitted isolation valves
- **V2**: Fitted 230V control valves
- **V230**: Port valve & 230VAC thermic actuator
- **IBV**: Isolating ball valves.
- **LTC2**: Adjustable LTC clamp-on thermostat
- **VPS10**: 10kΩ clamp-on valve proving sensor
- **R24**: 24VAC on/off relay
- **R230**: 230VAC on/off relay

Filter
Aerocourse is available with woven polyester filters fitted to fan inlet.

- **NN**: No filter
- **G2-1250**: Fitted Class G2 inlet filter for 1250mm long casings
- **G2-1750**: Fitted Class G2 inlet filter for 1750mm long casings
- **G2-2250**: Fitted Class G2 inlet filter for 2250mm long casings
- **G2-2750**: Fitted Class G2 inlet filter for 2750mm long casings
- **G2-3250**: Fitted Class G2 inlet filter for 3250mm long casings

Floor Grilles
Rigid or flexible roll grilles are available. Roll grille shall be supplied as standard. Applications, as classified in BS EN 13264:2001

- **Y-Bar Roll Grille**: 6.2mm thick ‘Y’ profile bars in silver satin extruded aluminium, crimped onto flexible black nylon tube and pitched at 13.5mm centres; available in 0.5m, 1.0m, 1.5m and 3.0m lengths. Generally for light duty applications.

- **I-Bar Roll Grille**: 3mm thick ‘I’ profile bars in silver satin extruded aluminium, fixed onto steel spring cores and pitched at 12.5mm centres; available in 0.5m, 1.0m, 1.2m, 1.25m, 1.5m, 1.75m, 2.25, 2.75m, 3.0m and 3.25m lengths. Generally for light duty applications.
INSTALLATION

Preparation
Allow for a suitable trench with a working clearance. The top of the Aerocourse Trench should be flush with the finished floor level and any cornering. The bottom of the trench should be suitable for accepting the point loading of the levelling screws etc. or telescopic mounting feet (see Diagram 3) Refer to supplied BL drawings for assembly of casing runs, corners, expansion joints, adjustable & trim sections.

Identify trench sections and lay them out adjacent to the trench. Check that all items have been supplied as per the delivery note and BL drawing.

Diagram 1 - Typical Aerocourse Trench Base Layout Drawing
1. Prepare the trench end sections
   Identify the end sections for each end of the trench installation. Fit the end caps as shown in diagram 1 below using 4 off pop rivets. It is also advisable at this stage to identify and remove the knock-outs required for the electrical and L.T.H.W. connections.

Diagram 2 – Fitting of end cap to trench casing

⚠️ WARNING

Assembly and installation should be undertaken by qualified personnel only.

Prior to assembly and installation, ensure that all electrical supplies are disconnected from the trench heater via local isolators.

Some internal components may have sharp edges. Care must be taken when assembling and installing this product and it is recommended that protective gloves are worn.
2. Trench Height – Coarse Adjustment (where applicable)

Aerocourse comes complete with adjustable feet for fine adjustment of 0-40mm to finished floor level; for deeper trenches and floor voids, telescopic mounting brackets (top hats) are available.

- **T050 Telescopic mounting brackets 20-50mm adjustment**
- **T100 Telescopic mounting brackets 50-100mm adjustment**
- **T150 Telescopic mounting brackets 75-150mm adjustment**
- **T250 Telescopic mounting brackets 125-250mm adjustment**
- **T450 Telescope mounting brackets 225-450mm adjustment**

Adjust telescopic mounting feet to height such that grille will approximately be flush with finished floor level. (see diagrams 17 and 18 for trench casing dimensions). Fine adjustment can be carried out using the screwed adjustable feet.

Place the telescopic mounting feet in the trench, position them such that the ends and middle of the trench runs are supported. The telescopic mounting feet should span the join between adjacent sections of casing. When positioned firmly fix the telescopic mounting feet (fixings by others) to the floor or slab. Remove the coarse height adjustment screws and adjust the telescopic mounting feet to the desired height, then replace the screws.

Diagram 3 – Installation of telescopic mounting feet

3. Fit trench casings into the prepared trench starting at the fixed (non adjustable end)

Using the supplied base layout drawing as a guide, fit the trench casings into the prepared trench starting at the fixed (non adjustable end. Please see sections 4 & 5 (overleaf) for guidance on “trim” and “telescopic” sections.
4. Adjust trim casing (where applicable)

Where applicable the Aerocourse trench heater may be supplied with a section of trim casing forming part of the non-active trench sections making up the run length. This is designed to take up larger variances in the length of the trench and to be cut to fit on site.

First measure the required length to be made up (dimension ‘Y’ on Diagram 4 below). Then identify the most suitable set of perforations to cut the casing down. Fix the sliding brackets thorough the pre-drilled holes in the casing side using 4 off pop rivets provided. Once the casing has been cut to length and brackets fitted it should be installed in the trench as per other straight sections.

Diagram 4 – Cutting the trim casing

Diagram 5 – Assembly of the trim casing
5. Adjust telescopic casing where applicable

Where applicable the Aerocourse trench heater may be supplied with a section of telescopic casing forming part of the non-active trench sections making up the run length. This is designed to take up variances in the length of the trench to a fine tolerance, hence should be installed last.

First measure the required length to be made up (dimension ‘X’ on Diagram 6 below). Then being careful to centralise the casing, identify the most suitable set of holes in the side of the casing that line up and put the fixing bolts provided through. It should then be adjusted precisely to length, the bolts tightened and installed in the trench as per other straight trench sections.

Diagram 6 – Adjusting the telescopic casing

Diagram 7 – Assembly of the telescopic casing
6. Level trench casing
Fine adjustment of the level and height of the trench casing is achieved using screwed adjustment feet see diagram 7 below. Please note the top of casing should be 25mm below finished floor level to allow for grille and edge trim.

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**Diagram 8 – Screwed adjustment feet.**

7. Join the trench casings together (where applicable)
Casings are joined using the M4 nuts & bolts provided through flanges at the end of the trench sections. Please note detail “G” for joining corner trench sections in Diagram 9 below.

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**Diagram 9- Left - Straight casing joint**
**Right – Corner casing joint**
8. Fit edge trims.

Edge trims are supplied in 2m lengths, which may need to be cut to fit. The trims should be arranged such that the trim joins do not line up with the casing joins. Trims for corners are supplied pre-notched; these should be identified before trims are cut. The trims are fitted by pushing the aluminium trim section over the flange on the top edge of the trench and into the rebate on the trim section.
9. Connect electrics as per wiring diagram

Remove the electrical connections box lid to gain access to the terminal blocks and speed control board.

Connect a 230v/1ph 50 Hertz supply to the mains inlet connection (see supplied wiring diagram or diagram 12 below for typical arrangement).

Fix any remote accessories-switches or thermostats in the appropriate locations and connected to the terminal block, on the underside of the electrical connections box lid. (where applicable)

Diagram 11 – Casing with electrical connections box lid removed

Diagram 12 – Typical wiring diagram for single speed unit.
10. Connect plumbing and valves

Coil connections are 15mm copper tube. Local isolating and regulating valves are recommended. Observe the correct flow and return positions, to ensure the rated heat output. A 2 port valve and/or isolating ball valves may be supplied and fitted, if specified, or to be supplied by others for fitting on site. See diagram 13 below for typical valve arrangement. Fill the system and check for leaks.

Diagram 13 - Typical valve arrangement.

Diagram 14 – Pipework and electrical connections on standard casing
Diagram 15 – Pipework and electrical Connections on standard casing with flow/return pipework

Commission the trench heating system

General
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. If a LTC thermostat fitted, the fans will run when water in the flow pipe reaches the required temperature. The standard adjustable type LTC is adjustable between 30 and 90°C. A setting of 20K less than the mean water temperature is recommended. In the absence of hot water, a temporary link may be used.

Fan Speed Adjustment (EC Motors)
Heaters fitted with EC motors are available as one of two standard options*:-

P1 – Internal fan speed potentiometer (single speed)
P2 – Internal 3 no fan speed potentiometers (three speed).

If fan speeds require adjustment, refer to the wiring diagram supplied with the heater. Contact Dunham-Bush for guidance on adjusting fan speeds and selecting appropriate DC signal voltages.

* SPECIAL CONTROLS In certain installations, where specified a 0-10v control signal may be provided by a controller or other means, please consult the supplied wiring diagram.

Floor Grilles

Floor grilles are supplied in standard lengths and may require trimming to fit on site. Please see the specific grille trimming instructions insert supplied with the unit. Care should be taken when cutting grilles.

NOTE:

Dunham-Bush cannot be held liable for incorrectly cut grilles if the instructions are not followed.
Diagram 17 - Fan Assisted Trench casing no flow and return supports

Diagram 18 - Fan Assisted Trench casing suffix ‘P’ flow and return pipe supports
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Declaration of Conformity

We, Dunham-Bush Ltd. of Downley Road, Havant, Hampshire, England, PO9 2JD, hereby declare conformity of the 'Aerocourse' fan assisted trench heating product with the following European Union Directives: -


The Low Voltage Directive 2006/95/EC.

The Energy Related Products Directive 2009/125/EC

In addition, we declare that the 'Aerocourse' fan assisted trench product complies with the following standards: -

EN 61000-6-3:2007 Electromagnetic Compatibility - generic emission standard

EN 61000-6-1:2007 Electromagnetic Compatibility - generic immunity standard

EN61000-3-2:2006 Electromagnetic Compatibility – Harmonic emissions


EN 60 335-1:2002 A14:2010 Household and Similar Electrical Appliances. Safety General Requirements


For and on behalf of Dunham-Bush Ltd.

David Shuttleworth B.Sc., C.Eng. MCIBSE.
Technical Director

Date 11/2/13
MAINTENANCE
Every 3-6 months the grille should be lifted and the casing inspected for dust and debris. Any dust and debris be vacuumed from the casing, the finned element and the fan/motor assemblies. Great care must be taken not to damage the finned element or the fan blades, a soft brush attachment should be used.

⚠️ PLEASE NOTE

The electrical components in the trench heater are not waterproof!
Do not use water or similar liquids to clean the heater.
If the unit is installed in a tiled floor or similar, great care should be taken not to get the unit wet when cleaning the surrounding floor.
Damage caused by water ingress will invalidate the warranty.

⚠️ WARNING

Maintenance should be undertaken by qualified personnel only.
Prior to undertaking any maintenance, ensure that all electrical supplies are disconnected from the trench heater via local isolators.
Some internal components may have sharp edges. Care must be taken when servicing this product and it is recommended that protective gloves are worn.

SPARES/SERVICE

PLEASE WRITE THE DETAILS OF THE UNIT HERE.
These details will be required when ordering spares for you Dunham-Bush Aerocourse Trench Heater.

HEATER 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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