

DUNHAM-BUSH®

WarmSafe LST Radiators



Products that perform... by people who care



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Identification

Introduction

Dunham-Bush Warsafe LST radiators are designed to provide comfort heating in applications where safety is paramount. The heat emitter is totally enclosed within the LST casing with inlet and outlet grilles, designed to exclude 'small hands'.

The mainly convective heat output promotes good room air circulation and ensures 'Cool casing touch temperatures, which conform to the NHS Estates Health Guidance Note on "Safe" Hot Water and Surface Temperatures'.

Authority

It is accepted practice and policy at Dunham-Bush to maintain exceptional standards in engineering and quality. To this end, Dunham-Bush operates a quality system and is registered as a firm of assessed capability to BS EN ISO 9001 : 2000

Description

Composition

Each Warsafe LST comprises a casing fabricated from 1.6mm thick mild steel sheet, coated in RAL 9010 white polyester powder. The top casing outlet comprises an extruded aluminium grille and the bottom inlet is provided by integral punched slots in the casing. Mild steel backplates, coated in matt black polyester powder, suspend both emitter and casing on the wall surface.

Knockouts are provided in each casing for top/bottom and opposite/same end connections, with a white nylon bezel to finish around the TRV adjuster.

Emitters are available in two types - E1 for 90mm thick casings and E2 for 150mm casings. The emitters are built for slimmer construction for low-water content, are finished in white gloss and include four 1/2" connections with plugs and vents.

Warsafe LST casings are also available in special finishes, to any colour and gloss level from the RAL and BS4800 range of colours.



Range

WarmSAFE LST radiators are offered in a comprehensive range of sizes. There are two types casing; 90mm deep (for type E1 emitter) and 150mm deep (for type E2 emitter).

Casing heights are 450mm, 600mm or 750mm. Casing lengths range from 600mm up to 2400mm.

Accessories

Each LST radiator can be supplied with the following accessories:

Thermostatic radiator valve - supplied loose for connection onto flow/return of the emitter ; available as angle pattern 15mm fitting or straight pattern 1/2" BSP female fitting.

Plinth kit - supplied loose for fitting underneath the casing to cover pipework; available in heights 150mm or 250mm.





Performance

Heat outputs

| Casing Dimensions | | Emitter Dimensions | | WSC090 casing with E1 emitter | WSC150 casing with E2 emitter |
|-------------------|-------------|--------------------|-------------|-------------------------------|-------------------------------|
| Height (mm) | Length (mm) | Height (mm) | Length (mm) | Heat output (W) t = 50K | Heat output (W) t = 50K |
| 450 | 700 | 300 | 500 | 210 | 455 |
| 450 | 1200 | 300 | 1000 | 419 | 910 |
| 450 | 1700 | 300 | 1500 | 629 | 1365 |
| 450 | 2200 | 300 | 2000 | 839 | 1819 |
| 600 | 600 | 450 | 400 | 251 | 510 |
| 600 | 800 | 450 | 600 | 376 | 765 |
| 600 | 1000 | 450 | 800 | 502 | 1019 |
| 600 | 1200 | 450 | 1000 | 627 | 1274 |
| 600 | 1400 | 450 | 1200 | 752 | 1529 |
| 600 | 1600 | 450 | 1400 | 878 | 1784 |
| 600 | 1800 | 450 | 1600 | 1003 | 2039 |
| 600 | 2000 | 450 | 1800 | 1129 | 2294 |
| 600 | 2200 | 450 | 2000 | 1254 | 2548 |
| 600 | 2400 | 450 | 2200 | 1379 | 2803 |
| 750 | 600 | 600 | 400 | 327 | 650 |
| 750 | 800 | 600 | 600 | 491 | 975 |
| 750 | 1000 | 600 | 800 | 655 | 1299 |
| 750 | 1200 | 600 | 1000 | 818 | 1624 |
| 750 | 1400 | 600 | 1200 | 982 | 1949 |
| 750 | 1600 | 600 | 1400 | 1145 | 2274 |
| 750 | 1800 | 600 | 1600 | 1309 | 2599 |
| 750 | 2000 | 600 | 1800 | 1473 | 2924 |
| 750 | 2200 | 600 | 2000 | 1636 | 3249 |
| 750 | 2400 | 600 | 2200 | 1800 | 3574 |

Table 1: Heat outputs of Warmsafe LST radiators. Outputs derived from tests to BS EN 442 : Pt 2 with t = 50K (t = mean water temperature minus air temperature)

Masses

| Casing Dimensions | | Emitter Dimensions | | WSC090 casing with E1 emitter | | WSC150 casing with E2 emitter | |
|-------------------|-------------|--------------------|-------------|-------------------------------|-------------------|-------------------------------|-------------------|
| Height (mm) | Length (mm) | Height (mm) | Length (mm) | Approx. dry mass (kg) | Water content (l) | Approx. dry mass (kg) | Water content (l) |
| 450 | 700 | 300 | 500 | 4.80 | 0.84 | 6.00 | 1.65 |
| 450 | 1200 | 300 | 1000 | 7.60 | 1.68 | 9.30 | 3.30 |
| 450 | 1700 | 300 | 1500 | 10.50 | 2.52 | 12.60 | 4.95 |
| 450 | 2200 | 300 | 2000 | 13.40 | 3.36 | 16.00 | 6.60 |
| 600 | 600 | 450 | 400 | 5.40 | 1.00 | 6.60 | 2.04 |
| 600 | 800 | 450 | 600 | 6.80 | 1.51 | 8.30 | 3.06 |
| 600 | 1000 | 450 | 800 | 8.30 | 2.02 | 9.90 | 4.08 |
| 600 | 1200 | 450 | 1000 | 9.70 | 2.52 | 11.50 | 5.10 |
| 600 | 1400 | 450 | 1200 | 11.10 | 3.03 | 13.10 | 6.12 |
| 600 | 1600 | 450 | 1400 | 12.50 | 3.53 | 14.80 | 7.14 |
| 600 | 1800 | 450 | 1600 | 14.00 | 4.04 | 16.40 | 8.16 |
| 600 | 2000 | 450 | 1800 | 15.40 | 4.54 | 18.00 | 9.18 |
| 600 | 2200 | 450 | 2000 | 16.90 | 5.04 | 19.70 | 10.20 |
| 600 | 2400 | 450 | 2200 | 18.30 | 5.55 | 21.30 | 11.20 |
| 750 | 600 | 600 | 400 | 6.60 | 1.16 | 8.00 | 2.28 |
| 750 | 800 | 600 | 600 | 8.30 | 1.75 | 9.90 | 3.42 |
| 750 | 1000 | 600 | 800 | 10.00 | 2.33 | 11.80 | 4.00 |
| 750 | 1200 | 600 | 1000 | 11.80 | 2.91 | 13.80 | 5.70 |
| 750 | 1400 | 600 | 1200 | 13.50 | 3.50 | 15.70 | 6.84 |
| 750 | 1600 | 600 | 1400 | 15.20 | 4.08 | 17.60 | 7.98 |
| 750 | 1800 | 600 | 1600 | 17.00 | 4.66 | 19.50 | 9.12 |
| 750 | 2000 | 600 | 1800 | 18.70 | 5.24 | 21.40 | 10.26 |
| 750 | 2200 | 600 | 2000 | 20.40 | 5.82 | 23.40 | 11.40 |
| 750 | 2400 | 600 | 2200 | 22.20 | 6.40 | 25.30 | 12.54 |

Table 2: Approximate shipping masses and water contents of Warmsafe LST radiators



Correction factors

| t (K) | 30 | 40 | 50 | 60 | 70 |
|--------|------|------|------|------|------|
| Factor | 0.51 | 0.74 | 1.00 | 1.27 | 1.56 |

Table 3: Approximate correction factors where t varies from 50K (t = mean water temp. - air temp.)

Application

General

WarmSAFE LST radiators are the ideal heat emitters for applications where safety is the first consideration. Each size can be selected and specified with confidence of satisfying criteria for low-surface temperature requirements. The low surface temperature casing has safe radiused corners with no sharp edges, but is robust and finished in a durable polyester powder coating.

Heating media

WarmSAFE LST radiators are designed for applications where it is critical to prevent long-exposure time burns. WarmSAFE LST is designed for low temperature hot water (LTHW) as the heating media (typically 80°C flow and 70°C return). The use of medium temperature hot water (MTHW) is not recommended, since casing surface temperatures will exceed NHS and HSE recommended values.

Engineering Specification

WarmSAFE LST radiators shall be manufactured by Dunham-Bush Ltd to the selection schedule and/or drawings. The construction shall comply with the following specification.

Casings

Casings shall be manufactured in 1.6mm thick mild steel, formed to a smooth finish free from sharp edges. Slots shall be punched in the bottom for air inlet and an extruded aluminium 'Shadowline' grille shall be fitted to the top for air outlet. Casings shall be supplied with backplate with pre-punched holes for emitter bracket fixing, or with mounting brackets for retrofitting to an existing emitter installation.

Four knockouts shall be incorporated to enable pipe entry from below and a TRV to be fitted either side of the casing. A TRV can be fitted at high or low level and shall be specified at the time of order with a bezel to finish around the TRV adjuster head. Casings shall be securely fixed to the backplate/mounting brackets with tamper-proof threaded fasteners.

Emitter

Emitters shall be manufactured in accordance with BS EN 442 from 1.2mm thick mild steel. Type E1 emitters are single panel with a single row of fins welded to the panel. Type E2 are double panel with a single row of fins welded to each panel.

Each emitter is supplied with two mounting brackets, and incorporates four 1/2" female connections, with an elbow and a manual air vent which permits the emitter to be vented without removing the casing.

Finish

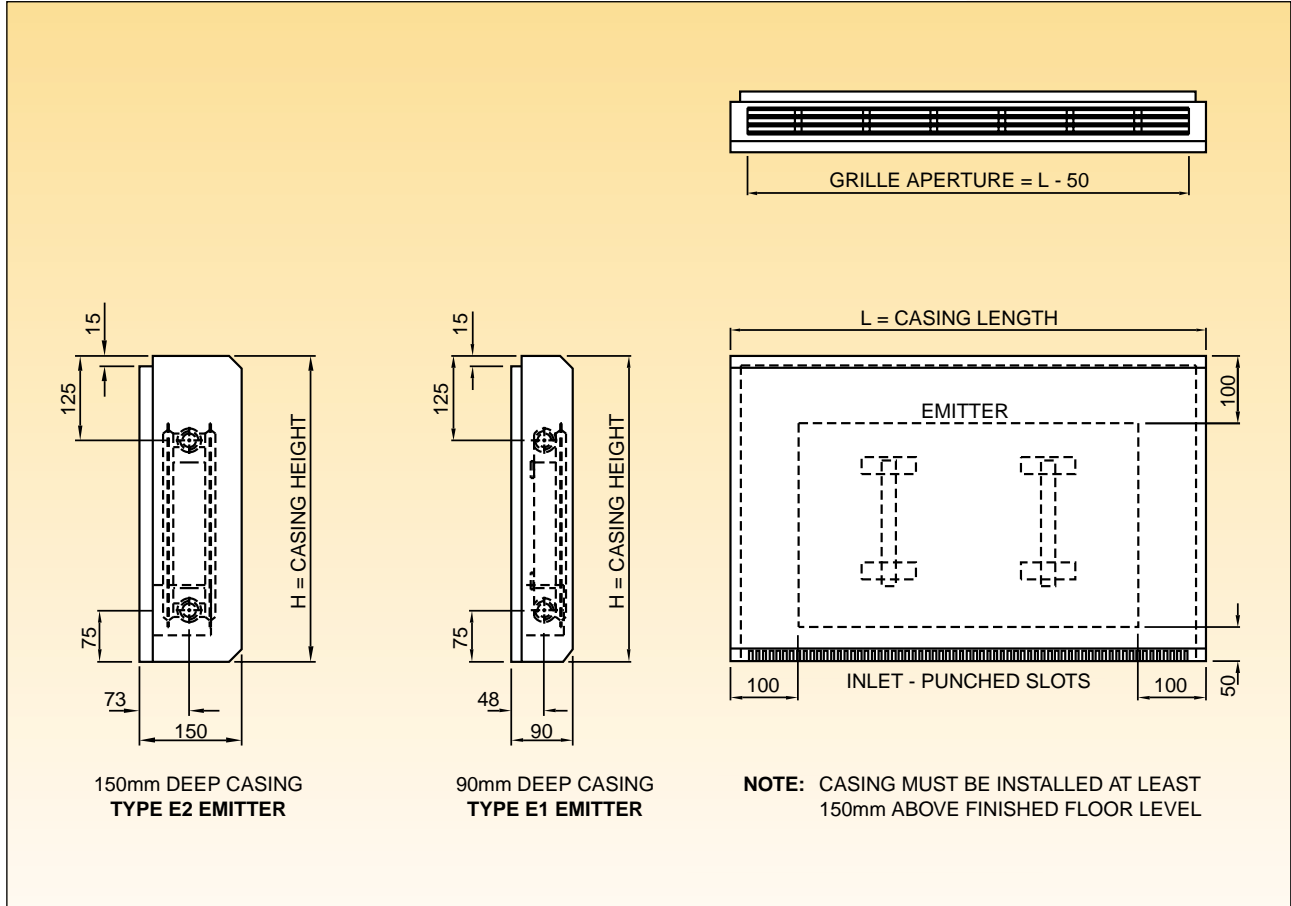
Casings and backplates are degreased and phosphated prior to coating in epoxy polyester powder. Casings shall be finished to RAL 9010 white in 35% gloss. Backplates shall be finished to BS 00 E 53 black in 10% gloss. Emitters shall be finished in a two coat paint finish, the final coat being powder coat RAL 9010 white. Aluminium outlet grilles shall be finished in BS 00 E 53 black, with grille bar faces in self-finished aluminium. If specified, other finishes/colours will apply.

Accessories

If specified, TRV kits shall be supplied loose for on-site connection, complete with a bezel moulded from ABS FR41, self-finished in white. Optional plinths shall be supplied loose, 150mm or 250mm high and finished in epoxy polyester powder to RAL 9010 white in 35% gloss. Grilles shall be available with optional "pencil-proof" mesh fitted if specified.



Dimensions



Construction

Handling

The purchaser is responsible for off-loading. Radiators are supplied in break-down form for fitting and assembly on-site. When a significant quantity of radiators is delivered, they may be palletised and shrink-wrapped, so a fork-lift or similar of lifting equipment is required. Radiators and components must not be dropped or suffer impact under any circumstances.

Storage

Radiators should be stored in clean, dry indoor conditions. Packaging should not be removed until installation is complete, unless damage in transit is suspected. Upon receipt of product, the purchaser should examine the radiators promptly and any claims for damage will only be accepted if, at the time of delivery, the consignment note is endorsed with a note detailing the damage and countersigned by the transport company.

Preparation

A sound, flat, vertical wall surface is required. The backplate provides a structural frame for fixing the emitter and casing to stud walls. The backplate will need to be site-drilled to align the fixings with the studding. Suitable fixings such as screws and wall plugs should be used, provided by the installer, for fixing the backplate and emitter brackets. All other fixings are supplied by Dunham-Bush. Piping should have been completed as far as possible.

Installation

Radiators can be supplied as a single-consignment, or supplied in first-fix and second-fix items. Backplates, casings, brackets, emitters and accessories are supplied in breakdown form for fitting and assembly on-site; backplates can be used as a fixing template. Please refer to Sitework Instructions enclosed with the radiator; further copies are available on request.



Prices and Conditions of Sale

Prices

Dunham-Bush Ltd do not issue product price lists, but will be pleased to supply a written quotation upon request. Refer to the product description code below for guidance on information required for quoting.

Condition of sale

Dunham-Bush standard conditions of sale appear on all quotations and order acknowledgements. Additional copies are available upon request.

Supply

Availability

Warmsafe LST radiators are supplied direct from our manufacturing plant in Havant. Availability varies with demand and should be checked at the time of ordering. Contact a Dunham-Bush sales representative for typical lead times.

Packaging

Radiators and casings are packed for storage in dry, indoor conditions. If specified, each casing will be marked with its own unique stencil reference for on-site identification.

Ordering

To enable rapid and efficient processing of your order, please refer to the relevant quotation and/or correspondence. All orders should be sent to the Dunham-Bush representative who provided the quotation.

Use the **product description code** below to specify a complete Warmsafe LST radiator.

| Code posn | Component | Options |
|-----------|---------------------|---|
| 1 | WSC | Warmsafe LST radiator |
| 2 | Casing width | 090 - 90mm, 150 - 150mm |
| 3 | Casing height | 450 - 450mm, 600 - 600mm, 750 - 750mm |
| 4 | Casing length | 06 - 600mm, 07 - 700mm, 08 - 800mm, 10 - 1000mm, 12 - 1200mm, 14 - 1400mm, 16 - 1600mm, 17 -1700mm, 18 - 1800mm, 20 - 2000mm, 22 - 2200mm, 24 - 2400mm |
| 5 | Knockout position | B - bottom knockouts, T - top knockouts |
| 6 | Installation | CE - casing and emitter (new installations) CO - retrofit casing only (existing emitter installation) FF - first fix items (backplate and emitter) SF - second fix items (casing only) |
| 7 | Plinth | N - no plinth, 150 - 150mm high, 250 - 250mm high |
| 8 | Pencil-proof grille | Y - required, N - not required |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----|---|---|---|---|---|---|---|
| WSC | | | | | | | |

- Notes**
- 1) 90mm casings are supplied with E1 type emitters 150mm casings are supplied with E2 type emitters
 - 2) For a complete installation supplied in two-fixes, first fix (FF) and second fix (SF) must be ordered separately. Options CE and CO are supplied as a single delivery.
 - 3) Accessories can be specified below.

| Accessory | Part No |
|--|-------------|
| Angle pattern TRV and 90mm bezel kit | 118-024-001 |
| Angle pattern TRV and 150mm bezel kit | 118-024-002 |
| Straight pattern TRV and 90mm bezel kit | 118-024-003 |
| Straight pattern TRV and 150mm bezel kit | 118-024-004 |
| 90mm bezel only | 118-013-001 |
| 150mm bezel only | 118-013-002 |



Dunham-Bush operates a quality control system and is a firm of assessed capability to BS EN ISO 9001 : 2000

Whatever the product, wherever its eventual destination, the Dunham-Bush design and manufacturing policy has always been firmly based on technical quality.

Product support

In the United Kingdom and Ireland, Dunham-Bush have a network of sales agents and representatives, situated at strategic locations, to provide local support in pricing and selection. Further technical and application support is available at Dunham-Bush head office and factory in Havant.

Other Dunham-Bush products

Series AM fan convector
Series BM fan convector
Series CM fan convector
Series L fan convector

Series F fan coil units
Panther fan coil units
Cougar fan coil units
Lynx fan coil units

Evolution radiant panels
Evo-Lite radiant panels
Dunham Strip radiant heating

Voidpak air handling units
ECS air handling units
Finvector perimeter heating system
Trench Finvector heating system
Series UH unit heaters

Systema gas fired products



Manufacturer reserves the right to change any product specification without notice.

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*PDS-1000-H-0093-03
November 2001*