

**DUNHAM-BUSH®**

**Evo-Lite Radiant Heating**



*Products that perform... by people who care*



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## Identification

### Introduction

Dunham Bush Evo-Lite is a radiant heating panel system for applications where heat-output demand requires a cost-effective solution. It realises a simple yet innovative design, utilising basic materials with proven manufacturing techniques. The superior product finish is complemented by lightweight construction and simple installation.

### 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

### Range

Evo-Lite radiant panels comprise aluminium alloy sheet finished in durable coating, with an extruded aluminium channel bonded to the upper surface. Copper tube (which transports the heating medium) is mechanically located inside the extruded channel with special spring clips. Optional accessories for hanging are supplied loose.

The main element comprises an aluminium sheet panel bonded to an extruded aluminium profile for locating copper tube. LTHW or MTHW carried in the copper tube gives up its heat, which is radiated from the aluminium sheet.

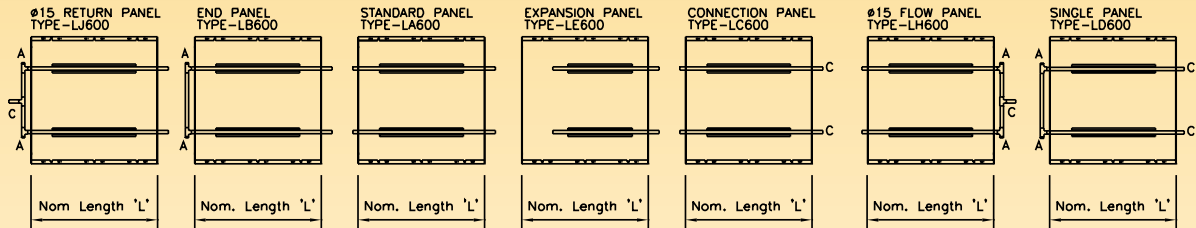
Insulation is fitted to the upper side of the panel to prevent heat losses from the rear of the panel; the insulation is 50mm thick mineral wool, fully-encapsulated in aluminium foil, factory-fitted and rated as a Class 0 material.

Evo-Lite typically weighs 9.8kg/m<sup>2</sup>; it is extremely lightweight, easy to handle and install. Installation can be completed without the need for specialist tools or training.



## Types of standard panels

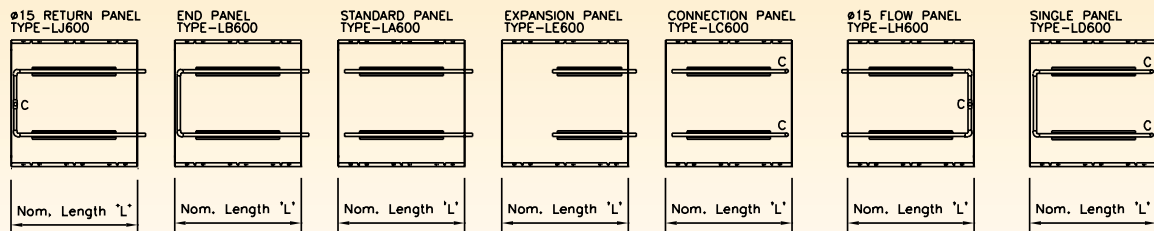
### EVOLITE – STYLE CS & WS



A = AIR VENT  
C = MAINS CONNECTION  
ALL PANELS ARE 600mm NOMINAL WIDTH

NOMINAL LENGTH 'L'	600	1200	1800	2400	3000
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### EVOLITE – STYLE CG



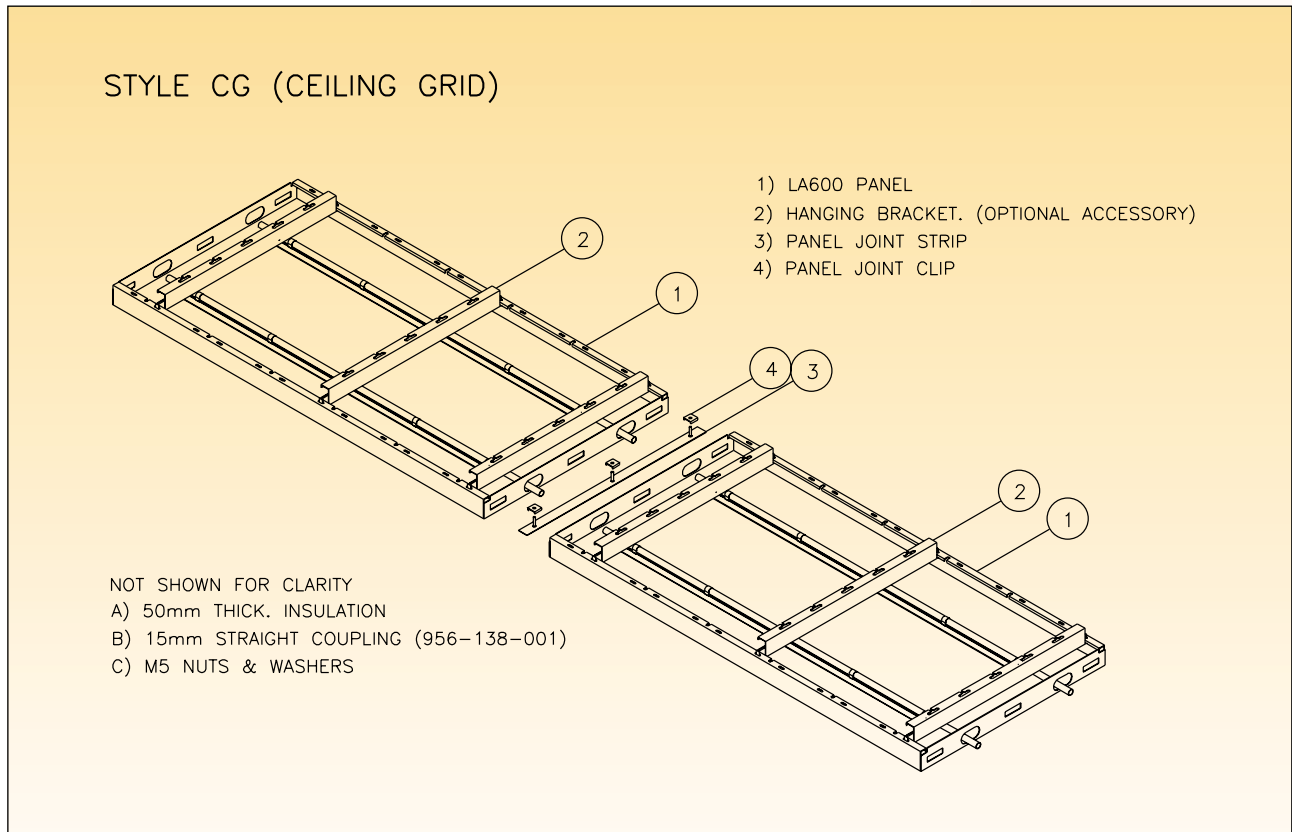
PANEL TYPES LC600 & LD600 HAVE  
PIPE CONNECTIONS FACE UPWARDS VERTICALLY



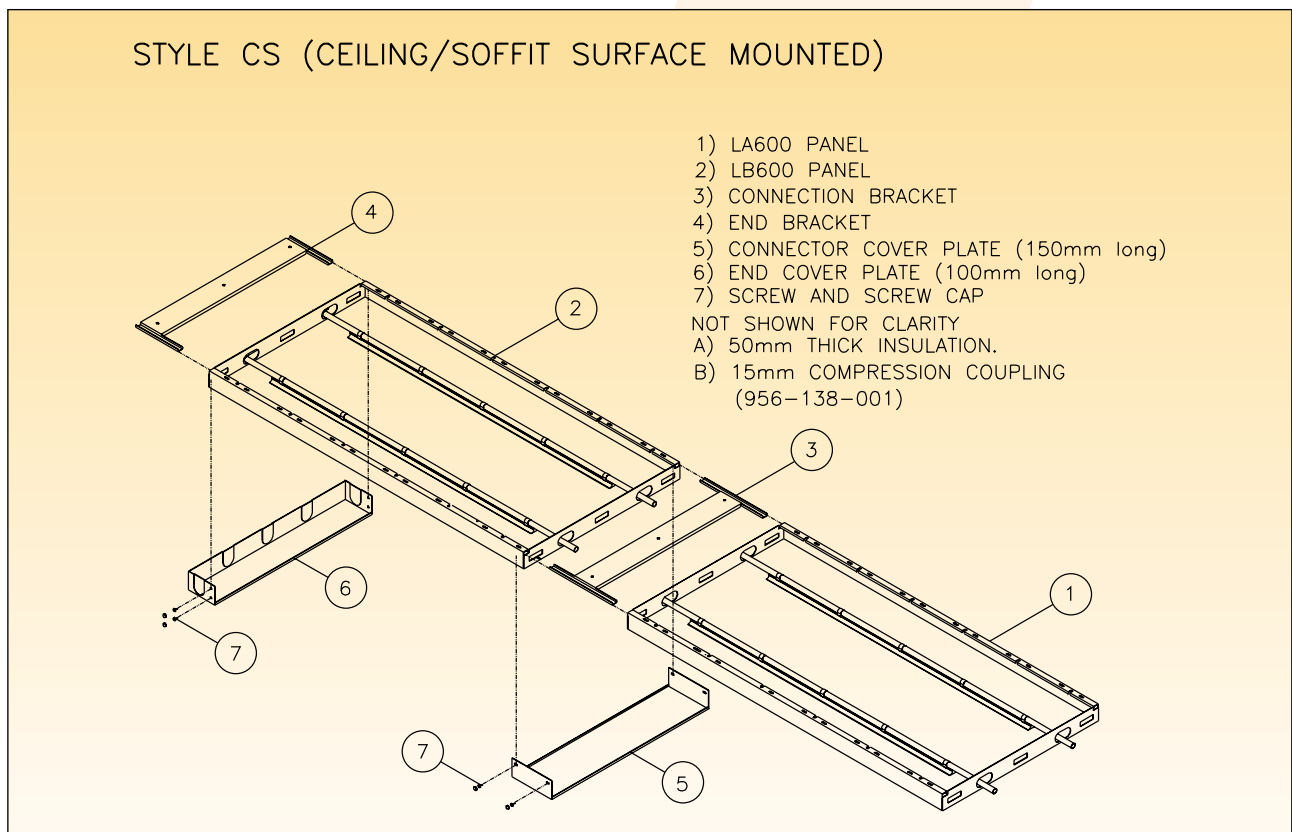
- 15mm copper tube for rapid pipework connections
- Durable white coating; any colour and gloss level from the RAL or BS4800 ranges also available
- Fully encapsulated mineral wool insulation to inhibit dust and particle migration
- Optional headered panels giving finished pipe circuits
- Air vents fitted as standard
- Lightweight construction for minimal support fixings and easy handling.
- Available in single panel lengths up to 3m
- Panels can be interconnected to make longer panel runs with multiple circuits



## Composition - Typical parts for Evo-Lite Style CG

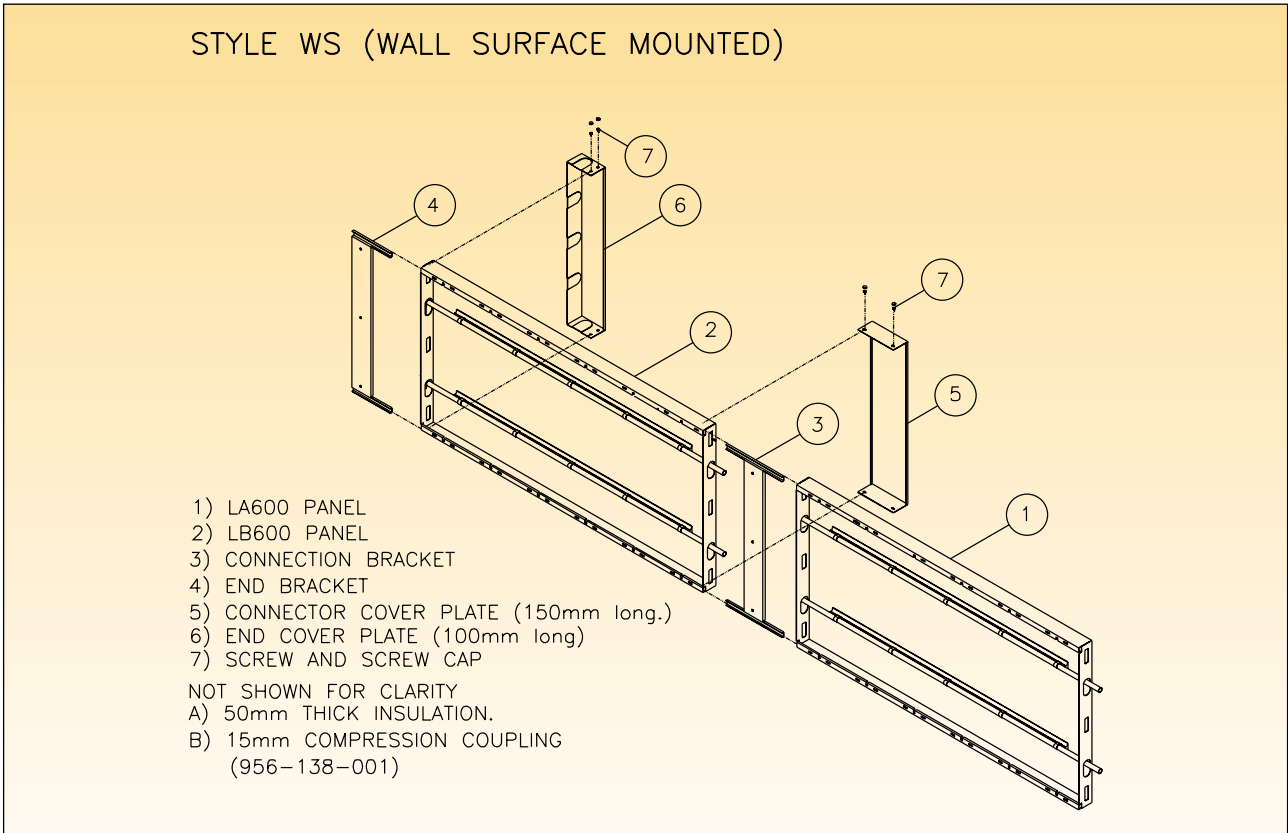


## Composition - Typical parts for Evo-Lite Style CS

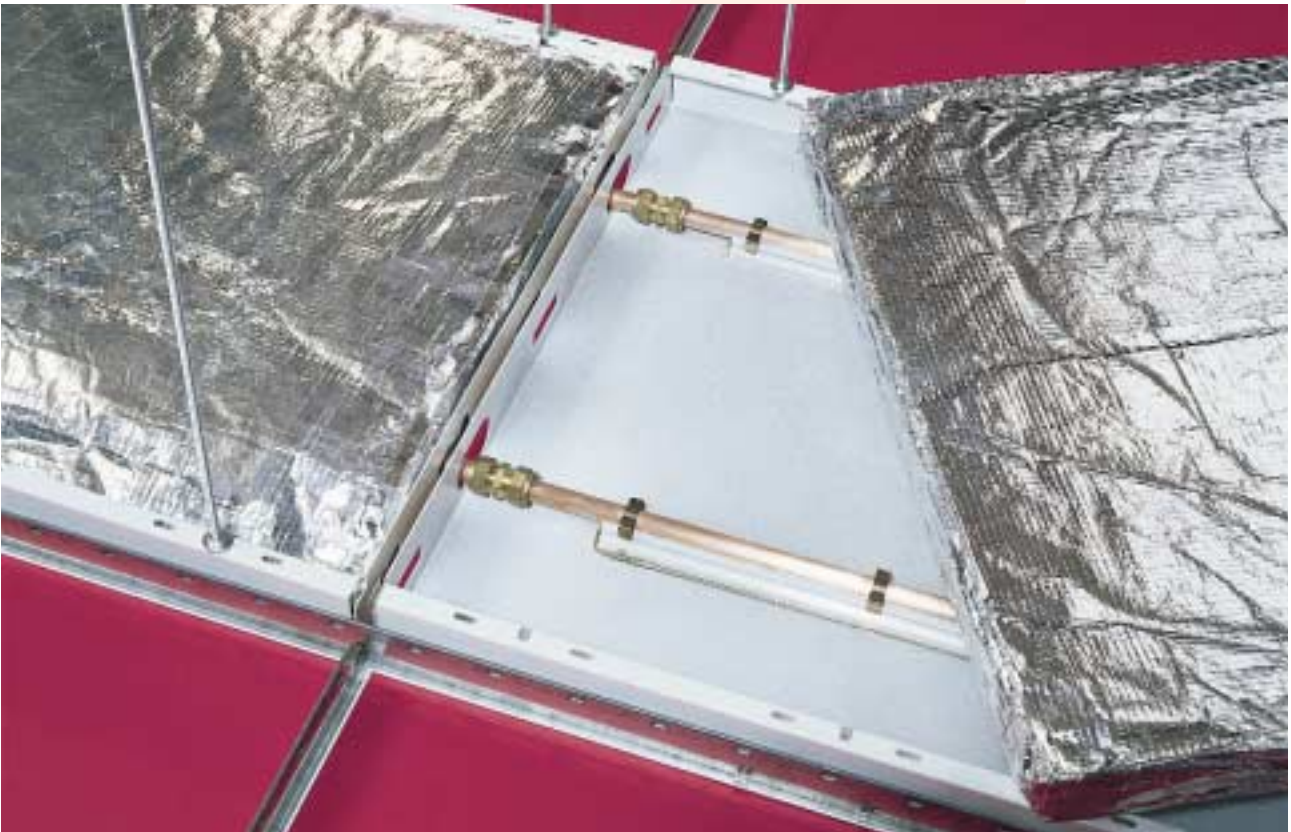




## Composition - Typical parts for Evo-Lite Style WS



## Evo-Lite Style CG - Typical panel connection



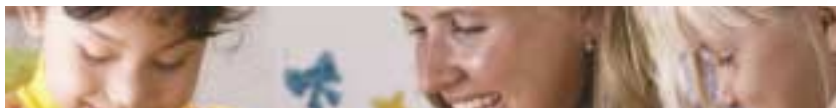


# Performance

## Heat outputs

Mean water temperature (°C)	Ambient air temperature (°C)	Total output (W/m)	
		Styles CG/CS	Style WS
65	16	201	226
	18	192	216
	20	182	205
	21	178	200
70	16	224	253
	18	215	242
	20	206	232
	21	201	226
75	16	248	281
	18	239	270
	20	229	259
	21	224	253
80	16	273	308
	18	263	297
	20	253	286
	21	248	281
85	16	297	336
	18	287	325
	20	277	314
	21	273	308
90	16	322	364
	18	312	353
	20	302	342
	21	297	336
95	16	347	393
	18	337	382
	20	327	370
	21	322	364
100	16	372	422
	18	362	410
	20	352	399
	21	347	393
105	16	397	451
	18	387	439
	20	377	428
	21	372	422
110	16	423	481
	18	413	469
	20	402	457
	21	397	451

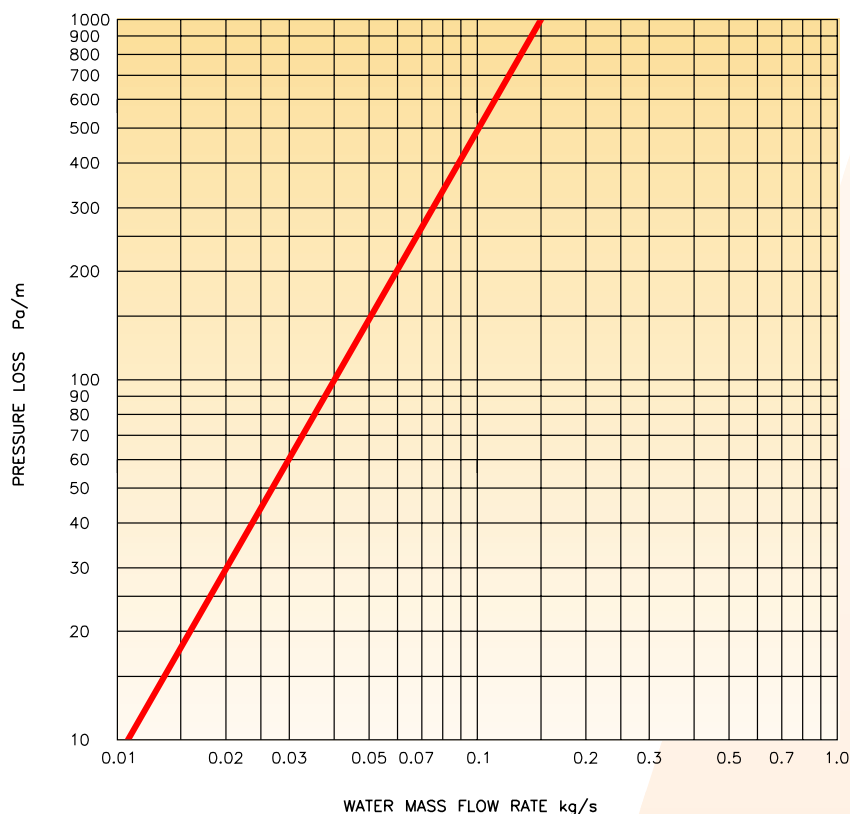
Table 1: Heat outputs for Evo-Lite based on testing to BS EN 442 : Pt 2. Total output is both radiant and convective. For style CG, approx. 60% of total output is radiant. For styles CS/WS, approx. 53% of total output is radiant. **N.B.** Max flow water temperature is 120°C



## Masses

Nominal panel length (mm)	600	1200	1800	2400	3000
Style CG (Ceiling Grid)	3.6	7.1	10.7	14.2	17.8
Styles CS/WS (Ceiling/Wall Surface)	5.7	9.2	12.8	16.3	19.8

**Table 2:** Masses in kg of Evo-Lite radiant panels.  
Masses given include radiant panel, insulation, accessories and water content.  
**N.B.** Style CG Evo-Lite panels have a nominal installed mass of 9.8kg/m<sup>2</sup>



**Graph 1:** Hydraulic resistance of Evo-Lite pipework. Note that water mass flow rates apply for each circuit in the system.

## Application

### General

Evo-Lite radiant panels are designed for a wide range of applications, in particular hospitals, school classrooms, assembly halls, residential care homes and offices.

Style CG (Ceiling Grid) panels can be fitted into a suspended ceiling system with 600mm grid, positioned in place of ceiling tiles.

Alternatively, style CS (Ceiling Surface) panels can be fixed directly onto the underside of a ceiling slab or soffit.

Evo-Lite can also be mounted vertically onto a wall surface. Style WS (Wall Surface) is used, which results in higher heat outputs (see table 1 on page 6).

Any installation angle is possible. Evo-Lite can be fitted to sloping surfaces, with the panel axis lying in any direction ; manual vents are fitted to the highest point in the pipe circuit. When the installed angle is greater than 10° to the horizontal, style WS heat outputs should be used.

### Comfort Conditions

It is recommended that for radiant heating systems, comfort conditions are achieved when dry-bulb air temperature is slightly lower than mean radiant temperature. The combination of the two temperatures is the dry-resultant temperature, upon which most comfort conditions are specified.



## Selection

The following guidelines are to assist the designer in deciding the best layout for Evo-Lite:-

### 1. Heat loads

The total heat load of the room must be calculated in accordance with recognised practice.

### 2. Panel run length

The total heat load should be divided by the total heat output per metre, as given in table 1. This will then give the require overall length radiant panels. Note that vertical panels will give greater heat output, which arises from greater convective heat transfer from the panel surface.

### 3. Layout

Panel runs should be set out on a layout plan. Radiant panels should be concentrated in areas of highest heat loss i.e. around the outside perimeter of the room, particularly, near windows. This will counteract disproportionately high heat losses. Single or dual circuit runs should be considered - see *Water flow rates* and *Hydraulic Resistances* below.

### 4. Maximum mounting height

There is no maximum mounting height for Evo-Lite. However, when mounting heights exceed 4m, the heat load should be adjusted to allow additional losses of radiant heat incident on walls, and stratification of air which absorbs some heat by convection

### 5. Minimum mountint height

There is no minimum mounting height for Evo-Lite. For comfort and safety the following rule of thumb can be applied:-

*Styles CG and CS*

*LTHW - minimum mounting height 2.4m*

*MTHW - minimum mounting height 3.0m*

Contact Dunham-Bush for further information on mounting heights and comfort conditions.

### 6. Expansion joints

Expansion joints should be fitted every 6m in a straight panel run.

### 7. Panel runs

Refer to page 9 for typical arrangements in a panel run. If requested, Dunham-Bush will prepare complete baseboard layout drawings for approval.

### 8. Water flow rates

To ensure rated heat outputs are achieved, water velocity in the tube should be such the water flow is turbulent. This maximises heat-transfer from the water, through the tube and to the radiating surface. Water flow rates should also be limited to inhibit noise and erosion and high pressure drops. Water velocities should ideally be between 0.3 - 1.0m/s.

### 9. Hydraulic resistances

Evo-Lite utilises 15mm OD copper tube to transport hot water. To calculate the total pressure drop, determine the water flow rate :-

$$\text{Water flow rate (kg/s)} = \frac{Q}{C_p \times \Delta T}$$

Q = total heat output (kW)

C<sub>p</sub> = specific heat capacity of water (kJ/kgK)  
= approx. 4.187kJ/kgK

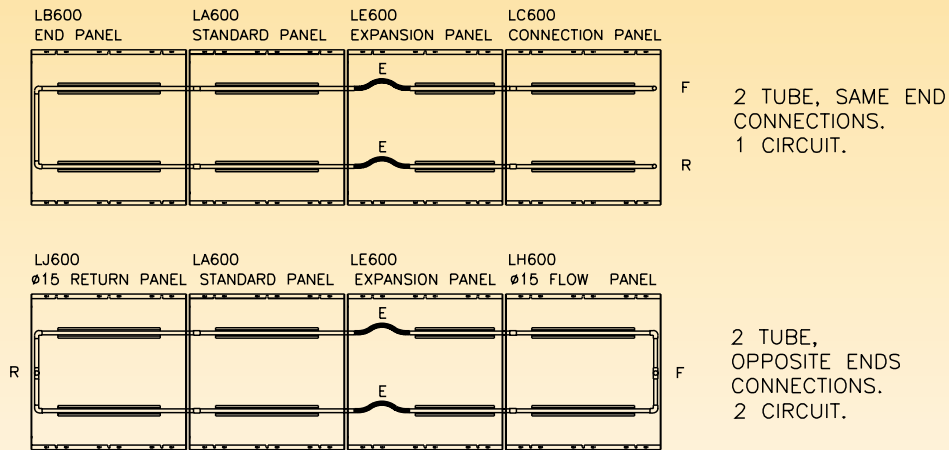
ΔT = water temperature drop (K)

Obtain the hydraulic resistance from the graph 2. Note that the water flow rate should be halved if dual circuit panel runs are used (i.e. type EH and EJ panels)  
**N.B.** circuit length applies for one circuit only.



## Typical panel runs

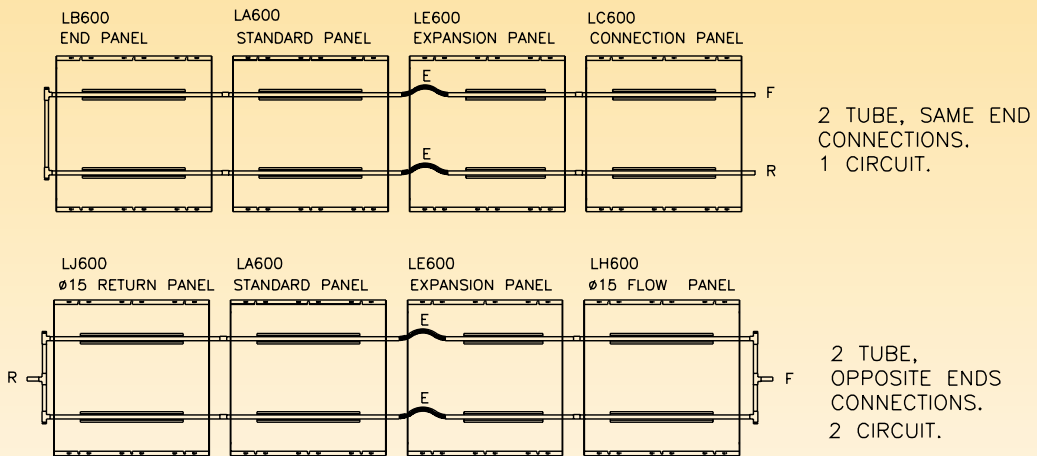
### STYLE CG TYPICAL PANEL ARRANGEMENTS



#### NOTES:

- 1) EXPANSION PANEL RECOMMENDED EVERY 6mtrs.
- 2) OBSERVE MINIMUM AND MAXIMUM WATER MASS FLOW RATES PER. CIRCUIT.
- 3) F = FLOW CONNECTION      R = RETURN CONNECTION  
E = EXPANSION HOSE

### STYLE CS & WS TYPICAL PANEL ARRANGEMENTS



#### NOTES:

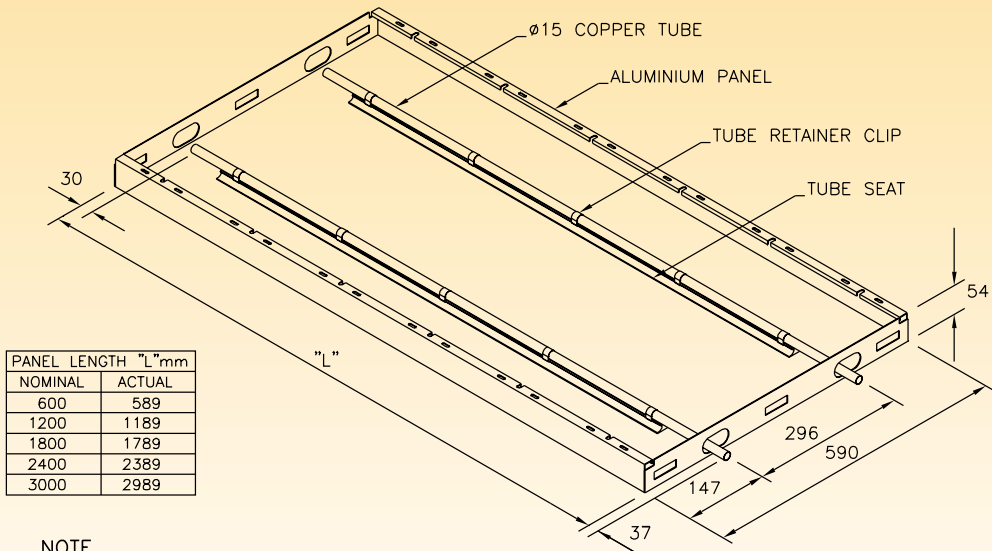
- 1) EXPANSION PANEL RECOMMENDED EVERY 6mtrs.
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- 3) F = FLOW CONNECTION      R = RETURN CONNECTION  
E = EXPANSION HOSE



# Dimensions

## DIMENSIONS Style CG - LA600 and LB600 panels

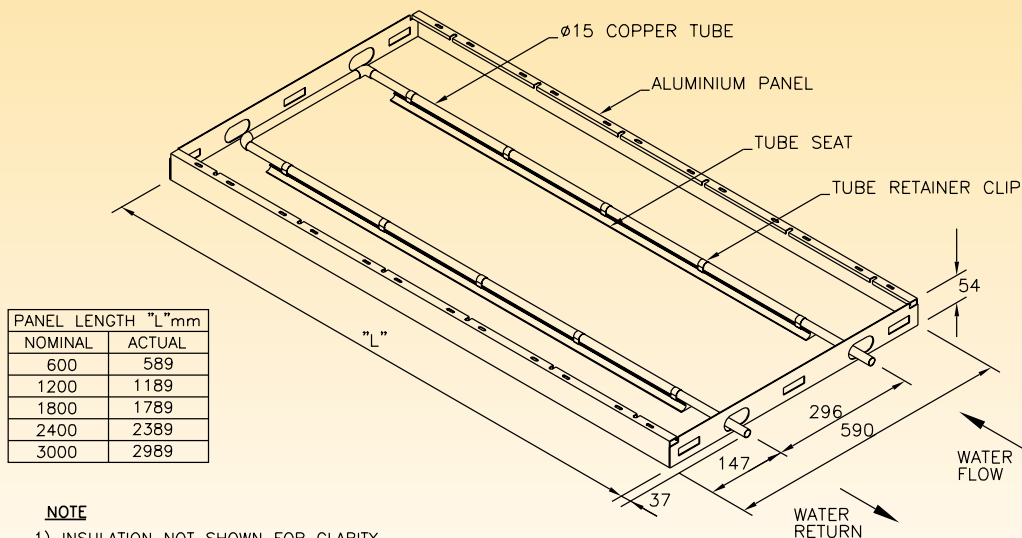
### STYLE CG STANDARD PANEL (TYPE LA600)



**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.

### STYLE CG END PANEL (TYPE LB600)



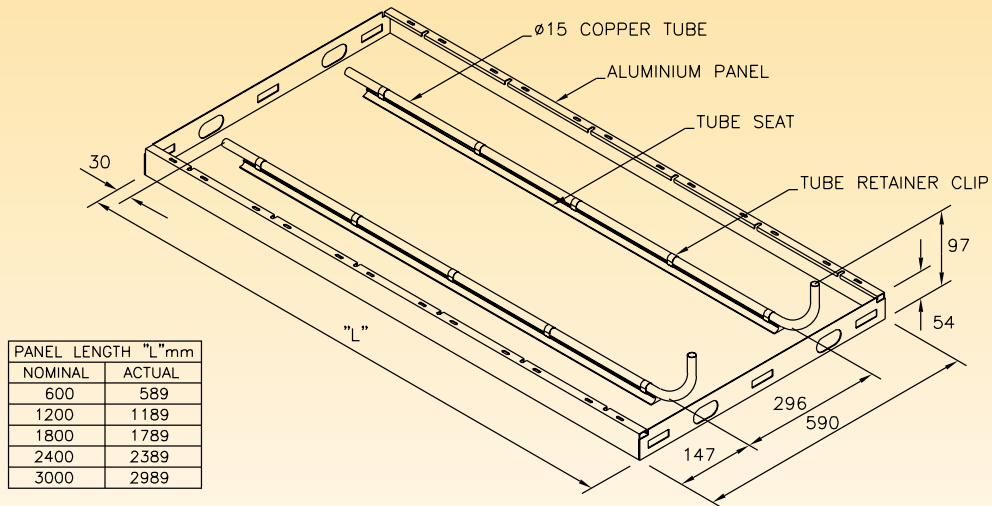
**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.



## Style CG - LC600 and LD600 panels

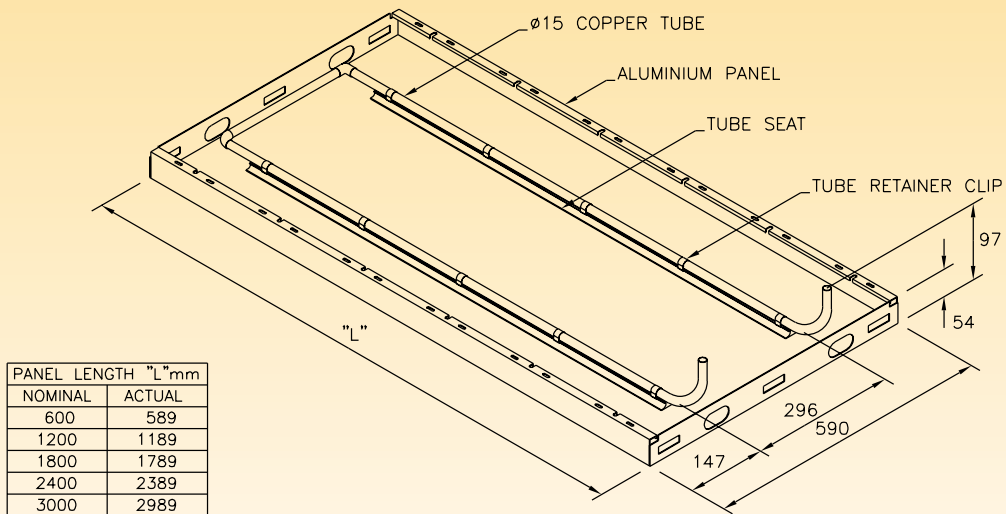
### STYLE CG CONNECTION PANEL (TYPE LC600)



**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.

### STYLE CG SINGLE PANEL (TYPE LD600)



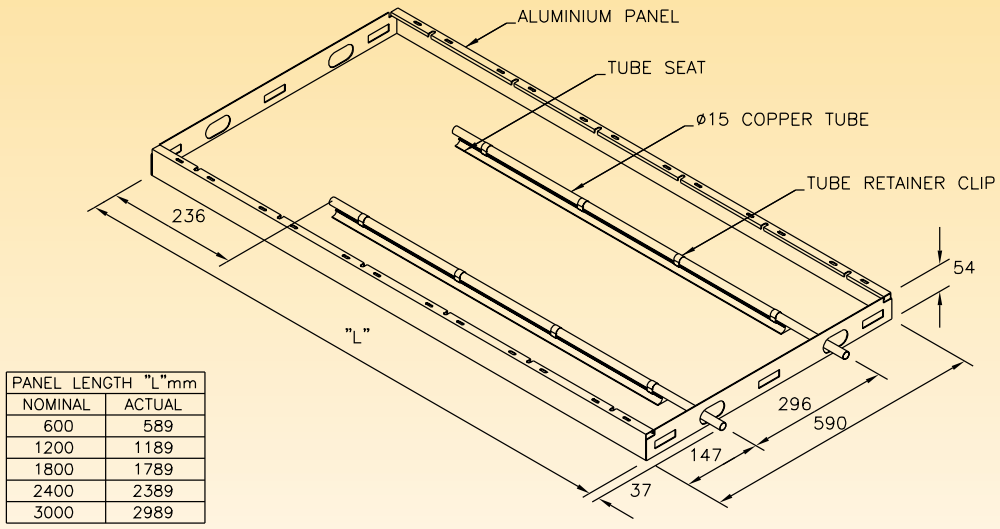
**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.



## Style CG - LE600 and LH600 panels

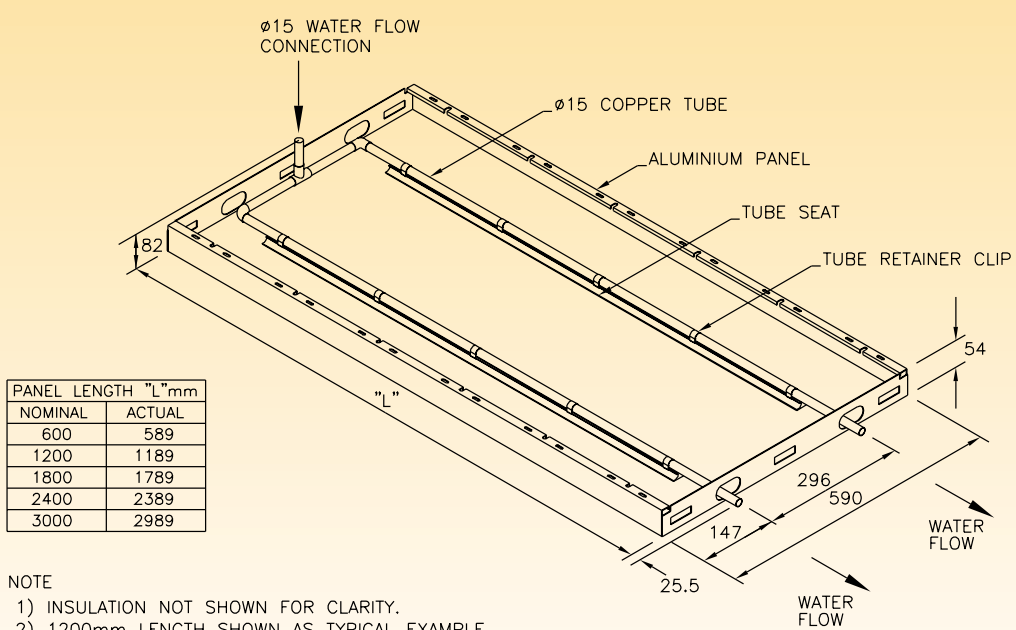
### STYLE CG EXPANSION PANEL (TYPE LE600)



PANEL LENGTH "L" mm	
NOMINAL	ACTUAL
600	589
1200	1189
1800	1789
2400	2389
3000	2989

- NOTE
- 1) INSULATION NOT SHOWN FOR CLARITY.
  - 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.
  - 3) EXPANSION HOSE SUPPLIED SEPARATELY.

### STYLE CG FLOW PANEL (TYPE LH600)



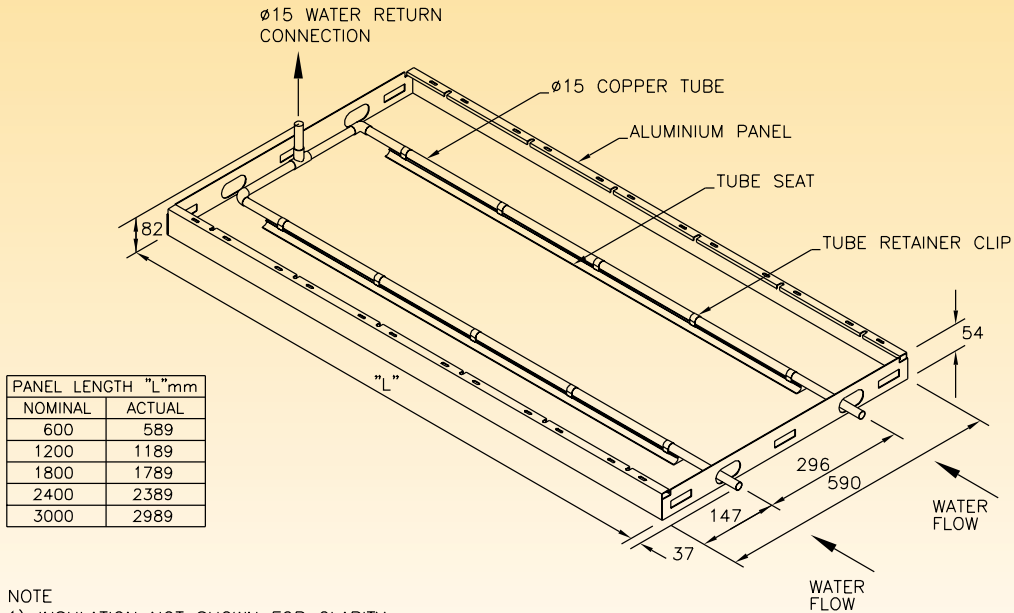
PANEL LENGTH "L" mm	
NOMINAL	ACTUAL
600	589
1200	1189
1800	1789
2400	2389
3000	2989

- NOTE
- 1) INSULATION NOT SHOWN FOR CLARITY.
  - 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.



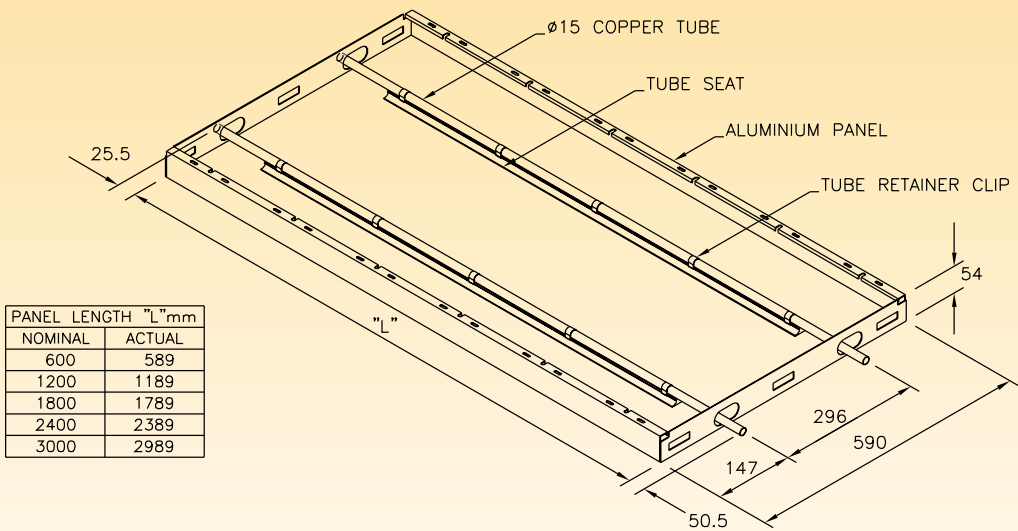
Style CG - LJ600 panel      Styles CS/WS - LA600 panel

STYLE CG RETURN PANEL (TYPE LJ600)



NOTE  
 1) INSULATION NOT SHOWN FOR CLARITY.  
 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.

STYLE CS & WS STANDARD PANEL (TYPE LA600)

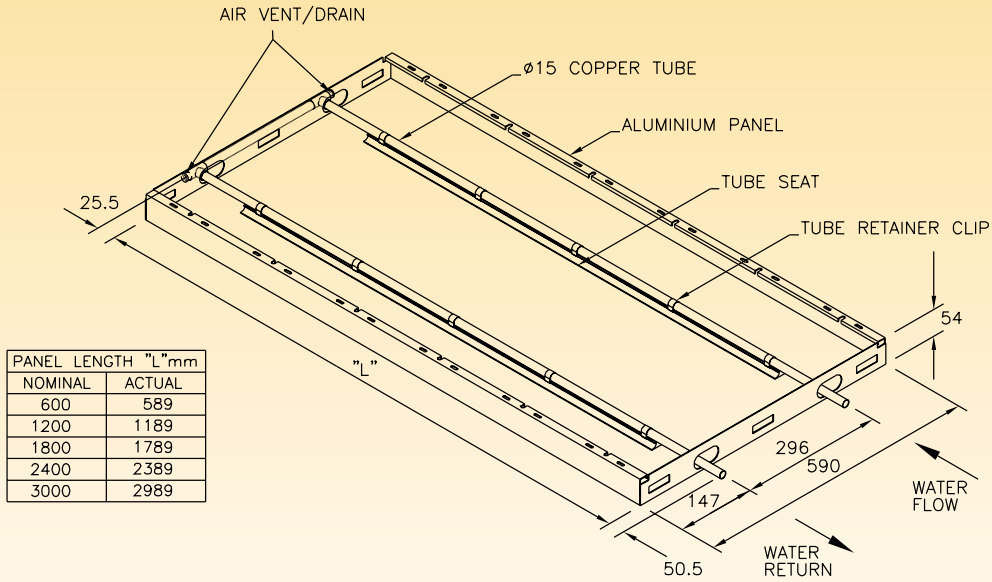


NOTE  
 1) INSULATION NOT SHOWN FOR CLARITY.  
 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.



## Styles CS/WS - LB600 and LC600 panels

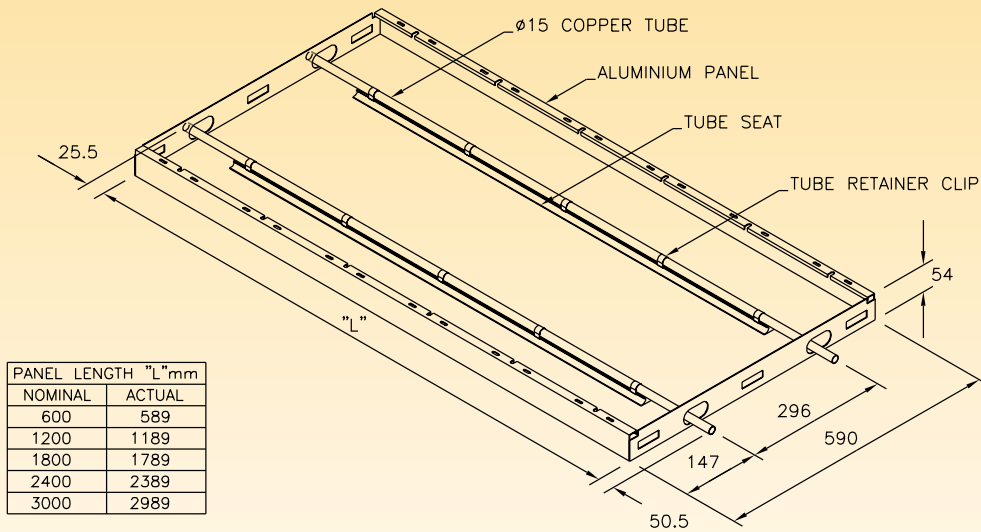
### STYLE CS & WS END PANEL (TYPE LB600)



**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.

### STYLE CS & WS CONNECTION PANEL (TYPE LC600)



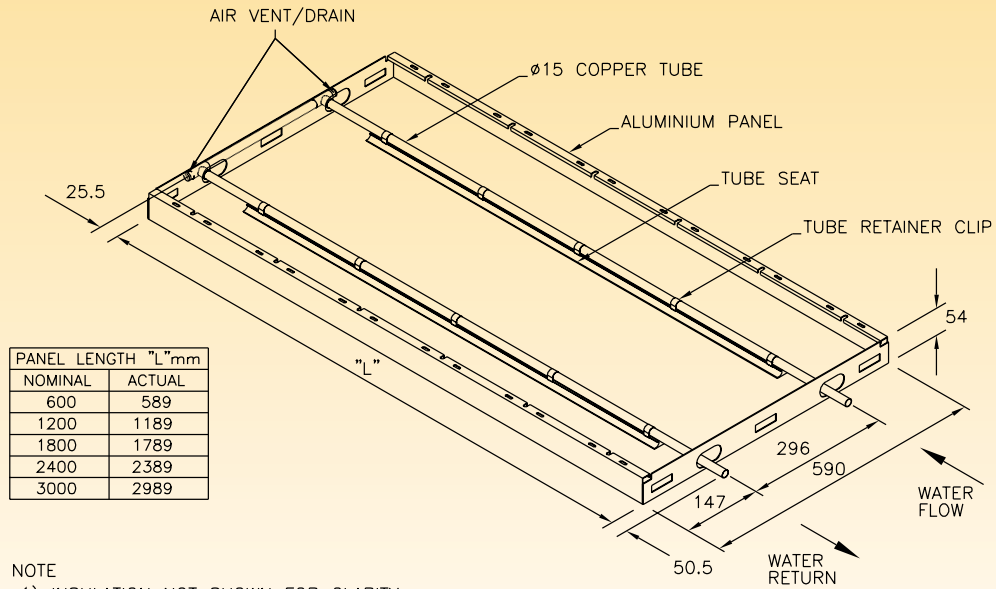
**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.



## Styles CS/WS - LD600 and LE600 panels

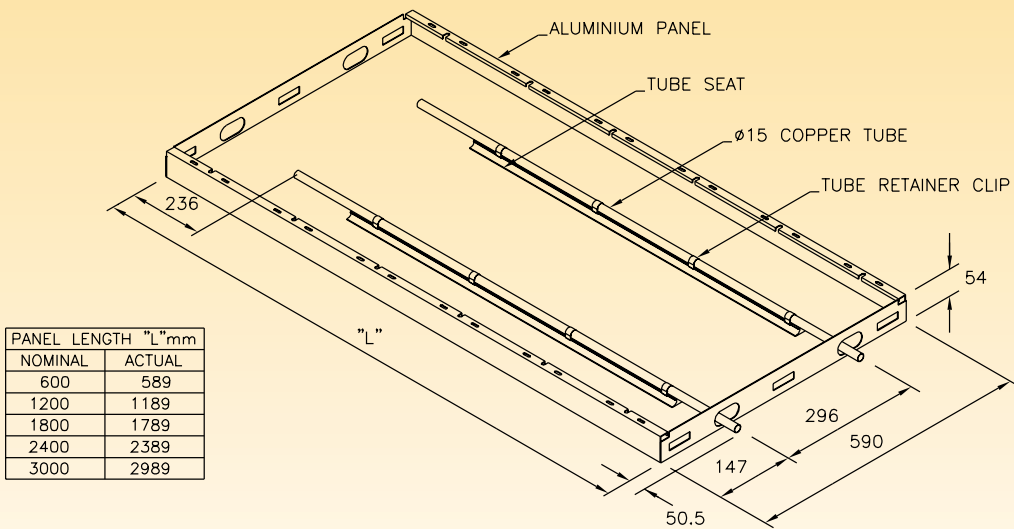
### STYLE CS & WS SINGLE PANEL (TYPE LD600)



**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.
- 3) WATER FLOW AND WATER RETURN ARE INTERCHANGEABLE.

### STYLE CS & WS EXPANSION PANEL (TYPE LE600)



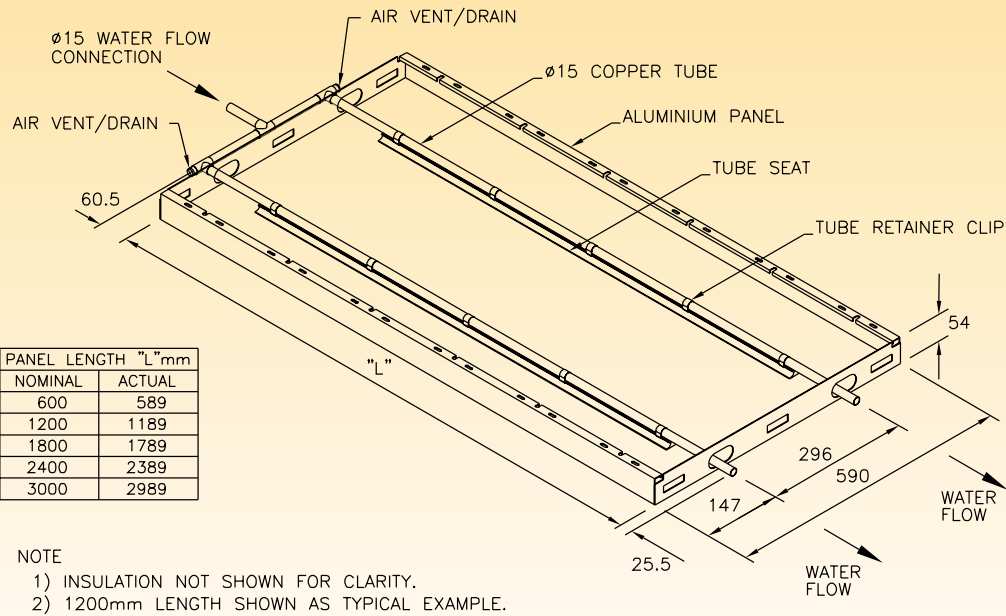
**NOTE**

- 1) INSULATION NOT SHOWN FOR CLARITY.
- 2) 1200mm LENGTH SHOWN AS TYPICAL EXAMPLE.
- 3) EXPANSION HOSE SUPPLIED SEPARATELY.

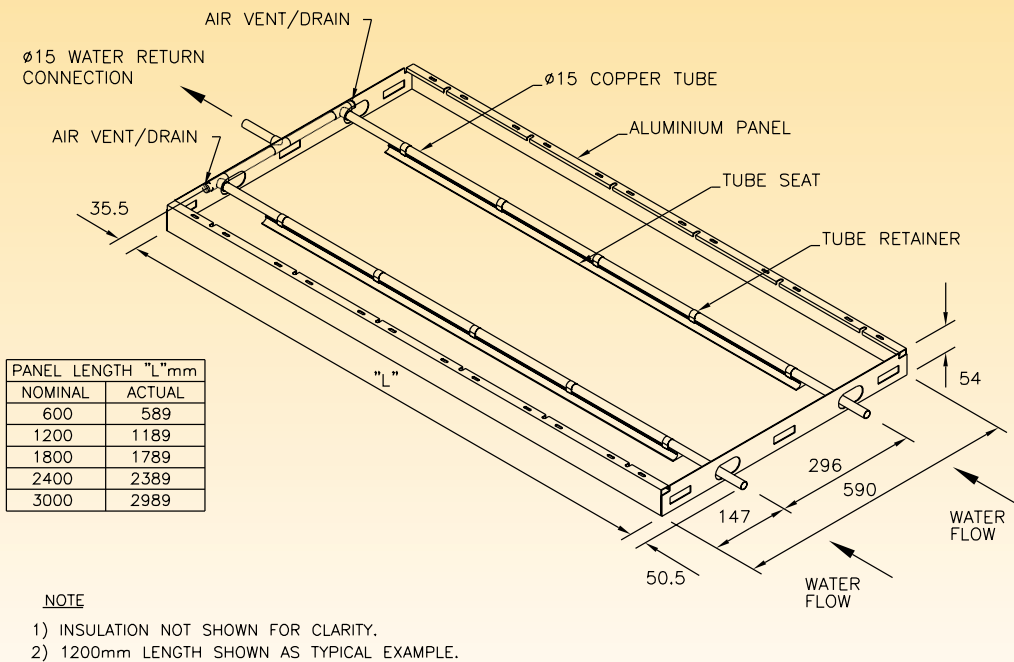


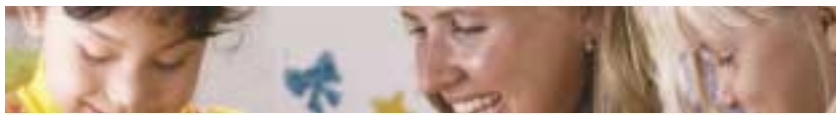
## Styles CS/WS - LH600 and LJ600 panels

### STYLE CS & WS FLOW PANEL (TYPE LH600)



### STYLE CS & WS RETURN PANEL (TYPE LJ600)





# Engineering Specification

## General

Evo-Lite radiant panels shall be manufactured by Dunham-Bush Ltd, Downley Road, Havant, Hants, PO9 2JD. The style, panel types, lengths, quantities and accessories shall be as detailed in the schedule or as shown on the drawings.

## Styles

Evo-Lite radiant panels shall be suitable in the following styles for the respective application

**Style CG** *Ceiling grid application*

**Style CS** *Ceiling/soffit surface application*

**Style WS** *Wall surface application*

## Panel types

Evo-Lite radiant panels, suitable for the required output and application, shall be selected from the following list of panel types:-

- LA600 - standard panel*
- LB600 - end panel*
- LC600 - connection panel*
- LD600 - single (stand-alone) panel*
- LE600 - expansion panel*
- LH600 - flow connection panel*
- LJ600 - return connection panel*

## Panel lengths

For all styles and panel types, panel lengths will be selected from the following list of nominal lengths 600mm, 1200mm, 1800mm, 2400mm, 3000mm.

## Composition

Evo-Lite radiant panels shall comprise aluminium alloy sheet finished in a durable coating, with an extruded aluminium channel bonded to the upper surface. 15mm OD copper tube to EN 1057 shall be mechanically located inside the extruded channel with steel spring clips. Factory made joints shall be jointed and formed using lead free solder fittings to make the appropriate panel circuitry.

50mm thick mineral wool insulation shall be fitted to the upper side of the panel to prevent heat losses from the rear of the panel; the insulation shall be fully-encapsulated in class 0 aluminium foil.

Interconnecting panel types (LA600, LB600, LC600, LH600 and LJ600) shall be supplied with 15mm compression straight couplings for on-site jointing.

Expansion panels (LE600) shall be supplied with stainless steel hoses with 15mm compression joint at each end.

## Accessories

Style CG Evo-Lite shall be supplied with optional brackets (if specified on the schedule) for suspending from drop-rods or similar.

Suspension hanging kits are available for rapid installation, and also as safety wires when panels are suspended directly by the ceiling grid.

Styles CS and WS Evo-Lite shall be supplied with end brackets and connection brackets for fixing to a ceiling, soffit or wall surface, as well as end cover plates and connection cover plates to cover and finish pipe connections between panels.

## Finish

Radiant panels, end cover plates and connection cover plates shall be finished in standard colour white RAL 9010 - gloss level approx. 30% (satin).

## Site test and working pressures

Maximum cold test pressure 12 bar gauge.  
Maximum working pressure 5 bar gauge at 120°C.  
Maximum recommended safe working pressure with manual air vents 7 bar gauge



## Construction

### Handling

The purchaser is responsible for off-loading. Radiant panels are supplied ready for mounting with accessories and insulation fitted separately. When a significant quantity of panels is delivered, they may be palletised and shrink-wrapped, so a fork-lift or similar of lifting equipment is required. Radiant panels and accessories must not be dropped or suffer impact under any circumstances.

### Storage

Radiant panels should be stored in clean, dry indoor conditions. Packaging should not be removed until installation takes place, unless damage in transit is suspected. Upon receipt of product, the purchaser should examine the panels 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

Style CG panels can be installed before or after ceiling grids have been fitted. Styles CS /WS require suitable wall or ceiling structure. The designer/installer should ensure that fixings are suitable for the application and provide adequate support. Fixings and hangers are not supplied by Dunham-Bush. Pipework to the panels should have been completed as far as possible.

### Installation

Reference should be made to a working layout or services drawing, which shows how panels are arranged and connections made. Please refer to Sitework Instructions enclosed with the panels; further copies are available on request.

#### *Style CG*

Panels are designed for suspension within a 600mm ceiling grid; where the weight of Evo-Lite exceeds the ceiling grid load limit, M6 drop rods or similar should be used, with optional hanging brackets supplied by Dunham-Bush. If panels are supported by the ceiling grid, then safety wires should be fitted.

#### *Style CS*

Panels are designed for fixing direct to a ceiling slab or soffit using end and connection brackets provided by Dunham-Bush. End cover plates and connector cover plates are used to finish panel joints and ends. Note that additional braces or noggins may be required to match panel fixing positions.

#### *Style WS*

Panels are designed for fixing direct to a wall using end and connection brackets provided by Dunham-Bush. End cover plates and connector cover plates are used to finish panel joints and ends. Note that additional braces or noggins may be required to match fixing positions.

### Pipework Connections

Evo-Lite radiant panels are supplied with pipe-circuitry complete; interconnecting panels are supplied with 15mm compression couplings or expansion hoses, as required. Pipework can be connected to the panel with solder, push-fit or compression fittings; flexible hoses are recommended to allow for rapid installation and flexibility.

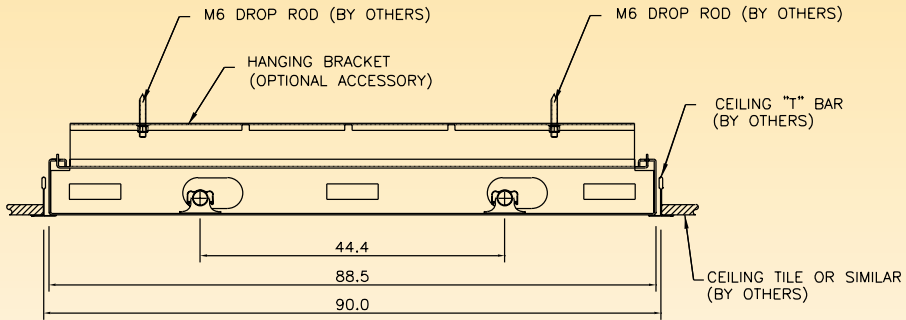


Style WS Evo-Lite: Connection bracket and radiant panel



## Installation Detail - Style CG

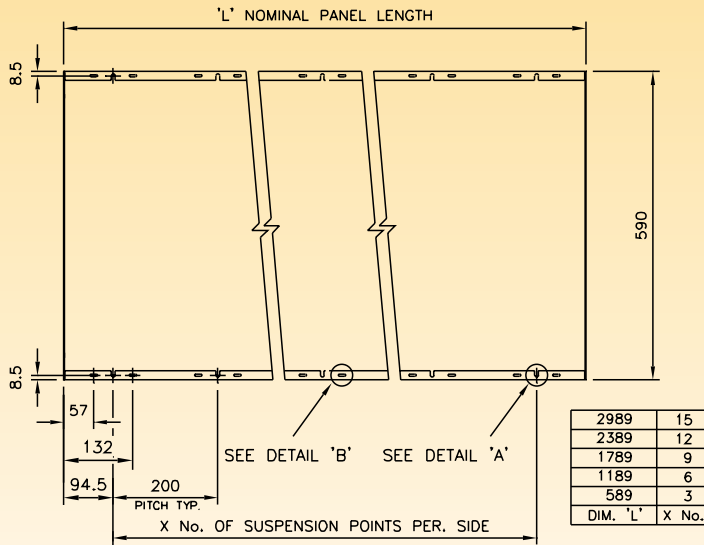
### STYLE CG FIXING DETAIL (VIEW ON END PANEL)



**NOTE:**

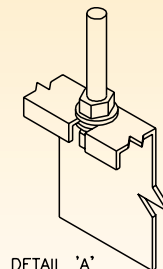
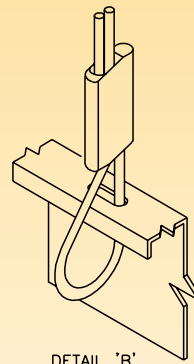
- 1) ENSURE SUFFICIENT ACCESS IS LEFT ABOVE THE PANEL TO ENABLE JOINTS TO BE MADE.
- 2) 50mm THICK INSULATION SUPPLIED (NOT SHOWN FOR CLARITY)
- 3) IF HANGING BRACKET IS NOT USED, DROP RODS CAN BE FIXED DIRECTLY TO PANEL (SEE STANDARD SUSPENSION POINTS).

### STYLE CG STANDARD SUSPENSION POINTS (VIEWED FROM ABOVE PANEL)



**NOTES:**

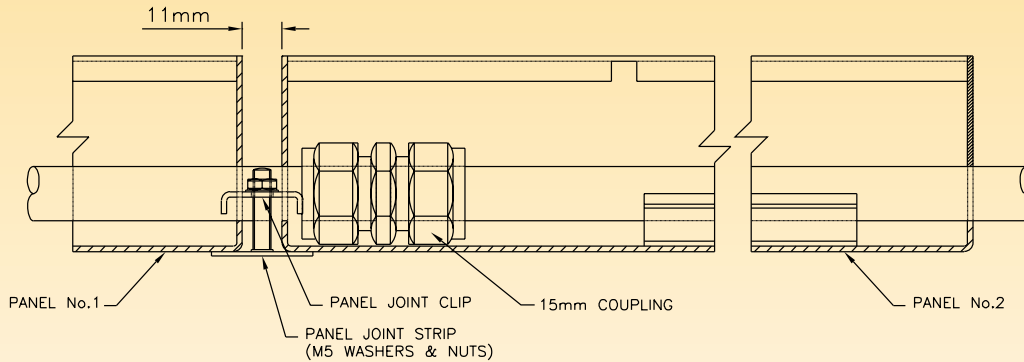
- 1.) DETAIL 'A' - PANEL TO BE SUSPENDED VIA M6 DROP RODS, WASHERS & NUTS IN SLOTS. SEE DETAIL 'A'.
- 2.) DETAIL 'B' - PANEL TO BE SUSPENDED ON SUITABLE HANGING WIRES, SUCH AS "GRIPPLE HANG FAST".
- 3.) PANEL TO BE LEVELLED TO CEILING GRID DATUM PRIOR TO MAKING JOINTS.
- 4.) PIPES NOT SHOWN FOR CLARITY.





## Installation Detail - Style CG

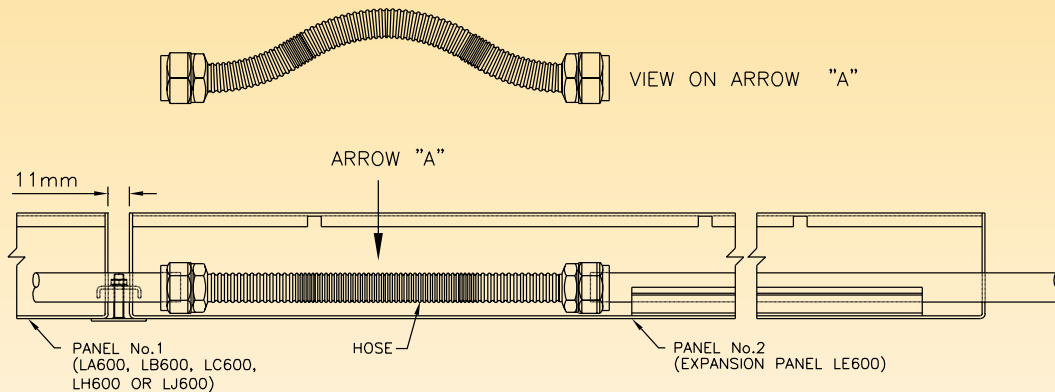
### STYLE CG STANDARD JOINT DETAIL (VIEWED FROM PANEL SIDE)



**NOTES:**

1. SUSPEND PANEL No.1 AND LEVEL TO REQUIRED INVERT.
2. FIT COMPRESSION FITTINGS & OLIVES ON TO TUBE ENDS OF PANEL No.1 & TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE, HOLD THE BODY OF THE COUPLING AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
3. FIT COMPRESSION FITTINGS & OLIVES ON TO TUBE ENDS OF PANEL No.2
4. SUSPEND PANEL No.2 AND LEVEL TO FIRST PANEL AND REQUIRED INVERT.
5. OFFER FREE END OF EACH COUPLING TO TUBE END OF PANEL No.2.
6. MOVE PANELS TOGETHER, SO THAT THE TUBE FULLY ENGAGES WITH PANEL No.2 TUBING, DISTANCE BETWEEN THEM IS 11mm.
7. TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE. HOLD THE BODY END OF THE COUPLING AND THEN TIGHTEN THE COMPRESSION NUTS APPROX. 1¼ TURNS.
8. APPLY HYDRAULIC TEST TO ALL JOINTS. MAXIMUM TEST PRESSURE 12barg. MAXIMUM WORKING TEMPERATURE OF 90°C AND MAXIMUM WORKING PRESSURE OF 6barg.
9. POSITION PANEL JOINT STRIP BETWEEN PANELS AND SECURE WITH PANEL JOINT CLIP USING M5 WASHERS AND NUTS.

### STYLE CG EXPANSION JOINT DETAIL (VIEWED FROM PANEL SIDE)



**NOTES:**

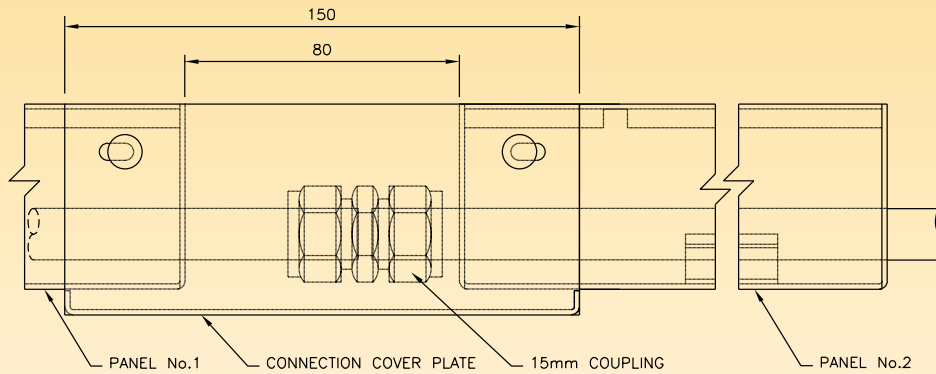
1. SUSPEND PANEL 1 AND LEVEL TO REQUIRED INVERT.
2. FIT HOSE ON TO TUBE END OF PANEL LE. & TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE HOLD THE HEXAGONAL END OF THE HOSE AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
3. SUSPEND PANEL 2 AND LEVEL TO FIRST PANEL AND REQUIRED INVERT.
4. MOVE PANELS TOGETHER, SO THAT THE DISTANCE BETWEEN THEM IS 11mm.
5. OFFER FREE END OF EACH HOSE TO TUBE END OF PANEL 1. (THE HOSES WILL REQUIRE PRE-BENDING AS VIEW ON ARROW "A").
6. TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE. HOLD THE HEXAGONAL END OF THE HOSE AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
7. APPLY HYDRAULIC TEST TO ALL JOINTS. MAXIMUM COLD TEST PRESSURE 12barg. MAXIMUM WORKING TEMPERATURE OF 90°C AND MAXIMUM WORKING PRESSURE OF 6barg.
8. POSITION PANEL JOINT STRIP BETWEEN PANELS AND SECURE WITH 3 OFF PANEL JOINT CLIPS USING M5 WASHERS AND NUTS.





## Installation Detail - Styles CS/WS

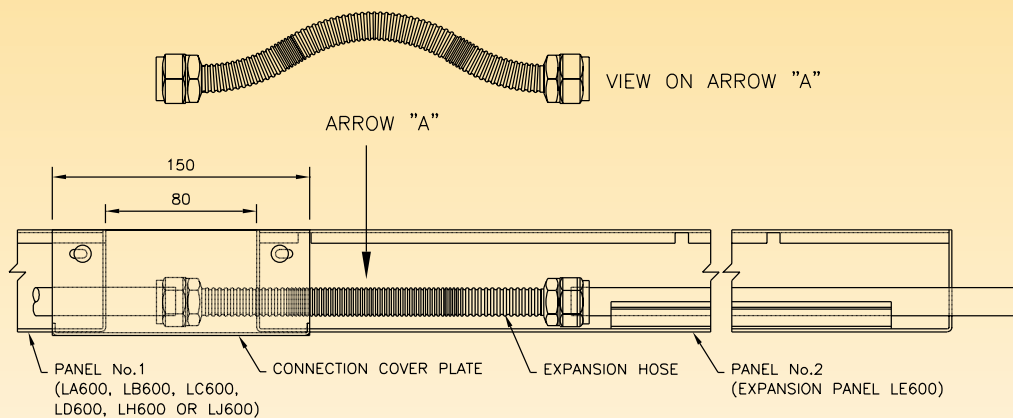
### STYLE CS & WS STANDARD JOINT DETAIL (VIEWED FROM PANEL SIDE)



NOTES:

1. FIX PANEL No.1 USING END/CONNECTION BRACKETS.
2. FIT COMPRESSION FITTINGS & OLIVES ON TO TUBE ENDS OF PANEL No.1 & TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE, HOLD THE BODY END OF THE COUPLING AND AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
3. FIT COMPRESSION FITTINGS & OLIVES ON TO TUBE ENDS OF PANEL No.2
4. FIX PANEL No.2 ONTO CONNECTION BRACKET.
5. OFFER FREE END OF EACH COUPLING TO TUBE END OF PANEL No.2.
6. MOVE PANELS TOGETHER, SO THAT THE TUBE FULLY ENGAGES WITH PANEL No.2 TUBING, AND DISTANCE BETWEEN THEM IS 80mm.
7. TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE. HOLD THE BODY END OF THE COUPLING AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
8. APPLY HYDRAULIC TEST TO ALL JOINTS. MAXIMUM TEST PRESSURE 12barg. MAXIMUM WORKING TEMPERATURE OF 90°C AND MAXIMUM WORKING PRESSURE OF 6barg.
9. FIX END AND CONNECTION COVER PLATES WITH SELF TAPPING SCREWS & CAPS (2off PER SIDE).

### STYLE CS & WS EXPANSION JOINT DETAIL VIEWED FROM PANEL SIDE



NOTES:

1. FIX PANEL 1 USING END/CONNECTION BRACKETS.
2. FIT HOSE ON TO TUBE END OF PANEL 2 & TIGHTEN NUTS BY HAND AS FAR POSSIBLE HOLD THE HEXAGONAL END OF THE HOSE AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
3. FIX PANEL 2 AND LEVEL TO FIRST PANEL ONTO CONNECTION BRACKET.
4. MOVE PANELS TOGETHER, SO THAT THE DISTANCE BETWEEN THEM IS 80mm.
5. OFFER FREE END OF EACH HOSE TO TUBE END OF PANEL 1.  
(THE HOSES WILL REQUIRE PRE-BENDING AS VIEW ON ARROW "A")
6. TIGHTEN NUTS BY HAND AS FAR AS POSSIBLE. HOLD THE HEXAGONAL END OF THE HOSE AND THEN TIGHTEN THE COMPRESSION NUT APPROX. 1¼ TURNS.
7. APPLY HYDRAULIC TEST TO ALL JOINTS. MAXIMUM COLD TEST PRESSURE 12barg. MAXIMUM WORKING TEMPERATURE OF 90°C AND MAXIMUM WORKING PRESSURE OF 6barg.
8. FIT END AND CONNECTION COVER PLATES WITH SELF TAPPING SCREWS AND CAPS (2 OFF PER SIDE).



## 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 'Ordering' 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

Evo-Lite radiant panels 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 prevailing lead times.

### Packaging

Radiant panels are packed for storage in dry, indoor conditions. If specified, each panel 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.

The following information should be supplied to Dunham-Bush for the selection and preparation of a baseboard layout (BL) drawing.

- a) Panel style
- b) Quantity and lengths of panel runs
- c) Details of special finish or accessories required
- d) Panel markings or stencil references for on-site identification
- e) A dimensioned drawing with panel runs marked on clearly, with connections and circuitry shown.





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 convectors  
Series BM fan convectors  
Series CM fan convectors  
Series L fan convectors

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

Evolution radiant panels  
Dunham Strip radiant panels

Voidpak air handling units  
ECS air handling units

Sentry air curtains

Finvector perimeter heating system  
Trench Finvector heating system  
Series UH unit heaters  
Warmsafe LST radiators

Systema gas fired products

Thermocold Packaged chillers



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

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