

Bradford SpacerX™

Refer to product table below for applicable product codes covered by this document

Issue A

Product Type & Application

Bradford SpacerX™ is an insulation spacer for purlin roofs. It elevates the roof cladding to allow roof insulation to maintain its position and nominal thickness to deliver its full declared R-value. SpacerX is for use with concealed (clip-fixed) roof cladding, it is not suitable for use with screw-fixed roof sheeting. It is available for installation in non-cyclonic regions.

Compliance with the NCC

Testing and analysis has been undertaken to determine the capacity of the SpacerX spacer. It is the project Structural Engineer's responsibility to determine the suitability of SpacerX for a specific roof system.

For use in Australia, when correctly specified and installed in accordance with the requirements and limitations of CSR documentation, this product complies with the NCC as follows-

NCC 2022

- **Steel Structures** – Complies with NCC 2022 Volume 1 B1P1 and B1P2. The product is compliant with AS 1170.0, AS 1170.1, AS 1170.2, and AS/NZS 4600.
- **Thermal Construction** – Allows insulation to maintain its thickness as required by NCC 2022 Volume 1 J4D3(3)(a) and ABCB Housing Provisions Standard 2022 13.2.2(c)(a).

NCC 2019

- **Steel Structures** – Complies with NCC 2019 Volume 1 Amend. 1 BP1.1 and BP1.2. The product is compliant with AS 1170.0, AS 1170.1, AS 1170.2, and AS/NZS 4600.
- **Thermal Construction** – Allows insulation to maintain its thickness as required by NCC 2019 Volume 1 Amend. 1 J1.2(c)(i) and NCC 2019 Volume 2 Amend. 1 3.12.1.1(c)(i).

Evidence of Suitability

- 23-34 Woolacotts Structural Assessment Report.
- R-GF201 Flannagan Consulting Engineering Report.
- David Beneke Consulting Report 2018-54-LO-03.

Conditions of Storage & Maintenance

- Store in the original packaging in a cool, dry area. Ensure packages are adequately labelled, protected from physical damage, and sealed when not in use.

Limitations of Use

- **IMPORTANT: Do Not Modify This Product:** Compliance with the evidence of suitability data referenced in this document is only achieved by the product or configuration listed in this PTS. Cutting bar lengths is permitted in accordance with the installation guide.
- **Purlin design is to be undertaken by the project's Structural Engineer.** SpacerX has been assessed to determine the effect on lateral and/or torsional restraint to purlins, and/or purlin rollover. The tables in this report must be used to assess design capacities of purlins by the project structural engineer.
- Purlin and roof sheet capacities have not been assessed.
- The mass added by the SpacerX product should be accounted for in structural load calculations by the project Structural Engineer. Refer to the table of masses below.
- Maximum allowed roof pitch is 10°.
- SpacerX is not suitable for use with screw-fixed roof sheeting.
- The SpacerX leg and start block must be centred on a flat, non-radiusued purlin flange contact width of minimum 51mm.
- Seismic requirements should be considered in the primary building design.
- Not suitable for use under tiled roofs.
- Not suitable for use on walls.
- Not suitable for use on timber framing.
- This product is not designed to withstand prolonged exposure to the elements and must be installed dry and remain dry once the roof is completed.
- The product is not intended for use in a harsh environment without prior written approval from CSR Bradford, including, but not limited to livestock buildings, indoor aquatic centres and fertiliser storage facilities, or as outlined in the published literature issued by CSR Bradford.
- SpacerX can only be used on roofs pitching in a single plane.
- Not for use in cyclonic regions.

Refer also to the notes with the Load Tables below.

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Specific Design or Installation Instructions

- Isolate power before installation.
- Ensure safety mesh and insulation is in place before installation commences.
- **WARNING:** This product contains steel which conducts electricity. To avoid electrocution, care should be taken to ensure that this product or conductive fasteners used to secure this product, do not come into contact or close proximity with electrical wiring during installation or use.
- **Purlin design is to be undertaken by the project's Structural Engineer.** SpacerX has been assessed to determine the effect on lateral and/or torsional restraint to purlins, and/or purlin rollover. The tables in this report must be used to assess design capacities. SpacerX load capacity is given in Table 1, and derated as in Table 2 for purlin-spacer interaction.
- Suitable for steel structures up to a pitch of 10° when correctly specified.
- Suitable for use with concealed fixed roofing products such as Apex Apdeck 700, Fielders KingKlip®, Lysaght Klip Lok 700 Hi Strength®, Metroll Metlok® 700, and Stramit Speed Deck Ultra®.
- Locate a minimum of one start block within the notches on the spacer bar flange at the start of the purlin. Additional start blocks may be used as required for extra support along the length of the bar.
- Cladding fixing should be completed according to the manufacturer's instructions.
- Suitable for applications where the product is protected from water during and after installation.
- Bar lengths can be cut to suit, cut edges must be protected by a galvanising treatment to prevent corrosion.
- **Important Aesthetic Consideration:** To avoid damage to the roof cladding the application of dynamic/static loads (either during or after construction) to the roof should be evenly distributed.

Refer also to the notes with the Load Tables below.

SpacerX must be installed in accordance with the product installation guide at BradfordInsulation.com.au

Applicable Product Codes

SPACER HEIGHT [mm]	FOR USE WITH BLANKET THICKNESS [mm]	BAR LENGTH [mm]	BARS PER PACK	LINEAL METERS PER PACK [m]	MASS PER PACK [kg]	NUMBER OF PACKS PER PALLET	PRODUCT CODE
NON-CYCLONIC							
40	60	700	10	7	9.3	100	176897
60	80	700	10	7	9.6	100	176898
80	100, 100(HP), 110	700	10	7	9.8	90	176899
120	130, 140, 145	700	10	7	10.2	90	176900

Applicable Product Codes cont.

START BLOCK HEIGHT [mm]	TO SUIT SPACERX HEIGHT [mm]	BLOCKS PER CARTON	MASS PER CARTON [kg]	PRODUCT CODE
NON-CYCLONIC				
40	40	10	0.6	177185
60	60	10	1.0	177186
80	80	10	1.4	177187
120	120	10	2.3	177188

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Additional Product Data

SpacerX Load Table – Non-Cyclonic, excludes purlin interaction (see Table 2 below for purlin interaction).

The table must be read in conjunction with the notes below.

Table 1. SpacerX Load table – load capacity of SpacerX.

SPACING BETWEEN PURLIN CENTRES [m]	DIRECTION OF LOADING	Uniformly Distributed load acting at 90° to cladding surface.	
		ULTIMATE LIMIT STATE (ULS)	SERVICEABILITY LIMIT STATE (SLS)
		LOADING [kPa]	
0.6	Download	6.3	2.9
	Uplift	See Uplift note.	See Uplift note.
0.9	Download	4.2	1.9
	Uplift	See Uplift note.	See Uplift note.
1.2	Download	3.1	1.4
	Uplift	See Uplift note.	See Uplift note.
1.5	Download	2.5	1.1
	Uplift	See Uplift note.	See Uplift note.

Notes:

- Wind loads have been derived using AS/NZ1170.2011.
- Download values are applicable for non-cyclonic regions A & B only, in exposed areas on flat terrain without shielding.
- Uplift load values are based on roof cladding manufacturer fixing to purlins as the Uplift loads are transferred directly to purlin via the screw through the concealed clip and screw; capacities nominated by cladding manufacturer.
- All loads shown are ultimate limit state design capacity (static and dynamic combined). The capacities have been calculated in accordance with AS/NZS 4600:2018.
- All screws are assumed to comply with AS 3566.1:2002.
- Downward load values are based on the load being transferred and distributed directly to SpacerX's bar and respective bar leg contact with the purlin.
- SpacerX leg and start block must be centred on a flat, non-radiusued purlin flange contact width of minimum 51mm. Refer to the spacer dimensions below.
- SpacerX download capacity is limited by the capacity of the purlin support structure having adequate strength, stiffness and torsional restraint.
- Loads uniformly distributed at 90 degrees angle to the cladding surface. Maximum allowable roof pitch is 10° from the horizontal.
- Purlin design is the responsibility of the project structural engineer.

Additional requirements and guidance:

- SpacerX system is not suitable for use with timber construction.
- Spacer-X is limited to the following systems - Apex Apdeck 700, Fielders KingKlip®, Lysaght Klip Lok 700 Hi Strength®, Metroll Metlok® 700, and Stramit Speed Deck Ultra®.
- The SpacerX Support Block must be used at each start point of a SpacerX bar run and where required at the end of an incomplete SpacerX bar.
- The SpacerX Support Block - additional load capacity - The maximum unfactored working load in compression located directly over a SpacerX Support Block is equal to 4.0kN. Each consecutive SpacerX bar shall have 3x screw fasteners (min 12g) through concealed clip embedded with 3x threads through to connecting purlin.
- The additional weight of SpacerX and Support Block should be included in all load calculations.
- Any increase of eccentric loading induced by the additional height of the SpacerX system components combined with the roof pitch angle should be analysed by the design engineer.
- The addition of static plant and equipment to the roof such as Solar Panels, HVAC, Ventilators, etc must be assessed for both the additional static and dynamic load components - the position of solar panels, support brackets and corresponding screws fixings must be compatible with the cladding, SpacerX system and approved by the responsible design engineer.
- To increase roof load capacities, consider reducing purlin spacing to maximise the load capacity of SpacerX system.
- It is the responsibility of the design engineer to determine the capacity of the supporting purlin and consider factors including, but not limited to durability, strength, roof angle, eccentric loads and serviceability effects on the purlin arising from the use of the SpacerX system.
- The product is limited to use as detail above unless written approval is provided by CSR Bradford technical representative.

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SpacerX Purlin Interaction De-Rating Table

Purlin performance must be reduced by the factors in the table below, because of the purlin/spacer interaction. This should be applied to all spacer heights, linearly interpolated where required.

De-rating is not required in the greyed-out areas, values are supplied for interpolation purposes.

Table 2. SpacerX purlin interaction table – where de-rating must be applied to purlins.

Dead Load + Live Load						
Purlin Span [mm]	All					
Spacer Height [mm]	40		120			
Roof Pitch [°]	0	5	10	0	5	10
Midspan Stress	0.95	0.90	0.88	0.84	0.83	0.75

Dead Load + Live Load																			
Purlin Span [mm]	4000						6000						8000						
Spacer Height [mm]	40			120			40			120			40			120			
Roof Pitch [°]	0	5	10	0	5	10	0	5	10	0	5	10	0	5	10	0	5	10	
Maximum Stress	0.89	0.90	0.88	0.64	0.71	0.81	0.99	0.99	0.98	0.53	0.76	0.72	1.0	0.41	0.42	0.43			
Rotation	1.0	0.97	0.91	1.0			0.99			1.0									
Vertical Deflection	1.0						0.99	1.0											

Dead Load + Point Live Load																			
Purlin Span [mm]	4000						6000						8000						
Spacer Height [mm]	40			120			40			120			40			120			
Roof Pitch [°]	0	5	10	0	5	10	0	5	10	0	5	10	0	5	10	0	5	10	
Vertical Deflection	1.0						0.99	1.0											

Contact Bradford for more information.

Bar and Start Block Masses

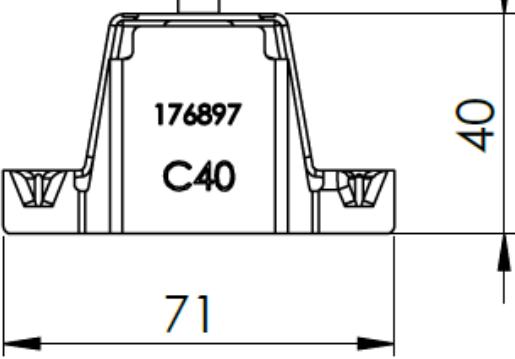
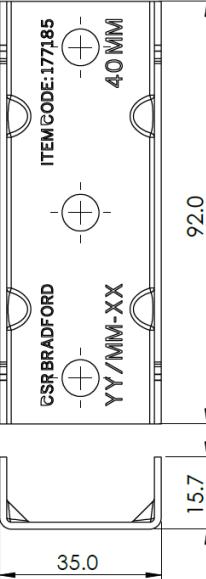
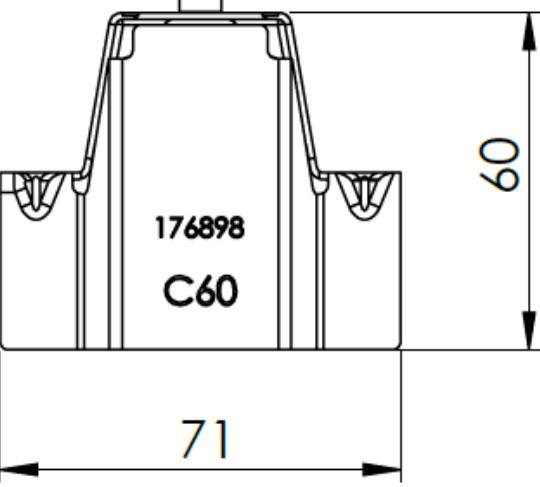
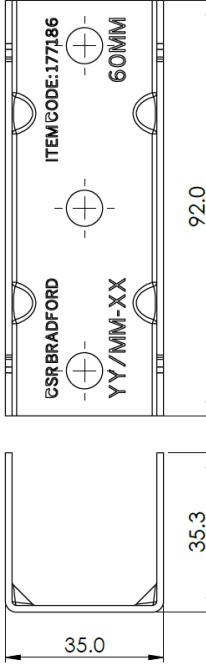
	SPACER			
	40mm	60mm	80mm	120mm
Bar	0.805 kg	0.825 kg	0.845 kg	0.880 kg
Start Block	0.06 kg	0.105 kg	0.280 kg	0.410 kg

Materials

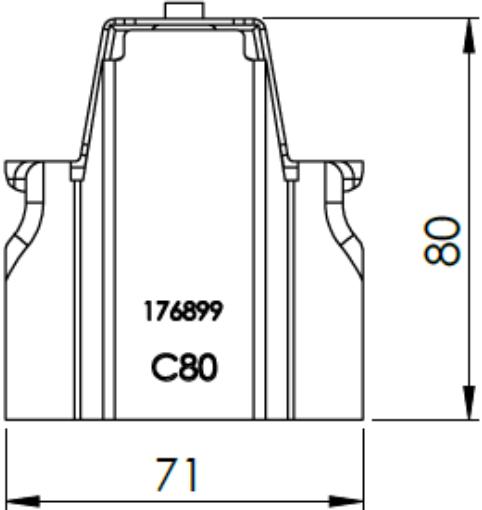
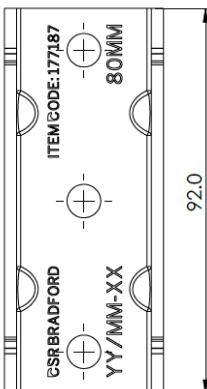
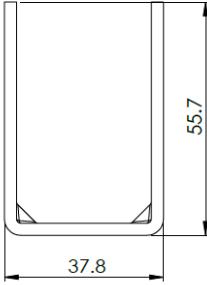
Spacer Bar Material	1.2mm BMT Zincalume G500 AM125 or Aluzinc G500 AZ150.	Minimum Yield Strength 500MPa Minimum Tensile Strength 520MPa
Start Block Material 40mm, 60mm	1.5mm BMT Galvabond G2	
Start Block Material 80mm, 120mm	2.9mm BMT G200	
Screw Specification Spacer to Purlin:	Minimum 12g Long Tek Screw, complying with AS 3566.	
Screw Specification Start Block to Purlin:	Minimum 12g Tek Screw, complying with AS 3566.	

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SpacerX Bar Leg and Start Block Detail

Size	Bar Leg	Start Block
40mm		
60mm		

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Size	Bar Leg	Start Block
80mm		 
120mm	