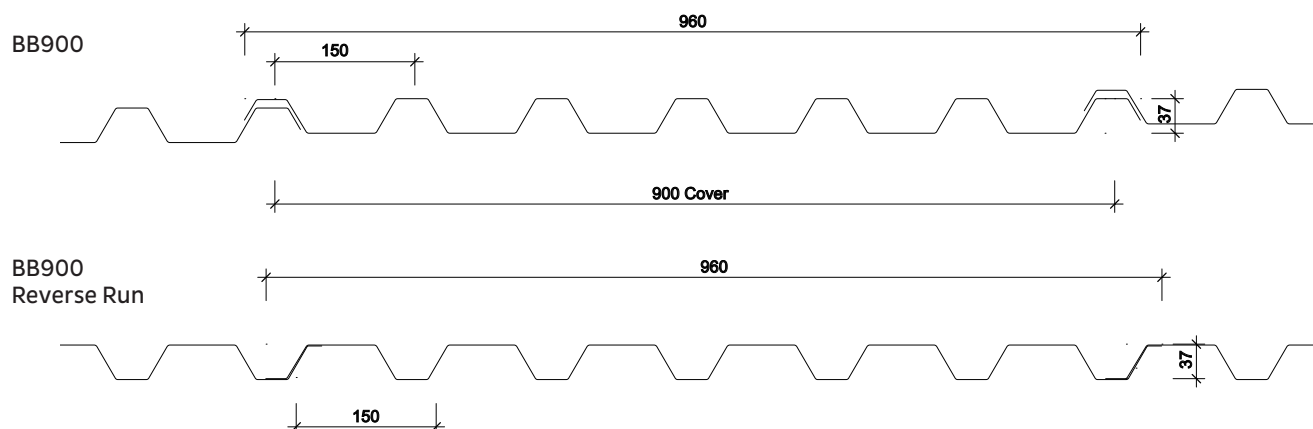


DIMOND BROWNBUILT 900 (BB900) PROFILE PERFORMANCE



BB900 Reverse Run Profile (for wall cladding only). Lapped sheet shown dotted.

Cover (mm)	900
Sheet width (mm)	960
Minimum Pitch	3° (approx. 1:20)

All dimensions given are nominal

Sheet Tolerances

Sheet width: ±5mm

Sheet width for aluminium +0, -15. If sheet cover widths are critical, advise Dimond at time of order.

Sheet length: +10mm, -0mm. For wall cladding where notified at time of order of intended use, tighter tolerances can be achieved +3mm, -0mm.

Material Options Profile	Steel			Aluminium		Stainless Steel	Duraclad®
	0.4	0.55	0.75	0.7	0.9	0.55	1.7 (total thickness)
Thickness (BMT) mm	0.4	0.55	0.75	0.7	0.9	0.55	1.7 (total thickness)
Nominal weight/lineal metre (kg/m)	4.12	5.55	7.47	2.31	2.96	5.36	2.90
Drape curved roof - min. radius (m)	n/r	90	90	n/r	90	n/r	24
Purlin spacings for drape curved roof (m)(1)	n/r	2.4	2.4	n/r	2.4	n/r	1.2
Machine crimp curved - roof min. radius (mm)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Unsupported overhang (2)(mm)	250	350	450	200	300	350	200

(1) Recommended maximum purlin spacing at minimum radius

(2) Based on 1.1kN point load support, but not intended for roof access.

n/r - not recommended

n/a - not available

Roll-forming facility at: Auckland

Manufacturing location for Duraclad®: Auckland

Sheet lengths: BB900 is custom run to order.

Where long sheets are used consideration must be given to:

- Special transportation licences for sheet lengths over 25m
- Site access for special lifting equipment
- Fixing techniques to accommodate thermal expansion.

Refer Section 2.1.3.4.

BROWNBUILT 900 LIMIT STATE LOAD / SPAN CAPACITY CHART

(span in mm, distributed serviceability loads in kPa)

Serviceability Category

		Unrestricted-Access Roof		Restricted-Access Roof			Non-Access Roof or Wall		
G550 Steel 0.40mm	End Span		800	1100	1300	1500	1500	1700	1900
	Internal Span		1200	1600	1900	2200	2300	2600	2900
	Serviceability		4.0	3.3	2.6	2.0	1.8	1.6	1.2
G550 Steel 0.55mm	End Span		1600	1700	2000	2300	2400	2500	2700
	Internal Span		2400	2500	3000	3400	3500	3800	4100
	Serviceability		3.7	3.5	2.7	2.0	1.9	1.7	1.5
G550 Steel 0.75mm	End Span		2000	2100	2400	2700	2800	3000	
	Internal Span		3000	3200	3600	4000	4200	4600	
	Serviceability		4.0	3.8	3.1	2.3	2.0	1.3	
5052 H36 Aluminium 0.70mm	End Span		900		900	1100	1200	1400	1600
	Internal Span		1300		1400	1700	1800	2100	2400
	Serviceability		3.1		2.8	2.2	2.0	1.5	1.2
5052 H36 Aluminium 0.90mm	End Span		1300	1400	1600	1900	1900	2200	2800
	Internal Span		2000	2100	2400	2800	2900	3300	3700
	Serviceability		3.8	3.6	2.8	2.1	2.0	1.5	1.2
Duraclad® 1.7mm (Note 4)	End Span				600	800	900	1100	1400
	Internal Span				900	1200	1300	1700	2100
	Serviceability Ultimate	N/R	N/R		4.5	4.5	4.5	3.2	2.0

Notes

- In any category, spans above the maximum shown should not be used. Category 1 and 2 maximum spans are based on static point load testing as a guide, and further limited by practical experience of roof performance under dynamic foot traffic loads. Category 3 maximum spans are limited as a guide to achieving satisfactory appearance for wall cladding.
- Loads given are based on 6 screw fasteners/sheet/purlin.
- Loads given are limited to a maximum of 4.0 kPa. If design requirements exceed this limit, contact Dimond for specific advice.
- Duraclad®
 - Serviceability Limit State loads are not applicable to the Duraclad® material, as it does not experience permanent deformation.
 - System must include Safety Mesh if intended for use as a Restricted-Access roof. Refer Section 2.2.1.8.
- N/R = not recommended.
- End span capacities given in this table are based on the end span being $\frac{2}{3}$ of the internal span.
- Design Criteria for Limit State Capacities**
 - Serviceability Limit State**
No deflection or permanent distortion that would cause unacceptable appearance, side lap leakage or water ponding, due to foot traffic point loads, inward or outward wind loads or snow loads.
 - Ultimate Limit State**
No pull through of fixings or fastener withdrawal resulting in sheet detachment due to wind up-lift (outward) loads.
- System Design**
The span capacity of Brownbuilt 900 is determined from the Brownbuilt 900 Limit State Load/Span Capacity Chart using the section of the chart appropriate to the grade and type of material, and to the category of serviceability selected from the three categories below. Serviceability loads have been derived by test to the NZMRM testing procedures. To obtain an ultimate limit state load we recommend factoring the serviceability load up by 1.4 in-line with NZMRM guidelines. The capacities given do not apply for cyclonic wind conditions.

Serviceability Requirements
While these categories are given for design guidance to meet the serviceability limit state criteria, foot traffic point load damage may still occur if there is careless placement of these point loads.

Service Category	Description
1. Unrestricted-access roof	Expect regular foot traffic to access the roof for maintenance work and able to walk anywhere on the roof. No congregation of foot traffic expected.
2. Restricted-access roof	Expect occasional foot traffic educated to walk only on the purlin lines, in the profile pans, or carefully across two profile ribs. Walkways installed where regular traffic is expected, and "Restricted Access" signs placed at access points.
3. Non-access roof or wall	Walls or roofs where no foot traffic access is possible or permitted. If necessary, "No Roof Access" signs used.
- Wind Pressure Guide**
As a guide for non-specific design the following S.L.S. design loads in accordance with the MRM Roofing Code of Practice can be used for buildings less than 10m high, otherwise AS/NZS 1170.2 should be used
Low wind zone = 0.68kPa, Medium wind zone = 0.93kPa, High wind zone = 1.32kPa, Very high wind zone = 1.72kPa and Extra high wind zone = 2.09kPa.

Fastener Design

Brownbuilt 900 should be screw fixed to either timber or steel purlins. The use of the appropriate length of 12g or 14g screw will ensure failure by screw pull out will not occur under loads within the scope of the Limit State Load / Span Capacity Chart.

Purlin Type	Screw Fastener			
	Roofing Rib		Wall Cladding Pan Fix	
	Screw Length* (mm)	Designation	Screw Length* (mm)	Designation
Timber	75	T17 - 14 - 10 x 75	50	Roofzip M6 x 50 HG-Z4
Steel	65	Tek - 14 - 10 x 65 Tek - 12 - 14 x 68	20	Tek - 12 - 14 x 20

*If sarking or insulation is used over the purlins or for wall cladding fixed onto a cavity batten, into the stud, the screw length will need to be increased.

For screw size range and fastener / washer assembly refer Section 2.2.3.1.

The Limit State Load / Span Capacity Chart is based on 6 screw fasteners/sheet/purlin without the use of load spreading washers (except for Duraclad® material, which must be fitted with profiled metal washers and 36mm EPDM seals.

Profiled metal washers are recommended for use:

1. On end spans, or large internal spans where the Ultimate Limit State distributed load is limiting. Contact Dimond for specific advice in these design cases.
2. When required to enable the fixing system to accommodate the thermal movement of long sheets – see Section 2.1.3.4 Thermal Movement.
3. Wherever the designer wishes to ensure the risk of fastener over-tightening will not cause dishing of the crest of the profile rib.

Use in serviceability categories (1) or (2) can allow the reduction of fasteners to 3 screw fasteners/sheet/purlin. If this is done, the distributed load capacities given in the chart should be reduced using a multiplying factor of 0.5.

Long spans may require the specification and use of side lap stitching screws – see Section 2.3.2C Installation Information: Layout and Fastening.

Design Example

Restricted access roof, 0.55mm G550 steel Brownbuilt 900 has a maximum end span of 2400mm and a maximum internal span of 3400mm. The following distributed load capacities apply.

	6 fasteners/sheet	3 fasteners/sheet
End Span	2300mm	2300mm
Internal Span	3400mm	3400mm
Serviceability	2.0 kPa	1.0 kPa

Continued on next page...

DIMOND BROWNBUILT 900 FASTENER LAYOUT OPTIONS

