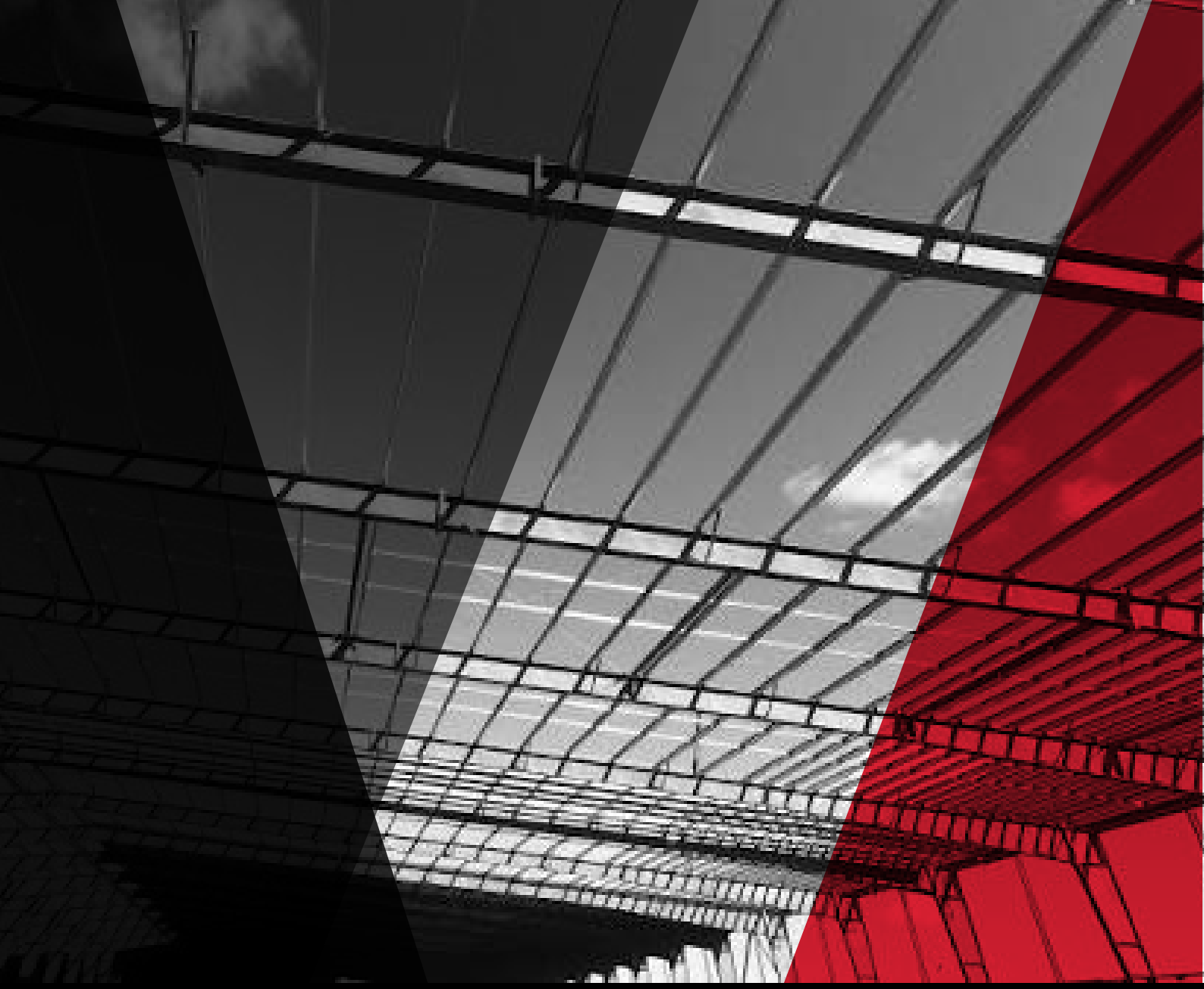

Dimond Structural™

DIMOND TOP HAT PURLIN MANUAL

Dimond Structural, a division of Fletcher Building Ltd.

V11.31.08.26 - **August 2026**

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DIMOND TOP HAT PURLIN SYSTEM

2.0 SCOPE OF USE

2.1 DURABILITY

2.2 SPECIFIC DESIGN – DIMOND PURLIN SYSTEM

2.3 INSTALLATION - DIMOND TOP HAT PURLIN SYSTEM

For on-line technical information
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SCOPE OF USE

Dimond Top Hats are intended for use as structural support to roofing and wall cladding. The systems provide for screw fastened connections to structural framework, suitable for use on spans and spacings within the limitations of the Dimond Top Hat Purlin Manual, typically used for lightweight commercial building applications (e.g. farm sheds) where small spans are required.

The information for Dimond Top Hat Purlin System herein is intended for use by suitably qualified structural engineers for their design and PS1 certification.

It is critical to product performance that the loads applied, member spans, member sizes and fixing points are designed within the appropriate Limit State Loads and limitations published in this manual.

Before commencing a project using a Dimond Top Hat Purlin System, the designer must ensure relevant information is available to the end user. Failure to observe this information may result in a significant reduction in product performance. Dimond Structural accepts no liability whatsoever for products which are used otherwise than in accordance with these recommendations.

The information contained within this manual is only applicable to Dimond Top Hat Purlin System – it cannot be assumed to apply to similar products from other manufacturers.

USE OUTSIDE THE STATED GUIDELINES

If the need arises to use a Dimond Top Hat Purlin System outside the limitations and procedures given in this manual or if there exists any doubt on product handling or use, written approval should be obtained from Dimond Structural for the specific project, before the project is commenced.

DURABILITY 2.1

SCOPE 2.1.1

The Dimond Top Hat Purlin System described in this manual are subject to limitations on the environment in which they are used, depending on the type of coating specified in this section.

COATING MATERIAL SPECIFICATIONS 2.1.2

Dimond Top Hat Purlin System are manufactured from galvanised coil in the following protective galvanised zinc coating weights.

Standard Grade Z275, i.e. 275g/m^2 total galvanised zinc coating weight.

Grade Z450, i.e. 450g/m^2 total galvanised zinc coating weight. Grade Z450 requires a three-month lead time from date of order to supply for all sizes of Top Hats and quantities.

ENVIRONMENTS 2.1.3

GENERAL 2.1.3.1

The durability of galvanised zinc coated products is dependent on:

- The environment it will be installed in.
- The grade or weight of the galvanised zinc coating used.
- The degree and extent of the maintenance that will be undertaken over the life of the product.

Performance of galvanised zinc coated products is affected by:

- The cumulative effects of the weather.
- The amount of dust (which can hold moisture) that settles on the product.
- Any other wind-blown deposits that may settle on the product, promoting corrosion.
- Proximity to the ground in subfloor areas with little or no ventilation.

Condensation or other deposits should be prevented from accumulating on Dimond Top Hat Purlin System by providing adequate ventilation and carrying out regular maintenance. A protective barrier must be provided if dampness is possible on the Top Hat system. Refer Durability Statement 2.1.5 and Maintenance 2.1.6.

LIMITATIONS ON USE 2.1.3.2

The use of galvanised steel Top Hat systems should be avoided:

- In areas where high concentrations of chemicals are combined with a high humidity, where the system remains wet for long periods of time, causing rapid consumption of the galvanised zinc coating and eventual red rusting of the base metal for example, swimming pool roofs.
- Where the galvanised surface is being exposed to continuous moisture, without a chance for the surface to dry out for example, water tank roofs.
- In or near marine environments, where the prevailing wind carries marine salts which deposit on the Top Hat system, causing rapid consumption of the galvanised zinc coating and eventual red rusting of the base metal.
- In areas surrounding chemical or industrial storage buildings where any chemical attack may lessen the life of the structure or wind-driven chemical fumes may attack the galvanised coating.
- When in contact with or laid directly on ground.
- When in contact with timber and especially treated timber such as CCA (copper chrome arsenic) without the use of an isolating material such as DPC between the timber and Top Hat system.
- When used as supporting members to which fall arrest anchor points are attached.

- Where used as ceiling support members, vertical studs or horizontal wall girts where plaster board is fixed directly to the Top Hat and a level 4 finish or above is required (fixing to a secondary adjustable grid framing system connected to the Top Hats prior to lining with plasterboard will ensure tighter alignment and fixing tolerance, to achieve the required finish).
- When used in sub-floor areas with less than 450mm ground clearance.
- When used in sub-floor areas where ventilation does not comply with NZS 3604 Clause 6.14.
- Where embedded in concrete or where used within 50mm of the concrete ground slab.

NZBC COMPLIANCE 2.1.4

Past history of use of Dimond Top Hat Purlin System indicate that provided the system design, product use and maintenance is in line with the guidelines of this manual, Dimond Top Hat Purlin System can reasonably be expected to meet the performance criteria in clause B1 Structure and B2 Durability of the New Zealand Building Code for a period of not less than 50 years, provided the steel components remain dry and free from contamination.

DURABILITY STATEMENT 2.1.5

The use of Dimond Top Hat Purlin System is limited to dry and non corrosive environments unless further protection of the surfaces is provided.

It is the responsibility of the design engineer to assess the durability requirements and specify accordingly.

Dimond Top Hat Purlin System can be used in the temperature range of +60°C to -30°C.

As a guide and subject to designers specification and approval,

- Standard Z275 zinc coating weight is used on buildings where components are kept dry in service and protected from exposure to moisture and corrosive environments.
- Z450 zinc coating weight could be considered for mild external environments, such as the underside of canopies.
- Where the surface of the Top Hat system may be exposed to contaminants and/or moisture that will not regularly dry out, the use of Dimond Top Hat Purlin System is only recommended if suitable protection of the galvanised steel surface can be achieved with a proprietary coating system applied in-situ. Coating specifications and statements on suitability of use can be obtained from PPG Coatings or Akzo Nobel Coatings.

MAINTENANCE 2.1.6

Dimond Top Hat Purlin System require a minimum degree of maintenance to ensure expected performance is achieved. Careful maintenance can extend the useful life of the Dimond Top Hat Purlin System.

As a guide the following should be carried out as often as is needed (this could be as often as every three months).

a) Keep surfaces clean and free from continuous contact with moisture, dust and other debris. This includes areas such as the exposed underside of canopy structures. Where necessary, regular maintenance should include a wash-down programme to remove all the accumulated dirt or salt buildup on all the galvanised surfaces with a soft brush and plenty of clean water.

b) Periodically inspect the Top Hat members and connections. At the first sign of any surface corrosion, the affected areas should be cleaned down, spot primed with a zinc rich primer and then repainted to an appropriate paint manufacturer's recommendations.

Any case of severe damage or corrosion must be reported to the design engineer.

SPECIFIC DESIGN – TOP HAT PURLIN SYSTEM 2.2

DESIGN BASIS 2.2.1

Dimond Top Hat Purlin System have been designed to comply with AS/NZS 4600:2018. Appropriate design limit state load combinations should be determined in accordance with AS/NZS 1170. It is recommended these be expressed as uniformly distributed bending loads (kN/m) for direct comparison with the tabulated data in this manual.

Self weight of the Top Hat Purlin System is not included in any load tables and must be calculated as part of the total dead load of the building elements supported by the Top Hat.

Dimond Top Hat Purlin Systems are typically used as purlins and girts in lightweight building applications, for example farm buildings and light commercial sheds.

DESIGN CONSIDERATIONS 2.2.2

Data presented in this manual is intended for use by structural engineers. Load situations other than uniformly distributed loads will require specific design.

Design capacities in the limit state format have been derived by the application of a capacity factor, ϕ_b = 0.90 for bending.

A design yield strength as outlined in Material Specification 2.5.1 has been used for the Top Hat Purlin System.

These tables are intended for use where roofing or cladding provides full restraint to the top flange of the Top Hat purlin or girt. Loads are assumed to be applied about the major axis of symmetry (X-X).

The fixing type and size is critical to achieve the outward design loads and may be reduced with specific design. Refer Connection Design in this section.

The Top Hat Purlin System does not require bracing to provide restraint. Therefore the loads are represented as inward and outward cases. However bracing battens can be fastened transversely along the underside of the purlins to enhance the performance of Top Hat purlins and are recommended where supports/restraints are further than 30 times the Top Hat purlin depth apart.

Gravity type loads can be assumed to act perpendicular to the roof plane for pitches up to 10 degrees. For pitches greater than 10 degrees, load components about the minor axis of symmetry (Y-Y) should also be considered.

When designing Top Hat purlins to be used as girts, it is assumed cladding and girt gravity loads are taken by a stiff eaves member such as a DHS Purlin.

Span Guide

As a guide, single spans are used most frequently for ease of installation. Deflections may govern on larger spans.

Double span configurations may be used where lower deflections are required.

Lapped end and lapped internal configurations are more economical on large purlin spans where better strength and lower deflections are required.

Deflection Guidelines

As a guide to acceptable deflection limits for serviceability of the Top Hat Purlin System, the following limits are recommended for wind load and dead load actions where there is no ceiling,

Deflection for W_s ≤ Span/150

Deflection for G ≤ Span/300

For further guidance on deflection limits, refer to AS/NZS 1170.

Specific Design

Specific design to AS/NZS 4600 is required where Top Hat purlins -

- are used as cantilever members.
- have suspended loads present (such as ducting and piping).
- have holes present.
- are subject to axial loading.
- are subject to combined loading.
- are subject to out of plane loading about the minor Y-Y axis.

Connection Design

Dimond Structural supply a range of self-drilling fasteners for fixing into both steel or timber.

- When fixing into mild steel, a Metal Tek with a hardened drill point should be used.
- When fixing into timber, a Type 17 self-drilling fastener should be used.

In order to achieve the loads shown in the Top Hat purlin design tables, the following size and number of self-drilling fasteners are required for the support condition and type of material.

Fixings

				Number of Fasteners/Fastener Gauge				
	Support Member			Top Hat Purlin Size				
Support Condition	Material	Grade	Minimum Thickness (mm)	60 x 0.75 60 x 0.95	100 x 0.75 100 x 0.95	120 x 0.75 120 x 0.95	150 x 0.75 150 x 0.95 150 x 1.15	150 x 1.55
End	Cold-formed Steel	G450	1.45	2/12g	2/12g	2/14g	2/14g	4/14g
	Steel	G300	3	2/12g	2/12g	2/14g	2/14g	4/14g
	Timber	G300	37*	2/12g	2/12g	2/14g	2/14g	4/14g
Internal	Cold-formed Steel	G450	1.45	4/12g	6/12g	6/14g	8/14g	Strap
	Steel	G300	3	4/12g	6/12g	6/14g	8/14g	Strap
	Timber	G300	37*	4/12g	6/12g	6/14g	8/14g	Strap

*Minimum fastener embedment into timber support.

Notes:

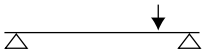
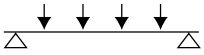
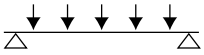
- Cold-formed Steel: Example 2/14g - 2 x 14 gauge fasteners connected to G450 cold-formed steel support member of 1.45mm minimum thickness.
- Steel: Example 2/14g - 2 x 14 gauge fasteners connected to G300 hot-rolled steel support member of 3.0mm minimum thickness.
- Timber: Example 2/14g - 2 x 14 gauge Type 17 x 50mm long fasteners connected into timber to achieve a minimum embedment of 37mm.
- Lap End Fasteners: 2 fasteners each end of the lap for 60 and 100 deep Top Hat purlins and 4 fasteners each end of the lap for 120 and 150 deep Top Hat purlins - to the same gauge (diameter) as fasteners recommended in the above table. The same rationale applies where 14 gauge fasteners are required.
- When the number of specified fixings above cannot be fixed into the Top Hat purlin and/or Top Hat purlin is being installed in cyclonic regions, an additional hold-down strap should be used. Refer CAD details on-line (**www.dimondstructural.co.nz/products/top-hat-purlins**).
- Specific Design is required where less fasteners or other types of support members are used.

Point Load Conversion Guide

The following formula may be used as a guide in converting point loads to equivalent uniformly distributed bending loads specific to the Top Hat Purlin System.

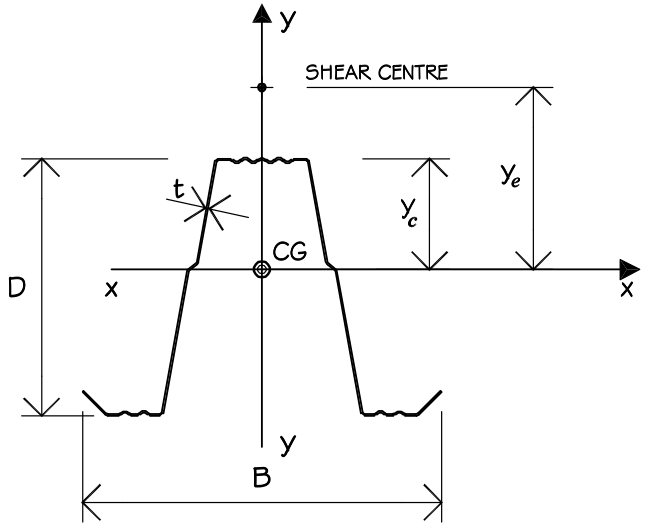
Formula $W = F \times \frac{P}{L}$

Where W = Uniform bending load
F = Factor "F" from table below
P = Point load ↓
L = Length of span

Type	Symbol	Factor "F"			
		Simple	End Span	Lapped End	Lapped Internal
One equidistant point load		2	2.25	2.25	2
One eccentric point load		1.5	2	2	1.5
Two equidistant point loads		2.67	3.25	3.25	2.25
Three equidistant point loads		4	4.25	4.25	3.5
Four equidistant point loads		4.8	5.5	5.5	4.25
Five equidistant point loads		6	6.75	6.75	5.5

Notes:
1. This conversion guide and factors (F) is only applicable to the Top Hat Purlin System.
2. The conversion factors (F) are an approximation to the pure derivation and are to be used as a guide only.
3. The conversion formula assumes all point loads are equal in magnitude.

TOP HAT PURLIN SYSTEM SECTION PROPERTIES



Top Hat Section	Depth D (mm)	Width B (mm)	Thickness T (mm)	Area A (mm^2)	Mass per unit length (kg/m)	Second Moment of Area		Section Modulus			Radius of Gyration		Centre of Gravity y_c (mm)	Shear Centre y_e (mm)	Torsion Constant J (mm^4)	Warping Constant I_w (10^6mm^6)	Monosymmetry Constant β_x (mm)
						I_x (10^6mm^4)	I_y (10^6mm^4)	Z_x (10^3mm^3)	Z_x (10^3mm^3)	Z_y (10^3mm^3)	r_x (mm)	r_y (mm)					
60x75	60	127	0.75	170.41	1.34	0.09	0.2	2.82	3.34	3.11	23.2	34.1	32.5	43.08	31.95	46.06	115
60x95	60	127	0.95	215.43	1.69	0.12	0.25	3.53	4.2	3.92	23.1	34.1	32.6	42.7	64.81	58.16	115
100x75	100	155	0.75	238.31	1.87	0.32	0.4	5.9	6.87	5.19	36.5	41.2	53.7	70.3	44.68	159.4	168
100x95	100	155	0.95	301.57	2.37	0.4	0.52	7.42	8.66	6.58	36.4	41.4	53.8	69.81	90.72	202.21	168
120x75	120	162	0.75	268.52	2.11	0.5	0.49	7.75	8.85	6.07	43	42.9	63.9	85.42	50.35	241.34	196
120x95	150	162	0.95	339.59	2.67	0.63	0.61	9.77	11.18	7.57	42.9	42.5	94	85.33	102.16	308.14	195
150x75	150	173	0.75	314.18	2.47	0.87	0.65	10.96	12.25	7.51	52.6	45.5	79.1	108.03	58.91	407.87	239
150x95	150	173	0.95	397.73	3.12	1.1	0.82	13.83	15.48	9.48	52.5	45.5	79.2	107.68	119.65	520.07	239
150x115	150	170	1.15	475.89	3.74	1.3	0.95	16.58	18.22	11.19	52.4	44.8	78.4	108.86	209.79	532.2	241
150x155	150	170	1.55	641.89	5.04	1.76	1.29	22.28	24.56	15.01	52.4	44.7	78.3	108.46	514.05	732.02	240

Note: Mass assumes a total coated weight for the standard zinc coating of $275g/m^2$.

TOP HAT PURLIN SYSTEM LOAD SPAN TABLES

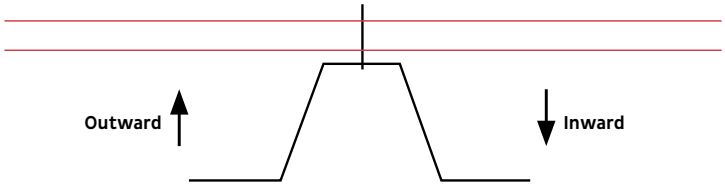
Uniformly loaded bending capacities (kN/m) are given for the Top Hat Purlin System for spans between 1.25m and 10.0m in the following configurations -

Inward Ultimate - Load pushing inward on the Top Flange

Outward Ultimate - Load pulling outward on the Top Flange

Ws Serviceability - Load at which midspan deflection equates to span/150.

As deflection is proportional to loading, Ws loads may be factored by the deflection ratio for any deflection within the limit of the linear load capacities.

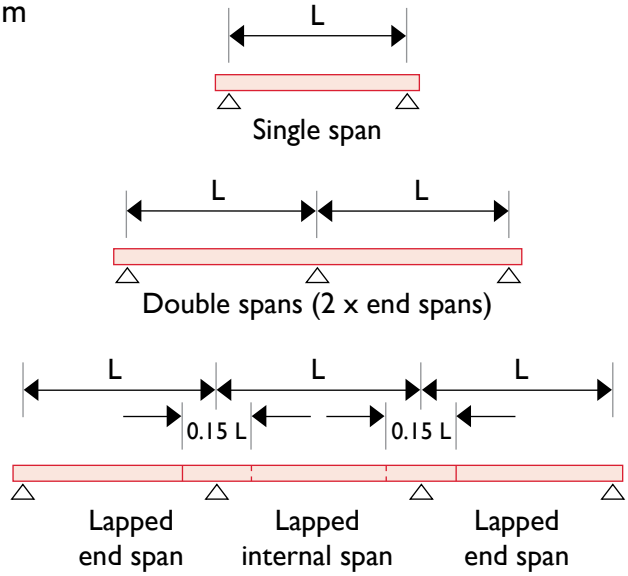


The following notes apply to the load tables in this section -

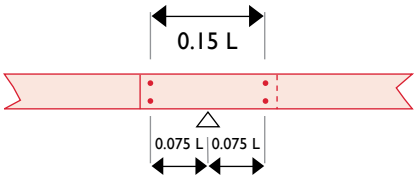
1. It is assumed that the top flange of the Top Hat purlin is continuously restrained by screw-fastened roof sheeting. If not, specific design to AS/NS 4600 is required.
2. Use of lapped end span tables with corresponding lapped internal span tables assumes that the lapped span is within plus 5% or minus 25% of the lapped internal spans, otherwise specific design to AS/NZS 4600 is required.
3. Outward loads are based on both section capability and the capability of the fastener connections, refer Connection Design in Section 2.4.2.
4. Shaded areas of the table relate to spans which will not support a point load of 1.4kN (refer AS/NZS 1170). This assumes no load sharing between purlins.
5. No member rotation has been allowed for at fixed ends.
6. Linear interpolation is permitted for Loads between intermediate Top Hat purlin spans.

Typical Top Hat Purlin System Span Configurations

L = Span length



All lap lengths are to be a minimum of 0.15 of the maximum span measured from fixing points each end of the lap, positioned equally each side of the portal rafter. Refer CAD Details on-line (**www.dimondstructural.co.nz/products/top-hat-purlins**).



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TOP HAT PURLIN SYSTEM LOAD SPAN TABLES – **SINGLE SPAN**

Uniformly Loaded Bending Capacities (kN/m) $\phi_b W_{bx}$

	60x75			60x95			100x75			100x95			120x75			120x95			150x75			150x95			150x115			150x155		
Span (m)	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S
1.00																														
1.25	4.88	4.75	4.82																											
1.50	3.39	3.30	2.79																											
1.75	2.49	2.42	1.76																											
2.00	1.91	1.86	1.18	2.74	2.57	1.47																								
2.25	1.51	1.47	0.83	2.17	2.03	1.04																								
2.50	1.22	1.19	0.60	1.75	1.64	0.75	2.45	2.33	2.08																					
2.75	1.01	0.98	0.45	1.45	1.36	0.57	2.02	1.93	1.57																					
3.00	0.85	0.82	0.35	1.22	1.14	0.44	1.70	1.62	1.21																					
3.25				1.04	0.97	0.34	1.45	1.38	0.95	2.10	1.93	1.19	1.87	1.71	1.48															
3.50							1.25	1.19	0.76	1.81	1.66	0.96	1.61	1.48	1.19	2.34	2.08	1.50	2.23	1.87	2.07									
3.75							1.09	1.04	0.62	1.58	1.45	0.78	1.41	1.29	0.96	2.04	1.82	1.22	1.94	1.63	1.69									
4.00							0.96	0.91	0.51	1.39	1.27	0.64	1.24	1.13	0.79	1.79	1.60	1.00	1.70	1.43	1.39									
4.25							0.85	0.81	0.42	1.23	1.13	0.53	1.10	1.00	0.66	1.59	1.41	0.83	1.51	1.27	1.16									
4.50							0.75	0.72	0.36	1.09	1.01	0.45	0.98	0.89	0.56	1.42	1.26	0.70	1.35	1.13	0.98	1.96	1.60	1.23						
4.75							0.68	0.65	0.30	0.98	0.90	0.38	0.88	0.80	0.47	1.27	1.13	0.60	1.21	1.01	0.83	1.76	1.44	1.05						
5.00										0.89	0.81	0.33	0.79	0.72	0.41	1.15	1.02	0.51	1.09	0.91	0.71	1.59	1.30	0.90						
5.25													0.72	0.66	0.35	1.04	0.93	0.44	0.99	0.83	0.61	1.44	1.18	0.78						
5.50													0.65	0.60	0.31	0.95	0.84	0.39	0.90	0.76	0.53	1.32	1.07	0.67						
5.75																0.87	0.77	0.34	0.82	0.69	0.47	1.20	0.98	0.59	1.63	1.27	0.70	2.43	2.15	0.95
6.00																0.80	0.71	0.30	0.76	0.64	0.41	1.11	0.90	0.52	1.49	1.17	0.62	2.23	1.97	0.83
6.25																			0.70	0.59	0.36	1.02	0.83	0.46	1.38	1.08	0.55	2.05	1.82	0.74
6.50																			0.65	0.54	0.32	0.94	0.77	0.41	1.27	0.99	0.49	1.90	1.68	0.66
6.75																						0.87	0.71	0.37	1.18	0.92	0.43	1.76	1.56	0.59
7.00																						0.81	0.66	0.33	1.10	0.86	0.39	1.64	1.45	0.53
7.25																									1.02	0.80	0.35	1.53	1.35	0.47
7.50																									0.96	0.75	0.32	1.43	1.26	0.43
7.75																												1.34	1.18	0.39
8.00																												1.25	1.11	0.35
8.25																												1.18	1.04	0.32
8.50																														
8.75																														
9.00																														
9.25																														
9.50																														
9.75																														
10.00																														

1. **Inward:** Load pushing inward on the top flange.
2. **Outward:** Load pulling outward on the top flange.
3. **Ws:** Load at a deflection of span/150.
4. ■ Shaded areas relate to spans which will not support a point load of 1.4kN (refer AS/NZS 1170).

TOP HAT PURLIN SYSTEM LOAD SPAN TABLES - **DOUBLE SPAN**

Uniformly Loaded Bending Capacities (kN/m) $\phi_b W_{bx}$

	60x75			60x95			100x75			100x95			120x75			120x95			150x75			150x95			150x115			150x155		
Span (m)	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S
1.00																														
1.25																														
1.50	3.30	3.30	6.73				5.76	5.19	23.25										4.70	4.82	63.50									
1.75	2.42	2.44	4.24				4.55	4.04	14.64										3.89	4.02	39.99									
2.00	1.86	1.88	2.84				3.65	3.23	9.81				3.55	3.51	15.32				3.28	3.41	26.79									
2.25	1.47	1.49	1.99	2.03	2.15	2.50	2.88	2.63	6.89				2.96	2.93	10.76				2.80	2.94	18.81									
2.50	1.19	1.21	1.45	1.64	1.74	1.82	2.33	2.18	5.02				2.51	2.48	7.84				2.42	2.56	13.72									
2.75	0.98	1.00	1.09	1.36	1.44	1.37	1.93	1.84	3.77	2.69	2.78	4.75	2.15	2.12	5.89				2.11	2.24	10.30									
3.00	0.82	0.84	0.84	1.14	1.21	1.05	1.62	1.56	2.91	2.26	2.36	3.66	1.86	1.83	4.54				1.86	1.99	7.94									
3.25	0.70	0.72	0.66	0.97	1.03	0.83	1.38	1.35	2.29	1.93	2.02	2.88	1.62	1.60	3.57				1.64	1.77	6.24									
3.50	0.61	0.62	0.53	0.84	0.89	0.66	1.19	1.17	1.83	1.66	1.75	2.30	1.43	1.40	2.86				1.46	1.58	5.00	2.43	2.65	6.31						
3.75	0.53	0.54	0.43	0.73	0.78	0.54	1.04	1.03	1.49	1.45	1.53	1.87	1.26	1.24	2.32	1.82	1.91	2.93	1.31	1.43	4.06	2.15	2.36	5.13						
4.00	0.46	0.47	0.35	0.64	0.68	0.44	0.91	0.91	1.23	1.27	1.35	1.54	1.13	1.11	1.91	1.60	1.69	2.41	1.18	1.29	3.35	1.92	2.11	4.23						
4.25	0.41	0.42	0.30	0.57	0.61	0.37	0.81	0.81	1.02	1.13	1.20	1.29	1.00	0.99	1.60	1.41	1.51	2.01	1.07	1.17	2.79	1.73	1.90	3.53						
4.50				0.51	0.54	0.31	0.72	0.73	0.86	1.01	1.07	1.08	0.89	0.89	1.35	1.26	1.35	1.70	0.97	1.07	2.35	1.56	1.72	2.97						
4.75							0.65	0.65	0.73	0.90	0.96	0.92	0.80	0.81	1.14	1.13	1.22	1.44	0.89	0.98	2.00	1.41	1.56	2.53				3.08	3.46	4.06
5.00							0.58	0.59	0.63	0.81	0.87	0.79	0.72	0.74	0.98	1.02	1.10	1.24	0.81	0.90	1.71	1.28	1.43	2.17				2.79	3.13	3.48
5.25							0.53	0.54	0.54	0.74	0.79	0.68	0.66	0.67	0.85	0.93	1.00	1.07	0.74	0.83	1.48	1.17	1.31	1.87	1.52	1.83	2.23	2.53	2.84	3.00
5.50							0.48	0.49	0.47	0.67	0.72	0.59	0.60	0.61	0.74	0.84	0.92	0.93	0.69	0.76	1.29	1.07	1.20	1.63	1.39	1.68	1.94	2.31	2.60	2.61
5.75							0.44	0.45	0.41	0.62	0.66	0.52	0.55	0.57	0.64	0.77	0.84	0.81	0.63	0.71	1.13	0.98	1.11	1.42	1.27	1.54	1.69	2.12	2.38	2.29
6.00							0.41	0.42	0.36	0.57	0.61	0.46	0.50	0.52	0.57	0.71	0.78	0.72	0.59	0.66	0.99	0.90	1.02	1.25	1.17	1.42	1.49	1.95	2.19	2.01
6.25							0.37	0.38	0.32	0.52	0.56	0.40	0.46	0.48	0.50	0.65	0.72	0.63	0.54	0.61	0.88	0.83	0.95	1.11	1.08	1.32	1.32	1.80	2.02	1.78
6.50										0.48	0.52	0.36	0.43	0.45	0.45	0.60	0.66	0.56	0.51	0.57	0.78	0.77	0.88	0.99	0.99	1.22	1.17	1.66	1.87	1.58
6.75										0.45	0.48	0.32	0.40	0.42	0.40	0.56	0.62	0.50	0.47	0.53	0.70	0.71	0.82	0.88	0.92	1.14	1.05	1.54	1.74	1.41
7.00													0.37	0.39	0.36	0.52	0.57	0.45	0.44	0.50	0.62	0.66	0.77	0.79	0.86	1.06	0.94	1.44	1.62	1.27
7.25													0.34	0.36	0.32	0.49	0.54	0.41	0.42	0.47	0.56	0.62	0.72	0.71	0.80	0.99	0.85	1.34	1.51	1.14
7.50																0.45	0.50	0.37	0.39	0.44	0.51	0.58	0.67	0.64	0.75	0.93	0.76	1.25	1.41	1.03
7.75																0.42	0.47	0.33	0.37	0.41	0.46	0.54	0.63	0.58	0.70	0.87	0.69	1.17	1.32	0.93
8.00																0.40	0.44	0.30	0.35	0.39	0.42	0.51	0.59	0.53	0.66	0.82	0.63	1.10	1.24	0.85
8.25																			0.33	0.37	0.38	0.48	0.56	0.48	0.62	0.77	0.57	1.04	1.17	0.77
8.50																			0.31	0.35	0.35	0.45	0.53	0.44	0.58	0.73	0.52	0.98	1.10	0.71
8.75																			0.29	0.33	0.32	0.42	0.50	0.40	0.55	0.69	0.48	0.92	1.04	0.65
9.00																						0.40	0.47	0.37	0.52	0.65	0.44	0.87	0.98	0.60
9.25																						0.38	0.45	0.34	0.49	0.62	0.41	0.83	0.93	0.55
9.50																						0.36	0.43	0.32	0.47	0.58	0.38	0.78	0.88	0.51
9.75																									0.44	0.55	0.35	0.74	0.84	0.47
10.00																									0.42	0.53	0.32	0.71	0.80	0.43

1. **Inward:** Load pushing inward on the top flange.
2. **Outward:** Load pulling outward on the top flange.
3. **Ws:** Load at a deflection of span/150.
4. ■ Shaded areas relate to spans which will not support a point load of 1.4kN (refer AS/NZS 1170).

TOP HAT PURLIN SYSTEM LOAD SPAN TABLES - **LAPPED END SPAN**

Uniformly Loaded Bending Capacities (kN/m) $\phi_b W_{bx}$

	60x75			60x95			100x75			100x95			120x75			120x95			150x75			150x95			150x115			150x155		
Span (m)	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S
1.00																														
1.25																														
1.50																														
1.75																														
2.00																														
2.25	1.98	2.00	2.26																											
2.50	1.61	1.63	1.65																											
2.75	1.33	1.35	1.24																											
3.00	1.12	1.13	0.95										2.34	2.32	5.14				2.26	2.38	8.99									
3.25	0.95	0.97	0.75	1.31	1.40	0.94							2.06	2.03	4.04				2.01	2.13	7.07									
3.50	0.82	0.84	0.60	1.13	1.20	0.75							1.82	1.80	3.24				1.81	1.93	5.66									
3.75	0.71	0.73	0.49	0.99	1.05	0.61	1.40	1.36	1.69	1.96	2.04	2.12	1.62	1.60	2.63	2.45	2.51	3.32	1.63	1.74	4.60									
4.00	0.63	0.64	0.40	0.87	0.92	0.50	1.23	1.21	1.39	1.72	1.81	1.75	1.45	1.43	2.17	2.16	2.23	2.74	1.48	1.59	3.79									
4.25	0.56	0.57	0.33	0.77	0.82	0.42	1.09	1.08	1.16	1.53	1.61	1.46	1.31	1.29	1.81	1.91	1.99	2.28	1.34	1.45	3.16									
4.50				0.69	0.73	0.35	0.97	0.97	0.98	1.36	1.44	1.23	1.18	1.16	1.52	1.70	1.79	1.92	1.23	1.33	2.66									
4.75							0.87	0.87	0.83	1.22	1.29	1.04	1.07	1.06	1.30	1.53	1.62	1.63	1.12	1.22	2.27	1.83	2.01	2.86						
5.00							0.79	0.79	0.71	1.10	1.17	0.89	0.98	0.96	1.11	1.38	1.47	1.40	1.03	1.13	1.94	1.67	1.84	2.45						
5.25							0.72	0.72	0.61	1.00	1.06	0.77	0.89	0.88	0.96	1.25	1.34	1.21	0.95	1.04	1.68	1.53	1.69	2.12						
5.50							0.65	0.66	0.53	0.91	0.97	0.67	0.81	0.81	0.83	1.14	1.22	1.05	0.88	0.97	1.46	1.41	1.56	1.84						
5.75							0.60	0.60	0.47	0.83	0.89	0.59	0.74	0.75	0.73	1.04	1.12	0.92	0.82	0.90	1.28	1.30	1.44	1.61						
6.00							0.55	0.56	0.41	0.77	0.82	0.52	0.68	0.69	0.64	0.96	1.04	0.81	0.76	0.84	1.12	1.20	1.34	1.42						
6.25							0.51	0.51	0.36	0.71	0.76	0.46	0.63	0.64	0.57	0.88	0.96	0.72	0.71	0.78	0.99	1.12	1.24	1.26						
6.50							0.47	0.48	0.32	0.65	0.70	0.41	0.58	0.59	0.51	0.82	0.89	0.64	0.66	0.73	0.88	1.04	1.16	1.12						
6.75										0.60	0.65	0.36	0.54	0.55	0.45	0.76	0.82	0.57	0.62	0.69	0.79	0.96	1.08	1.00						
7.00										0.56	0.60	0.33	0.50	0.52	0.40	0.70	0.77	0.51	0.58	0.65	0.71	0.90	1.01	0.89						
7.25													0.47	0.48	0.36	0.66	0.72	0.46	0.54	0.61	0.64	0.84	0.94	0.80	1.08	1.32	0.96	1.80	2.03	1.29
7.50													0.44	0.45	0.33	0.61	0.67	0.41	0.51	0.57	0.58	0.78	0.89	0.73	1.01	1.24	0.87	1.69	1.90	1.17
7.75													0.41	0.43	0.30	0.57	0.63	0.38	0.48	0.54	0.52	0.73	0.83	0.66	0.95	1.16	0.78	1.58	1.78	1.06
8.00																0.54	0.59	0.34	0.45	0.51	0.47	0.69	0.79	0.60	0.89	1.09	0.71	1.48	1.67	0.96
8.25																0.51	0.56	0.31	0.43	0.48	0.43	0.64	0.74	0.55	0.83	1.03	0.65	1.40	1.57	0.88
8.50																			0.41	0.46	0.40	0.61	0.70	0.50	0.79	0.97	0.59	1.32	1.48	0.80
8.75																			0.38	0.43	0.36	0.57	0.66	0.46	0.74	0.92	0.54	1.24	1.40	0.74
9.00																			0.37	0.41	0.33	0.54	0.63	0.42	0.70	0.87	0.50	1.18	1.32	0.68
9.25																			0.35	0.39	0.31	0.51	0.60	0.39	0.66	0.82	0.46	1.11	1.25	0.62
9.50																						0.49	0.57	0.36	0.63	0.78	0.43	1.06	1.19	0.57
9.75																						0.46	0.54	0.33	0.60	0.74	0.39	1.00	1.13	0.53
10.00																						0.44	0.51	0.31	0.57	0.71	0.36	0.95	1.07	0.49

1. **Inward:** Load pushing inward on the top flange.
2. **Outward:** Load pulling outward on the top flange.
3. **Ws:** Load at a deflection of span/150.
4. ■ Shaded areas relate to spans which will not support a point load of 1.4kN (refer AS/NZS 1170).
5. Values highlighted in red are governed by fixing uplift capacity.

TOP HAT PURLIN SYSTEM LOAD SPAN TABLES - **LAPPED INTERNAL SPAN**

Uniformly Loaded Bending Capacities (kN/m) $\phi_b W_{bx}$

	60x75			60x95			100x75			100x95			120x75			120x95			150x75			150x95			150x115			150x155		
Span (m)	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S	Inward	Outward	W_S
1.00																														
1.25																														
1.50																														
1.75																														
2.00																														
2.25																														
2.50	1.99	1.94	1.22																											
2.75	1.64	1.60	0.92	2.32	2.21	1.15																								
3.00	1.38	1.34	0.71	1.95	1.86	0.88	2.77	2.61	2.44																					
3.25	1.18	1.15	0.55	1.66	1.58	0.69	2.36	2.25	1.92																					
3.50	1.01	0.99	0.44	1.43	1.36	0.56	2.03	1.94	1.54																					
3.75	0.88	0.86	0.36	1.25	1.19	0.45	1.77	1.69	1.25																					
4.00	0.78	0.76	0.30	1.10	1.04	0.37	1.56	1.49	1.03																					
4.25							1.38	1.32	0.86	1.93	1.84	1.08	1.67	1.63	1.34															
4.50							1.23	1.17	0.72	1.72	1.64	0.91	1.51	1.46	1.13	2.16	2.05	1.42	1.52	1.61	1.97									
4.75							1.10	1.05	0.61	1.54	1.47	0.77	1.37	1.31	0.96	1.93	1.84	1.21	1.40	1.49	1.68									
5.00							1.00	0.95	0.53	1.39	1.33	0.66	1.24	1.18	0.82	1.75	1.66	1.04	1.30	1.39	1.44									
5.25							0.90	0.86	0.45	1.26	1.20	0.57	1.12	1.07	0.71	1.58	1.51	0.90	1.20	1.29	1.24									
5.50							0.82	0.79	0.40	1.15	1.10	0.50	1.02	0.97	0.62	1.44	1.37	0.78	1.12	1.21	1.08	1.80	1.75	1.37						
5.75							0.75	0.72	0.35	1.05	1.00	0.44	0.94	0.89	0.54	1.32	1.26	0.68	1.04	1.13	0.95	1.66	1.60	1.19						
6.00							0.69	0.66	0.30	0.97	0.92	0.38	0.86	0.82	0.48	1.21	1.16	0.60	0.97	1.04	0.83	1.53	1.47	1.05						
6.25							0.51	0.51	0.36	0.89	0.85	0.34	0.79	0.75	0.42	1.12	1.06	0.53	0.90	0.95	0.74	1.42	1.35	0.93						
6.50							0.47	0.48	0.32	0.82	0.79	0.30	0.73	0.70	0.37	1.03	0.98	0.47	0.84	0.88	0.65	1.31	1.25	0.83						
6.75													0.68	0.65	0.33	0.96	0.91	0.42	0.79	0.82	0.58	1.22	1.16	0.74						
7.00													0.63	0.60	0.30	0.89	0.85	0.38	0.74	0.76	0.52	1.13	1.08	0.66						
7.25																0.83	0.79	0.34	0.69	0.71	0.47	1.06	1.01	0.60	1.37	1.30	0.71	2.28	2.20	0.96
7.50																0.78	0.74	0.31	0.65	0.66	0.43	0.99	0.94	0.54	1.28	1.22	0.64	2.13	2.06	0.86
7.75																			0.61	0.62	0.39	0.92	0.88	0.49	1.20	1.14	0.58	2.00	1.93	0.78
8.00																			0.58	0.58	0.35	0.87	0.83	0.44	1.12	1.07	0.53	1.88	1.81	0.71
8.25																			0.55	0.55	0.32	0.82	0.78	0.40	1.06	1.01	0.48	1.77	1.70	0.65
8.50																						0.77	0.73	0.37	0.99	0.95	0.44	1.67	1.60	0.59
8.75																						0.72	0.69	0.34	0.94	0.89	0.40	1.57	1.51	0.54
9.00																						0.69	0.65	0.31	0.89	0.84	0.37	1.49	1.43	0.50
9.25																									0.84	0.80	0.34	1.41	1.35	0.46
9.50																									0.80	0.76	0.32	1.34	1.28	0.43
9.75																												1.27	1.22	0.39
10.00																												1.21	1.16	0.36

1. **Inward:** Load pushing inward on the top flange.
2. **Outward:** Load pulling outward on the top flange.
3. **Ws:** Load at a deflection of span/150.
4. ■ Shaded areas relate to spans which will not support a point load of 1.4kN (refer AS/NZS 1170).
5. Values highlighted in red are governed by fixing uplift capacity.

EXAMPLE: SINGLE SPAN AND LAPPED SPAN

Loadings

Dead Load, G = 0.12kPa Live Load, Q = 0.25kPa Snow Load, S_u = 0.5kPa

Outward Limit State Wind Loads, W_u = – 0.95kPa (ultimate state) and W_s = – 0.66kPa (serviceability state).

Inward Wind Loading is not significant for this roof.

Building Constraints

Portal Spacing, L_P = 5m		Rafter Length, L_R =	10.0m (distance from eaves purlin to ridge purlin)
Roof Pitch, a = 10 degrees		Cladding Profile =	Styleline x 0.40mm BMT

Critical Design Load Combinations for the Ultimate Limit State (from AS/NZS 1170)

i) W^*_{ULS} = 1.2G + 1.5Q = (1.2 x 0.12) + (1.5 x 0.25) = 0.52kPa

ii) W^*_{ULS} = 1.2G + S_u + ψ_lQ = (1.2 x 0.12) + 0.5 + (0.0 x 0.25) = 0.64kPa

iii) W^*_{ULS} = 0.9G + W_u = (0.9 x 0.12) – 0.95 = – 0.84kPa (outward)

Critical Design Load Combinations for the Serviceability Limit State (from AS/NZS 1170)

i) W^*_{SLS} = L_P/300 under G + ψ_lQ = [0.12 + (0.0 x 0.25)] x 300/150 = 0.24kPa

ii) W^*_{SLS} = L_P/150 under W_s = – 0.66 = – 0.66kPa (outward)

For i) we have converted the load by a factor of 300/150 in order to compare the load directly with W_s in the Top Hat purlin load span tables as these are based on span/150.

Optimise Roofing Profile Spans

In this case we have a restricted access roof where the point load requirement limits the intermediate span of the Styleline x 0.40mm BMT profile to 1.6m. End spanning capability of the roofing is reduced to 1.05m, i.e. two thirds of the intermediate span. Generally these spans will not 'fit' the rafter length exactly, hence the requirement to optimise.

The optimised roofing profile intermediate span is based on the rafter length and the number of purlins, NP (assuming at least four) and is given by the term: $PS_i = L_R / [NP - 1.66]$ where PS_i is the internal purlin spacing and purlins at each end are two thirds of PS_i.

Try 7 Purlins, PS_i = 10.0/(7 – 1.66) = 1.87m No good

Try 9 Purlins, PS_i = 10.0/(9 – 1.66) = 1.36m Not controlling

Try 8 Purlins, PS_i = 10.0/(8 – 1.66) = 1.58m Intermediate spans and 1.05m edge spans

From this, 8 purlins are required and the purlin spacings may be rationalised to 1.6m intermediate spans and 1.0m spans at the sheet ends.

The Top Hat purlin load span tables assume the top flange of the Top Hat purlin is continuously restrained by screw-fastened roof sheeting (if not, specific design to AS/NZS 4600 is required).

1. Single Span Purlin Design

All Bays (5m span)

Check design capacities (using Top Hat Purlin System Load Span Tables - Single Span): $W^*_{ULS} < \phi_b W_{bx}$

$W^*_{ULS}\downarrow$ = 1.6 x 0.64 = 1.02kN/m cf. 1.15kN/m for a 120 x 0.95

$W^*_{ULS}\uparrow$ = 1.6 x –0.84 = –1.34kN/m cf. 1.68kN/m for a 150 x 1.15

Check deflections

W^*_{SLS} = 1.6 x 0.66 = 1.06kN/m cf. 1.07kN/m for a 150 x 1.15

Both outward wind load and deflection govern and a 150 x 1.15 Top Hat purlin is required.

Therefore use 150 x 1.15 Top Hat purlins single span at 1.6m intermediate spacings and 1.0m at sheet ends.
Typically for multiple bay structures it would be more efficient to use a lapped purlin system as shown next.

2. Lapped Span Purlin Design

Check End Bays (5m span)

Check design capacities (using Top Hat Purlin System Load Span Tables - Lapped End Span): $W^*_{ULS} < \phi_b W_{bx}$

$W^*_{ULS}\downarrow$ = 1.6 x 0.64 = 1.02kN/m cf. 1.10kN/m for a 100 x 0.95

$W^*_{ULS}\uparrow$ = 1.6 x −0.84 = −1.34kN/m cf. 1.47kN/m for a 120 x 0.95

Check deflections

W^*_{SLS} = 1.6 x 0.66 = 1.06kN/m cf. 1.40kN/m for a 120 x 0.95

Deflection wind load governs the end span and a 120 x 0.95 lapped Top Hat purlin is required.

Check Internal Bays (5m span)

Check design (using Top Hat Purlin System Load Span Tables - Lapped Internal Span): $W^*_{ULS} < \phi_b W_{bx}$

$W^*_{ULS}\downarrow$ = 1.6 x 0.64 = 1.02kN/m cf. 1.00kN/m for a 100 x 0.75

$W^*_{ULS}\uparrow$ = 1.6 x −0.84 = −1.34kN/m cf. 1.33kN/m for a 100 x 0.95

Check deflections

W^*_{SLS} = 1.6 x 0.66 = 1.06kN/m cf. 1.04kN/m for a 120 x 0.95

Deflection wind load governs the internal span and a 120 x 0.95 lapped Top Hat purlin is required. (capacity governed by internal fixings)

Therefore use Top Hat 120 x 0.95 lapped purlins at 1.6m intermediate spacings and 1.0m at sheet ends (governed by the end bays).

Top Hat purlins must have the same depth on all bays to keep the roofing in the same plane and different thicknesses are not mixed when specifying Top Hat purlins for practical reasons.

The above examples use the same wind load on the end bays and the internal bays. However a more rigorous wind load analysis is likely to have different wind loads on the end and internal bays.

In the calculation of wall elements, optimisation follows the same logic as illustrated for roofing with the exception that foot traffic limitations do not apply, leaving the spanning ability of the cladding dependent on face loads caused by wind.

TOP HAT FLOOR JOIST SPAN TABLE

Top Hat	Case 1			Case 2			Case 3			Case 4		
	G=0.5kPa	Q=1.5kPa	Qc=1.8kN	G=1.0kPa	Q=1.5kPa	Qc=1.8kN	G=1.0kPa	Q=2.0kPa	Qc=1.8kN	G=1.0kPa	Q=3.0kPa	Qc=2.7kN
	300mm	400mm	600mm	300mm	400mm	600mm	300mm	400mm	600mm	300mm	400mm	600mm
100x75	2500	2250	2000	2300	2100	1800	2150	2000	1750	2000	1800	1550
100x95	2650	2400	2100	2500	2250	2000	2350	2100	1850	2100	1900	1650
120x75	2850	2600	2300	2650	2400	2100	2550	2300	2050	2300	2050	1800
120x95	3100	2850	2500	2850	2600	2300	2750	2500	2100	2500	2250	2000
150x75	3500	3150	2750	3250	2900	2550	3050	2750	2400	2750	2500	2150
150x95	3800	3400	3000	3500	3150	2800	3300	3000	2600	3000	2750	2350
150x115	4000	3600	3150	3750	3350	2900	3500	3150	2750	3150	2850	2500
150x155	4400	4050	3500	4100	3750	3250	3850	3500	3050	3500	3150	2800

NOTES:

1. These tables have been prepared for information only, based on the design criteria outlined in NASH Standard Part 1: 2016 - Alternative Solution and on the assumption that design/construction will be in accordance with the NASH Handbook for Design of Residential and Low-Rise Stell Buildings.
- Serviceability criteria has been adopted as per Table 4.1
- The minimum stiffness of the floor system floor for the 1kN point load check has been calculated in accordance with Section C2
- The natural frequency of the floor system has been calculated in accordance with Section C3
- 19mm thick grade F8 plywood (E=9.1GPa) and a 600mm joist spacing has been assumed for all cases. Specific design or thicker flooring may result in greater spans.
- The mass of the floor is equal or less than G + 0.3kPa (allowance for live load as per Section C3)
- The width of the floor system is assumed to be equal to or less than the span of the joists.

2. The following load cases and limits have been considered in preparing the tables:

• G+Q	L/500	or	12mm max	(SLS - Vibration)
• 1kN PL			2mm max	(SLS - Vibration allowing for stiffness of floor joist and decking system)
• G+0.3kPa			8Hz min	(SLS - Vibration allowing for stiffness of floor joist and decking system)
• G + 0.4Qudl L/400				(SLS - Noticeable Sag)
• 1.2G + 1.5Qudl				(ULS)
• 1.2G + 1.5Qc				(ULS)

3. Specific design is required when:
- The floor is supporting load bearing or bracing walls or concentrated loads
- The floor forms part of a structural diaphragm
- The floor will be used for dance-type activities
- The width of the floor system is greater than the span of the joists
- Alternative decking is proposed (with a lower EI value)
- Alternative criteria for the dynamic vibration of the floor is to be considered
- Floor joists do not have solid bearing on their supports
- Penetrations are made in the joists
- Spans exceeding the recommended values are required

4. We recommend that specific assessment of the dynamic vibrations is carried out once actual loads, dimensions and materials are confirmed. Contact Dimond for technical support if required. We have taken care to provide recommended span tables based on a range of assumptions. The design engineer shall take care to verify the assumptions are applicable to the project. Engineering judgement shall be made whether to adopt recommended limits as per the NASH Standard or NZS1170.

Dimond Structural™

Installation – Dimond Top Hat Purlin System

August 2026

TOP HAT PURLIN SYSTEM MATERIAL SPECIFICATION

2.3.1

Dimond Structural Top Hat Purlins are manufactured by roll forming galvanised steel coil produced to AS 1397.

Base Metal Thickness (BMT) (mm)	Steel Grade	Yield Strength, f_y (MPa)	Zinc Weight, Z (g/m^2)
0.75 & 0.95	G550	550	275
1.15	G500	500	275
1.55	G450	500	275

Z450 galvanised zinc coil can be supplied with order lead times of up 12 weeks. Contact Dimond Structural on 0800 Dimond (0800 346 663).

Tolerances

Length:		±6mm
Depth/Width:	60 Top Hat purlin:	±1mm
	100/120 Top Hat purlin:	±2mm
	150 Top Hat purlin:	±3mm
Top Flange Width:		±1mm

TOP HAT PURLIN SYSTEM SHORT FORM SPECIFICATION

2.3.2

The light steel section will be Dimond Structural **(1)** Top Hat **(2)** mm BMT to a galvanised zinc weight of **(3)** g/m^2.

The sizes, lengths, span configuration, lap length where required and thickness variations are as shown on the drawing.

Fixings to rafters to be **(4)** **(5)** self-drilling fasteners.

(1) Choose from: 60, 100, 120, 150

(2) Choose from: 0.75, 0.95 (for 60, 100 and 120 Top Hat Purlins) - 0.75, 0.95, 1.15, 1.55 (for 150 Top Hat Purlins).

(3) Choose from: 275 or 450

(4) Choose from: 2 – 12g, 4 – 12g, 6 – 12g, 2 – 14g, 4 – 14g, 6 – 14g, 8 – 14g or Strap

(5) Choose from: Type 17 (timber), Metal Teks (steel).

TOP HAT PURLIN SYSTEM COMPONENTS

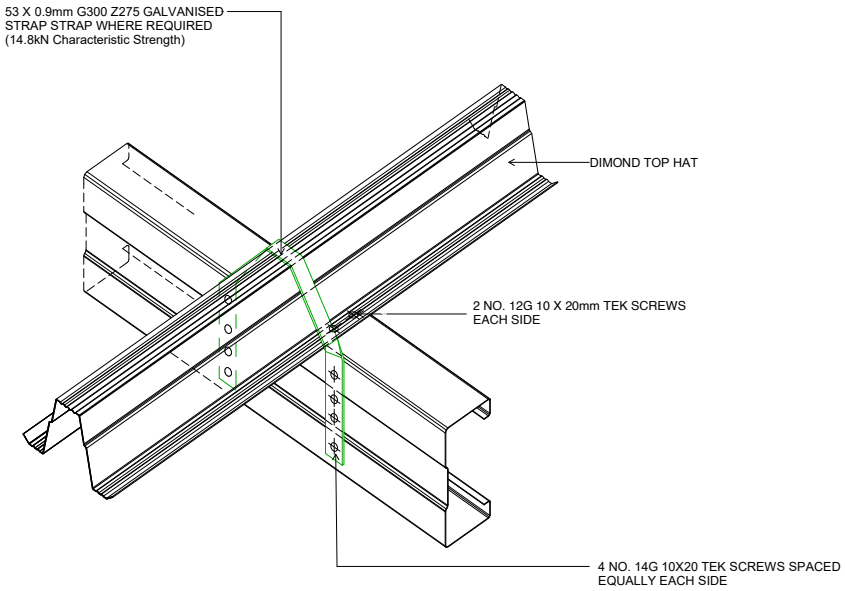
2.3.3

SUPPORT STRAP

2.3.3.1

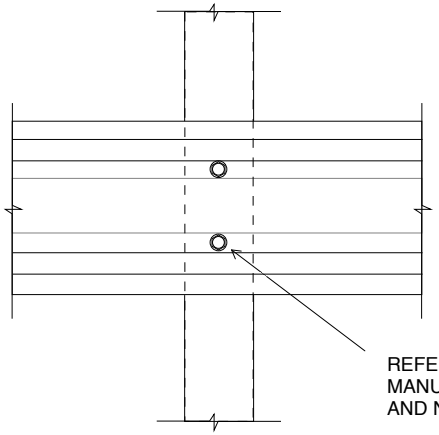
Additional hold-down straps are required in very high wind zones and above for Top Hat purlins in a continuous internal span configuration, as specified by the design engineer.

Manufactured from 53 x 0.9mm G300 Z275 galvanised steel strip, which is tied over the Top Hat purlin and fastened each side into the support structure as detailed below.



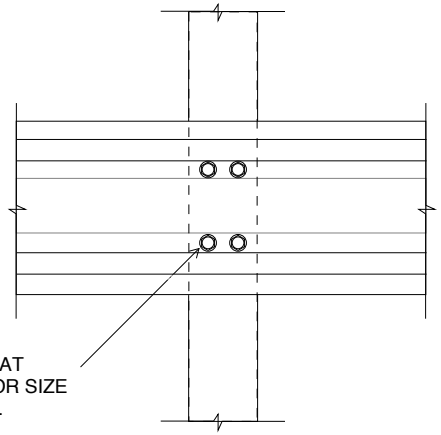
Dimond Structural

FIXING DETAILS



REFER TO DIMOND TOP HAT MANUAL SECTION 2.2.2 FOR SIZE AND NUMBER OF FIXINGS.

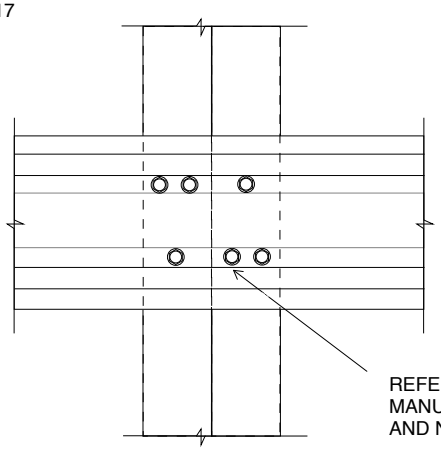
2 NO. TEK SCREW FIXING



4 NO. TEK SCREW FIXING

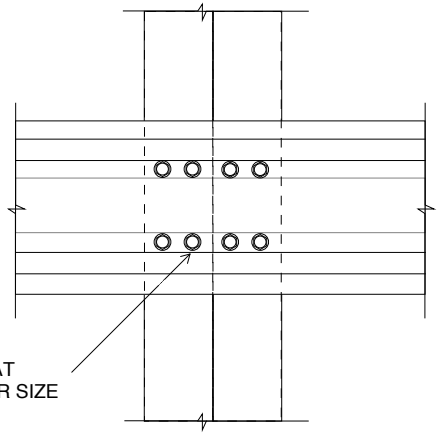
NOTES:

1. STEEL FIXINGS: MINIMUM SPACING AND EDGE DISTANCE SHALL BE 19 MM FOR 14G TEK SCREWS, AND 17 MM FOR 12G TEK SCREWS.
2. TIMBER FIXINGS: MINIMUM SPACING AND EDGE DISTANCE SHALL BE 32 MM FOR 14G T17 SCREWS, AND 28 MM FOR 12G T17 SCREWS.



REFER TO DIMOND TOP HAT MANUAL SECTION 2.2.2 FOR SIZE AND NUMBER OF FIXINGS.

6 NO. TEK SCREW FIXING



8 NO. TEK SCREW FIXING

TOP HAT PURLIN SYSTEM CAD DETAILS

For the latest Top Hat CAD details, please download from the Dimond Structural website
www.dimondstructural.co.nz/products/top-hat-purlins

Please note, the Top Hat CAD details are to be used as a guide only and are not intended for construction. Specific design details are required to be provided by the design engineer.