

SPECIFIC DESIGN – DHS PURLIN SYSTEM

DESIGN BASIS

Dimond Structural DHS Purlin Systems have been designed to comply with AS/NZS 4600:1996, based on physical testing and analysis carried out by the University of Sydney, who are recognised for their expertise in the area of cold form design. The structural analysis consisted of several modules including cross-sectional analysis, an AS/NZS 4600:1996 design module, in-plane structural analysis, and finite element lateral buckling analysis.

Methods in AS/NZS 4600:1996 for determining pure shear, combined bending/shear, lateral buckling and distortional buckling have, in some cases, resulted in lower purlin capacities than previously published. These are included in the design tables in this manual.

Appropriate design load combinations for each Limit State should be determined in accordance with AS/NZS 1170. It is recommended these be expressed as uniformly distributed bending loads (kN/m) assumed to be acting in-plane applied about the major axis of symmetry (X-X) and uniform axial compression loads (kN) applied about the rotational axis (Z-Z) for direct comparison with the tabulated data in this manual.

Self weight of the DHS Purlin Systems 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 purlin.

DHS PURLIN SYSTEM DESIGN CONSIDERATIONS

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

Design capacity of the DHS Purlin System is largely dependent on the amount of restraint provided to the purlin section. Data presented in DHS Purlin System Load Span Tables 2.3.4 assumes that bracing prevents both lateral movement and rotation of the section at that point.

Design Capacities in the Limit State format have been derived by the application of a capacity factor, ϕ :

Bending $\phi_b = 0.90$

Compression $\phi_c = 0.85$

A design yield strength of 500 MPa has been used for DHS purlins and girts. This is in line with the minimum specified yield for G500 material and is less than the consistent minimum yield stress in the G450 material used in manufacture.

Tables in this manual are intended for use where roofing or cladding is attached to one DHS purlin or girt flange, where it is assumed that the screw-fastened cladding significantly prevents lateral movement of the flange to which it is attached. Where this assumption does not hold, it is recommended that the number of braces required is specified such that the purlin load capacity, $\phi_b W_{bx}$ is not less than the capacity for the Fully Restrained (FR) case.

Gravity type loads can be assumed to act perpendicular to the roof plane for roof pitches up to 10 degrees provided the DHS purlins are placed with their flanges facing up the slope. For roof pitches greater than 10 degrees, load components about the minor axis of symmetry (Y-Y) should also be considered.

Span Guide

As a guide, single spans are used most frequently, particularly where purlins/girts are set down between the rafters/columns. Deflections may govern on larger spans.

End and internal continuous 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 DHS Purlin System used as purlins or girts, the following limits are recommended for wind load and dead load actions,

- **Where there is no ceiling:**
 - Deflection for $W_s \nlessgtr \text{Span}/150$
 - Deflection for $G \nlessgtr \text{Span}/300$
- **Where there is a ceiling:**
 - Deflection for $W_s \nlessgtr \text{Span}/200$
 - Deflection for $G \nlessgtr \text{Span}/360$.

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

Bracing Guidelines

For roofs, the out of plane component of the dead load of the roofing and purlins is assumed to be carried in tension by Fastbrace or Bolted Brace Channels tied across the ridge or into the ridge beam for monoslope roofs. In order to minimise lateral deflections to purlin members, we recommend a maximum spacing between bracing lines and/or support framing of 3.5 metres.

For walls, the following table gives the maximum allowable wall heights for Dimond Structural bracing systems, where the dead load of cladding and girts is assumed to be carried in tension to an eaves beam by Fastbrace or Bolted Brace Channels. In order to minimise deflections in the girt member, we recommend a maximum spacing between bracing lines and/or support framing of 3.5 metres.

Specific design of the bracing system and connections is required for wall heights greater than the limits shown or where the bracing is designed to carry compression loads.

Purlin Thickness BMT (mm)	Maximum Wall Height	
	Fastbrace	Bolted Channel Bracing
1.15, 1.25	5.0m	15.0m
1.45	6.5m	15.0m
1.75	8.0m	15.0m
1.95	-	15.0m

Basis to table: 1) Maximum spacing of bracing lines/portal frames 3.5m and 2) Maximum cladding weight 6.7kg/m².

Specific Design

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

- have suspended loads present (such as ducting and piping). Hangers must be connected to the web of the purlin or to the bottom flange within 25mm of the web. Under no circumstances should loads be hung off the purlin lips.
- are used as cantilever members.
- are used as truss or portal members.
- have holes larger than standard bolt holes present.
- are subject to out of plane loading about the minor Y-Y axis.

Distortional Buckling Stresses and Design Capacities in Compression, Bending and Shear

The following table lists design capacities and distortional buckling stresses that were used in determining the load span tables.

DHS size	Compression	Bending			Shear	
	$\phi_c N_s$ (kN)	$\phi_b M_{sx}$ (kNm)	$f_{odx}(TW)$ (MPa)	$\phi_b M_{bdx}$ (kNm)	k_v	$\phi_v V_{vy}$ (kN)
DHS 150/12	94.7	6.93	413	5.82	7.80	14.03
DHS 150/15	133.4	9.60	526	7.93	7.53	27.27
DHS 200/12	101.2	9.85	321	8.62	7.62	10.06
DHS 200/15	142.8	14.15	409	11.82	7.45	19.78
DHS 200/18	188.9	18.96	498	15.21	7.33	34.31
DHS 250/13	123.3	15.00	290	13.36	8.03	10.75
DHS 250/15	153.6	18.82	339	16.40	7.89	16.53
DHS 250/18	203.3	25.29	412	21.18	7.73	28.54
DHS 300/15	161.9	23.85	271	21.39	8.00	13.83
DHS 300/18	214.6	31.89	330	27.74	7.83	23.85
DHS 350/18	222.4	38.37	301	33.48	7.70	19.97
DHS 400/20	270.1	53.28	300	45.29	7.51	23.50

- $\phi_c N_s$: Design section capacity in pure compression, determined in accordance with AS/NZS 4600:1996 Clause 3.4.1 with $\phi_c = 0.85$.
- $\phi_b M_{sx}$: Design section capacity in pure bending about the major (X-X) axis, determined in accordance with AS/NZS 4600:1996 Clause 3.3.2 with $\phi_b = 0.95$ and the web modelled as a single stiffened flat element.
- $\phi_b M_{bdx}$: Design member capacity in pure bending about the major (X-X) axis based on failure by distortional buckling, determined in accordance with AS/NZS 4600:1996 Clause 3.3.3.3 with $\phi_b = 0.90$. The corresponding distortional buckling stress ($f_{odx}(TW)$) is determined using a rational elastic buckling analysis of the whole cross-section.
- k_v : Shear buckling coefficient for the web following the procedures outlined in Section R6.2 of the ECCS document entitled *European Recommendations for Steel Construction: The Design of Profiled Sheetting* (ECCS, 1983). The ECCS procedures provide a sound basis for determining k_v where a stiffening swage is present in the web.
- $\phi_v V_{vy}$: Design shear capacity for a shear force in the direction of the Y-Y axis, determined in accordance with AS/NZS 4600:1996 Clause 3.3.5 with $\phi_v = 0.90$.

Combined Bending and Compression Design

When purlins are designed to act under combined bending and axial loads, for example purlins transmitting end wall loads to braced bays, interaction of combined bending and axial loads may be shown in the following equations:

1. If $N^*/\phi_c N_c \leq 0.15$, the following interaction equation may be used:

$$\frac{N^*}{\phi_c N_c} + \frac{W_x^*}{\phi_b W_{bx}} \leq 1.0$$

This is usually the case when purlins are used primarily as bending members near capacity and are also required to take a nominal level of axial compression.

If $N^*/\phi_c N_c > 0.15$ then the following equations must be used:

2.
$$\frac{N^*}{\phi_c N_c} + \frac{C_{mx} W_x^*}{\phi_b W_{bx} \alpha_{nx}} \leq 1.0$$

3.
$$\frac{N^*}{\phi_c N_s} + \frac{W_x^*}{\phi_b W_{bx}} \leq 1.0$$

where

N^* = Design axial compressive load (kN).

$\phi_c N_c$ = Axial compression member capacity (kN) in the absence of other actions.

$\phi_c N_s$ = Axial compression section capacity (kN).

W_x^* = Design bending load (kN/m) about the X-X axis.

$\phi_b W_{bx}$ = Uniformly loaded bending capacity (kN/m) about the X-X axis.

C_{mx} = Restraint coefficient about the X-X axis.

It is reasonable to assume C_{mx} is 1.0 for unrestrained supports (i.e. simply supported) and 0.85 for restrained supports (end or internal spans).

α_{nx} = $1 - [N^*/\phi_c N_{ex}]$.

$\phi_c N_{ex}$ = Elastic buckling capacity (kN) about the major axis of symmetry (X-X).

Flexure about the minor axis of symmetry (Y-Y) is assumed to be zero. If biaxial flexure is expected, specific design to AS/NZS 4600 is required.

Solution of the interaction equation involves solving for the design axial compressive load (N^*), yielding the remaining axial capacity or directly substituting the known variables. These methods are illustrated in DHS Purlin System Design Examples 2.3.5.

Where DHS purlins are designed to take solely axial load, the design of the bolted connections must be considered. For example a DHS purlin designed as a load-bearing post will likely be limited by the capacity of bolts used at supports.

Bracing System Design

Fastbrace and Bolted Brace Channels are used with the DHS Purlin System and run in continuous lines between all purlins/girts. Fastbrace is the preferred bracing type for use with the DHS Purlin System and is suitable for use with DHS 150/12 up to DHS 300/18 (Bolted Brace Channels must be used with DHS 350/18 and DHS 400/20). Bolted Brace Channels are suitable for use on all DHS Purlin sizes.

Individual bracing units are available in lengths greater than 250mm.

To minimise lateral movement of the DHS Purlin System and for the bracing system to be effective with the Load Capacities in Section 2.3.4 it is assumed -

- Bracing lines are continuous from ridge to eaves.
- A minimum of one bracing line per bay is used for all purlin/girt configurations, assumed bolted to cleats at all supports.
- Bracing lines are located as set out for the span type and number of bracing lines considered. Refer CAD Details on-line (www.diamondstructural.co.nz/products/dhs-purlins).
- Bracing lines are not more than 3.5m apart and each length of brace channel does not exceed 3.20m
- No other structure is connected to or hung from the bracing system.
- Brace channels and alternating sag rods are not used. This significantly lowers the rotational restraint of the bracing system on the DHS Purlin System.

Bracing System Design Method

Specific design of the bracing system is required where bracing is used to support additional loads (other than providing rotational and lateral restraint to the purlins), for example sprinkler pipes or ducting.

The bending moment on each brace channel is determined by:

$$M^* = 0.75 \phi_b W_{bx} l_b m \text{ if roofing or cladding attachment provides sufficient restraint to the outside flange}$$

or
$$M^* = 1.5 \phi_b W_{bx} l_b m \text{ if there is no additional restraint to the outside flange.}$$

Where $\phi_b W_{bx}$ = Uniformly loaded bending capacities from DHS load span tables

$l_b = l \times h$ where l = purlin span, h = contributing length factor from below

m = distance from shear centre to mid plane of DHS purlin web from below.

Contributing Length Factor (h)

Span Type	No. of Brace Lines		
	1	2	3
Single	0.50	0.31	0.25
End	0.50	0.31	0.25
Internal	0.50	0.31	0.25
End Lapped	0.475	0.295	0.24
Internal Lapped	0.45	0.28	0.23

Dimension (m)

DHS Member	150/12	150/15	200/12	200/15	200/18	250/13	250/15	250/18	300/15	300/18	350/18	400/20
m (mm)	33.2	32.9	36.3	35.9	35.6	38.3	38.1	37.8	42.8	42.6	41.6	40.1

M^* must not exceed the brace member capacity M_b given below.

Bracing Member Moment Capacity (M_b)

Maximum Brace Length (m)	≤ 3.2	3.4	3.6	3.8	4.0
M_b (kNm)	0.50	0.48	0.45	0.41	0.38

Notes:

- For brace lengths less than 3.2m, the brace capacity is limited by cleat connection rather than the brace channel.
- The moment capacities given above do not apply where additional loads are connected eccentrically to the web of the brace channel. We do not recommend connecting additional loads to the flanges or lips of the brace channel.

Connection Design

The following table sets out the bolt shear capacities for Grade 4.6 and Grade 8.8 bolts and the connection capacity for different steel thicknesses of the DHS Purlin System when checked for end tearing and bearing. These can be compared with connection design loads determined by the design engineer. Refer Example: Bolt Sizing in Section 2.3.5.

Details of single bolt connection capacities for DHS Purlins and Girts

Bolt Diameter (mm)	Failure Mode	Steel capacity (kN) for varying steel thicknesses (mm)					Bolt shear ϕV_{fn} (kN)	
		1.15	1.25	1.45	1.75	1.95	Grade 4.6	Grade 8.8
12	Tearing ϕV_f	13.6	14.8	17.2	19.2	21.3	15.1	31.4
	Bearing ϕV_b	12.9	14.0	16.3	18.1	20.2		
16	Tearing ϕV_f	13.6	14.8	17.2	19.2	21.3	28.6	59.3
	Bearing ϕV_b	17.2	18.7	21.7	24.2	27.0		
20	Tearing ϕV_f	13.6	14.8	17.2	19.2	21.3	44.6	92.6
	Bearing ϕV_b	21.5	23.4	27.1	30.2	33.7		

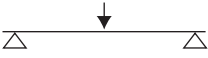
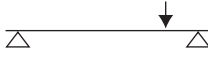

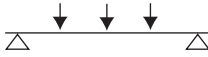
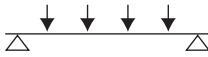
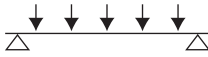
Notes:

- All capacities are in accordance with AS/NZS 4600:1996 (Grade 4.6 bolts - 400MPa minimum tensile strength and Grade 8.8 bolts - 830MPa minimum tensile strength).
- Bolts are assumed to comply to AS1111 (Grade 4.6) or AS1252 (Grade 8.8) and be produced to a quality assurance programme.
- All connections are assumed to have one washer under each of the bolt head and the nut (or the portal cleat acting as one of the washers).
- Calculation of tearing capacity assumes a 38mm edge distance.
- The maximum structural ductility factor used for seismic loads must be less than 1.25.

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 DHS 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 or Internal	Lapped End	Lapped Internal
One equidistant point load		2	1.75	1.75	1.5
One eccentric point load		1.5	1.5	1.5	1
Two equidistant point loads		2.67	2.5	2.5	1.75
Three equidistant point loads		4	3	3	2.5
Four equidistant point loads		4.8	4	4	3
Five equidistant point loads		6	5	5	4

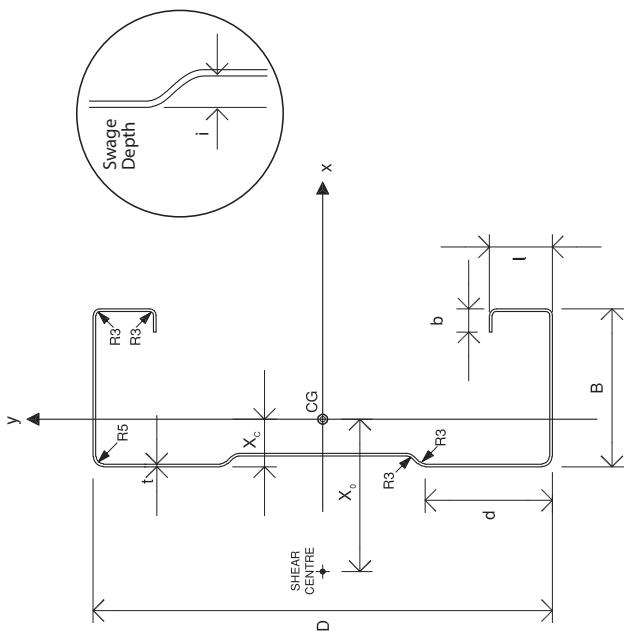
Notes:

1. This conversion guide and factors (F) is only applicable to the DHS 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.

DHS PURLIN SYSTEM SECTION PROPERTIES

DHS Section	Depth _D (mm)	Depth _B (mm)	Thickness _t (mm)	Mass (kg/m)	Weight (kN/m)	d (mm)	Swage Depth _i (mm)	b (mm)	l (mm)	X _c (mm)	X _o (mm)
DHS 150/12	150	65	1.15	2.99	0.030	54	4	10	23	24.0	56.6
DHS 150/15	150	65	1.45	3.74	0.037	54	4	10	23	23.9	56.1
DHS 200/12	200	75	1.15	3.71	0.037	62	4	10	28	26.3	62.0
DHS 200/15	200	75	1.45	4.65	0.046	62	4	10	28	26.2	61.4
DHS 200/18	200	75	1.75	5.59	0.055	62	4	10	28	26.1	60.8
DHS 250/13	250	85	1.25	4.87	0.048	67	6	12	33	29.4	67.1
DHS 250/15	250	85	1.45	5.63	0.056	67	6	12	33	29.3	66.7
DHS 250/18	250	85	1.75	6.76	0.067	67	6	12	33	29.3	66.2
DHS 300/15	300	100	1.45	6.66	0.066	67	7	12	38	34.0	76.1
DHS 300/18	300	100	1.75	8.01	0.079	67	7	12	38	33.9	75.6
DHS 350/18	350	100	1.75	8.83	0.087	77	7	12	43	32.7	73.4
DHS 400/20	400	100	1.95	10.74	0.106	79	7	12	48	31.8	70.9

Note: Mass assumes a total coated weight for the standard zinc coating of 275g/m².



DHS Section	Full (Gross) Section Properties										Effective Section Properties							
	A _g (mm ²)	I _x (10 ⁶ mm ⁴)	I _y (10 ⁶ mm ⁴)	Z _x (10 ³ mm ³)	Z _y ^(+ve) (10 ³ mm ³)	Z _y ^(-ve) (10 ³ mm ³)	r _x (mm)	r _y (mm)	β _y (mm)	J (mm ⁴)	I _w (10 ⁹ mm ⁶)	A _e (f _y) (mm ²)	I _{ex} (10 ⁶ mm ⁴)	I _{ey} ^(+ve) (10 ⁶ mm ⁴)	I _{ey} ^(-ve) (10 ⁶ mm ⁴)	Z _{ex} (10 ³ mm ³)	Z _{ey} ^(+ve) (10 ³ mm ³)	Z _{ey} ^(-ve) (10 ³ mm ³)
DHS 150/12	381	1.33	0.24	17.8	5.9	10.2	59.2	25.3	166	168	1.44	223	1.18	0.24	0.16	14.6	5.9	4.9
DHS 150/15	477	1.66	0.30	22.2	7.3	12.6	59.1	25.1	165	334	1.76	314	1.57	0.30	0.22	20.2	7.3	6.6
DHS 200/12	473	2.90	0.40	29.0	8.2	15.2	78.4	29.1	207	208	4.04	238	2.37	0.40	0.25	20.7	8.2	6.2
DHS 200/15	593	3.63	0.49	36.3	10.1	18.9	78.2	28.9	206	415	4.96	336	3.22	0.49	0.33	29.8	10.1	8.6
DHS 200/18	712	4.34	0.59	43.4	12.0	22.4	78.1	28.7	206	726	5.82	445	4.12	0.59	0.42	39.9	12.0	10.8
DHS 250/13	620	5.86	0.66	46.8	11.8	22.4	97.2	32.6	246	323	10.47	290	4.62	0.66	0.39	31.6	11.8	8.6
DHS 250/15	717	6.76	0.76	54.1	13.6	25.8	97.1	32.5	245	502	11.97	361	5.62	0.76	0.47	39.6	13.6	10.5
DHS 250/18	861	8.10	0.90	64.8	16.1	30.7	97.0	32.3	245	879	14.13	478	7.20	0.90	0.60	53.2	16.1	13.8
DHS 300/15	849	11.55	1.22	77.0	18.4	35.8	116.7	37.9	292	595	27.41	381	8.93	1.22	0.73	50.2	18.4	13.5
DHS 300/18	1020	13.86	1.45	92.4	22.0	42.7	116.5	37.7	292	1042	32.47	505	11.46	1.45	0.92	67.1	22.0	17.6
DHS 350/18	1125	20.22	1.60	115.6	23.7	48.8	134.1	37.7	333	1149	48.48	523	16.36	1.60	0.96	80.8	23.7	18.0
DHS 400/20	1368	31.31	1.91	156.5	28.0	60.0	151.3	37.4	380	1734	75.70	635	25.75	1.91	1.14	112.2	28.0	21.4

Note: Notation used is consistent with Table 1.4 in AS/NZS 4600, (+ve) = DHS Purlin Lip in compression (-ve) = DHS Purlin Web in compression.

DHS PURLIN SYSTEM LOAD SPAN TABLES

Uniformly loaded bending capacities (kN/m) and axial compression capacities (kN) are given for DHS purlins and girts for spans between 3.0m and 18.0m in the following configurations -

1B, 2B, 3B Ultimate - 1, 2 or 3 Braces

FR Ultimate - Fully Restrained (Used when the compression flange is fully restrained against lateral movement)

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

$\phi_c N_{ex}$ Elastic buckling capacity about the X-X axis.

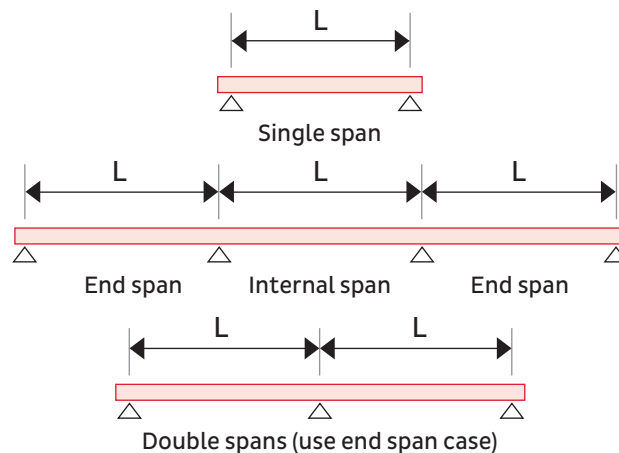
As deflection is proportional to loading, Ws loads may be factored by the deflection ratio for any deflection within the limit of the linear load capacities.

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

1. No bolt slip or member rotation has been allowed for at fixed ends.
2. End and internal spans can be either Continuous or Lapped span type, however only tables of the corresponding span type may be used in conjunction.
3. Use of end span tables with corresponding internal span tables assumes that the end span is within plus 5% or minus 10% of the internal spans, provided that for a 3 span configuration both end spans are reduced by the same amount. Otherwise specific design to AS/NZS 4600 is required.
4. Linear interpolation is permitted for Loads between intermediate DHS purlin spans.

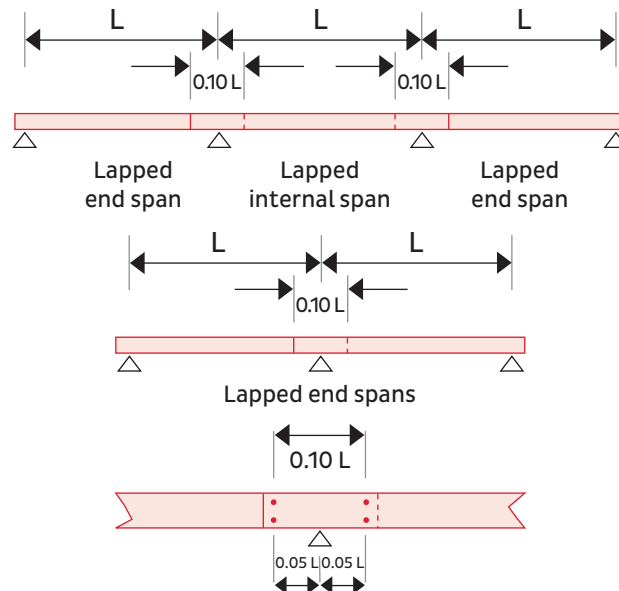
Typical DHS Purlin System Span Configurations

L = Span length



All lap lengths are to be a minimum of 0.1 of the maximum span, measured from bolt centre to bolt centre at each end of the lap, positioned equally each side of the portal rafter.

Refer CAD Details on-line (www.diamondstructural.co.nz/products/dhs-purlins).



DHS PURLIN SYSTEM LOAD SPAN TABLES – SINGLE SPANS

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

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13																
	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR	1B	2B	3B	FR	W _s	FR					
3.0	5.17	5.17	5.17	5.17	4.73																																										
3.5	3.80	3.80	3.80	3.80	3.02	5.18	5.18	5.18	5.18	3.92	5.63	5.63	5.63	4.31	4.03	5.91	5.91	5.91	5.91	5.91	7.60	7.60	7.60	7.60	6.80	6.80	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	7.48					
4.0	2.91	2.91	2.91	2.91	2.05	3.96	3.96	3.96	3.96	2.65	4.31	4.31	4.31	3.40	2.90	4.67	4.67	4.67	4.67	4.67	6.00	6.00	6.00	6.00	6.00	4.82	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	5.37				
4.5	2.30	2.30	2.30	2.30	1.45	3.09	3.13	3.13	3.13	1.86	3.40	3.40	3.40	2.75	2.16	3.78	3.78	3.78	3.78	3.78	4.86	4.86	4.86	4.86	4.86	3.54	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	3.99					
5.0	1.73	1.86	1.86	1.86	1.06	2.29	2.53	2.53	2.53	1.36	2.69	2.75	2.75	2.75	2.16	3.02	3.12	3.12	3.12	3.12	3.85	4.02	4.02	4.02	4.02	2.66	3.43	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.05				
5.5	1.26	1.54	1.54	1.54	0.80	1.67	2.09	2.09	2.09	1.02	2.09	2.28	2.28	2.28	1.65	2.35	2.62	2.62	2.62	2.62	2.94	3.38	3.38	3.38	3.38	2.05	2.73	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.39				
6.0	0.94	1.29	1.29	1.29	0.62	1.24	1.76	1.76	1.76	0.78	1.63	1.91	1.91	1.91	1.29	2.35	2.62	2.62	2.62	2.62	3.38	4.02	4.02	4.02	3.38	2.05	2.73	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.39			
6.5	0.71	1.10	1.10	1.10	0.49	0.94	1.50	1.50	1.50	0.62	1.27	1.63	1.63	1.63	1.02	1.79	2.23	2.23	2.23	2.23	2.88	2.88	2.88	2.88	2.88	1.61	2.20	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	1.91				
7.0	0.55	0.94	0.95	0.95	0.39	0.72	1.26	1.29	1.29	0.49	1.00	1.40	1.40	1.40	0.82	1.39	1.93	1.93	1.93	1.93	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.55				
7.5	0.43	0.78	0.82	0.82	0.32	0.56	1.03	1.12	1.12	0.40	0.81	1.21	1.22	1.22	0.67	1.09	1.68	1.68	1.68	1.68	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28			
8.0						0.44	0.84	0.99	0.99	0.33	0.65	1.02	1.07	1.07	0.56	0.87	1.47	1.47	1.47	1.47	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28			
8.5											0.53	0.86	0.95	0.95	0.47	0.70	1.25	1.30	1.30	1.30	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
9.0											0.43	0.74	0.85	0.85	0.39	0.57	1.07	1.16	1.16	1.16	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
9.5											0.35	0.62	0.76	0.76	0.34	0.47	0.89	1.04	1.04	1.04	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
10.0											0.29	0.53	0.67	0.69	0.29	0.38	0.75	0.94	0.94	0.94	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
10.5																0.32	0.63	0.85	0.85	0.85	2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
11.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28		
11.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28	
12.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28	
12.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28	
13.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28	
13.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28	
14.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
14.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
15.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
15.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
16.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
16.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
17.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
17.5																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28
18.0																					2.48	2.48	2.48	2.48	2.48	1.29	1.75	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	1.28

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - SINGLE SPANS

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

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20										
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s						
3.0																																				
3.5																																				
4.0																																				
4.5																																				
5.0	5.24	5.24	5.24	5.24	4.90	6.77	6.77	6.77	6.77	6.35	5.53	5.53	5.53	5.53	7.44																					
5.5	4.31	4.33	4.33	4.33	3.75	5.60	5.60	5.60	5.60	4.81	5.03	5.03	5.03	5.03	5.69																					
6.0	3.44	3.64	3.64	3.64	2.94	4.63	4.70	4.70	4.70	3.73	4.61	4.61	4.61	4.61	4.46																					
6.5	2.77	3.10	3.10	3.10	2.35	3.74	4.01	4.01	4.01	2.95	3.86	4.05	4.05	4.05	3.56	5.17	5.25	5.25	5.25	5.25	4.63															
7.0	2.21	2.67	2.67	2.67	1.91	2.98	3.45	3.45	3.45	2.37	3.18	3.49	3.49	3.49	2.89	4.26	4.52	4.52	4.52	4.52	3.77	5.15	5.46	5.46	5.46	5.46	5.17									
7.5	1.78	2.33	2.33	2.33	1.57	2.36	3.01	3.01	3.01	1.94	2.64	3.04	3.04	3.04	2.39	3.54	3.94	3.94	3.94	3.94	3.11	4.27	4.76	4.76	4.76	4.76	4.26	6.26	6.26	6.26	6.26	6.26	6.26	6.26	6.54	
8.0	1.45	2.04	2.04	2.04	1.30	1.88	2.64	2.64	2.64	1.60	2.17	2.67	2.67	2.67	1.99	2.91	3.46	3.46	3.46	3.46	2.60	3.52	4.18	4.18	4.18	4.18	3.56	5.66	5.66	5.66	5.66	5.66	5.66	5.46		
8.5	1.20	1.79	1.81	1.81	1.09	1.52	2.34	2.34	2.34	1.34	1.79	2.36	2.36	2.36	1.68	2.41	3.07	3.07	3.07	3.07	2.20	2.91	3.70	3.70	3.70	3.70	3.00	4.06	5.01	5.01	5.01	5.01	4.60			
9.0	0.99	1.54	1.61	1.61	0.92	1.24	2.08	2.09	2.09	1.13	1.49	2.11	2.11	2.11	1.43	2.02	2.74	2.74	2.74	2.74	1.86	2.43	3.30	3.30	3.30	3.30	2.56	3.39	4.47	4.47	4.47	4.47	3.92			
9.5	0.82	1.34	1.45	1.45	0.78	1.02	1.80	1.87	1.87	0.96	1.26	1.85	1.89	1.89	1.23	1.70	2.45	2.45	2.45	2.45	1.59	2.05	2.96	2.96	2.96	2.96	2.20	2.85	4.01	4.01	4.01	4.01	3.37			
10.0	0.68	1.16	1.31	1.31	0.67	0.85	1.57	1.69	1.69	0.82	1.07	1.62	1.71	1.71	1.07	1.45	2.17	2.21	2.21	2.21	1.37	1.74	2.63	2.67	2.67	2.67	1.91	2.42	3.62	3.62	3.62	3.62	2.92			
10.5	0.57	1.00	1.19	1.19	0.58	0.71	1.35	1.53	1.53	0.71	0.91	1.43	1.55	1.55	0.93	1.23	1.91	2.01	2.01	2.01	1.18	1.49	2.31	2.42	2.42	2.42	1.66	2.07	3.22	3.22	3.22	3.22	2.54			
11.0	0.48	0.86	1.08	1.08	0.51	0.59	1.16	1.40	1.40	0.62	0.79	1.26	1.41	1.41	0.82	1.04	1.69	1.83	1.83	1.83	1.03	1.28	2.04	2.21	2.21	2.21	1.46	1.79	2.85	2.99	2.99	2.99	2.23			
11.5	0.41	0.75	0.96	0.99	0.45	0.50	0.99	1.28	1.28	0.54	0.68	1.12	1.29	1.29	0.72	0.89	1.50	1.67	1.67	1.67	0.91	1.11	1.81	2.02	2.02	2.02	1.29	1.55	2.52	2.73	2.73	2.73	1.97			
12.0	0.35	0.66	0.86	0.91	0.39	0.42	0.86	1.16	1.17	0.47	0.59	0.98	1.18	1.18	0.64	0.76	1.32	1.54	1.54	1.54	0.80	0.97	1.60	1.86	1.86	1.86	1.15	1.35	2.23	2.51	2.51	2.51	1.75			
12.5	0.30	0.58	0.77	0.83	0.35	0.36	0.74	1.04	1.04	0.42	0.52	0.86	1.07	1.09	0.57	0.66	1.16	1.42	1.42	1.42	0.71	0.84	1.40	1.71	1.71	1.71	1.02	1.17	1.96	2.31	2.31	2.31	1.56			
13.0	0.26	0.51	0.69	0.77	0.31	0.31	0.65	0.94	1.00	0.37	0.45	0.76	0.97	1.01	0.51	0.57	1.03	1.30	1.31	1.31	0.63	0.73	1.24	1.57	1.57	1.58	0.92	1.01	1.73	2.14	2.14	2.14	1.40			
13.5						0.27	0.57	0.84	0.93	0.33	0.40	0.67	0.88	0.93	0.46	0.50	0.91	1.18	1.21	1.21	0.57	0.63	1.10	1.42	1.42	1.46	0.82	0.87	1.54	1.98	1.98	1.98	1.26			
14.0						0.23	0.50	0.75	0.86	0.30	0.35	0.60	0.80	0.87	0.41	0.43	0.81	1.07	1.13	1.13	0.51	0.55	0.98	1.29	1.36	1.36	0.74	0.76	1.37	1.80	1.84	1.84	1.14			
14.5											0.30	0.54	0.72	0.81	0.37	0.38	0.73	0.97	1.05	1.05	0.46	0.48	0.88	1.18	1.27	1.27	0.66	0.66	1.22	1.64	1.72	1.72	1.03			
15.0											0.27	0.48	0.66	0.76	0.33	0.33	0.66	0.89	0.98	0.98	0.41	0.42	0.79	1.07	1.19	1.19	0.60	0.58	1.10	1.49	1.61	1.61	0.94			
15.5											0.24	0.43	0.60	0.71	0.30	0.29	0.59	0.81	0.92	0.92	0.38	0.37	0.71	0.98	1.11	1.11	0.55	0.51	0.99	1.36	1.50	1.50	0.85			
16.0																0.26	0.53	0.73	0.86	0.86	0.34	0.33	0.64	0.89	1.04	1.04	0.50	0.45	0.89	1.24	1.41	1.41	0.77			
16.5																0.23	0.47	0.66	0.81	0.81	0.31	0.29	0.58	0.80	0.98	1.04	0.45	0.40	0.81	1.12	1.33	1.33	0.71			
17.0																												0.26	0.53	0.73	1.02	1.25	1.25	0.65		
17.5																											0.23	0.48	0.67	0.93	1.18	1.18	0.59			
18.0																											0.21	0.44	0.61	0.85	1.11	1.11	0.54			

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - END SPANS

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

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13									
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s					
3.0	4.75	4.75	4.75	4.75	10.78	7.05	7.05	7.05	7.05	14.30	4.57	4.57	4.57	4.57	21.64																				
3.5	3.69	3.69	3.69	3.69	6.78	5.18	5.18	5.18	5.18	9.01	3.74	3.74	3.74	3.74	13.63	6.46	6.46	6.46	6.46	6.46	18.50	9.71	9.71	9.71	9.71	23.62	4.39	4.39	4.39	4.39	26.55				
4.0	2.91	2.91	2.91	2.91	4.54	3.96	3.96	3.96	3.96	6.03	3.11	3.11	3.11	3.11	9.13	5.27	5.27	5.27	5.27	5.27	12.39	7.60	7.60	7.60	7.60	15.83	3.73	3.73	3.73	3.73	17.78				
4.5	2.30	2.30	2.30	2.30	3.19	3.13	3.13	3.13	3.13	4.24	2.63	2.63	2.63	2.63	6.41	4.37	4.37	4.37	4.37	4.37	8.70	6.00	6.00	6.00	6.00	11.11	3.21	3.21	3.21	3.21	12.49				
5.0	1.86	1.86	1.86	1.86	2.33	2.53	2.53	2.53	2.53	3.10	2.25	2.25	2.25	2.25	4.67	3.68	3.68	3.68	3.68	3.68	6.34	4.86	4.86	4.86	4.86	8.10	2.79	2.79	2.79	2.79	9.10				
5.5	1.54	1.54	1.54	1.54	1.78	2.09	2.09	2.09	2.09	2.35	1.94	1.94	1.94	1.94	3.51	3.12	3.12	3.12	3.12	3.12	4.76	4.02	4.02	4.02	4.02	6.08	2.45	2.45	2.45	2.45	6.84				
6.0	1.29	1.29	1.29	1.29	1.39	1.76	1.76	1.76	1.76	1.82	1.69	1.69	1.69	1.69	2.70	2.62	2.62	2.62	2.62	2.62	3.67	3.38	3.38	3.38	3.38	4.69	2.17	2.17	2.17	2.17	5.27				
6.5	1.10	1.10	1.10	1.10	1.11	1.50	1.50	1.50	1.50	1.44	1.49	1.49	1.49	1.49	2.12	2.23	2.23	2.23	2.23	2.23	2.88	2.88	2.88	2.88	2.88	3.69	1.93	1.93	1.93	1.93	4.14				
7.0	0.95	0.95	0.95	0.95	0.89	1.29	1.29	1.29	1.29	1.16	1.31	1.31	1.31	1.31	1.70	1.93	1.93	1.93	1.93	1.93	2.33	2.48	2.48	2.48	2.48	2.97	1.73	1.73	1.73	1.73	3.31				
7.5	0.82	0.82	0.82	0.82	0.73	1.11	1.12	1.12	1.12	0.95	1.17	1.17	1.17	1.17	1.40	1.68	1.68	1.68	1.68	1.68	1.92	2.16	2.16	2.16	2.16	2.43	1.56	1.56	1.56	1.56	2.69				
8.0	0.70	0.72	0.72	0.72	0.60	0.93	0.99	0.99	0.99	0.78	1.05	1.05	1.05	1.05	1.16	1.47	1.47	1.47	1.47	1.47	1.61	1.90	1.90	1.90	1.90	2.01	1.41	1.41	1.41	1.41	2.22				
8.5	0.59	0.64	0.64	0.64	0.50	0.78	0.86	0.87	0.87	0.66	0.91	0.94	0.94	0.94	0.98	1.30	1.30	1.30	1.30	1.30	1.36	1.68	1.68	1.68	1.68	1.68	1.28	1.28	1.28	1.28	1.85				
9.0	0.49	0.55	0.57	0.57	0.43	0.65	0.74	0.78	0.78	0.55	0.79	0.85	0.85	0.85	0.84	1.14	1.16	1.16	1.16	1.16	1.15	1.46	1.50	1.50	1.50	1.50	1.43	1.17	1.17	1.17	1.17	1.56			
9.5	0.41	0.47	0.51	0.51	0.36	0.54	0.63	0.70	0.70	0.47	0.68	0.74	0.76	0.76	0.72	0.98	1.04	1.04	1.04	1.04	0.98	1.25	1.34	1.34	1.34	1.34	1.22	1.07	1.07	1.07	1.07	1.34			
10.0	0.34	0.40	0.46	0.46	0.31	0.45	0.53	0.63	0.63	0.40	0.59	0.64	0.69	0.69	0.62	0.85	0.93	0.94	0.94	0.94	0.85	1.06	1.20	1.21	1.21	1.21	1.05	0.98	0.98	0.98	0.98	1.16			
10.5						0.39	0.45	0.57	0.57	0.35	0.50	0.56	0.62	0.62	0.54	0.72	0.82	0.85	0.85	0.85	0.73	0.90	1.04	1.10	1.10	1.10	0.91	0.86	0.90	0.90	1.01	1.01			
11.0						0.33	0.39	0.52	0.52	0.30	0.44	0.50	0.57	0.57	0.47	0.61	0.72	0.78	0.78	0.78	0.64	0.77	0.91	1.00	1.00	1.00	0.79	0.75	0.82	0.83	0.83	0.88			
11.5											0.38	0.43	0.52	0.52	0.42	0.53	0.62	0.71	0.71	0.71	0.56	0.66	0.78	0.92	0.92	0.92	0.69	0.66	0.73	0.77	0.77	0.78			
12.0											0.33	0.38	0.47	0.47	0.37	0.46	0.54	0.65	0.65	0.65	0.50	0.57	0.68	0.84	0.84	0.84	0.61	0.57	0.65	0.72	0.72	0.69			
12.5											0.29	0.33	0.44	0.44	0.33	0.40	0.47	0.60	0.60	0.60	0.44	0.50	0.59	0.77	0.77	0.77	0.54	0.50	0.58	0.67	0.67	0.62			
13.0											0.26	0.29	0.40	0.40	0.30	0.35	0.41	0.56	0.56	0.56	0.39	0.43	0.51	0.72	0.72	0.72	0.48	0.45	0.51	0.62	0.62	0.55			
13.5																0.30	0.36	0.51	0.51	0.51	0.35	0.38	0.45	0.66	0.66	0.66	0.43	0.40	0.45	0.58	0.58	0.49			
14.0																0.27	0.32	0.47	0.48	0.48	0.31	0.33	0.40	0.61	0.61	0.62	0.38	0.35	0.40	0.54	0.54	0.45			
14.5																						0.29	0.35	0.55	0.57	0.57	0.35	0.31	0.36	0.49	0.50	0.40	0.40		
15.0																						0.25	0.31	0.50	0.54	0.54	0.31	0.28	0.32	0.45	0.47	0.37	0.37		
15.5																												0.25	0.29	0.41	0.44	0.44	0.33	0.33	
16.0																																			
16.5																																			
17.0																																			
17.5																																			
18.0																																			

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - END SPANS

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

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20					
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	
3.0																															
3.5																															
4.0	5.41	5.41	5.41	5.41	21.61	8.47	8.47	8.47	8.47	27.70	5.01	5.01	5.01	5.01	34.35																
4.5	4.61	4.61	4.61	4.61	15.17	7.12	7.12	7.12	7.12	19.45	4.36	4.36	4.36	4.36	24.13																
5.0	3.97	3.97	3.97	3.97	11.06	6.05	6.05	6.05	6.05	14.18	3.82	3.82	3.82	3.82	17.59	6.11	6.11	6.11	6.11	6.11	22.56	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	32.21
5.5	3.45	3.45	3.45	3.45	8.31	5.20	5.20	5.20	5.20	10.65	3.39	3.39	3.39	3.39	13.21	5.35	5.35	5.35	5.35	5.35	16.95	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	24.20
6.0	3.03	3.03	3.03	3.03	6.40	4.52	4.52	4.52	4.52	8.20	3.02	3.02	3.02	3.02	10.18	4.73	4.73	4.73	4.73	4.73	13.05	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	18.64
6.5	2.68	2.68	2.68	2.68	5.03	3.95	3.95	3.95	3.95	6.45	2.71	2.71	2.71	2.71	8.00	4.21	4.21	4.21	4.21	4.21	10.27	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	14.66
7.0	2.38	2.38	2.38	2.38	4.03	3.45	3.45	3.45	3.45	5.16	2.45	2.45	2.45	2.45	6.41	3.76	3.76	3.76	3.76	3.76	8.22	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	11.74
7.5	2.13	2.13	2.13	2.13	3.27	3.01	3.01	3.01	3.01	4.20	2.22	2.22	2.22	2.22	5.21	3.38	3.38	3.38	3.38	3.38	6.68	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	9.54
8.0	1.91	1.91	1.91	1.91	2.70	2.64	2.64	2.64	2.64	3.46	2.02	2.02	2.02	2.02	4.29	3.05	3.05	3.05	3.05	3.05	5.50	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	7.86
8.5	1.73	1.73	1.73	1.73	2.25	2.34	2.34	2.34	2.34	2.90	1.85	1.85	1.85	1.85	3.58	2.77	2.77	2.77	2.77	2.77	4.59	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	6.55
9.0	1.57	1.57	1.57	1.57	1.90	2.09	2.09	2.09	2.09	2.47	1.70	1.70	1.70	1.70	3.01	2.52	2.52	2.52	2.52	2.52	3.86	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	5.52
9.5	1.40	1.43	1.43	1.43	1.64	1.87	1.87	1.87	1.87	2.12	1.56	1.56	1.56	1.56	2.56	2.31	2.31	2.31	2.31	2.31	3.28	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	4.69
10.0	1.23	1.30	1.30	1.30	1.42	1.66	1.69	1.69	1.69	1.84	1.44	1.44	1.44	1.44	2.19	2.12	2.12	2.12	2.12	2.12	2.82	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	4.02
10.5	1.08	1.17	1.19	1.23	1.45	1.53	1.53	1.53	1.53	1.60	1.33	1.33	1.33	1.33	1.89	1.95	1.95	1.95	1.95	1.95	2.43	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	3.47
11.0	0.95	1.04	1.08	1.08	1.08	1.28	1.40	1.40	1.40	1.41	1.24	1.24	1.24	1.24	1.65	1.77	1.80	1.80	1.80	1.80	2.13	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	3.02
11.5	0.83	0.92	0.99	0.99	0.96	1.12	1.24	1.28	1.28	1.24	1.15	1.15	1.15	1.15	1.45	1.58	1.66	1.66	1.66	1.66	1.88	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	2.64
12.0	0.72	0.82	0.91	0.91	0.85	0.97	1.11	1.17	1.17	1.10	1.05	1.05	1.05	1.05	1.29	1.41	1.53	1.54	1.54	1.54	1.67	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	2.33
12.5	0.64	0.73	0.83	0.83	0.76	0.85	0.99	1.08	1.08	0.98	0.94	1.00	1.00	1.00	1.15	1.26	1.38	1.42	1.42	1.42	1.49	1.52	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	2.06
13.0	0.56	0.65	0.77	0.77	0.68	0.74	0.88	1.00	1.00	0.87	0.83	0.93	0.94	0.94	1.03	1.12	1.24	1.31	1.31	1.31	1.34	1.35	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.84
13.5	0.50	0.58	0.72	0.72	0.61	0.65	0.78	0.93	0.93	0.78	0.74	0.84	0.88	0.88	0.93	1.00	1.12	1.21	1.21	1.21	1.20	1.20	1.36	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.66
14.0	0.45	0.51	0.66	0.66	0.55	0.57	0.68	0.86	0.86	0.70	0.66	0.76	0.82	0.82	0.84	0.89	1.02	1.13	1.13	1.13	1.09	1.08	1.23	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.50
14.5	0.40	0.46	0.62	0.62	0.50	0.51	0.61	0.80	0.80	0.63	0.59	0.68	0.78	0.78	0.78	0.80	0.92	1.05	1.05	1.05	0.98	0.96	1.11	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.36
15.0	0.36	0.41	0.57	0.58	0.45	0.45	0.54	0.75	0.75	0.57	0.53	0.62	0.73	0.73	0.69	0.72	0.83	0.98	0.98	0.98	0.89	0.87	1.00	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.23
15.5	0.32	0.37	0.52	0.54	0.41	0.40	0.48	0.70	0.70	0.52	0.48	0.55	0.69	0.69	0.63	0.65	0.75	0.92	0.92	0.92	0.82	0.78	0.90	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.12
16.0	0.29	0.34	0.48	0.51	0.38	0.36	0.43	0.65	0.66	0.47	0.43	0.50	0.65	0.65	0.57	0.59	0.68	0.86	0.86	0.86	0.75	0.71	0.82	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.03
16.5	0.26	0.31	0.44	0.48	0.35	0.32	0.39	0.59	0.62	0.43	0.39	0.45	0.61	0.62	0.53	0.54	0.62	0.81	0.81	0.81	0.68	0.64	0.74	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
17.0	0.23	0.28	0.41	0.45	0.32	0.29	0.35	0.55	0.58	0.39	0.36	0.41	0.57	0.58	0.48	0.49	0.56	0.76	0.76	0.76	0.63	0.58	0.68	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.87
17.5						0.26	0.31	0.51	0.55	0.36	0.33	0.38	0.52	0.55	0.45	0.44	0.51	0.70	0.72	0.72	0.58	0.53	0.62	0.85	0.87	0.87	0.87	0.87	0.87	0.87	0.80
18.0						0.23	0.28	0.46	0.52	0.33	0.30	0.34	0.49	0.52	0.41	0.40	0.47	0.65	0.68	0.68	0.54	0.49	0.56	0.79	0.82	0.82	0.82	0.82	0.82	0.82	0.74

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - INTERNAL SPANS

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

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13					
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	
3.0																															
3.5	5.18	5.18	5.18	5.18	14.11	7.77	7.77	7.77	7.77	18.74	4.93	4.93	4.93	4.93	28.35																
4.0	4.17	4.17	4.17	4.17	9.45	5.95	5.95	5.95	5.95	12.55	4.15	4.15	4.15	4.15	18.99																
4.5	3.43	3.43	3.43	3.43	6.64	4.70	4.70	4.70	4.70	8.81	3.54	3.54	3.54	3.54	13.34	6.06	6.06	6.06	6.06	6.06	18.10	9.01	9.01	9.01	9.01	23.12	4.20	4.20	4.20	4.20	25.98
5.0	2.79	2.79	2.79	2.79	4.84	3.80	3.80	3.80	3.80	6.42	3.06	3.06	3.06	3.06	9.72	5.15	5.15	5.15	5.15	5.15	13.19	7.30	7.30	7.30	7.30	16.85	3.69	3.69	3.69	3.69	18.94
5.5	2.31	2.31	2.31	2.31	3.63	3.14	3.14	3.14	3.14	4.83	2.67	2.67	2.67	2.67	7.30	4.42	4.42	4.42	4.42	4.42	9.91	6.03	6.03	6.03	6.03	12.66	3.26	3.26	3.26	3.26	14.23
6.0	1.94	1.94	1.94	1.94	2.80	2.64	2.64	2.64	2.64	3.72	2.34	2.34	2.34	2.34	5.62	3.83	3.83	3.83	3.83	3.83	7.63	5.07	5.07	5.07	5.07	9.75	2.91	2.91	2.91	2.91	10.96
6.5	1.65	1.65	1.65	1.65	2.20	2.25	2.25	2.25	2.25	2.92	2.07	2.07	2.07	2.07	4.42	3.35	3.35	3.35	3.35	3.35	6.00	4.32	4.32	4.32	4.32	7.67	2.61	2.61	2.61	2.61	8.62
7.0	1.42	1.42	1.42	1.42	1.76	1.94	1.94	1.94	1.94	1.94	1.84	1.84	1.84	1.84	3.54	2.89	2.89	2.89	2.89	2.89	4.81	3.72	3.72	3.72	3.72	6.14	2.35	2.35	2.35	2.35	6.90
7.5	1.24	1.24	1.24	1.24	1.45	1.69	1.69	1.69	1.69	1.92	1.65	1.65	1.65	1.65	2.88	2.52	2.52	2.52	2.52	2.52	3.91	3.24	3.24	3.24	3.24	4.99	2.13	2.13	2.13	2.13	5.61
8.0	1.09	1.09	1.09	1.09	1.21	1.48	1.48	1.48	1.48	1.59	1.48	1.48	1.48	1.48	2.37	2.21	2.21	2.21	2.21	2.21	3.22	2.85	2.85	2.85	2.85	4.11	1.94	1.94	1.94	1.94	4.62
8.5	0.96	0.96	0.96	0.96	1.02	1.31	1.31	1.31	1.31	1.33	1.34	1.34	1.34	1.34	1.97	1.96	1.96	1.96	1.96	1.96	2.68	2.52	2.52	2.52	2.52	3.43	1.77	1.77	1.77	1.77	3.85
9.0	0.86	0.86	0.86	0.86	0.87	1.17	1.17	1.17	1.17	1.13	1.22	1.22	1.22	1.22	1.66	1.75	1.75	1.75	1.75	1.75	2.26	2.25	2.25	2.25	2.25	2.89	1.62	1.62	1.62	1.62	3.24
9.5	0.77	0.77	0.77	0.77	0.74	1.05	1.05	1.05	1.05	0.96	1.11	1.11	1.11	1.11	1.41	1.57	1.57	1.57	1.57	1.57	1.93	2.02	2.02	2.02	2.02	2.47	1.49	1.49	1.49	1.49	2.76
10.0	0.69	0.69	0.69	0.69	0.64	0.95	0.95	0.95	0.95	0.83	1.01	1.01	1.01	1.01	1.22	1.41	1.41	1.41	1.41	1.41	1.67	1.82	1.82	1.82	1.82	2.12	1.38	1.38	1.38	1.38	2.36
10.5	0.63	0.63	0.63	0.63	0.55	0.86	0.86	0.86	0.86	0.72	0.93	0.93	0.93	0.93	1.06	1.28	1.28	1.28	1.28	1.28	1.46	1.65	1.65	1.65	1.65	1.84	1.27	1.27	1.27	1.27	2.04
11.0	0.57	0.57	0.57	0.57	0.48	0.78	0.78	0.78	0.78	0.63	0.85	0.85	0.85	0.85	0.93	1.17	1.17	1.17	1.17	1.17	1.28	1.50	1.50	1.50	1.50	1.61	1.18	1.18	1.18	1.18	1.77
11.5	0.52	0.52	0.52	0.52	0.42	0.72	0.72	0.72	0.72	0.55	0.78	0.78	0.78	0.78	0.82	1.07	1.07	1.07	1.07	1.07	1.13	1.38	1.38	1.38	1.38	1.41	1.10	1.10	1.10	1.10	1.55
12.0	0.48	0.48	0.48	0.48	0.37	0.66	0.66	0.66	0.66	0.48	0.71	0.71	0.71	0.71	0.73	0.98	0.98	0.98	0.98	0.98	1.00	1.26	1.26	1.26	1.26	1.25	1.02	1.02	1.02	1.02	1.37
12.5	0.44	0.44	0.44	0.44	0.33	0.60	0.60	0.60	0.60	0.43	0.66	0.66	0.66	0.66	0.66	0.90	0.90	0.90	0.90	0.90	0.89	1.16	1.16	1.16	1.16	1.11	0.95	0.95	0.95	0.95	1.21
13.0	0.41	0.41	0.41	0.41	0.29	0.56	0.56	0.56	0.56	0.38	0.61	0.61	0.61	0.61	0.61	0.84	0.84	0.84	0.84	0.84	0.80	1.08	1.08	1.08	1.08	0.99	0.89	0.89	0.89	0.89	1.08
13.5						0.51	0.50	0.52	0.52	0.34	0.56	0.56	0.56	0.56	0.56	0.77	0.77	0.77	0.77	0.77	0.71	1.00	1.00	1.00	1.00	0.88	0.83	0.83	0.83	0.83	0.97
14.0						0.46	0.46	0.48	0.48	0.31	0.52	0.52	0.52	0.52	0.52	0.72	0.72	0.72	0.72	0.72	0.64	0.93	0.93	0.93	0.93	0.79	0.78	0.78	0.78	0.78	0.88
14.5											0.48	0.48	0.49	0.49	0.43	0.67	0.67	0.67	0.67	0.67	0.58	0.86	0.86	0.86	0.86	0.71	0.74	0.74	0.74	0.74	0.79
15.0											0.44	0.44	0.46	0.46	0.39	0.63	0.63	0.63	0.63	0.63	0.52	0.81	0.81	0.81	0.81	0.65	0.69	0.69	0.69	0.69	0.72
15.5											0.41	0.40	0.42	0.43	0.35	0.59	0.59	0.59	0.59	0.59	0.48	0.76	0.75	0.76	0.76	0.59	0.65	0.65	0.65	0.65	0.66
16.0											0.37	0.37	0.39	0.40	0.32	0.54	0.53	0.55	0.55	0.55	0.43	0.69	0.69	0.71	0.71	0.53	0.61	0.61	0.61	0.61	0.60
16.5											0.35	0.34	0.36	0.38	0.30	0.50	0.49	0.52	0.52	0.52	0.40	0.64	0.63	0.67	0.67	0.49	0.56	0.56	0.56	0.56	0.55
17.0																0.46	0.45	0.48	0.49	0.49	0.36	0.58	0.58	0.62	0.62	0.45	0.52	0.52	0.52	0.52	0.51
17.5																0.43	0.42	0.45	0.46	0.46	0.33	0.54	0.52	0.57	0.57	0.41	0.48	0.48	0.48	0.48	0.47
18.0																0.39	0.38	0.41	0.41	0.41	0.31	0.49	0.48	0.53	0.53	0.38	0.45	0.44	0.44	0.44	0.43

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED END SPAN

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

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13						
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s		
3.0	5.66	5.66	5.66	5.66	12.02	8.98	8.98	8.98	8.98	15.96	5.18	5.18	5.18	5.18	24.15																	
3.5	4.45	4.45	4.45	4.45	7.57	6.62	6.62	6.62	6.62	10.05	4.28	4.28	4.28	4.28	15.21																	
4.0	3.58	3.58	3.58	3.58	5.07	5.06	5.06	5.06	5.06	6.73	3.60	3.60	3.60	3.60	10.19	6.24	6.24	6.24	6.24	6.24	13.83	9.41	9.41	9.41	9.41	9.41	9.41	9.41	9.41	9.41	9.41	
4.5	2.94	2.94	2.94	2.94	3.56	4.00	4.00	4.00	4.00	4.73	3.06	3.06	3.06	3.06	7.15	5.22	5.22	5.22	5.22	5.22	9.71	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	
5.0	2.38	2.38	2.38	2.38	2.59	3.24	3.24	3.24	3.24	3.44	2.64	2.64	2.64	2.64	5.21	4.43	4.43	4.43	4.43	4.43	7.08	6.22	6.22	6.22	6.22	6.22	6.22	6.22	6.22	6.22	6.22	
5.5	1.96	1.96	1.96	1.96	1.95	2.68	2.68	2.68	2.68	2.59	2.30	2.30	2.30	2.30	3.92	3.80	3.80	3.80	3.80	3.80	5.32	5.14	5.14	5.14	5.14	5.14	5.14	5.14	5.14	5.14	5.14	
6.0	1.65	1.65	1.65	1.65	1.50	2.25	2.25	2.25	2.25	2.00	2.02	2.02	2.02	2.02	3.02	3.29	3.29	3.29	3.29	3.29	4.09	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	
6.5	1.40	1.40	1.40	1.40	1.20	1.92	1.92	1.92	1.92	1.58	1.78	1.78	1.78	1.78	2.37	2.86	2.86	2.86	2.86	2.86	3.22	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	
7.0	1.21	1.21	1.21	1.21	0.97	1.61	1.65	1.65	1.65	1.27	1.59	1.59	1.59	1.59	1.90	2.46	2.46	2.46	2.46	2.46	2.58	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	
7.5	1.00	1.05	1.05	1.05	0.80	1.33	1.44	1.44	1.44	1.04	1.42	1.42	1.42	1.42	1.54	2.14	2.14	2.14	2.14	2.14	2.09	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	
8.0	0.83	0.91	0.93	0.93	0.66	1.10	1.22	1.26	1.26	0.86	1.27	1.27	1.27	1.27	1.15	1.88	1.88	1.88	1.88	1.88	1.72	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	
8.5	0.68	0.78	0.82	0.82	0.55	0.90	1.03	1.12	1.12	0.72	1.11	1.15	1.15	1.15	1.06	1.60	1.67	1.67	1.67	1.67	1.45	2.04	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	
9.0	0.56	0.65	0.73	0.73	0.47	0.74	0.86	1.00	1.00	0.61	0.95	1.03	1.04	1.04	0.90	1.37	1.49	1.49	1.49	1.49	1.24	1.72	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	
9.5	0.47	0.54	0.66	0.66	0.40	0.62	0.72	0.89	0.89	0.52	0.80	0.89	0.95	0.95	0.77	1.15	1.29	1.33	1.33	1.33	1.06	1.44	1.65	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	
10.0	0.39	0.46	0.59	0.59	0.34	0.52	0.61	0.81	0.81	0.45	0.69	0.78	0.87	0.87	0.67	0.97	1.13	1.20	1.20	1.20	0.92	1.21	1.42	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	
10.5	0.33	0.38	0.54	0.54	0.30	0.44	0.51	0.73	0.73	0.39	0.59	0.67	0.80	0.80	0.58	0.82	0.97	1.09	1.09	1.09	0.80	1.03	1.21	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	
11.0						0.37	0.44	0.65	0.67	0.34	0.51	0.58	0.72	0.72	0.51	0.70	0.82	0.99	0.99	0.99	0.70	0.87	1.03	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	
11.5						0.31	0.37	0.58	0.61	0.30	0.44	0.50	0.66	0.66	0.45	0.60	0.71	0.91	0.91	0.91	0.62	0.75	0.89	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	
12.0											0.39	0.44	0.60	0.61	0.40	0.52	0.61	0.83	0.83	0.83	0.54	0.64	0.77	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	
12.5											0.34	0.39	0.54	0.56	0.36	0.45	0.53	0.77	0.77	0.77	0.48	0.55	0.66	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	
13.0											0.30	0.34	0.48	0.52	0.32	0.39	0.46	0.70	0.71	0.71	0.43	0.48	0.58	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
13.5											0.26	0.30	0.44	0.48	0.29	0.34	0.40	0.63	0.66	0.66	0.38	0.42	0.50	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	
14.0																0.30	0.36	0.57	0.61	0.61	0.35	0.37	0.44	0.72	0.79	0.79	0.79	0.79	0.79	0.79	0.79	
14.5																0.27	0.31	0.51	0.57	0.57	0.31	0.32	0.39	0.64	0.74	0.74	0.74	0.74	0.74	0.74	0.74	
15.0																						0.28	0.34	0.57	0.69	0.69	0.69	0.69	0.69	0.69	0.69	
15.5																						0.25	0.30	0.51	0.64	0.64	0.64	0.64	0.64	0.64	0.64	
16.0																						0.22	0.27	0.46	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
16.5																																
17.0																																
17.5																																
18.0																																

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED INTERNAL SPANS

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

Span (m)	DHS 150/12					DHS 150/15					DHS 200/12					DHS 200/15					DHS 200/18					DHS 250/13										
	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	1B	2B	3B	FR	W _s	
3.0																																				
3.5																																				
4.0	5.43	5.43	5.43	5.43	11.72	8.46	8.46	8.46	8.46	15.56	5.04	5.04	5.04	5.04	23.54																					
4.5	4.51	4.51	4.51	4.51	8.23	6.68	6.68	6.68	6.68	10.93	4.35	4.35	4.35	4.35	16.53																					
5.0	3.80	3.80	3.80	3.80	6.00	5.41	5.41	5.41	5.41	7.96	3.79	3.79	3.79	3.79	12.05	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	6.60	
5.5	3.24	3.24	3.24	3.24	4.51	4.47	4.47	4.47	4.47	5.98	3.34	3.34	3.34	3.34	9.05	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	
6.0	2.76	2.76	2.76	2.76	3.47	3.76	3.76	3.76	3.76	4.61	2.96	2.96	2.96	2.96	6.97	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	
6.5	2.35	2.35	2.35	2.35	2.73	3.20	3.20	3.20	3.20	3.62	2.64	2.64	2.64	2.64	5.48	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	
7.0	2.02	2.02	2.02	2.02	2.18	2.76	2.76	2.76	2.76	2.90	2.37	2.37	2.37	2.37	4.39	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	
7.5	1.76	1.76	1.76	1.76	1.77	2.40	2.40	2.40	2.40	2.36	2.14	2.14	2.14	2.14	3.57	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49
8.0	1.55	1.55	1.55	1.55	1.46	2.11	2.11	2.11	2.11	1.94	1.93	1.93	1.93	1.93	2.94	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
8.5	1.37	1.37	1.37	1.37	1.22	1.87	1.87	1.87	1.87	1.62	1.76	1.76	1.76	1.76	2.45	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
9.0	1.22	1.22	1.22	1.22	1.02	1.63	1.67	1.67	1.67	1.37	1.61	1.61	1.61	1.61	2.06	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
9.5	1.06	1.10	1.10	1.10	0.88	1.40	1.50	1.50	1.50	1.17	1.47	1.47	1.47	1.47	1.75	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
10.0	0.92	0.99	0.99	0.99	0.76	1.22	1.35	1.35	1.35	1.00	1.35	1.35	1.35	1.35	1.35	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
10.5	0.80	0.90	0.90	0.90	0.66	1.05	1.22	1.22	1.22	0.87	1.25	1.25	1.25	1.25	1.30	1.79	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
11.0	0.69	0.82	0.82	0.82	0.58	0.90	1.11	1.11	1.11	0.76	1.10	1.10	1.10	1.10	1.13	1.59	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
11.5	0.59	0.75	0.75	0.75	0.51	0.78	1.02	1.02	1.02	0.67	0.98	0.98	0.98	0.98	1.07	1.41	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
12.0	0.51	0.69	0.69	0.69	0.45	0.68	0.93	0.94	0.94	0.59	0.86	0.86	0.86	0.86	0.99	1.24	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
12.5	0.45	0.63	0.63	0.63	0.40	0.59	0.84	0.86	0.86	0.52	0.76	0.76	0.76	0.76	0.92	1.08	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29
13.0	0.39	0.56	0.58	0.58	0.36	0.52	0.75	0.80	0.80	0.46	0.68	0.68	0.68	0.68	0.86	0.95	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
13.5	0.35	0.51	0.54	0.54	0.32	0.46	0.67	0.74	0.74	0.42	0.61	0.61	0.61	0.61	0.80	0.84	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
14.0	0.31	0.46	0.50	0.50	0.29	0.41	0.60	0.69	0.69	0.37	0.54	0.54	0.54	0.54	0.75	0.74	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
14.5						0.36	0.54	0.63	0.64	0.34	0.49	0.65	0.65	0.65	0.70	0.50	0.66	0.94	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
15.0						0.32	0.48	0.58	0.60	0.30	0.44	0.59	0.65	0.65	0.46	0.59	0.86	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
15.5											0.40	0.54	0.61	0.61	0.42	0.53	0.78	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
16.0											0.36	0.50	0.56	0.57	0.38	0.48	0.72	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
16.5											0.32	0.45	0.52	0.54	0.35	0.43	0.65	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
17.0											0.29	0.41	0.48	0.50	0.32	0.39	0.59	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
17.5											0.27	0.38	0.44	0.48	0.29	0.35	0.53	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
18.0																0.32	0.48	0.59	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. W_s: Load at a deflection of span/150.

DHS PURLIN SYSTEM LOAD SPAN TABLES - SINGLE SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13					
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	
3.0	65.4	76.4	77.0	77.1	247.9																															
3.5	57.3	70.8	71.5	71.6	182.1	80.2	99.4	100.5	100.6	227.3	73.2	85.4	86.2	86.2	397.2																					
4.0	49.2	64.7	65.6	65.7	139.4	67.9	90.8	92.2	92.3	174.0	66.4	81.1	82.1	82.1	304.1	93.6	114.5	115.9	116.0	380.6	123.3	151.2	153.2	153.3	455.1	91.2	106.4	107.5	107.6	614.5						
4.5	41.5	58.5	59.6	59.6	110.1	55.9	82.0	83.4	83.6	137.5	59.5	76.5	77.7	77.7	240.2	83.8	108.0	109.7	109.8	300.7	110.0	142.6	144.9	145.0	359.5	84.2	102.3	103.7	103.8	485.5						
5.0	35.2	52.3	53.4	53.5	89.2	46.8	72.7	74.5	74.7	111.4	52.6	71.7	73.0	73.1	194.6	74.1	101.2	103.1	103.2	243.6	95.4	133.4	136.1	136.2	291.2	77.0	98.0	99.6	99.7	393.2						
5.5	29.9	46.1	47.3	47.4	73.7	39.9	62.8	64.7	64.9	92.0	45.9	66.7	68.2	68.3	160.8	64.6	94.1	96.3	96.4	201.3	81.7	124.0	126.9	127.1	240.7	69.9	93.4	95.3	95.4	325.0						
6.0	25.8	40.3	41.5	41.5	61.9	34.6	53.9	55.6	55.7	77.3	40.4	61.7	63.3	63.4	135.1	55.9	87.0	89.4	89.5	169.1	70.6	114.4	117.6	117.8	202.2	62.8	88.7	90.8	90.9	273.1						
6.5	22.5	35.4	36.6	36.7	52.8	30.4	46.9	48.3	48.4	65.9	35.9	56.6	58.4	58.5	115.1	48.8	79.8	82.3	82.5	144.1	61.9	103.8	107.7	107.9	172.3	55.8	83.8	86.1	86.2	232.7						
7.0	19.9	31.1	32.1	32.2	45.5	26.9	41.2	42.4	42.6	56.8	32.1	51.6	53.5	53.6	99.3	43.1	72.7	75.3	75.5	124.2	54.8	93.2	97.2	97.4	148.6	50.0	78.8	81.4	81.5	200.6						
7.5	17.8	27.6	28.4	28.5	39.6	24.1	36.6	37.6	37.7	49.5	28.7	46.7	48.6	48.8	86.5	38.4	65.6	68.4	68.5	108.2	49.0	82.9	86.9	87.1	129.4	45.0	73.8	76.6	76.7	174.7						
8.0						21.8	32.7	33.6	33.7	43.5	25.7	42.4	44.2	44.3	76.0	34.5	59.0	61.8	62.0	95.1	44.2	74.2	77.6	77.8	113.7	40.9	68.8	71.7	71.8	153.6						
8.5											23.2	38.7	40.3	40.4	67.3	31.3	53.1	55.6	55.7	84.2	40.2	66.9	69.9	70.1	100.7	37.3	63.9	66.9	67.0	136.0						
9.0											21.1	35.5	37.0	37.0	60.0	28.5	48.1	50.3	50.4	75.1	36.7	60.7	63.3	63.5	89.8	34.1	59.0	62.2	62.3	121.3						
9.5											19.3	32.7	34.0	34.1	53.9	26.1	43.8	45.8	45.9	67.4	33.8	55.3	57.7	57.8	80.6	31.0	54.4	57.4	57.6	108.9						
10.0											17.7	30.1	31.5	31.5	48.6	24.1	40.1	41.9	42.0	60.9	31.2	50.7	52.8	53.0	72.8	28.3	50.4	53.2	53.3	98.3						
10.5																22.3	36.9	38.5	38.6	55.2	28.8	46.7	48.6	48.7	66.0	26.0	46.9	49.4	49.6	89.1						
11.0																					26.5	43.2	44.8	45.0	60.1	24.0	43.7	46.1	46.2	81.2						
11.5																					24.6	40.0	41.6	41.7	55.0	22.3	40.9	43.1	43.2	74.3						
12.0																										20.7	38.4	40.4	40.5	68.2						
12.5																											19.3	36.1	38.0	38.1	62.9					
13.0																																				
13.5																																				
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1. **1B, 2B & 3B**: Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR**: Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$** : Elastic buckling capacity about the X-X axis.



DHS PURLIN SYSTEM LOAD SPAN TABLES - SINGLE SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 250/15			DHS 250/18			DHS 300/15			DHS 300/18			DHS 350/18			DHS 400/20																
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$												
3.0																																
3.5																																
4.0																																
4.5																																
5.0	95.9	122.2	124.3	124.4	453.6	126.3	161.7	164.5	164.6	543.6	114.7	137.8	139.9	139.9	775.1																	
5.5	86.9	116.5	118.9	119.0	374.9	114.2	154.2	157.4	157.4	449.2	106.8	133.3	135.6	135.7	640.6																	
6.0	78.0	110.6	113.3	113.4	315.0	102.2	146.3	149.9	150.1	377.5	98.7	128.5	131.2	131.3	538.3																	
6.5	69.3	104.5	107.5	107.6	268.4	89.7	138.2	142.2	142.4	321.6	90.6	123.5	126.5	126.6	458.6	119.8	163.9	168.0	168.1	550.4												
7.0	61.9	98.3	101.5	101.7	231.4	78.8	130.0	134.3	134.5	277.3	82.7	118.3	121.6	121.8	395.4	109.2	157.0	161.5	161.7	474.5	112.4	162.9	179.0	179.2	692.3							
7.5	55.7	92.1	95.5	95.7	201.6	69.9	121.6	126.3	126.4	241.6	74.8	113.0	116.6	116.8	344.5	98.6	150.0	154.9	155.1	413.4	101.5	155.6	173.4	173.5	603.1	120.9	187.5	217.8	222.0	933.9		
8.0	50.0	85.9	89.5	89.6	177.2	62.6	113.3	118.2	118.4	212.3	68.0	107.6	111.5	111.7	302.7	89.5	142.8	148.1	148.3	363.3	92.1	148.1	167.6	167.7	530.0	108.9	178.3	211.5	216.1	820.8		
8.5	45.0	79.7	83.5	83.6	156.9	56.4	105.1	110.1	110.3	188.1	62.2	102.1	106.3	106.5	268.2	81.7	135.6	141.2	141.4	321.8	84.0	140.6	161.6	161.8	469.5	98.0	169.0	204.9	210.0	727.0		
9.0	40.7	73.5	77.5	77.7	140.0	51.1	96.8	102.1	102.3	167.7	57.1	96.7	101.1	101.2	239.2	74.5	128.3	134.3	134.5	287.0	76.5	133.0	155.5	155.7	418.8	88.8	159.7	198.2	203.8	648.5		
9.5	37.1	67.8	71.6	71.7	125.6	46.6	88.2	93.8	94.0	150.5	52.7	91.2	95.8	96.0	214.7	67.8	121.0	127.3	127.5	257.6	69.7	125.5	149.3	149.5	375.9	80.9	150.4	191.3	197.3	582.0		
10.0	33.9	62.8	66.2	66.4	113.4	42.7	80.7	85.7	86.0	135.9	48.7	85.8	90.6	90.8	193.7	62.0	113.8	120.3	120.5	232.5	63.8	117.9	143.0	143.2	339.2	74.1	141.1	184.3	190.7	525.3		
10.5	31.2	58.3	61.5	61.7	102.8	39.3	74.2	78.8	79.0	123.2	45.3	80.4	85.4	85.6	175.7	57.0	106.6	113.3	113.6	210.9	58.6	110.5	136.7	136.9	307.7	68.2	131.9	177.3	184.1	476.4		
11.0	28.8	54.4	57.3	57.4	93.7	36.3	68.5	72.7	72.8	112.3	41.9	75.1	80.2	80.4	160.1	52.6	99.5	106.4	106.6	192.1	54.1	103.0	130.4	130.6	280.3	63.1	122.9	170.1	177.3	434.1		
11.5	26.7	50.3	53.4	53.6	85.7	33.6	63.5	67.3	67.4	102.7	38.8	70.4	75.1	75.3	146.5	48.8	93.2	99.6	99.8	175.8	50.2	96.4	124.1	124.3	256.5	58.5	114.8	163.0	170.5	397.2		
12.0	24.8	46.8	49.6	49.7	78.7	31.3	59.1	62.5	62.7	94.3	36.0	66.1	70.6	70.7	134.5	45.3	87.5	93.4	93.7	161.4	46.7	90.4	117.8	118.1	235.5	54.4	106.6	155.8	163.7	364.8		
12.5	23.2	43.6	46.2	46.3	72.5	29.2	55.2	58.3	58.4	86.9	33.6	62.2	66.4	66.6	124.0	42.3	82.3	87.9	88.1	148.8	43.5	85.0	111.6	111.9	217.1	50.8	99.3	148.7	156.9	336.2		
13.0	21.7	40.8	43.1	43.3	67.1	27.3	51.6	54.5	54.6	80.4	31.4	58.7	62.7	62.8	114.6	39.5	77.5	82.8	83.0	137.6	40.7	80.0	105.3	105.6	200.7	47.6	92.8	141.6	150.0	310.8		
13.5						25.6	48.5	51.1	51.2	74.5	29.4	55.6	59.3	59.4	106.3	37.1	72.7	78.2	78.4	127.5	38.2	74.9	99.5	99.7	186.1	44.7	87.0	134.5	143.2	288.2		
14.0						24.1	45.6	48.0	48.1	69.3	27.6	52.6	56.1	56.3	98.8	34.9	68.3	73.5	73.6	118.6	35.9	70.4	94.2	94.4	173.0	42.1	81.7	127.4	136.5	268.0		
14.5											26.0	50.0	53.3	53.4	92.1	32.9	64.3	69.1	69.3	110.6	33.9	66.2	89.3	89.6	161.3	39.7	76.9	120.7	129.7	249.8		
15.0											24.6	47.5	50.6	50.7	86.1	31.0	60.7	65.2	65.3	103.3	32.0	62.4	84.9	85.1	150.7	37.5	72.6	114.6	123.1	233.4		
15.5											23.2	45.2	48.2	48.3	80.6	29.3	57.4	61.6	61.7	96.7	30.3	59.0	80.7	80.9	141.2	35.5	68.7	108.3	117.1	218.6		
16.0																27.8	54.3	58.3	58.4	90.8	28.7	55.9	76.5	76.7	132.5	33.7	65.1	102.5	111.1	205.2		
16.5																26.4	51.5	55.3	55.4	85.4	27.3	53.0	72.5	72.7	124.6	32.0	61.8	97.1	105.4	192.9		
17.0																						25.9	50.4	68.8	69.0	117.3	30.5	58.7	92.3	100.0	181.7	
17.5																						24.7	47.9	65.5	65.6	110.7	29.1	55.9	87.8	95.2	171.5	
18.0																							23.6	45.7	62.4	62.5	104.7	27.7	53.3	83.6	90.6	162.1

1. 1B, 2B & 3B: Load Capacity for 1, 2 and 3 rows of bracing. 2. FR: Load Capacity for fully restrained compression flange. 3. $\phi_c N_{ex}$: Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - END SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13								
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	FR	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$			
3.0	64.5	78.3	85.3	85.6	506.0	90.4	110.1	120.1	120.6	631.5	78.8	89.6	95.1	95.5	1103.3																								
3.5	56.2	73.2	82.2	82.6	371.7	78.7	102.8	115.7	116.2	464.0	72.1	85.7	93.0	93.5	810.6	101.7	121.0	131.3	132.1	1014.6	134.0	159.8	173.6	174.7	1213.1	96.2	109.7	116.3	117.1	1638.0									
4.0	48.0	67.7	78.7	79.2	284.6	66.0	94.9	110.7	111.5	355.2	65.1	81.5	90.7	91.3	620.6	91.8	115.1	128.0	129.0	776.8	120.8	151.9	169.2	170.6	928.8	89.2	105.8	114.3	115.3	1254.0									
4.5	40.4	62.0	74.9	75.5	224.8	54.2	86.8	105.4	106.2	280.6	58.0	77.1	88.1	88.9	490.3	81.7	108.7	124.4	125.5	613.8	106.8	143.4	164.4	166.0	733.8	81.9	101.6	112.0	113.3	990.8									
5.0	34.1	56.2	70.9	71.6	182.1	45.4	78.5	99.7	100.7	227.3	51.0	72.3	85.3	86.3	397.2	71.8	102.0	120.4	121.8	497.1	92.1	134.5	159.1	161.1	594.4	74.5	97.1	109.5	111.1	802.6									
5.5	29.0	50.4	66.8	67.6	150.5	38.8	69.7	93.8	94.9	187.9	44.4	67.5	82.3	83.4	328.2	62.3	95.2	116.2	117.8	410.8	78.6	125.3	153.5	155.8	491.2	67.1	92.4	106.8	108.7	663.3									
6.0	25.0	44.7	62.5	63.4	126.5	33.6	60.7	87.7	88.9	157.8	39.0	62.6	79.2	80.4	275.8	53.7	88.2	111.8	113.6	345.2	68.0	116.0	147.6	150.1	412.8	59.7	87.5	104.0	106.1	557.3									
6.5	21.9	39.6	58.2	59.1	107.7	29.6	53.0	81.4	82.8	134.5	34.7	57.6	75.9	77.3	235.0	47.0	81.2	107.2	109.2	294.1	59.6	106.0	141.4	144.2	351.7	53.0	82.5	101.0	103.4	474.9									
7.0	19.3	35.2	53.8	54.8	92.9	26.2	46.8	75.2	76.6	116.0	31.0	52.7	72.6	74.1	202.6	41.5	74.2	102.4	104.6	253.6	52.9	95.6	135.1	138.1	303.2	47.4	77.4	97.8	100.6	409.5									
7.5	17.3	31.3	49.5	50.5	80.9	23.5	41.7	68.2	69.9	101.0	27.6	47.9	69.1	70.8	176.5	37.0	67.3	97.5	99.9	220.9	47.3	85.6	128.5	131.8	264.1	42.7	72.3	94.5	97.6	356.7									
8.0	15.6	28.0	45.1	46.3	71.1	21.3	37.5	61.3	63.1	88.8	24.7	43.5	65.6	67.4	155.1	33.3	60.9	92.6	95.1	194.2	42.7	76.8	121.9	125.4	232.2	38.7	67.2	91.2	94.6	313.5									
8.5	14.1	25.3	41.1	42.2	63.0	19.4	33.9	55.1	56.7	78.6	22.3	39.8	62.1	64.0	137.4	30.2	54.9	87.6	90.3	172.0	38.8	69.4	115.2	118.8	205.6	35.3	62.2	87.7	91.4	277.7									
9.0	12.9	22.9	37.7	38.6	56.2	17.7	30.9	49.9	51.3	70.1	20.3	36.5	58.6	60.5	122.5	27.5	49.9	82.6	85.4	153.4	35.3	63.2	108.1	112.3	183.4	32.0	57.2	84.2	88.2	247.7									
9.5	11.8	21.0	34.3	35.3	50.4	16.3	28.3	45.4	46.6	62.9	18.6	33.7	55.1	57.1	110.0	25.2	45.5	77.6	80.5	137.7	32.2	57.8	100.5	104.9	164.6	29.2	52.8	80.6	84.9	222.3									
10.0	10.9	19.2	31.4	32.2	45.5	15.1	26.1	41.5	42.6	56.8	17.1	31.2	51.6	53.7	99.3	23.3	41.8	72.6	75.6	124.2	29.4	53.2	93.2	97.6	148.6	26.7	48.9	77.0	81.5	200.6									
10.5						14.0	24.1	38.1	39.2	51.5	15.8	28.8	48.1	50.3	90.0	21.6	38.5	67.6	70.8	112.7	27.1	49.2	85.9	90.4	134.7	24.5	45.4	73.5	78.2	182.0									
11.0						13.0	22.4	35.2	36.1	46.9	14.6	26.6	44.9	47.0	82.0	19.9	35.7	63.0	65.9	102.7	25.0	45.6	79.4	83.4	122.8	22.6	42.3	69.9	74.8	165.8									
11.5											13.6	24.6	42.0	43.9	75.0	18.5	33.2	58.4	61.4	93.9	23.1	42.5	73.6	77.2	112.3	20.9	39.6	66.3	71.5	151.7									
12.0											12.7	22.9	39.4	41.2	68.9	17.1	30.9	54.3	57.0	86.3	21.5	39.7	68.4	71.7	103.2	19.5	37.1	62.8	68.1	139.3									
12.5											11.9	21.4	37.1	38.7	63.5	16.0	28.9	50.6	53.1	79.5	20.0	37.3	63.9	66.8	95.1	18.1	34.9	59.2	64.8	128.4									
13.0											11.2	20.1	35.0	36.5	58.7	14.9	27.2	47.3	49.6	73.5	18.7	35.0	59.8	62.4	87.9	17.0	32.6	55.8	61.5	118.7									
13.5															14.0	25.6	44.3	46.4	46.4	68.2	17.5	33.0	56.1	58.5	81.5	15.9	30.5	52.8	58.1	110.0									
14.0															13.1	24.1	41.7	43.6	43.6	63.4	16.3	31.2	52.8	54.9	75.8	14.9	28.6	50.0	55.0	102.3									
14.5																				63.4	15.2	29.6	49.7	51.7	70.6	14.1	26.9	47.4	52.2	95.4									
15.0																					14.2	28.0	47.0	48.8	66.0	13.3	25.4	45.0	49.6	89.1									
15.5																										12.6	24.0	42.9	47.3	83.5									
16.0																										11.9	22.7	40.9	45.1	78.3									
16.5																																							
17.0																																							
17.5																																							
18.0																																							

1. **1B, 2B & 3B:** Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR:** Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$:** Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - END SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20					
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	
3.0																															
3.5																															
4.0	111.1	131.8	142.4	143.7	1446.7	146.7	174.3	188.4	190.3	1733.4	127.7	144.8	153.1	154.6	2471.8																
4.5	102.0	126.6	139.5	141.2	1143.0	134.5	167.4	184.6	187.0	1369.6	120.0	140.5	150.9	152.8	1953.0																
5.0	92.7	121.0	136.4	138.5	925.8	122.0	159.9	180.5	183.4	1109.4	111.9	136.0	148.4	150.7	1581.9	148.2	180.2	196.8	199.9	1898.3	153.0	186.4	203.7	210.7	2769.4						
5.5	83.4	115.2	133.1	135.5	765.1	109.5	152.1	176.0	179.4	916.8	103.6	131.1	145.8	148.5	1307.4	137.2	173.8	193.2	196.9	1568.8	141.5	179.7	200.0	208.3	2288.8						
6.0	74.1	109.1	129.6	132.4	642.9	97.0	143.9	171.3	175.2	770.4	95.2	126.0	142.9	146.1	1098.5	126.0	167.0	189.4	193.8	1318.2	129.9	172.6	196.1	205.7	1923.2	155.8	208.5	237.5	254.0	2978.0	
6.5	65.7	102.8	125.8	129.0	547.8	84.4	135.5	166.3	170.8	656.4	86.9	120.6	139.9	143.5	936.0	114.9	159.9	185.4	190.4	1123.2	118.3	165.2	191.8	203.0	1638.7	141.6	199.3	232.3	251.3	2537.5	
7.0	58.7	96.4	121.9	125.5	472.3	74.2	127.0	161.1	166.1	566.0	78.6	115.1	136.7	140.8	807.1	103.7	152.6	181.1	186.8	968.5	106.8	157.5	187.4	200.0	1412.9	127.4	189.9	226.8	248.4	2187.9	
7.5	52.6	90.0	117.8	121.8	411.5	65.8	118.4	155.6	161.2	493.0	71.0	109.5	133.3	137.9	703.0	93.6	145.1	176.7	183.0	843.7	96.3	149.7	182.7	196.9	1230.8	114.6	180.3	221.0	245.4	1905.9	
8.0	47.0	83.6	113.6	118.0	361.6	58.9	109.8	150.0	156.2	433.3	64.6	103.8	129.8	134.9	617.9	84.9	137.5	172.0	179.0	741.5	87.3	141.8	177.9	193.7	1081.8	102.5	170.5	215.0	242.2	1675.1	
8.5	42.3	77.3	109.3	114.0	320.3	53.1	101.3	144.2	150.9	383.8	59.0	98.1	126.2	131.8	547.3	77.4	129.8	167.2	174.9	656.8	79.5	133.8	172.8	190.3	958.2	92.3	160.7	208.8	238.8	1483.8	
9.0	38.3	71.0	104.9	110.0	285.7	48.1	92.3	138.3	145.6	342.4	54.2	92.4	122.4	128.6	488.2	70.1	122.1	162.2	170.7	585.9	72.0	125.9	167.6	186.7	854.7	83.6	150.9	202.4	235.3	1323.5	
9.5	34.9	65.5	100.4	105.9	256.4	43.9	84.0	132.3	140.1	307.3	49.9	86.7	118.6	125.2	438.2	63.8	114.5	157.2	166.3	525.8	65.6	117.9	162.3	183.1	767.1	76.2	141.1	195.8	231.6	1187.9	
10.0	31.9	60.6	95.9	101.8	231.4	40.2	76.8	126.3	134.6	277.3	46.2	81.0	114.7	121.8	395.4	58.4	107.0	152.0	161.8	474.5	60.0	110.1	156.9	179.3	692.3	69.8	131.4	189.2	227.8	1072.1	
10.5	29.4	56.2	91.4	97.6	209.9	37.0	70.6	120.3	129.0	251.5	42.8	75.4	110.8	118.4	358.7	53.7	99.4	146.7	157.2	430.4	55.2	102.3	151.4	175.4	627.9	64.3	122.0	182.4	223.9	972.4	
11.0	27.1	52.1	86.9	93.4	191.2	34.2	65.2	114.2	123.4	229.2	39.4	70.4	106.8	114.8	326.8	49.5	92.8	141.4	152.5	392.2	51.0	95.4	145.9	171.3	572.2	59.4	113.4	175.6	219.8	886.0	
11.5	25.1	48.2	82.4	89.2	175.0	31.7	60.3	108.2	117.7	209.7	36.5	65.9	102.7	111.2	299.0	45.9	86.8	136.0	147.7	358.8	47.3	89.2	140.3	167.3	523.5	55.1	105.0	168.7	215.7	810.6	
12.0	23.4	44.7	78.0	84.9	160.7	29.5	56.1	102.2	112.1	192.6	33.9	61.9	98.7	107.6	274.6	42.7	81.4	130.6	142.9	329.5	44.0	83.6	134.7	163.1	480.8	51.3	97.5	161.7	211.4	744.5	
12.5	21.8	41.7	73.5	80.8	148.1	27.5	52.3	96.1	106.5	177.5	31.6	58.2	94.7	104.0	253.1	39.8	76.2	125.2	138.1	303.7	41.0	78.4	129.1	158.9	443.1	47.9	90.9	154.8	207.1	686.1	
13.0	20.4	38.9	69.3	76.6	136.9	25.7	48.9	89.7	100.9	164.1	29.5	54.9	90.6	100.3	234.0	37.3	71.2	119.8	133.2	280.8	38.4	73.2	123.5	154.6	409.6	44.9	85.0	147.9	202.6	634.3	
13.5	19.1	36.5	65.4	72.4	127.0	24.1	45.8	84.0	95.1	152.1	27.7	51.9	86.6	96.6	217.0	34.9	66.7	114.5	128.3	260.4	36.0	68.6	117.9	150.3	379.8	42.1	79.7	141.1	198.1	588.2	
14.0	18.0	34.3	61.9	68.6	118.0	22.7	43.1	78.8	89.2	141.5	26.0	49.1	82.7	93.0	201.7	32.8	62.6	109.2	123.4	242.1	33.9	64.4	112.4	145.9	353.2	39.7	74.8	134.3	193.5	546.9	
14.5	16.9	32.3	58.7	65.0	110.0	21.4	40.6	74.2	83.9	131.9	24.5	46.6	78.6	89.3	188.1	31.0	58.9	103.7	118.6	225.7	31.9	60.6	106.8	141.5	329.3	37.4	70.5	127.4	188.9	509.9	
15.0	16.0	30.4	55.7	61.8	102.8	20.2	38.3	69.9	79.1	123.2	23.1	44.3	74.8	85.7	175.7	29.2	55.6	98.6	113.7	210.9	30.2	57.2	101.5	137.1	307.7	35.4	66.6	120.9	184.2	476.4	
15.5	15.1	28.8	52.8	58.8	96.3	19.1	36.2	66.1	74.8	115.4	21.9	41.9	71.3	82.1	164.6	27.6	52.5	93.9	108.9	197.5	28.6	54.1	96.6	132.7	288.1	33.5	63.0	115.0	179.5	446.2	
16.0	14.3	27.2	50.0	56.0	90.4	18.1	34.3	62.6	70.8	108.3	20.7	39.6	68.0	78.4	154.4	26.2	49.8	89.5	104.0	185.3	27.1	51.2	92.1	128.3	270.4	31.8	59.7	108.9	174.8	418.7	
16.5	13.6	25.8	47.4	53.3	85.0	17.1	32.6	59.3	67.1	101.8	19.7	37.5	65.0	75.0	145.2	24.9	47.2	85.5	99.3	174.3	25.7	48.6	87.9	123.9	254.3	30.2	56.6	103.2	170.0	393.7	
17.0	12.9	24.6	45.0	50.6	80.0	16.3	31.0	56.4	63.7	95.9	18.7	35.6	62.2	71.7	136.8	23.7	44.8	81.7	95.0	164.2	24.5	46.2	84.0	119.5	239.5	28.8	53.9	98.0	165.3	370.9	
17.5						15.5	29.5	53.6	60.6	90.5	17.8	33.9	59.5	68.7	129.1	22.5	42.7	78.2	91.0	154.9	23.3	43.9	80.4	115.1	226.0	27.4	51.3	93.2	160.5	350.0	
18.0						14.7	28.1	51.1	57.7	85.6	17.0	32.3	57.1	65.9	122.0	21.5	40.7	74.5	87.2	146.4	22.2	41.9	76.5	110.8	213.6	26.2	48.9	88.8	157.7	330.8	

1. **1B, 2B & 3B:** Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR:** Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$:** Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - INTERNAL SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13							
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$			
3.0																																						
3.5	58.5	75.7	83.5	88.3	728.6	81.9	106.3	117.4	124.3	909.4	73.9	87.5	93.3	97.2	1588.8																							
4.0	50.6	70.7	80.3	86.4	557.8	70.0	99.2	112.9	121.7	696.3	67.2	83.8	91.0	96.0	1216.4																							
4.5	42.9	65.4	76.9	84.3	440.7	58.0	91.8	108.1	118.7	550.1	60.4	79.7	88.5	94.7	961.1	85.1	112.5	124.8	133.6	1203.0	111.9	148.5	165.0	176.8	1438.3	84.2	103.9	112.0	118.1	1942.1								
5.0	36.5	60.1	73.3	82.1	357.0	48.6	84.1	102.9	115.5	445.6	53.7	75.5	85.7	93.2	778.5	75.5	106.4	121.0	131.6	974.4	97.5	140.4	159.8	174.1	1165.0	77.0	99.9	109.5	116.9	1573.1								
5.5	31.0	54.7	69.5	79.7	295.0	41.5	76.4	97.5	112.1	368.2	47.0	71.0	82.9	91.6	643.4	66.1	100.2	116.9	129.4	805.3	83.8	132.0	154.4	171.2	962.8	69.9	95.6	106.8	115.6	1300.1								
6.0	26.8	49.3	65.5	77.1	247.9	35.9	68.0	91.9	108.5	309.4	41.3	66.5	79.8	89.9	540.6	57.4	93.7	112.6	127.0	676.7	72.5	123.4	148.6	168.0	809.0	62.8	91.1	104.0	114.2	1092.4								
6.5	23.4	44.0	61.5	74.4	211.2	31.5	59.7	86.2	104.6	263.6	36.7	61.8	76.6	88.1	460.6	50.1	87.2	108.1	124.5	576.6	63.5	114.6	142.6	164.6	689.4	55.8	86.5	101.0	112.7	930.8								
7.0	20.7	39.4	57.5	71.6	182.1	28.0	52.7	80.4	100.6	227.3	32.9	57.2	73.3	86.2	397.2	44.3	80.6	103.4	121.8	497.1	56.3	105.1	136.3	161.0	594.4	50.0	81.7	97.8	111.1	802.6								
7.5	18.5	35.3	53.4	68.7	158.6	25.1	46.9	74.6	96.5	198.0	29.5	52.7	70.0	84.2	346.0	39.5	74.2	98.7	118.9	433.1	50.4	95.5	130.0	157.2	517.8	45.0	76.9	94.5	109.4	699.1								
8.0	16.6	31.6	49.4	65.7	139.4	22.7	42.1	68.2	92.3	174.0	26.4	48.2	66.5	82.1	304.1	35.5	67.7	93.8	116.0	380.6	45.4	86.1	123.5	153.3	455.1	40.9	72.1	91.2	107.6	614.5								
8.5	15.1	28.5	45.4	62.7	123.5	20.6	38.1	61.9	87.9	154.1	23.8	44.0	63.1	80.0	269.3	32.1	61.7	88.9	112.9	337.1	41.3	77.8	117.0	149.2	403.1	37.3	67.4	87.7	105.7	544.3								
9.0	13.7	25.8	41.7	59.6	110.1	18.9	34.7	56.2	83.6	137.5	21.7	40.4	59.6	77.7	240.2	29.3	56.0	84.0	109.8	300.7	37.5	70.7	110.3	145.0	359.5	34.1	62.6	84.2	103.8	485.5								
9.5	12.6	23.6	38.4	56.6	98.9	17.4	31.7	51.3	79.1	123.4	19.8	37.3	56.2	75.4	215.6	26.9	51.1	79.1	106.5	269.9	34.1	64.7	102.9	140.7	322.7	31.0	57.9	80.6	101.8	435.7								
10.0	11.6	21.6	35.4	53.5	89.2	16.1	29.2	47.0	74.7	111.4	18.2	34.6	52.8	73.1	194.6	24.8	46.8	74.3	103.2	243.6	31.3	59.5	95.7	136.2	291.2	28.3	53.6	77.0	99.7	393.2								
10.5	10.8	20.0	32.5	50.4	80.9	15.0	27.0	43.3	69.7	101.0	16.8	32.1	49.4	70.7	176.5	22.9	43.2	69.5	99.8	220.9	28.8	54.9	88.7	131.7	264.1	26.0	49.8	73.5	97.6	356.7								
11.0	10.0	18.5	30.0	47.4	73.7	13.9	25.1	40.1	64.9	92.0	15.6	29.9	46.1	68.3	160.8	21.2	39.9	64.8	96.4	201.3	26.5	50.9	82.0	127.1	240.7	24.0	46.5	69.9	95.4	325.0								
11.5	9.4	17.2	27.8	44.3	67.4	12.9	23.3	37.3	60.1	84.2	14.5	27.7	43.2	65.9	147.1	19.6	37.1	60.3	93.0	184.2	24.6	47.4	76.1	122.4	220.2	22.3	43.5	66.3	93.1	297.3								
12.0	8.8	16.0	25.9	41.5	61.9	12.1	21.8	34.8	55.7	77.3	13.5	25.7	40.5	63.4	135.1	18.2	34.6	56.1	89.5	169.1	22.8	44.3	70.9	117.8	202.2	20.7	40.8	62.8	90.9	273.1								
12.5	8.2	15.0	24.2	39.0	57.1	11.2	20.5	32.5	51.9	71.3	12.7	24.0	38.2	60.9	124.5	17.0	32.4	52.3	86.0	155.9	21.3	41.5	66.3	113.0	186.4	19.3	38.3	59.2	88.6	251.7								
13.0	7.8	14.1	22.6	36.7	52.8	10.4	19.3	30.5	48.4	65.9	11.9	22.5	36.0	58.5	115.1	15.9	30.4	49.0	82.5	144.1	19.9	39.0	62.1	107.9	172.3	18.0	36.1	55.8	86.2	232.7								
13.5						9.6	18.2	28.7	45.3	61.1	11.2	21.1	34.0	56.0	106.7	14.9	28.6	46.0	79.0	133.6	18.6	36.8	58.4	102.6	159.8	16.9	34.0	52.8	83.8	215.7								
14.0						8.9	17.2	27.1	42.5	56.8	10.5	19.9	32.2	53.6	99.3	14.0	26.9	43.3	75.5	124.2	17.4	34.8	55.0	97.4	148.6	15.9	31.9	50.0	81.5	200.6								
14.5											9.9	18.7	30.5	51.2	92.5	13.1	25.5	40.8	72.0	115.8	16.3	32.9	52.0	92.2	138.5	14.9	30.0	47.4	79.1	187.0								
15.0											9.3	17.7	28.8	48.7	86.5	12.4	24.1	38.6	68.5	108.2	15.2	31.2	49.2	87.1	129.4	14.1	28.3	45.0	76.7	174.7								
15.5											8.8	16.8	27.2	46.4	81.0	11.7	22.9	36.5	65.2	101.4	14.2	29.5	46.7	82.2	121.2	13.3	26.7	42.9	74.2	163.6								
16.0											8.4	15.9	25.8	44.2	76.0	11.1	21.8	34.7	62.0	95.1	13.4	27.9	44.4	77.8	113.7	12.6	25.3	40.9	71.8	153.6								
16.5											7.9	15.2	24.5	42.2	71.4	10.5	20.8	33.0	58.7	89.4	12.6	26.5	42.3	73.8	106.9	12.0	24.0	39.0	69.4	144.4								
17.0																9.9	19.8	31.4	55.7	84.2	11.8	25.1	40.3	70.1	100.7	11.4	22.8	37.3	67.0	136.0								
17.5																9.4	18.9	30.0	53.0	79.5	11.2	23.9	38.5	66.6	95.1	10.8	21.6	35.6	64.7	128.4								
18.0																8.9	18.1	28.6	50.4	75.1	10.5	22.8	36.9	63.5	89.8	10.3	20.6	34.1	62.3	121.3								

1. **1B, 2B & 3B**: Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR**: Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$** : Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED END SPAN

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13						
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$		
3.0	64.7	78.4	85.8	86.1	536.2	90.7	110.2	120.8	121.3	669.2	78.9	89.6	95.3	95.8	1169.1																						
3.5	56.5	73.3	82.8	83.2	393.9	79.1	102.9	116.6	117.2	491.7	72.2	85.8	93.2	94.0	858.9																						
4.0	48.3	67.8	79.5	80.0	301.6	66.6	95.1	111.9	112.6	376.4	65.3	81.6	90.9	91.9	657.6	92.1	115.2	128.3	129.7	823.2	121.3	152.0	169.7	171.6	984.2	89.3	105.9	114.4	115.8	1328.9							
4.5	40.7	62.1	75.9	76.5	238.3	54.8	87.0	106.7	107.7	297.4	58.2	77.1	88.4	89.6	519.6	82.1	108.8	124.8	126.5	650.4	107.5	143.6	164.9	167.3	777.6	82.0	101.7	112.1	113.9	1050.0							
5.0	34.4	56.3	72.1	72.8	193.0	46.0	78.8	101.3	102.4	240.9	51.3	72.4	85.7	87.1	420.9	72.3	102.2	120.9	123.0	526.8	92.9	134.7	159.8	162.6	629.9	74.6	97.2	109.6	111.8	850.5							
5.5	29.3	50.5	68.1	68.9	159.5	39.3	70.0	95.6	96.8	199.1	44.7	67.6	82.8	84.4	347.8	62.8	95.3	116.8	119.2	435.4	79.4	125.5	154.3	157.6	520.5	67.2	92.5	107.0	109.5	702.9							
6.0	25.3	44.8	63.9	64.9	134.0	34.1	61.0	89.7	91.1	167.3	39.3	62.7	79.7	81.5	292.2	54.2	88.4	112.5	115.2	365.8	68.8	116.2	148.5	152.2	437.4	59.9	87.6	104.2	107.1	590.6							
6.5	22.1	39.7	59.7	60.8	114.2	30.0	53.3	83.7	85.2	142.5	34.9	57.8	76.5	78.6	249.0	47.4	81.4	108.0	111.0	311.7	60.4	106.3	142.5	146.6	372.7	53.1	82.6	101.2	104.5	503.2							
7.0	19.6	35.3	55.5	56.6	98.4	26.7	47.0	77.6	79.2	122.9	31.2	52.9	73.2	75.5	214.7	41.9	74.5	103.3	106.6	268.8	53.6	96.0	136.2	140.7	321.3	47.5	77.6	98.0	101.8	433.9							
7.5	17.5	31.4	51.3	52.4	85.7	24.0	41.9	71.1	73.0	107.0	27.8	48.1	69.8	72.3	187.0	37.5	67.6	98.5	102.1	234.1	48.0	85.9	129.8	134.7	279.9	42.8	72.5	94.8	99.0	378.0							
8.0	15.8	28.1	47.1	48.3	75.4	21.7	37.6	64.4	66.3	94.1	25.0	43.7	66.4	69.0	164.4	33.7	61.1	93.7	97.5	205.8	43.3	77.1	123.4	128.5	246.0	38.8	67.4	91.4	96.0	332.2							
8.5	14.3	25.4	43.0	44.2	66.7	19.8	34.1	58.0	59.8	83.3	22.6	39.9	63.0	65.7	145.6	30.6	55.1	88.8	92.8	182.3	39.0	69.7	116.8	122.2	217.9	35.4	62.4	88.0	93.0	294.3							
9.0	13.1	23.0	39.4	40.5	59.5	18.2	31.0	52.5	54.1	74.3	20.5	36.7	59.5	62.4	129.9	27.9	50.0	83.9	88.0	162.6	35.4	63.4	110.1	115.8	194.4	32.1	57.4	84.5	89.9	262.5							
9.5	12.1	21.1	36.1	37.2	53.4	16.8	28.4	47.8	49.2	66.7	18.8	33.8	56.0	59.1	116.5	25.6	45.7	79.0	83.3	145.9	32.3	58.1	102.7	109.1	174.4	29.3	52.9	81.0	86.8	235.6							
10.0	11.1	19.3	33.0	34.0	48.2	15.6	26.2	43.7	45.0	60.2	17.3	31.3	52.6	55.7	105.2	23.5	41.9	74.1	78.5	131.7	29.5	53.4	95.5	101.9	157.4	26.8	49.0	77.4	83.6	212.6							
10.5	10.3	17.8	30.3	31.2	43.7	14.5	24.2	40.1	41.3	54.6	16.0	28.9	49.2	52.4	95.4	21.6	38.7	69.2	73.8	119.4	27.2	49.4	88.4	94.9	142.8	24.6	45.5	73.8	80.3	192.8							
11.0						13.5	22.5	37.0	38.1	49.7	14.8	26.7	45.9	49.2	86.9	20.0	35.8	64.6	69.1	108.8	25.1	45.8	81.7	87.9	130.1	22.7	42.4	70.3	77.0	175.7							
11.5						12.4	21.0	34.3	35.2	45.5	13.8	24.7	43.0	46.0	79.5	18.5	33.3	60.1	64.5	99.5	23.2	42.7	75.8	81.4	119.0	21.0	39.7	66.7	73.8	160.7							
12.0											12.9	23.0	40.4	43.1	73.0	17.2	31.1	55.9	60.1	91.4	21.6	39.9	70.6	75.6	109.3	19.5	37.2	63.2	70.5	147.6							
12.5											12.1	21.5	38.0	40.6	67.3	16.0	29.1	52.1	56.0	84.2	20.1	37.4	66.0	70.4	100.7	18.2	34.9	59.6	67.3	136.0							
13.0											11.3	20.1	35.8	38.2	62.2	15.0	27.3	48.8	52.3	77.9	18.7	35.2	61.8	65.8	93.1	17.0	32.7	56.2	64.0	125.8							
13.5											10.6	18.9	33.9	36.1	57.7	14.0	25.7	45.7	48.9	72.2	17.5	33.2	58.1	61.6	86.4	16.0	30.6	53.2	60.8	116.6							
14.0																13.2	24.2	43.0	45.9	67.2	16.3	31.4	54.7	57.9	80.3	15.0	28.7	50.3	57.6	108.4							
14.5																12.4	22.9	40.6	43.2	62.6	15.2	29.7	51.6	54.5	74.9	14.1	27.0	47.8	54.7	101.1							
15.0																					14.2	28.1	48.8	51.4	69.9	13.3	25.5	45.4	52.0	94.5							
15.5																					13.3	26.6	46.3	48.6	65.5	12.6	24.1	43.2	49.5	88.5							
16.0																					12.5	25.2	43.9	46.0	61.5	11.9	22.8	41.2	47.2	83.0							
16.5																										11.3	21.6	39.3	45.0	78.1							
17.0																																					
17.5																																					
18.0																																					

1. **1B, 2B & 3B**: Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR**: Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$** : Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED END SPAN

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20					
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	
3.0																															
3.5																															
4.0	111.3	131.9	142.5	144.3	1533.0	146.9	174.4	188.5	191.0	1836.9	127.8	144.8	153.2	155.1	2619.3																
4.5	102.2	126.7	139.7	141.9	1211.3	134.7	167.5	184.8	187.9	1451.4	120.1	140.6	151.0	153.3	2069.6																
5.0	92.9	121.1	136.6	139.3	981.1	122.2	160.1	180.7	184.5	1175.6	112.0	136.0	148.6	151.4	1676.3																
5.5	83.6	115.3	133.3	136.5	810.8	109.7	152.2	176.3	180.8	971.6	103.8	131.2	145.9	149.2	1385.4	137.4	173.9	193.4	197.9	1662.5	141.7	179.8	200.3	209.1	2425.4						
6.0	74.3	109.2	129.8	133.5	681.3	97.2	144.1	171.6	176.8	816.4	95.4	126.1	143.1	147.0	1164.1	126.2	167.1	189.7	194.9	1396.9	130.1	172.7	196.3	206.7	2038.0						
6.5	65.9	102.9	126.1	130.3	580.5	84.6	135.7	166.6	172.6	695.6	87.1	120.7	140.1	144.5	991.9	115.1	160.0	185.7	191.7	1190.3	118.6	165.3	192.1	204.1	204.1	1736.5	141.9	199.5	232.6	252.4	2688.9
7.0	58.9	96.6	122.2	127.0	500.5	74.4	127.2	161.4	168.1	599.8	78.9	115.3	136.9	141.9	855.2	104.0	152.7	181.4	188.3	1026.3	107.1	157.7	187.7	201.3	201.3	1497.3	127.7	190.1	227.2	249.7	2318.5
7.5	52.8	90.2	118.1	123.5	436.0	66.0	118.6	156.0	163.4	522.5	71.2	109.7	133.5	139.2	745.0	93.8	145.2	177.0	184.7	894.0	96.5	149.9	183.1	198.4	198.4	1304.3	114.9	180.5	221.4	246.8	2019.7
8.0	47.2	83.8	113.9	119.8	383.2	59.1	110.0	150.4	158.6	459.2	64.7	104.0	130.1	136.4	654.8	85.2	137.7	172.4	181.0	785.8	87.6	142.0	178.2	195.3	195.3	1146.3	102.8	170.8	215.5	243.7	1775.1
8.5	42.4	77.5	109.6	116.1	339.4	53.2	101.5	144.7	153.6	406.7	59.1	98.2	126.5	133.4	580.0	77.6	130.0	167.6	177.1	696.0	79.8	134.0	173.3	192.0	192.0	1015.4	92.5	161.0	209.3	240.5	1572.4
9.0	38.4	71.2	105.3	112.2	302.8	48.3	92.6	138.8	148.5	362.8	54.3	92.5	122.8	130.3	517.4	70.3	122.3	162.7	173.0	620.8	72.2	126.1	168.1	188.7	188.7	905.7	83.9	151.1	203.0	237.2	1402.5
9.5	35.0	65.6	100.8	108.3	271.7	44.0	84.2	132.9	143.2	325.6	50.1	86.8	119.0	127.1	464.3	64.0	114.7	157.6	168.8	572.2	65.8	118.2	162.8	185.2	185.2	812.9	76.5	141.4	196.5	233.7	1258.8
10.0	32.0	60.7	96.4	104.3	245.2	40.3	77.0	126.9	137.9	293.9	46.3	81.2	115.1	123.9	419.0	58.6	107.2	152.5	164.5	502.9	60.2	110.4	157.5	181.5	181.5	733.6	70.1	131.7	189.8	230.1	1136.0
10.5	29.5	56.4	91.9	100.2	222.4	37.1	70.8	120.9	132.5	266.5	42.9	75.6	111.2	120.6	380.1	53.8	99.7	147.3	160.1	456.1	55.4	102.6	152.0	177.8	177.8	665.4	64.5	122.3	183.1	226.4	1030.4
11.0	27.2	52.2	87.4	96.1	202.7	34.3	65.3	114.9	127.1	242.9	39.6	70.6	107.2	117.2	346.3	49.7	93.0	142.0	155.6	415.6	51.1	95.6	146.5	174.0	174.0	606.3	59.6	113.7	176.3	222.5	938.9
11.5	25.2	48.3	82.9	92.1	185.4	31.8	60.5	108.9	121.6	222.2	36.6	66.1	103.2	113.7	316.8	46.1	87.0	136.6	151.0	380.2	47.4	89.4	140.9	170.1	170.1	554.7	55.3	105.3	169.4	218.5	859.0
12.0	23.5	44.9	78.5	88.0	170.3	29.6	56.2	102.9	116.1	204.1	34.0	62.0	99.2	110.2	291.0	42.8	81.5	131.3	146.4	349.2	44.1	83.8	135.4	166.1	166.1	509.5	51.5	97.8	162.6	214.5	788.9
12.5	21.9	41.8	74.0	83.9	156.9	27.6	52.4	96.8	110.7	188.1	31.7	58.4	95.2	106.7	268.2	39.9	76.4	125.9	141.7	321.8	41.1	78.6	129.8	162.1	162.1	469.5	48.1	91.1	155.7	210.3	727.0
13.0	20.5	39.0	69.8	79.9	145.1	25.8	49.0	90.5	105.3	173.9	29.6	55.1	91.2	103.2	247.9	37.4	71.4	120.5	137.0	297.5	38.5	73.4	124.2	157.9	157.9	434.1	45.0	85.2	148.8	206.1	672.2
13.5	19.2	36.6	65.9	75.8	134.5	24.2	46.0	84.7	99.8	161.2	27.8	52.0	87.2	99.6	229.9	35.0	66.9	115.2	132.3	275.9	36.1	68.7	118.7	153.8	153.8	402.5	42.3	79.9	142.0	201.8	623.3
14.0	18.0	34.4	62.4	71.8	125.1	22.8	43.2	79.5	94.1	149.9	26.1	49.3	83.2	96.1	213.8	32.9	62.8	109.9	127.5	256.5	34.0	64.6	113.2	149.6	149.6	374.3	39.8	75.0	135.2	197.4	579.6
14.5	17.0	32.3	59.2	68.1	116.6	21.4	40.7	74.8	88.5	139.7	24.6	46.7	79.2	92.5	199.3	31.0	59.1	104.5	122.8	239.1	32.0	60.8	107.6	145.3	145.3	348.9	37.5	70.7	128.3	192.9	540.3
15.0	16.0	30.5	56.2	64.7	109.0	20.2	38.4	70.5	83.4	130.6	23.2	44.4	75.4	89.0	186.2	29.3	55.7	99.4	118.1	223.5	30.3	57.3	102.2	141.1	141.1	326.0	35.5	66.7	121.9	188.5	504.9
15.5	15.2	28.8	53.3	61.6	102.0	19.1	36.3	66.7	78.8	122.3	21.9	42.0	71.8	85.5	174.4	27.7	52.7	94.6	113.4	209.3	28.6	54.2	97.3	136.8	136.8	305.3	33.6	63.1	115.9	183.9	472.8
16.0	14.4	27.3	50.4	58.7	95.8	18.1	34.4	63.1	74.6	114.8	20.8	39.7	68.5	82.0	163.7	26.3	49.9	90.2	108.7	196.4	27.2	51.3	92.8	132.5	132.5	286.5	31.9	59.8	109.8	179.3	443.7
16.5	13.6	25.9	47.8	56.0	90.0	17.2	32.7	59.8	70.7	107.9	19.7	37.6	65.4	78.4	153.9	25.0	47.3	86.1	104.0	184.7	25.8	48.7	88.6	128.2	128.2	269.4	30.3	56.8	104.1	174.8	417.2
17.0	13.0	24.6	45.4	53.3	84.8	16.3	31.0	56.8	67.2	101.6	18.7	35.7	62.6	75.0	145.0	23.7	45.0	82.3	99.4	174.0	24.5	46.3	84.6	124.0	124.0	253.8	28.8	54.0	98.9	170.1	393.1
17.5	12.3	23.4	43.1	50.7	80.0	15.5	29.6	54.1	63.9	95.9	17.8	34.0	60.0	71.9	136.8	22.6	42.8	78.8	95.2	164.2	23.4	44.1	81.0	119.7	119.7	239.5	27.5	51.4	94.0	165.5	370.9
18.0	11.8	22.3	41.1	48.3	75.7	14.8	28.2	51.5	60.9	90.7	17.0	32.4	57.5	69.0	129.3	21.5	40.8	75.1	91.3	155.2	22.3	42.0	77.2	115.5	115.5	226.4	26.3	49.1	89.6	160.9	350.6

1. **1B, 2B & 3B:** Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR:** Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$:** Elastic buckling capacity about the X-X axis.



DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED INTERNAL SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 150/12						DHS 150/15						DHS 200/12						DHS 200/15						DHS 200/18						DHS 250/13								
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	FR	$\phi_c N_{ex}$						
3.0																																							
3.5																																							
4.0	51.1	70.8	80.1	87.4	605.3	70.9	99.5	112.6	123.0	755.5	67.5	83.8	90.7	96.6	1319.9																								
4.5	43.4	65.6	76.6	85.5	478.2	59.0	92.1	107.7	120.4	596.9	60.8	79.8	88.2	95.4	1042.8																								
5.0	37.1	60.3	73.0	83.5	387.4	49.5	84.5	102.5	117.5	483.5	54.1	75.5	85.4	94.1	844.7	76.2	106.6	120.5	132.9	1057.3	98.7	140.6	159.2	175.8	1264.2	77.3	99.7	108.9	117.6	1706.9									
5.5	31.5	54.9	69.1	81.3	320.1	42.3	76.9	97.1	114.5	399.6	47.5	71.1	82.4	92.7	698.1	66.8	100.3	116.3	130.9	873.8	85.1	132.2	153.6	173.2	1044.7	70.1	95.4	106.1	116.5	1410.7									
6.0	27.2	49.6	65.2	79.0	269.0	36.7	68.7	91.5	111.2	335.7	41.8	66.5	79.3	91.2	586.6	58.2	93.9	111.9	128.8	734.2	73.7	123.7	147.8	170.4	877.9	63.0	90.9	103.2	115.2	1185.3									
6.5	23.8	44.4	61.2	76.6	229.2	32.3	60.5	85.8	107.7	286.1	37.1	62.0	76.1	89.6	499.8	50.9	87.4	107.4	126.5	625.6	64.7	115.0	141.7	167.3	748.0	56.1	86.2	100.1	113.9	1010.0									
7.0	21.1	39.7	57.1	74.0	197.6	28.7	53.4	80.0	104.1	246.7	33.2	57.4	72.8	87.9	430.9	45.0	80.9	102.7	124.1	539.4	57.4	105.7	135.4	164.1	645.0	50.2	81.5	96.8	112.5	870.8									
7.5	18.9	35.7	53.1	71.4	172.1	25.8	47.6	74.2	100.3	214.9	29.9	52.8	69.4	86.1	375.4	40.1	74.5	97.9	121.6	469.9	51.4	96.2	129.0	160.7	561.8	45.2	76.7	93.4	110.9	758.6									
8.0	17.0	31.9	49.1	68.6	151.3	23.4	42.8	67.8	96.4	188.8	26.8	48.3	65.9	84.2	329.9	36.1	68.1	93.0	118.9	413.0	46.1	86.9	122.5	157.2	493.8	41.0	71.8	89.9	109.3	666.7									
8.5	15.4	28.8	45.1	65.9	134.0	21.3	38.8	61.6	92.5	167.3	24.2	44.2	62.4	82.2	292.2	32.8	62.2	88.1	116.1	365.8	41.5	78.6	115.9	153.5	437.4	37.4	67.0	86.4	107.7	590.6									
9.0	14.1	26.2	41.4	63.0	119.5	19.6	35.4	55.9	88.4	149.2	22.0	40.6	58.9	80.2	260.7	29.9	56.4	83.1	113.3	326.3	37.7	71.5	109.1	149.7	390.1	34.3	62.3	82.8	105.9	526.8									
9.5	13.0	23.9	38.2	60.2	107.3	18.1	32.4	51.1	84.3	133.9	20.1	37.5	55.5	78.1	234.0	27.3	51.5	78.2	110.3	292.9	34.3	65.5	101.8	145.7	350.1	31.2	57.6	79.1	104.1	472.8									
10.0	12.0	22.0	35.1	57.3	96.8	16.8	29.9	47.0	80.2	120.8	18.5	34.8	52.1	76.0	211.1	25.0	47.3	73.4	107.3	264.3	31.4	60.3	94.6	141.7	316.0	28.5	53.3	75.4	102.3	426.7									
10.5	11.1	20.3	32.3	54.4	87.8	15.6	27.7	43.4	76.0	109.6	17.1	32.3	48.6	73.8	191.5	23.0	43.6	68.5	104.2	239.7	28.9	55.7	87.6	137.5	286.6	26.2	49.5	71.7	100.3	387.0									
11.0	10.4	18.8	29.9	51.5	80.0	14.6	25.7	40.2	71.5	99.9	15.9	30.1	45.4	71.6	174.5	21.3	40.4	64.0	101.1	218.4	26.7	51.8	81.1	133.3	261.1	24.2	46.2	68.1	98.3	352.6									
11.5	9.7	17.5	27.7	48.7	73.2	13.3	24.0	37.4	66.9	91.4	14.8	27.9	42.5	69.3	159.6	19.7	37.6	59.5	97.9	199.8	24.7	48.3	75.4	129.0	238.9	22.4	43.2	64.4	96.3	322.6									
12.0	9.1	16.4	25.8	45.8	67.2	12.2	22.5	34.9	62.3	83.9	13.8	26.0	40.0	67.0	146.6	18.3	35.1	55.4	94.6	183.5	23.0	45.1	70.3	124.7	219.4	20.8	40.5	60.9	94.2	296.3									
12.5	8.6	15.3	24.1	43.0	61.9	11.3	21.2	32.7	58.0	77.3	12.8	24.3	37.6	64.7	135.1	17.1	32.8	51.7	91.4	169.1	21.4	42.3	65.8	120.3	202.2	19.4	38.1	57.2	92.1	273.1									
13.0	8.1	14.4	22.6	40.5	57.3	10.4	19.9	30.8	54.2	71.5	12.0	22.7	35.5	62.4	124.9	16.0	30.8	48.4	88.1	156.4	20.0	39.6	61.7	115.9	187.0	18.1	35.9	54.0	90.0	252.5									
13.5	7.7	13.6	21.3	38.2	53.1	9.7	18.8	29.0	50.7	66.3	11.3	21.3	33.6	60.1	115.8	15.0	29.0	45.5	84.8	145.0	18.7	37.1	58.1	111.5	173.4	17.0	33.7	51.0	87.8	234.1									
14.0	7.3	12.8	20.0	36.0	49.4	9.0	17.9	27.4	47.6	61.6	10.6	20.1	31.8	57.8	107.7	14.0	27.4	42.8	81.5	134.8	17.5	34.9	54.8	106.4	161.2	16.0	31.7	48.3	85.6	217.7									
14.5						8.4	17.0	25.9	44.7	57.4																													
15.0						7.8	16.1	24.6	42.2	53.7																													
15.5											8.9	17.0	26.9	51.0	87.9																								
16.0											8.4	16.2	25.5	48.7	82.4																								
16.5											8.0	15.4	24.2	46.5	77.5																								
17.0											7.6	14.7	23.0	44.5	73.0																								
17.5											7.2	14.0	22.0	42.6	68.9																								
18.0																8.9	18.0	28.6	56.4	81.5	10.6	22.6	36.1	70.9	97.5	10.4	20.5	32.8	67.6	131.7									

1. **1B, 2B & 3B:** Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR:** Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$:** Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM LOAD SPAN TABLES - LAPPED INTERNAL SPANS

Axial Compression Capacities (kN) $\phi_c N_c$

Span (m)	DHS 250/15					DHS 250/18					DHS 300/15					DHS 300/18					DHS 350/18					DHS 400/20					
	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	1B	2B	3B	FR	$\phi_c N_{ex}$	
3.0																															
3.5																															
4.0																															
4.5																															
5.0																															
5.5	87.2	118.8	132.2	145.1	1627.3	114.6	157.0	174.9	192.1	1949.9	107.0	134.1	145.1	155.7	2780.4																
6.0	78.3	113.2	128.6	143.6	1367.4	102.6	149.5	170.0	190.1	1638.5	99.0	129.5	142.1	154.5	2336.3																
6.5	69.6	107.4	124.7	141.9	1165.1	90.2	141.7	164.8	187.9	1396.1	91.0	124.6	138.9	153.3	1990.7																
7.0	62.2	101.4	120.6	140.2	1004.6	79.2	133.7	159.3	185.6	1203.8	83.0	119.5	135.6	152.0	1716.5	109.6	158.3	179.8	201.5	2059.8	112.9	163.6	185.9	212.0	3005.0						
7.5	56.0	95.4	116.4	138.3	875.1	70.3	125.6	153.7	183.1	1048.6	75.1	114.3	132.1	150.6	1495.2	99.1	151.4	175.1	199.7	1794.3	101.9	156.3	181.1	210.5	2617.7						
8.0	50.2	89.4	112.0	136.3	769.1	62.9	117.5	147.9	180.5	921.6	68.3	109.0	128.5	149.1	1314.2	89.9	144.3	170.3	197.7	1577.0	92.5	148.9	176.1	208.9	2300.7	109.5	179.3	212.8	257.1	3562.6	
8.5	45.2	83.4	107.6	134.3	681.3	56.7	109.4	141.9	177.8	816.4	62.4	103.6	124.7	147.5	1164.1	82.1	137.1	165.3	195.7	1396.9	84.4	141.5	170.8	207.3	2038.0	98.5	170.1	206.3	255.5	3155.8	
9.0	40.9	77.4	103.1	132.1	607.7	51.4	101.4	135.9	174.9	728.2	57.3	98.2	120.9	145.9	1038.3	74.9	129.9	160.2	193.5	1246.0	77.0	133.9	165.5	205.5	1817.8	89.3	160.8	199.7	253.8	2814.9	
9.5	37.3	71.4	98.5	129.9	545.4	46.8	93.0	129.8	171.9	653.5	52.9	92.8	116.9	144.2	931.9	68.1	122.7	154.9	191.2	1118.3	70.1	126.4	160.0	203.7	1631.5	81.4	151.6	193.0	252.0	2526.3	
10.0	34.1	66.1	93.9	127.5	492.2	42.9	85.0	123.6	168.8	589.8	49.0	87.4	112.9	142.4	841.1	62.4	115.5	149.6	188.9	1009.3	64.1	118.9	154.5	201.8	1472.4	74.5	142.3	186.1	250.1	2280.0	
10.5	31.4	61.4	89.3	125.1	446.5	39.5	78.1	117.4	165.7	535.0	45.5	82.1	108.9	140.5	762.9	57.3	108.3	144.2	186.4	915.4	58.9	111.5	148.8	199.8	1335.5	68.6	133.2	179.2	248.2	2068.0	
11.0	29.0	57.2	84.7	122.7	406.8	36.5	72.0	111.2	162.4	487.4	42.1	76.7	104.8	138.6	695.1	52.9	101.1	138.7	183.9	834.1	54.4	104.1	143.1	197.7	1216.9	63.4	124.1	172.1	246.1	1884.3	
11.5	26.8	53.3	80.1	120.1	372.2	33.8	66.7	105.0	159.0	446.0	39.0	71.8	100.6	136.6	635.9	49.0	94.6	133.2	181.3	763.1	50.4	97.4	137.4	195.5	1113.4	58.8	116.0	165.1	244.0	1724.0	
12.0	25.0	49.5	75.6	117.6	341.8	31.5	62.0	98.9	155.6	409.6	36.2	67.4	96.5	134.6	584.0	45.6	88.8	127.7	178.6	700.9	46.9	91.3	131.6	193.3	1022.5	54.7	107.8	158.0	241.8	1583.3	
12.5	23.3	46.1	71.1	114.9	315.0	29.4	57.8	92.4	152.1	377.5	33.8	63.5	92.4	132.5	538.3	42.5	83.5	122.2	175.9	645.9	43.8	85.8	125.9	191.0	942.3	51.1	100.5	150.9	239.6	1459.2	
13.0	21.8	43.1	67.0	112.2	291.2	27.5	54.0	86.3	148.5	349.0	31.6	59.9	88.3	130.4	497.6	39.8	78.7	116.7	173.0	597.2	40.9	80.9	120.2	188.7	871.2	47.8	93.9	143.9	237.2	1349.1	
13.5	20.4	40.3	63.3	109.5	270.1	25.8	50.6	80.8	144.9	323.6	29.6	56.6	84.2	128.2	461.5	37.3	73.8	111.2	170.2	553.8	38.4	75.8	114.5	186.3	807.9	44.9	88.0	136.9	234.8	1251.0	
14.0	19.2	37.9	59.9	106.8	251.1	24.2	47.6	75.8	141.3	300.9	27.8	53.6	80.1	125.9	429.1	35.0	69.2	105.7	167.2	514.9	36.1	71.2	108.8	183.8	751.2	42.3	82.7	129.8	232.4	1163.3	
14.5	18.1	35.6	56.7	104.0	234.1	22.8	44.8	71.3	137.6	280.5	26.2	50.9	76.1	123.7	400.0	33.0	65.1	100.3	164.2	480.0	34.1	67.0	103.2	181.3	700.3	39.9	77.8	123.1	229.9	1084.4	
15.0	17.1	33.6	53.8	101.2	218.7	21.5	42.3	67.3	133.8	262.1	24.7	48.3	72.4	121.4	373.8	31.2	61.4	95.4	161.2	448.5	32.2	63.2	98.1	178.7	654.4	37.7	73.4	116.9	227.3	1013.3	
15.5	16.1	31.8	50.8	98.4	204.9	20.4	40.0	63.6	130.1	245.5	23.3	46.0	68.9	119.0	350.0	29.5	58.1	90.8	158.1	420.1	30.4	59.7	93.4	176.1	612.8	35.7	69.5	110.7	224.7	949.0	
16.0	15.3	30.1	48.1	95.6	192.2	19.3	37.9	60.2	126.3	230.4	22.1	43.8	65.8	116.7	328.5	28.0	55.0	86.6	155.0	394.2	28.9	56.5	89.0	173.5	575.1	33.9	65.8	104.7	222.0	890.6	
16.5	14.5	28.5	45.6	92.8	180.8	18.3	35.9	57.1	122.5	216.6	21.0	41.5	62.8	114.3	308.9	26.5	52.1	82.6	151.8	370.7	27.4	53.6	85.0	170.8	540.8	32.2	62.5	99.3	219.2	837.4	
17.0	13.8	27.1	43.2	89.9	170.3	17.4	34.2	54.2	118.8	204.1	19.9	39.4	60.1	111.9	291.0	25.2	49.5	79.0	148.6	349.2	26.1	51.0	81.2	168.0	509.5	30.6	59.4	94.3	216.4	788.9	
17.5	13.1	25.8	41.1	87.1	160.7	16.5	32.5	51.6	115.0	192.6	19.0	37.5	57.6	109.5	274.6	24.0	47.1	75.2	145.4	329.5	24.8	48.5	77.3	165.2	480.8	29.2	56.6	89.7	213.6	744.5	
18.0	12.5	24.6	39.2	84.3	151.9	15.8	31.0	49.2	111.2	182.0	18.1	35.7	55.2	107.0	259.5	22.9	44.9	71.6	142.2	311.5	23.7	46.2	73.6	162.4	454.4	27.9	53.9	85.5	210.7	703.7	

1. **1B, 2B & 3B:** Load Capacity for 1, 2 and 3 rows of bracing. 2. **FR:** Load Capacity for fully restrained compression flange. 3. **$\phi_c N_{ex}$:** Elastic buckling capacity about the X-X axis.

DHS PURLIN SYSTEM DESIGN EXAMPLES

EXAMPLE: SINGLE SPAN AND LAPPED SPAN

Loadings

Dead Load, $G = 0.12\text{kPa}$ Live Load, $Q = 0.25\text{kPa}$ Snow Load, $S_u = 0.50\text{kPa}$

Outward Limit State Wind Loads, $W_u = -0.95\text{kPa}$ and $W_s = -0.66\text{kPa}$

Inward Wind Loading is not significant for this roof.

Building Constraints

Portal Spacing, $L_p = 7.5\text{m}$

Rafter Length, $L_R = 16.0\text{m}$ (distance from eaves purlin to ridge purlin)

Roof Pitch = 10 degrees

Roofing Profile = BB900 x 0.55mm BMT

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

- i) $W^*_{ULS\downarrow} = 1.2G + 1.5Q = (1.2 \times 0.12) + (1.5 \times 0.25) = 0.52\text{kPa}$
 ii) $W^*_{ULS\downarrow} = 1.2G + S_u + \psi_l Q = 1.2 \times 0.12 + 0.50 + (0.0 \times 0.25) = 0.64\text{kPa}$
 iii) $W^*_{ULS\uparrow} = 0.9G + W_u = (0.9 \times 0.12) + (-0.95) = -0.84\text{kPa}$

Critical Design Load Combinations for the Serviceability Limit State

- i) $W^*_{SLS\downarrow} = L_p/300$ under G & $\psi_l Q = (0.12 + 0.0 \times 0.25) \times 300/150 = 0.24\text{kPa}$
 ii) $W^*_{SLS\uparrow} = L_p/150$ under $W_s = -0.66 = -0.66\text{kPa}$

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 DHS 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 BB900 x 0.55mm BMT profile to 3.0m. End spanning capability of the roofing is reduced to 2.0m, 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 6 Purlins, $PS_i = 16.0 / (6 - 1.66) = 3.69\text{m}$ No good
 Try 8 Purlins, $PS_i = 16.0 / (8 - 1.66) = 2.52\text{m}$ Not controlling
 Try 7 Purlins, $PS_i = 16.0 / (7 - 1.66) = 3.0\text{m}$ Intermediate spans and 2.0m edge spans

From this, 7 purlins are required and the purlin spacings may be rationalised to 3.0m intermediate spans and 2.0m spans at the sheet ends.

1. Single Span Purlin Design

Assuming the top flange of the DHS purlin is restrained by screw-fastened roof sheeting. (If the top flange is not fully restrained then use the load capacity for the 1, 2 or 3 brace case as appropriate to check both uplift and gravity combinations.)

Try DHS 250/18 Purlin

Check design capacities (using those given in the single span DHS load span tables): $W^*_{ULS} \leq \phi_b W_{bx}$

$W^*_{ULS\downarrow} = 3.0 \times 0.64 = 1.92\text{kN/m} < \text{FR}, 3.01\text{kN/m} \quad \therefore \text{O.K.}$

$W^*_{ULS\uparrow} = 3.0 \times -0.84 = -2.52\text{kN/m} < 2 \text{ Braces}, 3.01\text{kN/m} \quad \therefore \text{O.K.}$

Check deflections

$W^*_{SLS\uparrow} = 3.0 \times -0.66 = -1.98\text{kN/m} < W_s, 1.94\text{kN/m} \quad \therefore \text{O.K.}$

Therefore use DHS 250/18 purlins at 2.9m intermediate spacings and 2.0m at sheet ends, with 2 rows of Fastbrace (or standard bolted DB89/12 braces) brace channels per bay.

2. Lapped Span Purlin Design

a) End Bays

Try DHS 200/18 Purlin

Check design capacities (using those given in the lapped end span DHS load span tables):

$$W^*_{ULS} \leq \phi_b W_{bx}$$

$$W^*_{ULS\downarrow} = 3.0 \times 0.64 = 1.92 \text{ kN/m} < \text{FR, } 2.76 \text{ kN/m} \quad \therefore \text{O.K.}$$

$$W^*_{ULS\uparrow} = 3.0 \times -0.84 = -2.52 \text{ kN/m} < 1 \text{ Brace, } 2.76 \text{ kN/m} \quad \therefore \text{O.K.}$$

Check deflections

$$W^*_{SLS\uparrow} = 3.0 \times 0.66 = -1.98 \text{ kN/m} < W_s, 2.68 \text{ kN/m} \quad \therefore \text{O.K.}$$

b) Internal Bays

Try DHS 200/15 Purlin

Check design capacities (using those given in the lapped internal span DHS load span tables):

$$W^*_{ULS} \leq \phi_b W_{bx}$$

$$W^*_{ULS\downarrow} = 3.0 \times 0.64 = 1.92 \text{ kN/m} < \text{FR, } 3.49 \text{ kN/m} \quad \therefore \text{O.K.}$$

$$W^*_{ULS\uparrow} = 3.0 \times -0.84 = -2.52 \text{ kN/m} < 1 \text{ Brace, } 3.49 \text{ kN/m} \quad \therefore \text{O.K.}$$

Check deflections

$$W^*_{SLS\uparrow} = 3.0 \times 0.66 = -1.98 \text{ kN/m} < W_s, 4.84 \text{ kN/m} \quad \therefore \text{O.K.}$$

Therefore use,

End Bays: DHS 200/18 purlins at 3.0m intermediate spacings and 2.0m at sheet ends, with 1 row of Fastbrace (or standard bolted DB89/12 braces) brace channels per bay.

Internal Bays: DHS 200/15 as per the end bay purlin spacings and bracing layout.

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.

EXAMPLE: DEFLECTION

a) The W_s loading for a DHS 250/18 purlin on a 9.0m single span is 1.13kN/m. It is desired to limit the DHS purlin deflection to span/200. Therefore the serviceable load in the DHS purlin at a deflection of span/200 is expressed as:

$$\frac{1.13 \times 150}{200} = 0.85\text{kN/m}$$

b) The design Linear Load for deflection of a DHS 250/18 on a 9.0m single span has been calculated as 0.94 kN/m.

The relative deflection is shown as, $\frac{0.94 \times \text{span}}{1.13 \times 150} = \frac{\text{span}}{180}$

The actual deflection is then, $\frac{\text{span}}{180} = \frac{9000\text{mm}}{180} = 50\text{mm}$

EXAMPLE: COMBINED BENDING AND COMPRESSION

There are three equations governing the design for combined bending and compression. Assuming there is no minor axis component for flexure, where $N^*/\phi_c N_c \leq 0.15$.

Using the purlin example, option 2 for a DHS 200/18 on a 7.5m lapped end span with 1 brace, the DHS purlin is required to resist a 4.0kN axial load (resulting from wind on the end wall) in addition to the W^*_{ULS} load combination. The remaining axial capacity is checked given the known flexural loads:

$$\begin{aligned} W_x^* &= 2.52\text{kN/m} && \text{(Design uniformly distributed bending load; } W^*_{ULS}\text{)} \\ \phi_b W_{bx} &= 2.76\text{kN/m} && \text{(Uniformly loaded bending capacity from load span tables)} \\ N^* &= 4\text{kN} && \text{(Design axial compressive load as calculated)} \\ \phi_c N_c &= 48.08\text{kN} && \text{(Axial compression capacity from load/span tables)} \end{aligned}$$

Solving for N^* ,

$$\begin{aligned} N^* &= \left(1 - \frac{W_x^*}{\phi_b W_{bx}}\right) \phi_c N_c && \text{(solving Equation 1 from Combined Bending and Compression Design in Section 2.3.2)} \\ &= \left(1 - \frac{2.52}{2.76}\right) 48.08 = 4.18\text{kN} > 4.0\text{kN} \therefore \text{O.K.} \end{aligned}$$

Check $N^*/\phi_c N_c \leq 0.15$ for the above formula to remain valid: $5.57/48.08 = 0.12 \therefore \text{O.K.}$

If the above formula is not valid, i.e. $N^*/\phi_c N_c > 0.15$, then N^* needs to be solved to satisfy whichever of the following equations gives the lowest N^* value.

$$\frac{N^*}{\phi_c N_c} + \frac{C_{mx} W_x^*}{\phi_b W_{bx} \alpha_{nx}} \leq 1.0 \quad \text{(solving Equation 2 from Combined Bending and Compression Design in Section 2.3.2)}$$

$$N^* = \left(1 - \frac{W_x^*}{\phi_b W_{bx}}\right) \phi_c N_s \quad \text{(solving Equation 3 from Combined Bending and Compression Design in Section 2.3.2)}$$

EXAMPLE: BOLT SIZING

Taking the previous purlin example option 1 where we have a single span DHS 250/18 purlin spaced at 3.0m apart, with 2 rows of bracing.

Critical load combination (ULS) = 0.84kPa

This converts to design shear force at the supports, $V^* = 0.84 \times 3.0 \times 7.5/2 = 9.45\text{kN}$ per end connection.

As there are 2 bolts at each end $V^* = 9.45/2 = 4.73\text{kN}$ per bolt (from Connection Design in Section 2.3.2 for 1.75mm thickness).

Try 12mm diameter bolts

End tearing	ϕV_f	=	19.2kN per bolt
Bearing	ϕV_b	=	18.1kN per bolt
Bolt shear	ϕV_{fn}	=	15.1kN per Grade 4.6 bolt > 4.73kN ∴ O.K.

EXAMPLE: BRACING SYSTEM

Consider a design case with purlin span 10m.

Ultimate uplift design load 1kPa.

Desired purlin spacing 3.6m on internal spans.

Proposed purlin design

DHS 300/18 on internal lapped spans. 1 row bracing using Fastbrace.

Design load = 1kPa x 3.6m = 3.6kN/m

This is less than $\phi_b W_{bx} = 3.85\text{kN/m}$ from DHS load span tables. ∴ O.K.

Check brace capacity

From Bracing System Design Method in Section 2.3.2.

Check bending moment on the brace channel.

$M^* = 0.75 \phi_b W_{bx} l_b$ m, assuming screw fixings of the roof sheets will restrain the top flange, where $\phi_b W_{bx}$ is the purlin capacity. (Note: The designer may choose to use the design load instead of $\phi_b W_{bx}$, although it is recommended that brace strength is designed to match the purlin capacity.)

In this example, use $\phi_b W_{bx} = 3.85\text{kN/m}$.

$l_b = 10 \times 0.5\text{m}$ (contributing length factor table)

$m = 42.6\text{mm}$ (distance from shear centre to mid plane table)

Therefore, $M^* = 0.75 \times 3.85 \times 5 \times 0.0426$
 $= 0.61\text{kNm}$

Brace Member Moment Capacity (from Bracing System Design Method in Section 2.3.2)

$M_b = 0.45\text{kN/m} < 0.61\text{kN/m}$ No Good.

Therefore either reduce purlin spacing or use 2 rows bracing.

Check for 2 rows bracing

$l_b = 10 \times 0.31$ (contributing length factor table)

$M^* = 0.75 \times 3.85 \times 3.1 \times 0.0426 = 0.38\text{kN/m} < 0.45\text{kNm}$. ∴ O.K.

Therefore use 2 rows bracing for DHS 300/18 purlins on lapped internal spans of 10m, with purlins spaced at 3.6m centres.

DHS PURLIN SYSTEM MATERIAL SPECIFICATION

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

	Base Metal Thickness BMT (mm)	Steel Grade, G	Yield Strength f_y (MPa)	Zinc Weight, Z (g/m ²)
DHS Purlins and Girts	< 1.5	G500	500	275
	> 1.5	G450	450	275
Brace Channel	1.15	G250	250	450
End Cleats	2.00	G250	250	450

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

Tolerances

Length: DHS Purlins ±6mm Bracing System ±2mm
 Depth/Width: DHS Purlins ±2mm Bracing System ±1mm
 Holes Centres: ±1.5mm
 Web/Flange Angle: 89–93 degrees

DHS PURLIN SYSTEM SHORT FORM SPECIFICATION

The purlin system will be Dimond Structural DHS **(1)**, manufactured from G450–G500 grade steel with a **(2)** g/m² galvanised zinc weight.

The sizes, lengths, span configuration and lap lengths (where required) are as detailed on the drawings.

All hole sizes, hole shapes and positions are as shown on the drawings.

The bracing system is to be **(3)**. The bracing channel size is 89mm x 34mm x 1.15mm BMT with a 450g/m² galvanised zinc weight.

All bolts to be Grade **(4)**, **(5)** diameter, **(6)** finish.

- (1)** Choose from: 150/12, 150/15, 200/12, 200/15, 200/18, 250/13, 250/15, 250/18, 300/15, 300/18, 350/18, 400/20
- (2)** Choose from: 275 or 450
- (3)** Choose from: Fastbrace (DHS 150 – 300 only) or Bolted Brace Channel (DHS 150 – 400)
- (4)** Choose from: 4.6 or 8.8
- (5)** Choose from: 12mm or 16mm
- (6)** Choose from: Electro galvanised or Hot Dip galvanised.

DHS PURLIN SYSTEM COMPONENTS

FASTBRACE

Fastbrace is a lock-in bracing system which runs in continuous lines between all purlins/girts and uses cleats with specially shaped lock-in tabs attached to each end of 89mm x 1.15mm (89/12) brace channel, suitable for use with DHS purlins from DHS 150/12 up to DHS 300/18. Fastbrace is fitted each side of the DHS purlin through pre-punched 18mm diameter round bracing holes, locking together to lower erection time. When a line of Fastbrace has been installed, the system provides resistance to restrict lateral movement of the DHS purlin system.

The end brace at the first and last bracing position is secured using the standard bolted connection on the outermost cleat end. To ensure straight alignment of the bracing system, the bracing holes can be offset from the bracing line by 25mm over the last purlin spacing to accommodate the bolted cleat. If not, an angle of approximately two degrees from a straight alignment on the end braces is created.

Cranked Sag Rods are used in the lower bolt position to tie the bracing lines each side of the rafter together at the ridge (or at a step in the roof).

Where back to back DHS purlins are used, bolted end brace components are required each side, where the bolts can accommodate the extra purlin thickness.

For use, handling and maintenance guidelines, refer Environments 2.1.3, Handling And Storage 2.5.2 and Maintenance 2.1.6.

FASTBRACE COMPONENTS

Standard Brace

This is the standard Fastbrace component used almost everywhere in the system. It locks into other standard brace components, adjustable brace components, or end brace components.

End Brace

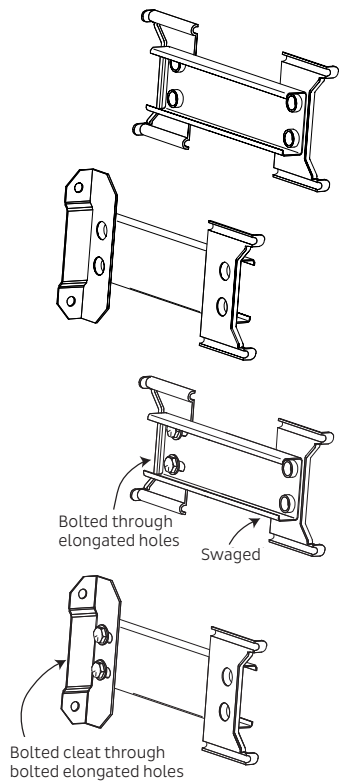
End brace is used at the end of a purlin bracing line, i.e. eaves or ridge, each side of a roof step, or at top and bottom girts on a wall. The end brace locks into either standard or adjustable brace at one end and is fitted between the DHS purlin lips and bolted into position at the other end.

Adjustable Brace

This is the adjustable component in the Fastbrace system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the hexagonal flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.

Adjustable End Brace

Where the end purlin spacing is less than 800mm, an adjustable end brace with a bolted end cleat is available, as twisting of the end cleat is not practical. The adjustable cleat can be rotated up to 15 degrees from normal, to accommodate the change in angle from vertical portal to the roof slope of the rafter.



BOLTED BRACE CHANNEL

Bolted Brace Channel is a bolted bracing system running in continuous lines between all purlins/girts and uses cleats clinched to each end of 89mm x 1.15mm (89/12) bracing channel, fastened with bolts through the DHS purlins (two bolts each end). Bolted Brace Channel is suitable for use on all DHS Purlin sizes.

Cranked Sag Rods are used in the lower bolt position to tie the bracing lines each side of the rafter together at the ridge (or at a step in the roof).

For use, handling and maintenance guidelines, refer Environments 2.1.3, Handling And Storage 2.5.2 and Maintenance 2.1.6.

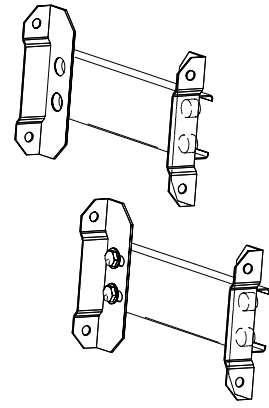
BOLTED BRACE CHANNEL COMPONENTS

Bolted Brace Channel

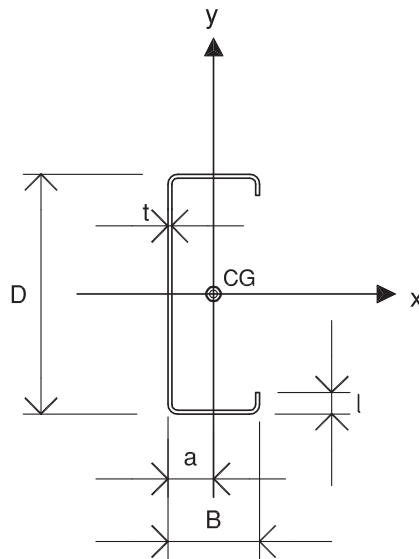
This is the standard component used in the bolted brace channel system and is used almost everywhere.

Adjustable Bolted Brace Channel

This is the adjustable component in the bolted brace channel system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the hexagonal flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.



BRACE CHANNEL SECTION PROPERTIES



Tabulated properties are based on full unreduced sections.

Code	D x B (mm)	t (mm)	Mass (kg/m)	Weight (kN/m)	Area (mm ²)	l (mm)	a (mm)	I _x (10 ⁶ mm ⁴)	I _y (10 ⁶ mm ⁴)	Z _x (10 ³ mm ³)	Column Properties	
											J (mm ⁴)	I _w (10 ⁹ mm ⁶)
DB 89/12	89 x 34	1.15	1.52	0.015	186.3	6	9.17	0.223	0.024	5.00	84.13	0.040

Note: Mass assumes a total coated weight for the zinc coating of 450g/m²

C100/19 PURLIN

Dimond Structural can supply a C100/19 Cee section (100mm x 50mm x 1.85mm BMT) for economy as a small section purlin or girt. Any limitation placed on the design and use of the Dimond Structural Purlin Systems as detailed in this manual also apply to the C100/19 Purlin. C100/19 purlins are typically braced with Sag Rods.

Design information for the C100/19 purlin can be provided by contacting Dimond Structural on 0800 Roofspec (0800 766 377).

PORTAL CLEATS

Portal Cleats are supplied by the fabricator or installer and welded on to the portal frame. Cleat thicknesses generally range from 6mm to 12mm thickness. The hole centres are laid out to suit hole punchings in the DHS purlin, refer CAD Details on-line (www.dimondstructural.co.nz/products/dhs-purlins). The cleat height may need to be increased where an expansion step in the roof is detailed.

GENERAL PURPOSE BRACKET

General Purpose Brackets are supplied by Dimond Structural and are typically used to connect trimmer purlins etc. General purpose brackets are not load rated and are suitable for application only in non-structural elements. Holes and cleat dimensions are set-out to suit use with the DHS Purlin System only, refer CAD Details on-line (www.dimondstructural.co.nz/products/dhs-purlins).

2.3.8.7

SAG RODS

Purpose-made cranked sag rods are installed at each bracing line in the lower holes on the DHS ridge purlins to tie the bracing lines on each side of the rafter together at the ridge. Sag Rods are fully tightened up upon installing purlin bracing.

Supplied by steel erectors and fabricators in 12mm diameter engineering round bar Grade 250MPa, galvanised or electroplated finishes, with double nuts and washers each end. Where loads require, 16mm diameter engineering round bar can be used.

2.3.8.8

TIMBER BATTENS

Where Timber Battens are to be fastened to the DHS Purlin System, Dimond Structural recommend using an ex 50mm x 50mm timber batten or a depth of batten to account for insulation and ventilation requirements, gauged two sides and treated to H3.1 timber preservation such as boric or LOSP (low organic solvent preservative). Avoid the use of CCA treated timber, as chemicals used in the CCA treatment (e.g. copper and chromium) could contact the galvanised purlin surface and the fasteners, causing dissimilar metal corrosion.

The batten is fixed onto the top flange of the DHS Purlins, once the netting or safety mesh has been laid on the structure. For ex 50mm x 50mm battens, fixings are to be 10g – 16 x 75mm Countersunk Rib Head Wingteks. The coating finish is a zinc plated AS 3566 class 2 finish. Longer, other types of fixings may need to be considered when the timber depth is greater.

Spacing of the Wingteks is dependent on the DHS material thickness it is being fixed into. To achieve a maximum outward load of 5.0kN/m on the Timber Batten, refer to faster centres in the following table.

DHS Purlin Base Metal Thickness (mm)	Maximum Fastener Centres (mm)
1.15	250
1.25 to 2.0	300

2.3.9

DHS PURLIN SYSTEM CAD DETAILS

For the latest DHS Purlin System CAD details, please download from the Dimond Structural website www.dimondstructural.co.nz/products/dhs-purlins

Please note, the DHS Purlin System 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.