

DUGGAN

Issue 1 - January 2017



Duggan Profiles & Steel Service Centre Ltd.



Purlin & Rail System Technical Manual



Duggan Profiles & Steel Service Centre Ltd.
Dublin Road, Kilkenny, Ireland. R95 CCY5
T: +353 (0) 56 7722485 F: +353 (0) 56 7763411
www.steel.ie
Email: salesdp@steel.ie

Please Note: All reasonable care has been taken in the compilation of the information contained within this publication, but Duggan Steel Group Ltd. and its related companies do not accept responsibility for errors or for information which is found to be misleading. Suggestions for, or descriptions of the end use or application of products or methods of working are for information only and Duggan Steel Group Ltd. and its related companies accept no liability in respect thereof. It is the customer's responsibility to ensure that the product is fit for its intended purpose and that the actual conditions of use are suitable. It is also the customer's responsibility to ensure overall compliance with the current Health & Safety and Building Regulations. Dimensions are for Illustration purposes only and subject to change. Duggan Steel Group pursues a policy of continuous product development and reserves the right to amend specifications without prior notice. Please refer to our website www.steel.ie for the most up to date information. Figures and comments given in this brochure are given for guidance purposes only. While care has been taken to ensure accuracy Duggan Profiles & Steel Service Centre Ltd. and its related companies do not accept liability for errors / or omissions. Customers should satisfy themselves of the suitability of the products supplied or manufactured by Duggan Profiles & Steel Service Centre Ltd. for the use intended.

Contents

Company overview	4	Stays	17
Who we are	4	Apex Ties	17
Our products	5	Tie ropes	18
Certification	5	Tube Struts	19
Website	5	Standard Tube Strut	19
ProSigma system at a glance	6	Strut for 145 Section	19
Standard purlins and rails	8	Flush Finish Strut	19
Section range	8	Clamp Plates	19
Material specification	8	Tube Strut Spacer	19
How to specify	8	Angle Struts	20
Features and dimensions	8	Threaded bar	21
Section properties	9	Cee Sleeve	21
Prepainted purlins and rails	10	Eaves Beams	22
Section range	10	Dimensions	22
Material specification	10	Section range	22
Features	10	Standard Eaves Beam	22
How to specify	10	Prepainted Eaves Beam	22
Section properties	11	How to specify	22
Spanning systems	12	Eaves Beam section properties	23
Anti sag support for roofs	13	Anti sag for Eaves Beams	24
Anti sag for common applications	13	Eaves Beam components	25
Configuration of restraints for wind uplift	13	Eaves to column connection	25
Anti sag support for walls	14	Eaves Strut Cleat	25
Anti sag for common applications	14	Eaves Strut	25
Restraining against wind suction	14	Eaves Strut to Purlin Cleat	25
Punching details	15	Cee Sections	26
Cleat connection	15	Standard section range	26
Sleeve connection	15	Prepainted section range	26
Anti sag connection	15	Accessories for Cee Sections	26
Flange holes	15	Dimensions	26
Cleat connection at joint	15	Non Standard Cee Sections	27
Slots	15	How to order	27
Notches	15	Cee Section punching options	28
Component details	16	Specification, Detailing and Ordering	29
Cleats	16	Load Tables	30
Sleeves	16		

Who we are

Duggan Profiles manufacture a wide range of steel building components including profiled steel sheeting, purlin and rail systems and a comprehensive range of associated ancillary products. The company is part of the Duggan Steel Group and has been operating for 40 years. We are based in Kilkenny from where we supply construction components for both the Industrial and Agricultural sectors. Our aim is to provide excellent service and quality products which offer customers cost effective solutions.

DUGGAN STEEL GROUP

DUGGAN DUGGAN



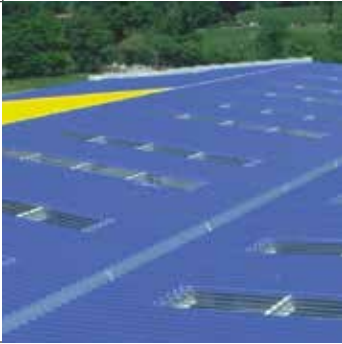
Duggan Steel Ireland



Duggan Profiles



Our products

Metal Cladding  Sinusoidal and Box profile sheeting for industrial and agricultural applications.	Clearlights  Clearlights to match all our cladding.
Purlins & Rails  Purlins and Rails for industrial and agricultural applications.	Accessories  Standard and bespoke flashings and gutters.
PVC Sheeting  PVC ceiling and wall liner.	Insulated Panels  Insulated panels for standard and hygienic applications.

Certification

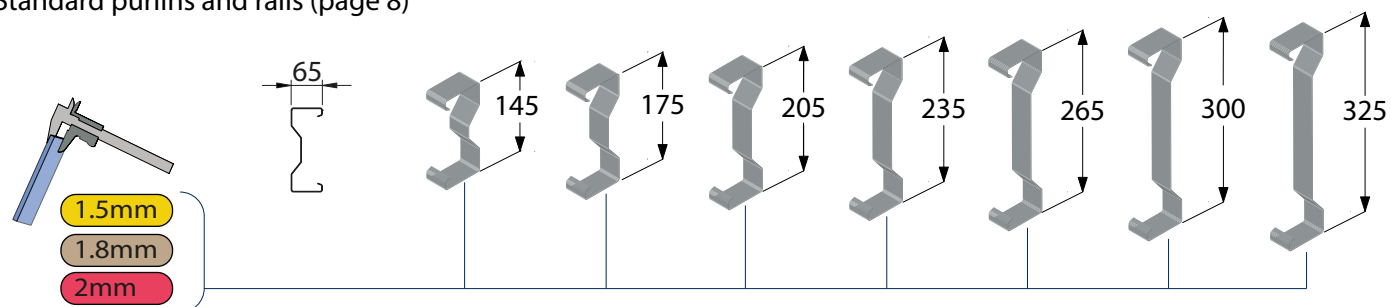
Our manufacturing systems and the design of our products have been independently certified with a variety of internationally recognised benchmarks.



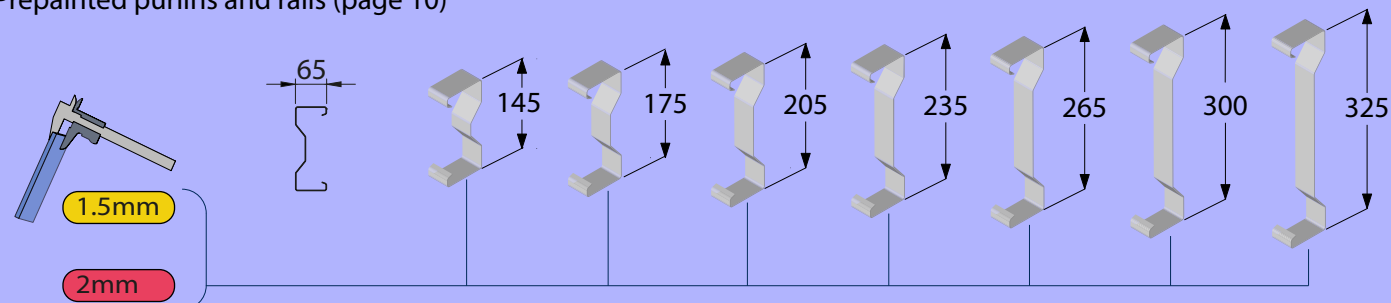
Website

Information on all our products is available at www.steel.ie

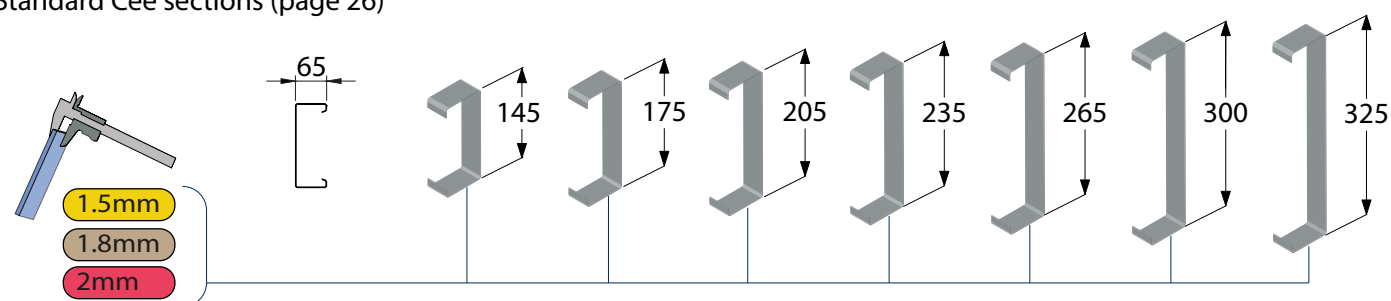
Standard purlins and rails (page 8)



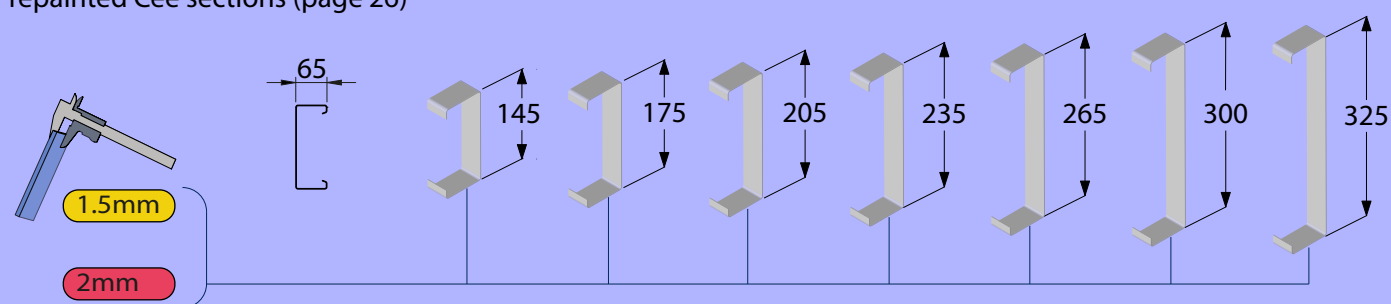
Prepainted purlins and rails (page 10)



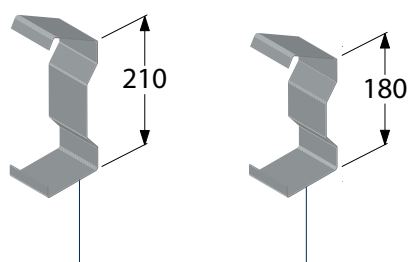
Standard Cee sections (page 26)



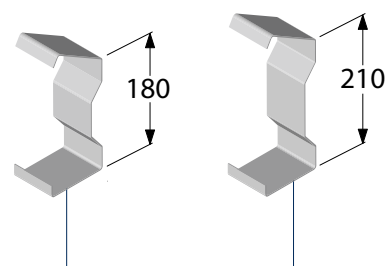
Prepainted Cee sections (page 26)



Standard Eaves Beams (page 22)



Prepainted Eaves Beams (page 22)



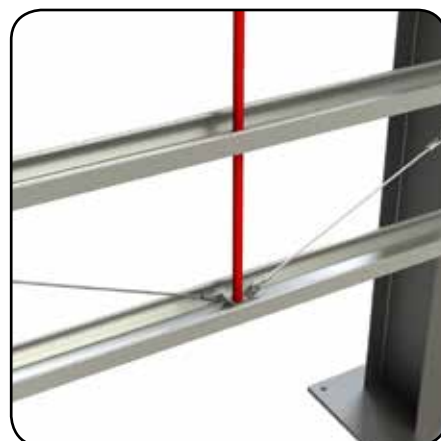
Cleats (page 16)



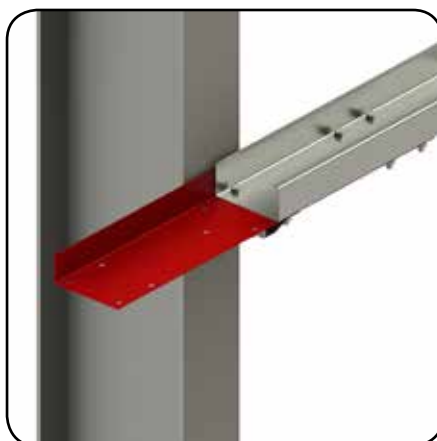
Sleeves (page 16)



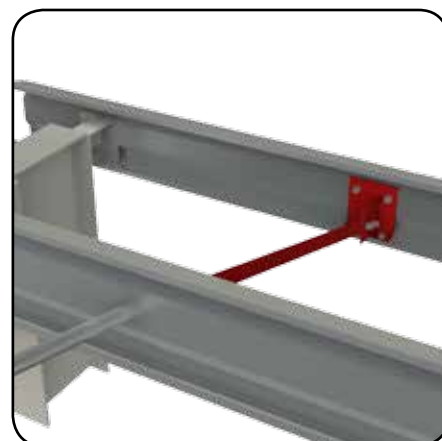
Stays (page 17)



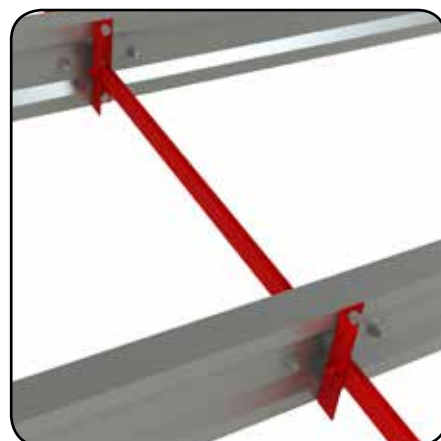
Tube Struts (page 19)



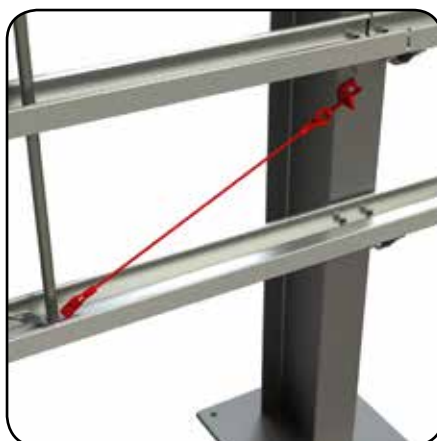
Cee Sleeves (page 21)



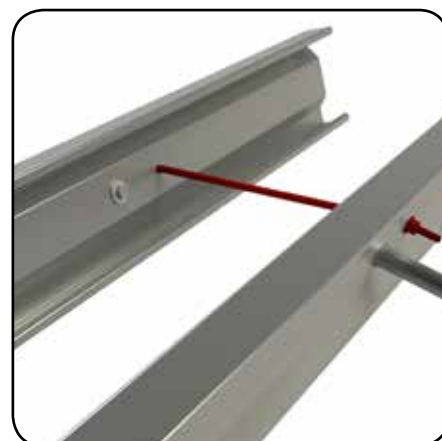
Eaves Beam anti sag (page 24)



Angle Struts (page 20)



Tie Ropes (page 18)



Apex Ties (page 17)



Features and dimensions

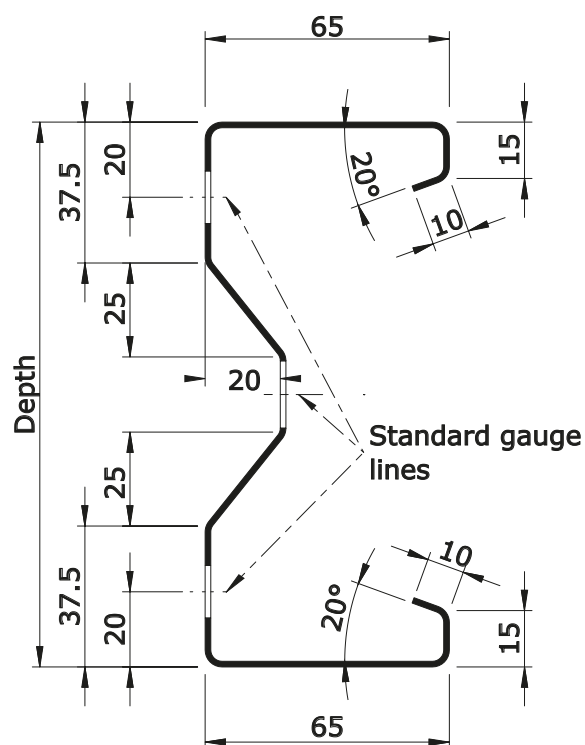
- ◆ 7 depths and 3 thicknesses
- ◆ Suits most types of roof and wall cladding
- ◆ Suitable for normal environments
- ◆ Lengths up to 20m
- ◆ Spanning system:
 - Single
 - Double
 - Single Span Sleeved
 - Single Span Heavy End Bay
 - Double Span Heavy End Bay
- ◆ M12 Bolts used for connections

Section range

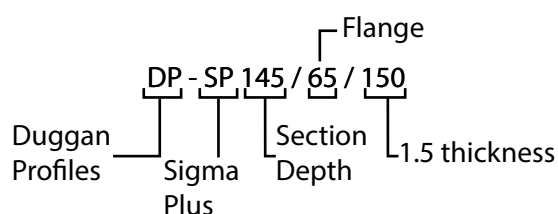
Section Depth (mm)	Thickness (mm)
145	Available in 1.5, 1.8 and 2mm
175	
205	
235	(Other thicknesses may be available subject to minimum order.)
265	
300	
325	

Material specification

Steel Grade:	HX460LAD
Minimum yield strength:	460MPa
Corrosion protection:	Hot-dip zinc coating
Coating designation:	Z275
Coating mass:	275g/m ²

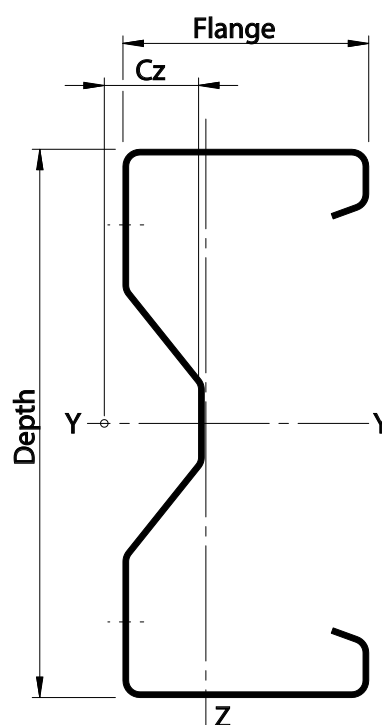


How to specify



Important notes

- ◆ Section properties have been calculated in accordance with Eurocode 3, BS EN 1993-1 3:2006.
- ◆ The top flange of the purlin must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the top flange.



Section reference	Weight kg/m	Depth mm	Flange mm	Thickness mm	Area cm ²	I _{yy} cm ⁴	I _{zz} cm ⁴	i _y cm	i _z cm	C _z mm	My,Rk kNm
DP-SP145/65/150	3.78	145	65	1.5	481.85	158.36	25.29	5.73	2.29	23.34	9.10
DP-SP145/65/180	4.53	145	65	1.8	577.69	189.02	29.93	5.72	2.28	23.03	13.28
DP-SP145/65/200	5.03	145	65	2	640.98	209.10	32.91	5.71	2.27	22.82	16.01
DP-SP175/65/150	4.13	175	65	1.5	525.65	245.74	25.35	6.84	2.20	23.06	11.70
DP-SP175/65/180	4.95	175	65	1.8	630.49	293.54	29.99	6.82	2.18	22.78	17.08
DP-SP175/65/200	5.49	175	65	2	699.78	324.90	32.98	6.81	2.17	22.59	20.62
DP-SP205/65/150	4.47	205	65	1.5	569.45	356.76	25.40	7.92	2.11	22.82	14.51
DP-SP205/65/180	5.36	205	65	1.8	683.29	426.43	30.04	7.90	2.10	22.56	21.19
DP-SP205/65/200	5.95	205	65	2	758.58	472.19	33.03	7.89	2.09	22.39	25.58
DP-SP235/65/150	4.81	235	65	1.5	613.25	493.42	25.44	8.97	2.04	22.62	17.50
DP-SP235/65/180	5.78	235	65	1.8	736.09	590.07	30.08	8.95	2.02	22.38	25.57
DP-SP235/65/200	6.42	235	65	2	817.38	653.62	33.07	8.94	2.01	22.21	30.88
DP-SP265/65/150	5.16	265	65	1.5	657.05	657.67	25.47	10.00	1.97	22.45	20.69
DP-SP265/65/180	6.19	265	65	1.8	788.89	786.84	30.12	9.99	1.95	22.22	30.24
DP-SP265/65/200	6.88	265	65	2	876.18	871.82	33.11	9.98	1.94	22.07	36.53
DP-SP300/65/150	5.56	300	65	1.5	708.15	886.80	25.51	11.19	1.90	22.27	24.64
DP-SP300/65/180	6.68	300	65	1.8	850.49	1061.43	30.16	11.17	1.88	22.06	36.04
DP-SP300/65/200	7.42	300	65	2	944.78	1176.42	33.15	11.16	1.87	21.92	43.54
DP-SP325/65/150	5.85	325	65	1.5	744.65	1076.84	25.53	12.03	1.85	22.16	27.62
DP-SP325/65/180	7.02	325	65	1.8	894.49	1289.24	30.19	12.01	1.84	21.96	40.40
DP-SP325/65/200	7.80	325	65	2	993.78	1429.17	33.18	11.99	1.83	21.82	48.83



Overview

Prepainted ProSigma is a range of organically coated hot-dip zinc purlins and rails with enhanced anti corrosion and aesthetic properties. The range is produced with an additional chemical and corrosion resistant polyester painted finish applied on both sides.

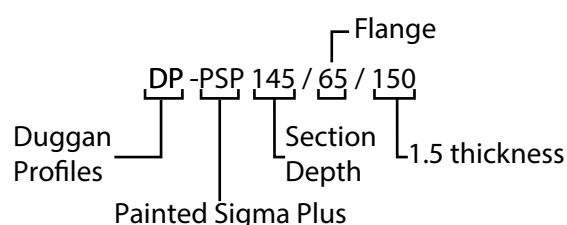
Features

- ◆ Offer additional anti corrosion protection
- ◆ Suitable for use with most types of roof and wall cladding
- ◆ Choice of 7 section depths
- ◆ Chalk white in colour
- ◆ Lengths up to 20m
- ◆ Spanning system:
 - Single
 - Double
 - Single Span Sleeved
 - Single Span Heavy End Bay
 - Double Span Heavy End Bay
- ◆ M12 Bolts used for connections

Section range

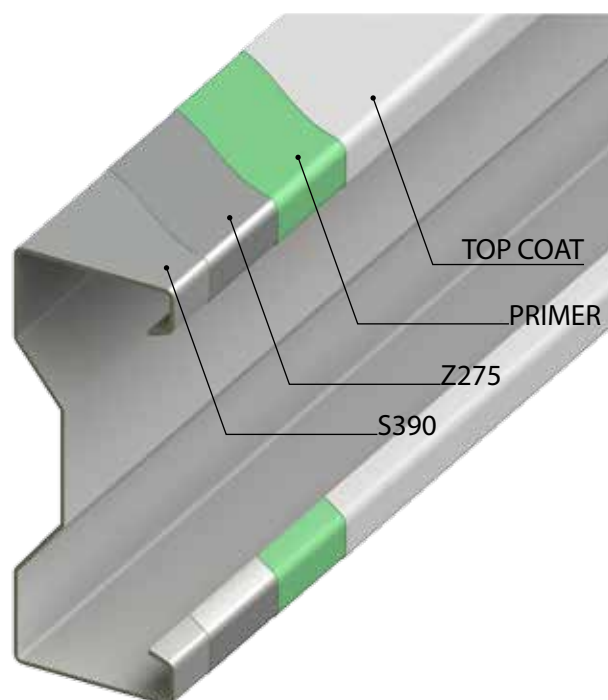
Section Depth (mm)	Thickness (mm)
145	Available in 1.5 and 2mm
175	
205	
235	
265	
300	
325	

How to specify



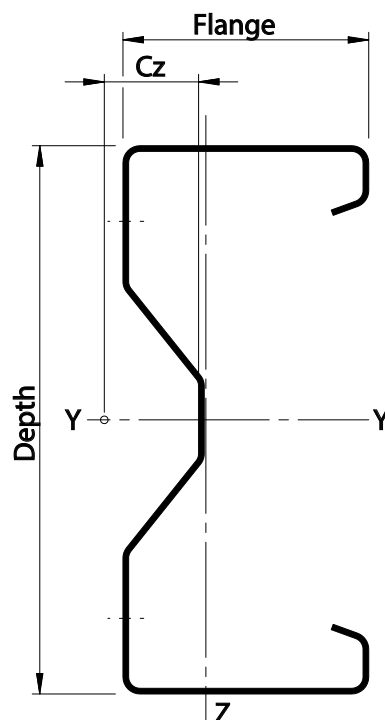
Material specification

Steel Grade:	S390
Minimum yield strength:	390MPa
Corrosion protection:	Organically coated hot-dip zinc. General coating properties to EN 10169:2010.
Zinc coating:	Z275
Primer:	15µm thick flexible primer applied on both sides.
Top coat	20µm thick flexible chemical and corrosion resistant Polyester Resin finish applied on each side.
Colour	Chalk White Top Coat



Important notes

- ◆ Section properties have been calculated in accordance with Eurocode 3, BS EN 1993-1 3:2006.
- ◆ The top flange of the purlin must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the top flange.

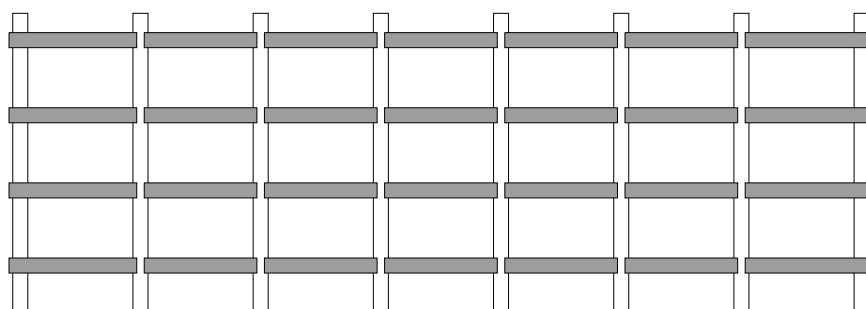


Section reference	Weight kg/m	Depth mm	Flange mm	Thickness mm	Area cm ²	I _{yy} cm ⁴	I _{zz} cm ⁴	i _y cm	i _z cm	C _z mm	M _y , R _k kNm
DP-PSP145/65/150	3.78	145	65	1.5	481.85	158.36	25.29	5.73	2.29	23.34	7.72
DP-PSP145/65/200	5.03	145	65	2	640.98	209.10	32.91	5.71	2.27	22.82	13.58
DP-PSP175/65/150	4.13	175	65	1.5	525.65	245.74	25.35	6.84	2.20	23.06	9.92
DP-PSP175/65/200	5.49	175	65	2	699.78	324.90	32.98	6.81	2.17	22.59	17.48
DP-PSP205/65/150	4.47	205	65	1.5	569.45	356.76	25.40	7.92	2.11	22.82	12.30
DP-PSP205/65/200	5.95	205	65	2	758.58	472.19	33.03	7.89	2.09	22.39	21.68
DP-PSP235/65/150	4.81	235	65	1.5	613.25	493.42	25.44	8.97	2.04	22.62	14.84
DP-PSP235/65/200	6.42	235	65	2	817.38	653.62	33.07	8.94	2.01	22.21	26.18
DP-PSP265/65/150	5.16	265	65	1.5	657.05	657.67	25.47	10.00	1.97	22.45	17.54
DP-PSP265/65/200	6.88	265	65	2	876.18	871.82	33.11	9.98	1.94	22.07	30.97
DP-PSP300/65/150	5.56	300	65	1.5	708.15	886.80	25.51	11.19	1.90	22.27	20.89
DP-PSP300/65/200	7.42	300	65	2	944.78	1176.42	33.15	11.16	1.87	21.92	36.92
DP-PSP325/65/150	5.85	325	65	1.5	744.65	1076.84	25.53	12.03	1.85	22.16	23.41
DP-PSP325/65/200	7.80	325	65	2	993.78	1429.17	33.18	11.99	1.83	21.82	41.40

ProSigma purlins and rails can be used in a variety of spanning systems with each offering benefits in terms of practicality and maximum economy.

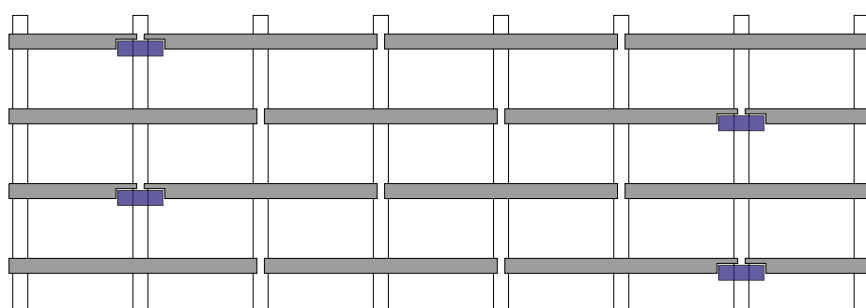
Single Span

This system allows shorter lengths for easier handling and may be used to fit sections between webs.



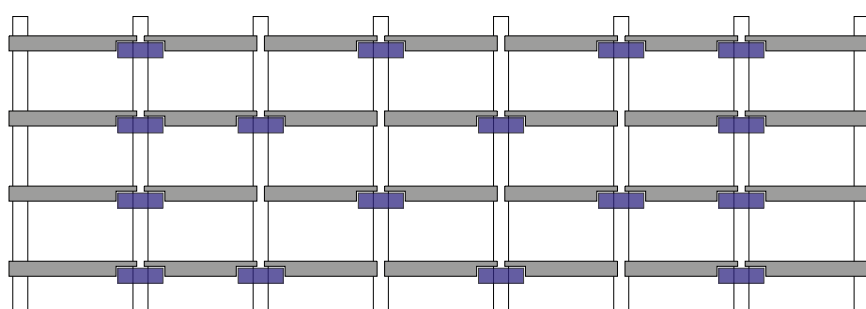
Double Span

A mix of single and double spanning members are used. To ensure equal load distribution across the supporting steel work the joints are staggered and sleeved as shown.



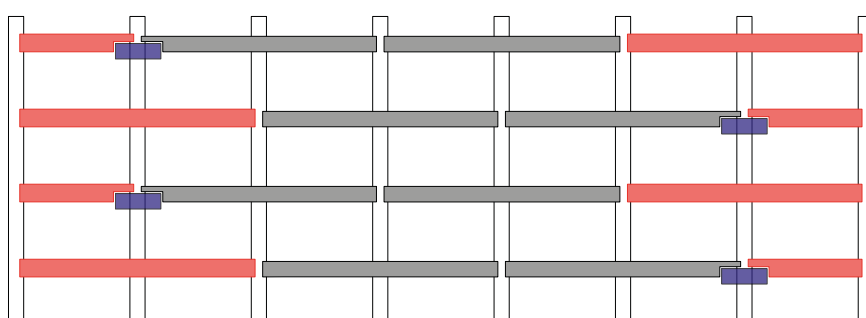
Single Span Sleeved

This system may be used to improve economy where restrictions such as bay length, site access or handling dictate the use of single span lengths.



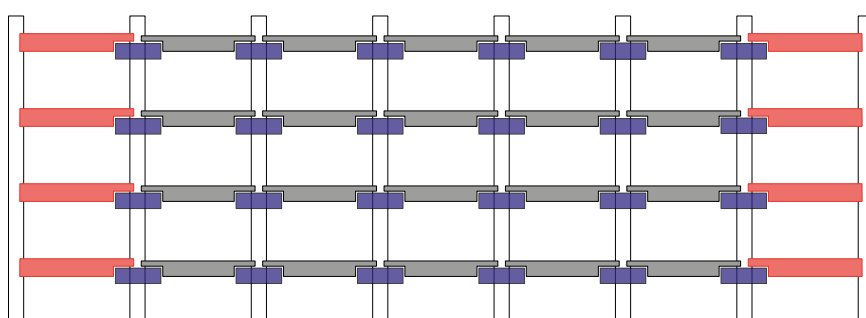
Double Span Heavy End Bay

This system may be considered when minimal material cost is a priority. A thicker gauge is used in the end bays (shown in red) while all internal bays are a lighter gauge.



Single Span Heavy End Bay

This system may be used to optimise material use when single span sections are needed. A thicker gauge is used in the end bays while all internal bays are a lighter gauge. All joints are sleeved.



Anti sag support for roofs

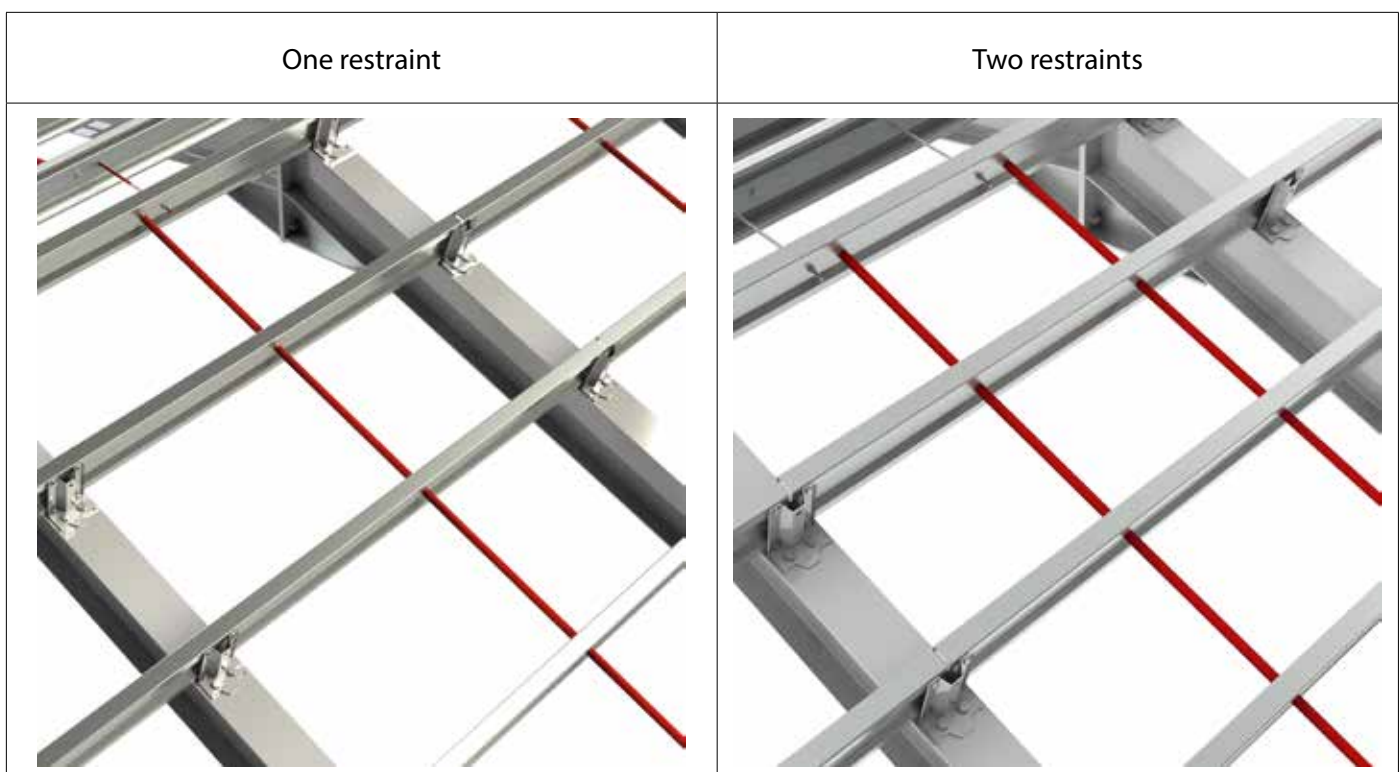
Anti-sag ties may be required to prevent distortion and misalignment of purlins during sheeting or to restrain against the effects of wind uplift. The guidance below is applicable to many common situations. Some points to note include:

- ◆ The top flange of the purlin must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the top flange.
- ◆ The guidelines below should be read in conjunction with additional considerations for specific situations or cladding types set out on our website such as steeper slopes and non restraining cladding.
- ◆ Anti-sag requirements assume that there are two slopes with a central ridge and Apex Tie.
- ◆ When no anti-sag ties are used temporary propping may be required during sheeting.

Anti sag requirements for common applications			
Slope	Section depth	Bay Centers	
		Up to 6m	6-8m
<4°	All	Refer to anti sag requirements for Flat Roof on website	
4° - 10°	All	No anti sag ties required	1 anti sag tie required
>10° - 15°	All	1 anti sag tie required	1 anti sag tie required

Configuration of restraints for wind uplift

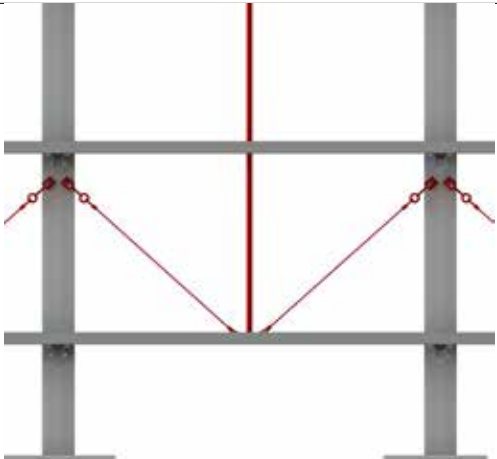
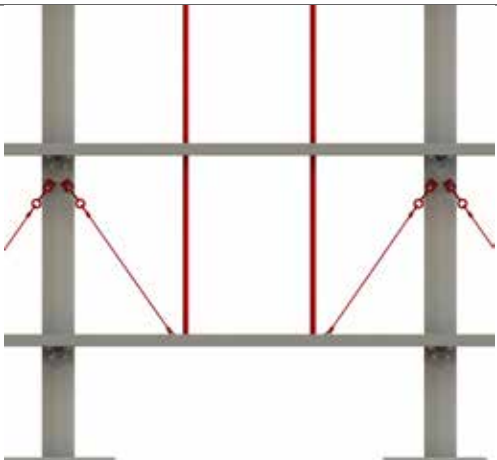
- ◆ The purlin capacity in respect of wind uplift is influenced by the number of uplift restraints as specified in the load tables (available on website).
- ◆ The top flange of the purlin must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the top flange.
- ◆ The typical layout for uplift restraint is shown below.



Anti sag support for walls

The guidance below is applicable to most common situations to control misalignment of purlins during sheeting. Some points to note include:

- ◆ The top flange of the purlin must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the outer flange.
- ◆ The guidelines below should be read in conjunction with additional considerations for higher elevations, heavy cladding or non restraining cladding set out on our website.

Anti sag for common applications	
Span (m): 3 to 6.1m For spans up to and including 6.1m anti sag supports are recommended at:	
Mid span	
Components: Tube Struts and Tie ropes are used as shown.	
Span (m): 6.1 - 9m For spans greater than 6.1m up to and including 9m anti sag supports are recommended at:	
1/3 points	
Components: Tube Struts and Tie ropes are used as shown.	

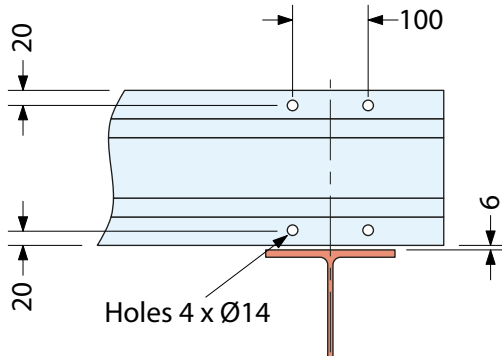
Restraining against wind suction

- ◆ The load tables (available on website) specify the number of restraints.
- ◆ The outer flange of the rail must have adequate restraint provided by screw fixed steel sheeting.
- ◆ The typical layout is similar to that shown above.

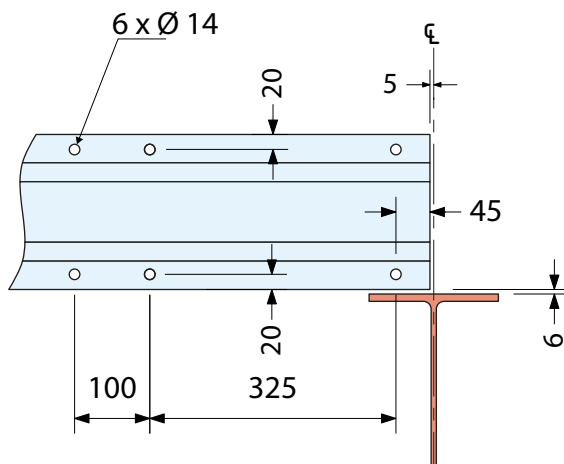
Punching details

The diagrams below show the typical punching details for many common connections. Refer to "Component details" on page 16 for information on accessories.

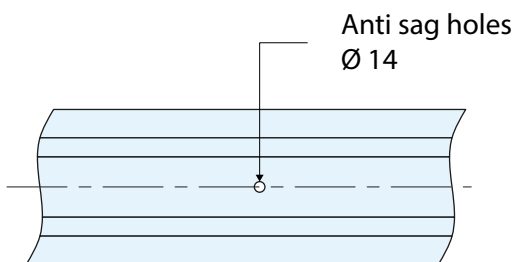
Cleat connection



Sleeve connection

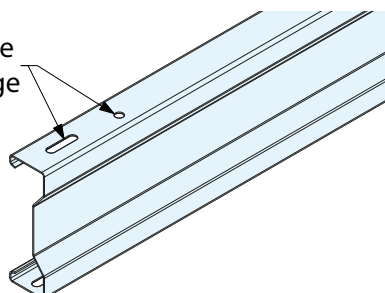


Anti sag connection

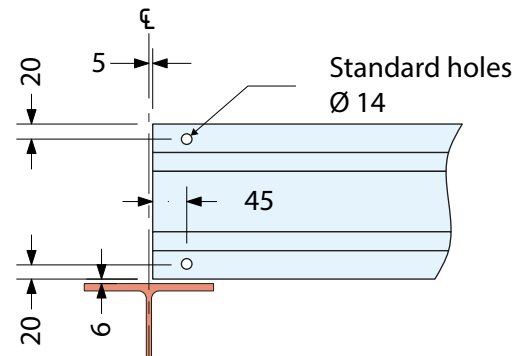


Flange holes

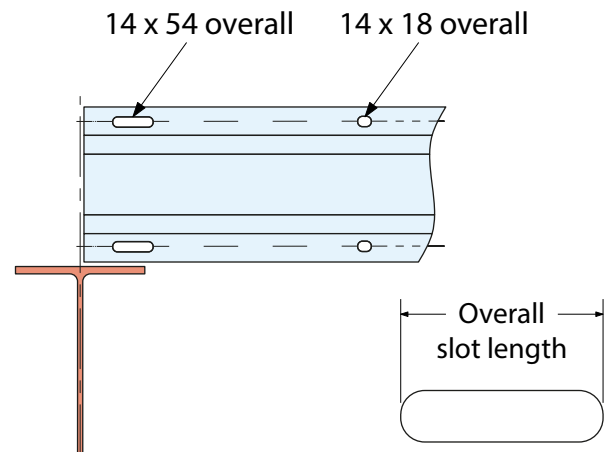
Holes/slots available
in top/bottom flange



Cleat connection at joint

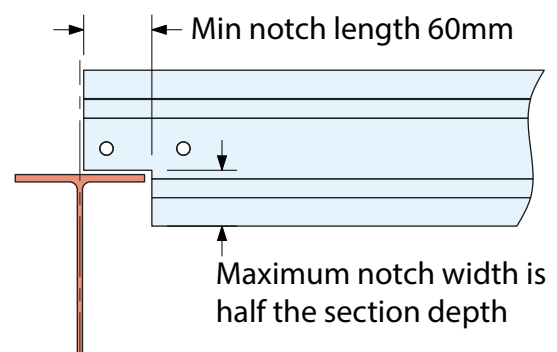


Slots



Other slot sizes are available, contact Duggan Profiles

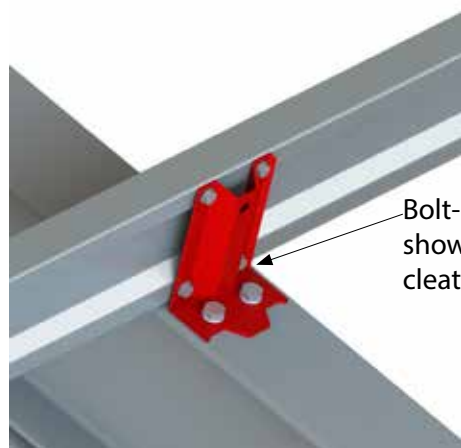
Notches



Important notes

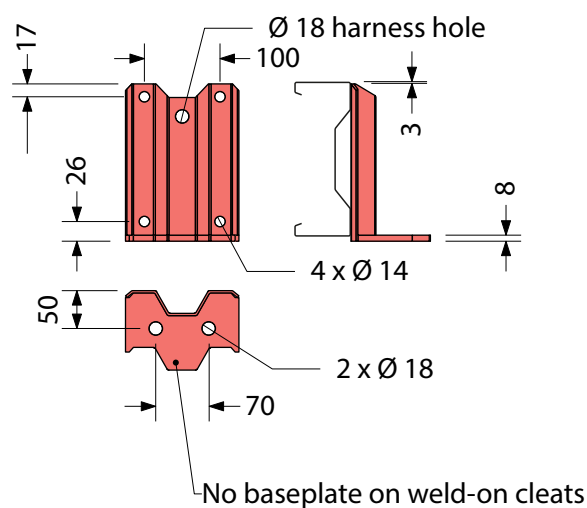
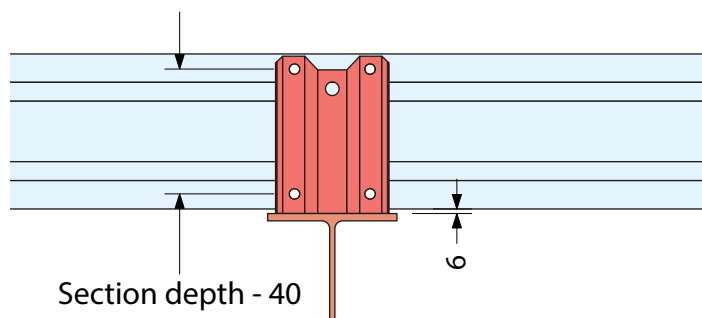
- ◆ 18mm holes are available instead of 14mm holes.
- ◆ Other slot sizes are available, contact us to discuss your requirements.
- ◆ Notching is a special order item and additional lead time and costs apply.

Cleats



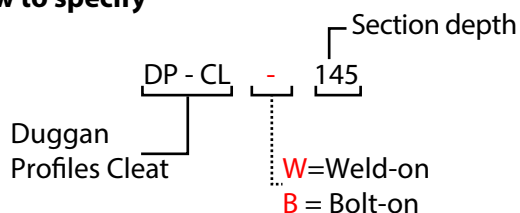
Bolt-on cleat shown, weld-on cleats also available

Dimensions

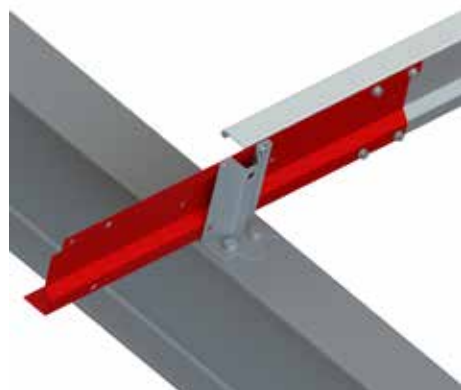


No baseplate on weld-on cleats

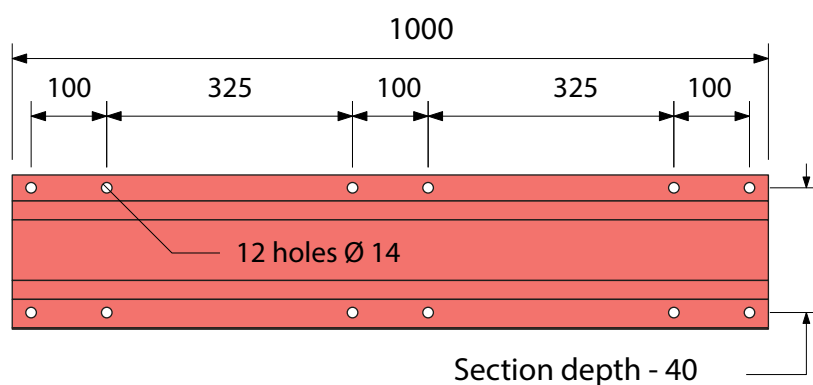
How to specify



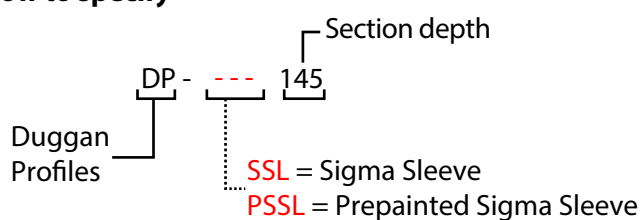
Sleeves



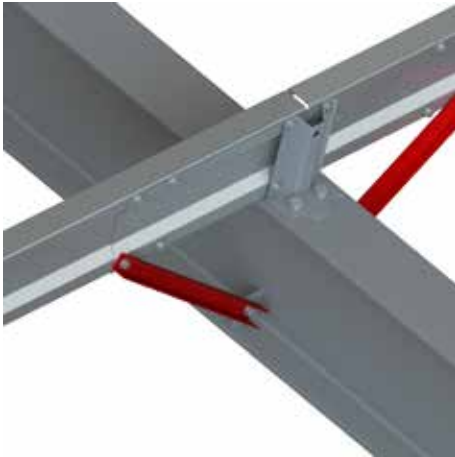
Dimensions



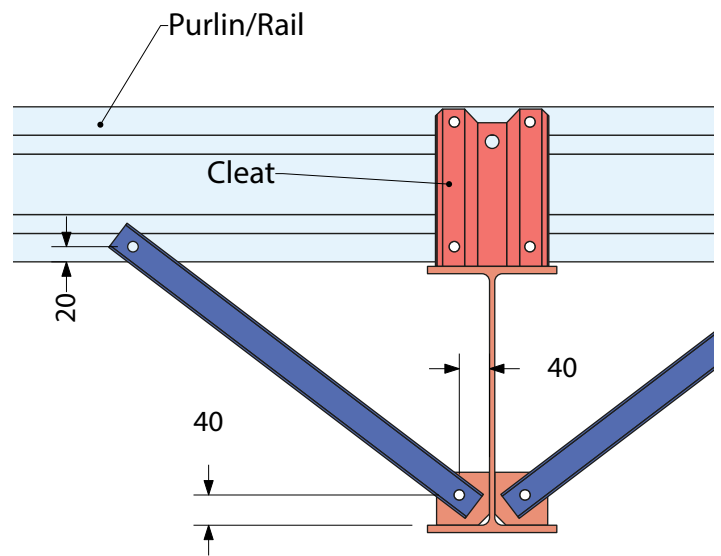
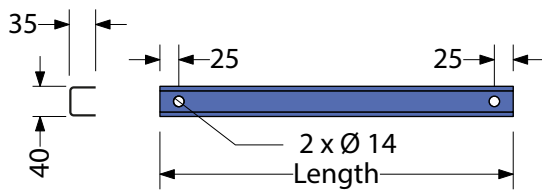
How to specify



Stays



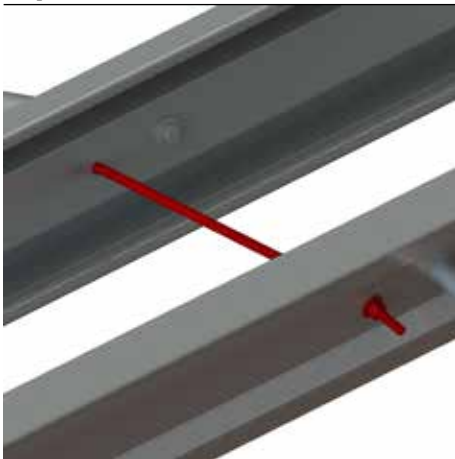
Dimensions



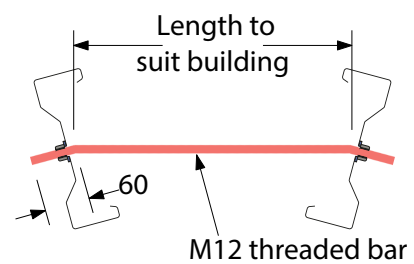
How to specify

Product code: DP-STAY

Apex Ties



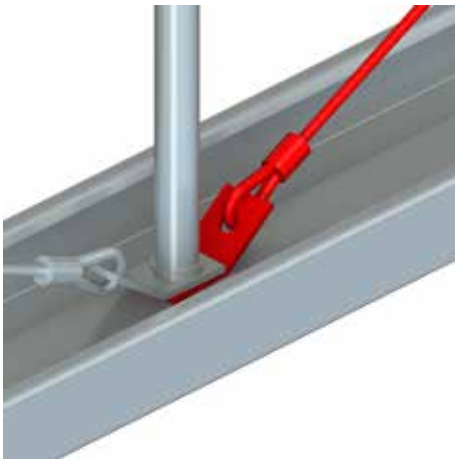
Dimensions



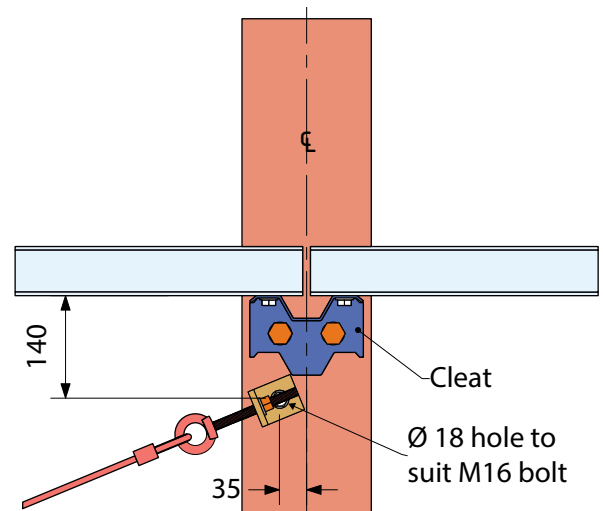
How to specify

Product code: DP-APEXTIE

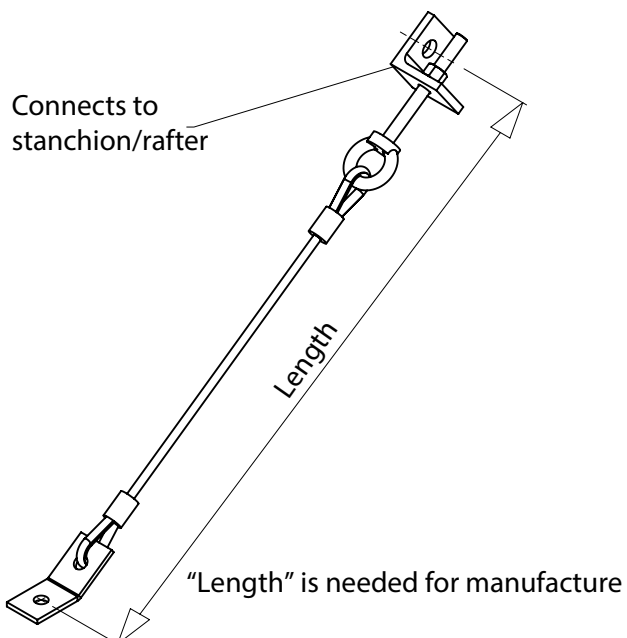
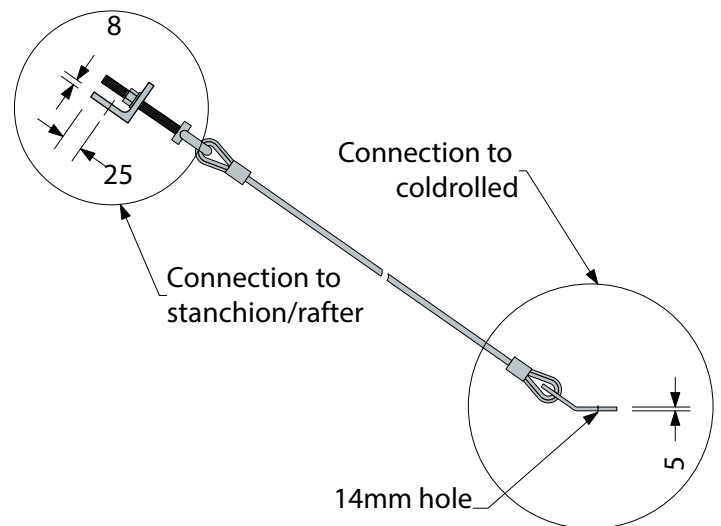
Tie ropes



Connection to stanchion



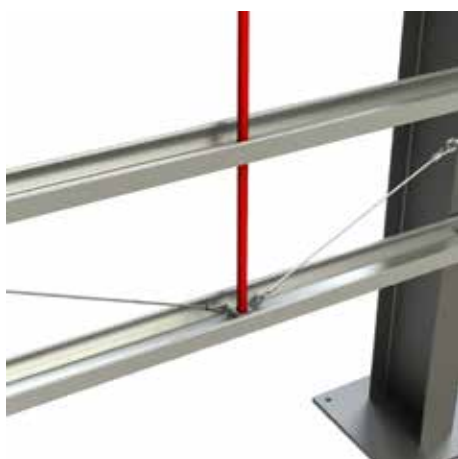
Connection to coldrolled



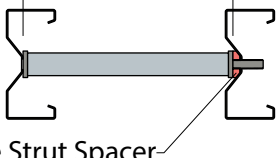
How to specify

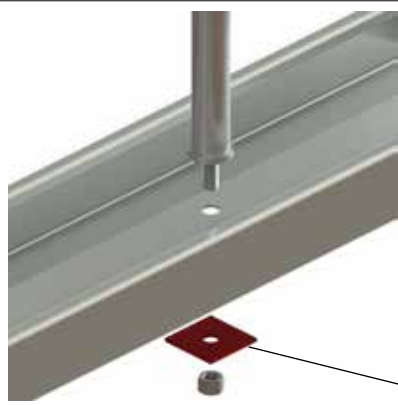
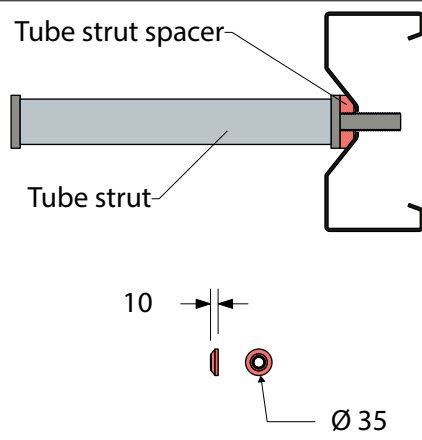
Product code: DP-DTW

Tube Struts

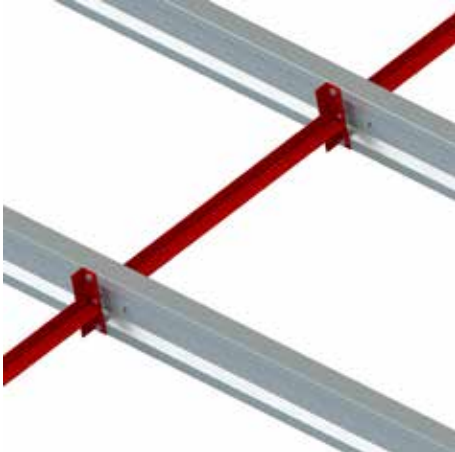


Tube Struts can be used as an anti sag component and to restrain against the effects of wind uplift. There are three types as described below.

Standard Tube Strut	Strut for 145 Section	Flush Finish Strut
Product code: DP-TS	Product code: DP-TS145	Product code: DP-TSFF
Length = purlin centers - 2mm 	Length = purlin centers - 12mm  Tube Strut Spacer	Length = purlin centers - 2mm 
These are used for all sections except 145mm.	These are used for the 145mm section. A tube strut spacer is required.	These are used in conjunction with counterformed holes to achieve a flush finish.

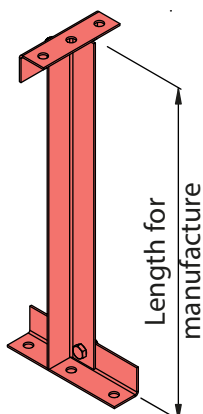
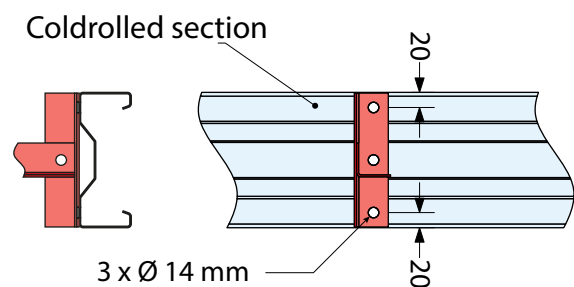
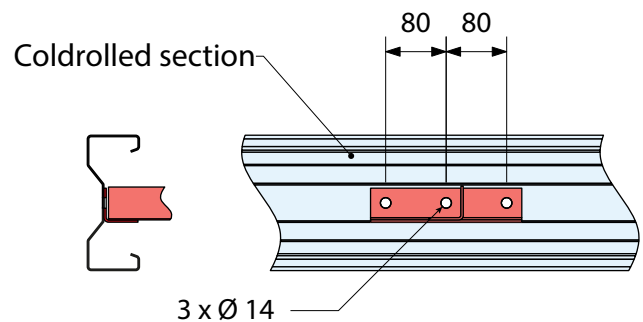
Clamp Plates	Tube Strut Spacer
Product code: DP-CLAMP-PLATE	Product code: DP-SP145
 50 x 50 x 3	 Tube strut spacer Tube strut 10 Ø 35

Angle Struts

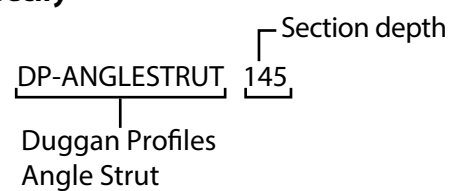


Angle struts may be used to restrain against the torsional effects of heavier loads. They are available to suit each section size and fit on both Sigma and Cee sections.

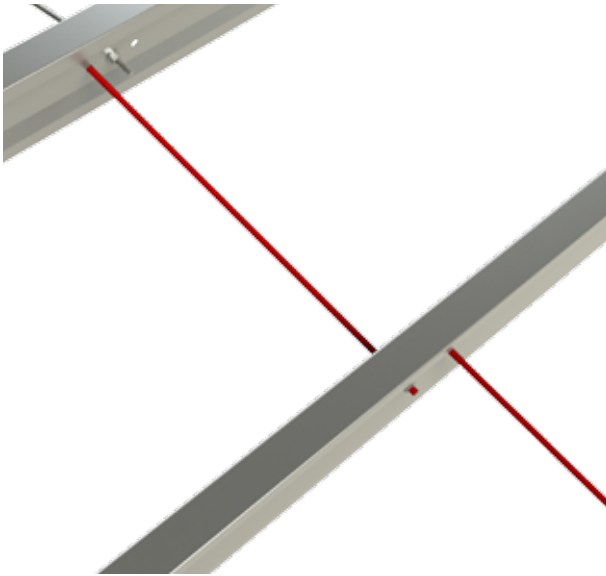
Angle Strut connection details



How to specify



Threaded bar



Threaded Tie Rods are manufactured from M12 Grade 8.8 threaded bar and may be supplied in lengths up to 3m long.

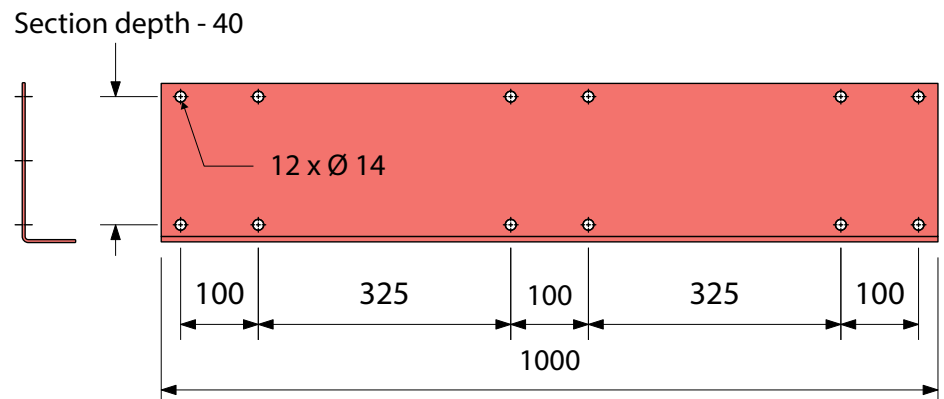
How to specify

Product code:	DP-TIE-ROD
---------------	------------

Cee Sleeve



Dimensions



How to specify

Duggan Profiles — DP - — Section depth 145
 CSL = Cee Sleeve
 PCSL = Prepainted Cee Sleeve

Overview

Eaves Beams are available in 2 section depths and may be supplied in either standard galvanised or white prepainted steel. Lengths up to 20m are available.

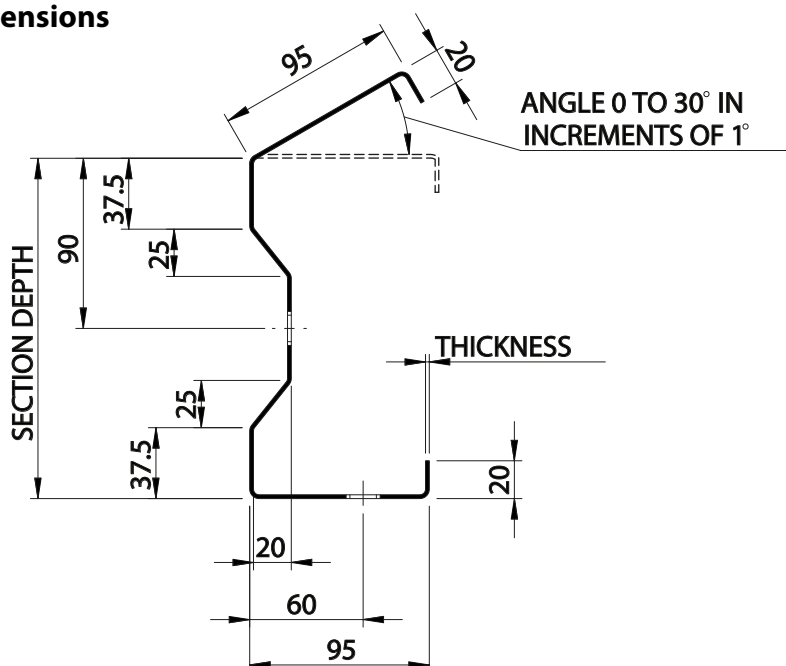


Standard Eaves Beam: Produced from Z275 galvanised steel with 460MPa minimum yield strength.



Prepainted Eaves Beam: Produced with Z275 organically coated hot-dip steel with 390MPa minimum yield strength.

Dimensions



Section range

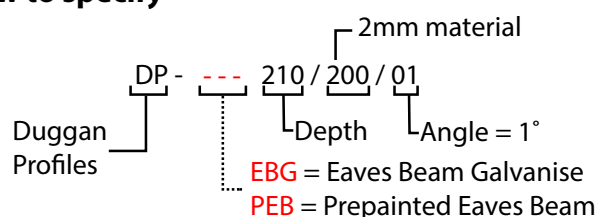
Standard Eaves Beam

Section Depth (mm)	Thickness (mm)	Angle (°)
180	2	0 - 30
210	2	0 - 30

Prepainted Eaves Beam

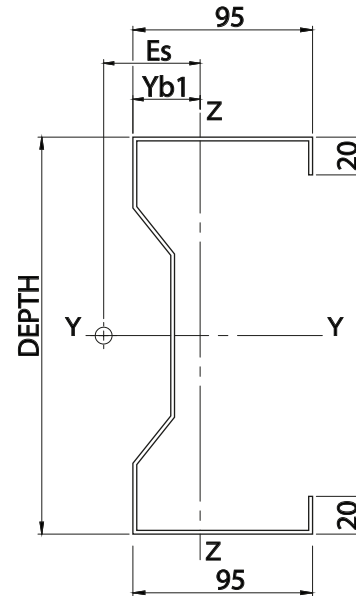
Section Depth (mm)	Thickness (mm)	Angle (°)
180	2	0 - 30
210	2	0 - 30

How to specify



Important notes

- ◆ Section properties have been calculated in accordance with Eurocode 3, BS EN 1993-1 3:2006.
- ◆ The top flange of the Eaves Beam must have adequate restraint provided by robust steel sheeting (or similar) fixed directly to the top flange.
- ◆ The section properties will vary depending on roof pitch. The properties below refer to a pitch of zero degrees as drawn.

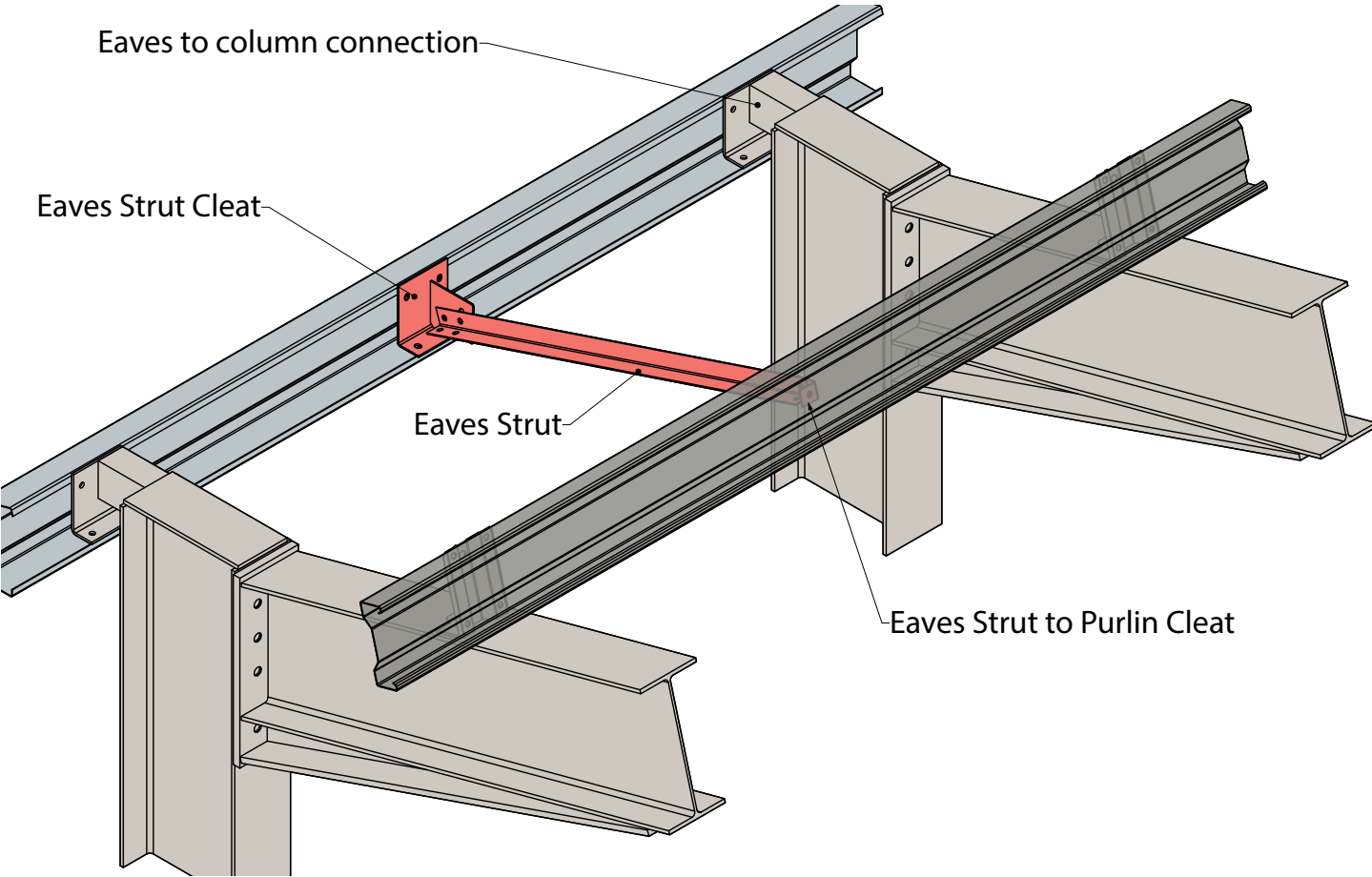


Gross section properties for 180mm Eaves Beam

Cross-section area	A	811.5	mm ²
Position of the z-z axis with regard to the web:	y _{b1}	33.1	mm
Second moment of area about strong axis y-y	I _{gry}	4305590	mm ⁴
Second moment of area about weak axis z-z	I _{grz}	831420	mm ⁴
Radii of gyration strong axis y-y	i _y	72.8	mm
Radii of gyration weak axis z-z	i _z	32	mm
Elastic modulus about strong axis y-y	W _y	48377.4	mm ³
Elastic modulus about weak axis z-z	W _z	13876.2	mm ³
Warping constant	I _w	6544483607	mm ⁶
Torsion constant	I _t	1039.2	mm ⁴
Distance from Shear Center to web center	E _s	57.3	mm

Gross section properties for 210mm Eaves Beam

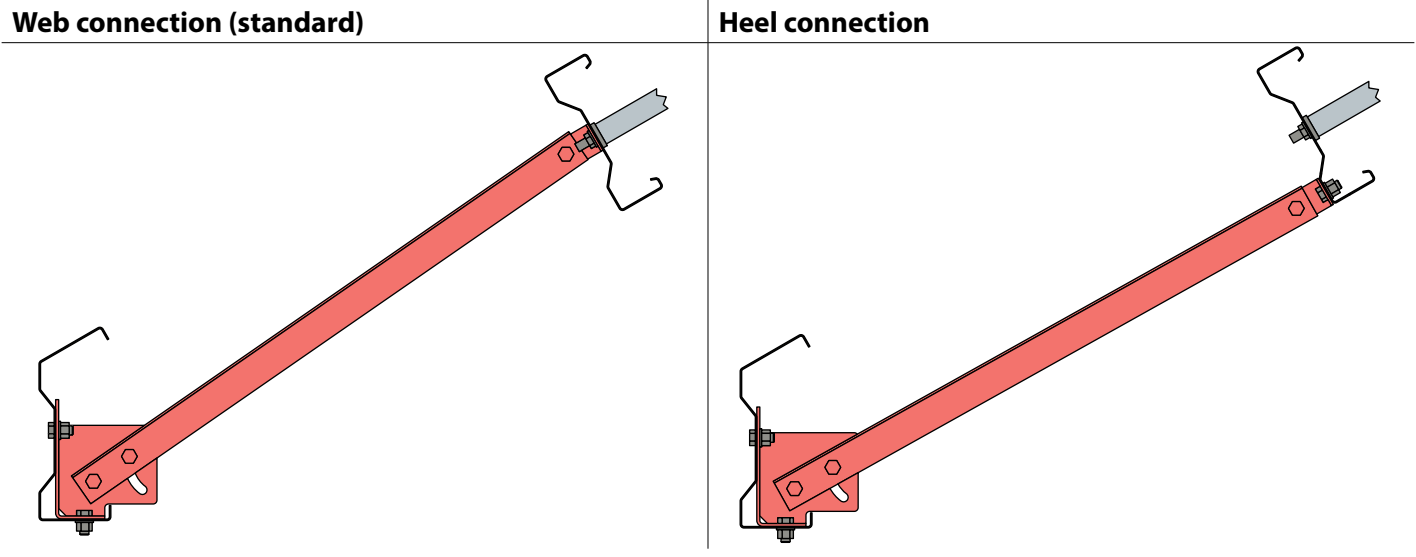
Cross-section area	A	870.3	mm ²
Position of the z-z axis with regard to the web:	y _{b1}	32.2	mm
Second moment of area about strong axis y-y	I _{gry}	6133238	mm ⁴
Second moment of area about weak axis z-z	I _{grz}	840805	mm ⁴
Radii of gyration strong axis y-y	i _y	83.9	mm
Radii of gyration weak axis z-z	i _z	31.1	mm
Elastic modulus about strong axis y-y	W _y	58973.4	mm ³
Elastic modulus about weak axis z-z	W _z	13828.8	mm ³
Warping constant	I _w	9145964005	mm ⁶
Torsion constant	I _t	1114.4	mm ⁴
Distance from Shear Centre to web center	E _s	51.4	mm



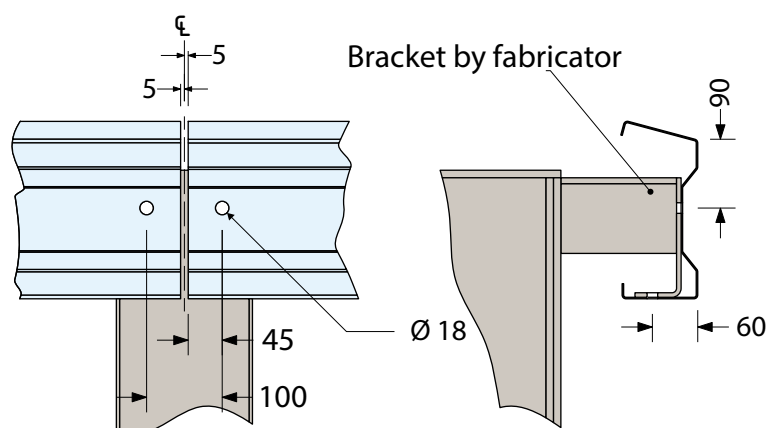
Anti sag support must be provided for all Eaves Beams. The data shown in the Eaves Beam Load Tables is invalid if this restraint is not included. The requirements are categorised by the distance spanned and are presented underneath.

Span	Number of Eaves Struts
<6m	1
6-10m	2
<12m	3

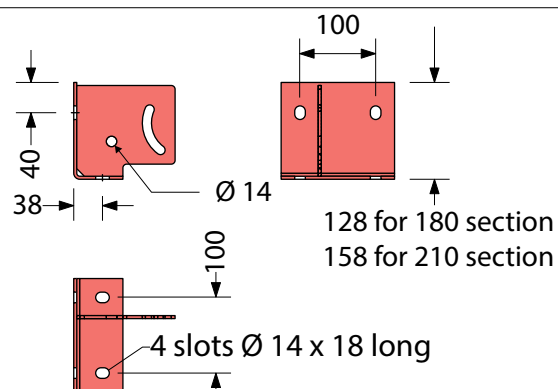
Eaves Beams can be supported from the heel or web of the adjoining purlin



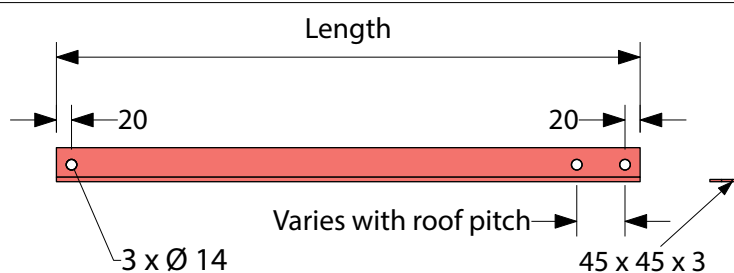
Eaves to column connection



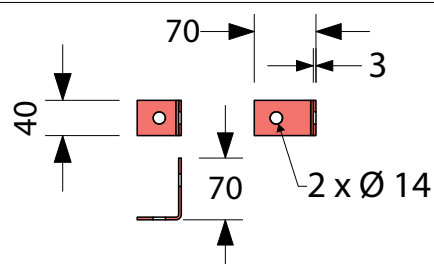
Eaves Strut Cleat (DP-EBS-CLEAT180, DP-EBS-CLEAT210)



Eaves Strut (DP-EB-STRUT)



Eaves Strut to Purlin Cleat (DP-EBSP-CLEAT)



Overview

Cee Sections are available in 7 section depths and may be supplied in either standard galvanised or white prepainted steel. Lengths up to 20m are available.



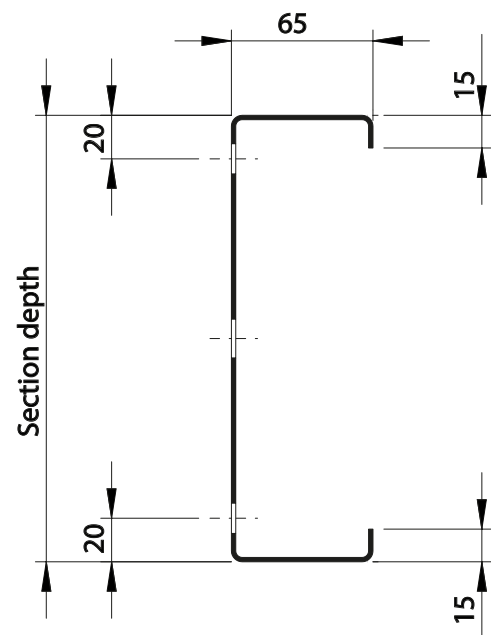
Standard Cee Section: Produced from Z275 galvanised steel with 460MPa minimum yield strength.

Prepainted Cee Section: Produced with Z275 organically coated hot-dip steel with 390MPa minimum yield strength.

Standard section range

Section Depth (mm)	Thickness (mm)
145	Available in 1.5, 1.8 and 2mm (Other thicknesses may be available subject to minimum order.)
175	
205	
235	
265	
300	
325	

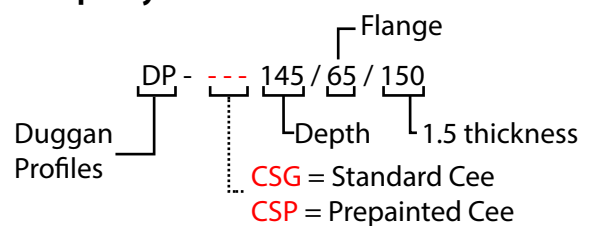
Dimensions



Prepainted section range

Section Depth (mm)	Thickness (mm)
145	Available in 1.5 and 2mm
175	
205	
235	
265	
300	
325	

How to specify



Accessories for Cee Sections

- ◆ Cleats, Struts and other accessories are the same as those used with purlins and rails. See "Component details" on page 16.

Non Standard Cee Sections

Overview

Customised Cee Sections may be produced for specific applications subject to quantity and material availability. They may be supplied in either standard galvanised or white prepainted steel. Lengths up to 20m are available.

Narrow Cee Sections

- as narrow as 75mm



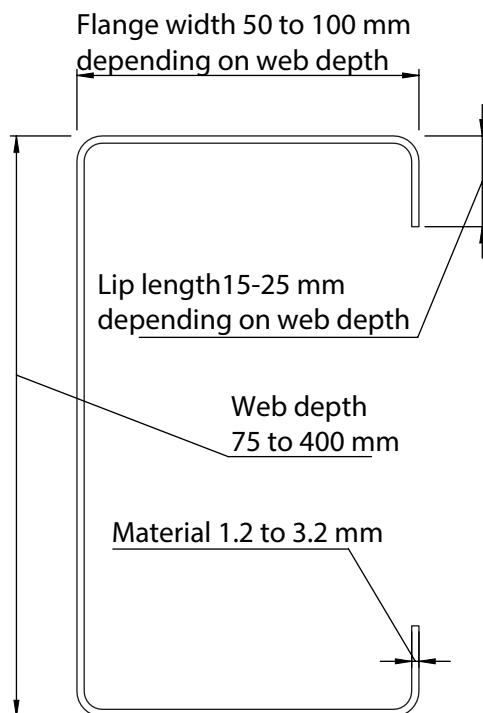
Extra wide Cee's

- up to 400mm



U sections

- no lips on Cee



Available options

Web depth (mm)	Flange width (mm)	Lip
75-88	Up to 63.5	15mm max
88-100	Up to 76	19mm max
100-113	Up to 89	25mm max
Over 113	Up to 100	25mm max

How to order

Contact Duggan Profiles to discuss your requirements.

- ◆ A variety of punching, notching and flanging is available for all Cee sections.
- ◆ Holes may be punched at any position in the web or flange.
- ◆ Holes may be either Ø14mm or Ø18mm.

	Standard holes	
	Slotted holes Two standard slot sizes available.	
	Counterformed holes These are a special order item - additional lead time and costs apply.	
	Service holes	
	End flanging These are a special order item - additional lead time and costs apply.	AVAILABLE OPTIONS
	Notching	

Specification

Section sizes and accessories can be specified by product code as described in the “How to specify” sections throughout this document.

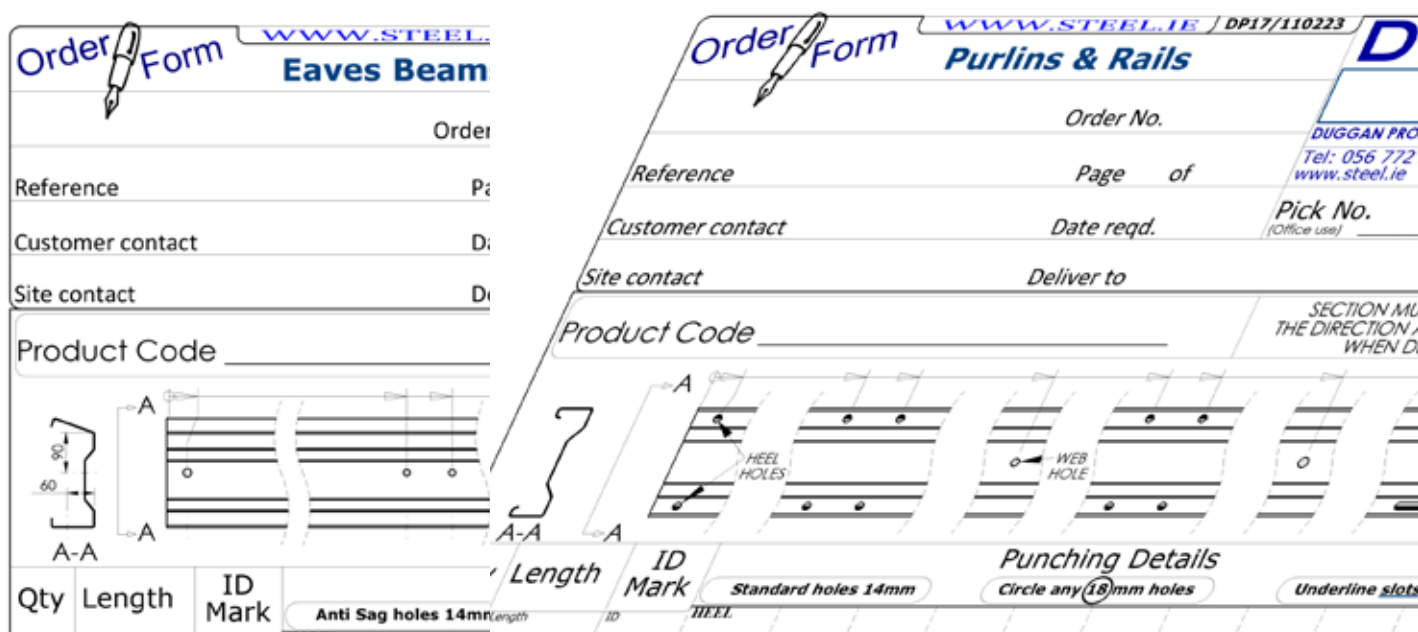
Detailing

The ProSigma range of purlins, rails and accessories can be detailed and ordered using either StruCad V15.5 or later and Tekla Structures 2016 or later. These systems allow the user to generate CAM data which can then be sent to us via email.



Manual Detailing

Purpose designed order forms are available for download from our website for those customers who do not have access to detailing software.



The image shows two order forms from the Steel.ie website. The left form is titled 'Eaves Beam' and the right form is titled 'Purlins & Rails'. Both forms include fields for Order No., Reference, Customer contact, Site contact, Product Code, and Deliver to. They also feature technical diagrams of the respective steel sections with labels for 'HEEL HOLES', 'WEB HOLE', and 'Punching Details'. The 'Purlins & Rails' form includes a section for 'Punching Details' with options for 'Standard holes 14mm', 'Circle any 18mm holes', and 'Underline slots'.

Technical Support

Technical assistance is available for all aspects of detailing and ordering our products. Please contact Duggan Profiles at 00353 56 7722485.

Load Tables

The complete range of Load tables for our sections are on our website at www.steel.ie. The loadings for our standard double spanning purlins are shown below for convenience.



Note:

- Loads shown are based on lateral restraint being provided to the top flange of the purlin by the sheeting.
- The self-weight of the section has not been deducted from the loads given below.

Load tables for Duggan Profiles standard double spanning purlins							
Section reference	Span (m)	Total Working U.D.L. (kN)	Deflection Span/180 (kN)	Gravity Load	Ultimate U.D.L. in kN / span		
					Uplift - dependent on number of anti sag rods		
					0 sag rods	1 sag rod	2 sag rods
DP-SP145/65/150	4.50	11.44	13.76	17.16	17.16	17.16	17.16
DP-SP145/65/180	4.50	16.33	16.43	24.49	24.49	24.49	24.49
DP-SP145/65/200	4.50	18.17	18.17	29.29	29.29	29.29	29.29
DP-SP175/65/150	4.50	13.44	20.07	20.16	20.16	20.16	20.16
DP-SP175/65/180	4.50	19.36	23.97	29.04	29.04	29.04	29.04
DP-SP175/65/200	4.50	23.24	26.53	34.86	34.77	34.86	34.86
DP-SP205/65/150	4.50	16.18	29.13	24.27	23.95	24.27	24.27
DP-SP205/65/180	4.50	23.53	34.82	35.30	32.60	35.30	35.30
DP-SP205/65/200	4.50	28.36	38.56	42.55	38.29	42.55	42.55
DP-SP235/65/150	4.50	18.13	38.59	27.20	27.20	27.20	27.20
DP-SP235/65/180	4.50	26.65	46.15	39.98	38.64	39.98	39.98
DP-SP235/65/200	4.50	32.25	51.12	48.38	45.39	48.38	48.38
DP-SP265/65/150	4.50	20.77	51.43	31.15	30.98	31.15	31.15
DP-SP265/65/180	4.50	30.86	61.54	46.28	42.06	46.28	46.28
DP-SP265/65/200	4.50	37.49	68.18	56.24	49.34	56.24	56.24
DP-SP145/65/150	5.00	10.43	11.15	15.65	15.65	15.65	15.65
DP-SP145/65/180	5.00	13.31	13.31	22.24	21.76	22.24	22.24
DP-SP145/65/200	5.00	14.72	14.72	26.57	25.76	26.57	26.57
DP-SP175/65/150	5.00	12.29	16.25	18.44	18.15	18.44	18.44
DP-SP175/65/180	5.00	17.62	19.42	26.43	25.03	26.43	26.43
DP-SP175/65/200	5.00	21.12	21.49	31.68	29.58	31.68	31.68
DP-SP205/65/150	5.00	14.85	23.60	22.28	20.04	22.28	22.28

Load tables for Duggan Profiles standard double spanning purlins continued...							
Section reference	Span (m)	Total Working U.D.L. (kN)	Deflection Span/180 (kN)	Ultimate U.D.L. in kN / span			
				Gravity Load	Uplift - dependent on number of anti sag rods		
					0 sag rods	1 sag rod	2 sag rods
DP-SP205/65/180	5.00	21.47	28.20	32.21	27.49	32.21	32.21
DP-SP205/65/200	5.00	25.82	31.23	38.73	32.40	38.73	38.73
DP-SP235/65/150	5.00	16.72	31.26	25.07	23.76	25.07	25.07
DP-SP235/65/180	5.00	24.38	37.38	36.57	32.62	36.57	36.57
DP-SP235/65/200	5.00	29.42	41.40	44.12	38.45	44.12	44.12
DP-SP265/65/150	5.00	19.22	41.66	28.83	25.86	28.83	28.83
DP-SP265/65/180	5.00	28.30	49.84	42.44	35.39	42.44	42.44
DP-SP265/65/200	5.00	34.27	55.23	51.40	41.66	51.40	51.40
DP-SP145/65/150	5.50	9.21	9.21	14.38	13.57	14.38	14.38
DP-SP145/65/180	5.50	11.00	11.00	20.37	18.92	20.37	20.37
DP-SP145/65/200	5.50	12.17	12.17	24.30	22.47	24.30	24.30
DP-SP175/65/150	5.50	11.32	13.43	16.99	15.62	16.99	16.99
DP-SP175/65/180	5.50	16.05	16.05	24.25	21.69	24.25	24.25
DP-SP175/65/200	5.50	17.76	17.76	29.02	25.70	29.02	29.02
DP-SP205/65/150	5.50	13.72	19.50	20.58	17.17	20.58	20.58
DP-SP205/65/180	5.50	19.73	23.31	29.60	23.71	29.60	29.60
DP-SP205/65/200	5.50	23.69	25.81	35.53	28.03	35.53	35.53
DP-SP235/65/150	5.50	15.49	25.83	23.23	20.37	23.23	23.23
DP-SP235/65/180	5.50	22.45	30.89	33.67	28.16	33.67	33.67
DP-SP235/65/200	5.50	27.03	34.22	40.54	33.30	40.54	40.54
DP-SP265/65/150	5.50	17.87	34.43	26.80	22.11	26.80	26.80
DP-SP265/65/180	5.50	26.11	41.19	39.17	30.47	39.17	39.17
DP-SP265/65/200	5.50	31.54	45.64	47.30	35.98	46.68	47.30
DP-SP145/65/150	6.00	7.74	7.74	13.29	11.94	13.29	13.29
DP-SP145/65/180	6.00	9.24	9.24	18.79	16.73	18.79	18.79
DP-SP145/65/200	6.00	10.22	10.22	22.39	19.92	22.39	22.39
DP-SP175/65/150	6.00	10.49	11.29	15.74	13.69	15.74	15.74
DP-SP175/65/180	6.00	13.48	13.48	22.40	19.12	22.40	22.40
DP-SP175/65/200	6.00	14.92	14.92	26.77	22.71	26.77	26.77
DP-SP205/65/150	6.00	12.74	16.39	19.11	14.98	19.11	19.11
DP-SP205/65/180	6.00	18.25	19.59	27.38	20.82	26.52	27.38
DP-SP205/65/200	6.00	21.69	21.69	32.81	24.68	31.03	32.81
DP-SP235/65/150	6.00	14.42	21.71	21.62	17.79	21.62	21.62
DP-SP235/65/180	6.00	20.80	25.96	31.20	24.74	31.20	31.20
DP-SP235/65/200	6.00	24.99	28.75	37.49	29.34	36.75	37.49
DP-SP265/65/150	6.00	16.67	28.93	25.01	19.26	25.01	25.01
DP-SP265/65/180	6.00	24.23	34.61	36.34	26.72	34.32	36.34
DP-SP265/65/200	6.00	29.20	38.35	43.80	31.64	40.10	43.80

Load tables for Duggan Profiles standard double spanning purlins continued...

Section reference	Span (m)	Total Working U.D.L. (kN)	Deflection Span/180 (kN)	Ultimate U.D.L. in kN / span			
				Gravity Load	Uplift - dependent on number of anti sag rods		
					0 sag rods	1 sag rod	2 sag rods
DP-SP145/65/150	6.50	6.60	6.60	12.36	10.65	12.36	12.36
DP-SP145/65/180	6.50	7.87	7.87	17.43	15.00	17.43	17.43
DP-SP145/65/200	6.50	8.71	8.71	20.76	17.89	20.76	20.76
DP-SP175/65/150	6.50	9.62	9.62	14.66	12.17	14.66	14.66
DP-SP175/65/180	6.50	11.49	11.49	20.81	17.09	20.81	20.81
DP-SP175/65/200	6.50	12.72	12.72	24.84	20.34	24.60	24.84
DP-SP205/65/150	6.50	11.89	13.96	17.83	13.27	17.05	17.83
DP-SP205/65/180	6.50	16.69	16.69	25.47	18.55	23.14	25.47
DP-SP205/65/200	6.50	18.48	18.48	30.48	22.04	27.15	30.48
DP-SP235/65/150	6.50	13.48	18.49	20.22	15.78	20.18	20.22
DP-SP235/65/180	6.50	19.37	22.12	29.05	22.06	27.42	29.05
DP-SP235/65/200	6.50	23.24	24.50	34.86	26.22	32.17	34.86
DP-SP265/65/150	6.50	15.62	24.65	23.43	17.04	22.07	23.43
DP-SP265/65/180	6.50	22.59	29.49	33.89	23.77	29.89	33.89
DP-SP265/65/200	6.50	27.18	32.68	40.77	28.22	35.01	40.77
DP-SP145/65/150	7.00	5.69	5.69	11.55	9.61	11.55	11.55
DP-SP145/65/180	7.00	6.79	6.79	16.26	13.59	16.10	16.26
DP-SP145/65/200	7.00	7.51	7.51	19.35	16.24	19.02	19.35
DP-SP175/65/150	7.00	8.29	8.29	13.72	10.96	13.54	13.72
DP-SP175/65/180	7.00	9.91	9.91	19.43	15.45	18.58	19.43
DP-SP175/65/200	7.00	10.96	10.96	23.17	18.43	21.90	23.17
DP-SP205/65/150	7.00	11.14	12.04	16.71	11.91	15.00	16.71
DP-SP205/65/180	7.00	14.39	14.39	23.80	16.72	20.48	23.80
DP-SP205/65/200	7.00	15.93	15.93	28.46	19.91	24.08	28.46
DP-SP235/65/150	7.00	12.65	15.95	18.98	14.17	17.77	18.98
DP-SP235/65/180	7.00	18.12	19.07	27.18	19.90	24.28	27.18
DP-SP235/65/200	7.00	21.12	21.12	32.58	23.70	28.55	32.58
DP-SP265/65/150	7.00	14.69	21.26	22.03	15.28	19.39	22.03
DP-SP265/65/180	7.00	21.16	25.43	31.74	21.41	26.40	31.74
DP-SP265/65/200	7.00	25.42	28.18	38.13	25.47	31.00	38.13
DP-SP145/65/200	7.50	6.54	6.54	18.12	14.87	17.18	18.12
DP-SP175/65/150	7.50	7.22	7.22	12.89	9.96	12.10	12.89
DP-SP175/65/180	7.50	8.63	8.63	18.21	14.10	16.69	18.21
DP-SP175/65/200	7.50	9.55	9.55	21.71	16.84	19.72	21.71
DP-SP205/65/150	7.50	10.48	10.49	15.72	10.80	13.36	15.72
DP-SP205/65/180	7.50	12.54	12.54	22.34	15.22	18.33	22.34
DP-SP205/65/200	7.50	13.88	13.88	26.68	18.16	21.60	26.68

Load tables for Duggan Profiles standard double spanning purlins continued...							
Section reference	Span (m)	Total Working U.D.L. (kN)	Deflection Span/180 (kN)	Ultimate U.D.L. in kN / span			
				Gravity Load	Uplift - dependent on number of anti sag rods		
					0 sag rods	1 sag rod	2 sag rods
DP-SP235/65/150	7.50	11.92	13.89	17.87	12.85	15.84	17.87
DP-SP235/65/180	7.50	16.61	16.61	25.53	18.13	21.74	25.53
DP-SP235/65/200	7.50	18.40	18.40	30.57	21.63	25.63	30.57
DP-SP265/65/150	7.50	13.85	18.52	20.78	13.84	17.24	20.78
DP-SP265/65/180	7.50	19.90	22.15	29.85	19.48	23.59	29.85
DP-SP265/65/200	7.50	23.87	24.55	35.81	23.22	27.78	35.81
DP-SP145/65/200	8.00	5.75	5.75	17.03	13.71	15.65	17.03
DP-SP175/65/180	8.00	7.58	7.58	17.15	12.97	15.13	17.15
DP-SP175/65/200	8.00	8.39	8.39	20.42	15.51	17.92	20.42
DP-SP205/65/150	8.00	9.22	9.22	14.84	9.87	12.02	14.84
DP-SP205/65/180	8.00	11.02	11.02	21.04	13.97	16.57	21.04
DP-SP205/65/200	8.00	12.20	12.20	25.12	16.70	19.57	25.12
DP-SP235/65/150	8.00	11.26	12.21	16.89	11.76	14.26	16.89
DP-SP235/65/180	8.00	14.60	14.60	24.07	16.65	19.67	24.07
DP-SP235/65/200	8.00	16.17	16.17	28.79	19.90	23.24	28.79
DP-SP265/65/150	8.00	13.11	16.27	19.66	12.65	15.49	19.66
DP-SP265/65/180	8.00	18.77	19.47	28.16	17.87	21.30	28.16
DP-SP265/65/200	8.00	21.57	21.57	33.75	21.33	25.14	32.87
DP-SP205/65/150	8.50	8.16	8.16	14.05	9.10	10.92	14.05
DP-SP205/65/180	8.50	9.76	9.76	19.89	12.92	15.11	19.53
DP-SP205/65/200	8.50	10.81	10.81	23.72	15.45	17.88	22.81
DP-SP235/65/150	8.50	10.67	10.82	16.01	10.84	12.96	16.01
DP-SP235/65/180	8.50	12.93	12.93	22.77	15.40	17.95	22.77
DP-SP235/65/200	8.50	14.33	14.33	27.21	18.43	21.24	27.00
DP-SP265/65/150	8.50	12.44	14.42	18.65	11.64	14.05	18.65
DP-SP265/65/180	8.50	17.25	17.25	26.65	16.51	19.41	25.31
DP-SP265/65/200	8.50	19.11	19.11	31.91	19.74	22.94	29.52

Index

A

- Accessories for Cee's 16
- Accessories for Eaves Beams 25
- Accessories for purlins and rails 16
- Angle Struts 20
 - Angle Strut connection details 20
 - How to specify 20
- Anti sag for Eaves Beams 24
- Anti sag support for roofs 13
- Anti sag support for walls 14
- Apex Ties 17

C

- CAM data 29
- Cee Section punching options 28
- Cee Sections 26
 - Cleats 16
 - Prepainted Cee Section 26
 - Punching options 28
 - Sleeves 21
 - Standard Cee Section 26
- Cee Sleeve 21
 - Dimensions 21
 - How to specify 21
- Clamp Plates 19
- Cleats
 - Dimensions 16
 - How to specify 16
- Components for purlins and rails 16
- Counterformed holes 28

D

- Detailing 29

E

- Eaves Beam components 25
 - Eaves Strut 25
 - Eaves Strut Cleat 25
 - Eaves Strut to Purlin Cleat 25
 - Eaves to column connection 25
- Eaves Beams 22
 - Anti sag for Eaves Beams 24
 - Galvanised Eaves Beam 22
 - Prepainted Eaves Beam 22
- End flanging 28

G

- Galvanised purlins and rails 8
 - Anti sag support for roofs 13
 - Anti sag support for walls 14

Components

- Angle Struts 20
- Apex Ties 17
- Cleats 16
- Sleeves 16
- Stays 17
- Threaded bar 21
- Tie ropes 18
- Tube Struts 19
- Dimensions 8
- How to specify 8
- Lengths 8
- Material specification 8
- Punching details 15
 - Anti sag connection 15
 - Cleat connection 15
 - Flange holes 15
 - Notches 15
 - Sleeve connection 15
 - Slots 15
- Section properties 9
- Section range 8
- Spanning systems 8
 - Double Span 12
 - Double Span Heavy End Bay 12
 - Single Span 12
 - Single Span Heavy End Bay 12
 - Single Span Sleeved 12

N

- Non Standard Cee Sections 27
 - Available options 27
 - Extra wide Cee's 27
 - How to order 27
 - Narrow Cee Sections 27
 - U sections 27

- Notching 28

O

- Order forms 29

P

- Prepainted Cee Section 26
 - Components
 - Cee Sleeve 21
 - Cleats 16
 - Tube Struts 19
 - Dimensions 26
 - How to specify 26
 - Non Standard Cee Sections 27
 - Punching options 28
 - Counterformed holes 28
 - End flanging 28
 - Notching 28
 - Service holes 28

- Slotted holes 28
 - Standard holes 28
- Section range 26
- Prepainted Eaves Beam 22
 - Anti sag 24
 - Dimensions 22
 - Eaves Beam components 25
 - Eaves Strut 25
 - Eaves Strut Cleat 25
 - Eaves Strut to Purlin Cleat 25
 - Eaves to column connection 25
- How to specify 22
- Section properties 23
- Section range 22
- Prepainted purlins and rails 10
 - Anti sag support for roofs 13
 - Anti sag support for walls 14
 - Components
 - Angle Struts 20
 - Apex Ties 17
 - Cleats 16
 - Sleeves 16
 - Tube Struts 19
- How to specify 10
- Lengths 10
- Material specification 10
- Overview 10
- Punching details 15
- Section properties 11
- Section range 10
- Spanning systems 10
 - Double Span 12
 - Double Span Heavy End Bay 12
 - Single Span 12
 - Single Span Heavy End Bay 12
 - Single Span Sleeved 12
- Purlins and rails 6
 - Prepainted purlins and rails 10
 - Standard purlins and rails 8
- S**
- Service holes 28
- Sleeves 16
 - Dimensions 16
 - How to specify 16
- Spanning systems 12
 - Double Span 12
 - Double Span Heavy End Bay 12
 - Single Span 12
 - Single Span Heavy End Bay 12
 - Single Span Sleeved 12
- Specification, Detailing and Ordering 29
- Standard Cee Section 26
 - Components
 - Cee Sleeve 21

- Cleats 16
 - Tube Struts 19
- Dimensions 26
- How to specify 26
- Punching options 28
 - Counterformed holes 28
 - End flanging 28
 - Notching 28
 - Service holes 28
 - Slotted holes 28
 - Standard holes 28
- Section range 26
- Standard Eaves Beam 22
 - Anti sag 24
 - Dimensions 22
 - Eaves Beam components 25
 - Eaves Strut 25
 - Eaves Strut Cleat 25
 - Eaves Strut to Purlin Cleat 25
 - Eaves to column connection 25
- How to specify 22
- Section properties 23
- Section range 22
- Stays 17
- StruCad 29
- T**
- Technical Support 29
- Tekla Structures 29
- Threaded bar 21
- Tie ropes
 - Connection to coldrolled 18
 - Connection to stanchion 18
 - How to specify 18
- Tube Struts 19
 - Flush Finish Strut 19
 - Standard Tube Strut 19
 - Strut for 145 Section 19
 - Tube Strut Components
 - Clamp Plates 19
 - Tube Strut Spacer 19
- U**
- U sections 27

Duggan Profiles & Steel Service Centre Ltd.
Dublin Road, Kilkenny, Ireland. R95 CCY5
T: +353 (0) 56 7722485 F: +353 (0) 56 7763411
www.steel.ie
Email: salesdp@steel.ie