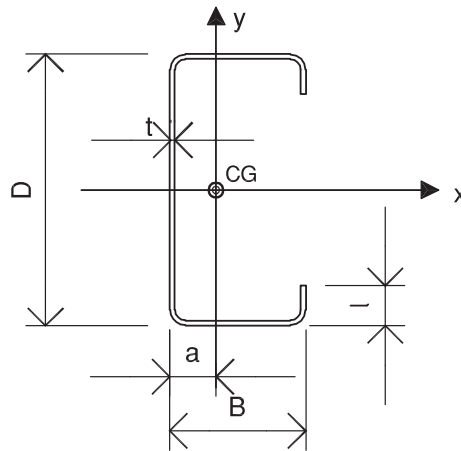


### 2.5.1 DIMOND 100/19 PURLIN

Dimond manufacture the 100/19 C section which provides economy as a small section purlin or girt. Any limitation placed on the design and use of the Dimond Purlin Systems as detailed in this manual also apply to the Dimond 100/19 Purlin. Sag rods are used as the bracing system for the 100/19 Purlin.



Tabulated properties are based on full unreduced sections.

CODE	D x B mm	t mm	Mass kg/m	Weight kN/m	Area mm <sup>2</sup>	l mm	a mm	$I_{xx}$ (10 <sup>6</sup> mm <sup>4</sup> )	$I_{yy}$ (10 <sup>6</sup> mm <sup>4</sup> )	$Z_{xx}$ (10 <sup>3</sup> mm <sup>3</sup> )
100 / 19	102 x 51	1.85	3.24	0.032	403	15	17.4	0.668	0.143	13.09

NOTE Mass assumes a total coated weight for the standard zinc coating of 275 g/m<sup>2</sup>

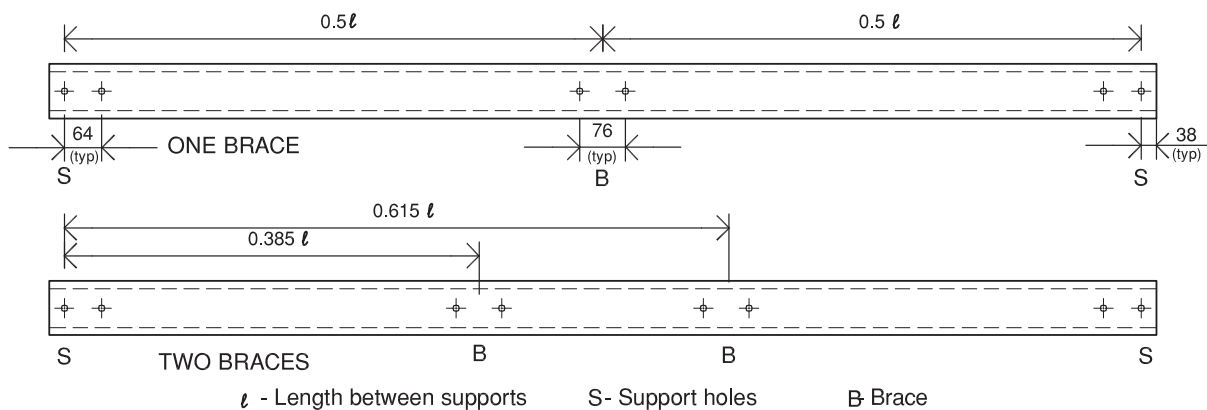
Design linear load capacities in kilonewtons per metre of span (kN/m),  $\Phi_b W_{bx}$

SPAN m	BRACE			$W_s$
	1	2	FR	
3.0	4.44	4.71	4.71	2.52
3.5	2.91	3.47	3.47	1.58
4.0	1.96	2.66	2.66	1.06
4.5	1.31	2.00	2.10	0.74
5.0	0.90	1.50	1.69	.54
5.5	0.65	1.15	1.40	0.41
6.0	0.47	0.90	1.19	0.31
6.5	0.36	0.68	1.01	0.24
7.0	0.27	0.52	0.87	0.20
7.5		0.42	0.75	0.17
8.0		0.33	0.66	0.13

FR Assumes compression flange fully restrained.

$W_s$  Linear load at a deflection of span / 150.

#### STANDARD HOLE PUNCHING FOR 100/19 PURLIN SIMPLE SPANS



## 2.5.2 BOLTS

The grade of bolts used in the design load capacities in this manual are typically grade 4.6. The design engineer will specify grade 8.8 bolts where required.

The load and shear capacity of the bolts are determined and specified by the design engineer using the table in Section 2.3.10 and following the method of the design example in Section 2.3.11.4.

Typical bolt diameters are either M12 or M16. All bolts must be used with washers against the purlin material.

All bolts supplied must comply with AS 1111 for grade 4.6 or AS 1252 for grade 8.8. Bolts should be produced to a quality assurance programme. While Dimond do not supply bolts or washers, we recommend using major suppliers such as Bremic Fasteners or EDL as preferred suppliers.

The following bolt capacities are in accordance with AS/NZS 4600.

Grade 4.6 bolts

Minimum tensile strength = 400 MPa

Grade 8.8 bolts

Minimum tensile strength = 830 MPa

## 2.5.3 SELF-DRILLING SCREWS

Dimond supply a range of self-drilling Buildex® screws for fixing into both steel or timber.

When fixing into mild steel, a metal tek with a hardened drill point should be chosen.

When fixing into timber, a type 17 self-drilling screw should be used.

The selection guide below is an extract from the Buildex® Product Catalogue and Selection Guide 2001.

### Buildex® Metal Tek® – Fixing to Metal

Teks® self-drilling screws have a hardened drill point that will drill and thread in structural steel and mild steel. To choose the correct fastener it is necessary to select one where the length of the drill point is equal to or greater than the total thickness of the material to be drilled, and the table below gives the thickness limitations for each screw. The length should allow three threads beyond the metal being fastened to.

Taptites® require pre-drilled holes into which the fastener will thread.

### Selection Guide

Use	Dimensions gauge-threads per inch x length (mm)	Coating/material available	Thickness limitation (mm)
Hex Head fixing to steel purlins and girts	10-16x16	Climaseal 4	3.5
	12-14x20	Climaseal 4	4.5
	12-14x35	Climaseal 4	4.5
	12-14x45	Climaseal 4	4.5
	14-20x22	Climaseal 4	6.4
	14-10x25	Climaseal 4	3.0
	14-10x42	Climaseal 4	3.0
	14-20x65	Climaseal 4	6.4
Hex Head Series 500 Taptites pre-drilled holes into heavy gauge steel	12-24x32	Climaseal 3	12.5
	12-24x50	Climaseal 3	12.5

*Continued on next page*

### 2.5.3 SELF-DRILLING SCREWS *continued*

#### Buildex® Type 17 – Fixing to Timber

Type 17's are self-drilling screws for fixing into timber. To use the correct fastener, the screw length should be chosen to achieve the minimum amount of embedment given in the table below.

#### Selection Guide

Use	Dimensions gauge-threads per inch x length (mm)	Coating/material available
Hex Head fixing to timber purlins and girts	12-11x45	Climaseal 3
	12-11x50	Climaseal 4
	12-11x65	Climaseal 4
	14-10x50	Climaseal 4
	14-10x65	Climaseal 4

#### Material Grade

Buildex® fasteners are available in a choice of finishes that comply with AS 3566, and are made to a high standard of quality backed by strict inspection and testing procedures endorsed to ISO 9002.

#### Climaseal 3®

Climaseal coatings use a unique anti-corrosive coating system consisting of three distinct layers which combine to give exceptional corrosion protection:

1. A mechanically deposited zinc alloy coating giving excellent galvanic protection.
2. A chromate conversion coating to passivate the zinc alloy, further inhibiting coating loss.
3. An aluminium filled polyester coating with good all-round corrosion and long-term weathering resistance.

#### Climaseal 4®

Buildex® Climaseal 4® fasteners meet and exceed the AS 3566 Class 4 specification. Climaseal 4® is a unique coating system comprised of an alloy combination which gives exceptional galvanic protection. The coating thickness exceeds 50 µm, which is twice the thickness of an equivalent Class 3 product.

Climaseal 4® should be used in coastal areas where salt, wind, UV and moisture are prevalent, in tropical zones, in industrial areas subject to acid rain fall-out or drift or in areas of chemical or industrial environments.

It is particularly recommended for use in moderate and severe marine environments.

*Continued on next page*

### 2.5.3 SELF-DRILLING SCREWS *continued*

#### STRENGTH PROPERTIES

##### Ultimate Average Pullout Loads

#### Buildex® TEKS® Screws

Fixing to Grade G450

Gauge/TPI	Purlin Thickness					
	1.0 mm	1.2 mm	1.6 mm	1.9 mm	2.4 mm	3.2 mm
12-14	2826N	3174N	4428N	5525N	7620N	11140N
12-24	–	–	3945N	–	7375N	10420N
14-10	3010N	3441N	4594N	6260N	8650N	–

#### Buildex® Type 17 Screws

Fixing to F5 (F5/JD4 Timber – Radiata Pine)

Screw Type	Embedment Depth				
	20 mm	25 mm	30 mm	35 mm	50 mm
12g	–	–	12-11 x 45 mm Hex 5400N	12-11 x 50 mm Hex 6300N	–
14g	–	–	14-10 x 50 mm Hex 6500N	14-10 x 50 mm Hex 6900N	14-10 x 75 mm Hex 9700N

Fixing to F17 J3 Timber – Seasoned Hardwood

Screw Type	Embedment Depth				
	20 mm	25 mm	30 mm	35 mm	50 mm
12g	–	–	12-11 x 45 mm Hex 6400N	12-11 x 50 mm Hex 7900N	–
14g	–	–	14-10 x 50 mm Hex 7100N	14-10 x 50 mm Hex 9100N	14-10 x 75 mm Hex 13500N

#### Mechanical Properties

Screw Type	Single Shear Strength	Axial Shear Strength	Torsional Strength
Buildex® TEKS® Screws			
12g	8.8 kN	15.3 kN	13.2 Nm
14g	10.9 kN	19.7 kN	18.5 Nm
Buildex® Type 17 Screws			
12g	8.4 kN	13.9 kN	13.4 Nm
14g	10.2 kN	17.9 kN	18.5 Nm

Note: All values are ultimate averages obtained under laboratory conditions (NATA approved). Appropriate safety factors should be applied for design purposes. These figures apply to Buildex® (BX Head marked) products only.