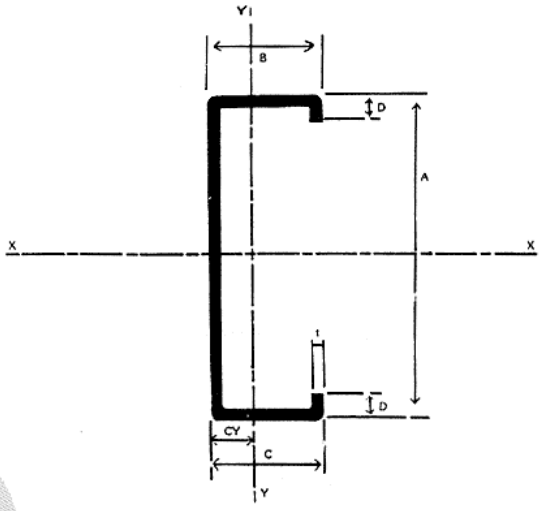
HIGH-TENSILE GALVANISED C-PURLINS

High-Tensile Galvanised C-Purlins (Sections) are roll formed from high-tensile Zinc coated steel with base steel Thickness of 1.60 mm, 2.00 mm and 2.50 mm.

They are suitable for roofing and wall cladding supports and for structural frames of buildings. Due to the light weight and high strength of the steel and the Zinc-coated surface. High-Tensile Galvanised C-Purlins are versatile and economical and require minimal maintenance throughout the life span of the building.

MATERIAL SPECIFICATION

Base Steel Thickness	:	1.60 mm, 2.00 mm and 2.50 mm		
Steel Grade	:	ASTM A446 Grade E Modified [AS 1397-G450]		
Yield Stress	:	450 Mpa (minimum)		
Zinc Coating	:	275 g/m² minimum coating mass		
Mechanical Property	:	Y/P Min. 450 Mpa		
		T/S Min. 510 Mpa		
		E/L Min. 10%		
Tolerances	:	Depth	:	±1 mm
		Flange width	:	±2 mm
		Length	:	±3 mm
		Hole Centres	:	±1.5 mm



Dimensions

Section Identification	Section Dimensions				
	A	B	C	D	t
	mm	mm	mm	mm	mm
BSC 1610	102	51	51	16	1.6
BSC 2010	102	51	51	16	2.0
BSC 2510	102	51	51	16	2.5
BSC 1612	127	51	51	16	1.6
BSC 2012	127	51	51	16	2.0
BSC 2512	127	51	51	16	2.5

Section Identification	Section Dimensions				
	A	B	C	D	t
	mm	mm	mm	mm	mm
BSC 1615	153	71	71	16	1.6
BSC 2015	153	71	71	16	2.0
BSC 2515	153	71	71	16	2.5
BSC 1620	203	71	71	16	1.6
BSC 2020	203	71	71	16	2.0
BSC 2520	203	71	71	16	2.5

Properties

Section Identification	Mass	Area	XX-AXIS			YY-AXIS			
			IX	ZX	RX	IY	ZY	RY	CY
	kg/m	mm²	10^6mm⁴	10^3mm³	mm	10^6mm⁴	10^3mm³	mm	mm
BSC 1610	3.05	373	0.60	11.77	40.6	0.14	4.11	19.5	18.24
BSC 2010	3.72	442	0.76	14.84	41.9	0.18	5.46	20.3	18.60
BSC 2510	4.60	534	0.95	18.56	42.7	0.22	7.01	20.9	19.05
BSC 1612	3.20	408	1.00	15.72	50.0	0.15	4.29	19.4	11.08
BSC 2012	3.94	510	1.25	19.67	50.1	0.19	5.49	19.5	16.42
BSC 2512	4.89	638	1.56	24.56	50.1	0.24	7.13	19.6	17.35
BSC 1615	4.01	512	1.99	26.30	62.3	0.34	6.90	25.8	21.69
BSC 2015	4.92	598	2.48	32.42	64.4	0.41	8.61	26.2	23.36
BSC 2515	6.01	731	3.11	40.65	65.2	0.50	10.24	26.3	24.11
BSC 1620	4.70	572	3.80	37.44	80.8	0.37	7.09	25.1	19.18
BSC 2020	5.74	698	4.75	46.80	82.5	0.45	9.39	25.4	20.16
BSC 2520	7.03	855	5.94	58.52	83.4	0.61	12.23	26.8	20.80

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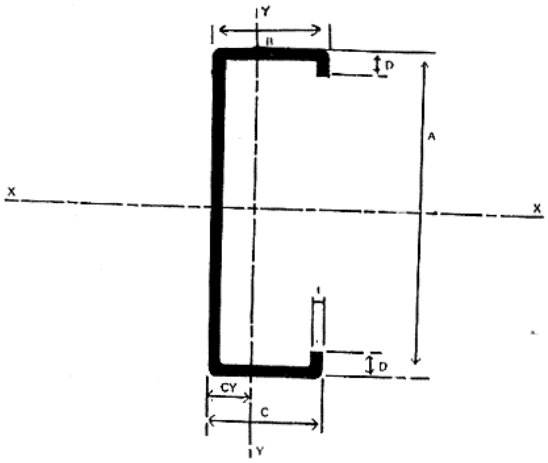
HIGH-TENSILE GALVANISED C-PURLINS (OTHER AVAILABLE SIZES)

The following purlin sizes provide an easy reference.

Section Identification	Dimensions					Mass
	A	B	C	D	t	
	mm	mm	mm	mm	mm	kg/m
SC100-16	100	50	50	14	1.6	2.78
SC100-20	100	50	50	14	2.0	3.45
SC150-16	150	65	65	16	1.6	3.84
SC150-20	150	65	65	16	2.0	4.77
SC150-25	150	65	65	16	2.5	5.93
SC200-16	200	75	75	20	1.6	4.82
SC200-20	200	75	75	20	2.0	6.00
SC200-25	200	75	75	20	2.5	7.46



DESIGN PRINCIPLE FOR PURLIN SELECTION TABLES

The purlin selection tables are derived basing on BS 5950 : Part 5 : 1987 "Code of Practice for design of cold formed sections".

1) Purlin is simply supported with pinned joints over supports.

2) **Roof Pitch**
The purlin selection tables are only applicable for roof pitch less than or equal to 30°.

3) **Loading**
Besides dead load arising from roof self weight, the purlins are designed based on a live load of 0.25KN/m² (Malaysian Building Bylaw Clause 63) and wind load (uplift) of 0.50KN/m² respectively.
i) 1.4 D.L. + 1.6 L.L. (The most severe inward loading combination)
ii) 1.0 D.L. + 1.4 W.L. (The most severe outward loading combination)

4) **Deflection**
Under serviceability limit state the limiting deflection under total load is L/150 whereas under live load only is L/180 (where L is the purlin span).

5) **Design Strength Py**
The design strength Py for purlins is to be taken as the minimum yield strength of 450N/mm².

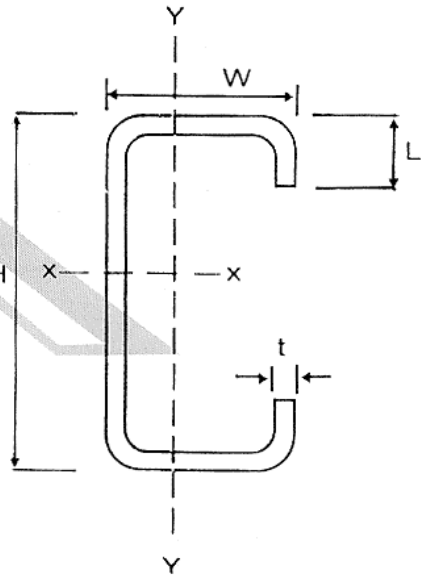


TABLE NO. 1 - PURLIN DIMENSIONS AND PROPERTIES

Section Identification	Dimensions				Mass per unit length	Area	Effective section modulus		Full section modulus		Second moment of Area		Radius of Gyration	
	H	W	L	t			Zex	Zey	Zxx	Zyy	Ixx	Iyy	rxx	ryy
	mm	mm	mm	mm	kg/m	mm²	10^3mm^3	10^3mm^3	10^3mm^3	10^3mm^3	10^6mm^4	10^6mm^4	mm	mm
SC100-16	100	50	14	1.6	2.78	355	11.36	3.60	11.60	3.82	0.579	0.125	40.4	18.8
SC100-20	100	50	14	2.0	3.45	440	14.22	4.52	14.30	4.65	0.713	0.153	40.3	18.6
SC150-16	150	65	16	1.6	3.84	489	21.78	4.51	23.60	6.31	1.770	0.282	60.2	24.0
SC150-20	150	65	16	2.0	4.77	608	28.44	5.67	29.20	7.74	2.187	0.346	60.0	23.9
SC150-25	150	65	16	2.5	5.93	755	35.80	7.08	35.90	9.44	2.696	0.422	59.8	23.6
SC200-16	200	75	20	1.6	4.82	614	34.11	6.28	38.50	8.94	3.848	0.472	79.2	27.7
SC200-20	200	75	20	2.0	6.00	764	44.89	7.92	47.70	11.00	4.768	0.580	79.0	27.6
SC200-25	200	75	20	2.5	7.46	950	58.07	9.93	58.90	13.50	5.893	0.710	78.8	27.3

Note : Effective section modulus are calculated based on the effective cross section which taken into consideration of local buckling effect (Section Four BS5950 : Part 5 : 1987).

HIGH-TENSILE GALVANISED C-PURLINS

PURLIN SELECTION TABLES FOR ROOFING APPLICATION

The following purlin selection tables provide an easy reference for selection of appropriate purlin size in accordance with the bay width or column spacing of the building.

These tables can be generally used in Singapore and Malaysia. However, for optimum designs where specific roofing and insulation loads are to be used or for any other structure or for application outside Singapore and Malaysia, contact CHYE HIN HARDWARE PTE LTD for free technical advice.

TABLE NO. 2 - PURLIN SELECTION TABLE

Roof decking (0.61 mm TCT at 6.55kg/m^2 distributed load) on C-Purlin

Span mm	Purlin spacing 1200 mm c/c	Purlin spacing 1500 mm c/c	Purlin spacing 1800 mm c/c	Purlin spacing 2100 mm c/c
5000	SC100-16	SC100-20	SC150-16	SC150-16
6000	SC150-16	SC150-16	SC150-16	SC150-20
7000	SC150-20	SC200-16	SC200-16	SC200-16
7500	SC200-16	SC200-16	SC200-20	SC200-16
8000	SC200-16	SC200-16	SC200-16	SC200-16
9000	SC200-16	SC200-16	SC200-20	SC200-25
10000	SC200-20	SC200-25	--	--
11000	SC200-25	--	--	--

TABLE NO. 3 - PURLIN SELECTION TABLE

Roof decking (0.61 mm TCT at 6.55kg/m^2 distributed load) on
50mm thk insulation wool (32 kg/m^3) on
1 layer Aluminium Foil on
1 layer Chicken mesh on C- Purlin

Span mm	Purlin spacing 1200 mm c/c	Purlin spacing 1500 mm c/c	Purlin spacing 1800 mm c/c	Purlin spacing 2100 mm c/c
5000	SC100-20	SC100-20	SC150-16	SC150-16
6000	SC150-16	SC150-16	SC150-16	SC150-20
7000	SC150-20	SC200-16	SC200-16	SC200-16
7500	SC200-16	SC200-16	SC200-20	SC200-16
8000	SC200-16	SC200-16	SC200-16	SC200-20
9000	SC200-16	SC200-20	SC200-25	SC200-25
10000	SC200-20	SC200-25	--	--

Note : All purlins shall have one bridging at midspan except for purlins in shaded area where 2 bridging are provided at L/3 and 2L/3 between supports.

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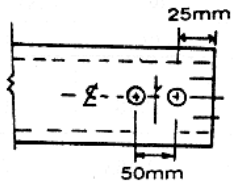
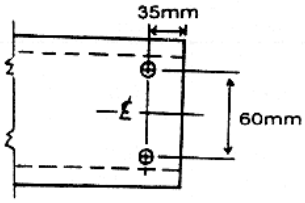
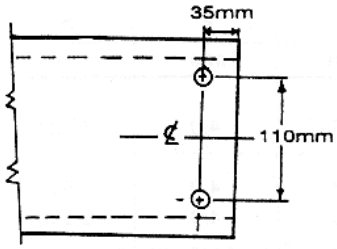
HOLING, CLEAT AND TIE ROD FOR C-PURLIN AND C-GIRTS



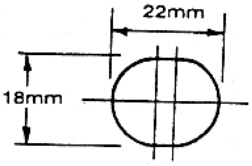
SC 100 Series
Hole size 14 mm dia.



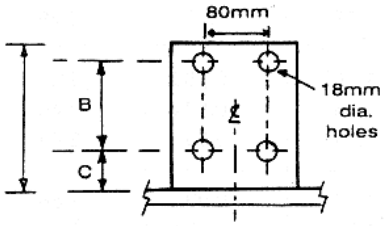
SC 150 Series



SC 200 Series

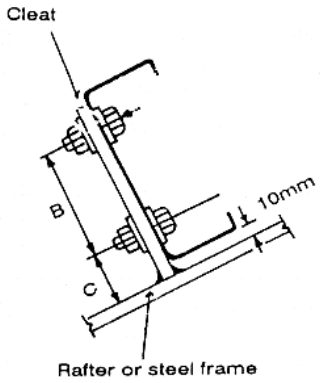


Cleats 8 mm Thickness

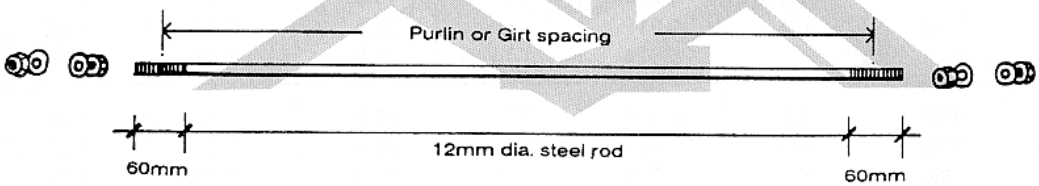


Cleat holes positions

C-Section Sizes	Dimensions in mm		
	A	B	C
150	145	60	55
200	195	110	55



DETAIL OF STANDARD TIE ROD



TYPICAL ARRANGEMENT OF SIMPLE SPAN C-PURLINS