

# Metal framing systems

The Metstrut metal framing system provides flexible and economical support solutions for mechanical and electrical services.

Four channel profiles are available as plain back or slotted back variants and each can be assembled into multiple configurations when additional load carrying capacity is needed. This is further complimented with a wide range of brackets and fasteners to achieve almost any framework assembly and configuration.

Metal framing systems can be found in almost all building sectors and in a wide range of applications.

Often used as a first fix component, Metstrut systems are used to support cable trays, cable ladders and other items of capital equipment.

## **Cut-to-length service**

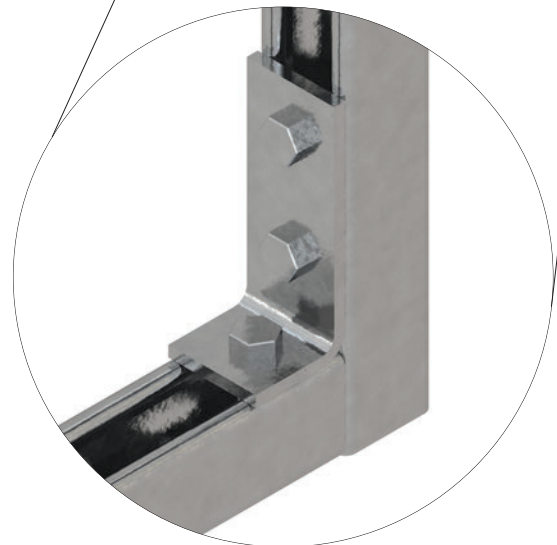
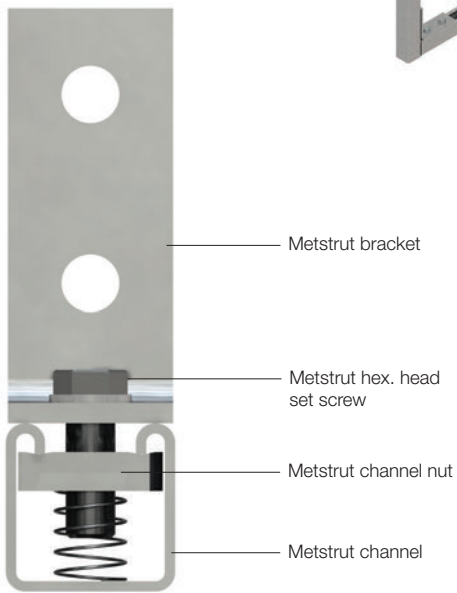
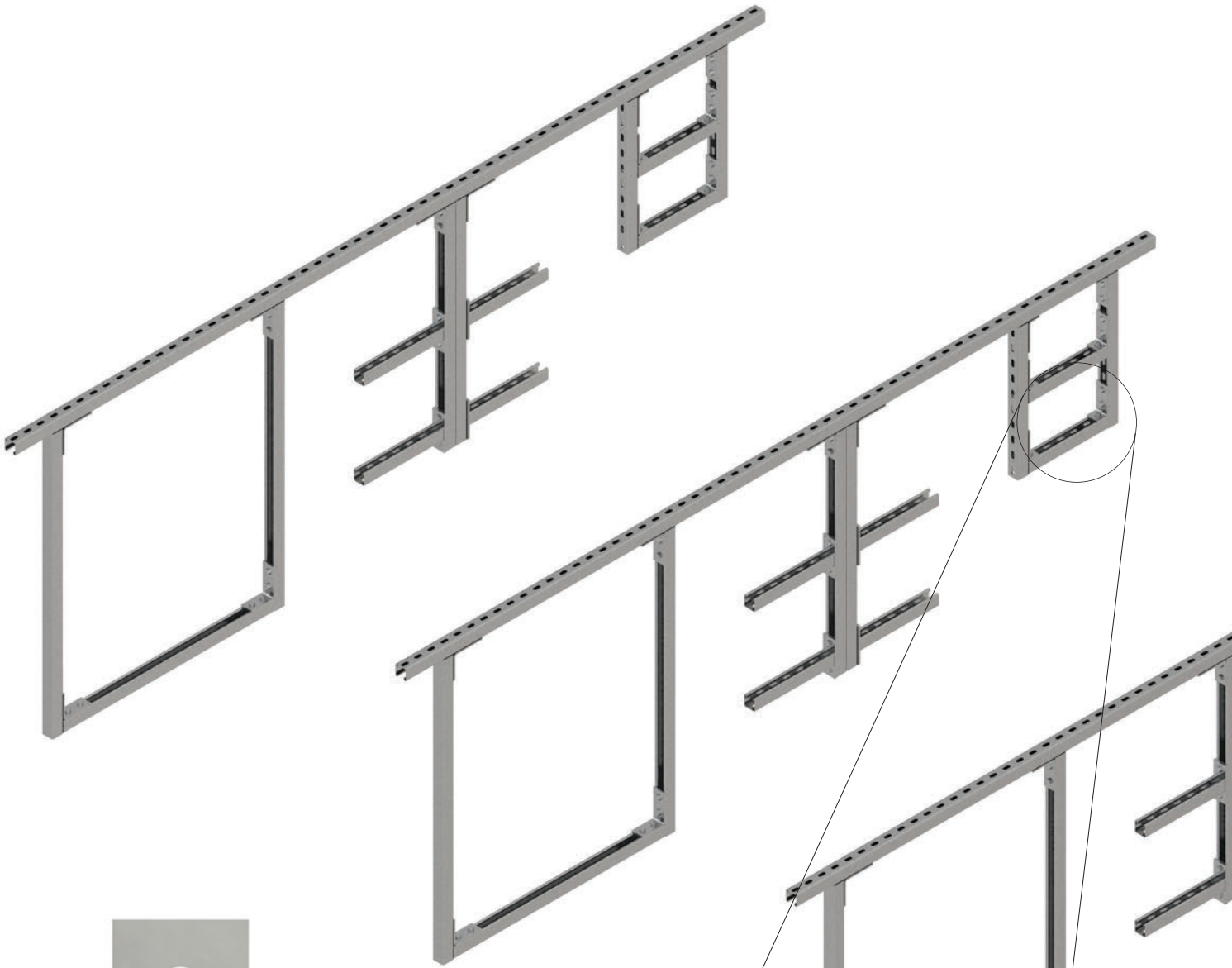
Metstrut offers a competitive cut-to-length service. By cutting in process the integrity of the pre galvanised coating is maintained on the cut end.

This service reduces the potential for waste when cut on site and provides substantial labour savings.

## **Pre fabrication service**

Considerable savings can be made on site by prefabrication modules and bracketry. Metstrut offers this service see page 86.





**Always use the complete Metstrut system**

# Standards

The Metstrut metal framing system comprises of single and combination channels, assembly brackets, channel nuts and fasteners. The integration of these items in their use, forms the basis of the system and as such should be purchased as a complete system.

The Metstrut metal framing system conforms to BS 6946:1988, the British Standard Specification for Metal channel cable support systems for electrical installations.

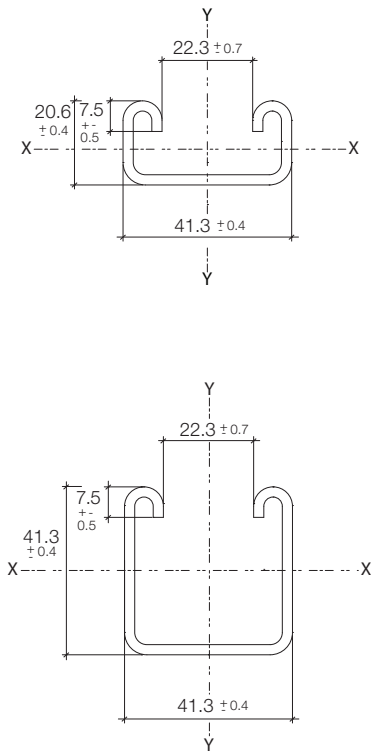
Independent testing has been carried out to verify the load tables for the various channels and to determine pull out and slip performance of the channel nuts when used as a system.

It is this system integrity that needs to be maintained for all installations to meet site safety requirements.

The material used for the Metstrut channels meets and surpasses the minimum yield strength of 250 N/mm<sup>2</sup> and brackets have a minimum yield strength of 170 N/mm<sup>2</sup>.

### Sectional dimensions

The Standard requires channel sections to meet the dimensional requirements stated when measured not less than 150mm from the end. Twist will not be greater than 2.5 degrees per metre and bow shall not exceed 5mm for channel 3m in length and 10mm for channel 6m in length, when measured at the centre of the length.



### Safe working slip and pull-out loads

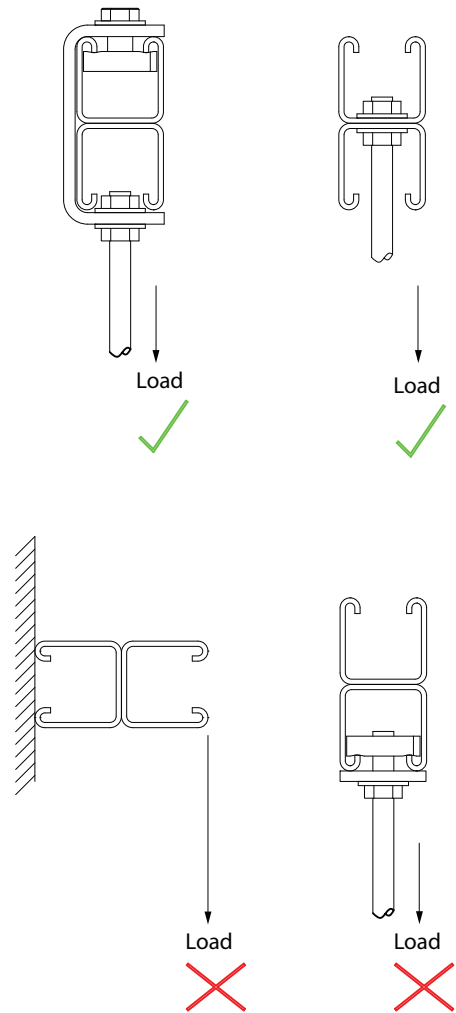
These have been determined by carrying out the tests in accordance with the method stated in section 8 of the standard. It should be noted that the channel nuts are a vital component within the system and the numerous imported products do not necessarily carry the same load and should never be mixed with Metstrut systems.

### Marking

Metstrut channels are marked at regular intervals along their length in the production process. The standard requires the name of the manufacturer and BS 6946:1988 Brackets and other components are marked by labelling the packaging.

### Combination channels

Channels that are required in multiple configurations e.g. back to back channel, are supplied spot welded as standard. These channels should always be fully supported at each end under the bottom face and the load should never be hung from just the lips of the bottom channel. Spot welding should never be loaded in tension or the load applied as a bending moment.



### Material specification

1. Channels: manufactured from steel complying with BS EN 10326:2004 pre galvanised, BS EN 10025-2:2004 mild steel hot dip galvanised after manufacture to BS EN 1461:1999 and BS EN 10088-2:2005 stainless steel grade 316L.

2. Brackets: manufactured from steel complying with BS EN 10025-2:2004 mild steel hot dip galvanised after manufacture to BS EN 1461:1999 and BS EN 10088-2:2005 stainless steel grade 316L.

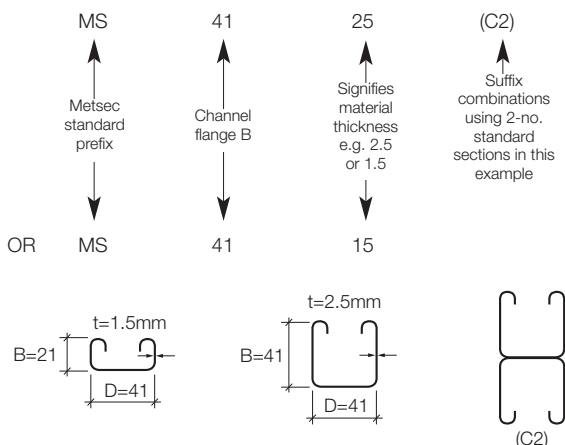
3. Fixings: bolts, hexagon nuts, screws and washers manufactured from steel complying with DIN938/8, DIN 933/8.8, BS4320 and zinc plated and CR3 passivated or hot dip galvanised after manufacture to BS EN 1461:1999. Stainless steel to BS EN 10088-2:2005 grade 316L A4.

### Dimensions and tolerances

In accordance with BS 6946:1988 Metal Channel Cable Support Systems for Electrical Installations.

### Channel notation

Metsec channel references are serialised for easy recognition and use, eg: channel series MS4125 comprises single channel or combinations of channel within the basic section profile thus:



### Load tables

Comprehensive load tables are provided for each channel series:

MS4125 series - page 68

MS2125 series - page 69

MS4115 series - page 70

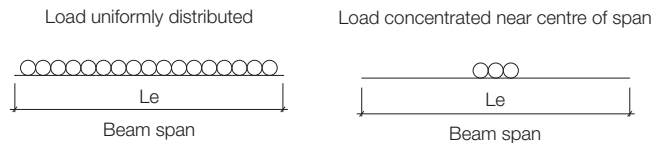
MS2115 series - pages 71

Slotted sections - pages 72-3

### Basis of design and formulation of load tables

- Safe loads calculated in accordance with BS 5950:Part 5:1998 Code of Practice for Design of Cold Formed Sections.
- Minimum Yield Stress (Ys) 280N/mm<sup>2</sup> (Z 28 material).
- Beams assumed simply supported and provided with adequate lateral restraint over the given span.
- Beam loads are applied through the shear centre of the section in the direction indicated in the tables.

5. Alternative beam safe load tables are provided for a uniformly distributed load or load concentrated near the centre of the span.eg:



6. Beam loads and corresponding deflections are calculated at a stress of 175N/mm<sup>2</sup> i.e.: using a global factor of safety of 1.6 to determine safe working loads from limit state analysis (ultimate stress ÷ 1.6 = 175N/mm<sup>2</sup>).

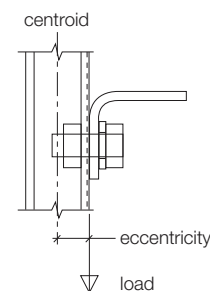
Beam safe loads tabulated with corresponding deflections may be used in the rare case where excessive deflection does not impair the strength or efficiency of the structure or its components or cause damage to the supported work.

Alternative safe loads are tabulated with deflections limited to span/200 or span/360 at the discretion of the designer and recommended where deflections are critical.

It is easily recognisable from the tables whether the design of the beam is governed by deflection or stress on a given span i.e.: the critical load is highlighted in colour.

7. Column effective lengths shall be determined by the designer in accordance with Table 9 of BS 5950: Part 5: 1998.

8. Beam loads are generally applied at the column face via the connection bracket. Therefore column safe load tables are provided allowing for this eccentricity of load from the centroid of the section.



### Alternative combinations

For safe loads on alternative combinations not tabulated please refer to Metsec Technical Department.

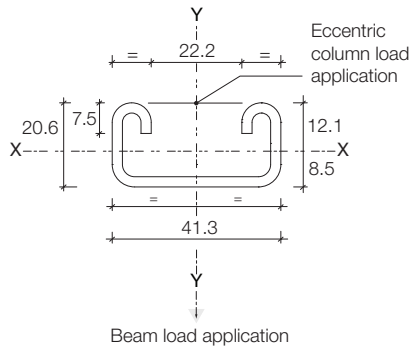
### Stainless steel

The mechanical properties of stainless steel are significantly different from those for carbon steel and safe load tables must not be used for sections in this material. Please consult Metsec Technical Department for advice.



Section properties										Safe load tables										
										Le (m)	Safe working loads in kg		Def. limit	Def. limit	Safe working loads in kg		Def. limit	Def. limit	Safe column loads	Safe column loads
Area	Wt	lxx	Zxx	Zxx	rx	lyy	Zyy	ryy	Load		Def.	span/200 (kg)	span/360 (kg)	Load	Def.	span/200 (kg)	span/360 (kg)	kg at centroid	kg at face	
2.35	1.85	1.21	1.00	1.43	0.72	5.44	2.63	1.52	0.6	237	2.64	237	150	118	2.11	118	93	2978	894	
			(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	0.7	203	3.59	198	110	101	2.87	101	69	2471	821	
			cm <sup>3</sup>	cm <sup>3</sup>					0.8	177	4.68	151	84	89	3.75	89	53	2019	747	
									0.9	158	5.94	120	66	79	4.75	75	42	1657	677	
									1.0	142	7.33	97	54	71	5.86	61	34	1375	613	
									1.1	129	8.87	80	44	65	7.09	50	28	1156	556	
									1.2	118	10.55	67	37	59	8.44	42	23	984	505	
									1.3	109	12.38	57	32	55	9.91	36	20			
									1.4	101	14.36	49	27	51	11.49	31	17			
									1.5	95	16.49	43	24	47	13.18	27	15			
									1.6	89	18.76	38	21	44	15.00	24	13			
									1.7	84	21.18	34	19	42	16.95	21	12			
									1.8	79	23.74	30	17	39	19.00	19	10			
									1.9	75	26.45	27	15	37	21.16	17	9			
									2.0	71	29.31	24	13	35	23.45	15	8			
									2.1	68	32.31	22	12	34	25.86	14	8	$\propto \frac{Le}{r_{xx}}$	>180	
									2.2	65	35.46	20	11	32	28.38	13	7			
									2.3	62	38.76	18	10	31	31.01	11	6			
									2.4	59	42.20	17	9	30	33.77	11	6			
									2.5	57	45.80	16	9	28	36.63	10	5			
									2.6	55	49.53	14	8	27	39.63	9	5			
									2.7	53	53.42	13	7	26	42.74	8	5			
									2.8	51	57.45	12	7	25	45.95	8	4			
									2.9	49	61.62	12	6	24	49.29	7	4			
									3.0	47	65.95	11	6	24	52.76	7	4			

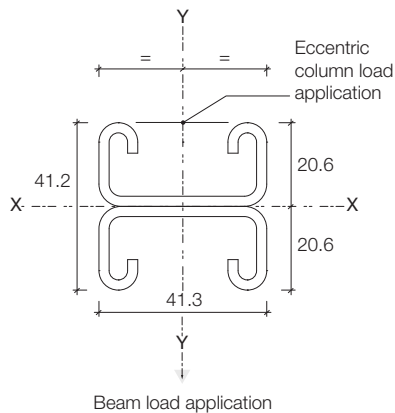
MS2125



Area	Wt	lxx	Zxx	Zxx	rx	lyy	Zyy	ryy	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
4.71	3.70	5.78	2.81	2.81	1.11	10.88	5.27	1.52	667	1.55	667	667	334	1.24	334	334	7582	1765															
			(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	0.7	572	2.11	572	526	286	1.69	286	286	7214	1720														
			cm <sup>3</sup>	cm <sup>3</sup>					0.8	501	2.76	501	403	250	2.21	250	250	6733	1665														
									0.9	445	3.50	445	318	222	2.80	222	199	6140	1601														
									1.0	400	4.32	400	258	200	3.46	200	161	5484	1528														
									1.1	364	5.22	364	213	182	4.17	182	133	4835	1451														
									1.2	334	6.22	322	179	167	4.97	167	112	4243	1372														
									1.3	308	7.29	274	152	154	5.84	154	95	3726	1295														
									1.4	286	8.46	237	131	143	6.77	143	82	3284	1221														
									1.5	267	9.71	206	115	133	7.77	129	72	2908	1150														
									1.6	250	11.05	181	101	125	8.84	113	63	2589	1084														
									1.7	236	12.47	161	89	118	9.98	100	56	2317	1022														
									1.8	222	13.98	143	80	111	11.19	89	50	2084	964														
									1.9	211	15.58	129	71	105	12.47	80	45	1884	910														
									2.0	200	17.26	116	64	100	13.81	72	40																
									2.1	191	19.03	105	58	95	15.23	66	37																
									2.2	182	20.89	96	53	91	16.72	60	33																
									2.3	174	22.83	88	49	87	18.27	55	30																
									2.4	167	24.86	81	45	83	19.89	50	28																
									2.5	160	26.98	74	41	80	21.58	46	26																
									2.6	154	29.18	69	38	77	23.35	43	24																
									2.7	148	31.46	64	35	74	25.18	40	22																
									2.8	143	33.84	59	33	72	27.07	37	21																
									2.9	138	36.30	55	31	69	29.04	34	19																
									3.0	133	38.84	52	29	67	31.08	32	18	$\propto \frac{Le}{r_{yy}}$	>180														

MS2125-C2

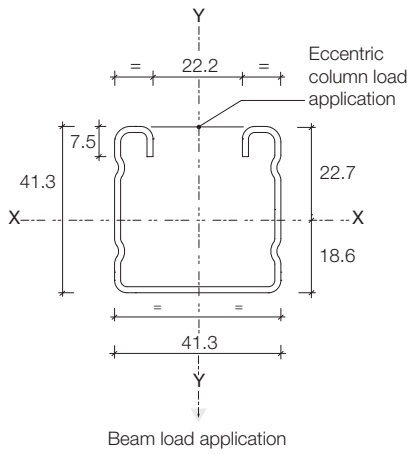
(Combination comprising two MS2125)



# Metal framing systems

Section properties										Safe load tables																												
										Le (m)	Safe working loads in kg uniform (kg) Load		Def. limit span/200 (mm) Def.	Def. limit span/360 (kg)	Safe working loads in kg concentrated (kg) Load		Def. limit span/200 (kg)	Def. limit span/360 (kg)	Safe column loads kg at centroid	Safe column loads kg at face																		
Area	Wt	lxx	Zxx	Zxx	rxx	lyy	Zyy	ryy		0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0				
cm <sup>2</sup>	kg/m	cm <sup>4</sup>	(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm		523	448	392	349	314	285	261	241	224	209	196	185	174	165	157	149	143	136	131	125	121	116	112	108	105				
			cm <sup>3</sup>	cm <sup>3</sup>						1.41	1.92	2.51	3.17	3.92	4.74	5.64	6.62	7.68	8.81	10.03	11.32	12.69	14.14	15.67	17.27	18.96	20.72	22.56	24.48	26.48	28.55	30.71	32.94	35.25				
2.14	1.69	4.99	2.20	2.68	1.53	6.14	2.97	1.69		523	448	392	349	314	285	261	241	224	209	196	185	174	165	157	149	143	136	131	125	121	116	112	108	105				
										523	448	348	275	222	184	154	132	114	99	87	77	69	62	56	50	46	42	39	36	33	31	28	26	25				
										261	224	196	174	157	143	131	121	112	105	98	92	87	83	78	75	71	68	65	63	60	58	56	54	52				
										1.13	1.54	2.01	2.53	3.14	3.79	4.52	5.30	6.14	7.05	8.03	9.05	10.15	11.32	12.53	13.82	15.17	16.58	18.05	19.58	21.18	22.85	24.56	26.36	28.20				
										261	224	196	174	157	143	131	121	112	105	98	92	87	83	78	75	71	68	65	63	60	58	56	54	52				
										261	224	196	174	157	143	131	121	112	105	98	92	87	83	78	75	71	68	65	63	60	58	56	54	52				
										3297	3057	2743	2418	2109	1857	1625	1432	1270	1148	1033	934	862	788															
										1061	1015	957	897	836	782	727	677	631	594	556	522	495	466															

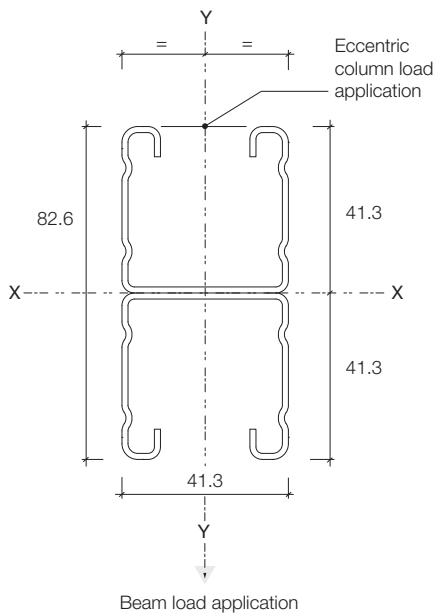
MS4115



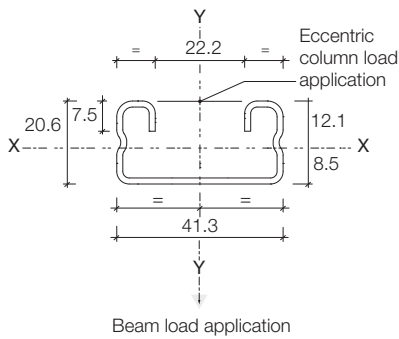
$\frac{\alpha Le}{r_{xx}} > 180$

Area	Wt	lxx	Zxx	Zxx	rxx	lyy	Zyy	ryy	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0			
cm <sup>2</sup>	kg/m	cm <sup>4</sup>	(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	1429	1225	1072	953	858	780	715	660	613	572	536	505	476	451	429	408	390	373	357	343	330	318	306	296	286			
4.29	3.38	24.82	6.01	6.01	2.41	12.27	5.94	1.69	1429	1225	1072	953	858	780	715	660	613	572	536	505	476	451	429	408	390	373	357	343	330	318	306	296	286			
									1429	1225	1072	953	858	780	715	660	613	572	536	505	476	451	429	408	390	373	357	343	330	318	306	296	286			
									715	613	536	476	429	390	357	330	306	286	268	252	238	226	214	204	195	186	179	172	165	159	153	148	143	138		
									0.61	0.84	1.10	1.40	1.73	2.09	2.48	2.91	3.38	3.88	4.40	4.98	5.58	6.22	6.89	7.59	8.33	9.11	9.92	10.76	11.65	12.56	13.50	14.49	15.50			
									715	613	536	476	429	390	357	330	306	286	268	252	239	239	213	192	173	157	143	131	120	111	102	95	88	82	77	
									7370	7245	7100	6931	6729	6486	6197	5862	5490	5099	4705	4326	3971	3646	3350	3083	2843	2628	2434	2260	2103	1961	1833	1717	1611			
									1901	1886	1868	1848	1825	1797	1765	1727	1684	1636	1585	1532	1478	1423	1370	1318	1267	1218	1170	1125	1081	1040	1000	962	925			

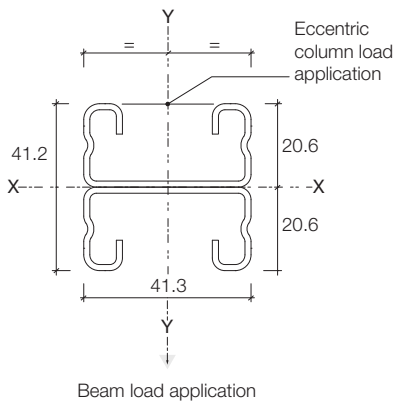
MS4115-C2  
(Combination comprising 2 no. MS4115)



Section properties										Safe load tables												
										Le (m)	Safe working loads in kg uniform (kg) Load		Def. limit span/200 (kg)	Def. limit span/360 (kg)	Safe working loads in kg concentrated (kg) Load		Def. limit span/200 (kg)	Def. limit span/360 (kg)	Safe column loads kg at centroid	Safe column loads kg at face		
Area	Wt	lxx	Zxx (top)	Zxx (btm)	rxx	lyy	Zyy	ryy														
1.52	1.20	0.89	0.75	1.03	0.77	3.68	1.78	1.55	0.6	179	2.69	179	111	89	2.15	89	69	2051	663			
									0.7	153	3.66	147	81	77	2.93	77	51	1748	612			
									0.8	134	4.78	112	62	67	3.83	67	39	1453	558			
									0.9	119	6.05	89	49	60	4.84	55	31	1203	506			
									1.0	107	7.46	72	40	54	5.98	45	25	1004	459			
									1.1	97	9.03	59	33	49	7.23	37	21	847	416			
									1.2	89	10.75	50	28	45	8.60	31	17	722	378			
									1.3	82	12.62	42	24	41	10.09	27	15	622	344			
									1.4	77	14.63	37	20	38	11.70	23	13					
									1.5	71	16.80	32	18	36	13.44	20	11					
									1.6	67	19.11	28	16	33	15.28	18	10					
									1.7	63	21.57	25	14	32	17.25	16	9					
									1.8	60	24.19	22	12	30	19.35	14	8					
									1.9	56	26.95	20	11	28	21.56	12	7					
									2.0	54	29.86	18	10	27	23.88	11	6					
									2.1	51	32.92	16	9	26	26.34	10	6					$\frac{\alpha Le}{r_{xx}} > 180$
									2.2	49	36.13	15	8	24	28.90	9	5					
									2.3	47	39.49	14	8	23	31.59	8	5					
									2.4	45	43.00	12	7	22	34.39	8	4					
									2.5	43	46.66	11	6	21	37.32	7	4					
									2.6	41	50.46	11	6	21	40.37	7	4					
									2.7	40	54.42	10	5	20	43.53	6	3					
									2.8	38	58.52	9	5	19	46.82	6	3					
									2.9	37	62.78	9	5	18	50.23	5	3					
									3.0	36	67.18	8	4	18	53.76	5	3					



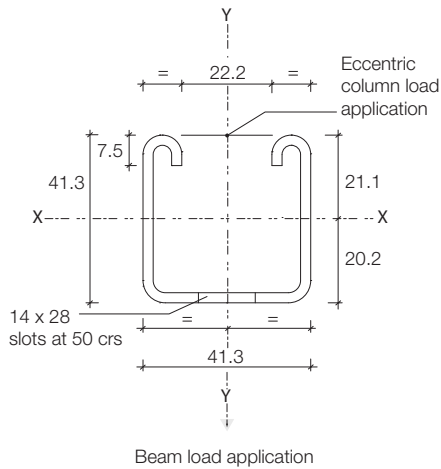
Area	Wt	lxx	Zxx (top)	Zxx (btm)	rxx	lyy	Zyy	ryy														
3.03	2.40	4.08	1.98	1.98	1.16	7.35	3.56	1.56	0.6	472	1.55	472	472	236	1.24	236	236	4938	1224			
									0.7	404	2.12	404	372	202	1.69	202	202	4729	1194			
									0.8	354	2.76	354	284	177	2.21	177	177	4458	1159			
									0.9	314	3.50	314	225	157	2.80	157	140	4117	1117			
									1.0	283	4.32	283	182	141	3.46	141	114	3725	1069			
									1.1	257	5.22	257	150	129	4.19	129	94	3319	1017			
									1.2	236	6.22	228	126	118	4.98	118	79	2934	963			
									1.3	218	7.30	194	108	109	5.84	109	67	2589	910			
									1.4	202	8.46	167	93	101	6.77	101	58	2290	859			
									1.5	189	9.71	146	81	94	7.77	91	51	2033	810			
									1.6	177	11.05	128	71	88	8.84	80	44	1813	763			
									1.7	166	12.48	113	63	83	9.98	71	39	1624	720			
									1.8	157	13.99	101	56	79	11.19	63	35	1463	679			
									1.9	149	15.59	91	50	74	12.47	57	32	1323	641			
									2.0	141	17.27	82	46	71	13.81	51	28	1202	606			
									2.1	135	19.04	74	41	67	15.23	46	26					
									2.2	129	20.90	68	38	64	16.72	42	24					
									2.3	123	22.84	62	34	62	18.27	39	22					
									2.4	118	24.87	57	32	59	19.89	36	20					
									2.5	113	26.98	52	29	57	21.59	33	18					$\frac{\alpha Le}{r_{yy}} > 180$
									2.6	109	29.19	48	27	54	23.35	30	17					
									2.7	105	31.47	45	25	52	25.18	28	16					
									2.8	101	33.85	42	23	51	27.08	26	15					
									2.9	98	36.31	39	22	49	29.04	24	14					
									3.0	94	38.86	36	20	47	31.09	23	13					



# Metal framing systems

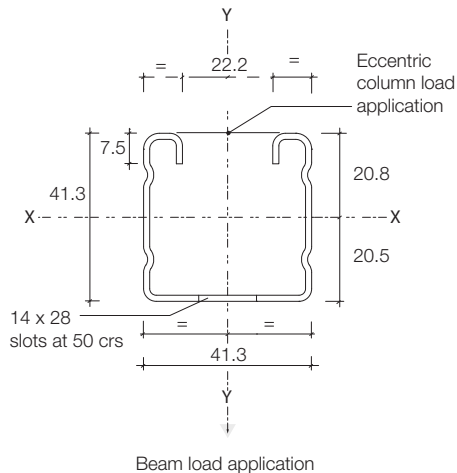
Section properties										Safe load tables										
										Le (m)	Safe working loads in kg uniform		Def. limit span/200	Def. limit span/360	Safe working loads in kg concentrated		Def. limit span/200	Def. limit span/360	Safe column loads kg at centroid	Safe column loads kg at face
Area cm <sup>2</sup>	Wt kg/m	Ixx cm <sup>4</sup>	Zxx (top) cm <sup>3</sup>	Zxx (btm) cm <sup>3</sup>	rx cm	Iyy cm <sup>4</sup>	Zyy cm <sup>3</sup>	ryy cm	Load (kg)		Def. (mm)	(kg)	Def. (kg)	Load (kg)	Def. (kg)	(kg)	(kg)			
3.04	2.53	6.20	2.94	3.07	1.43	9.28	4.50	1.75	0.6	698	1.52	698	698	349	1.22	349	349	4541	1491	
									0.7	599	2.06	599	564	299	1.65	299	299	4151	1416	
									0.8	524	2.70	524	432	262	2.16	262	262	3701	1333	
									0.9	466	3.41	466	341	233	2.73	233	213	3250	1247	
									1.0	419	4.21	419	276	210	3.37	210	173	2842	1163	
									1.1	381	5.10	381	228	190	4.08	190	143	2521	1090	
									1.2	349	6.07	345	192	175	4.85	175	120	2229	1019	
									1.3	322	7.12	294	163	161	5.70	161	102	2011	960	
									1.4	299	8.26	254	141	150	6.60	150	88	1808	902	
									1.5	279	9.48	221	123	140	7.59	138	77	1637	849	
									1.6	262	10.78	194	108	131	8.63	121	67	1494	802	
									1.7	246	12.18	172	96	123	9.74	108	60	1391	767	
									1.8	233	13.65	153	85	116	10.92	96	53	1286	729	
									1.9	221	15.21	138	77	110	12.17	86	48	1196	695	
									2.0	210	16.86	124	69	105	13.48	78	43	1118	664	
									2.1	200	18.58	113	63	100	14.86	70	39			
									2.2	190	20.39	103	57	95	16.32	64	36			
									2.3	182	22.29	94	52	91	17.83	59	33			
									2.4	175	24.27	86	48	87	19.42	54	30			
									2.5	168	26.34	80	44	84	21.07	50	28			
									2.6	161	28.49	74	41	81	22.78	46	26			
									2.7	155	30.72	68	38	78	24.58	43	24			
									2.8	150	33.04	63	35	75	26.43	40	22			
									2.9	144	35.44	59	33	72	28.35	37	21			
									3.0	140	37.92	55	31	70	30.37	35	19			

MS4125 - slotted



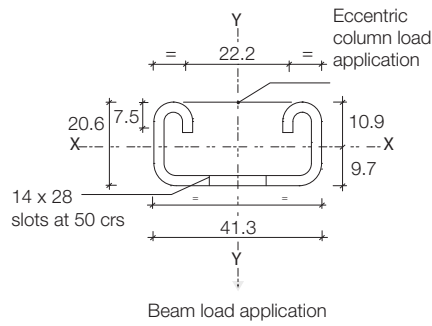
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										Le (m)	Safe working loads in kg uniform		Def. limit span/200	Def. limit span/360	Safe working loads in kg concentrated		Def. limit span/200	Def. limit span/360	Safe column loads kg at centroid	Safe column loads kg at face
Area cm <sup>2</sup>	Wt kg/m	Ixx cm <sup>4</sup>	Zxx (top) cm <sup>3</sup>	Zxx (btm) cm <sup>3</sup>	rx cm	Iyy cm <sup>4</sup>	Zyy cm <sup>3</sup>	ryy cm	Load (kg)		Def. (mm)	(kg)	Def. (kg)	Load (kg)	Def. (kg)	(kg)	(kg)			
1.93	1.61	4.25	2.01	2.10	1.48	6.10	2.96	1.78	0.6	479	1.52	479	479	239	1.22	239	239	2930	1012	
									0.7	410	2.07	410	386	205	1.65	205	205	2691	961	
									0.8	359	2.70	359	296	180	2.16	180	180	2385	899	
									0.9	319	3.41	319	234	160	2.73	160	146	2082	836	
									1.0	287	4.21	287	189	144	3.37	144	118	1803	773	
									1.1	261	5.10	261	156	131	4.08	131	98	1564	714	
									1.2	239	6.07	237	131	120	4.81	120	82	1364	660	
									1.3	221	7.12	202	112	110	5.70	110	70	1199	611	
									1.4	205	8.26	174	97	103	6.60	103	60	1061	567	
									1.5	192	9.48	151	84	96	7.59	95	53	947	527	
									1.6	180	10.79	133	74	90	8.63	83	46	850	491	
									1.7	169	12.18	118	66	84	9.74	74	41	778	463	
									1.8	160	13.66	105	58	80	10.92	66	37	708	434	
									1.9	151	15.21	94	52	76	12.17	59	33			
									2.0	144	16.86	85	47	72	13.49	53	30			
									2.1	137	18.59	77	43	68	14.87	48	27			
									2.2	131	20.40	70	39	65	16.32	44	24			
									2.3	125	22.30	64	36	62	17.83	40	22			
									2.4	120	24.28	59	33	60	19.42	37	21			
									2.5	115	26.34	55	30	57	21.07	34	19			
									2.6	110	28.49	50	28	55	22.80	32	18			
									2.7	106	30.72	47	26	53	24.58	29	16			
									2.8	103	33.04	43	24	51	26.43	27	15			
									2.9	99	35.44	41	23	50	28.35	25	14			
									3.0	96	37.93	38	21	48	30.35	24	13			

MS4115 - slotted



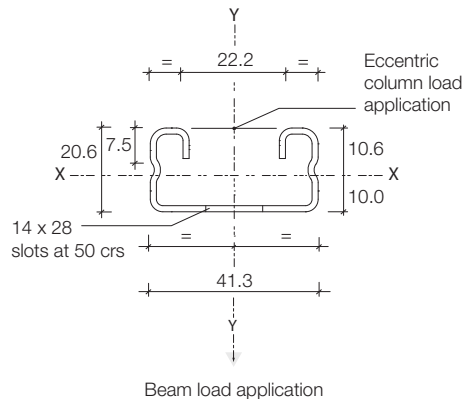
Section properties										Safe load tables										
										Le (m)	Safe working loads in kg		Def. limit	Def. limit	Safe working loads in kg		Def. limit	Def. limit	Safe column loads kg at centroid	Safe column loads kg at face
Load	Def.	span/200 (kg)	span/360 (kg)	Load	Def.	span/200 (kg)	span/360 (kg)													
Area	Wt	lxx	Zxx	Zxx	rxx	lyy	Zyy	ryy	0.6	216	2.94	216	123	108	2.36	108	77	2490	841	
cm <sup>2</sup>	kg/m	cm <sup>4</sup>	(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	0.7	186	4.00	162	90	93	3.20	93	56	2052	764	
			cm <sup>3</sup>	cm <sup>3</sup>					0.8	162	5.22	124	69	81	4.17	78	43	1671	688	
2.00	1.71	0.99	0.91	1.02	0.70	5.28	2.56	1.62	0.9	144	6.61	98	55	72	5.29	61	34	1368	617	
									1.0	130	8.16	80	44	65	6.53	50	28	1134	555	
									1.1	118	9.87	66	37	59	7.90	41	23	953	499	
									1.2	108	11.74	55	31	54	9.40	35	19	810	451	
									1.3	100	13.78	47	26	50	11.02	29	16			
									1.4	93	15.98	41	23	46	12.79	25	14			
									1.5	87	18.35	35	20	43	14.68	22	12			
									1.6	81	20.88	31	17	41	16.70	19	11			
									1.7	76	23.57	28	15	38	18.85	17	10			
									1.8	72	26.42	25	14	36	21.15	15	9			
									1.9	68	29.44	22	12	34	23.55	14	8			
									2.0	65	32.62	20	11	32	26.10	12	7			
									2.1	62	35.97	18	10	31	28.77	11	6	$\frac{\%Le}{r_{xx}} > 180$		
									2.2	59	39.47	16	9	30	31.58	10	6			
									2.3	56	43.14	15	8	28	34.51	9	5			
									2.4	54	46.98	14	8	27	37.58	9	5			
									2.5	52	50.97	13	7	26	40.78	8	4			
									2.6	50	55.13	12	7	25	44.11	7	4			
									2.7	48	59.45	11	6	24	47.56	7	4			
									2.8	46	63.94	10	6	23	51.15	6	4			
									2.9	45	68.59	9	5	22	54.87	6	3			
									3.0	43	73.40	9	5	22	58.73	6	3			

MS2125 - slotted



Area	Wt	lxx	Zxx	Zxx	rxx	lyy	Zyy	ryy	0.6	166	3.01	165	92	83	2.41	83	57	1738	632
cm <sup>2</sup>	kg/m	cm <sup>4</sup>	(top)	(btm)	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	0.7	142	4.09	121	67	71	3.28	71	42	1469	577
			cm <sup>3</sup>	cm <sup>3</sup>					0.8	124	5.35	93	52	62	4.28	58	32	1215	521
1.31	1.12	0.74	0.70	0.75	0.75	3.64	1.76	1.67	0.9	110	6.77	73	41	55	5.41	46	25	1003	468
									1.0	99	8.35	59	33	50	6.68	37	21	836	420
									1.1	90	10.11	49	27	45	8.09	31	17	704	378
									1.2	83	12.03	41	23	41	9.63	26	14	600	341
									1.3	76	14.12	35	20	38	11.29	22	12	516	309
									1.4	71	16.37	30	17	35	13.09	19	11		
									1.5	66	18.79	26	15	33	15.04	17	9		
									1.6	62	21.38	23	13	31	17.10	15	8		
									1.7	58	24.14	21	11	29	19.32	13	7		
									1.8	55	27.06	18	10	28	21.64	11	6		
									1.9	52	30.15	16	9	26	24.12	10	6		
									2.0	50	33.41	15	8	25	26.73	9	5		
									2.1	47	36.83	13	7	24	29.47	8	5		
									2.2	45	40.42	12	7	23	32.35	8	4	$\frac{\%Le}{r_{yy}} > 180$	
									2.3	43	44.18	11	6	22	35.34	7	4		
									2.4	41	48.11	10	6	21	38.49	6	4		
									2.5	40	52.20	10	5	20	41.77	6	3		
									2.6	38	56.46	9	5	19	45.17	5	3		
									2.7	37	60.89	8	5	18	48.70	5	3		
									2.8	35	65.48	8	4	18	52.39	5	3		
									2.9	34	70.24	7	4	17	56.19	4	2		
									3.0	33	75.17	7	4	17	60.13	4	2		

MS2115 - slotted



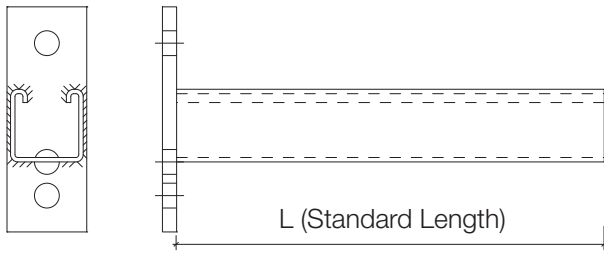
# Metal framing systems

## Cantilever arm details

### Cantilever arms - single

Finish: Post hot dip galvanised as standard, stainless steel grade 316, suffix **SS**

Ref	L (mm)	Wt (kg)
MS150A	150	0.77
MS300A	300	1.16
MS450A	450	1.56
MS600A	600	1.95
MS750A	750	2.35



Recommended safe loads (kg.) for arm bolted to 2.5mm thick channel (M12 bolt torque 65Nm)

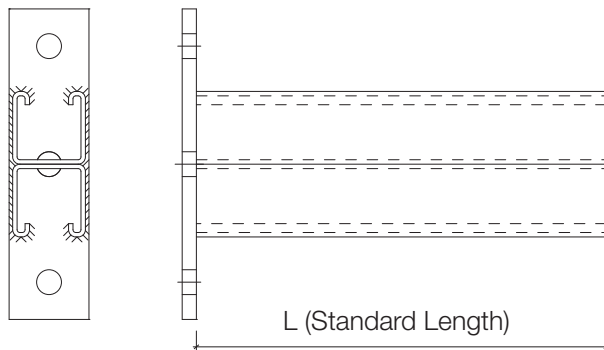
X (m)	Total uniformly distributed load	Concentrated load
0.10	684	542
0.15	608	377
0.20	542	283
0.25	452	226
0.30	377	188
0.35	323	162
0.40	283	141
0.45	251	126
0.50	226	113
0.55	206	103
0.60	188	94
0.65	174	87
0.70	162	81
0.75	151	75

NB: Arms have been independently tested (M12 bolt torque 65 Nm). Tabulated safe loads satisfy minimum factor of safety of 3 on continuous slip and limited design stresses in channel arms and their fixings.

### Cantilever arms - double

Finish: Post hot dip galvanised as standard, stainless steel grade 316, suffix **SS**

Ref	L (mm)	Wt (kg)
MS150E	150	1.26
MS300E	300	2.05
MS450E	450	2.85
MS600E	600	3.64
MS750E	750	4.43



Recommended safe loads (kg.) for arm bolted to 2.5mm thick channel (M12 bolt torque 65Nm)

X (m)	Total uniformly distributed load	Concentrated load
0.10	684	643
0.15	684	552
0.20	643	484
0.25	594	430
0.30	552	388
0.35	516	353
0.40	484	324
0.45	455	299
0.50	430	277
0.55	408	259
0.60	387	243
0.65	369	229
0.70	353	216
0.75	337	205

NB: Arms have been independently tested (M12 bolt torque 65 Nm). Tabulated safe loads satisfy minimum factor of safety of 3 on continuous slip and limited design stresses in channel arms and their fixings.

### Channel - plain

Finish: pre galvanised = **PG**, post galvanised = **HDG**, stainless steel grade 316 = **SS**

Length m		
3	MS4125PG3	
6	MS4125PG6	
3	MS4125PG3C2	
6	MS4125PG6C2	
3	MS2125PG3	
6	MS2125PG6	
3	MS2125PG3C2	
6	MS2125PG6C2	
3	MS4115PG3	
6	MS4115PG6	
3	MS4115PG3C2	
6	MS4115PG6C2	
3	MS2115PG3	
6	MS2115PG6	
3	MS2115PG3C2	
6	MS2115PG6C2	

### Channel - slotted

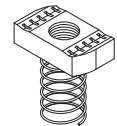
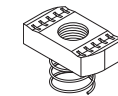
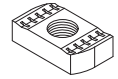
Finish: pre galvanised = **PG**, post galvanised = **HDG**, stainless steel grade 316 = **SS**

Length m		
3	MS4125PG3S11	
6	MS4125PG6S11	
3	MS4125PG3S14	
6	MS4125PG6S14	
3	MS2125PG3S11	
6	MS2125PG6S11	
3	MS2125PG3S14	
6	MS2125PG6S14	
3	MS4115PG3S11	
6	MS4115PG6S11	
3	MS4115PG3S14	
6	MS4115PG6S14	
3	MS2115PG3S11	
6	MS2115PG6S11	
3	MS2115PG3S14	
6	MS2115PG6S14	

### Channel nuts

Finish: **BZP** as standard, post hot dip galvanised suffix **HDG**, stainless steel grade 316, suffix **SS**

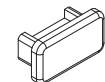
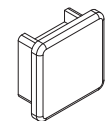
Nut type
Plain channel nuts
MPN06
MPN08
MPN10
MPN12
Short spring channel nuts
MSN06
MSN08
MSN10
MSN12
Long spring channel nuts
MLN06
MLN08
MLN10
MLN12



### PVC end caps

Black = **B**, White = **W**

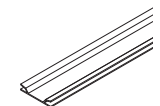
41mm deep channel
PVC41B
PVC41W
21mm deep channel
PVC21B
PVC21W



### Closure strip - 3m long

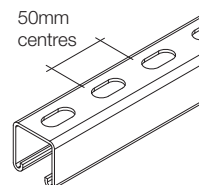
PVC white = **W**, PVC black = **B**, pre galvanised steel = **S**

MS41CLW3
MS41CLB3
MS41CLS3



### Slot sizes in channel

S11 = 11 x 22mm
S14 = 14 x 28mm



# Metal framing systems

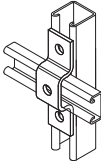
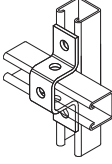
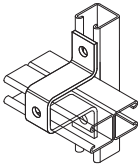
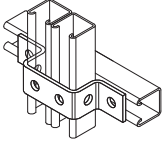
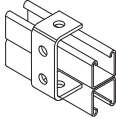
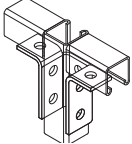
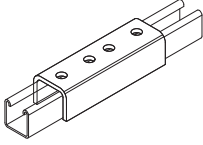
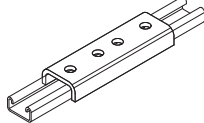
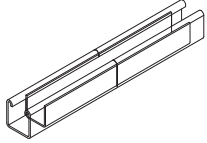
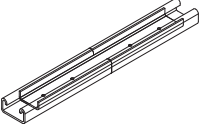
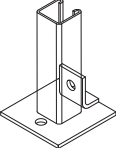
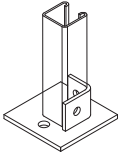
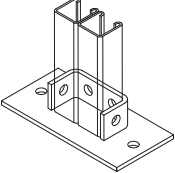
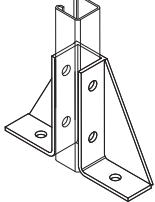
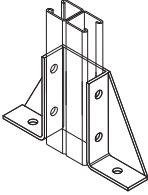
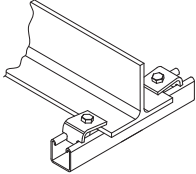
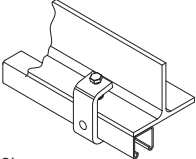
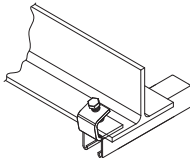
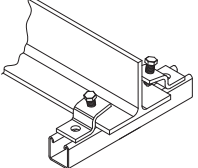
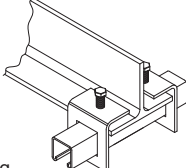
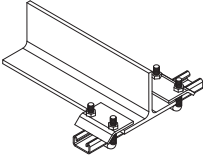
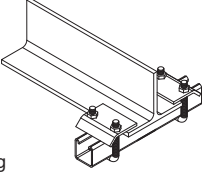
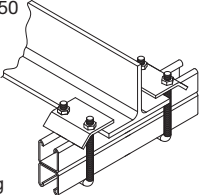
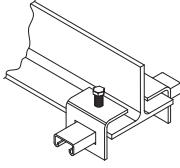
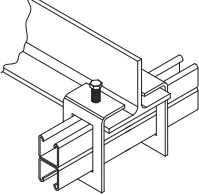
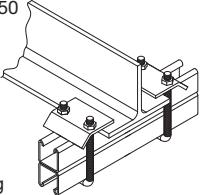
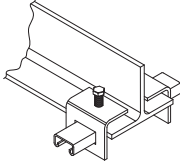
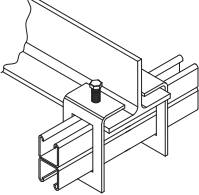
## Brackets

Finish: Post hot dip galvanised as standard, stainless steel grade 316, suffix **SS**

MSF501/06 MSF501/08 MSF501/10 MSF501/12		MSF502		MSF503	
MSF504		MSF505		MSF506	
MSF507		MSA600		MSA601	
MSA602		MSA603		MSA604	
MSA605		MSA606		MSA607	
MSA608		MSA609		MSA610	
MSA611		MSA612		MSA614	
MSA615		MSA616		MSA617	
MSZ700		MSZ701		MSZ702	

**Brackets**

Finish: Post hot dip galvanised as standard, stainless steel grade 316, suffix **SS**

MSU800		MSU801		MSU802	
MSU803		MSU804		MSU805	
MSU806		MSU807		MSU808	
MSU809		MBP304		MBP305	
MBP306		MBP307		MBP308	
MBC400		MBC401CP		MBC402CP	
SWL 270kg MBC403CP		SWL 230kg MBC404CP		SWL 200kg MBC405/65	
SWL 200kg MBC405/110		SWL 220kg MBC405/150		SWL 450kg MBC407	
SWL 450kg MBC408		SWL 450kg		SWL 220kg	
SWL 220kg		<p>Holes in brackets are 14mm in diameter for M12 hexagonal head bolts</p> <p>Beam clamps should be used in pairs. Maximum loadings given are per clamp when used in pairs.</p> <p>Where required, cone pont screws included.</p>			

# Product range summary

## Manufacturing solutions

Metstrut manufactures a broad range of cable management products that includes Cable Tray, Cable Ladder, Cable Trunking, Metal Framing and Rapid Installation systems.

Centrally located within the West Midlands close to major motorway networks, Metstrut is able to offer a National service through major electrical and mechanical distributors.

With over 10,000 m<sup>2</sup> of manufacturing and warehouse space, and state of the art equipment, a strong emphasis is placed on service, and a high level of 'on-time in-full' delivery performance is maintained.

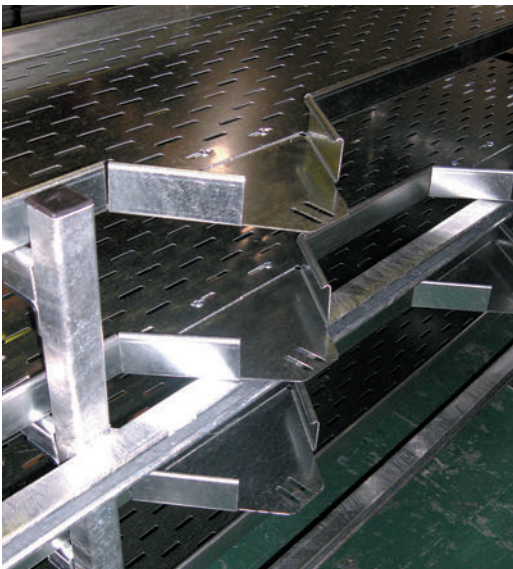
Comprehensive stocks are carried at all times and replenished through lean manufacturing principles.

With the ever-increasing demand from clients for value added products and services, Metstrut offers a comprehensive pre-fabrication facility that ranges from cut lengths of channel to bolted or welded frames both in 2D and 3D configuration. Cable tray, ladder and trunking can be pre-installed if required. This allows the contractor to schedule his requirements to overcome space and labour restrictions on site. Waste is also greatly reduced and site safety enhanced.



Significant cost savings can be achieved by opting for prefabrication off site and skilled electricians are released to do what they are best at.

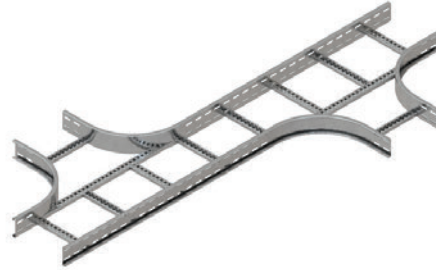
Metstrut also offers a full design service for its products and services to ensure the correct selection is made for the most cost effective solution. When required, CAD drawings are produced to ensure a full understanding of the solution is achieved.



## Product range

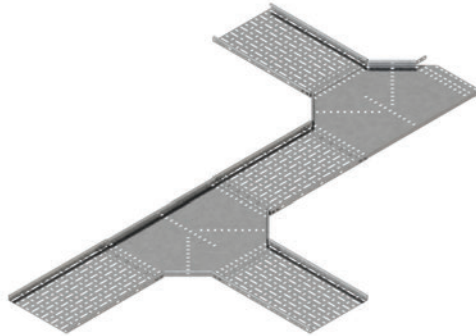
### Cable ladder systems

Metstrut cable ladder systems are widely accepted due to their strength to weight ratio and simplicity of design. Easily installed and with a comprehensive range of accessories, Metstrut cable ladder systems can be found in applications throughout the UK, Ireland and mainland Europe.



### Cable tray systems

Metstrut cable tray systems have been designed after considerable consultation with end users and installers to arrive at a final design that satisfies all of their requirements. Each cable tray range features a unique slotting pattern in the base and the return flange ranges have slotted sides. Additionally, each tray range has the same footprint to aid setting out when final loadings are not yet available.



### Cable trunking systems

Metstrut cable trunking systems are available as standard distribution trunking and also as lighting trunking. Manufactured on state of the art computer controlled equipment with a high level of automation, Metstrut cable trunking is of economic design to provide competitive solutions.



### Metal framing systems

Metstrut offers the traditional channel system in a variety of profiles and gauges with a large range of fittings and fasteners. The fully tested system can be reliably used for a wide application base for the support of mechanical and electrical services.



A Rapid Installation version is also available with a unique channel profile and pre-assembled fittings with integral fixings. By using this product range, installation times are drastically reduced.

Both systems can be fully integrated for total flexibility.

