



An Altus NZ Ltd brand
PO Box 14-107, Panmure, Auckland
30-32 Bowden Road, Mt Wellington, Auckland

www.customsolutionsnz.co.nz

Phone: 0800 322 555

Fax: 0800 388 555

Sales

FALSales@altus.co.nz



Randall Jordan
Business Manager



Tasi Steed
Account Manager



Junior Ka
Account Manager

Customer Support

cssupport@altus.co.nz



Janet Matau
Internal Sales Support



Karl Askew
Internal Sales Support

FOR FURTHER INFORMATION, PLEASE GO TO OUR WEBSITE:

www.customsolutionsnz.co.nz



INDEX

HOLLOWS

Square Hollows	1
Rectangular Hollows	3
Round Hollows	5

SOLIDS

Rods	8
Hexagon Bars	8
Square Bars	9
Flat Bars	10
Equal Angles	13
Unequal Angles	14
Channels	16
Tees	18
I-Beams	19
Top Hats & Zeds	20

MISCELLANEOUS

Cool Room	21
Flyscreen	25
Louvres	26
Marine / Transport	29
Mouldings & Trim	32
Security	33
Sign Blades	34
Thresholds	35
Din Rails	36
Flashings	37
Geometric Custom	38
Staking Angles	39
Miscellaneous	40

MANUFACTURING SPECIFICATIONS

Alloy Temper Guide	43
Alloy Characteristics & Applications	44
Mechanical Property Limits	45
Extrusion Tolerances	46
Extrusion Terminology	47
Surface Finishing Overview	49
Anodising Facts & Tips	50
Powdercoat Facts & Tips	52
Fabrication Overview	53





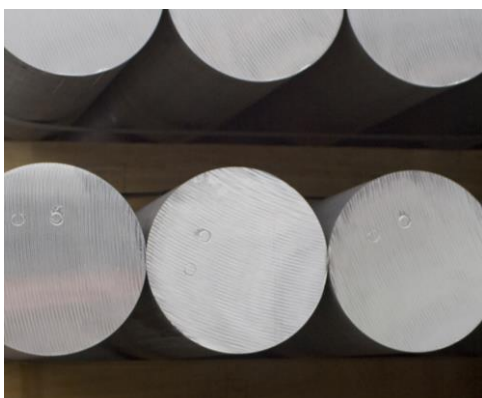
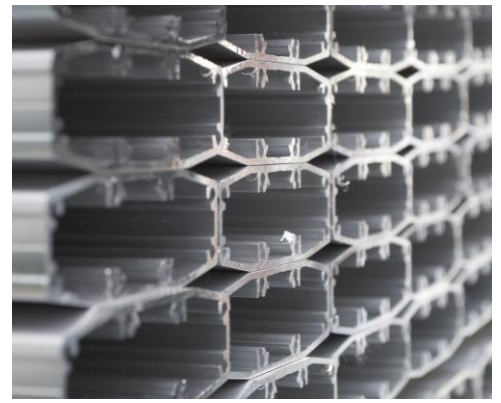
As well as providing a brief introduction to the use of aluminium extrusions, the purpose of this document is to stimulate interest by presenting some of the advantages, properties and applications of aluminium.

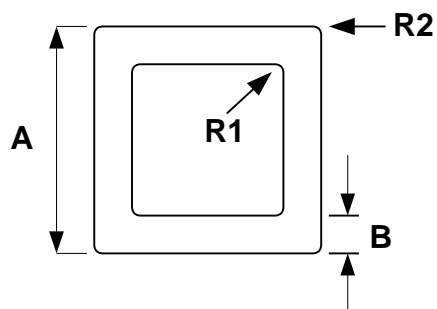
The data provided relates exclusively to Custom Solutions and Altus.

For further assistance we recommend you go to our website

www.customsolutionsnz.co.nz

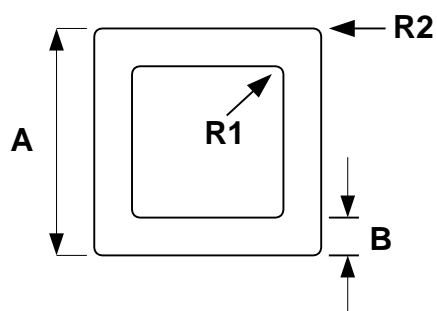
or consult our technical sales staff as early as possible. They will be able to assist you in designing economical, trouble free shapes.





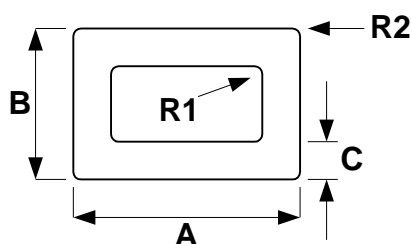
* = please request drawing

Die No	A	B	R1	R2	Mass (kg/m)	Perimeter (mm)
401911	12.7	1.5			0.182	51
404255	13	1.4		1.5	0.171	49
609788	16	1.4			0.221	64
404007*	19	1.5	1.5	3	0.269	71
609233	20	1.6			0.318	80
601847	20	3			0.553	80
609452*	25	1.4	0.6	2	0.350	97
609234	25	1.6			0.406	100
611603	25	1.8			0.452	185
404430*	25	1.8		2	0.443	97
609406*	25	1.8		3	0.432	95
609292	25	3			0.713	100
609719	25	4.5		2	0.991	97
404438	25.4	1.2			0.315	102
401790	25.4	3.18	3.18	3.18	0.766	96
609684	30	3			0.878	120
404057	31.8	3.3			1.020	127
601550*	38	2	1.6	3.6	0.756	146
612875*	38.1	1.6		2	0.624	149
609238	40	2			0.824	160
609442*	40	2	1.6	3.6	0.800	154
609289	40	3			1.203	160
614093	40	3	1	3	1.185	155
609626	40	4			1.555	159
611581	40	5			1.897	159



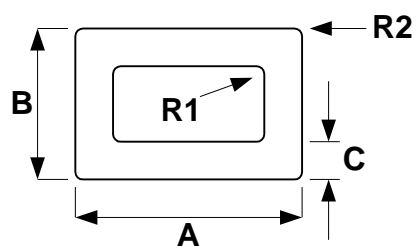
* = please request drawing

Die No	A	B	R1	R2	Mass (kg/m)	Perimeter (mm)
404431*	50	2		3	1.022	195
609543	50	2.5			1.287	200
609239	50	3			1.528	200
609450*	50	3	1	3	1.510	195
609431	50	3	1	4	1.494	193
609802*	50	5	2	4	2.411	193
609487*	50	6	1		2.864	200
609507*	57	3		6	1.672	218
404662	60	1.4	0.3	1	0.887	238
609709	60	3			1.854	240
610855	62	5		3	3.068	243
614295	65	2		3	1.347	255
401942	75	1.6			1.273	300
609240	75	3			2.333	300
611599	75	4.5			3.439	299
609241	100	3			3.154	400
609577	100	5	0.5	0.5	5.130	399
613503	100	6	6		6.197	399



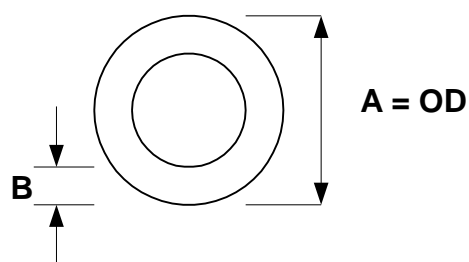
* = please request drawing

Die No	A	B	C	R1	R2	Mass (kg/m)	Perimeter (mm)
609348	20	10	2			0.282	60
609242*	25	12	1.6	0.4	2	0.284	71
603491	25.4	12.7	1.6			0.303	76
609619	30	20	2			0.496	99
609622*	38	25	2		3	0.617	121
609243	40	20	1.6			0.493	120
609695	40	20	3			0.878	120
603011	40	25	1.6			0.536	130
612667	42	20	2			0.628	123
601944	50	20	3			1.041	140
609804*	50	25	1.6		1	0.618	148
603010	50	25	2			0.770	150
609311	50	25	2.5			0.948	150
609444	50	25	3			1.122	150
609498*	50	25	3		4	1.081	143
603013	50	40	2			0.932	180
609244	50	40	3			1.361	180
609698	50	40	4			1.778	180
404663*	60	30	1.4	0.3	1	0.66	178
609514	60	40	3			1.528	200
608639	63.5	50.8	3.18			1.906	229
609503	65	30	2.5			1.220	190
404256	65	50	3			1.772	230
613432	75	25	1.6			0.839	199
601943	75	25	3			1.528	199
602970	75	40	6			3.350	230
603012	75	45	2			1.257	240
612302	75	50	3			1.935	475
404634*	75	50	4		2	2.527	247
614278	75	50	5		6	3.035	240
613118	76	38	6		2	3.308	225
604202	76.2	15.8	1.4			0.677	184
612876	76.2	38.1	3.18			1.860	228
402170	76.2	50.8	2.6	4.35	6.35	1.667	243
609351	80	40	2			1.257	240
609290	80	40	3			1.847	240
609702	80	40	4			2.428	240
609291	80	50	3			2.009	260
609691*	80	50	3		3	1.995	255
614258	80	70	6		6	4.413	289

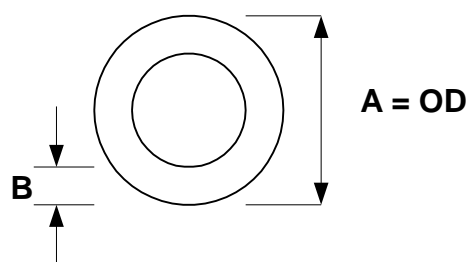


* = please request drawing

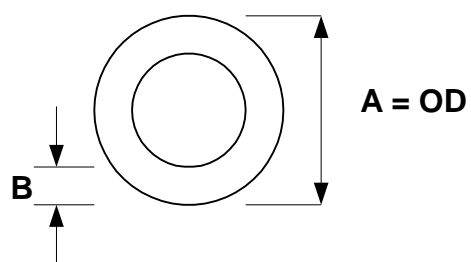
Die No	A	B	C	R1	R2	Mass (kg/m)	Perimeter (mm)
404291	100	25	2.2			1.438	250
609371	100	25	2.5			1.620	250
609246	100	25	3			1.935	250
609378	100	40	2			1.474	280
602818	100	45	3			2.252	290
609349	100	50	2			1.583	300
404009	100	50	3			2.341	300
609248*	100	50	3	1	4	2.307	293
609700	100	50	4			3.079	300
614259	100	50	5	1	6	3.713	289
609455	100	50	6			4.471	300
614294	100	50	6		6	4.430	291
609249	100	75	2.5			2.304	350
603019	101.6	25.4	2			1.333	254
609705	120	60	3			2.829	360
613119	125	65	5		5	4.820	371
614260	125	90	6	2	6	6.527	420
609250	150	50	3			3.154	400
609411*	150	50	3	1	4	3.120	393
611663*	150	50	5	5		4.975	382



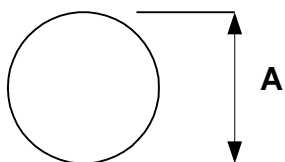
Die No	A = OD	B	Mass (kg/m)	Perimeter (mm)
609720	9.53	1.63	0.110	30
609582	12.5	1.3	0.124	39
609536	12.7	1.4	0.135	40
612230	13.4	2.5	0.232	42
609608	15.8	1.4	0.172	50
404604	15.88	1.22	0.152	50
609692	15.9	2.6	0.294	50
401787	16	1.2	0.151	50
609550	19	1	0.153	60
609591	19.05	1.2	0.182	60
609584	19.05	1.4	0.210	60
609251	20	1.6	0.251	63
609628	20	1.8	0.279	63
609252	20	2	0.306	63
609633	20	3.7	0.513	63
404569	20.6	5.2	0.682	65
609722	21	3.3	0.495	66
603511	22.2	1.4	0.247	70
404379	22.3	2.65	0.443	70
602925	25	1.2	0.243	78
609253	25	1.6	0.319	78
609254	25	3	0.562	78
612113	25	5	0.851	78
607909	25	5.25	0.883	78
609593	25.4	1.4	0.286	80
404761	25.4	2	0.398	80
609614	25.4	6.35	1.026	80
611062	28.58	1.42	0.328	90
404475	28.6	1.3	0.302	90
604530	28.6	3	0.654	90
609211	30	1.6	0.387	94
609623	30.2	6.8	1.350	95
404340	31	5	1.107	97
601279	31.75	1.4	0.362	100
601302	31.75	2.95	0.723	100
404063	31.8	2.7	0.669	100
404654	32	3	0.741	100



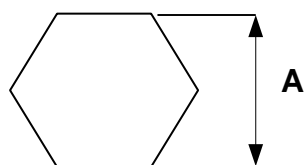
Die No	A = OD	B	Mass (kg/m)	Perimeter (mm)
404437	38	1.5	0.466	119
601280	38.1	1.4	0.437	120
603601	38.1	3	0.896	120
603597	38.1	4.4	1.262	120
404561	38.1	4.8	1.361	120
609259	40	2	0.647	126
609260	40	3	0.945	126
601286	41.25	1.4	0.473	130
613569	42.5	4.2	1.370	134
609445	44	4	1.357	138
613433	44	18	3.431	138
603600	44.45	3	1.059	140
601287	44.5	1.4	0.513	140
404066	44.5	1.7	0.619	140
404453	45	3	1.073	141
601289	47.6	1.4	0.551	150
609724	48	4	1.493	151
613989	48.4	2.6	1.014	152
609307	48.4	4.45	1.665	152
609264	50	1.6	0.657	157
609265	50	2	0.817	157
602926	50	3	1.200	157
609430	50	4	1.567	157
601290	50.8	1.4	0.589	160
603742	50.8	6	2.288	160
608826	51.3	2.25	0.940	161
609343	60	2	0.988	188
609392	60	3	1.456	188
611121	63	10	4.512	198
404456	63.5	3.3	1.691	200
603741	63.5	6	2.926	200
609413	65	3.5	1.833	204
609502	65	5	2.545	204
611636	65	6	3.014	204



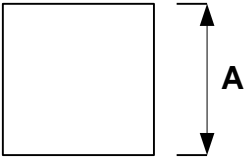
Die No	A = OD	B	Mass (kg/m)	Perimeter (mm)
609625	75	3	1.839	236
609266	75	6	3.525	236
404206	76.2	1.25	0.798	239
404332	76.2	1.65	1.047	239
404207	76.2	3.25	2.018	239
603740	76.2	6	3.573	239
611429	76.2	6.35	3.776	438
609618	78	2.3	1.482	245
612085	78	10	5.789	245
611526	80	4	2.588	477
613438	80	6	3.780	251
604062	88.9	2.9	2.123	279
603739	88.9	6	4.235	279
602823	100	3	2.468	314
611637	100	4	3.269	314
609310	100	6	4.802	314
611221	100	10	7.662	314
611352	100.7	6.85	5.473	316
611687	103	10	7.918	323
604065	114.3	6	5.532	359
611430	115	6.3	5.830	683
612108	119	8	7.560	373
609671	125	3	3.104	393
612404	125	6	6.079	393
611735	125	10	9.791	392
612209	127	3.25	3.424	399
603744	127	6	6.181	399
602769	140	3.5	4.067	440
612107	140	10	11.068	439
609017	150	3.5	4.349	471
612392	160	6	7.867	503
612677	160	10	12.771	503
613004	200	6	9.910	628



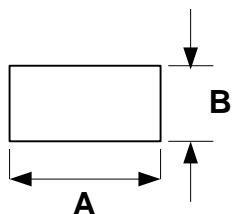
Die No	A	Mass (kg/m)	Perimeter (mm)
609673	6.35	0.086	20
609808	8	0.136	25
604046	9.5	0.192	30
404592	11.2	0.267	35
609001	12	0.306	38
601454	12.7	0.343	40
601444	15.85	0.535	50
609002	16	0.543	50
601393	19.05	0.772	60
613405	22.25	1.054	69
613322	23.8	1.206	75
609004	25	1.330	78
601222	25.4	1.373	80
404648	27.2	1.575	86
609005	30	1.916	94
603931	31.75	2.146	100
613306	33	2.318	103
601238	38.1	3.090	120
603928	44.45	4.205	140
601239	50.8	5.493	160
603930	63.5	8.582	200
612151	75	11.972	235



Die No	A	Mass (kg/m)	Perimeter (mm)
613063	11	0.274	37
612170	24	1.352	83

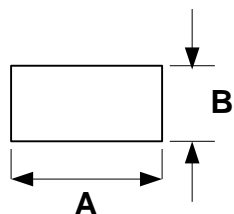


Die No	A	Mass (kg/m)	Perimeter (mm)
601769	12.7	0.437	51
603298	16	0.694	64
603420	19.05	0.983	76
603422	25.4	1.748	102
603424	31.75	2.732	127
603425	38.1	3.934	152
609023	50	6.775	200
603427	50.8	6.994	203
612603	70	13.277	278



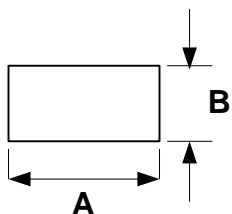
* = please request drawing

Die No	A	B	Mass (kg/m)	Perimeter (mm)
404323*	9	3	0.072	26
609078*	12	3	0.092	27
609024	12	3	0.098	30
609027	16	3	0.130	38
609030	16	6	0.260	44
404005	19	3	0.154	44
609031	20	3	0.163	46
609034	20	10	0.542	60
609035	25	3	0.203	56
611756	25	4.5	0.305	58
609036	25	5	0.339	60
609037	25	6	0.407	62
611736	25	9	0.609	67
601504*	25	10	0.619	61
612103	25	20	1.355	89
601259	25.4	4.8	0.330	60
604174	25.4	9.5	0.654	70
603441	25.4	12	0.826	75
601547	25.4	12.7	0.874	76
404249	25.5	4.7	0.325	60
609040	30	3	0.244	66
609796*	31.8	12.7	1.081	85
609329	32	3	0.260	70
611644	32	4.5	0.390	72
404155	32	6.5	0.564	77
611600	38	4.5	0.463	84
613872	38	7.5	0.772	90
601189	38.1	6.35	0.656	89
603848	38.1	9	0.926	94
404590	40	2	0.217	84
609043	40	3	0.324	86
609433*	40	6	0.629	87
609045	40	6	0.650	92
609046	40	10	1.084	100
609745	40	20	2.160	120
609049	45	3	0.366	96



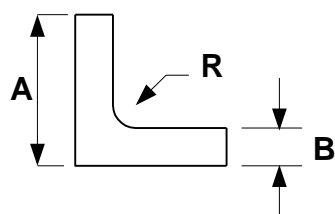
* = please request drawing

Die No	A	B	Mass (kg/m)	Perimeter (mm)
609051	50	3	0.407	106
609631	50	4.5	0.607	108
602906*	50	6	0.792	107
609053	50	6	0.813	112
609447	50	8	1.084	116
609578*	50	10	1.292	111
601551	50	10	1.355	120
609054	50	12	1.626	124
609098*	50	16	2.162	129
609491	50	19	2.575	138
609446	50	20	2.710	140
603410	50.8	12.7	1.748	127
603929	50.8	25.4	3.497	152
611566	60	3	0.487	125
609056	60	6	0.976	132
603297	60	10	1.626	140
612176	60	12	1.951	143
404360	65	5	0.881	140
609061	75	3	0.610	156
609063	75	6	1.220	162
609064	75	10	2.025	170
610839	75	12	2.439	173
603296	75	20	4.065	190
609066	75	25	5.081	200
609774	75	70	14.154	285
609284	80	3	0.648	166
609088*	80	6	1.275	167
404426	80	6	1.301	172
608443	80	8	1.728	176
609350	80	10	2.168	180
611850	90	10	2.439	199
609828	90	12	2.927	204



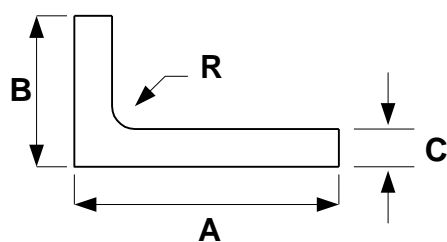
* = please request drawing

Die No	A	B	Mass (kg/m)	Perimeter (mm)
404513	100	1.6	0.434	203
609352	100	3	0.813	206
609604	100	5	1.354	209
609616*	100	5	1.354	209
609067	100	6	1.626	212
609448	100	8	2.168	216
404505	100	10	2.710	220
609068	100	12	3.252	224
609267	100	16	4.336	232
609070	100	25	6.775	250
609302	100	50	13.550	300
601229	101.6	6.35	1.748	216
613015	105	14	3.983	237
609072	120	12	3.902	264
609603	120	16	5.203	271
613011	120	32	10.406	303
613012	120	40	13.008	319
612397	125	10	3.387	269
604561	127	12.7	4.371	279
609391*	150	5	2.030	308
612099	150	6	2.439	311
611661	150	10	4.065	319
609074	150	12	4.878	324
609511	150	20	8.130	340
612757	150	25	10.161	349
611791*	150	25	12.137	401
612098	158	6	2.569	327
609340	160	10	4.336	340
612400	165	8	3.577	345
611791	180	25	12.137	401
611416	200	10	5.420	420
609076	200	12	6.504	424
609268	200	16	8.672	432
611326	200	20	10.840	439
609077	200	25	13.500	450



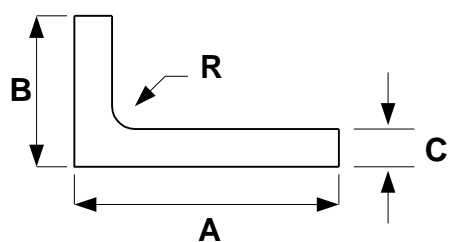
* = please request drawing

Die No	A	B	R	Mass (kg/m)	Perimeter (mm)
603265	12	1.6		0.097	48
609285	12	3		0.170	47
609273	16	1.6		0.132	64
601324	19.05	1.6		0.158	76
609113	20	1.6		0.167	80
601779	20	3		0.301	80
404643	22	1.5		0.173	88
404630	25	1.4		0.184	100
603266	25	1.6		0.210	100
609119	25	3		0.381	100
603706	25.4	1.15		0.155	102
609125	30	3		0.463	120
609127	30	6		0.878	120
612393	32	1.6		0.270	127
609332	32	3		0.496	128
604394	38	1.5		0.302	152
609275	40	1.6		0.340	160
609130	40	3		0.624	160
609710	40	4.5		0.917	160
609131	40	5		1.016	160
609716*	40	6	2	1.183	154
609132	40	6		1.203	160
609468	50	1.6		0.427	200
601466	50	3		0.789	200
609632	50	4.5		1.160	199
609135	50	5		1.287	200
609165*	50	5	5	1.302	198
609718*	50	6	2	1.507	194
609136	50	6		1.523	200
609140	60	3		0.951	240
609141	60	6		1.854	240
614001	75	4		1.582	299
609142	75	6		2.341	299
609621*	75	6	8	2.369	296
603757	76.2	2.9		1.175	305
603429	76.2	6		2.380	305
603417	76.2	9.5		3.679	305
609146	80	6		2.504	320
609147	100	6		3.154	400
609415	100	10		5.149	400
609172*	100	10	10	5.207	396



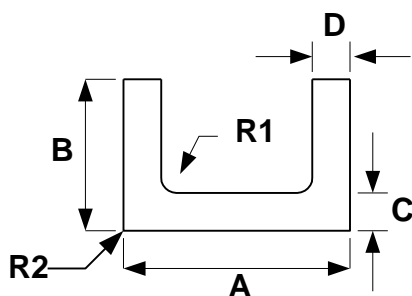
* = please request drawing

Die No	A	B	C	R	Mass (kg/m)	Perimeter (mm)
609111	20	12	1.6		0.132	64
609432	20	12	3		0.236	64
614287	25	16	1.6		0.170	82
609114	25	20	1.6		0.187	90
609122	25	40	3		0.504	130
404559	25.5	12.8	1.6		0.159	77
609648	30	12	1.6		0.174	83
404466	30	20	1.6		0.210	100
609330	32	25	3		0.439	114
601325	38.1	19.1	1.6		0.241	114
609293	40	12	1.6		0.218	104
609497	40	20	1.6		0.253	120
609116	40	20	3		0.462	120
609331	40	25	1.6		0.275	130
609122	40	25	3		0.504	130
611765	45	12	1.5		0.225	113
609652	50	12	1.6		0.262	124
609687	50	20	1.6		0.297	140
609123	50	25	1.6		0.317	150
609124	50	25	3		0.585	150
404357	50	38	5		1.125	176
609134	50	40	5		1.148	180

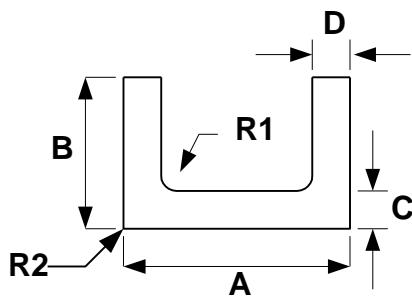


* = please request drawing

Die No	A	B	C	R	Mass (kg/m)	Perimeter (mm)
613344	60	20	3		0.626	159
609155	60	25	3		0.664	170
613345	60	30	3		0.707	179
609717*	60	30	6	2	1.345	173
613033	65	35	5		1.287	199
609809	70	20	1.6		0.383	180
404517	70	25	1.6		0.405	190
613885	70	40	2		0.585	219
602969	75	25	3		0.789	200
404001	75	50	4.5		1.469	250
609137	75	50	6		1.935	250
609645	80	40	3		0.947	239
609649	81	12	1.6		0.396	186
612165	85	20	1.6		0.448	209
611645	100	50	2		0.802	299
612333	100	50	4		1.582	299
609138	100	50	6		2.341	300
611664*	100	60	6	10	3.023	308
609512*	100	75	8	4	3.630	348
404384	102	25.5	3.2		1.078	255
612468	120	75	6		3.073	390
609689	125	40	6		2.585	330
613681	150	40	3		1.520	379
614334	150	75	4		2.395	449
609145*	150	75	6	6	3.582	447
609576	150	75	8		4.687	449

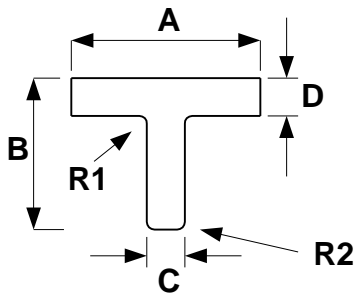


Die No	A	B	C	D	R1	R2	Mass (kg/m)	Perimeter (mm)
404086	9.6	9.6	1.6	1.6			0.111	54
603014	16	16	1.6	1.6			0.194	93
611571	17	25	2	2			0.341	129
609286	20	20	3	3			0.437	114
404096	22.4	22.4	3.2	3.2			0.527	128
612225*	24	3	1.5	1.5			0.108	55
613000	25	17	2	2			0.298	113
609178	25	20	2.5	2.5			0.405	125
404003	25	25	1.6	1.6			0.311	147
404004	25	25	3	3			0.561	144
609180	25	30	3	3			0.642	164
609760	25	50	3	3			0.964	244
609182	30	25	3	3			0.602	154
609287	32	25	3	3			0.616	158
609704	36	36	2.5	2.5			0.697	211
609531	38	38	3	3		0.8	0.876	220
404573	40	12	1.4	1.4			0.232	125
609354	40	12	3	3			0.472	122
404033	40	20	2	2			0.412	156
609183	40	20	3	3			0.599	154
609184	40	25	3	3			0.680	174
609185	40	40	3	3			0.927	234
404308	45	25	3	3			0.724	184
609624	50	10	2.5	2.5			0.438	134
609435*	50	25	2	2			0.468	197
609288	50	25	3	3			0.761	194
609470*	50	35	3	3	1.55		0.930	233
609187	50	50	3	3			1.166	294
603982	50.8	25.4	2.5	2.5			0.654	198
609813	53	25	1.5	1.5			0.406	202
404264	53.5	16	1.5	1.5			0.325	164
404635	70	30	1.6	1.6			0.550	257
404511*	70	30	2.5	2.5	1		0.848	254
609188	75	25	3	3			0.967	243
611744*	75	40	4.5	4	4		1.703	297
609190	75	40	6	6			2.325	298
609580*	76	38	3	3	3		1.193	295
604238*	76.5	20.2	1.55	2.4		1.55	0.558	227
609826*	87	45	4.5	4.5	5		2.078	341



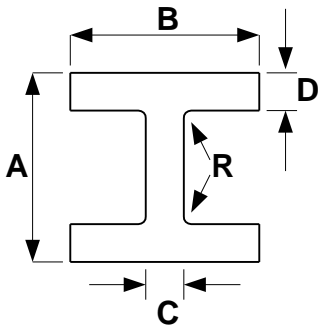
* = please request drawing

Die No	A	B	C	D	R1	R2	Mass (kg/m)	Perimeter (mm)
609191	100	25	3	3			1.171	294
612988	100	40	3	3			1.414	353
404044	100	50	4.5	4.5			2.329	391
609193	100	50	6	6			3.057	388
609206*	100	50	6	6	6		3.099	383
404316*	100	50	6	8	9		3.628	380
601203*	101.6	76.2	6.35	6.35	6.35		4.199	490
612331*	103.2	30	1.6	1.6		2	0.689	320
611839*	115	60	6	6	6	5	3.638	448
404613*	117	25	2.5	1.5	1.25	0.6	0.976	326
609208*	120	60	6	6	6		3.749	463
601202	127	76.2	9.5	9.5	6.4		6.751	534
609783	150	75	3.5	3.5			2.768	592
613218	150	75	5	5			3.929	589
611670*	150	75	6	6	2	0.5	4.613	578
609196	150	75	6	6			4.683	588
609210*	150	75	6	10	10		6.295	579
613422*	150	75	8	8	7	12	5.319	570
612768*	175	65	9.5	9.5	10		7.477	580
609741*	190	55	5	5	3		3.925	587



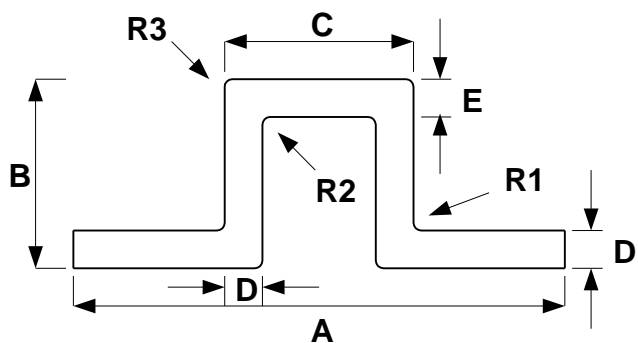
* = please request drawing

Die No	A	B	C	D	R1	R2	Mass (kg/m)	Perimeter (mm)
613790	19.8	36.5	1.6	1.6			0.235	111
609214	25	25	1.6	1.6			0.209	100
601823	25	25	3	3			0.382	100
612467	30	30	3	3			0.463	120
404709	38.1	38.1	1.6	1.6			0.323	152
601251	38.1	38.1	3.2	3.2			0.633	152
404608	40	20	1.5	1.5			0.238	120
609458	40	40	6	6			1.203	160
613024	40	50	4	5			1.068	172
609421*	40	50	6	6	6	1	1.404	172
613420	45	100	5	8			2.240	285
609218	50	50	3	3			0.789	200
613419	50	50	4	4	4		1.059	195
609457	50	50	6	6			1.528	200
610806	50	60	6	8	5	1	1.955	213
613421	50	70	4	8			1.774	235
609420*	50	75	6	6	6	1	1.973	242
609655	50	106	6	6			2.430	312
609422*	60	60	6	6	6	1	1.892	232
609396*	100	125	12	12	5		6.956	446
606552*	110	150	11	12			7.579	510



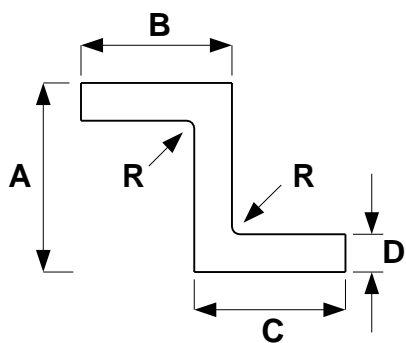
* = please request drawing

Die No	A	B	C	D	R	Mass (kg/m)	Perimeter (mm)
609548	25.5	15.6	1.6	1.6		0.232	110
404253	53	45	1.5	1.5		0.562	280
609221*	80	40	4	6	4	2.075	305
611161	100	75	8	10	5	5.856	473
609223*	125	50	5	5	5	2.959	430
609416*	140	90	8	8	8	6.735	607



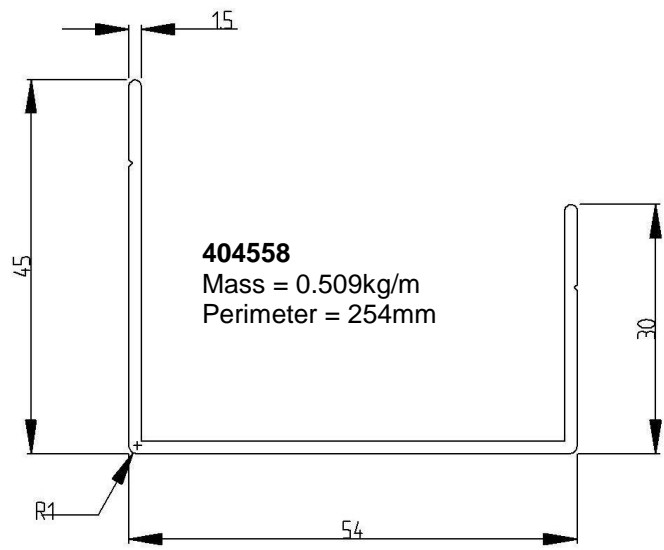
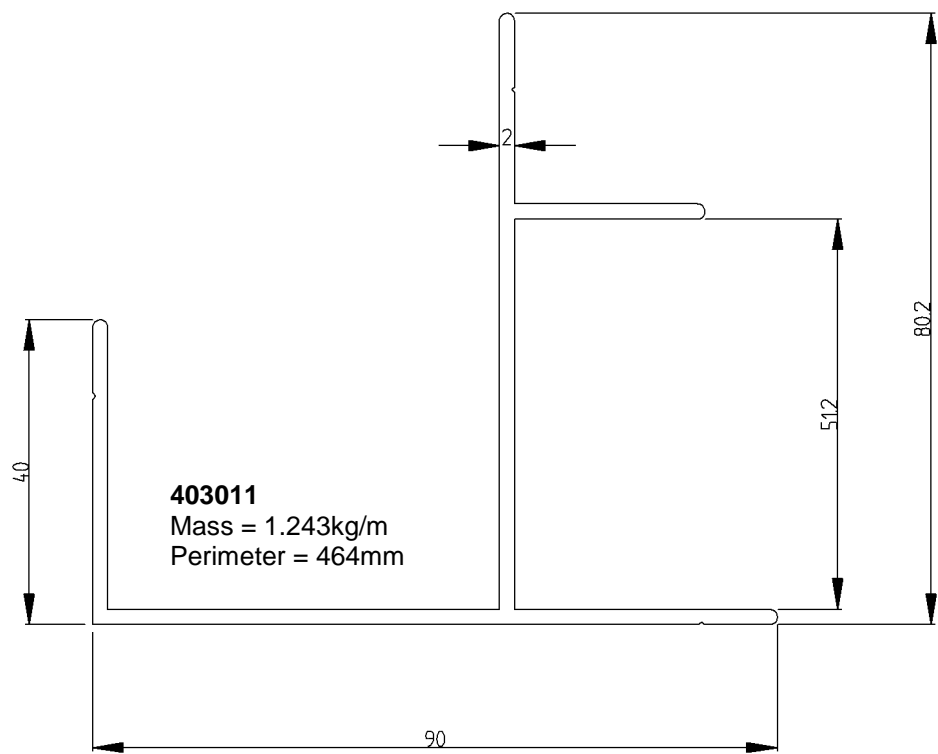
* = please request drawing

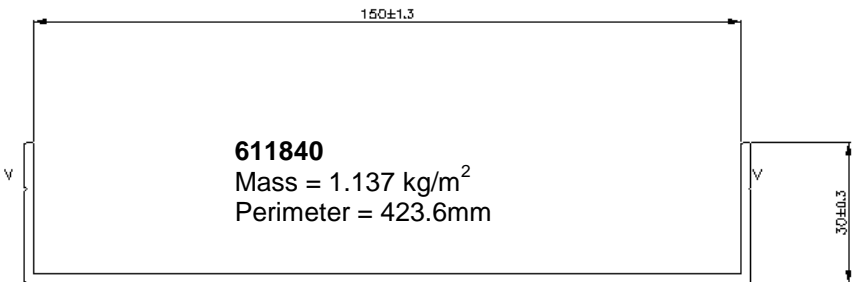
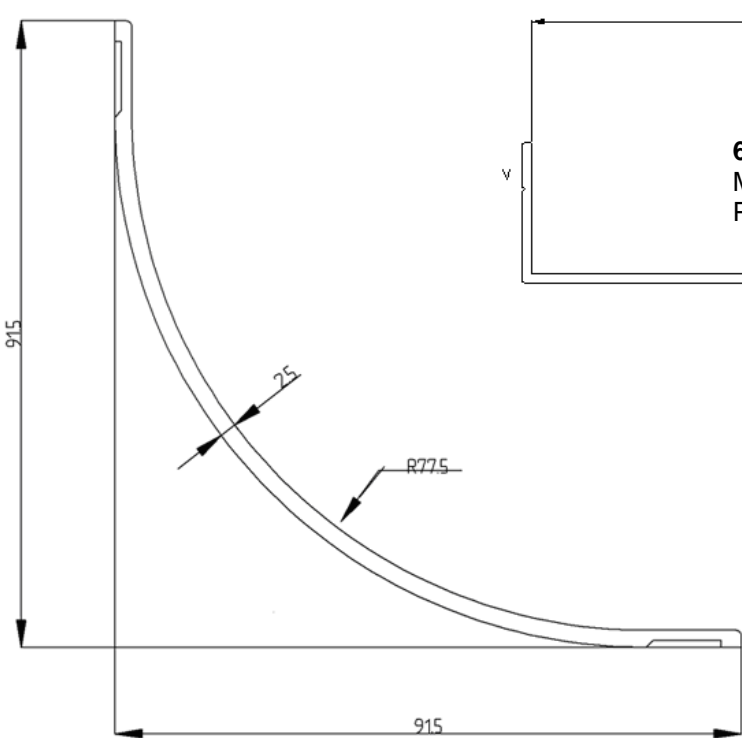
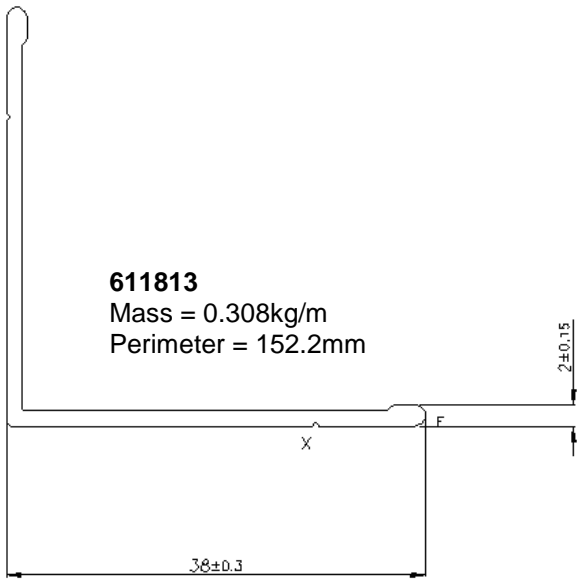
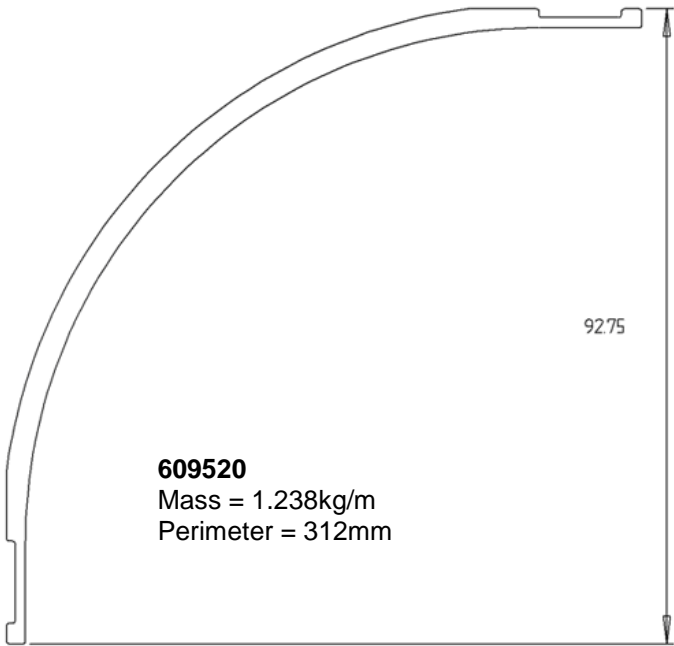
Die No	A	B	C	D	E	R1	R2	R3	Mass (kg/m)	Perimeter (mm)
404392*	50	16	25	1.6	1.6	1.4	1.4	3	0.324	152
404387*	55	28	24	2.4	3.2	2.4	2.4	4.8	0.689	201
601196*	57.15	28.55	23.8	1.5	1.5	2.35	2.35		0.742	214
601470*	64	32	32	3.2	3.2	3	3		0.969	243
611499	75	13	31	3	3			3	0.751	190



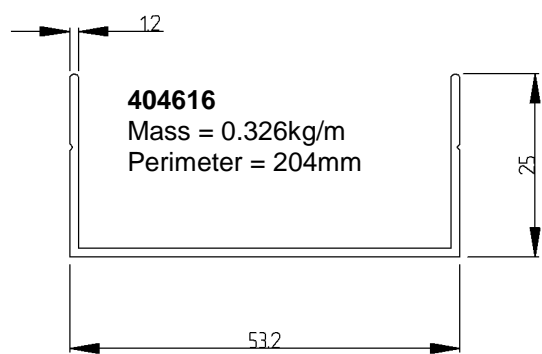
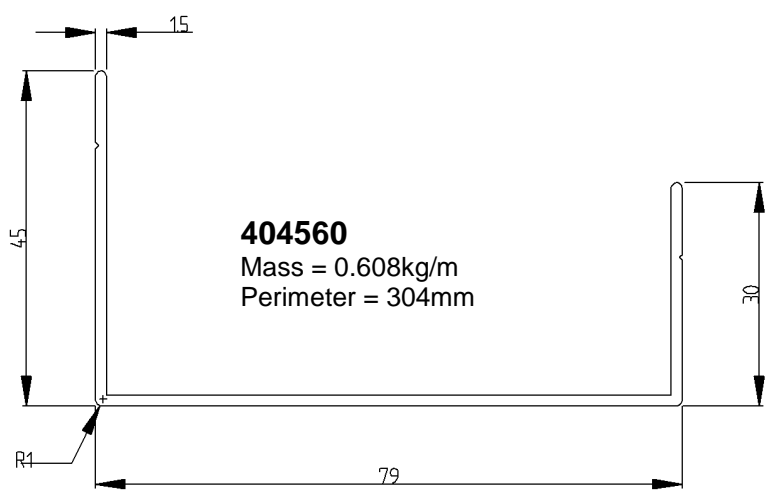
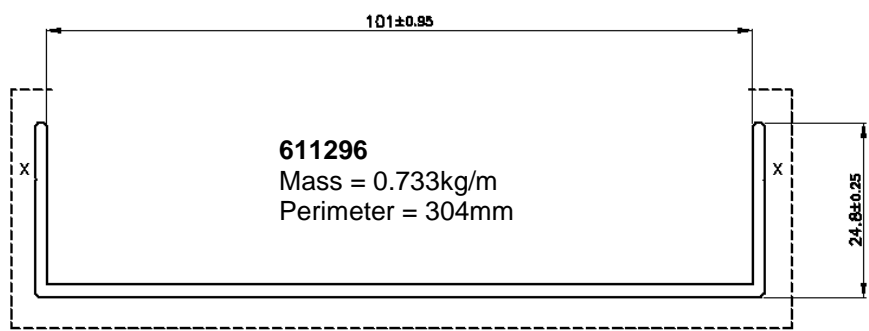
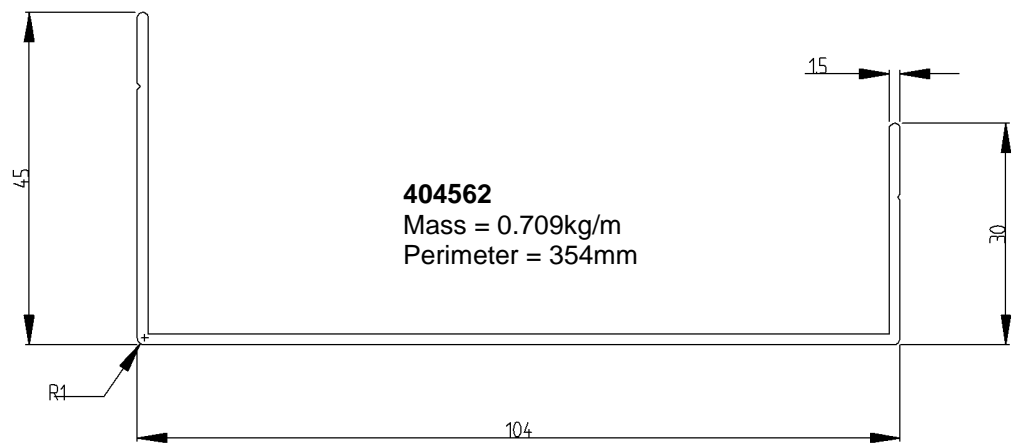
* = please request drawing

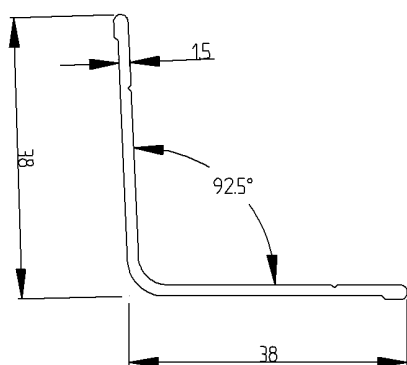
Die No	A	B	C	D	R	Mass (kg/m)	Perimeter (mm)
611790*	5.5	19	19	1.5		0.162	81.9
609231	30	25	25	3		0.602	154
612551*	30.5	19	19	1.5		0.264	132
610051	44.5	25.4	25.4	3.2		0.771	184
603539*	150	55	58	5.5		2.798	516



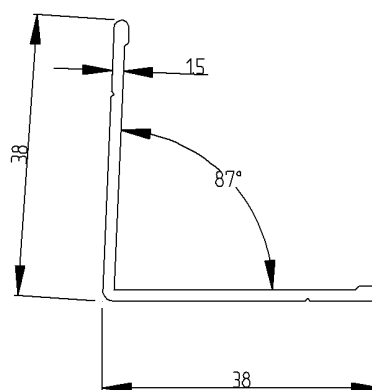


404266
Mass = 0.944kg/m
Perimeter = 303mm

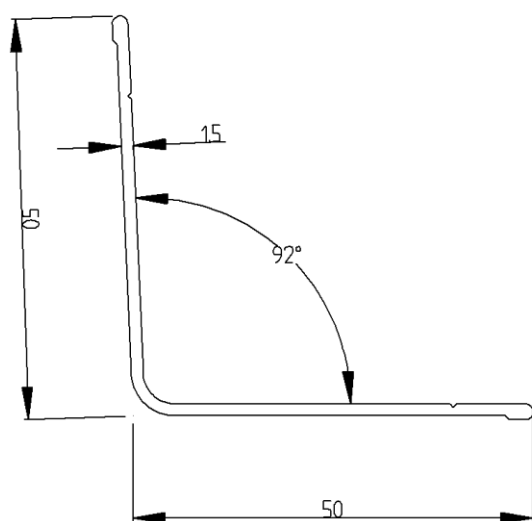


**404563**

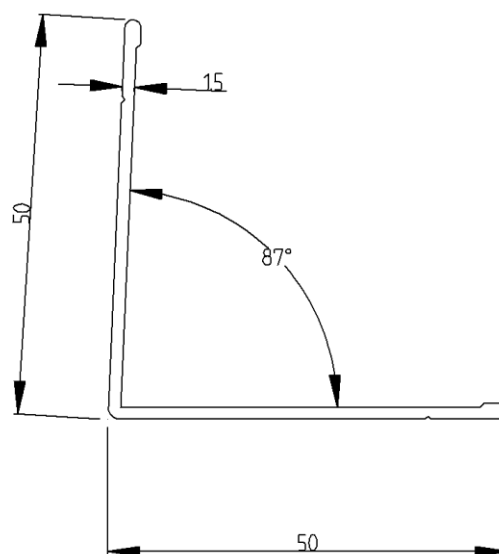
Mass = 0.303kg/m
Perimeter = 149mm

**404564**

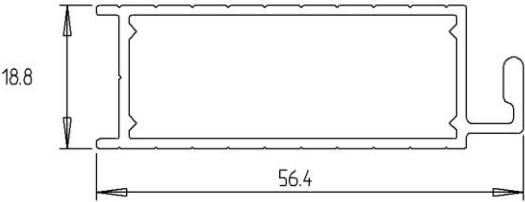
Mass = 0.306kg/m
Perimeter = 151mm

**404586**

Mass = 0.399kg/m
Perimeter = 197mm

**404593**

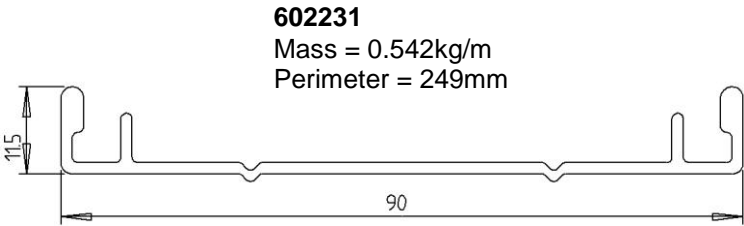
Mass = 0.404kg/m
Perimeter = 200mm



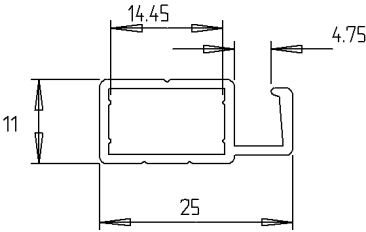
609637
Mass = 0.541kg/m
Perimeter = 176mm



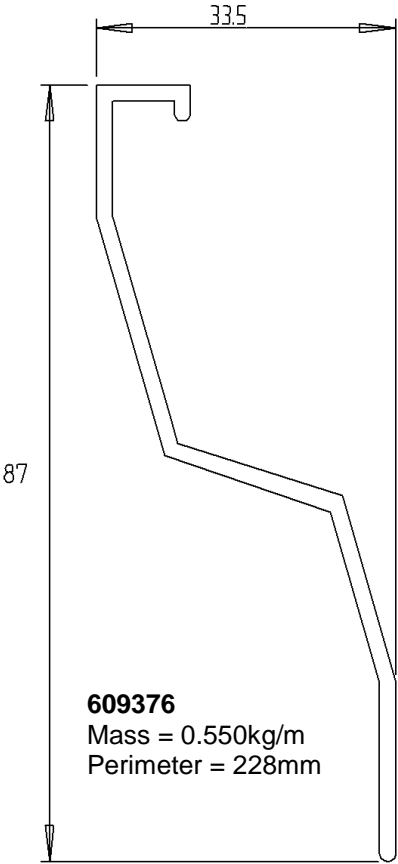
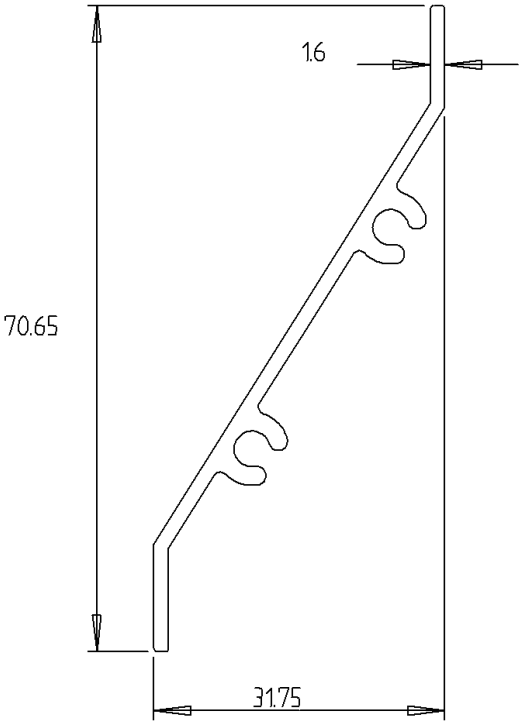
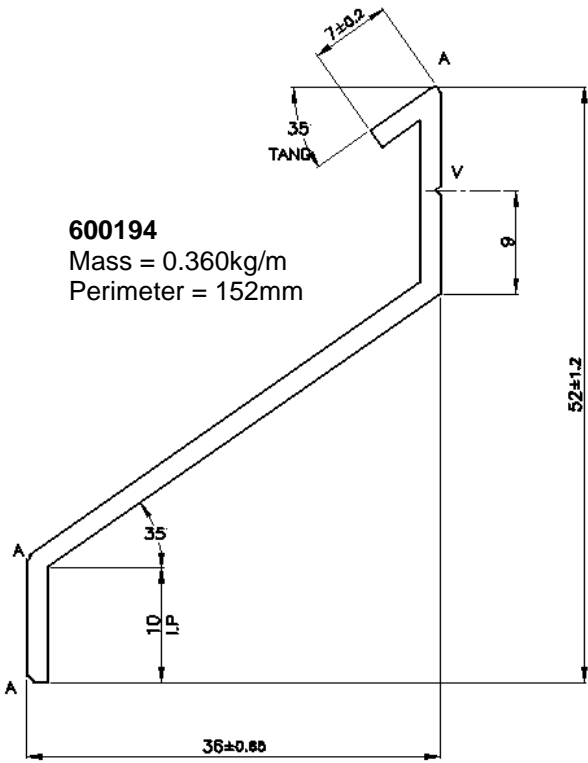
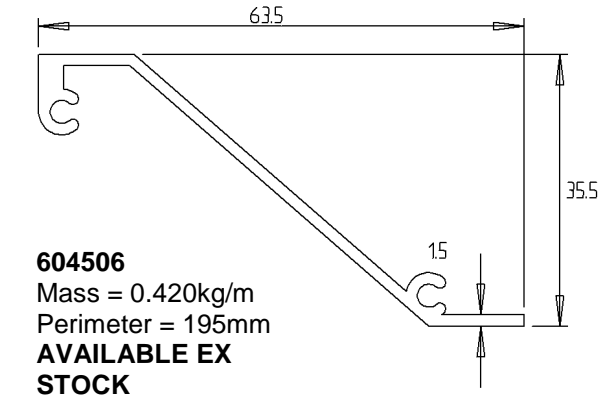
404522
Mass = 0.204kg/m
Perimeter = 136.2mm

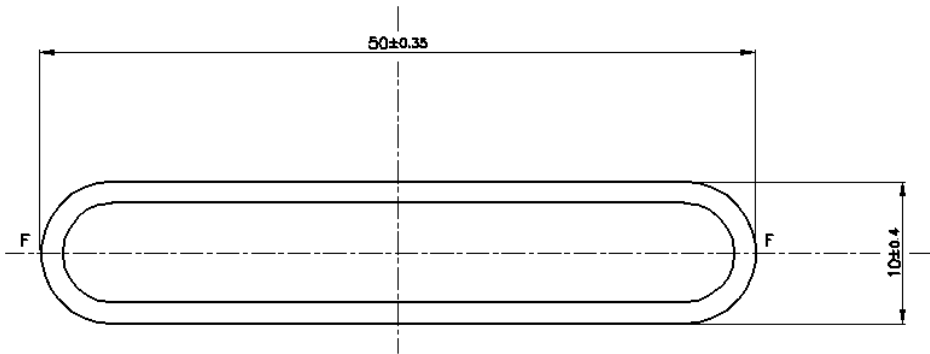


602231
Mass = 0.542kg/m
Perimeter = 249mm

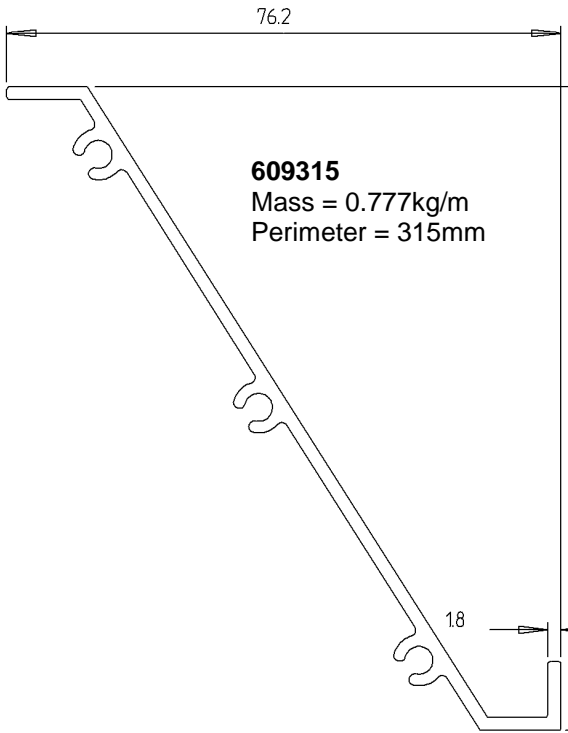


609395
Mass = 0.232kg/m
Perimeter = 88mm

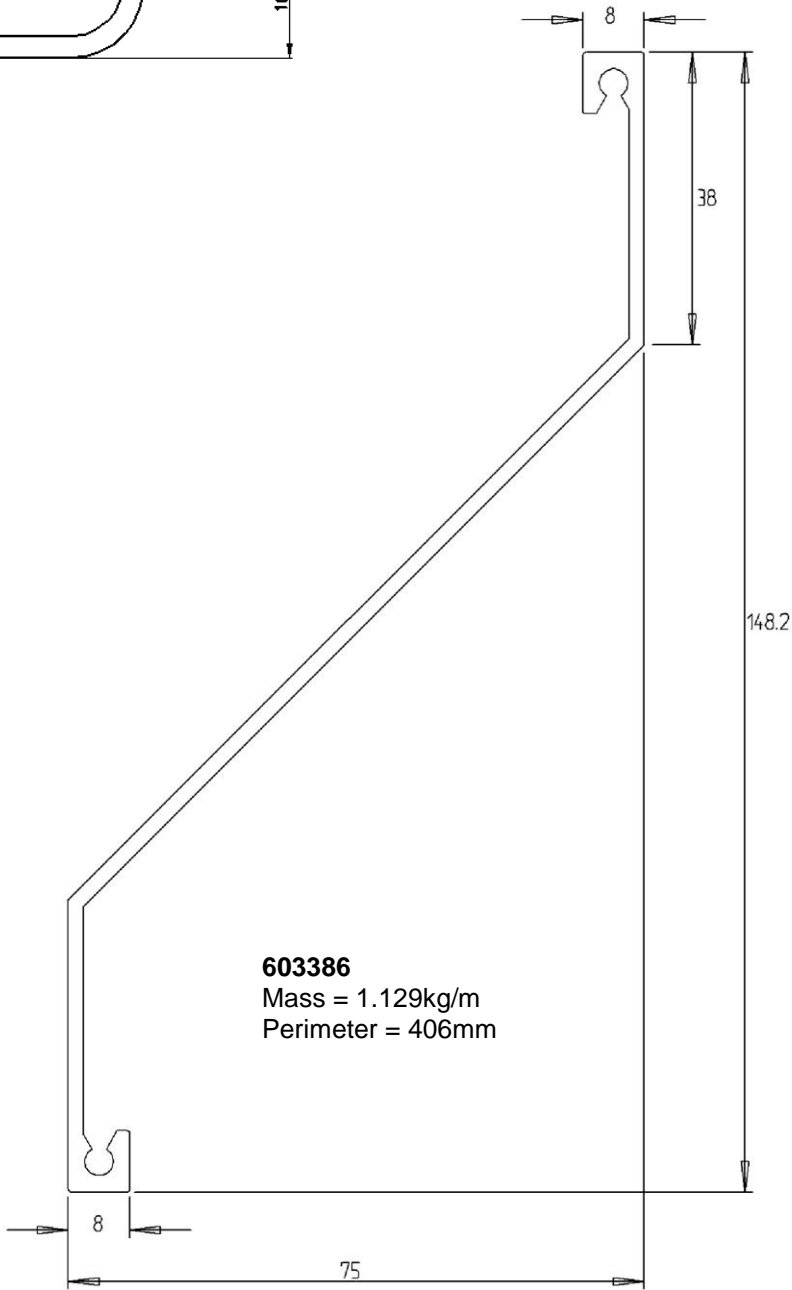




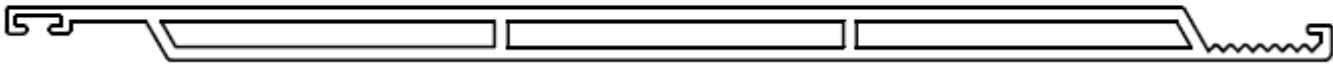
611632
Mass = 0.434kg/m
Perimeter = 111.4mm



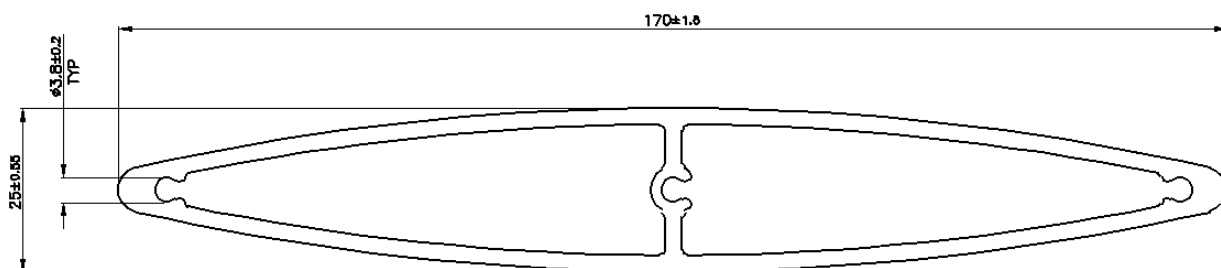
609315
Mass = 0.777kg/m
Perimeter = 315mm



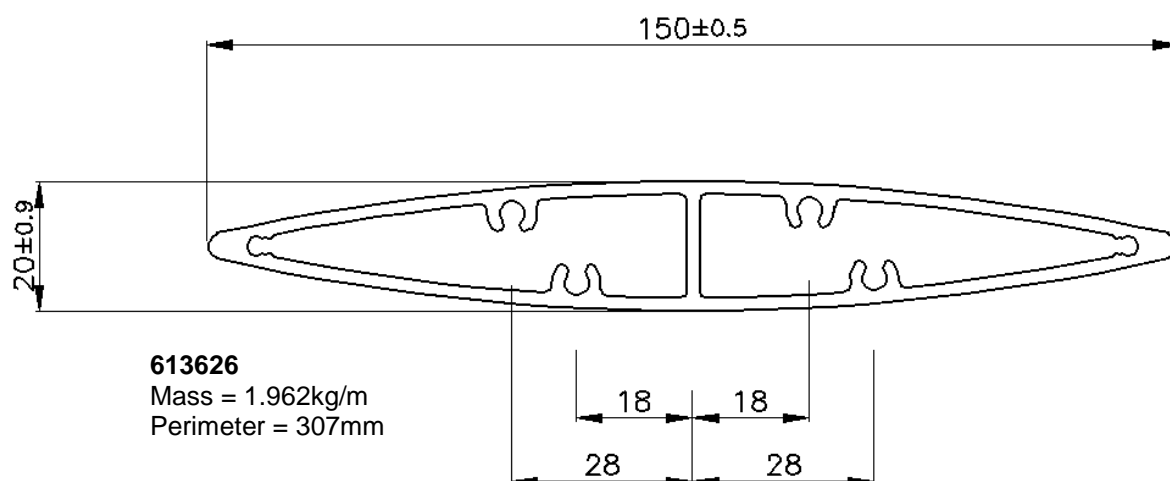
603386
Mass = 1.129kg/m
Perimeter = 406mm



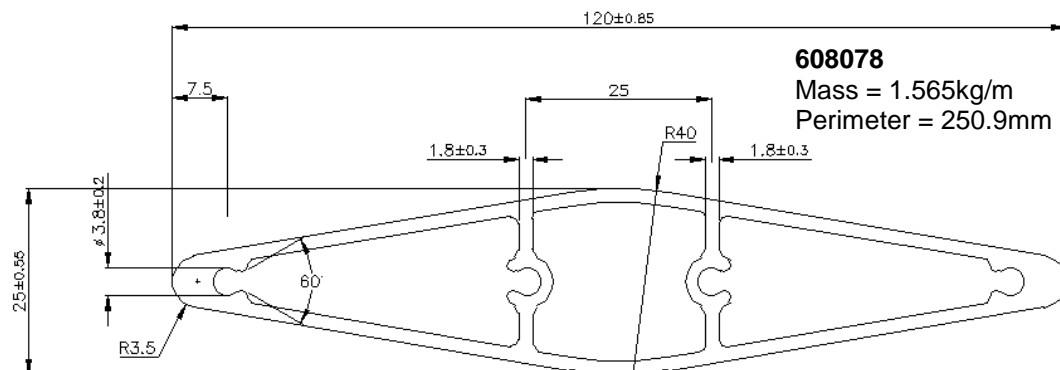
611346
Mass = 1.164kg/m
Perimeter = 580.3mm

**611284**

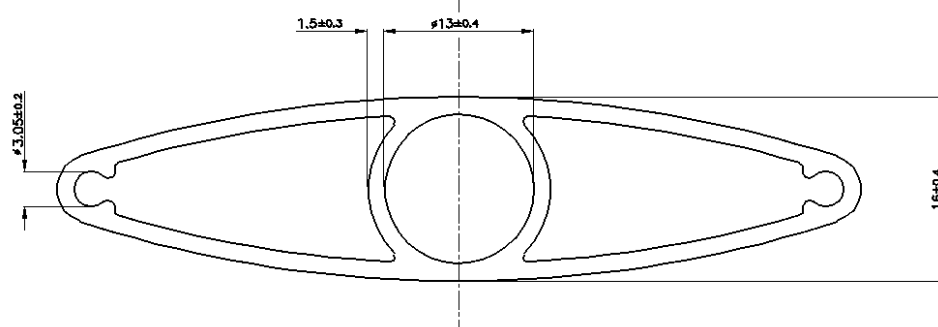
Mass = 2.542kg/m
Perimeter = 350.6mm

**613626**

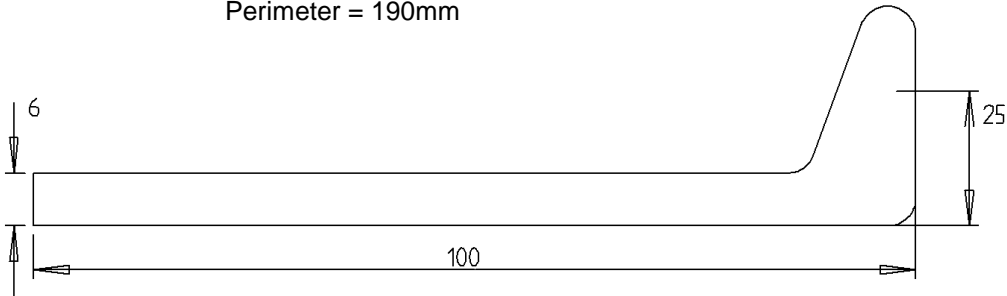
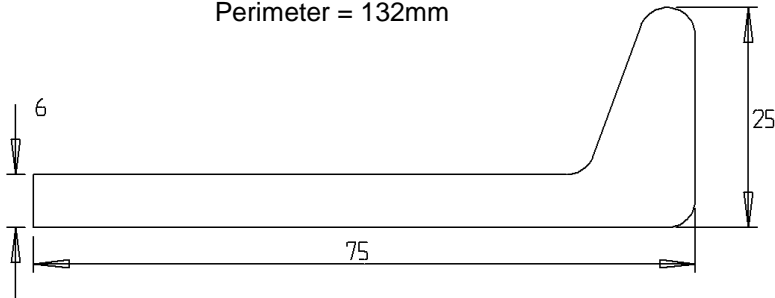
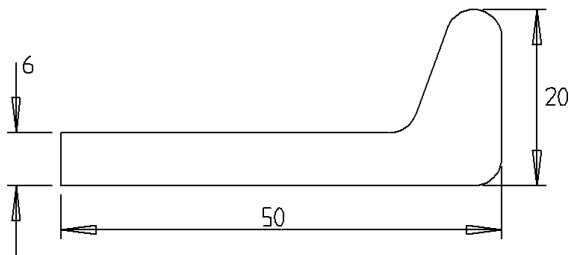
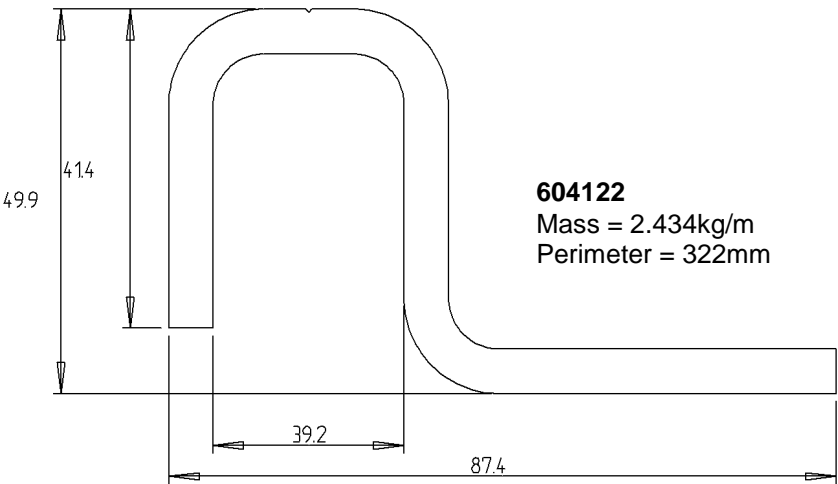
Mass = 1.962kg/m
Perimeter = 307mm

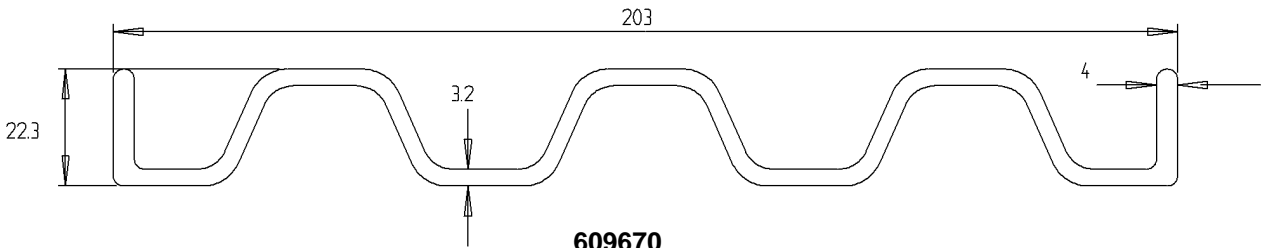
**608078**

Mass = 1.565kg/m
Perimeter = 250.9mm

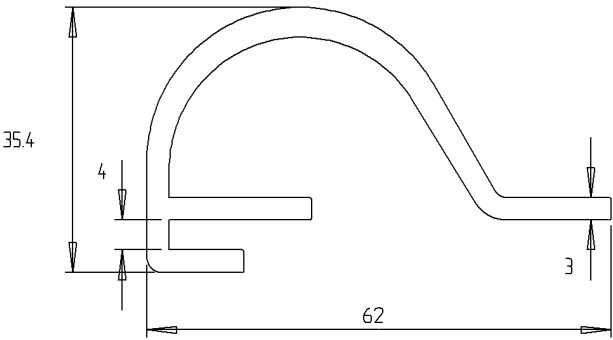
**612002**

Mass = 0.739kg/m
Perimeter = 149.3mm

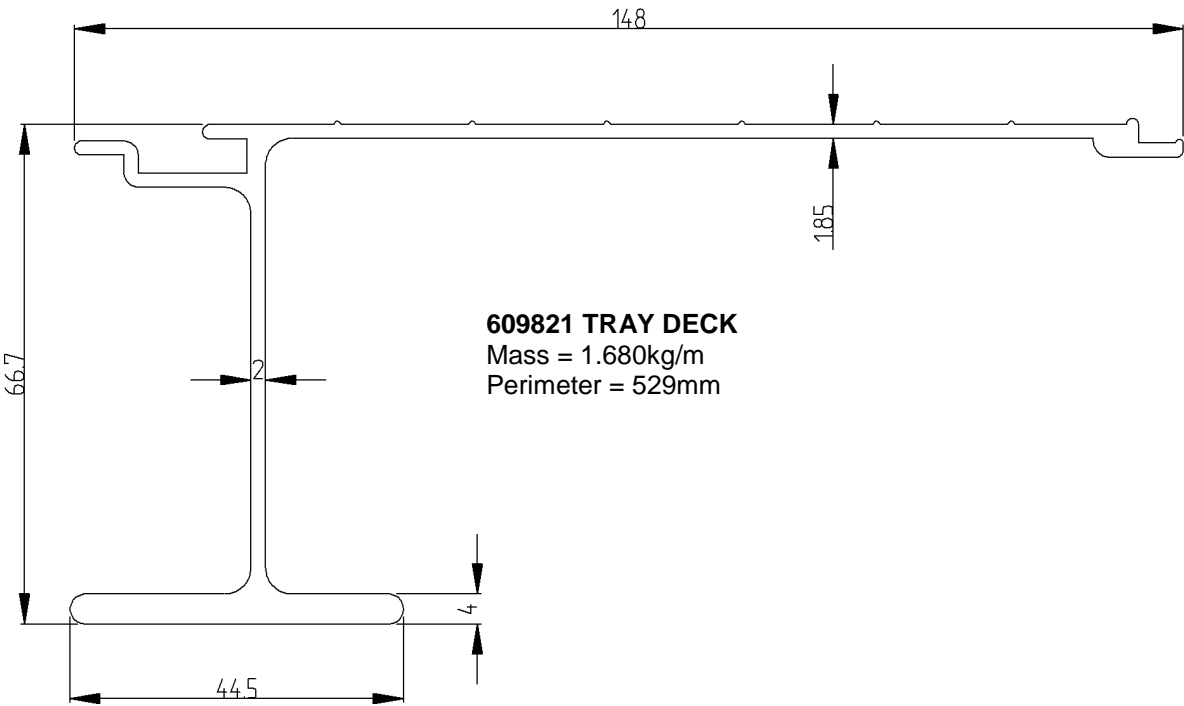




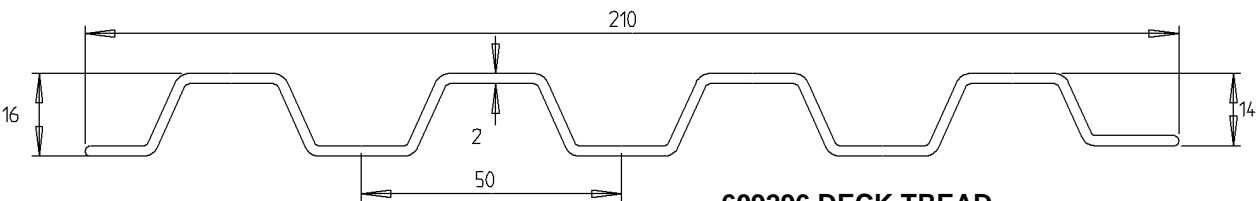
609670
Mass = 2.751kg/m
Perimeter = 607mm



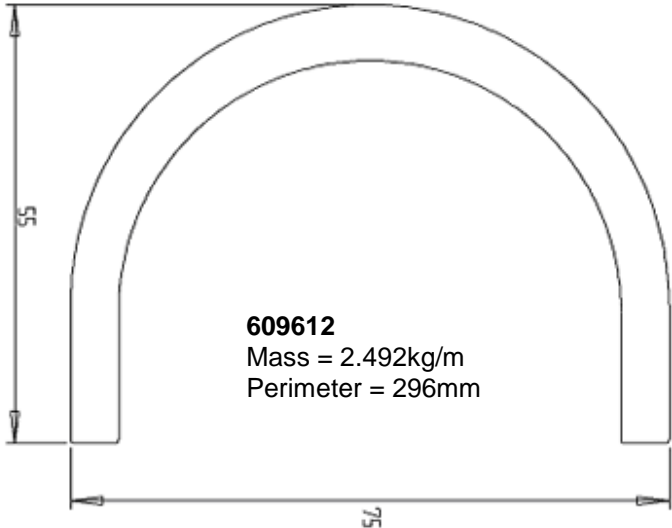
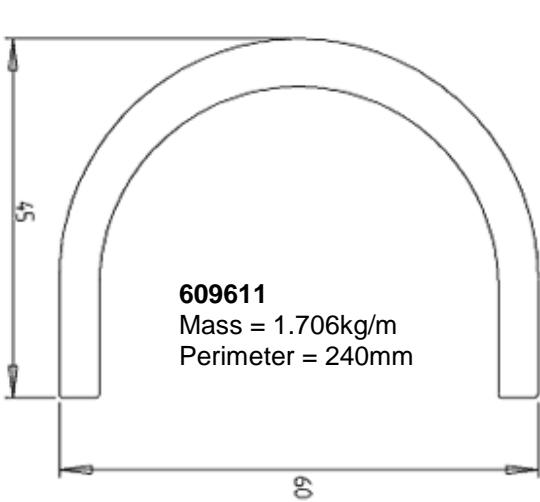
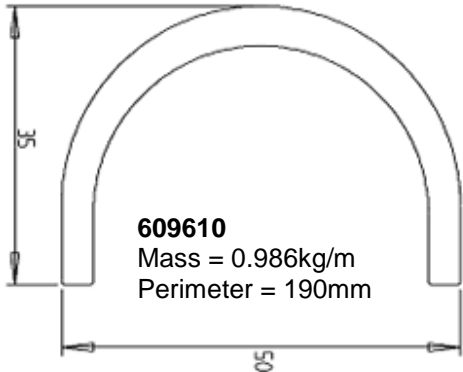
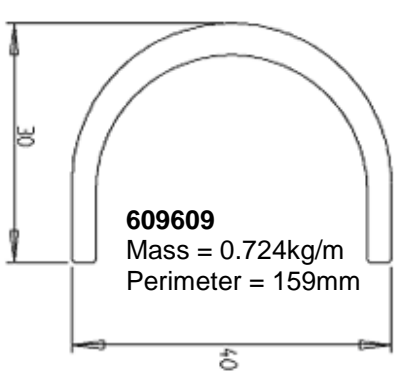
609658
Mass = 1.132kg/m
Perimeter = 258mm

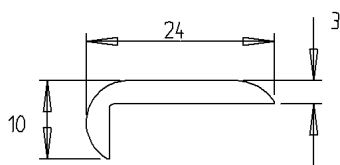


609821 TRAY DECK
Mass = 1.680kg/m
Perimeter = 529mm



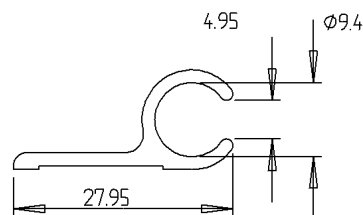
609296 DECK TREAD
Mass = 1.496kg/m
Perimeter = 555mm




609380

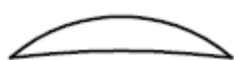
Mass = 0.212kg/m

Perimeter = 62mm


609312

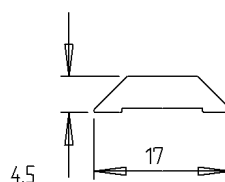
Mass = 0.228kg/m

Perimeter = 95mm


601136

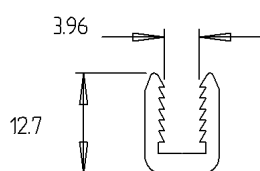
Mass = 0.187kg/m

Perimeter = 53.2mm


609627

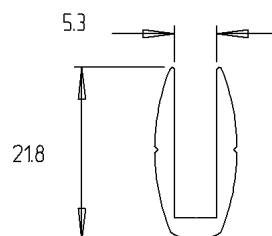
Mass = 0.148kg/m

Perimeter = 39mm


609540

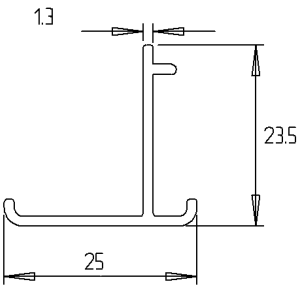
Mass = 0.172kg/m

Perimeter = 73mm

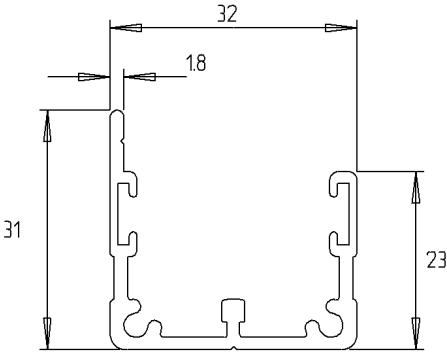

609542

Mass = 0.250kg/m

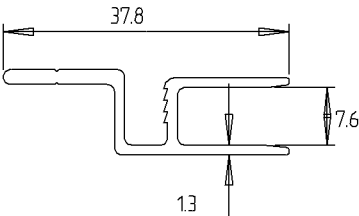
Perimeter = 94mm



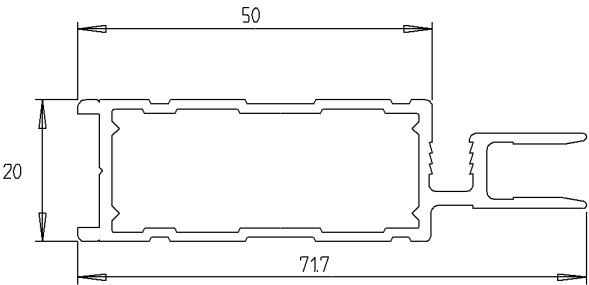
609690
Mass = 0.186kg/m
Perimeter = 108mm



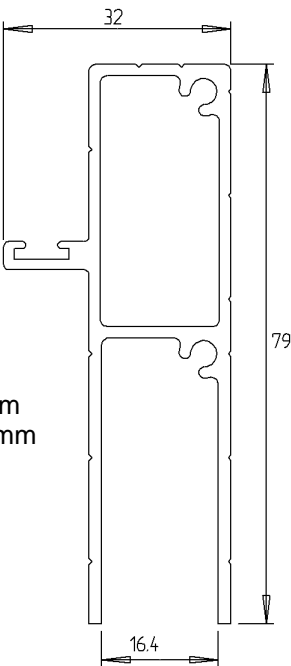
609733
Mass = 0.464kg/m
Perimeter = 215mm



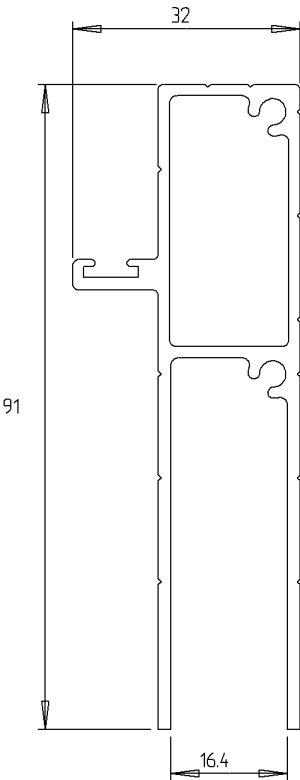
609299
Mass = 0.280kg/m
Perimeter = 143mm



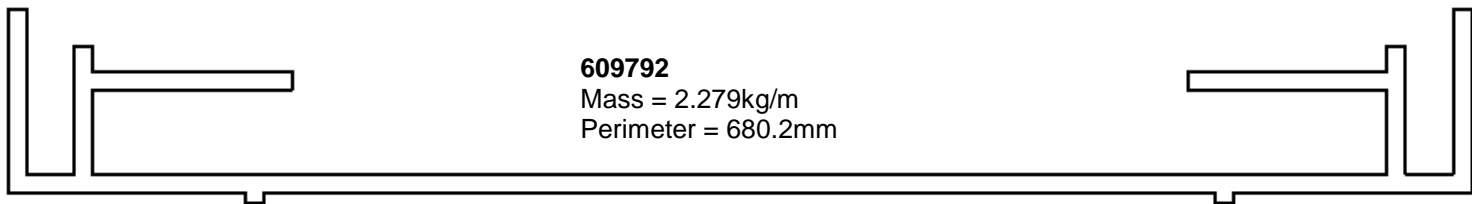
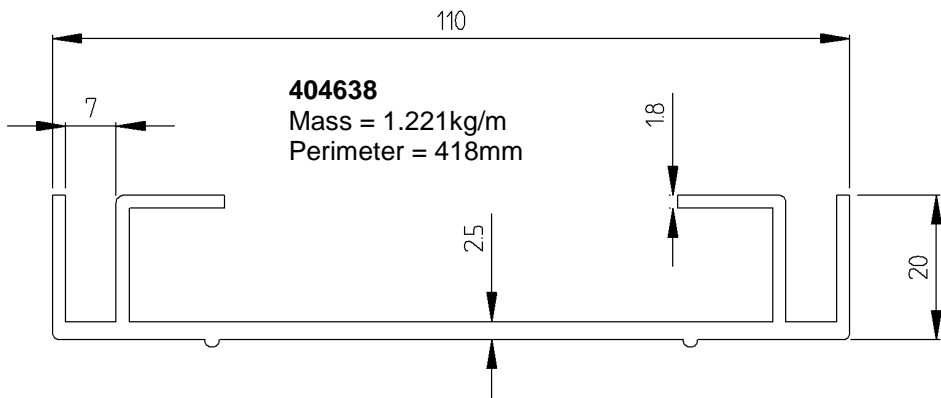
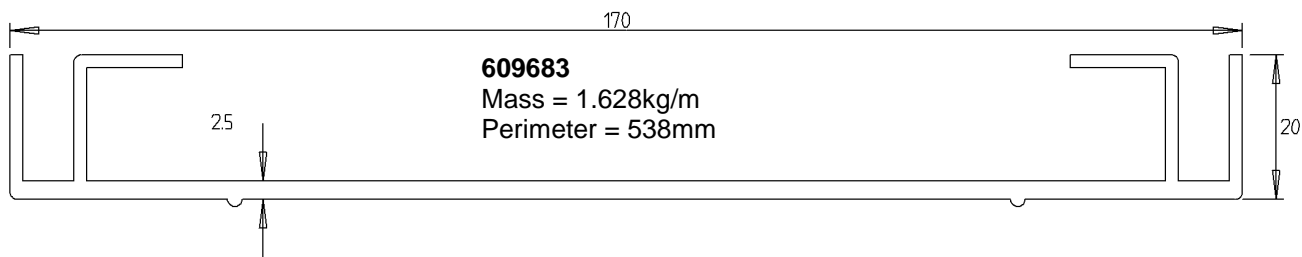
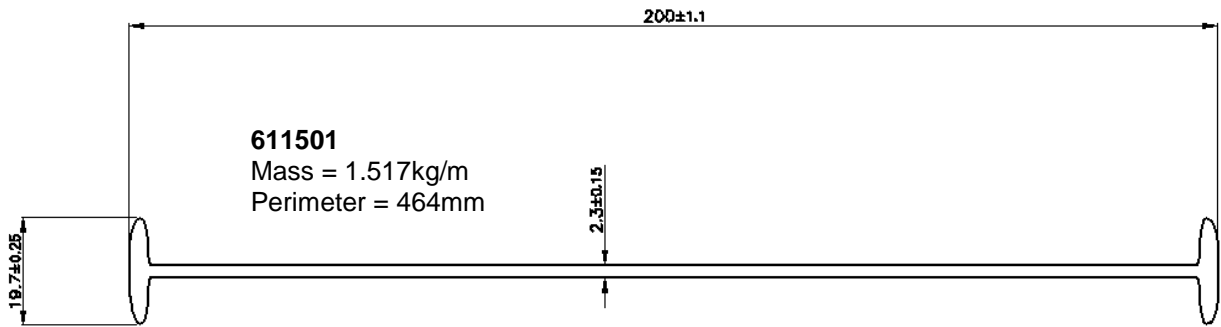
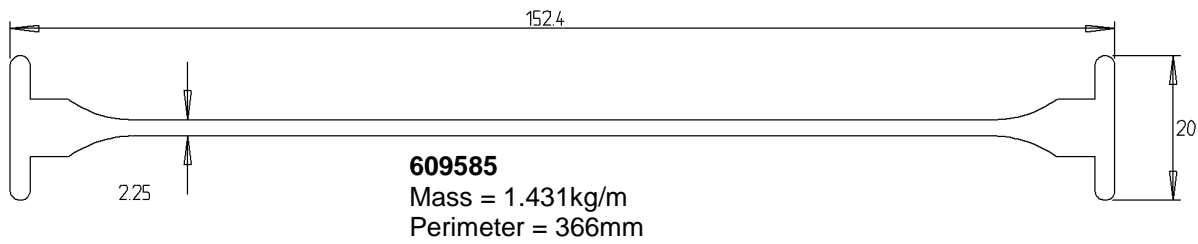
609295
Mass = 0.770kg/m
Perimeter = 239mm

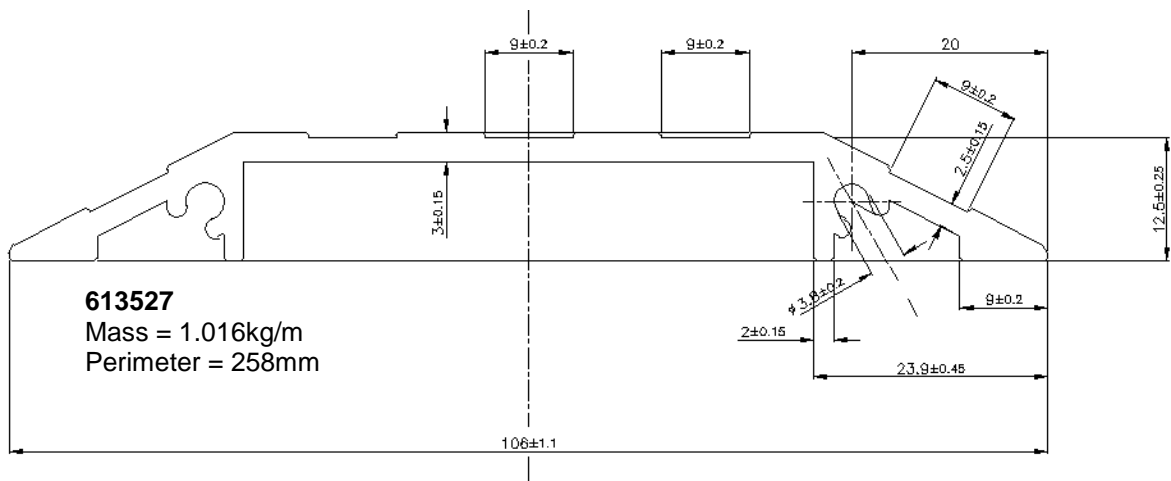
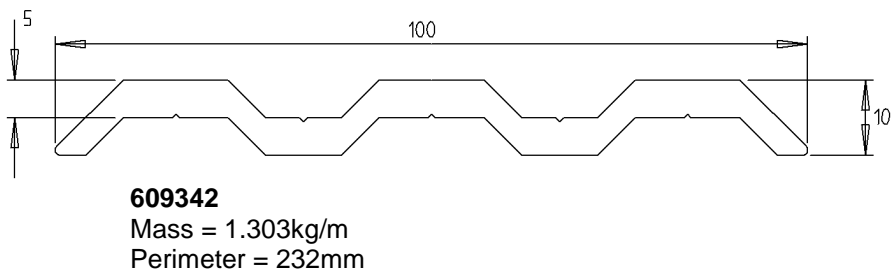
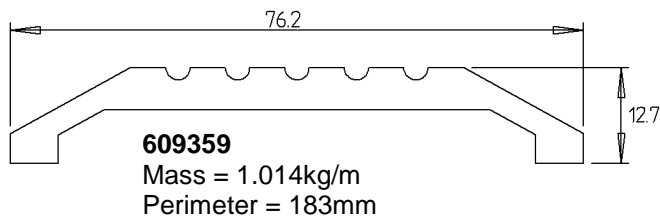


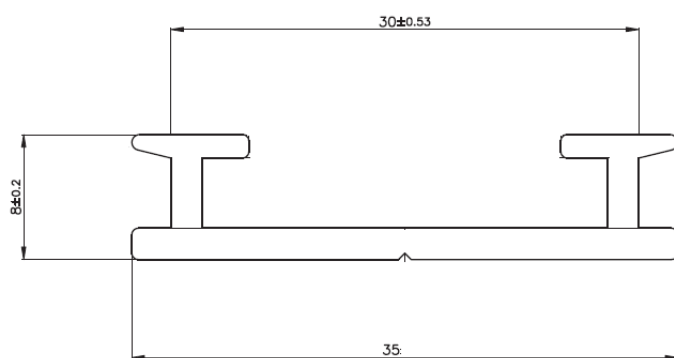
609545
Mass = 1.036kg/m
Perimeter = 321mm



609758
Mass = 1.153kg/m
Perimeter = 369mm

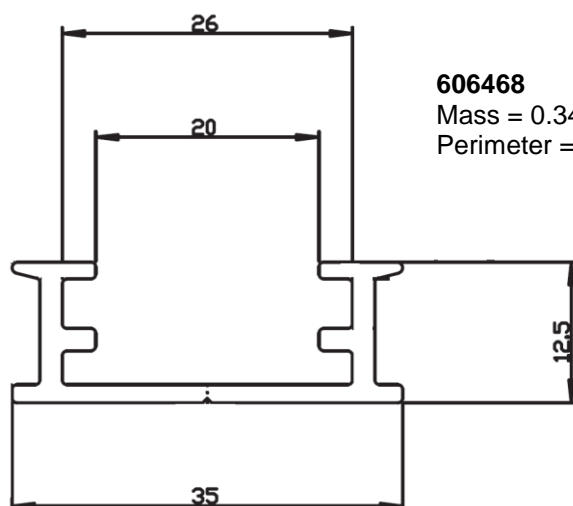




**606327**

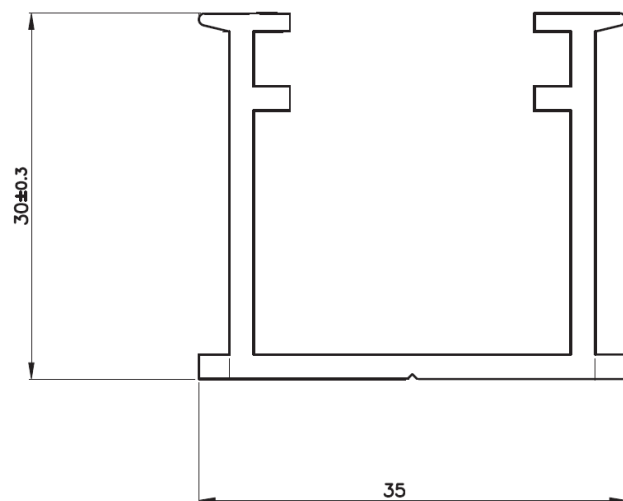
Mass = 0.294kg/m

Perimeter = 117.2mm

**606468**

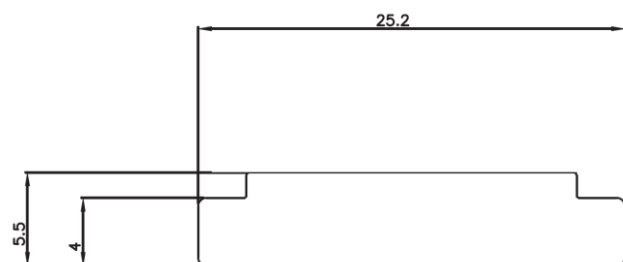
Mass = 0.341kg/m

Perimeter = 145.4mm

**606326**

Mass = 0.565kg/m

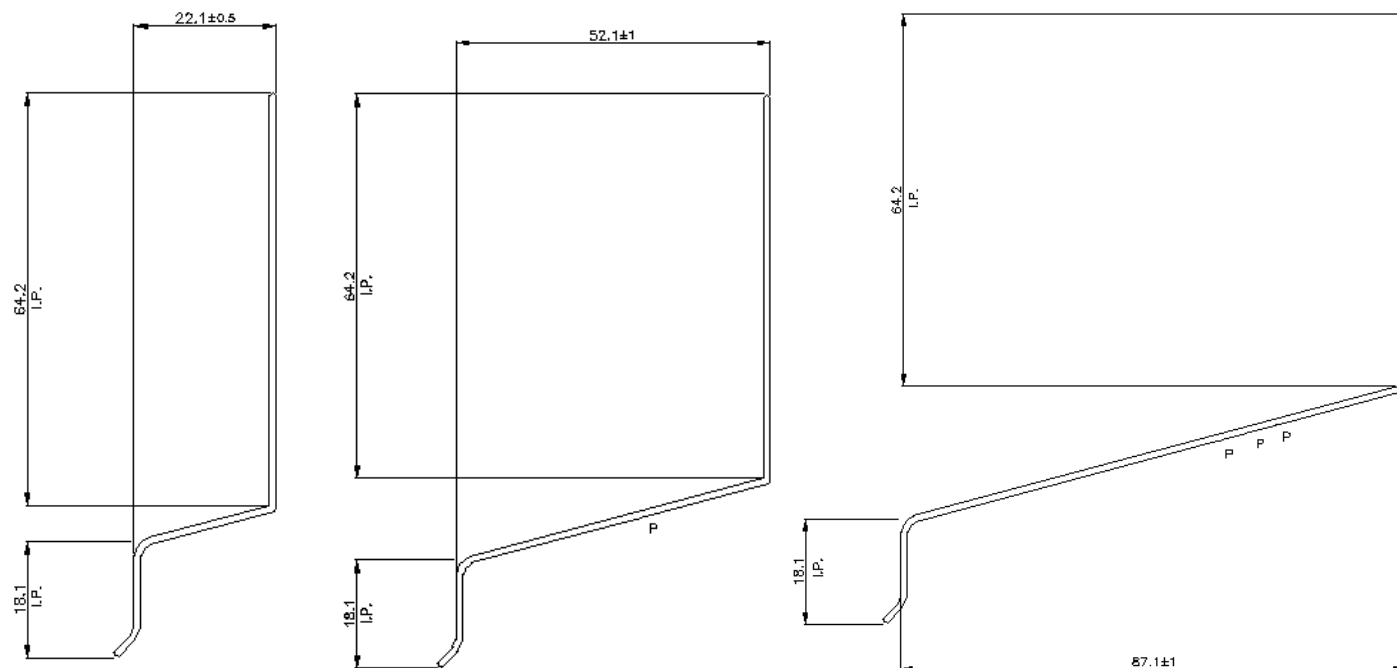
Perimeter = 218.6mm

**611093**

Mass = 0.352kg/m

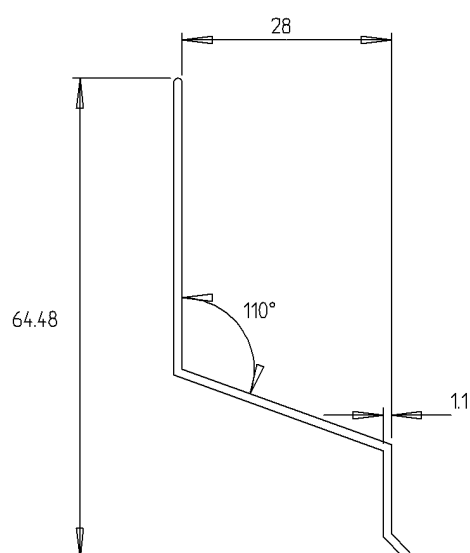
Perimeter = 60.3mm

**TO FIT WITH 606468, 606326 &
606327 AS A SLIDE FIT**



FLASHINGS – AVAILABLE EX STOCK

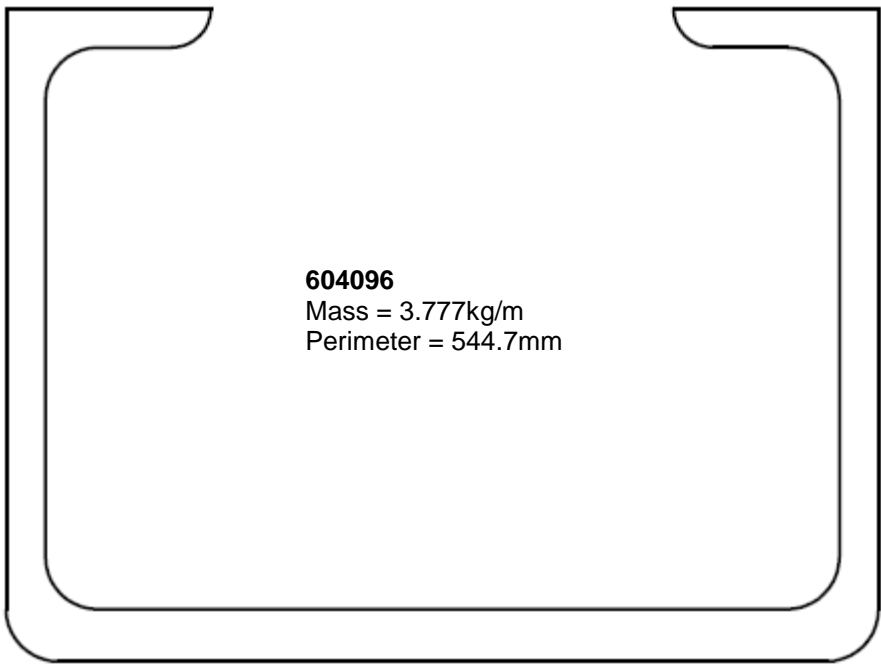
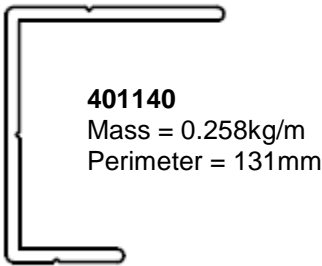
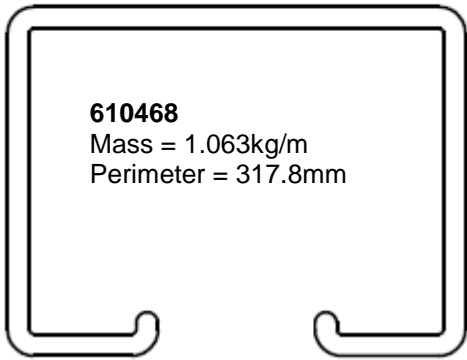
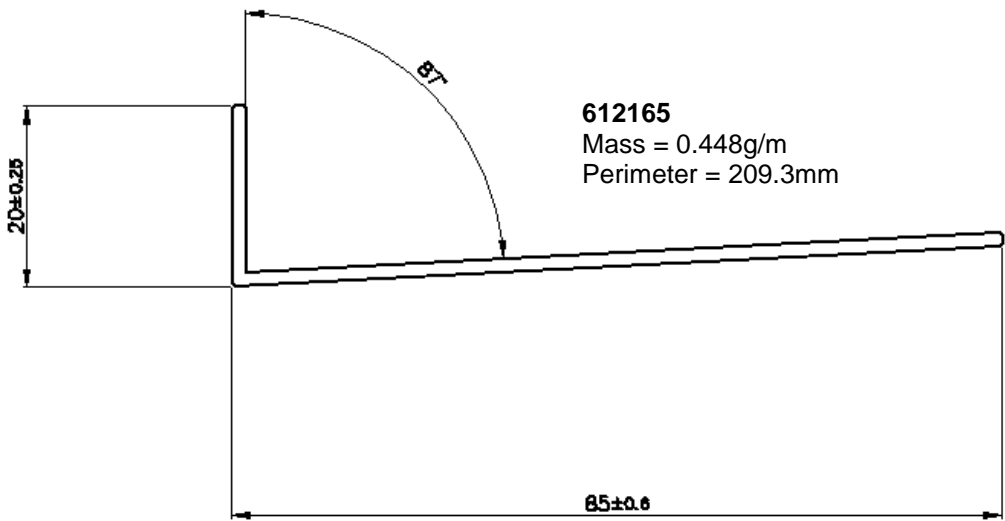
A range of flashings in 5m lengths are available ex stock, in widths increasing by 5mm. Above are examples of a 20mm, 50mm, and 85mm. Please contact a representative for more information.

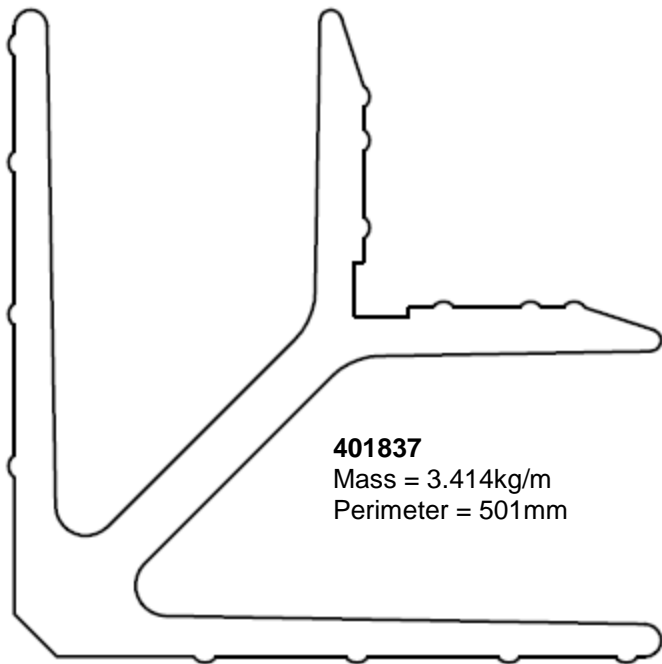


609707

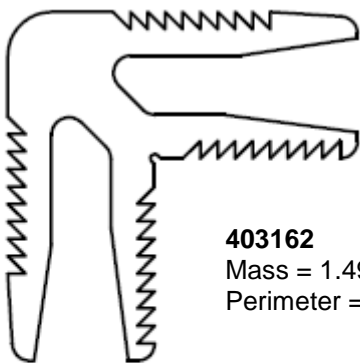
Mass = 0.252kg/m

Perimeter = 171mm

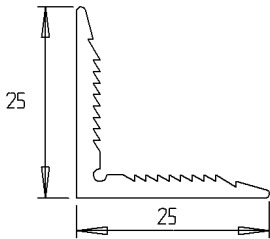




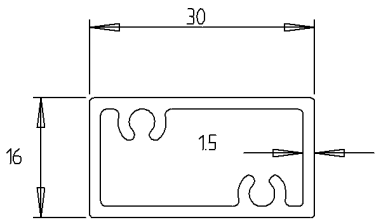
401837
Mass = 3.414kg/m
Perimeter = 501mm



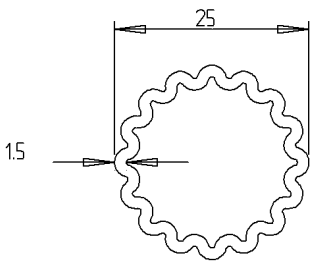
403162
Mass = 1.499kg/m
Perimeter = 354mm



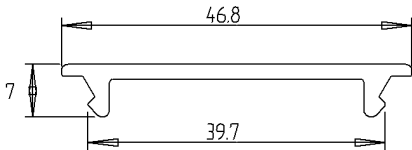
609556
Mass = 0.311kg/m
Perimeter = 116mm



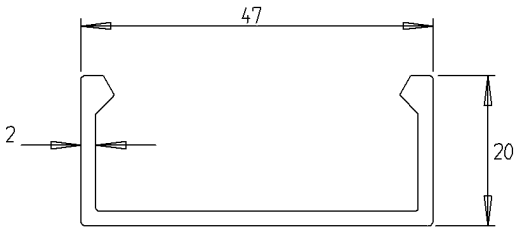
603029
Mass = 0.426kg/m
Perimeter = 91mm



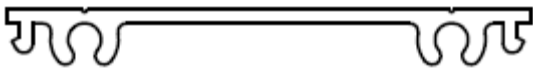
603869
Mass = 0.363kg/m
Perimeter = 94mm



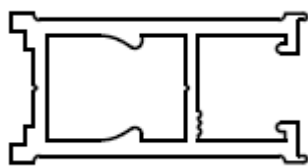
603026
Mass = 0.312kg/m
Perimeter = 114mm
(Fits with 603506)



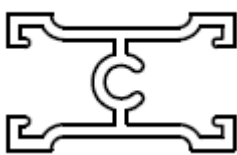
603506
Mass = 0.490kg/m
Perimeter = 174mm



609477
Mass = 0.403kg/m
Perimeter = 169mm



401139
Mass = 0.473kg/m
Perimeter = 204mm



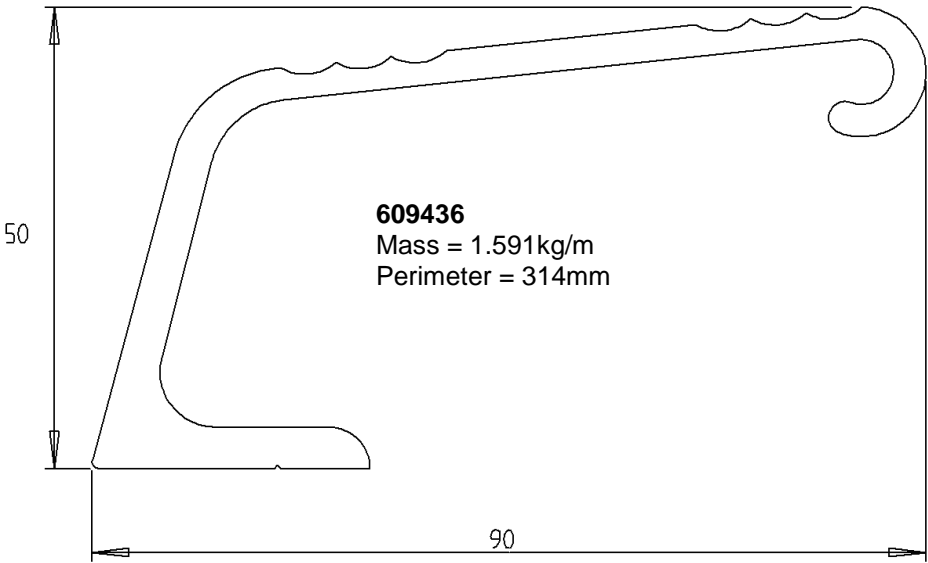
401194
Mass = 0.317kg/m
Perimeter = 171mm



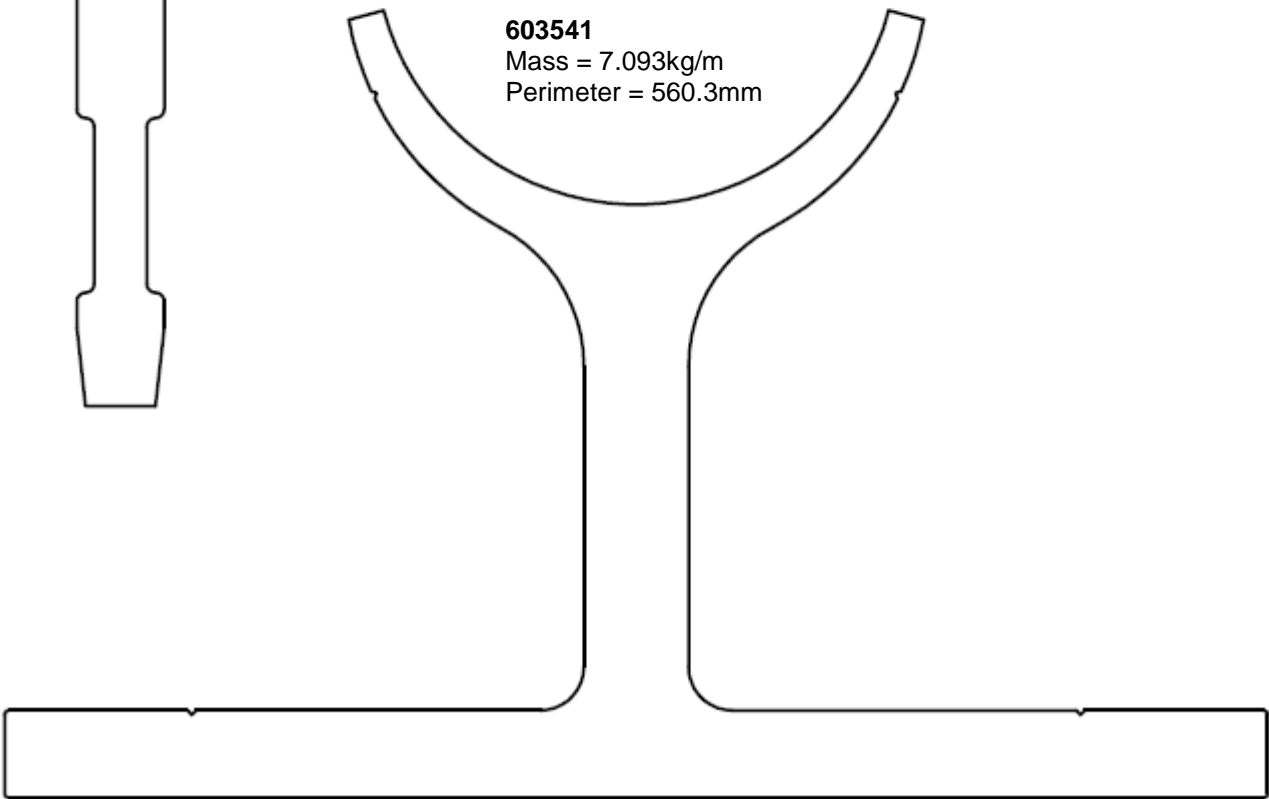
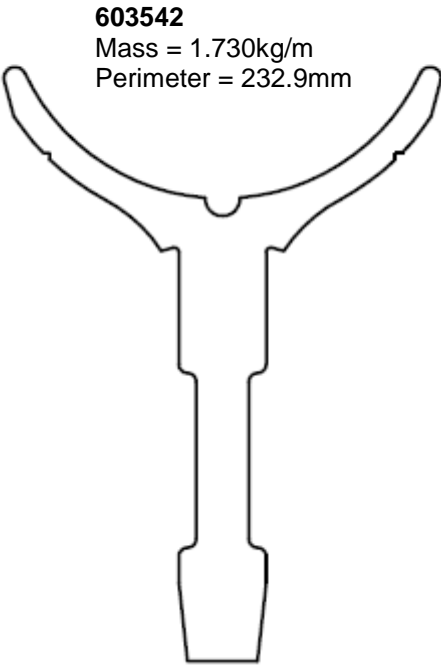
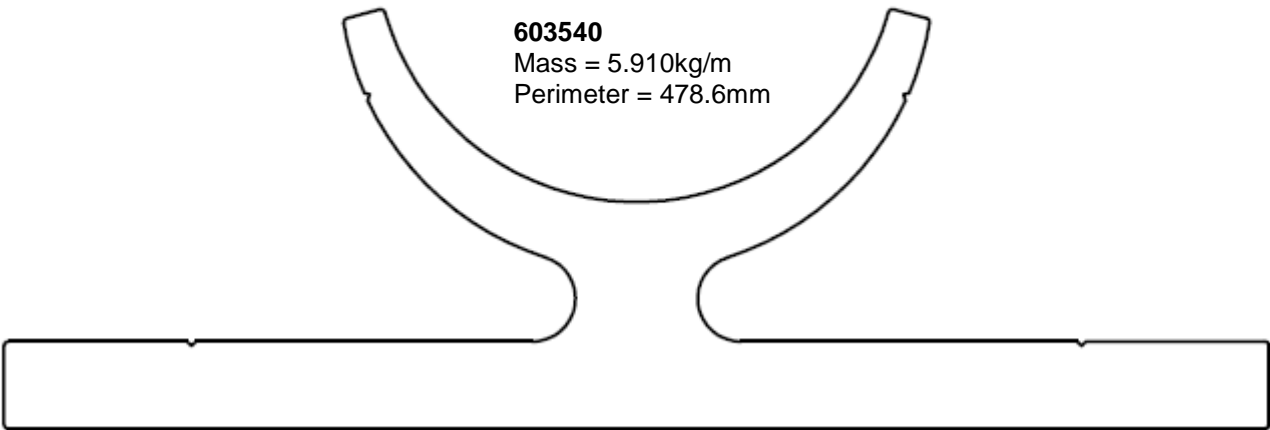
609592
Mass = 0.287kg/m
Perimeter = 96.9mm



609999
Mass = 0.273kg/m
Perimeter = 53.3mm



609436
Mass = 1.591kg/m
Perimeter = 314mm



EXTRUSION ALLOYS AVAILABLE
(OTHER ALLOYS MAY BE AVAILABLE BY DIRECT CONSULTATION)

FLETCHER & REG INTERNATIONAL DESIGNATION	DESCRIPTION	TEMPERED OFFERED
1200	Commercially pure	TF
6060	Architectural Semi-Structural	T4, T591 T5, T6
6061	Medium strength Structural	T4 T6
6261	Medium strength Structural	T4 T5 T6
6101	Electrical conductivity	T4, T591 T5, T6

NOTE: NOT ALL DIES ARE ABLE TO RUN IN HARD ALLOYS, I.E. 6061 AND 6261

ALLOY	CHARACTERISTICS	TYPICAL FORMS	TYPICAL APPLICATIONS
1200	Commercially pure aluminium. Very ductile, Anodises well. Excellent corrosion resistance.	Simple shapes.	Table edgings. Radio antennae. Decorative trim. Electrical conductors.
6060	Suitable for intricate sections of medium strength. High corrosion resistance. Good surface finish, anodises well.	All shapes, particularly architectural.	Architectural members such as window frames and shop-fitting shapes. General purpose uses as detailed in this catalogue.
6061	Structural alloy. Good mechanical properties. Good corrosion resistance and weldability. Surface is not controlled. Machinability better than 6060.	Simple structural shapes, including hollows.	Road, rail and marine transport, guard rail, bridges, pipe & pipe flanges. All types welded assemblies.
6261	Medium strength structural alloy. Forms well in T4 temper. Anodises well. Good corrosion resistance and weldability. Surface is not controlled. Machinability better than 6060.	Structural shapes of all kinds, rod, bar, tubing.	Structural applications where surface finish is important or where thin intricate shapes are involved. Road transport sections e.g. decking plank and ladder sections.
6101	Electrical conductivity grade structural alloy.	All shapes.	Electrical conductivity.

TEMPER CHARACTERISTICS AND APPLICATIONS	
FLETCHER AND REG. INT. DESIGN	APPLICATIONS
TF	Soft, not heat treatable. Trim and electrical conductors.
T4	Forming, may be heat treated after forming to produce T5 temper.
T591	Semi heat treated forming grade. Semi structural temper.
T5	Most commonly requested.
T6	Fully heat treated grade. Cannot be easily formed.

EXTRUDED PRODUCTS

	Tensile Strength (Mpa)				
	Thickness (mm)		Ultimate	Yield	Elongation
Alloy and Temper	Over	Up to	Min.	Min.	(%Min. in 50mm or 5.65√A
6261-T4		25	180	100	14
6261-T5		5	295	255	7
	5	10	280	240	7
6261-T591	All		210	190	10
6261-T6	All		295	255	7
6061-T4	All		180	110	14
6061-T591	All		210	190	10
6061-T6	All		260	240	8
6060-T4		25	120	60	16
6060-T5		12	150	110	8
	12	25	145	105	6
6060-T591	All		120	75	12
6060-T6		3	190	150	8
	3	25	170	140	8
1200-T4	All		75	20	18
6101-T4		25	120	60	16
6101-T5		12	150	110	8
	12	25	145	105	6
6101-T591	All		120	75	12
6101-T6	3	12	200	170	10

Source: The Australian Aluminium Council Ltd

THE MANUFACTURING TOLERANCES WHICH APPLY ARE THOSE PRESENTLY SET DOWN BY THE ALUMINIUM DEVELOPMENT COUNCIL OF AUSTRALIA (A.D.C.) IN ALUMINIUM STANDARDS AND DATA WROUGHT PRODUCTS (THIRD EDITION 1978).

INVARIABLELY, TOLERANCES FOR AN INDIVIDUAL GEOMETRIC SHAPE ARE SUBJECT TO NEGOTIATION AND AGREEMENT BETWEEN EXTRUDER AND CUSTOMER, UNDER THIS PROVISION THE FUNCTION OF THE SHAPE IS GIVEN PRIORITY.

ALL MANUFACTURING TOLERANCES ARE SUBJECT TO REVIEW FROM TIME TO TIME

DIMENSIONAL TOLERANCES

Cross-Sectional *Metal dimension	A.D.C.
Up to 3mm	0.15mm
3.0 - 12.0	0.20mm
12.0 - 25.0	0.25mm
25.0 - 40.0	0.30mm
40.0 - 50.0	0.40mm
50.0 - 100.0	0.60mm
100.0 - 150.0	0.90mm
150.0 - 200.0	1.10mm

Notes: All tolerances and sizes are stated to the nearest 0.05mm

DEFINITIONS

STANDARD SHAPE is one that is available to all customers.

EXCLUSIVE SHAPE is one that is manufactured to the design of a client - it is not published and is retained for the client's exclusive use.

STANDARD is applied to those alloys, tempers, dimensions and services which are always available and can be accepted for production without further reference.

NON-STANDARD is applied to those alloys, tempers, dimensions and services which are outside normal availability and must always be the subject of special inquiry.

SECTION DRAWINGS are prepared for every extruded shape that is manufactured by Fletcher Aluminium. Each one is identified by a number preceded by the letter A.

VISIBLE FACE is that surface of the shape which is exposed to view and so nominated by the client.

PERIMETER is the distance around the periphery of the extruded shapes (both internal and external surfaces).

EXTERNAL PERIMETER is used in computing the price for surface finishes on hollow shapes in which the external perimeter only is measured, and the internal void excluded.

FACTOR is calculated by dividing the total perimeter (internal and external for hollow shapes) of the section in millimetres by the weight in kg/metre.

CIRCUMSCRIBING CIRCLE is the minimum circle inside which the extruded shape will fit precisely.

SHAPE DEFINITIONS

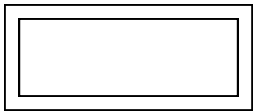
SOLID SHAPE

An extruded shape whose geometry does not form a void and which is long in relation to its cross-sectional dimensions.



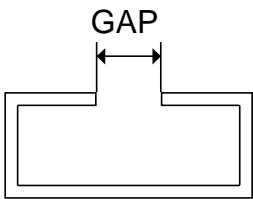
HOLLOW SHAPES

A single void totally enclosed extruded shape, with a width to depth ratio of not less than 5: 1. Wall thickness should be uniform (except for radiused corners).



SEMI-HOLLOW SHAPES

A solid shape with a cross-section that partially encloses a void and in which the area of the void is substantially greater than the square of the width of the gap, otherwise classified as a hollow in the following table.



GAP DIMENSIONS (G) (mm)		Ratio Area/Gap squared over which a shape is classified as a Hollow
Over	Up to	
6.0		4.0
3.0	6.0	3.0
1.5	3.0	2.5
	1.5	2.0

WELD LINES

Due to the method of manufacture of hollow and semi-hollow extrusions no undertaking can be given regarding placement or homogeneous nature of weld lines unless otherwise agreed to prior to placement of order.

Anodising

The Altus Bowden Road anodising plant is situated alongside the extrusion plant, allowing the scheduling of work to be continuous from extrusion through to packing and despatch.

The anodising plant's quality management system is TELARC registered and complies with ISO 9001.

Two separate anodised finishes are offered, both of which comply with WANZ SFA 3503-03.

NATURAL (CLEAR) ANODISING

This is the conventional sulphuric acid process on alloy 6060, available in coating thicknesses of 12, 15, 20 and 25 microns. Other thicknesses or alloys are available subject to special enquiry. This finish is widely used for domestic and commercial architectural applications and provides good protection for any aluminium products during handling or in abrasive situations.

DURACOLOR ANODISING

This is two stage electrolytic colouring process in a range of standard bronze colours and black, available on Fletcher alloy 6060-T5. Coating thickness is subject to enquiry.

Duracolor standard colours are Light Bronze, Medium Bronze, Dark Bronze and Black. Colour charts are available upon request.

The maximum extrusion length that can be anodised is 6.5 metres.

Powder Coating

Alongside our Anodising plant here at Altus Bowden Road we also have a Powder Coating plant, The Powder Coating plant's quality management system is also TELARC registered and complies with ISO 9001. All powder coated product supplied through Altus complies with WANZ Endurocolour Powder coating Quality standard. Colour charts are available upon request.

The maximum extrusion length that can be processed is 6 metres.

Anodising Facts & Tips

Altus in Bowden Road offers anodising film thicknesses of between 12 and 25 microns for extruded aluminium shapes. These thicknesses cover the standards required for domestic and commercial architecture. Corrosion resistance increases with film thickness.

Before deciding on an anodised finish for your extruded aluminium product, you need to know about factors that affect final appearance and long term durability. This section explains some of these factors, along with the production standards we adhere to.

We recommend you talk to our experienced Custom Solutions team for more detailed advice and recommendations about how to achieve the outcome you want.

Anodic film is substantially transparent

Unlike painting, parent metal surface remains visible through the coating. So the surface of the extruded aluminium surface should be of the best possible quality before anodising.

Anodising does not remove all defects

The cleaning and etching process does not remove defects such as deep die lines, surface abrasions and corrosion. In fact, these defects are often exaggerated. So it's important to control damage risks during production, storage, handling and transport of extruded aluminium.

Because of this factor, if you want us to anodise material from your own supply, we may not always be able to guarantee good appearance. However, we will make recommendations and do everything we can to achieve the best possible finish for you.

Film thickness affects appearance

As anodic film becomes thicker, the film also becomes duller and less transparent. For a good match in appearance, particularly with coloured material, it's best to avoid mixed film thickness.

Heat joining methods affect colour

Weld filler metal and the heat affected zones of weldments anodise to a different colour than the parent metal. This fact must be taken into account when anodising welded structures.

Temper (hardness) and metal types affect colour

T4 and T5 tempers anodise to a different shade, as do sheet metal and extruded metal. The sheet alloys 5005 and especially 5205 provide the best match with 6060 T5 (the preferred extruded aluminium alloy for anodising). Cast material is almost impossible to match with wrought metal (sheet or extrusion).

Cleaning products and environmental factors may cause corrosion

The anodic film on aluminium is one of the most corrosion resistant coatings available, but it is not indestructible.

Strong acid or alkaline material will seriously corrode the coating. In service, it's essential to avoid:

- Contact with brick or glass cleaners (acid) or alkaline cleaners
- Contact with wet building materials such as plaster or cement and unprotected concrete (alkaline)
- Paint splashes – as attempts to remove them using paint stripper will cause corrosion
- Aggressive scouring type cleaners

We recommend you treat all commercial cleaning products with suspicion and do patch tests before using them extensively on anodised aluminium.

Run off from dissimilar metal building components such as copper guttering or downpipes can also cause serious corrosion.

Dissimilar metal fixings should be properly insulated from anodised aluminium, particularly in a severe environment. Use only good quality, proven sealants.

Reasonably resistant to abrasion

Anodised film is about 4-5 times harder than the aluminium alloy substrate. The greatest hardness is found at the surface of the film, which is capable of marking glass and steel. The aluminium alloy's substrate is not altered by anodic treatment.

Anodic film is therefore quite resistant to abrasion. In fact, specific abrasion tests have found that anodised aluminium is more abrasion resistant than hardened glass. Rubbing type abrasion, particularly with hard scouring material, is more damaging than blast type abrasion – for example, water blasting.

Bending may cause crazing and reduced corrosion resistance

Anodic films cannot be permanently deformed (bent out of shape) without crazing, which also reduces the film's corrosion resistance. We recommend you avoid bending or forming anodised extruded sections, except for sections with very low thickness film.

Films with a thickness of less than 6 microns may be formed for articles such as windscreen trim (FORD specification). But above this figure, flexibility reduces very quickly. You must always use rounded tools and good lubrication.

ISO and Telarc accreditation

Our anodising plant operates in accordance with Altus' ISO 9001-accredited quality management system. Altus Bowden Road also has ISO 14001 environmental management system accreditation.

The plant's quality and environmental management systems are registered with Telarc – New Zealand's largest certifier of quality, environmental, and health and safety management systems.

Window Association of New Zealand (WANZ) Standards

Altus' anodised finishes comply with the Window Association of New Zealand Voluntary Specification: WANZ SFA 3503-03, along with most other international specifications.

Introducing Sheer Anodising

SHEER ANODISED™ is the ultimate in joinery finishes. Its fine matte surface exhibits fewer imperfections providing sharper clarity and reduced reflectivity.

SHEER ANODISED™ is achieved via a two step process. A high-pressure bead blast is applied to the aluminium surface to remove imperfections; the aluminium is then anodised resulting in a lustre free surface.

SHEER ANODISED™ is ideal for a durable and enhanced finish on all exterior and interior architectural joinery surfaces.

Powder Coating Facts & Tips

Altus Bowden Road provides powder coating finishes in a wide range of colours.

Before deciding on a powder coated finish for your extruded aluminium product, you need to know about factors that affect final appearance and long term durability. This section explains some of these factors, along with the production standards we adhere to.

For expert advice and recommendations on achieving the best finish for your unique requirements, talk to Custom Solutions.

Starting with a smooth metal surface is important

Paint film is not transparent, so you will not see the parent metal through the finish. But depressions such as die lines or abrasion marks, unless very shallow are not filled in by powder coating. Protrusions such as adherent particles or water corrosion will be 'painted over', leaving raised-type defects. These are aesthetic rather than damaging.

Differences in surface contour such as flow lines may also affect the paint film's reflectivity and make these effects more visible.

Cleaning products and environmental factors may cause corrosion

The bond between paint film and parent metal is very strong. It is enough to prevent corrosion under normal exposure conditions.

However, acid or alkaline cleaners must be avoided, along with:

- Contact with wet building materials such as plaster or cement and unprotected concrete (alkaline)
- Paint splashes – as attempts to remove them using paint stripper will destroy the film
- Solvents – as these will tend to soften and perhaps dissolve the film

Care needed to avoid scratching

The paint film on powder coated aluminium has about one tenth of the hardness of the parent metal, so it is much less scratch resistant than anodised aluminium.

Avoid using any type of scouring pad – whether metallic or synthetic.

Reasonable flexibility

Paint film is flexible enough to allow simple operations like drilling or punching.

Severe bending of powder coated aluminium extrusions is not easy because of the difference in the formability of the paint film and the base metal.

ISO and Telarc accreditation

Our powder coating plant operates in accordance with Altus' ISO 9001-accredited quality management system. Altus Bowden Road also has ISO 14001 environmental management system accreditation.

The plant's quality management systems are registered with Telarc – New Zealand's largest certifier of quality, environmental, and health and safety management systems.

Window Association of New Zealand (WANZ) Standards

Altus' powder coating finish complies with the Window Association of New Zealand (WANZ) Endurocolour Powder Coating Quality Standard, along with most other international specifications.

The Powder Coat Quality Standard requires a minimum film thickness of 50 microns on significant metal surfaces. In practice, coating thickness usually varies between 60 and 120 microns. This range is necessary to ensure adequate coverage of significant faces.

The Standard also requires other film qualities such as quality of paint cure and adhesion, along with quality of the pre-treatment conversion coating.

Fabrication Overview

Where there is a requirement, Custom Solutions offers a fabrication capability which can be tailored to your needs.

Each stage of your work is completed on site at our plant in Auckland, from extrusion and finishing to fabrication. You will experience the benefits of a direct route to market from just one source, together with friendly help and expert advice to make the best possible choices in the development of your product.

We make standard shapes and customised aluminium shapes, with your choice of mill-finish, anodised finish or powder coating.

As industry experts, we have experience in componentry that may be compatible with your product; e.g. plastic end caps, seals, rollers, hardware, fabricated details, corner stakes/gussets and forming.

We can help with the design and fabrication of everything you need to complete your unique project.

Fabrication Capabilities

- * Precise length cutting
- * Drilling
- * Machining
- * Punching
- * Product assembly
- * De-burring
- * Welding
- * Thermal break



DISCLAIMER

Every effort has been made to ensure accuracy, but all liability incurred in connection with the use of the information in this catalogue is disclaimed. Custom Solutions and Altus reserve the right to amend specifications/dimensions of products and/or add or remove information from this catalogue at any time without prior notice.

This document is current as at:

27 February 2017