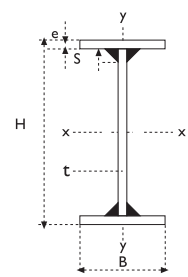
DESIGNACION	DIMENSIONES			SECCION TOTAL									
IN H X PESO				AREA EJE X-X				EJE Y-Y			FLEXION		Sold
	B	e	t	A	I	W	i	I	W	i	ia	it	Smin
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
IN 100 x 352	400	40	14	449	829000	16600	43.0	42700	2130	9.75	11.3	1.60	10
322		35	14	410	746000	14900	42.6	37400	1870	9.54	11.2	1.40	8
304		32	14	387	696000	13900	42.4	34200	1710	9.39	11.1	1.28	8
280		28	14	356	627000	12500	42.0	29900	1490	9.16	10.9	1.12	8
279	350	32	14	355	621000	12400	41.8	22900	1310	8.03	9.60	1.12	8
258		28	14	328	561000	11200	41.4	20000	1140	7.81	9.45	0.980	8
242		25	14	308	516000	10300	40.9	17900	1020	7.62	9.31	0.875	8
226		22	14	288	470000	9400	40.4	15700	900	7.40	9.15	0.770	8
215		20	14	274	439000	8790	40.0	14300	818	7.22	9.02	0.700	6
205		18	14	261	408000	8170	39.6	12900	736	7.03	8.88	0.630	6
194		16	14	248	377000	7540	39.0	11500	655	6.80	8.72	0.560	6
IN 90 x 328	400	40	12	418	647000	14400	39.3	42700	2130	10.10	11.6	1.78	10
298		35	12	380	581000	12900	39.1	37300	1870	9.92	11.4	1.56	8
280		32	12	356	541000	12000	39.0	34100	1710	9.79	11.3	1.42	8
255		28	12	325	486000	10800	38.7	29900	1490	9.58	11.2	1.24	8
254	350	32	12	324	481000	10700	38.5	22900	1310	8.40	9.82	1.24	8
233		28	12	297	433000	9620	38.2	20000	1140	8.21	9.68	1.09	8
217		25	12	277	396000	8810	37.8	17900	1020	8.03	9.56	0.972	8
202		22	12	257	360000	7990	37.4	15700	899	7.83	9.41	0.856	8
191		20	12	243	335000	7440	37.1	14300	817	7.67	9.30	0.778	6
180		18	12	230	310000	6880	36.7	12900	736	7.49	9.18	0.700	6
170		16	12	216	284000	6320	36.3	11400	654	7.28	9.03	0.622	6
IN 80 x 250	350	35	10	318	391000	9780	35.1	25000	1430	8.87	10.1	1.53	8
234		32	10	298	364000	9090	35.0	22900	1310	8.77	10.0	1.40	8
212		28	10	270	326000	8160	34.7	20000	1140	8.60	9.90	1.22	8
196		25	10	250	298000	7450	34.5	17900	1020	8.45	9.80	1.09	8
180		22	10	230	269000	6730	34.2	15700	899	8.28	9.67	0.962	8
177	300	25	10	225	260000	6510	34.0	11300	750	7.07	8.32	0.938	8
163		22	10	208	236000	5900	33.7	9910	660	6.91	8.20	0.825	8
154		20	10	196	219000	5480	33.4	9010	600	6.78	8.11	0.750	6
145		18	10	184	202000	5060	33.1	8110	540	6.63	8.01	0.675	6
136		16	10	173	185000	4630	32.7	7210	480	6.46	7.89	0.600	6
127		14	10	161	168000	4200	32.3	6310	420	6.25	7.75	0.525	6
IN 70 x 232	350	35	8	295	288000	8220	31.2	25000	1430	9.20	10.3	1.75	8
216		32	8	275	267000	7640	31.2	22900	1310	9.12	10.2	1.60	8
194		28	8	248	239000	6830	35.1	20000	1140	8.99	10.1	1.40	8
178		25	8	227	218000	6220	31.0	17900	1020	8.87	10.0	1.25	8
162		22	8	206	196000	5600	30.8	15700	898	8.73	9.92	1.10	8
159	300	25	8	202	189000	5410	30.6	11300	750	7.46	8.53	1.07	8
145		22	8	184	171000	4870	30.4	9900	660	7.33	8.43	0.943	8
136		20	8	173	158000	4510	30.2	9000	600	7.22	8.36	0.857	6
126		18	8	161	145000	4150	30.0	8100	540	7.09	8.27	0.771	6
117		16	8	149	132000	3780	29.7	7200	480	6.94	8.17	0.686	6
108		14	8	138	119000	3400	29.4	6300	420	6.76	8.05	0.600	6



Vigas Soldadas

SERIE IN PROPIEDADES DE DISEÑO

VESPUCIO MAESTRANZA&FUNDICION

DESIGNACION	DIMENSIONES			SECCION TOTAL									
IN H X PESO	B	e	t	AREA DE EJE X-X				EJE Y-Y			FLEXION		Sold
				A	I	W	i	I	W	i	ia	it	Smin
cm x kg/m	mm	mm	mm	cm5	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
IN 60 x 184	300	32	8	235	165000	5510	26.5	14400	960	7.83	8.86	1.60	8
166		28	8	212	148000	4940	26.5	12600	840	7.72	8.75	1.40	8
152		25	8	194	135000	4510	26.4	11300	750	7.62	8.66	1.25	8
139		22	8	176	122000	4060	26.3	9900	660	7.49	8.56	1.10	8
129		20	8	165	113000	3760	26.1	9900	600	7.39	8.48	1.00	6
121	250	22	8	154	103000	3450	25.9	5730	459	6.09	7.06	0.917	8
114		20	8	145	95800	3190	25.7	2510	417	6.00	7.00	0.833	6
106		18	8	135	88200	2940	25.5	4690	375	5.89	6.92	0.750	6
98.5		16	8	125	80400	2680	25.3	4170	334	5.77	6.83	0.667	6
90.9		14	8	116	72600	2420	25.0	3650	292	5.61	6.73	0.583	6
83.3		12	8	106	64600	2150	24.7	3130	250	5.43	6.60	0.500	5
IN 50 x 182	350	28	8	232	115000	4610	22.3	20000	1140	9.30	10.4	1.96	8
166		25	8	211	105000	4200	22.3	17900	1020	9.20	10.3	1.75	8
150		22	8	190	94300	3770	22.3	15700	898	9.09	10.2	1.54	8
132	300	22	8	168	81800	3270	22.0	9900	660	7.67	8.70	1.32	8
123		20	8	157	75600	3030	22.0	9000	600	7.58	8.62	1.20	6
114		18	8	145	69400	2780	21.9	8100	540	7.47	8.54	1.08	6
105		16	8	133	63100	2520	21.7	7200	480	7.35	8.45	0.960	6
99.8	250	18	8	127	59000	2360	21.5	4690	375	6.07	7.05	0.900	6
92.2		16	8	117	53700	2150	21.4	4170	333	5.96	6.97	0.800	6
84.6		14	8	108	48400	1930	21.2	3650	292	5.82	6.87	0.700	6
77.0		12	8	98.1	42900	1720	20.9	3130	250	5.65	6.75	0.600	5
IN 45 x 157	300	28	8	200	79000	3510	19.9	12600	840	7.95	8.99	1.87	8
143		25	8	182	72100	3200	19.9	11300	750	7.86	8.89	1.67	8
129		22	8	164	65000	2890	19.9	9900	660	7.76	8.78	1.47	8
120		20	8	153	60100	2670	19.8	9000	600	7.68	8.71	1.33	6
112	250	22	8	142	54900	2440	19.6	5730	458	6.34	7.27	1.22	8
104		20	8	133	50900	2260	19.6	5210	417	6.26	7.20	1.11	6
96.6		18	8	123	46700	2080	19.5	4690	375	6.17	7.13	1.00	6
89.1		16	8	113	42600	1890	19.4	4170	333	6.06	7.04	0.889	6
82.5	200	18	8	105	38300	1700	19.1	2400	240	4.78	5.63	0.800	6
76.5		16	8	97.4	35000	1560	19.0	2140	214	4.68	5.56	0.711	6
70.5		14	8	89.4	31600	1410	18.8	1870	187	4.56	5.47	0.622	6
64.4		12	8	82.1	28200	1250	18.5	1600	160	4.42	5.36	0.535	5
IN 40 x 140	300	25	8	178	55700	2780	17.7	11300	750	7.95	8.99	1.87	8
126		22	8	160	50200	2510	17.7	9900	660	7.85	8.88	1.65	8
111		20	6	142	45700	2280	18.0	9000	600	7.97	8.88	1.50	6
109	250	22	8	138	42300	2120	17.5	5730	458	6.43	7.36	1.37	8
95.5		20	6	122	38500	1920	17.8	5210	417	6.54	7.36	1.25	6
87.8		18	6	112	35300	1760	17.8	4690	375	6.47	7.29	1.12	6
80.1		16	6	102	32000	1600	17.7	4170	333	6.39	7.22	1.00	6
73.7	200	18	6	93.8	28700	1430	17.5	2400	240	5.06	5.78	0.900	6
67.6		16	6	86.1	26100	1300	17.4	2130	213	4.98	5.72	0.800	6
61.5		14	6	78.3	23400	1170	17.3	1870	187	4.88	5.64	0.700	6
55.4		12	6	70.6	20700	1040	17.1	1600	160	4.76	5.56	0.600	5
49.3		10	6	62.8	18000	898	16.9	1330	133	4.61	5.45	0.500	5

Vigas Soldadas

SERIE IN PROPIEDADES DE DISEÑO

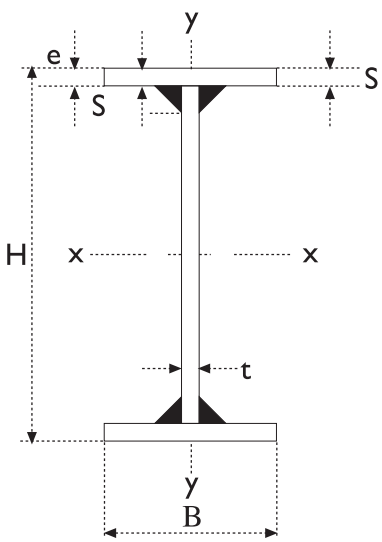
DESIGNACION	DIMENSIONES			SECCION TOTAL									
IN H X PESO				AREA EJE X-X				EJE Y-Y			FLEXION		Sold
	B	e	t	A	I	W	i	I	W	i	ia	it	Smin
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
IN 35 x 137	300	25	8	174	41500	2370	15.4	11300	750	8.04	9.11	2.14	8
123		22	8	156	37500	2140	15.5	9900	660	7.95	9.00	1.89	8
109		20	6	139	34200	1950	15.7	9000	600	8.06	8.98	1.71	6
106	250	22	8	134	31500	1800	15.3	5730	458	6.53	7.46	1.57	8
93.1		20	6	119	28700	1640	15.6	5210	417	6.63	7.45	1.43	6
85.4		18	6	109	26400	1510	15.6	4690	375	6.56	7.38	1.29	6
77.8		16	6	99.1	23900	1370	15.5	4170	333	6.49	7.30	1.14	6
71.3	200	18	6	90.8	21400	1220	15.4	2400	240	5.14	5.86	1.03	6
65.2		16	6	83.1	19500	1110	15.3	2130	213	5.07	5.79	0.914	6
59.1		14	6	75.3	17500	999	15.2	1870	187	4.98	5.72	0.800	6
53.0		12	6	67.6	15400	883	15.1	1600	160	4.87	5.63	0.686	5
46.9		10	6	59.8	13400	763	14.9	1330	133	4.72	5.53	0.571	5
IN 30 x 102	250	22	8	130	22400	1490	13.1	5730	458	6.63	7.58	1.83	8
90.7		20	6	116	20500	1370	13.3	5216	417	6.71	7.56	1.67	6
83.1		18	6	106	18800	1260	13.3	4690	375	6.66	7.48	1.50	6
75.4		16	6	96.1	17100	1140	13.3	4170	333	6.59	7.40	1.33	6
69.0	200	18	6	87.8	15300	1020	13.2	2400	240	5.23	5.95	1.20	6
62.9		16	6	80.1	13900	925	13.2	2130	213	5.16	5.88	1.07	6
56.8		14	6	72.3	12500	831	13.1	1870	187	5.08	5.81	0.93	6
50.7		12	6	64.6	11000	734	13.1	1600	160	4.98	5.72	0.800	5
44.6		10	6	56.8	9510	634	12.9	1330	133	4.85	5.62	0.667	5
41.3	150	12	6	52.6	8520	568	12.7	675	90.1	3.58	4.22	0.600	5
36.7		10	6	46.8	7410	494	12.6	563	75.1	3.47	4.14	0.500	5
32.2		8	6	41.0	6260	417	12.4	451	60.1	3.31	4.02	0.400	5
IN 25 x 72.7	200	20	6	92.6	11100	886	10.9	2670	267	5.37	6.14	1.60	6
66.6		18	6	84.8	10200	816	11.0	2400	240	5.32	6.06	1.44	6
60.5		16	6	77.1	9290	743	11.0	2130	213	5.26	5.99	1.28	6
54.4		14	6	69.3	8350	668	11.0	1870	187	5.19	5.91	1.12	6
46.6		12	5	59.3	7280	583	11.1	1600	160	5.19	5.86	0.960	5
43.4	150	14	6	55.3	6400	512	10.8	788	105	3.77	4.39	0.840	6
37.1		12	5	47.3	5580	447	10.9	675	90.0	3.78	4.35	0.720	5
32.6		10	5	41.5	4830	386	10.8	563	75.0	3.68	4.27	0.600	5
27.7	100	12	5	35.3	3880	311	10.5	200	40.0	2.38	2.84	0.480	5
24.7		10	5	31.5	3390	271	10.4	167	33.4	2.30	2.77	0.400	5
21.7		8	5	27.7	2880	230	10.2	134	26.7	2.20	2.69	0.320	5
18.8		6	5	23.9	2350	188	9.91	100	20.0	20.5	2.58	0.240	4
IN 20 x 50.1	150	18	6	63.8	4710	417	8.59	1010	135	3.98	4.64	1.35	6
45.6		16	6	58.1	4310	431	8.61	900	120	3.94	4.57	1.20	6
41.1		14	6	52.3	3890	389	8.63	788	105	3.88	4.50	1.05	6
35.2		12	5	44.8	3410	341	8.73	675	90.0	3.88	4.45	0.900	5
30.6		10	5	39.0	2950	295	8.70	563	75.0	3.80	4.37	0.750	5
25.7	100	12	5	32.8	2350	235	8.47	200	40.0	2.47	2.92	0.600	5
22.8		10	5	29.0	2050	205	8.41	157	33.4	2.40	2.85	0.500	5
19.8		8	5	25.2	1730	173	8.30	134	26.7	2.30	2.77	0.400	5
16.8		6	5	21.4	1410	141	8.11	100	20.0	2.16	2.67	0.300	4
13.8		5	4	17.6	1180	118	3.19	83	16.7	2.18	2.66	0.250	4

Columnas Soldadas

SERIE HN PROPIEDADES DE DISEÑO

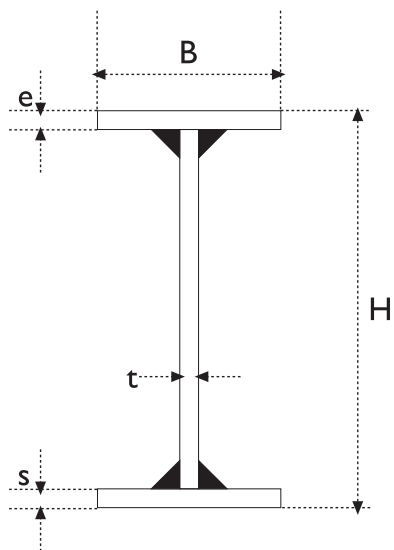
VESPUCIO MAESTRANZA&FUNDICION

DESIGNACION	DIMENSIONES			SECCION TOTAL									
HN H X PESO				AREA EJE X-X				EJE Y-Y			FLEXION		Sold
	B	e	t	A	I	W	i	I	W	i	ia	it	Smin
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
HN 50 x 462	500	50	22	588	266000	10600	21.3	104000	4170	13.3	15.7	5.00	10
380		40	20	484	224000	8980	21.5	83400	3330	13.1	15.2	4.00	10
336		35	18	427	201000	8060	21.7	72900	2920	13.1	15.0	3.50	8
306		32	16	390	187000	7460	21.9	66700	2670	13.1	14.9	3.20	8
269		28	14	342	166000	6650	22.0	58300	2330	13.1	14.8	2.80	8
246		25	14	313	152000	6070	22.0	52100	2080	12.9	14.6	2.50	8
223		22	14	284	137000	5470	22.0	45800	1830	12.7	14.5	2.20	8
208		20	14	264	127000	5060	21.9	41700	1670	12.6	14.3	2.00	6
192		18	14	245	116000	4650	21.8	37500	1500	12.4	14.2	1.80	6
177		16	14	226	106000	4230	21.6	33300	1330	12.2	14.0	1.60	6
HN 45 x 341	450	40	20	434	160000	7120	19.2	60800	2700	11.8	13.9	4.00	10
301		35	18	383	144000	6410	19.4	53200	2360	11.8	13.7	3.50	8
275		32	16	350	134000	5940	19.6	48600	2160	11.8	13.6	3.20	8
241		28	14	307	119000	5310	19.7	42500	1890	11.8	13.4	2.80	8
214		25	12	273	108000	4810	19.9	38000	1690	11.8	13.3	2.50	8
194		22	12	247	97400	4330	19.9	33400	1490	11.6	13.2	2.20	8
180		20	12	229	90200	4010	19.8	30400	1350	11.5	13.1	2.00	6
166		18	12	212	82700	3680	19.8	27300	1220	11.4	12.9	1.80	6
152		16	12	194	75100	3340	19.7	24300	1080	11.2	12.8	1.60	6
139		14	12	177	67400	3000	19.5	21300	945	11.0	12.6	1.40	6
HN 40 x 301	400	40	20	384	110000	5480	16.9	42700	2130	10.5	12.5	4.00	10
266		35	18	339	98900	4950	17.1	37300	1870	10.5	12.3	3.50	8
243		32	16	310	91900	4600	17.2	34100	1710	10.5	12.2	3.20	8
214		28	14	272	82400	4120	17.4	29900	1490	10.5	12.0	2.80	8
190		25	12	242	74700	3740	17.6	26700	1330	10.5	12.0	2.50	8
172		22	12	219	67500	3370	17.6	23500	1170	10.4	11.8	2.20	8
160		20	12	203	62500	3120	17.5	21300	1070	10.2	11.7	2.00	6
147		18	12	188	57400	2870	17.5	19200	960	10.1	11.6	1.80	6
135		16	12	172	52200	2610	17.4	17100	854	9.96	11.4	1.60	6
123		14	12	157	46900	2340	17.3	14900	747	9.77	11.3	1.40	6



DESIGNACION	DIMENSIONES			SECCION TOTAL									
HN H X PESO	B	e	t	AREA EJE X-X				EJE Y-Y			FLEXION		Sold
				A	I	W	i	I	W	i	ia	it	Smin
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
HN 35 x 232	350	35	18	295	64300	3680	14.8	25000	1430	9.20	10.9	3.50	8
212		32	16	270	59900	3430	14.9	22900	1310	9.21	10.8	3.20	8
186		28	14	237	53900	3080	15.1	20000	1140	9.19	10.7	2.80	8
166		25	12	211	49000	2800	15.2	17900	1020	9.20	10.6	2.50	8
150		22	12	191	44300	2530	15.2	15700	899	9.08	10.4	2.20	8
134		20	10	171	40600	2320	15.4	14300	817	9.14	10.4	2.00	6
124		18	10	157	37300	2130	15.4	12900	735	9.04	10.3	1.80	6
113		16	10	144	33900	1940	15.4	11400	653	8.92	10.2	1.60	6
102		14	10	130	30500	1740	15.3	10000	572	8.77	10.0	1.40	6
91.5		12	10	117	26900	1540	15.2	8580	490	8.58	9.88	1.20	5
HN 30 x 180	300	32	16	230	36400	2430	12.6	14400	961	7.92	9.44	3.20	8
159		28	14	202	32900	2190	12.8	12600	840	7.90	9.29	2.80	8
141		25	12	180	30000	2000	12.9	11300	750	7.91	9.19	2.50	8
128		22	12	163	27200	1820	12.9	9900	660	7.80	9.05	2.20	8
115		20	10	146	25000	1670	13.1	9000	600	7.85	9.00	2.00	6
106		18	10	134	23000	1540	13.1	8100	540	7.76	8.90	1.80	6
92.2		16	8	117	20700	1380	13.3	7200	480	7.83	8.86	1.60	6
83		14	8	106	18500	1240	13.2	6300	420	7.72	8.75	1.40	6
7.39		12	8	94.1	16300	1090	13.2	5400	360	7.58	8.62	1.20	5
64.7		10	8	82.4	14100	939	13.1	4500	300	7.39	8.48	1.00	5
HN 25 x 131	250	28	14	167	18200	1460	10.4	7300	584	6.61	7.92	2.80	8
117		25	12	149	16700	1330	10.6	6510	521	6.61	7.81	2.50	8
106		22	12	135	15200	1220	10.6	5730	459	6.52	7.67	2.20	8
95.0		20	10	121	14000	1120	10.8	5210	417	6.56	7.62	2.00	6
87.4		18	10	111	13000	1040	10.8	4690	375	6.49	7.52	1.80	6
76.5		16	8	97.4	11700	933	10.9	4170	333	6.54	7.47	1.60	6
68.9		14	8	87.8	10500	839	10.9	3650	292	6.45	7.37	1.40	6
57.7		12	6	73.6	9080	726	11.1	3130	250	6.52	7.33	1.20	5
50.1		10	6	63.8	7810	625	11.1	2600	208	6.39	7.22	1.00	5
42.4		8	6	54	6500	520	11.0	2080	167	6.21	7.08	0.800	5
HN 20 x 90.3	200	25	10	115	7990	799	8.34	3330	333	5.38	6.46	2.50	8
81.3		22	10	104	7320	732	8.41	2930	293	5.32	6.33	2.20	8
75.4		20	10	96.0	6850	685	8.45	2670	267	5.27	6.24	2.00	6
69.4		18	10	88.4	6350	635	8.47	2400	240	5.21	6.15	1.80	6
60.8		16	8	77.4	5750	575	8.61	2130	213	5.25	6.09	1.60	6
54.8		14	8	69.8	5190	519	8.63	1870	187	5.17	6.00	1.40	6
46.0		12	6	58.6	4520	452	8.79	1600	160	5.23	5.95	1.20	5
39.9		10	6	50.8	3900	390	8.77	1330	133	5.12	5.84	1.00	5
33.8		8	6	43.0	3260	326	8.71	1070	107	4.98	5.72	0.800	5

PERFIL AISC		DIMENSIONES METRICAS					PESO	
	PESO	H	t	B	e	s		DENOMINACION
DENOMINACION	Kg/m	mm	mm	mm	mm	mm	Kg./m	METRICA
14 BP 117	174	361	20	378	20	8	169.09	35 BPM 170
102	152	356	16	376	20	8	158.76	159
89	132	352	16	313	16	6	118.82	134
73	109	346	12	370	12	5	100.04	100
12 BP 74	110	308	16	310	16	6	112.54	30 BPM 113
53	79	299	12	306	12	5	83.56	84
10 BP 57	85	254	12	260	16	6	86.98	25 HPM 87
42	63	247	10	256	10	5	58.01	58
8 BP 36	54	204	12	207	12	5	55.95	20 BPM 56
8 x 8 M 34.3	51	203	10	203	12	5	52.61	20 MM 52
32.6	49	203	8	202	12	5	49.80	49
12 JR 11.8	18	305	5	78	6	5	18.93	30 JRM 19
10 JR 9	13	254	5	68	5	5	14.92	25 JRM 15
8 JR 6.5	10	203	5	58	5	5	12.13	20 JRM 12



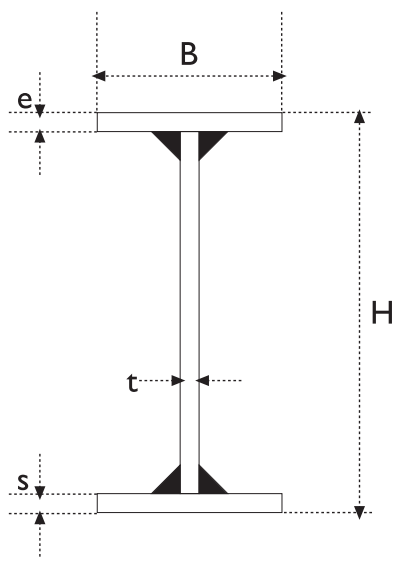
PERFIL AISC		DIMENSIONES METRICAS					PESO	DENOMINACION METRICA
	PESO	H	t	B	e	s		
DENOMINACION	Kg/m	mm	mm	mm	mm	mm	Kg./m	
60	199	600	22	215	32	8	204.04	201
55	166	550	20	200	30	8	174.27	172
50	141	500	16	185	28	8	140.11	138
47.5	128	475	16	178	25	8	125.51	124
45	115	450	16	170	25	8	119.23	118
42.5	104	425	16	163	22	8	105.66	105
40	92	400	16	155	22	8	99.76	99
38	84	380	12	149	20	8	80.32	80
36	76	360	12	143	20	8	76.55	76
34	68	340	12	137	20	8	72.79	72
32	61	320	12	131	16	6	60.79	61
30	54	300	10	125	16	6	53.38	54
28	48	280	10	119	16	6	50.30	50
26	42	260	10	113	16	6	47.23	47
24	36	240	8	106	12	5	34.04	34
22	31	220	8	98	12	5	31.27	31
20	26	200	8	90	12	5	28.51	29
IPE 600	122	600	12	220	20	8	123.34	IPE 123
550	106	550	12	210	16	6	102.30	103
500	91	500	10	200	16	6	87.92	88
450	78	450	10	190	16	6	81.48	82
400	66	400	8	180	16	6	69.33	69
360	57	360	8	170	12	5	53.63	53
330	49	330	8	160	12	5	49.86	49
300	42	300	8	150	10	5	41.39	41
270	36	270	6	135	10	5	33.35	33
240	31	240	6	120	10	5	29.58	29
220	26	220	6	110	10	5	27.07	27
200	22	200	6	100	8	5	21.41	21

Perfiles Alternativos
REEMPLAZO DE PERFILES EURONORM

VESPUCIO
MAESTRANZA&FUNDICION

PERFIL EURONORM		DIMENSIONES METRICAS					PESO	DENOMINACION METRICA
	PESO	H	t	B	e	s		
DENOMINACION	Kg/m	mm	mm	mm	mm	mm	Kg./m	
IPER 500	111	508	12	198	20	8	10.76	IPER 107
450	95	458	12	188	20	8	99.91	99
400	82	407	10	178	16	6	75.09	75
360	70	366	10	168	16	6	69.36	69
330	60	336	10	158	16	6	64.50	65
300	52	306	8	147	16	6	55.14	55
270	44	276	8	133	12	5	41.39	41
240	37	245	8	118	12	5	36.31	36
220	32	225	6	108	12	5	30.38	30
200	27	204	6	98	10	5	24.43	24
* 1000	272	990	16	300	32	8	271.04	HEA 268
900	252	890	16	300	30	8	249.06	246
800	224	790	16	300	28	8	227.08	225
700	204	690	16	300	28	8	214.52	212
650	190	640	12	300	28	8	189.91	188
600	178	590	12	300	25	8	171.07	170
550	166	540	12	300	25	8	166.36	165
500	155	490	12	300	22	8	147.52	147
450	140	440	12	300	22	8	142.81	142
400	125	390	10	300	20	8	123.25	123
360	112	350	10	300	20	8	120.11	120
340	105	330	10	300	16	6	99.70	100
320	98	310	8	300	16	6	93.32	94
300	88	290	8	300	16	6	92.57	93
280	76	270	8	280	12	5	68.70	68
260	68	250	8	260	12	5	63.68	63
220	60	230	8	240	12	5	58.66	58
200	51	210	6	220	12	5	50.77	40
200	42	190	6	200	10	5	39.78	40

* DENOMINACIÓN ANTIGUA
DIE. IPBI.



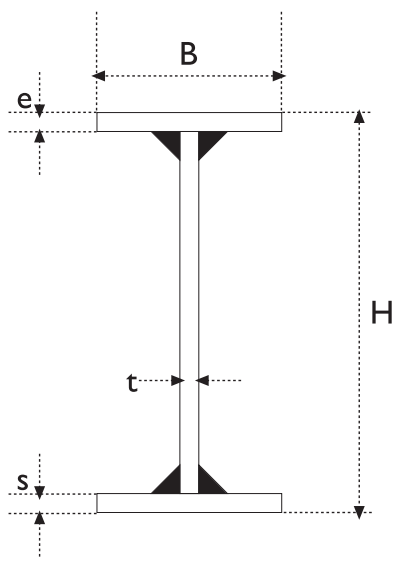
PERFIL EURONORM		DIMENSIONES METRICAS					PESO	DENOMINACION METRICA
	PESO	H	t	B	e	s		
DENOMINACION	Kg/m	mm	mm	mm	mm	mm	Kg./m	
* HEB 1000	314	1000	20	300	38	8	329.70	HEB 325
900	291	900	20	300	35	8	299.87	296
800	262	800	16	300	35	8	261.31	258
700	241	700	16	300	32	8	234.62	232
650	225	650	16	300	32	8	228.34	226
600	212	600	16	300	32	8	222.06	219
550	199	550	16	300	28	8	196.94	195
500	187	500	16	300	28	8	190.66	189
450	171	450	12	300	28	8	172.01	170
400	155	400	12	300	25	8	153.17	152
360	142	360	12	300	22	8	135.27	135
340	135	340	12	300	22	8	133.39	133
320	127	320	12	300	20	8	122.08	122
300	117	300	10	300	20	8	116.18	116
280	103	280	10	280	20	8	108.33	108
260	93	260	10	260	20	8	100.48	100
240	83	240	10	240	16	6	77.56	78
220	72	220	10	220	16	6	70.96	71
200	61	200	8	200	16	6	61.80	62
**HEM 340	248	377	22	309	41	10	256.41	HEM 252
320	245	359	22	309	41	10	253.30	248
300	238	340	22	310	38	8	236.07	232
300C	177	320	16	305	28	8	170.25	168
280	189	310	20	288	35	8	200.65	197
260	172	290	20	268	32	8	173.89	171
240	157	270	20	248	32	8	160.71	158
220	117	240	16	226	25	8	114.83	114
200	103	220	16	206	25	8	104.47	103

* DENOMINACION ANTIGUA
** DIR, IPB.
* DIN, JPB.

Perfiles Alternativos
REEMPLAZO DE PERFILES EURONORM

VESPUCIO
MAESTRANZA&FUNDICION

PERFIL EURONORM		DIMENSIONES METRICAS					PESO	DENOMINACION METRICA
	PESO	H	t	B	e	s		
DENOMINACION	Kg/m	mm	mm	mm	mm	mm	K/gm	
HEM 1000	349	1008	22	302	41	10	360.88	HEM 357
900	333	910	22	302	41	10	343.96	340
800	317	814	22	303	41	10	328.02	323
700	301	716	22	304	41	10	311.74	307
650	293	668	22	305	41	10	304.09	300
600	285	620	22	306	41	10	296.45	292
550	278	572	22	306	41	10	288.16	284
500	270	524	22	306	41	10	279.87	275
450	263	478	22	307	41	10	272.57	268
400	256	432	22	307	41	10	264.62	260
360	250	395	22	308	41	10	258.88	255
DIL 60	210	600	12	300	32	8	204.98	DIL 202
55	197	550	12	300	32	8	200.27	197
50	186	500	12	300	28	8	176.72	175
47.5	177	475	12	300	28	8	174.36	172
45	168	450	12	300	28	8	172.01	170
42.5	159	425	12	300	25	8	155.52	154
40	151	400	12	300	25	8	153.17	152
38	143	380	10	300	25	8	146.01	145
36	136	360	10	300	22	8	130.31	130
34	128	340	10	300	22	8	128.74	128
32	121	320	8	300	22	8	122.71	122
30	114	300	8	300	20	8	112.04	112
28	101	280	8	280	20	8	104.50	104
26	89	260	8	260	20	8	96.96	97
25	83	250	8	250	16	6	77.50	78
24	77	240	8	240	16	6	74.36	74
22	66	220	6	220	16	6	65.05	65
20	57	200	6	200	16	6	59.09	59



Perfiles T Soldados

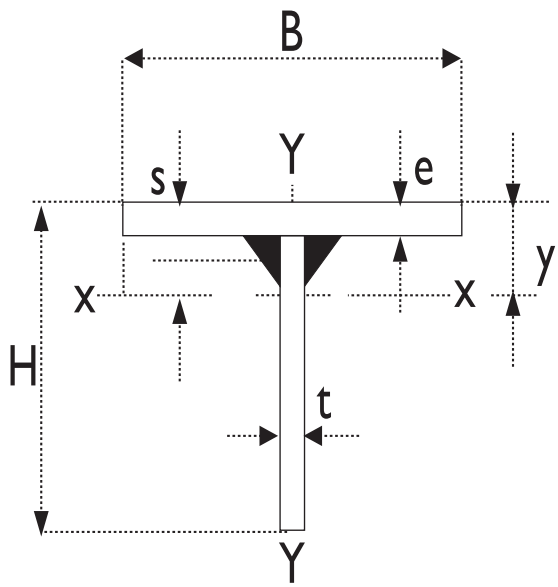
PROPIEDADES DE DISEÑO

DESIGNACION	DIMENSIONES			SECCION TOTAL							
TH X PESO				AREA	EJE X-X				EJE Y-Y		
	B	e	t	A	I	W	i	Y	I	W	i
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm	cm4	cm3	cm
T 25 x 108	350	28	18	138	6140	307	6.67	5.02	10000	572	8.52
100		25	18	128	6080	307	6.89	5.21	8940	511	8.36
92.7		22	18	118	5990	306	7.12	5.45	7870	450	8.16
87.1	300	25	16	111	5360	272	6.95	5.30	5630	375	7.12
80.4		22	16	102	5280	271	7.18	5.55	4960	330	6.95
76.0		20	16	96.8	5210	270	7.33	5.75	4510	300	6.82
68.2	250	22	14	86.9	4560	236	7.24	5.69	2870	229	5.74
64.5		20	14	82.2	4500	235	7.40	5.90	2610	209	5.63
60.8		18	14	77.5	4420	234	7.55	6.14	2350	188	5.51
T 20 x 80.9	300	25	16	103	2790	174	5.21	3.97	5630	375	7.39
74.2		22	16	94.5	2770	174	5.41	4.11	4950	330	7.24
69.7		20	16	88.8	2740	174	5.56	4.24	4500	300	7.12
62.7	250	22	14	79.9	2390	152	5.47	4.22	2870	229	5.99
59.0		20	14	75.2	2370	152	5.62	4.35	2610	209	5.89
55.3		18	14	70.5	2340	151	5.76	4.52	2350	188	5.77
48.4	200	20	12	61.6	2000	129	5.70	4.51	1340	134	4.66
45.4		18	12	57.8	1970	129	5.84	4.68	1200	120	4.56
42.5		16	12	54.1	1940	128	5.98	4.88	1070	107	4.45
T 17.5 x 68.6	300	22	14	87.4	1680	118	4.39	3.24	4950	330	7.53
64.1		20	14	81.7	1670	118	4.53	3.32	4500	300	7.42
59.6		18	14	76.0	1660	118	4.68	3.43	4050	270	7.30
53.9	250	20	12	68.6	1430	101	4.56	3.37	2610	208	6.16
50.1		18	12	63.8	1420	101	4.71	3.48	2350	188	6.06
46.4		16	12	59.1	1400	101	4.87	3.63	2080	167	5.94
40.6	200	18	10	51.7	1170	83.8	4.76	3.56	1200	120	4.82
37.6		16	10	47.9	1150	83.7	4.91	3.70	1070	107	4.72
34.6		14	10	44.1	1130	83.4	5.07	3.89	934	93.4	4.60
T 15 x 51.5	250	20	12	65.6	905	74.1	3.71	2.78	2600	208	6.30
47.8		18	12	60.8	901	74.2	3.85	2.85	2340	188	6.21
44.0		16	12	56.1	894	74.2	3.99	2.95	2080	167	6.10
38.6	200	18	10	49.2	745	61.6	3.89	2.91	1200	120	4.94
35.6		16	10	45.4	739	61.6	4.03	3.01	1070	107	4.85
32.7		14	10	41.6	729	61.5	4.19	3.15	934	93.4	4.74
27.3	150	16	8	34.7	582	49.0	4.10	3.12	450	60.1	3.60
25.0		14	8	31.9	574	48.9	4.24	3.26	394	52.6	3.52
22.8		12	8	29.0	562	48.7	4.40	3.45	338	45.1	3.41
T 12.5 x 38.3	200	18		48.8	502	50.4	3.21	2.54	1200	120	4.96
35.4		16	12	45.1	499	50.5	3.33	2.61	1070	107	4.87
27.4	150	16	0	34.9	406	41.6	3.41	2.75	451	60.1	3.59
25.2		14	10	31.2	401	41.6	3.53	2.86	395	52.6	3.51
T 10 x 21.9	150	14	8	27.9	175	21.7	2.51	1.93	394	52.5	3.76
19.7		12	8	25.0	174	21.8	2.64	2.01	338	45.0	3.67

Perfiles T Soldados
PROPIEDADES DE CALCULO

VESPUCIO
MAESTRANZA&FUNDICION

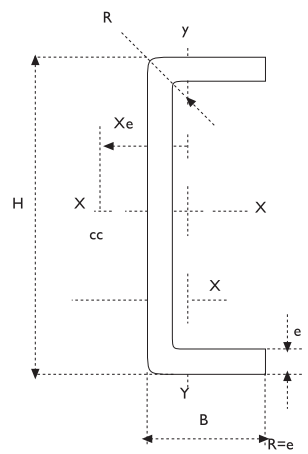
ALTURA NOMINAL	PESO	AREA	ALTURA AREA TOTAL	ALA		ALMA		EJE X-X			EJE Y-Y			SUPERFICIE
				Ancho	Espesor	Ancho	Espesor	I	W	i	I	w	i	
cm	Kg/m	cm2	mm	mm	mm	mm	mm	cm4	cm3	cm	cm4	cm3	cm	m2/Ton
25	69.08	88	266	300	16	250	16	5943	301.0	8.21	3608	241.0	6.40	16.4
	62.80	80	266	250	16	250	16	5581	292.0	8.35	2091	167.0	5.10	16.4
20	42.39	54	212	250	12	200	12	2298	146.0	6.52	1564	125.0	5.40	21.5
	37.68	48	212	200	12	200	12	2148	140.0	6.70	802	80.2	4.08	21.6
15	27.48	35	160	200	10	150	10	832	69.0	4.90	668	67.0	4.35	25.7
	23.56	30	160	150	10	150	10	762	66.4	5.05	283	37.6	3.06	25.8
10	15.70	20	108	150	8	100	8	201	24.6	3.18	225	30.0	3.35	32.3
	12.56	16	108	100	8	100	8	179	23.7	3.36	67	13.4	2.05	31.9
	11.78	15	106	150	6	100	6	151	18.7	3.18	169	22.6	3.35	42.9
	9.42	12	106	100	6	100	6	134	17.5	3.36	50	10.0	2.04	41.2



Canales y Zetas Plegadas

ALAS NO ATIESADAS • PROPIEDADES DE DISEÑO

DESIGNACION	DIMENSIONES		SECCION TOTAL									
			CYZ				C					
			AREA	EJE X-X			EJE Y-Y				FLEXION	
CHXPESO	B	e	A	I	W	i	I	W	i	X	ia	it
cmxkg/m	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	cm
C 30 x 43.4	100	12	55.3	6670	445	11.0	459	61.5	2.88	2.53	3.94	0.400
36.7		10	46.7	5750	383	11.1	396	52.4	2.91	2.44	3.94	0.333
29.7		8	37.9	4750	317	11.2	328	42.9	2.94	2.35	3.94	0.267
26.6	75	8	33.9	3900	260	10.7	143	24.1	2.05	1.59	2.87	0.200
20.3		6	25.8	3040	202	10.8	112	18.6	2.08	1.51	2.88	0.150
17.0		5	21.7	2580	172	10.9	95.1	15.8	2.09	1.46	2.88	0.125
15.1	50	5	19.2	2030	136	10.3	29.0	6.98	1.23	0.840	1.79	0.083
12.1		4	15.5	1660	111	10.4	24.0	5.71	1.24	0.797	1.80	
10.7		3.5	13.6	1470	97.9	10 4	21.3	5.04	1.25	0.775	1.81	
9.19		3	11.7	1270	84.8	10.4	18.6	4.37	1.26	0.754	1.81	
C 25x 38.7	100	12	49.3	4268	341	9.31	347	60.4	2.98	2.76	4.00	0.48
32 7		10	41.7	3700	296	9.41	375	51.2	3.00	2.67	3.98	0.400
26.6		8	33.9	3070	246	9.52	311	41.9	3.03	2.58	3.98	0.320
23.5	75	8	29.9	2480	199	9.12	136	23.7	2.13	1.75	2.93	0.240
17.9		6	22.8	1940	155	9.23	107	18.3	2.16	1.67	2.93	0.180
15.1		5	19.2	1650	132	9.28	90.9	15.5	2.18	1.62	2.93	0.150
13.1	50	5	16.7	1280	102	8.75	28.0	6.89	1.30	0.929	1.85	0.10
10.6		4	13.5	1050	83.7	8.81	23.2	5.63	1.31	0.885	1.86	
9.30		3.5	11.8	926	74.1	8.84	20.6	4.98	1.32	0.864	1.86	
8.01		3	10.2	803	64.2	8.87	17.9	4.31	1.33	0.842	1.87	
6.71		2.5	8.54	677	54.2	8.90	15.2	3.63	1.33	0.821	1.87	
C 20 x 29.3	75	12	37.3	1954	195	7.24	176	32.9	2.17	2.15	3.00	0.450
24.9		10	31.7	1713	171	7.35	153	28.2	2.20	2.06	2.99	0.375
20.3		8	25.9	1440	144	7.46	128	23.1	2.22	1.96	2.98	0.300
15.6		6	19.8	1130	113	7.56	100	17.8	2.25	1.87	2.97	0.225
13.1		5	16.7	967	96.7	7.61	85.5	15.1	2.26	1.83	2.97	0.188
11.1	50	5	14.2	729	72.9	7.17	26.7	6.75	1.37	1.05	1.91	0.125
9.01		4	11.5	600	60.0	7.23	22.1	5.52	1.39	1.00	1.92	
7.93		3.5	10.1	532	5.32	7.26	19.6	4.88	1.39	0.983	1.92	
6.83		3	8.70	462	46.2	7.29	17.1	4.23	1.40	0.962	1.92	
5.73		2.5	7.29	390	39.0	7.32	14.5	3.56	1.41	0.940	1.92	
4.61		2	5.87	316	31.6	7.34	11.8	2.88	1.42	0.919	1.93	

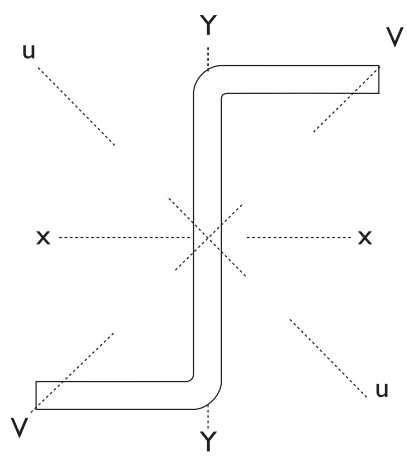


Canales y Zetas Plegadas

ALAS NO ATIESADAS • PROPIEDADES DE DISEÑO

VESPUCIO MAESTRANZA&FUNDICION

SECCION TOTAL												
	c						z					
	PANDEO FLEXO TORSIONAL						EJE y-y			eje u-u	ejev-v	flexion
PESO	xo	io	B	j	1000j	ca	I	W	i	i	i	ia
kg/m	cm	cm		cm	cm4	cm6	cm4	cm3	cm	cm	cm	cm
43.4	-5.23	12.5	0.825	16.1	2650	69400	665	70.7	3.47	11.3	2.32	4.74
36.7	-5.24	12.6	0.827	16.2	15600	60400	575	60.2	3.50	11.4	2.35	4.73
29.7	-5.26	12.7	0.829	16.4	8080	50500	472	49.2	3.53	11.5	2.39	4.73
26.6	-3.40	11.4	0.912	18.0	7230	22600	191	26.9	2.37	10.9	1.71	3.32
20.3	-3.42	11.6	0.912	18.1	3100	17900	149	20.7	2.40	11.0	1.74	3.33
17.0	-3.43	11.6	0.913	18.2	1810	15300	127	17.5	2.42	11.0	1.76	3.33
15.1	-1.80	10.5	0.971	23.9	1600	4910	35.7	7.52	1.36	10.3	1.07	1.99
12.1	-1.81	10.6	0.971	23.9	825	4070	29.5	6.14	1.38	10.4	1.08	2.00
10.7	-1.82	10.6	0.971	23.9	555	3630	26.2	5.43	1.39	10.4	1.09	2.00
9.19	-1.83	10.7	0.971	23.9	351	3160	22.8	4.70	1.40	10.5	1.10	2.01
38.7	-5.68	11.3	0.747	13.2	23648	44466	665	70.7	3.67	9.73	2.32	4.93
32.7	-5.69	11.4	0.751	13.3	13900	38900	572	60.2	3.70	9.84	2.36	4.92
26.6	-5.70	11.5	0.754	13.5	7230	32600	472	49.2	3.73	9.94	2.40	4.90
23.5	-3.73	10.1	0.863	13.9	6380	14600	191	26.9	2.53	9.30	1.74	3.47
17.9	-3.75	10.2	0.865	14.0	2740	11600	149	20.7	2.56	9.41	1.78	3.47
15.1	-3.76	10.2	0.865	14.1	1600	9920	127	17.5	2.57	9.46	1.79	3.47
13.1	-2.00	9.07	0.951	17.3	1390	3200	35.7	7.52	1.46	8.80	1.11	2.09
10.6	-2.02	9.13	0.951	17.3	719	2660	29.5	6.14	1.48	8.86	1.12	2.10
9.30	-2.03	9.16	0.951	17.4	484	2370	26.2	5.43	1.49	8.89	1.13	2.10
8.01	-2.03	9.20	0.951	17.4	306	2070	22.8	4,70	1.50	8.92	1.14	2.11
6.71	-2.04	9.23	0.951	17.4	178	1760	19.3	3.96	1.50	8.95	1.14	2.11
29.3	-4.13	8.62	0.770	10.3	17888	11244	263	38.1	266	7.53	1.69	3.67
24.9	-4.14	8.72	0.775	10.4	10571	9980	229	32.7	2.69	7.63	1.73	3.61
20.3	-4.14	8.82	0.779	10.6	5520	8500	191	26.9	2.72	7.74	1.76	3.64
15.6	-4.16	8.92	0.783	10.8	2380	6780	149	20.7	2.74	7.84	1.80	3.63
13.1	-4.16	8.97	0.785	10.8	1390	5820	127	17.5	2.76	7.89	1.81	3.62
11.1	-2.27	7.65	0.912	12.0	1180	1180	35.7	7.52	1.59	7.26	1.15	2.21
9.01	-2.28	7.71	0.912	12.1	612	1570	29.5	6.14	1.60	7.31	1.16	2.22
7.93	-2.29	7.74	0.913	12.1	412	1400	26.2	5.43	1.61	7.34	1.17	2.22
6.83	-2.29	7.77	0.913	12.2	261	1220	22.8	4.70	1.62	7.37	1.18	2.22
5.73	-2.30	7.80	0.913	12.2	152	1040	19.3	3.96	1.63	7.40	1.18	2.22
4.61	-2.31	7.83	0.913	12.2	78.2	848	15.7	3.20	1.63	7.43	1.19	2.23



Canales y Zetas Plegadas

ALAS NO ATIESADAS • PROPIEDADES DE DISEÑO

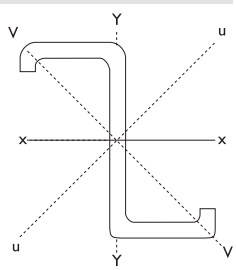
DESIGNACION	DIMENSIONES		SECCION TOTAL									
			CYZ				C					
			AREA	EJE x-x			EJE y-y			FLEXION		
CHXPESO	B	e	A	I	W	i	I	W	i	x	ia	it
cm x kg/m	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	mm
C 17.5 x 26.9	75	12	34.3	1401	160	6.40	168	32.2	2.21	2.28	3.03	0.514
22.9		10	29.2	1235	141	6.50	147	27.6	2.24	2.19	3.02	0.429
18.8		8	23.9	1043	119	6.61	123	22.7	2.27	2.09	3.00	0.343
14.4		6	18.3	824	94.2	6.71	96.3	17.5	2.29	2.00	2.99	0.257
12.1		5	15.4	705	80.5	6.76	82.1	14.8	2.31	1.96	2.99	0.214
1.90	50	10	24.2	894	102	6.08	44.6	12.2	1.36	1.35	1.95	0.286
15.6		8	19.9	764	87.3	6.20	37.9	10.1	1.38	1.26	1.95	0.229
12.0		6	15.3	610	69.7	6.31	30.2	7.89	1.40	1.17	1.95	0.171
10.1		5	12.9	524	59.9	6.37	25.8	6.66	1.41	1.13	1.94	0.143
8.22		4	10.5	432	49.4	6.42	21.3	5.45	1.43	1.08	1.94	
7.24		3.5	9.22	384	43.9	6.45	19.0	4.82	1.43	1.06	1.95	
6.24		3	7.95	334	38.1	6.48	16.5	4.18	1.44	1.04	1.95	
5.24		2.5	6.67	282	32.3	6.51	14.0	3.52	1.45	1.02	1.95	
4.21		2	5.37	229	26.2	6.53	11.4	2.04	1.46	0.995	1.95	
C 15 x 24.5	75	12	31.3	956	127	5.53	158	31.3	2.25	2.44	3.05	0.600
21.0		10	26.7	847	113	5.63	139	26.9	2.28	2.35	3.03	0.500
17.2		8	21.9	720	96.0	5.73	117	22.2	2.31	2.25	3.02	0.400
13.2		6	16.8	572	76.3	5.83	91.8	17.2	2.34	2.15	3.00	0.300
11.1		5	14.2	491	65.4	5.88	78.2	14.5	2.35	2.11	2.99	0.250
9.01		4	11.5	404	53.8	5.93	64.1	11.8	2.36	2.06	2.99	
17.0	50	10	21.7	602	80.3	5.27	42.3	11.9	1.40	1.45	1.99	0.333
14.0		8	17.9	518	69.1	5.38	36.2	9.92	1.42	1.35	1.98	0.267
10.8		6	13.8	417	55.6	5.49	28.9	7.74	1.45	1.26	1.98	0.200
9.17		5	11.7	359	47.9	5.55	24.8	6.55	1.46	1.22	1.97	0.167
7.44		4	9.47	297	39.6	5.60	20.5	5.36	1.47	1.17	1.97	
6.55		3.5	8.35	264	35.2	5.63	18.2	4.74	1.48	1.15	1.97	
5.66		3	7.20	230	30.7	5.65	15.9	4.11	1.49	1.13	1.97	
4.74		2.5	6.04	195	26.0	5.68	13.5	3.46	1.49	1.11	1.97	
3.82		2	4.87	159	21.1	5.71	10.9	2.80	1.50	1.09	1.97	
C 12.5 x 12.5	50	8	15.9	329	52.6	4.55	34.0	9.64	1.46	1.48	2.01	0.320
9.67		6	12.3	267	42.7	4.65	27.3	7.55	1.49	1.38	2.00	0.240
8.19		5	10.4	231	37.0	4.71	23.4	6.40	1.50	1.34	1.99	0.200
6.65		4	8.47	192	30.7	4.76	19.4	5.24	1.51	1.29	1.99	
5.87		3.5	7.47	171	27.4	4.78	17.3	4.63	1.52	1.27	1.99	
5.07		3	6.45	149	23.9	4.81	15.1	4.02	1.53	1.24	1.99	
4.25		2.5	5.42	127	20.3	4.83	12.8	3.38	1.54	1.22	1.99	
3.43		2	4.37	103	16.5	4.86	10.4	2.74	1.54	1.20	1.98	
C 10 x 10.9	50	8	13.9	189	37.8	3.69	31.2	9.27	1.50	1.63	2.03	0.400
8.49		6	10.8	155	31.1	3.79	25.3	7.29	1.53	1.53	2.02	0.300
7.20		5	9.18	135	27.1	3.84	21.9	6.21	1.54	1.48	2.01	0.250
5.87		4	7.47	113	22.6	3.89	18.1	5.07	1.56	1.44	2.00	
5.18		3.5	6.60	101	20.2	3.91	16.1	4.49	1.56	1.41	2.00	
4.48		3	5.70	88.5	17.7	3.94	14.1	3.89	1.57	1.39	1.99	
3.76		2.5	4.79	75.3	15.1	3.96	11.9	3.28	1.58	1.37	1.99	
3.04		2	3.87	61.5	12.3	3.99	9.72	2.66	1.58	1.34	1.99	
C 8 x6.61	40	6	8.42	74.2	18.6	2.97	12.2	4.50	1.21	1.28	1.62	0.300
5.64		5	7.18	65.5	16.4	3.02	10.7	3.86	1.22	1.24	1.62	0.250
4.61		4	5.87	55.4	13.9	3.07	8.95	3.18	1.23	1.19	1.61	0.200
3.54		3	4.50	43.9	11.0	3.12	7.01	2.45	1.25	1.14	1.60	
2.98		2.5	3.79	37.5	9.39	3.15	5.97	2.07	1.25	1.12	1.60	
2.41		2	3.07	30.8	7.71	3.17	4.89	1.68	1.26	1.09	1.59	
C 5 x 1.80	25	2.5	2.29	8.45	3.38	1.92	1.36	0.774	0.770	0.742	1.00	
1.47		2	1.87	7.06	2.83	1.94	1.13	0.634	0.778	0.718	1.00	

Canales y Zetas Plegadas

ALAS ATIESADAS • PROPIEDADES DE DISEÑO

VESPUCIO
MAESTRANZA&FUNDICION

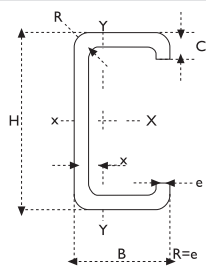
SECCION TOTAL												
	CA						ZA					
	PANDEO FLEXO TORSIONAL				1000j	CA	EJE Y-Y			eje u-u	eje v-v	flexion
PESO	xo	io		j			I	W	i	i	i	ia
kg /m	cm	cm		cm	cm4	cm6	cm4	cm3	cm	cm	cm	cm
25.0	-7.25	14.0	0.732	16.5	3820	76800	629	64.9	4.45	11.9	2.90	5.83
21.1	-7.33	14.1	0.730	16.4	2240	67000	549	56.3	4.52	12.0	2.95	5.89
16.8	-7.09	14.0	0.745	16.5	1140	50400	423	43.2	4.45	12.1	2.92	5.77
14.9	-4.75	12.4	0.853	17.4	1010	22700	178	24.3	3.06	11.4	2.14	4.11
13.1	-4.79	12.5	0.852	17.3	682	20400	160	21.9	3.10	11.4	2.16	4.15
11.3	-4.83	12.5	0.851	17.1	432	18000	142	19.3	3.13	11.5	2.18	4.18
19.1	-7.89	13.1	0.636	14.0	2030	45800	549	56.3	4.75	10.4	2.94	6.10
15.2	-7.63	13.0	0.653	14.1	1030	34100	423	43.2	4.68	10.5	2.91	5.96
13.3	-5.16	11.1	0.784	13.9	904	15200	178	24.3	3.24	9.78	2.17	4.27
11.7	-5.20	11.2	0.783	13.8	610	13700	160	21.9	3.27	9.82	2.19	4.30
10.1	-5.24	11.2	0.782	13.7	387	12100	142	19.3	3.31	9.86	2.22	4.34
8.31	-4.97	11.1	0.799	13.9	221	9040	108	14.7	3.20	9.85	2.16	4.18
11.7	-5.67	9.97	0.677	11.1	797	9410	178	24.3	3.45	8.18	2.18	4.45
10.4	-5.71	10.0	0.676	11.1	539	8490	160	21.9	3.48	8.22	2.20	4.49
8.96	-5.74	10.1	0.675	11.0	342	7510	142	19.3	3.52	8.27	2.23	4.52
7.33	-5.45	9.92	0.698	11.1	195	5540	108	14.7	3.41	8.26	2.17	4.35
5.92	-5.49	9.98	0.697	11.1	100	4570	89.6	12.1	3.45	8.30	2.19	4.38
10.9	-5.96	9.48	0.604	10.1	744	7130	178	24.3	3.57	7.40	2.17	4.56
9.67	-6.00	9.54	0.604	10.1	503	6450	160	21.9	3.61	7.44	2.19	4.59
8.37	6.04	9.59	0.603	10.0	320	5710	142	19.3	3.65	7.49	2.21	4.62
6.84	-5.73	9.41	0.629	10.1	182	4160	108	14.7	3.53	7.48	2.16	4.45
5.52	-5.77	9.47	0.628	10.1	93.8	3440	89.6	12.1	3.57	7.52	2.18	4.48
8.98	-6.34	9.13	0.519	9.25	467	4740	160	21.9	3.74	6.69	2.15	4.71
7.78	-6.37	9.19	0.519	9.23	297	4210	142	19.3	3.78	6.73	2.17	4.74
8.28	-3.71	6.98	0.718	8.27	563	1620	51.9	10.8	2.22	5.90	1.44	2.94
7.33	-3.75	7.04	0.717	8.19	382	1490	47.5	9.85	2.26	5.94	1.46	2.98
6.36	-3.78	7.10	0.716	8.12	243	1330	42.6	8.79	2.29	5.98	1.49	3.01
5.37	-3.82	7.15	0.714	8.06	142	1160	37.1	7.62	2.33	6.02	1.51	3.04
4.19	-3.55	7.02	0.745	8.25	71.2	787	26.4	5.39	2.23	6.03	1.46	2.88
7.49	-4.00	6.47	0.619	7.05	509	1120	51.9	10.8	2.33	5.11	1.44	3.06
6.65	-4.03	6.53	0.618	7.01	346	1030	47.5	9.85	2.37	5.15	1.46	3.09
5.78	-4.07	6.58	0.618	6.98	221	922	42.6	8.79	2.41	5.19	1.49	3.12
4.88	-4.11	6.64	0.617	6.94	129	805	37.1	7.62	2.45	5.23	1.51	3.14
3.80	-3.81	6.48	0.653	7.05	64.5	533	26.4	5.39	2.34	5.24	1.46	2.98
5.96	-4.38	6.13	0.491	6.17	310	688	47.5	9.85	2.50	4.39	1.43	3.22
5.19	-4.41	6.19	0.492	6.16	198	603	42.6	8.79	2.54	4.43	1.46	3.25
4.39	-4.45	6.24	0.492	6.15	116	528	37.1	7.62	2.58	4.47	1.48	3.27
3.40	-4.13	6.04	0.532	6.16	57.8	337	26.4	5.39	2.47	4.48	1.42	3.09
4.01	-3.42	4.84	0.501	4.95	153	170	19.6	5.08	1.96	3.49	1.12	2.53
3.41	-3.45	4.89	0.502	4.93	90.4	152	17.3	4.46	2.00	3.53	1.15	2.55
2.78	-3.49	4.94	0.502	4.92	47.2	129	14.6	3.75	2.03	3.57	1.17	2.58



Canales y Zetas Plegadas

ALAS ATIESADAS • PROPIEDADES DE DISEÑO

DESIGNACION	DIMENSIONES			SECCION TOTAL									
				CYZ				C					
				AREA	EJE X-X			EJE Y-Y				FLEXION	
CAHXPESO	B	C	e	A	I	W	i	I	W	i	X	ia	it
cmxkg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	cm	cm	cm
CA 30 x 25.0	100	35	6	31.8	4170	278	11.4	404	57.4	3.56	2.96	4.67	0.200
21.1		35	5	26.9	3560	237	11.5	351	49.9	3.62	2.97	4.71	0.167
16.8		30	4	21.3	2860	191	11.6	274	38.3	3.58	2.84	4.64	
14.9	75	25	4	18.9	2360	157	11.2	124	22.1	2.56	1.88	3.44	
13.1		25	3.5	16.7	2100	140	11.2	112	19.9	2.59	1.88	3.47	
11.3		25	3	14.4	1820	121	11.2	98.7	17.5	2.62	1.88	3.49	
CA 52 x 19.1	100	35	5	24.4	2310	185	9.74	331	49.0	3.69	3.24	4.73	0.200
15.2		30	4	19.3	1860	149	9.81	259	37.6	3.66	3.11	4.66	
13.3	75	25	4	16.9	1520	122	9.48	118	21.7	2.64	2.07	3.48	
11.7		25	3.5	14.9	1350	108	9.51	106	19.6	2.67	2.08	3.50	
10.1		25	3	12.9	1180	94.1	9.55	93.7	17.3	2.69	2.08	3.53	
8.31		20	2.5	10.6	969	77.5	9.57	73.1	13.2	2.63	1.95	3.43	
CA 20 x 11.7	75	25	4	14.9	895	89.5	7.64	110	21.3	2.71	2.32	3.51	
10.4		25	3.5	13.2	796	79.6	7.77	99.1	19.2	2.74	2.33	3.53	
8.96		25	3	11.4	694	69.4	7.80	87.4	16.9	2.77	2.33	3.55	
7.33		20	2.5	9.34	573	57.3	7.84	68.4	12.9	2.71	2.20	3.45	
5.92		20	2	7.54	467	46.7	7.87	56.3	10.6	2.73	2.20	3.47	
CA 17.5 x 10.9	75	25	4	13.9	653	74.6	6.84	105	20.9	2.75	2.48	3.51	
9.67		25	3.5	12.3	582	66.5	6.87	94.7	18.9	2.77	2.48	3.53	
8.37		25	3	10.7	508	58.0	6.90	83.6	16.7	2.80	2.48	3.55	
6.84		20	2.5	8.71	420	48.0	6.94	65.5	12.7	2.74	2.35	3.45	
5.52		20	2	7.04	342	39.1	6.97	54.0	10.5	2.77	2.35	3.47	
CA 15 x 8.98	75	25	3.5	11.4	406	54.1	5.95	89.7	18.5	2.80	2.66	3.53	
7.78		25	3	9.91	354	47.3	5.98	79.2	16.4	2.83	2.66	3.54	
8.28	50	20	4	10.5	337	44.9	5.65	32.9	9.52	1.77	1.54	2.35	
7.33		20	3.5	9.34	302	40.3	5.68	30.1	8.70	1.79	1.54	2.37	
6.36		20	3	8.11	265	35.4	5.72	26.9	7.78	1.82	1.54	2.39	
5.37		20	2.5	6.84	226	30.2	5.75	23.4	6.76	1.85	1.54	2.41	
4.19		15	2	5.34	179	23.8	5.79	17.1	4.78	1.79	1.42	2.32	
CA 12.5 x 7.49	50	20	4	9.55	217	34.7	4.77	30.9	9.32	1.80	1.68	2.36	
6.65		20	3.5	8.47	195	31.2	4.80	28.3	8.53	1.83	1.68	2.38	
5.78		20	3	7.36	172	27.4	4.83	25.3	7.63	1.85	1.69	2.40	
4.88		20	2.5	6.21	147	23.5	4.86	22.0	6.63	1.88	1.69	2.42	
3.80		15	2	4.84	116	18.6	4.91	16.2	4.69	1.83	1.56	2.33	
CA 10 x 5.96	50	20	3.5	7.59	114	22.9	3.88	26.1	8.29	1.85	1.86	2.39	
5.19		20	3	6.61	101	20.2	3.91	23.3	7.43	1.88	1.86	2.40	
4.39		20	2.5	5.59	86.6	17.3	3.94	20.3	6.46	1.90	1.86	2.42	
3.40		15	2	4.34	69.2	13.8	4.00	15.0	4.57	1.86	1.73	2.33	
CA 8 x 4.01	40	15	3	5.11	49.0	12.3	3.10	10.8	4.27	1.46	1.46	1.88	
3.41		15	2.5	4.34	42.5	10.6	3.13	9.56	3.76	1.48	1.46	1.90	
2.78		15	2	3.54	35.3	8.81	3.16	8.07	3.18	1.51	1.46	1.91	

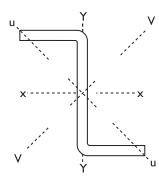


Canales y Zetas Plegadas

ALAS NO ATIESADAS • PROPIEDADES DE DISEÑO

VESPUCIO
MAESTRANZA&FUNDICION

SECCION TOTAL												
PESO	C						z					
	PANDEO FLEXO-TORSIONAL						EJE Y-Y			EJE U-U	EJE V-V	Flexion
	xo	io	B	J	1000J	Ca	I	W	i	i	i	ia
Kg/m	cm	cm		cm	cm4	cm6	cm4	cm3	cm	cm	cm	cm
26.9	-4.39	8.07	0.704	9.04	16448	8063	263	38.1	2.77	6.76	1.68	3.79
22.9	-4.39	8.16	0.711	9.19	9737	7183	229	32.7	2.80	6.87	1.72	3.77
18.8	-4.39	8.25	0.717	9.34	5098	6138	191	26.9	2.83	6.97	1.76	3.74
14.4	-4.40	8.34	0.722	9.50	2200	4910	149	20.7	2.86	7.07	1.79	3.72
12.1	-4.40	8.39	0.725	9.56	1290	4230	127	17.5	2.87	7.12	1.81	3.71
19.0	-2.39	6.67	0.872	9.33	8071	2210	60.9	13.5	1.59	6.19	1.09	2.28
15.6	-2.40	6.79	0.875	9.56	4244	1928	52.0	11.3	1.62	6.30	1.12	2.28
12.0	-2.42	6.90	0.877	9.76	1838	1575	41.5	8.84	1.65	6.42	1.15	2.28
10.1	-2.43	6.96	0.878	9.90	1080	1370	35.7	7.52	1.66	6.48	1.16	2.28
8.22	-2.44	7.02	0.879	9.97	559	1140	29.5	6.14	1.68	6.53	1.18	2.29
7.24	-2.45	7.05	0.879	10.0	377	1020	26.2	5.43	1.69	6.56	1.19	2.29
6.24	-2.45	7.08	0.880	10.0	239	892	22.8	4.70	1.69	6.59	1.20	2.29
5.24	-2.46	7.10	0.880	10.1	139	759	19.3	3.96	1.69	6.62	1.20	2.29
4.21	-2.46	7.13	0.881	10.1	71.6	620	15.7	3.20	1.70	6.64	1.21	2.29
24.5	-4.69	7.59	0.618	8.05	15008	5474	263	38.1	2.90	6.02	1.65	3.94
21.0	-4.68	7.67	0.628	8.18	8904	4902	229	32.7	2.93	6.12	1.69	3.90
17.2	-4.67	7.75	0.636	8.31	4671	4210	191	26.9	2.95	6.21	1.73	3.86
13.2	-4.67	7.83	0.644	8.44	2018	3386	149	20.7	2.98	6.31	1.77	3.83
11.1	-4.67	7.87	0.648	8.51	1180	2920	127	17.5	2.99	6.35	1.79	3.82
9.01	-4.67	7.91	0.651	8.57	612	2420	104	14.2	3.01	6.40	1.81	3.80.
17.0	-2.59	6.04	0.815	7.62	7237	1507	60.9	13.5	1.67	5.42	1.10	2.38
14.0	-2.60	6.14	0.821	7.82	3818	1321	52.0	11.3	1.70	5.53	1.13	2.38
10.8	-2.61	6.25	0.825	8.00	1658	1084	41.5	8.84	1.73	5.64	1.16	2.37
9.17	-2.62	6.30	0.827	8.12	973	944	35.7	7.52	1.75	5.70	1.18	2.37
7.44	-2.63	6.36	0.829	8.19	505	789	29.5	6.14	1.76	5.75	1.19	2.36
6.55	-2.63	6.39	0.830	8.22	341	706	26.2	5.43	1.77	5.78	1.20	2.36
5.66	-2.64	6.41	0.831	8.25	216	618	22.8	4.70	1.78	5.80	1.21	2.36
4.74	-2.64	6.44	0.832	8.29	126	527	19.3	3.96	1.79	5.83	1.22	2.36
3.82	-2.65	6.47	0.833	8.32	64.9	430	15.7	3.20	1.79	5.85	1.23	2.36
12.5	-2.84	5.56	0.739	6.42	3391	841	52.0	11.3	1.81	4.76	1.13	2.49
9.67	-2.84	5.65	0.747	6.58	1478	695	41.5	8.84	1.84	4.87	1.16	2.47
8.19	-2.84	5.70	0.751	6.67	869	607	35.7	7.52	1.85	4.92	1.18	2.46
6.65	-2.85	5.75	0.754	6.74	452	509	29.5	6.14	1.87	4.97	1.20	2.45
5.87	-2.85	5.77	0.756	6.77	305	456	26.2	5.43	1.87	4.99	1.21	2.45
5.07	-2.85	5.80	0.758	6.80	194	400	22.8	4.70	1.88	5.02	1.22	2.44
4.25	-2.86	5.82	0.759	6.84	113	341	19.3	3.96	1.89	5.04	1.22	2.44
3.43	-2.86	5.85	0.761	6.87	58.2	280	15.7	3.20	1.89	5.07	1.23	2.44
10.9	-3.13	5.06	0.618	5.36	2964	481	520	11.3	1.93	4.01	1.10	2.62
8.49	-3.12	5.14	0.632	5.50	1298	401	41.5	8.84	1.96	4.11	1.14	2.59
7.20	-3.11	5.18	0.638	5.56	765	353	35.7	7.52	1.97	4.16	1.16	2.57
5.87	-3.11	5.22	0.644	5.63	399	297	29.5	6.14	1.99	4.20	1.18	2.55
5.18	-3.11	5.24	0.647	5.66	269	267	26.2	5.43	1.99	4.23	1.19	2.55
4.48	-3.11	5.26	0.649	5.70	171	235	22.8	4.70	2.00	4.25	1.20	2.54
3.76	-3.12	5.28	0.652	5.73	99.9	201	19.3	3.96	2.01	4.27	1.21	2.53
3.04	-3.12	5.30	0.655	5.76	51.6	165	15.7	3.20	2.01	4.30	1.22	2.53
6.61	2.50	4.06	0.622	4.32	1010	121	20.3	5.48	1.55	3.23	0.89	2.10
5.64	2.49	4.10	0.630	4.39	598	108	17.6	4.69	1.57	3.28	0.91	2.07
4.61	-2.49	4.14	0.638	4.45	313	92.4	14.6	3.85	1.58	3.33	0.93	2.06
3.54	-2.49	4.18	0.645	4.52	135	74.0	11.4	2.96	1.59	3.37	0.948	2.04
2.98	-2.49	4.20	0.649	4.55	79.0	63.7	9.70	2.50	1.60	3.40	0.957	2.03
2.41	-2.49	4.23	0.652	4.58	40.9	52.6	7.91	2.03	1.61	3.42	0.967	2.03
1.80	-1.56	2.59	0.638	2.79	47.8	5.51	2.23	0.940	0.99	2.08	0.580	1.28
1.47	-1.56	2.61	0.644	2.82	24.9	4.64	1.84	0.768	0.99	2.10	0.590	1.28



Angulos Plegados

ALAS DESIGUALES • PROPIEDADES DE DISEÑO

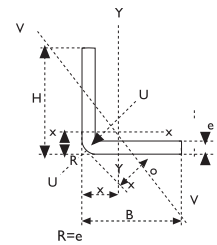
DESIGNACION	DIMENSIONES		SECCION TOTAL											
			L							X-Y		Y-X		
			AREA	EJE X-Xy			EJE Y-Y	EJE U-U	EJE V-V	PANDEO FLEXO-TORSIONAL				
LH X PESO	B	e	A	I	W	i	x=y	I	I	Xo	io	B	J	1000J
cm x kg/m	mm	cm	cm2	cm4	cm3	cm	cm	cm	cm	cm	cm		cm	cm4
L20 x 46.9	200	16	59.8	2310	162	6.22	5.74	7.94	3.78	-6.00	10.6	0.683	13.5	51000
41.4		14	52.8	2060	144	6.25	5.65	7.97	3.82	-6.13	10.8	0.675	13.6	34500
35.8		12	45.6	1800	125	6.28	5.55	8.00	3.86	-6.26	10.9	0.668	13.6	21900
30.1		10	38.4	1530	105	6.31	5.46	8.03	3.90	-6.39	11.0	0.661	13.7	12800
24.3		8	30.9	1244	85.0	6.34	5.37	8.06	3.93	-6.53	11.1	0.653	13.8	6602
18.4		6	23.4	950	64.5	6.37	5.28	8.08	3.96	-6.66	11.2	0.646	13.9	2809
L17.5 x 35.9	175	14	45.8	1360	109	5.44	5.03	6.95	3.31	-5.25	9.32	0.683	11.8	29900
31.1		12	39.6	1190	94.5	5.47	4.93	6.98	3.35	-5.38	9.43	0.674	11.9	19000
26.2		10	33.4	1010	79.8	5.50	4.84	7.01	3.39	-5.51	9.54	0.666	11.9	11100
21.2		8	26.9	825	64.7	5.53	4.74	7.03	3.43	-5.65	9.65	0.658	12.0	5750
16.0		6	20.4	631	49.1	5.56	4.65	7.06	3.45	-5.78	9.76	0.649	12.1	2449
L15 x 26.4	150	12	33.6	732	68.5	4.67	4.31	5.96	2.84	-4.50	7.99	0.683	10.1	16100
22.3		10	28.4	625	53.0	4.70	4.21	5.99	2.88	-4.63	8.10	0.673	10.2	9450
18.0		8	22.9	512	47.1	4.73	4.12	6.01	2.92	-4.76	8.21	0.663	10.2	4900
13.7		6	17.4	394	35.9	4.75	4.03	6.04	2.95	-4.90	8.32	0.654	10.3	2090
L 12.5 x 21.7	125	12	27.6	411	46.7	3.86	3.68	4.94	2.31	-3.62	6.54	0.695	8.41	13264
18.3		10	23.4	353	39.6	3.89	3.59	4.97	2.36	-3.75	6.65	0.683	8.43	7780
14.9		8	18.9	291	32.3	3.92	3.50	4.99	2.40	-3.88	6.76	0.671	8.49	4040
11.3		6	14.4	225	24.7	3.95	3.40	5.02	2.44	-4.01	6.88	0.659	8.57	1730
9.49		5	12.1	190	20.8	3.96	3.35	5.03	2.46	-4.08	6.93	0.654	8.61	1010
L10 x 17.0	100	12	21.6	201	29.0	3.05	3.06	3.92	1.80	-2.74	5.11	0.713	6.68	10384
14.4		10	18.4	174	24.8	3.08	2.97	3.94	1.84	-2.87	5.21	0.698	6.72	6119
11.7		8	14.9	145	20.3	3.11	2.87	3.97	1.89	-3.00	5.32	0.683	6.75	3190
8.96		6	11.4	113	15.6	3.14	2.78	4.00	1.93	-3.13	5.43	0.668	6.81	1370
7.53		5	9.59	95.5	13.1	3.16	2.73	4.01	1.95	-3.20	5.49	0.661	6.85	799
6.07		4	7.74	77.7	10.6	3.17	2.68	4.03	197	-3.26	5.55	0.654	6.89	413
L8 x 11.3	80	10	14.4	85.0	15.4	2.43	2.47	3.13	1.43	-2.16	4.06	0.716	5.34	4785
9.18		8	11.7	71.3	12.7	2.46	2.37	3.16	1.47	-2.29	4.17	0.698	5.37	2506
7.07		6	9.01	56.1	9.80	2.49	2.28	3.18	1.52	-2.43	4.28	0.679	5.41	1080
5.96		5	7.59	47.8	8.28	2.51	2.23	3.20	1.54	-2.49	4.34	0.670	5.44	632
4.82		4	6.14	39.1	6.72	2.52	2.18	3.21	1.56	-2.56	4.39	0.661	5.48	327
4.24		3.5	5.40	34.6	5.93	2.53	2.16	3.22	1.57	-2.59	4.42	0.656	5.50	220
L 6.5x 7.34	65	8	9.35	36.6	8.13	1.98	2.00	2.54	1.16	-1.77	3.31	0.715	4.34	1994
5.66		6	7.21	29.1	6.34	2.01	1.90	2.57	1.21	-1.90	3.42	0.692	4.38	865
4.78		5	6.09	25.0	5.38	2.02	1.86	2.58	1.23	-1.96	3.47	0.681	4.39	507
3.88		4	4.94	20.5	4.38	2.04	1.81	2.60	1.25	-2.03	3.53	0.669	4.42	263
3.41		3.5	4.35	18.2	3.87	2.05	1.79	2.61	1.26	-2.06	3.55	0.664	4.44	178
2.95		3	3.75	15.8	3.34	2.05	1.76	2.61	1.27	-2.09	3.58	0.658	4.46	113
L5 x 4.25	50	6	5.41	12.6	3.62	1.52	1.53	1.96	0.90	-1.37	2.55	0.713	3.34	649
3.60		5	4.59	10.9	3.10	1.54	1.48	1.97	0.92	-1.43	2.61	0.698	3.36	382
2.93		4	3.74	9.04	2.54	1.56	1.44	1.99	0.95	-1.50	2.66	0.683	3.37	199
2.59		3.5	3.30	8.06	2.25	1.56	1.41	1.99	0.96	-1.53	2.69	0.675	3.39	135
2.24		3	2.85	7.03	1.95	1.57	1.39	2.00	0.97	-1.57	2.72	0.668	3.40	85.6
1.88		2.5	2.40	5.97	1.64	1.58	1.37	2.01	0.98	-1.60	2.74	0.661	3.42	49.9
L4 x 2.82	40	5	3.59	5.31	1.92	1.22	1.24	1.56	0.71	-1.08	2.03	0.716	2.67	299
2.31		4	2.94	4.46	1.58	1.23	1.19	1.58	0.74	-1.15	2.09	0.698	2.69	157
2.04		3.5	2.60	3.99	1.41	1.24	1.16	1.58	0.75	-1.18	2.11	0.688	2.69	106
1.77		3	2.25	3.50	1.22	1.25	1.14	1.59	0.76	-1.21	2.14	0.679	2.70	67.6
1.49		2.5	1.90	2.99	1.04	1.25	1.12	1.60	0.77	-1.25	2.17	0.670	2.72	39.5
1.20		2	1.53	2.44	0.84	1.26	1.09	1.61	0.78	-1.28	2.20	0.661	2.74	20.5
L3 x 1.30	30	3	1.65	1.41	0.67	0.92	0.89	1.18	0.55	-0.86	1.56	0.698	2.01	49.6
1.10		2.5	1.40	1.21	0.57	0.93	0.87	1.19	0.57	-0.89	1.59	0.685	2.02	29.1
0.89		2	1.13	1.00	0.46	0.94	0.84	1.20	0.58	-0.93	1.62	0.673	2.04	15.1
L2.5 x 0.90	25	2.5	1.15	0.68	0.39	0.77	0.74	0.99	0.46	-0.72	1.30	0.698	1.67	23.9
0.73		2	0.93	0.57	0.32	0.78	0.72	0.99	0.47	-0.75	1.33	0.683	1.69	12.5
L2 x 0.58	20	2	0.73	0.28	0.20	0.62	0.59	0.79	0.37	-0.57	1.04	0.698	1.34	9.8

Angulos Plegados

ALAS DESIGUALES • PROPIEDADES DE DISEÑO

VESPUCIO
MAESTRANZA&FUNDICION

DESIGNACION		SECCION TOTAL										
		L										
		AREA	EJE X-X				EJE Y-Y				EJE U-U	EJE V-V
LH X B X PESO	e	A	I	W	i	y	I	W	i	x	i	i
cm x cm x kg/m	mm	cm2	cm4	cm3	cm	cm	cm4	cm3	cm	cm	cm	cm
L 20x15x40.7	16	51.8	2089	155	6.35	6.51	1021	92.2	4.44	3.93	7.11	3.07
16.0	16	20.4	864	61.8	6.51	6.01	429	37.2	4.59	3.48	7.26	3.26
35.9	14	45.8	1860	137	6.38	6.41	915	81.9	4.47	3.84	7.14	3.11
31.1	12	39.6	1630	119	6.41	6.30	802	71.3	4.50	3.75	7.17	3.15
26.2	10	33.4	1390	100	6.45	6.20	684	60.3	4.53	3.66	7.20	3.19
21.2	8	26.9	1130	81.4	6.48	6.11	560	48.9	4.56	3.57	7.23	3.23
L 17.5x12.5x26.4	12	33.6	1050	89.4	5.60	5.70	458	48.9	3.69	3.13	6.18	2.61
22.3	10	28.4	900	75.6	5.63	5.60	392	41.5	3.72	3.04	6.21	2.65
18.0	8	22.9	736	61.4	5.66	5.50	323	33.8	3.75	2.96	6.24	2.69
13.7	6	17.4	565	46.7	5.70	5.40	248	25.8	3.78	2.87	6.27	2.72
15 x10 x 21.7	12	27.6	62	63.9	4.78	5.11	230	30.7	2.88	2.53	5.19	2.06
18.3	10	23.4	542	54.2	4.82	5.01	198	26.2	2.91	2.44	5.22	2.10
14.9	8	18.9	445	44.1	4.85	4.90	164	21.4	2.94	2.35	5.25	2.14
11.3	6	14.4	334	33.7	4.88	4.80	127	16.4	2.97	2.26	5.28	2.18
9.49	5	12.1	290	28.3	4.90	4.75	108	13.80	2.98	2.22	5.30	2.19
L 12.5 x 8 x 14.8	10	18.9	300	36.7	3.99	4.33	98.3	16.4	2.28	2.00	4.29	1.65
12.0	8	15.3	248	30.0	4.02	4.22	82.1	13.5	2.31	1.91	4.32	1.69
9.19	6	11.7	193	23.0	4.06	4.12	64.2	10.4	2.34	1.82	4.35	1.73
7.72	5	9.84	163	19.3	4.07	4.07	54.6	8.78	2.36	1.78	4.37	1.74
6.23	4	7.94	133	15.6	4.09	4.01	44.6	7.12	2.37	1.73	4.39	1.76
L 10 x 6.5 x 9.50	8	12.1	1236	18.8	3.19	3.44	42.1	8.65	1.86	1.63	3.44	1.34
7.31	6	9.31	96.7	14.5	3.22	3.34	33.3	6.72	1.89	1.54	3.47	1.38
6.15	5	7.84	82.3	12.3	3.24	3.28	28.5	5.69	1.91	1.50	3.49	1.40
4.97	4	6.34	67.2	9.93	3.26	3.23	23.4	4.63	1.92	1.45	3.51	1.42
4.38	3.5	5.57	59.4	8.74	3.26	3.21	20.7	4.09	1.93	1.43	3.51	1.43
L 8 x 5 x 5.66	6	7.21	47.3	9.04	2.56	2.77	14.6	3.87	1.42	1.22	2.74	1.04
4.78	5	6.09	40.5	7.66	2.58	2.72	12.6	3.30	1.44	1.18	2.76	1.06
3.88	4	4.94	33.2	6.23	2.59	2.67	10.4	2.70	1.45	1.14	2.77	1.08
3.41	3.5	4.35	29.5	5.50	2.60	2.64	9.28	2.39	1.46	1.11	2.78	1.08
2.95	3	3.75	25.6	4.75	2.61	2.61	8.08	2.07	1.47	1.09	2.79	1.09
L6.5x4 x 4.48	6	5.71	24.2	5.81	2.06	2.33	7.14	2.40	1.12	1.03	2.20	0.808
3.80	5	4.84	20.9	4.95	2.08	2.27	6.21	2.06	1.13	0.981	2.22	0.828
3.09	4	3.94	17.3	4.04	2.10	2.22	5.18	1.69	1.15	0.936	2.23	0.847
2.73	3.5	3.47	15.4	3.57	2.10	2.19	4.63	1.50	1.15	0.914	2.24	0.856
2.36	3	3.00	13.4	3.09	2.11	2.17	4.05	1.30	1.16	0.892	2.25	0.865
1.98	2.5	2.52	11.30	2.60	2.12	2.14	3.45	1.10	1.17	0.870	2.26	0.874
L5 x 3 x 2.82	5	3.59	8.94	2.82	1.58	1.83	2.45	1.11	0.827	0.782	1.68	0.597
2.31	4	2.94	7.49	2.32	1.60	1.77	2.08	0.92	0.842	0.737	1.70	0.617
2.04	3.5	2.60	6.70	2.06	1.61	1.75	1.87	0.82	0.85	0.715	1.70	0.627
1.77	3	2.25	5.87	1.79	1.61	1.72	1.65	0.72	0.86	0.693	1.71	0.636
1.49	2.5	1.90	4.99	1.51	1.62	1.69	1.42	0.61	0.86	0.671	1.72	0.645
1.20	2	1.53	4.08	1.22	1.63	1.67	1.16	0.50	0.87	0.649	1.73	0.654
L4 x 2.5 x 14.1	3	1.80	2.95	1.13	1.28	1.39	0.914	0.48	0.71	0.612	1.37	0.519
1.19	2.5	1.52	2.53	0.96	1.29	1.36	0.788	0.41	0.72	0.590	1.38	0.529
0.969	2	1.23	2.08	0.78	1.30	1.33	0.652	0.34	0.73	0.568	1.39	0.538
L3 x 2 x 0.901	2.5	1.15	1.05	0.53	0.96	1.03	0.379	0.26	0.58	0.510	1.04	0.411
0.733	2	0.93	0.87	0.43	0.96	1.00	0.317	0.21	0.58	0.488	1.04	0.420

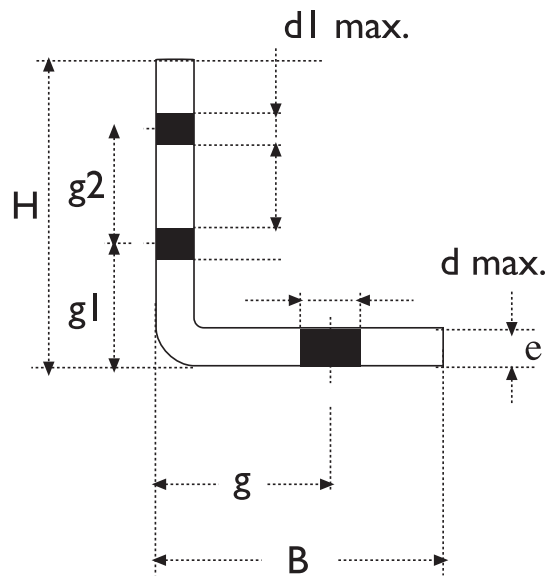


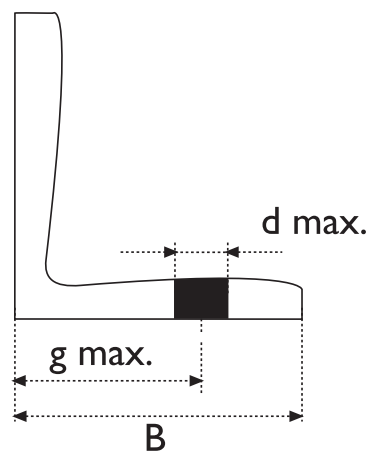
Gramiles Perfiles Angulo

PLEGADOS Y LAMINADOS

ALAS	ANGULOS PLEGADOS						ANGULOS LAMINADOS	
H ó B	ESPESOR	GRAMILLES			DIAMETROS		GRAMIL	DIAMETRO
	e MAX.	g	g1	g2	d max.	d1 max.	g max.	dmax.
mm	mm	mm	mm	mm	mm	mm	mm	mm
25	3	15	-	-	6	-	15	6
30	3	19	-	-	6	-	19	8
35	3.5	22	-	-	6	-	-	-
40	4	25	-	-	8	-	25	10
45	4.5	30	-	-	8	-	-	-
50	5	30	-	-	10	-	30	10
55	6	35	-	-	10	-	-	-
60	6	35	-	-	12	-	-	-
65	6	40	-	-	14	-	35	16
70	6	40	-	-	16	-	-	-
75	8	50	-	-	16	-	-	-
80	8	50	-	-	16	-	45	22
90	8	55	-	-	20	-	-	-
100	10	60	-	-	24	-	55	27
125	12	70	60	40	24	14	-	-
150	14	80	70	50	27	18	-	-
175	16	90	80	60	27	20	-	-
200	18	100	90	70	30	24	-	-

NOTA: Los valores de **dmax** y **d1max** corresponden a los diámetros máximos de pernos.





Recomendaciones para Gramiles

PERFILES PLEGADOS • ALAS ATIESADAS

VESPUCIO
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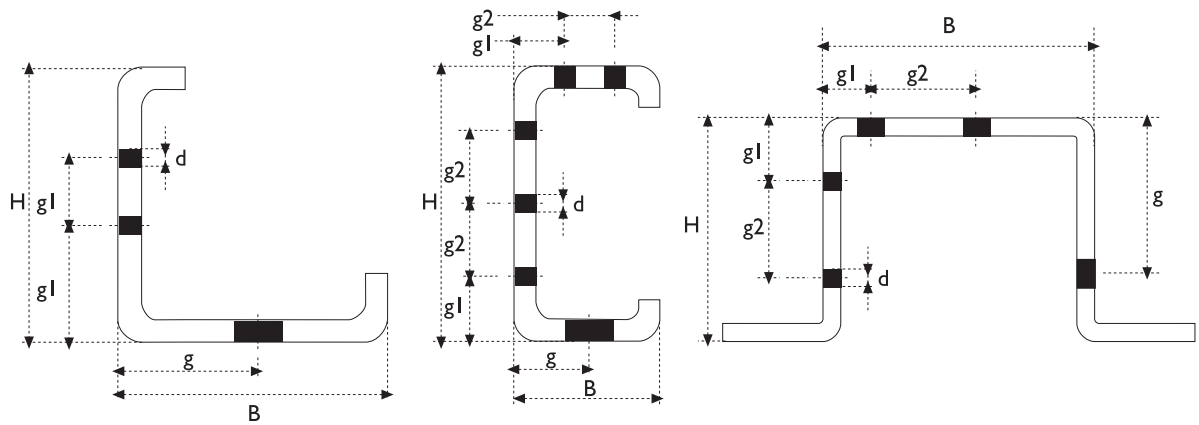
TIPO DE GRAMIL	GRAMIL RECOMENDADOS	DIAMETRO MAXIMO DEL PERNO, d.max.
Simple (1 perforación)	g>3e+1.5 d (de preferencia usar g=B/2)	b/3-2e
Doble (2 perforaciones)	g1>3e+1.5 d g2>2.67 d (de preferencia usar g2>3 d)	(b-6e)/5.67
Multiple (n perforaciones)		3(b-6e)/(8n+1)

NOTA: Los Gramiles G y G1 son recomendaciones de distancias desde el centro de la perforacion al codo mas cerrado.

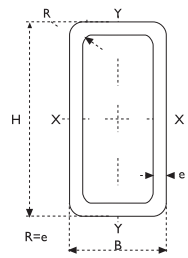


DESIGNACION	DIMENSIONES			SECCION TOTAL								
				AREA	EJE X-X				EJE Y-Y			FLEXION
SH X PESO	B	C	e	A	I	W	i	y	I	W	i	ia
cm x kg/m	mm	mm	mm	cm2	cm4	cm3	cm	cm	cm4	cm3	cm	cm
S 25 x 46.9	375	80	6	59.7	5570	368	9.65	15.1	16800	643	16.8	
38.2		65	5	48.6	4380	281	9.49	15.6	13200	534	16.5	
30.1		55	4	38.3	3370	212	9.38	15.9	10200	430	16.3	
26.2	250	55	4	33.3	2920	200	9.35	14.6	4370	248	11.4	
22.4		45	3.5	28.6	2430	163	9.22	14.9	3650	219	11.3	
19.1		40	3	24.3	2040	135	9.15	15.1	3080	190	11.2	
16.1	125	40	3	20.6	1610	121	8.86	13.3	740	74.4	6.00	5.34
13.3		35	2.5	17.0	1320	97.5	8.81	13.5	601	63.3	5.95	5.35
10.5		30	2	13.4	1030	75.1	8.75	13.7	470	51.9	5.92	5.37
S 20 x 31.3	300	65	5	39.9	2380	197	7.73	12.1	7190	342	13.4	
24.6		55	4	31.3	1830	148	7.64	12.4	5510	274	13.3	
21.5	200	55	4	27.3	1580	140	7.59	11.3	2380	158	9.34	
18.3		45	3.5	23.3	1310	112	7.48	11.6	1960	138	9.16	
15.5		40	3	19.8	1090	92.7	7.43	11.8	1640	120	9.10	
13.2	100	40	3	16.8	864	83.4	7.17	10.4	404	46.5	4.90	4.26
10.9		35	2.5	13.8	703	66.8	7.13	10.5	324	39.3	4.84	4.27
8.59		30	2	10.9	548	51.1	7.08	10.7	251	32.2	4.79	4.29
S 15 x 19.1	225	55	4	24.3	836	94.1	5.86	8.88	2540	155	10.2	
16.3		45	3.5	10.7	687	74.9	5.76	9.17	2070	135	10.0	
14.2	150	45	3.5	18.1	590	70.7	5.71	8.35	902	77.4	7.06	
12.0		40	3	15.3	493	58.0	5.68	8.51	745	66.5	6.98	
9.88		35	2.5	12.6	400	46.1	5.64	8.67	599	55.8	6.90	
8.41	75	35	2.5	10.7	315	41.5	5.42	7.59	152	21.7	3.77	3.19
6.62		30	2	8.44	245	31.6	5.39	7.76	115	17.6	3.69	3.21
S 10 x 13.6	150	55	4	17.3	278	51.1	4.00	5.44	921	73.1	7.29	
11.5		45	3.5	14.6	228	40.0	3.95	5.69	714	61.3	7.00	
10.1	100	45	3.5	12.8	194	37.7	3.88	5.13	329	35.9	5.06	
8.48		40	3	10.8	162	30.7	3.87	5.27	263	30.2	4.93	
6.94		35	2.5	8.84	131	24.2	3.85	5.41	206	24.9	4.82	
5.96	50	35	2.5	7.59	102	21.8	3.67	4.68	58.3	10.1	2.77	2.10
4.66		30	2	5.94	79.6	16.5	3.66	4.83	41.8	7.89	2.65	2.12
S 8 x 9.53	120	45	3.5	12.1	124	28.6	3.19	4.33	415	40.9	5.85	
8.01		40	3	10.2	103	23.2	3.18	4.45	333	34.3	5.71	
7.07	80	40	3	9.01	87.7	21.9	3.12	4.00	156	20.3	4.17	
5.76		35	2.5	7.34	71.2	17.2	3.11	4.13	119	16.5	4.03	
4.50		30	2	5.74	55.2	12.9	3.10	4.27	87.8	12.9	3.91	
3.88	40	30	2	4.94	42.9	11.6	2.95	3.68	25.6	5.34	2.28	1.69
S 5 x 6.13	100	40	3	7.81	32.4	12.1	2.04	2.68	193	22.1	4.97	
4.98		35	2.5	6.34	26.3	9.45	2.04	2.78	146	17.7	4.80	
3.99	50	35	2.5	5.09	19.4	8.58	1.95	2.27	44.2	7.68	2.95	
3.09		30	2	3.94	15.2	6.40	1.97	2.38	30.3	5.72	2.78	
2.70	25	30	2	3.44	11.6	5.76	1.84	2.01	11.3	2.78	1.81	1.03

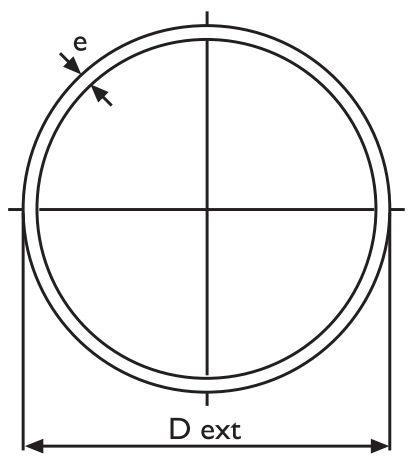
VESPUCIO MAESTRANZA&FUNDICION

PLEGADOS Y SOLDADOS RECTANGULARES Y CUADRADOS PROPIEDADES DE DISEÑO

DESIGNACION		SECCION TOTAL						
		AREA	EJE X-X			EJE Y-Y		
HXBX PESO	e	A	I	W	i	I	w	i
cmxcmxkg/m	mm	cm2	cm4	cm3	cm	cm4	cm3	cm
□ 25x25x 59.5	8	75.8	7310	585	9.82	7310	585	9.82
45.2	6	57.6	5670	453	9.92	5670	453	9.92
38.0	5	48.4	4800	384	9.97	4800	384	9.97
20.53.2	8	67.8	6140	491	9.52	4350	435	8.01
40.5	6	51.6	4780	382	9.62	3390	339	8.11
34.0	5	43.4	4050	324	9.67	2880	288	8.16
15x 46.9	8	59.8	4970	397	9.11	2250	299	6.13
35.8	6	45.6	3880	311	9.22	1770	236	6.22
30.1	5	38.4	3300	264	9.28	1510	201	6.27
10x 31.1	6	39.6	2990	239	8.69	708	142	4.23
26.2	5	33.4	2550	204	8.75	609	122	4.27
□ 20x20x 4.69	8	59.8	3620	362	7.78	3620	362	7.78
35.8	6	45.6	2830	283	7.88	2830	283	7.88
30.1	5	38.4	2410	241	7.92	2410	241	7.92
24.3	4	30.9	1970	197	7.97	1970	197	7.97
15x 40.7	8	51.8	2880	288	7.46	1840	246	5.96
31.1	6	39.6	2270	227	7.56	1460	194	6.06
26.2	5	33.4	1930	193	7.61	1240	166	6.11
21.2	4	26.9	1580	158	7.66	1020	136	6.15
10x 26.4	6	33.6	1700	170	7.11	576	115	4.14
22.3	5	28.4	1460	146	7.17	496	99.2	4.18
18.0	4	22.9	1200	120	7.23	410	82.1	4.23
□ 15x15x 26.4	6	33.6	1140	153	5.83	1140	153	5.83
22.3	5	28.4	981	131	5.88	981	131	5.88
18.0	4	22.9	807	108	5.93	807	108	5.93
13.7	3	17.4	622	83.0	5.98	622	83.0	5.98
10x 21.7	6	27.6	833	111	5.49	443	88.6	4.00
18.3	5	23.4	718	95.8	5.55	383	76.7	4.05
14.9	4	18.9	594	79.2	5.60	318	63.6	4.10
11.3	3	14.4	460	61.4	5.64	247	49.5	4.14
5x 14.4	5	18.4	455	60.7	4.98	77.4	31.0	2.05
11.7	4	14.9	381	50.8	5.05	65.9	26.4	2.10
8.96	3	11.4	298	39.8	5.11	52.5	21.0	2.15
□ 10x10 17.0	6	21.6	310	62.1	3.79	310	62.1	3.79
14.4	5	18.4	270	54.1	3.84	270	54.1	3.84
11.7	4	14.9	226	45.2	3.89	226	45.2	3.89
8.96	3	11.4	177	35.4	3.94	177	35.4	3.94
5x 10.5	5	13.4	158	31.5	3.44	52.1	20.8	1.97
8.59	4	10.9	134	26.8	3.50	44.8	17.9	2.02
6.60	3	8.41	106	21.3	3.56	36.0	14.4	2.07
4.50	2	5.74	74.9	15.0	3.61	25.6	10.3	2.11



DESIGNACION		DIMENSIONES		SECCION TOTAL			
O D X PESO		Dext.	e	Area	I	W	i
in x kg/m		mm	mm	cm2	cm4	cm3	cm
○	40 x 297	1016.0	12	379	477000	9390	35.5
	248		10	316	400000	7870	35.6
	199		8	253	322000	6330	35.6
○	39 x 290	990.6	12	369	442000	8920	34.6
	242		10	308	370000	7480	34.7
	194		8	247	298000	6020	34.7
○	36 x 267	914.4	12	340	346000	7580	31.9
	223		10	284	291000	6350	32.0
	179		8	228	234000	5120	32.0
	134		6	171	177000	3860	32.1
○	32 x 237	812.8	12	302	242000	5960	28.3
	198		10	252	203000	5000	28.4
	159		8	202	164000	4030	28.5
	119		6	152	124000	3040	28.5
○	30 x 222	762.0	12	283	199000	5220	26.5
	185		10	236	167000	4380	26.6
	149		8	190	135000	3540	26.7
	112		6	143	102000	2670	26.7
○	28 x 207	711.2	12	264	161000	4530	24.7
	173		10	220	135000	3810	24.8
	139		8	177	109000	3070	24.9
	104		6	133	82600	2320	24.9
○	26 x 192	660.4	12	244	129000	3890	22.9
	160		10	204	108000	3270	23.0
	129		8	164	87200	2640	23.1
	96.8		6	123	66000	2000	23.1
○	24 x 177	609.6	12	225	101000	3300	22.1
	148		10	188	84700	2780	21.2
	119		8	151	68400	2240	21.3
	89.3		6	114	51800	1700	21.3



DESIGNACION	DIMENSIONES		SECCION TOTAL			
O D X PESO	dext.	e	Area	I	W	i
mm x kg/m	mm	mm	cm2	cm4	cm3	cm
○ 22 1/2 x 165	571.0	12	211	82400	2880	19.8
138		10	176	69400	2430	19.8
111		8	141	56100	1960	19.9
83.6		6	107	42500	1490	20.0
○ 22 x 162	558.8	12	206	77100	2760	19.3
135		10	172	64900	2320	19.4
109		8	138	52500	1880	19.5
81.8		6	104	39800	1420	19.5
159	550.0	12	203	73400	2670	19.0
133		10	170	61900	2250	19.1
107		8	136	50000	1820	19.2
80.5		6	103	37900	1380	19.2
○ 20 x 147	508.0	12	187	57500	2270	17.5
123		10	156	48500	1910	17.6
98.6		8	126	39300	1550	17.7
74.3		6	94.6	29800	1170	17.7
144	500.0	12	184	54800	2190	17.3
121		10	154	46200	1850	17.3
97.1		8	124	37400	1500	17.4
73.1		6	93.1	28400	1140	17.5
○ 18 x 132	457.2	12	168	41600	1820	15.7
110		10	140	35100	1540	15.9
88.6		8	113	28500	1250	15.9
66.8		6	85	21600	947	16.0
130	450.0	12	165	39600	1760	15.5
109		10	138	33500	1490	15.6
87.2		8	111	27100	1210	15.6
65.7		6	83.7	20600	917	15.7
○ 16 x 117	406.4	12	149	28900	1420	14.0
97.8		10	125	24500	1200	14.0
78.6		8	100	19900	978	14.1
59.2		6	75.5	15100	745	14.2
○ 14 x 102	355.6	12	130	10139	1076	12.2
85.2		10	109	16223	912	12.2
68.6		8	87.4	13201	742	12.3
51.7		6	65.9	10071	566	12.4
○ 12 3/4 x 61.7	323.9	7.92	78.6	9810	606	11.2
55.8		7.14	71.0	8910	550	11.2
49.7		6.35	63.3	7980	493	11.2
○ 10 3/4 x 51.0	273.0	7.80	65.0	5720	419	9.38
46.5		7.09	59.2	5240	384	9.40
41.8		6.35	53.2	4730	347	9.43
39.5		6	50.3	4490	329	9.44
○ 8 5/8 x 41.6	219.1	8	53.1	2960	270	7.47
41.2		7.92	52.5	2930	268	7.47
36.8		7.04	46.9	2640	241	7.50
33.3		6.35	42.4	2400	219	7.53
31.5		6	40.2	2280	208	7.54
29.3		5.56	37.3	2130	194	7.55
26.4		5	33.6	1930	176	7.57

DESIGNACION	DIMENSIONES		SECCION TOTAL			
O D X PESO	Dext.	e	Area	I	W	i
mm x kg/m	mm	mm	cm2	cm4	cm3	cm
○ 1224 x 365.5	1200	12	457.0	835500	13700	42.90
1220 x 305.0		10	381.0	695000	11500	42.80
1216 x 243.0		8	304.0	553500	9160	42.75
1212 x 182.0		6	227.5	413000	6860	42.70
○ 1124 x 335.5	1100	12	419.0	643500	11600	39.40
1120 x 279.0		10	349.0	536000	9660	39.20
1116 x 223.0		8	278.0	426000	7690	39.10
1112 x 167.0		6	209.0	319000	5760	39.00
○ 1024 x 305.0	1000	12	381.5	480000	9450	35.90
1020 x 254.0		10	317.0	405000	8030	35.80
1016 x 203.0		8	254.0	321000	6370	35.60
○ 920 x 229.0	900	10	286.0	296000	6500	32.70
916 x 183.0		8	229.0	235000	5175	32.10
912 x 135.5		6	171.0	175000	3860	32.00
○ 820 x 204.0	800	10	255.0	209000	5150	28.65
816 x 163.0		8	203.5	165500	4100	28.60
812 x 121.5		6	152.0	123500	3060	28.60
○ 720 x 175.5	700	10	223.0	140200	3950	25.10
716 x 142.5		8	178.0	111500	3140	25.00
712 x 106.8		6	133.5	83000	2350	25.00
○ 620 x 153.5	600	10	191.8	89000	2920	21.55
616 x 122.0		8	153.0	70600	2325	21.50
612 x 91.5		6	114.5	52400	1732	21.40
○ 570 x 141.0	550	10	176.0	68500	2450	19.75
566 x 112.5		8	140.5	54300	1945	19.70
562 x 83.8		6	105.0	40300	1450	19.65
○ 520 x 128.5	500	10	160.5	52000	2040	18.20
516 x 102.3		8	127.8	40850	1610	17.92
512 x 76.3		6	95.4	30500	1208	17.90
○ 470 x 115.5	450	10	144.5	38200	1660	16.28
466 x 92.0		8	115.0	30200	1320	16.22
462 x 68.7		6	86.0	22300	978	16.15
○ 420 x 103.2	400	10	129.0	27100	1330	14.45
416 x 82.0		8	102.5	21350	1045	14.40
412 x 61.2		6	76.6	15750	778	14.32
○ 370 x 888	350	10	113.1	18300	991	12.73
366 x 70.6		8	90.0	14400	788	12.66
362 x 52.7		6	67.1	10600	587	12.59
○ 320 x 76.5	300	10	97.4	11700	732	10.97
316 x 60.8		8	77.4	9185	581	10.89
312 x 45.3		6	57.7	6754	433	10.82
○ 270 x 64.1	250	10	81.7	6912	512	9.20
266 x 50.9		8	64.8	5400	406	9.13
262 x 37.9		6	48.3	3955	302	9.05
○ 220 x 51.8	200	10	66.0	3645	331	7.43
216 x 41.0		8	52.3	2831	262	7.36
212 x 30.5		6	38.8	2061	194	7.29

Tabla para Ranuras de Unión

TIPO VITCTAULIC DE CAÑERIAS ENGOMADAS

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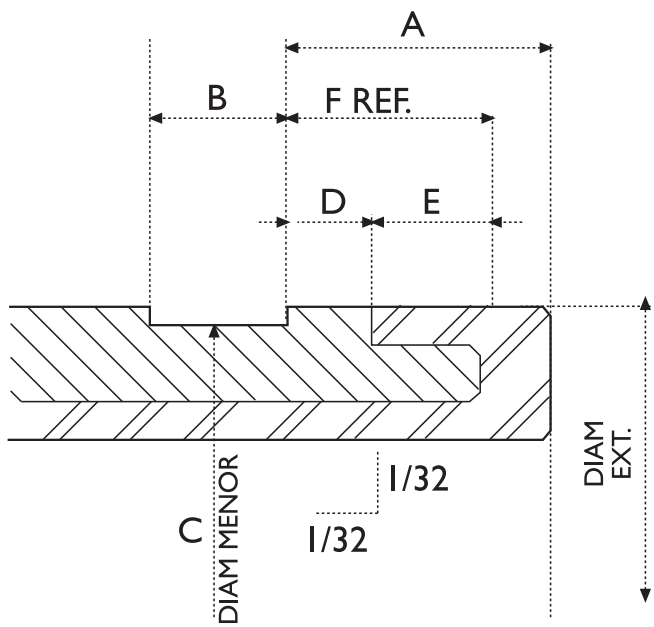
DIAM. NOM.	DIAM. EXT.	A +1/32 -0	B +0 -1/32	C DIAMETRO MENOR		D +1/32 -0	E +0 -1/32	F REF.	Separación MAX ENTRE CAÑERIAS
2	2.375	19/32	9/32	2250	+0-0.015	3/16	9/32	15/32	3/16
2 1/2	2.875	19/32	9/32	2750	+0-0.018	3/16	9/32	15/32	3/16
3	3.500	19/32	9/32	3444	+0-0.018	3/16	9/32	15/32	3/16
4	4.500	5/8	11/32	4334	+0-0.020	3/16	5/16	1/2	1/4
5	5.563	5/8	11/32	5395	+00-.022	3/16	5/16	1/2	1/4
6	6.625	5/8	11/32	6445	+0-0.022	7/32	5/16	1/2	1/4
8	8.625	3/4	13/32	8441	+0-0.025	7/32	13/32	5/8	1/4
10	10.750	3/4	15/32	10562	+0-0.027	7/32	13/32	5/8	1/4
12	12.750	3/4	15/32	12531	+0-0.030	7/32	13/32	5/8	1/4
14	14.000	29/32	7/16	13781	+0-0.030	9/32	1/2	25/32	5/16
16	16.000	29/32	1/2	15781	+0-0.030	9/32	1/2	25/32	5/16
18	18.000	31/32	1/2	17781	+0-0.30	11/32	1/2	27/32	5/16
20	20.000	31/32	1/2	19781	+0-030	11/32	1/2	27/32	5/16
24	24.000	31/32	17/32	23656	-0-0.03	11/32	1/2	27/32	5/16



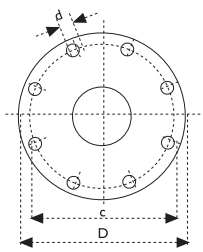
Bridas (flanges) PN10 Plantillas de Perforacionas

(NORMA NCH 402)

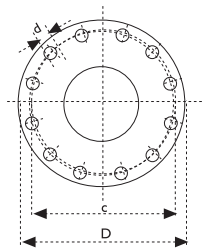
Dimensiones en mm

DIAMETRO NOMINAL DN	D	C	AGUJEROS		PERNOS
			NUMERO d	DIAMETRO	DIAMETRO
50	165	125	4	19	16
75	200	160	8	19	16
100	220	180	8	19	16
125	250	210	8	19	16
150	285	240	8	23	20
200	340	295	8	23	20
250	395	350	12	23	20
300	445	400	12	23	20
350	505	460	16	23	20
400	565	515	16	28	24
500	670	620	20	28	24
600	780	725	20	31	27
700	895	840	24	31	27
800	1.015	950	24	34	30
900	1.115	1.050	28	34	30
1.000	1.230	1.160	28	37	33

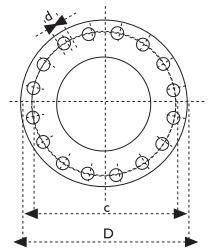
DN 75 A 200



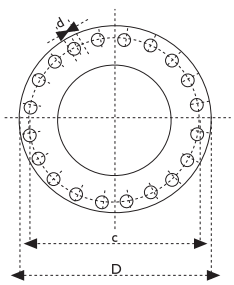
250 Y 300



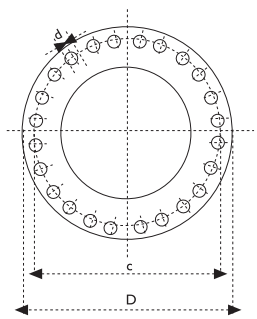
350 Y 400



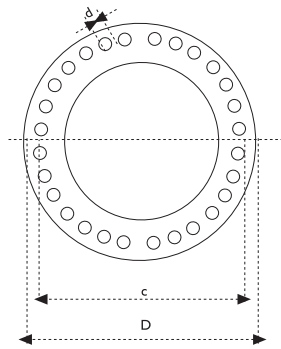
DN 500 Y 600



700 Y 800



900 Y 1000



NOTA: Para la Brida de Diametro Nominal 75 y de Presión Nominal PN 10, El número de agujeros puede reducirse a 4, a pedido del comprador, para permitir el acoplamiento con una brida existente de una línea antigua.

Tabla de Peldaños Tipicos

(RS/S-ZZ/S) • DIMENSIONES EN MM)

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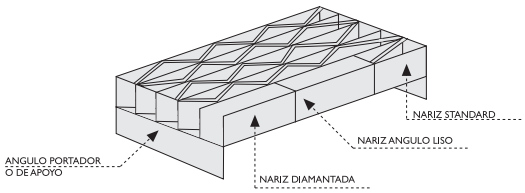
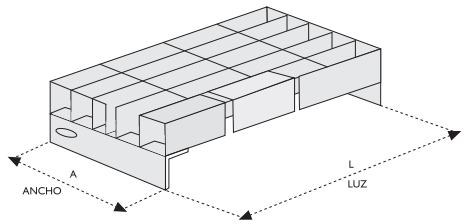
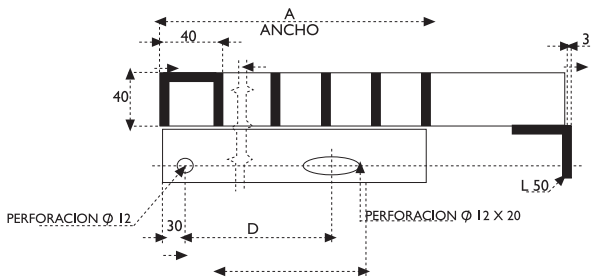




TIPO	R. SOP	A	L	D
A-225-3	25X3	225	700	140
A-225-5	25X5	225	800	140
A-260-3	32X3	260	1000	160
A-260-5	32X5	260	1100	160
A-250-3	38X3	230	1200	180
A-250-5	38X5	230	1500	180



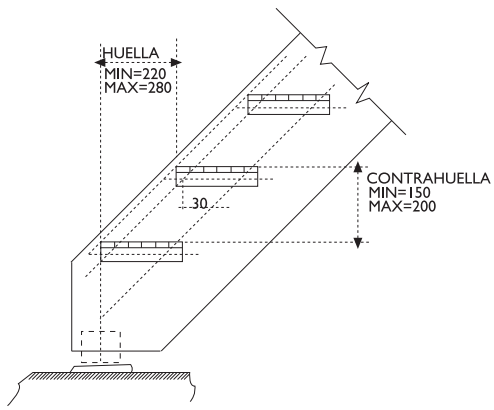


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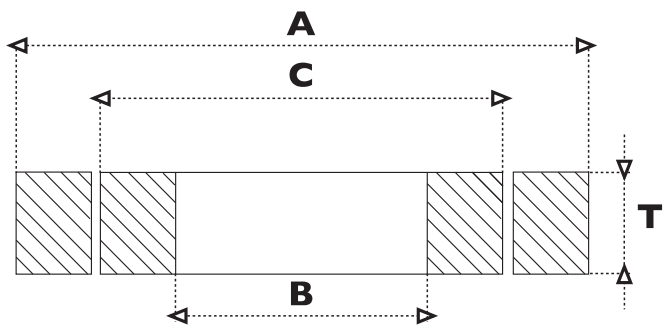
Tabla Flanches

TABLE: AWWA STANDARD STEEL RING FLANGES, CLASS B" (86 PSI)

Nominal Pipe Size in.	O of Flange(A) in.	I of Flange(B++) in.	Number of Bolts	Diameter of Bolt Circle(C) in.	Diameter of Bolts in.		Thickness of Flanges in.	
					Class B	Class D	Class B (T)	Class D (T)
4	9.00	4.57	8	7.50	0.625	0.625	0.625	0.625
5	10.00	5.66	8	8.50	0.625	0.750	0.625	0.625
6	11.00	6.72	8	9.00	0.625	0.750	0.688	0.688
8	13.50	8.72	8	11.75	0.625	0.750	0.688	0.688
10	16.00	10.88	12	14.25	0.625	0.875	0.688	0.688
12	19.00	12.88	12	17.00	0.625	0.875	0.688	0.812
14	21.00	14.19	12	18.75	0.750	1.000	0.688	0.932
16	23.50	16.19	16	21.25	0.750	1.000	0.688	1.000
18	25.00	18.19	16	22.75	0.750	1.125	0.688	1.062
20	27.50	20.19	20	25.00	0.750	1.125	0.688	1.125
22	29.50	22.19	20	27.25	0.750	1.250	0.750	1.188
24	32.00	24.19	20	29.50	0.750	1.250	0.750	1.250
26	34.25		24	31.75	0.750	1.250	0.812	1.312
28	36.50		28	24.00	0.750	1.250	0.875	1.312
30	38.75		28	36.00	0.875	1.250	0.875	1.375
32	41.75		28	38.50	0.875	1.500	0.938	1.500
34	43.75		32	40.50	0.875	1.500	0.938	1.500
36	46.00		32	42.75	0.875	1.500	1.000	1.625
38	48.75		32	45.25	0.875	1.500	1.000	1.625
40	50.75		36	47.25	0.875	1.500	1.000	1.625
42	53.00		36	49.50	1.000	1.500	1.125	1.750
44	55.25		40	51.75	1.000	1.500	1.125	1.750
46	57.25		40	53.75	1.000	1.500	1.125	1.750
48	59.50		44	56.00	1.000	1.500	1.250	1.750
50	61.75		44	58.25	1.125	1.750	1.250	2.000
52	64.00		44	60.50	1.125	1.750	1.250	2.000
54	66.25		44	62.75	1.250	1.750	1.375	2.125
60	73.00		52	69.25	1.250	1.750	1.500	2.250
66	80.00		52	76.00	1.250	1.750	1.625	2.500
72	86.50		60	82.50	1.250	1.750	1.750	2.625
78	93.00		64	59.00	1.500	2.000	2.000	2.750
84	99.75		64	95.50	1.500	2.000	2.000	2.750
90	106.50		68	102.00	1.750	2.250	2.250	3.000
96	113.25		68	108.50	1.750	2.250	2.250	3.000
102	120.00		72	114.50	2.000	2.500	2.500	3.250
108	126.75		72	120.75	2.000	2.500	2.500	3.250
114	133.50		76	126.75	2.250	2.750	2.750	3.500
120	140.25		76	132.75	2.250	2.750	2.750	3.500
126	147.00		80	139.25	2.500	3.000	3.000	3.750
132	153.75		80	145.75	2.500	3.000	3.000	3.750
138	160.50		84	152.00	2.750	3.250	3.250	4.000
144	167.25		84	158.25	2.750	3.250	3.250	4.000



Cargas Admisibles Parrilla Standard

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CLASE RECTANGULAR SOLDADAS RS/S Y ZIG ZAG ZZ/S

- PARRILLA CLASE RS/D, DEBE MULTIPLICARSE EL VALOR POR FACTOR: 1,25
- PARRILLA ZZ/SL, DEBE MULTIPLICARSE EL VALOR POR FACTOR: 0,66
- PARRILLA ZZ/L, DEBE MULTIPLICARSE EL VALOR POR FACTOR: 0,50

TIPO	PLETINA	CARGAS	DISTANCIA ENTRE APOYOS EN M.M.(LUZ)											PESOS(KG / M2)				
			500	750	1.000	1.250	1.500	1.750	2.000	2.250	2.500	2.750	3.000	RS / S	RS / D	ZZ / S	ZZ / SL	ZZ / L
1	20x3	U	2.400	1.000	600													
		C	600	400	300									19	23	32	27	21
2	20x5	U	3.500	1.600	900	600												
		C	900	600	450	350								32	38	41	37	25
3	25x3	U	4.300	1.800	1.000	700	500											
		C	1.000	700	650	400	350							24	28	36	31	23
4	25x5	U	6.300	2.800	1.600	1.000	700	500										
		C	1.000	1.000	790	600	500	450						39	46	47	42	29
5	32x3	U	6.600	3.000	1.650	1.100	800	600	400									
		C	1.600	1.100	820	660	600	500	400					31	36	42	35	26
6	32x5	U	9.500	4.400	2.400	1.500	1.100	800	600	550								
		C	2.500	1.600	1.300	1.000	800	700	600	550				49	58	56	50	34
8	38x5	U	14.000	6.500	3.500	2.200	1.600	1.200	1.000	750	600							
		C	3.500	2.400	1.800	1.400	1.200	1.000	1.000	800	700			58	69	64	57	39
10	50x5	U	25.000	11.200	6.300	4.000	2.800	2.100	1.600	1.200	1.000	900						
		C	6.500	4.300	3.200	2.500	2.100	1.800	1.600	1.400	1.200	1.200		77	92	83	74	50
12	63x5	U	40.000	17.500	10.000	6.500	3.300	2.500	2.000	1.700	1.500	1.500	1.200					
		C	10.000	6.500	5.000	4.000	2.800	2.500	2.100	2.200	2.000	2.000	1.800	96	113	100	89	60

- U: CARGA UNIFORME REPARTIDA EN KG/M2
- C: CARGA CONCENTRADA EN KG/ML
- LAS CARGAS DADAS, ESTAN BASADAS EN UN ESFUERZO DE TRABAJO DE 1.200 KG/CM2.

PARRILLAS ASERRADAS REQUIERE AUMENTAR LA ALTURA DE PLETINA SOPORTANTE EN 6MM. MINIMO.

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Carga Admisibles Parrillas Trabajo Pesado Especiales

CLASE RECTANGULAR SOLDADAS RS/TP

- PARRILLA CLASE RS/SP, DEBE MULTIPLICARSE EL VALOR POR FACTOR DE CARGA: 0,68
- U: CARGA UNIFORME REPARTIDA EN KG/M2
- C: CARGA CONCENTRADA EN KG/ML

TIPO	PLETINA SOPORTANTE	CARGAS	LUZ ENTRE APOYOS EN M.M.											PESO (KG/M2)			
			300	450	600	750	900	1000	1200	1400	1500	1600	1800	2100	2500	RS / SP	RS / TP
1	50x6	U	88.660	39.400	22.160	14.180	9.850	7.230	5.540	4.370	3.540	2.930	2.460	1.800	1.310	58	82
		C	13.500	8.990	6.750	5.400	4.500	3.850	3.370	2.990	2.690	2.450	2.240	1.920	1.680		
2	50x8	U	110.510	49.120	27.620	17.680	12.280	9.020	6.900	5.450	4.420	3.650	3.070	2.250	1.720	77	109
		C	16.820	11.210	8.410	6.730	5.600	4.800	4.200	3.730	3.360	3.050	2.800	2.400	2.100		
3	63x6	U	138.500	61.550	34.620	22.160	15.390	11.300	8.650	6.830	5.540	4.570	3.840	2.820	2.160	71	101
		C	21.080	14.060	10.540	8.430	7.030	6.000	5.270	4.680	4.210	3.830	3.510	310	2.630		
4	63x8	U	17.700	76.750	43.170	27.630	19.180	14.090	10.790	8.520	6.900	5.710	4.790	3.520	2.690	96	135
		C	26.290	17.530	13.140	10.510	8.760	7.510	6.570	5.890	5.250	4.780	4.380	3.750	3.280		
5	63x10	U	206.710	91.870	51.680	22.960	22.960	16.860	12.910	10.200	8.260	6.830	5.740	4.210	3.230	117	167
		C	31.470	20.980	15.730	10.490	10.490	8.990	7.860	6.990	6.290	5.720	5.240	4.490	3.930		
6	75x6	U	194.590	88.550	49.860	31.910	22.160	16.280	12.460	9.850	7.890	6.590	5.540	4.070	3.110	84	119
		C	30.360	20.240	15.180	12.140	10.120	8.670	7.590	6.740	6.070	5.520	5.060	4.330	3.796		
8	75x8	U		110.520	62.160	39.780	27.620	20.900	15.450	12.280	9.940	8.210	6.900	5.070	3.880	112	159
		C		25.240	18.930	15.140	12.620	10.810	9.460	8.410	7.570	6.880	6.310	5.400	4.730		
10	75x10	U		132.300	74.420	47.620	33.070	24.300	18.600	14.700	11.900	9.840	8.260	6.070	4.650	138	197
		C		30.210	22.660	18.130	15.100	12.950	11.330	10.070	9.060	8.240	7.550	6.470	5.660		
12	100x8	U		196.490	110.530	70.730	19.120	36.090	27.630	21.830	17.680	14.610	12.280	9.020	6.900	146	209
		C		44.870	33.650	26.920	22.430	19.230	16.820	14.950	13.460	12.230	11.210	9.610	8.410		
13	100x10	U		235.200	132.300	84670	58.800	43.200	33.070	26.130	21.170	17.490	14.700	10.790	8.260	181	260
		C		53.710	40.290	32.230	26.860	23.020	20.140	17.900	16.110	14.650	13.420	11.510	10.070		

- LAS CARGAS DADAS, ESTAN BASADAS EN UN ESFUERZO DE TRABAJO DE 1.200 KG/CM2.

VESPUCIO
MAESTRANZA&FUNDICION

Tabla de Cañerias

ANSI PIPE SCHEDULE • SI - UNITS (METRIC) • OD: MM • WALLTHICKNESS: MM • WEIGHT: KG/M • VOL / M: M3

Normal pipe	OD mm	10	20	30	STD	40	60	xs	80	100	120	140	160	xxs	5s	10s	40s	80s	VOL/M M3
1/8	10.30				1.73	1.73		2.41	2.41							1.24	1.73	2.41	0.0001
					0.37	0.37		0.47	0.47							0.28	0.36	0.48	
1/4	13.70				2.24	2.24		3.02	3.02							1.65	2.24	3.02	0.0002
					0.63	0.63		0.80	0.80							0.51	0.64	0.82	
3/8	17.10				2.31	2.31		3.20	3.20							1.65	2.31	3.20	0.0003
					0.84	0.84		1.10	1.10							64	0.86	1.12	
1/2	21.30				2.77	2.77		3.73	3.73				4.78	7.47	1.65	2.11	2.77	3.73	0.0004
					1.27	1.27		1.62	1.62				1.95	2.55	0.82	1.01	1.30	1.65	
3/4	26.70				2.87	2.87		3.91	3.91				5.56	7.82	1.65	2.11	2.87	3.91	0.0007
					1.69	1.69		2.20	2.20				2.90	3.64	1.04	1.31	1.71	2.24	
1	33.40				3.38	3.38		4.55	4.55				6.35	9.09	1.65	2.77	3.38	4.55	0.0011
					2.50	2.50		3.24	3.24				4.24	5.45	1.33	2.13	2.55	3.29	
1 1/4	42.20				3.56	3.56		4.85	4.85				6.35	9.70	1.65	2.77	3.56	4.85	0.0018
					3.39	3.39		4.47	4.47				5.61	7.7	1.68	2.76	3.46	4.56	
1 1/2	48.30				3.68	3.68		5.08	5.08				7.14	10.15	1.65	2.77	3.68	5.08	0.0023
					4.05	4.05		5.41	5.41				7.25	9.56	1.95	3.17	4.13	5.51	
2	60.30				3.91	3.91		5.54	5.54				8.74	11.07	1.65	2.77	3.91	5.54	0.0036
					5.44	5.44		7.48	7.48				11.11	13.44	2.44	4.01	5.54	7.63	
2 1/2	73.00				5.16	5.16		7.01	7.01				9.53	14.02	2.11	3.05	5.16	7.01	0.0053
					8.63	8.63		11.41	11.41				14.92	20.39	3.77	5.36	8.81	11.64	
3	88.90				5.49	5.49		7.62	7.62				11.13	15.24	2.11	3.05	5.49	7.62	0.0079
					11.29	11.29		15.27	15.27				21.35	27.68	4.60	6.59	11.56	15.59	
3 1/2	101.60				5.74	5.74		8.08	8.08				-	-	2.11	3.05	5.74	8.08	0.0103
					13.57	13.57		18.63	18.63				-	-	5.29	7.55	13.84	19.01	
4	114.30				6.02	6.02		8.56	8.56		11.13		13.49	17.12	2.11	3.05	6.02	8.56	0.013
					16.07	16.07		22.32	22.32		28.32		33.54	41.03	5.96	8.52	16.4	22.77	
5	141.30				6.55	6.55		9.53	9.53		12.70		15.88	19.05	2.77	3.40	6.55	9.53	0.0199
					21.77	21.77		30.97	30.97		40.28		49.11	57.43	9.67	11.82	22.20	31.59	
6	168.30				7.11	7.11		10.97	10.97		14.27		18.26	21.95	2.77	3.40	7.11	10.97	0.028
					28.26	28.26		42.56	42.56		54.2		67.56	79.22	11.55	14.13	28.83	43.42	
8	219.10		6.35	7.04	8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.23	2.77	3.76	8.18	12.70	0.048
			33.31	36.81	42.55	42.55	53.08	64.64	64.64	75.92	90.44	100.92	111.27	107.92	15.09	20.37	43.39	65.95	
10	273.10		6.35	7.80	9.27	9.27	12.7	12.70	15.09	18.26	21.44	25.40	28.58	25.40	3.40	4.19	9 .27	12.70	0.074
			41.77	51.03	60.31	60.31	81.55	81.55	96.01	114.75	133.06	155.15	172.33	155.15	23.08	28.34	61.52	83.19	
12	323.90		6.35	8.38	9.53	10.31	14.27	12.70	17.48	21.44	25.4	28.58	33.32	25.40	3.96	4.57	9.52	12.70	0.104
			49.73	65.2	73.88	79.73	108.96	97.46	132.08	159.91	186.97	208.14	238.76	186.97	31.89	36.73	75.32	99.43	
14	355.60	6.35	7.92	9.53	9.53	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71		3.96	4.78			0.126
		54.69	67.90	81.33	81.33	94.55	126.71	107.39	158.1	194.96	224.65	253.56	281.7		35.06	42.14			
16	406.40	6.35	7.92	9.53	9.53	12.70	16.66	12.70	21.44	26.19	30.96	36.53	40.49		4.19	4.78			0.165
		62.64	77.83	93.27	93.27	123.3	160.12	123.3	203.53	245.56	286.64	333.19	365.35		42.41	48.26			
18	457.00	6.35	7.92	11.13	9.53	14.27	19.05	12.70	23.88	29.36	34.93	39.67	45.24		4.19	4.78			0.208
		70.57	87.71	122.38	105.16	155.80	205.74	139.15	254.55	309.62	363.56	408.26	459.37		47.77	54.36			
20	508.00	6.35	9.53	12.70	9.53	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01		4.78	5.54			0.258
		78.55	117.15	155.12	117.15	183.42	247.83	155.12	311.17	381.53	441.49	508.11	564.81		60.46	70.00			
22	559.00	6.35	9.53	12.70	9.53	-	22.23	12.70	28.58	34.93	41.28	47.63	53.98		4.78	5.54			0.312
		86.54	129.13	171.09	129.13	-	294.25	171.09	373.83	451.42	527.02	600.63	672.26		66.57	77.06			
24	610.00	6.35	9.53	14.27	9.53	17.48	24.61	12.70	30.96	38.89	46.02	52.37	59.54		5.54	6.35			0.372
		94.53	141.12	209.64	141.12	255.41	355.26	187.06	442.08	547.71	640.03	720.15	808.22		84.16	96.37			
26	660.00	7.92	12.70	-	9.53	-		12.70											435
		127.36	202.72	-	152.87	-		202.72											
28	711.00	7.92	12.70	15.88	9.53	-		12.70											0.506
		137.32	218.69	271.21	164.85	-		218.69											
30	762.00	7.92	12.70	15.88	9.53	-		12.70							6.35	7.92			0.580
		147.28	234.67	292.18	176.84	-		234.67							120.72	150.36			
32	813.00	7.92	12.70	15.88	9.53	17.48		12.70											0.66
		157.24	250.64	312.15	188.82	342.91		250.64											
34	864.00	7.92	12.70	15.88	9.53	17.48		12.70											0.746
		167.20	266.61	332.12	200.31	364.90		266.61											
36	914.00	7.92	12.70	15.88	9.53	19.05		12.70											0.835
		176.96	282.27	351.7	212.56	420.42		282.27											
38	965.00				9.53			12.70											0.931
					224.54			298.24											
40	1016.00				9.53			12.70											1.032
					236.53			314.22											
42	1067.00				9.53			12.70											1.138
					248.52			330.19											
44	1118.00				9.53			12.70											1.249
					260.5			346.16											
46	1168.00				9.53			12.70											1.364
					272.25			351.82											
48	1219.00				9.53			12.70											1.485
					284.24			377.79											