

HSS

# **DIMENSIONS AND SECTION PROPERTIES ASTM A500**

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HSS: TECHNICAL BROCHURE



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## NOMENCLATURE

<b>b</b>	Nominal width minus 3 times the design wall thickness, $t$ (in.)
<b>C</b>	Torsional shear constant of cross-section (in. <sup>3</sup> )
<b>D</b>	Outside diameter of round HSS (in.)
<b>h</b>	Nominal depth minus 3 times the design wall thickness, $t$ (in.)
<b>I</b>	Moment of inertia of cross-section (in. <sup>4</sup> )
<b>J</b>	Torsional stiffness constant of cross-section (in. <sup>4</sup> )
<b>r</b>	Radius of gyration (in.)
<b>S</b>	Elastic section modulus (in. <sup>3</sup> )
<b>t</b>	Design wall thickness (in.)
<b>Z</b>	Plastic section modulus (in. <sup>3</sup> )

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## FOREWARD

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## DIMENSIONS AND SECTION PROPERTIES OF ROUND HSS

Nominal Size										Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
Outside Diameter	Wall	Weight per Foot	Wall Thickness t	D/t	Cross Sectional Area	I	S	r	Z			
in.	in.	lb.	in.		in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
20.000	0.625	129.47	0.581	34.4	35.44	1670	167	6.87	219	3340	334.00	5.24
20.000	0.250	52.79	0.233	85.8	14.47	707	70.7	6.99	91.0	1410	141.00	5.24
18.000	0.625	116.10	0.581	31.0	31.79	1210	134	6.16	176	2410	268.00	4.71
18.000	0.250	47.44	0.233	77.3	13.01	513	57.0	6.28	73.6	1030	114.00	4.71
16.000	0.625	102.74	0.581	27.5	28.14	838	105	5.46	138	1680	209	4.19
16.000	0.250	42.10	0.233	68.7	11.54	359	44.8	5.58	57.9	717	89.7	4.19
14.000	0.625	89.37	0.581	24.1	24.49	552	78.9	4.75	105	1100	158	3.67
14.000	0.437	63.37	0.406	34.5	17.34	401	57.3	4.81	75.0	802	115	3.67
14.000	0.250	36.75	0.233	60.1	10.08	239	34.1	4.87	44.2	478	68.2	3.67
13.375	0.625	85.20	0.581	23.0	23.35	479	71.6	4.53	95.2	958	143	3.50
13.375	0.500	68.83	0.465	28.8	18.86	393	58.8	4.57	77.5	787	118	3.50
13.375	0.375	52.12	0.349	38.3	14.28	303	45.3	4.61	59.2	606	90.7	3.50
13.375	0.250	35.08	0.233	57.4	9.62	208	31.1	4.65	40.2	415	62.1	3.50
12.750	0.625	81.02	0.581	21.9	22.21	412	64.6	4.31	86.1	824	129	3.34
12.750	0.406	53.58	0.378	33.7	14.69	281	44.1	4.38	57.9	563	88.3	3.34
12.750	0.393	51.92	0.365	34.9	14.20	273	42.8	4.38	56.0	545	85.5	3.34



## DIMENSIONS AND SECTION PROPERTIES OF ROUND HSS

Nominal Size										Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
Outside Diameter	Wall	Weight per Foot	Wall Thickness t	D/t	Cross Sectional Area	I	S	r	Z			
in.	in.	lb.	in.		in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
12.000	0.625	76.01	0.581	20.7	20.84	341	56.8	4.04	75.8	681	114	3.14
12.000	0.500	61.48	0.465	25.8	16.85	281	46.8	4.08	61.9	561	93.6	3.14
12.000	0.375	46.61	0.349	34.4	12.77	217	36.2	4.12	47.4	434	72.3	3.14
12.000	0.250	31.41	0.233	51.5	8.61	149	24.9	4.16	32.3	298	49.7	3.14
11.750	0.625	74.34	0.581	20.2	20.39	319	54.3	3.95	72.5	638	109	3.08
11.750	0.500	60.14	0.465	25.3	16.49	263	44.7	3.99	59.3	526	89.5	3.08
11.750	0.375	45.61	0.349	33.7	12.50	203	34.6	4.03	45.4	407	69.2	3.08
11.750	0.322	39.34	0.299	39.3	10.76	176	30.0	4.05	39.2	353	60.1	3.08
11.750	0.250	30.74	0.233	50.4	8.43	140	23.8	4.07	30.9	280	47.6	3.08
10.750	0.625	67.66	0.581	18.5	18.56	241	44.8	3.60	60.1	481	89.6	2.81
10.750	0.375	41.60	0.349	30.8	11.40	154	28.7	3.68	37.8	309	57.4	2.81
10.750	0.313	34.93	0.291	36.9	9.56	131	24.3	3.70	31.8	262	48.7	2.81
10.750	0.188	21.23	0.175	61.4	5.81	81.3	15.1	3.74	19.6	163	30.2	2.81
9.625	0.625	60.14	0.581	16.6	16.51	169	35.2	3.20	47.6	339	70.4	2.52
8.625	0.625	53.46	0.581	14.8	14.68	119	27.7	2.85	37.7	239	55.4	2.26
8.625	0.125	11.36	0.116	74.4	3.10	28.1	6.51	3.01	8.40	56.1	13.0	2.26





## DIMENSIONS AND SECTION PROPERTIES OF ROUND HSS

Nominal Size										Torsional	Torsional	Surface
Outside Diameter	Wall	Weight per Foot	Wall	D/t	Cross Sectional Area	I	S	r	Z	Stiffness Constant J	Shear Constant C	Area per Foot
in.	in.	lb.	in.		in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
6.625	0.437	28.91	0.406	16.3	7.93	38.5	11.6	2.20	15.7	77.0	23.3	1.73
6.625	0.134	9.30	0.125	53.0	2.55	13.5	4.07	2.30	5.28	27.0	8.14	1.73
5.563	0.500	27.07	0.465	12.0	7.45	24.4	8.77	1.81	12.1	48.8	17.5	1.46
4.500	0.375	16.54	0.349	12.9	4.55	9.87	4.39	1.47	6.03	19.7	8.78	1.18
4.500	0.120	5.62	0.112	40.2	1.54	3.72	1.65	1.55	2.16	7.44	3.31	1.18
4.000	0.318	12.52	0.296	13.5	3.44	5.94	2.97	1.31	4.07	11.9	5.94	1.05
4.000	0.120	4.96	0.112	35.7	1.37	2.59	1.29	1.38	1.69	5.17	2.59	1.05
3.500	0.219	7.68	0.204	17.2	2.11	2.88	1.65	1.17	2.22	5.76	3.29	0.92
3.500	0.120	4.32	0.112	31.3	1.19	1.71	0.978	1.20	1.29	3.42	1.96	0.92
3.000	0.125	3.84	0.116	25.9	1.05	1.09	0.730	1.02	0.965	2.19	1.46	0.79
2.875	0.276	7.67	0.257	11.2	2.11	1.83	1.27	0.930	1.77	3.66	2.54	0.75
2.875	0.120	3.53	0.112	25.7	0.97	0.929	0.646	0.978	0.855	1.86	1.29	0.75
2.375	0.109	2.64	0.101	23.5	0.72	0.467	0.394	0.805	0.523	0.935	0.787	0.62
2.25	0.250	5.35	0.233	9.7	1.48	0.761	0.676	0.718	0.952	1.52	1.35	0.59
2.25	0.188	4.14	0.174	12.9	1.13	0.616	0.547	0.737	0.752	1.23	1.09	0.59
2.25	0.125	2.84	0.116	19.4	0.78	0.444	0.395	0.756	0.529	0.888	0.789	0.59



## DIMENSIONS AND SECTION PROPERTIES OF ROUND HSS

Nominal Size										Torsional	Torsional	Surface
Outside Diameter	Wall	Weight per Foot	Wall	D/t	Cross Sectional Area	I	S	r	Z	Stiffness Constant J	Shear Constant C	Area per Foot
in.	in.	lb.	in.		in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
2.000	0.120	2.40	0.112	17.9	0.66	0.297	0.297	0.669	0.400	0.594	0.594	0.52
1.900	0.188	3.44	0.174	10.9	0.94	0.355	0.374	0.613	0.520	0.710	0.747	0.50
1.900	0.134	2.53	0.125	15.2	0.70	0.276	0.290	0.629	0.394	0.552	0.581	0.50
1.900	0.125	2.37	0.116	16.4	0.65	0.260	0.273	0.632	0.370	0.519	0.547	0.50
1.900	0.120	2.28	0.112	17.0	0.63	0.252	0.266	0.633	0.359	0.505	0.531	0.50
1.900	0.109	2.09	0.101	18.8	0.57	0.232	0.244	0.637	0.327	0.463	0.488	0.50
1.900	0.100	1.92	0.093	20.4	0.53	0.216	0.227	0.640	0.304	0.432	0.455	0.50
1.660	0.134	2.19	0.125	13.3	0.60	0.179	0.215	0.545	0.295	0.357	0.431	0.43
1.660	0.125	2.05	0.116	14.3	0.56	0.169	0.203	0.547	0.277	0.337	0.406	0.43
1.660	0.109	1.81	0.101	16.4	0.49	0.151	0.182	0.552	0.246	0.302	0.364	0.43
1.660	0.083	1.40	0.077	21.6	0.38	0.120	0.145	0.560	0.193	0.240	0.290	0.43
1.500	0.120	1.77	0.112	13.4	0.49	0.118	0.158	0.492	0.216	0.237	0.316	0.39
1.315	0.133	1.68	0.124	10.6	0.46	0.083	0.126	0.423	0.177	0.166	0.253	0.34
1.315	0.125	1.59	0.116	11.3	0.44	0.079	0.121	0.426	0.167	0.159	0.241	0.34
1.315	0.083	1.09	0.077	17.1	0.30	0.058	0.088	0.439	0.118	0.115	0.175	0.34
1.250	0.120	1.45	0.112	11.2	0.40	0.065	0.105	0.404	0.146	0.131	0.209	0.33
1.000	0.120	1.13	0.112	8.9	0.31	0.031	0.063	0.316	0.089	0.063	0.125	0.26



## DIMENSIONS AND SECTION PROPERTIES OF SQUARE HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	I	S	r	Z	Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	ft.2
22	22	0.875		244.91	0.814	24.0	24.0	67.28	4967.3	451.6	8.59	529.8	7891.7	728.6	7.10
22	22	0.750		212.02	0.698	28.5	28.5	58.22	4354.7	395.9	8.65	461.6	6863.9	632.2	7.13
20	20	0.875		221.09	0.814	21.6	21.6	60.76	3674.1	367.4	7.78	432.9	5869.2	597.2	6.43
20	20	0.750		191.61	0.698	25.7	25.7	52.64	3228.6	322.9	7.83	377.9	5113.2	518.8	6.47
18	18	0.875		197.27	0.814	19.1	19.1	54.25	2627.3	291.9	6.96	345.8	4225.0	478.8	5.77
18	18	0.750		171.19	0.698	22.8	22.8	47.05	2315.5	257.3	7.02	302.5	3688.4	416.6	5.80
16	16	0.875		173.45	0.814	16.7	16.7	47.74	1801.0	225.1	6.14	268.5	2919.9	373.4	5.10
16	16	0.750		150.77	0.698	19.9	19.9	41.47	1593.1	199.1	6.20	235.5	2555.9	325.6	5.13
16	16	0.250		53.05	0.233	65.7	65.7	14.56	600.1	75.0	6.42	85.8	921.3	115.8	5.27
14	14	0.875		149.62	0.814	14.2	14.2	41.23	1169.0	167.0	5.32	200.9	1915.0	281.0	4.43
14	14	0.750		130.35	0.698	17.1	17.1	35.88	1039.1	148.4	5.38	176.8	1682.3	245.7	4.47
14	14	0.250		46.25	0.233	57.1	57.1	12.69	398.7	57.0	5.60	65.3	614.0	88.3	4.60
12	12	0.750		109.93	0.698	14.2	14.2	30.30	631.2	105.2	4.56	126.5	1034.0	177.0	3.80
12	12	0.188		29.84	0.174	66.0	66.0	8.15	189.1	31.5	4.82	36.0	290.3	48.6	3.95
10	10	0.750		89.51	0.698	11.3	11.3	24.72	347.0	69.4	3.75	84.7	577.6	119.5	3.13



## DIMENSIONS AND SECTION PROPERTIES OF SQUARE HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Section- al Area	I	S	r	Z	Torsional Stiffness Constant J	Torsion- al Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	ft.2
9	9	0.625		67.83	0.581	12.5	12.5	18.70	215.5	47.9	3.40	58.1	356.2	81.6	2.83
9	9	0.125		14.96	0.116	74.6	74.6	4.09	53.5	11.9	3.62	13.6	82.0	18.3	2.97
8	8	0.125		13.26	0.116	66.0	66.0	3.62	37.4	9.3	3.21	10.7	57.3	14.4	2.63
7	7	0.125		11.56	0.116	57.3	57.3	3.16	24.8	7.1	2.80	8.1	38.2	11.0	2.30
6	6	0.134	10	10.54	0.125	45.0	45.0	2.90	16.5	5.5	2.39	6.4	25.7	8.6	1.96
6	6	0.120	11	9.48	0.112	50.6	50.6	2.61	15.0	5.0	2.40	5.7	23.1	7.8	1.97
5.5	5.5	0.134	10	9.63	0.125	41.0	41.0	2.65	12.6	4.6	2.19	5.3	19.7	7.2	1.80
5.5	5.5	0.120	11	8.66	0.112	46.1	46.1	2.38	11.4	4.2	2.19	4.8	17.7	6.5	1.80
5	5	0.134	10	8.72	0.125	37.0	37.0	2.40	9.4	3.8	1.98	4.4	14.7	5.9	1.63
5	5	0.120	11	7.85	0.112	41.6	41.6	2.16	8.5	3.4	1.99	3.9	13.2	5.3	1.63
4.5	4.5	0.134	10	7.81	0.125	33.0	33.0	2.15	6.8	3.02	1.78	3.5	10.6	4.8	1.46
4.5	4.5	0.120	11	7.03	0.112	37.2	37.2	1.93	6.2	2.73	1.78	3.2	9.6	4.3	1.47
4	4	0.134	10	6.89	0.125	29.0	29.0	1.90	4.7	2.35	1.57	2.74	7.4	3.7	1.30
4	4	0.120	11	6.21	0.112	32.7	32.7	1.71	4.3	2.13	1.58	2.48	6.7	3.4	1.30
4	4	0.105	12	5.45	0.097	38.2	38.2	1.49	3.8	1.88	1.59	2.17	5.8	3.0	1.31
4	4	0.095	13	4.97	0.088	42.5	42.5	1.36	3.4	1.72	1.59	1.98	5.3	2.7	1.31
4	4	0.083	14	4.37	0.077	48.9	48.9	1.19	3.0	1.52	1.60	1.75	4.7	2.4	1.31





## DIMENSIONS AND SECTION PROPERTIES OF SQUARE HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	I	S	r	Z	Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	ft.2
3.5	3.5	0.134	10	5.98	0.125	25.0	25.0	1.65	3.09	1.76	1.37	2.07	4.9	2.84	1.13
3.5	3.5	0.120	11	5.40	0.112	28.3	28.3	1.49	2.81	1.61	1.38	1.87	4.4	2.57	1.13
3.5	3.5	0.105	12	4.74	0.097	33.1	33.1	1.30	2.48	1.42	1.38	1.64	3.9	2.24	1.14
3.5	3.5	0.095	13	4.32	0.088	36.8	36.8	1.18	2.27	1.30	1.39	1.50	3.5	2.05	1.14
3.5	3.5	0.083	14	3.80	0.077	42.3	42.3	1.04	2.02	1.15	1.39	1.33	3.1	1.81	1.14
3	3	0.165		6.13	0.153	16.6	16.6	1.68	2.230	1.487	1.15	1.773	3.62	2.466	0.96
3	3	0.134	10	5.07	0.125	21.0	21.0	1.40	1.896	1.264	1.16	1.491	3.03	2.059	0.96
3	3	0.120	11	4.58	0.112	23.8	23.8	1.26	1.731	1.154	1.17	1.354	2.75	1.863	0.97
3	3	0.105	12	4.03	0.097	27.9	27.9	1.10	1.531	1.020	1.18	1.191	2.41	1.631	0.97
3	3	0.095	13	3.68	0.088	31.1	31.1	1.01	1.406	0.937	1.18	1.090	2.21	1.490	0.97
3	3	0.083	14	3.24	0.077	36.0	36.0	0.89	1.249	0.833	1.19	0.964	1.95	1.314	0.98
3	3	0.060		2.37	0.056	50.6	50.6	0.65	0.935	0.623	1.20	0.716	1.44	0.970	0.98
2.5	2.5	0.313		8.45	0.291	5.6	5.6	2.35	1.82	1.45	0.879	1.88	3.20	2.74	0.75
2.5	2.5	0.238		6.83	0.221	8.3	8.3	1.89	1.58	1.26	0.914	1.58	2.69	2.25	0.77
2.5	2.5	0.165		5.01	0.153	13.3	13.3	1.38	1.23	0.99	0.947	1.19	2.03	1.67	0.79
2.5	2.5	0.134	10	4.16	0.125	17.0	17.0	1.15	1.06	0.85	0.961	1.01	1.71	1.40	0.80
2.5	2.5	0.120	11	3.76	0.112	19.3	19.3	1.04	0.97	0.78	0.967	0.92	1.56	1.27	0.80
2.5	2.5	0.105	12	3.31	0.097	22.8	22.8	0.91	0.86	0.69	0.974	0.81	1.37	1.12	0.81
2.5	2.5	0.095	13	3.03	0.088	25.4	25.4	0.83	0.79	0.64	0.979	0.74	1.26	1.02	0.81
2.5	2.5	0.083	14	2.67	0.077	29.5	29.5	0.73	0.71	0.57	0.984	0.66	1.11	0.90	0.81



## DIMENSIONS AND SECTION PROPERTIES OF SQUARE HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	I	S	r	Z	Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	ft.2
2.12	2.12	0.188		4.64	0.174	9.2	9.2	1.28	0.786	0.740	0.784	0.916	1.33	1.30	0.66
2.12	2.12	0.134	10	3.47	0.125	14.0	14.0	0.96	0.626	0.589	0.808	0.709	1.03	0.992	0.67
2.12	2.12	0.125		3.27	0.116	15.3	15.3	0.90	0.592	0.557	0.812	0.667	0.964	0.930	0.68
2	2	0.134	10	3.25	0.125	13.0	13.0	0.90	0.513	0.513	0.756	0.621	0.846	0.871	0.63
2	2	0.120	11	2.94	0.112	14.9	14.9	0.81	0.473	0.473	0.763	0.568	0.773	0.793	0.63
2	2	0.105	12	2.60	0.097	17.6	17.6	0.71	0.423	0.423	0.770	0.504	0.684	0.699	0.64
2	2	0.100		2.50	0.093	18.5	18.5	0.69	0.410	0.410	0.772	0.486	0.660	0.673	0.64
2	2	0.095	13	2.38	0.088	19.7	19.7	0.65	0.392	0.392	0.774	0.463	0.629	0.641	0.64
2	2	0.083	14	2.11	0.077	23.0	23.0	0.58	0.351	0.351	0.780	0.412	0.559	0.568	0.64
1.75	1.75	0.120	11	2.53	0.112	12.6	12.6	0.70	0.306	0.350	0.661	0.424	0.506	0.596	0.55
1.5	1.5	0.250		3.71	0.233	3.4	3.4	1.04	0.258	0.343	0.497	0.469	0.470	0.699	0.43
1.5	1.5	0.120	11	2.13	0.112	10.4	10.4	0.59	0.184	0.245	0.558	0.301	0.308	0.426	0.47
1.5	1.5	0.100		1.82	0.093	13.1	13.1	0.50	0.162	0.215	0.568	0.260	0.266	0.365	0.47
1.5	1.5	0.083	14	1.54	0.077	16.5	16.5	0.42	0.140	0.187	0.575	0.223	0.227	0.310	0.48
1.25	1.25	0.120	11	1.72	0.112	8.2	8.2	0.48	0.099	0.159	0.456	0.199	0.170	0.285	0.38
1.25	1.25	0.100		1.48	0.093	10.4	10.4	0.41	0.088	0.142	0.466	0.174	0.148	0.246	0.39
1.25	1.25	0.083	14	1.26	0.077	13.2	13.2	0.35	0.078	0.124	0.473	0.150	0.128	0.210	0.39



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	I	S	r	Z	Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	ft.2
1	1	0.125		1.35	0.116	5.6	5.6	0.38	0.046	0.093	0.352	0.120	0.082	0.175	0.30
1	1	0.120	11	1.31	0.112	5.9	5.9	0.37	0.046	0.091	0.354	0.118	0.080	0.171	0.30
1	1	0.100		1.14	0.093	7.8	7.8	0.32	0.042	0.083	0.363	0.104	0.071	0.150	0.31
1	1	0.083	14	0.98	0.077	10.0	10.0	0.27	0.037	0.074	0.371	0.091	0.062	0.129	0.31



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
24	12	0.750		171.19	0.698	14.2	31.4	47.05	3440	287	8.55	359	1170	194	4.98	221	2850	366	5.80
24	12	0.625		144.40	0.581	17.7	38.3	39.61	2940	245	8.62	304	1000	167	5.03	188	2430	310	5.83
24	12	0.500		116.92	0.465	22.8	48.6	32.06	2420	202	8.69	248	829	138	5.08	154	1980	252	5.87
20	12	0.750		150.77	0.698	14.2	25.7	41.47	2190	219	7.26	270	988	165	4.88	190	2220	303	5.13
20	12	0.313		65.88	0.291	38.2	65.7	18.07	1010	101	7.48	122	464	77.3	5.07	85.8	997	134	5.25
20	12	0.250		53.05	0.233	48.5	82.8	14.56	822	82.2	7.51	98.3	377	62.9	5.09	69.5	806	108	5.27
20	8	0.750		130.35	0.698	8.5	25.7	35.88	1670	167	6.82	216	388	97.0	3.29	112	1060	195	4.47
20	8	0.313		57.37	0.291	24.5	65.7	15.74	786	78.6	7.07	98.6	189	47.4	3.47	52.0	496	88.3	4.58
20	8	0.250		46.25	0.233	31.3	82.8	12.69	640	64.0	7.10	79.9	155	38.8	3.50	42.3	403	71.5	4.60
20	4	0.313		48.86	0.291	10.7	65.7	13.41	560	56.0	6.46	75.6	41.2	20.6	1.75	22.9	134	42.4	3.92
20	4	0.250		39.44	0.233	14.2	82.8	10.83	458	45.8	6.50	61.5	34.3	17.1	1.78	18.7	111	34.7	3.93
16	12	0.750		130.35	0.698	14.2	19.9	35.88	1270	158	5.94	193	810	135	4.75	158	1610	240	4.47
16	12	0.250		46.25	0.233	48.5	65.7	12.69	484	60.5	6.18	71.1	313	52.1	4.96	58.5	588	86.4	4.60
16	8	0.250		39.44	0.233	31.3	65.7	10.83	368	46.1	5.83	56.4	127	31.7	3.42	35.00	300	57.0	3.93
16	4	0.250		32.63	0.233	14.2	65.7	8.96	253	31.6	5.31	41.7	27.7	13.8	1.76	15.2	85.2	27.6	3.27
16	4	0.188		24.74	0.174	20.0	89.0	6.76	193	24.2	5.35	31.7	21.5	10.8	1.78	11.7	65.5	21.1	3.28





## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
12	2	0.313		27.59	0.291	3.9	38.2	7.59	104	17.4	3.71	24.5	5.09	5.09	0.819	6.05	17.6	11.6	2.25
10	8	0.625		67.83	0.581	10.8	14.2	18.70	253	50.5	3.68	62.2	178	44.5	3.09	53.3	346	80.4	2.83
10	4	0.125		11.56	0.116	31.5	83.2	3.16	39.8	7.97	3.55	9.95	9.65	4.83	1.75	5.26	25.1	8.90	2.30
10	3.5	0.500		40.35	0.465	4.5	18.5	11.13	118	23.7	3.26	31.9	21.4	12.2	1.39	14.7	63.2	26.5	2.12
10	3.5	0.375		31.31	0.349	7.0	25.7	8.62	96.1	19.2	3.34	25.3	17.8	10.2	1.44	11.8	51.5	21.1	2.15
10	3.5	0.313		26.53	0.291	9.0	31.4	7.30	83.2	16.6	3.38	21.7	15.6	8.92	1.46	10.2	44.6	18.0	2.17
10	3.5	0.250		21.57	0.233	12.0	39.9	5.93	69.1	13.8	3.41	17.9	13.1	7.50	1.49	8.45	37.0	14.8	2.18
10	3.5	0.188		16.44	0.174	17.1	54.5	4.50	53.6	10.7	3.45	13.7	10.3	5.89	1.51	6.52	28.6	11.4	2.20
10	3.5	0.134		11.91	0.125	25.0	77.0	3.27	39.6	7.93	3.48	10.1	7.72	4.41	1.54	4.81	21.2	8.32	2.21
10	3.5	0.125		11.14	0.116	27.2	83.2	3.04	37.0	7.40	3.49	9.37	7.22	4.12	1.54	4.48	19.8	7.75	2.22
10	3	0.134	10	11.45	0.125	21.0	77.0	3.15	36.6	7.32	3.41	9.44	5.51	3.68	1.32	4.01	16.0	7.09	2.13
10	2	0.134	10	10.54	0.125	13.0	77.0	2.90	30.5	6.10	3.24	8.21	2.27	2.27	0.89	2.50	7.37	4.62	1.96
10	2	0.125		9.86	0.116	14.2	83.2	2.70	28.5	5.70	3.25	7.65	2.14	2.14	0.89	2.33	6.90	4.31	1.97
10	2	0.120	11	9.48	0.112	14.9	86.3	2.61	27.6	5.52	3.25	7.41	2.07	2.07	0.89	2.26	6.69	4.18	1.97
9	3	0.134	10	10.54	0.125	21.0	69.0	2.90	27.9	6.20	3.10	7.93	5.00	3.33	1.31	3.65	14.0	6.37	1.96
9	3	0.120	11	9.48	0.112	23.8	77.4	2.61	25.2	5.61	3.11	7.15	4.53	3.02	1.32	3.29	12.7	5.74	1.97



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
8	4	0.134	10	10.54	0.125	29.0	61.0	2.90	24.6	6.14	2.91	7.53	8.45	4.23	1.71	4.67	20.0	7.62	1.96
8	4	0.120	11	9.48	0.112	32.7	68.4	2.61	22.2	5.55	2.92	6.79	7.65	3.83	1.71	4.22	18.1	6.86	1.97
8	3.5	0.313		22.28	0.291	9.0	24.5	6.14	46.7	11.7	2.76	15.0	12.6	7.20	1.43	8.34	33.3	14.3	1.83
8	3.5	0.250		18.17	0.233	12.0	31.3	5.00	39.0	9.76	2.79	12.4	10.6	6.08	1.46	6.92	27.7	11.8	1.85
8	3.5	0.188		13.89	0.174	17.1	43.0	3.80	30.4	7.60	2.83	9.55	8.38	4.79	1.48	5.36	21.5	9.04	1.87
8	3.5	0.134	10	10.09	0.125	25.0	61.0	2.77	22.6	5.66	2.86	7.04	6.29	3.60	1.51	3.97	15.9	6.64	1.88
8	3.5	0.120	11	9.07	0.112	28.3	68.4	2.49	20.5	5.12	2.86	6.35	5.70	3.26	1.51	3.58	14.3	5.98	1.88
8	3	0.134	10	9.63	0.125	21.0	61.0	2.65	20.7	5.17	2.80	6.55	4.48	2.99	1.30	3.29	12.1	5.65	1.80
8	3	0.120	11	8.66	0.112	23.8	68.4	2.38	18.7	4.68	2.80	5.91	4.07	2.71	1.31	2.97	10.9	5.10	1.80
8	2	0.120	11	7.85	0.112	14.9	68.4	2.16	15.2	3.81	2.66	5.02	1.67	1.67	0.880	1.84	5.14	3.33	1.63
7	5	0.134	10	10.54	0.125	37.0	53.0	2.90	20.7	5.91	2.67	7.00	12.4	4.95	2.07	5.58	24.2	8.37	1.96
7	5	0.120	11	9.48	0.112	41.6	59.5	2.61	18.7	5.34	2.68	6.32	11.2	4.48	2.07	5.03	21.8	7.54	1.97
7	4	0.134	10	9.63	0.125	29.0	53.0	2.65	17.7	5.07	2.59	6.15	7.51	3.76	1.68	4.19	16.7	6.65	1.80
7	4	0.120	11	8.66	0.112	32.7	59.5	2.38	16.0	4.58	2.60	5.54	6.81	3.40	1.69	3.78	15.1	5.99	1.80
7	3	0.134	10	8.72	0.125	21.0	53.0	2.40	14.8	4.22	2.48	5.29	3.96	2.64	1.29	2.93	10.2	4.93	1.63
7	3	0.120	11	7.85	0.112	23.8	59.5	2.16	13.4	3.83	2.49	4.77	3.60	2.40	1.29	2.65	9.18	4.45	1.63



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
7	2	0.250		13.92	0.233	5.6	27.0	3.84	19.8	5.67	2.27	7.64	2.57	2.57	0.82	3.02	7.95	5.52	1.43
7	2	0.188		10.70	0.174	8.5	37.2	2.93	15.7	4.49	2.31	5.95	2.09	2.09	0.85	2.39	6.35	4.32	1.45
7	2	0.134	10	7.81	0.125	13.0	53.0	2.15	11.8	3.38	2.35	4.43	1.61	1.61	0.87	1.79	4.81	3.22	1.46
7	2	0.125		7.31	0.116	14.2	57.3	2.00	11.1	3.16	2.35	4.13	1.52	1.52	0.87	1.68	4.51	3.00	1.47
7	2	0.120	11	7.03	0.112	14.9	59.5	1.93	10.7	3.07	2.36	4.00	1.47	1.47	0.87	1.63	4.37	2.91	1.47
6	5	0.500		31.84	0.465	7.8	9.9	8.81	41.1	13.7	2.16	17.2	30.8	12.30	1.87	15.2	59.8	23.0	1.70
6	5	0.134	10	9.63	0.125	37.0	45.0	2.65	14.4	4.80	2.33	5.62	10.9	4.36	2.03	4.97	19.3	7.15	1.80
6	5	0.125		9.01	0.116	40.1	48.7	2.46	13.4	4.48	2.34	5.24	10.2	4.07	2.03	4.63	18.0	6.66	1.80
6	5	0.120	11	8.66	0.112	41.6	50.6	2.38	13.0	4.34	2.34	5.07	9.86	3.95	2.04	4.48	17.4	6.44	1.80
6	4	0.134	10	8.72	0.125	29.0	45.0	2.40	12.2	4.08	2.26	4.88	6.57	3.29	1.66	3.71	13.5	5.68	1.63
6	4	0.120	11	7.85	0.112	32.7	50.6	2.16	11.1	3.69	2.27	4.41	5.96	2.98	1.66	3.35	12.2	5.12	1.63
6	3.5	0.250		14.77	0.233	12.0	22.8	4.07	18.9	6.31	2.16	7.86	8.15	4.66	1.42	5.40	18.7	8.73	1.52
6	3.5	0.188		11.34	0.174	17.1	31.5	3.11	14.9	4.96	2.19	6.10	6.46	3.69	1.44	4.20	14.5	6.72	1.53
6	3.5	0.134	10	8.26	0.125	25.0	45.0	2.27	11.2	3.72	2.22	4.52	4.87	2.78	1.46	3.12	10.8	4.95	1.55
6	3.5	0.120	11	7.44	0.112	28.3	50.6	2.05	10.1	3.37	2.22	4.08	4.42	2.52	1.47	2.82	9.74	4.46	1.55
6	3	0.134	10	7.81	0.125	21.0	45.0	2.15	10.1	3.36	2.17	4.15	3.45	2.30	1.27	2.57	8.27	4.22	1.46
6	3	0.120	11	7.03	0.112	23.8	50.6	1.93	9.14	3.05	2.17	3.75	3.13	2.09	1.27	2.32	7.48	3.80	1.47



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	Ix in.4	Sx in.3	rx in.	Zx in.3	Iy in.4	Sy in.3	ry in.	Zy in.3	in.4	in.3	ft.2
6	2.5	0.250		13.07	0.233	7.7	22.8	3.60	15.1	5.02	2.04	6.51	3.73	2.98	1.02	3.48	10.1	6.04	1.35
6	2.5	0.188		10.06	0.174	11.4	31.5	2.76	11.9	3.98	2.08	5.08	3.00	2.40	1.04	2.74	7.99	4.70	1.37
6	2.5	0.134	10	7.35	0.125	17.0	45.0	2.02	9.00	3.00	2.11	3.78	2.29	1.84	1.07	2.05	5.99	3.48	1.38
6	2.5	0.120	11	6.62	0.112	19.3	50.6	1.82	8.2	2.72	2.12	3.4	2.09	1.67	1.07	1.86	5.43	3.14	1.38
6	2.5	0.105	12	5.81	0.097	22.8	58.9	1.59	7.17	2.39	2.13	2.99	1.84	1.47	1.08	1.63	4.76	2.75	1.39
6	2.5	0.095	13	5.29	0.088	25.4	65.2	1.45	6.56	2.19	2.13	2.73	1.69	1.35	1.08	1.49	4.35	2.51	1.39
6	2	0.134	10	6.89	0.125	13.0	45.0	1.90	7.92	2.64	2.04	3.42	1.39	1.39	0.857	1.56	3.98	2.75	1.30
6	2	0.120	11	6.21	0.112	14.9	50.6	1.71	7.19	2.40	2.05	3.09	1.27	1.27	0.863	1.41	3.61	2.48	1.30
6	2	0.105	12	5.45	0.097	17.6	58.9	1.49	6.33	2.11	2.06	2.71	1.13	1.13	0.870	1.24	3.18	2.18	1.31
6	2	0.095	13	4.97	0.088	19.7	65.2	1.36	5.80	1.93	2.07	2.47	1.04	1.04	0.874	1.14	2.91	1.99	1.31
6	2	0.083	14	4.37	0.077	23.0	74.9	1.19	5.13	1.71	2.07	2.18	0.921	0.921	0.878	1.00	2.57	1.75	1.31
5.5	3.5	0.250		13.92	0.233	12.0	20.6	3.84	15.20	5.55	1.99	6.87	7.53	4.30	1.40	5.02	16.6	7.97	1.43
5.5	3.5	0.188		10.70	0.174	17.1	28.6	2.93	12.00	4.37	2.03	5.34	5.98	3.42	1.43	3.91	12.9	6.14	1.45
5.5	3.5	0.134	10	7.81	0.125	25.0	41.0	2.15	9.04	3.29	2.05	3.96	4.51	2.58	1.45	2.91	9.55	4.53	1.46
5.5	3.5	0.120	11	7.03	0.112	28.3	46.1	1.93	8.19	2.98	2.06	3.58	4.10	2.34	1.46	2.63	8.62	4.08	1.47
5	4.5	0.250		14.77	0.233	16.3	18.5	4.07	14.7	5.88	1.90	7.05	12.50	5.55	1.75	6.56	21.8	9.43	1.52
5	4.5	0.188		11.34	0.174	22.9	25.7	3.11	11.6	4.63	1.93	5.47	9.84	4.37	1.78	5.09	16.9	7.24	1.53
5	4.5	0.134	10	8.26	0.125	33.0	37.0	2.27	8.67	3.47	1.95	4.05	7.38	3.28	1.80	3.77	12.5	5.32	1.55
5	4.5	0.120	11	7.44	0.112	37.2	41.6	2.05	7.86	3.14	1.96	3.66	6.69	2.97	1.81	3.41	11.3	4.80	1.55





## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
5	4	0.125		7.31	0.116	31.5	40.1	2.00	7.42	2.97	1.93	3.50	5.27	2.64	1.62	3.01	9.66	4.39	1.47
5	4	0.120	11	7.03	0.112	32.7	41.6	1.93	7.19	2.88	1.93	3.39	5.11	2.56	1.63	2.91	9.35	4.25	1.47
5	3.5	0.250		13.07	0.233	12.0	18.5	3.60	12.0	4.82	1.83	5.94	6.91	3.95	1.38	4.64	14.4	7.21	1.35
5	3.5	0.188		10.06	0.174	17.1	25.7	2.76	9.54	3.82	1.86	4.63	5.49	3.14	1.41	3.62	11.2	5.57	1.37
5	3.5	0.134	10	7.35	0.125	25.0	37.0	2.02	7.19	2.87	1.89	3.44	4.16	2.38	1.43	2.70	8.34	4.11	1.38
5	3.5	0.120	11	6.62	0.112	28.3	41.6	1.82	6.52	2.61	1.89	3.11	3.77	2.16	1.44	2.44	7.53	3.70	1.38
5	3.5	0.105	12	5.81	0.097	33.1	48.5	1.59	5.73	2.29	1.90	2.72	3.32	1.90	1.45	2.14	6.59	3.23	1.39
5	3.5	0.095	13	5.29	0.088	36.8	53.8	1.45	5.24	2.10	1.90	2.49	3.04	1.74	1.45	1.95	6.01	2.95	1.39
5	3	0.134	10	6.89	0.125	21.0	37.0	1.90	6.44	2.58	1.84	3.14	2.93	1.95	1.24	2.21	6.44	3.50	1.30
5	3	0.120	11	6.21	0.112	23.8	41.6	1.71	5.85	2.34	1.85	2.84	2.67	1.78	1.25	2.00	5.83	3.16	1.30
5	3	0.105	12	5.45	0.097	27.9	48.5	1.49	5.14	2.06	1.86	2.49	2.35	1.57	1.26	1.75	5.10	2.76	1.31
5	3	0.095	13	4.97	0.088	31.1	53.8	1.36	4.71	1.88	1.86	2.27	2.15	1.44	1.26	1.60	4.66	2.51	1.31
5.5	2	0.250		11.36	0.233	5.6	20.6	3.14	10.4	3.78	1.82	5.03	2.03	2.03	0.803	2.40	5.86	4.29	1.18
5.5	2	0.188		8.78	0.174	8.5	28.6	2.41	8.33	3.03	1.86	3.95	1.66	1.66	0.829	1.91	4.69	3.36	1.20
5.5	2	0.134	10	6.44	0.125	13.0	41.0	1.77	6.33	2.30	1.89	2.96	1.28	1.28	0.851	1.44	3.56	2.51	1.21
5.5	2	0.120	11	5.80	0.112	14.9	46.1	1.60	5.75	2.09	1.90	2.68	1.17	1.17	0.857	1.31	3.23	2.27	1.22
5.5	2	0.105	12	5.09	0.097	17.6	53.7	1.39	5.07	1.84	1.91	2.35	1.04	1.04	0.863	1.15	2.85	1.99	1.22
5.5	2	0.095	13	4.65	0.088	19.7	59.5	1.27	4.64	1.69	1.91	2.15	0.955	0.955	0.867	1.05	2.61	1.82	1.22



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	ft. <sup>2</sup>
5	2.5	0.165		7.81	0.153	13.3	29.7	2.14	6.76	2.71	1.78	3.39	2.29	1.83	1.03	2.09	5.61	3.47	1.21
5	2.5	0.134	10	6.44	0.125	17.0	37.0	1.77	5.70	2.28	1.79	2.83	1.94	1.55	1.05	1.75	4.70	2.89	1.21
5	2.5	0.120	11	5.80	0.112	19.3	41.6	1.60	5.18	2.07	1.80	2.57	1.77	1.42	1.05	1.59	4.26	2.61	1.22
5	2.5	0.105	12	5.09	0.097	22.8	48.5	1.39	4.56	1.82	1.81	2.25	1.56	1.25	1.06	1.39	3.74	2.28	1.22
5	2.5	0.095	13	4.65	0.088	25.4	53.8	1.27	4.18	1.67	1.81	2.06	1.43	1.15	1.06	1.27	3.42	2.08	1.22
5	2	0.134	10	5.98	0.125	13.0	37.0	1.65	4.96	1.98	1.73	2.53	1.17	1.17	0.844	1.32	3.15	2.28	1.13
5	2	0.120	11	5.40	0.112	14.9	41.6	1.49	4.51	1.80	1.74	2.29	1.07	1.07	0.850	1.20	2.86	2.06	1.13
5	2	0.105	12	4.74	0.097	17.6	48.5	1.30	3.98	1.59	1.75	2.01	0.951	0.951	0.857	1.06	2.52	1.81	1.14
5	2	0.095	13	4.32	0.088	19.7	53.8	1.18	3.65	1.46	1.76	1.84	0.875	0.875	0.861	0.968	2.31	1.65	1.14
5	2	0.083	14	3.80	0.077	23.0	61.9	1.04	3.23	1.29	1.76	1.62	0.778	0.778	0.865	0.857	2.04	1.46	1.14
4.5	3.5	0.500		21.63	0.465	4.5	6.7	6.02	14.2	6.33	1.54	8.33	9.50	5.43	1.26	6.96	20.1	11.0	1.20
4.5	3.5	0.375		17.27	0.349	7.0	9.9	4.78	12.3	5.45	1.60	6.91	8.22	4.70	1.31	5.79	16.8	8.97	1.23
4.5	3.5	0.313		14.83	0.291	9.0	12.5	4.10	10.9	4.85	1.63	6.04	7.34	4.19	1.34	5.07	14.7	7.77	1.25
4.5	3.5	0.250		12.21	0.233	12.0	16.3	3.37	9.30	4.13	1.66	5.07	6.28	3.59	1.37	4.26	12.3	6.45	1.27
4.5	3.5	0.188		9.42	0.174	17.1	22.9	2.58	7.39	3.29	1.69	3.96	5.01	2.86	1.39	3.33	9.62	4.99	1.28
4.5	3.5	0.134	10	6.89	0.125	25.0	33.0	1.90	5.59	2.48	1.72	2.95	3.80	2.17	1.42	2.49	7.15	3.68	1.30
4.5	3.5	0.120	11	6.21	0.112	28.3	37.2	1.71	5.07	2.25	1.72	2.67	3.45	1.97	1.42	2.25	6.47	3.32	1.30
4.5	3.5	0.105	12	5.45	0.097	33.1	43.4	1.49	4.46	1.98	1.73	2.34	3.04	1.74	1.43	1.97	5.66	2.90	1.31
4.5	3.5	0.095	13	4.97	0.088	36.8	48.1	1.36	4.08	1.82	1.73	2.14	2.78	1.59	1.43	1.80	5.16	2.65	1.31



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
4.5	3	0.250		11.36	0.233	9.9	16.3	3.14	8.24	3.66	1.62	4.57	4.36	2.91	1.18	3.45	9.48	5.45	1.18
4.5	3	0.188		8.78	0.174	14.2	22.9	2.41	6.58	2.92	1.65	3.59	3.50	2.34	1.21	2.71	7.44	4.23	1.20
4.5	3	0.134	10	6.44	0.125	21.0	33.0	1.77	4.99	2.22	1.68	2.68	2.67	1.78	1.23	2.03	5.55	3.14	1.21
4.5	3	0.120	11	5.80	0.112	23.8	37.2	1.60	4.53	2.02	1.68	2.43	2.43	1.62	1.23	1.84	5.02	2.83	1.22
4.5	3	0.105	12	5.09	0.097	27.9	43.4	1.39	3.99	1.77	1.69	2.13	2.14	1.43	1.24	1.61	4.40	2.48	1.22
4.5	3	0.095	13	4.65	0.088	31.1	48.1	1.27	3.66	1.62	1.70	1.94	1.97	1.31	1.24	1.47	4.02	2.26	1.22
4.5	2.5	0.250		10.51	0.233	7.7	16.3	2.91	7.18	3.19	1.57	4.07	2.83	2.26	0.987	2.69	6.84	4.46	1.10
4.5	2.5	0.188		8.15	0.174	11.4	22.9	2.24	5.77	2.56	1.61	3.21	2.30	1.84	1.01	2.13	5.42	3.48	1.12
4.5	2.5	0.134	10	5.98	0.125	17.0	33.0	1.65	4.39	1.95	1.63	2.41	1.76	1.41	1.04	1.60	4.07	2.59	1.13
4.5	2.5	0.120	11	5.40	0.112	19.3	37.2	1.49	4.00	1.78	1.64	2.18	1.61	1.29	1.04	1.45	3.69	2.34	1.13
4.5	2.5	0.105	12	4.74	0.097	22.8	43.4	1.30	3.52	1.56	1.65	1.91	1.42	1.14	1.05	1.28	3.24	2.05	1.14
4.5	2.5	0.095	13	4.32	0.088	25.4	48.1	1.18	3.23	1.43	1.65	1.75	1.31	1.04	1.05	1.17	2.96	1.87	1.14
4.5	2	0.250		9.66	0.233	5.6	16.3	2.67	6.12	2.72	1.51	3.58	1.66	1.66	0.788	1.99	4.49	3.46	1.02
4.5	2	0.188		7.51	0.174	8.5	22.9	2.06	4.95	2.20	1.55	2.83	1.37	1.37	0.814	1.59	3.61	2.73	1.03
4.5	2	0.134	10	5.53	0.125	13.0	33.0	1.52	3.79	1.69	1.58	2.13	1.06	1.06	0.836	1.21	2.74	2.04	1.05
4.5	2	0.120	11	4.99	0.112	14.9	37.2	1.37	3.46	1.54	1.59	1.93	0.973	0.973	0.842	1.10	2.49	1.85	1.05
4.5	2	0.105	12	4.38	0.097	17.6	43.4	1.20	3.05	1.36	1.60	1.70	0.863	0.863	0.848	0.965	2.19	1.62	1.06
4.5	2	0.095	13	4.00	0.088	19.7	48.1	1.09	2.80	1.24	1.60	1.55	0.794	0.794	0.852	0.884	2.01	1.48	1.06



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
4	3	0.134	10	5.98	0.125	21.0	29.0	1.65	3.76	1.88	1.51	2.25	2.41	1.61	1.21	1.85	4.68	2.78	1.13
4	3	0.120	11	5.40	0.112	23.8	32.7	1.49	3.42	1.71	1.52	2.04	2.20	1.47	1.22	1.68	4.24	2.51	1.13
4	3	0.105	12	4.74	0.097	27.9	38.2	1.30	3.01	1.51	1.52	1.79	1.94	1.29	1.22	1.47	3.72	2.19	1.14
4	3	0.095	13	4.32	0.088	31.1	42.5	1.18	2.76	1.38	1.53	1.64	1.78	1.19	1.23	1.35	3.39	2.00	1.14
4	3	0.083	14	3.80	0.077	36.0	48.9	1.04	2.45	1.22	1.53	1.45	1.58	1.05	1.23	1.19	3.00	1.76	1.14
4	2.5	0.375		13.44	0.349	4.2	8.5	3.74	6.76	3.38	1.34	4.48	3.16	2.53	0.920	3.20	7.57	5.32	0.98
4	2.5	0.134	10	5.53	0.125	17.0	29.0	1.52	3.29	1.64	1.47	2.01	1.59	1.27	1.020	1.45	3.45	2.29	1.05
4	2.5	0.125		5.18	0.116	18.6	31.5	1.42	3.09	1.54	1.47	1.88	1.49	1.19	1.030	1.36	3.23	2.14	1.05
4	2.5	0.120	11	4.99	0.112	19.3	32.7	1.37	3.00	1.50	1.48	1.82	1.45	1.16	1.030	1.32	3.13	2.07	1.05
4	2.5	0.105	12	4.38	0.097	22.8	38.2	1.20	2.64	1.32	1.48	1.60	1.28	1.03	1.030	1.16	2.75	1.82	1.06
4	2.5	0.095	13	4.00	0.088	25.4	42.5	1.09	2.43	1.21	1.49	1.46	1.18	0.943	1.040	1.06	2.52	1.66	1.06
4	2.5	0.083	14	3.52	0.077	29.5	48.9	0.96	2.15	1.08	1.50	1.29	1.05	0.837	1.040	0.939	2.22	1.46	1.06
4	2	0.165		6.13	0.152	10.2	23.3	1.67	3.30	1.65	1.40	2.09	1.11	1.11	0.814	1.28	2.76	2.15	0.96
4	2	0.134	10	5.07	0.125	13.0	29.0	1.40	2.82	1.41	1.42	1.77	0.954	0.954	0.826	1.09	2.34	1.81	0.96
4	2	0.120	11	4.58	0.112	14.9	32.7	1.26	2.57	1.29	1.43	1.61	0.873	0.873	0.832	0.991	2.13	1.64	0.97
4	2	0.105	12	4.03	0.097	17.6	38.2	1.10	2.27	1.14	1.44	1.41	0.775	0.775	0.839	0.873	1.87	1.44	0.97
4	2	0.095	13	3.68	0.088	19.7	42.5	1.01	2.09	1.04	1.44	1.29	0.714	0.714	0.843	0.800	1.72	1.31	0.97
4	2	0.083	14	3.24	0.077	23.0	48.9	0.89	1.86	0.928	1.45	1.14	0.636	0.636	0.848	0.708	1.52	1.16	0.98





## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
4	1.5	0.250		7.96	0.233	3.4	14.2	2.21	3.66	1.83	1.29	2.50	0.730	0.974	0.575	1.21	2.14	2.18	0.85
4	1.5	0.188		6.23	0.174	5.6	20.0	1.71	3.02	1.51	1.33	2.01	0.620	0.826	0.601	0.982	1.78	1.75	0.87
4	1.5	0.165		5.57	0.152	6.9	23.3	1.52	2.74	1.37	1.34	1.80	0.567	0.756	0.611	0.885	1.61	1.56	0.87
4	1.5	0.125		4.33	0.116	9.9	31.5	1.19	2.21	1.11	1.36	1.43	0.467	0.622	0.627	0.710	1.30	1.24	0.88
4	1.5	0.120	11	4.17	0.112	10.4	32.7	1.15	2.15	1.07	1.37	1.39	0.454	0.606	0.629	0.689	1.26	1.20	0.88
4	1.5	0.083		2.95	0.077	16.5	48.9	0.81	1.56	0.779	1.39	0.992	0.335	0.447	0.644	0.497	0.911	0.858	0.89
3.5	3	0.250		9.66	0.233	9.9	12.0	2.67	4.41	2.52	1.29	3.12	3.47	2.31	1.14	2.80	6.49	4.16	1.02
3.5	3	0.188		7.51	0.174	14.2	17.1	2.06	3.57	2.04	1.32	2.47	2.81	1.87	1.17	2.22	5.12	3.25	1.03
3.5	3	0.134	10	5.53	0.125	21.0	25.0	1.52	2.73	1.56	1.34	1.86	2.15	1.44	1.19	1.67	3.84	2.42	1.05
3.5	3	0.120	11	4.97	0.112	23.8	28.3	1.37	2.49	1.42	1.35	1.68	1.96	1.31	1.20	1.52	3.48	2.19	1.05
3.5	3	0.105	12	4.38	0.097	27.9	33.1	1.20	2.20	1.26	1.35	1.48	1.74	1.16	1.20	1.33	3.05	1.91	1.06
3.5	3	0.095	13	4.00	0.088	31.1	36.8	1.09	2.02	1.15	1.36	1.35	1.59	1.06	1.21	1.22	2.79	1.75	1.06
3.5	2.5	0.165		6.13	0.153	13.3	19.9	1.68	2.80	1.60	1.29	1.96	1.66	1.33	0.992	1.55	3.40	2.39	0.96
3.5	2.5	0.134	10	5.07	0.125	17.0	25.0	1.40	2.38	1.36	1.30	1.65	1.41	1.13	1.01	1.31	2.85	2.00	0.96
3.5	2.5	0.120	11	4.58	0.112	19.3	28.3	1.26	2.17	1.24	1.31	1.49	1.29	1.03	1.01	1.19	2.59	1.81	0.97
3.5	2.5	0.105	12	4.03	0.097	22.8	33.1	1.10	1.92	1.09	1.32	1.31	1.14	0.914	1.02	1.04	2.27	1.58	0.97
3.5	2.5	0.095	13	3.68	0.088	25.4	36.8	1.01	1.76	1.01	1.32	1.20	1.05	0.840	1.02	0.956	2.08	1.45	0.97
3.5	2.5	0.075		2.93	0.069	33.2	47.7	0.80	1.42	0.809	1.33	0.961	0.847	0.677	1.03	0.764	1.66	1.15	0.98



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
3.5	2	0.250		7.96	0.233	5.6	12.0	2.21	3.17	1.81	1.20	2.36	1.29	1.29	0.766	1.58	3.16	2.64	0.85
3.5	2	0.188		6.23	0.174	8.5	17.1	1.71	2.61	1.49	1.23	1.89	1.08	1.08	0.792	1.27	2.55	2.09	0.87
3.5	2	0.134	10	4.61	0.125	13.0	25.0	1.27	2.02	1.15	1.26	1.43	0.844	0.844	0.814	0.972	1.95	1.57	0.88
3.5	2	0.125		4.33	0.116	14.2	27.2	1.19	1.90	1.09	1.26	1.34	0.795	0.795	0.818	0.912	1.83	1.47	0.88
3.5	2	0.120	11	4.17	0.112	14.9	28.3	1.15	1.85	1.05	1.27	1.30	0.773	0.773	0.820	0.885	1.77	1.43	0.88
3.5	2	0.105	12	3.67	0.097	17.6	33.1	1.01	1.64	0.934	1.28	1.15	0.687	0.687	0.827	0.780	1.56	1.25	0.89
3.5	2	0.095	13	3.35	0.088	19.7	36.8	0.92	1.50	0.859	1.28	1.05	0.633	0.633	0.831	0.716	1.43	1.15	0.89
3.5	2	0.083	14	2.95	0.077	23.0	42.5	0.81	1.34	0.764	1.29	0.932	0.564	0.564	0.836	0.634	1.27	1.01	0.89
3.5	1.5	0.250		7.11	0.233	3.4	12.0	1.97	2.55	1.46	1.14	1.98	0.636	0.848	0.568	1.06	1.79	1.88	0.77
3.5	1.5	0.188		5.59	0.174	5.6	17.1	1.54	2.12	1.21	1.17	1.60	0.543	0.724	0.594	0.867	1.49	1.51	0.78
3.5	1.5	0.165		5.01	0.153	6.8	19.9	1.38	1.94	1.11	1.19	1.44	0.500	0.667	0.603	0.787	1.36	1.37	0.79
3.5	1.5	0.134	10	4.16	0.125	9.0	25.0	1.15	1.66	0.951	1.20	1.22	0.434	0.579	0.615	0.670	1.16	1.15	0.80
3.5	1.5	0.125		3.90	0.116	9.9	27.2	1.07	1.57	0.896	1.21	1.15	0.411	0.548	0.619	0.630	1.09	1.08	0.80
3.5	1.5	0.120	11	3.76	0.112	10.4	28.3	1.04	1.52	0.871	1.21	1.11	0.400	0.533	0.621	0.612	1.06	1.05	0.80
3.5	1.5	0.105	12	3.31	0.097	12.5	33.1	0.91	1.35	0.774	1.22	0.983	0.358	0.477	0.628	0.541	0.938	0.923	0.81
3.5	1.5	0.095	13	3.03	0.088	14.0	36.8	0.83	1.25	0.713	1.23	0.902	0.331	0.441	0.632	0.497	0.862	0.845	0.81
3	2.5	0.134	10	4.61	0.125	17.0	21.0	1.27	1.64	1.09	1.13	1.31	1.24	0.988	0.985	1.16	2.27	1.70	0.88
3	2.5	0.120	11	4.17	0.112	19.3	23.8	1.15	1.50	1.00	1.14	1.19	1.13	0.904	0.991	1.05	2.06	1.54	0.88
3	2.5	0.105	12	3.67	0.097	22.8	27.9	1.01	1.33	0.884	1.15	1.05	1.00	0.802	0.999	0.927	1.81	1.35	0.89
3	2.5	0.095	13	3.35	0.088	25.4	31.1	0.92	1.22	0.813	1.15	0.962	0.922	0.738	1.00	0.850	1.66	1.23	0.89



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
3	2	0.165		5.01	0.153	10.1	16.6	1.38	1.61	1.07	1.08	1.34	0.852	0.852	0.787	1.01	1.85	1.60	0.79
3	2	0.134	10	4.16	0.125	13.0	21.0	1.15	1.38	0.920	1.10	1.13	0.733	0.733	0.800	0.855	1.57	1.34	0.80
3	2	0.120	11	3.76	0.112	14.9	23.8	1.04	1.26	0.842	1.10	1.03	0.673	0.673	0.806	0.779	1.43	1.22	0.80
3	2	0.105	12	3.31	0.097	17.6	27.9	0.91	1.12	0.748	1.11	0.909	0.599	0.599	0.812	0.688	1.26	1.07	0.81
3	2	0.095	13	3.03	0.088	19.7	31.1	0.83	1.03	0.689	1.12	0.834	0.553	0.553	0.816	0.632	1.15	0.977	0.81
3	2	0.083	14	2.67	0.077	23.0	36.0	0.73	0.920	0.613	1.12	0.739	0.493	0.493	0.821	0.560	1.02	0.864	0.81
3	1.5	0.165		4.44	0.153	6.8	16.6	1.22	1.30	0.866	1.03	1.12	0.430	0.574	0.593	0.684	1.10	1.16	0.71
3	1.5	0.134	10	3.70	0.125	9.0	21.0	1.02	1.12	0.747	1.05	0.952	0.375	0.500	0.606	0.584	0.941	0.981	0.71
3	1.5	0.120	11	3.35	0.112	10.4	23.8	0.93	1.03	0.686	1.05	0.869	0.346	0.461	0.611	0.534	0.861	0.892	0.72
3	1.5	0.105	12	2.96	0.097	12.5	27.9	0.81	0.917	0.612	1.06	0.768	0.310	0.413	0.618	0.473	0.763	0.787	0.72
3	1.5	0.095	13	2.71	0.088	14.0	31.1	0.74	0.846	0.564	1.07	0.706	0.287	0.382	0.622	0.435	0.702	0.721	0.72
3	1.5	0.083	14	2.39	0.077	16.5	36.0	0.65	0.756	0.504	1.07	0.627	0.257	0.343	0.627	0.387	0.624	0.639	0.73
3	1	0.250		5.41	0.233	1.3	9.9	1.51	1.23	0.820	0.903	1.19	0.189	0.379	0.355	0.506	0.586	0.940	0.60
3	1	0.165		3.88	0.153	3.5	16.6	1.07	0.989	0.659	0.961	0.902	0.162	0.323	0.389	0.397	0.490	0.724	0.62
3	1	0.083	14	2.11	0.077	10.0	36.0	0.58	0.591	0.394	1.01	0.514	0.103	0.206	0.422	0.233	0.297	0.414	0.64
2.5	2	0.250		6.26	0.233	5.6	7.7	1.74	1.33	1.06	0.873	1.37	0.928	0.928	0.730	1.17	1.90	1.82	0.68
2.5	2	0.188		4.96	0.174	8.5	11.4	1.37	1.12	0.893	0.904	1.12	0.785	0.785	0.758	0.956	1.55	1.46	0.70
2.5	2	0.165		4.44	0.153	10.1	13.3	1.22	1.02	0.819	0.915	1.01	0.721	0.721	0.768	0.867	1.41	1.31	0.71
2.5	2	0.134	10	3.70	0.125	13.0	17.0	1.02	0.883	0.706	0.929	0.861	0.623	0.623	0.781	0.738	1.20	1.11	0.71
2.5	2	0.125		3.48	0.116	14.2	18.6	0.96	0.833	0.666	0.934	0.809	0.589	0.589	0.785	0.694	1.12	1.04	0.72
2.5	2	0.120	11	3.35	0.112	14.9	19.3	0.93	0.810	0.648	0.936	0.785	0.573	0.573	0.787	0.674	1.09	1.00	0.72



## DIMENSIONS AND SECTION PROPERTIES OF RECTANGULAR HSS

Nominal Size				Weight per Foot	Wall Thickness t	b/t	h/t	Cross Sectional Area	X-X Axis				Y-Y Axis				Torsional Stiffness Constant J	Torsional Shear Constant C	Surface Area per Foot
in.	in.	in.	GA	lb.	in.			in.2	in.4	in.3	in.	in.3	in.4	in.3	in.	in.3	in.4	in.3	ft.2
2.5	2	0.105	12	2.96	0.097	17.6	22.8	0.81	0.722	0.578	0.943	0.694	0.511	0.511	0.794	0.596	0.963	0.884	0.72
2.5	2	0.095	13	2.71	0.088	19.7	25.4	0.74	0.666	0.533	0.948	0.638	0.472	0.472	0.798	0.547	0.883	0.809	0.72
2.5	2	0.083	14	2.39	0.077	23.0	29.5	0.65	0.595	0.476	0.954	0.566	0.422	0.422	0.803	0.486	0.783	0.716	0.73
2.5	1.5	0.165		3.88	0.153	6.8	13.3	1.07	0.813	0.650	0.871	0.833	0.361	0.481	0.581	0.581	0.850	0.954	0.62
2.5	1.5	0.134	10	3.25	0.125	9.0	17.0	0.90	0.706	0.565	0.887	0.712	0.316	0.421	0.593	0.498	0.729	0.809	0.63
2.5	1.5	0.120	11	2.94	0.112	10.4	19.3	0.81	0.651	0.521	0.894	0.652	0.292	0.389	0.599	0.456	0.668	0.737	0.63
2.5	1.5	0.105	12	2.60	0.097	12.5	22.8	0.71	0.582	0.465	0.903	0.578	0.262	0.349	0.606	0.405	0.593	0.651	0.64
2.5	1.5	0.095	13	2.38	0.088	14.0	25.4	0.65	0.538	0.430	0.908	0.531	0.243	0.324	0.610	0.373	0.545	0.597	0.64
2.5	1.5	0.083	14	2.11	0.077	16.5	29.5	0.58	0.482	0.385	0.914	0.473	0.218	0.291	0.615	0.332	0.485	0.529	0.64
2.5	1	0.188		3.68	0.174	2.7	11.4	1.02	0.645	0.516	0.796	0.713	0.142	0.284	0.373	0.360	0.412	0.648	0.53
2.5	1	0.125		2.63	0.116	5.6	18.6	0.72	0.503	0.403	0.834	0.532	0.115	0.230	0.398	0.274	0.322	0.483	0.55
2.25	2	0.188		4.64	0.174	8.5	9.9	1.28	0.858	0.763	0.819	0.952	0.713	0.713	0.746	0.877	1.32	1.30	0.66
2.25	2	0.125		3.27	0.116	14.2	16.4	0.90	0.646	0.574	0.848	0.693	0.538	0.538	0.774	0.639	0.957	0.927	0.68
2	1.5	0.165		3.32	0.153	6.8	10.1	0.92	0.460	0.460	0.708	0.585	0.291	0.388	0.563	0.478	0.609	0.747	0.54
2	1	0.165		2.76	0.153	3.5	10.1	0.76	0.329	0.329	0.656	0.444	0.106	0.212	0.373	0.268	0.283	0.465	0.46
2	1	0.120	11	2.13	0.112	5.9	14.9	0.59	0.273	0.273	0.681	0.356	0.090	0.180	0.391	0.217	0.232	0.370	0.47
2	1	0.100		1.82	0.093	7.8	18.5	0.50	0.240	0.240	0.692	0.308	0.080	0.160	0.399	0.189	0.203	0.319	0.47
2	1	0.083	14	1.54	0.077	10.0	23.0	0.42	0.208	0.208	0.702	0.264	0.070	0.140	0.407	0.162	0.174	0.272	0.48

