



Table 1-5
C-Shapes
Dimensions

Shape	Area, A	Depth, d	Web				Flange				Distance			r_{ts}	h_o
			Thickness, t_w		$\frac{t_w}{2}$	Width, b_f		Average Thickness, t_f		k	T	Work- able Gage			
	in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
C15×50	14.7	15.0	15	0.716	$\frac{1}{16}$	$\frac{3}{8}$	3.72	$\frac{3}{4}$	0.650	$\frac{5}{8}$	$\frac{17}{16}$	$\frac{12}{16}$	$\frac{2}{4}$	1.17	14.4
×40	11.8	15.0	15	0.520	$\frac{1}{2}$	$\frac{1}{4}$	3.52	$\frac{3}{2}$	0.650	$\frac{5}{8}$	$\frac{17}{16}$	↓	2	1.15	14.4
×33.9	10.0	15.0	15	0.400	$\frac{3}{8}$	$\frac{3}{16}$	3.40	$\frac{3}{8}$	0.650	$\frac{5}{8}$	$\frac{17}{16}$	↓	2	1.13	14.4
C12×30	8.81	12.0	12	0.510	$\frac{1}{2}$	$\frac{1}{4}$	3.17	$\frac{3}{8}$	0.501	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{9}{4}$	$\frac{1}{4}$ [a]	1.01	11.5
×25	7.34	12.0	12	0.387	$\frac{3}{8}$	$\frac{3}{16}$	3.05	3	0.501	$\frac{1}{2}$	$\frac{1}{8}$	↓	↓	1.00	11.5
×20.7	6.08	12.0	12	0.282	$\frac{5}{16}$	$\frac{3}{16}$	2.94	3	0.501	$\frac{1}{2}$	$\frac{1}{8}$	↓	↓	0.983	11.5
C10×30	8.81	10.0	10	0.673	$\frac{1}{16}$	$\frac{3}{8}$	3.03	3	0.436	$\frac{7}{16}$	$\frac{1}{16}$	8	$\frac{1}{4}$ [a]	0.924	9.56
×25	7.35	10.0	10	0.526	$\frac{1}{2}$	$\frac{1}{4}$	2.89	$\frac{2}{8}$	0.436	$\frac{7}{16}$	$\frac{1}{16}$	↓	$\frac{1}{4}$ [a]	0.911	9.56
×20	5.87	10.0	10	0.379	$\frac{3}{8}$	$\frac{3}{16}$	2.74	$\frac{2}{4}$	0.436	$\frac{7}{16}$	$\frac{1}{16}$	↓	$\frac{1}{2}$ [a]	0.894	9.56
×15.3	4.48	10.0	10	0.240	$\frac{1}{4}$	$\frac{1}{8}$	2.60	$\frac{2}{5}$	0.436	$\frac{7}{16}$	$\frac{1}{16}$	↓	$\frac{1}{2}$ [a]	0.868	9.56
C9×20	5.87	9.00	9	0.448	$\frac{7}{16}$	$\frac{1}{4}$	2.65	$\frac{2}{8}$	0.413	$\frac{7}{16}$	1	7	$\frac{1}{2}$ [a]	0.850	8.59
×15	4.40	9.00	9	0.285	$\frac{5}{16}$	$\frac{3}{16}$	2.49	$\frac{2}{12}$	0.413	$\frac{7}{16}$	1	↓	$\frac{1}{8}$ [a]	0.825	8.59
×13.4	3.94	9.00	9	0.233	$\frac{1}{4}$	$\frac{1}{8}$	2.43	$\frac{2}{8}$	0.413	$\frac{7}{16}$	1	↓	$\frac{1}{8}$ [a]	0.814	8.59
C8×18.75	5.51	8.00	8	0.487	$\frac{1}{2}$	$\frac{1}{4}$	2.53	$\frac{2}{12}$	0.390	$\frac{3}{8}$	$\frac{15}{16}$	$\frac{6}{8}$	$\frac{1}{2}$ [a]	0.800	7.61
×13.75	4.03	8.00	8	0.303	$\frac{5}{16}$	$\frac{3}{16}$	2.34	$\frac{2}{8}$	0.390	$\frac{3}{8}$	$\frac{15}{16}$	↓	$\frac{1}{8}$ [a]	0.774	7.61
×11.5	3.37	8.00	8	0.220	$\frac{1}{4}$	$\frac{1}{8}$	2.26	$\frac{2}{14}$	0.390	$\frac{3}{8}$	$\frac{15}{16}$	↓	$\frac{1}{8}$ [a]	0.756	7.61
C7×14.75	4.33	7.00	7	0.419	$\frac{7}{16}$	$\frac{1}{4}$	2.30	$\frac{2}{14}$	0.366	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{5}{4}$	$\frac{1}{4}$ [a]	0.738	6.63
×12.25	3.59	7.00	7	0.314	$\frac{5}{16}$	$\frac{3}{16}$	2.19	$\frac{2}{14}$	0.366	$\frac{3}{8}$	$\frac{7}{8}$	↓	↓	0.722	6.63
×9.8	2.87	7.00	7	0.210	$\frac{3}{16}$	$\frac{1}{8}$	2.09	$\frac{2}{18}$	0.366	$\frac{3}{8}$	$\frac{7}{8}$	↓	↓	0.698	6.63
C6×13	3.82	6.00	6	0.437	$\frac{7}{16}$	$\frac{1}{4}$	2.16	$\frac{2}{18}$	0.343	$\frac{5}{16}$	$\frac{13}{16}$	$\frac{4}{8}$	$\frac{1}{8}$ [a]	0.689	5.66
×10.5	3.07	6.00	6	0.314	$\frac{5}{16}$	$\frac{3}{16}$	2.03	2	0.343	$\frac{5}{16}$	$\frac{13}{16}$	↓	$\frac{1}{8}$ [a]	0.669	5.66
×8.2	2.39	6.00	6	0.200	$\frac{3}{16}$	$\frac{1}{8}$	1.92	$\frac{1}{18}$	0.343	$\frac{5}{16}$	$\frac{13}{16}$	↓	$\frac{1}{8}$ [a]	0.643	5.66
C5×9	2.64	5.00	5	0.325	$\frac{5}{16}$	$\frac{3}{16}$	1.89	$\frac{1}{18}$	0.320	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{3}{12}$	$\frac{1}{8}$ [a]	0.616	4.68
×6.7	1.97	5.00	5	0.190	$\frac{3}{16}$	$\frac{1}{8}$	1.75	$\frac{1}{14}$	0.320	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{3}{12}$	—	0.584	4.68
C4×7.25	2.13	4.00	4	0.321	$\frac{5}{16}$	$\frac{3}{16}$	1.72	$\frac{1}{14}$	0.296	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{2}{12}$	1[a]	0.563	3.70
×6.25	1.84	4.00	4	0.247	$\frac{1}{4}$	$\frac{1}{8}$	1.65	$\frac{1}{18}$	0.296	$\frac{5}{16}$	$\frac{3}{4}$	↓	—	0.549	3.70
×5.4	1.58	4.00	4	0.184	$\frac{3}{16}$	$\frac{1}{8}$	1.58	$\frac{1}{18}$	0.296	$\frac{5}{16}$	$\frac{3}{4}$	↓	—	0.528	3.70
×4.5	1.34	4.00	4	0.125	$\frac{1}{8}$	$\frac{1}{16}$	1.52	$\frac{1}{12}$	0.296	$\frac{5}{16}$	$\frac{3}{4}$	↓	—	0.506	3.70
C3×6	1.76	3.00	3	0.356	$\frac{3}{8}$	$\frac{3}{16}$	1.60	$\frac{1}{18}$	0.273	$\frac{1}{4}$	$\frac{11}{16}$	$\frac{1}{8}$	—	0.519	2.73
×5	1.47	3.00	3	0.258	$\frac{1}{4}$	$\frac{1}{8}$	1.50	$\frac{1}{12}$	0.273	$\frac{1}{4}$	$\frac{11}{16}$	↓	—	0.496	2.73
×4.1	1.20	3.00	3	0.170	$\frac{3}{16}$	$\frac{1}{8}$	1.41	$\frac{1}{18}$	0.273	$\frac{1}{4}$	$\frac{11}{16}$	↓	—	0.469	2.73
×3.5	1.09	3.00	3	0.132	$\frac{1}{8}$	$\frac{1}{16}$	1.37	$\frac{1}{18}$	0.273	$\frac{1}{4}$	$\frac{11}{16}$	↓	—	0.456	2.73

^[a] The actual size, combination, and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.
— Indicates flange too narrow to establish a workable gage.

Table 1-5 (continued)															
C-Shapes															
Properties															
C-SHAPES															
Nominal Wt.	Shear Ctr., e_o	Axis X-X				Axis Y-Y						Torsional Properties			
		I	S	r	Z	I	S	r	\bar{x}	Z	x_p	J	C_w	\bar{r}_o	H
												in. ⁴	in. ⁶	in.	
lb/ft	in.	in. ⁴	in. ³	in.	in. ³	in. ⁴	in. ³	in.	in.	in. ³	in.	in. ⁴	in. ⁶	in.	
50	0.583	404	53.8	5.24	68.5	11.0	3.77	0.865	0.799	8.14	0.490	2.65	492	5.49	0.937
40	0.767	348	46.5	5.43	57.5	9.17	3.34	0.883	0.778	6.84	0.392	1.45	410	5.71	0.927
33.9	0.896	315	42.0	5.61	50.8	8.07	3.09	0.901	0.788	6.19	0.332	1.01	358	5.94	0.920
30	0.618	162	27.0	4.29	33.8	5.12	2.05	0.762	0.674	4.32	0.367	0.861	151	4.54	0.919
25	0.746	144	24.0	4.43	29.4	4.45	1.87	0.779	0.674	3.82	0.306	0.538	130	4.72	0.909
20.7	0.870	129	21.5	4.61	25.6	3.86	1.72	0.797	0.698	3.47	0.253	0.369	112	4.93	0.899
30	0.368	103	20.7	3.43	26.7	3.93	1.65	0.668	0.649	3.78	0.441	1.22	79.5	3.63	0.921
25	0.494	91.1	18.2	3.52	23.1	3.34	1.47	0.675	0.617	3.18	0.367	0.687	68.3	3.76	0.912
20	0.636	78.9	15.8	3.67	19.4	2.80	1.31	0.690	0.606	2.70	0.294	0.368	56.9	3.93	0.900
15.3	0.796	67.3	13.5	3.88	15.9	2.27	1.15	0.711	0.634	2.34	0.224	0.209	45.5	4.19	0.884
20	0.515	60.9	13.5	3.22	16.9	2.41	1.17	0.640	0.583	2.46	0.326	0.427	39.4	3.46	0.899
15	0.681	51.0	11.3	3.40	13.6	1.91	1.01	0.659	0.586	2.04	0.245	0.208	31.0	3.69	0.882
13.4	0.742	47.8	10.6	3.48	12.6	1.75	0.954	0.666	0.601	1.94	0.219	0.168	28.2	3.79	0.875
18.75	0.431	43.9	11.0	2.82	13.9	1.97	1.01	0.598	0.565	2.17	0.344	0.434	25.1	3.05	0.894
13.75	0.604	36.1	9.02	2.99	11.0	1.52	0.848	0.613	0.554	1.73	0.252	0.186	19.2	3.26	0.874
11.5	0.697	32.5	8.14	3.11	9.63	1.31	0.775	0.623	0.572	1.57	0.211	0.130	16.5	3.41	0.862
14.75	0.441	27.2	7.78	2.51	9.75	1.37	0.772	0.561	0.532	1.63	0.309	0.267	13.1	2.75	0.875
12.25	0.538	24.2	6.92	2.59	8.46	1.16	0.696	0.568	0.525	1.42	0.257	0.161	11.2	2.86	0.862
9.8	0.647	21.2	6.07	2.72	7.19	0.957	0.617	0.578	0.541	1.26	0.205	0.0996	9.15	3.02	0.845
13	0.380	17.3	5.78	2.13	7.29	1.05	0.638	0.524	0.514	1.35	0.318	0.237	7.19	2.37	0.858
10.5	0.486	15.1	5.04	2.22	6.18	0.860	0.561	0.529	0.500	1.14	0.256	0.128	5.91	2.48	0.842
8.2	0.599	13.1	4.35	2.34	5.16	0.687	0.488	0.536	0.512	0.987	0.199	0.0736	4.70	2.65	0.824
9	0.427	8.89	3.56	1.84	4.39	0.624	0.444	0.486	0.478	0.913	0.264	0.109	2.93	2.10	0.815
6.7	0.552	7.48	2.99	1.95	3.55	0.470	0.372	0.489	0.484	0.757	0.215	0.0549	2.22	2.26	0.790
7.25	0.386	4.58	2.29	1.47	2.84	0.425	0.337	0.447	0.459	0.695	0.266	0.0817	1.24	1.75	0.767
6.25	0.447	4.19	2.10	1.51	2.55	0.374	0.312	0.451	0.453	0.623	0.233	0.0549	1.07	1.81	0.753
5.4	0.501	3.85	1.92	1.56	2.29	0.312	0.277	0.444	0.457	0.565	0.231	0.0399	0.921	1.88	0.742
4.5	0.556	3.53	1.77	1.62	2.05	0.265	0.253	0.445	0.473	0.495	0.305	0.0306	0.778	1.97	0.727
6	0.322	2.07	1.38	1.09	1.74	0.300	0.263	0.413	0.455	0.543	0.294	0.0725	0.462	1.40	0.690
5	0.392	1.85	1.23	1.12	1.52	0.241	0.228	0.405	0.439	0.464	0.245	0.0425	0.379	1.45	0.673
4.1	0.461	1.65	1.10	1.18	1.32	0.191	0.196	0.398	0.437	0.399	0.262	0.0269	0.307	1.53	0.655
3.5	0.493	1.57	1.04	1.20	1.24	0.169	0.182	0.394	0.443	0.364	0.296	0.0226	0.276	1.57	0.646