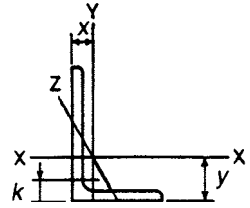
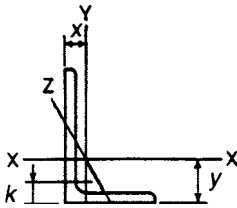


Angles
Equal legs
Properties for designing



Size and Thickness	k	Weight per ft.	Area	Axis X-X				Axis Y-Y				Axis Z-Z		
				<i>l</i>	<i>S</i>	<i>r</i>	<i>y</i>	<i>l</i>	<i>S</i>	<i>r</i>	<i>x</i>	<i>r</i>	Tan	
in.	in.	lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.		
L 1 x 1 x 1/8	1/4	0.800	0.234	0.022	0.031	0.304	0.296	0.022	0.031	0.304	0.296	0.196	1.000	
L 1 1/8 x 1 1/8 x 1/8	7/32	0.900	0.266	0.032	0.040	0.345	0.327	0.032	0.040	0.345	0.327	0.221	1.000	
L 1 1/4 x 1 1/4 x 3/16	3/8	1.48	0.434	0.061	0.071	0.377	0.381	0.061	0.071	0.377	0.381	0.244	1.000	
	x 1/4	7/16	1.92	0.563	0.077	0.091	0.369	0.403	0.077	0.091	0.369	0.403	0.243	1.000
L 1 1/2 x 1 1/2 x 3/16	3/8	1.80	0.527	0.110	0.104	0.457	0.444	0.110	0.104	0.457	0.444	0.293	1.000	
	x 1/4	7/16	2.34	0.688	0.139	0.134	0.449	0.466	0.139	0.134	0.449	0.466	0.292	1.000
L 1 3/4 x 1 3/4 x 3/16	7/16	2.12	0.621	0.179	0.144	0.537	0.506	0.179	0.144	0.537	0.506	0.343	1.000	
	x 1/4	1/2	2.77	0.813	0.227	0.227	0.529	0.529	0.227	0.227	0.529	0.529	0.341	1.000
L 2 x 2 x 1/8	3/8	1.65	0.484	0.190	0.131	0.626	0.546	0.190	0.131	0.626	0.546	0.398	1.000	
	x 3/16	7/16	2.44	0.715	0.272	0.190	0.617	0.569	0.272	0.190	0.617	0.569	0.394	1.000
	x 1/4	1/2	3.19	0.938	0.348	0.247	0.609	0.592	0.348	0.247	0.609	0.592	0.391	1.000
	x 5/16	9/16	3.92	1.15	0.416	0.300	0.601	0.614	0.416	0.300	0.601	0.614	0.390	1.000
	x 3/8	5/8	4.7	1.36	0.479	0.351	0.594	0.636	0.479	0.351	0.594	0.636	0.389	1.000
L 2 1/2 x 2 1/2 x 3/16	1/2	3.07	0.902	0.547	0.303	0.778	0.694	0.547	0.303	0.778	0.694	0.495	1.000	
	x 1/4	9/16	4.1	1.19	0.709	0.394	0.769	0.717	0.703	0.394	0.769	0.717	0.491	1.000
	x 5/16	5/8	5.0	1.46	0.849	0.482	0.761	0.740	0.849	0.482	0.761	0.740	0.489	1.000
	x 3/8	11/16	5.9	1.73	0.984	0.566	0.753	0.762	0.984	0.566	0.753	0.762	0.487	1.000
	x 1/2	13/16	7.7	2.25	1.230	0.724	0.739	0.806	1.230	0.724	0.739	0.806	0.487	1.000
L 3 x 3 x 3/16	1/2	3.71	1.09	0.962	0.441	0.939	0.820	0.962	0.441	0.939	0.820	0.596	1.000	
	x 1/4	9/16	4.9	1.44	1.24	0.577	0.930	0.842	1.24	0.577	0.930	0.842	0.592	1.000
	x 5/16	5/8	6.1	1.78	1.51	0.707	0.922	0.865	1.51	0.707	0.922	0.865	0.589	1.000
	x 3/8	11/16	7.2	2.11	1.76	0.833	0.913	0.888	1.76	0.833	0.913	0.888	0.587	1.000
	x 1/2	13/16	9.4	2.75	2.22	1.07	0.898	0.932	2.22	1.07	0.898	0.932	0.584	1.000
L 3 1/2 x 3 1/2 x 1/4	5/8	5.8	1.69	1.69	0.794	1.09	0.968	2.01	0.794	1.09	0.968	0.694	1.000	
	x 5/16	11/16	7.2	2.09	2.09	0.976	1.08	0.990	2.45	0.976	1.08	0.990	0.690	1.000
	x 3/8	3/4	8.5	2.48	2.48	1.15	1.07	1.01	2.87	1.15	1.07	1.01	0.687	1.000
	x 1/2	7/8	11.1	3.25	3.25	1.49	1.06	1.06	3.64	1.49	1.06	1.06	0.683	1.000



Angles

Equal legs

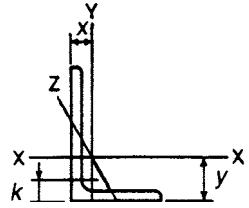
Properties for designing

Size and Thickness	k	Weight per ft.	Area	Axis X-X				Axis Y-Y				Axis Z-Z	
				l	S	r	y	l	S	r	x	r	Tan
in.	in.	lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.	
L 4 x 4 x 1/4	5/8	6.6	1.94	1.94	1.05	1.25	1.09	3.04	1.05	1.25	1.09	0.795	1.000
x 5/16	11/16	8.2	2.40	2.40	1.29	1.24	1.12	3.71	1.29	1.24	1.12	0.791	1.000
x 3/8	3/4	9.8	2.86	2.86	1.52	1.23	1.14	4.36	1.52	1.23	1.14	0.788	1.000
x 1/2	7/8	12.8	3.75	3.75	1.97	1.22	1.18	5.56	1.97	1.22	1.18	0.782	1.000
x 5/8	1	15.7	4.61	4.61	2.40	1.20	1.23	6.66	2.40	1.20	1.23	0.779	1.000
x 3/4	1 1/8	18.5	5.44	5.44	2.81	1.19	1.27	7.67	2.81	1.19	1.27	0.778	1.000
L 5 x 5 x 5/16	13/16	10.3	3.03	7.42	2.04	1.57	1.37	7.42	2.04	1.57	1.37	0.994	1.000
x 3/8	7/8	12.3	3.61	8.74	2.42	1.56	1.39	8.74	2.42	1.56	1.39	0.990	1.000
x 1/2	1	16.2	4.75	11.3	3.16	1.54	1.43	11.3	3.16	1.54	1.43	0.983	1.000
x 5/8	1 1/8	20.0	5.86	13.6	3.86	1.52	1.48	13.6	3.86	1.52	1.48	0.978	1.000
x 3/4	1 1/4	23.6	6.94	15.7	4.53	1.51	1.52	15.7	4.53	1.51	1.52	0.975	1.000
L 6 x 6 x 5/16	13/16	12.4	3.65	13.0	2.97	1.89	1.62	13.0	2.97	1.89	1.62	1.20	1.000
x 3/8	7/8	14.9	4.36	15.4	3.53	1.88	1.64	15.4	3.53	1.88	1.64	1.19	1.000
x 1/2	1	19.6	5.75	19.9	4.61	1.86	1.68	19.9	4.61	1.86	1.68	1.18	1.000
x 5/8	1 1/8	24.2	7.11	24.2	5.66	1.84	1.73	24.2	5.66	1.84	1.73	1.18	1.000
x 3/4	1 1/4	28.7	8.44	28.2	6.66	1.83	1.78	28.2	6.66	1.83	1.78	1.17	1.000
x 1	1 1/2	37.4	11.0	35.5	8.57	1.80	1.86	35.5	8.57	1.80	1.86	1.17	1.000
L 8 x 8 x 1/2	1 1/8	26.4	7.75	48.6	8.36	2.50	2.19	48.6	8.36	2.50	2.19	1.59	1.000
x 5/8	1 1/4	32.7	9.61	59.4	10.3	2.49	2.23	59.4	10.3	2.49	2.23	1.58	1.000
x 3/4	1 3/8	38.9	11.4	69.7	12.2	2.47	2.28	69.7	12.2	2.47	2.28	1.58	1.000
x 1	1 5/8	51.0	15.0	89.0	15.8	2.44	2.37	89.0	15.8	2.44	2.37	1.56	1.000
x 1 1/8	1 3/4	56.9	16.7	89.0	17.5	2.42	2.41	89.0	17.5	2.42	2.41	1.56	1.000

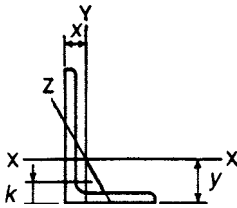
Angles

Unequal legs

Properties for designing



Size and Thickness	k	Weight per ft.	Area	Axis X-X				Axis Y-Y				Axis Z-Z		
				l	S	r	y	l	S	r	x	r	Tan	
in.	in.	lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.	in.	
L 2½ x 2 x ¾	½	2.75	0.809	0.509	0.293	0.793	0.764	0.291	0.196	0.600	0.514	0.427	0.631	
x ¼	⅞	3.62	1.06	0.654	0.381	0.784	0.787	0.372	0.254	0.592	0.537	0.424	0.626	
x ⅝	⅝	4.5	1.31	0.788	0.466	0.776	0.809	0.446	0.310	0.584	0.559	0.422	0.620	
x ⅝	11/16	5.3	1.55	0.912	0.547	0.768	0.831	0.514	0.363	0.577	0.581	0.420	0.614	
L 3 x 2 x ¾	½	3.07	0.902	0.842	0.415	0.966	0.970	0.307	0.200	0.583	0.470	0.439	0.446	
x ¼	⅞	4.1	1.19	1.09	0.542	0.957	0.993	0.392	0.260	0.574	0.493	0.435	0.440	
x ⅝	⅝	5.0	1.46	1.320	0.664	0.948	1.02	0.470	0.317	0.567	0.516	0.432	0.435	
x ⅝	11/16	5.9	1.73	1.53	0.781	0.940	1.04	0.543	0.371	0.559	0.539	0.430	0.428	
x ½	13/16	7.7	2.25	1.920	1.00	0.924	1.08	0.672	0.474	0.546	0.583	0.428	0.414	
L 3 x 2½ x ¾	⅞	3.39	0.996	0.907	0.430	0.954	0.888	0.577	0.310	0.761	0.638	0.533	0.688	
x ¼	⅝	4.5	1.31	1.17	0.561	0.945	0.911	0.743	0.404	0.753	0.661	0.528	0.684	
x ⅝	11/16	5.6	1.62	1.42	0.688	0.937	0.933	0.898	0.494	0.744	0.683	0.525	0.680	
x ⅝	¾	6.6	1.92	1.66	0.810	0.928	0.956	1.04	0.581	0.736	0.706	0.522	0.676	
x ½	7/8	8.5	2.50	2.08	1.04	0.913	1.00	1.30	0.744	0.722	0.750	0.520	0.667	
L 3½ x 2½ x ¼	11/16	4.9	1.44	1.44	0.755	1.12	1.11	0.777	0.412	0.735	0.614	0.544	0.506	
x ⅝	¾	6.1	1.78	1.78	0.927	1.11	1.14	0.939	0.504	0.727	0.637	0.540	0.501	
x ⅝	13/16	7.2	2.11	2.11	1.09	1.10	1.16	1.09	0.592	0.719	0.660	0.537	0.496	
x ½	15/16	9.4	2.75	2.75	1.41	1.09	1.20	1.36	0.760	0.704	0.705	0.534	0.486	
L 3½ x 3½ x ¼	⅝	5.8	1.69	1.69	0.794	1.09	0.968	2.01	0.794	1.09	0.968	0.694	1.000	
x ⅝	11/16	7.2	2.09	2.09	0.976	1.08	0.990	2.45	0.976	1.08	0.990	0.690	1.000	
x ⅝	¾	8.5	2.48	2.48	1.15	1.07	1.01	2.87	1.15	1.07	1.01	0.687	1.000	
x ½	7/8	11.1	3.25	3.25	1.49	1.06	1.06	3.64	1.49	1.06	1.06	0.683	1.000	
L 4 x 3 x ¼	11/16	5.8	1.69	1.69	1.00	1.28	1.24	1.36	0.599	0.896	0.736	0.651	0.559	
x ⅝	¾	7.2	2.09	2.09	1.23	1.27	1.26	1.65	0.734	0.887	0.759	0.647	0.554	
x ⅝	13/16	8.5	2.48	2.48	1.46	1.26	1.28	1.92	0.866	0.879	0.782	0.644	0.551	
x ½	15/16	11.1	3.25	3.25	1.89	1.25	1.33	2.42	1.12	0.864	0.827	0.639	0.543	
L 4 x 3½ x ¼	11/16	6.2	1.81	1.81	1.03	1.27	1.16	2.09	0.808	1.07	0.909	0.734	0.759	
x ⅝	¾	7.7	2.25	2.25	1.26	1.26	1.18	2.55	0.994	1.07	0.932	0.730	0.757	
x ⅝	13/16	9.1	2.67	2.67	1.49	1.25	1.21	2.95	1.17	1.06	0.955	0.727	0.755	
x ½	15/16	11.9	3.50	3.50	1.94	1.23	1.25	3.79	1.52	1.04	1.00	0.722	0.750	



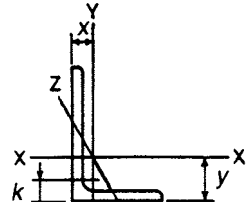
Angles

Unequal legs
Properties for designing

Size and Thickness	k	Weight per ft.	Area	Axis X-X				Axis Y-Y				Axis Z-Z	
				l	S	r	y	l	S	r	x	r	Tan
in.	in.	lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.	
L 5 x 3 x 1/4	3/4	6.6	1.94	5.11	1.53	1.62	1.66	1.44	0.614	0.861	0.657	0.663	0.371
x 5/16	13/16	8.2	2.40	6.26	1.89	1.61	1.68	1.75	0.753	0.853	0.681	0.658	0.368
x 3/8	7/8	9.8	2.86	7.37	2.24	1.61	1.70	2.04	0.888	0.845	0.704	0.654	0.364
x 1/2	1	12.8	3.75	9.45	2.91	1.59	1.75	2.58	1.15	0.829	0.750	0.648	0.357
x 5/8	1	15.7	4.61	11.4	3.55	1.57	1.80	3.06	1.39	0.815	0.796	0.644	0.349
L 5 x 3 1/2 x 1/4	3/4	7.0	2.06	5.39	1.57	1.62	1.56	2.23	0.830	1.04	0.814	0.770	0.492
x 5/16	13/16	8.7	2.56	6.60	1.94	1.61	1.59	2.72	1.02	1.03	0.838	0.776	0.489
x 3/8	7/8	10.4	3.05	7.78	2.29	1.60	1.61	3.18	1.21	1.02	0.861	0.762	0.486
x 1/2	1	13.6	4.00	9.99	2.99	1.58	1.66	4.05	1.56	1.01	0.906	0.755	0.479
x 5/8	1 1/8	16.8	4.92	12.0	3.65	1.56	1.70	4.83	1.90	0.991	0.951	0.751	0.472
x 3/4	1 1/4	19.8	5.81	13.9	4.28	1.55	1.75	5.55	2.22	0.977	0.996	0.748	0.464
L 6 x 3 1/2 x 5/16	13/16	9.8	2.87	10.9	2.73	1.95	2.01	2.85	1.04	0.996	0.763	0.772	0.352
x 3/8	7/8	11.7	3.42	12.9	3.24	1.94	2.04	3.34	1.23	0.998	0.787	0.767	0.350
x 1/2	1	15.3	4.50	16.6	4.24	1.92	2.08	4.25	1.59	0.972	0.833	0.759	0.344
L 6 x 4 x 5/16	13/16	10.3	3.03	11.4	2.79	1.94	1.92	4.18	1.35	1.17	0.918	0.882	0.448
x 3/8	7/8	12.3	3.61	13.5	3.32	1.93	1.94	4.90	1.60	1.17	0.941	0.877	0.446
x 1/2	1	16.2	4.75	17.4	4.33	1.91	1.99	6.27	2.08	1.15	0.987	0.870	0.440
x 5/8	1 1/8	20.0	5.86	21.1	5.31	1.90	2.03	7.52	2.54	1.13	1.03	0.864	0.435
x 3/4	1 1/4	23.6	6.94	24.5	6.25	1.88	2.08	8.68	2.97	1.12	1.08	0.860	0.428
L 7 x 4 x 3/8	7/8	13.6	3.98	20.6	4.44	2.27	2.37	5.10	1.63	1.13	0.870	0.880	0.340
x 1/2	1	17.9	5.25	26.7	5.81	2.25	2.42	6.53	2.12	1.11	0.917	0.872	0.335
x 5/8	1 1/8	22.1	6.48	32.4	7.14	2.24	2.46	7.84	2.58	1.10	0.963	0.865	0.329
x 3/4	1 1/4	26.2	7.69	37.8	8.42	2.22	2.51	9.05	3.03	1.09	1.01	0.860	0.324
L 8 x 4 x 1/2	1	19.6	5.75	38.5	7.49	2.59	2.86	6.74	2.15	1.08	0.859	0.865	0.267
x 3/4	1 1/4	28.7	8.44	54.9	10.9	2.55	2.95	9.36	3.07	1.05	0.953	0.852	0.258
x 1	1 1/2	37.4	11.0	69.6	14.1	2.52	3.05	11.6	3.94	1.03	1.05	0.846	0.247

Angles

Unequal legs
Properties for designing



Size and Thickness	k	Weight per ft.	Area	Axis X-X				Axis Y-Y				Axis Z-Z	
				l	S	r	y	l	S	r	x	r	Tan
in.	in.	lb.	in. ²	in. ⁴	in. ³	in.	in.	in. ⁴	in. ³	in.	in.	in.	in.
L 8 x 6 x 7/16	15/16	20.2	5.93	39.2	7.07	2.57	2.45	19.3	4.23	1.80	1.45	1.31	0.560
x 1/2	1	23.0	6.75	44.3	8.02	2.56	2.47	21.7	4.79	1.79	1.47	1.30	0.558
x 5/8	1 1/8	28.5	8.36	54.1	9.87	2.54	2.52	26.3	5.88	1.77	1.52	1.29	0.554
x 3/4	1 1/4	33.8	9.94	63.4	11.7	2.53	2.56	30.7	6.92	1.76	1.56	1.29	0.551
x 1	1 1/2	44.2	13.0	80.8	15.1	2.49	2.65	38.8	8.92	1.73	1.65	1.28	0.543
L 9 x 4 x 5/8	1	21.3	6.25	53.2	9.34	2.92	3.31	6.92	2.17	1.05	0.810	0.854	0.220
x 9/16	1 1/16	23.8	7.00	59.1	10.4	2.91	3.33	7.63	2.41	1.04	0.834	0.850	0.218
x 1/2	1 1/8	26.3	7.73	64.9	11.5	2.90	3.36	8.32	2.65	1.04	0.810	0.847	0.216