6" TO 12" J

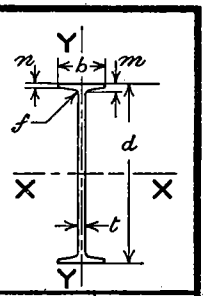
J AND L JUNIOR BEAMS

ROLLED FROM COPPER BEARING STEEL

DIMENSIONS—FUNCTIONS—ALLOWABLE TOTAL LOADS

I is Moment of Inertia S is Section Modulus r is Radius of Gyration
V is Maximum Web Shear in Pounds.
P is Minimum Span in feet, uniformly loaded to cause V.
R is Allowable End Reaction for 2½" bearing. For details see page of Allowable End Reactions.
W is Maximum Load on one Standard Connection.
Q is Minimum Span in feet, uniformly loaded to cause W.
w is Weight of one Standard Connection including Angles and Web Rivets

Rivet given is Maximum Diameter in flange.
Allowable concentrated center loads are 50% and their deflections 80% of those shown.



			6"	7"	8"	9"	10"	11"	12"
Depth = d"			6.028	7.028	8.028	9.018	10.026	11.024	12.028
Weight per foot			4.41	5.48	6.54	7.48	8.96	10.23	11.74
Area Sq. In.			1.30	1.61	1.92	2.20	2.64	3.01	3.45
b"			1.84	2.08	2.28	2.38	2.69	2.84	3.06
t"			.114	.126	.135	.145	.155	.165	.175
m			.200	.212	.224	.231	.247	.258	.272
n			.142	.148	.154	.155	.165	.170	.178
f			.150	.165	.180	.195	.210	.225	.240
AXES	X-X	I	7.30	12.13	18.67	26.20	39.01	53.08	72.21
		S	2.42	3.45	4.65	5.81	7.78	9.63	12.01
		r	2.372	2.744	3.116	3.450	3.847	4.200	4.573
	Y-Y	I	.1654	.2482	.3434	.3939	.6078	.7459	.9776
		S	.1794	.2389	.3011	.3317	.4523	.5246	.6385
		r	.3569	.3925	.4226	.4230	.4802	.4979	.5320
Coef. Str.			29074	41425	55817	69727	93369	115555	144088
Max. Mom."#			43610	62137	83726	104591	140054	173332	216131
V			8210	10580	12960	15660	18330	20930	23700
P. feet			1.77	1.96	2.15	2.23	2.55	2.76	3.04
R			5620	6370	6900	7550	8240	8960	9710
W			5130	5670	6075	6525	6975	7425	7875
Q. feet			2.83	3.65	4.59	5.34	6.69	7.78	9.15
w. lbs			4	5	5	5	5	5	5

Allowable Uniform Load in Kips, as fixed by shear or flexure, whichever is least.
For laterally fixed beam loads not tabulated, divide the Coefficient of Strength by the Span in feet.

Span feet	Laterally fixed	Laterally free	Laterally fixed	Laterally free	Laterally fixed	Laterally free	Laterally fixed	Laterally free	Laterally fixed	Laterally free	Laterally fixed	Laterally free	Laterally fixed	Laterally free
6	4.85	3.05	6.90	4.80	9.30	6.90	11.62	8.86	15.56	12.73	19.26	16.20	24.02	20.90
7	4.15	....	5.92	....	7.97	5.28	9.96	6.82	13.34	9.96	16.51	12.76	20.58	16.61
8	3.63	....	5.18	....	6.98	....	8.72	5.34	11.67	7.92	14.44	10.21	18.01	13.41
9	3.23	....	4.60	....	6.20	....	7.75	....	10.37	....	12.84	8.28	16.01	10.96
10	2.91	....	4.14	....	5.58	....	6.97	....	9.34	....	11.56	....	14.41	....
11	2.64	....	3.77	....	5.07	....	6.34	....	8.49	....	10.51	....	13.10	....
12	2.42	....	3.45	....	4.65	....	5.81	....	7.78	....	9.63	....	12.01	....
13	2.24	....	3.19	....	4.29	....	5.36	....	7.18	....	8.89	....	11.08	....
14	2.08	....	2.96	....	3.99	....	4.98	....	6.67	....	8.25	....	10.29	....
15	1.94	....	2.76	....	3.72	....	4.65	....	6.23	....	7.70	....	9.61	....
16	1.82	....	2.59	....	3.49	....	4.36	....	5.84	....	7.22	....	9.01	....
17	1.71	....	2.44	....	3.28	....	4.10	....	5.49	....	6.80	....	8.48	....
18	1.62	....	2.30	....	3.10	....	3.87	....	5.19	....	6.42	....	8.01	....
19	1.53	....	2.18	....	2.94	....	3.67	....	4.91	....	6.08	....	7.58	....
20	1.45	....	2.07	....	2.79	....	3.49	....	4.67	....	5.78	....	7.20	....
21	1.38	....	1.97	....	2.66	....	3.32	....	4.45	....	5.50	....	6.86	....
22	1.32	....	1.88	....	2.54	....	3.17	....	4.24	....	5.25	....	6.55	....
23	1.26	....	1.80	....	2.43	....	3.03	....	4.06	....	5.02	....	6.27	....
24	1.21	....	1.73	....	2.33	....	2.91	....	3.89	....	4.82	....	6.00	....
25	1.16	....	1.66	....	2.23	....	2.79	....	3.74	....	4.62	....	5.76	....
26	1.12	....	1.59	....	2.15	....	2.68	....	3.59	....	4.44	....	5.54	....

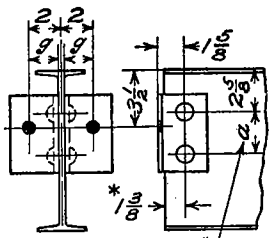
Total Deflection in inches for Maximum Load; Laterally fixed beam.
Live Load deflection must not exceed 1/360 of the Span.
Live Load Def. = Total Def. × Live Load / Tabular Load

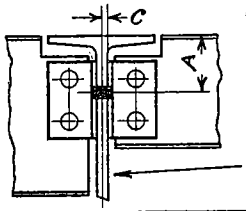
9	.252	.216	.189	.168	.151	.137	.126
10	.310	.266	.233	.207	.186	.169	.155
11	.375	.321	.281	.250	.225	.205	.188
12	.447	.383	.335	.298	.268	.244	.223
13	.525	.450	.394	.350	.315	.286	.263
14	.608	.521	.456	.406	.365	.332	.304
15	.698	.599	.524	.466	.419	.381	.341
16	.795	.681	.596	.530	.477	.434	.398
17	.898	.770	.674	.599	.539	.490	.449
18	1.01	.861	.754	.670	.603	.548	.503
19	1.12	.960	.840	.747	.672	.611	.560
20	1.24	1.06	.931	.828	.745	.677	.621
21	1.37	1.17	1.03	.912	.821	.746	.684
22	1.51	1.29	1.13	1.00	.901	.819	.751
24	1.79	1.53	1.34	1.19	1.07	.975	.894
26	2.10	1.80	1.57	1.40	1.26	1.14	1.05

CONNECTION ANGLES FOR J AND L JUNIOR BEAMS

DIMENSIONS, WEIGHTS, AND WORKING LOADS — ¾" POWER DRIVEN RIVETS

Beam Depth	Beam Weight per foot	Connection Value Web	Connection Value Outstanding Single Shear Power Driven Rivets	Connection Value Outstanding Single Shear Unfinished Bolts	Framing Distance C	Connection Angles A.I.S.C. Mark	Connection Angles Gage g	Connection Angles Size and Length	Connection Angles Weight inc. Web Rivets	Connection Details
6"	4.41	5130	9000	6000	⅛	IC. 4.15	1 15/16	3 x 3 x ¼ 4¼" Long	4 lbs.	
7"	5.48	5670	9000	6000	⅛	IC. 5.15	1 15/16			
8"	6.54	6075	9000	6000	⅛	IC. 5.15	1 15/16			
9"	7.48	6525	9000	6000	⅛	IC. 5.15	1 15/16	3 x 3 x ¼ 4⅞" Long	5 lbs.	
10"	8.96	6975	9000	6000	⅛	IC. 5.15	1 15/16			
11"	10.23	7425	9000	6000	⅛	IC. 5.15	1 15/16			
12"	11.74	7875	9000	6000	⅛	IC. 5.15	1 15/16			





*Layer-out starts with this dimension at left end of beam. With beams ordered one half inch short, as recommended for J & L Junior beams, this leaves sufficient end distance at right end, in case of full allowable 3/8" underrun in beam lengths.

When A = 3½" all Junior beams can be framed opposite with tops flush.

Minimum Web required to develop Single Shearing Value is .33"
Minimum Web required to develop Double Shearing Value is .53"

ALLOWABLE END REACTIONS FOR J AND L JUNIOR BEAMS

DETERMINED BY

BUCKLING OF UNSTIFFENED WEBS OVER VARIOUS LENGTHS OF BEARING

Depth in Inches	Weight per Foot	Web t	Unit Stress in Buckling	Reaction R for 2½" Bearing	Min. Span for 2½" Bearing	Reaction R for 3½" Bearing	Increase in R for 1" Additional Bearing	Max. Web Shear V.	Length of Bearing to develop V.
6"	4.41	.114	12310	5620	2.59	7020	1400	8210	4.35
7"	5.48	.126	11890	6370	3.25	7860	1500	10580	5.32
8"	6.54	.135	11360	6900	4.05	8430	1530	12960	6.45
9"	7.48	.145	10960	7550	4.62	9140	1590	15660	7.60
10"	8.96	.155	10630	8240	5.67	9880	1650	18330	8.63
11"	10.23	.165	10340	8960	6.45	10660	1710	20930	9.52
12"	11.74	.175	10090	9710	7.42	11480	1770	23700	10.42

The beam web is treated as a column with fixed ends, having an effective length L of one-half the beam depth. The unit stress is determined by the A. I. S. C. column formula. The length of web resisting buckling is assumed as the actual bearing on the bracket or wall plate plus one-fourth the beam depth. This agrees with the results of numerous tests.
When the reaction from the load exceeds the allowable reaction R, the beam web must be stiffened or additional length of bearing provided; but in no case shall the reaction exceed the allowable shearing value V.