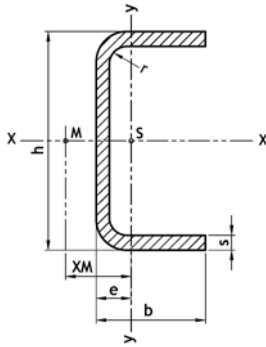


پروفیل U تک

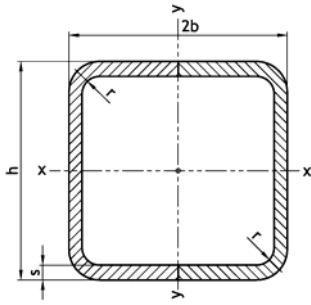


- سطح مقطع = F
- وزن = G
- گشتاور سکون = J
- گشتاور مقاوم = W
- مربوط به محور خمش } شعاع سکون = $i = \sqrt{\frac{J}{F}}$
- فاصله محور y-y = e
- فاصله مرکز ثقل کشش از محور y-y = X_M
- مقاومت = J_b
- مقاومت شکل‌گیری = C_M

بر حسب میلیمتر				F cm ²	G kg/m	محور خمش						e cm	X_M cm	J_b cm ⁴	C_M cm ⁶
h	b	s	r			x-x			y-y						
						J_x cm ⁴	W_x cm ³	i_x cm	J_y cm ⁴	W_y cm ³	i_y cm				
25	25	1.5	1.5	1.04	0.814	1.11	0.888	1.04	0.677	0.430	0.808	0.925	1.93	0.0076	0.624
28	28	1.5	1.5	1.17	0.920	1.59	1.14	1.17	0.966	0.544	0.908	1.03	2.16	0.0086	1.14
30	30	1.5	1.5	1.26	0.991	1.99	1.33	1.26	1.20	0.628	0.975	1.09	2.32	0.0093	1.65
		2	2	1.64	1.29	2.50	1.66	1.23	1.54	0.817	0.966	1.12	2.32	0.0214	1.99
		3	3	2.35	1.84	3.32	2.21	1.19	2.12	1.17	0.949	1.19	2.32	0.0677	2.40
60	4	4	5.37	4.22	8.00	5.33	1.22	18.4	5.58	1.85	2.70	5.24	0.278	22.4	
40	20	2	2	1.44	1.13	3.39	1.69	1.53	0.557	0.398	0.621	0.599	1.25	0.0187	1.27
		3	3	2.05	1.61	4.50	2.25	1.48	0.763	0.565	0.610	0.649	1.25	0.0587	1.51
		4	4	2.57	2.02	5.28	2.64	1.43	0.928	0.714	0.601	0.699	1.23	0.129	1.55
	25	3	3	2.35	1.84	5.51	2.76	1.53	1.43	0.871	0.781	0.856	1.69	0.0677	2.96
		1.5	1.5	1.41	1.11	3.81	1.91	1.64	1.34	0.664	0.973	0.984	2.15	0.0104	3.31
		2	2	1.84	1.45	4.83	2.42	1.62	1.72	0.866	0.966	1.01	2.15	0.0240	4.06
30	3	3	2.65	2.08	6.56	3.28	1.57	2.40	1.24	0.953	1.07	2.15	0.0767	5.09	
	4	4	3.77	2.96	9.15	4.57	1.56	4.57	2.13	1.10	1.35	2.62	0.193	8.97	
	2	2	2.24	1.76	6.28	3.14	1.67	3.79	1.49	1.30	1.46	3.09	0.0294	9.27	
40	3	3	3.25	2.55	8.62	4.31	1.63	5.34	2.15	1.28	1.52	3.10	0.0947	11.9	
46	36	3	3	3.19	2.50	10.8	4.69	1.84	4.23	1.82	1.15	1.27	2.62	0.0929	12.5
	45	3	3	3.73	2.93	13.3	5.78	1.89	7.84	2.77	1.45	1.67	3.46	0.109	23.9
50	30	2	2	2.04	1.60	8.09	3.24	1.99	1.87	0.901	0.957	0.922	2.01	0.0267	7.06
		3	3	2.95	2.31	11.1	4.45	1.94	2.63	1.30	0.945	0.975	2.01	0.0857	9.06
	40	2	2	2.44	1.92	10.4	4.16	2.06	4.13	1.56	1.30	1.34	2.92	0.0320	15.9
		3	3	3.55	2.79	14.4	5.78	2.02	5.86	2.26	1.29	1.40	2.92	0.104	20.9
	4	4	4	4.57	3.59	17.8	7.12	1.97	7.39	2.91	1.27	1.46	2.93	0.235	24.2
		2	2	2.84	2.23	12.7	5.08	2.11	7.58	2.36	1.63	1.79	3.85	0.0374	30.0
50	4	4	5.37	4.22	22.0	8.81	2.03	13.7	4.45	1.60	1.91	3.87	0.278	47.0	
	5	7.5	6.45	5.07	25.1	10.1	1.97	16.0	5.34	1.58	2.00	3.86	0.521	48.0	
54	45	4	4	5.13	4.03	23.8	8.83	2.16	10.6	3.70	1.44	1.64	3.33	0.265	41.9
60	30	2	2	2.24	1.76	12.4	4.13	2.35	2.0	0.928	0.943	0.849	1.88	0.0294	11.1
		3	3	3.25	2.55	17.2	5.72	2.30	2.82	1.34	0.932	0.899	1.88	0.0947	14.5
	40	2	2	2.64	2.08	15.7	5.25	2.44	4.42	1.61	1.29	1.25	2.77	0.0347	24.8
		3	3	3.85	3.02	22.0	7.35	2.39	6.30	2.34	1.28	1.31	2.77	0.113	33.0
	50	2	2	3.04	2.39	19.1	6.37	2.51	8.12	2.44	1.63	1.68	3.68	0.0400	46.3
		3	3	4.45	3.49	26.9	8.97	2.46	11.6	3.57	1.62	1.74	3.69	0.131	62.6
62	45	4	4	5.45	4.28	33.0	10.6	2.46	11.2	3.81	1.44	1.55	3.20	0.282	59.6
		2	2	2.84	2.23	22.4	6.40	2.81	4.66	1.65	1.28	1.17	2.63	0.0374	36.0
70	40	3	3	4.15	3.26	31.6	9.02	2.76	6.67	2.40	1.27	1.22	2.63	0.122	48.5
		4	4	5.37	4.22	39.5	11.3	2.71	8.48	3.11	1.26	1.27	2.63	0.278	57.7
		2	2	3.24	2.55	27.0	7.72	2.89	8.59	2.51	1.63	1.58	3.53	0.0427	67.0
	50	3	3	4.75	3.73	38.3	10.9	2.84	12.4	3.67	1.61	1.64	3.53	0.140	91.4
		4	4	6.17	4.85	48.2	13.8	2.79	15.8	4.77	1.60	1.69	3.54	0.321	110
		5	7.5	7.45	5.85	55.9	16.0	2.74	18.7	5.78	1.58	1.77	3.55	0.604	117

بر حسب ميليمتر				F Cm ²	G kg/m	محور خمش						e cm	x _M cm	J ₀ cm ⁴	C _M cm ⁶	
h	b	s	r			x-x			y-y							
						J _x cm ⁴	W _x cm ³	i _x cm	J _y cm ⁴	W _y cm ³	i _y cm					
78	50	4	4	6.49	5.10	62.0	15.9	3.09	16.5	4.87	1.59	1.62	3.42	0.338	145	
80	40	3	3	4.45	3.49	43.1	10.8	3.12	6.99	2.45	1.25	1.15	2.51	0.131	67.7	
		4	4	5.77	4.53	54.2	13.6	3.07	8.91	3.18	1.24	1.20	2.51	0.299	81.3	
		5	7.5	6.95	5.46	62.6	15.7	3.00	10.5	3.84	1.23	1.26	2.51	0.562	85.2	
	50	2	2	3.44	2.70	36.6	9.14	3.26	9.00	2.57	1.62	1.49	3.38	0.0454	92.4	
		3	3	5.05	3.96	52.0	13.0	3.21	13.0	3.76	1.60	1.55	3.39	0.149	127	
		4	4	6.57	5.16	65.8	16.4	3.16	16.6	4.89	1.59	1.60	3.39	0.342	154	
	60	5	7.5	7.95	6.24	76.7	19.2	3.11	19.8	5.94	1.58	1.67	3.40	0.646	166	
		6	9	10.5	8.24	103	25.8	3.14	37.9	9.88	1.90	2.16	4.31	1.22	307	
	81	55	5	7.5	8.50	6.68	86.2	21.3	3.19	25.9	7.15	1.75	1.87	3.84	0.691	228
	86	50	4	4	6.81	5.35	77.9	18.1	3.38	17.1	4.96	1.58	1.55	3.31	0.355	185
	90	50	3	3	5.35	4.20	68.3	15.2	3.57	13.5	3.83	1.59	1.47	3.26	0.158	169
			4	4	6.97	5.47	86.7	19.3	3.53	17.4	5.00	1.58	1.52	3.26	0.363	207
5			7.5	8.45	6.64	102	22.6	3.47	20.7	6.07	1.57	1.59	3.27	0.687	228	
60		4	4	7.77	6.10	101	22.6	3.61	28.8	7.08	1.93	1.93	4.15	0.406	348	
		5	7.5	9.45	7.42	120	26.6	3.56	34.5	8.63	1.91	2.00	4.17	0.771	386	
92	60	5	7.5	9.55	7.50	126	27.3	3.63	34.7	8.65	1.91	1.98	4.14	0.779	408	
97	55	5	7.5	9.30	7.30	132	27.2	3.77	27.9	7.40	1.73	1.73	3.63	0.758	363	
100	50	3	3	5.65	4.43	87.3	17.5	3.93	14.0	3.90	1.58	1.40	3.14	0.167	219	
		4	4	7.37	5.79	111	22.2	3.88	18.0	5.08	1.56	1.45	3.14	0.385	270	
		5	7.5	8.95	7.03	131	26.1	3.82	21.6	6.19	1.55	1.51	3.15	0.729	297	
	60	4	4	10.5	8.24	149	29.7	3.77	24.9	7.25	1.54	1.57	3.14	1.22	321	
		5	7.5	12.9	10.1	171	34.1	3.71	29.1	8.63	1.91	1.91	4.03	0.812	505	
	80	6	9	14.1	11.1	228	45.7	4.03	92.9	18.0	2.57	2.83	5.86	1.66	1290	
		7	10.5	16.1	12.7	256	51.1	3.98	105	20.6	2.55	2.89	5.86	2.57	1390	
107	55	5	7.5	9.80	7.70	167	31.1	4.12	28.9	7.53	1.72	1.66	3.50	0.800	467	
110	55	4	4	8.17	6.42	150	27.3	4.29	24.3	6.20	1.73	1.57	3.45	0.427	448	
		5	7.5	9.95	7.81	178	32.3	4.23	29.2	7.56	1.71	1.64	3.47	0.812	501	
120	30	2	2	3.44	2.70	65.1	10.9	4.35	2.44	1.01	0.842	0.588	1.38	0.0454	60.2	
		3	3	6.85	5.38	154	25.7	4.75	24.7	5.67	1.90	1.65	3.77	0.203	568	
	60	4	4	8.97	7.04	198	33.0	4.70	31.9	7.43	1.89	1.70	3.77	0.470	709	
		5	7.5	11.0	8.60	235	39.2	4.64	38.5	9.08	1.88	1.76	3.78	0.895	803	
133	60	6	9	12.9	10.1	271	45.1	4.58	44.8	10.7	1.86	1.81	3.78	1.51	888	
140	60	6.5	9.75	14.7	11.5	368	55.3	5.01	49.6	11.7	1.84	1.75	3.63	2.02	1210	
		7	10.5	17.7	13.1	424	63.1	5.01	57.1	13.6	1.84	1.84	3.63	2.02	1210	
145	60	6	9	14.1	11.1	392	56.0	5.27	47.3	11.0	1.83	1.68	3.56	1.66	1320	
		6.5	9.75	15.5	12.1	453	62.5	5.42	51.1	11.8	1.82	1.68	3.50	2.13	1510	
146	60	6.5	9.75	15.5	12.2	460	63.1	5.45	51.1	11.8	1.81	1.68	3.49	2.14	1540	
150	100	6	9	19.5	15.3	712	94.9	6.04	202	29.7	3.22	3.20	6.94	2.30	6780	
		7	10.5	22.4	17.6	807	108	5.99	230	34.1	3.20	3.26	6.95	3.60	7490	
160	65	7	10.5	18.2	14.3	649	81.1	5.96	70.3	15.0	1.96	1.81	3.77	2.91	2550	
		7	10.5	18.9	14.9	691	86.4	6.04	87.0	17.3	2.14	1.99	4.19	3.03	3160	
	70	8	12	21.3	16.7	763	95.4	5.98	96.9	19.5	2.13	2.04	4.18	4.43	3370	
174	70	7	10.5	19.9	15.6	846	97.2	6.52	89.5	17.6	2.12	1.91	4.04	3.19	3920	
180	70	7	10.5	20.3	16.0	918	102	6.72	90.5	17.7	2.11	1.87	3.98	3.26	4270	
		8	12	22.9	18.0	1020	113	6.66	101	19.9	2.10	1.92	3.98	4.78	4590	
200	80	6	9	20.1	15.8	1160	116	7.60	120	20.2	2.44	2.07	4.62	2.38	7380	
		6	9	22.5	17.7	1390	139	7.85	224	31.1	3.15	2.81	6.30	2.66	13800	
	100	7	10.5	25.9	20.4	1580	158	7.80	256	35.9	3.14	2.86	6.30	4.17	15390	
		8	12	29.3	23.0	1760	176	7.74	287	40.5	3.13	2.92	6.30	6.14	16790	
220	100	6	9	23.7	18.6	1730	158	8.55	231	31.6	3.12	2.68	6.08	2.81	17450	
		7	10.5	27.3	21.5	1970	179	8.50	264	36.4	3.11	2.73	6.08	4.40	19510	
		8	12	30.9	24.3	2200	200	8.44	297	41.1	3.10	2.79	6.08	6.48	21350	
250	100	6	9	25.5	20.0	2340	187	9.58	240	32.1	3.07	2.52	5.77	3.02	23890	
		7	10.5	29.4	23.1	2670	214	9.53	276	37.1	3.06	2.56	5.77	4.74	26800	
		8	12	33.3	26.2	2990	239	9.47	310	41.9	3.05	2.61	5.77	6.99	29430	
300	100	7	10.5	32.9	25.9	4140	276	11.2	291	38.0	2.97	2.33	5.33	5.31	42060	
		8	12	37.3	29.3	4640	309	11.1	327	42.9	2.96	2.38	5.33	7.85	46370	

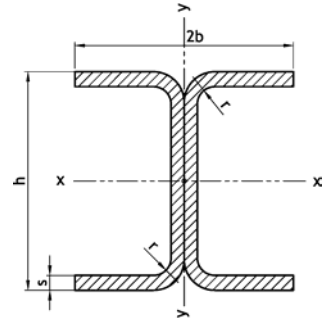
پروفیل L دوپل



سطح مقطع = F
 وزن = G
 گشتاور سکون = J
 گشتاور مقاوم = W

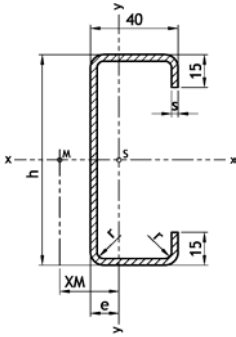
$$i = \sqrt{\frac{J}{F}}$$

 فاصله مرکز دو پروفیل = a



h mm	b mm	s mm	r mm	F cm ²	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a cm	ترتیب 1			ترتیب 2		
										J _y cm ⁴	W _y cm ³	i _y cm	J _y cm ⁴	W _y cm ³	i _y cm
40	20	2	2	2.89	2.27	6.78	3.39	1.53	2.80	2.15	1.07	0.863	6.78	3.39	1.53
		3	3	4.10	3.21	9.00	4.50	1.48	2.70	3.25	1.63	0.891	9.00	4.50	1.48
		4	4	5.15	4.04	10.6	5.28	1.43	2.60	4.37	2.19	0.922	10.6	5.28	1.43
50	30	2	2	4.09	3.21	16.2	6.47	1.99	3.49	7.22	2.41	1.33	21.4	7.13	2.29
		3	3	5.90	4.63	22.2	8.90	1.94	3.39	10.9	3.62	1.36	29.4	9.81	2.23
60	30	2	2	4.49	3.52	24.7	8.25	2.35	4.30	7.23	2.41	1.27	24.7	8.25	2.35
		3	3	6.50	5.10	34.3	11.4	2.30	4.20	10.9	3.63	1.29	34.3	11.4	2.30
70	40	2	2	5.69	4.46	44.8	12.8	2.81	5.00	17.1	4.27	1.73	54.9	13.7	3.11
		3	3	8.30	6.51	63.1	18.0	2.76	4.90	25.7	6.43	1.76	77.4	19.4	3.05
		4	4	10.7	8.44	78.9	22.5	2.71	4.80	34.4	8.59	1.79	96.9	24.2	3.00
80	40	3	3	8.90	6.98	86.3	21.6	3.12	5.70	25.7	6.43	1.70	86.3	21.6	3.11
		4	4	11.5	9.06	108	27.1	3.07	5.60	34.4	8.61	1.73	108	27.1	3.06
		5	7.5	13.9	10.9	125	31.3	3.00	5.49	43.2	10.8	1.76	125	31.3	3.00
90	50	3	3	10.7	8.40	137	30.4	3.57	6.40	50.2	10.0	2.17	160	32.1	3.87
		4	4	13.9	10.9	173	38.5	3.53	6.30	67.0	13.4	2.19	204	40.7	3.82
		5	7.5	16.9	13.3	203	45.1	3.47	6.18	84.0	16.8	2.23	239	47.7	3.76
100	50	3	3	11.3	8.87	175	34.9	3.93	7.20	50.2	10.0	2.11	175	34.9	3.93
		4	4	14.7	11.6	222	44.4	3.88	7.10	67.0	13.4	2.13	222	44.4	3.88
		5	7.5	17.9	14.1	261	52.2	3.82	6.98	84.0	16.8	2.17	261	52.2	3.82
110	55	6	9	21.0	16.5	297	59.5	3.77	6.87	101	20.2	2.20	297	59.5	3.76
		4	4	16.3	12.8	301	54.7	4.29	7.85	89.1	16.2	2.33	301	54.7	4.29
		5	7.5	19.9	15.6	356	64.7	4.23	7.73	112	20.3	2.37	356	64.7	4.23
120	30	2	2	6.89	5.41	130	21.7	4.35	8.53	7.26	2.42	1.03	44.9	15.0	2.55
		3	3	13.7	10.8	309	51.4	4.75	8.70	86.6	14.4	2.51	309	51.4	4.75
		4	4	17.9	14.1	396	66.0	4.70	8.60	116	19.3	2.54	396	66.0	4.70
120	60	5	7.5	21.9	17.2	471	78.5	4.64	8.48	145	24.1	2.57	471	78.5	4.64
		6	9	25.8	20.2	541	90.2	4.58	8.37	174	29.0	2.60	542	90.3	4.58
		4	4	19.5	15.3	569	81.3	5.40	10.0	116	19.3	2.43	450	75.0	4.80
140	60	5	7.5	23.9	18.8	679	97.0	5.33	10.0	145	24.2	2.46	537	89.5	4.74
		6	9	28.2	22.1	784	112	5.27	9.89	175	29.1	2.49	620	103	4.69
		6.5	9.75	30.9	24.3	907	125	5.42	10.2	190	31.6	2.48	679	113	4.69
150	100	6	9	39.0	30.6	1420	190	6.04	10.2	802	80.2	4.54	2210	221	7.53
		7	10.5	44.9	35.2	1610	215	5.99	10.1	936	93.6	4.57	2500	250	7.47
160	70	7	10.5	37.9	29.7	1380	173	6.04	11.3	323	46.2	2.92	1130	161	5.01
		8	12	42.6	33.5	1530	191	5.98	11.2	370	52.9	2.95	1240	178	5.40
180	70	7	10.5	40.7	31.9	1840	204	6.72	12.8	324	46.3	2.82	1250	179	5.54
		8	12	45.8	36.0	2030	226	6.66	12.6	371	53.0	2.85	1380	198	5.49
200	100	6	9	45.0	35.3	2770	277	7.85	14.4	803	80.3	4.22	2770	277	7.85
		7	10.5	51.9	40.7	3160	316	7.80	14.3	937	93.7	4.25	3160	316	7.80
		8	12	58.6	46.0	3520	352	7.74	14.2	1070	107	4.28	3520	352	7.74
220	100	6	9	47.4	37.2	3470	315	8.55	15.9	803	80.3	4.12	3000	300	7.96
		7	10.5	54.7	42.9	3950	359	8.50	15.8	938	93.8	4.14	3420	342	7.90
		8	12	61.8	48.5	4410	401	8.44	15.7	1070	107	4.17	3810	381	7.85
250	100	6	9	51.0	40.0	4680	375	9.58	18.2	803	80.3	3.97	3340	334	8.09
		7	10.5	58.9	46.2	5350	428	9.53	18.0	938	93.8	3.99	3810	381	8.04
		8	12	66.6	52.3	5980	478	9.47	17.9	1070	107	4.02	4250	425	7.99
300	100	7	10.5	65.9	51.7	8270	552	11.2	21.6	940	94.0	3.78	4460	446	8.23
		8	12	74.6	58.6	9270	618	11.1	21.5	1080	108	3.80	4990	499	8.18

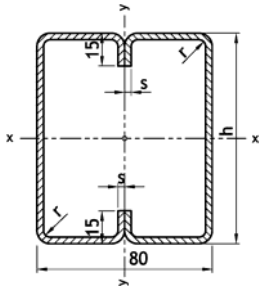
پروفیل C تک



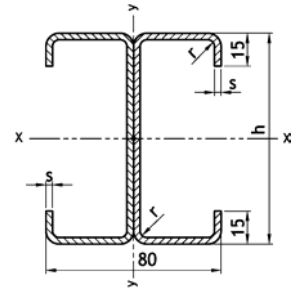
F = سطح مقطع
 G = وزن
 I = گشتاور سکون
 W = گشتاور مقاوم
 $i = \sqrt{\frac{I}{F}}$ = شعاع سکون
 e = فاصله محور $y-y$
 x_M = فاصله مرکز ثقل کشش M از محور $y-y$
 I_D = مقاومت
 C_M = مقاومت شکل‌گیری

بر حسب میلی‌متر			F	G	محور خمش						e	x_M	I_D	C_M
h	b	s=r			x-x			y-y						
			I_x cm ⁴	W_x cm ³	i_x cm	I_y cm ⁴	W_y cm ³	i_y cm	cm	cm	cm ⁴	cm ⁴		
60	40	2	3.09	2.42	17.6	5.86	2.39	7.08	2.99	1.51	1.63	3.70	0.0401	73.9
		2.25	3.43	2.69	19.3	6.43	2.37	7.73	3.26	1.50	1.63	3.67	0.0561	79.6
		2.5	3.76	2.95	20.9	6.97	2.36	8.33	3.51	1.49	1.63	3.64	0.0757	84.6
		3	4.40	3.45	23.9	7.96	2.33	9.40	3.95	1.46	1.62	3.57	0.126	92.6
80	40	2	3.49	2.74	34.5	8.64	3.15	7.91	3.11	1.51	1.46	3.39	0.0454	122
		2.25	3.88	3.05	38.1	9.52	3.13	8.64	3.39	1.49	1.45	3.35	0.0637	132
		2.5	4.26	3.34	41.4	10.4	3.12	9.33	3.66	1.48	1.45	3.32	0.0861	141
		3	5.00	3.92	47.6	11.9	3.09	10.5	4.13	1.45	1.44	3.25	0.144	155
100	40	2	3.89	3.05	58.5	11.7	3.88	8.57	3.19	1.49	1.32	3.12	0.0507	188
		2.25	4.33	3.40	64.6	12.9	3.86	9.37	3.49	1.47	1.31	3.09	0.0713	204
		2.5	4.76	3.74	70.4	14.1	3.85	10.1	3.76	1.46	1.31	3.06	0.0965	218
		3	5.60	4.39	81.3	16.3	3.81	11.4	4.25	1.43	1.31	2.99	0.162	241
120	40	2	4.29	3.37	90.2	15.0	4.59	9.11	3.26	1.46	1.20	2.90	0.0561	273
		2.25	4.78	3.75	99.8	16.6	4.57	9.96	3.56	1.44	1.20	2.87	0.0789	297
		2.5	5.26	4.13	109	18.2	4.55	10.8	3.84	1.43	1.20	2.84	0.107	318
		3	6.20	4.86	126	21.0	4.51	12.2	4.34	1.40	1.19	2.77	0.180	353
140	40	2	4.69	3.68	131	18.6	5.28	9.55	3.30	1.43	1.11	2.72	0.0614	379
		2.25	5.23	4.10	145	20.6	5.26	10.4	3.61	1.41	1.11	2.68	0.0865	412
		2.5	5.76	4.52	158	22.6	5.24	11.3	3.90	1.40	1.11	2.65	0.117	442
		3	6.80	5.33	183	26.2	5.20	12.8	4.41	1.37	1.10	2.59	0.198	493
160	40	2	5.09	3.99	180	22.5	5.95	9.93	3.34	1.40	1.03	2.55	0.0667	507
		2.25	5.68	4.46	200	25.0	5.93	10.9	3.65	1.38	1.03	2.52	0.0941	551
		2.5	6.26	4.91	219	27.3	5.91	11.7	3.94	1.37	1.03	2.49	0.128	591
		3	7.40	5.81	254	31.8	5.86	13.3	4.46	1.34	1.02	2.43	0.216	661
180	40	2	5.49	4.31	240	26.7	6.61	10.3	3.37	1.37	0.961	2.41	0.0721	657
		2.25	6.13	4.81	266	29.6	6.59	11.2	3.69	1.35	0.961	2.38	0.102	715
		2.5	6.76	5.31	292	32.4	6.57	12.1	3.98	1.34	0.960	2.35	0.138	768
		3	8.00	6.28	340	37.8	6.52	13.7	4.51	1.31	0.959	2.29	0.234	859
200	40	2.25	6.58	5.16	345	34.5	7.24	11.5	3.72	1.32	0.903	2.26	0.109	904
		2.5	7.26	5.70	378	37.8	7.22	12.4	4.01	1.31	0.902	2.22	0.149	971
		3	8.60	6.75	442	44.2	7.17	14.1	4.54	1.28	0.902	2.16	0.252	1090
220	40	2.5	7.76	6.09	479	43.6	7.86	12.7	4.04	1.28	0.852	2.11	0.159	1200
		2.75	8.48	6.66	520	47.3	7.83	13.6	4.32	1.27	0.853	2.08	0.210	1280
		3	9.20	7.22	560	50.9	7.81	14.4	4.58	1.25	0.853	2.05	0.270	1350

پروفیل C دویل

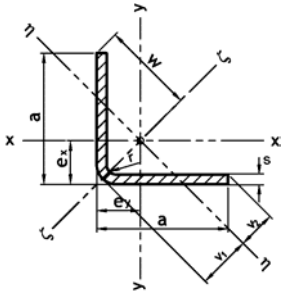


سطح مقطع = F
 وزن = G
 گشتاور سکون = J
 گشتاور مقاوم = W
 شعاع سکون = $i = \sqrt{\frac{J}{F}}$
 فاصله مرکز دو پروفیل = a



h mm	b mm	s=r mm	F cm ²	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a cm	ترتیب 1			ترتیب 2		
									J _y cm ⁴	W _y cm ³	i _y cm	J _y cm ⁴	W _y cm ³	i _y cm
60	80	2	6.17	4.85	35.1	11.7	2.39	3.69	30.6	7.65	2.23	48.8	12.2	2.81
		2.25	6.86	5.38	38.6	12.9	2.37	3.67	32.6	8.16	2.18	53.0	13.3	2.78
		2.5	7.52	5.90	41.8	13.9	2.36	3.66	36.5	9.14	2.20	59.2	14.8	2.81
		3	8.79	6.90	47.8	15.9	2.33	3.63	41.9	10.5	2.18	68.5	17.1	2.79
80	80	2	6.97	5.47	69.1	17.3	3.15	5.53	30.6	7.65	2.09	61.0	15.2	2.96
		2.25	7.76	6.09	76.1	19.0	3.13	5.51	33.7	8.42	2.08	67.6	16.9	2.95
		2.5	8.52	6.69	82.8	20.7	3.12	5.49	36.6	9.14	2.07	78.1	18.5	2.95
		3	9.99	7.84	95.2	23.8	3.09	5.45	41.9	10.5	2.05	86.4	21.6	2.94
100	80	2	7.77	6.10	117	23.4	3.88	7.17	30.6	7.65	1.98	73.1	18.3	3.07
		2.25	8.66	6.80	129	25.8	3.86	7.14	33.7	8.42	1.97	81.3	20.3	3.06
		2.5	9.52	7.47	141	28.2	3.85	7.12	36.6	9.15	1.96	89.1	22.3	3.06
		3	11.2	8.78	163	32.5	3.81	7.07	42.0	10.5	1.94	104	26.0	3.05
120	80	2	8.57	6.73	180	30.1	4.59	8.70	30.6	7.65	1.89	85.3	21.3	3.15
		2.25	9.56	7.50	200	33.3	4.57	8.67	33.7	8.42	1.88	94.9	23.7	3.15
		2.5	10.5	8.26	218	36.3	4.55	8.64	36.6	9.15	1.87	104	26.0	3.15
		3	12.4	9.73	252	42.1	4.51	8.58	42.0	10.5	1.84	122	30.5	3.14
140	80	2	9.37	7.36	261	37.3	5.28	10.2	30.6	7.65	1.81	97.5	24.4	3.23
		2.25	10.5	8.21	289	41.3	5.26	10.1	33.7	8.43	1.80	108	27.1	3.22
		2.5	11.5	9.04	316	45.1	5.24	10.1	36.6	9.16	1.78	119	29.8	3.22
		3	13.6	10.7	367	52.4	5.20	10.0	42.1	10.5	1.76	140	34.9	3.21
160	80	2	10.2	7.99	360	45.1	5.95	11.6	30.6	7.66	1.74	110	27.4	3.28
		2.25	11.4	8.92	399	49.9	5.93	11.5	33.7	8.43	1.72	122	30.5	3.28
		2.5	12.5	9.83	437	54.6	5.91	11.5	36.7	9.16	1.71	134	33.5	3.27
		3	14.8	11.6	509	63.6	5.86	11.4	42.1	10.5	1.69	158	39.4	3.26
180	80	2	11.0	8.61	480	53.3	6.61	12.9	30.6	7.66	1.67	122	30.5	3.33
		2.25	12.3	9.62	533	59.2	6.59	12.9	33.7	8.44	1.66	136	33.9	3.33
		2.5	13.5	10.6	583	64.8	6.57	12.9	36.7	9.17	1.65	149	37.3	3.32
		3	16.0	12.6	680	75.5	6.52	12.8	42.1	10.5	1.62	175	43.8	3.31
200	80	2.25	13.2	10.3	690	69.0	7.24	14.2	33.8	8.44	1.60	149	37.3	3.37
		2.5	14.5	11.4	756	75.6	7.22	14.2	36.7	9.17	1.59	164	41.1	3.36
		3	17.2	13.5	883	88.3	7.17	14.1	42.1	10.5	1.57	193	48.3	3.35
220	80	2.5	15.5	12.2	959	87.2	7.86	15.5	36.7	9.18	1.54	179	44.8	3.40
		2.75	17.0	13.3	1040	94.6	7.83	15.5	39.5	9.88	1.53	195	48.8	3.39
		3	18.4	14.4	1120	102	7.81	15.4	42.2	10.5	1.51	211	52.7	3.39

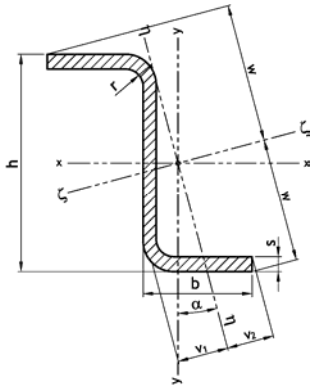
پروفیل L متوازی الاضلاع



F = سطح مقطع
 G = وزن
 J = گشتاور سکون
 W = گشتاور مقاوم
 مربوط به محور خمش
 $i = \sqrt{\frac{J}{F}}$ = شعاع سکون

بر حسب mm			F cm ²	G kg/m	فاصله محورها				محور خمش								
a	s	r			$e_x = e_y$				$x - x' = y - y'$			$\xi - \xi'$			$\eta - \eta'$		
					v_1 cm	v_2 cm	w cm	J_k cm ⁴	W_k cm ³	i_k cm	J_ξ cm ⁴	W_ξ cm ³	i_ξ cm	J_η cm ⁴	W_η cm ³	i_η cm	
20	1.5	1.5	0.556	0.436	0.574	0.688	0.708	1.41	0.219	0.153	0.627	0.357	0.253	0.801	0.080	0.113	0.379
	2	2	0.722	0.567	0.599	0.682	0.708	1.41	0.278	0.199	0.621	0.458	0.324	0.797	0.099	0.139	0.370
	3	3	1.02	0.804	0.649	0.670	0.708	1.41	0.381	0.282	0.610	0.636	0.450	0.788	0.127	0.179	0.352
25	1.5	1.5	0.706	0.554	0.699	0.865	0.885	1.77	0.438	0.244	0.788	0.714	0.404	1.01	0.163	0.185	0.481
	2	2	0.922	0.724	0.724	0.859	0.885	1.77	0.564	0.318	0.782	0.923	0.522	1.00	0.205	0.232	0.472
	2.5	2.5	1.13	0.885	0.749	0.852	0.885	1.77	0.680	0.388	0.777	1.12	0.633	0.996	0.241	0.272	0.462
	3	3	1.32	1.04	0.774	0.846	0.885	1.77	0.787	0.456	0.771	1.30	0.736	0.992	0.272	0.307	0.453
30	1.5	1.5	0.856	0.672	0.824	1.04	1.06	2.12	0.771	0.355	0.949	1.25	0.590	1.21	0.291	0.274	0.583
	2	2	1.12	0.881	0.849	1.04	1.06	2.12	0.998	0.464	0.943	1.63	0.767	1.21	0.369	0.347	0.573
	2.5	2.5	1.38	1.08	0.874	1.03	1.06	2.12	1.21	0.570	0.937	1.98	0.935	1.20	0.438	0.413	0.564
	3	3	1.62	1.28	0.899	1.02	1.06	2.12	1.41	0.671	0.932	2.32	1.09	1.20	0.500	0.471	0.555
	4	4	2.09	1.64	0.949	1.01	1.06	2.12	1.77	0.863	0.921	2.94	1.39	1.19	0.602	0.567	0.537
40	2	2	1.52	1.20	1.10	1.39	1.42	2.83	2.44	0.840	1.27	3.96	1.40	1.61	0.919	0.649	0.777
	3	3	2.22	1.75	1.15	1.38	1.42	2.83	3.50	1.23	1.25	5.71	2.02	1.60	1.28	0.903	0.758
	4	4	2.89	2.27	1.20	1.36	1.42	2.83	4.46	1.59	1.24	7.33	2.59	1.59	1.58	1.12	0.740
50	5	5	3.69	2.89	1.45	1.72	1.77	3.54	9.02	2.54	1.56	14.8	4.18	2.00	3.28	1.85	0.943
	5	7.5	4.48	3.51	1.51	1.62	1.75	3.54	10.8	3.09	1.55	17.9	5.06	2.00	3.70	2.11	0.909
60	3	3	3.42	2.69	1.65	2.08	2.12	4.24	12.3	2.84	1.90	20.0	4.72	2.42	4.65	2.19	1.17
	4	4	4.49	3.52	1.70	2.07	2.12	4.24	16.0	3.71	1.89	26.0	6.14	2.41	5.90	2.78	1.15
	5	7.5	5.48	4.30	1.76	1.97	2.11	4.24	19.3	4.54	1.88	31.7	7.48	2.41	6.79	3.22	1.11
	6	9	6.45	5.06	1.81	1.94	2.10	4.24	22.4	5.34	1.86	37.1	8.74	2.40	7.66	3.64	1.09
80	5	7.5	7.48	5.87	2.26	2.68	2.82	5.66	47.5	8.27	2.52	77.6	13.7	3.22	17.3	6.16	1.52
	6	9	8.85	6.94	2.31	2.65	2.81	5.66	55.6	9.78	2.51	91.4	16.2	3.21	19.9	7.08	1.50
	7	10.5	10.2	7.99	2.36	2.62	2.81	5.66	63.4	11.2	2.50	105	18.5	3.21	22.2	7.90	1.48
100	5	7.5	9.48	7.44	2.76	3.38	3.52	7.07	95.0	13.1	3.17	155	21.9	4.04	35.4	10.0	1.93
	6	9	11.2	8.83	2.81	3.35	3.52	7.07	112	15.6	3.15	183	25.8	4.03	41.0	11.6	1.91
	7	10.5	13.0	10.2	2.86	3.32	3.52	7.07	128	17.9	3.14	210	29.7	4.02	46.2	13.1	1.89
120	5	7.5	11.5	9.01	3.26	4.09	4.23	8.49	167	19.1	3.81	270	31.9	4.86	62.9	14.9	2.34
	6	9	13.6	10.7	3.31	4.06	4.23	8.49	197	22.7	3.80	320	37.8	4.85	73.3	17.3	2.32
	7	10.5	15.8	12.4	3.36	4.03	4.23	8.49	226	26.2	3.79	369	43.5	4.84	83.1	19.7	2.30

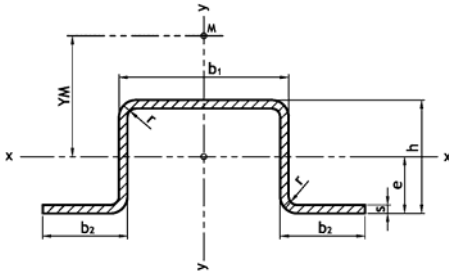
پروفیل Z شکل



- F = سطح مقطع
 G = وزن
 I = گشتاور سکون
 W = گشتاور مقاوم
 $i = \sqrt{\frac{I}{F}}$ = شعاع سکون
 مربوط به محور خمش

برحسب mm				F		G		فاصله محورها			α	I_{yy}	محور خمش											
h	b	s	r	cm ²	kg/m	v ₁ cm	v ₂ cm	w cm				x - x			y - y			$\xi - \xi$		$\eta - \eta$				
											cm ⁴	I_x cm ⁴	W_x cm ³	i_x cm	I_y cm ⁴	W_y cm ³	i_y cm	I_ξ cm ⁴	W_ξ cm ³	i_ξ cm	I_η cm ⁴	W_η cm ³	i_η cm	
25	15	2		0.943	0.741	0.580	0.661	1.79	30.946	0.449		0.847	0.677	0.947	0.367	0.262	0.624	1.12	0.623	1.09	0.098	0.148	0.322	
	30	1.5	1.5	1.19	0.932	0.958	0.738	3.12	55.739	1.51		1.32	1.05	1.05	2.50	0.856	1.45	3.53	1.13	1.73	0.290	0.303	0.495	
	30	2		1.54	1.21	0.941	0.735	3.11	56.313	1.93		1.64	1.31	1.03	3.25	1.12	1.45	4.54	1.46	1.72	0.354	0.376	0.479	
30	3	3		2.20	1.73	0.906	0.732	3.08	57.463	2.67		2.15	1.72	0.989	4.63	1.63	1.45	6.34	2.06	1.70	0.442	0.488	0.449	
	30	1.5	1.5	1.26	0.991	1.06	0.899	3.19	49.020	1.83		1.99	1.33	1.26	2.50	0.856	1.41	4.09	1.28	1.80	0.399	0.377	0.562	
	30	2.5	2.5	2.01	1.57	1.03	0.884	3.17	50.119	2.84		2.94	1.96	1.21	3.96	1.38	1.41	6.33	2.00	1.78	0.568	0.553	0.532	
40	1.5	1.5		1.56	1.23	1.21	0.876	4.14	58.830	3.29		2.60	1.73	1.29	6.05	1.54	1.97	8.04	1.94	2.27	0.605	0.500	0.622	
	40	3		2.95	2.31	1.16	0.876	4.09	60.141	6.00		4.42	2.94	1.22	11.4	2.97	1.97	14.9	3.64	2.25	0.974	0.842	0.575	
	20	1.5	1.5	1.11	0.873	0.774	1.02	2.60	23.578	1.07		2.70	1.35	1.56	0.714	0.371	0.802	3.16	1.22	1.69	0.248	0.242	0.472	
40	2	2		1.44	1.13	0.776	1.01	2.60	23.960	1.37		3.39	1.69	1.53	0.917	0.483	0.797	4.00	1.54	1.66	0.308	0.307	0.462	
	20	3		2.05	1.61	0.778	0.968	2.59	24.759	1.89		4.50	2.25	1.48	1.27	0.688	0.789	5.37	2.07	1.62	0.402	0.415	0.443	
	40	2.5	2.5	2.76	2.16	1.40	1.19	4.24	49.432	7.03		7.51	3.75	1.65	9.70	2.50	1.88	15.7	3.71	2.39	1.49	1.07	0.735	
50	3	3		3.25	2.55	1.38	1.18	4.23	49.844	8.22		8.62	4.31	1.63	11.4	2.97	1.88	18.4	4.34	2.38	1.68	1.22	0.720	
	40	4		4.17	3.28	1.35	1.17	4.21	50.671	10.4		10.5	5.24	1.59	14.6	3.86	1.87	23.1	5.50	2.36	1.99	1.48	0.690	
	40	2.5	2.5	3.01	2.36	1.52	1.48	4.42	40.527	8.91		12.5	5.00	2.04	9.70	2.50	1.80	20.1	4.56	2.59	2.09	1.38	0.833	
60	3	3		3.55	2.79	1.50	1.47	4.41	40.891	10.4		14.4	5.78	2.02	11.4	2.97	1.79	23.5	5.32	2.57	2.38	1.59	0.829	
	40	4		4.57	3.59	1.48	1.45	4.39	41.625	13.3		17.8	7.12	1.97	14.7	3.86	1.79	29.6	6.73	2.54	2.87	1.94	0.793	
	30	2		2.24	1.76	1.16	1.55	3.91	23.454	4.87		12.4	4.13	2.35	3.26	1.12	1.21	14.5	3.71	2.54	1.14	0.738	0.713	
60	30	3		3.25	2.55	1.16	1.51	3.90	23.960	6.93		17.2	5.72	2.30	4.64	1.63	1.20	20.2	5.19	2.50	1.56	1.04	0.693	
	40	4		4.17	3.28	1.17	1.47	3.89	24.487	8.75		21.1	7.03	2.25	5.88	2.10	1.19	25.1	6.45	2.45	1.90	1.29	0.674	
	40	3		3.85	3.02	1.56	1.71	4.63	33.632	12.7		22.0	7.35	2.39	11.4	2.97	1.72	30.5	6.58	2.81	3.00	1.76	0.884	
80	40	4		4.97	3.90	1.54	1.68	4.62	34.243	16.1		27.4	9.13	2.35	14.7	3.86	1.72	38.4	8.31	2.78	3.67	2.19	0.859	
	40	5	7.5	5.95	4.67	1.45	1.61	4.62	35.335	19.3		31.2	10.4	2.29	17.6	4.70	1.72	44.9	9.72	2.75	3.94	2.44	0.813	
	60	4		6.57	5.16	2.09	1.78	6.36	49.569	37.6		39.9	13.3	2.47	52.1	8.98	2.81	84.1	13.2	3.58	7.88	3.78	1.10	
80	60	5	7.5	7.95	6.24	1.96	1.75	6.34	50.321	45.4		46.3	15.4	2.41	63.4	11.0	2.82	101	15.9	3.57	8.65	4.48	1.04	
	40	2		3.04	2.39	1.54	2.09	5.21	23.208	11.9		30.5	7.62	3.17	7.91	2.03	1.61	35.6	6.82	3.42	2.83	1.36	0.964	
	40	3		4.45	3.49	1.55	2.05	5.21	23.578	17.1		43.1	10.8	3.12	11.4	2.97	1.60	50.6	9.72	3.37	3.97	1.94	0.944	
80	40	4		5.77	4.53	1.55	2.01	5.20	23.960	21.9		54.2	13.6	3.07	14.7	3.86	1.59	64.0	12.3	3.33	4.94	2.46	0.925	
	40	5	7.5	6.95	5.46	1.49	1.94	5.20	24.763	26.4		62.6	15.7	3.00	17.7	4.71	1.59	74.8	14.4	3.28	5.50	2.83	0.889	
	60	5	7.5	8.95	7.03	2.19	2.29	6.72	38.778	62.0		90.8	22.7	3.19	63.4	11.0	2.66	141	20.9	3.96	13.6	5.96	1.24	
100	60	6	9	10.5	8.24	2.16	2.26	6.71	39.313	72.1		103	25.8	3.14	74.2	13.0	2.66	162	24.2	3.93	15.2	6.72	1.20	
	80	5	7.5	11.0	8.60	2.70	2.36	8.49	49.575	113		119	29.7	3.30	155	20.0	3.77	251	29.6	4.79	23.0	8.55	1.45	
	80	6	9	12.9	10.1	2.65	2.34	8.47	50.022	132		136	34.0	3.25	183	23.7	3.77	293	34.6	4.77	25.8	9.76	1.42	
120	50	4		7.37	5.79	1.94	2.55	6.51	23.654	44.2		111	22.2	3.88	29.5	6.15	2.00	130	20.0	4.21	10.2	3.99	1.18	
	50	5	7.5	8.95	7.03	1.88	2.48	6.51	24.259	53.6		131	26.1	3.82	35.8	7.54	2.00	155	23.8	4.16	11.7	4.70	1.14	
	50	6	9	10.5	8.24	1.87	2.44	6.51	24.660	62.3		149	29.7	3.77	41.7	8.87	1.99	177	27.3	4.11	13.1	5.38	1.12	
140	80	5	7.5	12.0	9.38	2.94	2.94	8.85	40.708	143		198	39.7	4.07	155	20.0	3.60	321	36.3	5.18	32.5	11.1	1.65	
	80	6	9	14.1	11.1	2.90	2.91	8.83	41.116	167		228	45.7	4.03	183	23.7	3.60	374	42.4	5.15	36.8	12.7	1.62	
	80	5	7.5	13.0	10.2	3.04	3.42	9.28	33.521	173		302	50.3	4.83	155	20.0	3.46	416	44.8	5.67	40.9	11.9	1.78	
160	80	6	9	15.3	12.0	3.01	3.38	9.27	33.870	203		349	58.1	4.78	183	23.7	3.46	485	52.3	5.63	46.7	13.8	1.75	
	80	5	7.5	14.0	11.0	3.06	3.81	9.81	27.905	203		431	61.5	5.56	155	20.0	3.34	538	54.8	6.21	47.9	12.6	1.85	
	80	6	9	16.5	12.9	3.04	3.76	9.81	28.190	238		500	71.4	5.51	183	23.7	3.33	628	64.0	6.17	55.1	14.6	1.83	
180	80	5	7.5	15.0	11.7	3.03	4.11	10.4	23.553	233		588	73.5	6.27	155	20.0	3.22	689	66.1	6.79	53.9	13.1	1.90	
	80	6	9	17.7	13.9	3.02	4.06	10.4	23.782	274		684	85.5	6.22	183	23.7	3.22	805	77.2	6.74	62.2	15.3	1.87	
	80	6	9	18.9	14.8	2.98	4.30	11.1	20.340	310		903	100	6.91	183	23.8	3.11	1020	91.6	7.34	68.2	15.9	1.99	
200	80	7	10.5	21.7	17.1	2.98	4.25	11.1	20.528	354		1020	114	6.86	209	27.4	3.10	1160	104	7.29	76.7	18.0	1.88	
	80	6	9	20.1	15.8	2.93	4.49	11.9	17.615	345		1160	116	7.60	183	23.8	3.02	1270	107	7.95	73.4	16.3	1.91	
	80	7	10.5	23.1	18.2	2.93	4.45	11.9	17.765	395		1320	132	7.54	209	27.4	3.01	1440	122	7.90	82.8	18.6	1.89	

پروفیل شکل



مربوط به محور خمش

سطح مقطع = F

وزن = G

گشتاور سکون = J

گشتاور مقاوم = W

شعاع سکون = $i = \sqrt{\frac{J}{F}}$

فاصله محور y-y = e

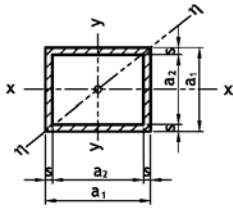
فاصله مرکز ثقل کشش M از محور y-y = y_M

مقاومت = J_0

مقاومت شکل‌گیری = C_M

بر حسب میلیمتر					F cm ²	G kg/m	محور خمش						e cm	y_M cm	J_0 cm ⁴	C_M cm ⁴		
h	b_1	b_2	s	r			x - x			y - y								
							J_x cm ⁴	W_x cm ³	i_x cm	J_y cm ⁴	W_y cm ³	i_y cm						
25	40	15	1.5	1.5	1.62	1.28	1.58	1.16	0.986	6.05	1.81	1.93	1.36	2.01	0.0118	2.35		
			2	2	2.09	1.64	1.93	1.42	0.963	7.56	2.29	1.90	1.36	1.96	0.0267	2.66		
30	30	15	1.5	1.5	1.62	1.28	2.15	1.43	1.15	3.88	1.36	1.55	1.50	2.42	0.0118	2.45		
			2	2	2.09	1.64	2.64	1.76	1.12	4.83	1.72	1.52	1.50	2.36	0.0267	2.81		
40	25	15	1.5	1.5	1.85	1.45	3.99	1.92	1.47	3.24	1.24	1.32	1.92	3.23	0.0135	4.44		
			2	2	2.39	1.87	4.96	2.38	1.44	4.02	1.58	1.30	1.92	3.17	0.0307	5.22		
			2.5	2.5	2.89	2.27	5.76	2.77	1.41	4.68	1.87	1.27	1.92	3.11	0.0575	5.70		
			3	3	3.35	2.63	6.40	3.07	1.38	5.22	2.13	1.25	1.92	3.04	0.0949	5.94		
40	40	15	2	2	2.69	2.11	6.00	2.80	1.50	9.73	2.95	1.90	2.14	3.36	0.0347	10.1		
			3	3	3.80	2.98	7.89	3.68	1.44	13.0	4.06	1.85	2.15	3.24	0.108	11.7		
50	50	15	2	2	3.29	2.58	11.3	4.05	1.85	17.5	4.61	2.31	2.79	4.28	0.0427	30.9		
			3	3	4.70	3.69	15.2	5.42	1.80	23.8	6.44	2.25	2.80	4.16	0.135	37.9		
60	40	15	2.5	2.5	4.26	3.34	19.3	6.09	2.13	15.0	4.62	1.88	3.17	5.22	0.0861	36.4		
			54	15	2	2	3.77	2.96	18.2	5.39	2.20	23.2	5.80	2.48	3.37	5.21	0.0491	62.0
			57	25	3.5	3.5	6.99	5.48	34.8	11.2	2.23	54.1	10.8	2.78	3.10	4.91	0.275	124
80	40	20	3	3	6.50	5.10	50.7	12.7	2.79	24.8	6.70	1.95	4.00	6.88	0.189	119		
			85	15	3	3	7.55	5.92	60.9	12.6	2.84	104	19.1	3.72	4.84	6.62	0.221	565
100	50	25	3	3	8.30	6.51	104	20.8	3.54	51.0	10.9	2.48	5.00	8.69	0.243	400		
			4	4	10.7	8.44	130	26.0	3.48	63.4	13.8	2.43	5.00	8.57	0.556	471		
100	60	25	3	3	8.60	6.75	111	21.4	3.59	72.6	14.0	2.91	5.17	8.81	0.252	529		
			4	4	11.1	8.75	139	26.8	3.53	90.9	17.8	2.86	5.17	8.70	0.577	626		
			5	7.5	13.4	10.5	159	30.7	3.45	105	21.1	2.80	5.18	8.52	1.08	646		
100	100	15	3	3	9.20	7.22	114	18.6	3.52	176	28.5	4.38	6.11	8.29	0.270	1580		
			4	4	11.9	9.38	142	23.3	3.45	223	36.6	4.33	6.13	8.15	0.620	1920		
			5	7.5	14.4	11.3	163	26.5	3.36	262	43.6	4.26	6.15	7.96	1.17	2070		
150	80	25	4	4	15.9	12.5	430	53.5	5.20	220	36.1	3.72	8.05	13.6	0.833	3650		
			5	7.5	19.4	15.2	506	62.7	5.11	261	43.5	3.67	8.06	13.4	1.58	4030		
150	100	25	5	7.5	20.4	16.0	548	65.4	5.18	417	59.6	4.52	8.39	13.2	1.67	6850		
			6	9	24.0	18.8	627	74.6	5.11	479	69.4	4.47	8.40	13.0	2.81	7520		
			7	10.5	27.4	21.5	695	82.6	5.04	534	78.5	4.42	8.41	12.9	4.34	8000		
150	110	25	25	5	7.5	20.9	16.4	568	66.5	5.21	510	68.1	4.94	8.54	13.0	1.71	8870	
			25	6	9	24.6	19.3	650	76.0	5.14	587	79.4	4.89	8.55	12.9	2.88	9560	
			25	7	10.5	28.1	22.1	722	84.2	5.07	656	89.9	4.89	8.57	12.8	4.46	10210	
			30	5	7.5	21.4	16.8	602	72.1	5.30	540	67.6	5.03	8.35	13.1	1.75	8750	
			30	6	9	25.2	19.8	690	82.5	5.23	622	78.8	4.97	8.36	13.0	2.95	9650	
			30	7	10.5	28.8	22.6	768	91.7	5.16	696	89.3	4.92	8.37	12.9	4.57	10300	

قوٹی چہار گوش لہتیز



اندازه = a_1
 ضخامت = s
 سطح مقطع = F
 وزن = G

a_1 mm	s mm	F cm ²	G kg/m	a_1 mm	s mm	F cm ²	G kg/m	a_1 mm	s mm	F cm ²	G kg/m	a_1 mm	s mm	F cm ²	G kg/m	a_1 mm	s mm	F cm ²	G kg/m
10	1.5	0.510	0.400	18	3	1.80	1.41	26	1.5	1.47	1.15	31	2.5	2.85	2.24	36	1.5	2.07	1.62
11	1.5	0.570	0.447	19	1.5	1.05	0.824		2	1.92	1.51		3	3.36	2.64		2	2.72	2.14
12	1.5	0.630	0.495		20	2	1.36	1.07	2.5	2.35	1.84	31.7	3.5	3.85	3.02	37	2.5	3.35	2.63
	2	0.800	0.628	2.5		1.65	1.30	3	2.76	2.17	4		4.32	3.39	3		3.96	3.11	
13	2.5	0.950	0.746	21	3	1.92	1.51	3.5	3.15	2.47	32	1.5	1.81	1.42	38	3.5	4.55	3.57	
	1.5	0.690	0.542		1.5	1.11	0.871	4	3.52	2.76		2	2.38	1.87		4	5.12	4.02	
14	2	0.880	0.691	22	2	1.44	1.13	1.5	1.53	1.20	33	2.5	2.92	2.29	39	1.5	2.13	1.67	
	2.5	1.05	0.824		2.5	1.75	1.37	2	2.00	1.57		3	3.44	2.70		2	2.80	2.20	
15	3	1.20	0.942	23	3	2.04	1.60	2.5	2.45	1.92	34	1.5	1.83	1.44	40	2.5	3.45	2.71	
	1.5	0.750	0.589		1.5	1.17	0.918	3	2.88	2.26		2	2.40	1.88		3	4.08	3.20	
16	2	0.960	0.754	24	2	1.52	1.19	3.5	3.29	2.58	35	2.5	2.95	2.32	41	3.5	4.69	3.68	
	2.5	1.15	0.903		2.5	1.85	1.45	4	3.68	2.89		3	3.48	2.73		4	5.28	4.14	
17	3	1.32	1.04	25	3	2.16	1.70	1.5	1.59	1.25	36	3.5	3.99	3.13	42	1.5	2.19	1.72	
	1.5	0.780	0.612		1.5	1.23	0.966	2	2.08	1.63		4	4.48	3.52		2	2.88	2.26	
18	2	1.00	0.785	26	2	1.60	1.26	2.5	2.55	2.00	37	1.5	1.89	1.48	43	2.5	3.55	2.79	
	2.5	1.20	0.942		2.5	1.95	1.53	3	3.00	2.36		2	2.48	1.95		3	4.20	3.30	
19	3	1.38	1.08	27	3	2.28	1.79	3.5	3.43	2.69	38	2.5	3.05	2.39	44	3.5	4.83	3.79	
	1.5	0.810	0.636		1.5	1.29	1.01	4	3.84	3.01		3	3.60	2.83		4	5.44	4.27	
20	2	1.04	0.816	28	2	1.68	1.32	1.5	1.65	1.30	39	3.5	4.13	3.24	45	1.5	2.20	1.72	
	2.5	1.25	0.981		2.5	2.05	1.61	2	2.16	1.70		4	4.64	3.64		2	2.89	2.27	
21	3	1.44	1.13	29	3	2.40	1.84	2.5	2.65	2.08	40	1.5	1.95	1.53	46	2.5	3.56	2.79	
	1.5	0.870	0.683		1.5	1.35	1.06	3	3.12	2.45		2	2.56	2.01		3	4.21	3.31	
22	2	1.12	0.879	30	2	1.76	1.38	3.5	3.57	2.80	41	2.5	3.15	2.47	47	1.5	2.25	1.77	
	2.5	1.35	1.06		2.5	2.15	1.69	4	4.00	3.14		3	3.72	2.92		2	2.96	2.32	
23	3	1.56	1.22	31	3	2.52	1.98	1.5	1.71	1.34	42	3.5	4.27	3.35	48	2.5	3.65	2.87	
	1.5	0.930	0.730		1.5	1.41	1.11	2	2.24	1.76		4	4.80	3.77		3	4.32	3.39	
24	2	1.20	0.942	32	2	1.84	1.44	2.5	2.75	2.16	43	1.5	2.01	1.58	49	3.5	4.97	3.90	
	2.5	1.45	1.14		2.5	2.25	1.77	3	3.24	2.54		2	2.64	2.07		4	5.60	4.40	
25	3	1.68	1.32	33	3	2.64	2.07	3.5	3.71	2.91	44	2.5	3.25	2.55	50				
	1.5	0.990	0.777		1.5	1.43	1.13	4	4.16	3.27		3	3.84	3.01					
26	2	1.28	1.00	34	2	1.87	1.47	1.5	1.77	1.39	45	3.5	4.41	3.46	51				
	2.5	1.55	2.5		2.5	2.29	1.80	2	2.32	1.82		4	4.95	3.89					

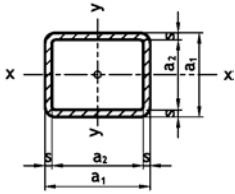
a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm
40	1.5	2.31	1.81	5.72	2.86	1.57	44.5	1.5	2.58	2.03	7.96	3.58	1.76
	2	3.04	2.39	7.34	3.67	1.55		2	3.40	2.67	10.3	4.61	1.74
	2.5	3.75	2.94	8.83	4.41	1.53		2.5	4.20	3.30	12.4	5.57	1.72
	3	4.44	3.49	10.2	5.10	1.52		3	4.98	3.91	14.4	6.46	1.70
	3.5	5.11	4.01	11.5	5.73	1.50		1.5	2.61	2.05	8.24	3.66	1.78
	4	5.76	4.52	12.6	6.30	1.48		2	3.44	2.70	10.6	4.72	1.76
41	1.5	2.37	1.86	6.17	3.01	1.61	45	2.5	4.25	3.34	12.8	5.71	1.74
	2	3.12	2.45	7.93	3.87	1.59		3	5.04	3.96	14.9	6.62	1.72
	2.5	3.85	3.02	9.55	4.66	1.58		3.5	5.81	4.56	16.8	7.46	1.70
	3	4.56	3.58	11.0	5.39	1.56		4	6.56	5.15	18.6	8.25	1.68
	3.5	5.25	4.12	12.4	6.05	1.54		4.5	7.29	5.72	20.2	8.97	1.66
	4	5.92	4.65	13.7	6.67	1.52		5	8.00	6.28	21.7	9.63	1.65
	4.5	6.57	5.16	14.8	7.22	1.50		1.5	2.67	2.10	8.82	3.84	1.82
5	7.20	5.65	15.9	7.73	1.48	2	3.52	2.76	11.4	4.95	1.80		
42	1.5	2.43	1.91	6.65	3.17	1.65	46	2.5	4.35	3.41	13.8	5.98	1.78
	2	3.20	2.51	8.55	4.07	1.64		3	5.16	4.05	16.0	6.96	1.76
	2.5	3.95	3.10	10.3	4.91	1.62		3.5	5.95	4.67	18.0	7.84	1.74
	3	4.68	3.67	11.9	5.68	1.60		4	6.72	5.28	19.9	8.67	1.72
	3.5	5.39	4.23	13.4	6.39	1.58		4.5	7.47	5.86	21.7	9.43	1.70
	4	6.08	4.77	14.8	7.05	1.56		5	8.20	6.44	23.3	10.1	1.69
	4.5	6.75	5.30	16.0	7.64	1.54		1.5	2.73	2.14	9.43	4.01	1.86
	5	7.40	5.81	17.2	8.19	1.52		2	3.60	2.83	12.2	5.18	1.84
43	1.5	2.49	1.95	7.16	3.33	1.70	47	2.5	4.45	3.49	14.7	6.27	1.82
	2	3.28	2.57	9.21	4.28	1.68		3	5.28	4.14	17.1	7.28	1.80
	2.5	4.05	3.18	11.1	5.17	1.66		3.5	6.09	4.78	19.3	8.23	1.78
	3	4.80	3.77	12.9	5.99	1.64		4	6.88	5.40	21.4	9.10	1.76
	3.5	5.53	4.34	14.5	6.74	1.62		4.5	7.65	6.01	23.3	9.91	1.74
	4	6.24	4.90	16.0	7.43	1.60		5	8.40	6.59	25.0	10.7	1.73
	4.5	6.93	5.44	17.4	8.07	1.58		1.5	2.79	2.19	10.1	4.19	1.90
	5	7.60	5.97	18.6	8.65	1.56		2	3.68	2.89	13.0	5.42	1.88
44	1.5	2.55	2.00	7.69	3.49	1.74	48	2.5	4.55	3.57	15.7	6.56	1.86
	2	3.36	2.64	9.90	4.50	1.72		3	5.40	4.24	18.3	7.63	1.84
	2.5	4.15	3.26	12.0	5.43	1.70		3.5	6.23	4.89	20.7	8.62	1.82
	3	4.92	3.86	13.9	6.30	1.68		4	7.04	5.53	22.9	9.54	1.80
	3.5	5.67	4.45	15.6	7.10	1.66		4.5	7.83	6.15	25.0	10.4	1.79
	4	6.40	5.02	17.2	7.84	1.64		5	8.60	6.75	26.9	11.2	1.77
	4.5	7.11	5.58	18.7	8.51	1.62							
	5	7.80	6.12	20.1	9.14	1.61							

a mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm
49	1.5	2.85	2.24	10.7	4.38	1.94	56	1.5	3.27	2.57	16.2	5.79	2.23
	2	3.76	2.95	13.9	5.66	1.92		2	4.32	3.39	21.0	7.51	2.21
	2.5	4.65	3.65	16.8	6.86	1.90		2.5	5.35	4.20	25.6	9.13	2.19
	3	5.52	4.33	19.6	7.98	1.88		3	6.36	4.99	29.9	10.7	2.17
	3.5	6.37	5.00	22.1	9.02	1.86		3.5	7.35	5.77	33.9	12.1	2.15
	4	7.20	5.65	24.5	10.0	1.84		4	8.32	6.53	37.7	13.5	2.13
	4.5	8.01	6.29	26.7	10.9	1.83		4.5	9.27	7.28	41.3	14.7	2.11
5	8.80	6.91	28.8	11.7	1.81	5	10.2	8.01	44.6	15.9	2.09		
50	1.5	2.91	2.28	11.4	4.57	1.98	57	1.5	3.33	2.61	17.1	6.00	2.27
	2	3.84	3.01	14.8	5.91	1.96		2	4.40	3.45	22.2	7.79	2.25
	2.5	4.75	3.73	17.9	7.16	1.94		2.5	5.45	4.28	27.0	9.49	2.23
	3	5.64	4.43	20.8	8.34	1.92		3	6.48	5.09	31.6	11.1	2.21
	3.5	6.51	5.11	23.6	9.44	1.90		3.5	7.49	5.88	35.9	12.6	2.19
	4	7.36	5.78	26.2	10.5	1.89		4	8.48	6.66	39.9	14.0	2.17
	4.5	8.19	6.43	28.5	11.4	1.87		4.5	9.45	7.42	43.7	15.3	2.15
5	9.00	7.07	30.8	12.3	1.85	5	10.4	8.16	47.3	16.6	2.13		
51	1.5	2.97	2.33	12.1	4.76	2.02	58	1.5	3.39	2.66	18.0	6.22	2.31
	2	3.92	3.08	15.7	6.16	2.00		2	4.48	3.52	23.4	8.08	2.29
	2.5	4.85	3.81	19.1	7.48	1.98		2.5	5.55	4.36	28.6	9.84	2.27
	3	5.76	4.52	22.2	8.71	1.96		3	6.60	5.18	33.4	11.5	2.25
	3.5	6.65	5.22	25.1	9.86	1.94		3.5	7.63	5.99	37.9	13.1	2.23
	4	7.52	5.90	27.9	10.9	1.93		4	8.64	6.78	42.2	14.6	2.21
	4.5	8.37	6.57	30.4	11.9	1.91		4.5	9.63	7.56	46.3	16.0	2.19
5	9.20	7.22	32.8	12.9	1.89	5	10.6	8.32	50.1	17.3	2.17		
52	1.5	3.03	2.38	12.9	4.96	2.06	59	1.5	3.45	2.71	19.0	6.45	2.35
	2	4.00	3.14	16.7	6.42	2.04		2	4.56	3.58	24.7	8.38	2.33
	2.5	4.95	3.89	20.3	7.79	2.02		2.5	5.65	4.44	30.1	10.2	2.31
	3	5.88	4.62	23.6	9.08	2.00		3	6.72	5.28	35.2	11.9	2.29
	3.5	6.79	5.33	26.8	10.3	2.99		3.5	7.77	6.10	40.0	13.6	2.27
	4	7.68	6.03	29.7	11.4	1.97		4	8.80	6.91	44.6	15.1	2.25
	4.5	8.55	6.71	32.4	12.5	1.95		4.5	9.81	7.70	48.9	16.6	2.23
5	9.40	7.38	35.0	13.5	1.93	5	10.8	8.48	52.9	17.9	2.21		
53	1.5	3.09	2.43	13.7	5.16	2.10	60	1.5	3.51	2.76	30.0	6.68	2.39
	2	4.08	3.20	17.7	6.68	2.08		2	4.64	3.64	26.0	8.68	2.37
	2.5	5.05	3.96	21.5	8.12	2.06		2.5	5.75	4.51	31.7	10.6	2.35
	3	6.00	4.71	25.1	9.47	2.04		3	6.84	5.37	37.1	12.4	2.33
	3.5	6.93	5.44	28.4	10.7	2.03		3.5	7.91	6.21	42.2	14.1	2.31
	4	7.84	6.15	31.6	11.9	2.01		4	8.96	7.03	47.1	15.7	2.29
	4.5	8.73	6.85	34.5	13.0	1.99		4.5	9.99	7.84	51.6	17.2	2.27
5	9.60	7.54	37.3	14.1	1.97	5	11.0	8.64	55.9	18.6	2.25		
54	1.5	3.15	2.47	14.5	5.36	2.14	61	1.5	3.57	2.80	21.1	6.91	2.43
	2	4.16	3.27	18.8	6.95	2.12		2	4.72	3.71	27.4	8.99	2.41
	2.5	5.15	4.04	22.8	8.45	2.10		2.5	5.85	4.59	33.4	11.0	2.39
	3	6.12	4.80	26.6	9.86	2.09		3	6.96	5.46	39.1	12.8	2.37
	3.5	7.07	5.55	30.2	11.2	2.07		3.5	8.05	6.32	44.5	14.6	2.35
	4	8.00	6.28	33.5	12.4	2.05		4	9.12	7.16	49.6	16.3	2.33
	4.5	8.91	6.99	36.7	13.6	2.03		4.5	10.2	7.98	54.5	17.9	2.31
5	9.80	7.69	39.6	14.7	2.01	5	11.2	8.79	59.0	19.3	2.30		
55	1.5	3.21	2.52	15.3	5.57	2.18	62	1.5	3.63	2.85	22.2	7.15	2.47
	2	4.24	3.33	19.9	7.23	2.17		2	4.80	3.77	28.8	9.30	2.45
	2.5	5.25	4.12	24.2	8.79	2.15		2.5	5.95	4.67	35.2	11.3	2.43
	3	6.24	4.90	28.2	10.3	2.13		3	7.08	5.56	41.2	13.3	2.41
	3.5	7.21	5.66	32.0	11.6	2.11		3.5	8.19	6.43	46.9	15.1	2.39
	4	8.16	6.41	35.6	12.9	2.09		4	9.28	7.28	52.3	16.9	2.37
	4.5	9.09	7.14	38.9	14.2	2.07		4.5	10.4	8.12	57.4	18.5	2.35
5	10.0	7.85	42.1	15.3	2.05	5	11.4	8.95	62.2	20.1	2.34		

a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm
63	1.5	3.69	2.90	23.3	7.39	2.51	68	1.5	3.99	3.13	29.4	8.65	2.72
	2	4.88	3.83	30.3	9.62	2.49		2	5.28	4.14	38.4	11.3	2.70
	2.5	6.05	4.75	37.0	11.7	2.47		2.5	6.55	5.14	46.9	13.8	2.68
	3	7.20	5.65	43.3	13.7	2.45		3	7.80	6.12	55.0	16.2	2.66
	3.5	8.33	6.54	49.3	15.7	2.43		3.5	9.03	7.09	62.8	18.5	2.64
	4	9.44	7.41	55.0	17.5	2.41		4	10.2	8.04	70.2	20.6	2.62
	4.5	10.5	8.27	60.4	19.2	2.40		4.5	11.4	8.97	77.2	22.7	2.60
5	11.6	9.11	65.5	20.8	2.38	5	12.6	9.89	83.9	24.7	2.58		
64	1.5	3.75	2.94	24.4	7.63	2.55	69	5.5	13.8	10.8	90.2	26.5	2.56
	2	4.96	3.89	31.8	9.94	2.53		6	14.9	11.7	96.2	28.3	2.54
	2.5	6.15	4.83	38.8	12.1	2.51		1.5	4.05	3.18	30.8	8.92	2.76
	3	7.32	5.75	45.5	14.2	2.49		2	5.36	4.21	40.1	11.6	2.74
	3.5	8.47	6.65	51.8	16.2	2.47		2.5	6.65	5.22	49.1	14.2	2.72
	4	9.60	7.54	57.9	18.1	2.45		3	7.92	6.22	57.6	16.7	2.70
	4.5	10.7	8.41	63.6	19.9	2.44		3.5	9.17	7.20	65.8	19.1	2.68
5	11.8	9.26	69.0	21.5	2.42	4	10.4	8.16	73.5	21.3	2.66		
65	1.5	3.81	2.99	25.6	7.88	2.59	70	4.5	11.6	9.11	80.9	23.4	2.64
	2	5.04	3.96	33.4	10.3	2.57		5	12.8	10.0	87.9	25.5	2.62
	2.5	6.25	4.91	40.8	12.5	2.55		5.5	14.0	11.0	94.6	27.4	2.60
	3	7.44	5.84	47.8	14.7	2.53		6	15.1	11.9	101	29.3	2.58
	3.5	8.61	6.76	54.5	16.8	2.51		1.5	4.11	3.23	32.2	9.19	2.80
	4	9.76	7.66	60.8	18.7	2.50		2	5.44	4.27	42.0	12.0	2.78
	4.5	10.9	8.55	66.8	20.6	2.48		2.5	6.75	5.30	51.3	14.7	2.76
5	12.0	9.42	72.5	22.3	2.46	3	8.04	6.31	60.3	17.2	2.74		
66	1.5	3.87	3.04	26.8	8.14	2.63	71	3.5	9.31	7.31	68.8	19.7	2.72
	2	5.12	4.02	35.0	10.6	2.61		4	10.6	8.29	76.9	22.0	2.70
	2.5	6.35	4.98	42.7	13.0	2.59		4.5	11.8	9.26	84.7	24.2	2.68
	3	7.56	5.93	50.1	15.2	2.57		5	13.0	10.2	92.1	26.3	2.66
	3.5	8.75	6.87	57.1	17.3	2.56		5.5	14.2	11.1	99.1	28.3	2.64
	4	9.92	7.79	63.8	19.3	2.54		6	15.4	12.1	106	30.2	2.62
	4.5	11.1	8.69	70.2	21.3	2.52		1.5	4.17	3.27	33.6	9.46	2.84
5	12.2	9.58	76.2	23.1	2.50	2	5.52	4.33	43.8	12.3	2.82		
67	1.5	3.93	3.09	28.1	8.39	2.67	2.5	6.85	5.38	53.6	15.1	2.80	
	2	5.20	4.08	36.7	10.9	2.65	3	8.16	6.41	63.0	17.7	2.78	
	2.5	6.45	5.06	44.8	13.4	2.64	3.5	9.45	7.42	72.0	20.3	2.76	
	3	7.68	6.03	52.5	15.7	2.62	4	10.7	8.42	80.5	22.7	2.74	
	3.5	8.89	6.98	59.9	17.9	2.60	4.5	12.0	9.40	88.6	25.0	2.72	
	4	10.1	7.91	66.9	20.0	2.58	5	13.2	10.4	96.4	27.1	2.70	
	4.5	11.3	8.83	73.6	22.0	2.56	5.5	14.4	11.3	104	29.2	2.68	
	5	12.4	9.73	80.0	23.9	2.54	6	15.6	12.2	111	31.2	2.66	
	5.5	13.5	10.6	86.0	25.7	2.52							
	6	14.6	11.5	91.7	27.4	2.50							

a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm	a ₁ mm	s mm	F cm ³	G kg/m	J _x cm ⁴	W _x cm ³	i _x cm
72	1.5	4.23	3.32	35.1	9.74	2.88	77	2	6.00	4.71	56.3	14.6	3.06
	2	5.60	4.40	45.8	12.7	2.86		2.5	7.45	5.85	69.0	17.9	3.04
	2.5	6.95	5.46	56.0	15.6	2.84		3	8.88	6.97	81.2	21.1	3.02
	3	8.28	6.50	65.8	18.3	2.82		3.5	10.3	8.08	92.9	24.1	3.00
	3.5	9.59	7.53	75.2	20.9	2.80		4	11.7	9.17	104	27.0	2.98
	4	10.9	8.54	84.1	23.4	2.78		4.5	13.1	10.2	115	29.8	2.97
	4.5	12.2	9.54	92.7	25.7	2.76		5	14.4	11.3	125	32.5	2.95
	5	13.4	10.5	101	28.0	2.74		5.5	15.7	12.3	135	35.0	2.93
5.5	14.6	11.5	109	30.2	2.72	6	17.0	13.4	144	37.5	2.91		
6	15.8	12.4	116	32.2	2.71	2	6.08	4.77	58.6	15.0	3.10		
73	1.5	4.29	3.37	36.6	10.0	2.92	78	2.5	7.55	5.93	71.8	18.4	3.08
	2	5.68	4.46	47.8	13.1	2.90		3	9.00	7.07	84.5	21.7	3.06
	2.5	7.05	5.53	58.5	16.0	2.88		3.5	10.4	8.19	96.7	24.8	3.04
	3	8.40	6.59	68.7	18.8	2.86		4	11.8	9.29	108	27.8	3.03
	3.5	9.73	7.64	78.5	21.5	2.84		4.5	13.2	10.4	120	30.7	3.01
	4	11.0	8.67	87.9	24.1	2.82		5	14.6	11.5	130	33.4	2.99
	4.5	12.3	9.68	96.8	26.5	2.80		5.5	16.0	12.5	141	36.0	2.97
	5	13.6	10.7	105	28.9	2.78		6	17.3	13.6	150	38.5	2.95
5.5	14.9	11.7	114	31.1	2.76	2	6.16	4.84	60.9	15.4	3.14		
6	16.1	12.6	121	33.2	2.75	2.5	7.65	6.01	74.7	18.9	3.12		
74	1.5	4.35	3.41	38.1	10.3	2.96	79	3	9.12	7.16	87.9	22.3	3.11
	2	5.76	4.52	49.8	13.5	2.94		3.5	10.6	8.30	101	25.5	3.09
	2.5	7.15	5.61	61.0	16.5	2.92		4	12.0	9.42	113	28.6	3.07
	3	8.52	6.69	71.7	19.4	2.90		4.5	13.4	10.5	125	31.5	3.05
	3.5	9.87	7.75	82.0	22.2	2.88		5	14.8	11.6	136	34.4	3.03
	4	11.2	8.79	91.8	24.8	2.86		5.5	16.2	12.7	146	37.1	3.01
	4.5	12.5	9.82	101	27.3	2.84		6	17.5	13.8	157	39.7	2.99
	5	13.8	10.8	110	29.8	2.82		2	6.24	4.90	63.3	15.8	3.19
5.5	15.1	11.8	119	32.1	2.81	2.5	7.75	6.08	77.7	19.4	3.17		
6	16.3	12.8	127	34.3	2.79	3	9.24	7.25	91.4	22.9	3.15		
75	1.5	4.41	3.46	39.7	10.6	3.00	80	3.5	10.7	8.41	105	26.2	3.13
	2	5.84	4.58	51.9	13.8	2.98		4	12.2	9.55	117	29.3	3.11
	2.5	7.25	5.69	63.6	17.0	2.96		4.5	13.6	10.7	130	32.4	3.09
	3	8.64	6.78	74.8	19.9	2.94		5	15.0	11.8	141	35.3	3.07
	3.5	10.0	7.86	85.5	22.8	2.92		5.5	16.4	12.9	152	38.1	3.05
	4	11.4	8.92	95.7	25.5	2.90		6	17.8	13.9	163	40.8	3.03
	4.5	12.7	9.96	106	28.1	2.88		3	10.4	8.20	132	29.3	3.55
	5	14.0	11.0	115	30.6	2.87		3.5	12.1	9.51	151	33.6	3.53
5.5	15.3	12.0	124	33.0	2.85	4	13.8	10.8	170	37.8	3.51		
6	16.6	13.0	132	35.3	2.83	4.5	15.4	12.1	188	41.8	3.50		
76	2	5.92	4.65	54.1	14.2	3.02	90	5	17.0	13.3	205	45.6	3.48
	2.5	7.35	5.77	66.3	17.4	3.00		5.5	18.6	14.6	222	49.4	3.46
	3	8.76	6.88	77.9	20.5	2.98		6	20.2	15.8	238	53.0	3.44
	3.5	10.2	7.97	89.1	23.5	2.96		3	11.6	9.14	183	36.5	3.96
	4	11.5	9.04	99.8	26.3	2.94		3.5	13.5	10.6	210	42.0	3.94
	4.5	12.9	10.1	110	29.0	2.92		4	15.4	12.1	236	47.3	3.92
	5	14.2	11.1	120	31.6	2.91		4.5	17.2	13.5	262	52.4	3.90
	5.5	15.5	12.2	129	34.0	2.89		5	19.0	14.9	287	57.3	3.88
6	16.8	13.2	138	36.4	2.87	5.5	20.8	16.3	310	62.1	3.86		
							6	22.6	17.7	334	66.7	3.85	

قوتی چهارگوش لبه‌گرد

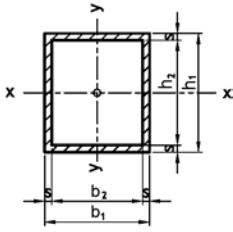


اندازه = a_1
ضخامت = s
سطح مقطع = F
وزن = G

a_1 mm	s mm	F cm ²	G kg/m	J_x cm ⁴	W_x cm ³	i_x cm	a_1 mm	s mm	F cm ²	G kg/m	J_x cm ⁴	W_x cm ³	i_x cm	a_1 mm	s mm	F cm ²	G kg/m	J_x cm ⁴	W_x cm ³	i_x cm
20	1.5	1.02	0.80	0.56	0.56	0.74	40	1.5	2.22	1.75	5.39	2.70	1.56	44	3.5	5.20	4.08	13.7	6.21	1.62
	2	1.29	1.01	0.66	0.66	0.72		2	2.89	2.27	6.78	3.39	1.53		4	5.79	4.54	14.7	6.70	1.60
	2.5	1.51	1.19	0.72	0.72	0.69		2.5	3.51	2.76	7.98	3.99	1.51		4.5	6.22	4.89	15.0	6.83	1.55
	3	1.70	1.33	0.75	0.75	0.67		3	4.10	3.21	9.00	4.50	1.48		5	6.71	5.26	15.6	7.10	1.53
25	1.5	1.32	1.04	1.18	0.95	0.95	40	3.5	4.64	3.64	9.86	4.93	1.46	45	1.5	2.52	1.98	7.83	3.48	1.76
	2	1.69	1.32	1.43	1.14	0.92		4	5.15	4.04	10.6	5.28	1.43		2	3.29	2.58	9.91	4.40	1.74
	2.5	2.01	1.58	1.61	1.29	0.90		4.5	5.50	4.32	10.6	5.32	1.39		2.5	4.01	3.15	11.7	5.22	1.71
	3	2.30	1.80	1.74	1.39	0.87		5	5.91	4.64	10.9	5.47	1.36		3	4.70	3.69	13.4	5.93	1.69
30	1.5	1.62	1.27	2.14	1.43	1.15	42	1.5	2.34	1.84	6.30	3.00	1.64	45	3.5	5.34	4.19	14.7	6.55	1.66
	2	2.09	1.64	2.64	1.76	1.12		2	3.05	2.39	7.94	3.78	1.61		4	5.95	4.67	15.9	7.08	1.64
	2.5	2.51	1.97	3.03	2.02	1.10		2.5	3.71	2.91	9.37	4.46	1.59		4.5	6.40	5.03	16.3	7.24	1.60
	3	2.90	2.27	3.34	2.23	1.07		3	4.34	3.40	10.6	5.05	1.56		5	6.91	5.42	17.0	7.54	1.57
	3.5	3.24	2.54	3.57	2.38	1.05		3.5	4.92	3.86	11.7	5.55	1.54		2	3.37	2.64	10.6	4.62	1.78
	4	3.55	2.78	3.73	2.48	1.02		4	5.47	4.29	12.5	5.97	1.51		2.5	4.11	3.23	12.6	5.49	1.75
35	1.5	1.92	1.51	3.52	2.01	1.35	44	4.5	5.86	4.60	12.7	6.05	1.47	46	3	4.82	3.78	14.4	6.24	1.73
	2	2.49	1.95	4.39	2.51	1.33		5	6.31	4.95	13.1	6.26	1.44		3.5	5.48	4.30	15.9	6.90	1.70
	2.5	3.01	2.36	5.11	2.92	1.30		1.5	2.46	1.93	7.29	3.32	1.72		4	6.11	4.79	17.2	7.47	1.68
	3	3.50	2.74	5.71	3.26	1.28		2	3.21	2.52	9.22	4.19	1.70		4.5	6.58	5.17	17.6	7.67	1.64
	3.5	3.94	3.09	6.19	3.54	1.25		2.5	3.91	3.07	10.9	4.96	1.67		5	7.11	5.58	18.4	7.99	1.61
	4	4.35	3.41	6.56	3.75	1.23		3	4.58	3.59	12.4	5.63	1.65							

a ₁ mm	s mm	F cm ³	G kg/m	J _k cm ⁴	W _x cm ³	i _k cm	a ₁ mm	s mm	F cm ³	G kg/m	J _k cm ⁴	W _x cm ³	i _k cm	a ₁ mm	s mm	F cm ³	G kg/m	J _k cm ⁴	W _x cm ³	i _k cm
48	2	12.2	2.77	12.2	5.08	1.86	65	5	10.9	8.56	62.2	19.1	2.39	86	4	12.5	9.82	137	31.9	3.31
	2.5	14.5	3.38	14.5	6.04	1.83		2.5	6.11	4.80	40.3	12.2	2.57		4	13.8	10.8	148	34.3	3.27
	3	16.5	3.97	16.5	6.89	1.81		3	7.22	5.66	46.7	14.1	2.54		5	15.1	11.9	159	37.0	3.25
	3.5	18.3	4.52	18.3	7.64	1.78		3.5	8.28	6.50	52.5	15.9	2.52		3	9.86	7.74	117	26.5	3.44
	4	19.9	5.05	19.9	8.28	1.76		4	9.31	7.31	57.9	17.5	2.49		3.5	11.4	8.92	133	30.1	3.42
50	4.5	20.5	5.45	20.5	8.54	1.72	4.5	10.2	7.99	61.4	18.6	2.46	4	12.8	10.1	148	33.5	3.39		
	5	21.4	5.89	21.4	8.94	1.69	5	11.1	8.72	65.5	19.8	2.43	4.5	14.1	11.1	159	36.2	3.36		
	2	13.9	2.89	13.9	5.55	1.94	2.5	6.31	4.95	44.3	13.0	2.65	5	15.5	12.2	172	39.0	3.33		
	2.5	16.5	3.54	16.5	6.62	1.92	3	7.46	5.85	51.4	15.1	2.62	3	10.1	7.92	125	27.8	3.52		
	3	18.9	4.16	18.9	7.57	1.89	3.5	8.56	6.72	57.9	17.0	2.60	3.5	11.6	9.14	142	31.6	3.50		
52	3.5	21.0	4.74	21.0	8.41	1.87	4	9.63	7.56	63.8	18.8	2.57	4	13.1	10.3	159	35.2	3.47		
	4	22.9	5.30	22.9	9.14	1.84	4.5	10.5	8.28	67.9	20.0	2.54	4.5	14.5	11.4	171	38.1	3.44		
	4.5	23.7	5.73	23.7	9.47	1.80	5	11.5	9.03	72.5	21.3	2.51	5	15.9	12.5	185	41.1	3.41		
	5	24.8	6.21	24.8	9.94	1.77	2.5	6.51	5.11	48.6	13.9	2.73	5.5	17.3	13.6	198	43.9	3.38		
	2	15.7	3.02	15.7	6.05	2.02	3	7.70	6.04	56.4	16.1	2.71	3	10.3	8.11	134	29.2	3.60		
54	2.5	18.8	3.70	18.8	7.23	2.00	3.5	8.84	6.94	63.6	18.2	2.68	3.5	11.9	9.36	153	33.2	3.58		
	3	21.5	4.35	21.5	8.28	1.97	4	9.95	7.81	70.2	20.1	2.66	4	13.5	10.6	170	37.0	3.55		
	3.5	24.0	4.96	24.0	9.21	1.95	4.5	10.9	8.56	74.8	21.4	2.62	4.5	14.9	11.7	184	40.0	3.52		
	4	26.1	5.55	26.1	10.0	1.92	5	11.9	9.35	80.0	22.9	2.59	5	16.3	12.8	199	43.2	3.49		
	4.5	27.2	6.02	27.2	10.4	1.88	2.5	6.71	5.27	53.1	14.8	2.81	5.5	17.7	13.9	213	46.2	3.46		
55	5	28.6	6.52	28.6	11.0	1.85	3	7.94	6.23	61.7	17.1	2.79	3	10.6	8.30	144	30.6	3.69		
	2	17.7	3.15	17.7	6.57	2.10	3.5	9.12	7.16	69.6	19.3	2.76	3.5	12.2	9.58	164	34.8	3.66		
	2.5	21.2	3.85	21.2	7.86	2.08	4	10.3	8.06	77.0	21.4	2.74	4	13.8	10.8	182	38.8	3.64		
	3	24.4	4.53	24.4	9.02	2.05	4.5	11.3	8.84	82.2	22.8	2.70	4.5	15.2	12.0	197	42.0	3.60		
	3.5	27.2	5.18	27.2	10.1	2.03	5	12.3	9.66	88.0	24.4	2.67	5	16.7	13.1	213	45.4	3.57		
56	4	29.7	5.80	29.7	11.0	2.00	2.5	6.91	5.42	57.9	15.7	2.89	5.5	18.1	14.2	228	48.6	3.55		
	4.5	31.0	6.30	31.0	11.5	1.96	3	8.18	6.42	67.3	18.2	2.87	3	10.7	8.40	149	31.3	3.73		
	5	32.7	6.83	32.7	12.1	1.94	3.5	9.40	7.38	76.1	20.6	2.84	3.5	12.3	9.69	169	35.6	3.70		
	2	18.8	3.21	18.8	6.83	2.14	4	10.6	8.31	84.2	22.7	2.82	4	13.9	10.9	189	39.7	3.68		
	2.5	22.5	3.93	22.5	8.18	2.12	4.5	11.6	9.12	90.0	24.3	2.78	4.5	15.4	12.1	204	43.0	3.64		
58	3	25.9	4.63	25.9	9.40	2.09	5	12.7	9.97	96.5	26.1	2.76	5	16.9	13.3	221	46.5	3.61		
	3.5	28.9	5.29	28.9	10.5	2.07	2.5	7.01	5.50	60.4	16.1	2.94	5.5	18.4	14.4	236	49.8	3.59		
	4	31.5	5.92	31.5	11.5	2.04	3	8.30	6.51	70.3	18.7	2.91	3	10.8	8.49	154	32.0	3.77		
	4.5	33.0	6.44	33.0	12.0	2.01	3.5	9.54	7.4	79.4	21.2	2.89	3.5	12.5	9.80	175	36.4	3.74		
	5	34.8	6.99	34.8	12.7	1.98	4	10.7	8.44	87.9	23.4	2.86	4	14.1	11.1	195	40.6	3.72		
60	2	19.9	3.27	19.9	7.11	2.19	4.5	11.8	9.27	94.1	25.1	2.82	4.5	15.6	12.2	211	44.0	3.68		
	2.5	23.8	4.01	23.8	8.52	2.16	5	12.9	10.1	101	26.9	2.80	5	17.1	13.4	229	47.6	3.66		
	3	27.4	4.72	27.4	9.79	2.14	2.5	7.11	5.58	63.0	16.6	2.98	5.5	18.6	14.6	245	51.0	3.63		
	3.5	30.6	5.40	30.6	10.9	2.11	3	8.42	6.61	73.3	19.3	2.95	3	11.1	8.68	164	33.4	3.85		
	4	33.5	6.05	33.5	12.0	2.09	3.5	9.68	7.60	82.9	21.8	2.93	3.5	12.8	9.0	187	38.1	3.82		
62	4.5	35.1	6.58	35.1	12.5	2.05	4	10.9	8.56	91.8	24.2	2.90	4	14.4	11.3	208	42.5	3.80		
	5	37.1	7.15	37.1	13.3	2.02	4.5	12.0	9.41	98.3	25.9	2.86	4.5	15.9	12.5	226	46.1	3.76		
	2	22.2	3.40	22.2	7.67	2.27	5	13.1	10.3	106	27.8	2.84	5	17.5	13.7	244	49.9	3.74		
	2.5	26.7	4.17	26.7	9.20	2.24	2.5	7.31	5.74	68.4	17.5	3.06	5.5	18.0	14.9	262	53.5	3.71		
	3	30.7	4.91	30.7	10.6	2.22	3	8.66	6.79	79.6	20.4	3.03	3	11.3	8.87	175	34.9	3.93		
64	3.5	34.4	5.62	34.4	11.9	2.19	3.5	9.96	7.82	90.1	23.1	3.01	3.5	13.0	10.2	199	39.8	3.91		
	4	37.7	6.30	37.7	13.0	2.17	4	11.2	8.81	99.9	25.6	2.98	4	14.7	11.6	222	44.4	3.88		
	4.5	39.6	6.86	39.6	13.7	2.13	4.5	12.3	9.69	107	27.5	2.95	4.5	16.3	12.8	241	48.2	3.85		
	5	42.0	7.46	42.0	14.5	2.10	5	13.5	10.6	115	29.5	2.92	5	17.9	14.1	261	52.2	3.82		
	2.5	29.7	4.33	29.7	9.92	2.32	2.5	7.51	5.90	74.0	18.5	3.14	5.5	19.5	15.3	280	56.0	3.79		
66	3	34.3	5.10	34.3	11.4	2.30	3	8.90	6.98	86.3	21.6	3.11	6	21.0	16.5	297	59.5	3.77		
	3.5	38.5	5.84	38.5	12.8	2.27	3.5	10.2	8.04	97.8	24.4	3.09	4	16.3	12.8	301	54.7	4.29		
	4	42.2	6.55	42.2	14.1	2.25	4	11.5	9.06	108	27.1	3.06	4.5	18.1	14.2	328	59.6	4.25		
	4.5	44.5	7.15	44.5	14.8	2.21	4.5	12.7	9.97	116	29.1	3.03	5	19.9	15.6	356	64.7	4.23		
	5	47.2	7.78	47.2	15.7	2.18	5	13.9	10.9	125	31.3	3.00	5.5	21.7	17.0	382	69.5	4.20		
68	2.5	33.0	4.48	33.0	10.7	2.41	3	9.14	7.17	93.3	22.8	3.20	6	23.4	18.4	407	74.1	4.17		
	3	38.2	5.29	38.2	12.3	2.38	3.5	10.5	8.26	106	25.8	3.17	4	17.9	14.1	396	66.0	4.70		
	3.5	42.8	6.06	42.8	13.8	2.36	4	11.9	9.32	117	28.6	3.15	4.5	19.9	15.6	433	72.1	4.66		
	4	47.1	6.80	47.1	15.2	2.33	4.5	13.1	10.3	126	30.8	3.11	5	21.9	17.2	471	78.5	4.64		
	4.5	49.7	7.43	49.7	16.0	2.29	5	14.3	11.2	136	33.2	3.08	5.5	23.9	18.7	507	84.5	4.61		
70	5	52.9	8.09	52.9	17.0	2.26	3	9.38	7.36	101	24.0	3.28	6	25.8	20.2	541	90.2	4.58		
	2.5	36.6	4.64	36.6	11.4	2.49	3.5	10.8	8.48	114	27.2	3.25	4	18.7	14.7	450	72.1	4.90		
	3	42.3	5.48	42.3	13.2	2.46	4	12.2	9.57	127	30.2	3.23	4.5	20.8	16.3	493	78.8	4.87		
	3.5	47.5	6.28	47.5	14.8	2.44	4.5	13.4	10.5	137	32.6	3.19	5	22.9	18.0	537	85.9	4.84		
	4	52.3	7.05	52.3	16.3	2.41	5	14.7	11.5	147	35.1	3.16	5.5	25.0	19.6	578	92.6	4.81		
72	4.5	55.4	7.71	55.4	17.3	2.37	3	9.50	7.45	105	24.6	3.32	6	27.0	21.2	618	98.9	4.79		
	5	58.9	8.40	58.9	18.4	2.35	3.5	10.9	8.59	119	27.9	3.29	4	19.5	15.3	509	78.4	5.11		
	2.5	38.4	4.72	38.4	11.8	2.53	4	12.3	9.69	132	31.0	3.27	4.5	21.7	17.0	558	85.9	5.07		
	3	44.4	5.57	44.4	13.7	2.50	4.5	13.6	10.7	142	33.4	3.23	5	23.9	18.8	608	93.6	5.04		
	3.5	50.0	6.39	50.0	15.4	2.48	5	14.9	11.7	153	36.0	3.21	6	28.2	22.1	702	108	4.99		
74	4	55.0	7.18	55.0	16.9	2.45	3	9.62	7.55	109	25.2	3.36								
	4.5	10.0	7.85	58.3	17.9	2.41	3.5	11.1	8.70	123	28.7	3.33								

قوتی مستطیل چهار گوش



عرض = h_1

طول = b_1

ضخامت = s

سطح مقطع = F

وزن = G

h_1	12	16.9	20		23	25						26				26.5	
b_1	8	12	10	15	11	8	10	15	18		20		16				16.5
s	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.0	1.5	2.0	1.5	2.0	2.5	3.0	1.5
F	0.510	0.777	0.810	0.960	0.930	0.900	0.960	1.11	1.20	1.56	1.26	1.64	1.17	1.52	1.85	2.16	1.20
G	0.400	0.610	0.636	0.754	0.730	0.707	0.754	0.871	0.942	1.22	0.989	1.29	0.918	1.19	1.45	1.45	0.942

h_1	27	30														31.7	32	
b_1	15	10	11.5	15			18			20			22		25		9.52	25
s	1.5	1.5	2.0	1.5	2.0	2.5	1.5	2.0	1.5	2.0	2.5	3.0	1.5	2.0	1.5	2.0	1.5	1.5
F	1.17	1.11	1.50	1.26	1.64	2.00	1.35	1.76	1.41	1.84	2.25	2.64	1.47	1.92	1.56	2.04	1.15	1.62
G	0.918	0.871	1.18	0.989	1.29	1.57	1.06	1.38	1.11	1.44	1.77	2.07	1.15	1.51	1.22	1.60	0.900	1.27

h_1	34	35				36		38.1	40								
b_1	16	20		22		30	26	28	12.7	13	20			25	30		
s	1.5	1.5	2.0	1.5	2.0	2.0	2.0	1.5	1.5	2.0	1.5	2.0	2.5	3.0	2.5	1.5	2.0
F	1.41	1.56	2.04	1.62	2.12	2.44	2.32	1.83	1.43	1.96	1.71	2.24	2.75	3.24	3.00	2.01	2.64
G	1.11	1.22	1.60	1.27	1.66	1.92	1.82	1.44	1.13	1.54	1.34	1.76	2.16	2.54	2.36	1.58	2.07
J_x	2.01	2.50	3.17	2.67	3.39	4.26	4.10	3.40	2.36	3.43	3.49	4.45	5.31	6.08	6.19	4.60	5.89
W_x	1.18	1.43	1.81	1.53	1.94	2.44	2.28	1.89	1.24	1.72	1.75	2.22	2.65	3.04	3.09	2.30	2.95
i_x	1.19	1.27	1.25	1.28	1.26	1.32	1.33	1.36	1.28	1.32	1.43	1.41	1.39	1.37	1.44	1.51	1.49
J_y	0.593	1.02	1.28	1.28	1.60	3.33	2.43	2.29	0.383	0.514	1.15	1.44	1.68	1.89	2.87	2.93	3.73
W_y	0.741	1.02	1.28	1.16	1.45	2.22	1.87	1.63	0.604	0.790	1.15	1.44	1.68	1.89	2.30	1.95	2.48
i_y	0.648	0.810	0.791	0.888	0.868	1.17	1.02	1.12	0.517	0.512	0.821	0.801	0.782	0.764	0.970	1.21	1.19

h_1	40		42		45	40											
b_1	30	35	30	33	25	15	20			22	25			30			
s	2.5	3.0	2.0	2.0	2.0	2.0	1.5	2.0	2.5	1.5	1.5	2.0	2.5	3.0	1.5	2.0	
F	3.25	3.84	2.84	2.72	2.84	2.64	2.44	2.01	2.64	3.25	2.07	2.16	2.84	3.50	4.14	2.31	3.04
G	2.55	3.01	2.23	2.14	2.23	2.07	1.92	1.58	2.07	2.55	1.62	1.70	2.23	2.75	3.25	1.81	2.39
J_x	7.07	8.14	6.61	6.63	7.11	6.92	6.70	6.13	7.86	9.44	6.48	7.01	9.01	10.9	12.6	7.89	10.2
W_x	3.53	4.07	3.31	3.16	3.39	3.08	2.68	2.45	3.14	3.78	2.59	2.80	3.60	4.34	5.02	3.16	4.06
i_x	1.47	1.46	1.53	1.56	1.58	1.62	1.66	1.75	1.72	1.70	1.77	1.80	1.78	1.76	1.74	1.85	1.83
J_y	4.44	5.08	5.35	3.88	4.85	2.70	0.896	1.41	1.76	2.07	1.75	2.34	2.96	3.51	4.00	3.54	4.51
W_y	2.98	3.39	3.06	2.59	2.94	2.16	1.19	1.41	1.76	2.07	1.59	1.87	2.37	2.81	3.20	2.36	3.01
i_y	1.17	1.15	1.37	1.20	1.31	1.01	0.606	0.837	0.817	0.798	0.920	1.04	1.02	1.00	0.982	1.24	1.22

h_1	50										40			50.8			
b_1	30		34		35			40			25.4		1.5	2.0	2.5		
s	2.5	3.0	2.0	2.5	3.0	1.5	2.0	2.5	3.0	1.5	2.0	2.5	3.0	3.5	1.5	2.0	2.5
F	3.75	4.44	3.20	3.95	4.68	2.46	3.24	4.00	4.74	2.61	3.44	4.25	5.04	5.81	2.20	2.89	3.56
G	2.94	3.49	2.51	3.10	3.67	1.93	2.54	3.14	3.72	2.05	2.70	3.34	3.96	4.56	1.72	2.27	2.79
J_x	12.3	14.2	11.1	13.4	15.5	8.77	11.3	13.7	15.9	9.65	12.5	15.1	17.5	19.8	7.36	9.47	11.4
W_x	4.91	5.69	4.43	5.36	6.22	3.51	4.53	5.47	6.35	3.86	4.99	6.04	7.01	7.92	2.90	3.73	4.49
i_x	1.81	1.79	1.86	1.84	1.82	1.89	1.87	1.85	1.83	1.92	1.90	1.88	1.87	1.85	1.83	1.81	1.79
J_y	5.39	6.18	6.03	7.23	8.33	5.03	6.44	7.74	8.92	6.83	8.78	10.6	12.3	13.8	2.46	3.12	3.70
W_y	3.59	4.12	3.55	4.25	4.90	2.87	3.68	4.42	5.10	3.41	4.39	5.29	6.13	6.89	1.94	2.45	2.91
i_y	1.20	1.18	1.37	1.35	1.33	1.43	1.41	1.39	1.37	1.62	1.60	1.58	1.56	1.54	1.06	1.04	1.02

h_1	50.8					55					56			60			
b_1	25.4		31.7			20		34			40		20	36.5	18	20	
s	3.0	1.5	2.0	2.5	3.0	1.5	2.5	1.5	2.0	2.5	3.0	2.5	3.0	1.5	2.0	2.0	1.5
F	4.21	2.39	3.14	3.88	4.59	2.16	3.50	2.58	3.40	4.20	4.98	4.50	5.34	2.19	3.54	2.96	2.31
G	3.31	1.87	2.46	3.04	3.60	1.70	2.75	2.03	2.67	3.30	3.91	3.53	4.19	1.72	2.78	2.32	1.81
J_k	13.2	8.51	11.0	13.3	15.4	7.81	11.1	10.8	14.0	16.9	19.7	22.1	8.18	15.3	11.9	9.76	
W_k	5.20	3.35	4.32	5.22	6.05	2.84	4.05	3.93	5.08	6.16	7.16	6.91	8.05	2.92	5.48	3.97	3.25
i_k	1.77	1.89	1.87	1.85	1.83	1.90	1.78	2.05	2.03	2.01	1.99	2.05	2.04	1.93	2.08	2.01	2.06
J_y	4.21	4.07	5.20	6.22	7.15	1.54	2.26	5.10	6.54	7.85	9.05	11.5	13.3	1.56	7.82	1.64	1.67
W_y	3.32	2.57	3.28	3.92	4.51	1.54	2.26	3.00	3.85	4.62	5.32	5.73	6.64	1.56	4.28	1.82	1.67
i_y	1.00	1.31	1.29	1.27	1.25	0.844	0.804	1.41	1.39	1.37	1.35	1.60	1.58	0.845	1.49	0.743	0.849

h_1	60																
b_1	20		25	30			33					38	40				
s	2.0	2.5	3.0	2.0	2.5	3.0	1.5	2.0	2.5	3.0	3.5	4.0	2.0	1.5	2.0	2.5	3.0
F	3.04	3.75	4.74	3.44	4.25	5.04	2.70	3.56	4.40	5.22	6.02	6.80	3.76	2.91	3.84	4.75	5.64
G	2.39	2.94	3.72	2.70	3.34	3.96	2.12	2.79	3.45	4.10	4.73	5.34	2.95	2.28	3.01	3.73	4.43
J_k	12.6	15.2	20.1	15.9	19.3	22.5	13.1	17.0	20.6	24.0	27.1	30.1	18.6	14.9	19.3	23.5	27.4
W_k	4.19	5.07	6.69	5.32	6.45	7.50	4.37	5.65	6.86	7.99	9.05	10.0	6.21	4.97	6.44	7.82	9.13
i_k	2.03	2.01	2.06	2.15	2.13	2.11	2.20	2.18	2.16	2.14	2.12	2.10	2.23	2.26	2.24	2.22	2.20
J_y	2.09	2.45	4.73	5.30	6.34	7.28	5.14	6.59	7.91	9.11	10.2	11.2	9.09	7.94	10.2	12.3	14.3
W_y	2.09	2.45	3.78	3.53	4.23	4.85	3.12	3.99	4.79	5.52	6.19	6.79	4.79	3.97	5.11	6.17	7.16
i_y	0.829	0.809	0.999	1.24	1.22	1.20	1.38	1.36	1.34	1.32	1.30	1.28	1.56	1.65	1.63	1.61	1.59

h_1	60					63.5					65						
b_1	40			45	50		25.4				38.1	35	40	42	50		
s	3.5	4.0	4.5	5.0	2.0	2.0	2.5	3.0	1.5	2.0	2.5	3.0	1.6	2.0	2.0	4.0	1.75
F	6.51	7.36	8.19	9.00	4.04	4.24	5.25	6.24	2.58	3.40	4.20	4.97	3.15	3.84	4.04	7.92	3.90
G	5.11	5.78	6.43	7.07	3.17	3.33	4.12	4.90	2.02	2.67	3.29	3.90	2.47	3.01	3.17	6.22	3.06
J_k	31.1	34.5	37.7	40.8	21.0	22.7	27.6	32.3	12.9	16.6	20.2	23.5	17.5	21.5	23.4	43.6	24.3
W_k	10.4	11.5	12.6	13.6	7.00	7.56	9.20	10.8	4.05	5.24	6.35	7.39	5.52	6.60	7.21	13.4	7.47
i_k	2.18	2.17	2.15	2.13	2.28	2.31	2.29	2.27	2.23	2.21	2.19	2.17	2.36	2.36	2.41	2.35	2.49
J_y	16.1	17.8	19.3	20.8	13.4	17.1	20.7	24.2	3.00	3.81	4.53	5.17	7.91	8.08	10.9	21.5	16.2
W_y	8.06	8.90	9.67	10.4	5.96	6.83	8.29	9.67	2.37	3.00	3.57	4.07	4.15	4.62	5.47	10.2	6.47
i_y	1.57	1.56	1.54	1.52	1.82	2.01	1.99	1.97	1.08	1.06	1.04	1.02	1.58	1.45	1.65	1.65	2.04

h_1	67				70						80						
b_1	30		35		40			60			35			40			
s	1.5	2.0	2.5	3.0	2.0	2.0	2.5	3.0	3.5	4.0	4.0	2.0	2.5	3.0	1.5	2.0	2.5
F	2.82	3.72	4.60	5.46	3.92	4.24	5.25	6.24	7.21	8.16	9.76	4.44	5.50	6.54	3.51	4.64	5.75
G	2.21	2.92	3.61	4.29	3.08	3.33	4.12	4.90	5.66	6.41	7.66	3.49	4.32	5.13	2.76	3.64	4.51
J_k	16.2	21.0	25.5	29.8	23.1	28.1	34.2	40.1	45.6	50.8	68.2	35.9	43.9	51.4	29.9	39.0	47.6
W_k	4.84	6.27	7.62	8.89	6.90	8.02	9.78	11.4	13.0	14.5	19.5	8.98	11.0	12.9	7.48	9.74	11.9
i_k	2.40	2.38	2.36	2.34	2.43	2.57	2.55	2.53	2.51	2.49	2.64	2.84	2.82	2.80	2.92	2.90	2.88
J_y	4.58	5.85	7.00	8.05	8.30	11.7	14.1	16.4	18.5	20.4	53.4	9.72	11.7	13.5	10.2	13.1	15.9
W_y	3.05	3.90	4.67	5.37	4.74	5.84	7.05	8.19	9.23	10.2	17.8	5.55	6.69	7.74	5.08	6.56	7.93
i_y	1.27	1.25	1.23	1.21	1.45	1.66	1.64	1.62	1.60	1.58	2.34	1.48	1.46	1.44	1.70	1.68	1.66

h_1	80						100						120	
b_1	40		50		60		40		50		60		40	80
s	3.0	4.0	2.0	2.5	3.0	2.0	2.5	3.0	3.0	2.5	2.5	3.0	3.0	3.0
F	6.84	8.96	5.04	6.25	7.44	5.44	6.75	8.04	8.04	7.25	7.75	9.24	9.24	11.6
G	5.37	7.03	3.96	4.91	5.84	4.27	5.30	6.31	6.31	5.69	6.08	7.25	7.25	9.14
J_k	55.9	71.1	45.1	55.1	64.8	51.1	62.6	73.6	98.0	95.2	107	126	156	238
W_k	14.0	17.8	11.3	13.8	16.2	12.8	15.7	18.4	19.6	19.0	21.4	25.2	26.0	39.7
i_k	2.86	2.82	2.99	2.97	2.95	3.07	3.05	3.03	3.49	3.62	3.72	3.70	4.11	4.53
J_y	18.4	23.0	21.7	26.4	30.8	32.8	40.0	46.9	22.5	32.0	48.3	56.7	26.7	127
W_y	9.21	11.5	8.67	10.6	12.3	10.9	13.3	15.6	11.3	12.8	16.1	18.9	13.3	31.8
i_y	1.64	1.60	2.07	2.05	2.03	2.45	2.43	2.42	1.67	2.10	2.50	2.48	1.70	3.30