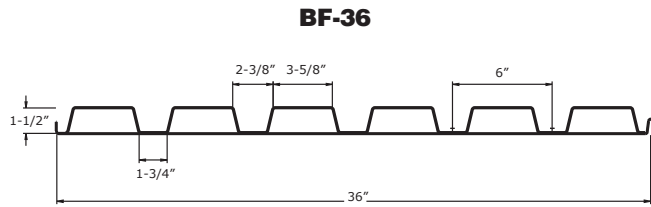
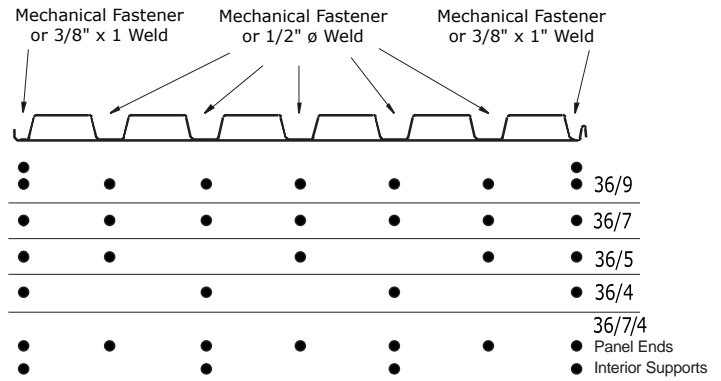


2.3 DGBF-36 & BF-36



Attachment Patterns



Note: Weld sizes are effective not visible. Refer to AISI S100-2016 or AWS D1.3 for additional welding requirements.

Panel Properties

Gage	Weight w psf	Base Metal Thickness t in	Yield Strength F_y ksi	Tensile Strength F_u ksi	Gross Section Properties				
					Area A_g in ² /ft	Moment of Inertia I_g in ⁴ /ft	Distance to N.A. from Bottom y_b in	Section Modulus S_g in ³ /ft	Radius of Gyration r in
20/20	3.69	0.0359 / 0.036	50	65	1.040	0.460	0.58	0.462	0.665
20/18	4.16	0.0359 / 0.047	50	65	1.179	0.499	0.52	0.471	0.651
20/16	4.68	0.0359 / 0.059	50	65	1.330	0.535	0.48	0.479	0.634
18/20	4.35	0.0478 / 0.036	50	65	1.231	0.564	0.65	0.601	0.677
18/18	4.83	0.0478 / 0.047	50	65	1.370	0.614	0.59	0.613	0.670
18/16	5.35	0.0478 / 0.059	50	65	1.521	0.661	0.55	0.624	0.659
16/20	5.03	0.0598 / 0.036	50	65	1.423	0.661	0.70	0.736	0.682
16/18	5.51	0.0598 / 0.047	50	65	1.562	0.721	0.65	0.752	0.679
16/16	6.03	0.0598 / 0.059	50	65	1.713	0.777	0.60	0.767	0.674

Gage	Effective Section Modulus for Bending at F_y					Effective Moment of Inertia for Deflection at Service Load			
	Area	Section Modulus	Distance to N.A. from Bottom	Section Modulus	Distance to N.A. from Bottom	Moment of Inertia	Moment of Inertia	Uniform Load Only	
								$I_d = (2I_e + I_g)/3$	
	A_{e+} in ² /ft	S_{e+} in ³ /ft	y_b in	S_{e-} in ³ /ft	y_b in	I_{e+} in ⁴ /ft	I_{e-} in ⁴ /ft	I_+ in ⁴ /ft	I_- in ⁴ /ft
20/20	0.643	0.272	0.43	0.438	0.73	0.354	0.389	0.389	0.413
20/18	0.744	0.278	0.39	0.452	0.66	0.381	0.445	0.420	0.463
20/16	0.861	0.284	0.35	0.465	0.58	0.404	0.505	0.448	0.515
18/20	0.876	0.409	0.53	0.569	0.77	0.489	0.486	0.514	0.512
18/18	0.977	0.419	0.48	0.587	0.71	0.529	0.547	0.558	0.569
18/16	1.094	0.427	0.44	0.604	0.65	0.566	0.617	0.598	0.631
16/20	1.105	0.564	0.61	0.698	0.81	0.619	0.582	0.633	0.609
16/18	1.206	0.577	0.56	0.719	0.75	0.673	0.646	0.689	0.671
16/16	1.323	0.588	0.52	0.739	0.70	0.724	0.723	0.742	0.741

Reactions at Supports (plf) Based on Web Crippling

Gage	Condition	Bearing Length of Webs							
		ASD, R/Ω				LRFD, ϕR			
		1"	1.5"	2"	3"	1"	1.5"	2"	3"
22	End	772	874	960	1105	1180	1337	1469	1691
	Interior	1229	1366	1482	1675	1828	2032	2204	2492
20	End	1081	1220	1336	1532	1655	1866	2045	2344
	Interior	1737	1922	2078	2339	2584	2859	3091	3479
18	End	1834	2053	2239	2550	2805	3142	3425	3901
	Interior	2984	3277	3525	3940	4439	4875	5243	5860
16	End	2771	3086	3351	3796	4240	4721	5127	5809
	Interior	4555	4975	5329	5923	6776	7401	7927	8810

Constants $h = 1.32"$ $r = 0.125"$ $\theta = 78.3^\circ$

Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

Gauge	Span	Limit Condition	Panel Span (Support Spacing)								
			4' - 0"	6' - 0"	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"
20/20	Single Span	f_b / Ω	340	151	85	54	38	28	21	17	14
		Φf_b	510	227	128	82	57	42	32	25	20
		L/360	266	79	33	17	10	6	4	3	2
		L/240	399	118	50	26	15	9	6	4	3
		L/180	532	158	66	34	20	12	8	6	4
		L/120	798	236	100	51	30	19	12	9	6
	Double Span	f_b / Ω	547	243	137	87	61	45	34	27	22
		Φf_b	822	365	205	131	91	67	51	41	33
		L/360	640	190	80	41	24	15	10	7	5
		L/240	961	285	120	61	36	22	15	11	8
		L/180	1281	380	160	82	47	30	20	14	10
		L/120	1921	569	240	123	71	45	30	21	15
	Triple Span	f_b / Ω	531	236	133	85	59	43	33	26	21
		Φf_b	797	354	199	128	89	65	50	39	32
		L/360	502	149	63	32	19	12	8	6	4
		L/240	753	223	94	48	28	18	12	8	6
		L/180	1003	297	125	64	37	23	16	11	8
		L/120	1505	446	188	96	56	35	24	17	12
20/18	Single Span	f_b / Ω	347	154	87	56	39	28	22	17	14
		Φf_b	522	232	130	83	58	43	33	26	21
		L/360	287	85	36	18	11	7	4	3	2
		L/240	430	128	54	28	16	10	7	5	3
		L/180	574	170	72	37	21	13	9	6	5
		L/120	861	255	108	55	32	20	13	9	7
	Double Span	f_b / Ω	563	250	141	90	63	46	35	28	23
		Φf_b	847	376	212	135	94	69	53	42	34
		L/360	691	205	86	44	26	16	11	8	6
		L/240	1037	307	130	66	38	24	16	11	8
		L/180	1383	410	173	88	51	32	22	15	11
		L/120	2074	615	259	133	77	48	32	23	17
	Triple Span	f_b / Ω	542	241	136	87	60	44	34	27	22
		Φf_b	815	362	204	130	91	67	51	40	33
		L/360	542	160	68	35	20	13	8	6	4
		L/240	812	241	102	52	30	19	13	9	6
		L/180	1083	321	135	69	40	25	17	12	9
		L/120	1625	481	203	104	60	38	25	18	13
20/16	Single Span	f_b / Ω	354	157	88	57	39	29	22	17	14
		Φf_b	532	236	133	85	59	43	33	26	21
		L/360	306	91	38	20	11	7	5	3	2
		L/240	459	136	57	29	17	11	7	5	4
		L/180	612	181	76	39	23	14	10	7	5
		L/120	918	272	115	59	34	21	14	10	7
	Double Span	f_b / Ω	580	258	145	93	64	47	36	29	23
		Φf_b	872	388	218	140	97	71	55	43	35
		L/360	737	218	92	47	27	17	12	8	6
		L/240	1105	327	138	71	41	26	17	12	9
		L/180	1474	437	184	94	55	34	23	16	12
		L/120	2210	655	276	141	82	52	35	24	18
	Triple Span	f_b / Ω	553	246	138	88	61	45	35	27	22
		Φf_b	831	369	208	133	92	68	52	41	33
		L/360	577	171	72	37	21	13	9	6	5
		L/240	866	257	108	55	32	20	14	10	7
		L/180	1154	342	144	74	43	27	18	13	9
		L/120	1732	513	216	111	64	40	27	19	14

2.3 DGBF-36 & BF-36



Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

Gauge	Span	Limit Condition	Panel Span (Support Spacing)								
			4' - 0"	6' - 0"	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"
18/20	Single Span	f_b/Ω	511	227	128	82	57	42	32	25	20
		Φf_b	768	341	192	123	85	63	48	38	31
		L/360	351	104	44	22	13	8	5	4	3
		L/240	526	156	66	34	19	12	8	6	4
		L/180	702	208	88	45	26	16	11	8	6
	L/120	1053	312	132	67	39	25	16	12	8	
	Double Span	f_b/Ω	710	316	178	114	79	58	44	35	28
		Φf_b	1068	474	267	171	119	87	67	53	43
		L/360	845	250	106	54	31	20	13	9	7
		L/240	1268	376	159	81	47	30	20	14	10
		L/180	1691	501	211	108	63	39	26	19	14
	L/120	2536	751	317	162	94	59	40	28	20	
	Triple Span	f_b/Ω	798	355	199	128	89	65	50	39	32
		Φf_b	1199	533	300	192	133	98	75	59	48
		L/360	662	196	83	42	25	15	10	7	5
L/240		993	294	124	64	37	23	16	11	8	
L/180		1325	392	166	85	49	31	21	15	11	
L/120	1987	589	248	127	74	46	31	22	16		
18/18	Single Span	f_b/Ω	522	232	131	84	58	43	33	26	21
		Φf_b	785	349	196	126	87	64	49	39	31
		L/360	381	113	48	24	14	9	6	4	3
		L/240	571	169	71	37	21	13	9	6	5
		L/180	762	226	95	49	28	18	12	8	6
	L/120	1142	339	143	73	42	27	18	13	9	
	Double Span	f_b/Ω	732	325	183	117	81	60	46	36	29
		Φf_b	1100	489	275	176	122	90	69	54	44
		L/360	917	272	115	59	34	21	14	10	7
		L/240	1376	408	172	88	51	32	22	15	11
		L/180	1835	544	229	117	68	43	29	20	15
	L/120	2752	815	344	176	102	64	43	30	22	
	Triple Span	f_b/Ω	816	363	204	131	91	67	51	40	33
		Φf_b	1226	545	307	196	136	100	77	61	49
		L/360	719	213	90	46	27	17	11	8	6
L/240		1078	319	135	69	40	25	17	12	9	
L/180		1437	426	180	92	53	34	22	16	11	
L/120	2156	639	269	138	80	50	34	24	17		
18/16	Single Span	f_b/Ω	532	237	133	85	59	43	33	26	21
		Φf_b	800	356	200	128	89	65	50	40	32
		L/360	408	121	51	26	15	10	6	4	3
		L/240	612	181	77	39	23	14	10	7	5
		L/180	817	242	102	52	30	19	13	9	7
	L/120	1225	363	153	78	45	29	19	13	10	
	Double Span	f_b/Ω	753	335	188	121	84	61	47	37	30
		Φf_b	1132	503	283	181	126	92	71	56	45
		L/360	983	291	123	63	36	23	15	11	8
		L/240	1475	437	184	94	55	34	23	16	12
		L/180	1967	583	246	126	73	46	31	22	16
	L/120	2950	874	369	189	109	69	46	32	24	
	Triple Span	f_b/Ω	832	370	208	133	92	68	52	41	33
		Φf_b	1250	556	313	200	139	102	78	62	50
		L/360	770	228	96	49	29	18	12	8	6
L/240		1156	342	144	74	43	27	18	13	9	
L/180		1541	457	193	99	57	36	24	17	12	
L/120	2311	685	289	148	86	54	36	25	18		

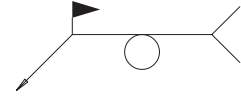
Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

Gauge	Span	Limit Condition	Panel Span (Support Spacing)								
			4' - 0"	6' - 0"	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"
16/20	Single Span	f_b/Ω	703	313	176	113	78	57	44	35	28
		Φf_b	1057	470	264	169	117	86	66	52	42
		L/360	433	128	54	28	16	10	7	5	3
		L/240	649	192	81	42	24	15	10	7	5
		L/180	865	256	108	55	32	20	14	9	7
		L/120	1298	384	162	83	48	30	20	14	10
	Double Span	f_b/Ω	871	387	218	139	97	71	54	43	35
		Φf_b	1309	582	327	209	145	107	82	65	52
		L/360	1042	309	130	67	39	24	16	11	8
		L/240	1563	463	195	100	58	36	24	17	13
		L/180	2084	617	260	133	77	49	33	23	17
		L/120	3126	926	391	200	116	73	49	34	25
	Triple Span	f_b/Ω	1088	484	272	174	121	89	68	54	44
		Φf_b	1636	727	409	262	182	134	102	81	65
		L/360	816	242	102	52	30	19	13	9	7
		L/240	1224	363	153	78	45	29	19	13	10
		L/180	1632	484	204	104	60	38	26	18	13
		L/120	2449	726	306	157	91	57	38	27	20
16/18	Single Span	f_b/Ω	719	320	180	115	80	59	45	36	29
		Φf_b	1081	481	270	173	120	88	68	53	43
		L/360	471	139	59	30	17	11	7	5	4
		L/240	706	209	88	45	26	16	11	8	6
		L/180	941	279	118	60	35	22	15	10	8
		L/120	1412	418	177	90	52	33	22	15	11
	Double Span	f_b/Ω	897	399	224	144	100	73	56	44	36
		Φf_b	1349	599	337	216	150	110	84	67	54
		L/360	1134	336	142	73	42	26	18	12	9
		L/240	1701	504	213	109	63	40	27	19	14
		L/180	2268	672	283	145	84	53	35	25	18
		L/120	3401	1008	425	218	126	79	53	37	27
	Triple Span	f_b/Ω	1122	498	280	179	125	92	70	55	45
		Φf_b	1686	749	421	270	187	138	105	83	67
		L/360	888	263	111	57	33	21	14	10	7
		L/240	1332	395	167	85	49	31	21	15	11
		L/180	1776	526	222	114	66	41	28	19	14
		L/120	2665	790	333	171	99	62	42	29	21
16/16	Single Span	f_b/Ω	734	326	183	117	82	60	46	36	29
		Φf_b	1103	490	276	176	123	90	69	54	44
		L/360	507	150	63	32	19	12	8	6	4
		L/240	760	225	95	49	28	18	12	8	6
		L/180	1013	300	127	65	38	24	16	11	8
		L/120	1520	450	190	97	56	35	24	17	12
	Double Span	f_b/Ω	922	410	231	148	102	75	58	46	37
		Φf_b	1386	616	347	222	154	113	87	68	55
		L/360	1220	362	153	78	45	28	19	13	10
		L/240	1830	542	229	117	68	43	29	20	15
		L/180	2440	723	305	156	90	57	38	27	20
		L/120	3660	1085	458	234	136	85	57	40	29
	Triple Span	f_b/Ω	1147	510	287	183	127	94	72	57	46
		Φf_b	1723	766	431	276	191	141	108	85	69
		L/360	956	283	119	61	35	22	15	10	8
		L/240	1434	425	179	92	53	33	22	16	11
		L/180	1912	566	239	122	71	45	30	21	15
		L/120	2868	850	358	184	106	67	45	31	23

2.4 DGB-36 & DGBF-36

Arc Spot/Seam Welds to Supports with DeltaGrip® Side Seam Attachment

Diaphragm Shear in pounds per linear foot (plf)



Support Fastener Pattern	Gage	Seam Attach. Spacing	Allowable Shear (q_a) (plf), Factored Shear (q_f) (plf), and Flexibility Factor (F) (10^{-6} in/lbs)																			
			Span →	4' - 0"		5' - 0"		6' - 0"		7' - 0"		8' - 0"		9' - 0"		10' - 0"		11' - 0"		12' - 0"		
36/4	16 ga	4"	q_a	q_f	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2134	3414	1763	2821	1482	2371
			F		3.2	-0.1R	3.2	-0.1R	3.2	-0.1R	3.2	-0.1R	3.2	-0.1R	3.2	-0.1R	3.3	-0.1R	3.3	-0.1R	3.3	+0R
		6"	q_a	q_f	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2134	3414	1763	2821	1482	2371
			F		3.6	-0.2R	3.7	-0.2R	3.7	-0.2R	3.7	-0.2R	3.8	-0.1R	3.8	-0.1R	3.8	-0.1R	3.8	-0.1R	3.8	-0.1R
		8"	q_a	q_f	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2421	3994	2134	3414	1763	2821	1482	2371
			F		4	-0.3R	4.1	-0.3R	4.2	-0.3R	4.2	-0.2R	4.3	-0.2R	4.3	-0.2R	4.3	-0.2R	4.3	-0.2R	4.3	-0.2R
	12"	q_a	q_f	2206	3641	2137	3526	2087	3444	2050	3382	2021	3335	1998	3297	1980	3266	1763	2821	1482	2371	
		F		4.7	-0.6R	4.9	-0.5R	5	-0.5R	5.1	-0.5R	5.2	-0.4R	5.2	-0.4R	5.3	-0.4R	5.3	-0.4R	5.4	-0.3R	
	18"	q_a	q_f	1968	3641	1935	3193	1709	2821	1722	2842	1732	2857	1588	2620	1610	2657	1628	2686	1482	2371	
		F		5.5	-0.9R	5.8	-0.9R	6	-0.8R	6.2	-0.8R	6.4	-0.8R	6.5	-0.7R	6.6	-0.7R	6.7	-0.7R	6.7	-0.6R	
	24"	q_a	q_f	1664	2746	1691	2791	1473	2430	1523	2513	1369	2259	1422	2346	1304	2151	1355	2235	1259	2078	
		F		6.1	-1.2R	6.6	-1.2R	6.9	-1.2R	7.1	-1.1R	7.4	-1.1R	7.5	-1.1R	7.7	-1R	7.8	-1R	7.9	-1R	
	18 ga	4"	q_a	q_f	1900	3136	1900	3136	1900	3136	1900	3136	1900	3136	1900	3062	1550	2481	1281	2050	1077	1723
			F		4.2	-0.2R	4.3	-0.2R	4.3	-0.2R	4.3	-0.1R	4.4	-0.1R	4.4	-0.1R	4.4	-0.1R	4.4	-0.1R	4.4	-0.1R
		6"	q_a	q_f	1900	3136	1900	3136	1900	3136	1900	3136	1900	3136	1900	3062	1550	2481	1281	2050	1077	1723
			F		4.9	-0.4R	5	-0.4R	5	-0.3R	5.1	-0.3R	5.1	-0.3R	5.2	-0.2R	5.2	-0.2R	5.2	-0.2R	5.3	-0.2R
		8"	q_a	q_f	1863	3074	1864	3075	1788	2950	1800	2970	1746	2881	1761	2906	1550	2481	1281	2050	1077	1723
			F		5.4	-0.6R	5.6	-0.5R	5.7	-0.5R	5.8	-0.5R	5.9	-0.4R	5.9	-0.4R	6	-0.4R	6	-0.4R	6.1	-0.3R
	12"	q_a	q_f	1597	2635	1531	2527	1485	2450	1450	2392	1423	2347	1401	2312	1384	2283	1281	2050	1077	1723	
		F		6.3	-0.9R	6.6	-0.9R	6.8	-0.9R	7	-0.8R	7.1	-0.8R	7.3	-0.7R	7.4	-0.7R	7.4	-0.7R	7.5	-0.6R	
	18"	q_a	q_f	1419	2635	1380	2277	1206	1990	1207	1992	1208	1993	1100	1815	1112	1834	1121	1850	1044	1723	
		F		7.3	-1.4R	7.8	-1.4R	8.1	-1.4R	8.5	-1.4R	8.7	-1.3R	8.9	-1.3R	9.1	-1.2R	9.3	-1.2R	9.4	-1.2R	
	24"	q_a	q_f	1203	1985	1205	1988	1041	1717	1066	1760	953	1573	984	1624	899	1483	930	1534	861	1421	
		F		8	-1.7R	8.6	-1.8R	9.2	-1.9R	9.6	-1.9R	10	-1.8R	10.3	-1.8R	10.6	-1.8R	10.8	-1.8R	11	-1.7R	
20 ga	4"	q_a	q_f	1121	1850	1121	1850	1121	1850	1121	1850	1121	1850	1121	1850	1025	1640	847	1355	712	1139	
		F		6.1	-0.5R	6.2	-0.4R	6.3	-0.4R	6.4	-0.4R	6.5	-0.3R	6.5	-0.3R	6.5	-0.3R	6.6	-0.3R	6.6	-0.2R	
	6"	q_a	q_f	1121	1850	1121	1850	1121	1850	1121	1850	1121	1850	1121	1850	1025	1640	847	1355	712	1139	
		F		7	-0.8R	7.3	-0.7R	7.5	-0.7R	7.6	-0.7R	7.7	-0.6R	7.8	-0.6R	7.9	-0.5R	7.9	-0.5R	8	-0.5R	
	8"	q_a	q_f	1082	1785	1081	1784	1035	1708	1042	1719	1009	1665	1018	1679	993	1638	847	1355	712	1139	
		F		7.8	-1.1R	8.1	-1.1R	8.4	-1R	8.6	-1R	8.8	-0.9R	8.9	-0.9R	9	-0.8R	9.1	-0.8R	9.2	-0.8R	
12"	q_a	q_f	925	1527	885	1460	857	1413	835	1378	819	1351	806	1329	795	1312	786	1297	712	1139		
	F		8.9	-1.6R	9.5	-1.7R	9.9	-1.6R	10.3	-1.6R	10.6	-1.6R	10.9	-1.5R	11.1	-1.5R	11.3	-1.4R	11.5	-1.4R		
18"	q_a	q_f	821	1527	797	1315	695	1147	695	1146	694	1145	631	1042	638	1052	643	1060	598	987		
	F		10	-2.2R	10.9	-2.4R	11.6	-2.4R	12.2	-2.5R	12.8	-2.5R	13.2	-2.5R	13.6	-2.4R	13.9	-2.4R	14.2	-2.4R		
24"	q_a	q_f	697	1151	696	1149	600	990	614	1013	548	904	565	932	515	850	533	879	493	814		
	F		10.8	-2.7R	11.9	-2.9R	12.9	-3.1R	13.7	-3.2R	14.4	-3.2R	15	-3.3R	15.5	-3.3R	16	-3.3R	16.5	-3.3R		
22 ga	4"	q_a	q_f	805	1329	805	1329	805	1329	805	1329	805	1329	805	1329	779	1247	644	1031	541	866	
		F		7.7	-0.7R	7.9	-0.7R	8.1	-0.6R	8.2	-0.6R	8.3	-0.5R	8.4	-0.5R	8.5	-0.5R	8.5	-0.5R	8.6	-0.4R	
	6"	q_a	q_f	805	1329	805	1329	805	1329	805	1329	805	1329	803	1324	779	1247	644	1031	541	866	
		F		8.8	-1.2R	9.2	-1.1R	9.5	-1.1R	9.8	-1R	9.9	-1R	10.1	-1R	10.2	-0.9R	10.3	-0.9R	10.4	-0.8R	
	8"	q_a	q_f	767	1266	766	1264	732	1209	737	1216	713	1177	719	1186	701	1157	644	1031	541	866	
		F		9.7	-1.6R	10.3	-1.6R	10.7	-1.6R	11	-1.5R	11.3	-1.5R	11.6	-1.4R	11.8	-1.4R	11.9	-1.3R	12.1	-1.3R	
12"	q_a	q_f	655	1081	626	1032	605	997	589	972	577	952	567	936	559	923	553	912	541	866		
	F		11	-2.2R	11.8	-2.3R	12.5	-2.4R	13.1	-2.4R	13.6	-2.4R	14	-2.3R	14.3	-2.3R	14.6	-2.2R	14.9	-2.2R		
18"	q_a	q_f	582	1081	563	929	490	809	489	807	489	806	444	733	448	739	451	744	420	692		
	F		12.2	-2.9R	13.4	-3.2R	14.4	-3.3R	15.3	-3.4R	16	-3.5R	16.7	-3.6R	17.3	-3.6R	17.8	-3.6R	18.3	-3.5R		
24"	q_a	q_f	494	815	492	812	424	699	433	714	386	637	397	655	362	598	374	617	346	571		
	F		12.9	-3.4R	14.4	-3.8R	15.7	-4.1R	16.8	-4.3R	17.8	-4.4R	18.7	-4.6R	19.5	-4.7R	20.2	-4.7R	20.9	-4.7R		

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Support Attachment: 0.5" Effective Dia. Arc Spot Weld

Side Seam Attachment: DeltaGrip