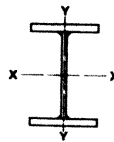
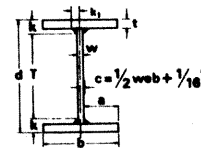


WELDED WIDE FLANGE SHAPES
WWF(M)47 — WWF(M)28
 PROPERTIES IN IMPERIAL UNITS



Designation	Total Area	Area	h/w	d/A _f	Axis X-X				Axis Y-Y		
					l _x	S _x	r _x	Z _x	l _y	S _y	r _y
	In. ²	In. ²		In. ⁻¹	In. ⁴	In. ³	In.	In. ³	In. ⁴	In. ³	In.
WWF(M)47											
X326	96.2	27.8	70.0	1.39	40200	1700	20.4	1860	2670	247	5.27
X270	79.6	28.3	71.3	1.85	32000	1350	20.1	1500	2000	185	5.01
X244	72.0	28.4	71.5	2.18	28000	1190	19.7	1320	1400	142	4.41
X203	59.7	28.5	71.9	3.05	21600	914	19.0	1040	642	81.5	3.28
X176	52.0	28.5	71.9	4.06	17400	737	18.3	861	271	45.9	2.28
WWF(M)43											
X307	90.5	22.1	72.9	1.27	32700	1510	19.0	1650	2670	247	5.43
X260	76.8	22.4	73.6	1.60	27000	1250	18.8	1360	1750	178	4.77
X225	66.2	22.7	74.6	2.00	22600	1040	18.5	1150	1400	142	4.60
X195	57.5	22.7	74.6	2.49	18700	864	18.0	965	718	91.2	3.53
X171	50.4	22.9	75.4	3.18	15700	725	17.7	817	564	71.6	3.35
X147	43.5	22.9	75.4	4.23	12600	582	17.0	672	238	40.3	2.34
WWF(M)39											
X300	88.3	20.0	65.7	1.15	26600	1350	17.4	1470	2670	247	5.50
X253	74.6	20.2	66.4	1.45	21900	1110	17.1	1220	1750	178	4.84
X217	64.0	20.5	67.4	1.81	18300	930	16.9	1020	1400	142	4.68
X188	55.4	20.5	67.4	2.27	15100	767	16.5	855	718	91.2	3.60
X163	48.2	20.7	68.3	2.89	12600	640	16.2	720	564	71.6	3.42
X134	39.6	20.7	68.6	4.23	9460	481	15.5	556	217	36.7	2.34
WWF(M)35											
X279	82.3	14.0	74.5	1.04	20800	1170	15.9	1270	2670	247	5.70
X233	68.6	14.2	75.5	1.31	17000	960	15.7	1040	1750	178	5.05
X197	57.9	14.4	76.7	1.63	14200	802	15.7	865	1400	142	4.92
X167	49.3	14.4	76.7	2.04	11600	655	15.3	716	718	91.2	3.82
X142	42.0	14.6	77.8	2.60	9580	541	15.1	594	564	71.6	3.66
X128	37.9	14.5	77.3	3.05	8290	468	14.8	522	271	45.9	2.67
X113	33.4	14.7	78.2	3.81	7030	397	14.5	446	217	36.7	2.55
WWF(M)31											
X223	65.7	11.3	73.0	1.16	13100	832	14.1	898	1750	178	5.16
X187	55.1	11.5	74.4	1.45	10900	692	14.1	744	1400	142	5.04
X157	46.4	11.5	74.4	1.81	8880	564	13.8	612	718	91.2	3.93
X133	39.2	11.7	75.6	2.31	7300	464	13.6	505	564	71.6	3.79
X109	32.3	11.7	75.6	3.08	5700	362	13.3	401	238	40.3	3.71
X103	30.5	11.8	76.0	3.39	5300	337	13.2	374	216	36.6	2.66
WWF(M)28											
X149	43.9	8.98	71.6	1.59	6580	478	12.2	516	718	91.2	4.04
X136	40.2	9.07	72.2	1.78	6000	435	12.2	470	641	81.4	3.99
X124	36.6	9.15	72.9	2.02	5400	392	12.1	423	564	71.6	3.93
X110	32.5	9.07	72.2	2.37	4630	336	11.9	367	270	45.7	2.88
X101	29.8	9.15	72.9	2.69	4180	303	11.8	332	238	40.3	2.83
X95	28.0	9.21	73.3	2.96	3880	282	11.8	309	216	36.6	2.78

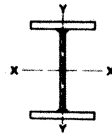
WELDED WIDE FLANGE SHAPES
WWF(M)47 — WWF(M)28
 DIMENSIONS IN IMPERIAL UNITS



Designation‡	Depth d	Flange				Web		Distance					
		Width b		Mean Thickness t		Thickness w		a	T	k	k ₁	c	
	In.	In.		In.		In.		In.	In.	In.	In.	In.	
WWF(M)47													
X326	47.24	47%	21.65	21%	1.57	1%	.630	%	10½	43½	1%	%	%
X270	47.24	47%	21.65	21%	1.18	1%	.630	%	10½	44%	1½	%	%
X244	47.24	47%	19.69	19%	1.10	1%	.630	%	9%	44%	1½	%	%
X203	47.24	47%	15.75	15%	.984	1	.630	%	7½	44%	1½	%	%
X176	47.24	47%	11.81	11%	.984	1	.630	%	5%	44%	1½	%	%
WWF(M)43													
X307	43.31	43%	21.65	21%	1.57	1%	.551	%	10½	39½	1%	%	%
X260	43.31	43%	19.69	19%	1.38	1%	.551	%	9%	40	1%	%	%
X225	43.31	43%	19.69	19%	1.10	1%	.551	%	9%	40½	1%	%	%
X195	43.31	43%	15.75	15%	1.10	1%	.551	%	7%	40½	1%	%	%
X171	43.31	43%	15.75	15%	.866	%	.551	%	7%	41	1%	%	%
X147	43.31	43%	11.81	11%	.866	%	.551	%	5%	41	1%	%	%
WWF(M)39													
X300	39.37	39%	21.65	21%	1.57	1%	.551	%	10½	35%	1%	%	%
X253	39.37	39%	19.69	19%	1.38	1%	.551	%	9%	36%	1%	%	%
X217	39.37	39%	19.69	19%	1.10	1%	.551	%	9%	36%	1%	%	%
X188	39.37	39%	15.75	15%	1.10	1%	.551	%	7%	36%	1%	%	%
X163	39.37	39%	15.75	15%	.866	%	.551	%	7%	37%	1%	%	%
X134	39.37	39%	11.81	11%	.787	1%	.551	%	5%	37%	1½	%	%
WWF(M)35													
X279	35.43	35%	21.65	21%	1.57	1%	.433	¾	10%	31%	1%	½	¼
X233	35.43	35%	19.69	19%	1.38	1%	.433	¾	9%	32%	1%	½	¼
X197	35.43	35%	19.69	19%	1.10	1%	.433	¾	9%	32%	1%	½	¼
X167	35.43	35%	15.75	15%	1.10	1%	.433	¾	7%	32%	1%	½	¼
X142	35.43	35%	15.75	15%	.866	%	.433	¾	7%	33%	1%	½	¼
X128	35.43	35%	11.81	11%	.984	1	.433	¾	5%	32%	1%	½	¼
X113	35.43	35%	11.81	11%	.787	1%	.433	¾	5%	33%	1½	½	¼
WWF(M)31													
X223	31.50	31½	19.69	19%	1.38	1%	.394	%	9%	28½	1%	½	¼
X187	31.50	31½	19.69	19%	1.10	1%	.394	%	9%	28%	1%	½	¼
X157	31.50	31½	15.75	15%	1.10	1%	.394	%	7%	28%	1%	½	¼
X133	31.50	31½	15.75	15%	.866	%	.394	%	7%	29%	1%	½	¼
X109	31.50	31½	11.81	11%	.866	%	.394	%	5%	29%	1%	½	¼
X103	31.50	31½	11.81	11%	.787	1%	.394	%	5%	29%	1½	½	¼
WWF(M)28													
X149	27.56	27½	15.75	15%	1.10	1%	.354	%	7%	24%	1%	¾	¼
X136	27.56	27½	15.75	15%	.984	1	.354	%	7%	25	1%	¾	¼
X124	27.56	27½	15.75	15%	.866	%	.354	%	7%	25½	1%	¾	¼
X110	27.56	27½	11.81	11%	.984	1	.354	%	5%	25	1%	¾	¼
X101	27.56	27½	11.81	11%	.866	%	.354	%	5%	25½	1%	¾	¼
X95	27.56	27½	11.81	11%	.787	1%	.354	%	5%	25%	1½	¾	¼

‡The numerical term following the X is the nominal weight in pounds per foot.

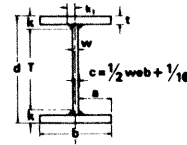
WELDED WIDE FLANGE SHAPES
WWF(M)22 — WWF(M)14
 PROPERTIES IN IMPERIAL UNITS



Designation	Total Area In. ²	Area hw In. ²	h/w	d/A _f In. ⁻¹	Axis X-X				Axis Y-Y		
					I _x In. ⁴	S _x In. ³	r _x In.	Z _x In. ³	I _y In. ⁴	S _y In. ³	r _y In.
WWF(M)22											
X484**	143	40.0	7.17	.423	10500	970	8.57	1160	4020	371	5.30
X416**	123	20.0	14.3	.423	10100	933	9.06	1070	4000	369	5.70
X338	99.5	14.0	22.5	.508	8680	802	9.34	901	3330	308	5.79
X282	83.1	14.6	23.5	.635	7330	677	9.39	752	2670	247	5.67
X146	43.0	8.70	46.4	1.27	4020	371	9.67	399	1330	123	5.56
WWF(M)20											
X437**	129	35.3	6.33	.423	7700	782	7.73	938	3020	307	4.84
X377**	111	17.7	12.7	.423	7370	749	8.15	872	3010	306	5.21
X306	90.2	12.4	20.0	.508	6380	648	8.41	735	2500	254	5.26
X256	75.3	13.0	21.0	.635	5410	550	8.48	615	2000	203	5.15
X230	67.9	13.3	21.5	.726	4890	497	8.49	553	1750	178	5.08
X205	60.5	13.6	22.0	.847	4350	442	8.48	489	1500	152	4.98
X185	54.6	11.0	27.8	.907	4050	411	8.61	451	1400	142	5.06
X170	50.1	11.2	28.1	1.02	3700	376	8.59	412	1250	127	5.00
X150	44.2	9.90	32.6	1.15	3300	335	8.64	365	1100	112	4.99
X132	39.0	7.84	41.8	1.27	3000	305	8.77	328	1000	102	5.06
WWF(M)18											
X337**	99.4	15.3	11.0	.423	5200	587	7.23	692	2190	247	4.69
X275	80.9	10.9	17.5	.508	4530	511	7.48	587	1830	207	4.76
X229	67.6	11.5	18.5	.635	3870	437	7.57	492	1460	165	4.65
X207	60.9	11.8	19.0	.726	3500	395	7.58	443	1280	145	4.58
X184	54.3	12.1	19.5	.847	3120	352	7.58	392	1100	124	4.50
X166	49.0	9.77	24.6	.907	2910	329	7.71	362	1020	115	4.56
X152	45.0	9.92	25.0	1.02	2660	300	7.69	331	913	103	4.50
X134	39.7	8.80	29.0	1.15	2380	269	7.74	294	803	90.7	4.50
X119	35.0	6.99	37.3	1.27	2160	244	7.86	264	730	82.4	4.57
WWF(M)16											
X298**	87.7	13.0	9.33	.423	3510	446	6.33	534	1540	196	4.19
X243	71.6	9.30	15.0	.508	3080	391	6.56	455	1280	163	4.23
X203	59.8	9.92	16.0	.635	2640	335	6.64	383	1030	131	4.15
X183	53.9	10.2	16.5	.726	2400	305	6.67	345	898	114	4.08
X163	48.1	10.5	17.0	.847	2150	273	6.69	306	769	97.7	4.00
X147	43.5	8.53	21.5	.907	2010	255	6.80	283	718	91.2	4.06
X135	39.9	8.68	21.9	1.02	1840	234	6.79	259	641	81.4	4.01
X119	35.2	7.73	25.4	1.15	1650	210	6.85	230	564	71.6	4.00
X105	31.1	6.14	32.7	1.27	1500	191	6.94	207	513	65.2	4.06
WWF(M)14											
X258**	76.1	10.7	7.67	.423	2230	324	5.41	396	1030	150	3.68
X211	62.3	7.75	12.5	.508	1980	287	5.64	339	859	125	3.71
X177	52.1	8.37	13.5	.635	1710	248	5.73	287	687	99.7	3.63
X159	47.0	8.68	14.0	.726	1560	226	5.76	259	601	87.2	3.58
X142	41.9	8.99	14.5	.847	1400	203	5.78	231	516	74.9	3.51
X128	37.9	7.29	18.4	.907	1310	190	5.88	214	481	69.8	3.56
X118	34.8	7.44	18.8	1.02	1210	176	5.90	196	429	62.3	3.51
X104	30.7	6.64	21.9	1.15	1080	157	5.93	174	378	54.9	3.51
X92	27.1	5.29	28.2	1.27	988	143	6.04	157	343	49.8	3.56

**Welding does not fully develop web strength for these sections.

WELDED WIDE FLANGE SHAPES
WWF(M)22 — WWF(M)14
 DIMENSIONS IN IMPERIAL UNITS



Designation†	Depth d In.	Flange		Web Thickness w In.	Distance								
		Width b In.	Mean Thickness t In.		a	T	k	k ₁	c				
WWF(M)22													
X484	21.65	21%	21.65	21%	2.36	2%	2.36	2%	9%	16%	2%	1 1/8	1 1/2
X416	21.65	21%	21.65	21%	2.36	2%	1.18	1 3/8	10%	16%	2%	1	5/8
X338	21.65	21%	21.65	21%	1.97	1 1/8	.787	1 3/8	10%	16%	2%	1 3/8	7/8
X282	21.65	21%	21.65	21%	1.57	1 1/8	.787	1 3/8	10%	17%	1 1/8	1 3/8	7/8
X146	21.65	21%	21.65	21%	.787	1 3/8	.433	7/8	10%	19%	1 1/8	1/2	1/4
WWF(M)20													
X437	19.69	19%	19.69	19%	2.36	2%	2.36	2%	8%	14%	2%	1 1/8	1 1/4
X377	19.69	19%	19.69	19%	2.36	2%	1.18	1 3/8	9%	14%	2%	1	5/8
X306	19.69	19%	19.69	19%	1.97	1 1/8	.787	1 3/8	9%	14%	2%	1 3/8	7/8
X256	19.69	19%	19.69	19%	1.57	1 1/8	.787	1 3/8	9%	15%	1 1/8	1 3/8	7/8
X230	19.69	19%	19.69	19%	1.38	1%	.787	1 3/8	9%	16%	1%	1 3/8	7/8
X205	19.69	19%	19.69	19%	1.18	1 3/8	.787	1 3/8	9%	16%	1 1/8	1 3/8	7/8
X185	19.69	19%	19.69	19%	1.10	1%	.630	1 3/8	9%	16%	1 1/8	5/8	3/8
X170	19.69	19%	19.69	19%	.984	1	.630	1 3/8	9%	17%	1%	5/8	3/8
X150	19.69	19%	19.69	19%	.866	3/8	.551	1 3/8	9%	17%	1 1/8	5/8	3/8
X132	19.69	19%	19.69	19%	.787	1 3/8	.433	7/8	9%	17%	1 1/8	1/2	1/4
WWF(M)18													
X337	17.72	17%	17.72	17%	2.36	2%	1.18	1 3/8	8%	12%	2%	1	5/8
X275	17.72	17%	17.72	17%	1.97	1 1/8	.787	1 3/8	8%	13%	2%	1 3/8	7/8
X229	17.72	17%	17.72	17%	1.57	1 1/8	.787	1 3/8	8%	13%	1 1/8	1 3/8	7/8
X207	17.72	17%	17.72	17%	1.38	1%	.787	1 3/8	8%	14%	1%	1 3/8	7/8
X184	17.72	17%	17.72	17%	1.18	1 3/8	.787	1 3/8	8%	14%	1 1/8	1 3/8	7/8
X166	17.72	17%	17.72	17%	1.10	1%	.630	1 3/8	8%	14%	1 1/8	5/8	3/8
X152	17.72	17%	17.72	17%	.984	1	.630	1 3/8	8%	15%	1 1/8	5/8	3/8
X134	17.72	17%	17.72	17%	.866	3/8	.551	1 3/8	8%	15%	1 1/8	5/8	3/8
X119	17.72	17%	17.72	17%	.787	1 3/8	.433	7/8	8%	15%	1 1/8	1/2	1/4
WWF(M)16													
X298	15.75	15%	15.75	15%	2.36	2%	1.18	1 3/8	7%	10%	2%	1	5/8
X243	15.75	15%	15.75	15%	1.97	1 1/8	.787	1 3/8	7%	11%	2%	1 3/8	7/8
X203	15.75	15%	15.75	15%	1.57	1 1/8	.787	1 3/8	7%	11%	1 1/8	1 3/8	7/8
X183	15.75	15%	15.75	15%	1.38	1%	.787	1 3/8	7%	12%	1%	1 3/8	7/8
X163	15.75	15%	15.75	15%	1.18	1 3/8	.787	1 3/8	7%	12%	1 1/8	1 3/8	7/8
X147	15.75	15%	15.75	15%	1.10	1%	.630	1 3/8	7%	12%	1 1/8	5/8	3/8
X135	15.75	15%	15.75	15%	.984	1	.630	1 3/8	7%	13%	1 1/8	5/8	3/8
X119	15.75	15%	15.75	15%	.866	3/8	.551	1 3/8	7%	13%	1 1/8	5/8	3/8
X105	15.75	15%	15.75	15%	.787	1 3/8	.433	7/8	7%	13%	1 1/8	1/2	1/4
WWF(M)14													
X258	13.78	13%	13.78	13%	2.36	2%	1.18	1 3/8	6%	8%	2%	1	5/8
X211	13.78	13%	13.78	13%	1.97	1 1/8	.787	1 3/8	6%	9%	2%	1 3/8	7/8
X177	13.78	13%	13.78	13%	1.57	1 1/8	.787	1 3/8	6%	9%	1 1/8	1 3/8	7/8
X159	13.78	13%	13.78	13%	1.38	1%	.787	1 3/8	6%	10%	1%	1 3/8	7/8
X142	13.78	13%	13.78	13%	1.18	1 3/8	.787	1 3/8	6%	10%	1 1/8	1 3/8	7/8
X128	13.78	13%	13.78	13%	1.19	1%	.630	1 3/8	6%	10%	1 1/8	5/8	3/8
X118	13.78	13%	13.78	13%	.984	1	.630	1 3/8	6%	11%	1 1/8	5/8	3/8
X104	13.78	13%	13.78	13%	.866	3/8	.551	1 3/8	6%	11%	1 1/8	5/8	3/8
X92	13.78	13%	13.78	13%	.787	1 3/8	.433	7/8	6%	11%	1 1/8	1/2	1/4

†The numerical term following the X is the nominal weight in pounds per foot.