

## Integrated Messenger Wire (IM/F and IM/H) - Sag and Tension Guide

### Initial Sag and Tension<sup>1</sup>

IM/F - 2-Pair x 22 AWG												
Span ft	0°F		20°F		40°F		60°F		80°F		100°F	
	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in
25	49	1.0	30	1.7	22	2.3	17	3.0	14	3.7	12	4.3
50	71	2.9	52	3.9	42	5.0	34	6.0	29	7.0	26	8.1
75	92	5.0	73	6.4	60	7.7	52	9.0	45	10.3	40	11.6
100	112	7.4	93	8.9	79	10.5	69	12.0	61	13.5	55	15.1
125	131	9.8	112	11.5	97	13.3	86	15.0	77	16.7	70	18.5
150	150	12.3	130	14.2	115	16.1	103	18.0	93	19.9	85	21.8
175	169	14.9	149	17.0	133	19.0	120	21.0	110	23.0	101	25.0
200	188	17.6	167	19.7	151	21.9	138	24.0	126	26.1	117	28.3
225	206	20.3	185	22.5	169	24.8	155	27.0	143	29.2	133	31.5
250	224	23.0	204	25.3	186	27.7	172	30.0	159	32.3	149	34.7

IM/F - 6-Pair x 22 AWG												
Span ft	0°F		20°F		40°F		60°F		80°F		100°F	
	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in
25	59	1.3	41	1.8	31	2.4	25	3.0	21	3.6	18	4.2
50	90	3.3	71	4.2	59	5.1	50	6.0	44	6.9	39	7.8
75	119	5.7	100	6.8	86	7.9	75	9.0	67	10.1	60	11.2
100	147	8.2	127	9.4	112	10.7	100	12.0	90	13.3	82	14.6
125	174	10.8	154	12.2	138	13.6	125	15.0	114	16.4	105	17.8
150	201	13.4	181	15.0	164	16.5	150	18.0	138	19.5	128	21.0
175	227	16.2	207	17.8	190	19.4	175	21.0	163	22.6	152	24.2
200	254	18.9	233	20.6	215	22.3	200	24.0	187	25.7	175	27.4
225	280	21.7	259	23.5	241	25.2	225	27.0	211	28.8	199	30.5

IM/H - 12-Pair x 22 AWG												
Span ft	0°F		20°F		40°F		60°F		80°F		100°F	
	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in	Tension lbs	Sag in
25	99	1.2	67	1.8	51	2.4	41	3.0	34	3.6	29	4.2
50	150	3.3	117	4.2	96	5.1	81	6.0	71	6.9	62	7.8
75	197	5.6	163	6.7	140	7.9	122	9.0	108	10.1	97	11.3
100	242	8.0	208	9.4	183	10.7	163	12.0	146	13.3	133	14.6
125	287	10.6	252	12.1	225	13.5	203	15.0	185	16.5	170	17.9
150	331	13.3	296	14.8	267	16.4	244	18.0	224	19.6	207	21.2
175	374	16.0	338	17.6	309	19.3	284	21.0	263	22.7	245	24.4
200	417	18.7	381	20.5	351	22.2	325	24.0	303	25.8	283	27.5
225	459	21.5	423	23.3	392	25.2	366	27.0	342	28.8	322	30.7
250	502	24.3	465	26.2	434	28.1	406	30.0	382	31.9	361	33.8
275	544	27.1	507	29.1	475	31.0	447	33.0	422	35.0	399	36.9
300	586	30.0	549	32.0	516	34.0	488	36.0	462	38.0	439	40.0
325	627	32.8	590	34.9	558	36.9	528	39.0	502	41.1	478	43.1
350	669	35.7	632	37.8	599	39.9	569	42.0	542	44.1	517	46.2

## NESC Ice and Wind Loading Districts<sup>1</sup>

IM/F - 2-Pair x 22 AWG																
Span ft	Heavy Plus <sup>2</sup>				Heavy				Medium				Light			
	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs
25	6.4	2.8	7.0	279	3.9	2.9	4.9	159	2.6	3.0	4.0	103	1.0	4.2	4.3	97
50	16.2	7.1	17.7	439	10.0	7.5	12.5	249	6.5	7.6	10.0	163	2.4	10.2	10.5	158
75	-	-	-	-	17.3	12.8	21.5	326	11.1	12.9	17.0	216	4.0	17.2	17.7	211
100	-	-	-	-	25.4	18.8	31.6	395	16.2	18.8	24.8	263	5.8	25.0	25.7	259
125	-	-	-	-	34.1	25.3	42.5	460	21.7	25.1	33.2	307	7.7	33.3	34.2	303
150	-	-	-	-	-	-	-	-	27.5	31.9	42.1	349	9.8	42.2	43.3	345
175	-	-	-	-	-	-	-	-	33.6	38.9	51.4	389	11.9	51.4	52.8	385
200	-	-	-	-	-	-	-	-	39.9	46.3	61.1	427	14.1	61.0	62.6	424
225	-	-	-	-	-	-	-	-	46.4	53.9	71.1	465	16.4	70.9	72.8	461
250	-	-	-	-	-	-	-	-	53.2	61.7	81.5	501	18.8	81.2	83.3	498

IM/F - 6-Pair x 22 AWG																
Span ft	Heavy Plus <sup>2</sup>				Heavy				Medium				Light			
	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs
25	6.5	2.8	7.1	292	4.1	2.9	5.0	171	2.8	3.0	4.0	113	0.8	4.1	4.2	100
50	16.5	7.0	17.9	461	10.3	7.3	12.7	269	6.9	7.4	10.1	182	2.0	9.9	10.1	164
75	-	-	-	-	17.7	12.5	21.7	353	11.7	12.5	17.1	241	3.3	16.6	16.9	220
100	-	-	-	-	25.9	18.3	31.7	429	17.0	18.1	24.8	295	4.8	24.0	24.4	271
125	-	-	-	-	34.8	24.5	42.6	500	22.7	24.2	33.1	345	6.3	31.8	32.5	319
150	-	-	-	-	-	-	-	-	28.6	30.6	41.9	394	8.0	40.1	40.9	365
175	-	-	-	-	-	-	-	-	34.9	37.2	51.0	440	9.7	48.7	49.7	409
200	-	-	-	-	-	-	-	-	41.4	44.1	60.5	484	11.5	57.7	58.8	452
225	-	-	-	-	-	-	-	-	-	-	-	-	13.3	66.9	68.2	493

IM/H - 12-Pair x 22 AWG																
Span ft	Heavy Plus <sup>2</sup>				Heavy				Medium				Light			
	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs	Vert. Sag in	Horiz. Sag in	Total Sag in	Tension lbs
25	5.4	2.2	5.9	373	3.4	2.3	4.1	227	2.5	2.3	3.4	153	0.6	3.3	3.4	122
50	13.8	5.6	14.9	588	8.8	5.7	10.5	356	6.2	5.8	8.5	246	1.4	8.0	8.1	204
75	23.7	9.6	25.6	770	15.1	9.9	18.0	468	10.5	9.8	14.3	327	2.4	13.3	13.5	276
100	-	-	-	-	22.1	14.4	26.3	569	15.1	14.2	20.7	402	3.4	19.1	19.4	343
125	-	-	-	-	29.6	19.3	35.3	663	20.1	18.9	27.6	472	4.5	25.2	25.6	406
150	-	-	-	-	37.5	24.5	44.8	752	25.4	23.8	34.8	539	5.6	31.5	32.0	466
175	-	-	-	-	45.8	29.9	54.7	838	30.9	28.9	42.3	603	6.8	38.2	38.8	524
200	-	-	-	-	-	-	-	-	36.5	34.2	50.1	666	8.0	45.0	45.7	581
225	-	-	-	-	-	-	-	-	42.4	39.7	58.1	727	9.2	52.0	52.8	637
250	-	-	-	-	-	-	-	-	48.4	45.3	66.2	786	10.5	59.1	60.0	691
275	-	-	-	-	-	-	-	-	54.5	51.0	74.6	845	11.8	66.4	67.4	744
300	-	-	-	-	-	-	-	-	-	-	-	-	13.1	73.8	75.0	797
325	-	-	-	-	-	-	-	-	-	-	-	-	14.4	81.3	82.6	849
350	-	-	-	-	-	-	-	-	-	-	-	-	15.8	89.0	90.3	900

## Loading District Specifics

	Heavy Plus <sup>2</sup>	Heavy	Medium	Light
Horizontal Wind Pressure (lb/ft <sup>2</sup> )	4	4	4	9
Radial Ice Thickness (in)	1	½	¼	0
Temperature (F)	0	0	15	30

<sup>1</sup>Reflects 1% Sag at 60° F Installation

<sup>2</sup>Not an NESC District