

READY

THE INNOVATOR OF OUR INDUSTRY[®]

SuperSprings[®]

... They Simply Are the World's Finest Die Springs



We take die springs very seriously ... that's why we recently built the most sophisticated die spring manufacturing plant in the world. You won't find a better die spring at any price.

Not all die springs are the same. Compare SuperSprings® to the competition. You'll find ...

- Longer Life (see next page) - less downtime means greater productivity.
- Consistent Dimensional Accuracy - tighter tolerances on free lengths and perpendicularity.
- Because our die springs are more dimensionally accurate, our spring rates are more accurate.
- Better Value - With SuperSprings®, you'll buy fewer die springs and lower your operating costs.
- We offer applications expertise, both technical support from our lab and sales support in the field.

We are the die spring experts in our industry. Try our SuperSprings®, and you'll see the difference for yourself!

SuperSprings®

- **Four Load Classes, Guaranteed Fit, Fully Interchangeable**

More than 400 SuperSprings® are available in four color-coded load classifications. Uniform lengths and diameters provide full interchangeability between load ratings. Spring diameters are guaranteed to fit in the hole and over the rod diameters listed in the dimensional data. Lengths, diameters, rates, and colors are in accordance with ISO 10243.

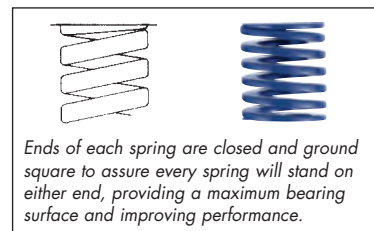
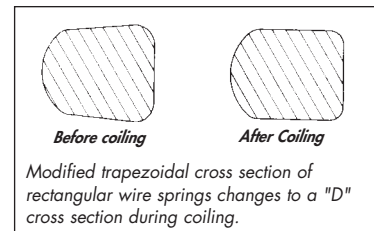
- **Engineered for High Performance and Long Service Life**

Each SuperSpring® has the optimum design, pitch, and metallurgical content for efficient performance. Rectangular wire springs are made from a trapezoidal cross section wire, which changes to a "D" cross section during coiling. This shape results in a lower maximum stress level, substantially contributing to longer spring life.

READY® applies several advanced manufacturing processes to enhance the life of SuperSprings®. These include precision heat treating, shot peening to reduce mechanical stresses, and presetting by compressing to solid for increased set resistance and greatest resistance to fatigue.

- **Dependable Performance Is Quality-Assured**

SuperSprings® are manufactured exclusively from vacuum degassed, valve spring quality alloy steel. State-of-the-art equipment, including CNC coiling and grinding, is employed to achieve consistent dimensional accuracy within narrowest tolerances. Each production run is thoroughly inspected and documented to maintain strict quality. The result is a die spring of unsurpassed quality which many of the world's most demanding users specify for long, dependable performance.



SuperSprings® Selection and Use

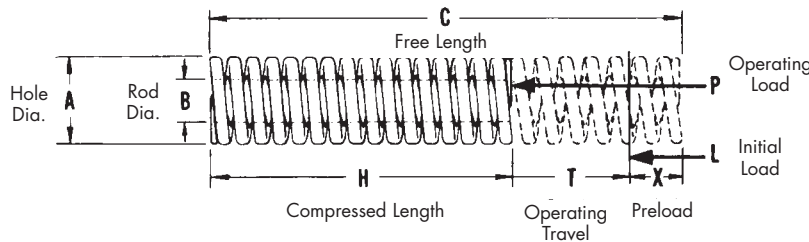
Take A Closer Look ...

As the ratio of preload to total deflection increases, spring life increases. We recommend that you use a generous preload in your tool design whenever possible.

As the ratio of total deflection to free length decreases, spring life increases. Spring life can often be

improved by drilling the spring pockets deeper and selecting the next longer spring.

The chart below and the spring tables presented on the following pages are designed to help you quickly select the die spring best suited to your needs.



Converting Compressed Lengths to Free Lengths

Light Load				Medium Load				Heavy Load				Extra Heavy Load			
H-Compressed Length Compression			C	H-Compressed Length Compression			C	H-Compressed Length Compression			C	H-Compressed Length Compression			C
Long Life 25%	Average Life 30%	Maximum Deflection 40%	Free Length	Long Life 25%	Average Life 30%	Maximum Deflection 37.5%	Free Length	Long Life 20%	Average Life 25%	Maximum Deflection 30%	Free Length	Long Life 17%	Average Life 20%	Maximum Deflection 25%	Free Length
Inch Conversion															
0.75	0.69	0.58	1	0.75	0.69	0.61	1	0.79	0.75	0.69	1	0.82	0.79	0.75	1
0.94	0.89	0.77	1 1/4	0.94	0.89	0.79	1 1/4	1.02	0.94	0.89	1 1/4	1.04	1.02	0.94	1 1/4
1.02	1.06	0.91	1 1/2	1.12	1.06	0.94	1 1/2	1.20	1.12	1.06	1 1/2	1.24	1.20	1.12	1 1/2
1.30	1.22	1.02	1 3/4	1.30	1.22	1.06	1 3/4	1.38	1.30	1.22	1 3/4	1.44	1.38	1.30	1 3/4
1.50	1.42	1.22	2	1.50	1.42	1.26	2	1.61	1.50	1.42	2	1.67	1.61	1.50	2
1.89	1.77	1.54	2 1/2	1.89	1.77	1.57	2 1/2	2.01	1.89	1.77	2 1/2	2.09	2.01	1.89	2 1/2
2.24	2.09	1.81	3	2.24	2.09	1.85	3	2.40	2.24	2.09	3	2.48	2.40	2.24	3
2.64	2.44	2.13	3 1/2	2.64	2.44	2.20	3 1/2	2.80	2.64	2.44	3 1/2	2.91	2.80	2.64	3 1/2
3.03	2.80	2.40	4	3.03	2.80	2.52	4	3.23	3.03	2.80	4	3.35	3.23	3.03	4
3.39	3.19	2.72	4 1/2	3.39	3.19	2.83	4 1/2	3.62	3.39	3.19	4 1/2	3.74	3.62	3.39	4 1/2
3.74	3.50	2.99	5	3.74	3.50	3.11	5	4.02	3.74	3.50	5	4.13	4.02	3.74	5
4.13	3.86	3.31	5 1/2	4.13	3.86	3.46	5 1/2	4.41	4.13	3.86	5 1/2	4.57	4.41	4.13	5 1/2
4.49	4.17	3.58	6	4.49	4.17	3.74	6	4.80	4.49	4.17	6	4.96	4.80	4.49	6
5.24	4.92	4.21	7	5.24	4.92	4.37	7	5.63	5.24	4.92	7	5.83	5.63	5.24	7
5.98	5.59	4.80	8	5.98	5.59	5.00	8	6.38	5.98	5.59	8	6.61	6.38	5.98	8
0.00	0.00	0.00	9	6.77	6.30	5.63	9	0.00	0.00	0.00	9	0.00	0.00	0.00	9
7.52	7.01	10.00	10	7.52	7.01	6.26	10	7.99	7.52	7.01	10	8.31	7.99	7.52	10
9.02	8.39	12.01	12	9.02	8.39	7.52	12	9.61	9.02	8.39	12	9.96	9.61	9.02	12
Metric Conversion															
19	17.5	14.8	25	19	17.5	15.5	25	20	19	17.5	25	20.8	20	19	25
24	22.5	19.5	32	24	22.5	20	32	26	24	22.5	32	26.5	26	24	32
25.8	27	23	38	28.5	27	24	38	30.5	28.5	27	38	31.5	30.5	28.5	38
33	31	26	44	33	31	27	44	35	33	31	44	36.5	35	33	44
38	36	31	51	38	36	32	51	41	38	36	51	42.5	41	38	51
48	45	39	64	48	45	40	64	51	48	45	64	53	51	48	64
57	53	46	76	57	53	47	76	61	57	53	76	63	61	57	76
67	62	54	89	67	62	56	89	71	67	62	89	74	71	67	89
77	71	61	102	77	71	64	102	82	77	71	102	85	82	77	102
86	81	69	115	86	81	72	115	92	86	81	115	95	92	86	115
95	89	76	127	95	89	79	127	102	95	89	127	105	102	95	127
105	98	84	140	105	98	88	140	112	105	98	140	116	112	105	140
114	106	91	152	114	106	95	152	122	114	106	152	126	122	114	152
133	125	107	178	133	125	111	178	143	133	125	178	148	143	133	178
152	142	122	203	152	142	127	203	162	152	142	203	168	162	152	203
----	----	----	----	172	160	143	229	----	----	----	----	----	----	----	----
191	178	254	254	191	178	159	254	203	191	178	254	211	203	191	254
229	213	305	305	229	213	191	305	244	229	213	305	253	244	229	305

Most die spring manufacturers will claim that based upon in-house testing, their spring outperforms the competition.

To eliminate all bias, we went outside and asked the prestigious Spring Research and Manufacturer's Association to life test our SuperSpring® against the competition. The results of this independent test, certified under Test Certificate No. 002860, prove* the long-life performance of our SuperSpring®:

The springs were cycled between lengths corresponding to the 'catalog' maximum deflection conditions of 23.97mm and 18.80mm at a test speed of 3000 cycles/minute.

The results have also been analyzed by means of the 'weibull' technique, and a value of 'B10' (the life in cycles which 90% of springs would be expected to survive without failure) determined for each batch.

The B10 values are:		
READY SuperSprings®		333,139
RAYMOND springs		152,159
DANLY DIE SET springs		117,706

Ready SuperSprings®
(color code yellow)

Spring No.	Cycles	Broken	Unbroken
1	466,450	X	
2	10,000,000		X
3	3,043,070	X	
4	1,995,730	X	
5	10,000,000		X
6	10,000,000		X
7	10,000,000		X
8	314,670	X	
9	10,000,000		X
10	10,000,000		X

Danly Die Set Springs
(color code yellow/green)

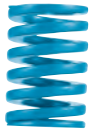
Spring No.	Cycles	Broken	Unbroken
1	238,290	X	
2	286,540	X	
3	178,390	X	
4	138,640	X	
5	231,390	X	
6	199,170	X	
7	114,490	X	
8	144,870	X	
9	136,010	X	
10	211,740	X	

Raymond Springs
(color code green)

Spring No.	Cycles	Broken	Unbroken
1	185,000	X	
2	156,760	X	
3	166,160	X	
4	164,410	X	
5	154,530	X	
6	9,000,860	X	
7	157,470	X	
8	198,250	X	
9	152,030	X	
10	167,680	X	

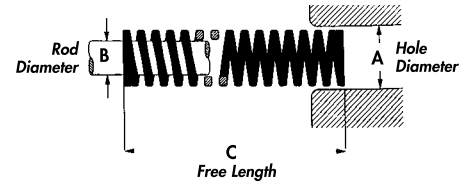
*1. Every effort was made to test representative samples. SuperSprings were randomly selected from stock, and competitors' springs were supplied against a purchase order. The possibility remains, however, that these samples may somehow not be representative.

2. This is a test on only one spring size and one specific set of operating conditions, performed in a laboratory environment; it may not be typical of the way you use springs. We urge you to run a comparison life test in your own plant and compare the fatigue life of our SuperSpring to those of our competitors under actual manufacturing conditions.



LIGHT LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 3/8" to 1", Rectangular Wire Construction

Color: Green

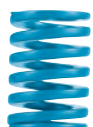
Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Average Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid	
					Load lbs.	Deflection Inches	Load lbs.	Deflection Inches	Load lbs.	Deflection Inches	Load lbs.	Deflection Inches
Rectangular Wire Construction												
3/8	3/16	1	9 - 0604 - LE	5.7	14	0.25	17	0.30	23	0.40	34	0.59
		1.25	9 - 0605 - LE	4.9	15	0.31	18	0.38	24	0.50	36	0.75
		1.5	9 - 0606 - LE	3.9	15	0.38	17	0.45	23	0.60	35	0.91
		1.75	9 - 0607 - LE	3.4	15	0.44	18	0.53	24	0.70	36	1.06
		2	9 - 0608 - LE	2.9	14	0.50	17	0.60	23	0.80	35	1.22
		2.5	9 - 0610 - LE	2.5	15	0.63	18	0.75	25	1.00	40	1.61
		3	9 - 0612 - LE	1.8	14	0.75	16	0.90	22	1.20	35	1.89
		12	9 - 0648 - LE	0.6	19	3.00	23	3.60	30	4.80	46	7.36
1/2	9/32	1	9 - 0804 - LE	10.2	26	0.25	31	0.30	41	0.40	52	0.51
		1.25	9 - 0805 - LE	9.4	29	0.31	35	0.38	47	0.50	63	0.67
		1.5	9 - 0806 - LE	7.8	29	0.38	35	0.45	47	0.60	67	0.87
		1.75	9 - 0807 - LE	6.9	30	0.44	36	0.53	48	0.70	68	0.98
		2	9 - 0808 - LE	6.5	33	0.50	39	0.60	52	0.80	74	1.14
		2.5	9 - 0810 - LE	5.3	33	0.63	40	0.75	53	1.00	77	1.46
		3	9 - 0812 - LE	4.1	30	0.75	36	0.90	49	1.20	75	1.85
		3.5	9 - 0814 - LE	3.1	27	0.88	32	1.05	43	1.40	66	2.13
		4.5	9 - 0818 - LE	2.5	28	1.13	34	1.35	45	1.80	71	2.83
		5.5	9 - 0822 - LE	2.1	29	1.38	35	1.65	46	2.20	76	3.58
		6.5	9 - 0826 - LE	1.5	24	1.63	29	1.95	39	2.60	58	3.90
		7.5	9 - 0830 - LE	1.1	21	1.88	26	2.25	34	3.00	50	4.37
12	9 - 0848 - LE	0.8	24	3.00	29	3.60	38	4.80	58	7.24		
5/8	11/32	1	9 - 1004 - LE	13.4	33	0.25	40	0.30	53	0.40	58	0.43
		1.25	9 - 1005 - LE	13.1	41	0.31	49	0.38	65	0.50	87	0.67
		1.5	9 - 1006 - LE	11.0	41	0.38	50	0.45	66	0.60	87	0.79
		1.75	9 - 1007 - LE	9.8	43	0.44	51	0.53	68	0.70	92	0.94
		2	9 - 1008 - LE	9.0	45	0.50	54	0.60	72	0.80	102	1.14
		2.5	9 - 1010 - LE	6.1	38	0.63	46	0.75	61	1.00	89	1.46
		3	9 - 1012 - LE	5.7	43	0.75	51	0.90	68	1.20	94	1.65
		3.5	9 - 1014 - LE	4.9	43	0.88	52	1.05	69	1.40	99	2.01
		4	9 - 1016 - LE	4.5	45	1.00	53	1.20	71	1.60	109	2.44
		12	9 - 1048 - LE	1.4	43	3.00	51	3.60	68	4.80	102	7.13
3/4	3/8	1	9 - 1204 - L	31.7	79	0.25	95	0.30	127	0.40	162	0.51
		1.25	9 - 1205 - L	24.4	76	0.31	91	0.38	122	0.50	154	0.63
		1.5	9 - 1206 - L	19.3	73	0.38	87	0.45	116	0.60	145	0.75
		1.75	9 - 1207 - L	16.3	71	0.44	85	0.53	114	0.70	147	0.91
		2	9 - 1208 - L	14.1	70	0.50	85	0.60	113	0.80	144	1.02
		2.5	9 - 1210 - L	11.0	69	0.63	82	0.75	110	1.00	139	1.26
		3	9 - 1212 - L	9.2	69	0.75	83	0.90	110	1.20	145	1.57
		3.5	9 - 1214 - L	7.7	67	0.88	81	1.05	107	1.40	139	1.81
		4	9 - 1216 - L	6.7	67	1.00	81	1.20	108	1.60	141	2.09
		4.5	9 - 1218 - L	5.9	67	1.13	80	1.35	107	1.80	140	2.36
		5	9 - 1220 - L	5.4	67	1.25	80	1.50	107	2.00	142	2.64
		5.5	9 - 1222 - L	4.8	67	1.38	80	1.65	107	2.20	139	2.87
		6	9 - 1224 - L	4.5	67	1.50	81	1.80	108	2.40	143	3.19
		12	9 - 1248 - L	2.2	65	3.00	78	3.60	104	4.80	138	6.38
1	1/2	1	9 - 1604 - L	57.1	143	0.25	171	0.30	228	0.40	292	0.51
		1.25	9 - 1605 - L	46.0	144	0.31	172	0.38	230	0.50	290	0.63
		1.5	9 - 1606 - L	37.0	139	0.38	166	0.45	222	0.60	277	0.75
		1.75	9 - 1607 - L	30.4	133	0.44	160	0.53	213	0.70	275	0.91
		2	9 - 1608 - L	26.4	132	0.50	158	0.60	211	0.80	260	0.98
		2.5	9 - 1610 - L	20.4	127	0.63	153	0.75	204	1.00	249	1.22
		3	9 - 1612 - L	16.7	125	0.75	150	0.90	200	1.20	256	1.54
		3.5	9 - 1614 - L	14.2	124	0.88	149	1.05	198	1.40	256	1.81
		4	9 - 1616 - L	12.1	121	1.00	145	1.20	194	1.60	248	2.05
		4.5	9 - 1618 - L	10.7	120	1.13	144	1.35	193	1.80	248	2.32
		5	9 - 1620 - L	9.6	119	1.25	143	1.50	191	2.00	248	2.60
		5.5	9 - 1622 - L	8.7	119	1.38	143	1.65	191	2.20	253	2.91
		6	9 - 1624 - L	7.9	119	1.50	143	1.80	190	2.40	250	3.15
		7	9 - 1628 - L	6.8	119	1.75	143	2.10	190	2.80	249	3.66
		8	9 - 1632 - L	6.0	120	2.00	144	2.40	192	3.20	253	4.21
		12	9 - 1648 - L	4.0	120	3.00	144	3.60	191	4.80	251	6.30

Sizes: 1 1/4" to 2 1/2", Rectangular Wire Construction
 Sizes: 3/8" to 5/8", Round Wire Construction

Color: Green

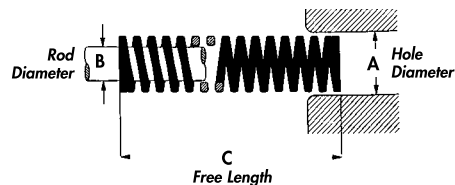
INCH

Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE									
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Average Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid			
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches		
A	B	C												
1 1/4	5/8	1.5	9 - 2006 - L	53.6	201	0.38	241	0.45	322	0.60	401	0.75		
		1.75	9 - 2007 - L	45.4	199	0.44	238	0.53	318	0.70	393	0.87		
		2	9 - 2008 - L	38.2	191	0.50	229	0.60	306	0.80	376	0.98		
		2.5	9 - 2010 - L	31.4	196	0.63	235	0.75	314	1.00	395	1.26		
		3	9 - 2012 - L	26.3	197	0.75	236	0.90	315	1.20	403	1.54		
		3.5	9 - 2014 - L	21.2	186	0.88	223	1.05	297	1.40	376	1.77		
		4	9 - 2016 - L	18.3	183	1.00	219	1.20	292	1.60	374	2.05		
		4.5	9 - 2018 - L	16.9	190	1.13	228	1.35	304	1.80	386	2.28		
		5	9 - 2020 - L	14.3	178	1.25	214	1.50	285	2.00	365	2.56		
		5.5	9 - 2022 - L	13.4	184	1.38	221	1.65	295	2.20	380	2.83		
		6	9 - 2024 - L	12.3	184	1.50	221	1.80	295	2.40	378	3.07		
		7	9 - 2028 - L	10.4	182	1.75	218	2.10	291	2.80	360	3.46		
8	9 - 2032 - L	9.1	181	2.00	217	2.40	290	3.20	371	4.09				
10	9 - 2040 - L	7.2	180	2.50	216	3.00	288	4.00	368	5.12				
12	9 - 2048 - L	5.9	178	3.00	213	3.60	284	4.80	361	6.10				
1 1/2	3/4	2	9 - 2408 - L	52.5	263	0.50	315	0.60	420	0.80	517	0.98		
		2.5	9 - 2410 - L	41.6	260	0.63	312	0.75	416	1.00	524	1.26		
		3	9 - 2412 - L	36.0	270	0.75	324	0.90	431	1.20	538	1.50		
		3.5	9 - 2414 - L	29.1	255	0.88	306	1.05	408	1.40	516	1.77		
		4	9 - 2416 - L	24.5	245	1.00	295	1.20	393	1.60	493	2.01		
		4.5	9 - 2418 - L	22.6	254	1.13	305	1.35	407	1.80	516	2.28		
		5	9 - 2420 - L	21.1	264	1.25	317	1.50	422	2.00	540	2.56		
		5.5	9 - 2422 - L	18.3	251	1.38	301	1.65	402	2.20	511	2.80		
		6	9 - 2424 - L	16.0	240	1.50	288	1.80	384	2.40	491	3.07		
		7	9 - 2428 - L	14.4	252	1.75	302	2.10	403	2.80	521	3.62		
		8	9 - 2432 - L	13.0	259	2.00	311	2.40	415	3.20	536	4.13		
		10	9 - 2440 - L	9.7	243	2.50	291	3.00	388	4.00	500	5.16		
12	9 - 2448 - L	8.5	254	3.00	304	3.60	406	4.80	523	6.18				
2	1	2.5	9 - 3210 - L	89.7	560	0.63	672	0.75	897	1.00	1130	1.26		
		3	9 - 3212 - L	72.0	540	0.75	648	0.90	864	1.20	1105	1.54		
		3.5	9 - 3214 - L	60.0	525	0.88	630	1.05	841	1.40	1064	1.77		
		4	9 - 3216 - L	51.3	513	1.00	615	1.20	820	1.60	1049	2.05		
		4.5	9 - 3218 - L	43.8	492	1.13	591	1.35	788	1.80	1000	2.28		
		5	9 - 3220 - L	40.0	500	1.25	600	1.50	800	2.00	1023	2.56		
		5.5	9 - 3222 - L	36.0	495	1.38	594	1.65	792	2.20	1020	2.83		
		6	9 - 3224 - L	32.8	492	1.50	590	1.80	787	2.40	1007	3.07		
		7	9 - 3228 - L	27.8	486	1.75	584	2.10	778	2.80	1006	3.62		
		8	9 - 3232 - L	23.7	474	2.00	569	2.40	758	3.20	970	4.09		
		10	9 - 3240 - L	18.8	470	2.50	564	3.00	752	4.00	962	5.12		
		12	9 - 3248 - L	15.5	465	3.00	558	3.60	744	4.80	952	6.14		
2 1/2	1 1/2	3	9 - 4012 - L	110	825	0.75	990	0.90	1319	1.20	1645	1.50		
		3.5	9 - 4014 - L	90.1	789	0.88	946	1.05	1262	1.40	1561	1.73		
		4	9 - 4016 - L	76.4	764	1.00	916	1.20	1222	1.60	1503	1.97		
		4.5	9 - 4018 - L	66.2	744	1.13	893	1.35	1191	1.80	1485	2.24		
		5	9 - 4020 - L	58.0	725	1.25	870	1.50	1160	2.00	1461	2.52		
		6	9 - 4024 - L	47.7	716	1.50	859	1.80	1145	2.40	1428	2.99		
		7	9 - 4028 - L	40.1	701	1.75	842	2.10	1122	2.80	1404	3.50		
		8	9 - 4032 - L	34.5	690	2.00	828	2.40	1103	3.20	1385	4.02		
		10	9 - 4040 - L	26.8	670	2.50	804	3.00	1072	4.00	1329	4.96		
		12	9 - 4048 - L	22.1	663	3.00	795	3.60	1060	4.80	1322	5.98		
		Round Wire Construction												
		3/8	3/16	1	9 - 0604 - L	2.6	7	0.25	8	0.30	11	0.40	13	0.51
1.25	9 - 0605 - L			2.0	6	0.31	7	0.38	10	0.50	13	0.63		
1.5	9 - 0606 - L			1.6	6	0.38	7	0.45	10	0.60	13	0.79		
1.75	9 - 0607 - L			1.4	6	0.44	7	0.53	10	0.70	12	0.91		
2	9 - 0608 - L			1.2	6	0.50	7	0.60	10	0.80	13	1.06		
2.5	9 - 0610 - L			1.0	6	0.63	7	0.75	10	1.00	13	1.34		
3	9 - 0612 - L			0.8	6	0.75	7	0.90	9	1.20	12	1.57		
12	9 - 0648 - L			0.2	5	3.00	6	3.60	9	4.80	12	6.42		
1/2	9/32	1	9 - 0804 - L	5.1	13	0.25	15	0.30	21	0.40	26	0.51		
		1.25	9 - 0805 - L	3.8	12	0.31	14	0.38	19	0.50	26	0.67		
		1.5	9 - 0806 - L	3.1	12	0.38	14	0.45	18	0.60	24	0.79		
		1.75	9 - 0807 - L	2.6	11	0.44	14	0.53	18	0.70	24	0.91		
		2	9 - 0808 - L	2.2	11	0.50	13	0.60	18	0.80	23	1.06		
		2.5	9 - 0810 - L	1.7	11	0.63	13	0.75	17	1.00	24	1.38		
		3	9 - 0812 - L	1.4	11	0.75	13	0.90	17	1.20	23	1.61		
		3.5	9 - 0814 - L	1.2	10	0.88	13	1.05	17	1.40	23	1.93		
12	9 - 0848 - L	0.3	10	3.00	12	3.60	16	4.80	22	6.54				
5/8	11/32	1	9 - 1004 - L	10.2	25	0.25	30	0.30	41	0.40	52	0.51		
		1.25	9 - 1005 - L	7.6	24	0.31	29	0.38	38	0.50	48	0.63		
		1.5	9 - 1006 - L	6.0	23	0.38	27	0.45	36	0.60	47	0.79		
		1.75	9 - 1007 - L	5.0	22	0.44	26	0.53	35	0.70	45	0.91		
		2	9 - 1008 - L	4.3	22	0.50	26	0.60	35	0.80	46	1.06		
		2.5	9 - 1010 - L	3.4	21	0.63	25	0.75	34	1.00	45	1.34		
		3	9 - 1012 - L	2.7	20	0.75	25	0.90	33	1.20	44	1.61		
		3.5	9 - 1014 - L	2.3	20	0.88	25	1.05	33	1.40	45	1.93		
		4	9 - 1016 - L	2.0	20	1.00	24	1.20	32	1.60	44	2.20		
		12	9 - 1048 - L	0.6	19	3.00	23	3.60	31	4.80	43	6.69		



MEDIUM LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 3/8" to 1", Rectangular Wire Construction

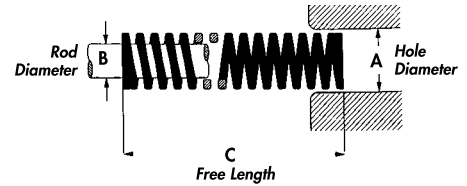
Color: Blue

Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Average Life (30% of C)		Maximum Operating Deflection (37.5% of C)		Total Travel to Solid	
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches
Rectangular Wire Construction												
3/8	3/16	1	9 - 0604 - ME	9.1	23	0.25	27	0.30	34	0.38	40	0.43
		1 1/4	9 - 0605 - ME	7.4	23	0.31	28	0.38	35	0.47	53	0.71
		1 1/2	9 - 0606 - ME	6.8	25	0.38	31	0.45	38	0.56	53	0.79
		1 3/4	9 - 0607 - ME	5.9	26	0.44	31	0.53	39	0.66	51	0.87
		2	9 - 0608 - ME	5.1	25	0.50	30	0.60	38	0.75	52	1.02
		2 1/2	9 - 0610 - ME	4.3	27	0.63	32	0.75	40	0.94	54	1.26
		3	9 - 0612 - ME	3.0	23	0.75	27	0.90	34	1.13	45	1.50
		12	9 - 0648 - ME	0.9	27	3.00	33	3.60	41	4.50	54	5.87
1/2	9/32	1	9 - 0804 - ME	17.1	43	0.25	51	0.30	64	0.38	88	0.51
		1 1/4	9 - 0805 - ME	14.2	44	0.31	53	0.38	66	0.47	100	0.71
		1 1/2	9 - 0806 - ME	12.2	46	0.38	55	0.45	69	0.56	96	0.79
		1 3/4	9 - 0807 - ME	10.6	46	0.44	55	0.53	69	0.66	100	0.94
		2	9 - 0808 - ME	8.8	44	0.50	53	0.60	66	0.75	98	1.10
		2 1/2	9 - 0810 - ME	6.9	43	0.63	52	0.75	65	0.94	95	1.38
		3	9 - 0812 - ME	5.8	44	0.75	52	0.90	65	1.13	94	1.61
		3 1/2	9 - 0814 - ME	4.8	42	0.88	50	1.05	63	1.31	92	1.93
12	9 - 0848 - ME	1.2	36	3.00	43	3.60	54	4.50	70	5.87		
5/8	11/32	1	9 - 1004 - ME	28.2	70	0.25	85	0.30	106	0.38	133	0.47
		1 1/4	9 - 1005 - ME	21.2	66	0.31	79	0.38	99	0.47	125	0.59
		1 1/2	9 - 1006 - ME	19.3	73	0.38	87	0.45	109	0.56	145	0.75
		1 3/4	9 - 1007 - ME	17.1	75	0.44	90	0.53	112	0.66	142	0.83
		2	9 - 1008 - ME	15.1	75	0.50	90	0.60	113	0.75	148	0.98
		2 1/2	9 - 1010 - ME	11.7	73	0.63	88	0.75	110	0.94	147	1.26
		3	9 - 1012 - ME	10.2	76	0.75	91	0.90	114	1.13	156	1.54
		3 1/2	9 - 1014 - ME	8.7	76	0.88	91	1.05	114	1.31	154	1.77
4	9 - 1016 - ME	7.7	77	1.00	92	1.20	116	1.50	161	2.09		
12	9 - 1048 - ME	2.7	82	3.00	99	3.60	123	4.50	162	5.91		
3/4	3/8	1	9 - 1204 - M	51.5	129	0.25	155	0.30	193	0.38	223	0.43
		1 1/4	9 - 1205 - M	39.0	122	0.31	146	0.38	183	0.47	200	0.51
		1 1/2	9 - 1206 - M	31.4	118	0.38	142	0.45	177	0.56	198	0.63
		1 3/4	9 - 1207 - M	25.7	112	0.44	135	0.53	169	0.66	192	0.75
		2	9 - 1208 - M	22.2	111	0.50	133	0.60	167	0.75	184	0.83
		2 1/2	9 - 1210 - M	17.4	108	0.63	130	0.75	163	0.94	184	1.06
		3	9 - 1212 - M	14.2	106	0.75	127	0.90	159	1.13	184	1.30
		3 1/2	9 - 1214 - M	12.2	106	0.88	128	1.05	160	1.31	187	1.54
		4	9 - 1216 - M	10.6	106	1.00	127	1.20	159	1.50	184	1.73
		4 1/2	9 - 1218 - M	9.3	105	1.13	126	1.35	157	1.69	180	1.93
		5	9 - 1220 - M	8.4	105	1.25	126	1.50	157	1.88	182	2.17
		5 1/2	9 - 1222 - M	7.6	104	1.38	125	1.65	157	2.06	182	2.40
		6	9 - 1224 - M	6.8	103	1.50	123	1.80	154	2.25	178	2.60
		12	9 - 1248 - M	3.5	104	3.00	125	3.60	156	4.50	185	5.35
1	1/2	1	9 - 1604 - M	86.0	215	0.25	258	0.30	323	0.38	372	0.43
		1 1/4	9 - 1605 - M	67.6	211	0.31	254	0.38	317	0.47	346	0.51
		1 1/2	9 - 1606 - M	53.3	200	0.38	240	0.45	300	0.56	336	0.63
		1 3/4	9 - 1607 - M	47.5	208	0.44	249	0.53	312	0.66	355	0.75
		2	9 - 1608 - M	39.3	197	0.50	236	0.60	295	0.75	325	0.83
		2 1/2	9 - 1610 - M	30.4	190	0.63	228	0.75	285	0.94	323	1.06
		3	9 - 1612 - M	24.7	185	0.75	222	0.90	278	1.13	321	1.30
		3 1/2	9 - 1614 - M	21.7	190	0.88	228	1.05	285	1.31	333	1.54
		4	9 - 1616 - M	18.8	188	1.00	226	1.20	283	1.50	326	1.73
		4 1/2	9 - 1618 - M	16.7	188	1.13	226	1.35	282	1.69	329	1.97
		5	9 - 1620 - M	15.1	188	1.25	226	1.50	283	1.88	332	2.20
		5 1/2	9 - 1622 - M	13.6	187	1.38	224	1.65	280	2.06	337	2.48
		6	9 - 1624 - M	12.4	187	1.50	224	1.80	280	2.25	328	2.64
		7	9 - 1628 - M	10.6	185	1.75	222	2.10	277	2.63	328	3.11
8	9 - 1632 - M	9.1	182	2.00	219	2.40	273	3.00	323	3.54		
12	9 - 1648 - M	6.0	179	3.00	215	3.60	269	4.50	317	5.31		



HEAVY LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 3/8" to 1", Rectangular Wire Construction

Color: Red

Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (20% of C)		Total Deflection Recommended for Average Life (25% of C)		Maximum Operating Deflection (30% of C)		Total Travel to Solid	
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches
A	B	C										
Rectangular Wire Construction												
3/8	3/16	1	9-0604-HE	12.6	25	0.20	32	0.25	38	0.30	60	0.47
		1 1/4	9-0605-HE	10.0	25	0.25	31	0.31	37	0.38	51	0.51
		1 1/2	9-0606-HE	9.8	29	0.30	37	0.38	44	0.45	58	0.59
		1 3/4	9-0607-HE	8.6	30	0.35	37	0.44	45	0.53	64	0.75
		2	9-0608-HE	7.3	29	0.40	37	0.50	44	0.60	66	0.91
		2 1/2	9-0610-HE	6.1	31	0.50	38	0.63	46	0.75	65	1.06
		3	9-0612-HE	4.3	26	0.60	32	0.75	39	0.90	54	1.26
		12	9-0648-HE	1.2	29	2.40	36	3.00	43	3.60	66	5.51
1/2	9/32	1	9-0804-HE	24.0	48	0.20	60	0.25	72	0.30	114	0.47
		1 1/4	9-0805-HE	18.9	47	0.25	59	0.31	71	0.38	119	0.63
		1 1/2	9-0806-HE	16.7	50	0.30	63	0.38	75	0.45	132	0.79
		1 3/4	9-0807-HE	14.0	49	0.35	61	0.44	74	0.53	122	0.87
		2	9-0808-HE	11.2	45	0.40	56	0.50	67	0.60	110	0.98
		2 1/2	9-0810-HE	8.6	43	0.50	54	0.63	64	0.75	101	1.18
		3	9-0812-HE	7.5	45	0.60	57	0.75	68	0.90	110	1.46
		3 1/2	9-0814-HE	6.5	46	0.70	57	0.88	68	1.05	108	1.65
		12	9-0848-HE	1.6	38	2.40	48	3.00	58	3.60	82	5.12
5/8	11/32	1	9-1004-HE	43.2	86	0.20	108	0.25	130	0.30	170	0.39
		1 1/4	9-1005-HE	30.1	75	0.25	94	0.31	113	0.38	154	0.51
		1 1/2	9-1006-HE	27.7	83	0.30	104	0.38	125	0.45	185	0.67
		1 3/4	9-1007-HE	24.4	85	0.35	107	0.44	128	0.53	202	0.83
		2	9-1008-HE	21.2	85	0.40	106	0.50	127	0.60	192	0.91
		2 1/2	9-1010-HE	17.3	86	0.50	108	0.63	130	0.75	197	1.14
		3	9-1012-HE	14.7	88	0.60	110	0.75	132	0.90	196	1.34
		3 1/2	9-1014-HE	12.4	87	0.70	108	0.88	130	1.05	190	1.54
				4	9-1016-HE	11.0	88	0.80	110	1.00	132	1.20
		12	9-1048-HE	4.1	97	2.40	122	3.00	146	3.60	185	4.57
3/4	3/8	1	9-1204-H	123	247	0.20	308	0.25	370	0.30	388	0.31
		1 1/4	9-1205-H	95.9	240	0.25	300	0.31	360	0.38	377	0.39
		1 1/2	9-1206-H	73.6	221	0.30	276	0.38	331	0.45	348	0.47
		1 3/4	9-1207-H	63.9	224	0.35	280	0.44	336	0.53	352	0.55
		2	9-1208-H	53.6	215	0.40	268	0.50	322	0.60	338	0.63
		2 1/2	9-1210-H	41.2	206	0.50	257	0.63	309	0.75	340	0.83
		3	9-1212-H	34.1	204	0.60	256	0.75	307	0.90	349	1.02
		3 1/2	9-1214-H	28.8	202	0.70	252	0.88	303	1.05	340	1.18
		4	9-1216-H	25.2	202	0.80	252	1.00	303	1.20	348	1.38
		4 1/2	9-1218-H	21.9	197	0.90	247	1.13	296	1.35	345	1.57
		5	9-1220-H	19.5	195	1.00	243	1.25	292	1.50	337	1.73
		5 1/2	9-1222-H	17.7	195	1.10	243	1.38	292	1.65	341	1.93
		6	9-1224-H	16.1	193	1.20	241	1.50	290	1.80	336	2.09
		12	9-1248-H	8.6	205	2.40	257	3.00	308	3.60	364	4.25
1	1/2	1	9-1604-H	217	434	0.20	543	0.25	651	0.30	684	0.31
		1 1/4	9-1605-H	158	394	0.25	493	0.31	591	0.38	621	0.39
		1 1/2	9-1606-H	125	376	0.30	470	0.38	564	0.45	642	0.51
		1 3/4	9-1607-H	105	369	0.35	461	0.44	553	0.53	622	0.59
		2	9-1608-H	89.8	359	0.40	449	0.50	539	0.60	636	0.71
		2 1/2	9-1610-H	69.4	347	0.50	434	0.63	521	0.75	601	0.87
		3	9-1612-H	57.1	343	0.60	428	0.75	514	0.90	607	1.06
		3 1/2	9-1614-H	48.2	337	0.70	421	0.88	506	1.05	626	1.30
		4	9-1616-H	41.9	336	0.80	419	1.00	503	1.20	611	1.46
		4 1/2	9-1618-H	37.2	335	0.90	419	1.13	502	1.35	630	1.69
		5	9-1620-H	32.8	328	1.00	410	1.25	492	1.50	607	1.85
		5 1/2	9-1622-H	29.7	327	1.10	409	1.38	491	1.65	609	2.05
		6	9-1624-H	27.4	329	1.20	411	1.50	493	1.80	615	2.24
		7	9-1628-H	23.3	327	1.40	409	1.75	490	2.10	625	2.68
		8	9-1632-H	20.4	326	1.60	408	2.00	489	2.40	618	3.03
		12	9-1648-H	13.1	314	2.40	392	3.00	471	3.60	592	4.53

Sizes: 1 1/4" to 2", Rectangular Wire Construction
 Sizes: 3/8" to 5/8", Round Wire Construction

Color: Red

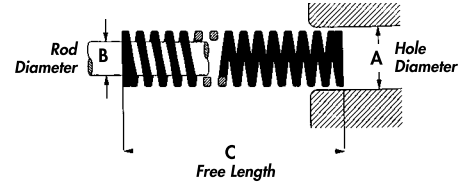
Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (20% of C)		Total Deflection Recommended for Average Life (25% of C)		Maximum Operating Deflection (30% of C)		Total Travel to Solid	
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches
A	B	C										
1 1/4	5/8	1 1/2	9-2006-H	215	644	0.30	805	0.38	966	0.45	1014	0.47
		1 3/4	9-2007-H	177	618	0.35	773	0.44	928	0.53	974	0.55
		2	9-2008-H	150	601	0.40	751	0.50	902	0.60	947	0.63
		2 1/2	9-2010-H	117	584	0.50	730	0.63	876	0.75	965	0.83
		3	9-2012-H	94.7	568	0.60	711	0.75	853	0.90	970	1.02
		3 1/2	9-2014-H	80.2	561	0.70	701	0.88	842	1.05	947	1.18
		4	9-2016-H	69.1	553	0.80	691	1.00	829	1.20	952	1.38
		4 1/2	9-2018-H	60.8	547	0.90	684	1.13	820	1.35	957	1.57
		5	9-2020-H	54.7	547	1.00	683	1.25	820	1.50	969	1.77
		5 1/2	9-2022-H	49.3	542	1.10	678	1.38	814	1.65	971	1.97
		6	9-2024-H	44.9	539	1.20	674	1.50	809	1.80	955	2.13
		7	9-2028-H	38.1	533	1.40	666	1.75	800	2.10	945	2.48
8	9-2032-H	33.0	529	1.60	661	2.00	793	2.40	937	2.83		
10	9-2040-H	26.4	529	2.00	661	2.50	793	3.00	957	3.62		
12	9-2048-H	21.8	523	2.40	654	3.00	784	3.60	944	4.33		
1 1/2	3/4	2	9-2408-H	201	804	0.40	1006	0.50	1207	0.60	1346	0.67
		2 1/2	9-2410-H	153	766	0.50	957	0.63	1149	0.75	1327	0.87
		3	9-2412-H	125	750	0.60	938	0.75	1125	0.90	1329	1.06
		3 1/2	9-2414-H	105	738	0.70	923	0.88	1107	1.05	1329	1.26
		4	9-2416-H	90.7	726	0.80	907	1.00	1088	1.20	1321	1.46
		4 1/2	9-2418-H	80.4	724	0.90	905	1.13	1086	1.35	1330	1.65
		5	9-2420-H	71.5	715	1.00	893	1.25	1072	1.50	1322	1.85
		5 1/2	9-2422-H	64.3	708	1.10	884	1.38	1061	1.65	1317	2.05
		6	9-2424-H	59.1	709	1.20	886	1.50	1063	1.80	1326	2.24
		7	9-2428-H	50.3	704	1.40	880	1.75	1056	2.10	1326	2.64
		8	9-2432-H	43.8	700	1.60	876	2.00	1051	2.40	1310	2.99
		10	9-2440-H	34.5	691	2.00	863	2.50	1036	3.00	1319	3.82
12	9-2448-H	28.7	688	2.40	860	3.00	1031	3.60	1308	4.57		
2	1	2 1/2	9-3210-H	242	1209	0.50	1512	0.63	1814	0.75	2000	0.83
		3	9-3212-H	193	1158	0.60	1448	0.75	1737	0.90	1976	1.02
		3 1/2	9-3214-H	161	1124	0.70	1405	0.88	1686	1.05	1896	1.18
		4	9-3216-H	140	1119	0.80	1398	1.00	1678	1.20	1927	1.38
		4 1/2	9-3218-H	123	1104	0.90	1380	1.13	1657	1.35	1932	1.57
		5	9-3220-H	108	1080	1.00	1351	1.25	1621	1.50	1914	1.77
		5 1/2	9-3222-H	96.5	1061	1.10	1326	1.38	1592	1.65	1899	1.97
		6	9-3224-H	88.1	1057	1.20	1321	1.50	1585	1.80	1872	2.13
		7	9-3228-H	75.1	1051	1.40	1314	1.75	1576	2.10	1891	2.52
		8	9-3232-H	65.8	1053	1.60	1316	2.00	1579	2.40	1865	2.83
		10	9-3240-H	51.6	1032	2.00	1290	2.50	1548	3.00	1869	3.62
		12	9-3248-H	42.6	1023	2.40	1279	3.00	1535	3.60	1880	4.41
Round Wire Construction												
3/8	3/16	1	9-0604-H	12.2	24	0.20	30	0.25	37	0.30	43	0.35
		1 1/4	9-0605-H	9.4	23	0.25	29	0.31	35	0.38	44	0.47
		1 1/2	9-0606-H	7.6	23	0.30	28	0.38	34	0.45	42	0.55
		1 3/4	9-0607-H	6.7	23	0.35	29	0.44	35	0.53	45	0.67
		2	9-0608-H	5.6	22	0.40	28	0.50	34	0.60	42	0.75
		2 1/2	9-0610-H	4.4	22	0.50	27	0.63	33	0.75	43	0.98
		3	9-0612-H	3.6	22	0.60	27	0.75	32	0.90	41	1.14
		12	9-0648-H	0.9	21	2.40	26	3.00	31	3.60	41	4.72
1/2	9/32	1	9-0804-H	22.5	45	0.20	56	0.25	67	0.30	80	0.35
		1 1/4	9-0805-H	17.2	43	0.25	54	0.31	64	0.38	74	0.43
		1 1/2	9-0806-H	13.8	41	0.30	52	0.38	62	0.45	71	0.51
		1 3/4	9-0807-H	11.5	40	0.35	50	0.44	60	0.53	72	0.63
		2	9-0808-H	10.1	40	0.40	50	0.50	61	0.60	76	0.75
		2 1/2	9-0810-H	7.9	39	0.50	49	0.63	59	0.75	75	0.94
		3	9-0812-H	6.5	39	0.60	49	0.75	58	0.90	74	1.14
		3 1/2	9-0814-H	5.5	38	0.70	48	0.88	58	1.05	71	1.30
12	9-0848-H	1.5	37	2.40	46	3.00	55	3.60	72	4.72		
5/8	11/32	1	9-1004-H	49.6	99	0.20	124	0.25	149	0.30	176	0.35
		1 1/4	9-1005-H	36.4	91	0.25	114	0.31	136	0.38	157	0.43
		1 1/2	9-1006-H	29.5	89	0.30	111	0.38	133	0.45	163	0.55
		1 3/4	9-1007-H	24.0	84	0.35	105	0.44	126	0.53	151	0.63
		2	9-1008-H	20.9	84	0.40	104	0.50	125	0.60	148	0.71
		2 1/2	9-1010-H	16.2	81	0.50	101	0.63	121	0.75	146	0.91
		3	9-1012-H	13.2	79	0.60	99	0.75	119	0.90	151	1.14
		3 1/2	9-1014-H	11.2	79	0.70	98	0.88	118	1.05	151	1.34
		4	9-1016-H	9.8	78	0.80	98	1.00	118	1.20	154	1.57
		12	9-1048-H	3.1	74	2.40	93	3.00	112	3.60	149	4.80

INCH



EXTRA HEAVY LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 3/8" to 1", Rectangular Wire Construction

Color: Yellow

Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (17% of C)		Total Deflection Recommended for Average Life (20% of C)		Maximum Operating Deflection (25% of C)		Total Travel to Solid	
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches
3/8	3/16	1	9-0604-X	18.5	32	0.17	37	0.20	46	0.25	66	0.35
		1 1/4	9-0605-X	14.3	30	0.21	36	0.25	45	0.31	56	0.39
		1 1/2	9-0606-X	11.9	30	0.26	36	0.30	45	0.38	61	0.51
		1 3/4	9-0607-X	10.2	30	0.30	36	0.35	45	0.44	60	0.59
		2	9-0608-X	8.6	29	0.34	34	0.40	43	0.50	57	0.67
		2 1/2	9-0610-X	6.8	29	0.43	34	0.50	43	0.63	57	0.83
		3	9-0612-X	5.7	29	0.51	34	0.60	43	0.75	58	1.02
		12	9-0648-X	1.4	28	2.04	33	2.40	41	3.00	57	4.17
1/2	9/32	1	9-0804-X	33.3	57	0.17	67	0.20	83	0.25	118	0.35
		1 1/4	9-0805-X	25.3	54	0.21	63	0.25	79	0.31	110	0.43
		1 1/2	9-0806-X	20.5	52	0.26	62	0.30	77	0.38	105	0.51
		1 3/4	9-0807-X	17.6	52	0.30	62	0.35	77	0.44	104	0.59
		2	9-0808-X	15.4	52	0.34	62	0.40	77	0.50	109	0.71
		2 1/2	9-0810-X	12.3	52	0.43	62	0.50	77	0.63	107	0.87
		3	9-0812-X	10.2	52	0.51	61	0.60	76	0.75	108	1.06
		3 1/2	9-0814-X	8.7	52	0.60	61	0.70	76	0.88	113	1.30
12	9-0848-X	2.5	50	2.04	59	2.40	74	3.00	108	4.41		
5/8	11/32	1	9-1004-X	71.6	122	0.17	143	0.20	179	0.25	254	0.35
		1 1/4	9-1005-X	53.0	113	0.21	132	0.25	166	0.31	229	0.43
		1 1/2	9-1006-X	42.7	109	0.26	128	0.30	160	0.38	219	0.51
		1 3/4	9-1007-X	36.0	107	0.30	126	0.35	157	0.44	212	0.59
		2	9-1008-X	31.4	107	0.34	126	0.40	157	0.50	223	0.71
		2 1/2	9-1010-X	24.5	104	0.43	122	0.50	153	0.63	212	0.87
		3	9-1012-X	20.1	103	0.51	121	0.60	151	0.75	206	1.02
		3 1/2	9-1014-X	17.0	101	0.60	119	0.70	149	0.88	208	1.22
4	9-1016-X	14.9	101	0.68	119	0.80	149	1.00	211	1.42		
12	9-1048-X	4.9	100	2.04	117	2.40	146	3.00	211	4.33		
3/4	3/8	1	9-1204-X	167	284	0.17	334	0.20	418	0.25	527	0.31
		1 1/4	9-1205-X	128	272	0.21	320	0.25	400	0.31	503	0.39
		1 1/2	9-1206-X	101	258	0.26	303	0.30	379	0.38	477	0.47
		1 3/4	9-1207-X	85.0	253	0.30	298	0.35	372	0.44	469	0.55
		2	9-1208-X	73.1	248	0.34	292	0.40	365	0.50	460	0.63
		2 1/2	9-1210-X	56.5	240	0.43	283	0.50	353	0.63	467	0.83
		3	9-1212-X	46.6	238	0.51	280	0.60	350	0.75	459	0.98
		3 1/2	9-1214-X	39.7	236	0.60	278	0.70	347	0.88	468	1.18
		4	9-1216-X	34.6	235	0.68	277	0.80	346	1.00	463	1.34
		4 1/2	9-1218-X	30.2	231	0.77	272	0.90	340	1.13	453	1.50
		5	9-1220-X	27.2	231	0.85	272	1.00	340	1.25	460	1.69
		5 1/2	9-1222-X	24.5	229	0.94	270	1.10	337	1.38	454	1.85
6	9-1224-X	22.3	227	1.02	267	1.20	334	1.50	447	2.01		
12	9-1248-X	12.1	247	2.04	290	2.40	363	3.00	500	4.13		
1	1/2	1 1/4	9-1605-X	202	430	0.21	506	0.25	632	0.31	796	0.39
		1 1/2	9-1606-X	160	408	0.26	480	0.30	600	0.38	756	0.47
		1 3/4	9-1607-X	132	394	0.30	463	0.35	579	0.44	729	0.55
		2	9-1608-X	113	384	0.34	452	0.40	564	0.50	711	0.63
		2 1/2	9-1610-X	87.8	373	0.43	439	0.50	549	0.63	726	0.83
		3	9-1612-X	71.3	364	0.51	428	0.60	535	0.75	702	0.98
		3 1/2	9-1614-X	60.2	358	0.60	421	0.70	527	0.88	687	1.14
		4	9-1616-X	52.1	354	0.68	416	0.80	521	1.00	697	1.34
		4 1/2	9-1618-X	46.3	354	0.77	417	0.90	521	1.13	711	1.54
		5	9-1620-X	41.2	350	0.85	412	1.00	514	1.25	697	1.69
		5 1/2	9-1622-X	37.4	350	0.94	411	1.10	514	1.38	706	1.89
		6	9-1624-X	34.3	350	1.02	412	1.20	515	1.50	716	2.09
7	9-1628-X	29.3	348	1.19	410	1.40	512	1.75	715	2.44		
8	9-1632-X	25.5	347	1.36	408	1.60	510	2.00	703	2.76		
12	9-1648-X	16.9	345	2.04	405	2.40	507	3.00	718	4.25		

Hole Dia. in.	Rod Dia. in.	Free Length in.	CATALOG NUMBER	RATE Pounds Required to Deflect 1/10 in.	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (17% of C)		Total Deflection Recommended for Average Life (20% of C)		Maximum Operating Deflection (25% of C)		Total Travel to Solid	
					Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches	Load lbs.	Deflection inches
1 1/4	5/8	1 1/2	9-2006-X	279	712	0.26	837	0.30	1046	0.38	1208	0.43
		1 3/4	9-2007-X	231	687	0.30	809	0.35	1011	0.44	1183	0.51
		2	9-2008-X	197	670	0.34	789	0.40	986	0.50	1165	0.59
		2 1/2	9-2010-X	152	648	0.43	762	0.50	953	0.63	1200	0.79
		3	9-2012-X	123	629	0.51	740	0.60	925	0.75	1165	0.94
		3 1/2	9-2014-X	104	619	0.60	729	0.70	911	0.88	1189	1.14
		4	9-2016-X	89.1	606	0.68	713	0.80	891	1.00	1158	1.30
		4 1/2	9-2018-X	77.8	596	0.77	701	0.90	876	1.13	1103	1.42
		5	9-2020-X	69.7	593	0.85	697	1.00	872	1.25	1126	1.61
		5 1/2	9-2022-X	63.8	596	0.94	701	1.10	877	1.38	1180	1.85
		6	9-2024-X	57.9	590	1.02	694	1.20	868	1.50	1139	1.97
		7	9-2028-X	49.0	583	1.19	686	1.40	857	1.75	1137	2.32
8	9-2032-X	42.8	582	1.36	685	1.60	856	2.00	1146	2.68		
10	9-2040-X	34.1	580	1.70	683	2.00	853	2.50	1142	3.35		
12	9-2048-X	28.3	577	2.04	679	2.40	849	3.00	1148	4.06		
1 1/2	3/4	2	9-2408-X	319	1086	0.34	1278	0.40	1597	0.50	1886	0.59
		2 1/2	9-2410-X	241	1023	0.43	1203	0.50	1504	0.63	1800	0.75
		3	9-2412-X	193	985	0.51	1158	0.60	1448	0.75	1824	0.94
		3 1/2	9-2414-X	161	959	0.60	1128	0.70	1410	0.88	1776	1.10
		4	9-2416-X	139	949	0.68	1116	0.80	1395	1.00	1812	1.30
		4 1/2	9-2418-X	122	933	0.77	1097	0.90	1372	1.13	1776	1.46
		5	9-2420-X	108	922	0.85	1085	1.00	1356	1.25	1751	1.61
		5 1/2	9-2422-X	97.6	913	0.94	1074	1.10	1342	1.38	1767	1.81
		6	9-2424-X	88.8	905	1.02	1065	1.20	1331	1.50	1747	1.97
		7	9-2428-X	75.1	893	1.19	1051	1.40	1314	1.75	1714	2.28
		8	9-2432-X	65.0	884	1.36	1040	1.60	1300	2.00	1715	2.64
		10	9-2440-X	51.7	879	1.70	1034	2.00	1293	2.50	1730	3.35
12	9-2448-X	42.9	876	2.04	1030	2.40	1288	3.00	1724	4.02		
2	1	2 1/2	9-3210-X	413	1756	0.43	2066	0.50	2582	0.63	3091	0.75
		3	9-3212-X	327	1667	0.51	1962	0.60	2452	0.75	2960	0.91
		3 1/2	9-3214-X	271	1610	0.60	1894	0.70	2368	0.88	2876	1.06
		4	9-3216-X	231	1569	0.68	1846	0.80	2308	1.00	2817	1.22
		4 1/2	9-3218-X	201	1539	0.77	1811	0.90	2264	1.13	2773	1.38
		5	9-3220-X	178	1516	0.85	1784	1.00	2229	1.25	2739	1.54
		5 1/2	9-3222-X	160	1500	0.94	1765	1.10	2206	1.38	2779	1.73
		6	9-3224-X	136	1391	1.02	1637	1.20	2046	1.50	2524	1.85
		7	9-3228-X	123	1459	1.19	1716	1.40	2145	1.75	2703	2.20
		8	9-3232-X	106	1442	1.36	1697	1.60	2121	2.00	2672	2.52
		10	9-3240-X	83.5	1419	1.70	1669	2.00	2087	2.50	2629	3.15
		12	9-3248-X	68.9	1405	2.04	1653	2.40	2066	3.00	2630	3.82

INCH

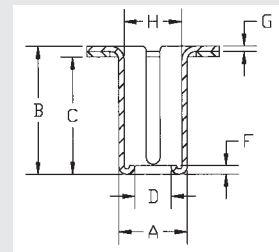
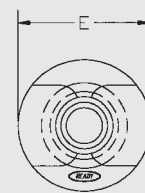
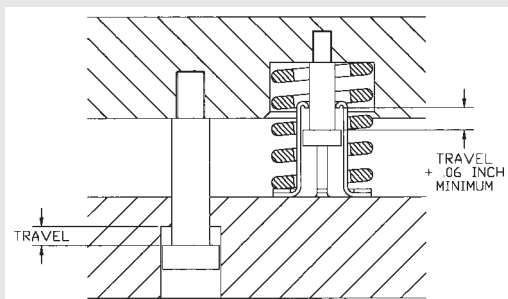


Spring Retainers

- all steel construction, zinc-plated finish
- compatible with 3/4" and 1", 20 and 25 mm diameter spring rods
- use with any length that allows clearance

READY® Spring Retainers locate and provide a light pre-load to each spring. This allows for easy assembly and disassembly of strippers in a die even while in the press. Broken springs can easily be replaced without long downtime.

Shoulder bolts or spools must be used in conjunction with the READY Spring Retainer.



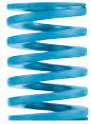
CATALOG NUMBER <i>inch</i>	A	B	C	D	E	F	G	H
9-0615-16	0.79	1.90	1.77	0.39	1.46	0.16	0.05	0.62
9-0815-16	0.99	1.90	1.73	0.53	1.93	0.12	0.08	0.85
9-0823-16	0.99	2.88	2.76	0.53	1.93	0.12	0.08	0.85

CATALOG NUMBER <i>metric</i>	A	B	C	D	E	F	G	H
9-0615-16	20	48	45	10	37	4	1.3	15.8
9-0815-16	25	48	44	13.5	49	3	2	21.5
9-0823-16	25	73	70	13.5	49	3	2	21.5

SPRING RETAINERS

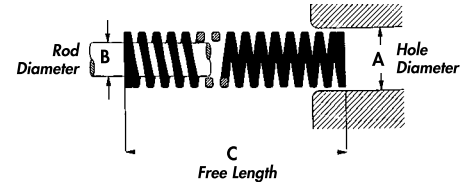


SuperSprings®



LIGHT LOAD

Vacuum degassed,
valve spring quality alloy steel

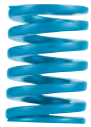


Sizes: 10 to 25 mm, Rectangular Wire Construction

Color: Green

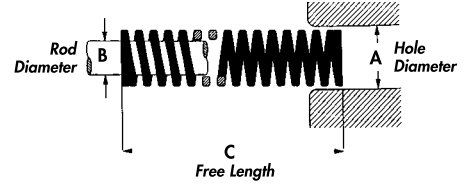
Hole Dia. mm	Rod Dia. mm	Free Length mm	CATALOG NUMBER	RATE Dekanewtons (daN) Required to Deflect 1 mm	LOAD - DEFLECTION TABLE								
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Average Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid		
					Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	
A	B	C											
Rectangular Wire Construction													
10	5	25	9-0604-LE	1.00	6.3	6.3	7.5	7.5	10.0	10	15.0	15	
		32	9-0605-LE	0.85	6.8	8.0	8.2	9.6	10.9	13	16.2	19	
		38	9-0606-LE	0.68	6.5	9.5	7.8	11	10.3	15	15.6	23	
		44	9-0607-LE	0.60	6.6	11	7.9	13	10.6	18	16.2	27	
		51	9-0608-LE	0.50	6.4	13	7.7	15	10.2	20	15.5	31	
		64	9-0610-LE	0.43	6.9	16	8.3	19	11.0	26	17.6	41	
		76	9-0612-LE	0.32	6.1	19	7.3	23	9.7	30	15.4	48	
		305	9-0648-LE	0.11	8.4	76	10.1	92	13.4	122	20.6	187	
12.5	6.3	25	9-0804-LE	1.79	11.2	6.3	13.4	7.5	17.9	10	23.3	13	
		32	9-0805-LE	1.64	13.1	8.0	15.7	9.6	21.0	13	27.9	17	
		38	9-0806-LE	1.36	12.9	9.5	15.5	11	20.7	15	29.9	22	
		44	9-0807-LE	1.21	13.3	11	16.0	13	21.3	18	30.3	25	
		51	9-0808-LE	1.14	14.5	13	17.4	15	23.3	20	33.1	29	
		64	9-0810-LE	0.93	14.9	16	17.9	19	23.8	26	34.4	37	
		76	9-0812-LE	0.71	13.5	19	16.2	23	21.6	30	33.4	47	
		89	9-0814-LE	0.54	12.0	22	14.4	27	19.2	36	29.2	54	
		114	9-0818-LE	0.44	12.5	29	15.0	34	20.1	46	31.7	72	
		140	9-0822-LE	0.37	13.0	35	15.5	42	20.7	56	33.7	91	
		165	9-0826-LE	0.26	10.7	41	12.9	50	17.2	66	25.7	99	
		190	9-0830-LE	0.20	9.5	48	11.4	57	15.2	76	22.2	111	
305	9-0848-LE	0.14	10.7	76	12.8	92	17.1	122	25.8	184			
16	8	25	9-1004-LE	2.34	14.6	6.3	17.6	7.5	23.4	10	25.7	11	
		32	9-1005-LE	2.29	18.3	8.0	22.0	9.6	29.3	13	38.9	17	
		38	9-1006-LE	1.93	18.3	9.5	22.0	11	29.3	15	38.6	20	
		44	9-1007-LE	1.71	18.8	11	22.6	13	30.1	18	41.0	24	
		51	9-1008-LE	1.57	20.0	13	24.0	15	32.0	20	45.5	29	
		64	9-1010-LE	1.07	17.1	16	20.5	19	27.4	26	39.6	37	
		76	9-1012-LE	1.00	19.0	19	22.8	23	30.4	30	42.0	42	
		89	9-1014-LE	0.86	19.1	22	23.0	27	30.6	36	43.9	51	
		102	9-1016-LE	0.78	19.9	26	23.9	31	31.8	41	48.4	62	
		305	9-1048-LE	0.25	19.1	76	22.9	92	30.5	122	45.3	181	
20	10	25	9-1204-L	5.56	34.8	6.3	41.7	7.5	55.6	10	72.3	13	
		32	9-1205-L	4.27	34.2	8.0	41.0	9.6	54.7	13	68.4	16	
		38	9-1206-L	3.39	32.2	9.5	38.6	11	51.5	15	64.4	19	
		44	9-1207-L	2.85	31.4	11	37.6	13	50.2	18	65.6	23	
		51	9-1208-L	2.47	31.5	13	37.8	15	50.4	20	64.2	26	
		64	9-1210-L	1.93	30.8	16	37.0	19	49.3	26	61.6	32	
		76	9-1212-L	1.61	30.6	19	36.7	23	48.9	30	64.4	40	
		89	9-1214-L	1.35	29.9	22	35.9	27	47.9	36	61.9	46	
		102	9-1216-L	1.18	30.1	26	36.2	31	48.2	41	62.7	53	
		115	9-1218-L	1.04	29.9	29	35.8	35	47.8	46	62.3	60	
		127	9-1220-L	0.94	29.8	32	35.8	38	47.8	51	63.0	67	
		140	9-1222-L	0.85	29.7	35	35.7	42	47.6	56	62.0	73	
		152	9-1224-L	0.79	29.9	38	35.9	46	47.9	61	63.8	81	
		305	9-1248-L	0.38	28.8	76	34.6	92	46.2	122	61.3	162	
25	12.5	25	9-1604-L	10.00	62.5	6.3	75.0	7.5	100	10	130	13	
		32	9-1605-L	8.06	64.4	8.0	77.3	9.6	103	13	129	16	
		38	9-1606-L	6.48	61.6	9.5	73.9	11	98.5	15	123	19	
		44	9-1607-L	5.33	58.6	11	70.4	13	93.8	18	123	23	
		51	9-1608-L	4.62	58.9	13	70.7	15	94.2	20	116	25	
		64	9-1610-L	3.57	57.2	16	68.6	19	91.5	26	111	31	
		76	9-1612-L	2.92	55.6	19	66.7	23	88.9	30	114	39	
		89	9-1614-L	2.48	55.2	22	66.2	27	88.3	36	114	46	
		102	9-1616-L	2.12	54.0	26	64.8	31	86.5	41	110	52	
		115	9-1618-L	1.87	53.9	29	64.6	35	86.2	46	111	59	
		127	9-1620-L	1.67	53.2	32	63.8	38	85.1	51	111	66	
		140	9-1622-L	1.52	53.2	35	63.8	42	85.1	56	112	74	
		152	9-1624-L	1.39	52.8	38	63.4	46	84.5	61	111	80	
		178	9-1628-L	1.19	53.0	45	63.5	53	84.7	71	111	93	
		203	9-1632-L	1.05	53.4	51	64.1	61	85.5	81	113	107	
		305	9-1648-L	0.70	53.3	76	63.9	92	85.3	122	112	160	

1 daN = 2.24 lbs. 1 mm = .0394 in.



MEDIUM LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 10 to 25 mm, Rectangular Wire Construction

Color: Blue

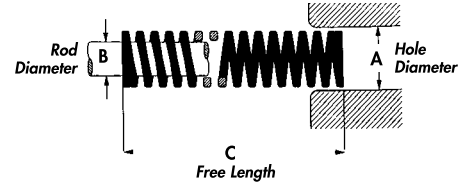
Hole Dia. mm	Rod Dia. mm	Free Length mm	CATALOG NUMBER	RATE Dekanewtons (daN) Required to Deflect 1 mm	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Average Life (30% of C)		Maximum Operating Deflection (37.5% of C)		Total Travel to Solid	
					Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm
Rectangular Wire Construction												
10	5	25	9 - 0604 - ME	1.60	10.0	6.3	12.0	7.5	15.0	9.4	17.6	11
		32	9 - 0605 - ME	1.30	10.4	8.0	12.5	9.6	15.6	12	23.4	18
		38	9 - 0606 - ME	1.19	11.3	9.5	13.6	11	17.0	14	23.8	20
		44	9 - 0607 - ME	1.03	11.3	11	13.6	13	17.0	17	22.7	22
		51	9 - 0608 - ME	0.89	11.3	13	13.6	15	17.0	19	23.1	26
		64	9 - 0610 - ME	0.75	12.0	16	14.4	19	18.0	24	24.0	32
		76	9 - 0612 - ME	0.53	10.1	19	12.1	23	15.1	29	20.1	38
		305	9 - 0648 - ME	0.16	12.2	76	14.6	92	18.3	114	23.8	149
12.5	6.3	25	9 - 0804 - ME	3.00	18.8	6.3	22.5	7.5	28.1	9.4	39.0	13
		32	9 - 0805 - ME	2.48	19.8	8.0	23.8	9.6	29.8	12	44.6	18
		38	9 - 0806 - ME	2.14	20.3	9.5	24.4	11	30.5	14	42.8	20
		44	9 - 0807 - ME	1.85	20.4	11	24.4	13	30.5	17	44.4	24
		51	9 - 0808 - ME	1.55	19.8	13	23.7	15	29.6	19	43.4	28
		64	9 - 0810 - ME	1.21	19.4	16	23.2	19	29.0	24	42.4	35
		76	9 - 0812 - ME	1.02	19.4	19	23.3	23	29.1	29	41.8	41
		305	9 - 0814 - ME	0.84	18.7	22	22.4	27	28.0	33	41.2	49
16	8	25	9 - 1004 - ME	4.94	30.9	6.3	37.1	7.5	46.3	9.4	59.3	12
		32	9 - 1005 - ME	3.71	29.7	8.0	35.6	9.6	44.5	12	55.7	15
		38	9 - 1006 - ME	3.39	32.2	9.5	38.6	11	48.3	14	64.4	19
		44	9 - 1007 - ME	3.00	33.0	11	39.6	13	49.5	17	63.0	21
		51	9 - 1008 - ME	2.64	33.7	13	40.4	15	50.5	19	66.0	25
		64	9 - 1010 - ME	2.05	32.8	16	39.4	19	49.2	24	65.6	32
		76	9 - 1012 - ME	1.78	33.8	19	40.6	23	50.7	29	69.4	39
		305	9 - 1016 - ME	1.52	33.8	22	40.6	27	50.7	33	68.4	45
20	10	25	9 - 1204 - M	9.03	56.4	6.3	67.7	7.5	84.7	9.4	99.3	11
		32	9 - 1205 - M	6.83	54.6	8.0	65.6	9.6	82.0	12	88.8	13
		38	9 - 1206 - M	5.51	52.3	9.5	62.8	11	78.5	14	88.2	16
		44	9 - 1207 - M	4.50	49.5	11	59.4	13	74.3	17	85.5	19
		51	9 - 1208 - M	3.89	49.6	13	59.5	15	74.4	19	81.7	21
		64	9 - 1210 - M	3.04	48.6	16	58.4	19	73.0	24	82.1	27
		76	9 - 1212 - M	2.48	47.1	19	56.5	23	70.7	29	81.8	33
		305	9 - 1214 - M	2.13	47.3	22	56.9	27	71.1	33	83.1	39
25	12.5	25	9 - 1604 - M	15.1	94.2	6.3	113	7.5	141	9.4	166	11
		32	9 - 1605 - M	11.9	94.8	8.0	114	9.6	142	12	154	13
		38	9 - 1606 - M	9.34	88.7	9.5	106	11	133	14	149	16
		44	9 - 1607 - M	8.32	91.5	11	110	13	137	17	158	19
		51	9 - 1608 - M	6.89	87.8	13	105	15	132	19	145	21
		64	9 - 1610 - M	5.32	85.1	16	102	19	128	24	144	27
		76	9 - 1612 - M	4.33	82.3	19	98.7	23	123	29	143	33
		305	9 - 1614 - M	3.80	84.6	22	101	27	127	33	148	39
		102	9 - 1616 - M	3.30	84.2	26	101	31	126	38	145	44
		115	9 - 1618 - M	2.93	84.2	29	101	35	126	43	147	50
		127	9 - 1620 - M	2.64	83.8	32	101	38	126	48	148	56
		140	9 - 1622 - M	2.38	83.3	35	100	42	125	53	150	63
		152	9 - 1624 - M	2.18	82.8	38	99.4	46	124	57	146	67
		178	9 - 1628 - M	1.85	82.3	45	98.8	53	123	67	146	79
		203	9 - 1632 - M	1.60	81.0	51	97.2	61	121	76	144	90
		305	9 - 1648 - M	1.05	79.7	76	95.7	92	120	114	141	135

1 daN = 2.24 lbs. 1 mm = .0394 in.



HEAVY LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 10 to 25 mm, Rectangular Wire Construction

Color: Red

Hole Dia. mm	Rod Dia. mm	Free Length mm	CATALOG NUMBER	RATE Dekanewtons (daN) Required to Deflect 1 mm	LOAD - DEFLECTION TABLE								
					Total Deflection Recommended for Long Life (20% of C)		Total Deflection Recommended for Average Life (25% of C)		Maximum Operating Deflection (30% of C)		Total Travel to Solid		
					Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	
A	B	C											
Rectangular Wire Construction													
10	5	25	9 - 0604 - HE	2.21	11.1	5.0	13.8	6.3	16.6	7.5	26.5	12	
		32	9 - 0605 - HE	1.75	11.2	6.4	14.0	8.0	16.8	9.6	22.8	13	
		38	9 - 0606 - HE	1.71	13.0	7.6	16.2	9.5	19.5	11	25.7	15	
		44	9 - 0607 - HE	1.50	13.2	8.8	16.5	11	19.8	13	28.5	19	
		51	9 - 0608 - HE	1.28	13.1	10	16.3	13	19.6	15	29.4	23	
		64	9 - 0610 - HE	1.07	13.7	13	17.1	16	20.5	19	28.9	27	
		76	9 - 0612 - HE	0.75	11.4	15	14.3	19	17.1	23	24.0	32	
		305	9 - 0648 - HE	0.21	12.8	61	16.0	76	19.2	92	29.4	140	
12.5	6.3	25	9 - 0804 - HE	4.21	21.1	5.0	26.3	6.3	31.6	7.5	50.5	12	
		32	9 - 0805 - HE	3.32	21.2	6.4	26.6	8.0	31.9	9.6	53.1	16	
		38	9 - 0806 - HE	2.93	22.3	7.6	27.8	9.5	33.4	11	58.6	20	
		44	9 - 0807 - HE	2.46	21.6	8.8	27.1	11	32.5	13	54.1	22	
		51	9 - 0808 - HE	1.96	20.0	10	25.0	13	30.0	15	49.0	25	
		64	9 - 0810 - HE	1.50	19.2	13	24.0	16	28.8	19	45.0	30	
		76	9 - 0812 - HE	1.32	20.1	15	25.1	19	30.1	23	48.8	37	
		305	9 - 0848 - HE	0.28	17.1	61	21.4	76	25.6	92	36.4	130	
16	8	25	9 - 1004 - HE	7.57	37.9	5.0	47.3	6.3	56.8	7.5	76	10	
		32	9 - 1005 - HE	5.28	33.8	6.4	42.2	8.0	50.7	9.6	69	13	
		38	9 - 1006 - HE	4.85	36.9	7.6	46.1	9.5	55.3	11	82	17	
		44	9 - 1007 - HE	4.28	37.7	8.8	47.1	11	56.5	13	90	21	
		51	9 - 1008 - HE	3.71	37.8	10	47.3	13	56.8	15	85	23	
		64	9 - 1010 - HE	3.03	38.8	13	48.5	16	58.2	19	88	29	
		76	9 - 1012 - HE	2.57	39.1	15	48.8	19	58.6	23	87	34	
		89	9 - 1014 - HE	2.17	38.6	18	48.3	22	57.9	27	85	39	
		102	9 - 1016 - HE	1.93	39.4	20	49.2	26	59.1	31	87	45	
		305	9 - 1048 - HE	0.71	43.3	61	54.1	76	65.0	92	82	116	
20	10	25	9 - 1204 - H	21.6	108	5.0	135	6.3	162	7.5	173	8	
		32	9 - 1205 - H	16.8	108	6.4	134	8.0	161	9.6	168	10	
		38	9 - 1206 - H	12.9	98.0	7.6	123	9.5	147	11	155	12	
		44	9 - 1207 - H	11.2	98.6	8.8	123	11	148	13	157	14	
		51	9 - 1208 - H	9.40	95.9	10	120	13	144	15	150	16	
		64	9 - 1210 - H	7.21	92.3	13	115	16	138	19	151	21	
		76	9 - 1212 - H	5.97	90.7	15	113	19	136	23	155	26	
		89	9 - 1214 - H	5.05	89.9	18	112	22	135	27	152	30	
		102	9 - 1216 - H	4.42	90.2	20	113	26	135	31	155	35	
		115	9 - 1218 - H	3.84	88.3	23	110	29	132	35	154	40	
		127	9 - 1220 - H	3.41	86.6	25	108	32	130	38	150	44	
		140	9 - 1222 - H	3.10	86.8	28	109	35	130	42	152	49	
		152	9 - 1224 - H	2.82	85.7	30	107	38	129	46	149	53	
		305	9 - 1248 - H	1.50	91.5	61	114	76	137	92	162	108	
25	12.5	25	9 - 1604 - H	38.0	190	5.0	238	6.3	285	7.5	304	8	
		32	9 - 1605 - H	27.6	177	6.4	221	8.0	265	9.6	276	10	
		38	9 - 1606 - H	22.0	167	7.6	209	9.5	250	11	286	13	
		44	9 - 1607 - H	18.5	162	8.8	203	11	244	13	277	15	
		51	9 - 1608 - H	15.7	160	10	201	13	241	15	283	18	
		64	9 - 1610 - H	12.2	156	13	195	16	233	19	268	22	
		76	9 - 1612 - H	10.0	152	15	190	19	228	23	270	27	
		89	9 - 1614 - H	8.44	150	18	188	22	225	27	279	33	
		102	9 - 1616 - H	7.35	150	20	187	26	225	31	272	37	
		115	9 - 1618 - H	6.52	150	23	187	29	225	35	280	43	
		127	9 - 1620 - H	5.75	146	25	183	32	219	38	270	47	
		140	9 - 1622 - H	5.21	146	28	182	35	219	42	271	52	
		152	9 - 1624 - H	4.80	146	30	182	38	219	46	274	57	
		178	9 - 1628 - H	4.09	146	36	182	45	218	53	278	68	
		203	9 - 1632 - H	3.57	145	41	181	51	217	61	275	77	
		305	9 - 1648 - H	2.29	140	61	175	76	210	92	263	115	

1 daN = 2.24 lbs. 1 mm = .0394 in.

Sizes: 32 to 50 mm, Rectangular Wire Construction

Sizes: 10 to 16 mm, Round Wire Construction

Color: Red

Hole Dia. mm	Rod Dia. mm	Free Length mm	CATALOG NUMBER	RATE Dekanewtons (daN) Required to Deflect 1 mm	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (20% of C)		Total Deflection Recommended for Average Life (25% of C)		Maximum Operating Deflection (30% of C)		Total Travel to Solid	
					Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm
32	16	38	9-2006-H	37.6	286	7.6	357	9.5	429	11	451	12
		44	9-2007-H	31.0	272	8.8	341	11	409	13	433	14
		51	9-2008-H	26.3	269	10	336	13	403	15	421	16
		64	9-2010-H	20.5	262	13	327	16	393	19	430	21
		76	9-2012-H	16.6	252	15	315	19	378	23	432	26
		89	9-2014-H	14.0	250	18	313	22	375	27	421	30
		102	9-2016-H	12.1	247	20	309	26	370	31	424	35
		115	9-2018-H	10.6	245	23	306	29	367	35	426	40
		127	9-2020-H	9.58	243	25	304	32	365	38	431	45
		140	9-2022-H	8.64	242	28	302	35	363	42	432	50
		152	9-2024-H	7.87	239	30	299	38	359	46	425	54
		178	9-2028-H	6.67	238	36	297	45	356	53	420	63
		203	9-2032-H	5.79	235	41	294	51	352	61	417	72
		254	9-2040-H	4.63	235	51	294	64	353	76	426	92
		305	9-2048-H	3.82	233	61	291	76	349	92	420	110
40	20	51	9-2408-H	35.2	359	10	449	13	539	15	599	17
		64	9-2410-H	26.8	344	13	429	16	515	19	590	22
		76	9-2412-H	21.9	333	15	416	19	500	23	592	27
		89	9-2414-H	18.5	329	18	411	22	493	27	591	32
		102	9-2416-H	15.9	324	20	405	26	486	31	588	37
		115	9-2418-H	14.1	324	23	405	29	486	35	592	42
		127	9-2420-H	12.5	318	25	398	32	477	38	589	47
		140	9-2422-H	11.3	316	28	394	35	473	42	586	52
		152	9-2424-H	10.4	315	30	393	38	472	46	590	57
		178	9-2428-H	8.81	314	36	392	45	470	53	590	67
		203	9-2432-H	7.67	311	41	389	51	467	61	583	76
		254	9-2440-H	6.05	307	51	384	64	461	76	587	97
305	9-2448-H	5.02	306	61	383	76	459	92	582	116		
50	25	64	9-3210-H	42.4	542	13	678	16	814	19	890	21
		76	9-3212-H	33.8	514	15	643	19	771	23	879	26
		89	9-3214-H	28.1	501	18	626	22	751	27	844	30
		102	9-3216-H	24.5	500	20	625	26	750	31	858	35
		115	9-3218-H	21.5	495	23	618	29	742	35	860	40
		127	9-3220-H	18.9	481	25	601	32	721	38	852	45
		140	9-3222-H	16.9	473	28	592	35	710	42	845	50
		152	9-3224-H	15.4	469	30	586	38	704	46	833	54
		178	9-3228-H	13.2	468	36	585	45	702	53	842	64
		203	9-3232-H	11.5	468	41	585	51	702	61	830	72
		254	9-3240-H	9.04	459	51	574	64	689	76	832	92
		305	9-3248-H	7.47	456	61	570	76	684	92	837	112
Round Wire Construction												
10	5	25	9-0604-H	2.14	10.7	5.0	13.4	6.3	16.0	7.5	19.2	9
		32	9-0605-H	1.65	10.5	6.4	13.2	8.0	15.8	9.6	19.8	12
		38	9-0606-H	1.33	10.1	7.6	12.6	9.5	15.2	11	18.6	14
		44	9-0607-H	1.17	10.3	8.8	12.9	11	15.4	13	19.9	17
		51	9-0608-H	0.98	10.0	10	12.5	13	15.0	15	18.6	19
		64	9-0610-H	0.77	9.9	13	12.3	16	14.8	19	19.3	25
		76	9-0612-H	0.63	9.6	15	12.0	19	14.4	23	18.3	29
305	9-0648-H	0.15	9.3	61	11.6	76	13.9	92	18.3	120		
12.5	6.3	25	9-0804-H	3.94	19.7	5.0	24.6	6.3	29.6	7.5	35.3	9
		32	9-0805-H	3.01	19.3	6.4	24.1	8.0	28.9	9.6	33.1	11
		38	9-0806-H	2.42	18.4	7.6	23.0	9.5	27.6	11	31.4	13
		44	9-0807-H	2.01	17.7	8.8	22.2	11	26.6	13	32.2	16
		51	9-0808-H	1.77	18.0	10	22.6	13	27.1	15	33.6	19
		64	9-0810-H	1.38	17.7	13	22.1	16	26.6	19	33.2	24
		76	9-0812-H	1.14	17.3	15	21.6	19	26.0	23	33.0	29
89	9-0814-H	0.96	17.1	18	21.4	22	25.7	27	31.8	33		
305	9-0848-H	0.27	16.3	61	20.4	76	24.5	92	32.2	120		
16	8	25	9-1004-H	8.69	43.5	5.0	54.3	6.3	65.2	7.5	78.2	9
		32	9-1005-H	6.37	40.8	6.4	51.0	8.0	61.2	9.6	70.1	11
		38	9-1006-H	5.17	39.3	7.6	49.1	9.5	58.9	11	72.4	14
		44	9-1007-H	4.20	37.0	8.8	46.2	11	55.5	13	67.3	16
		51	9-1008-H	3.66	37.3	10	46.7	13	56.0	15	65.9	18
		64	9-1010-H	2.83	36.2	13	45.3	16	54.3	19	65.1	23
		76	9-1012-H	2.31	35.1	15	43.9	19	52.7	23	67.0	29
		89	9-1014-H	1.97	35.1	18	43.8	22	52.6	27	67.0	34
		102	9-1016-H	1.72	35.0	20	43.8	26	52.5	31	68.7	40
305	9-1048-H	0.54	33.1	61	41.4	76	49.7	92	66.2	122		

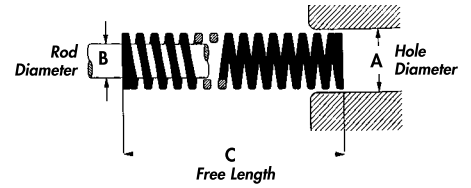
1 daN = 2.24 lbs. 1 mm = .0394 in.

METRIC



EXTRA HEAVY LOAD

Vacuum degassed,
valve spring quality alloy steel



Sizes: 10 to 25 mm, Rectangular Wire Construction

Color: Yellow

Hole Dia. mm	Rod Dia. mm	Free Length mm	CATALOG NUMBER	KAIE Deka-newtons (daN) Required to Deflect 1 mm	LOAD - DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (17% of C)		Total Deflection Recommended for Average Life (20% of C)		Maximum Operating Deflection (25% of C)		Total Travel to Solid	
					Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm	Load daN	Deflection mm
10	5	25	9-0604-X	3.25	13.8	4.3	16.3	5.0	20.3	6.3	29.3	9
		32	9-0605-X	2.51	13.7	5.4	16.1	6.4	20.1	8.0	25.1	10
		38	9-0606-X	2.09	13.5	6.5	15.9	7.6	19.9	9.5	27.2	13
		44	9-0607-X	1.79	13.4	7.5	15.8	8.8	19.7	11	26.9	15
		51	9-0608-X	1.50	13.0	8.7	15.3	10	19.1	13	25.5	17
		64	9-0610-X	1.20	13.1	11	15.4	13	19.2	16	25.2	21
		76	9-0612-X	1.00	12.9	13	15.2	15	19.0	19	26.0	26
		305	9-0648-X	0.24	12.4	52	14.6	61	18.3	76	25.4	106
12.5	6.3	25	9-0804-X	5.84	24.8	4.3	29.2	5.0	36.5	6.3	52.6	9
		32	9-0805-X	4.44	24.2	5.4	28.4	6.4	35.5	8.0	48.8	11
		38	9-0806-X	3.60	23.3	6.5	27.4	7.6	34.2	9.5	46.8	13
		44	9-0807-X	3.09	23.1	7.5	27.2	8.8	34.0	11	46.4	15
		51	9-0808-X	2.70	23.4	8.7	27.5	10	34.4	13	48.6	18
		64	9-0810-X	2.16	23.5	11	27.6	13	34.6	16	47.5	22
		76	9-0812-X	1.78	23.0	13	27.1	15	33.8	19	48.1	27
		305	9-0848-X	0.43	22.3	52	26.2	61	32.8	76	48.2	112
16	8	25	9-1004-X	12.6	53.3	4.3	62.8	5.0	78.4	6.3	113	9
		32	9-1005-X	9.28	50.5	5.4	59.4	6.4	74.2	8.0	102	11
		38	9-1006-X	7.49	48.4	6.5	56.9	7.6	71.2	9.5	97.4	13
		44	9-1007-X	6.30	47.1	7.5	55.4	8.8	69.3	11	94.5	15
		51	9-1008-X	5.51	47.8	8.7	56.2	10	70.3	13	99.2	18
		64	9-1010-X	4.29	46.7	11	54.9	13	68.6	16	94.4	22
		76	9-1012-X	3.53	45.6	13	53.7	15	67.1	19	91.8	27
		305	9-1048-X	0.85	44.3	52	52.1	61	65.2	76	94.0	110
20	10	25	9-1204-X	29.3	125	4.3	147	5.0	183	6.3	234	8
		32	9-1205-X	22.4	122	5.4	143	6.4	179	8.0	224	10
		38	9-1206-X	17.7	114	6.5	135	7.6	168	9.5	212	12
		44	9-1207-X	14.9	111	7.5	131	8.8	164	11	209	14
		51	9-1208-X	12.8	111	8.7	131	10	163	13	205	16
		64	9-1210-X	9.90	108	11	127	13	158	16	208	21
		76	9-1212-X	8.17	106	13	124	15	155	19	204	25
		89	9-1214-X	6.95	105	15	124	18	155	22	209	30
		102	9-1216-X	6.06	105	17	124	20	155	26	206	34
		115	9-1218-X	5.30	104	20	122	23	152	29	201	38
		127	9-1220-X	4.76	103	22	121	25	151	32	205	43
		140	9-1222-X	4.30	102	24	120	28	151	35	202	47
		305	9-1224-X	3.90	101	26	119	30	148	38	199	51
25	9-1248-X	2.12	110	52	129	61	162	76	223	105		
25	12.5	32	9-1605-X	35.4	193	5.4	227	6.4	283	8.0	354	10
		38	9-1606-X	28.0	181	6.5	213	7.6	266	9.5	336	12
		44	9-1607-X	23.2	173	7.5	204	8.8	255	11	325	14
		51	9-1608-X	19.8	171	8.7	202	10	252	13	316	16
		64	9-1610-X	15.4	167	11	197	13	246	16	323	21
		76	9-1612-X	12.5	162	13	190	15	238	19	313	25
		89	9-1614-X	10.6	160	15	188	18	235	22	306	29
		102	9-1616-X	9.12	158	17	186	20	233	26	310	34
		115	9-1618-X	8.11	159	20	187	23	233	29	316	39
		127	9-1620-X	7.21	156	22	183	25	229	32	310	43
		140	9-1622-X	6.55	156	24	183	28	229	35	314	48
		152	9-1624-X	6.01	155	26	183	30	228	38	319	53
		178	9-1628-X	5.13	155	30	183	36	228	45	318	62
		203	9-1632-X	4.47	154	35	181	41	227	51	313	70
		305	9-1648-X	2.96	153	52	181	61	226	76	320	108

1 daN = 2.24 lbs. 1 mm = .0394 in.



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