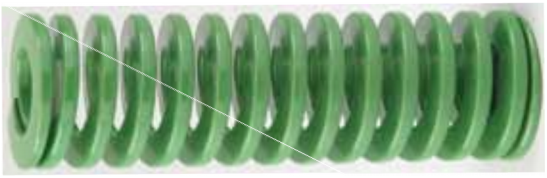
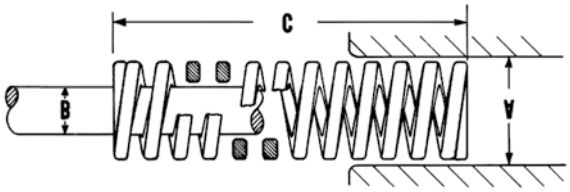
DieMax XL™ Light Load Springs - Inch

product Features:

- ISO color - Green
- High tensile strength chrome silicon material
- Optimal rectangular wire design
- Long life design for increased spring run-time





Hole Diam. (in) A	Rod Diam. (in) B	Free Length (in) C	CATALOG NUMBER	RATE Pounds Reqd. to deflect 1/10 in.	LOAD-DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Avg. Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid	
					Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.
3/8	3/16	3/4	9-0603-11	8.4	16	0.19	19	0.23	25	0.30	32	0.38
		1	9-0604-11	6.3	16	0.25	19	0.30	25	0.40	35	0.52
		1 1/4	9-0605-11	5.0	16	0.31	19	0.38	25	0.50	36	0.67
		1 1/2	9-0606-11	4.2	16	0.37	19	0.45	25	0.60	37	0.80
		1 3/4	9-0607-11	3.6	16	0.43	19	0.52	25	0.69	37	0.96
		2	9-0608-11	3.1	15	0.50	18	0.60	25	0.80	36	1.08
		2 1/2	9-0610-11	2.6	16	0.63	19	0.76	26	1.01	38	1.45
		3	9-0612-11	2.1	16	0.75	19	0.90	25	1.20	39	1.70
		12	9-0648-11	0.5	15	3.00	18	3.60	24	4.80	34	6.84
1/2	9/32	3/4	9-0803-11	14.5	27	0.19	33	0.23	44	0.30	57	0.39
		1	9-0804-11	10.9	27	0.25	32	0.30	43	0.40	58	0.54
		1 1/4	9-0805-11	9.4	30	0.31	36	0.38	47	0.50	68	0.72
		1 1/2	9-0806-11	7.8	29	0.37	35	0.45	47	0.60	68	0.87
		1 3/4	9-0807-11	6.6	29	0.43	34	0.52	46	0.69	68	1.03
		2	9-0808-11	5.8	29	0.50	35	0.60	47	0.80	69	1.19
		2 1/2	9-0810-11	4.7	29	0.63	35	0.76	47	1.01	70	1.50
		3	9-0812-11	3.6	27	0.75	32	0.90	43	1.20	62	1.73
		3 1/2	9-0814-11	3.1	27	0.88	32	1.05	43	1.40	62	2.03
		12	9-0848-11	0.8	25	3.00	30	3.60	40	4.80	58	6.88
5/8	11/32	3/4	9-1003-11	22.0	41	0.19	50	0.23	66	0.30	79	0.36
		1	9-1004-11	18.0	44	0.25	53	0.30	71	0.40	95	0.53
		1 1/4	9-1005-11	13.4	42	0.31	51	0.38	68	0.50	87	0.65
		1 1/2	9-1006-11	12.0	45	0.37	54	0.45	72	0.60	100	0.83
		1 3/4	9-1007-11	10.0	43	0.43	52	0.52	69	0.69	97	0.97
		2	9-1008-11	9.3	47	0.50	56	0.60	75	0.80	107	1.16
		2 1/2	9-1010-11	7.2	45	0.63	54	0.76	73	1.01	103	1.44
		3	9-1012-11	5.9	44	0.75	53	0.90	71	1.20	103	1.74
		3 1/2	9-1014-11	5.3	46	0.88	56	1.05	74	1.40	112	2.10
		4	9-1016-11	4.7	47	1.00	57	1.20	75	1.61	114	2.42
		12	9-1048-11	1.5	45	3.00	54	3.60	72	4.80	109	7.26
3/4	3/8	3/4	9-1203-11	42.5	80	0.19	96	0.23	128	0.30	153	0.36
		1	9-1204-11	32.0	79	0.25	94	0.30	126	0.40	158	0.49
		1 1/4	9-1205-11	24.4	77	0.31	92	0.38	123	0.50	152	0.63
		1 1/2	9-1206-11	19.3	72	0.37	87	0.45	115	0.60	144	0.74
		1 3/4	9-1207-11	16.2	70	0.43	84	0.52	112	0.69	142	0.87
		2	9-1208-11	14.2	71	0.50	86	0.60	114	0.80	144	1.02
		2 1/2	9-1210-11	11.0	69	0.63	83	0.76	111	1.01	139	1.27
		3	9-1212-11	9.2	69	0.75	83	0.90	110	1.20	142	1.55
		3 1/2	9-1214-11	7.7	67	0.88	81	1.05	108	1.40	137	1.79
		4	9-1216-11	6.8	68	1.00	82	1.20	109	1.61	140	2.07
		4 1/2	9-1218-11	6.0	67	1.12	81	1.35	108	1.80	140	2.34
		5	9-1220-11	5.3	66	1.25	80	1.50	106	2.00	137	2.58
		5 1/2	9-1222-11	4.9	67	1.38	80	1.65	107	2.20	139	2.86
		6	9-1224-11	4.5	67	1.50	81	1.80	108	2.39	143	3.17
		12	9-1248-11	2.2	65	3.00	78	3.60	104	4.80	135	6.24

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Inch Standard

Hole Diam. (in) A	Rod Diam. (in) B	Free Length (in) C	CATALOG NUMBER	RATE Pounds Reqd. to deflect 1/10 in.	LOAD-DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Avg. Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid	
					Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.
1	1/2	1	9-1604-11	61.2	151	0.25	181	0.30	241	0.40	296	0.48
		1 1/4	9-1605-11	46.2	146	0.31	175	0.38	233	0.50	284	0.62
		1 1/2	9-1606-11	37.0	138	0.37	166	0.45	221	0.60	277	0.75
		1 3/4	9-1607-11	30.6	133	0.43	159	0.52	212	0.69	268	0.87
		2	9-1608-11	26.5	133	0.50	160	0.60	213	0.80	269	1.01
		2 1/2	9-1610-11	20.4	129	0.63	154	0.76	206	1.01	258	1.25
		3	9-1612-11	16.8	126	0.75	151	0.90	201	1.20	256	1.50
		3 1/2	9-1614-11	14.1	124	0.88	148	1.05	198	1.40	251	1.75
		4	9-1616-11	12.1	121	1.00	146	1.20	194	1.61	247	2.01
		4 1/2	9-1618-11	10.7	120	1.12	144	1.35	192	1.80	244	2.25
		5	9-1620-11	9.6	120	1.25	144	1.50	192	2.00	244	2.52
		5 1/2	9-1622-11	8.7	120	1.38	144	1.65	192	2.20	247	2.80
		6	9-1624-11	8.0	120	1.50	144	1.80	191	2.39	250	3.10
		7	9-1628-11	6.9	121	1.75	145	2.10	193	2.80	252	3.63
		8	9-1632-11	6.0	120	2.00	144	2.40	192	3.20	253	4.17
		12	9-1648-11	4.0	120	3.00	144	3.60	192	4.80	254	6.22
1 1/4	5/8	1 1/2	9-2006-11	57.9	217	0.37	260	0.45	346	0.60	413	0.71
		1 3/4	9-2007-11	47.5	206	0.43	247	0.52	329	0.69	397	0.84
		2	9-2008-11	40.7	204	0.50	245	0.60	327	0.80	393	0.96
		2 1/2	9-2010-11	31.4	198	0.63	237	0.76	316	1.01	382	1.22
		3	9-2012-11	26.3	197	0.75	236	0.90	315	1.20	395	1.50
		3 1/2	9-2014-11	22.2	194	0.88	233	1.05	311	1.40	391	1.76
		4	9-2016-11	19.2	193	1.00	231	1.20	308	1.61	388	2.02
		4 1/2	9-2018-11	16.9	190	1.12	228	1.35	303	1.80	386	2.28
		5	9-2020-11	15.0	188	1.25	225	1.50	300	2.00	379	2.53
		5 1/2	9-2022-11	13.5	186	1.38	223	1.65	298	2.20	374	2.77
		6	9-2024-11	12.3	184	1.50	221	1.80	294	2.39	373	3.03
		7	9-2028-11	10.4	182	1.75	219	2.10	292	2.80	369	3.53
		8	9-2032-11	9.1	182	2.00	218	2.40	291	3.20	366	4.04
		10	9-2040-11	7.2	180	2.50	216	3.00	288	4.00	360	5.03
		12	9-2048-11	5.9	177	3.00	213	3.60	283	4.80	357	6.03
1 1/2	3/4	2	9-2408-11	60.3	303	0.50	363	0.60	484	0.80	584	0.97
		2 1/2	9-2410-11	45.8	289	0.63	346	0.76	462	1.01	558	1.22
		3	9-2412-11	37.5	281	0.75	337	0.90	449	1.20	558	1.49
		3 1/2	9-2414-11	31.8	279	0.88	334	1.05	446	1.40	559	1.76
		4	9-2416-11	27.3	274	1.00	329	1.20	439	1.61	547	2.01
		4 1/2	9-2418-11	24.1	270	1.12	324	1.35	433	1.80	549	2.28
		5	9-2420-11	21.6	270	1.25	324	1.50	432	2.00	551	2.55
		5 1/2	9-2422-11	19.4	267	1.38	321	1.65	428	2.20	543	2.80
		6	9-2424-11	17.6	263	1.50	316	1.80	421	2.39	537	3.05
		7	9-2428-11	15.0	263	1.75	315	2.10	420	2.80	534	3.57
		8	9-2432-11	12.9	258	2.00	309	2.40	412	3.20	526	4.07
		10	9-2440-11	10.3	258	2.50	309	3.00	412	4.00	524	5.11
		12	9-2448-11	8.4	252	3.00	303	3.60	403	4.80	516	6.10
2	1	2 1/2	9-3210-11	89.9	566	0.63	680	0.76	906	1.01	1096	1.22
		3	9-3212-11	72.0	539	0.75	646	0.90	862	1.20	1064	1.50
		3 1/2	9-3214-11	60.2	527	0.88	633	1.05	844	1.40	1046	1.75
		4	9-3216-11	51.2	514	1.00	617	1.20	822	1.61	1016	2.02
		4 1/2	9-3218-11	44.9	504	1.12	605	1.35	806	1.80	1006	2.28
		5	9-3220-11	40.0	500	1.25	600	1.50	800	2.00	1000	2.50
		5 1/2	9-3222-11	36.0	496	1.38	595	1.65	794	2.20	994	2.76
		6	9-3224-11	32.8	491	1.50	589	1.80	785	2.39	990	3.02
		7	9-3228-11	27.8	487	1.75	584	2.10	779	2.80	983	3.54
		8	9-3232-11	23.8	476	2.00	571	2.40	761	3.20	951	4.00
		10	9-3240-11	18.8	470	2.50	564	3.00	752	4.00	950	5.04
		12	9-3248-11	15.5	465	3.00	558	3.60	744	4.80	940	6.05
2 1/2	1 1/2	3	9-4012-11	110.0	823	0.75	987	0.90	1317	1.20	1569	1.43
		3 1/2	9-4014-11	89.9	788	0.88	945	1.05	1260	1.40	1512	1.68
		4	9-4016-11	76.2	765	1.00	918	1.20	1224	1.61	1473	1.93
		4 1/2	9-4018-11	66.0	741	1.12	889	1.35	1185	1.80	1440	2.18
		5	9-4020-11	58.8	735	1.25	882	1.50	1176	2.00	1442	2.45
		6	9-4024-11	47.6	712	1.50	855	1.80	1139	2.39	1406	2.95
		7	9-4028-11	40.0	701	1.75	841	2.10	1121	2.80	1380	3.45
		8	9-4032-11	34.4	687	2.00	825	2.40	1100	3.20	1362	3.96
		10	9-4040-11	26.7	668	2.50	801	3.00	1068	4.00	1316	4.92
		12	9-4048-11	22.0	660	3.00	793	3.60	1057	4.80	1304	5.92

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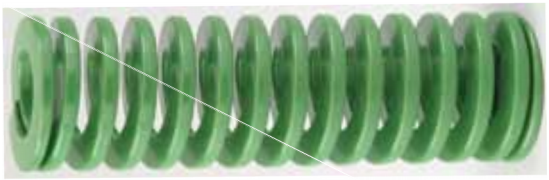

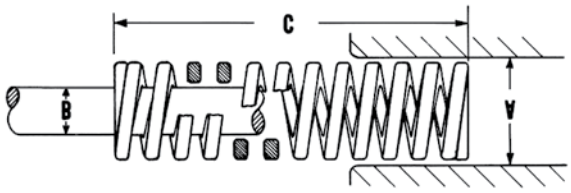

*Note: 1 Newton=0.10197 Kg (Force)

Hole Diam. (mm) A	Rod Diam. (mm) B	Free Length (mm) C	CATALOG NUMBER	RATE Newtons Reqd. to deflect 1 mm	LOAD-DEFLECTION TABLE							
					Total Deflection Recommended for Long Life (25% of C		Total Deflection Recommended for Avg. Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid	
					Load N	Defl. mm	Load N	Defl. mm	Load N	Defl. mm	Load N	Defl. mm
10	5	19	9-0603-11	14.7	70	4.75	84	5.70	112	7.60	142	9.7
		25	9-0604-11	11.0	69	6.3	83	7.5	110	10.0	157	13.2
		32	9-0605-11	8.8	70	8.0	84	9.6	112	12.8	162	17.0
		38	9-0606-11	7.4	70	9.5	84	11.4	112	15.2	164	20.3
		44	9-0607-11	6.3	69	11.0	83	13.2	111	17.6	164	24.4
		51	9-0608-11	5.4	68	12.8	82	15.3	109	20.4	158	27.4
		64	9-0610-11	4.5	72	16.0	86	19.2	115	25.6	170	36.8
		76	9-0612-11	3.7	71	19.0	85	22.8	113	30.4	172	43.2
		305	9-0648-11	0.9	65	76.3	79	91.5	105	122.0	152	174.0
12.5	7	19	9-0803-11	25.4	121	4.75	145	5.70	193	7.60	254	10.0
		25	9-0804-11	19.1	119	6.3	143	7.5	191	10.0	258	13.6
		32	9-0805-11	16.5	132	8.0	158	9.6	211	12.8	303	18.3
		38	9-0806-11	13.7	130	9.5	156	11.4	208	15.2	303	22.0
		44	9-0807-11	11.6	127	11.0	153	13.2	203	17.6	304	26.0
		51	9-0808-11	10.2	130	12.8	155	15.3	207	20.4	307	30.0
		64	9-0810-11	8.2	131	16.0	157	19.2	209	25.6	312	38.0
		76	9-0812-11	6.2	118	19.0	142	22.8	190	30.4	276	44.0
		89	9-0814-11	5.3	119	22.3	143	26.7	190	35.6	276	52.0
		305	9-0848-11	1.5	112	76.3	135	91.5	179	122.0	257	175.0
16	8.5	19	9-1003-11	38.5	183	4.75	219	5.70	293	7.60	350	9.1
		25	9-1004-11	31.5	197	6.3	236	7.5	315	10.0	422	13.3
		32	9-1005-11	23.5	188	8.0	225	9.6	300	12.8	385	16.4
		38	9-1006-11	21.0	200	9.5	240	11.4	319	15.2	443	21.0
		44	9-1007-11	17.5	193	11.0	231	13.2	308	17.6	432	25.0
		51	9-1008-11	16.3	208	12.8	249	15.3	332	20.4	477	29.0
		64	9-1010-11	12.6	202	16.0	242	19.2	323	25.6	459	37.0
		76	9-1012-11	10.3	196	19.0	236	22.8	314	30.4	456	44.0
		89	9-1014-11	9.3	207	22.3	248	26.7	330	35.6	497	53.0
		102	9-1016-11	8.2	210	25.5	252	30.6	336	40.8	506	61.0
		305	9-1048-11	2.6	200	76.3	240	91.5	320	122.0	484	184.0
20	10	19	9-1203-11	74.4	353	4.75	424	5.70	565	7.60	677	9.1
		25	9-1204-11	56.0	350	6.3	420	7.5	560	10.0	703	12.6
		32	9-1205-11	42.7	342	8.0	410	9.6	547	12.8	678	15.9
		38	9-1206-11	33.8	321	9.5	385	11.4	514	15.2	640	18.9
		44	9-1207-11	28.4	312	11.0	375	13.2	499	17.6	632	22.0
		51	9-1208-11	24.9	317	12.8	380	15.3	507	20.4	641	26.0
		64	9-1210-11	19.3	308	16.0	370	19.2	493	25.6	619	32.0
		76	9-1212-11	16.1	306	19.0	367	22.8	490	30.4	633	39.0
		89	9-1214-11	13.5	300	22.3	360	26.7	480	35.6	610	45.0
		102	9-1216-11	11.9	304	25.5	364	30.6	486	40.8	622	53.0
		115	9-1218-11	10.5	299	28.5	359	34.2	479	45.6	624	59.0
		127	9-1220-11	9.3	295	31.8	354	38.1	472	50.8	609	66.0
		139	9-1222-11	8.5	297	35.0	357	42.0	476	56.0	618	73.0
		152	9-1224-11	7.9	299	38.0	359	45.6	479	60.8	634	80.0
		305	9-1248-11	3.8	288	76.3	346	91.5	462	122.0	601	159.0

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ISO Standard Metric

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					Total Deflection Recommended for Long Life (25% of C)		Total Deflection Recommended for Avg. Life (30% of C)		Maximum Operating Deflection (40% of C)		Total Travel to Solid	
					Load N	Defl. mm	Load N	Defl. mm	Load N	Defl. mm	Load N	Defl. mm
25	12.5	25	9-1604-11	107.2	670	6.3	804	7.5	1072	10.0	1315	12.3
		32	9-1605-11	80.9	647	8.0	777	9.6	1036	12.8	1265	15.6
		38	9-1606-11	64.8	616	9.5	739	11.4	985	15.2	1230	19.0
		44	9-1607-11	53.6	589	11.0	707	13.2	943	17.6	1190	22.0
		51	9-1608-11	46.4	592	12.8	710	15.3	947	20.4	1196	26.0
		64	9-1610-11	35.7	572	16.0	686	19.2	915	25.6	1148	32.0
		76	9-1612-11	29.4	559	19.0	671	22.8	894	30.4	1139	38.1
		89	9-1614-11	24.7	549	22.3	659	26.7	879	35.6	1115	44.5
		102	9-1616-11	21.2	540	25.5	648	30.6	865	40.8	1098	51.0
		115	9-1618-11	18.7	534	28.5	641	34.2	855	45.6	1085	57.2
		127	9-1620-11	16.8	534	31.8	641	38.1	854	50.8	1087	64.0
		139	9-1622-11	15.2	533	35.0	640	42.0	853	56.0	1100	71.1
		152	9-1624-11	14.0	532	38.0	639	45.6	852	60.8	1111	79.0
		178	9-1628-11	12.1	538	44.5	645	53.4	860	71.2	1119	92.2
		203	9-1632-11	10.5	533	50.8	640	60.9	853	81.2	1125	106.0
		305	9-1648-11	7.0	534	76.3	641	91.5	855	122.0	1129	158.0
32	16	38	9-2006-11	101.4	963	9.5	1156	11.4	1541	15.2	1838	18.1
		44	9-2007-11	83.2	915	11.0	1098	13.2	1464	17.6	1765	21.0
		51	9-2008-11	71.3	909	12.8	1091	15.3	1454	20.4	1746	25.0
		64	9-2010-11	55.0	880	16.0	1056	19.2	1408	25.6	1700	31.0
		76	9-2012-11	46.1	875	19.0	1050	22.8	1400	30.4	1756	38.0
		89	9-2014-11	38.9	865	22.3	1038	26.7	1384	35.6	1739	45.0
		102	9-2016-11	33.6	857	25.5	1029	30.6	1372	40.8	1727	51.0
		115	9-2018-11	29.6	844	28.5	1012	34.2	1350	45.6	1718	58.0
		127	9-2020-11	26.3	834	31.8	1001	38.1	1335	50.8	1686	64.0
		139	9-2022-11	23.6	827	35.0	993	42.0	1324	56.0	1661	70.0
		152	9-2024-11	21.5	819	38.0	982	45.6	1310	60.8	1661	77.0
		178	9-2028-11	18.2	811	44.5	973	53.4	1297	71.2	1642	90.0
		203	9-2032-11	15.9	809	50.8	971	60.9	1294	81.2	1629	103.0
		254	9-2040-11	12.6	801	63.5	961	76.2	1281	101.6	1599	128.0
		305	9-2048-11	10.3	788	76.3	945	91.5	1261	122.0	1589	153.0
40	20	51	9-2408-11	105.6	1346	12.8	1616	15.3	2154	20.4	2596	25.0
		64	9-2410-11	80.2	1283	16.0	1540	19.2	2053	25.6	2481	31.0
		76	9-2412-11	65.7	1248	19.0	1497	22.8	1996	30.4	2482	38.0
		89	9-2414-11	55.7	1239	22.3	1487	26.7	1983	35.6	2488	45.0
		102	9-2416-11	47.8	1219	25.5	1463	30.6	1951	40.8	2435	51.0
		115	9-2418-11	42.2	1203	28.5	1443	34.2	1925	45.6	2441	58.0
		127	9-2420-11	37.8	1201	31.8	1441	38.1	1922	50.8	2449	65.0
		139	9-2422-11	34.0	1189	35.0	1427	42.0	1903	56.0	2415	71.0
		152	9-2424-11	30.8	1171	38.0	1406	45.6	1874	60.8	2388	77.0
		178	9-2428-11	26.3	1169	44.5	1403	53.4	1870	71.2	2374	91.0
		203	9-2432-11	22.6	1147	50.8	1376	60.9	1834	81.2	2339	103.0
		254	9-2440-11	18.0	1145	63.5	1375	76.2	1833	101.6	2331	130.0
		305	9-2448-11	14.7	1122	76.3	1346	91.5	1795	122.0	2293	155.0
50	25	64	9-3210-11	157.4	2519	16.0	3023	19.2	4031	25.6	4874	31.0
		76	9-3212-11	126.1	2396	19.0	2875	22.8	3833	30.4	4733	38.0
		89	9-3214-11	105.4	2346	22.3	2815	26.7	3753	35.6	4652	44.0
		102	9-3216-11	89.7	2287	25.5	2744	30.6	3658	40.8	4519	51.0
		115	9-3218-11	78.6	2241	28.5	2689	34.2	3586	45.6	4475	58.0
		127	9-3220-11	70.1	2224	31.8	2669	38.1	3559	50.8	4449	64.0
		139	9-3222-11	63.0	2207	35.0	2648	42.0	3531	56.0	4421	70.0
		152	9-3224-11	57.4	2183	38.0	2619	45.6	3493	60.8	4404	77.0
		178	9-3228-11	48.7	2167	44.5	2600	53.4	3466	71.2	4373	90.0
		203	9-3232-11	41.7	2115	50.8	2538	60.9	3385	81.2	4231	102.0
		254	9-3240-11	32.9	2091	63.5	2509	76.2	3345	101.6	4224	128.0
		305	9-3248-11	27.1	2070	76.3	2484	91.5	3312	122.0	4180	154.0
63	38	76	9-4012-11	192.6	3660	19.0	4392	22.8	5856	30.4	6976	36.0
		89	9-4014-11	157.4	3503	22.3	4204	26.7	5605	35.6	6726	43.0
		102	9-4016-11	133.5	3403	25.5	4084	30.6	5445	40.8	6552	49.0
		115	9-4018-11	115.6	3294	28.5	3953	34.2	5271	45.6	6404	55.0
		127	9-4020-11	103.0	3270	31.8	3923	38.1	5231	50.8	6412	62.0
		152	9-4024-11	83.4	3168	38.0	3801	45.6	5068	60.8	6254	75.0
		178	9-4028-11	70.1	3117	44.5	3741	53.4	4988	71.2	6136	88.0
		203	9-4032-11	60.2	3057	50.8	3669	60.9	4892	81.2	6060	100.0
		254	9-4040-11	46.8	2969	63.5	3563	76.2	4751	101.6	5851	125.0
		305	9-4048-11	38.5	2938	76.3	3525	91.5	4701	122.0	5798	150.0

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DieMax XL™ Maximum Life Springs

Four load classifications – in standard ISO sizes for dies, jigs, fixtures, and general tool work.

DANLY IEM springs are offered in a range of lengths, diameters, and load classifications that conform to the ISO 10243 International Standard and the NAAMS (North American Automotive Metric Standard), including color coding for easy identification of load range.

ISO 9002 registered Quality

All of our **DANLY IEM** die springs are manufactured to ISO 9001: 2008 quality standards consistent with the **DANLY IEM** reputation for providing the stamping industry with the most carefully engineered diemakers' supplies. Comparison testing of the operating life of **DANLY IEM** die springs and competitive products have shown that **DANLY IEM** springs offer significantly longer life.

The exceptional quality of **DANLY IEM** die springs has made them popular for a wide variety of applications. For example, **DANLY IEM** die springs are commonly used in general tool work, such as jigs and fixtures, as well as in industrial clutches and brakes and as components in farm machinery and aircraft mechanisms. Many manufacturers specify **DANLY IEM** die springs because the quality and service life of these springs improves the reliability and performance of their products.

Whatever your application might be, you can be sure that the springs you select from this catalog will consistently provide rugged, dependable spring performance. They will live up to the **DANLY IEM** reputation for quality and value.

For help with your selection, or to order die springs, contact **DANLY IEM** or your authorized **DANLY IEM** distributor.

LIGHT LOAD
Green Color Coded

MEDIUM LOAD
Blue Color Coded

HEAVY LOAD
Red Color Coded

EXTRA HEAVY LOAD
Yellow Color Coded

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DieMax XL™ Maximum Life Springs

DieMax XL™ Maximum Life Springs - springs you can rely on.

A combination of enhanced raw material, optimal spring design, innovative manufacturing processes, and broad distribution channels allow the DieMax XL™ spring to yield the best, most dependable performance and availability combination, time after time.

Spring Wire

Manufactured from spring quality chromium silicon alloy steel in accordance with ASTM A1000-99 specifications. The high tensile strength and superior heat resistance wire characteristics contribute to the low-stress, long life spring design.

Enhanced Design

Our spring starts with a modified trapezoidal cross section and changes to a "D" cross section after coiling. This wire cross section, exclusive to **DANLY IEM**, has significantly lower stress levels during compression compared to competitor designs. The "D" cross section also allows for more coils per spring while providing a greater amount of spring travel to solid when compared to competitor springs.

Physical Dimensions and Load Ratings

Computer controlled coiling and spring setting equipment allow tight control over the critical spring characteristics. Every manufactured lot of DieMax XL™ springs is carefully inspected for hole/rod fit, free length, spring rate, solid height, squareness and physical appearance. All inspection results are recorded and analyzed to ensure compliance to quality standards. These tight tolerances and highly inspected attributes guarantee the springs will work freely over the rods or freely in the holes specified without binding. They also ensure that the free lengths, solid heights and spring loads are compatible from spring to spring and lot to lot for predictable, long-life performance.

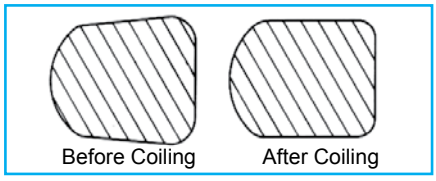
Manufacturing Processes

In addition to the optimal, low-stress spring design, the continual investment in the most advanced coiling and spring processing equipment allows **DANLY IEM** to offer a premium, long-life, mechanical spring solution. From the computer controlled spring coilers with in-line SPC data collection, the springs are routed through a series of steps including shot peening to reduce working stresses, and set removal which ensures the spring length and load will not relax in the tool.

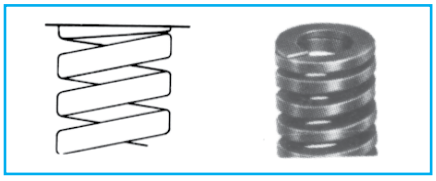
Coilers - *Using the latest in CNC coiling technology, springs are produced with much better predictability and consistency in performance, rates and lengths.*

SPC Quality Assurance - *Using SPC software, operators insure that every production process meets our high quality standards.*

Computer Controlled Spring Testing - *Utilizing custom software, spring testers track and verify consistency in spring dimensions and rates.*



Modified trapezoidal cross section of rectangular wire springs changes to a "D" cross section during coiling to achieve a low stress level that means longer spring life.



Ends of each spring are closed and ground square to assure that the spring will stand on either end and provide a maximum bearing surface.

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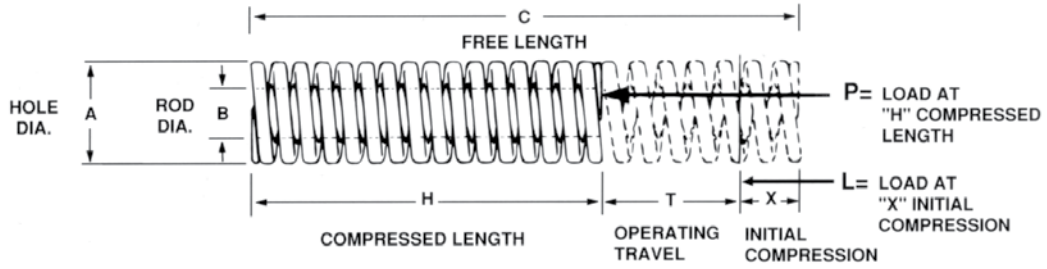
Spring Selection Steps



If the diameter and length are known, turn directly to dimension tables on pages 6 through 23 to select springs with desired total load.

If diameter and length are not known, use the following seven spring selection steps and refer to the rate column of the dimension tables for spring selection.

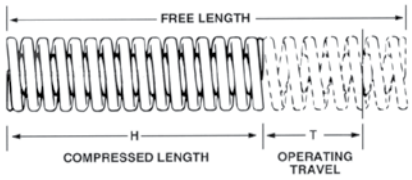
In determining the length of a spring, it should be remembered that maximum delivered spring load is obtained by selecting longer springs. For best economy and saving of space, choose Light and Medium Load springs or the Heavy Load spring having a free length equal to six times the travel, or an Extra Heavy Load spring having a free length equal to eight times the travel. If ratios lower than these are used because of height limitations, the number of springs required will be substantially increased.

Step 1

Estimate the level of production required of the die - short run, constant production, etc.

Step 2

Determine compressed spring length “H” and operating travel “T” from the die layout.



INCH

THIS CHART CONVERTS COMPRESSED LENGTHS TO FREE LENGTHS

C Free Length (in)	LIGHT LOAD H-COMPRESSED LENGTH (in)			MEDIUM LOAD H-COMPRESSED LENGTH (in)			HEAVY LOAD H-COMPRESSED LENGTH (in)			EXTRA HEAVY LOAD H-COMPRESSED LENGTH (in)		
	Long Life 25%	Average Life 30%	Maximum Deflection 40%	Long Life 25%	Average Life 30%	Maximum Deflection 37.5%	Long Life 20%	Average Life 25%	Maximum Deflection 30%	Long Life 17%	Average Life 20%	Maximum Deflection 25%
3/4	0.56	0.53	0.45	0.56	0.53	0.47	0.60	0.56	0.53	0.62	0.60	0.56
1	0.75	0.70	0.60	0.75	0.70	0.62	0.80	0.75	0.70	0.83	0.80	0.75
1 1/4	0.94	0.87	0.75	0.94	0.87	0.78	1.00	0.94	0.87	1.04	1.00	0.94
1 1/2	1.12	1.05	0.90	1.12	1.05	0.93	1.20	1.12	1.05	1.25	1.20	1.12
1 3/4	1.31	1.22	1.05	1.31	1.22	1.09	1.40	1.31	1.22	1.45	1.40	1.31
2	1.50	1.40	1.20	1.50	1.40	1.25	1.60	1.50	1.40	1.66	1.60	1.50
2 1/2	1.87	1.75	1.50	1.87	1.75	1.56	2.00	1.87	1.75	2.07	2.00	1.87
3	2.25	2.10	1.80	2.25	2.10	1.87	2.40	2.25	2.10	2.50	2.40	2.25
3 1/2	2.62	2.45	2.10	2.62	2.45	2.18	2.80	2.62	2.45	2.91	2.80	2.62
4	3.00	2.80	2.40	3.00	2.80	2.50	3.20	3.00	2.80	3.33	3.20	3.00
4 1/2	3.37	3.15	2.70	3.37	3.15	2.81	3.60	3.37	3.15	3.75	3.60	3.37
5	3.75	3.50	3.00	3.75	3.50	3.12	4.00	3.75	3.50	4.15	4.00	3.75
5 1/2	4.13	3.85	3.30	4.13	3.85	3.44	4.40	4.13	3.85	4.57	4.40	4.13
6	4.50	4.20	3.60	4.50	4.20	3.75	4.80	4.50	4.20	5.00	4.80	4.50
7	5.25	4.90	4.20	5.25	4.90	4.37	5.60	5.25	4.90	5.83	5.60	5.25
8	6.00	5.60	4.80	6.00	5.60	5.00	6.40	6.00	5.60	6.66	6.40	6.00
9	–	–	–	6.75	6.30	5.62	–	–	–	–	–	–
10	7.50	7.00	6.00	7.50	7.00	6.25	8.00	7.50	7.00	8.30	8.00	7.50
12	9.00	8.40	7.20	9.00	8.40	7.50	9.60	9.00	8.40	10.00	9.60	9.00

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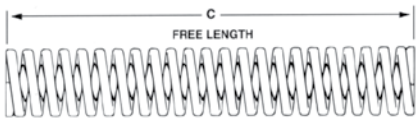
Spring Selection Steps

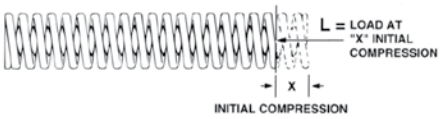
Step 3

Determine free length "C" as follows: Decide which load classification the spring should be selected from: Light, Medium, Heavy, or Extra-Heavy Load. Then choose the figure nearest the compressed length "H" required by the die design from the appropriate charts below on pages 4 and 5. Read corresponding "C" (free length).



Step 4

Estimate total initial spring load "L" required for all springs when springs are compressed "X" inches or millimeters.



Step 5

Determine "X" (initial compression) by using the following formula:

$$X = C\text{-}H\text{-}T$$

Step 6

Inch: Determine "R" (total rate for all springs in pounds per 1/10 inch) by using the following formula:

$$R = \frac{L}{10xX}$$

Metric: Determine "R" (total rate for all springs in newtons per millimeter) by using the following formula:

$$R = \frac{L}{X}$$

Step 7

Select springs as follows:

1. The free length "C" must comply with the length determined in Step 3.
2. Divide "R" in Step 6 by the number of springs to be used (if known) in order to get the rate per spring. Then refer to the following pages for the catalog number of springs having the desired rate. If the number of springs is not known, divide "R" from Step 6 by the rate of the spring you select for the correct number of springs.

METRIC

THIS CHART CONVERTS COMPRESSED LENGTHS TO FREE LENGTHS

C Free Length (mm)	LIGHT LOAD H-COMPRESSED LENGTH (mm)			MEDIUM LOAD H-COMPRESSED LENGTH (mm)			HEAVY LOAD H-COMPRESSED LENGTH (mm)			EXTRA HEAVY LOAD H-COMPRESSED LENGTH (mm)		
	Long Life 25%	Average Life 30%	Maximum Deflection 40%	Long Life 25%	Average Life 30%	Maximum Deflection 37.5%	Long Life 20%	Average Life 25%	Maximum Deflection 30%	Long Life 17%	Average Life 20%	Maximum Deflection 25%
19	14	13	11	14	13	12	15	14	13	16	15	14
25	19	18	15	19	18	16	20	19	18	21	20	19
32	24	22	19	24	22	20	26	24	22	27	26	24
38	29	27	23	29	27	24	30	29	27	32	30	29
44	33	31	26	33	31	28	35	33	31	37	35	33
51	38	36	31	38	36	32	41	38	36	42	41	38
64	48	45	38	48	45	40	51	48	45	53	51	48
76	57	53	46	57	53	47	61	57	53	63	61	57
89	67	62	53	67	62	56	71	67	62	74	71	67
102	76	71	61	76	71	64	82	76	71	85	82	76
115	86	80	68	86	80	71	91	86	80	95	91	86
127	95	89	76	95	89	79	102	95	89	105	102	95
139	105	98	84	105	98	87	112	105	98	116	112	105
152	114	106	91	114	106	95	122	114	106	126	122	114
178	133	125	107	133	125	111	142	133	125	148	142	133
203	152	142	122	152	142	127	162	152	142	168	162	152
229	–	–	–	172	160	143	–	–	–	–	–	–
254	190	178	152	190	178	159	203	190	178	211	203	190
305	229	213	183	229	213	191	244	229	213	253	244	229

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