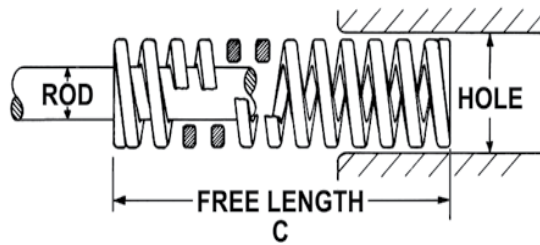


Extra Heavy Duty Die Springs



Color coded **GREEN STRIPE**



Hole Diam. (in)	Rod Diam. (in)	Free Length (in)	Wire Size (in)	CATALOG NUMBER	Pounds @ 1/10 inch defl.	Total Deflection Recommended for Long Life (15% of C)		Total Deflection Recommended for Avg. Life (17% of C)		Maximum Operating Deflection (25% of C)		* Max. Comp. Length (in)
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.	
3/8	3/16	1.00	0.063 X 0.073	XH100L	20.5	30.8	0.15	34.9	0.17	51.3	0.25	0.67
		1.25		XH100AL	16.0	30.0	0.19	34.0	0.21	50.0	0.31	0.86
		1.50		XH101L	12.5	28.1	0.23	31.9	0.26	46.9	0.38	1.03
		1.75		XH101AL	11.1	29.1	0.26	33.0	0.30	48.6	0.44	1.22
		2.00		XH102L	9.0	27.0	0.30	30.6	0.34	45.0	0.50	1.38
		2.50		XH103L	7.0	26.3	0.38	29.8	0.43	43.8	0.63	1.71
		3.00		XH104L	6.3	28.4	0.45	32.1	0.51	47.3	0.75	2.05
		12.00		XH105L	1.5	27.0	1.80	30.6	2.04	45.0	3.00	7.98
1/2	9/32	1.00	0.088 X 0.090	XH110L	32.0	48.0	0.15	54.4	0.17	80.0	0.25	0.69
		1.25		XH110AL	24.2	45.4	0.19	51.4	0.21	75.6	0.31	0.86
		1.50		XH111L	20.0	45.0	0.23	51.0	0.26	75.0	0.38	1.03
		1.75		XH111AL	17.0	44.6	0.26	50.6	0.30	74.4	0.44	1.20
		2.00		XH112L	14.5	43.5	0.30	49.3	0.34	72.5	0.50	1.36
		2.50		XH113L	11.5	43.1	0.38	48.9	0.43	71.9	0.63	1.65
		3.00		XH114L	9.4	42.3	0.45	47.9	0.51	70.5	0.75	1.99
		3.50		XH115L	8.0	42.0	0.53	47.6	0.60	70.0	0.88	2.30
12.00	XH116L	2.5	45.0	1.80	51.0	2.04	75.0	3.00	7.82			
5/8	11/32	1.00	0.115 X 0.120	XH120L	63.0	94.5	0.15	107.1	0.17	157.5	0.25	0.68
		1.25		XH120AL	47.0	88.1	0.19	99.9	0.21	146.9	0.31	0.85
		1.50		XH121L	38.0	85.5	0.23	96.9	0.26	142.5	0.38	1.03
		1.75		XH121AL	32.0	84.0	0.26	95.2	0.30	140.0	0.44	1.20
		2.00		XH122L	29.0	87.0	0.30	98.6	0.34	145.0	0.50	1.38
		2.50		XH123L	22.0	82.5	0.38	93.5	0.43	137.5	0.63	1.81
		3.00		XH124L	19.0	85.5	0.45	96.9	0.51	142.5	0.75	2.06
		3.50		XH125L	16.0	84.0	0.53	95.2	0.60	140.0	0.88	2.39
		4.00		XH126L	13.5	81.0	0.60	91.8	0.68	135.0	1.00	2.78
		12.00		XH127L	4.5	81.0	1.80	91.8	2.04	135.0	3.00	7.87
3/4	3/8	1.00	0.140 X 0.155	XH1L	140.0	210.0	0.15	238.0	0.17	350.0	0.25	0.71
		1.25		XH1AL	110.0	206.3	0.19	233.8	0.21	343.8	0.31	0.89
		1.50		XH2L	89.0	200.3	0.23	227.0	0.26	333.8	0.38	1.06
		1.75		XH2AL	75.0	196.9	0.26	223.1	0.30	328.1	0.44	1.24
		2.00		XH3L	68.0	204.0	0.30	231.2	0.34	340.0	0.50	1.42
		2.50		XH4L	50.0	187.5	0.38	212.5	0.43	312.5	0.63	1.76
		3.00		XH5L	40.5	182.3	0.45	206.6	0.51	303.8	0.75	2.07
		3.50		XH6L	34.5	181.1	0.53	205.3	0.60	301.9	0.88	2.41
		4.00		XH7L	30.0	180.0	0.60	204.0	0.68	300.0	1.00	2.76
		4.50		XH8L	26.5	178.9	0.68	202.7	0.77	298.1	1.13	3.10
		5.00		XH9L	23.5	176.3	0.75	199.8	0.85	293.8	1.25	3.42
		5.50		XH10L	21.5	177.4	0.83	201.0	0.94	295.6	1.38	3.78
6.00	XH11L	19.5	175.5	0.90	198.9	1.02	292.5	1.50	4.10			
12.00	XH12L	9.5	171.0	1.80	193.8	2.04	285.0	3.00	8.10			

* NOTE: For design purposes only. We do not recommend deflecting a spring to maximum deflection.

Inch Standard

Hole Diam. (in)	Rod Diam. (in)	Free Length (in)	Wire Size (in)	CATALOG NUMBER	Pounds @ 1/10 inch defl.	Total Deflection Recommended for Avg. Life (15% of C)		Total Deflection Recommended for Long Life (17% of C)		Maximum Operating Deflection (25% of C)		* Max. Length (in)
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.	
1	1/2	1.50	0.182 X 0.215	XH13L	160.0	360.0	0.23	408.0	0.26	600.0	0.38	1.05
		2.00		XH14L	116.0	348.0	0.30	394.4	0.34	580.0	0.50	1.40
		2.50		XH15L	89.6	336.0	0.38	380.8	0.43	560.0	0.63	1.73
		3.00		XH16L	73.6	331.2	0.45	375.4	0.51	552.0	0.75	2.08
		3.50		XH17L	62.4	327.6	0.53	371.3	0.60	546.0	0.88	2.42
		4.00		XH18L	55.2	331.2	0.60	375.4	0.68	552.0	1.00	2.74
		4.50		XH19L	48.8	329.4	0.68	373.3	0.77	549.0	1.13	3.04
		5.00		XH20L	43.2	324.0	0.75	367.2	0.85	540.0	1.25	3.38
		6.00		XH21L	36.0	324.0	0.90	367.2	1.02	540.0	1.50	3.99
		12.00		XH22AL	17.6	316.8	1.80	359.0	2.04	528.0	3.00	7.86
1-1/4	5/8	2.00	0.226 X 0.280	XH37L	192.0	576.0	0.30	652.8	0.34	960.0	0.50	1.41
		2.50		XH38L	146.2	548.3	0.38	621.4	0.43	913.8	0.63	1.74
		3.00		XH39L	118.4	532.8	0.45	603.8	0.51	888.0	0.75	2.09
		3.50		XH40L	100.8	529.2	0.53	599.8	0.60	882.0	0.88	2.43
		4.00		XH41L	85.0	510.0	0.60	578.0	0.68	850.0	1.00	2.78
		4.50		XH42L	78.4	529.2	0.68	599.8	0.77	882.0	1.13	3.12
		5.00		XH43L	68.0	510.0	0.75	578.0	0.85	850.0	1.25	3.46
		6.00		XH45L	56.0	504.0	0.90	571.2	1.02	840.0	1.50	4.11
		8.00		XH47L	41.6	499.2	1.20	565.8	1.36	832.0	2.00	5.40
		10.00		XH48L	33.6	504.0	1.50	571.2	1.70	840.0	2.50	6.75
12.00	XH48AL	26.4	475.2	1.80	538.6	2.04	792.0	3.00	7.99			
1-1/2	3/4	2.00	0.290 X 0.330	XH49L	370.0	1017.0	0.30	1152.6	0.34	1695.0	0.50	1.45
		2.50		XH50L	285.0	993.8	0.38	1126.3	0.43	1656.3	0.63	1.80
		3.00		XH51L	231.2	967.5	0.45	1096.5	0.51	1612.5	0.75	2.16
		3.50		XH52L	196.0	918.8	0.53	1041.3	0.60	1531.3	0.88	2.51
		4.00		XH53L	171.0	912.0	0.60	1033.6	0.68	1520.0	1.00	2.90
		4.50		XH54L	148.0	891.0	0.68	1009.8	0.77	1485.0	1.13	3.22
		5.00		XH55L	135.0	915.0	0.75	1037.0	0.85	1525.0	1.25	3.58
		6.00		XH56L	110.4	891.0	0.90	1009.8	1.02	1485.0	1.50	4.30
		8.00		XH57L	80.8	852.0	1.20	965.6	1.36	1420.0	2.00	5.72
		10.00		XH58L	65.0	855.0	1.50	969.0	1.70	1425.0	2.50	7.12
12.00	XH58AL	54.0	828.0	1.80	938.4	2.04	1380.0	3.00	8.52			
2	1	2.50	0.350 X 0.452	XH70L	387.0	1451.3	0.38	1644.8	0.43	2418.8	0.63	1.81
		3.00		XH71L	312.0	1404.0	0.45	1591.2	0.51	2340.0	0.75	2.16
		3.50		XH72L	254.4	1335.6	0.53	1513.7	0.60	2226.0	0.88	2.51
		4.00		XH73L	220.0	1320.0	0.60	1496.0	0.68	2200.0	1.00	2.86
		4.50		XH74L	189.7	1280.5	0.68	1451.2	0.77	2134.1	1.13	3.21
		5.00		XH75L	172.8	1296.0	0.75	1468.8	0.85	2160.0	1.25	3.56
		6.00		XH77L	141.6	1274.4	0.90	1444.3	1.02	2124.0	1.50	4.24
		8.00		XH80L	101.5	1218.0	1.20	1380.4	1.36	2030.0	2.00	5.64
		10.00		XH82L	84.0	1260.0	1.50	1428.0	1.70	2100.0	2.50	7.02
		12.00		XH83L	70.0	1260.0	1.80	1428.0	2.04	2100.0	3.00	8.35

* NOTE: For design purposes only. We do not recommend deflecting a spring to maximum deflection.

Die Spring Basics

A die spring is a highly engineered mechanical spring with specific wire designs that stores energy elastically by resisting movement when pressure is applied. The desired wire segment is selected to produce the maximum amount of force within a minimal amount of space.

Altering Die Springs Each die spring is carefully engineered to perform within specific applications. Under no circumstances should you alter a die spring. Altering a die spring will change its designed characteristics and allows additional stresses to occur causing early failure. Grinding on the die spring not only changes the spring's original properties, but the heat from grinding can change the temper of the material and negatively affect the spring's performance.

Compressed Length The sum of the preload travel and operating travel.

Corrosion Frequently, die spring failure can be traced to corrosive elements which affect the surface of the spring's material, causing premature failure. Be aware of conditions that may affect the spring's surface such as rust, lubricants, soaps, and chemicals. Clean, protected die springs provide the best performance.

Cycle Rate The more rapidly a spring is cycled, the greater the need to operate in the recommended long life deflections from the catalog.

Die Spring Guidance Make sure that the hole size and/or rod size match the die spring's operating dimensions.

Duty Ranges We offer 4 separate duty ranges to best suit your applications – Medium Duty, Medium Heavy Duty, Heavy Duty, and Extra Heavy Duty. Do not mix springs of different duties.

Free Length The length of the spring without any load or force applied.

Hole Diameter Die springs are designed to be used in a hole dimension as indicated in the catalog. The actual O.D. will be somewhat smaller to prevent interference.

Material In our case, the spring material is High Tensile Strength Chrome Silicon Material. We use an optimal rectangular wire design. The maximum rated service temperature is 425°F.

Operating Travel Operating travel is the deflection of the spring where it is operating between the preload and the total travel of the spring during operation. This is the area where the actual work is performed.

Preload The initial force which is applied to a die spring. Preload is recommended to compress the first coils at each end where additional stresses are present because of the turn-down of the end coils. Applying a preload will extend the life of the spring.

Quality Our die springs are manufactured in an ISO9001-2008 facility.

Rates Die spring rates are normally listed as *Pounds per Inch of deflection* (i.e. 60 pounds load per inch.) As a die spring is deflected, the loads will increase for the amount of travel it is deflected. That is, a spring with a 60lb/inch rate will produce 60 lbs of resistance at 1" of travel, 120 lbs. at 2" of travel, etc. For purposes of simplification, the loads in our catalog are shown in pounds needed to deflect a spring 1/10th of an inch. Simply multiply the rates given by 10 to determine the actual spring rate.

Rod Diameter Die springs are designed to fit over a rod for guidance and the actual I.D. of the spring is actually somewhat larger to fit over a rod without interference.

Solid Height Solid height is the height of the spring when all of the coils are totally collapsed to solid. You never want to operate a die spring close to this condition.



DieMax[™] L Die Springs

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