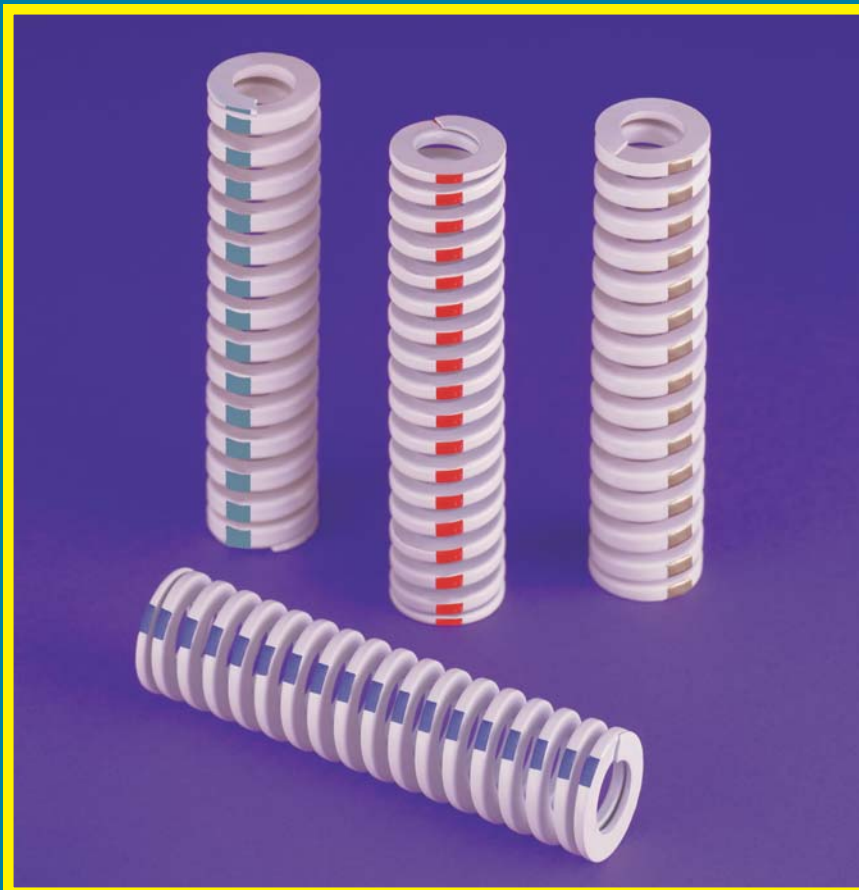


# Die Springs



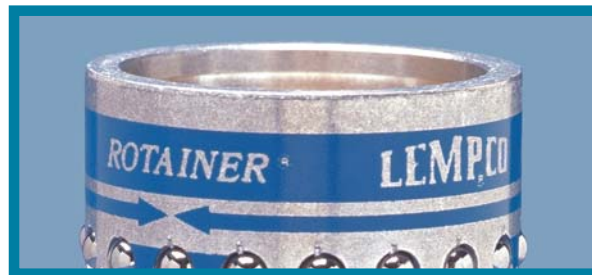
**LEMPICO<sup>®</sup>**

**SERVICING  
INDUSTRY  
SINCE 1918**

## The Industry Standard, Conformed to Your Needs

**LEMPCO** customization services will go to virtually any length to satisfy your needs. Now, the full range of answers to your requirements is at your command. It could be a simple modification or something quite exotic. Whatever your need, **LEMPCO** will work closely with you to make sure your specs are met.

The pride we have in our ability to perform (and to provide you with profitable production performance) is stamped on every part we make. The **LEMPCO** stamp means satisfaction in terms of quality, dependability and service since 1918. Other brands may appear the same; for a system to truly perform, look for the **LEMPCO** name.



We pledge that all of our products – innovative or conventional – will be manufactured to the same high quality level throughout the coming years.

Included in our full line offering are both inch and metric size die sets and die components that are designed to numerous die standards including ISO, NAAMS and JIS. The complete product offering includes:

- Ball bearing and plain bearing die sets (including custom and catalog sets)
- Ball bearing components (including the exclusive Rotainer<sup>®</sup>)
- Plain bearing components
- Aluminum precision die sets
- Forming Machine die sets
- Lempcoshank<sup>®</sup> kits for die sets
- Ground and machined plates
- ISO and JIS Die Springs
- Nitrogen gas springs
- Formathane<sup>™</sup> Urethane springs, strippers, sheets, bars, rods and die cover film
- Accu-Bend<sup>™</sup> Rotary Benders
- Lempcoloy<sup>®</sup> self-lubricating bushings



# Inch Die Springs

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## Die Springs Product Features

- ◆ For same day shipments, we stock them so you don't have to
- ◆ Inch sizes manufactured to industry standard colors
- ◆ Yields reliable, trouble-free performance
- ◆ Manufactured in an ISO 9001:2000 certified facility
- ◆ Manufactured from spring-quality Chromium Silicon alloy, high-tensile strength steel in accordance with ASTM A1000-99 specifications
- ◆ Optimal rectangular wire design



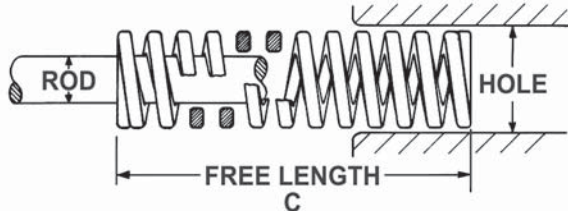
**MEDIUM DUTY**  
Color Coded  
Blue Stripe

**MEDIUM HEAVY DUTY**  
Color Coded  
Red Stripe

**HEAVY DUTY**  
Color Coded  
Gold Stripe

**EXTRA HEAVY DUTY**  
Color Coded  
Green Stripe

# Medium Duty Die Springs



Color coded **BLUE 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 (25% of C)		Total Deflection Recommended for Avg. Life (35% of C)		Maximum Operating Deflection (40% of C)		Max. Defl. (45%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
3/8	3/16	1.00	0.040 X 0.070	9-0604-1	6.2	15.5	0.25	21.7	0.35	24.8	0.40	0.45	24
		1.25		9-0605-1	5.3	16.6	0.31	23.2	0.44	26.5	0.50	0.56	24
		1.50		9-0606-1	4.2	15.6	0.38	21.8	0.53	24.9	0.60	0.68	24
		1.75		9-0607-1	3.5	15.3	0.44	21.4	0.61	24.5	0.70	0.79	24
		2.00		9-0608-1	2.9	14.5	0.50	20.3	0.70	23.2	0.80	0.90	24
		2.50		9-0610-1	2.4	15.3	0.63	21.4	0.88	24.4	1.00	1.13	24
		3.00		9-0612-1	2.1	15.8	0.75	22.1	1.05	25.2	1.20	1.35	24
		12.00	9-0648-1	0.6	16.8	3.00	23.5	4.20	26.9	4.80	5.40	8	
1/2	9/32	1.00	0.052 X 0.095	9-0804-1	10.7	26.8	0.25	37.5	0.35	42.8	0.40	0.45	24
		1.25		9-0805-1	8.2	25.6	0.31	35.9	0.44	41.0	0.50	0.56	24
		1.50		9-0806-1	6.8	25.5	0.38	35.7	0.53	40.8	0.60	0.68	24
		1.75		9-0807-1	6.0	26.3	0.44	36.8	0.61	42.0	0.70	0.79	24
		2.00		9-0808-1	5.3	26.5	0.50	37.1	0.70	42.4	0.80	0.90	24
		2.50		9-0810-1	4.3	26.9	0.63	37.6	0.88	43.0	1.00	1.13	24
		3.00		9-0812-1	3.4	25.5	0.75	35.7	1.05	40.8	1.20	1.35	24
		3.50		9-0814-1	2.9	25.4	0.88	35.5	1.23	40.6	1.40	1.58	24
		4.50		9-0818-1	2.4	27.0	1.13	37.8	1.58	43.2	1.80	2.03	24
		5.50		9-0822-1	2.0	27.5	1.38	38.5	1.93	44.0	2.20	2.48	24
		6.50		9-0826-1	1.4	22.8	1.63	31.9	2.28	36.4	2.60	2.93	24
		7.50		9-0830-1	1.2	22.5	1.88	31.5	2.63	36.0	3.00	3.38	24
		12.00	9-0848-1	0.7	21.0	3.00	29.4	4.20	33.6	4.80	5.40	8	
5/8	11/32	1.00	0.068 X 0.117	9-1004-1	17.0	42.5	0.25	59.5	0.35	68.0	0.40	0.45	24
		1.25		9-1005-1	13.0	40.6	0.31	56.9	0.44	65.0	0.50	0.56	24
		1.50		9-1006-1	11.1	41.6	0.38	58.3	0.53	66.6	0.60	0.68	24
		1.75		9-1007-1	9.6	42.0	0.44	58.8	0.61	67.2	0.70	0.79	24
		2.00		9-1008-1	8.8	44.0	0.50	61.6	0.70	70.4	0.80	0.90	24
		2.50		9-1010-1	6.3	39.4	0.63	55.1	0.88	63.0	1.00	1.13	24
		3.00		9-1012-1	5.6	42.0	0.75	58.8	1.05	67.2	1.20	1.35	24
		3.50		9-1014-1	4.8	42.0	0.88	58.8	1.23	67.2	1.40	1.58	24
		4.00		9-1016-1	4.4	44.0	1.00	61.6	1.40	70.4	1.60	1.80	24
					12.00	9-1048-1	1.5	45.6	3.00	63.8	4.20	73.0	4.80
3/4	3/8	1.00	0.085 X 0.155	9-1204-1	31.8	79.5	0.25	111.3	0.35	127.2	0.40	0.45	24
		1.25		9-1205-1	25.6	80.0	0.31	112.0	0.44	128.0	0.50	0.56	24
		1.50		9-1206-1	20.0	75.0	0.38	105.0	0.53	120.0	0.60	0.68	24
		1.75		9-1207-1	17.6	77.0	0.44	107.8	0.61	123.2	0.70	0.79	24
		2.00		9-1208-1	14.4	72.0	0.50	100.8	0.70	115.2	0.80	0.90	24
		2.50		9-1210-1	12.0	75.0	0.63	105.0	0.88	120.0	1.00	1.13	24
		3.00		9-1212-1	9.6	72.0	0.75	100.8	1.05	115.2	1.20	1.35	24
		3.50		9-1214-1	8.0	70.0	0.88	98.0	1.23	112.0	1.40	1.58	24
		4.00		9-1216-1	7.2	72.0	1.00	100.8	1.40	115.2	1.60	1.80	24
		4.50		9-1218-1	6.4	72.0	1.13	100.8	1.58	115.2	1.80	2.03	24
		5.00		9-1220-1	6.0	75.0	1.25	105.0	1.75	120.0	2.00	2.25	24
		5.50		9-1222-1	5.5	75.6	1.38	105.9	1.93	121.0	2.20	2.48	24
		6.00		9-1224-1	5.0	75.0	1.50	105.0	2.10	120.0	2.40	2.70	24
		6.50		9-1226-1	4.5	73.1	1.63	102.4	2.28	117.0	2.60	2.93	24
		7.50		9-1230-1	3.8	71.3	1.88	99.8	2.63	114.0	3.00	3.38	24
		12.00	9-1248-1	2.4	72.0	3.00	100.8	4.20	115.2	4.80	5.40	8	

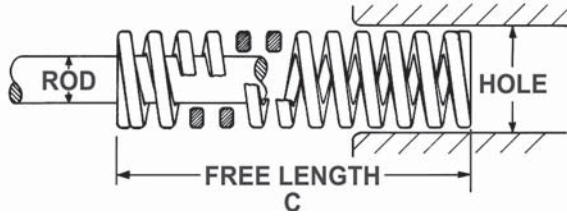
\* NOTE: For design purposes only. We do not recommend deflecting a spring to maximum deflection.

# 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 Long Life (25% of C)		Total Deflection Recommended for Avg. Life (35% of C)		Maximum Operating Deflection (40% of C)		Max. Defl. (45%)* (in)	Pkg. Qty.			
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.					
1	1/2	1.00	0.105 X 0.212	9-1604-1	55.0	137.5	0.25	192.5	0.35	220.0	0.40	0.45	24			
		1.25		9-1605-1	45.0	140.6	0.31	196.9	0.44	225.0	0.50	0.56	24			
		1.50		9-1606-1	35.4	132.8	0.38	185.9	0.53	212.4	0.60	0.68	24			
		1.75		9-1607-1	30.0	131.3	0.44	183.8	0.61	210.0	0.70	0.79	24			
		2.00		9-1608-1	26.0	130.0	0.50	182.0	0.70	208.0	0.80	0.90	24			
		2.50		9-1610-1	20.2	126.3	0.63	176.8	0.88	202.0	1.00	1.13	24			
		3.00		9-1612-1	16.5	123.8	0.75	173.3	1.05	198.0	1.20	1.35	24			
		3.50		9-1614-1	15.0	131.3	0.88	183.8	1.23	210.0	1.40	1.58	24			
		4.00		9-1616-1	12.0	120.0	1.00	168.0	1.40	192.0	1.60	1.80	24			
		4.50		9-1618-1	10.5	118.1	1.13	165.4	1.58	189.0	1.80	2.03	24			
		5.00		9-1620-1	9.6	120.0	1.25	168.0	1.75	192.0	2.00	2.25	24			
		5.50		9-1622-1	8.8	121.0	1.38	169.4	1.93	193.6	2.20	2.48	24			
		6.00		9-1624-1	8.0	120.0	1.50	168.0	2.10	192.0	2.40	2.70	24			
		7.00		9-1628-1	7.2	126.0	1.75	176.4	2.45	201.6	2.80	3.15	16			
		8.00		9-1632-1	6.0	120.0	2.00	168.0	2.80	192.0	3.20	3.60	16			
12.00	9-1648-1	4.0	120.0	3.00	168.0	4.20	192.0	4.80	5.40	8						
1-1/4	5/8	1.50	0.125 X 0.270	9-2006-1	51.0	191.3	0.38	267.8	0.53	306.0	0.60	0.68	16			
		1.75		9-2007-1	42.4	185.5	0.44	259.7	0.61	296.8	0.70	0.79	16			
		2.00		9-2008-1	36.0	180.0	0.50	252.0	0.70	288.0	0.80	0.90	16			
		2.50		9-2010-1	28.8	180.0	0.63	252.0	0.88	288.0	1.00	1.13	16			
		3.00		9-2012-1	24.0	180.0	0.75	252.0	1.05	288.0	1.20	1.35	16			
		3.50		9-2014-1	20.0	175.0	0.88	245.0	1.23	280.0	1.40	1.58	16			
		4.00		9-2016-1	17.6	176.0	1.00	246.4	1.40	281.6	1.60	1.80	16			
		4.50		9-2018-1	16.0	180.0	1.13	252.0	1.58	288.0	1.80	2.03	16			
		5.00		9-2020-1	13.6	170.0	1.25	238.0	1.75	272.0	2.00	2.25	16			
		5.50		9-2022-1	12.8	176.0	1.38	246.4	1.93	281.6	2.20	2.48	16			
		6.00		9-2024-1	12.0	180.0	1.50	252.0	2.10	288.0	2.40	2.70	16			
		7.00		9-2028-1	10.4	182.0	1.75	254.8	2.45	291.2	2.80	3.15	16			
		8.00		9-2032-1	8.8	176.0	2.00	246.4	2.80	281.6	3.20	3.60	16			
		10.00		9-2040-1	7.2	180.0	2.50	252.0	3.50	288.0	4.00	4.50	8			
		12.00		9-2048-1	6.0	180.0	3.00	252.0	4.20	288.0	4.80	5.40	8			
1-1/2	3/4	2.00	0.158 X 0.315	9-2408-1	54.7	273.5	0.50	382.9	0.70	437.6	0.80	0.90	16			
		2.50		9-2410-1	44.7	279.4	0.63	391.1	0.88	447.0	1.00	1.13	16			
		3.00		9-2412-1	36.0	270.0	0.75	378.0	1.05	432.0	1.20	1.35	16			
		3.50		9-2414-1	30.0	262.5	0.88	367.5	1.23	420.0	1.40	1.58	16			
		4.00		9-2416-1	27.0	270.0	1.00	378.0	1.40	432.0	1.60	1.80	16			
		4.50		9-2418-1	23.0	258.8	1.13	362.3	1.58	414.0	1.80	2.03	16			
		5.00		9-2420-1	21.0	262.5	1.25	367.5	1.75	420.0	2.00	2.25	16			
		5.50		9-2422-1	18.5	254.4	1.38	356.1	1.93	407.0	2.20	2.48	16			
		6.00		9-2424-1	17.0	255.0	1.50	357.0	2.10	408.0	2.40	2.70	16			
		7.00		9-2428-1	14.5	253.8	1.75	355.3	2.45	406.0	2.80	3.15	16			
		8.00		9-2432-1	12.8	256.0	2.00	358.4	2.80	409.6	3.20	3.60	16			
		10.00		9-2440-1	10.0	250.0	2.50	350.0	3.50	400.0	4.00	4.50	8			
		12.00		9-2448-1	8.2	246.0	3.00	344.4	4.20	393.6	4.80	5.40	8			
		2		1	2.50	0.215 X 0.445	9-3210-1	100.0	625.0	0.63	875.0	0.88	1000.0	1.00	1.13	16
					3.00		9-3212-1	83.0	622.5	0.75	871.5	1.05	996.0	1.20	1.35	16
3.50	9-3214-1		65.8		575.8		0.88	806.1	1.23	921.2	1.40	1.58	16			
4.00	9-3216-1		60.0		600.0		1.00	840.0	1.40	960.0	1.60	1.80	16			
4.50	9-3218-1		53.0		596.3		1.13	834.8	1.58	954.0	1.80	2.03	16			
5.00	9-3220-1		47.0		587.5		1.25	822.5	1.75	940.0	2.00	2.25	16			
5.50	9-3222-1		39.8		547.3		1.38	766.2	1.93	875.6	2.20	2.48	16			
6.00	9-3224-1		39.0		585.0		1.50	819.0	2.10	936.0	2.40	2.70	16			
7.00	9-3228-1		31.6		553.0		1.75	774.2	2.45	884.8	2.80	3.15	8			
8.00	9-3232-1		28.5		570.0		2.00	798.0	2.80	912.0	3.20	3.60	8			
10.00	9-3240-1		20.8		520.0		2.50	728.0	3.50	832.0	4.00	4.50	8			
12.00	9-3248-1		17.5		525.0		3.00	735.0	4.20	840.0	4.80	5.40	8			

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

# Medium Heavy Duty Die Springs



Color coded **RED 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 (20% of C)		Total Deflection Recommended for Avg. Life (25% of C)		Maximum Operating Deflection (35% of C)		Max. Defl. (37%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
3/8	3/16	1.00	0.045 X 0.070	9-0604-2	9.0	18.0	0.20	22.5	0.25	31.5	0.35	0.37	24
		1.25		9-0605-2	7.3	18.3	0.25	22.8	0.31	31.9	0.44	0.46	24
		1.50		9-0606-2	6.7	20.1	0.30	25.1	0.38	35.2	0.53	0.56	24
		1.75		9-0607-2	5.7	20.0	0.35	24.9	0.44	34.9	0.61	0.65	24
		2.00		9-0608-2	5.0	20.0	0.40	25.0	0.50	35.0	0.70	0.74	24
		2.50		9-0610-2	4.0	20.0	0.50	25.0	0.63	35.0	0.88	0.93	24
		3.00		9-0612-2	3.0	18.0	0.60	22.5	0.75	31.5	1.05	1.11	24
		12.00		9-0648-2	0.8	19.2	2.40	24.0	3.00	33.6	4.20	4.44	8
1/2	9/32	1.00	0.060 X 0.095	9-0804-2	16.6	33.2	0.20	41.5	0.25	58.1	0.35	0.37	24
		1.25		9-0805-2	13.0	32.5	0.25	40.6	0.31	56.9	0.44	0.46	24
		1.50		9-0806-2	9.9	29.7	0.30	37.1	0.38	52.0	0.53	0.56	24
		1.75		9-0807-2	8.5	29.8	0.35	37.2	0.44	52.1	0.61	0.65	24
		2.00		9-0808-2	7.5	30.0	0.40	37.5	0.50	52.5	0.70	0.74	24
		2.50		9-0810-2	6.0	30.0	0.50	37.5	0.63	52.5	0.88	0.93	24
		3.00		9-0812-2	5.5	33.0	0.60	41.3	0.75	57.8	1.05	1.11	24
		3.50		9-0814-2	4.0	28.0	0.70	35.0	0.88	49.0	1.23	1.30	24
12.00	9-0848-2	1.2	28.8	2.40	36.0	3.00	50.4	4.20	4.44	8			
5/8	11/32	1.00	0.086 X 0.112	9-1004-2	30.0	60.0	0.20	75.0	0.25	105.0	0.35	0.37	24
		1.25		9-1005-2	21.5	53.8	0.25	67.2	0.31	94.1	0.44	0.46	24
		1.50		9-1006-2	19.2	57.6	0.30	72.0	0.38	100.8	0.53	0.56	24
		1.75		9-1007-2	16.8	58.8	0.35	73.5	0.44	102.9	0.61	0.65	24
		2.00		9-1008-2	14.8	59.2	0.40	74.0	0.50	103.6	0.70	0.74	24
		2.50		9-1010-2	11.5	57.5	0.50	71.9	0.63	100.6	0.88	0.93	24
		3.00		9-1012-2	10.0	60.0	0.60	75.0	0.75	105.0	1.05	1.11	24
		3.50		9-1014-2	8.5	59.5	0.70	74.4	0.88	104.1	1.23	1.30	24
4.00	9-1016-2	7.6	60.8	0.80	76.0	1.00	106.4	1.40	1.48	24			
12.00	9-1048-2	2.6	62.4	2.40	78.0	3.00	109.2	4.20	4.44	8			
3/4	3/8	1.00	0.100 X 0.155	9-1204-2	50.0	100.0	0.20	125.0	0.25	175.0	0.35	0.37	24
		1.25		9-1205-2	38.0	95.0	0.25	118.8	0.31	166.3	0.44	0.46	24
		1.50		9-1206-2	32.0	96.0	0.30	120.0	0.38	168.0	0.53	0.56	24
		1.75		9-1207-2	28.5	99.8	0.35	124.7	0.44	174.6	0.61	0.65	24
		2.00		9-1208-2	24.8	99.2	0.40	124.0	0.50	173.6	0.70	0.74	24
		2.50		9-1210-2	19.2	96.0	0.50	120.0	0.63	168.0	0.88	0.93	24
		3.00		9-1212-2	14.4	86.4	0.60	108.0	0.75	151.2	1.05	1.11	24
		3.50		9-1214-2	12.8	89.6	0.70	112.0	0.88	156.8	1.23	1.30	24
		4.00		9-1216-2	12.0	96.0	0.80	120.0	1.00	168.0	1.40	1.48	24
		4.50		9-1218-2	11.0	99.0	0.90	123.8	1.13	173.3	1.58	1.67	24
		5.00		9-1220-2	9.0	90.0	1.00	112.5	1.25	157.5	1.75	1.85	24
		5.50		9-1222-2	8.0	88.0	1.10	110.0	1.38	154.0	1.93	2.04	24
6.00	9-1224-2	7.5	90.0	1.20	112.5	1.50	157.5	2.10	2.22	24			
12.00	9-1248-2	3.6	86.4	2.40	108.0	3.00	151.2	4.20	4.44	8			

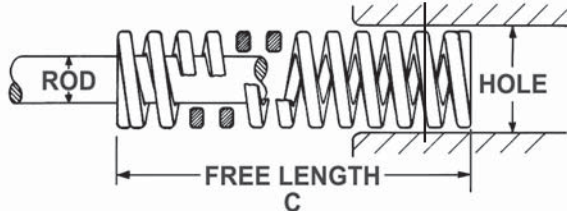
\* NOTE: For design purposes only. We do not recommend deflecting a spring to maximum deflection.

# 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 Long Life (20% of C)		Total Deflection Recommended for Avg. Life (25% of C)		Maximum Operating Deflection (35% of C)		Max. Defl. (37%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
1	1/2	1.00	0.125 X 0.214	9-1604-2	76.0	152.0	0.20	190.0	0.25	266.0	0.35	0.37	24
		1.25		9-1605-2	62.4	156.0	0.25	195.0	0.31	273.0	0.44	0.46	24
		1.50		9-1606-2	49.6	148.8	0.30	186.0	0.38	260.4	0.53	0.56	24
		1.75		9-1607-2	44.0	154.0	0.35	192.5	0.44	269.5	0.61	0.65	24
		2.00		9-1608-2	40.0	160.0	0.40	200.0	0.50	280.0	0.70	0.74	24
		2.50		9-1610-2	31.0	155.0	0.50	193.8	0.63	271.3	0.88	0.93	24
		3.00		9-1612-2	25.0	150.0	0.60	187.5	0.75	262.5	1.05	1.11	24
		3.50		9-1614-2	21.6	151.2	0.70	189.0	0.88	264.6	1.23	1.30	24
		4.00		9-1616-2	18.4	147.2	0.80	184.0	1.00	257.6	1.40	1.48	24
		4.50		9-1618-2	17.0	153.0	0.90	191.3	1.13	267.8	1.58	1.67	24
		5.00		9-1620-2	14.4	144.0	1.00	180.0	1.25	252.0	1.75	1.85	24
		5.50		9-1622-2	12.8	140.8	1.10	176.0	1.38	246.4	1.93	2.04	24
		6.00		9-1624-2	12.0	144.0	1.20	180.0	1.50	252.0	2.10	2.22	24
7.00	9-1628-2	10.0	140.0	1.40	175.0	1.75	245.0	2.45	2.59	16			
8.00	9-1632-2	8.8	140.8	1.60	176.0	2.00	246.4	2.80	2.96	16			
12.00	9-1648-2	6.2	148.8	2.40	186.0	3.00	260.4	4.20	4.44	8			
1-1/4	5/8	1.50	0.165 X 0.270	9-2006-2	113.4	340.2	0.30	425.3	0.38	595.4	0.53	0.56	16
		1.75		9-2007-2	94.5	330.8	0.35	413.4	0.44	578.8	0.61	0.65	16
		2.00		9-2008-2	81.0	324.0	0.40	405.0	0.50	567.0	0.70	0.74	16
		2.50		9-2010-2	62.4	312.0	0.50	390.0	0.63	546.0	0.88	0.93	16
		3.00		9-2012-2	51.2	307.2	0.60	384.0	0.75	537.6	1.05	1.11	16
		3.50		9-2014-2	43.5	304.5	0.70	380.6	0.88	532.9	1.23	1.30	16
		4.00		9-2016-2	36.8	294.4	0.80	368.0	1.00	515.2	1.40	1.48	16
		4.50		9-2018-2	32.0	288.0	0.90	360.0	1.13	504.0	1.58	1.67	16
		5.00		9-2020-2	29.0	290.0	1.00	362.5	1.25	507.5	1.75	1.85	16
		5.50		9-2022-2	26.4	290.4	1.10	363.0	1.38	508.2	1.93	2.04	16
		6.00		9-2024-2	25.0	300.0	1.20	375.0	1.50	525.0	2.10	2.22	16
		7.00		9-2028-2	20.0	280.0	1.40	350.0	1.75	490.0	2.45	2.59	16
		8.00		9-2032-2	18.4	294.4	1.60	368.0	2.00	515.2	2.80	2.96	16
10.00	9-2040-2	14.5	290.0	2.00	362.5	2.50	507.5	3.50	3.70	8			
12.00	9-2048-2	12.1	290.4	2.40	363.0	3.00	508.2	4.20	4.44	8			
1-1/2	3/4	2.00	0.191 X 0.320	9-2408-2	104.0	416.0	0.40	520.0	0.50	728.0	0.70	0.74	16
		2.50		9-2410-2	81.5	407.5	0.50	509.4	0.63	713.1	0.88	0.93	16
		3.00		9-2412-2	62.4	374.4	0.60	468.0	0.75	655.2	1.05	1.11	16
		3.50		9-2414-2	52.8	369.6	0.70	462.0	0.88	646.8	1.23	1.30	16
		4.00		9-2416-2	47.3	378.4	0.80	473.0	1.00	662.2	1.40	1.48	16
		4.50		9-2418-2	41.6	374.4	0.90	468.0	1.13	655.2	1.58	1.67	16
		5.00		9-2420-2	36.8	368.0	1.00	460.0	1.25	644.0	1.75	1.85	16
		5.50		9-2422-2	33.6	369.6	1.10	462.0	1.38	646.8	1.93	2.04	16
		6.00		9-2424-2	30.4	364.8	1.20	456.0	1.50	638.4	2.10	2.22	16
		7.00		9-2428-2	26.4	369.6	1.40	462.0	1.75	646.8	2.45	2.59	16
		8.00		9-2432-2	22.0	352.0	1.60	440.0	2.00	616.0	2.80	2.96	16
		10.00		9-2440-2	17.6	352.0	2.00	440.0	2.50	616.0	3.50	3.70	8
		12.00		9-2448-2	14.4	345.6	2.40	432.0	3.00	604.8	4.20	4.44	8
2	1	2.50	0.235 X 0.440	9-3210-2	118.4	592.0	0.50	740.0	0.63	1036.0	0.88	0.93	16
		3.00		9-3212-2	96.0	576.0	0.60	720.0	0.75	1008.0	1.05	1.11	16
		3.50		9-3214-2	80.0	560.0	0.70	700.0	0.88	980.0	1.23	1.30	16
		4.00		9-3216-2	66.4	531.2	0.80	664.0	1.00	929.6	1.40	1.48	16
		4.50		9-3218-2	60.0	540.0	0.90	675.0	1.13	945.0	1.58	1.67	16
		5.00		9-3220-2	55.1	551.0	1.00	688.8	1.25	964.3	1.75	1.85	16
		5.50		9-3222-2	49.7	546.7	1.10	683.4	1.38	956.7	1.93	2.04	16
		6.00		9-3224-2	45.3	543.6	1.20	679.5	1.50	951.3	2.10	2.22	16
		7.00		9-3228-2	38.5	539.0	1.40	673.8	1.75	943.3	2.45	2.59	8
		8.00		9-3232-2	33.5	536.0	1.60	670.0	2.00	938.0	2.80	2.96	8
		10.00		9-3240-2	26.0	520.0	2.00	650.0	2.50	910.0	3.50	3.70	8
		12.00		9-3248-2	21.9	525.6	2.40	657.0	3.00	919.8	4.20	4.44	8

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

# Heavy Duty Die Springs



Color coded **GOLD 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 (20% of C)		Maximum Operating Deflection (28% of C)		Max. Defl. (30%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
3/8	3/16	1.00	0.053 X 0.071	9-0604-3	11.6	17.4	0.15	23.2	0.20	32.5	0.28	0.30	24
		1.25		9-0605-3	9.8	18.4	0.19	24.5	0.25	34.3	0.35	0.38	24
		1.50		9-0606-3	8.3	18.7	0.23	24.9	0.30	34.9	0.42	0.45	24
		1.75		9-0607-3	8.2	21.5	0.26	28.7	0.35	40.2	0.49	0.53	24
		2.00		9-0608-3	7.1	21.3	0.30	28.4	0.40	39.8	0.56	0.60	24
		2.50		9-0610-3	5.5	20.6	0.38	27.5	0.50	38.5	0.70	0.75	24
		3.00		9-0612-3	4.2	18.9	0.45	25.2	0.60	35.3	0.84	0.90	24
		12.00		9-0648-3	1.1	20.5	1.80	27.4	2.40	38.3	3.36	3.60	8
1/2	9/32	1.00	0.071 X 0.095	9-0804-3	23.6	35.4	0.15	47.2	0.20	66.1	0.28	0.30	24
		1.25		9-0805-3	18.6	34.9	0.19	46.5	0.25	65.1	0.35	0.38	24
		1.50		9-0806-3	15.5	34.9	0.23	46.5	0.30	65.1	0.42	0.45	24
		1.75		9-0807-3	13.8	36.2	0.26	48.3	0.35	67.6	0.49	0.53	24
		2.00		9-0808-3	11.0	33.0	0.30	44.0	0.40	61.6	0.56	0.60	24
		2.50		9-0810-3	8.4	31.5	0.38	42.0	0.50	58.8	0.70	0.75	24
		3.00		9-0812-3	7.4	33.3	0.45	44.4	0.60	62.2	0.84	0.90	24
		3.50		9-0814-3	6.0	31.5	0.53	42.0	0.70	58.8	0.98	1.05	24
12.00	9-0848-3	1.6	28.8	1.80	38.4	2.40	53.8	3.36	3.60	8			
5/8	11/32	1.00	0.096 X 0.115	9-1004-3	43.0	64.5	0.15	86.0	0.20	120.4	0.28	0.30	24
		1.25		9-1005-3	32.0	60.0	0.19	80.0	0.25	112.0	0.35	0.38	24
		1.50		9-1006-3	27.7	62.3	0.23	83.1	0.30	116.3	0.42	0.45	24
		1.75		9-1007-3	24.0	63.0	0.26	84.0	0.35	117.6	0.49	0.53	24
		2.00		9-1008-3	20.8	62.4	0.30	83.2	0.40	116.5	0.56	0.60	24
		2.50		9-1010-3	16.6	62.3	0.38	83.0	0.50	116.2	0.70	0.75	24
		3.00		9-1012-3	14.0	63.0	0.45	84.0	0.60	117.6	0.84	0.90	24
		3.50		9-1014-3	11.9	62.5	0.53	83.3	0.70	116.6	0.98	1.05	24
4.00	9-1016-3	10.4	62.4	0.60	83.2	0.80	116.5	1.12	1.20	24			
12.00	9-1048-3	3.1	55.8	1.80	74.4	2.40	104.2	3.36	3.60	8			
3/4	3/8	1.00	0.130 X 0.155	9-1204-3	108.8	163.2	0.15	217.6	0.20	304.6	0.28	0.30	24
		1.25		9-1205-3	88.0	165.0	0.19	220.0	0.25	308.0	0.35	0.38	24
		1.50		9-1206-3	68.4	153.9	0.23	205.2	0.30	287.3	0.42	0.45	24
		1.75		9-1207-3	60.0	157.5	0.26	210.0	0.35	294.0	0.49	0.53	24
		2.00		9-1208-3	49.8	149.4	0.30	199.2	0.40	278.9	0.56	0.60	24
		2.50		9-1210-3	40.0	150.0	0.38	200.0	0.50	280.0	0.70	0.75	24
		3.00		9-1212-3	34.0	153.0	0.45	204.0	0.60	285.6	0.84	0.90	24
		3.50		9-1214-3	28.0	147.0	0.53	196.0	0.70	274.4	0.98	1.05	24
		4.00		9-1216-3	25.0	150.0	0.60	200.0	0.80	280.0	1.12	1.20	24
		4.50		9-1218-3	22.0	148.5	0.68	198.0	0.90	277.2	1.26	1.35	24
		5.00		9-1220-3	19.5	146.3	0.75	195.0	1.00	273.0	1.40	1.50	24
		5.50		9-1222-3	17.0	140.3	0.83	187.0	1.10	261.8	1.54	1.65	24
		6.00		9-1224-3	16.0	144.0	0.90	192.0	1.20	268.8	1.68	1.80	24
		12.00		9-1248-3	8.0	144.0	1.80	192.0	2.40	268.8	3.36	3.60	8

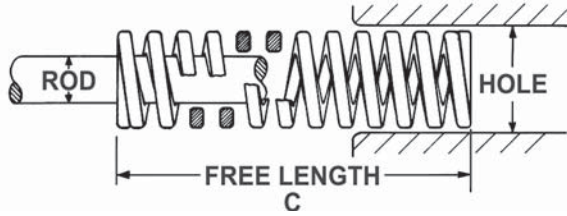
\* NOTE: For design purposes only. We do not recommend deflecting a spring to maximum deflection.

# 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 Long Life (15% of C)		Total Deflection Recommended for Avg. Life (20% of C)		Maximum Operating Deflection (28% of C)		Max. Defl. (30%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
1	1/2	1.00	0.165 X 0.216	9-1604-3	208.0	312.0	0.15	416.0	0.20	582.4	0.28	0.30	24
		1.25		9-1605-3	170.0	318.8	0.19	425.0	0.25	595.0	0.35	0.38	24
		1.50		9-1606-3	119.8	269.6	0.23	359.4	0.30	503.2	0.42	0.45	24
		1.75		9-1607-3	104.0	273.0	0.26	364.0	0.35	509.6	0.49	0.53	24
		2.00		9-1608-3	90.0	270.0	0.30	360.0	0.40	504.0	0.56	0.60	24
		2.50		9-1610-3	68.0	255.0	0.38	340.0	0.50	476.0	0.70	0.75	24
		3.00		9-1612-3	54.4	244.8	0.45	326.4	0.60	457.0	0.84	0.90	24
		3.50		9-1614-3	45.9	241.0	0.53	321.3	0.70	449.8	0.98	1.05	24
		4.00		9-1616-3	40.0	240.0	0.60	320.0	0.80	448.0	1.12	1.20	24
		4.50		9-1618-3	35.2	237.6	0.68	316.8	0.90	443.5	1.26	1.35	24
		5.00		9-1620-3	31.5	236.3	0.75	315.0	1.00	441.0	1.40	1.50	24
		5.50		9-1622-3	28.8	237.6	0.83	316.8	1.10	443.5	1.54	1.65	24
		6.00		9-1624-3	25.9	233.1	0.90	310.8	1.20	435.1	1.68	1.80	24
		7.00		9-1628-3	22.4	235.2	1.05	313.6	1.40	439.0	1.96	2.10	16
8.00	9-1632-3	19.2	230.4	1.20	307.2	1.60	430.1	2.24	2.40	16			
12.00	9-1648-3	12.5	225.0	1.80	300.0	2.40	420.0	3.36	3.60	8			
1-1/4	5/8	1.50	0.209 X 0.275	9-2006-3	212.0	477.0	0.23	636.0	0.30	890.4	0.42	0.45	16
		1.75		9-2007-3	181.0	475.1	0.26	633.5	0.35	886.9	0.49	0.53	16
		2.00		9-2008-3	149.6	448.8	0.30	598.4	0.40	837.8	0.56	0.60	16
		2.50		9-2010-3	117.2	439.5	0.38	586.0	0.50	820.4	0.70	0.75	16
		3.00		9-2012-3	95.0	427.5	0.45	570.0	0.60	798.0	0.84	0.90	16
		3.50		9-2014-3	77.0	404.3	0.53	539.0	0.70	754.6	0.98	1.05	16
		4.00		9-2016-3	66.4	398.4	0.60	531.2	0.80	743.7	1.12	1.20	16
		4.50		9-2018-3	58.4	394.2	0.68	525.6	0.90	735.8	1.26	1.35	16
		5.00		9-2020-3	53.0	397.5	0.75	530.0	1.00	742.0	1.40	1.50	16
		5.50		9-2022-3	47.2	389.4	0.83	519.2	1.10	726.9	1.54	1.65	16
		6.00		9-2024-3	42.9	386.1	0.90	514.8	1.20	720.7	1.68	1.80	16
		7.00		9-2028-3	36.8	386.4	1.05	515.2	1.40	721.3	1.96	2.10	16
		8.00		9-2032-3	32.8	393.6	1.20	524.8	1.60	734.7	2.24	2.40	16
		10.00		9-2040-3	25.6	384.0	1.50	512.0	2.00	716.8	2.80	3.00	8
12.00	9-2048-3	20.8	374.4	1.80	499.2	2.40	698.9	3.36	3.60	8			
1-1/2	3/4	2.00	0.245 X 0.328	9-2408-3	195.4	586.2	0.30	781.6	0.40	1094.2	0.56	0.60	16
		2.50		9-2410-3	155.0	581.3	0.38	775.0	0.50	1085.0	0.70	0.75	16
		3.00		9-2412-3	128.0	576.0	0.45	768.0	0.60	1075.2	0.84	0.90	16
		3.50		9-2414-3	106.4	558.6	0.53	744.8	0.70	1042.7	0.98	1.05	16
		4.00		9-2416-3	91.2	547.2	0.60	729.6	0.80	1021.4	1.12	1.20	16
		4.50		9-2418-3	78.4	529.2	0.68	705.6	0.90	987.8	1.26	1.35	16
		5.00		9-2420-3	71.2	534.0	0.75	712.0	1.00	996.8	1.40	1.50	16
		5.50		9-2422-3	64.0	528.0	0.83	704.0	1.10	985.6	1.54	1.65	16
		6.00		9-2424-3	58.4	525.6	0.90	700.8	1.20	981.1	1.68	1.80	16
		7.00		9-2428-3	49.6	520.8	1.05	694.4	1.40	972.2	1.96	2.10	16
		8.00		9-2432-3	43.2	518.4	1.20	691.2	1.60	967.7	2.24	2.40	16
		10.00		9-2440-3	34.4	516.0	1.50	688.0	2.00	963.2	2.80	3.00	8
12.00	9-2448-3	28.8	518.4	1.80	691.2	2.40	967.7	3.36	3.60	8			
2	1	2.50	.305 X 0.450	9-3210-3	253.0	948.8	0.38	1265.0	0.50	1771.0	0.70	0.75	16
		3.00		9-3212-3	200.0	900.0	0.45	1200.0	0.60	1680.0	0.84	0.90	16
		3.50		9-3214-3	170.0	892.5	0.53	1190.0	0.70	1666.0	0.98	1.05	16
		4.00		9-3216-3	146.0	876.0	0.60	1168.0	0.80	1635.2	1.12	1.20	16
		4.50		9-3218-3	120.0	810.0	0.68	1080.0	0.90	1512.0	1.26	1.35	16
		5.00		9-3220-3	110.0	825.0	0.75	1100.0	1.00	1540.0	1.40	1.50	16
		5.50		9-3222-3	100.0	825.0	0.83	1100.0	1.10	1540.0	1.54	1.65	16
		6.00		9-3224-3	93.0	837.0	0.90	1116.0	1.20	1562.4	1.68	1.80	16
		7.00		9-3228-3	79.0	829.5	1.05	1106.0	1.40	1548.4	1.96	2.10	8
		8.00		9-3232-3	69.0	828.0	1.20	1104.0	1.60	1545.6	2.24	2.40	8
		10.00		9-3240-3	54.4	816.0	1.50	1088.0	2.00	1523.2	2.80	3.00	8
12.00	9-3248-3	42.0	756.0	1.80	1008.0	2.40	1411.2	3.36	3.60	8			

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

# 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. Defl. (28%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
3/8	3/16	1.00	0.063 X 0.073	9-0604-4	20.5	30.8	0.15	34.9	0.17	51.3	0.25	0.28	24
		1.25		9-0605-4	16.0	30.0	0.19	34.0	0.21	50.0	0.31	0.35	24
		1.50		9-0606-4	12.5	28.1	0.23	31.9	0.26	46.9	0.38	0.42	24
		1.75		9-0607-4	11.1	29.1	0.26	33.0	0.30	48.6	0.44	0.49	24
		2.00		9-0608-4	9.0	27.0	0.30	30.6	0.34	45.0	0.50	0.56	24
		2.50		9-0610-4	7.0	26.3	0.38	29.8	0.43	43.8	0.63	0.70	24
		3.00		9-0612-4	6.3	28.4	0.45	32.1	0.51	47.3	0.75	0.84	24
		12.00		9-0648-4	1.5	27.0	1.80	30.6	2.04	45.0	3.00	3.36	8
1/2	9/32	1.00	0.088 X 0.090	9-0804-4	32.0	48.0	0.15	54.4	0.17	80.0	0.25	0.28	24
		1.25		9-0805-4	24.2	45.4	0.19	51.4	0.21	75.6	0.31	0.35	24
		1.50		9-0806-4	20.0	45.0	0.23	51.0	0.26	75.0	0.38	0.42	24
		1.75		9-0807-4	17.0	44.6	0.26	50.6	0.30	74.4	0.44	0.49	24
		2.00		9-0808-4	14.5	43.5	0.30	49.3	0.34	72.5	0.50	0.56	24
		2.50		9-0810-4	11.5	43.1	0.38	48.9	0.43	71.9	0.63	0.70	24
		3.00		9-0812-4	9.4	42.3	0.45	47.9	0.51	70.5	0.75	0.84	24
		3.50		9-0814-4	8.0	42.0	0.53	47.6	0.60	70.0	0.88	0.98	24
12.00	9-0848-4	2.5	45.0	1.80	51.0	2.04	75.0	3.00	3.36	8			
5/8	11/32	1.00	0.115 X 0.120	9-1004-4	63.0	94.5	0.15	107.1	0.17	157.5	0.25	0.28	24
		1.25		9-1005-4	47.0	88.1	0.19	99.9	0.21	146.9	0.31	0.35	24
		1.50		9-1006-4	38.0	85.5	0.23	96.9	0.26	142.5	0.38	0.42	24
		1.75		9-1007-4	32.0	84.0	0.26	95.2	0.30	140.0	0.44	0.49	24
		2.00		9-1008-4	29.0	87.0	0.30	98.6	0.34	145.0	0.50	0.56	24
		2.50		9-1010-4	22.0	82.5	0.38	93.5	0.43	137.5	0.63	0.70	24
		3.00		9-1012-4	19.0	85.5	0.45	96.9	0.51	142.5	0.75	0.84	24
		3.50		9-1014-4	16.0	84.0	0.53	95.2	0.60	140.0	0.88	0.98	24
4.00	9-1016-4	13.5	81.0	0.60	91.8	0.68	135.0	1.00	1.12	24			
12.00	9-1048-4	4.5	81.0	1.80	91.8	2.04	135.0	3.00	3.36	8			
3/4	3/8	1.00	0.140 X 0.155	9-1204-4	140.0	210.0	0.15	238.0	0.17	350.0	0.25	0.28	24
		1.25		9-1205-4	110.0	206.3	0.19	233.8	0.21	343.8	0.31	0.35	24
		1.50		9-1206-4	89.0	200.3	0.23	227.0	0.26	333.8	0.38	0.42	24
		1.75		9-1207-4	75.0	196.9	0.26	223.1	0.30	328.1	0.44	0.49	24
		2.00		9-1208-4	68.0	204.0	0.30	231.2	0.34	340.0	0.50	0.56	24
		2.50		9-1210-4	50.0	187.5	0.38	212.5	0.43	312.5	0.63	0.70	24
		3.00		9-1212-4	40.5	182.3	0.45	206.6	0.51	303.8	0.75	0.84	24
		3.50		9-1214-4	34.5	181.1	0.53	205.3	0.60	301.9	0.88	0.98	24
		4.00		9-1216-4	30.0	180.0	0.60	204.0	0.68	300.0	1.00	1.12	24
		4.50		9-1218-4	26.5	178.9	0.68	202.7	0.77	298.1	1.13	1.26	24
		5.00		9-1220-4	23.5	176.3	0.75	199.8	0.85	293.8	1.25	1.40	24
		5.50		9-1222-4	21.5	177.4	0.83	201.0	0.94	295.6	1.38	1.54	24
6.00	9-1224-4	19.5	175.5	0.90	198.9	1.02	292.5	1.50	1.68	24			
12.00	9-1248-4	9.5	171.0	1.80	193.8	2.04	285.0	3.00	3.36	8			

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

# Inch Standard

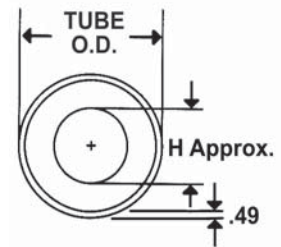
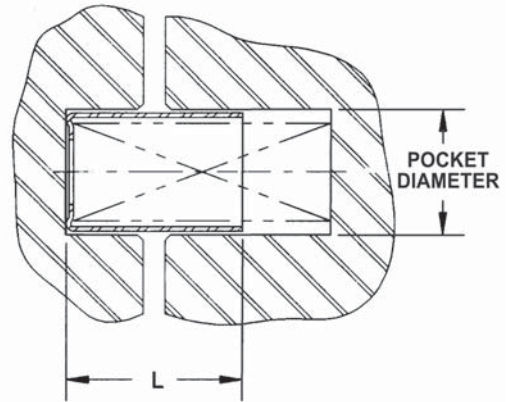
Hole Diam. (in)	Rod Diam. (in)	Free Length (in)	Wire Size (in)	CATALOG NUMBER	Pounds @ 1/10 inch defl.	Total Deflection Recommended for Long Life (15% of C)		Total Deflection Recommended for Avg. Life (17% of C)		Maximum Operating Deflection (25% of C)		Max. Defl. (28%)* (in)	Pkg. Qty.
						Load lbs.	Defl. in.	Load lbs.	Defl. in.	Load lbs.	Defl. in.		
1	1/2	1.50	0.182 X 0.215	9-1606-4	160.0	360.0	0.23	408.0	0.26	600.0	0.38	0.42	24
		2.00		9-1608-4	116.0	348.0	0.30	394.4	0.34	580.0	0.50	0.56	24
		2.50		9-1610-4	89.6	336.0	0.38	380.8	0.43	560.0	0.63	0.70	24
		3.00		9-1612-4	73.6	331.2	0.45	375.4	0.51	552.0	0.75	0.84	24
		3.50		9-1614-4	62.4	327.6	0.53	371.3	0.60	546.0	0.88	0.98	24
		4.00		9-1616-4	55.2	331.2	0.60	375.4	0.68	552.0	1.00	1.12	24
		4.50		9-1618-4	48.8	329.4	0.68	373.3	0.77	549.0	1.13	1.26	24
		5.00		9-1620-4	43.2	324.0	0.75	367.2	0.85	540.0	1.25	1.40	24
		6.00		9-1624-4	36.0	324.0	0.90	367.2	1.02	540.0	1.50	1.68	24
		12.00		9-1648-4	17.6	316.8	1.80	359.0	2.04	528.0	3.00	3.36	8
1-1/4	5/8	2.00	0.226 X 0.280	9-2008-4	192.0	576.0	0.30	652.8	0.34	960.0	0.50	0.56	16
		2.50		9-2010-4	146.2	548.3	0.38	621.4	0.43	913.8	0.63	0.70	16
		3.00		9-2012-4	118.4	532.8	0.45	603.8	0.51	888.0	0.75	0.84	16
		3.50		9-2014-4	100.8	529.2	0.53	599.8	0.60	882.0	0.88	0.98	16
		4.00		9-2016-4	85.0	510.0	0.60	578.0	0.68	850.0	1.00	1.12	16
		4.50		9-2018-4	78.4	529.2	0.68	599.8	0.77	882.0	1.13	1.26	16
		5.00		9-2020-4	68.0	510.0	0.75	578.0	0.85	850.0	1.25	1.40	16
		6.00		9-2024-4	56.0	504.0	0.90	571.2	1.02	840.0	1.50	1.68	16
		8.00		9-2032-4	41.6	499.2	1.20	565.8	1.36	832.0	2.00	2.24	16
		10.00		9-2040-4	33.6	504.0	1.50	571.2	1.70	840.0	2.50	2.80	8
12.00	9-2048-4	26.4	475.2	1.80	538.6	2.04	792.0	3.00	3.36	8			
1-1/2	3/4	2.00	0.290 X 0.330	9-2408-4	339.0	1017.0	0.30	1152.6	0.34	1695.0	0.50	0.56	16
		2.50		9-2410-4	255.0	956.3	0.38	1083.8	0.43	1593.8	0.63	0.70	16
		3.00		9-2412-4	211.5	951.8	0.45	1078.7	0.51	1586.3	0.75	0.84	16
		3.50		9-2414-4	172.0	903.0	0.53	1023.4	0.60	1505.0	0.88	0.98	16
		4.00		9-2416-4	149.0	894.0	0.60	1013.2	0.68	1490.0	1.00	1.12	16
		4.50		9-2418-4	129.0	870.8	0.68	986.9	0.77	1451.3	1.13	1.26	16
		5.00		9-2420-4	121.2	909.0	0.75	1030.2	0.85	1515.0	1.25	1.40	16
		6.00		9-2424-4	98.6	887.4	0.90	1005.7	1.02	1479.0	1.50	1.68	16
		8.00		9-2432-4	70.9	850.8	1.20	964.2	1.36	1418.0	2.00	2.24	16
		10.00		9-2440-4	55.3	829.5	1.50	940.1	1.70	1382.5	2.50	2.80	8
12.00	9-2448-4	45.5	819.0	1.80	928.2	2.04	1365.0	3.00	3.36	8			
2	1	2.50	0.350 X 0.452	9-3210-4	387.0	1451.3	0.38	1644.8	0.43	2418.8	0.63	0.70	16
		3.00		9-3212-4	312.0	1404.0	0.45	1591.2	0.51	2340.0	0.75	0.84	16
		3.50		9-3214-4	254.4	1335.6	0.53	1513.7	0.60	2226.0	0.88	0.98	16
		4.00		9-3216-4	220.0	1320.0	0.60	1496.0	0.68	2200.0	1.00	1.12	16
		4.50		9-3218-4	189.7	1280.5	0.68	1451.2	0.77	2134.1	1.13	1.26	16
		5.00		9-3220-4	172.8	1296.0	0.75	1468.8	0.85	2160.0	1.25	1.40	16
		6.00		9-3224-4	141.6	1274.4	0.90	1444.3	1.02	2124.0	1.50	1.68	16
		8.00		9-3232-4	101.5	1218.0	1.20	1380.4	1.36	2030.0	2.00	2.24	8
		10.00		9-3240-4	84.0	1260.0	1.50	1428.0	1.70	2100.0	2.50	2.80	8
12.00	9-3248-4	70.0	1260.0	1.80	1428.0	2.04	2100.0	3.00	3.36	8			

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

# Spring Accessories

## Spring Cages

- ◆ Our spring cages enhance die spring life by providing a flat, hardened die pocket for spring operation.
- ◆ Material: A513 tube steel with phosphate finish.
- ◆ Conforms to NAAMS standards.



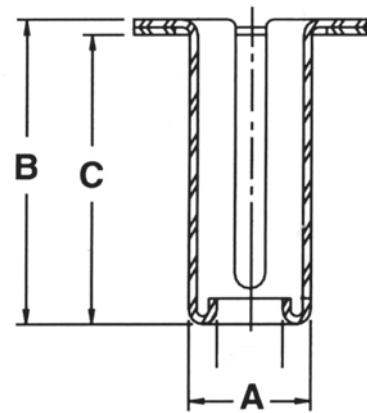
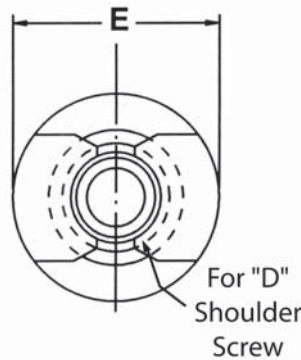
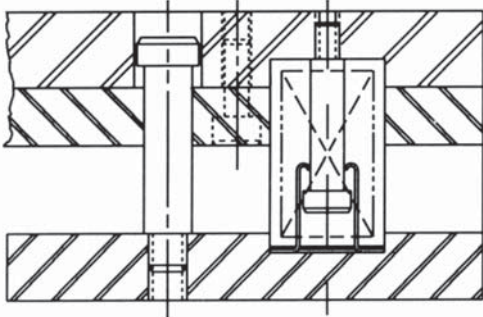
Spring Diameter (in)	Pocket Diameter (in)	Tube O.D. (in)	Diameter (H) (in)
3/4	29/32	0.855	7/16
1	1-5/32	1.105	9/16
1-1/4	1-13/32	1.355	3/4
1-1/2	1-21/32	1.605	31/32
2	2-5/32	2.105	1-3/8

Length L (in)	3/4 inch Diameter Springs		1 inch Diameter Springs		1-1/4 inch Diameter Springs		1-1/2 inch Diameter Springs		2 inch Diameter Springs	
	CATALOG NUMBER	NAAMS Code	CATALOG NUMBER	NAAMS Code	CATALOG NUMBER	NAAMS Code	CATALOG NUMBER	NAAMS Code	CATALOG NUMBER	NAAMS Code
1	6-8	S212025	8-8	S212525	10-8	S213225	12-8	S214025	16-8	S215025
1-1/4	6-10	S212032	8-10	S212532	10-10	S213232	12-10	S214032	16-10	S215032
1-1/2	6-12	S212038	8-12	S212538	10-12	S213238	12-12	S214038	16-12	S215038
1-3/4	6-14	S212044	8-14	S212544	10-14	S213244	12-14	S214044	16-14	S215044
2	6-16	S212051	8-16	S212551	10-16	S213251	12-16	S214051	16-16	S215051
2-1/4	6-18	-	8-18	-	10-18	-	12-18	-	16-18	-
2-1/2	6-20	S212064	8-20	S212564	10-20	S213264	12-20	S214064	16-20	S215064
2-3/4	6-22	-	8-22	-	10-22	-	12-22	-	16-22	-
3	6-24	S212076	8-24	S212576	10-24	S213276	12-24	S214076	16-24	S215076
3-1/4	6-26	-	8-26	-	10-26	-	12-26	-	16-26	-
3-1/2	6-28	S212089	8-28	S212589	10-28	S213289	12-28	S214089	16-28	S215089
3-3/4	6-30	-	8-30	-	10-30	-	12-30	-	16-30	-
4	6-32	S212010	8-32	S212510	10-32	S213210	12-32	S214010	16-32	S215010
4-1/4	6-34	-	8-34	-	10-34	-	12-34	-	16-34	-
4-1/2	6-36	-	8-36	-	10-36	-	12-36	-	16-36	-
4-3/4	6-38	-	8-38	-	10-38	-	12-38	-	16-38	-
5	6-40	S212012	8-40	S212512	10-40	S213212	12-40	S214012	16-40	S215012
5-1/2	6-44	-	8-44	-	10-44	-	12-44	-	16-44	-
6	6-48	S212015	8-48	S212515	10-48	S213215	12-48	S214015	16-48	S215015
6-1/2	6-52	-	8-52	-	10-52	-	12-52	-	16-52	-
7	6-56	S212017	8-56	S212517	10-56	S213217	12-56	S214017	16-56	S215017
8	6-64	S212020	8-64	S212520	10-64	S213220	12-64	S214020	16-64	S215020
9	-	-	-	-	10-72	S213222	12-72	S214022	16-72	S215022
10	-	-	-	-	10-80	-	12-80	-	16-80	-
11	-	-	-	-	-	-	-	-	16-88	S215028
12	-	-	-	-	-	-	-	-	16-96	S215030

# Spring Accessories

## Spring Retainers

- ◆ Our spring retainers hold individual springs firmly in position while the die is being assembled or disassembled. Pre-loading the spring is easy since the springs can be set individually, which avoids working against the combined force of the springs.
- ◆ Available for springs 1-1/4", 1-1/2" and 2" diameters and any free length where clearance permits.
- ◆ Material: steel



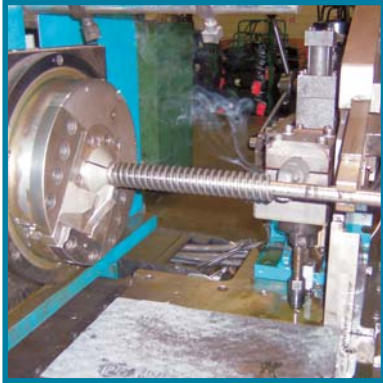
CATALOG NUMBER	Spring Diameter (in)	Rod Diameter A (in)	B (in)	C (in)	Shoulder Screw D (in)	E (in)
SR125150	1-1/4	5/8	1-11/16	1-1/2	5/16	1-1/4
SR125200			2-3/16	2		1-1/4
SR125250			2-11/16	2-1/2		1-1/4
SR150150	1-1/2	3/4	1-11/16	1-1/2	3/8	1-1/2
9-0615-16			1-7/8	1-3/4		1-7/16
SR150200			2-3/16	2		1-1/2
SR150250			2-11/16	2-1/2		1-1/2
SR200150	2	1	1-11/16	1-1/2	1/2	2
9-0815-16			1-3/4	1-3/4		1-5/16
SR200200			2-3/16	2		2
SR200250			2-11/16	2-1/2		2
9-0823-16			2-7/8	2-3/4		1-5/16

# Special Heavy Duty Compression Springs

## CUSTOM SPRINGS

A custom spring is any spring that has:

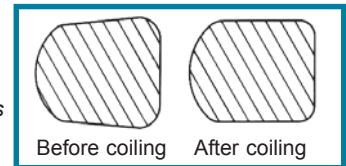
- ◆ Unique physical attributes
  - Special wire material, plating or paint
  - Custom free lengths, diameters, solid heights, rates, number of coils or custom loads at a given deflection
- ◆ Critical tolerances
- ◆ Specific inspection or certification requirements
  - Military specifications
  - 100% inspection of critical characteristics
- ◆ Statistical reports
- ◆ Computer controlled multi-point tests



## MANUFACTURING CAPABILITIES

- ◆ Outside diameters from 3/8" to 2 1/2" (9.5mm to 63.5mm)
- ◆ Free length from 1" to 17" (25.4mm to 431.8mm)
- ◆ Round Spring wire 0.043" minimum to 1/2" (1.1mm to 12.7mm)
- ◆ Standard rectangular wire up to 0.375" x 0.469" (9.5mm to 11.9mm)

*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.*



## COATINGS AVAILABLE

- ◆ Plain, no paint
- ◆ Oiled
- ◆ Cadmium Plate
- ◆ Dacromet®
- ◆ Electroless Nickel
- ◆ Any paint Color
- ◆ Powder Coating
- ◆ E-coat

## SPRING SPECIALS QUOTING PROCESS

- ◆ Submit custom spring print
- ◆ Submit application information
  - Include description of application
  - Life expectations
  - Critical dimensions, tolerances, certifications required

## The LEMPCO Value Proposition

- **LEMPCO** is a recognized leader in providing quality ball bearing components:
  1. Rotainer® designed ball cage that minimizes tracking.
  2. Precision Rotainer® and retainer that provides accuracy and repeatability in high speed applications.
  3. Quality pins and bushings are made from through-hardened, 52100 tool steel.
- **LEMPCO** offers high quality die sets with either ball bearing or plain bearing components. Pins and bushings are manufactured using through-hardened, 52100 tool steel.
- **LEMPCO** has a strong distribution network with over 250 distributors located around the world to service our valued customers.
- **LEMPCO's** manufacturing capabilities allow larger size die sets to be offered (240 in. by 120 in.) and complex machining to be available with exceptional deliveries.



**QUALITY ■ DEPENDABILITY ■ SERVICE**

**SINCE 1918**

**THE GLOBAL STANDARD WITH DISTRIBUTORS WORLDWIDE**

# Die Springs

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# LEMPCO®

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