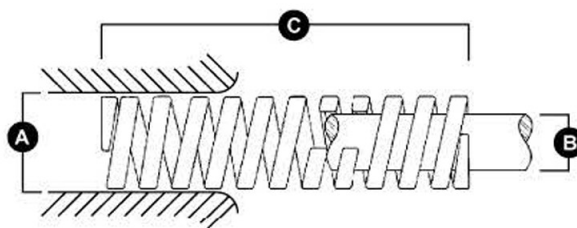


SECTION E

SPRINGS / SPRING ACCESSORIES / URETHANE

Page Index

ITEM DESCRIPTION		SERIES CODE	PAGE NUMBER
DIE SPRINGS: RAYMOND (Blue - Red - Gold - Green)	INCH	M / MH / H / XH SERIES	PAGES 1 THRU 8
DIE SPRINGS: DANLY (Green - Blue - Red - Yellow)	INCH / METRIC ISO	-11 / -21 / -26 / -36 SERIES	CATALOG INSERT
SPRING CAGES / SPRING RETAINERS: DANLY	INCH or METRIC	S SERIES / SR SERIES	CATALOG PG.24/25
DIE SPRINGS: DANLY (Yellow-Blue-Red-Green-Gold)	JIS METRIC	91 / 92 / 93 / 94 / 95 SERIES	CATALOG INSERT
RETURN-RITE SPRINGS (Mold Return Pin Springs)	INCH	RPS SERIES	PAGE INSERT
UTILITY SPRINGS: COMPRESSION-EXTENSION-DISC			PAGE INSERT
URETHANE: TUBE SPRINGS - SHEETS - RODS	STD. DUROMETERS		CATALOG INSERT
MARSH MELLOW TUBE SPRINGS (Rubber with Cord	INCH or METRIC	MM SERIES	CATALOG INSERT
NITROGEN GAS SPRINGS (KALLER)			CATALOG INSERT
			PAGE INSERT



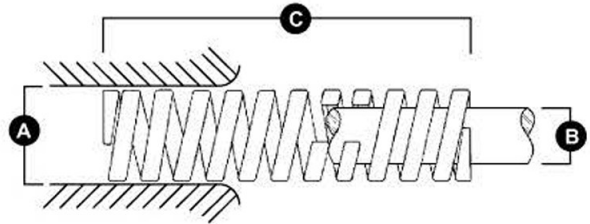
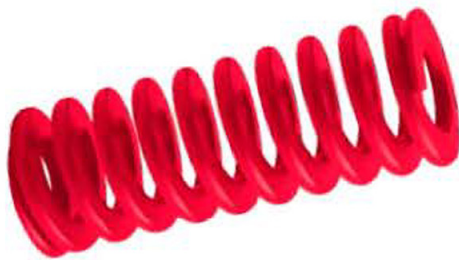
Raymond® MEDIUM DUTY DIE SPRINGS					INCH DIMENSIONS				BLUE		
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (25% of free length)		For Long Life (35% of free length)		Maximum Operating Def. (40% of free length)		*Maximum Deflection (50% of free length)
A	B	C			Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
3/8 10mm Wire .039 x .070	3/16 4.5mm	1	M04-010	6.0	15.0	0.25	21.0	0.35	24.0	0.40	0.50
		1 1/4	M04-012	5.4	16.9	0.31	23.6	0.44	27.0	0.50	0.63
		1 1/2	M04-015	4.0	15.0	0.38	21.0	0.53	24.0	0.60	0.75
		1 3/4	M04-017	3.4	14.9	0.44	20.8	0.61	23.8	0.70	0.88
		2	M04-020	2.8	14.0	0.50	19.6	0.70	22.4	0.80	1.00
		2 1/2	M04-025	2.4	15.0	0.63	21.0	0.88	24.0	1.00	1.25
		3	M04-030	2.1	15.8	0.75	22.0	1.05	25.2	1.20	1.50
		12	M04-120	0.6	18.0	3.00	25.2	4.20	28.8	4.80	6.00
1/2 13mm Wire .52 x .093	9/32 7mm	1	M05-010	11.0	27.5	0.25	38.5	0.35	44.0	0.40	0.50
		1 1/4	M05-012	8.2	25.6	0.31	35.9	0.44	41.0	0.50	0.63
		1 1/2	M05-015	6.8	25.5	0.38	35.7	0.53	40.8	0.60	0.75
		1 3/4	M05-017	6.0	26.3	0.44	36.8	0.61	42.0	0.70	0.88
		2	M05-020	5.5	27.5	0.50	38.5	0.70	44.0	0.80	1.00
		2 1/2	M05-025	4.5	28.1	0.63	39.4	0.88	45.0	1.00	1.25
		3	M05-030	3.5	26.3	0.75	36.8	1.05	42.0	1.20	1.50
		3 1/2	M05-035	3.0	26.3	0.88	36.8	1.23	42.0	1.40	1.75
		4 1/2	M05-045	2.5	28.1	1.13	39.4	1.58	45.0	1.80	2.25
		5 1/2	M05-055	2.1	28.9	1.38	40.4	1.93	46.2	2.20	2.75
		6 1/2	M05-065	1.4	22.8	1.63	31.9	2.28	36.4	2.60	3.25
		7 1/2	M05-075	1.2	22.5	1.88	31.5	2.63	36.0	3.00	3.75
12	M05-120	0.7	21.0	3.00	29.4	4.20	33.6	4.80	6.00		
5/8 16mm Wire .069 x .109	11/32 8.5mm	1	M06-010	16.4	41.0	0.25	57.4	0.35	65.6	0.40	0.50
		1 1/4	M06-012	12.8	40.0	0.31	56.0	0.44	64.0	0.50	0.63
		1 1/2	M06-015	10.8	40.5	0.38	56.7	0.53	64.8	0.60	0.75
		1 3/4	M06-017	9.6	42.0	0.44	58.8	0.61	67.2	0.70	0.88
		2	M06-020	8.8	44.0	0.50	61.6	0.70	70.4	0.80	1.00
		2 1/2	M06-025	6.0	37.5	0.63	52.5	0.88	60.0	1.00	1.25
		3	M06-030	5.6	42.0	0.75	58.8	1.05	67.2	1.20	1.50
		3 1/2	M06-035	4.8	42.0	0.88	58.8	1.23	67.2	1.40	1.75
		4	M06-040	4.4	44.0	1.00	61.6	1.40	70.4	1.60	2.00
		12	M06-120	1.6	48.0	3.00	67.2	4.20	76.8	4.80	6.00
3/4 19mm Wire .075 x .165	3/8 9.5mm	1	M07-010	31.2	78.0	0.25	109.2	0.35	124.8	0.40	0.50
		1 1/4	M07-012	25.6	80.0	0.31	112.0	0.44	128.0	0.50	0.63
		1 1/2	M07-015	20.0	75.0	0.38	105.0	0.53	120.0	0.60	0.75
		1 3/4	M07-017	17.6	77.0	0.44	107.8	0.61	123.2	0.70	0.88
		2	M07-020	14.4	72.0	0.50	100.8	0.70	115.2	0.80	1.00
		2 1/2	M07-025	12.0	75.0	0.63	105.0	0.88	120.0	1.00	1.25
		3	M07-030	9.6	72.0	0.75	100.8	1.05	115.2	1.20	1.50
		3 1/2	M07-035	8.0	70.0	0.88	98.0	1.23	112.0	1.40	1.75
		4	M07-040	7.2	72.0	1.00	100.8	1.40	115.2	1.60	2.00
		4 1/2	M07-045	6.4	72.0	1.13	100.8	1.58	115.2	1.80	2.25
		5	M07-050	6.0	75.0	1.25	105.0	1.75	120.0	2.00	2.50
		5 1/2	M07-055	5.5	75.6	1.38	105.9	1.93	121.0	2.20	2.75
		6	M07-060	5.0	75.0	1.50	105.0	2.10	120.0	2.40	3.00
		6 1/2	M07-065	4.5	73.1	1.63	102.4	2.28	117.0	2.60	3.25
		7 1/2	M07-075	3.8	71.3	1.88	99.8	2.63	114.0	3.00	3.75
		12	M07-120	2.4	72.0	3.00	100.8	4.20	115.2	4.80	6.00

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color blue is a registered trademark of Barnes Group Inc.



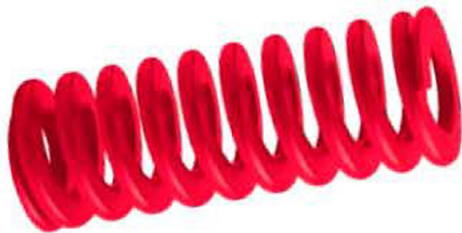
Raymond® MEDIUM DUTY DIE SPRINGS					INCH DIMENSIONS						BLUE
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (25% of free length)		For Long Life (35% of free length)		Maximum Operating Def. (40% of free length)		*Maximum Deflection (50% of free length)
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
A	B	C									
1 26mm Wire .100 x .215	1/2 12.5mm	1	M10-010	55.0	137.5	0.25	192.5	0.35	220.0	0.40	0.50
		1 1/4	M10-012	45.0	140.6	0.31	196.9	0.44	225.0	0.50	0.63
		1 1/2	M10-015	35.0	131.3	0.38	183.8	0.53	210.0	0.60	0.75
		1 3/4	M10-017	30.0	131.3	0.44	183.8	0.61	210.0	0.70	0.88
		2	M10-020	26.0	130.0	0.50	182.0	0.70	208.0	0.80	1.00
		2 1/2	M10-025	20.0	125.0	0.63	175.0	0.88	200.0	1.00	1.25
		3	M10-030	16.5	123.8	0.75	173.3	1.05	198.0	1.20	1.50
		3 1/2	M10-035	15.0	131.3	0.88	183.8	1.23	210.0	1.40	1.75
		4	M10-040	12.0	120.0	1.00	168.0	1.40	192.0	1.60	2.00
		4 1/2	M10-045	10.4	117.0	1.13	163.8	1.58	187.2	1.80	2.25
		5	M10-050	9.6	120.0	1.25	168.0	1.75	192.0	2.00	2.50
		5 1/2	M10-055	8.8	121.0	1.38	169.4	1.93	193.6	2.20	2.75
1 1/4 32mm Wire .155 x .285	5/8 15.5mm	6	M10-060	8.0	120.0	1.50	168.0	2.10	192.0	2.40	3.00
		7	M10-070	7.2	126.0	1.75	176.4	2.45	201.6	2.80	3.50
		8	M10-080	6.0	120.0	2.00	168.0	2.80	192.0	3.20	4.00
		12	M10-120	4.0	120.0	3.00	168.0	4.20	192.0	4.80	6.00
		1 1/2	M12-015	49.6	186.0	0.38	260.4	0.53	297.6	0.60	0.75
		1 3/4	M12-017	42.4	185.5	0.44	259.7	0.61	296.8	0.70	0.88
		2	M12-020	35.2	176.0	0.50	246.4	0.70	281.6	0.80	1.00
		2 1/2	M12-025	28.8	180.0	0.63	252.0	0.88	288.0	1.00	1.25
		3	M12-030	24.0	180.0	0.75	252.0	1.05	288.0	1.20	1.50
		3 1/2	M12-035	20.0	175.0	0.88	245.0	1.23	280.0	1.40	1.75
		4	M12-040	17.6	176.0	1.00	246.4	1.40	281.6	1.60	2.00
		4 1/2	M12-045	16.0	180.0	1.13	252.0	1.58	288.0	1.80	2.25
1 1/2 38mm Wire .135 x .345	3/4 19mm	5	M12-050	13.6	170.0	1.25	238.0	1.75	272.0	2.00	2.50
		5 1/2	M12-055	12.8	176.0	1.38	246.4	1.93	281.6	2.20	2.75
		6	M12-060	12.0	180.0	1.50	252.0	2.10	288.0	2.40	3.00
		7	M12-070	10.4	182.0	1.75	254.8	2.45	291.2	2.80	3.50
		8	M12-080	8.8	176.0	2.00	246.4	2.80	281.6	3.20	4.00
		10	M12-100	7.2	180.0	2.50	252.0	3.50	288.0	4.00	5.00
		12	M12-120	6.0	180.0	3.00	252.0	4.20	288.0	4.80	6.00
		2	M15-020	53.0	265.0	0.50	371.0	0.70	424.0	0.80	1.00
		2 1/2	M15-025	45.0	281.3	0.63	393.8	0.88	450.0	1.00	1.25
		3	M15-030	36.0	270.0	0.75	378.0	1.05	432.0	1.20	1.50
		3 1/2	M15-035	30.0	262.5	0.88	367.5	1.23	420.0	1.40	1.75
		2 51mm Wire .195 x .468	1 25mm	4	M15-040	27.0	270.0	1.00	378.0	1.40	432.0
4 1/2	M15-045			23.0	258.8	1.13	362.3	1.58	414.0	1.80	2.25
5	M15-050			21.0	262.5	1.25	367.5	1.75	420.0	2.00	2.50
5 1/2	M15-055			18.5	254.4	1.38	356.1	1.93	407.0	2.20	2.75
6	M15-060			17.0	255.0	1.50	357.0	2.10	408.0	2.40	3.00
7	M15-070			14.5	253.8	1.75	355.3	2.45	406.0	2.80	3.50
8	M15-080			12.8	256.0	2.00	358.4	2.80	409.6	3.20	4.00
10	M15-100			10.0	250.0	2.50	350.0	3.50	400.0	4.00	5.00
12	M15-120			8.0	240.0	3.00	336.0	4.20	384.0	4.80	6.00
2 1/2	M20-025			100.0	625.0	0.63	875.0	0.88	1000.0	1.00	1.25
3	M20-030			83.0	622.5	0.75	871.5	1.05	996.0	1.20	1.50
3 1/2	M20-035			64.8	567.0	0.88	793.8	1.23	907.2	1.40	1.75
4	M20-040	60.0	600.0	1.00	840.0	1.40	960.0	1.60	2.00		
4 1/2	M20-045	53.0	596.3	1.13	834.8	1.58	954.0	1.80	2.25		
5	M20-050	47.0	587.5	1.25	822.5	1.75	940.0	2.00	2.50		
5 1/2	M20-055	39.2	539.0	1.38	754.6	1.93	862.4	2.20	2.75		
6	M20-060	39.0	585.0	1.50	819.0	2.10	936.0	2.40	3.00		
7	M20-070	31.2	546.0	1.75	764.4	2.45	873.6	2.80	3.50		
8	M20-080	28.5	570.0	2.00	798.0	2.80	912.0	3.20	4.00		
10	M20-100	20.8	520.0	2.50	728.0	3.50	832.0	4.00	5.00		
12	M20-120	17.5	525.0	3.00	735.0	4.20	840.0	4.80	6.00		

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color blue is a registered trademark of Barnes Group Inc.



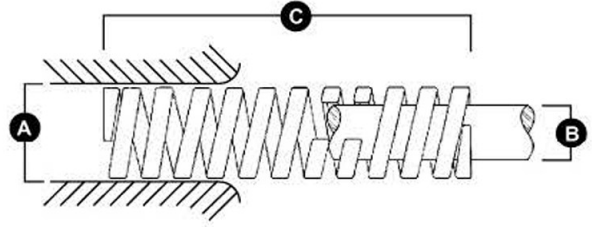
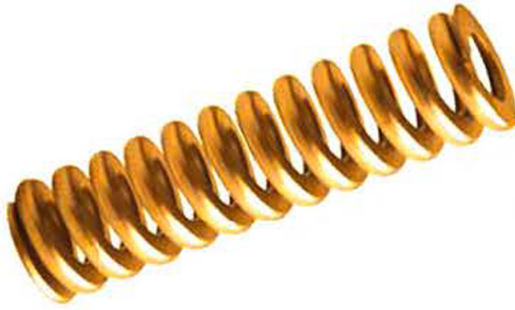
Raymond® MEDIUM HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS						RED
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (20% of free length)		For Long Life (25% of free length)		Maximum Operating Def. (30% of free length)		*Maximum Deflection (37% of free length)
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
3/8 10mm Wire .46 x .067	3/16 4.5mm	1	MH04-010	9.0	18.0	0.20	22.5	0.25	27.0	0.30	0.37
		1 1/4	MH04-012	7.3	18.3	0.25	22.8	0.31	27.4	0.38	0.46
		1 1/2	MH04-015	6.7	20.1	0.30	25.1	0.38	30.2	0.45	0.56
		1 3/4	MH04-017	5.8	20.3	0.35	25.4	0.44	30.5	0.53	0.65
		2	MH04-020	5.0	20.0	0.40	25.0	0.50	30.0	0.60	0.74
		2 1/2	MH04-025	4.2	21.0	0.50	26.3	0.63	31.5	0.75	0.93
		3	MH04-030	3.0	18.0	0.60	22.5	0.75	27.0	0.90	1.11
		12	MH04-120	0.9	21.6	2.40	27.0	3.00	32.4	3.60	4.44
1/2 13mm Wire .061 x .156	9/32 7mm	1	MH05-010	16.8	33.6	0.20	42.0	0.25	50.4	0.30	0.37
		1 1/4	MH05-012	13.0	32.5	0.25	40.6	0.31	48.8	0.38	0.46
		1 1/2	MH05-015	9.5	28.5	0.30	35.6	0.38	42.8	0.45	0.56
		1 3/4	MH05-017	8.5	29.8	0.35	37.2	0.44	44.6	0.53	0.65
		2	MH05-020	7.5	30.0	0.40	37.5	0.50	45.0	0.60	0.74
		2 1/2	MH05-025	6.0	30.0	0.50	37.5	0.63	45.0	0.75	0.93
		3	MH05-030	5.7	34.2	0.60	42.8	0.75	51.3	0.90	1.11
		3 1/2	MH05-035	4.0	28.0	0.70	35.0	0.88	42.0	1.05	1.30
5/8 16mm Wire .081 x .117	11/32 7mm	12	MH05-120	1.2	28.8	2.40	36.0	3.00	43.2	3.60	4.44
		1	MH06-010	30.0	60.0	0.20	75.0	0.25	90.0	0.30	0.37
		1 1/4	MH06-012	21.5	53.8	0.25	67.2	0.31	80.6	0.38	0.46
		1 1/2	MH06-015	19.0	57.0	0.30	71.3	0.38	85.5	0.45	0.56
		1 3/4	MH06-017	16.8	58.8	0.35	73.5	0.44	88.2	0.53	0.65
		2	MH06-020	14.8	59.2	0.40	74.0	0.50	88.8	0.60	0.74
		2 1/2	MH06-025	11.5	57.5	0.50	71.9	0.63	86.3	0.75	0.93
		3	MH06-030	10.0	60.0	0.60	75.0	0.75	90.0	0.90	1.11
3/4 19mm Wire .093 x .156	3/8 9.5mm	3 1/2	MH06-035	8.5	59.5	0.70	74.4	0.88	89.3	1.05	1.30
		4	MH06-040	7.6	60.8	0.80	76.0	1.00	91.2	1.20	1.48
		12	MH06-120	2.7	64.8	2.40	81.0	3.00	97.2	3.60	4.44
		1	MH07-010	50.0	100.0	0.20	125.0	0.25	150.0	0.30	0.37
		1 1/4	MH07-012	38.0	95.0	0.25	118.8	0.31	142.5	0.38	0.46
		1 1/2	MH07-015	32.0	96.0	0.30	120.0	0.38	144.0	0.45	0.56
		1 3/4	MH07-017	28.8	100.8	0.35	126.0	0.44	151.2	0.53	0.65
		2	MH07-020	24.8	99.2	0.40	124.0	0.50	148.8	0.60	0.74
		2 1/2	MH07-025	19.2	96.0	0.50	120.0	0.63	144.0	0.75	0.93
		3	MH07-030	14.4	86.4	0.60	108.0	0.75	129.6	0.90	1.11
		3 1/2	MH07-035	12.8	89.6	0.70	112.0	0.88	134.4	1.05	1.30
		4	MH07-040	12.0	96.0	0.80	120.0	1.00	144.0	1.20	1.48
		4 1/2	MH07-045	11.2	100.8	0.90	126.0	1.13	151.2	1.35	1.67
		5	MH07-050	9.0	90.0	1.00	112.5	1.25	135.0	1.50	1.85
		5 1/2	MH07-055	8.0	88.0	1.10	110.0	1.38	132.0	1.65	2.04
		6	MH07-060	7.5	90.0	1.20	112.5	1.50	135.0	1.80	2.22
		12	MH07-120	3.6	86.4	2.40	108.0	3.00	129.6	3.60	4.44

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color red is a registered trademark of Barnes Group Inc.



Raymond® MEDIUM HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS				RED		
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (20% of free length)		For Long Life (25% of free length)		Maximum Operating Def. (30% of free length)		*Maximum Deflection (37% of free length)
A	B	C			Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
1 26mm	1/2 12.5mm	1	MH10-010	76.0	152.0	0.20	190.0	0.25	228.0	0.30	0.37
		1 1/4	MH10-012	62.4	156.0	0.25	195.0	0.31	234.0	0.38	0.46
		1 1/2	MH10-015	49.6	148.8	0.30	186.0	0.38	223.2	0.45	0.56
		1 3/4	MH10-017	44.0	154.0	0.35	192.5	0.44	231.0	0.53	0.65
		2	MH10-020	40.0	160.0	0.40	200.0	0.50	240.0	0.60	0.74
		2 1/2	MH10-025	31.0	155.0	0.50	193.8	0.63	232.5	0.75	0.93
		3	MH10-030	25.0	150.0	0.60	187.5	0.75	225.0	0.90	1.11
		3 1/2	MH10-035	21.6	151.2	0.70	189.0	0.88	226.8	1.05	1.30
		4	MH10-040	18.4	147.2	0.80	184.0	1.00	220.8	1.20	1.48
		4 1/2	MH10-045	17.0	153.0	0.90	191.3	1.13	229.5	1.35	1.67
		5	MH10-050	14.4	144.0	1.00	180.0	1.25	216.0	1.50	1.85
		5 1/2	MH10-055	12.8	140.8	1.10	176.0	1.38	211.2	1.65	2.04
1 1/4 32mm	5/8 15.5mm	6	MH10-060	12.0	144.0	1.20	180.0	1.50	216.0	1.80	2.22
		7	MH10-070	10.0	140.0	1.40	175.0	1.75	210.0	2.10	2.59
		8	MH10-080	8.8	140.8	1.60	176.0	2.00	211.2	2.40	2.96
		12	MH10-120	6.2	148.8	2.40	186.0	3.00	223.2	3.60	4.44
		1 1/2	MH12-015	114.4	343.2	0.30	429.0	0.38	514.8	0.45	0.56
		1 3/4	MH12-017	100.8	352.8	0.35	441.0	0.44	529.2	0.53	0.65
		2	MH12-020	86.4	345.6	0.40	432.0	0.50	518.4	0.60	0.74
		2 1/2	MH12-025	62.4	312.0	0.50	390.0	0.63	468.0	0.75	0.93
		3	MH12-030	51.2	307.2	0.60	384.0	0.75	460.8	0.90	1.11
		3 1/2	MH12-035	44.0	308.0	0.70	385.0	0.88	462.0	1.05	1.30
		4	MH12-040	36.8	294.4	0.80	368.0	1.00	441.6	1.20	1.48
		4 1/2	MH12-045	32.0	288.0	0.90	360.0	1.13	432.0	1.35	1.67
1 1/2 38mm	3/4 19mm	5	MH12-050	29.0	290.0	1.00	362.5	1.25	435.0	1.50	1.85
		5 1/2	MH12-055	26.4	290.4	1.10	363.0	1.38	435.6	1.65	2.04
		6	MH12-060	25.0	300.0	1.20	375.0	1.50	450.0	1.80	2.22
		7	MH12-070	20.0	280.0	1.40	350.0	1.75	420.0	2.10	2.59
		8	MH12-080	18.4	294.4	1.60	368.0	2.00	441.6	2.40	2.96
		10	MH12-100	14.5	290.0	2.00	362.5	2.50	435.0	3.00	3.70
		12	MH12-120	12.4	297.6	2.40	372.0	3.00	446.4	3.60	4.44
		2	MH15-020	108.0	432.0	0.40	540.0	0.50	648.0	0.60	0.74
		2 1/2	MH15-025	85.6	428.0	0.50	535.0	0.63	642.0	0.75	0.93
		3	MH15-030	62.4	374.4	0.60	468.0	0.75	561.6	0.90	1.11
		3 1/2	MH15-035	52.8	369.6	0.70	462.0	0.88	554.4	1.05	1.30
		4	MH15-040	48.0	384.0	0.80	480.0	1.00	576.0	1.20	1.48
4 1/2	MH15-045	43.2	388.8	0.90	486.0	1.13	583.2	1.35	1.67		
2 51mm	1 25mm	5	MH15-050	36.8	368.0	1.00	460.0	1.25	552.0	1.50	1.85
		5 1/2	MH15-055	34.4	378.4	1.10	473.0	1.38	567.6	1.65	2.04
		6	MH15-060	30.4	364.8	1.20	456.0	1.50	547.2	1.80	2.22
		7	MH15-070	26.4	369.6	1.40	462.0	1.75	554.4	2.10	2.59
		8	MH15-080	22.0	352.0	1.60	440.0	2.00	528.0	2.40	2.96
		10	MH15-100	17.6	352.0	2.00	440.0	2.50	528.0	3.00	3.70
		12	MH15-120	14.4	345.6	2.40	432.0	3.00	518.4	3.60	4.44
		2 1/2	MH20-025	118.4	592.0	0.50	740.0	0.63	888.0	0.75	0.93
		3	MH20-030	96.0	576.0	0.60	720.0	0.75	864.0	0.90	1.11
		3 1/2	MH20-035	80.0	560.0	0.70	700.0	0.88	840.0	1.05	1.30
		4	MH20-040	66.4	531.2	0.80	664.0	1.00	796.8	1.20	1.48
		4 1/2	MH20-045	60.0	540.0	0.90	675.0	1.13	810.0	1.35	1.67
5	MH20-050	56.0	560.0	1.00	700.0	1.25	840.0	1.50	1.85		
5 1/2	MH20-055	50.4	554.4	1.10	693.0	1.38	831.6	1.65	2.04		
6	MH20-060	47.2	566.4	1.20	708.0	1.50	849.6	1.80	2.22		
7	MH20-070	40.0	560.0	1.40	700.0	1.75	840.0	2.10	2.59		
8	MH20-080	35.2	563.2	1.60	704.0	2.00	844.8	2.40	2.96		
10	MH20-100	26.0	520.0	2.00	650.0	2.50	780.0	3.00	3.70		
12	MH20-120	22.4	537.6	2.40	672.0	3.00	806.4	3.60	4.44		

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color red is a registered trademark of Barnes Group Inc.



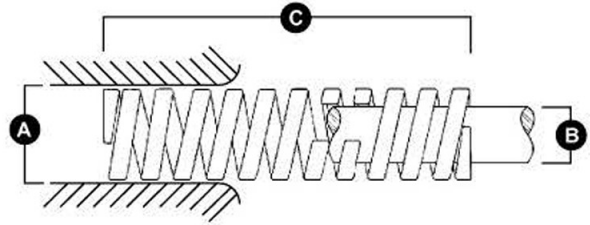
Raymond® HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS				GOLD		
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (15% of free length)		For Long Life (20% of free length)		Maximum Operating Def. (25% of free length)		*Maximum Deflection (30% of free length)
A	B	C			Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
3/8 10mm Wire .054 x .072	3/16 4.5mm	1	H04-010	11.0	16.5	0.15	22.0	0.20	27.5	0.25	0.30
		1 1/4	H04-012	9.8	18.4	0.19	24.5	0.25	30.6	0.31	0.38
		1 1/2	H04-015	8.0	18.0	0.23	24.0	0.30	30.0	0.38	0.45
		1 3/4	H04-017	8.4	22.1	0.26	29.4	0.35	36.8	0.44	0.53
		2	H04-020	7.2	21.6	0.30	28.8	0.40	36.0	0.50	0.60
		2 1/2	H04-025	5.5	20.6	0.38	27.5	0.50	34.4	0.63	0.75
		3	H04-030	4.2	18.9	0.45	25.2	0.60	31.5	0.75	0.90
		12	H04-120	1.2	21.6	1.80	28.8	2.40	36.0	3.00	3.60
1/2 13mm Wire .070 x .093	9/32 7mm	1	H05-010	23.6	35.4	0.15	47.2	0.20	59.0	0.25	0.30
		1 1/4	H05-012	18.6	34.9	0.19	46.5	0.25	58.1	0.31	0.38
		1 1/2	H05-015	15.5	34.9	0.23	46.5	0.30	58.1	0.38	0.45
		1 3/4	H05-017	13.8	36.2	0.26	48.3	0.35	60.4	0.44	0.53
		2	H05-020	11.0	33.0	0.30	44.0	0.40	55.0	0.50	0.60
		2 1/2	H05-025	8.4	31.5	0.38	42.0	0.50	52.5	0.63	0.75
		3	H05-030	7.4	33.3	0.45	44.4	0.60	55.5	0.75	0.90
		3 1/2	H05-035	6.0	31.5	0.53	42.0	0.70	52.5	0.88	1.05
5/8 16mm Wire .093 x .125	11/32 7mm	1	H06-010	42.4	63.6	0.15	84.8	0.20	106.0	0.25	0.30
		1 1/4	H06-012	29.6	55.5	0.19	74.0	0.25	92.5	0.31	0.38
		1 1/2	H06-015	27.2	61.2	0.23	81.6	0.30	102.0	0.38	0.45
		1 3/4	H06-017	24.0	63.0	0.26	84.0	0.35	105.0	0.44	0.53
		2	H06-020	20.8	62.4	0.30	83.2	0.40	104.0	0.50	0.60
		2 1/2	H06-025	17.0	63.8	0.38	85.0	0.50	106.3	0.63	0.75
		3	H06-030	14.4	64.8	0.45	86.4	0.60	108.0	0.75	0.90
		3 1/2	H06-035	12.2	64.1	0.53	85.4	0.70	106.8	0.88	1.05
3/4 19mm Wire .125 x .165	3/8 9.5mm	4	H06-040	10.8	64.8	0.60	86.4	0.80	108.0	1.00	1.20
		12	H06-120	3.0	54.0	1.80	72.0	2.40	90.0	3.00	3.60
		1	H07-010	108.0	162.0	0.15	216.0	0.20	270.0	0.25	0.30
		1 1/4	H07-012	88.0	165.0	0.19	220.0	0.25	275.0	0.31	0.38
		1 1/2	H07-015	65.6	147.6	0.23	196.8	0.30	246.0	0.38	0.45
		1 3/4	H07-017	60.0	157.5	0.26	210.0	0.35	262.5	0.44	0.53
		2	H07-020	49.6	148.8	0.30	198.4	0.40	248.0	0.50	0.60
		2 1/2	H07-025	40.0	150.0	0.38	200.0	0.50	250.0	0.63	0.75
3	H07-030	34.0	153.0	0.45	204.0	0.60	255.0	0.75	0.90		
3 1/2	H07-035	28.0	147.0	0.53	196.0	0.70	245.0	0.88	1.05		
4	H07-040	25.0	150.0	0.60	200.0	0.80	250.0	1.00	1.20		
4 1/2	H07-045	22.0	148.5	0.68	198.0	0.90	247.5	1.13	1.35		
5	H07-050	19.5	146.3	0.75	195.0	1.00	243.8	1.25	1.50		
5 1/2	H07-055	17.0	140.3	0.83	187.0	1.10	233.8	1.38	1.65		
6	H07-060	16.0	144.0	0.90	192.0	1.20	240.0	1.50	1.80		
12	H07-120	8.0	144.0	1.80	192.0	2.40	240.0	3.00	3.60		

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color gold is a registered trademark of Barnes Group Inc.



Raymond® HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS					GOLD	
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (15% of free length)		For Long Life (20% of free length)		Maximum Operating Def. (25% of free length)		*Maximum Deflection (30% of free length)
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
A	B	C									
1 26mm	1/2 12.5mm	1	H10-010	208.0	312.0	0.15	416.0	0.20	520.0	0.25	0.30
		1 1/4	H10-012	171.2	321.0	0.19	428.0	0.25	535.0	0.31	0.38
		1 1/2	H10-015	118.4	266.4	0.23	355.2	0.30	444.0	0.38	0.45
		1 3/4	H10-017	104.0	273.0	0.26	364.0	0.35	455.0	0.44	0.53
		2	H10-020	90.0	270.0	0.30	360.0	0.40	450.0	0.50	0.60
		2 1/2	H10-025	68.0	255.0	0.38	340.0	0.50	425.0	0.63	0.75
		3	H10-030	54.4	244.8	0.45	326.4	0.60	408.0	0.75	0.90
		3 1/2	H10-035	45.6	239.4	0.53	319.2	0.70	399.0	0.88	1.05
		4	H10-040	40.0	240.0	0.60	320.0	0.80	400.0	1.00	1.20
		4 1/2	H10-045	35.2	237.6	0.68	316.8	0.90	396.0	1.13	1.35
		5	H10-050	31.2	234.0	0.75	312.0	1.00	390.0	1.25	1.50
		5 1/2	H10-055	28.8	237.6	0.83	316.8	1.10	396.0	1.38	1.65
1 1/4 32mm	5/8 15.5mm	6	H10-060	25.6	230.4	0.90	307.2	1.20	384.0	1.50	1.80
		7	H10-070	22.4	235.2	1.05	313.6	1.40	392.0	1.75	2.10
		8	H10-080	19.2	230.4	1.20	307.2	1.60	384.0	2.00	2.40
		12	H10-120	12.0	216.0	1.80	288.0	2.40	360.0	3.00	3.60
		1 1/2	H12-015	212.0	477.0	0.23	636.0	0.30	795.0	0.38	0.45
		1 3/4	H12-017	181.6	476.7	0.26	635.6	0.35	794.5	0.44	0.53
		2	H12-020	149.6	448.8	0.30	598.4	0.40	748.0	0.50	0.60
		2 1/2	H12-025	117.6	441.0	0.38	588.0	0.50	735.0	0.63	0.75
		3	H12-030	95.2	428.4	0.45	571.2	0.60	714.0	0.75	0.90
		3 1/2	H12-035	75.2	394.8	0.53	526.4	0.70	658.0	0.88	1.05
		4	H12-040	66.4	398.4	0.60	531.2	0.80	664.0	1.00	1.20
		4 1/2	H12-045	58.4	394.2	0.68	525.6	0.90	657.0	1.13	1.35
1 1/2 38mm	3/4 19mm	5	H12-050	53.0	397.5	0.75	530.0	1.00	662.5	1.25	1.50
		5 1/2	H12-055	47.2	389.4	0.83	519.2	1.10	649.0	1.38	1.65
		6	H12-060	42.4	381.6	0.90	508.8	1.20	636.0	1.50	1.80
		7	H12-070	36.8	386.4	1.05	515.2	1.40	644.0	1.75	2.10
		8	H12-080	32.8	393.6	1.20	524.8	1.60	656.0	2.00	2.40
		10	H12-100	25.6	384.0	1.50	512.0	2.00	640.0	2.50	3.00
		12	H12-120	20.8	374.4	1.80	499.2	2.40	624.0	3.00	3.60
		2	H15-020	190.4	571.2	0.30	761.6	0.40	952.0	0.50	0.60
		2 1/2	H15-025	155.0	581.3	0.38	775.0	0.50	968.8	0.63	0.75
		3	H15-030	130.0	585.0	0.45	780.0	0.60	975.0	0.75	0.90
		3 1/2	H15-035	106.4	558.6	0.53	744.8	0.70	931.0	0.88	1.05
		4	H15-040	91.2	547.2	0.60	729.6	0.80	912.0	1.00	1.20
4 1/2	H15-045	78.4	529.2	0.68	705.6	0.90	882.0	1.13	1.35		
2 51mm	1 25mm	5	H15-050	71.2	534.0	0.75	712.0	1.00	890.0	1.25	1.50
		5 1/2	H15-055	64.0	528.0	0.83	704.0	1.10	880.0	1.38	1.65
		6	H15-060	58.4	525.6	0.90	700.8	1.20	876.0	1.50	1.80
		7	H15-070	49.6	520.8	1.05	694.4	1.40	868.0	1.75	2.10
		8	H15-080	43.2	518.4	1.20	691.2	1.60	864.0	2.00	2.40
		10	H15-100	34.4	516.0	1.50	688.0	2.00	860.0	2.50	3.00
		12	H15-120	28.8	518.4	1.80	691.2	2.40	864.0	3.00	3.60
		2 1/2	H20-025	260.0	975.0	0.38	1300.0	0.50	1625.0	0.63	0.75
		3	H20-030	200.0	900.0	0.45	1200.0	0.60	1500.0	0.75	0.90
		3 1/2	H20-035	170.0	892.5	0.53	1190.0	0.70	1487.5	0.88	1.05
		4	H20-040	150.0	900.0	0.60	1200.0	0.80	1500.0	1.00	1.20
		4 1/2	H20-045	120.0	810.0	0.68	1080.0	0.90	1350.0	1.13	1.35
5	H20-050	110.0	825.0	0.75	1100.0	1.00	1375.0	1.25	1.50		
5 1/2	H20-055	100.0	825.0	0.83	1100.0	1.10	1375.0	1.38	1.65		
6	H20-060	94.0	846.0	0.90	1128.0	1.20	1410.0	1.50	1.80		
7	H20-070	82.0	861.0	1.05	1148.0	1.40	1435.0	1.75	2.10		
8	H20-080	73.0	876.0	1.20	1168.0	1.60	1460.0	2.00	2.40		
10	H20-100	55.0	825.0	1.50	1100.0	2.00	1375.0	2.50	3.00		
12	H20-120	42.0	756.0	1.80	1008.0	2.40	1260.0	3.00	3.60		

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color gold is a registered trademark of Barnes Group Inc.



Raymond® EXTRA HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS						GREEN
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (15% of free length)		For Long Life (17% of free length)		Maximum Operating Def. (20% of free length)		*Maximum Deflection (25% of free length)
A	B	C			Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
3/8 10mm Wire .059 x .080	3/16 4.5mm	1	XH04-010	22.0	33.0	0.15	37.4	0.17	44.0	0.20	0.25
		1 1/4	XH04-012	16.0	30.0	0.19	34.0	0.21	40.0	0.25	0.31
		1 1/2	XH04-015	12.5	28.1	0.23	31.9	0.26	37.5	0.30	0.38
		1 3/4	XH04-017	11.5	30.2	0.26	34.2	0.30	40.3	0.35	0.44
		2	XH04-020	9.0	27.0	0.30	30.6	0.34	36.0	0.40	0.50
		2 1/2	XH04-025	7.0	26.3	0.38	29.8	0.43	35.0	0.50	0.63
		3	XH04-030	6.5	29.3	0.45	33.2	0.51	39.0	0.60	0.75
		12	XH04-120	1.5	27.0	1.80	30.6	2.04	36.0	2.40	3.00
1/2 13mm Wire .084 x .097	9/32 7mm	1	XH05-010	32.0	48.0	0.15	54.4	0.17	64.0	0.20	0.25
		1 1/4	XH05-012	24.0	45.0	0.19	51.0	0.21	60.0	0.25	0.31
		1 1/2	XH05-015	20.0	45.0	0.23	51.0	0.26	60.0	0.30	0.38
		1 3/4	XH05-017	17.0	44.6	0.26	50.6	0.30	59.5	0.35	0.44
		2	XH05-020	14.0	42.0	0.30	47.6	0.34	56.0	0.40	0.50
		2 1/2	XH05-025	11.5	43.1	0.38	48.9	0.43	57.5	0.50	0.63
		3	XH05-030	9.0	40.5	0.45	45.9	0.51	54.0	0.60	0.75
		3 1/2	XH05-035	8.0	42.0	0.53	47.6	0.60	56.0	0.70	0.88
12	XH05-120	2.5	45.0	1.80	51.0	2.04	60.0	2.40	3.00		
5/8 16mm Wire .110 x .126	11/32 7mm	1	XH06-010	63.0	94.5	0.15	107.1	0.17	126.0	0.20	0.25
		1 1/4	XH06-012	47.0	88.1	0.19	99.9	0.21	117.5	0.25	0.31
		1 1/2	XH06-015	38.0	85.5	0.23	96.9	0.26	114.0	0.30	0.38
		1 3/4	XH06-017	32.0	84.0	0.26	95.2	0.30	112.0	0.35	0.44
		2	XH06-020	29.0	87.0	0.30	98.6	0.34	116.0	0.40	0.50
		2 1/2	XH06-025	22.0	82.5	0.38	93.5	0.43	110.0	0.50	0.63
		3	XH06-030	19.0	85.5	0.45	96.9	0.51	114.0	0.60	0.75
		3 1/2	XH06-035	16.0	84.0	0.53	95.2	0.60	112.0	0.70	0.88
4	XH06-040	13.5	81.0	0.60	91.8	0.68	108.0	0.80	1.00		
12	XH06-120	4.5	81.0	1.80	91.8	2.04	108.0	2.40	3.00		
3/4 19mm Wire .135 x .165	3/8 9.5mm	1	XH07-010	140.0	210.0	0.15	238.0	0.17	280.0	0.20	0.25
		1 1/4	XH07-012	110.0	206.3	0.19	233.8	0.21	275.0	0.25	0.31
		1 1/2	XH07-015	89.0	200.3	0.23	227.0	0.26	267.0	0.30	0.38
		1 3/4	XH07-017	75.0	196.9	0.26	223.1	0.30	262.5	0.35	0.44
		2	XH07-020	68.0	204.0	0.30	231.2	0.34	272.0	0.40	0.50
		2 1/2	XH07-025	50.0	187.5	0.38	212.5	0.43	250.0	0.50	0.63
		3	XH07-030	40.5	182.3	0.45	206.6	0.51	243.0	0.60	0.75
		3 1/2	XH07-035	34.5	181.1	0.53	205.3	0.60	241.5	0.70	0.88
		4	XH07-040	30.0	180.0	0.60	204.0	0.68	240.0	0.80	1.00
		4 1/2	XH07-045	26.5	178.9	0.68	202.7	0.77	238.5	0.90	1.13
		5	XH07-050	23.5	176.3	0.75	199.8	0.85	235.0	1.00	1.25
		5 1/2	XH07-055	21.5	177.4	0.83	201.0	0.94	236.5	1.10	1.38
		6	XH07-060	19.5	175.5	0.90	198.9	1.02	234.0	1.20	1.50
		12	XH07-120	9.5	171.0	1.80	193.8	2.04	228.0	2.40	3.00

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color green is a registered trademark of Barnes Group Inc.

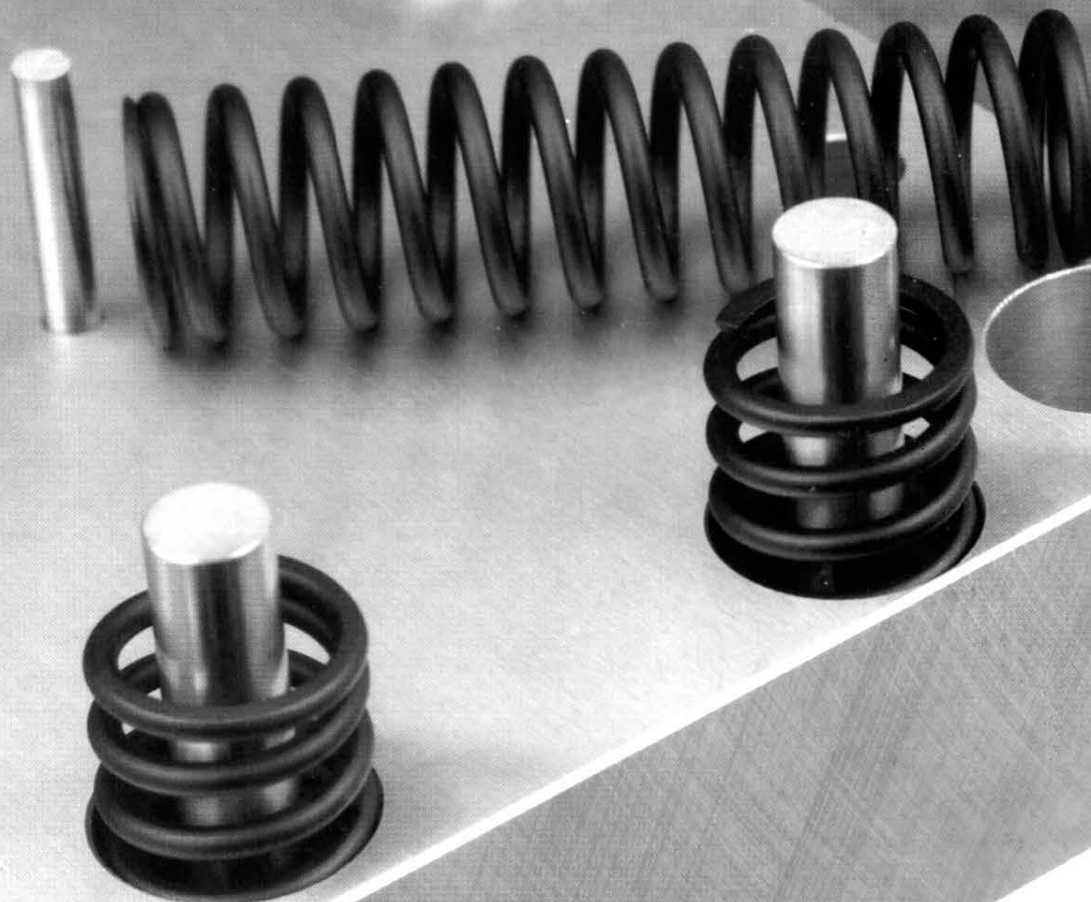


Raymond® EXTRA HEAVY DUTY DIE SPRINGS					INCH DIMENSIONS				GREEN		
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 in. Def. (lb)	LOAD DEFLECTION TABLE						
					For Optimum Life (15% of free length)		For Long Life (17% of free length)		Maximum Operating Def. (20% of free length)		*Maximum Deflection (25% of free length)
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)
A	B	C									
1 26mm Wire .188 x .225	1/2 12.5mm	1 1/2	XH10-015	160.0	360.0	0.23	408.0	0.26	480.0	0.30	0.38
		2	XH10-020	116.0	348.0	0.30	394.4	0.34	464.0	0.40	0.50
		2 1/2	XH10-025	89.6	336.0	0.38	380.8	0.43	448.0	0.50	0.63
		3	XH10-030	73.6	331.2	0.45	375.4	0.51	441.6	0.60	0.75
		3 1/2	XH10-035	62.4	327.6	0.53	371.3	0.60	436.8	0.70	0.88
		4	XH10-040	55.2	331.2	0.60	375.4	0.68	441.6	0.80	1.00
		4 1/2	XH10-045	48.8	329.4	0.68	373.3	0.77	439.2	0.90	1.13
		5	XH10-050	43.2	324.0	0.75	367.2	0.85	432.0	1.00	1.25
		6	XH10-060	36.0	324.0	0.90	367.2	1.02	432.0	1.20	1.50
		12	XH10-120	17.6	316.8	1.80	359.0	2.04	422.4	2.40	3.00
1 1/4 32mm Wire .225 x .295	5/8 15.5mm	2	XH12-020	192.0	576.0	0.30	652.8	0.34	768.0	0.40	0.50
		2 1/2	XH12-025	144.0	540.0	0.38	612.0	0.43	720.0	0.50	0.63
		3	XH12-030	118.4	532.8	0.45	603.8	0.51	710.4	0.60	0.75
		3 1/2	XH12-035	100.8	529.2	0.53	599.8	0.60	705.6	0.70	0.88
		4	XH12-040	84.0	504.0	0.60	571.2	0.68	672.0	0.80	1.00
		4 1/2	XH12-045	78.4	529.2	0.68	599.8	0.77	705.6	0.90	1.13
		5	XH12-050	68.0	510.0	0.75	578.0	0.85	680.0	1.00	1.25
		6	XH12-060	56.0	504.0	0.90	571.2	1.02	672.0	1.20	1.50
		8	XH12-080	41.6	499.2	1.20	565.8	1.36	665.6	1.60	2.00
		10	XH12-100	33.6	504.0	1.50	571.2	1.70	672.0	2.00	2.50
12	XH12-120	26.4	475.2	1.80	538.6	2.04	633.6	2.40	3.00		
1 1/2 38mm Wire .300 x .350	3/4 19mm	2	XH15-020	376.0	1128.0	0.30	1278.4	0.34	1504.0	0.40	0.50
		2 1/2	XH15-025	294.4	1104.0	0.38	1251.2	0.43	1472.0	0.50	0.63
		3	XH15-030	231.2	1040.4	0.45	1179.1	0.51	1387.2	0.60	0.75
		3 1/2	XH15-035	196.0	1029.0	0.53	1166.2	0.60	1372.0	0.70	0.88
		4	XH15-040	171.2	1027.2	0.60	1164.2	0.68	1369.6	0.80	1.00
		4 1/2	XH15-045	148.0	999.0	0.68	1132.2	0.77	1332.0	0.90	1.13
		5	XH15-050	136.0	1020.0	0.75	1156.0	0.85	1360.0	1.00	1.25
		6	XH15-060	110.4	993.6	0.90	1126.1	1.02	1324.8	1.20	1.50
		8	XH15-080	80.8	969.6	1.20	1098.9	1.36	1292.8	1.60	2.00
		10	XH15-100	67.2	1008.0	1.50	1142.4	1.70	1344.0	2.00	2.50
12	XH15-120	54.4	979.2	1.80	1109.8	2.04	1305.6	2.40	3.00		
2 51mm Wire .365 x .460	1 25mm	2 1/2	XH20-025	381.6	1431.0	0.38	1621.8	0.43	1908.0	0.50	0.63
		3	XH20-030	312.0	1404.0	0.45	1591.2	0.51	1872.0	0.60	0.75
		3 1/2	XH20-035	254.4	1335.6	0.53	1513.7	0.60	1780.8	0.70	0.88
		4	XH20-040	220.0	1320.0	0.60	1496.0	0.68	1760.0	0.80	1.00
		4 1/2	XH20-045	188.8	1274.4	0.68	1444.3	0.77	1699.2	0.90	1.13
		5	XH20-050	172.8	1296.0	0.75	1468.8	0.85	1728.0	1.00	1.25
		6	XH20-060	141.6	1274.4	0.90	1444.3	1.02	1699.2	1.20	1.50
		8	XH20-080	100.0	1200.0	1.20	1360.0	1.36	1600.0	1.60	2.00
		10	XH20-100	84.0	1260.0	1.50	1428.0	1.70	1680.0	2.00	2.50
		12	XH20-120	71.2	1281.6	1.80	1452.5	2.04	1708.8	2.40	3.00

* Deflection values shown represent compressed lengths near solid and are for design information only.
The color green is a registered trademark of Barnes Group Inc.

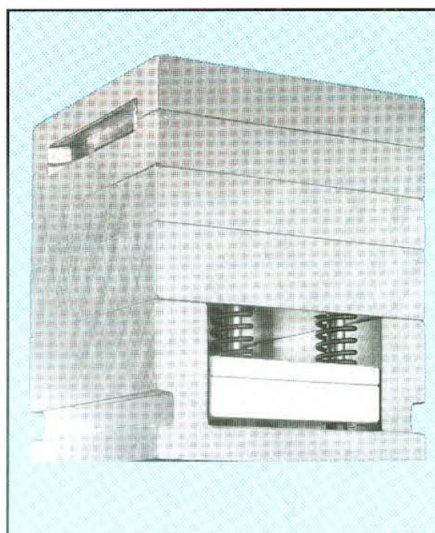


A "New Standard"
Return Pin Spring
Designed Exclusively
for Mold Base
Applications

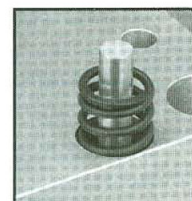


Return-Rite™ ... the only return spring specially engineered and manufactured for safe and efficient operation of mold base ejector systems.

Unlike ordinary die spring products, Superior's exclusive Return-Rite™ spring design offers positive return action and safer operating specifications for any mold base application. Each spring is specially engineered and uniquely coiled for specific force ratings, which will maintain proper load retention and long operating life. Because of this efficient design you get a smaller, more compact spring that takes up less mold cavity area and does not break through the plate edge, which reduces pinch point and debris jamming.



DO NOT cut these springs.



FORCE 10

Catalog Number	Dimensional Data (inches)			Load Deflection Data (lbs)		
	Outside Diameter	Inside Diameter	Free Length	Preload (at .100")	Optimum Life (at 25%)	Max Deflection (at 40%)
RPS-1030	1.100	0.788	3.00	13.33	100.00	160.00
RPS-1035	1.100	0.788	3.50	11.40	100.00	160.00
RPS-1040	1.100	0.788	4.00	10.00	100.00	160.00
RPS-1045	1.100	0.788	4.50	8.90	100.00	160.00
RPS-1050	1.100	0.788	5.00	8.00	100.00	160.00
RPS-1055	1.100	0.776	5.50	7.27	100.00	160.00
RPS-1060	1.100	0.776	6.00	6.67	100.00	160.00
RPS-1065	1.100	0.776	6.50	6.15	100.00	160.00
RPS-1070	1.100	0.776	7.00	5.71	100.00	160.00

Return-Rite™ Features:

- No need to relocate your return-pins. These springs use standard return pin locations.
- Maintain fast mold base lead times because you use standard mold bases without custom machining delays.
- Saves cavity work area with smaller, more specialized springs. No need to buy larger mold bases to accommodate return springs.
- Reduce pinch points and debris jamming. No plate edge breakthrough!
- Specially designed for any mold base application.

FORCE 20

Catalog Number	Dimensional Data (inches)			Load Deflection Data (lbs)		
	Outside Diameter	Inside Diameter	Free Length	Preload (at .100")	Optimum Life (at 25%)	Max Deflection (at 40%)
RPS-2040	1.350	0.936	4.00	20.00	200.00	320.00
RPS-2045	1.350	0.936	4.50	17.78	200.00	320.00
RPS-2050	1.350	0.936	5.00	16.00	200.00	320.00
RPS-2055	1.350	0.936	5.50	14.54	200.00	320.00
RPS-2060	1.350	0.936	6.00	13.33	200.00	320.00
RPS-2065	1.350	0.936	6.50	12.30	200.00	320.00
RPS-2070	1.350	0.936	7.00	11.43	200.00	320.00
RPS-2040	1.350	0.936	7.50	10.67	200.00	320.00

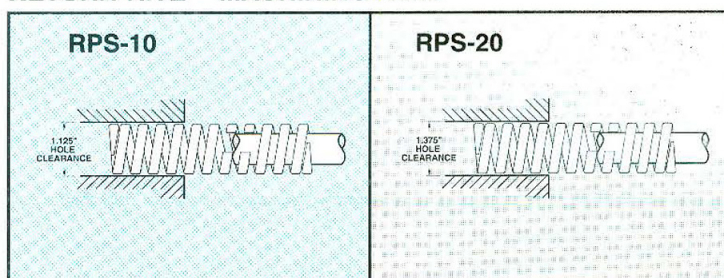
Return-Rite™ Specifications:

Select your Return-Rite spring from the chart on page 193F. These tables will give you technical specifications and exact dimensions for the spring you choose.

When Ordering Please Specify:

1. Part Number
2. Quantity

RETURN-RITE™ MACHINING DATA



Utility Springs

Compression

Extension

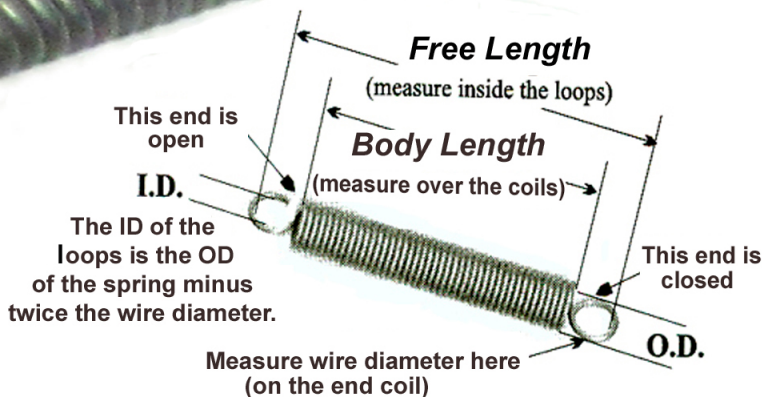
Disc / Retaining Rings

Belleville Spring Washers

**CALL FOR QUOTE PER PART #
QUOTE PER SPEC. SEE BACK
OF THIS PAGE.**

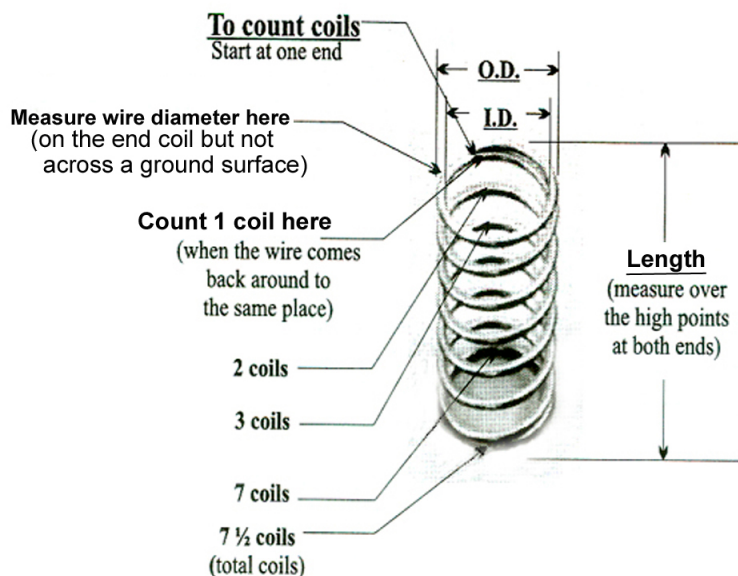
FULL CATALOGS AVAILABLE

RECOMMENDED PROCEDURE



To count coils:

Measure the body length and divide by the wire diameter. Subtract one to get the number of active coils, add one to get the number of total coils.



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www.toolingcomponentsinc.com email: sales@toolcompinc.com



Tooling Components, Inc.

Special Springs

Company: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Attn: _____
 Phone: _____
 Fax: _____

In Office Use Only

Date Received: _____

Date Quoted: _____

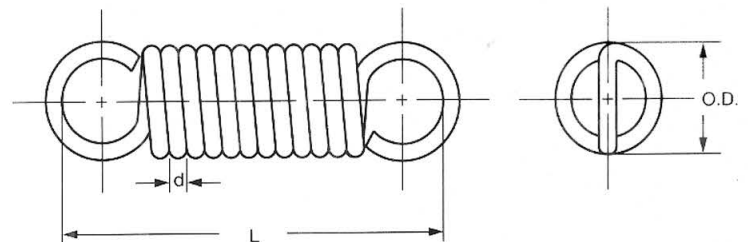
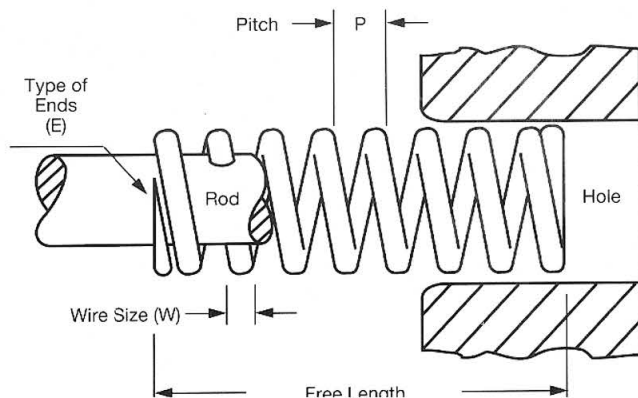
Quoted By: _____

Compression

Quantity Required
Wire Size
Type of Wire
Outside Diameter
Inside Diameter
Free Length
Hole Size
Rod Size
No. of Coils
Pitch
Rate
Solid Height
Direction of Coils
Type of Ends
Test Loads
Print Available?
Finish
Comments

Extension

Quantity Required
Wire Size
Type of Wire
Outside Diameter
Inside Diameter
Free Length
Initial Tension
No. of Coils
Pitch
Rate
Maximum Extension
Direction of Coils
Type of Loops
Test Loads
Print Available?
Finish
Comments



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Tooling Components, Inc.

Kaller

Quality and Technology Go



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full catalog available.*

"Quality" and "technology" are words that you see and hear every day when companies describe their products and services. Often they appear to be just that—words. At Kaller Gas Springs, it is a different story entirely. "We have a long history of meeting international standards and engineering new products to meet customer needs," states General Manager Mike Ambrogio. "We can back up what we say," he continues.

Kaller Gas Springs is the US arm of Strömsholmen, a company that began engineering operations in Tranås, Sweden in 1876. The Kaller brand gas spring was introduced in 1983 and within ten years, Strömsholmen made the decision to concentrate all its efforts into the design and manufacture of nitrogen gas springs. It was the automotive industry that first saw the advantages of using gas springs over mechanical springs: greater forces, longer strokes, and considerably lower life cycle costs. "We worked closely with the auto makers from the beginning," says Ambrogio; "It paid off because today Kaller products and dimensions are the standards for General Motors, Ford, Volvo, Daimler-Chrysler and many other manufacturers."

And not only the auto manufacturers. International standards organizations like ISO and NAAMS have adopted the Kaller dimension standards as their own.



Left: Ultra short gas springs are ideal when shut height is limited

Above: Kaller offers a complete line of gas springs and cams

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Tooling Components, Inc.

Flex Cam™



Flex Cam

Simplifies tool design because you require fewer tools.

*Piercing, cutting, forming and flanging operations
easier and more cost effective.*

As an example, in this application, six holes needed to be pierced. Before the Flex Cam was installed, the round holes were punched using oval shaped punches because of the large angle between the work piece face and the punch centerline. The lifetime of the oval punches was very short and the quality of the holes poor. The Flex Cam mounts upside down in the upper tool. The cam unit (1) mounts on a floating die (2). The floating die is centered relative to the lower die using conical pillars, and backed up by gas springs. As the press moves downward and the floating die is centered, the power unit (3) is activated and the holes are punched. Use of the Flex Cam enhanced both quality and productivity, and the system including installation paid for itself within three months.

