



## US Series

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	3/16	1	105-104	11.6	17.4	0.15	23.2	0.20	29.0	0.25	0.30
		1 1/4	105-105	9.8	18.6	0.19	24.5	0.25	30.4	0.31	0.38
		1 1/2	105-106	8.0	18.4	0.23	24.0	0.30	30.4	0.38	0.45
		1 3/4	105-107	7.5	19.5	0.26	26.3	0.35	33.0	0.44	0.53
		2	105-108	6.2	18.6	0.30	24.8	0.40	31.0	0.50	0.60
		2 1/2	105-110	5.0	19.0	0.38	25.0	0.50	31.5	0.63	0.75
		3	105-112	4.1	18.5	0.45	24.6	0.60	30.8	0.75	0.90
		2	105-148	1.1	19.8	1.80	26.4	2.40	33.0	3.00	3.60
1/2	9/32	1	105-204	22.5	33.8	0.15	45.0	0.20	56.3	0.25	0.30
		1 1/4	105-205	18.2	34.6	0.19	45.5	0.25	56.4	0.31	0.38
		1 1/2	105-206	14.8	34.0	0.23	44.4	0.30	56.2	0.38	0.45
		1 3/4	105-207	12.6	32.8	0.26	44.1	0.35	55.4	0.44	0.53
		2	105-208	11.0	33.0	0.30	44.0	0.40	55.0	0.50	0.60
		2 1/2	105-210	8.6	32.7	0.38	43.0	0.50	54.2	0.63	0.75
		3	105-212	7.4	33.3	0.45	44.4	0.60	55.5	0.75	0.90
		3 1/2	105-214	6.0	31.8	0.53	42.0	0.70	52.8	0.88	1.05
5/8	11/32	12	105-248	1.7	30.6	1.80	40.8	2.40	51.0	3.00	3.60
		1	105-304	42.4	63.6	0.15	84.8	0.20	106.0	0.25	0.30
		1 1/4	105-305	32.5	61.8	0.19	81.3	0.25	100.8	0.31	0.38
		1 1/2	105-306	28.0	64.4	0.23	84.0	0.30	106.4	0.38	0.45
		1 3/4	105-307	24.0	62.4	0.26	84.0	0.35	105.6	0.44	0.53
		2	105-308	20.8	62.4	0.30	83.2	0.40	104.0	0.50	0.60
		2 1/2	105-310	17.0	64.6	0.38	85.0	0.50	107.1	0.63	0.75
		3	105-312	14.0	63.0	0.45	84.0	0.60	105.0	0.75	0.90
3/4	3/8	3 1/2	105-314	12.2	64.7	0.53	85.4	0.70	107.4	0.88	1.05
		4	105-316	10.8	64.8	0.60	86.4	0.80	108.0	1.00	1.20
		12	105-348	3.0	54.0	1.80	72.0	2.40	90.0	3.00	3.60
		1	105-404	108.0	162.0	0.15	216.0	0.20	270.0	0.25	0.27
		1 1/4	105-405	88.0	167.2	0.19	220.0	0.25	272.8	0.31	0.35
		1 1/2	105-406	69.0	158.7	0.23	207.0	0.30	262.2	0.38	0.45
		1 3/4	105-407	60.0	156.0	0.26	210.0	0.35	264.0	0.44	0.53
		2	105-408	51.5	154.5	0.30	206.0	0.40	257.5	0.50	0.60
3/4	3/8	2 1/2	105-410	40.0	152.0	0.38	200.0	0.50	252.0	0.63	0.75
		3	105-412	33.0	148.5	0.45	198.0	0.60	247.5	0.75	0.90
		3 1/2	105-414	29.0	153.7	0.53	203.0	0.70	255.2	0.88	1.05
		4	105-416	25.0	150.0	0.60	200.0	0.80	250.0	1.00	1.20
		4 1/2	105-418	22.0	149.6	0.68	198.0	0.90	248.6	1.13	1.35
		5	105-420	19.5	146.3	0.75	195.0	1.00	243.8	1.25	1.50
		5 1/2	105-422	17.8	147.7	0.83	195.8	1.10	245.6	1.38	1.65
		6	105-424	16.0	144.0	0.90	192.0	1.20	240.0	1.50	1.80
12	105-448	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 blue is a registered trademark of Barnes Group Inc.



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					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Deflection (in)		
A	B	C											
1	1/2	1	105-504	193.2	289.8	0.15	386.4	0.20	483.0	0.25	0.27		
		1 1/4	105-505	146.5	278.4	0.19	366.3	0.25	454.2	0.31	0.38		
		1 1/2	105-506	120.0	276.0	0.23	360.0	0.30	456.0	0.38	0.45		
		1 3/4	105-507	104.0	270.4	0.26	364.0	0.35	457.6	0.44	0.53		
		2	105-508	87.2	261.6	0.30	348.8	0.40	436.0	0.50	0.60		
		2 1/2	105-510	66.5	252.7	0.38	332.5	0.50	419.0	0.63	0.75		
		3	105-512	54.4	244.8	0.45	326.4	0.60	408.0	0.75	0.90		
		3 1/2	105-514	45.6	241.7	0.53	319.2	0.70	401.3	0.88	1.05		
		4	105-516	40.0	240.0	0.60	320.0	0.80	400.0	1.00	1.20		
		4 1/2	105-518	35.2	239.4	0.68	316.8	0.90	397.8	1.13	1.35		
		5	105-520	31.2	234.0	0.75	312.0	1.00	390.0	1.25	1.50		
		5 1/2	105-522	28.8	239.0	0.83	316.8	1.10	397.4	1.38	1.65		
1 1/4	5/8	6	105-524	25.6	230.4	0.90	307.2	1.20	384.0	1.50	1.80		
		7	105-528	22.4	235.2	1.05	313.6	1.40	392.0	1.75	2.10		
		8	105-532	19.2	230.4	1.20	307.2	1.60	384.0	2.00	2.40		
		12	105-548	12.8	230.4	1.80	307.2	2.40	384.0	3.00	3.60		
		1 1/2	105-606	220.0	506.0	0.23	660.0	0.30	836.0	0.38	0.45		
		1 3/4	105-607	181.6	472.2	0.26	635.6	0.35	799.0	0.44	0.53		
		2	105-608	149.6	448.8	0.30	598.4	0.40	748.0	0.50	0.57		
		2 1/2	105-610	117.6	446.9	0.38	588.0	0.50	740.9	0.63	0.75		
		3	105-612	95.2	428.4	0.45	571.2	0.60	714.0	0.75	0.90		
		3 1/2	105-614	78.0	413.4	0.53	546.0	0.70	686.4	0.88	1.05		
		4	105-616	66.4	398.4	0.60	531.2	0.80	664.0	1.00	1.20		
		4 1/2	105-618	58.4	397.1	0.68	525.6	0.90	659.9	1.13	1.35		
1 1/2	3/4	5	105-620	53.0	397.5	0.75	530.0	1.00	662.5	1.25	1.50		
		5 1/2	105-622	47.2	391.8	0.83	519.2	1.10	651.4	1.38	1.65		
		6	105-624	45.0	405.0	0.90	540.0	1.20	675.0	1.50	1.80		
		7	105-628	36.8	386.4	1.05	515.2	1.40	644.0	1.75	2.10		
		8	105-632	32.8	393.6	1.20	524.8	1.60	656.0	2.00	2.40		
		10	105-640	25.6	384.0	1.50	512.0	2.00	640.0	2.50	3.00		
		12	105-648	22.0	396.0	1.80	528.0	2.40	660.0	3.00	3.60		
		1 1/2	3/4	2	105-708	198.0	594.0	0.30	792.0	0.40	990.0	0.50	0.60
				2 1/2	105-710	155.0	589.0	0.38	775.0	0.50	976.5	0.63	0.75
				3	105-712	130.0	585.0	0.45	780.0	0.60	975.0	0.75	0.90
				3 1/2	105-714	106.4	563.9	0.53	744.8	0.70	936.3	0.88	1.05
				4	105-716	91.2	547.2	0.60	729.6	0.80	912.0	1.00	1.20
4 1/2	105-718			81.6	554.9	0.68	734.4	0.90	922.1	1.13	1.35		
5	105-720			73.0	547.5	0.75	730.0	1.00	912.5	1.25	1.50		
5 1/2	105-722			67.0	556.1	0.83	737.0	1.10	924.6	1.38	1.65		
6	105-724			58.4	525.6	0.90	700.8	1.20	876.0	1.50	1.80		
7	105-728			49.6	520.8	1.05	694.4	1.40	868.0	1.75	2.10		
8	105-732			43.2	518.4	1.20	691.2	1.60	864.0	2.00	2.40		
2	1			10	105-740	36.2	543.0	1.50	724.0	2.00	905.0	2.50	3.00
		12	105-748	30.0	540.0	1.80	720.0	2.40	900.0	3.00	3.60		
		2 1/2	105-810	251.2	954.6	0.38	1256.0	0.50	1582.6	0.63	0.75		
		3	105-812	206.0	927.0	0.45	1236.0	0.60	1545.0	0.75	0.90		
		3 1/2	105-814	170.0	901.0	0.53	1190.0	0.70	1496.0	0.88	1.05		
		4	105-816	150.0	900.0	0.60	1200.0	0.80	1500.0	1.00	1.20		
		4 1/2	105-818	127.2	865.0	0.68	1144.8	0.90	1437.4	1.13	1.35		
		5	105-820	118.6	889.5	0.75	1186.0	1.00	1482.5	1.25	1.50		
		5 1/2	105-822	107.7	893.9	0.83	1184.7	1.10	1486.3	1.38	1.65		
		6	105-824	97.7	879.3	0.90	1172.4	1.20	1465.5	1.50	1.80		
		7	105-828	82.0	861.0	1.05	1148.0	1.40	1435.0	1.75	2.10		
		8	105-832	73.0	876.0	1.20	1168.0	1.60	1460.0	2.00	2.40		
2	1	10	105-840	57.2	858.0	1.50	1144.0	2.00	1430.0	2.50	3.00		
		12	105-848	47.7	858.6	1.80	1144.8	2.40	1431.0	3.00	3.60		

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