



高品质弹簧制造专家



大连泰维精密模具股份有限公司
Dalian TopWay Precise Mould & Die Co., Ltd.

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耐久试验条件:

- ① 弹簧导杆方式
导向轴直径: $d-1.0\text{mm}$
- ② 初始压缩量
1.5mm
- ③ 振幅
30%及条件辅助压缩量
- ④ 速度
100rpm
※耐久次数时回使用状况后。

图1 导向轴沉头孔的选择

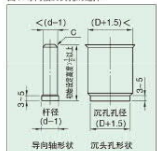


图2 负载图

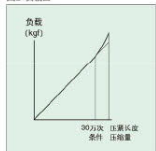


图3 异物混入の場合

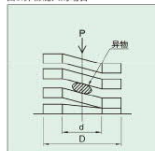


图4 安装面平行度差の場合



图5 弹簧串联使用の場合1



图6 弹簧串联使用の場合2

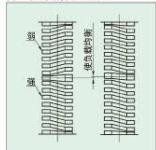


图7 弹簧套用使用の場合



使用方法与注意事项:

泰捷 (TopWay Spring) 不断的改善矩形弹簧的截面尺寸与设计参数,以提高矩形弹簧的耐久性,为了您能更放心的使用,避免使用不当造成的麻烦,请充分注意以下事项。

1. 无弹簧导向轴的使用

在没有弹簧的导向销时,弹簧极易发生弯曲及变形,最终导致弹簧折损,并且对设备产生极大的损坏与损害。
*通常,采用内径全通导向是比较理想的。

2. 弹簧内径与导向轴的关系

建议弹簧内径比导向轴大1.0mm,间隙过大容易导致弹簧弯曲,间隙过小容易磨损弹簧内径,造成弹簧早起折损。

3. 弹簧外径与沉头孔的关系

建议弹簧外径比沉头孔小1.5mm,由于弹簧在压缩后外径会膨胀,间隙过小会导致弹簧受约束,导致弹簧早起折损。

4. 导向轴、沉头孔深度较小时

导向轴长度建议设定初始设定长度的1/2以上,如果导向轴过小,容易使弹簧在弯曲时碰撞导向轴前端,导致弹簧早起折损,建议导向轴前端进行C倒角。

5. 超过标准使用

超过标准使用寿命时,截面会产生超过安全范围的应力,不确定性的断裂经常产生,因此请按照目录标准使用次数使用,超过最大压缩量使用时,负载曲线急速升高,会产生超过安全范围的应力,极易产生早期折损及弹簧变形。

6. 无预压量使用

如果没有对弹簧进行预压而使用,弹簧容易上下运动而产生冲击力,从而使弹簧发生破损或者变形,请进行预压后再使用,预压量根据弹簧的自由长度确定,以保证弹簧能稳定的运行为宜。

7. 废料、异物状态下使用

请务必保证弹簧运行时,不混入废料、异物,混入了废料、异物不但减少了弹簧的运行空间,由于冲压惯性,极易使弹簧截面受异常剪切力,使弹簧早起折损。

8. 安装面平行度较差时使用

如果安装面平行度较差时,弹簧会产生倾斜,局部产生高应力,造成早起折损,请改善安装面的平行度。

9. 弹簧串联使用

由于是串联,由于每个弹簧的负载不同,会导致负载小的弹簧压缩量增加,导致弹簧变形,甚至折损。

10. 弹簧套用使用

弹簧套用使用,容易使内外两簧碰撞,导致碰撞、挤压,早起折损。

使用温度:

本目录中所示为弹簧在常温(25℃)下的使用寿命及最大压缩量,即使超出常温使用,按照正常的使用方法在80℃下,性能也不会出现大幅度下降,根据使用条件的不同,弹簧的耐久性将发生大幅度变化,耐久性降低将缩短弹簧的使用寿命,降低弹簧刚度,并使弹簧的自由长度减小。

※导致温度升高,耐久性降低的主要使用条件:

- 起始压缩量大,状态保持时间长
 - 使用速度(反复速度)快
 - 行程量大(起始压缩量与最大压缩量之差大)
- 属于以上情况时,请在低于本目录中所示的使用寿命下进行维护。

※弹簧的耐热温度低于线材的耐热温度(圆线120℃,矩形220℃)。

使用压缩量:

请务必在最大压缩量范围内使用,使用寿命因实际压缩量会有所不同,超出最大压缩量使用不仅会降低使用寿命或弹簧刚度,甚至会引起折损及损伤模具。




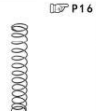





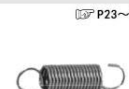





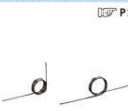
另外,压并长度为标准值,请避免在压并长度附近使用,必要时,请重新设定载荷或自由长度。

在压并状态使用时,自由长度或弹簧刚度将会降低,使用寿命也将缩短。

冲压模具在卸料螺钉,浮料销,打料杆等处较多地使用到弹簧,设计者需要考虑这些弹簧的安装空间,载荷和使用寿命,并需从多达4000产品中进行选择。

○以安装空间为主导,选择最合适的载荷规格

○以设计载荷为主导,查找最适合于安装空间的规格

圆线压缩弹簧			
 P1~P14	 P1~P14	 P15	 P16
CW□	CNW□ (内径基准型)	CWP (加长型)	
材质: SWP-A	材质: SWP-A	材质: SWP-A	
 P17~P21	 P17~P21 请咨询	 P22	 P22
CU□ (外径基准型)	CVU□ (内径基准型)	CFW□ (外径基准 L尺寸指定型)	CFU□ (外径基准 L尺寸指定型)
材质: SUS304	材质: SUS304	材质: SWP-A	材质: SUS304
拉伸弹簧/扭簧			
 P23~P25	 P23~P25	 P23~P25	 P23~P25
CAW□	CBW□	CAU□	CBU□
材质: SWP-A	材质: SWP-A	材质: SUS304	材质: SUS304
 P26	 P26	 P26	 P27
CWFSP/CBWFSP (材质: SWP-A)	CAWFM (材质: SWP-A)	CLWS (材质: SWP-A)	CUA□□
CUFSP/CBUFSP (材质: SUS304)	CAUFM (材质: SUS304)	CLUS (材质: SUS304)	材质: SUS304

矩形弹簧 JIS B5012标准				
 P28	 P29~30	 P31~32	 P33~34	
CSWY	CSWU	CSWR	CSWS	
超高压缩量	超压缩量	高压缩量	中压缩量	
 P35~36	 P37~38	 P39~40	 P41~42	
CSWC	CSWF	CSWL	CSWM	
极轻小载荷	轻小载荷	轻载荷	中载荷	
 P43~44	 P45~46	 P47~48	 P49	
CSWH	CSWB	CSWG	CSWX	
重载荷	超重载荷	极重载荷	极重载荷高速用	
矩形弹簧 ISO 10243标准				
 P50	 P51~52	 P53~54	 P55~56	 P57~58
CIF	CIL	CIM	CIH	CIB
极轻小载荷	轻载荷	中载荷	重载荷	超重载荷

美标弹簧 NAAMS标准			
 P59~P62	 P63~P66	 P67~P70	 P71~P74
CMB 轻负荷用	CMR 中负荷用	CMG 重负荷用	CML 超重负荷用

短形彈簧 - 輕負荷用 - CMB NAAMS 标准 - 英制尺寸

DIE SPRINGS-MEDIUM DUTY SPRINGS-CMB NAAMS STANDARD- INCH DIMENSIONS



材料 Material	顏色 Colour	Code
適合特殊鋼 Special alloy	藍 Blue	CMB

自由長 Lo	公差 Tolerances
25-64	±0.1%
76-114	±2.5%
127-305	±2%



MEDIUM DUTY DIE SPRINGS

INCH DIMENSIONS

BLUE

Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	LOAD DEFLECTION TABLE								
				For Optimum Life (25% of free length)		Maximum Operating Def. (40% of free length)		*Maximum Deflection (50% of free length)				
				Load (lb)	Deflection (in)	Load (lb)	Deflection (in)					
3/8	3/16	1	CMB10-25	6.0	15.0	0.25	21.0	0.35	24.0	0.40	0.50	
		1 1/4	CMB10-32	5.4	16.9	0.31	23.6	0.44	27.0	0.50	0.63	
		1 1/2	CMB10-38	4.0	15.0	0.38	21.0	0.53	24.0	0.60	0.75	
		1 3/4	CMB10-44	3.4	14.9	0.44	20.8	0.61	23.8	0.70	0.88	
		2	CMB10-51	2.8	14.0	0.50	19.6	0.70	22.4	0.80	1.00	
		2 1/2	CMB10-64	2.4	15.0	0.63	21.0	0.88	24.0	1.00	1.25	
	1/2	9/32	3	CMB10-76	2.1	15.8	0.75	22.0	1.05	25.2	1.20	1.50
			12	CMB10-305	0.6	18.0	3.00	25.2	4.20	28.8	4.80	6.00
			1	CMB13-25	11.0	27.5	0.25	38.5	0.35	44.0	0.40	0.50
			1 1/4	CMB13-32	8.2	25.6	0.31	35.9	0.44	41.0	0.50	0.63
			1 1/2	CMB13-38	6.8	25.5	0.38	35.7	0.53	40.8	0.60	0.75
			1 3/4	CMB13-44	6.0	26.3	0.44	36.8	0.61	42.0	0.70	0.88
5/8	11/32	2	CMB13-51	5.5	27.5	0.50	38.5	0.70	44.0	0.80	1.00	
		2 1/2	CMB13-64	4.5	28.1	0.63	39.4	0.88	45.0	1.00	1.25	
		3	CMB13-76	3.5	26.3	0.75	36.8	1.05	42.0	1.20	1.50	
		3 1/2	CMB13-89	3.0	26.3	0.88	36.8	1.23	42.0	1.40	1.75	
		4	CMB13-114	2.5	28.1	1.13	39.4	1.58	45.0	1.80	2.25	
		5 1/2	CMB13-140	2.1	28.9	1.38	40.2	1.93	46.2	2.20	2.75	
	3/4	3/8	6 1/2	CMB13-165	1.4	22.8	1.63	31.9	2.28	36.4	2.60	3.25
			7 1/2	CMB13-191	1.2	22.5	1.88	31.5	2.63	36.0	3.00	3.75
			12	CMB13-305	0.7	21.0	3.00	29.4	4.20	33.6	4.80	6.00
			1	CMB16-25	12.6	41.0	0.25	57.4	0.35	64.0	0.40	0.50
			1 1/4	CMB16-32	12.8	40.0	0.31	56.0	0.44	64.0	0.50	0.63
			1 1/2	CMB16-38	10.8	40.5	0.38	56.7	0.53	64.8	0.60	0.75
3/4	11/32	1 3/4	CMB16-44	9.6	42.0	0.44	58.8	0.61	67.2	0.70	0.88	
		2	CMB16-51	8.8	44.0	0.50	61.6	0.70	70.4	0.80	1.00	
		2 1/2	CMB16-64	6.0	37.5	0.63	52.5	0.88	60.0	1.00	1.25	
		3	CMB16-76	5.6	42.0	0.75	58.8	1.05	67.2	1.20	1.50	
		3 1/2	CMB16-89	4.8	42.0	0.88	58.8	1.23	67.2	1.40	1.75	
		4	CMB16-102	4.4	44.0	1.00	61.6	1.40	70.4	1.60	2.00	
	1/2	3/8	12	CMB16-305	1.6	48.0	3.00	67.2	4.20	76.8	4.80	6.00
			1	CMB19-25	31.2	78.0	0.25	109.2	0.35	124.8	0.40	0.50
			1 1/4	CMB19-32	25.6	80.0	0.31	112.0	0.44	128.0	0.50	0.63
			1 1/2	CMB19-38	20.8	75.0	0.38	106.0	0.50	120.0	0.60	0.75
			1 3/4	CMB19-44	17.6	77.0	0.44	107.8	0.61	123.2	0.70	0.88
			2	CMB19-51	14.4	72.0	0.50	100.8	0.70	115.2	0.80	1.00
3/4	3/8	2 1/2	CMB19-64	12.0	75.0	0.63	105.0	0.88	120.0	1.00	1.25	
		3	CMB19-76	9.6	72.0	0.75	100.8	1.05	115.2	1.20	1.50	
		3 1/2	CMB19-89	8.0	70.0	0.88	98.0	1.23	112.0	1.40	1.75	
		4	CMB19-102	7.2	72.0	1.00	100.8	1.40	115.2	1.60	2.00	
		4 1/2	CMB19-115	6.4	72.0	1.13	100.8	1.58	115.2	1.80	2.25	
		5 1/2	CMB19-127	6.0	75.0	1.25	105.0	1.75	120.0	2.00	2.50	
	1/2	3/8	6	CMB19-140	5.5	75.6	1.38	105.9	1.93	121.0	2.20	2.75
			6 1/2	CMB19-152	5.0	75.0	1.50	105.0	2.10	120.0	2.40	3.00
			6 1/2	CMB19-165	4.5	73.1	1.63	102.4	2.28	117.0	2.60	3.25
			7 1/2	CMB19-191	3.8	71.3	1.88	99.8	2.63	114.0	3.00	3.75
			12	CMB19-305	2.4	72.0	3.00	100.8	4.20	115.2	4.80	6.00

MEDIUM DUTY DIE SPRINGS

INCH DIMENSIONS

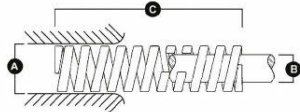
Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/16 in. Def. (lb)	LOAD DEFLECTION TABLE							
					For Optimum Life (25% of free length)		Maximum Operating Def. (40% of free length)		*Maximum Deflection (50% of free length)			
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)				
1	1/2	1	CMB25-25	55.0	137.5	0.25	192.5	0.35	220.0	0.40	0.50	
		1 1/4	CMB25-32	45.0	140.8	0.31	196.9	0.44	225.0	0.50	0.63	
		1 1/2	CMB25-38	35.0	131.3	0.38	183.8	0.53	210.0	0.60	0.75	
		1 3/4	CMB25-44	30.0	131.3	0.44	183.8	0.61	210.0	0.70	0.88	
		2	CMB25-51	26.0	130.0	0.50	180.0	0.70	208.0	0.80	1.00	
		2 1/2	CMB25-64	20.0	125.0	0.63	175.0	0.88	200.0	1.00	1.25	
	1 1/4	5/8	3	CMB25-76	16.5	123.8	0.75	173.3	1.05	198.0	1.20	1.50
			3 1/2	CMB25-89	15.0	131.3	0.88	183.8	1.23	210.0	1.40	1.75
			4	CMB25-102	12.0	120.0	1.00	168.0	1.40	192.0	1.60	2.00
			4 1/2	CMB25-115	10.4	120.0	1.13	168.0	1.58	187.2	1.80	2.25
			5	CMB25-127	9.6	120.0	1.25	168.0	1.75	192.0	2.00	2.50
			5 1/2	CMB25-140	8.8	121.0	1.38	169.4	1.93	193.6	2.20	2.75
1 1/4	3/4	6	CMB25-152	8.0	120.0	1.50	168.0	2.10	192.0	2.40	3.00	
		7	CMB25-178	7.2	126.0	1.75	176.4	2.45	201.6	2.80	3.50	
		8	CMB25-203	6.0	120.0	2.00	168.0	2.80	192.0	3.20	4.00	
		12	CMB25-305	4.0	120.0	3.00	168.0	4.20	192.0	4.80	6.00	
		1 1/2	CMB32-38	49.6	186.0	0.38	260.4	0.53	297.6	0.60	0.75	
		1 3/4	CMB32-44	42.4	185.5	0.44	259.7	0.61	296.8	0.70	0.88	
	1 1/2	5/8	2	CMB32-51	35.2	176.0	0.50	246.4	0.70	281.6	0.80	1.00
			2 1/2	CMB32-64	28.8	180.0	0.63	252.0	0.88	288.0	1.00	1.25
			3	CMB32-76	24.0	180.0	0.75	252.0	1.05	288.0	1.20	1.50
			3 1/2	CMB32-89	20.0	175.0	0.88	245.0	1.23	280.0	1.40	1.75
			4	CMB32-102	17.6	176.0	1.00	246.4	1.40	281.6	1.60	2.00
			4 1/2	CMB32-115	16.0	180.0	1.13	250.0	1.58	288.0	1.80	2.25
1 1/2	3/4	5	CMB32-127	13.6	170.0	1.25	238.0	1.75	272.0	2.00	2.50	
		5 1/2	CMB32-140	12.8	176.0	1.38	246.4	1.93	281.6	2.20	2.75	
		6	CMB32-152	12.0	180.0	1.50	252.0	2.10	288.0	2.40	3.00	
		7	CMB32-178	10.4	182.0	1.75	264.8	2.45	291.2	2.80	3.50	
		8	CMB25-203	8.8	176.0	2.00	246.4	2.80	281.6	3.20	4.00	
		10	CMB25-254	7.2	180.0	2.50	252.0	3.50	288.0	4.00	5.00	
	1 1/2	3/4	12	CMB25-305	6.0	180.0	3.00	252.0	4.20	288.0	4.80	6.00
			1	CMB38-31	53.0	205.0	0.30	371.0	0.70	424.0	0.80	1.00
			2 1/2	CMB38-64	45.0	213.3	0.63	393.8	0.88	450.0	1.00	1.25
			3	CMB38-76	36.0	270.0	0.75	378.0	1.05	432.0	1.20	1.50
			3 1/2	CMB38-89	30.0	262.5	0.88	367.5	1.23	420.0	1.40	1.75
			4	CMB38-102	27.0	260.0	1.00	378.0	1.40	420.0	1.60	2.00
2	1	4 1/2	CMB38-115	23.0	258.8	1.13	362.5	1.58	414.0	1.80	2.25	
		5	CMB38-127	21.0	262.5	1.25	367.5	1.75	420.0	2.00	2.50	
		5 1/2	CMB38-140	18.5	254.4	1.38	356.1	1.93	407.0	2.20	2.75	
		6	CMB38-152	16.5	255.0	1.50	357.0	2.10	408.0	2.40	3.00	
		7	CMB38-178	14.5	236.8	1.75	353.3	2.45	406.0	2.80	3.50	
		8	CMB38-203	12.8	256.0	2.00	358.4	2.80	406.0	3.20	4.00	
	1 1/2	3/4	10	CMB38-254	10.0	250.0	2.50	350.0	3.50	400.0	4.00	5.00
			12	CMB38-305	6.0	240.0	3.00	336.0	4.20	384.0	4.80	6.00
			2 1/2	CMB51-64	100.0	625.0	0.63	875.0	0.88	1000.0	1.00	1.25
			3	CMB51-76	63.0	622.5	0.75	871.5	1.05	986.0	1.20	1.50
			3 1/2	CMB51-89	64.8	597.0	0.88	793.8	1.23	907.2	1.40	1.75
			4 1/2	CMB51-102	60.0	600.0	1.00	840.0	1.40	960.0	1.60	2.00
1 1/2	3/8	5	CMB51-115	53.0	596.3	1.13	834.8	1.58	944.0	1.80	2.25	
		5 1/2	CMB51-127	47.0	597.5	1.25	825.2	1.75	940.0	2.00	2.50	
		6	CMB51-140									

矩形弹簧 - 轻负荷 - CMB NAAMS标准 - 公制尺寸

DIE SPRINGS-MEDIUM DUTY-SRINGS-CMB NAAMS STANDARD-METRIC DIMENSIONS



材料 Material	颜色 Colour	Code
特殊合金材料 Special alloy	蓝色 Blue	CMB
自由长 Lo	公差 Tolerances	
25-64	+9%	
76-114	±2.5%	
127-305	±2%	



MEDIUM DUTY DIE SPRINGS			METRIC DIMENSIONS					BLUE				
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	LOAD DEFLECTION TABLE								
				Load at 1mm Def. (N)	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)				
9.53	4.76	25.40	CMB10-25	10.5	67	6.4	93	8.9	107	10.2	12.7	
		31.75	CMB10-32	9.5	75	7.9	105	11.1	120	12.7	15.9	
		38.10	CMB10-38	7.0	67	9.5	93	13.3	107	15.2	19.1	
		44.45	CMB10-44	6.0	66	11.1	93	15.6	106	17.8	22.2	
		50.80	CMB10-51	4.9	62	12.7	87	17.8	100	20.3	25.4	
		57.15	CMB10-58	4.2	67	15.9	93	22.2	107	25.4	31.8	
	12.70	7.14	76.20	CMB10-76	3.7	70	19.1	98	26.7	112	30.5	38.1
			304.80	CMB10-305	1.1	80	76.2	112	106.7	128	121.9	152.4
			25.40	CMB13-25	19.3	122	6.4	171	8.9	196	10.2	12.7
			31.75	CMB13-32	14.4	114	7.9	160	11.1	182	12.7	15.9
			38.10	CMB13-38	11.9	113	9.5	159	13.3	181	15.2	19.1
			44.45	CMB13-44	10.5	117	11.1	163	15.6	187	17.8	22.2
15.88	8.73	50.80	CMB13-51	9.5	122	12.7	171	17.8	196	20.3	25.4	
		57.15	CMB13-64	7.9	125	15.9	175	22.2	200	25.4	31.8	
		76.20	CMB13-76	6.1	117	19.1	163	26.7	187	30.5	38.1	
		89.90	CMB13-89	5.3	117	22.2	163	31.1	187	35.6	44.5	
		114.30	CMB13-114	4.4	125	23.8	175	40.0	200	45.7	57.2	
		139.70	CMB13-140	3.7	128	24.9	180	43.9	205	55.9	69.9	
	19.05	8.73	165.10	CMB13-165	2.5	101	41.3	142	57.8	162	66.0	82.6
			190.50	CMB13-191	2.1	100	47.6	140	66.7	160	76.2	95.3
			304.80	CMB13-305	1.2	93	76.2	131	106.7	149	121.9	152.4
			25.40	CMB16-25	16.2	84	26.2	114	33.2	132	38.1	47.6
			31.75	CMB16-32	22.4	178	7.9	249	11.1	285	12.7	15.9
			38.10	CMB16-38	18.0	180	9.5	252	13.3	288	15.2	19.1
25.40	9.53	44.45	CMB16-44	16.5	187	11.1	262	15.6	299	17.8	22.2	
		50.80	CMB16-51	16.5	186	12.7	264	17.8	311	20.3	25.4	
		63.50	CMB16-64	10.5	167	15.9	234	22.2	267	25.4	31.8	
		76.20	CMB16-76	9.8	187	19.1	262	26.7	299	30.5	38.1	
		89.90	CMB16-89	8.4	187	22.2	262	31.1	299	35.6	44.5	
		101.60	CMB16-102	7.7	196	25.4	274	35.6	313	40.6	50.8	
	304.80	25.40	304.80	CMB16-305	2.8	214	76.2	299	106.7	342	121.9	152.4
			25.40	CMB19-25	54.6	347	6.4	486	8.9	555	10.2	12.7
			31.75	CMB19-32	44.8	356	7.9	496	11.1	569	12.7	15.9
			38.10	CMB19-38	35.0	334	9.5	334	13.3	467	15.2	19.1
			44.45	CMB19-44	30.8	342	11.1	479	15.6	548	17.8	22.2
			50.80	CMB19-51	25.2	320	12.7	448	17.8	512	20.3	25.4
304.80	9.53	63.50	CMB19-64	21.0	334	15.9	467	22.2	534	25.4	31.8	
		76.20	CMB19-76	16.8	320	19.1	448	26.7	512	30.5	38.1	
		89.90	CMB19-89	14.0	311	21.1	498	32.6	542	44.5	55.9	
		101.60	CMB19-102	12.6	320	25.4	448	35.6	512	40.6	50.8	
		114.30	CMB19-115	11.2	320	28.6	448	40.0	512	45.7	57.2	
		127.00	CMB19-127	10.5	334	31.8	467	44.5	534	50.8	63.5	
	50.80	25.40	139.70	CMB19-140	9.5	336	34.9	471	48.9	538	58.9	76.2
			152.40	CMB19-152	8.8	334	38.1	467	53.3	534	61.0	76.2
			165.10	CMB19-165	7.9	325	41.3	455	57.8	520	66.0	82.6
			190.50	CMB19-191	6.7	317	47.6	444	66.7	507	76.2	95.3
			304.80	CMB19-305	4.2	320	76.2	448	106.7	512	121.9	152.4

MEDIUM DUTY DIE SPRINGS			METRIC DIMENSIONS					BLUE				
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1mm Def. (N)	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)				
25.40	12.70	25.40	CMB25-25	96.3	612	6.4	856	8.9	979	10.2	12.7	
		31.75	CMB25-32	76.8	806	7.9	878	11.1	1001	12.7	15.9	
		38.10	CMB25-38	61.3	584	9.5	817	13.3	934	15.2	19.1	
		44.45	CMB25-44	52.5	584	11.1	817	15.6	934	17.8	22.2	
		50.80	CMB25-51	45.5	578	12.7	810	17.8	925	20.3	25.4	
		57.15	CMB25-58	35.6	556	15.9	778	22.2	898	25.4	31.8	
	31.75	15.88	76.20	CMB25-76	28.9	550	19.1	771	26.7	881	30.5	38.1
			89.90	CMB25-89	26.3	584	22.2	817	31.1	934	35.6	44.5
			101.60	CMB25-102	21.0	534	25.4	747	35.6	854	40.6	50.8
			114.30	CMB25-115	18.2	520	28.6	729	40.0	833	45.7	57.2
			127.00	CMB25-127	16.8	534	31.8	747	44.5	854	50.8	63.5
			139.70	CMB25-140	15.4	538	34.9	753	48.9	861	55.9	69.9
38.10	19.05	152.40	CMB25-152	14.0	534	38.1	747	53.3	854	61.0	76.2	
		177.80	CMB25-178	12.6	560	44.5	785	62.2	897	71.1	89.9	
		203.20	CMB25-203	10.5	534	50.8	747	71.1	854	81.3	101.6	
		304.80	CMB25-305	7.0	534	76.2	747	106.7	854	121.9	152.4	
		38.10	CMB32-38	86.9	827	9.5	1158	13.3	1324	15.2	19.1	
		44.45	CMB32-44	74.3	825	11.1	1155	15.6	1320	17.8	22.2	
	44.45	25.40	30.80	CMB32-51	61.6	783	12.7	1096	17.8	1253	20.3	25.4
			63.50	CMB32-64	50.4	801	15.9	1121	22.2	1281	25.4	31.8
			76.20	CMB32-76	42.0	801	19.1	1121	26.7	1281	30.5	38.1
			89.90	CMB32-89	35.0	778	22.2	1090	31.1	1245	35.6	44.5
			114.30	CMB32-115	28.0	801	28.6	1121	40.0	1281	45.7	57.2
			127.00	CMB32-127	23.8	756	31.8	1059	44.5	1210	50.8	63.5
50.80	25.40	139.70	CMB32-140	22.4	783	34.9	1096	48.9	1253	55.9	69.9	
		152.40	CMB32-152	21.0	801	38.1	1121	53.3	1281	61.0	76.2	
		177.80	CMB25-178	18.2	810	44.5	1133	62.2	1295	71.1	89.9	
		203.20	CMB25-203	15.4	783	50.8	1096	71.1	1253	81.3	101.6	
		254.00	CMB25-254	12.6	801	63.5	1121	88.9	1281	101.6	127.0	
		304.80	CMB25-305	10.5	801	76.2	1121	106.7	1281	121.9	152.4	
	57.15	31.75	50.80	CMB38-51	92.8	1179	12.7	1650	11.8	1886	20.3	25.4
			63.50	CMB38-64	78.8	1251	15.9	1751	22.2	2002	25.4	31.8
			76.20	CMB38-76	63.0	1201	19.1	1681	26.7	1922	30.5	38.1
			89.90	CMB38-89	52.5	1168	22.2	1635	31.1	1868	35.6	44.5
			101.60	CMB38-102	44.5	1161	25.4	1681	35.6	1922	40.6	50.8
			114.30	CMB38-115	40.3	1151	28.6	1611	40.0	1841	45.7	57.2
57.15	38.10	127.00	CMB38-127	36.8	1168	31.8	1635	44.5	1868	50.8	63.5	
		139.70	CMB38-140	32.4	1131	34.9	1584	48.9	1810	55.9	69.9	
		152.40	CMB38-152	28.0	1134	38.1	1581	53.3	1810	61.0	76.2	
		177.80	CMB38-178	25.4	1129	44.5	1500	62.2	1600	71.1	89.9	
		203.20	CMB38-203	22.4	1139	50.8	1594	71.1	1822	81.3	101.6	
		254.00	CMB38-254	17.5	1112	63.5	1557	88.9	1779	101.6	127.0	
	57.15	38.10	304.80	CMB38-305	16.8	1068	76.2	1481	106.7	1708	121.9	152.4
			63.50	CMB51-64	175.1	2780	15.9	3892	22.2	4448	25.4	31.8
			76.20	CMB51-76	145.3	2769	19.1	3876	26.7	4430	30.5	38.1
			89.90	CMB51-89	113.5	2522	22.2	3531	31.1	4035	35.6	44.5
			101.60	CMB51-102	105.6	2669	25.4	3736	35.6	4270	40.6	50.8
			114.30	CMB51-115	92.8	2652	28.6	3713	40.0	4243	45.7	57.2
57.15	44.45	127.00	CMB51-127	82.3	2613	31.8	3658	44.5	4181	50.8	63.5	
		139.70	CMB51-140	68.6	2397	34.9	3356	48.9	3836	55.9	69.9	
		152.40	CMB51-152	66.3	2602	38.1	3563	53.3	4163	61.0	76.2	
		177.80	CMB51-178	54.6	2429	44.5	3400	62.2	3886	71.1	89.9	
		203.20	CMB51-203	48.9	2355	50.8	3550	71.1	4057	81.3	101.6	

短形彈簧 - 中負荷用 - CMR NAAMS標準 - 英制尺寸

DIE SPRINGS-MEDIUM HEAVY DUTY SPRINGS-CMR NAAMS STANDARD-INCH DIMENSIONS



材料 Material	顏色 Colour	代號 Code
特殊合金彈簧鋼 Special alloy	紅 Red	CMR

自由長 Lo	公差 Tolerances
5% - 64	+0.5%
76-114	±2.5%
127-305	±2%

MEDIUM HEAVY DUTY DIE SPRINGS INCH DIMENSIONS RED

Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 170 lb. Def. (25% of free length)	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)		
A	B	C										
3/8	3/16	1	CMR10-25	9.0	18.0	0.20	22.5	0.25	27.0	0.30	0.37	
		1 1/4	CMR10-32	7.3	18.3	0.25	22.8	0.31	27.4	0.38	0.46	
		1 1/2	CMR10-38	6.7	20.1	0.30	25.1	0.38	30.2	0.45	0.56	
		1 3/4	CMR10-44	5.8	20.3	0.35	25.4	0.44	30.5	0.53	0.65	
		2	CMR10-51	5.0	20.0	0.40	25.0	0.50	30.0	0.60	0.74	
		2 1/2	CMR10-64	4.2	21.0	0.50	26.3	0.63	31.5	0.75	0.93	
	1/2	9/32	3	CMR10-76	3.0	18.0	0.60	22.5	0.75	27.0	0.90	1.11
			3 1/2	CMR10-89	0.9	21.6	2.40	27.0	3.00	32.4	3.60	4.44
			4	CMR13-25	16.8	33.6	0.20	42.0	0.25	50.4	0.30	0.37
			1 1/4	CMR13-32	13.0	32.5	0.25	40.6	0.31	48.8	0.38	0.46
			1 1/2	CMR13-38	9.5	28.5	0.30	35.6	0.38	42.8	0.45	0.56
			1 3/4	CMR13-44	8.5	29.8	0.35	37.2	0.44	44.6	0.53	0.65
5/8	11/32	2	CMR13-51	7.5	30.0	0.40	37.5	0.50	45.0	0.60	0.74	
		2 1/2	CMR13-64	6.0	30.0	0.50	37.5	0.63	45.0	0.75	0.93	
		3	CMR13-76	5.7	34.2	0.60	42.8	0.75	51.3	0.90	1.11	
		3 1/2	CMR13-89	4.0	28.0	0.70	35.0	0.88	42.0	1.05	1.30	
		4	CMR13-102	1.2	28.8	2.40	36.0	3.00	43.2	3.60	4.44	
		1 1/4	CMR16-25	30.0	60.0	0.25	75.0	0.25	90.0	0.30	0.37	
	3/4	3/8	1 1/4	CMR16-32	21.5	53.8	0.25	67.2	0.31	80.6	0.38	0.46
			1 1/2	CMR16-38	19.0	57.0	0.30	71.3	0.38	85.5	0.45	0.56
			1 3/4	CMR16-44	16.8	58.8	0.35	73.5	0.44	88.2	0.53	0.65
			2	CMR16-51	14.8	55.2	0.40	74.0	0.50	88.8	0.60	0.74
			2 1/2	CMR16-64	11.5	57.5	0.50	71.9	0.63	86.3	0.75	0.93
			3	CMR16-76	10.0	60.0	0.60	75.0	0.75	90.0	0.90	1.11
1	3/4	3 1/2	CMR16-89	9.5	59.5	0.70	74.4	0.88	89.3	1.05	1.30	
		4	CMR16-102	7.6	66.8	0.80	76.0	1.00	91.2	1.20	1.48	
		4 1/2	CMR16-305	2.7	64.8	2.40	81.0	3.00	97.2	3.60	4.44	
		5	CMR19-25	50.0	100.0	0.20	125.0	0.25	150.0	0.30	0.37	
		1 1/4	CMR19-32	38.0	95.0	0.30	118.8	0.31	142.5	0.38	0.46	
		1 1/2	CMR19-38	32.0	96.0	0.30	120.0	0.38	144.0	0.45	0.56	
	1 1/2	3/8	1 3/4	CMR19-44	28.8	108.0	0.35	126.0	0.44	151.2	0.53	0.65
			2	CMR19-51	24.8	99.2	0.40	124.0	0.50	148.8	0.60	0.74
			2 1/2	CMR19-64	19.2	96.0	0.50	120.0	0.63	144.0	0.75	0.93
			3	CMR19-76	14.4	86.4	0.60	108.0	0.75	129.6	0.90	1.11
			3 1/2	CMR19-89	12.8	89.6	0.70	112.0	0.88	134.4	1.05	1.30
			4	CMR19-102	12.0	96.0	0.80	120.0	1.00	144.0	1.20	1.48
1 3/4	3/8	4 1/2	CMR19-115	11.2	100.8	0.90	126.0	1.13	151.2	1.35	1.67	
		5	CMR19-127	9.0	90.0	1.00	112.5	1.25	135.0	1.50	1.88	
		5 1/2	CMR19-140	8.0	88.0	1.10	110.0	1.38	132.0	1.65	2.04	
		6	CMR19-152	7.5	90.0	1.20	112.5	1.50	135.0	1.80	2.22	
		6 1/2	CMR19-305	3.6	86.4	2.40	108.0	3.00	129.6	3.60	4.44	

MEDIUM HEAVY DUTY DIE SPRINGS INCH DIMENSIONS RED

Hole Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 170 lb. Def. (25% of free length)	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)		
A	B	C										
1	1/2	1	CMR25-25	76.0	152.0	0.20	190.0	0.25	228.0	0.30	0.37	
		1 1/4	CMR25-32	62.4	156.0	0.25	195.0	0.31	234.0	0.38	0.46	
		1 1/2	CMR25-38	49.6	148.8	0.30	186.0	0.38	223.2	0.45	0.56	
		1 3/4	CMR25-44	44.0	154.0	0.35	192.5	0.44	231.0	0.53	0.65	
		2	CMR25-51	40.0	160.0	0.40	200.0	0.50	240.0	0.60	0.74	
		2 1/2	CMR25-64	31.2	168.0	0.50	193.8	0.63	232.5	0.75	0.93	
	1 1/4	5/8	3	CMR25-76	25.0	150.0	0.60	187.5	0.75	225.0	0.90	1.11
			3 1/2	CMR25-89	21.6	151.2	0.70	189.0	0.88	226.8	1.05	1.30
			4	CMR25-102	18.4	147.2	0.80	184.0	1.00	220.8	1.20	1.48
			4 1/2	CMR25-115	17.0	151.5	0.90	191.3	1.13	229.5	1.35	1.67
			5	CMR25-127	14.4	144.0	1.00	180.0	1.25	216.0	1.50	1.88
			5 1/2	CMR25-140	12.8	140.8	1.10	176.0	1.38	211.2	1.65	2.04
1 1/2	3/4	6	CMR25-152	12.0	144.0	1.20	180.0	1.50	216.0	1.80	2.22	
		7	CMR25-178	10.0	140.0	1.40	175.0	1.75	210.0	2.10	2.58	
		8	CMR25-203	8.8	140.8	1.60	176.0	2.00	211.2	2.40	2.96	
		12	CMR25-305	6.2	148.8	2.40	186.0	3.00	223.2	3.60	4.44	
		1 1/2	CMR32-38	114.4	343.2	0.30	429.0	0.38	514.8	0.45	0.56	
		1 3/4	CMR32-44	100.8	352.8	0.35	441.0	0.44	529.2	0.53	0.65	
	1 3/4	5/8	2	CMR32-51	86.4	345.6	0.40	432.0	0.50	518.4	0.60	0.74
			2 1/2	CMR32-64	62.4	312.0	0.50	396.0	0.63	468.0	0.75	0.93
			3	CMR32-76	51.2	307.2	0.60	384.0	0.75	460.8	0.90	1.11
			3 1/2	CMR32-89	44.0	308.0	0.70	385.0	0.88	462.0	1.05	1.30
			4	CMR32-102	36.8	294.4	0.80	368.0	1.00	441.6	1.20	1.48
			4 1/2	CMR32-115	32.0	288.0	0.90	360.0	1.13	432.0	1.35	1.67
1 3/4	3/4	5	CMR32-127	29.0	290.0	1.00	362.5	1.25	435.0	1.50	1.85	
		5 1/2	CMR32-140	26.4	290.4	1.10	365.0	1.38	435.6	1.65	2.04	
		6	CMR32-152	25.0	300.0	1.20	375.0	1.50	450.0	1.80	2.22	
		7	CMR25-178	20.0	280.0	1.40	350.0	1.75	420.0	2.10	2.59	
		8	CMR25-203	18.4	294.4	1.60	368.0	2.00	441.6	2.40	2.96	
		10	CMR25-254	14.5	290.0	2.00	362.5	2.50	435.0	3.00	3.70	
	1 3/4	3/8	12	CMR38-305	12.4	271.6	2.40	372.0	3.00	446.4	3.60	4.44
			2	CMR38-51	108.0	636.0	0.40	540.0	0.50	648.0	0.60	0.74
			2 1/2	CMR38-64	85.6	428.0	0.50	536.0	0.63	642.0	0.75	0.93
			3	CMR38-76	62.4	374.4	0.60	468.0	0.75	561.6	0.90	1.11
			3 1/2	CMR38-89	52.8	369.6	0.70	462.0	0.88	554.4	1.05	1.30
			4	CMR38-102	48.0	384.0	0.80	480.0	1.00	576.0	1.20	1.48
1 3/4	3/4	4 1/2	CMR38-115	43.2	388.8	0.90	486.0	1.13	583.2	1.35	1.67	
		5	CMR38-127	36.8	368.0	1.00	460.0	1.25	552.0	1.50	1.85	
		5 1/2	CMR38-140	34.4	378.4	1.10	473.0	1.38	567.6	1.65	2.04	
		6	CMR38-152	30.0	360.0	1.20	456.0	1.50	540.0	1.80	2.22	
		7	CMR30-178	26.4	309.0	1.40	402.0	1.75	554.4	2.10	2.59	
		8	CMR38-203	22.0	352.0	1.60	440.0	2.00	528.0	2.40	2.96	
	1 3/4	3/8	10	CMR38-254	17.6	352.0	2.00	440.0	2.50	528.0	3.00	3.70
			12	CMR38-305	14.4	345.6	2.40	432.0	3.00	518.4	3.60	4.44
			2 1/2	CMR51-64	118.4	592.0	0.50	740.0	0.63	888.0	0.75	0.93
			3	CMR51-76	96.0	576.0	0.60	720.0	0.75	864.0	0.90	1.11
			3 1/2	CMR51-89	80.0	560.0	0.70	700.0	0.88	840.0	1.05	1.30
			4	CMR51-102	68.4	531.2	0.80	684.0	1.00	796.8	1.20	1.48
2	1	4 1/2	CMR51-115	60.0	540.0	0.90	675.0	1.13	810.0	1.35	1.67	
		5	CMR51-127	56.0	560.0	1.00	700.0	1.25	840.0	1.50	1.85	
		5 1/2	CMR51-140	50.4	554.4	1.10	693.0	1.38	831.6	1.65	2.04	
		6	CMR51-152	47.2	568.0	1.20	708.0	1.50	848.6	1.80	2.22	
		7	CMR51-178	40.0	560.0	1.40	700.0	1.75	840.0	2.10	2.59	
		8	CMR51-203	35.2	563.2	1.60	704.0	2.00	848.8	2.40	2.96	
	1 3/4	3/8	10	CMR51-254	26.0	520.0	2.00	650.0	2.50	780.0		

短形彈簧 - 中負荷用 - CMR NAAMS標準 - 公制尺寸

DIE SPRINGS-MEDIUM HEAVY DUTY SPRINGS-CMR NAAMS STANDARD-METRIC DIMENSIONS



材料 Material	顏色 Colour	代碼 Code
特殊合金彈簧鋼 Special alloy	紅 Red	CMR

自由長 Lo	公差 Tolerance
2% - 64	+0.5%
76-114	±2.5%
127-305	±2%



MEDIUM HEAVY DUTY DIE SPRINGS

METRIC DIMENSIONS

RED

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	LOAD DEFLECTION TABLE								
					For Optimum Life (20% of free length)		For Long Life (20% of free length)		Maximum Operating Def. (37% of free length)	*Maximum Deflection (37% of free length)			
					Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Load (N)	Deflection (mm)			
9.53	4.76	25.40	CMR10-25	15.8	80	5.1	100	6.4	120	7.6	9.4		
		31.75	CMR10-32	12.8	81	6.4	101	7.9	122	9.5	11.7		
		38.10	CMR10-38	11.7	89	7.6	112	9.5	134	11.4	14.1		
		44.45	CMR10-44	10.2	90	8.9	113	11.1	135	13.3	16.4		
		50.80	CMR10-51	8.8	89	10.2	111	12.7	133	15.2	18.8		
		63.50	CMR10-64	7.4	93	12.7	117	15.9	140	19.1	23.5		
		76.20	CMR10-76	5.3	80	15.2	100	19.1	120	22.9	28.2		
		304.80	CMR10-305	1.6	96	61.0	120	76.2	144	91.4	112.8		
		12.70	7.14	25.40	CMR13-25	23.4	149	5.1	167	6.4	224	7.6	9.4
				31.75	CMR13-32	22.8	145	6.4	181	7.9	217	9.5	11.7
				38.10	CMR13-38	16.6	127	7.6	158	9.5	190	11.4	14.1
				44.45	CMR13-44	14.9	132	8.9	165	11.1	198	13.3	16.4
50.80	CMR13-51			11	133	10.2	167	12.7	200	15.2	18.8		
63.50	CMR13-64			10.5	133	12.7	167	15.9	200	19.1	23.5		
76.20	CMR13-76			10.0	152	15.2	190	19.1	228	22.9	28.2		
88.90	CMR13-89			7.0	125	17.8	156	22.2	187	26.7	32.9		
304.80	CMR13-305			2.1	128	61.0	160	76.2	192	91.4	112.8		
25.40	CMR16-25			52.5	267	5.1	334	6.4	400	7.6	9.4		
31.75	CMR16-32			37.7	239	6.4	299	7.9	359	9.5	11.7		
38.10	CMR16-38			33.3	254	7.6	317	9.5	380	11.4	14.1		
44.45	CMR16-44	29.4	262	8.9	327	11.1	392	13.3	16.4				
50.80	CMR16-51	25.9	263	10.2	329	12.7	395	15.2	18.8				
63.50	CMR16-64	20.1	256	12.7	320	15.9	384	19.1	23.5				
76.20	CMR16-76	17.5	267	15.2	334	19.1	400	22.9	28.2				
88.90	CMR16-89	14.9	265	17.8	331	22.2	397	26.7	32.9				
101.60	CMR16-102	13.3	270	20.3	338	25.4	406	30.5	37.6				
304.80	CMR16-305	4.7	288	61.0	360	76.2	432	91.4	112.8				
25.40	CMR19-25	87.6	445	5.1	556	6.4	667	7.6	9.4				
31.75	CMR19-32	86.5	423	6.4	528	7.9	634	9.5	11.7				
38.10	CMR19-38	56.0	427	7.6	534	9.5	641	11.4	14.1				
44.45	CMR19-44	50.4	448	8.9	560	11.1	673	13.3	16.4				
50.80	CMR19-51	43.4	441	10.2	552	12.7	662	15.2	18.8				
63.50	CMR19-64	33.6	427	12.7	534	15.9	641	19.1	23.5				
76.20	CMR19-76	23.7	384	15.2	480	19.1	573	22.9	28.2				
88.90	CMR19-89	22.4	399	17.8	498	22.2	598	26.7	32.9				
101.60	CMR19-102	21.0	427	20.3	534	25.4	641	30.5	37.6				
114.30	CMR19-115	19.6	468	22.9	560	28.6	673	34.3	42.3				
127.00	CMR19-127	15.8	400	25.4	500	31.8	600	37.6	47.0				
139.70	CMR19-140	14.0	391	27.9	489	34.9	573	41.9	51.7				
152.40	CMR19-152	13.1	400	30.5	500	38.1	600	45.7	56.4				
304.80	CMR19-305	6.3	384	61.0	480	76.2	576	91.4	112.8				

MEDIUM HEAVY DUTY DIE SPRINGS

METRIC DIMENSIONS

RED

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	LOAD DEFLECTION TABLE								
					For Optimum Life (20% of free length)		For Long Life (20% of free length)		Maximum Operating Def. (37% of free length)	*Maximum Deflection (37% of free length)			
					Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Load (N)	Deflection (mm)			
25.40	12.70	25.40	CMR25-25	133.1	676	5.1	845	6.4	1014	7.6	9.4		
		31.75	CMR25-32	109.3	694	6.4	867	7.9	1041	9.5	11.7		
		38.10	CMR25-38	86.9	662	7.6	827	9.5	993	11.4	14.1		
		44.45	CMR25-44	77.1	685	8.9	866	11.1	1027	13.3	16.4		
		50.80	CMR25-51	70.0	712	10.2	890	12.7	1068	15.2	18.8		
		63.50	CMR25-64	54.3	689	12.7	862	15.9	1031	19.1	23.5		
		76.20	CMR25-76	43.8	667	15.2	834	19.1	1001	22.9	28.2		
		88.90	CMR25-89	37.8	673	17.8	841	22.2	1009	26.7	32.9		
		101.60	CMR25-102	32.2	655	20.3	818	25.4	982	30.5	37.6		
		114.30	CMR25-115	29.8	681	22.9	821	28.6	1001	34.3	42.3		
		127.00	CMR25-127	25.4	641	25.4	801	31.8	961	38.1	47.0		
		139.70	CMR25-140	22.4	626	27.9	783	34.9	939	41.9	51.7		
		152.40	CMR25-152	21.0	641	30.5	801	38.1	961	45.7	56.4		
		177.80	CMR25-178	17.5	623	35.8	778	44.5	934	53.3	65.8		
		203.20	CMR25-203	15.4	626	40.6	783	50.8	939	61.0	75.2		
		304.80	CMR25-305	10.9	662	61.0	827	76.2	993	91.4	112.8		
		31.75	15.88	38.10	CMR32-38	200.3	1527	7.6	1908	9.5	2290	11.4	14.1
				44.45	CMR32-44	176.5	1569	8.9	1962	11.1	2354	13.3	16.4
				50.80	CMR32-51	151.3	1537	10.2	1922	12.7	2266	15.2	18.8
				63.50	CMR32-64	109.3	1388	12.7	1735	15.9	2082	19.1	23.5
				76.20	CMR32-76	89.7	1366	15.2	1708	19.1	2050	22.9	28.2
				88.90	CMR32-89	77.1	1370	17.8	1712	22.2	2055	26.7	32.9
				101.60	CMR32-102	64.4	1309	20.3	1637	25.4	1964	30.5	37.6
				114.30	CMR32-115	56.0	1281	22.9	1601	28.6	1922	34.3	42.3
127.00	CMR32-127			50.8	1290	25.4	1612	31.8	1935	38.1	47.0		
139.70	CMR32-140			46.2	1292	27.9	1615	34.9	1938	41.9	51.7		
152.40	CMR32-152			43.8	1334	30.5	1668	38.1	2002	45.7	56.4		
177.80	CMR32-178			35.0	1245	35.8	1557	44.5	1868	53.3	65.8		
203.20	CMR32-203			32.2	1309	40.6	1637	50.8	1964	61.0	75.2		
254.00	CMR32-254			25.4	1290	50.8	1612	63.5	1935	76.2	94.0		
304.80	CMR32-305			21.7	1324	61.0	1655	76.2	1986	91.4	112.8		
38.10	CMR38-38			189.1	1922	10.2	2402	12.7	2882	15.2	18.8		
44.45	CMR38-44			149.9	1904	12.7	2380	15.9	2856	19.1	23.5		
50.80	CMR38-51			109.3	1665	15.2	2082	19.1	2498	22.9	28.2		
63.50	CMR38-64			92.5	1644	17.8	2055	22.2	2466	26.7	32.9		
76.20	CMR38-76			84.1	1708	20.3	2145	25.4	2562	30.5	37.6		
88.90	CMR38-89			75.7	1729	22.9	2162	28.6	2594	34.3	42.3		
101.60	CMR38-102			64.4	1637	25.4	2046	31.8	2455	38.1	47.0		
114.30	CMR38-115			56.0	1683	27.9	2104	34.9	2525	41.9	51.7		
127.00	CMR38-127			50.8	1653	30.5	2104	38.1	2540	45.7	56.4		
139.70	CMR38-140	46.2	1683	32.9	2104	41.9	2540	49.5	61.0				
152.40	CMR38-152	43.8	1644	35.8	2055	44.5	2466	53.3	65.8				
177.80	CMR38-178	38.1	1566	40.6	1967	50.8	2349	61.0	75.2				
203.20	CMR38-203	30.8	1566	50.8	1967	63.5	2349	76.2	94.0				
254.00	CMR38-254	25.4	1566	61.0	1967	76.2	2349	91.4	112.8				
304.80	CMR38-305	21.7	1537	61.0	1937	76.2	2349	91.4	112.8				
38.10	19.05	83.30	CMR51-64	207.3	2633	12.7	3292	15.9	3950	19.1	23.5		
44.45		CMR51-76	168.1	2562	15.2	3203	19.1	3843	22.9	28.2			
50.80		CMR51-89	140.1	2491	17.8	3114	22.2	3736	26.7	32.9			
63.50		CMR51-102	116.3	2463	20.3	2983	25.4	3544	30.5	37.6			
76.20		CMR51-115	105.1	2402	22.9	3002	28.6	3603	34.3	42.3			
88.90		CMR51-127	96.1	2491	25.4	3114	31.8	3736	38.1	47.0			
101.60		CMR51-140	88.3	2466	27.9	3082	34.9	3699	41.9	51.7			
114.30		CMR51-152	82.5	2519	30.5	3149	38.1	3749	45.7	56.4			
127.00		CMR51-178	70.0	2491	35.8	3114	44.5	3736	53.3	65.8			
139.70		CMR51-178	68.3	2466	37.9	3082	46.9	3699	51.7	64.0			
152.40		CMR51-203	61.6	2505	40.8	3131	50.8	3758	61.0	75.2			
177.80		CMR51-254	45.5	2313	50.8	2891	63.5	3469	76.2	94.0			
203.20	CMR51-305	39.2	2391	61.0	2989	76.2	3597	91.4	112.8				

矩形彈簧 - 重負荷 - CMG NAAMS標準 - 英制尺寸

DIE SPRINGS-HEAVY DUTY SPRINGS-CMG NAAMS STANDARD-INCH DIMENSIONS



材料 Material	顏色 Colour	Code
純金合金彈簧鋼 Special alloy	金 Gold	CMG



自由長 Lo	公差 Tolerances
5%-.64	+3%
76-114	±2.5%
127-305	±2%

HEAVY DUTY DIE SPRINGS		INCH DIMENSIONS		GOLD								
Hot Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 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)			
3/8	3/16	1	CMG10-25	11.0	16.5	0.15	22.0	0.20	27.5	0.25	0.30	
		1 1/4	CMG10-32	9.8	18.4	0.19	24.5	0.25	30.6	0.31	0.38	
		1 1/2	CMG10-38	8.0	18.0	0.23	24.0	0.30	30.0	0.38	0.45	
		1 3/4	CMG10-44	8.4	22.1	0.26	29.4	0.35	36.8	0.44	0.53	
		2	CMG10-51	7.2	21.6	0.30	28.8	0.40	36.0	0.50	0.60	
		2 1/2	CMG10-64	5.5	29.6	0.38	27.5	0.50	34.4	0.63	0.75	
	3	CMG10-76	4.2	18.9	0.45	25.2	0.60	31.5	0.75	0.90		
	12	CMG10-305	1.2	21.6	1.80	28.8	2.40	36.0	3.00	3.60		
	1/2	9/32	1	CMG13-25	23.6	33.4	0.15	47.2	0.20	59.0	0.25	0.30
			1 1/4	CMG13-32	18.6	34.9	0.19	46.5	0.25	58.1	0.31	0.38
			1 1/2	CMG13-38	15.5	34.9	0.23	46.5	0.30	58.1	0.38	0.45
			1 3/4	CMG13-44	13.8	35.2	0.26	48.3	0.35	60.4	0.44	0.53
2			CMG13-51	11.0	33.0	0.30	44.0	0.40	55.0	0.50	0.60	
2 1/2			CMG13-64	8.4	31.5	0.38	42.0	0.50	52.5	0.63	0.75	
3	CMG13-76	7.4	33.3	0.45	44.4	0.60	55.5	0.75	0.90			
3 1/2	CMG13-89	6.0	31.5	0.53	42.0	0.70	52.5	0.88	1.05			
12	CMG13-305	1.6	29.8	1.80	38.4	2.40	48.0	3.00	3.60			
5/8	11/32	1	CMG16-25	42.4	63.6	0.15	84.8	0.20	106.0	0.25	0.30	
		1 1/4	CMG16-32	29.6	65.5	0.19	74.0	0.25	92.5	0.31	0.38	
		1 1/2	CMG16-38	27.2	61.2	0.23	81.6	0.30	102.0	0.38	0.45	
		1 3/4	CMG16-44	24.0	63.0	0.26	84.0	0.35	104.0	0.44	0.53	
		2	CMG16-51	20.8	62.4	0.30	83.2	0.40	104.0	0.50	0.60	
		2 1/2	CMG16-64	17.0	63.8	0.38	85.0	0.50	106.3	0.63	0.75	
	3	CMG16-76	14.4	64.8	0.45	86.4	0.60	108.0	0.75	0.90		
	3 1/2	CMG16-89	12.2	64.1	0.53	86.8	0.70	108.8	0.88	1.05		
	4	CMG16-102	10.8	64.8	0.60	86.4	0.80	108.0	1.00	1.20		
	12	CMG16-305	3.0	54.0	1.80	72.0	2.40	90.0	3.00	3.60		
	3/4	3/8	1	CMG19-25	108.0	162.0	0.15	216.0	0.20	270.0	0.25	0.30
			1 1/4	CMG19-32	88.0	165.0	0.19	230.0	0.25	275.0	0.31	0.38
1 1/2			CMG19-38	85.6	147.6	0.23	196.8	0.30	246.0	0.38	0.45	
1 3/4			CMG19-44	80.0	157.5	0.26	210.0	0.35	262.5	0.44	0.53	
2			CMG19-51	69.6	148.8	0.30	198.4	0.40	248.0	0.50	0.60	
2 1/2			CMG19-64	40.0	150.0	0.38	200.0	0.50	250.0	0.63	0.75	
3		CMG19-76	34.0	153.0	0.45	204.0	0.60	255.0	0.75	0.90		
3 1/2		CMG19-89	28.0	147.0	0.53	196.0	0.70	245.0	0.88	1.05		
4		CMG19-102	25.0	150.0	0.60	200.0	0.80	250.0	1.00	1.20		
5 1/2		CMG19-115	22.0	148.5	0.68	198.0	0.90	247.5	1.13	1.35		
6		CMG19-127	19.5	148.3	0.76	195.0	1.00	243.8	1.26	1.50		
12		CMG19-140	17.0	140.3	0.83	187.0	1.10	233.8	1.38	1.65		
12	CMG19-152	16.0	144.0	0.90	192.0	1.20	240.0	1.50	1.80			
12	CMG19-305	8.0	144.0	1.80	192.0	2.40	240.0	3.00	3.60			

HEAVY DUTY DIE SPRINGS		INCH DIMENSIONS		GOLD							
Hot Dia. (in)	Rod Dia. (in)	Free Length (in)	CATALOG NUMBER	Load at 1/10 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)		
1	1/2	1	CMG25-25	208.0	312.0	0.15	416.0	0.20	520.0	0.25	0.30
		1 1/4	CMG25-32	171.2	322.0	0.19	428.0	0.25	535.0	0.31	0.38
		1 1/2	CMG25-38	118.4	266.4	0.23	355.2	0.30	444.0	0.38	0.45
		1 3/4	CMG25-44	104.0	273.0	0.26	364.0	0.35	455.0	0.44	0.53
		2	CMG25-51	90.0	270.0	0.30	360.0	0.40	450.0	0.50	0.60
		2 1/2	CMG25-64	68.0	295.0	0.38	340.0	0.50	425.0	0.63	0.75
	3	CMG25-76	54.4	248.8	0.45	326.4	0.60	408.0	0.75	0.90	
	3 1/2	CMG25-89	45.6	239.4	0.53	319.2	0.70	399.0	0.88	1.05	
	4	CMG25-102	40.0	240.0	0.60	320.0	0.80	400.0	1.00	1.20	
	4 1/2	CMG25-115	38.2	237.6	0.68	316.8	0.90	396.0	1.13	1.35	
	5	CMG25-127	31.2	234.0	0.76	312.0	1.00	390.0	1.25	1.50	
	5 1/2	CMG25-140	28.8	237.6	0.83	316.8	1.10	396.0	1.38	1.65	
6	CMG25-152	25.6	230.4	0.90	307.2	1.20	384.0	1.50	1.80		
7	CMG25-178	22.4	235.2	1.05	313.6	1.40	392.0	1.75	2.10		
8	CMG25-203	19.2	230.4	1.20	307.2	1.60	384.0	2.00	2.40		
12	CMG25-305	12.0	216.0	1.80	288.0	2.40	360.0	3.00	3.60		
1 1/4	5/8	1	CMG32-38	212.0	477.0	0.23	636.0	0.30	795.0	0.38	0.45
		1 3/4	CMG32-44	161.6	476.7	0.26	635.6	0.35	794.5	0.44	0.53
		2	CMG32-51	149.6	448.8	0.30	598.4	0.40	749.0	0.50	0.60
		2 1/2	CMG32-64	117.6	441.0	0.38	588.0	0.50	735.0	0.63	0.75
		3	CMG32-76	95.2	428.4	0.45	571.2	0.60	714.0	0.75	0.90
		3 1/2	CMG32-89	75.2	394.8	0.53	526.4	0.70	659.0	0.88	1.05
	4	CMG32-102	66.4	390.4	0.60	531.2	0.80	664.0	1.00	1.20	
	4 1/2	CMG32-115	58.4	394.2	0.68	526.6	0.90	657.0	1.13	1.35	
	5	CMG32-127	53.0	397.5	0.75	530.0	1.00	662.5	1.25	1.50	
	5 1/2	CMG32-140	47.2	389.4	0.83	519.2	1.10	649.0	1.38	1.65	
	6	CMG32-152	42.4	381.6	0.90	508.8	1.20	636.0	1.50	1.80	
	7	CMG32-178	36.8	386.4	1.05	515.2	1.40	644.0	1.75	2.10	
8	CMG32-203	32.8	393.6	1.20	524.8	1.60	656.0	2.00	2.40		
10	CMG32-254	25.6	384.0	1.50	512.0	2.00	640.0	2.50	3.00		
12	CMG32-305	20.8	374.4	1.80	499.2	2.40	624.0	3.00	3.60		
1 1/2	3/4	1	CMG39-51	190.4	571.2	0.30	761.6	0.40	952.0	0.50	0.60
		1 1/4	CMG39-64	155.0	581.3	0.38	775.0	0.50	968.8	0.63	0.75
		1 3/2	CMG39-76	130.0	585.0	0.45	790.0	0.60	975.0	0.75	0.90
		2	CMG39-89	106.4	559.6	0.53	744.8	0.70	931.0	0.88	1.05
		2 1/2	CMG39-102	91.2	547.2	0.60	726.0	0.80	912.0	1.00	1.20
		3	CMG39-115	78.4	529.2	0.68	705.6	0.90	882.0	1.13	1.35
	3 1/2	CMG39-127	71.2	534.0	0.75	712.0	1.00	890.0	1.25	1.50	
	4	CMG39-140	64.0	528.0	0.83	704.0	1.10	880.0	1.38	1.65	
	4 1/2	CMG39-152	58.4	528.6	0.90	708.8	1.20	878.0	1.50	1.80	
	5	CMG39-178	49.6	520.0	1.05	694.4	1.40	860.0	1.75	2.10	
	6	CMG39-203	43.2	518.4	1.20	691.2	1.60	864.0	2.00	2.40	
	8	CMG39-254	34.4	516.0	1.50	688.0	2.00	860.0	2.50	3.00	
12	CMG39-305	28.8	518.4	1.80	691.2	2.40	864.0	3.00	3.60		
2	1	1	CMG51-64	260.0	975.0	0.38	1300.0	0.50	1625.0	0.63	0.75
		1 1/4	CMG51-76	200.0	900.0	0.45	1200.0	0.60	1500.0	0.75	0.90
		1 1/2	CMG51-89	170.0	825.0	0.53	1190.0	0.70	1487.5	0.88	1.05
		1 3/4	CMG51-102	150.0	800.0	0.60	1180.0	0.80	1480.0	1.00	1.20
		2	CMG51-115	120.0	810.0	0.68	1080.0	0.90	1350.0	1.13	1.35
		2 1/2	CMG51-127	110.0	825.0	0.75	1100.0	1.00	1375.0	1.25	1.50
	3	CMG51-140	100.0	825.0	0.83	1100.0	1.10	1375.0	1.38	1.65	
	4	CMG51-152	94.0	840.0	0.90	1100.0	1.20	1410.0	1.50	1.80	
	5	CMG51-178	82.0	861.0	1.05	1148.0	1.40	1455.0	1.75	2.10	
	6	CMG51-203	73.0	876.0	1.20	1168.0	1.60	1460.0	2.00	2.40	
	8	CMG51-254	55.0	825.0	1.50	1100.0	2.00	1375.0	2.50	3.00	
	12	CMG51-305	42.0	756.0	1.80	1008.0	2.40	1260.0	3.00	3.60	

矩形弹簧-重负荷- CMG NAAMS标准-公制尺寸

DIE SPRINGS-HEAVY DUTY SPRINGS- CMG NAAMS STANDARD- METRIC DIMENSIONS



材料 Material	颜色 Colour	Code
特殊合金材料 Special alloy	金 Gold	CMG

自由长 Lo	公差 Tolerances
25-64	+0.5%
76-114	±2.5%
127-305	±2%



HEAVY DUTY DIE SPRINGS			METRIC DIMENSIONS					GOLD				
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	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)	Deflection (mm)	Load (N)		
A	B	C		Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	*Maximum Deflection (mm)		
9.53	4.76	25.40	CMG10-25	19.3	73	3.8	98	5.1	122	6.4	7.6	
		31.75	CMG10-32	17.2	82	4.8	109	6.4	136	7.9	9.5	
		38.10	CMG10-38	14.0	80	5.7	107	7.6	133	9.5	11.4	
		44.45	CMG10-44	14.7	98	6.7	131	8.9	163	11.1	13.3	
		50.80	CMG10-51	12.6	96	7.6	128	10.2	160	12.7	15.2	
		63.50	CMG10-64	9.6	92	9.5	122	12.7	153	15.9	19.1	
	76.20	CMG10-76	7.4	84	11.4	112	15.2	140	19.1	22.9		
	304.80	CMG10-305	2.1	95	45.7	128	61.0	160	76.2	91.4		
	12.70	7.14	25.40	CMG13-25	41.3	157	3.8	210	5.1	262	6.4	7.6
			31.75	CMG13-32	32.6	155	4.8	207	6.4	259	7.9	9.5
			38.10	CMG13-38	27.1	155	5.7	207	7.6	259	9.5	11.4
			44.45	CMG13-44	24.2	161	6.7	215	8.9	268	11.1	13.3
50.80			CMG13-51	19.3	147	7.6	196	10.2	245	12.7	15.2	
63.50			CMG13-64	14.7	140	9.5	187	12.7	234	15.9	19.1	
76.20		CMG13-76	13.0	148	11.4	197	15.2	247	19.1	22.9		
304.80		CMG13-305	2.3	129	45.7	171	61.0	214	76.2	91.4		
15.88		8.73	25.40	CMG16-25	74.3	283	3.8	377	5.1	471	6.4	7.6
			31.75	CMG16-32	51.8	247	4.8	329	6.4	411	7.9	9.5
			38.10	CMG16-38	47.6	272	5.7	363	7.6	454	9.5	11.4
			44.45	CMG16-44	42.0	280	6.7	374	8.9	467	11.1	13.3
	50.80		CMG16-51	36.4	278	7.6	370	10.2	463	12.7	15.2	
	63.50		CMG16-64	29.8	284	9.5	378	12.7	473	15.9	19.1	
	76.20	CMG16-76	25.2	288	11.4	384	15.2	480	19.1	22.9		
	304.80	CMG16-305	2.8	129	45.7	171	61.0	214	76.2	91.4		
	19.05	9.53	25.40	CMG19-25	189.1	721	3.8	961	5.1	1201	6.4	7.6
			31.75	CMG19-32	154.1	734	4.8	974	6.4	1223	7.9	9.5
			38.10	CMG19-38	114.3	657	5.7	875	7.6	1094	9.5	11.4
			44.45	CMG19-44	105.1	701	6.7	934	8.9	1168	11.1	13.3
50.80			CMG19-51	86.9	662	7.6	882	10.2	1103	12.7	15.2	
63.50			CMG19-64	70.0	667	9.5	890	12.7	1112	15.9	19.1	
76.20		CMG19-76	59.5	681	11.4	907	15.2	1124	19.1	22.9		
304.80		CMG19-305	5.3	240	45.7	320	61.0	400	76.2	91.4		
25.40		12.70	25.40	CMG25-25	189.1	721	3.8	961	5.1	1201	6.4	7.6
			31.75	CMG25-32	154.1	734	4.8	974	6.4	1223	7.9	9.5
			38.10	CMG25-38	114.3	657	5.7	875	7.6	1094	9.5	11.4
			44.45	CMG25-44	105.1	701	6.7	934	8.9	1168	11.1	13.3
	50.80		CMG25-51	86.9	662	7.6	882	10.2	1103	12.7	15.2	
	63.50		CMG25-64	70.0	667	9.5	890	12.7	1112	15.9	19.1	
	76.20	CMG25-76	59.5	681	11.4	907	15.2	1124	19.1	22.9		
	304.80	CMG25-305	5.3	240	45.7	320	61.0	400	76.2	91.4		
	30.48	15.88	25.40	CMG30-25	189.1	721	3.8	961	5.1	1201	6.4	7.6
			31.75	CMG30-32	154.1	734	4.8	974	6.4	1223	7.9	9.5
			38.10	CMG30-38	114.3	657	5.7	875	7.6	1094	9.5	11.4
			44.45	CMG30-44	105.1	701	6.7	934	8.9	1168	11.1	13.3
50.80			CMG30-51	86.9	662	7.6	882	10.2	1103	12.7	15.2	
63.50			CMG30-64	70.0	667	9.5	890	12.7	1112	15.9	19.1	
76.20		CMG30-76	59.5	681	11.4	907	15.2	1124	19.1	22.9		
304.80		CMG30-305	5.3	240	45.7	320	61.0	400	76.2	91.4		

HEAVY DUTY DIE SPRINGS			METRIC DIMENSIONS					GOLD			
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	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)	Deflection (mm)	Load (N)	
A	B	C		Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	*Maximum Deflection (mm)	
25.40	12.70	25.40	CMG25-25	364.2	1388	3.8	1850	5.1	2313	6.4	7.6
		31.75	CMG25-32	298.8	1428	4.8	1904	6.4	2380	7.9	9.5
		38.10	CMG25-38	207.3	1185	5.7	1580	7.6	1975	9.5	11.4
		44.45	CMG25-44	182.1	1214	6.7	1619	8.9	2024	11.1	13.3
		50.80	CMG25-51	157.6	1201	7.6	1601	10.2	2002	12.7	15.2
		63.50	CMG25-64	118.1	1134	9.5	1512	12.7	1890	15.9	19.1
	76.20	CMG25-76	95.3	1089	11.4	1452	15.2	1815	19.1	22.9	
	88.90	CMG25-89	79.9	1065	13.3	1420	17.8	1775	22.2	26.7	
	101.60	CMG25-102	70.0	1068	15.2	1423	20.3	1779	25.4	30.5	
	114.30	CMG25-115	61.6	1045	17.8	1409	22.9	1761	28.6	34.3	
	127.00	CMG25-127	54.6	1041	19.1	1388	25.4	1735	31.8	38.1	
	139.70	CMG25-140	50.4	1057	21.0	1409	27.9	1761	34.9	41.9	
152.40	CMG25-152	44.8	1025	22.9	1366	30.5	1708	38.1	45.7		
177.80	CMG25-178	39.2	1045	25.7	1395	35.8	1744	44.5	53.3		
203.20	CMG25-203	33.6	1025	30.5	1366	40.6	1708	50.8	61.0		
304.80	CMG25-305	21.0	961	45.7	1281	61.0	1601	76.2	91.4		
31.75	15.88	25.40	CMG32-38	371.3	2122	5.7	2829	7.6	3536	9.5	11.4
		44.45	CMG32-44	318.0	2120	6.7	2827	8.9	3534	11.1	13.3
		50.80	CMG32-51	262.0	1996	7.6	2692	10.2	3327	12.7	15.2
		63.50	CMG32-64	205.9	1962	9.5	2615	12.7	3269	15.9	19.1
		76.20	CMG32-76	166.7	1906	11.4	2541	15.2	3176	19.1	22.9
		88.90	CMG32-89	131.7	1759	13.3	2341	17.8	2927	22.2	26.7
	101.60	CMG32-102	116.3	1772	15.2	2363	20.3	2953	25.4	30.5	
	114.30	CMG32-115	102.3	1753	17.1	2388	22.9	2922	28.6	34.3	
	127.00	CMG32-127	92.8	1768	19.1	2357	25.4	2947	31.8	38.1	
	139.70	CMG32-140	82.7	1732	21.0	2309	27.9	2887	34.9	41.9	
	152.40	CMG32-152	74.3	1697	22.9	2253	30.5	2829	38.1	45.7	
	177.80	CMG32-178	64.4	1719	26.7	2232	35.8	2865	44.5	53.3	
203.20	CMG32-203	57.4	1751	30.5	2334	40.6	2918	50.8	61.0		
254.00	CMG32-254	44.8	1708	38.1	2277	50.8	2847	63.5	76.2		
304.80	CMG32-305	36.4	1655	45.7	2220	61.0	2776	76.2	91.4		
38.10	19.05	25.40	CMG38-51	333.4	2341	7.6	3388	10.2	4234	12.7	15.2
		63.50	CMG38-64	271.4	2585	9.5	3447	12.7	4309	15.9	19.1
		76.20	CMG38-76	227.7	2602	11.4	3469	15.2	4337	19.1	22.9
		88.90	CMG38-89	166.3	2485	13.3	3313	17.8	4141	22.2	26.7
		101.60	CMG38-102	158.7	2434	15.2	3245	20.3	4057	25.4	30.5
		114.30	CMG38-115	137.3	2354	17.1	3139	22.9	3923	28.6	34.3
	127.00	CMG38-127	124.7	2375	19.1	3167	25.4	3959	31.8	38.1	
	139.70	CMG38-140	112.1	2349	21.0	3131	27.9	3914	34.9	41.9	
	152.40	CMG38-152	102.3	2338	22.9	3117	30.5	3896	38.1	45.7	
	177.80	CMG38-178	86.9	2317	26.7	3099	35.8	3861	44.5	53.3	
	203.20	CMG38-203	75.7	2306	30.5	3074	40.6	3843	50.8	61.0	
	254.00	CMG38-254	60.2	2295	38.1	3050	50.8	3825	63.5	76.2	
304.80	CMG38-305	50.4	2308	45.7	3034	61.0	3812	76.2	91.4		
50.80	25.40	25.40	CMG51-64	453.3	4337	9.5	5782	12.7	7228	15.9	19.1
		31.75	CMG51-76	350.2	4003	11.4	5338	15.2	6672	19.1	22.9
		38.10	CMG51-89	297.7	3970	13.3	5293	17.8	6616	22.2	26.7
		44.45	CMG51-102	262.7	4003	15.2	5338	20.3	6616	25.4	30.5
		50.80	CMG51-115	210.1	3603	17.1	4804	22.9	6005	28.6	34.3
		63.50	CMG51-127	192.6	3670	19.1	4893	25.4	6116	31.8	38.1
	76.20	CMG51-140	175.1	3670	21.0	4893	27.9	6116	34.9	41.9	
	88.90	CMG51-152	164.6	3763	22.9	5017	30.5	6277	38.1	45.7	
	101.60	CMG51-178	143.6	3830	26.7	5106	35.8	6383	44.5	53.3	
	127.00	CMG51-203	127.8	3896	30.5	5195	40.6	6494	50.8	61.0	
	152.40	CMG51-254	96.3	3670	38.1	4893	50.8	6116	63.5	76.2	
	304.80	CMG51-305	73.5	3363	45.7	4484	61.0	5694	76.2	91.4	

超形弹簧-超重负荷用-CML NAAMS 标准-英制尺寸

DIE SPRINGS-EXTRA HEAVY DUTY SPRINGS-CMG NAAMS STANDARD-INCH DIMENSIONS



材料 Material	颜色 Colour	Code
特殊合金材料 Special alloy	绿 Green	CML

自由长 Lo	公差 Tolerances
25-64	+0.5%
76-114	±2.5%
127-305	±2%



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					*Maximum Deflection (25% of free length)						
					For Optimum Life (15% of free length)		For Long Life (17% of free length)		Maximum Operating Def. (20% of free length)							
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)		Deflection (in)					
A	B	C														
3/8	3/16	1	CML10-25	22.0	33.0	0.15	37.4	0.17	44.0	0.20	0.25	0.31				
		1 1/4	CML10-32	16.0	30.0	0.19	34.0	0.21	40.0	0.25	0.31	0.38				
		1 1/2	CML10-38	12.5	28.1	0.23	31.9	0.25	37.5	0.30	0.38	0.44				
		1 3/4	CML10-44	11.5	30.2	0.26	34.2	0.30	40.3	0.35	0.44	0.50				
		2	CML10-51	9.0	27.0	0.30	30.6	0.34	36.0	0.40	0.50	0.63				
		2 1/2	CML10-64	7.0	26.3	0.38	29.8	0.43	35.0	0.50	0.63	0.75				
	3	CML10-76	6.5	29.3	0.45	33.2	0.51	39.0	0.60	0.75	0.88					
	12	CML10-305	1.5	27.0	1.50	30.6	2.04	36.0	2.40	3.00	3.75					
	1/2	9/32	1 1/4	CML13-32	24.0	45.0	0.19	51.0	0.21	60.0	0.25	0.31	0.38			
			1 1/2	CML13-38	20.0	45.0	0.23	51.0	0.25	60.0	0.30	0.38	0.44			
			1 3/4	CML13-44	17.0	44.6	0.26	50.6	0.30	59.5	0.35	0.44	0.50			
			2	CML13-51	14.0	42.0	0.30	47.6	0.34	56.0	0.40	0.50	0.63			
2 1/2			CML13-64	11.5	43.1	0.38	48.9	0.43	57.5	0.50	0.63	0.75				
3			CML13-76	9.0	40.5	0.45	45.0	0.51	54.0	0.60	0.75	0.88				
3 1/2	CML13-89	8.0	42.0	0.53	47.6	0.60	56.0	0.70	0.88	1.00						
12	CML13-305	2.5	45.0	1.80	51.0	2.04	60.0	2.40	3.00	3.75						
5/8	11/32	1 1/4	CML16-32	47.0	88.1	0.19	99.9	0.21	117.5	0.25	0.31	0.38				
		1 1/2	CML16-38	38.0	85.5	0.23	96.9	0.26	114.0	0.30	0.38	0.44				
		1 3/4	CML16-44	32.0	84.0	0.26	95.2	0.30	112.0	0.35	0.44	0.50				
		2	CML16-51	29.0	87.0	0.30	98.6	0.34	116.0	0.40	0.50	0.63				
		2 1/2	CML16-64	22.0	82.0	0.38	93.5	0.43	110.0	0.50	0.63	0.75				
		3	CML16-76	19.0	85.5	0.45	96.9	0.51	114.0	0.60	0.75	0.88				
	3 1/2	CML16-89	18.0	84.0	0.53	95.2	0.60	112.0	0.70	0.88	1.00					
	12	CML16-102	13.5	81.0	0.60	91.8	0.68	108.0	0.80	1.00	1.25					
	12	CML16-305	4.5	81.0	1.80	91.8	2.04	108.0	2.40	3.00	3.75					
	3/4	3/8	1 1/4	CML19-32	140.0	210.0	0.15	238.0	0.17	280.0	0.20	0.25	0.31			
			1 1/2	CML19-38	110.0	206.3	0.19	233.8	0.21	275.0	0.25	0.31	0.38			
			1 3/4	CML19-44	89.0	200.3	0.23	227.0	0.26	267.0	0.30	0.38	0.44			
2			CML19-51	75.0	196.9	0.26	223.1	0.30	262.5	0.35	0.44	0.50				
2 1/2			CML19-64	58.0	204.0	0.30	231.2	0.34	272.0	0.40	0.50	0.63				
3			CML19-76	50.0	187.5	0.38	212.5	0.43	250.0	0.50	0.63	0.75				
3 1/2		CML19-89	40.5	192.3	0.45	206.6	0.51	243.0	0.60	0.75	0.88					
4		CML19-102	34.5	181.1	0.53	205.3	0.60	241.5	0.70	0.88	1.00					
4 1/2		CML19-115	26.5	178.9	0.68	202.7	0.77	238.5	0.90	1.13	1.25					
5		CML19-127	23.5	176.3	0.85	199.8	0.95	235.0	1.00	1.25	1.50					
6		CML19-140	21.5	177.4	0.83	201.0	0.94	236.5	1.10	1.38	1.50					
12		CML19-152	19.5	175.5	0.90	198.9	1.02	234.0	1.20	1.50	1.88					
12	CML19-305	9.5	171.0	1.80	193.8	2.04	228.0	2.40	3.00	3.75						

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					*Maximum Deflection (25% of free length)						
					For Optimum Life (15% of free length)		For Long Life (17% of free length)		Maximum Operating Def. (20% of free length)							
					Load (lb)	Deflection (in)	Load (lb)	Deflection (in)	Load (lb)		Deflection (in)					
A	B	C														
1	1/2	1 1/2	CML25-38	160.0	360.0	0.23	408.0	0.26	480.0	0.30	0.38	0.50				
		2	CML25-44	116.0	348.0	0.30	396.4	0.34	464.0	0.40	0.50	0.63				
		2 1/2	CML25-64	89.6	336.0	0.38	380.8	0.43	448.0	0.50	0.63	0.75				
		3	CML25-76	73.6	331.2	0.45	375.4	0.51	441.6	0.60	0.75	0.88				
		3 1/2	CML25-89	62.4	327.6	0.53	371.3	0.60	436.8	0.70	0.88	1.00				
		4	CML25-102	58.2	331.2	0.60	375.4	0.68	441.6	0.80	1.00	1.25				
	4 1/2	CML25-115	48.8	329.4	0.68	373.3	0.77	439.2	0.90	1.13	1.25					
	5	CML25-127	43.2	324.0	0.75	367.2	0.85	432.0	1.00	1.25	1.50					
	6	CML25-152	36.0	324.0	0.90	367.2	1.02	432.0	1.20	1.50	1.88					
	12	CML25-305	17.6	316.8	1.80	359.0	2.04	422.4	2.40	3.00	3.75					
	1 1/4	5/8	2 1/2	CML32-64	144.0	540.0	0.38	612.0	0.43	720.0	0.50	0.63	0.75			
			3	CML32-76	118.4	532.8	0.45	603.8	0.51	710.4	0.60	0.75	0.88			
3 1/2			CML32-89	100.8	529.2	0.53	599.8	0.60	705.6	0.70	0.88	1.00				
4			CML32-102	84.0	504.0	0.60	571.2	0.68	672.0	0.80	1.00	1.25				
4 1/2			CML32-115	78.4	529.2	0.68	599.8	0.77	705.6	0.90	1.13	1.25				
5			CML32-127	68.0	510.0	0.75	578.0	0.85	680.0	1.00	1.25	1.50				
6		CML32-152	56.0	504.0	0.90	571.2	1.02	672.0	1.20	1.50	1.88					
8		CML25-203	41.6	499.2	1.20	565.8	1.36	665.6	1.60	2.00	2.50					
10		CML25-254	33.6	504.0	1.50	571.2	1.70	672.0	2.00	2.50	3.00					
12		CML25-305	26.4	475.2	1.80	538.6	2.04	633.6	2.40	3.00	3.75					
1 1/2		3/4	2	CML38-51	376.0	1128.0	0.30	1276.4	0.34	1504.0	0.40	0.50	0.63			
			2 1/2	CML38-64	294.4	1104.0	0.38	1251.2	0.43	1472.0	0.50	0.63	0.75			
	3		CML38-76	231.2	1040.4	0.45	1179.1	0.51	1387.2	0.60	0.75	0.88				
	3 1/2		CML38-89	196.0	1029.0	0.53	1166.2	0.60	1372.0	0.70	0.88	1.00				
	4		CML38-102	171.2	1027.2	0.60	1164.2	0.68	1368.6	0.80	1.00	1.13				
	4 1/2		CML38-115	148.0	990.0	0.68	1132.2	0.77	1332.0	0.90	1.13	1.25				
	5	CML38-127	136.0	1020.0	0.75	1156.0	0.85	1360.0	1.00	1.25	1.50					
	6	CML38-152	110.4	993.6	0.90	1126.1	1.02	1324.8	1.20	1.50	1.88					
	8	CML38-203	80.8	969.6	1.20	1098.9	1.36	1292.8	1.60	2.00	2.50					
	10	CML38-254	67.2	1008.0	1.50	1142.4	1.70	1344.0	2.00	2.50	3.00					
	12	CML38-305	54.4	979.2	1.80	1109.8	2.04	1305.6	2.40	3.00	3.75					
	2	1	2 1/2	CML51-64	381.6	1431.0	0.38	1621.8	0.43	1908.0	0.50	0.63	0.75			
3			CML51-76	312.0	1404.0	0.45	1591.2	0.51	1872.0	0.60	0.75	0.88				
3 1/2			CML51-89	254.4	1335.6	0.53	1513.7	0.60	1769.8	0.70	0.88	1.00				
4			CML51-102	220.0	1300.0	0.60	1486.0	0.68	1760.0	0.80	1.00	1.13				
4 1/2			CML51-115	188.8	1274.4	0.68	1444.3	0.77	1699.2	0.90	1.13	1.25				
5			CML51-127	172.8	1296.0	0.75	1468.8	0.85	1728.0	1.00	1.25	1.50				
6		CML51-152	141.6	1274.4	0.90	1444.3	1.02	1699.2	1.20	1.50	1.88					
8		CML51-203	100.0	1200.0	1.20	1360.0	1.36	1600.0	1.60	2.00	2.50					
10		CML51-254	84.0	1160.0	1.50	1420.0	1.70	1600.0	2.00	2.50	3.00					
12		CML51-305	71.2	1281.6	1.80	1452.5	2.04	1708.8	2.40	3.00	3.75					

超重弹簧 - 超重负荷用 - CML NAAMS 标准 - 公制尺寸

DIE SPRINGS-EXTRA HEAVY DUTY SPRINGS-CMG NAAMS STANDARD-METRIC DIMENSIONS



材料 Material	颜色 Colour	代码 Code
特殊合金材料 Special alloy	绿 Green	CML

自由长 Lo	公差 Tolerance
25-64	+9%
76-114	±2.5%
127-305	±2%

EXTRA HEAVY DUTY DIE SPRINGS		METRIC DIMENSIONS		GREEN							
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	LOAD DEFLECTION TABLE						
					For Optimum Life (15% of free length)		Maximum Operating Def. (20% of free length)		*Maximum Deflection (25% of free length)		
					Load (N)	Deflection (mm)	Load (N)	Deflection (mm)			
A	B	C									
9.53	4.76	25.40	CML10-25	38.5	147	3.8	166	4.3	196	5.1	6.4
		31.75	CML10-32	28.0	133	4.8	151	5.4	178	6.4	7.9
		38.10	CML10-38	21.9	125	5.7	142	6.5	167	7.6	9.5
		44.45	CML10-44	20.1	134	6.7	152	7.6	179	8.9	11.1
		50.80	CML10-51	15.8	120	7.6	136	8.6	160	10.2	12.7
		63.50	CML10-64	12.3	117	9.5	132	10.8	156	12.7	15.9
		76.20	CML10-76	11.4	130	11.4	147	13.0	173	15.2	19.1
		304.80	CML10-305	2.6	120	45.7	136	51.8	160	61.0	76.2
		25.40	CML13-25	36.0	214	3.8	242	4.3	285	5.1	6.4
		31.75	CML13-32	42.0	200	4.8	227	5.4	267	6.4	7.9
38.10	CML13-38	35.0	200	5.7	227	6.5	267	7.6	9.5		
44.45	CML13-44	29.8	198	6.7	225	7.6	265	8.9	11.1		
50.80	CML13-51	24.5	187	7.6	212	8.6	249	10.2	12.7		
63.50	CML13-64	20.1	192	9.5	217	10.8	256	12.7	15.9		
76.20	CML13-76	15.8	180	11.4	204	13.0	240	15.2	19.1		
89.90	CML13-89	14.0	187	13.3	212	15.1	249	17.8	22.2		
304.80	CML13-305	4.4	230	45.7	227	51.8	267	61.0	76.2		
25.40	CML16-25	110.3	420	3.8	476	4.3	560	5.1	6.4		
31.75	CML16-32	82.3	392	4.8	444	5.4	523	6.4	7.9		
38.10	CML16-38	66.5	380	5.7	431	6.5	507	7.6	9.5		
44.45	CML16-44	56.0	374	6.7	423	7.6	496	8.9	11.1		
50.80	CML16-51	50.8	387	7.6	439	8.6	516	10.2	12.7		
63.50	CML16-64	38.5	367	9.5	416	10.8	489	12.7	15.9		
76.20	CML16-76	33.3	360	11.4	431	13.0	507	15.2	19.1		
89.90	CML16-89	29.0	374	13.3	423	15.1	496	17.8	22.2		
101.60	CML16-102	23.6	360	15.2	408	17.3	480	20.3	25.4		
304.80	CML16-305	7.9	360	45.7	408	51.8	480	61.0	76.2		
25.40	CML19-25	245.2	934	3.8	1059	4.3	1245	5.1	6.4		
31.75	CML19-32	192.6	917	4.8	1040	5.4	1223	6.4	7.9		
38.10	CML19-38	155.9	891	5.7	1009	6.5	1168	7.6	9.5		
44.45	CML19-44	131.3	876	6.7	992	7.6	1168	8.9	11.1		
50.80	CML19-51	119.1	907	7.6	1028	8.6	1210	10.2	12.7		
63.50	CML19-64	87.5	834	9.5	945	10.8	1112	12.7	15.9		
76.20	CML19-76	70.9	811	11.4	918	13.0	1081	15.2	19.1		
89.90	CML19-89	60.4	806	13.3	913	15.1	1074	17.8	22.2		
101.60	CML19-102	52.5	801	15.2	907	17.3	1068	20.3	25.4		
114.30	CML19-115	46.4	796	17.1	902	19.4	1061	22.9	28.6		
127.00	CML19-127	41.2	784	19.1	884	21.5	1045	25.4	31.8		
139.70	CML19-140	37.7	789	21.0	894	23.7	1052	27.9	34.9		
152.40	CML19-152	34.1	781	22.9	885	25.9	1041	30.5	38.1		
304.80	CML19-305	16.6	761	45.7	862	51.8	1014	61.0	76.2		

EXTRA HEAVY DUTY DIE SPRINGS		METRIC DIMENSIONS		GREEN							
Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	CATALOG NUMBER	Load at 1 mm Def. (N)	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 (N)	Deflection (mm)	Load (N)	Deflection (mm)			
A	B	C									
25.40	12.70	38.10	CML25-38	280.2	1601	5.7	1815	6.5	2135	7.6	9.5
		50.80	CML25-51	203.1	1548	7.6	1754	8.6	2064	10.2	12.7
		63.50	CML25-64	156.9	1495	9.5	1694	10.8	1993	12.7	15.9
		76.20	CML25-76	128.9	1473	11.4	1670	13.0	1964	15.2	19.1
		89.90	CML25-89	109.3	1457	13.3	1651	15.1	1943	17.8	22.2
		101.60	CML25-102	96.7	1473	15.2	1670	17.3	1964	20.3	25.4
		114.30	CML25-115	85.5	1465	17.1	1661	19.4	1954	22.9	28.6
		127.00	CML25-127	75.7	1441	19.1	1633	21.6	1922	25.4	31.8
		152.40	CML25-152	63.0	1441	22.9	1633	25.9	1922	30.5	38.1
		304.80	CML25-305	30.8	1409	45.7	1587	51.8	1878	61.0	76.2
50.80	CML32-51	356.2	2562	7.6	2904	8.6	3416	10.2	12.7		
63.50	CML32-64	252.2	2402	9.5	2722	10.8	3203	12.7	15.9		
76.20	CML32-76	207.3	2370	11.4	2686	13.0	3160	15.2	19.1		
89.90	CML32-89	176.5	2354	13.3	2668	15.1	3139	17.8	22.2		
101.60	CML32-102	147.1	2242	15.2	2541	17.3	2989	20.3	25.4		
114.30	CML32-115	137.3	2354	17.1	2668	19.4	3139	22.9	28.6		
127.00	CML32-127	119.1	2268	19.1	2571	21.6	3025	25.4	31.8		
152.40	CML32-152	98.1	2242	22.9	2541	25.9	2989	30.5	38.1		
203.20	CML25-203	72.8	2220	30.5	2517	34.5	2961	40.6	50.8		
254.00	CML25-254	58.8	2242	38.1	2541	43.2	2989	50.8	63.5		
304.80	CML25-305	46.2	2114	45.7	2336	51.8	2818	61.0	76.2		
50.80	CML38-51	688.4	3017	7.6	3686	8.6	4690	10.2	12.7		
63.50	CML38-64	515.5	4911	9.5	5595	10.8	6547	12.7	15.9		
76.20	CML38-76	404.9	4628	11.4	5245	13.0	6170	15.2	19.1		
89.90	CML38-89	343.2	4577	13.3	5187	15.1	6103	17.8	22.2		
101.60	CML38-102	299.8	4569	15.2	5178	17.3	6092	20.3	25.4		
114.30	CML38-115	259.2	4444	17.1	5036	19.4	5925	22.9	28.6		
127.00	CML38-127	238.2	4537	19.1	5142	21.6	6049	25.4	31.8		
152.40	CML38-152	193.3	4420	22.9	5009	25.9	5893	30.5	38.1		
203.20	CML38-203	141.5	4313	30.5	4888	34.5	5750	40.6	50.8		
254.00	CML38-254	117.7	4484	38.1	5051	43.2	5978	50.8	63.5		
304.80	CML38-305	95.3	4353	45.7	4936	51.8	5807	61.0	76.2		
63.50	CML51-64	668.3	3365	9.5	7214	10.8	8487	12.7	15.9		
76.20	CML51-76	546.4	3245	11.4	7078	13.0	8327	15.2	19.1		
89.90	CML51-89	445.5	3941	13.3	6733	15.1	7921	17.8	22.2		
101.60	CML51-102	385.3	3879	15.2	6654	17.3	7828	20.3	25.4		
114.30	CML51-115	330.6	5669	17.1	6424	19.4	7558	22.9	28.6		
127.00	CML51-127	302.6	5765	19.1	6533	21.6	7686	25.4	31.8		
152.40	CML51-152	248.0	5669	22.9	6424	25.9	7558	30.5	38.1		
203.20	CML51-203	176.1	5338	30.5	6049	34.5	7117	40.6	50.8		
254.00	CML51-254	147.1	5004	38.1	6332	43.2	7473	50.8	63.5		
304.80	CML51-305	124.7	5701	45.7	6046	51.8	7601	61.0	76.2		