



产品手册

WAVE SPRING 波形弹簧

专注于工业制造配件 用心服务



COMPANY PROFILE

公司简介

敏硕科技是一家中外合资具有研发、生产、销售综合实力于一体的高温弹簧（600°）&低温弹簧（-260°）精密弹簧、密封产品、制冷配件及单向阀系列等精密五金产品专业制造商。

公司拥有四个分厂（江苏、上海、浙江、美国）及天津分公司，两万多平方米的标准厂房。公司创始人及研发技术骨干拥有欧美同行业丰富的管理及领先的技术经验。公司现有员工598名，其中专业工程技术人员、管理人员268名，各种设备1000多台，形成了从产品研发、生产、销售到售后服务的完整现代化企业管理体系。

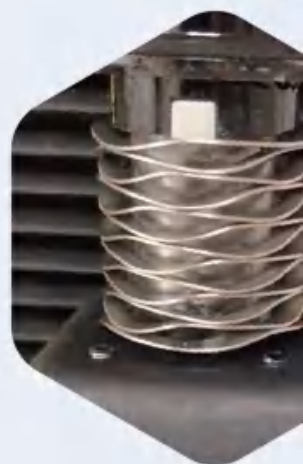
Mascot industrial group is a Sino foreign joint venture with comprehensive strength of R & D, production and sales. We are a professional manufacturer of high temperature spring (600 °) & low temperature spring (- 260 °) and other precision spring, sealing, refrigeration accessories and check valve series and other precision hardware products.

We have four branches (Jiangsu, Shanghai, Zhejiang, Dallas) and Tianjin Branch, more than 20000 square meters of standard workshop. As well as, We have 598 employees, including 268 professional engineering and technical personnel and management personnel, and more than 1000 sets of various equipment. The founder and R & D technical backbone of the company have rich management and technical experience in the same industry in Europe and America. It has formed a complete modern enterprise management system with product development, production, sales to after-sales service.

为什么 选择我们？

公司通过IATF16949:2016质量体系等一系列技术认证，获得多项国家实用新型及发明专利。公司始终秉承“客户第一，质量至上”为宗旨，为客户提供全方位综合性弹簧、密封、制冷五金产品解决方案。我们承诺，无论您在何时何地，我们都将为您提供特殊需求的定制服务，专业、优质、安心、快捷、高效是我们十年如一日的服务宗旨。

The company has passed a series of quality technology certification such as IATF 16949:2016 quality system, and obtained a number of national utility model and invention patents. The company always adheres to the tenet of "customer first, quality first" to provide customers with comprehensive spring, sealing, refrigeration hardware products solutions. We promise that no matter when and where you are, we will provide you with customized services with special needs. Our ten-year service tenet is professional, high-quality, reassuring, fast and efficient.





客户第一

Customers are the most important

对于顾客提出的任何正当、合理的要求，敏硕都会想方设法，尽最大努力去满足。



质量至上

Guaranteed quality

产品质量无疑是整个企业的基石，也是第一个要抓的重点。



品牌创新

Brand Power

品牌力量是创新力量的体现，是公司经济力量和文化力量的集中展现。



定制服务

Customized

根据每个客户的需求定制化的设计和生产产品，更好的满足客户的需求。

WELCOME to MASCOT

≡ 弹簧事业部

✂ 五金制冷事业部

⊙ 密封事业部

SPRING DIVISION

弹簧事业部

拥有各式压拉扭弹簧机160台和CNC弹簧机60台及检测设备20套；能精密制造各种标准和非标准压簧、拉簧、扭簧、高温弹簧&低温弹簧、碟形弹簧、波形弹簧(外径范围：1mm~500mm，厚度范围：0.1~10mm)、热卷弹簧、冷卷弹簧、发条、恒力弹簧、密封弹簧、螺旋叶片弹簧、阻尼器、气杆、悬架弹簧、涡卷弹簧、模具弹簧、卡簧、蛇形弹簧、异型弹簧、螺旋弹簧加工件、弹簧垫圈、孔用弹性挡圈、轴用弹性挡圈、止动环、缓冲器等精密五金。通过严格的疲劳测试实验，我们的弹簧最高耐疲劳1亿次以上。

常用材料：各类碳素钢、合金钢材料、琴钢线、Hastelloy哈氏合金、Elgiloy、SAE6150、SAE9254、50CrV4、60Si2CrA、62Si2MnA、SK4、SK5、CK55、CK67、CK70、CK75、、65Mn、SUS301、SUS304、SUS316、SUS631、17-7、InconelX-718、InconelX-750、GH145等。

We have all kinds of press-pull torsion spring machine 160 sets and CNC spring machine 60 sets and 20 sets of testing equipment, Precision manufacturing various standard and non-standard high temperature spring & low temperature spring and compression spring, tension spring, torsion spring, disc springs (Outer diameter range: 1mm~500mm, thickness range: 0.1~10mm), spiral leaf spring, damper, gas pole, suspension spring, hot coil spring, constant force spring, Seal Spring, vortex coil spring, die spring, snap ring, serpentine spring, shaped spring, screw, spring washer, hole, Axis with elastic retaining ring, stop ring, buffer and other precision hardware. Through rigorous fatigue testing experiments, our spring can withstand more than 100 million times of maximum fatigue.

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搭口型-WO系列



缺口型-WG系列



对顶波簧-WM系列



平垫圈-WF系列



园线型-WR系列



线型-WL系列

What is 波形弹簧 A WAVE SPRING?

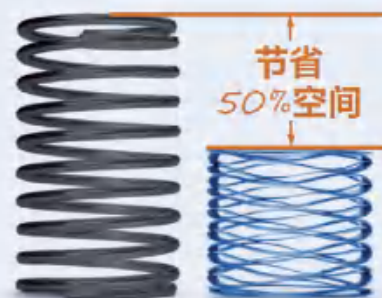
波形弹簧应用于电机、纺织机械、液压设备、汽车等行业。主要安装在轴承室或与规格(公称尺寸)相适应的孔内。安装空间很小，具有降低噪音和振动的特殊功能。

Wave spring is used in motor, textile machinery, hydraulic equipment, automobile and other industries. It is mainly installed in the bearing chamber or the hole corresponding to the specification (nominal size). The installation space is very small, with the special function of reducing noise and vibration.

APPLICATION OF WAVE SPRING

波簧应用

与其所起的作用相比，波簧占据的空间通常非常小。本产品可用于狭小的轴向和径向空间，但并不仅限于此。边缘卷绕波簧采用预回火的原材料，具有卷绕而成的顺滑圆形正弦波形，与模具冲压制成的产品相比具有许多优点。它的负荷与弹性比率的精度和可预测性更高，公差比冲压产品小 50%。在绝大部分的变形范围中，波形弹簧的弹力将以一致的比率增长。边缘卷绕波簧的金属加工方法、机械性质以及均匀的尺寸稳定性共同构成了一种适合高精度高品质应用的组件。



航空航天



精密机械



液压密封



高端电机



省空间

SAVE SPACE

波形弹簧具有节省空间的独特优势，可以用来代替圆线弹簧。通过降低弹簧工作高度，波簧也减少了弹簧腔的体积。它以较小的组件尺寸和较少的制造材料实现了成本的节约。

Wave Springs offer the unique advantage of space savings when used to replace coil springs. By reducing spring operating height, wave springs also produce a decrease in the spring cavity. With a smaller assembly size and less material used in the manufacturing process, a cost savings is realized.



高精度

HIGH ACCURACY

波簧属于负荷承载设备。它们占据间隙，并且补偿装置中的尺寸变化。通过逐渐累积或突然改变负荷使波簧达到预定工作高度，可以产生几乎任何一种范围的力度。如此便可建立负荷与变形程度成比例的精确弹性比率。

Wave springs operate as load bearing devices. They take up play and compensate for dimensional variations within assemblies. A virtually unlimited range of forces can be produced whereby loads build either gradually or abruptly to reach a predetermined working height. This establishes a precise spring rate in which load is proportional to deflection.



高品质

SUPERIOR QUALITY

无论从什么标准看，波形弹簧的可靠性和性能都优于一般水平。由于采用的是经过预回火的全硬材料，所以不存在硬化热处理导致弹簧变形的风险。

No matter from what standard, the reliability and performance of wave spring are better than the general level. As the pre tempered all hard material is used, there is no risk of spring deformation caused by hardening heat treatment.

What is 搭口型 A WAVE SPRING?

搭口型单层波形弹簧是扁线弹簧，其末端略微重叠。搭口型弹簧非常适合较小直径的应用，在无需考虑过度压缩问题的情况下可以减少包装缠绕。非常适合轻至中等负荷且变形较小的应用。

The lap type single-layer wavy spring is a flat wire spring with its ends slightly overlapped. Lap type springs are very suitable for applications with smaller diameters, and can reduce packaging entanglement without considering the problem of over compression. It is very suitable for applications with light to medium load and small deformation.



WO系列

搭口型 Overlap Type-WO Series



节省空间



较小变形



中等负荷



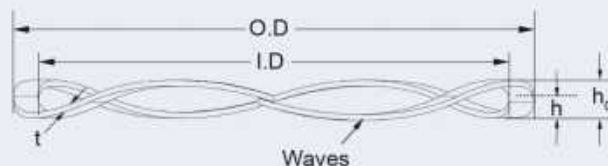
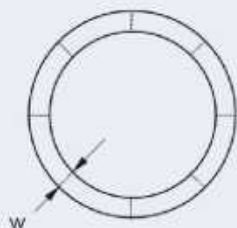
WO系列

搭口型 Overlap Type-WO Series

WO - 0016

系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free Height	工作高度 Working Height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WO-0016	9.00	6.86	25.8	3	1	1.50	1.00	0.20	0.81	52
WO-0019	10.00	7.49	27.6	3	1	1.57	1.00	0.20	1.02	48
WO-0022	11.00	8.46	29.4	3	1	1.83	1.00	0.20	1.02	35
WO-0022	12.00	9.17	33.4	3	1	1.57	1.00	0.25	1.17	59
WO-0024	13.00	9.53	37.8	3	1	1.57	1.00	0.25	1.47	66
WO-0016	16.00	11.28	44.5	3	1	2.29	1.57	0.25	1.98	65
WO-0019	19.00	14.28	53.4	3	1	3.05	1.57	0.25	1.98	35
WO-0022	22.00	16.46	62.3	3	1	2.79	1.57	0.30	2.39	48
WO-0024	24.00	18.46	66.7	3	1	3.56	1.57	0.30	2.39	35
WO-0026	26.00	18.22	71.2	3	1	2.54	1.98	0.41	3.38	111
WO-0028	28.00	20.22	75.6	3	1	2.79	1.98	0.41	3.38	85
WO-0030	30.00	22.22	84.5	3	1	3.30	1.98	0.41	3.38	66
WO-0032	32.00	24.22	89.0	3	1	3.81	1.98	0.41	3.38	52
WO-0035	35.00	27.22	97.9	3	1	4.57	1.98	0.41	3.38	38
WO-0037	37.00	28.72	102.3	3	1	3.81	1.98	0.46	3.63	58
WO-0040	40.00	31.72	111.2	3	1	5.08	1.98	0.46	3.63	37
WO-0042	42.00	33.72	115.7	4	1	3.05	1.98	0.46	3.63	99

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



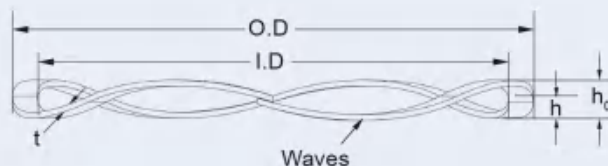
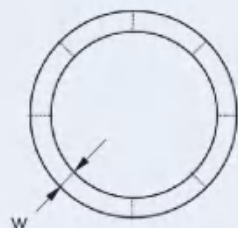
WO系列

搭口型 Overlap Type-WO Series

WO - 0016

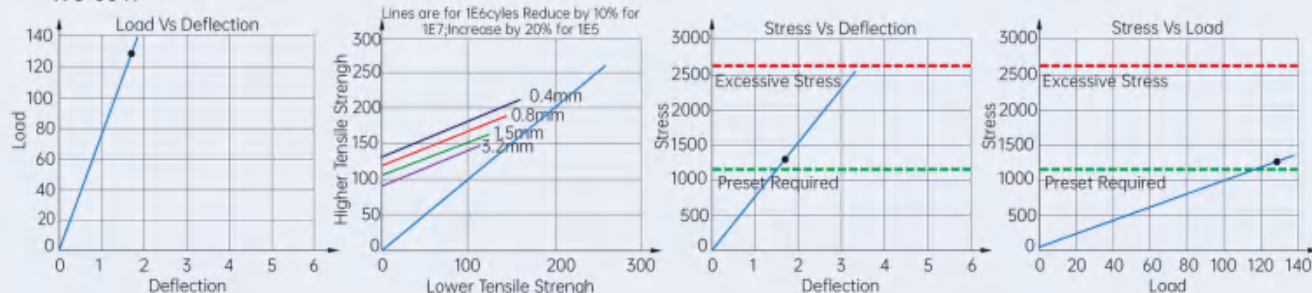
系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Turns of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WO-0047	47.00	38.72	129.0	4	1	3.81	1.98	0.46	3.63	68
WO-0052	52.00	43.11	142.4	4	1	3.56	2.36	0.61	3.76	121
WO-0055	55.00	46.11	151.3	4	1	3.81	2.36	0.61	3.76	100
WO-0062	62.00	51.69	169.1	4	1	4.32	2.36	0.61	4.52	85
WO-0068	68.00	57.17	186.9	4	1	4.32	2.77	0.76	4.78	131
WO-0070	70.00	59.17	191.3	4	1	4.32	2.77	0.76	4.78	119
WO-0072	72.00	61.17	195.8	4	1	4.57	2.77	0.76	4.78	108
WO-0075	75.00	64.17	204.7	4	1	5.08	2.77	0.76	4.78	94
WO-0080	80.00	68.66	218.0	4	1	5.59	2.77	0.76	4.78	76
WO-0085	85.00	71.38	231.4	4	1	5.59	2.77	0.76	5.92	83
WO-0090	90.00	76.38	249.2	4	1	6.35	2.77	0.76	5.92	68
WO-0095	95.00	81.38	262.5	4	1	7.37	2.77	0.76	5.92	57

WO-0047



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

What is 缺口型 A WAVE SPRING?

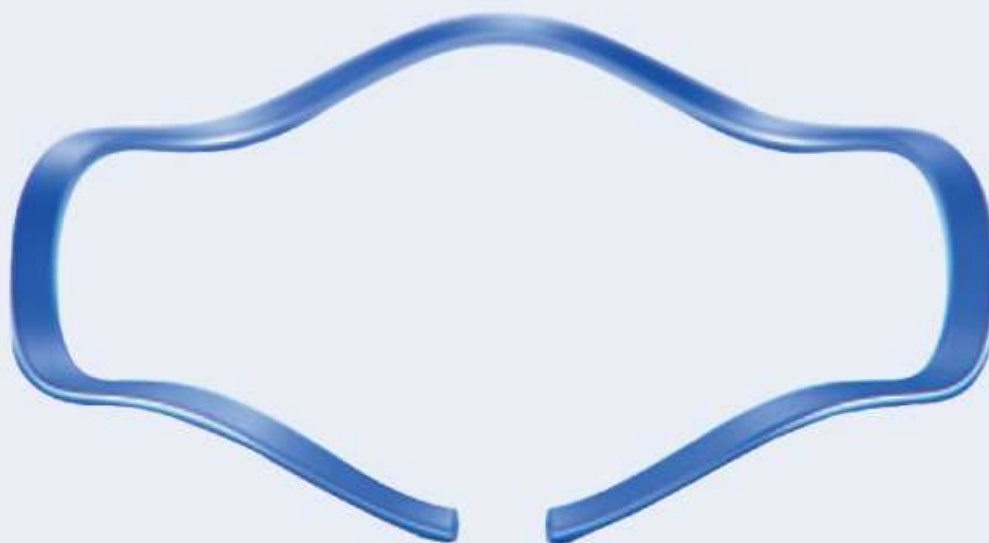
缺口型单层波形弹簧是扁线弹簧，其末端有一个微小的间隙。缺口型波形弹簧非常适合导致高度或过度压缩问题的重叠情况。尤其是在堆叠时，非常适合轻至中等负荷且变形较小的应用。

The notched single-layer wavy spring is a flat wire spring with a small gap at the end. Ideal for overlapping situations that cause height or over compression problems. Especially when stacking, it is very suitable for applications with light to medium load and small deformation.



WG系列

缺口型 Gap Type-WG Series



节省空间



较小变形



中等负荷



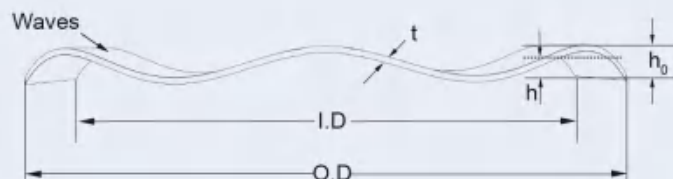
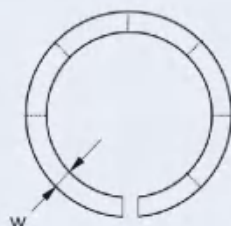
WG系列

缺口型 Gap Type-WG Series

WG - 0044

系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WG-0044	44	36.58	133	4	1	3.56	1.98	0.46	3.63	85
WG-0048	48	39.62	142	4	1	3.81	1.98	0.46	3.63	78
WG-0051	51	42.67	151	4	1	3.56	2.36	0.61	3.81	127
WG-0054	54	45.72	160	4	1	3.81	2.36	0.61	3.81	111
WG-0057	57	49.02	169	4	1	4.32	2.36	0.61	3.81	86
WG-0060	60	50.55	178	4	1	4.06	2.36	0.61	4.52	104
WG-0064	64	53.85	187	4	1	4.32	2.36	0.61	4.52	95
WG-0067	67	56.90	196	4	1	4.83	2.36	0.61	4.52	79
WG-0070	70	59.44	204	4	1	4.32	2.77	0.76	4.78	132
WG-0073	73	62.74	213	4	1	4.57	2.77	0.76	4.78	118
WG-0076	76	65.79	222	4	1	4.83	2.77	0.76	4.78	108
WG-0079	79	68.83	231	4	1	5.33	2.77	0.76	4.78	90
WG-0083	83	69.85	240	4	1	5.08	2.77	0.76	5.92	104
WG-0086	86	72.14	249	4	1	5.59	2.77	0.76	5.92	88
WG-0089	89	76.20	258	4	1	5.84	2.77	0.76	5.92	84
WG-0092	92	79.25	267	4	1	6.10	2.77	0.76	5.92	80
WG-0095	95	82.55	276	4	1	6.60	2.77	0.76	5.92	72
WG-0098	98	85.60	284	4	1	7.62	2.77	0.76	5.92	59
WG-0100	100	86.38	275.9	5	1	4.57	2.77	0.76	5.92	157
WG-0105	105	91.38	289.2	5	1	5.08	2.77	0.76	5.92	134
WG-0110	110	96.38	302.6	5	1	5.33	2.77	0.76	5.92	115
WG-0115	115	101.38	315.9	5	1	6.35	3.18	0.76	5.92	99
WG-0120	120	106.38	329.3	5	1	7.11	3.18	0.76	5.92	86
WG-0125	125	111.38	342.6	5	1	7.62	3.18	0.76	5.92	76
WG-0130	130	116.38	356.0	5	1	8.64	3.18	0.76	5.92	67

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



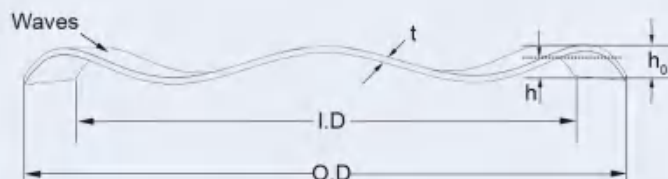
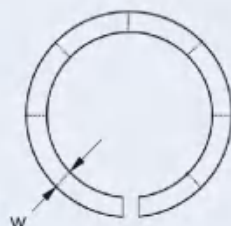
WG系列

缺口型 Gap Type-WG Series

WG - 0044

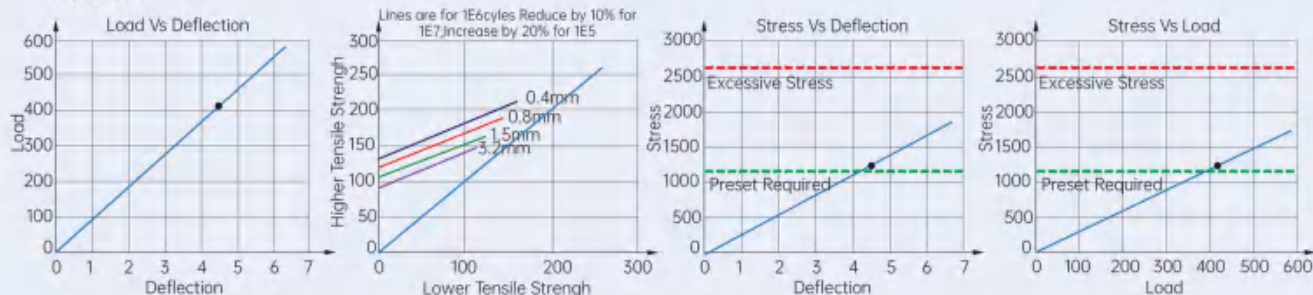
系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WG-0130	130	116.38	356.0	5	1	8.64	3.18	0.76	5.92	67
WG-0135	135	121.38	369.3	5	1	9.40	3.18	0.76	5.92	59
WG-0140	140	126.38	382.7	6	1	6.86	3.18	0.76	5.92	108
WG-0145	145	131.38	396.0	6	1	7.37	3.18	0.76	5.92	97
WG-0150	150	136.38	404.9	6	1	7.87	3.18	0.76	5.92	87
WG-0160	160	146.38	440.5	6	1	9.40	3.18	0.76	5.92	71
WG-0165	165	151.38	453.9	6	1	10.41	3.18	0.76	5.92	64
WG-0170	170	156.38	467.2	6	1	11.18	3.18	0.76	5.92	58
WG-0175	175	154.16	480.6	6	1	8.13	3.96	0.81	9.53	116
WG-0180	180	159.16	493.9	6	1	8.64	3.96	0.81	9.53	105
WG-0185	185	164.16	507.3	6	1	9.14	3.96	0.81	9.53	97
WG-0190	190	169.16	520.6	6	1	9.91	3.96	0.81	9.53	88
WG-0200	200	179.16	547.3	7	1	7.11	3.96	0.81	9.53	174
WG-0205	205	184.16	560.7	7	1	7.37	3.96	0.81	9.53	161
WG-0210	210	189.16	578.5	7	1	7.87	3.96	0.81	9.53	149
WG-0215	215	194.16	591.8	7	1	8.38	3.96	0.81	9.53	138
WG-0220	220	199.16	605.2	7	1	8.64	3.96	0.81	9.53	128

WG-0150



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



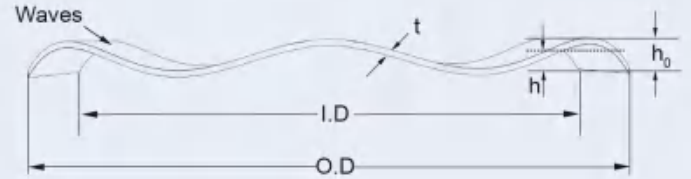
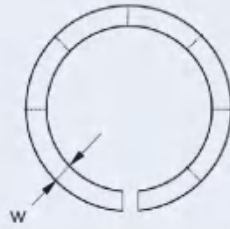
WG系列

缺口型 Gap Type-WG Series

WG - 0044

系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WG-0220	220	199.16	605.2	7	1	8.64	3.96	0.81	9.53	128
WG-0225	225	204.16	618.5	8	1	7.11	3.96	0.81	9.53	203
WG-0230	230	209.16	631.9	9	1	6.10	3.96	0.81	9.53	303
WG-0235	235	214.16	645.2	9	1	6.35	3.96	0.81	9.53	283
WG-0240	240	219.16	658.6	9	1	6.35	3.96	0.81	9.53	265
WG-0250	250	229.16	685.3	9	1	6.86	3.96	0.81	9.53	232
WG-0260	260	239.16	712.0	9	1	7.37	3.96	0.81	9.53	205
WG-0265	265	244.16	725.3	9	1	7.62	3.96	0.81	9.53	193
WG-0270	270	249.16	743.1	9	1	8.13	3.96	0.81	9.53	182
WG-0280	280	259.16	769.8	9	1	8.64	3.96	0.81	9.53	162
WG-0290	290	269.16	796.5	9	1	9.40	3.96	0.81	9.53	144
WG-0300	300	279.16	823.2	9	1	10.41	3.96	0.81	9.53	129
WG-0310	310	289.16	849.9	9	1	7.11	3.96	1.07	9.53	264
WG-0237	320	299.16	876.6	9	1	7.62	3.96	1.07	9.53	239
WG-0340	340	319.16	934.5	9	1	8.64	3.96	1.07	9.53	198
WG-0350	350	329.16	961.1	9	1	9.40	3.96	1.07	9.53	180
WG-0360	360	339.16	987.9	10	1	7.62	3.96	1.07	9.53	271
WG-0370	370	349.16	1014.6	10	1	8.13	3.96	1.07	9.53	249
WG-0380	380	359.16	1041.3	10	1	8.64	3.96	1.07	9.53	229
WG-0390	390	369.16	1072.4	10	1	9.14	3.96	1.07	9.53	211
WG-0400	400	379.16	1099.1	10	1	9.65	3.96	1.07	9.53	196
WG-0410	410	382.82	1125.8	10	1	8.38	3.96	1.07	12.70	251
WG-0420	420	392.82	1152.5	10	1	8.89	3.96	1.07	12.70	233
WG-0430	430	402.82	1179.2	11	1	7.62	3.96	1.07	12.70	317
WG-0440	440	412.82	1205.9	11	1	8.13	3.96	1.07	12.70	295

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



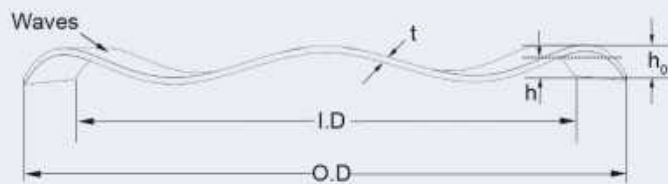
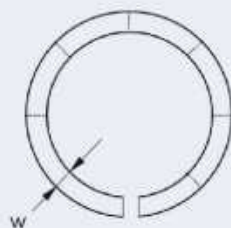
WG系列

缺口型 Gap Type-WG Series

WG - 0044

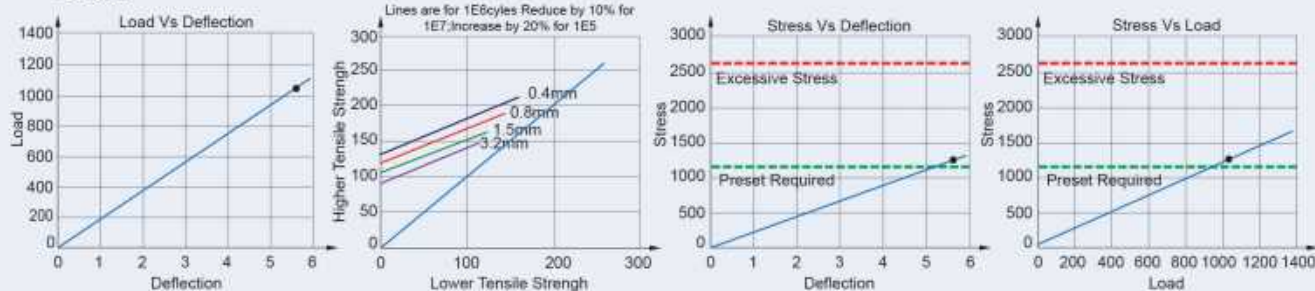
系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向量 Radial width	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WG-0440	440	412.82	1205.9	11	1	8.13	3.96	1.07	12.70	295
WG-0460	460	432.82	1263.7	11	1	8.89	3.96	1.07	12.70	256
WG-0480	480	452.82	1317.1	12	1	8.13	3.96	1.07	12.70	318
WG-0500	500	472.82	1370.5	12	1	8.89	3.96	1.07	12.70	280
WG-0540	540	512.82	1481.8	13	1	8.89	3.96	1.07	12.70	303
WG-0580	580	552.82	1593.0	14	1	8.89	3.96	1.07	12.70	327

WG-0380



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

What is 对顶波簧 A WAVE SPRING?

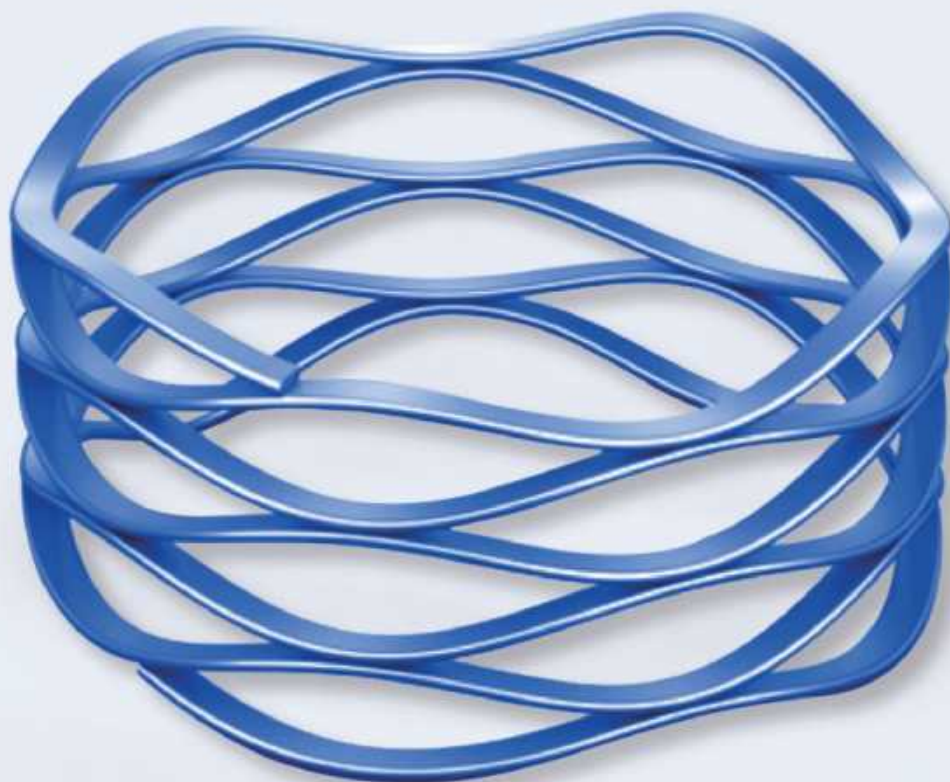
对顶波簧是以串联方式卷绕的扁线多层弹簧。与传统螺旋弹簧相比，这些波形弹簧可提供类似的弹力，同时减少轴向高度(高达50%)。标准对顶弹簧适用于轻至中等负荷和中等行程的应用，是螺旋弹簧的理想替代品。

The counter top wave spring is a flat wire multi-layer spring wound in series. Compared with traditional coil springs, these wave springs can provide similar elasticity while reducing axial height (up to 50%). The standard counter spring is suitable for light to medium load and medium stroke applications, and is an ideal substitute for coil springs.



WM系列

对顶波簧 Wave Springs



减少轴向高度



中等行程



中等负荷



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

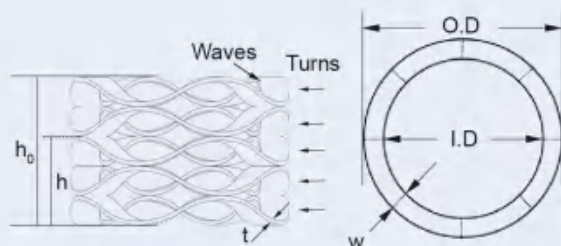
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM06-L3	6	4	6	2.5	3	1.52	0.61	0.13	0.50	6.59
WM06-L4	6	4	6	2.5	4	2.03	0.81	0.13	0.50	4.92
WM06-L5	6	4	6	2.5	5	2.54	1.02	0.13	0.50	3.95
WM06-L6	6	4	6	2.5	6	3.05	1.22	0.13	0.50	3.28
WM06-L7	6	4	6	2.5	7	3.56	1.42	0.13	0.50	2.80
WM06-L8	6	4	6	2.5	8	4.06	1.63	0.13	0.50	2.47
WM06-L9	6	4	6	2.5	9	4.57	1.83	0.13	0.50	2.19
WM06-L11	6	4	6	2.5	11	5.59	2.24	0.13	0.50	1.79
WM06-L13	6	4	6	2.5	13	6.60	2.64	0.13	0.50	1.52
WM06-M3	6	4	12	2.5	3	1.52	0.74	0.15	0.60	15.38
WM06-M4	6	4	12	2.5	4	2.03	0.97	0.15	0.60	11.32
WM06-M5	6	4	12	2.5	5	2.54	1.22	0.15	0.60	9.09
WM06-M6	6	4	12	2.5	6	3.05	1.47	0.15	0.60	7.59
WM06-M7	6	4	12	2.5	7	3.56	1.70	0.15	0.60	6.45
WM06-M8	6	4	12	2.5	8	4.06	1.96	0.15	0.60	5.71
WM06-M9	6	4	12	2.5	9	4.57	2.18	0.15	0.60	5.02
WM06-M11	6	4	12	2.5	11	5.59	2.69	0.15	0.60	4.14
WM06-M13	6	4	12	2.5	13	6.60	3.18	0.15	0.60	3.51
WM08-L3	8	5	15	2.5	3	2.82	1.70	0.20	0.80	13.39
WM08-L4	8	5	15	2.5	4	3.76	2.39	0.20	0.80	10.95
WM08-L5	8	5	15	2.5	5	4.70	2.74	0.20	0.80	7.65
WM08-L6	8	5	15	2.5	6	5.64	3.56	0.20	0.80	7.21
WM08-L7	8	5	15	2.5	7	6.58	4.01	0.20	0.80	5.84
WM08-L8	8	5	15	2.5	8	7.52	4.57	0.20	0.80	5.08
WM08-L9	8	5	15	2.5	9	8.46	5.26	0.20	0.80	4.69
WM08-L11	8	5	15	2.5	11	10.34	6.35	0.20	0.80	3.76
WM08-L13	8	5	15	2.5	13	12.22	7.37	0.20	0.80	3.09
WM08-M3	8	5	30	2.5	3	2.82	1.78	0.25	0.80	28.85
WM08-M4	8	5	30	2.5	4	3.76	2.54	0.25	0.80	24.59

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

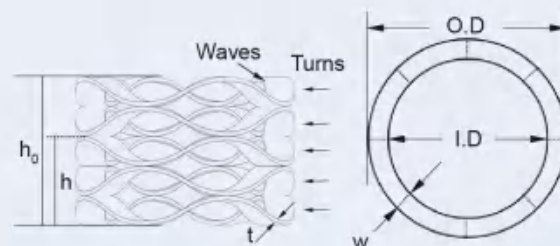
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Turns of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM08-M5	8	5	30	2.5	5	4.70	3.05	0.25	0.80	18.18
WM08-M6	8	5	30	2.5	6	5.64	3.81	0.25	0.80	16.39
WM08-M7	8	5	30	2.5	7	6.58	4.32	0.25	0.80	13.27
WM08-M8	8	5	30	2.5	8	7.52	4.95	0.25	0.80	11.67
WM08-M9	8	5	30	2.5	9	8.46	5.59	0.25	0.80	10.45
WM08-M11	8	5	30	2.5	11	10.34	6.86	0.25	0.80	8.62
WM08-M13	8	5	30	2.5	13	12.22	7.87	0.25	0.80	6.90
WM10-L3	10	7	18	2.5	3	3.96	1.91	0.20	0.80	8.78
WM10-L4	10	7	18	2.5	4	5.28	2.54	0.20	0.80	6.57
WM10-L5	10	7	18	2.5	5	6.60	3.15	0.20	0.80	5.22
WM10-L6	10	7	18	2.5	6	7.92	3.78	0.20	0.80	4.55
WM10-L7	10	7	18	2.5	7	9.25	4.42	0.20	0.80	3.73
WM10-L8	10	7	18	2.5	8	10.57	5.05	0.20	0.80	3.26
WM10-L9	10	7	18	2.5	9	11.89	5.69	0.20	0.80	2.90
WM10-L10	10	7	18	2.5	10	13.21	6.32	0.20	0.80	2.61
WM10-L11	10	7	18	2.5	11	14.53	6.96	0.20	0.80	2.38
WM10-M3	10	7	35	2.5	3	3.96	2.03	0.28	0.80	18.13
WM10-M4	10	7	35	2.5	4	5.28	2.79	0.28	0.80	14.06
WM10-M5	10	7	35	2.5	5	6.60	3.56	0.28	0.80	11.51
WM10-M6	10	7	35	2.5	6	7.92	4.32	0.28	0.80	9.72
WM10-M7	10	7	35	2.5	7	9.25	5.08	0.28	0.80	8.39
WM10-M8	10	7	35	2.5	8	10.57	5.84	0.28	0.80	7.40
WM10-M9	10	7	35	2.5	9	11.89	6.60	0.28	0.80	6.62
WM10-M10	10	7	35	2.5	10	13.21	7.37	0.28	0.80	5.99
WM10-M11	10	7	35	2.5	11	14.53	8.13	0.28	0.80	5.47
WM12-L3	12	9	20	2.5	3	4.34	1.47	0.20	1.00	6.97
WM12-L4	12	9	20	2.5	4	5.79	1.98	0.20	1.00	5.25
WM12-L5	12	9	20	2.5	5	7.24	2.46	0.20	1.00	4.18
WM12-L6	12	9	20	2.5	6	8.69	2.95	0.20	1.00	3.48

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WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

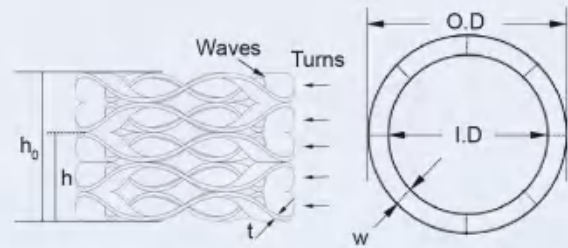
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM12-L7	12	9	20	2.5	7	10.13	3.45	0.20	1.00	2.99
WM12-L8	12	9	20	2.5	8	11.58	3.94	0.20	1.00	2.62
WM12-L9	12	9	20	2.5	9	13.03	4.45	0.20	1.00	2.33
WM12-L10	12	9	20	2.5	10	14.48	4.93	0.20	1.00	2.09
WM12-L11	12	9	20	2.5	11	15.93	5.44	0.20	1.00	1.91
WM12-M3	12	8.5	40	2.5	3	4.34	2.36	0.28	1.20	20.20
WM12-M4	12	8.5	40	2.5	4	5.79	3.18	0.28	1.20	15.33
WM12-M5	12	8.5	40	2.5	5	7.24	3.96	0.28	1.20	12.20
WM12-M6	12	8.5	40	2.5	6	8.69	4.75	0.28	1.20	10.15
WM12-M7	12	8.5	40	2.5	7	10.13	5.54	0.28	1.20	8.71
WM12-M8	12	8.5	40	2.5	8	11.58	6.32	0.28	1.20	7.60
WM12-M9	12	8.5	40	2.5	9	13.03	7.11	0.28	1.20	6.76
WM12-M10	12	8.5	40	2.5	10	14.48	7.92	0.28	1.20	6.10
WM12-M11	12	8.5	40	2.5	11	15.93	8.71	0.28	1.20	5.54
WM12-H3	12	8.5	60	2.5	3	4.34	1.98	0.30	1.15	25.42
WM12-H4	12	8.5	60	2.5	4	5.79	2.64	0.30	1.15	19.05
WM12-H5	12	8.5	60	2.5	5	7.24	3.30	0.30	1.15	15.23
WM12-H6	12	8.5	60	2.5	6	8.69	3.99	0.30	1.15	12.77
WM12-H7	12	8.5	60	2.5	7	10.13	4.65	0.30	1.15	10.95
WM12-H8	12	8.5	60	2.5	8	11.58	5.31	0.30	1.15	9.57
WM12-H9	12	8.5	60	2.5	9	13.03	5.97	0.30	1.15	8.50
WM12-H10	12	8.5	60	2.5	10	14.48	6.63	0.30	1.15	7.64
WM12-H11	12	8.5	60	2.5	11	15.93	7.29	0.30	1.15	6.94
WM14-L3	14	10	22	2.5	3	4.95	2.18	0.23	1.48	7.94
WM14-L4	14	10	22	2.5	4	6.60	2.95	0.23	1.48	6.03
WM14-L5	14	10	22	2.5	5	8.26	3.71	0.23	1.48	4.84
WM14-L6	14	10	22	2.5	6	9.91	4.52	0.23	1.48	4.08
WM14-L7	14	10	22	2.5	7	11.56	5.33	0.23	1.48	3.53
WM14-L8	14	10	22	2.5	8	13.21	6.17	0.23	1.48	3.13

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

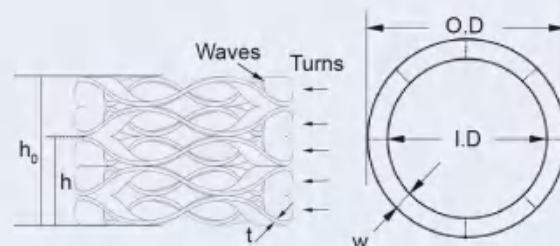
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture diameter	轴直径 External diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM14-L9	14	10	22	2.5	9	14.86	7.01	0.23	1.48	2.80
WM14-L10	14	10	22	2.5	10	16.51	7.85	0.23	1.48	2.54
WM14-L11	14	10	22	2.5	11	18.16	8.71	0.23	1.48	2.33
WM14-M3	14	10	50	2.5	3	4.95	2.18	0.30	1.50	18.05
WM14-M4	14	10	50	2.5	4	6.60	2.95	0.30	1.50	13.70
WM14-M5	14	10	50	2.5	5	8.26	3.71	0.30	1.50	10.99
WM14-M6	14	10	50	2.5	6	9.91	4.52	0.30	1.50	9.28
WM14-M7	14	10	50	2.5	7	11.56	5.33	0.30	1.50	8.03
WM14-M8	14	10	50	2.5	8	13.21	6.17	0.30	1.50	7.10
WM14-M9	14	10	50	2.5	9	14.86	7.01	0.30	1.50	6.37
WM14-M10	14	10	50	2.5	10	16.51	7.85	0.30	1.50	5.77
WM14-M11	14	10	50	2.5	11	18.16	8.71	0.30	1.50	5.29
WM14-H3	14	9	80	2.5	3	4.95	3.15	0.38	1.50	44.44
WM14-H4	14	9	80	2.5	4	6.60	4.19	0.38	1.50	33.20
WM14-H5	14	9	80	2.5	5	8.26	5.26	0.38	1.50	26.67
WM14-H6	14	9	80	2.5	6	9.91	6.30	0.38	1.50	22.16
WM14-H7	14	9	80	2.5	7	11.56	7.34	0.38	1.50	18.96
WM14-H8	14	9	80	2.5	8	13.21	8.41	0.38	1.50	16.67
WM14-H9	14	9	80	2.5	9	14.86	9.45	0.38	1.50	14.79
WM14-H10	14	9	80	2.5	10	16.51	10.49	0.38	1.50	13.29
WM14-H11	14	9	80	2.5	11	18.16	11.56	0.38	1.50	12.12
WM15-L3	15	11	25	2.5	3	5.18	2.57	0.25	1.48	9.58
WM15-L4	15	11	25	2.5	4	6.91	3.43	0.25	1.48	7.18
WM15-L5	15	11	25	2.5	5	8.64	4.27	0.25	1.48	5.72
WM15-L6	15	11	25	2.5	6	10.36	5.13	0.25	1.48	4.78
WM15-L7	15	11	25	2.5	7	12.09	5.99	0.25	1.48	4.10
WM15-L8	15	11	25	2.5	8	13.82	6.83	0.25	1.48	3.58
WM15-L9	15	11	25	2.5	9	15.54	7.70	0.25	1.48	3.19
WM15-L10	15	11	25	2.5	10	17.27	8.53	0.25	1.48	2.86

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlay Type

06

轴孔直径

(mm)

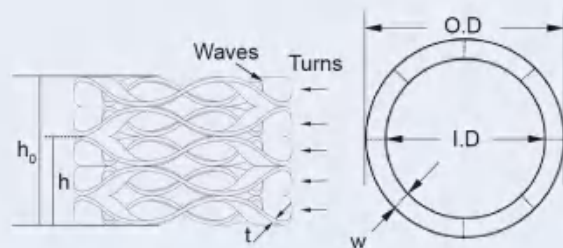
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM15-L11	15	11	25	2.5	11	19.00	9.40	0.25	1.48	2.60
WM15-M3	15	10	50	3.5	3	5.18	3.43	0.23	1.48	28.57
WM15-M4	15	10	50	3.5	4	6.91	4.57	0.23	1.48	21.37
WM15-M5	15	10	50	3.5	5	8.64	5.72	0.23	1.48	17.12
WM15-M6	15	10	50	3.5	6	10.36	6.86	0.23	1.48	14.29
WM15-M7	15	10	50	3.5	7	12.09	8.00	0.23	1.48	12.22
WM15-M8	15	10	50	3.5	8	13.82	9.14	0.23	1.48	10.68
WM15-M9	15	10	50	3.5	9	15.54	10.29	0.23	1.48	9.52
WM15-M10	15	10	50	3.5	10	17.27	11.43	0.23	1.48	8.56
WM15-M11	15	10	50	3.5	11	19.00	12.57	0.23	1.48	7.78
WM15-H3	15	10	80	3.5	3	5.18	3.20	0.25	1.48	40.40
WM15-H4	15	10	80	3.5	4	6.91	4.19	0.25	1.48	29.41
WM15-H5	15	10	80	3.5	5	8.64	5.23	0.25	1.48	23.46
WM15-H6	15	10	80	3.5	6	10.36	6.27	0.25	1.48	19.56
WM15-H7	15	10	80	3.5	7	12.09	7.32	0.25	1.48	16.77
WM15-H8	15	10	80	3.5	8	13.82	8.36	0.25	1.48	14.65
WM15-H9	15	10	80	3.5	9	15.54	9.40	0.25	1.48	13.03
WM15-H10	15	10	80	3.5	10	17.27	10.46	0.25	1.48	11.75
WM15-H11	15	10	80	3.5	11	19.00	11.51	0.25	1.48	10.68
WM16-L3	16	11	25	2.5	3	5.41	2.11	0.25	1.48	7.58
WM16-L4	16	11	25	2.5	4	7.21	2.79	0.25	1.48	5.66
WM16-L5	16	11	25	2.5	5	9.02	3.51	0.25	1.48	4.54
WM16-L6	16	11	25	2.5	6	10.82	4.19	0.25	1.48	3.77
WM16-L7	16	11	25	2.5	7	12.62	4.90	0.25	1.48	3.24
WM16-L9	16	11	25	2.5	9	16.23	6.30	0.25	1.48	2.52
WM16-L11	16	11	25	2.5	11	19.84	7.70	0.25	1.48	2.06
WM16-L13	16	11	25	2.5	13	23.44	9.09	0.25	1.48	1.74
WM16-M3	16	11	55	3.5	3	5.41	3.63	0.25	1.48	30.90
WM16-M4	16	11	55	3.5	4	7.21	4.83	0.25	1.48	23.11

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlay Type

06

轴孔直径

(mm)

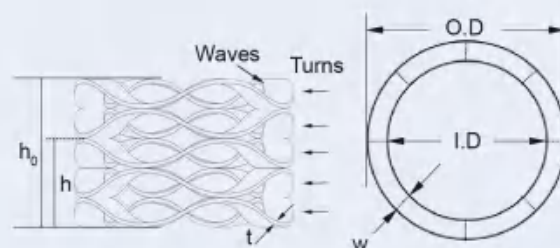
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of wave-forms	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM16-M5	16	11	55	3.5	5	9.02	6.05	0.25	1.48	18.52
WM16-M6	16	11	55	3.5	6	10.82	7.24	0.25	1.48	15.36
WM16-M7	16	11	55	3.5	7	12.62	8.46	0.25	1.48	13.22
WM16-M9	16	11	55	3.5	9	16.23	10.87	0.25	1.48	10.26
WM16-M11	16	11	55	3.5	11	19.84	13.28	0.25	1.48	8.38
WM16-M13	16	11	55	3.5	13	23.44	15.70	0.25	1.48	7.11
WM16-H3	16	11	90	3.5	3	5.41	3.30	0.30	1.50	42.65
WM16-H4	16	11	90	3.5	4	7.21	4.57	0.30	1.50	34.09
WM16-H5	16	11	90	3.5	5	9.02	5.59	0.30	1.50	26.24
WM16-H6	16	11	90	3.5	6	10.82	6.86	0.30	1.50	22.73
WM16-H7	16	11	90	3.5	7	12.62	7.87	0.30	1.50	18.95
WM16-H9	16	11	90	3.5	9	16.23	10.16	0.30	1.50	14.83
WM16-H11	16	11	90	3.5	11	19.84	12.45	0.30	1.50	12.18
WM16-H13	16	11	90	3.5	13	23.44	14.73	0.30	1.50	10.33
WM18-L3	18	13	30	3.5	3	5.72	3.63	0.20	1.80	14.35
WM18-L4	18	13	30	3.5	4	7.62	4.75	0.20	1.80	10.45
WM18-L5	18	13	30	3.5	5	9.53	5.94	0.20	1.80	8.36
WM18-L6	18	13	30	3.5	6	11.43	7.14	0.20	1.80	6.99
WM18-L7	18	13	30	3.5	7	13.34	8.31	0.20	1.80	5.96
WM18-L9	18	13	30	3.5	9	17.15	10.69	0.20	1.80	4.64
WM18-L12	18	13	30	3.5	12	22.86	14.25	0.20	1.80	3.48
WM18-M3	18	13	55	3.5	3	5.72	3.68	0.25	1.85	26.96
WM18-M4	18	13	55	3.5	4	7.62	4.98	0.25	1.85	20.83
WM18-M5	18	13	55	3.5	5	9.53	6.22	0.25	1.85	16.62
WM18-M6	18	13	55	3.5	6	11.43	7.47	0.25	1.85	13.89
WM18-M7	18	13	55	3.5	7	13.34	8.74	0.25	1.85	11.96
WM18-M9	18	13	55	3.5	9	17.15	11.23	0.25	1.85	9.29
WM18-M12	18	13	55	3.5	12	22.86	14.96	0.25	1.85	6.96
WM18-H3	18	13	90	3.5	3	5.72	3.84	0.30	1.85	47.87

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WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

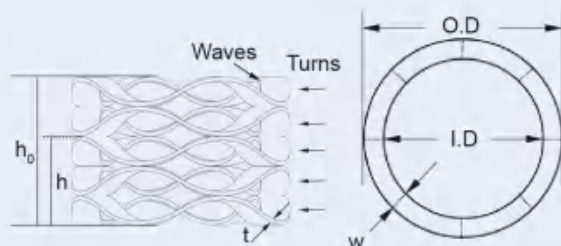
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial width	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM18-H4	18	13	90	3.5	4	7.62	5.13	0.30	1.85	36.14
WM18-H5	18	13	90	3.5	5	9.53	6.40	0.30	1.85	28.75
WM18-H6	18	13	90	3.5	6	11.43	7.70	0.30	1.85	24.13
WM18-H7	18	13	90	3.5	7	13.34	8.97	0.30	1.85	20.59
WM18-H9	18	13	90	3.5	9	17.15	11.53	0.30	1.85	16.01
WM18-H12	18	13	90	3.5	12	22.86	15.37	0.30	1.85	12.02
WM20-L3	20	15	35	3.5	3	6.32	2.72	0.20	1.80	9.72
WM20-L4	20	15	35	3.5	4	8.43	3.61	0.20	1.80	7.26
WM20-L5	20	15	35	3.5	5	10.54	4.52	0.20	1.80	5.81
WM20-L6	20	15	35	3.5	6	12.65	5.41	0.20	1.80	4.83
WM20-L7	20	15	35	3.5	7	14.76	6.32	0.20	1.80	4.15
WM20-L9	20	15	35	3.5	9	18.97	8.13	0.20	1.80	3.23
WM20-L12	20	15	35	3.5	12	25.30	10.82	0.20	1.80	2.42
WM20-M3	20	14	70	3.5	3	6.32	3.05	0.25	2.00	21.41
WM20-M4	20	14	70	3.5	4	8.43	4.06	0.25	2.00	16.02
WM20-M5	20	14	70	3.5	5	10.54	5.08	0.25	2.00	12.82
WM20-M6	20	14	70	3.5	6	12.65	6.27	0.25	2.00	10.97
WM20-M7	20	14	70	3.5	7	14.76	7.32	0.25	2.00	9.41
WM20-M9	20	14	70	3.5	9	18.97	9.17	0.25	2.00	7.14
WM20-M12	20	14	70	3.5	12	25.3	12.22	0.25	2.00	5.35
WM20-H3	20	14	100	3.5	3	6.32	4.24	0.33	2.00	48.08
WM20-H4	20	14	100	3.5	4	8.43	5.66	0.33	2.00	36.1
WM20-H5	20	14	100	3.5	5	10.54	7.06	0.33	2.00	28.74
WM20-H6	20	14	100	3.5	6	12.65	8.48	0.33	2.00	23.98
WM20-H7	20	14	100	3.5	7	14.76	9.91	0.33	2.00	20.62
WM20-H9	20	14	100	3.5	9	18.97	12.73	0.33	2.00	16.03
WM20-H12	20	14	100	3.5	12	25.3	16.97	0.33	2.00	12
WM25-L3	25	19	50	3.5	3	6.63	2.06	0.25	2.18	10.94
WM25-L4	25	19	50	3.5	4	8.84	2.74	0.25	2.18	8.2

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WM系列

对顶波簧 Wave Springs

WM

系列名称

(Wave Springs Overlap Type)

06

轴孔直径

(mm)

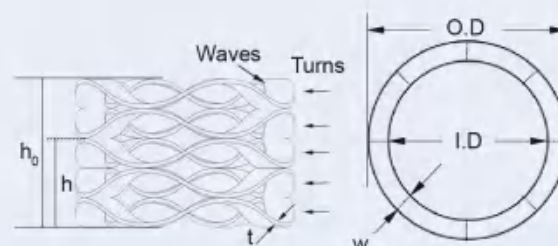
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of wave-forms	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM25-L5	25	19	50	3.5	5	11.05	3.43	0.25	2.18	6.56
WM25-L6	25	19	50	3.5	6	13.26	4.11	0.25	2.18	5.46
WM25-L7	25	19	50	3.5	7	15.47	4.8	0.25	2.18	4.69
WM25-L9	25	19	50	3.5	9	19.89	6.2	0.25	2.18	3.65
WM25-L12	25	19	50	3.5	12	26.52	8.26	0.25	2.18	2.74
WM25-M3	25	19	80	3.5	3	6.63	2.95	0.3	2.40	21.74
WM25-M4	25	19	80	3.5	4	8.84	3.94	0.3	2.40	16.33
WM25-M5	25	19	80	3.5	5	11.05	4.9	0.3	2.40	13.01
WM25-M6	25	19	80	3.5	6	13.26	5.89	0.3	2.40	10.85
WM25-M7	25	19	80	3.5	7	15.47	6.88	0.3	2.40	9.31
WM25-M9	25	19	80	3.5	9	19.89	8.84	0.3	2.40	7.24
WM25-M12	25	19	80	3.5	12	26.52	11.79	0.3	2.40	5.43
WM25-H3	25	19	110	3.5	3	6.63	4.04	0.38	2.40	42.47
WM25-H4	25	19	110	3.5	4	8.84	5.38	0.38	2.40	31.79
WM25-H5	25	19	110	3.5	5	11.05	6.73	0.38	2.40	25.46
WM25-H6	25	19	110	3.5	6	13.26	8.08	0.38	2.40	21.24
WM25-H7	25	19	110	3.5	7	15.47	9.4	0.38	2.40	18.12
WM25-H9	25	19	110	3.5	9	19.89	12.12	0.38	2.40	14.16
WM25-H12	25	19	110	3.5	12	26.52	16.15	0.38	2.40	10.61
WM28-L3	28	22	50	3.5	3	7.24	3.76	0.3	2.40	14.37
WM28-L4	28	22	50	3.5	4	9.65	5	0.3	2.40	10.75
WM28-L5	28	22	50	3.5	5	12.07	6.27	0.3	2.40	8.62
WM28-L6	28	22	50	3.5	6	14.48	7.52	0.3	2.40	7.18
WM28-L7	28	22	50	3.5	7	16.89	8.79	0.3	2.40	6.17
WM28-L8	28	22	50	3.5	8	19.3	10.03	0.3	2.40	5.39
WM28-L9	28	22	50	3.5	9	21.72	11.28	0.3	2.40	4.79
WM28-L11	28	22	50	3.5	11	26.54	13.79	0.3	2.40	3.92
WM28-L13	28	22	50	3.5	13	31.37	16.31	0.3	2.40	3.32
WM28-M3	28	22	80	3.5	3	7.24	4.39	0.38	2.40	28.07

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WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

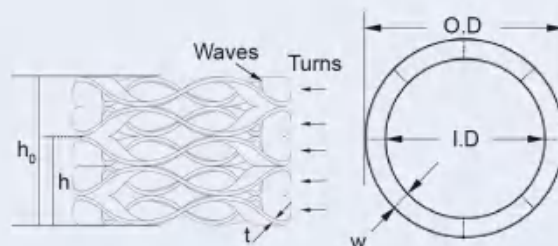
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture diameter	轴直径 External diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM28-M4	28	22	80	3.5	4	9.65	5.84	0.38	2.40	21
WM28-M5	28	22	80	3.5	5	12.07	7.32	0.38	2.40	16.84
WM28-M6	28	22	80	3.5	6	14.48	8.79	0.38	2.40	14.06
WM28-M7	28	22	80	3.5	7	16.89	10.24	0.38	2.40	12.03
WM28-M8	28	22	80	3.5	8	19.3	11.71	0.38	2.40	10.54
WM28-M9	28	22	80	3.5	9	21.72	13.18	0.38	2.40	9.37
WM28-M11	28	22	80	3.5	11	26.54	16.1	0.38	2.40	7.66
WM28-M13	28	22	80	3.5	13	31.37	19.02	0.38	2.40	6.48
WM28-H3	28	22	130	3.5	3	7.24	4.57	0.46	2.40	48.69
WM28-H4	28	22	130	3.5	4	9.65	6.07	0.46	2.40	36.31
WM28-H5	28	22	130	3.5	5	12.07	7.59	0.46	2.40	29.02
WM28-H6	28	22	130	3.5	6	14.48	9.12	0.46	2.40	24.25
WM28-H7	28	22	130	3.5	7	16.89	10.64	0.46	2.40	20.8
WM28-H8	28	22	130	3.5	8	19.3	12.17	0.46	2.40	18.23
WM28-H9	28	22	130	3.5	9	21.72	13.69	0.46	2.40	16.19
WM28-H11	28	22	130	3.5	11	26.54	16.71	0.46	2.40	13.22
WM28-H13	28	22	130	3.5	13	31.37	19.76	0.46	2.40	11.2
WM30-L3	30	24	50	3.5	3	7.62	3.18	0.3	2.40	11.26
WM30-L4	30	24	50	3.5	4	10.16	4.22	0.3	2.40	8.42
WM30-L5	30	24	50	3.5	5	12.7	5.28	0.3	2.40	6.74
WM30-L6	30	24	50	3.5	6	15.24	6.32	0.3	2.40	5.61
WM30-L7	30	24	50	3.5	7	17.78	7.39	0.3	2.40	4.81
WM30-L8	30	24	50	3.5	8	20.32	8.43	0.3	2.40	4.21
WM30-L9	30	24	50	3.5	9	22.86	9.5	0.3	2.40	3.74
WM30-L11	30	24	50	3.5	11	27.94	11.61	0.3	2.40	3.06
WM30-L13	30	24	50	3.5	13	33.02	13.72	0.3	2.40	2.59
WM30-M3	30	24	90	3.5	3	7.62	3.51	0.38	2.40	21.9
WM30-M4	30	24	90	3.5	4	10.16	4.7	0.38	2.40	16.48
WM30-M5	30	24	90	3.5	5	12.7	5.87	0.38	2.40	13.18

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

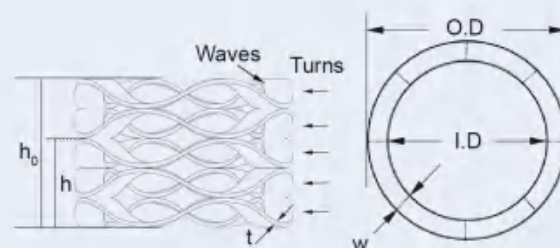
- L

负荷大小

(L=轻 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM30-M6	30	24	90	3.5	6	15.24	7.04	0.38	2.40	10.98
WM30-M7	30	24	90	3.5	7	17.78	8.2	0.38	2.40	9.39
WM30-M8	30	24	90	3.5	8	20.32	9.37	0.38	2.40	8.22
WM30-M9	30	24	90	3.5	9	22.86	10.54	0.38	2.40	7.31
WM30-M11	30	24	90	3.5	11	27.94	12.9	0.38	2.40	5.98
WM30-M13	30	24	90	3.5	13	33.02	15.24	0.38	2.40	5.06
WM30-H3	30	24	130	3.5	3	7.62	4.19	0.46	2.40	37.9
WM30-H4	30	24	130	3.5	4	10.16	5.59	0.46	2.40	28.45
WM30-H5	30	24	130	3.5	5	12.7	6.99	0.46	2.40	22.77
WM30-H6	30	24	130	3.5	6	15.24	8.38	0.46	2.40	18.95
WM30-H7	30	24	130	3.5	7	17.78	9.78	0.46	2.40	16.25
WM30-H8	30	24	130	3.5	8	20.32	11.18	0.46	2.40	14.22
WM30-H9	30	24	130	3.5	9	22.86	12.57	0.46	2.40	12.63
WM30-H11	30	24	130	3.5	11	27.94	15.37	0.46	2.40	10.34
WM30-H13	30	24	130	3.5	13	33.02	18.16	0.46	2.40	8.75
WM35-L3	35	27	70	3.5	3	8.38	3.94	0.36	3.20	15.77
WM35-L4	35	27	70	3.5	4	11.18	5.23	0.36	3.20	11.76
WM35-L5	35	27	70	3.5	5	13.97	6.55	0.36	3.20	9.43
WM35-L6	35	27	70	3.5	6	16.76	7.87	0.36	3.20	7.87
WM35-L7	35	27	70	3.5	7	19.56	9.17	0.36	3.20	6.74
WM35-L8	35	27	70	3.5	8	22.35	10.49	0.36	3.20	5.9
WM35-L9	35	27	70	3.5	9	25.15	11.81	0.36	3.20	5.25
WM35-L11	35	27	70	3.5	11	30.73	14.43	0.36	3.20	4.29
WM35-L13	35	27	70	3.5	13	36.32	17.04	0.36	3.20	3.63
WM35-M3	35	27	110	3.5	3	8.38	4.14	0.41	3.40	25.94
WM35-M4	35	27	110	3.5	4	11.18	5.51	0.41	3.40	19.4
WM35-M5	35	27	110	3.5	5	13.97	6.88	0.41	3.40	15.51
WM35-M6	35	27	110	3.5	6	16.76	8.26	0.41	3.40	12.94
WM35-M7	35	27	110	3.5	7	19.56	9.63	0.41	3.40	11.08

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

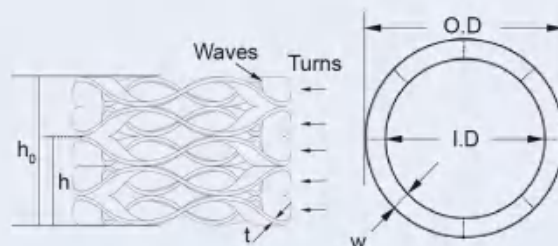
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM35-M8	35	27	110	3.5	8	22.35	11.02	0.41	3.40	9.71
WM35-M9	35	27	110	3.5	9	25.15	12.4	0.41	3.40	8.63
WM35-M11	35	27	110	3.5	11	30.73	15.14	0.41	3.40	7.06
WM35-M13	35	27	110	3.5	13	36.32	17.91	0.41	3.40	5.98
WM35-H3	35	27	160	3.5	3	8.38	4.04	0.46	3.40	36.87
WM35-H4	35	27	160	3.5	4	11.18	5.38	0.46	3.40	27.59
WM35-H5	35	27	160	3.5	5	13.97	6.73	0.46	3.40	22.1
WM35-H6	35	27	160	3.5	6	16.76	8.08	0.46	3.40	18.43
WM35-H7	35	27	160	3.5	7	19.56	9.42	0.46	3.40	15.78
WM35-H8	35	27	160	3.5	8	22.35	10.77	0.46	3.40	13.82
WM35-H9	35	27	160	3.5	9	25.15	12.12	0.46	3.40	12.28
WM35-H11	35	27	160	3.5	11	30.73	14.81	0.46	3.40	10.05
WM35-H13	35	27	160	3.5	13	36.32	17.5	0.46	3.40	8.5
WM40-L3	40	30	100	3.5	3	9.14	2.9	0.41	3.40	16.03
WM40-L4	40	30	100	3.5	4	12.19	3.86	0.41	3.40	12
WM40-L5	40	30	100	3.5	5	15.24	4.8	0.41	3.40	9.58
WM40-L6	40	30	100	3.5	6	18.29	5.77	0.41	3.40	7.99
WM40-L7	40	30	100	3.5	7	21.34	6.73	0.41	3.40	6.84
WM40-L8	40	30	100	3.5	8	24.38	7.7	0.41	3.40	6
WM40-L9	40	30	100	3.5	9	27.43	8.66	0.41	3.40	5.33
WM40-L11	40	30	100	3.5	11	33.53	10.59	0.41	3.40	4.36
WM40-L13	40	30	100	3.5	13	39.62	12.52	0.41	3.40	3.69
WM40-M3	40	30	150	3.5	3	9.14	5.44	0.53	3.65	40.54
WM40-M4	40	30	150	3.5	4	12.19	7.24	0.53	3.65	30.3
WM40-M5	40	30	150	3.5	5	15.24	9.04	0.53	3.65	24.19
WM40-M6	40	30	150	3.5	6	18.29	10.85	0.53	3.65	20.16
WM40-M7	40	30	150	3.5	7	21.34	12.65	0.53	3.65	17.26
WM40-M8	40	30	150	3.5	8	24.38	14.48	0.53	3.65	15.15
WM40-M9	40	30	150	3.5	9	27.43	16.28	0.53	3.65	13.45

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

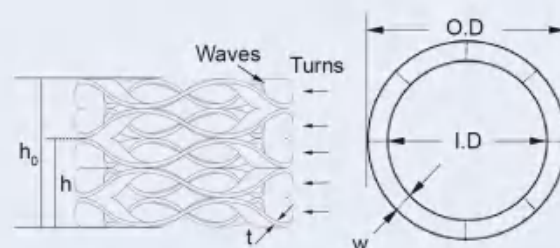
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture diameter	轴直径 External diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM40-M11	40	30	150	3.5	11	33.53	19.89	0.53	3.65	11
WM40-M13	40	30	150	3.5	13	39.62	23.5	0.53	3.65	9.31
WM40-H3	40	30	300	4.5	3	9.14	5.66	0.46	3.40	86.21
WM40-H4	40	30	300	4.5	4	12.19	7.54	0.46	3.40	64.52
WM40-H5	40	30	300	4.5	5	15.24	9.42	0.46	3.40	51.55
WM40-H6	40	30	300	4.5	6	18.29	11.33	0.46	3.40	43.1
WM40-H7	40	30	300	4.5	7	21.34	13.21	0.46	3.40	36.9
WM40-H8	40	30	300	4.5	8	24.38	15.09	0.46	3.40	32.29
WM40-H9	40	30	300	4.5	9	27.43	16.97	0.46	3.40	28.68
WM40-H11	40	30	300	4.5	11	33.53	20.75	0.46	3.40	23.47
WM40-H13	40	30	300	4.5	13	39.62	24.54	0.46	3.40	19.89
WM45-L3	45	35	110	3.5	3	9.91	3.38	0.46	3.65	16.85
WM45-L4	45	35	110	3.5	4	13.21	4.52	0.46	3.65	12.66
WM45-L5	45	35	110	3.5	5	16.51	5.64	0.46	3.65	10.12
WM45-L6	45	35	110	3.5	6	19.81	6.76	0.46	3.65	8.43
WM45-L7	45	35	110	3.5	7	23.11	7.9	0.46	3.65	7.23
WM45-L8	45	35	110	3.5	8	26.42	9.02	0.46	3.65	6.32
WM45-L9	45	35	110	3.5	9	29.72	10.16	0.46	3.65	5.62
WM45-L11	45	35	110	3.5	11	36.32	12.4	0.46	3.65	4.6
WM45-L13	45	35	110	3.5	13	42.93	14.66	0.46	3.65	3.89
WM45-M3	45	35	225	4.5	3	9.91	5.33	0.46	3.65	49.13
WM45-M4	45	35	225	4.5	4	13.21	6.99	0.46	3.65	36.17
WM45-M5	45	35	225	4.5	5	16.51	9.14	0.46	3.65	30.53
WM45-M6	45	35	225	4.5	6	19.81	10.8	0.46	3.65	24.97
WM45-M7	45	35	225	4.5	7	23.11	12.7	0.46	3.65	21.61
WM45-M8	45	35	225	4.5	8	26.42	14.48	0.46	3.65	18.84
WM45-M9	45	35	225	4.5	9	29.72	16.26	0.46	3.65	16.72
WM45-M11	45	35	225	4.5	11	36.32	19.81	0.46	3.65	13.63
WM45-M13	45	35	225	4.5	13	42.93	23.37	0.46	3.65	11.5

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

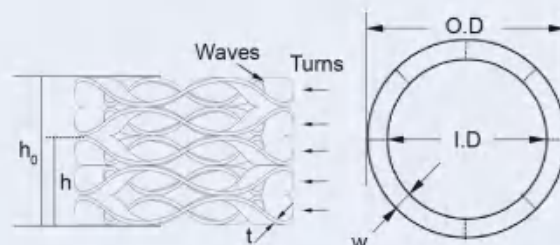


WM系列

对顶波簧 Wave Springs

WM **06** - **L** **3**

系列名称 轴孔直径 负荷大小 圈数
 (= Wave Springs Overlap Type) (mm) (L=小 M=中 H=大)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of undulations	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM45-H3	45	35	400	4.5	3	9.91	6.43	0.61	3.75	114.94
WM45-H4	45	35	400	4.5	4	13.21	8.38	0.61	3.75	82.82
WM45-H5	45	35	400	4.5	5	16.51	11.2	0.61	3.75	75.33
WM45-H6	45	35	400	4.5	6	19.81	12.95	0.61	3.75	58.31
WM45-H7	45	35	400	4.5	7	23.11	15.37	0.61	3.75	51.68
WM45-H8	45	35	400	4.5	8	26.42	17.27	0.61	3.75	43.72
WM45-H9	45	35	400	4.5	9	29.72	19.68	0.61	3.75	39.88
WM45-H11	45	35	400	4.5	11	36.32	24.26	0.61	3.75	33.17
WM45-H13	45	35	400	4.5	13	42.93	28.45	0.61	3.75	27.62
WM50-L3	50	40	110	3.5	3	10.29	4.83	0.53	3.65	20.15
WM50-L4	50	40	110	3.5	4	13.72	6.1	0.53	3.65	14.44
WM50-L5	50	40	110	3.5	5	17.15	7.87	0.53	3.65	11.85
WM50-L6	50	40	110	3.5	6	20.57	9.4	0.53	3.65	9.85
WM50-L7	50	40	110	3.5	7	24	11.3	0.53	3.65	8.66
WM50-L8	50	40	110	3.5	8	27.43	12.7	0.53	3.65	7.47
WM50-L9	50	40	110	3.5	9	30.86	14.99	0.53	3.65	6.93
WM50-L11	50	40	110	3.5	11	37.72	18.16	0.53	3.65	5.62
WM50-L13	50	40	110	3.5	13	44.58	21.34	0.53	3.65	4.73
WM50-L15	50	40	110	3.5	15	51.44	24.64	0.53	3.65	4.1
WM50-M3	50	40	225	4.5	3	10.29	4.62	0.46	3.65	39.68
WM50-M4	50	40	225	4.5	4	13.72	5.84	0.46	3.65	30.53
WM50-M5	50	40	225	4.5	5	17.15	7.49	0.46	3.65	23.29
WM50-M6	50	40	225	4.5	6	20.57	8.89	0.46	3.65	19.26
WM50-M7	50	40	225	4.5	7	24	10.54	0.46	3.65	16.72
WM50-M8	50	40	225	4.5	8	27.43	11.89	0.46	3.65	14.48
WM50-M9	50	40	225	4.5	9	30.86	13.59	0.46	3.65	13.03
WM50-M11	50	40	225	4.5	11	37.72	16.71	0.46	3.65	10.71
WM50-M13	50	40	225	4.5	13	44.58	19.61	0.46	3.65	9.01
WM50-M15	50	40	225	4.5	15	51.44	22.48	0.46	3.65	7.77

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

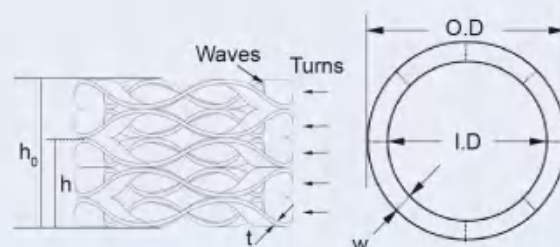
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of Waves	圈数 Number of Turns	自由高度 Free Height	工作高度 Working Height	厚度 Thickness	径向壁 Radial width	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM50-H3	50	40	400	4.5	3	10.29	5.92	0.61	3.75	91.53
WM50-H4	50	40	400	4.5	4	13.72	7.8	0.61	3.75	67.57
WM50-H5	50	40	400	4.5	5	17.15	10.16	0.61	3.75	57.22
WM50-H6	50	40	400	4.5	6	20.57	11.79	0.61	3.75	45.56
WM50-H7	50	40	400	4.5	7	24	14.15	0.61	3.75	40.61
WM50-H8	50	40	400	4.5	8	27.43	15.62	0.61	3.75	33.87
WM50-H9	50	40	400	4.5	9	30.86	17.91	0.61	3.75	30.89
WM50-H11	50	40	400	4.5	11	37.72	21.54	0.61	3.75	24.72
WM50-H13	50	40	400	4.5	13	44.58	25.65	0.61	3.75	21.13
WM50-H15	50	40	400	4.5	15	51.44	29.21	0.61	3.75	17.99
WM55-L3	55	45	125	3.5	3	11.05	5.59	0.61	3.75	22.89
WM55-L4	55	45	125	3.5	4	14.73	7.72	0.61	3.75	17.83
WM55-L5	55	45	125	3.5	5	18.41	9.68	0.61	3.75	14.3
WM55-L6	55	45	125	3.5	6	22.1	11.48	0.61	3.75	11.77
WM55-L7	55	45	125	3.5	7	25.78	13.92	0.61	3.75	10.54
WM55-L8	55	45	125	3.5	8	29.46	15.52	0.61	3.75	8.97
WM55-L9	55	45	125	3.5	9	33.15	18.41	0.61	3.75	8.49
WM55-L11	55	45	125	3.5	11	40.51	21.67	0.61	3.75	6.63
WM55-L13	55	45	125	3.5	13	47.88	25.65	0.61	3.75	5.62
WM55-L15	55	45	125	3.5	15	55.25	29.77	0.61	3.75	4.91
WM55-M3	55	45	250	4.5	3	11.05	3.1	0.46	3.65	31.45
WM55-M4	55	45	250	4.5	4	14.73	4.11	0.46	3.65	23.54
WM55-M5	55	45	250	4.5	5	18.41	5.16	0.46	3.65	18.85
WM55-M6	55	45	250	4.5	6	22.1	6.2	0.46	3.65	15.72
WM55-M7	55	45	250	4.5	7	25.78	7.21	0.46	3.65	13.46
WM55-M8	55	45	250	4.5	8	29.46	8.26	0.46	3.65	11.79
WM55-M9	55	45	250	4.5	9	33.15	9.27	0.46	3.65	10.47
WM55-M11	55	45	250	4.5	11	40.51	11.33	0.46	3.65	8.57
WM55-M13	55	45	250	4.5	13	47.88	13.41	0.46	3.65	7.25

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

Other materials such as 304 stainless steel and 72A can be customized. Use "MWP" prefix for squared-shim ends.

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

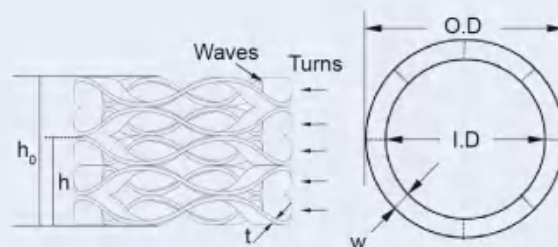
- L

负荷大小

(L=小 M=中 H=大)

3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of Waveform	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM55-M15	55	45	250	4.5	15	55.25	15.47	0.46	3.65	6.28
WM55-H3	55	45	400	4.5	3	11.05	5.31	0.61	3.75	69.69
WM55-H4	55	45	400	4.5	4	14.73	7.24	0.61	3.75	53.4
WM55-H5	55	45	400	4.5	5	18.41	9.09	0.61	3.75	42.87
WM55-H6	55	45	400	4.5	6	22.1	10.64	0.61	3.75	34.9
WM55-H7	55	45	400	4.5	7	25.78	12.24	0.61	3.75	29.54
WM55-H8	55	45	400	4.5	8	29.46	14.1	0.61	3.75	26.04
WM55-H9	55	45	400	4.5	9	33.15	15.82	0.61	3.75	23.08
WM55-H11	55	45	400	4.5	11	40.51	19.3	0.61	3.75	18.86
WM55-H13	55	45	400	4.5	13	47.88	23.11	0.61	3.75	16.15
WM55-H15	55	45	400	4.5	15	55.25	26.54	0.61	3.75	13.93
WM60-L3	60	50	135	4.5	3	11.43	5.59	0.46	3.65	23.12
WM60-L4	60	50	135	4.5	4	15.24	7.47	0.46	3.65	17.37
WM60-L5	60	50	135	4.5	5	19.05	9.32	0.46	3.65	13.87
WM60-L6	60	50	135	4.5	6	22.86	11.2	0.46	3.65	11.58
WM60-L7	60	50	135	4.5	7	26.67	13.06	0.46	3.65	9.92
WM60-L8	60	50	135	4.5	8	30.48	14.94	0.46	3.65	8.69
WM60-L9	60	50	135	4.5	9	34.29	16.79	0.46	3.65	7.71
WM60-L11	60	50	135	4.5	11	41.91	20.52	0.46	3.65	6.31
WM60-L13	60	50	135	4.5	13	49.53	24.26	0.46	3.65	5.34
WM60-L15	60	50	135	4.5	15	57.15	27.99	0.46	3.65	4.63
WM60-M3	60	50	275	4.5	3	11.43	6.65	0.61	3.75	57.53
WM60-M4	60	50	275	4.5	4	15.24	8.86	0.61	3.75	43.1
WM60-M5	60	50	275	4.5	5	19.05	11.07	0.61	3.75	34.46
WM60-M6	60	50	275	4.5	6	22.86	13.28	0.61	3.75	28.71
WM60-M7	60	50	275	4.5	7	26.67	15.49	0.61	3.75	24.6
WM60-M8	60	50	275	4.5	8	30.48	17.7	0.61	3.75	21.52
WM60-M9	60	50	275	4.5	9	34.29	19.94	0.61	3.75	19.16
WM60-M11	60	50	275	4.5	11	41.91	24.36	0.61	3.75	15.67

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用"MWF"前缀。

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波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WM系列

对顶波簧 Wave Springs

WM

系列名称

Wave Springs Overlap Type

06

轴孔直径

(mm)

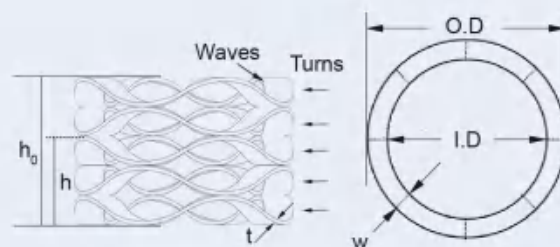
- L

负荷大小

(L=小 M=中 H=大)

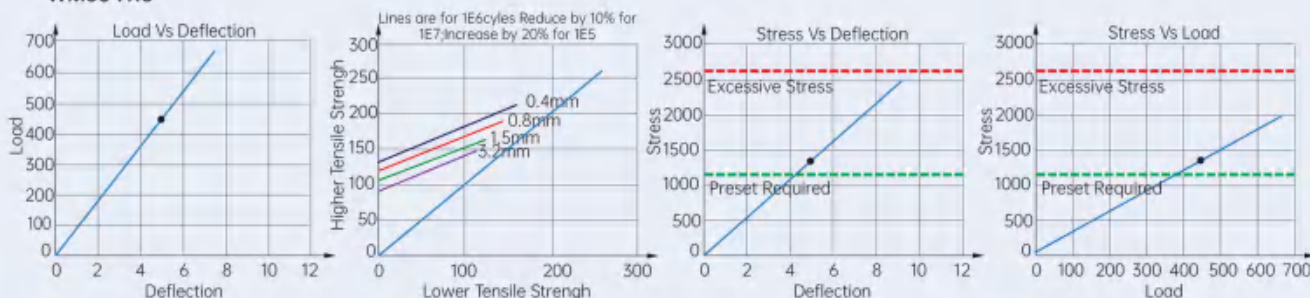
3

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of Turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WM60-M13	60	50	275	4.5	13	49.53	28.78	0.61	3.75	13.25
WM60-M15	60	50	275	4.5	15	57.15	33.22	0.61	3.75	11.49
WM60-H3	60	50	450	4.5	3	11.43	7.75	0.76	4.00	122.28
WM60-H4	60	50	450	4.5	4	15.24	10.31	0.76	4.00	91.28
WM60-H5	60	50	450	4.5	5	19.05	12.9	0.76	4.00	73.17
WM60-H6	60	50	450	4.5	6	22.86	15.47	0.76	4.00	60.89
WM60-H7	60	50	450	4.5	7	26.67	18.06	0.76	4.00	52.26
WM60-H8	60	50	450	4.5	8	30.48	20.62	0.76	4.00	45.64
WM60-H9	60	50	450	4.5	9	34.29	23.22	0.76	4.00	40.65
WM60-H11	60	50	450	4.5	11	41.91	28.37	0.76	4.00	33.23
WM60-H13	60	50	450	4.5	13	49.53	33.53	0.76	4.00	28.13
WM60-H15	60	50	450	4.5	15	57.15	38.68	0.76	4.00	24.36

WM60-H15



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制。平端请使用“MWF”前缀。

Other materials such as 304 stainless steel and 72A can be customized. Use "MWP" prefix for squared-shim ends.

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

What is 平垫圈

A FLAT WASHER?

平垫圈和波簧结合起来用于需要靠板的软金属外壳，还用于以皮革、氯丁橡胶或类似材料制成的包装。垫圈可以充当隔圈，以改变波簧的工作高度。增减垫片是调整波簧所承载负荷的出色方法。

Flat washers and wave springs are combined for soft metal shells that require backing plates; and also for packaging made of leather, neoprene or similar materials. The washer can act as a spacer to change the working height of the wave spring. Adding or removing shims is an excellent way to adjust the load carried by the wave spring.



WF系列

平垫圈 Flat Washer Type-WF Series



调节高度



应用广泛



作用明显



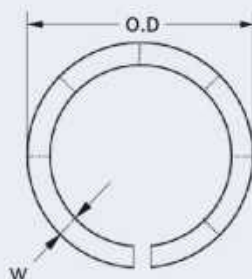
WF系列

平垫圈 Flat Washer Type-WF Series

WF - 0019

系列名称
Wave Springs Overlap Type

适用直径
(mm)



编号 Model	适用直径 Aperture Diameter	范围扩展 External Diameter	厚度 Thickness	径向壁 Radial wall	零件重量/1000件 Part Weight
	mm	mm	mm	mm	KG
WF-0019	19	+0.000/-0.381	0.61	2.36	0.59
WF-0022	22		0.61	2.36	0.70
WF-0025	25		0.61	2.62	0.89
WF-0029	29		0.61	3.51	1.32
WF-0032	32		0.61	3.51	1.49
WF-0035	35		0.61	3.51	1.66
WF-0038	38	+0.000/-0.508	0.61	3.81	1.96
WF-0041	41		0.61	3.81	2.15
WF-0044	44		0.61	3.81	2.33
WF-0048	48		0.61	3.81	2.51
WF-0051	51		0.61	3.81	2.69
WF-0054	54		0.61	3.81	2.87
WF-0057	57	+0.000/-0.635	0.61	4.52	3.05
WF-0060	60		0.61	4.52	3.79
WF-0064	64		0.61	4.52	4.01
WF-0067	67		0.61	4.52	4.22
WF-0070	70		0.76	4.78	5.83
WF-0073	73		0.76	4.78	6.12
WF-0076	76	+0.000/-0.762	0.76	4.78	6.40
WF-0079	79		0.76	5.92	6.69
WF-0083	83		0.76	5.92	8.51
WF-0086	86		0.76	5.92	8.87
WF-0089	89		0.76	5.92	9.22
WF-0092	92		0.76	5.92	9.57
WF-0095	95	+0.000/-0.889	0.76	5.92	9.92
WF-0098	98		0.76	5.92	10.28
WF-0102	102		0.76	5.92	10.63
WF-0105	105		0.76	5.92	10.98
WF-0108	108		0.76	5.92	11.34
WF-0111	111		0.76	5.92	11.69
WF-0114	114	+0.000/-0.889	0.76	5.92	12.04
WF-0117	117		0.76	5.92	12.39
WF-0121	121		0.76	5.92	12.75
WF-0124	124		0.76	5.92	13.10
WF-0127	127		0.76	5.92	13.45
WF-0130	130		0.76	5.92	13.80



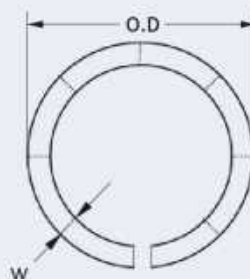
WF系列

平垫圈 Flat Washer Type-WF Series

WF - 0019

系列名称
Wave Springs Overlap-Type

适用直径
(mm)



编号 Masct	适用直径 Aperture Diameter	范围扩展 Extensal Diameter	厚度 Thickness	径向壁 Radial wall	零件重量/1000件 Part Weight
	mm	mm	mm	mm	KG
WF-0133	133	+0.000/-1.524	0.76	5.92	14.16
WF-0137	137		0.76	5.92	14.51
WF-0140	140		0.76	5.92	14.86
WF-0143	143		0.76	5.92	15.21
WF-0146	146		0.76	5.92	15.57
WF-0149	149		0.76	5.92	15.92
WF-0152	152		0.76	5.92	16.27
WF-0156	156		0.76	5.92	16.63
WF-0159	159		0.76	5.92	16.98
WF-0162	162		0.76	5.92	17.33
WF-0165	165	+0.000/-1.778	0.76	5.92	17.69
WF-0171	171		0.76	5.92	18.39
WF-0178	178		0.81	9.53	32.10
WF-0184	184		0.81	9.53	33.31
WF-0191	191		0.81	9.53	34.52
WF-0197	197		0.81	9.53	35.73
WF-0203	203		0.81	9.53	36.94
WF-0210	210		0.81	9.53	38.15
WF-0216	216		0.81	9.53	39.36
WF-0222	222		0.81	9.53	40.57
WF-0229	229	+0.000/-2.032	0.81	9.53	41.78
WF-0241	241		0.81	9.53	44.21
WF-0254	254		0.81	9.53	46.63
WF-0267	267		0.81	9.53	49.05
WF-0279	279		0.81	9.53	51.47
WF-0292	292		0.81	9.53	53.90
WF-0305	305		0.81	9.53	56.32
WF-0318	318		0.81	9.53	58.74
WF-0330	330		0.81	9.53	61.16
WF-0343	343		0.81	9.53	63.58
WF-0356	356	+0.000/-1.143	0.81	9.53	66.01
WF-0368	368		0.81	9.53	68.43
WF-0381	381		0.81	9.53	70.85
WF-0394	394		0.81	9.53	73.27
WF-0406	406		0.81	9.53	75.70

What is 圆线型 A WAVE SPRING?

圆线型波簧可产生极高的负荷，且弹簧刚度准确、可预测。它们用于减少或消除预负荷振动，补偿由于组件中的热膨胀引起的松动，或者在需要极高弹力的极其狭窄的径向空间中使用。

The circular wave spring can produce extremely high load, and the spring stiffness is accurate and predictable. They are used to reduce or eliminate preload vibration, compensate for looseness caused by thermal expansion in components, or in extremely narrow radial spaces that require extremely high elasticity.



WR系列

圆线型 Round Wire Type-WR Series



节省空间



极高弹力



极高负荷



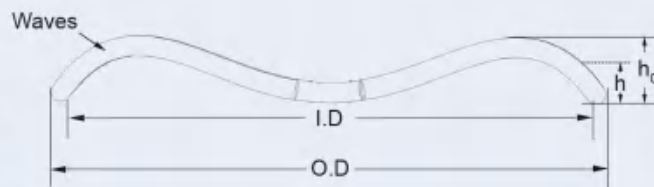
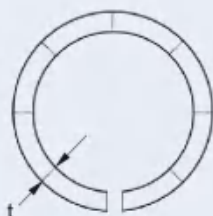
WR系列

圆线型 Round Wire Type-WR Series

WR - 0013

系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	线材直径 Material diameter	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	N/mm
WR-0013	13	10	156	3	1	1.57	1.32	0.79	613
WR-0016	16	13	222	3	1	1.96	1.63	0.97	673
WR-0019	19	16	311	3	1	2.34	1.93	1.14	766
WR-0022	22	19	356	3	1	2.64	2.18	1.30	778
WR-0025	25	22	400	3	1	2.95	2.41	1.42	750
WR-0029	29	25	445	3	1	3.23	2.59	1.52	700
WR-0032	32	27	489	3	1	3.51	2.79	1.65	688
WR-0035	35	31	533	4	1	3.07	2.41	1.42	808
WR-0038	38	34	578	4	1	3.25	2.59	1.52	875
WR-0041	41	37	622	4	1	3.48	2.79	1.65	907
WR-0044	44	40	667	4	1	3.66	2.87	1.70	847
WR-0048	48	43	711	4	1	3.94	3.02	1.78	778
WR-0051	51	46	756	4	1	4.19	3.15	1.83	726
WR-0054	54	48	800	4	1	4.11	3.28	1.93	955
WR-0057	57	51	845	4	1	4.27	3.45	2.03	1039
WR-0060	60	54	889	4	1	4.52	3.58	2.11	946
WR-0064	64	57	934	4	1	4.70	3.66	2.16	896
WR-0067	67	60	978	4	1	5.16	3.89	2.29	770
WR-0070	70	63	1022	4	1	5.38	3.91	2.31	694
WR-0073	73	66	1067	4	1	5.33	4.01	2.36	808
WR-0076	76	70	1111	5	1	4.55	3.58	2.11	1151
WR-0079	79	73	1156	5	1	4.67	3.66	2.16	1138
WR-0083	83	76	1200	5	1	4.83	3.89	2.29	1277
WR-0086	86	79	1245	5	1	4.95	3.91	2.31	1195
WR-0086	89	82	1289	5	1	5.11	4.01	2.36	1180
WR-0092	92	85	1334	5	1	5.23	4.09	2.41	1167
WR-0095	95	88	1378	5	1	5.38	4.22	2.49	1179
WR-0098	98	91	1422	5	1	5.28	4.32	2.54	1474
WR-0102	102	94	1467	5	1	5.72	4.32	2.54	1050

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



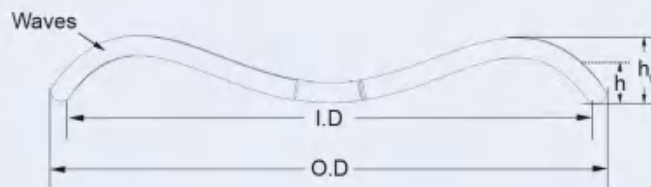
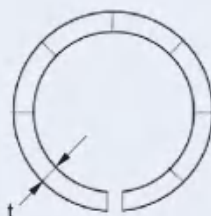
WR系列

圆线型 Round Wire Type-WR Series

WR - 0013

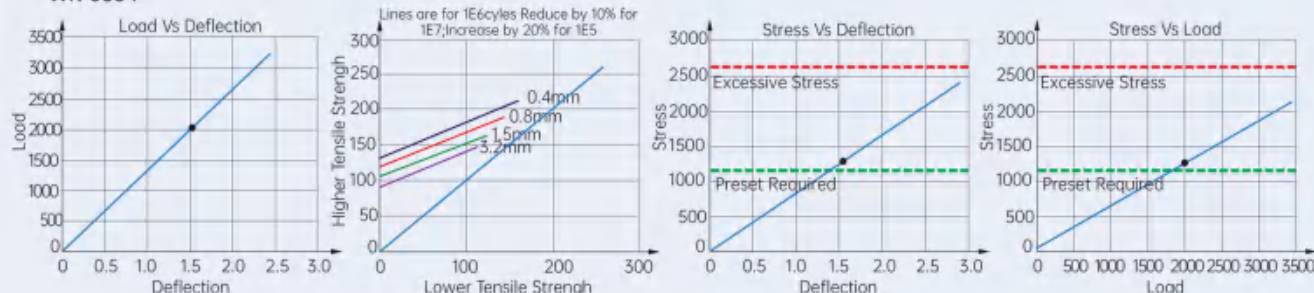
系列名称
Wave Springs Overlap Type

轴孔直径
(mm)



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	线材直径 Material diameter	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	N/mm
WR-0105	105	97	1489	5	1	5.61	4.45	2.67	1275
WR-0108	108	100	1534	5	1	5.72	4.52	2.67	1285
WR-0111	111	103	1556	5	1	6.10	4.75	2.79	1156
WR-0114	114	106	1600	5	1	6.27	4.75	2.79	1050
WR-0117	117	109	1623	5	1	6.43	4.75	2.79	968
WR-0121	121	113	1667	5	1	6.53	4.83	2.84	979
WR-0124	124	116	1689	5	1	6.71	4.83	2.84	899
WR-0127	127	119	1734	5	1	6.73	4.95	2.95	975
WR-0130	130	121	1778	5	1	6.96	5.08	3.00	946
WR-0135	133	124	1823	5	1	7.09	5.18	3.05	957
WR-0137	137	128	1867	6	1	6.22	4.75	2.79	1267
WR-0140	140	131	1911	6	1	6.38	4.75	2.79	1176
WR-0143	143	134	1956	6	1	6.22	4.83	2.84	1400
WR-0146	146	137	2000	6	1	6.38	4.83	2.84	1291
WR-0149	149	140	2045	6	1	6.65	5.00	2.95	1238
WR-0152	152	143	2089	6	1	6.81	5.08	3.00	1210

WR-0054



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

What is 叠型 A WAVE SPRING?

叠型波簧是平行盘绕的多层扁线波形弹簧，可选双层或三层配置。它们可以代替单层波形弹簧的堆叠，从而避免堆叠单个弹簧的错误并减少装配时间。层叠波形弹簧适用于需要中等至重负荷且变形较小的应用。

Stacked wave springs are multi-layer flat-line waveform springs wound in parallel, optionally arranged in two or three layers. They can replace the stacking of single-layer waveform springs, thus avoiding errors in stacking individual springs and reducing assembly time. Stacked waveform springs are suitable for applications requiring moderate to heavy loads and small deformations.



WS系列

叠型 Stacked Wave Springs-WS Series



装配精准



较小变形



中等负荷



WS系列

叠型 Stacked Wave Springs-WS Series

WL

系列名称

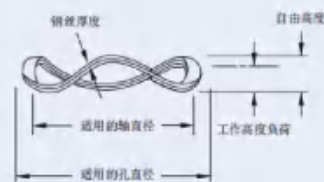
Wave Springs Overlap Type

0016

轴孔直径
(mm)

2

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WS0016-2	16.00	11.46	89.0	3	2	2.46	1.83	0.28	1.52	140
WS0016-3	16.00	11.46	133.5	3	3	3.15	2.08	0.28	1.52	125
WS0019-2	19.00	13.36	106.8	3	2	2.77	1.83	0.28	1.98	114
WS0019-3	19.00	13.36	160.2	3	3	3.18	2.08	0.28	1.98	146
WS0022-2	22.00	15.75	124.6	3	2	3.14	1.88	0.30	2.39	99
WS0022-3	22.00	15.75	186.9	3	3	3.56	2.18	0.30	2.39	136
WS0024-2	24.00	17.02	133.5	3	2	3.56	1.88	0.30	2.39	80
WS0024-3	24.00	17.02	200.3	3	3	3.86	2.18	0.30	2.39	119
WS0026-2	26.00	18.14	142.4	3	2	3.37	2.34	0.36	3.18	138
WS0026-3	26.00	18.14	213.6	3	3	3.73	2.69	0.36	3.18	205
WS0028-2	28.00	20.07	151.3	3	2	3.68	2.34	0.36	3.18	113
WS0028-3	28.00	20.07	227.0	3	3	4.04	2.69	0.36	3.18	168
WS0030-2	30.00	21.87	169.1	3	2	4.24	2.34	0.36	3.18	89
WS0030-3	30.00	21.87	253.7	3	3	4.78	2.69	0.36	3.18	121
WS0032-2	32.00	23.67	178.0	3	2	4.07	2.39	0.41	3.38	106
WS0032-3	32.00	23.67	267.0	3	3	4.48	2.79	0.41	3.38	158
WS0035-2	35.00	26.42	195.8	3	2	4.94	2.39	0.41	3.38	77
WS0035-3	35.00	26.42	293.7	3	3	5.35	2.79	0.41	3.38	115
WS0037-2	37.00	28.65	204.7	3	2	4.72	2.44	0.46	3.38	90
WS0037-3	37.00	28.65	307.1	3	3	5.18	2.90	0.46	3.38	135
WS0040-2	40.00	31.01	222.5	3	2	5.70	2.44	0.46	3.38	68
WS0040-3	40.00	31.01	333.8	3	3	6.15	2.90	0.46	3.38	103
WS0042-2	42.00	33.50	231.4	4	2	3.71	2.44	0.46	3.38	182
WS0042-3	42.00	33.50	347.1	4	3	4.17	2.90	0.46	3.38	273
WS0047-2	47.00	38.18	258.1	4	2	4.52	2.44	0.46	3.38	124
WS0047-3	47.00	38.18	387.2	4	3	4.98	2.90	0.46	3.38	186
WS0052-2	52.00	42.37	284.8	4	2	4.15	2.97	0.61	3.76	241
WS0052-3	52.00	42.37	427.2	4	3	4.76	3.58	0.61	3.76	362
WS0055-2	55.00	45.31	302.6	4	2	4.48	2.97	0.61	3.76	200

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WS系列

叠型 Stacked Wave Springs-WS Series

WL

系列名称

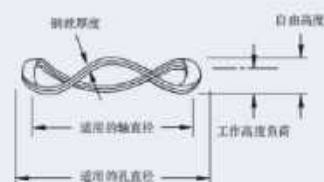
Wave Springs Overlap Type

0016

 轴孔直径
(mm)

- 2

圈数



编号 Model	轴孔直径 Aperture Diameter	轴直径 External Diameter	负荷 Load	波形数量 Number of waveforms	圈数 Number of turns	自由高度 Free height	工作高度 Working height	厚度 Thickness	径向壁 Radial wall	弹性系数 Spring stiffness
	mm	mm	N			mm	mm	mm	mm	N/mm
WS0055-3	55.00	45.31	453.9	4	3	5.09	3.58	0.61	3.76	301
WS0062-2	62.00	50.65	338.2	4	2	4.93	2.97	0.61	4.52	173
WS0062-3	62.00	50.65	507.3	4	3	5.54	3.58	0.61	4.52	259
WS0068-2	68.00	56.16	373.8	4	2	4.94	3.53	0.76	4.78	265
WS0068-3	68.00	56.16	560.7	4	3	5.70	4.29	0.76	4.78	398
WS0070-2	70.00	58.14	382.7	4	2	5.12	3.53	0.76	4.78	241
WS0070-3	70.00	58.14	574.1	4	3	5.88	4.29	0.76	4.78	361
WS0072-2	72.00	60.07	391.6	4	2	5.32	3.53	0.76	4.78	219
WS0072-3	72.00	60.07	587.4	4	3	6.08	4.29	0.76	4.78	328
WS0075-2	75.00	62.97	409.4	4	2	5.68	3.53	0.76	4.78	190
WS0075-3	75.00	62.97	614.1	4	3	6.44	4.29	0.76	4.78	286
WS0080-2	80.00	67.49	436.1	4	2	6.37	3.53	0.76	4.78	154
WS0080-3	80.00	67.49	654.2	4	3	7.13	4.29	0.76	4.78	230
WS0085-2	85.00	70.26	462.8	4	2	6.29	3.53	0.76	5.92	168
WS0085-3	85.00	70.26	694.2	4	3	7.05	4.29	0.76	5.92	252
WS0090-2	90.00	74.98	498.4	4	2	7.13	3.53	0.76	5.92	138
WS0090-3	90.00	74.98	747.6	4	3	7.89	4.29	0.76	5.92	208
WS0095-2	95.00	79.65	525.1	4	2	8.08	3.53	0.76	5.92	115
WS0095-3	95.00	79.65	787.7	4	3	8.84	4.29	0.76	5.92	173
WS0100-2	100.00	85.42	551.8	5	2	5.27	3.53	0.76	5.92	317
WS0100-3	100.00	85.42	827.7	5	3	6.03	4.29	0.76	5.92	476

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

What is 线型 A WAVE SPRING?

线型波形弹簧是带有额外波形的扁线直弹簧。它们专门用于需要在线性腔体中施加轻至中等负荷和变形的应用，例如机械密封或回转式滑片泵。

Linear wave spring is a flat straight spring with additional wave. They are designed for applications that require light to moderate loads and deformations in linear cavities, such as mechanical seals or rotary vane pumps.



WL系列

线型 Linear Springs-WL Series



作用明显



中等变形



中等负荷



WL系列

线型 Linear Springs-WL Series

WL

系列名称

Wave Springs Overlap Type

03

厚度

(mm)

48

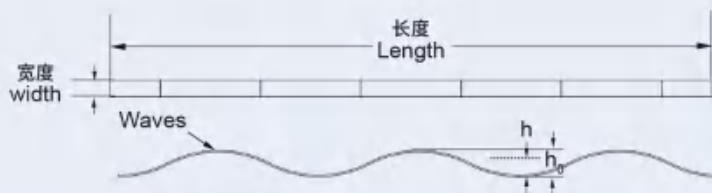
宽度

(mm)

- 1

波形数量

(数量越大, 长度越长)



编号 Model	厚度 Thickness	宽度 Width	长度 Length	波形数量 Number of waveform	自由高度 Free height	工作高度 Working height	负荷 Load	弹性系数 Spring stiffness
	mm	mm	mm		mm	mm	N	N/mm
WL0348-1	0.30	4.78	38.10	1	5.72	3.18	6.67	1.93
WL0348-2	0.30	4.78	76.20	2	5.72	3.18	24.89	15.93
WL0348-3	0.30	4.78	114.30	3	5.72	3.18	46.23	23.80
WL0348-4	0.30	4.78	152.40	4	5.72	3.18	65.79	31.85
WL0364-1	0.30	6.35	38.10	1	5.72	3.18	9.78	2.63
WL0364-2	0.30	6.35	76.20	2	5.72	3.18	34.67	21.18
WL0364-3	0.30	6.35	114.30	3	5.72	3.18	61.79	31.68
WL0364-4	0.30	6.35	152.40	4	5.72	3.18	88.02	42.35
WL0379-1	0.30	7.92	38.10	1	5.72	3.18	12.89	3.33
WL0379-2	0.30	7.92	76.20	2	5.72	3.18	45.34	26.43
WL0379-3	0.30	7.92	114.30	3	5.72	3.18	78.24	39.55
WL0379-4	0.30	7.92	152.40	4	5.72	3.18	115.58	52.85
WL0395-1	0.30	9.53	38.10	1	5.72	3.18	15.56	4.03
WL0395-2	0.30	9.53	76.20	2	5.72	3.18	50.23	31.68
WL0395-3	0.30	9.53	114.30	3	5.72	3.18	89.35	47.60
WL0395-4	0.30	9.53	152.40	4	5.72	3.18	112.02	63.35
WL0548-1	0.51	4.78	47.63	1	6.35	3.81	13.34	4.73
WL0548-2	0.51	4.78	95.25	2	6.35	3.81	50.68	37.63
WL0548-3	0.51	4.78	142.88	3	6.35	3.81	104.46	56.53
WL0548-4	0.51	4.78	190.50	4	6.35	3.81	144.47	75.43
WL0564-1	0.51	6.35	47.63	1	6.35	3.81	24.89	6.30
WL0564-2	0.51	6.35	95.25	2	6.35	3.81	78.24	50.05
WL0564-3	0.51	6.35	142.88	3	6.35	3.81	140.92	75.25
WL0564-4	0.51	6.35	190.50	4	6.35	3.81	199.59	100.28
WL0579-1	0.51	7.92	47.63	1	6.35	3.81	26.67	7.88
WL0579-2	0.51	7.92	95.25	2	6.35	3.81	91.13	62.48
WL0579-3	0.51	7.92	142.88	3	6.35	3.81	155.14	93.80

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WL系列

线型 Linear Springs-WL Series

WL

系列名称
Wave Springs Overlap Type

03

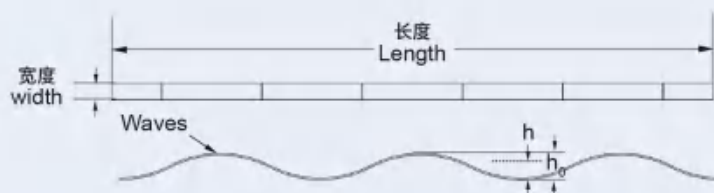
厚度
(mm)

48

宽度
(mm)

- 1

波形数量
(数量越大, 长度越长)



编号 Model	厚度 Thickness	宽度 Width	长度 Length	波形数量 Number of waves	自由高度 Free height	工作高度 Working height	负荷 Load	弹性系数 Spring stiffness
	mm	mm	mm		mm	mm	N	N/mm
WL0579-4	0.51	7.92	190.50	4	6.35	3.81	225.82	125.13
WL0595-1	0.51	9.53	47.63	1	6.35	3.81	28.45	9.45
WL0595-2	0.51	9.53	95.25	2	6.35	3.81	103.58	75.25
WL0595-3	0.51	9.53	142.88	3	6.35	3.81	231.16	112.70
WL0595-4	0.51	9.53	190.50	4	6.35	3.81	331.17	150.33
WL0648-1	0.64	4.78	57.15	1	6.99	4.45	15.56	5.25
WL0648-2	0.64	4.78	114.30	2	6.99	4.45	68.46	42.53
WL0648-3	0.64	4.78	171.45	3	6.99	4.45	124.02	63.88
WL0648-4	0.64	4.78	228.60	4	6.99	4.45	188.93	85.23
WL0664-1	0.64	6.35	57.15	1	6.99	4.45	28.89	7.00
WL0664-2	0.64	6.35	114.30	2	6.99	4.45	96.46	56.70
WL0664-3	0.64	6.35	171.45	3	6.99	4.45	154.25	85.05
WL0664-4	0.64	6.35	228.60	4	6.99	4.45	224.49	113.23
WL0679-1	0.64	7.92	57.15	1	6.99	4.45	29.34	8.93
WL0679-2	0.64	7.92	114.30	2	6.99	4.45	106.69	70.70
WL0679-3	0.64	7.92	171.45	3	6.99	4.45	192.04	106.05
WL0679-4	0.64	7.92	228.60	4	6.99	4.45	275.61	141.40
WL0695-1	0.64	9.53	57.15	1	6.99	4.45	34.23	10.68
WL0695-2	0.64	9.53	114.30	2	6.99	4.45	130.69	85.05
WL0695-3	0.64	9.53	171.45	3	6.99	4.45	239.16	127.40
WL0695-4	0.64	9.53	228.60	4	6.99	4.45	341.84	169.93
WL1048-1	0.97	4.78	66.68	1	7.62	5.08	33.34	11.73
WL1048-2	0.97	4.78	133.35	2	7.62	5.08	111.13	94.15
WL1048-3	0.97	4.78	200.03	3	7.62	5.08	271.16	141.40
WL1048-4	0.97	4.78	266.70	4	7.62	5.08	400.08	188.48
WL1064-1	0.97	6.35	66.68	1	7.62	5.08	52.90	15.58
WL1064-2	0.97	6.35	133.35	2	7.62	5.08	203.15	125.30

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WL系列

线型 Linear Springs-WL Series

WL

系列名称

Wave Springs Overlap Type

03

厚度

(mm)

48

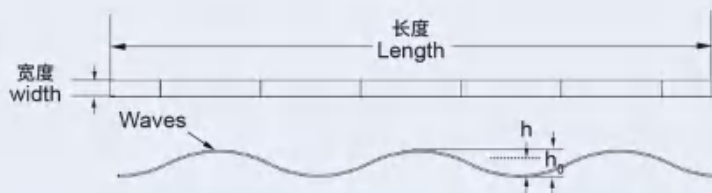
宽度

(mm)

- 1

波形数量

(数量越大, 长度越长)



编号 Ascot	厚度 Thickness	宽度 Width	长度 Length	波形数量 Number of waveform	自由高度 Free height	工作高度 Working height	负荷 Load	弹性系数 Spring stiffness
	mm	mm	mm		mm	mm	N	N/mm
WL1064-3	0.97	6.35	200.03	3	7.62	5.08	330.29	187.95
WL1064-4	0.97	6.35	266.70	4	7.62	5.08	495.65	250.60
WL1079-1	0.97	7.92	66.68	1	7.62	5.08	44.01	19.60
WL1079-2	0.97	7.92	133.35	2	7.62	5.08	219.15	156.28
WL1079-3	0.97	7.92	200.03	3	7.62	5.08	391.19	234.50
WL1079-4	0.97	7.92	266.70	4	7.62	5.08	714.36	312.73
WL1095-1	0.97	9.53	66.68	1	7.62	5.08	75.13	23.45
WL1095-2	0.97	9.53	133.35	2	7.62	5.08	274.28	187.95
WL1095-3	0.97	9.53	200.03	3	7.62	5.08	466.76	281.93
WL1095-4	0.97	9.53	266.70	4	7.62	5.08	680.13	375.90
WL1148-1	1.14	4.78	76.20	1	8.26	5.72	40.01	13.13
WL1148-2	1.14	4.78	152.40	2	8.26	5.72	160.03	104.83
WL1148-3	1.14	4.78	228.60	3	8.26	5.72	288.94	157.15
WL1148-4	1.14	4.78	304.80	4	8.26	5.72	395.63	209.65
WL1164-1	1.14	6.35	76.20	1	8.26	5.72	55.57	17.50
WL1164-2	1.14	6.35	152.40	2	8.26	5.72	188.93	139.48
WL1164-3	1.14	6.35	228.60	3	8.26	5.72	368.96	209.13
WL1164-4	1.14	6.35	304.80	4	8.26	5.72	535.66	278.78
WL1179-1	1.14	7.92	76.20	1	8.26	5.72	65.35	21.70
WL1179-2	1.14	7.92	152.40	2	8.26	5.72	268.05	173.95
WL1179-3	1.14	7.92	228.60	3	8.26	5.72	484.09	260.93
WL1179-4	1.14	7.92	304.80	4	8.26	5.72	582.33	347.90
WL1195-1	1.14	9.53	76.20	1	8.26	5.72	90.68	26.08
WL1195-2	1.14	9.53	152.40	2	8.26	5.72	324.95	209.13
WL1195-3	1.14	9.53	228.60	3	8.26	5.72	593.45	313.60
WL1195-4	1.14	9.53	304.80	4	8.26	5.72	844.61	418.25
WL1648-1	1.57	4.78	85.73	1	8.89	6.35	63.57	24.15

PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值



WL系列

线型 Linear Springs-WL Series

WL

系列名称
Wave Springs Overlap Type

03

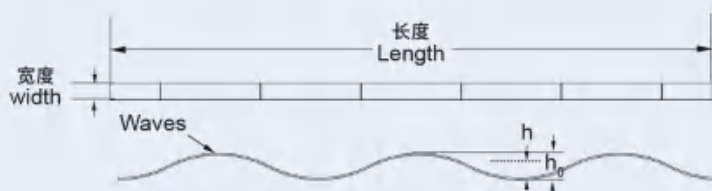
厚度
(mm)

48

宽度
(mm)

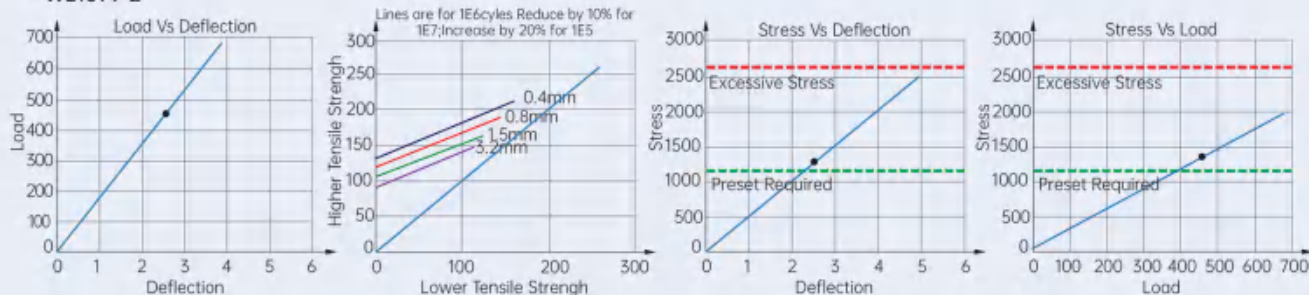
- 1

波形数量
(数量越大, 长度越长)



编号 Model	厚度 Thickness	宽度 Width	长度 Length	波形数量 Number of waveform	自由高度 Free height	工作高度 Working height	负荷 Load	弹性系数 Spring stiffness
	mm	mm	mm		mm	mm	N	N/mm
WL1648-2	1.57	4.78	171.45	2	8.89	6.35	300.06	192.50
WL1648-3	1.57	4.78	257.18	3	8.89	6.35	468.98	288.75
WL1648-4	1.57	4.78	304.80	4	8.89	6.35	709.03	385.00
WL1664-1	1.57	6.35	85.73	1	8.89	6.35	100.02	32.03
WL1664-2	1.57	6.35	171.45	2	8.89	6.35	462.31	256.03
WL1664-3	1.57	6.35	257.18	3	8.89	6.35	715.69	384.13
WL1664-4	1.57	6.35	304.80	4	8.89	6.35	1040.20	512.05
WL1679-1	1.57	7.92	85.73	1	8.89	6.35	123.58	39.90
WL1679-2	1.57	7.92	171.45	2	8.89	6.35	462.31	319.55
WL1679-3	1.57	7.92	257.18	3	8.89	6.35	775.70	479.33
WL1679-4	1.57	7.92	304.80	4	8.89	6.35	1166.89	639.10
WL1695-1	1.57	9.53	85.73	1	8.89	6.35	186.70	47.95
WL1695-2	1.57	9.53	171.45	2	8.89	6.35	620.12	384.13
WL1695-3	1.57	9.53	257.18	3	8.89	6.35	1066.87	576.10
WL1695-4	1.57	9.53	304.80	4	8.89	6.35	1569.19	768.08

WL1679-2



PS:材料Material: PH17-7 其他材料如304不锈钢、72A等可定制

Other materials such as 304 stainless steel and 72A can be customized

波形弹簧与轴孔直径外壳紧密贴合 自由高度为参考值 弹性系数为理论值

波形弹簧及绕制挡圈 Wave Spring and Winding Ring

波形弹簧的种类：单层波形弹簧和多层波形弹簧

单层波形弹簧分为单层圆环型波形弹簧; 单层开口型波形弹簧; 单层搭口型波形弹簧; 单层圆线波形弹簧。

多层波形弹簧分为多层串联式波形弹簧（又分成平端面型和波端面型); 多层叠峰式波形弹簧。

Types of wave springs: single wave spring and multi-layer wave spring

The single wave spring is divided into single layer ring type wave spring; Single layer open wave spring; Single layer joint type wave spring; Single layer circular wire wave spring. The multi-layer wave spring is divided into multi-layer series wave spring (also divided into flat end type and wave end type); Multi layer stacked wave spring.

绕制型挡圈

是用扁丝通过卷绕而加工的挡圈，没有突耳影响装配，易于安装与拆卸。分为定位卡圈和波圈。

retaining ring

It is a retaining ring made of flat wire by winding. It has no lug to affect the assembly and is easy to install and disassemble. It is divided into positioning ring and wave ring.



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