COIL SPRINGS

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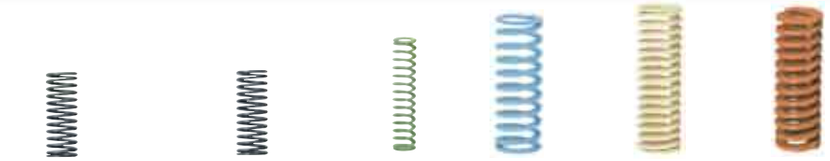


Name	WIRE SPRINGS	—Internal diameter standard type—	COIL SPRINGS			
Catalog No.	WY・WR・WF・WL・WT・WM・WH・WB	NWL・NWM・WP	SWY	SWU	SWR	SWS
Delivery	①	①	①	①	①	①
Page	966～973	974	975	976	977	979

COIL SPRINGS									
SWC	SWF	SWL	SWM	SWH	SWB	SWG	SWZ	SWV	SWX
①	①	①	①	①	①	①	①	①	①
981	983	985	987	989	991	993	995	997	998

SPRING GUIDE UNITS	WASHERS FOR COIL SPRING	FLANGE FOR SPRING UNITS	SPRING GUIDE PINS	SPRING GUIDE RETAINERS
CUK	SSWA・SSWB・SSWC	WUNT	SGA	SGC
③	①	③Ⓐ	①	①
1001	1003	1004	1005	1006

Category	Features	Page	Type Catalog No.	Type Color	Outside diameter min.	Outside diameter max.	Overall length min.	Overall length max.	Allowable deflection	Load N{kgf} min.	Load N{kgf} max.
Wire spring	 ● Spring constant is fixed for each diameter. (Load varies depending on the overall length.)	P.966	WY	—	φ3	φ16	5	70	75% (1 million shots)	0.38 {0.04}	10.3 {1.05}
		P.967	WR	—	φ3	φ27	5	90	60% (1 million shots)	0.9 {0.09}	23.5 {2.4}
		P.968	WF	—	φ3	φ27	5	90	45% (1 million shots)	1.1 {0.11}	35.3 {3.6}
		P.969	WL	—	φ2	φ27	5	100	40% (1 million shots)	0.98 {0.1}	117.7 {12.0}
		P.970	WT	—	φ3	φ27	5	80	40% (1 million shots)	2.9 {0.3}	125.5 {12.8}
		P.971	WM	—	φ3	φ27	5	100	35% (1 million shots)	3.4 {0.4}	171.6 {17.5}
		P.972	WH	—	φ4	φ27	5	100	30% (1 million shots)	4.9 {0.5}	441.3 {45.0}
		P.973	WB	—	φ3	φ27	5	100	25% (1 million shots)	4.9 {0.5}	735.5 {75.0}
		P.974	NWL (Int. diam.)	—	φ5.5 (Int. diam.)	φ16.6 (Int. diam.)	30	60	40% (1 million shots)	13.7 {1.4}	27.5 {2.8}
		P.974	NWM (Int. diam.)	—	φ5.5 (Int. diam.)	φ16.6 (Int. diam.)	30	60	32% (1 million shots)	20.6 {2.1}	34.3 {3.5}
		P.974	WP (Long type)	—	φ11.5	φ17	100	500	70% (1 million shots)	21.3 {2.2}	34.3 {3.5}

●Operating temperature

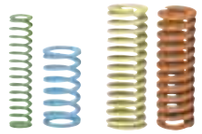
The data shown on the catalog such as load values have been obtained through measurements conducted at normal temperatures (40℃ or less). If coils are used at temperatures higher than normal temperatures, the load capacity and maximum number of durable operating times may be reduced, though it also depends on other conditions.

The maximum working temperature is 80℃. Although the heat resisting temperature of spring wires are higher than springs' maximum working temperatures (120℃ for round wires, 200℃ for deformed wires), if springs are used at temperatures higher than normal temperatures, significant degradation in their functionality is expected.

●Allowable deflection

Do not use the springs exceeding the allowable deflection values.If they are used exceeding the allowable deflection, their load capacity and durability will degrade, leading to their breakage in the worst case.

Ⓡ If once round wire springs are compressed exceeding the allowable deflection, their dimension L will be shortened.

Category	Features	Page	Type Catalog No.	Type Color	Outside diameter min.	Outside diameter max.	Overall length min.	Overall length max.	Allowable deflection	Load N{kgf} min.	Load N{kgf} max.
Deformed wire coil springs—high deflection type—	 ● Load is fixed for each diameter.	P.975	SWY (Extra super high deflection)	Pastel green	φ11	φ42	20	300	65% (1 million shots)	29.4 {3.0}	392.3 {40.0}
									70% (300,000 shots)	31.4 {3.2}	425.6 {43.4}
		P.976	SWU (Super high deflection)	Light blue	φ10.5	φ43	15	300	60% (1 million shots)	68.6 {7.0}	588.4 {60.0}
									65% (300,000 shots)	73.9 {7.5}	637.4 {65.0}
		P.977	SWR (High deflection)	Ivory	φ10.5	φ50	15	400	50% (1 million shots)	78.5 {8.0}	1323.9 {135.0}
									55% (300,000 shots)	87.2 {8.8}	1456.3 {148.5}
		P.979	SWS (Middle deflection)	Orange	φ10.5	φ52	20	300	40% (1 million shots)	87.2 {8.9}	1569.0 {160.0}
									45% (300,000 shots)	97.1 {9.9}	1765.2 {180.0}
Deformed wire coil springs—heavy load type—	 ● Load is fixed for each diameter.	P.981	SWC (Extra minimal load)	Purple	φ6 (φ3)	φ30 (φ15)	15	200	50% (1 million shots)	27 {2.8}	392 {40.0}
									60% (300,000 shots)	32 {3.3}	471 {48.0}
		P.983	SWF (Minimal load)	Yellow	φ6 (φ3)	φ70 (φ38.5)	15	500	40% (1 million shots)	47 {4.8}	3136 {320}
									50% (300,000 shots)	59 {6.0}	3920 {400}
		P.985	SWL (Light load)	Blue	φ6 (φ3)	φ70 (φ38.5)	15	350	32% (1 million shots)	63 {6.4}	4782 {488}
									40% (300,000 shots)	78 {8.0}	5978 {610}
		P.987	SWM (Medium load)	Red	φ6 (φ3)	φ70 (φ38.5)	15	350	25.6% (1 million shots)	78 {8.0}	6664 {680}
									32% (300,000 shots)	98 {10}	8330 {850}
		P.989	SWH (Heavy load)	Green	φ6 (φ3)	φ70 (φ38.5)	15	350	19.2% (1 million shots)	110 {11}	10046 {1024}
									24% (300,000 shots)	137 {14}	12557 {1280}
		P.991	SWB (Extra heavy load)	Brown	φ6 (φ3)	φ70 (φ38.5)	15	350	16% (1 million shots)	142 {14}	13655 {1392}
									20% (300,000 shots)	177 {18}	17069 {1740}
		P.993	SWG (Super heavy load)	Black	φ10 (φ5)	φ50 (φ25)	15	200	16% (1 million shots)	392 {40}	9807 {1000}
									20% (300,000 shots)	490 {50}	12258 {1250}
		P.995	SWZ (Hyper extra heavy load)	Gold	φ10 (φ5)	φ50 (φ25)	25	200	10.5% (1 million shots)	416 {42}	12959 {1321}
									13% (300,000 shots)	515 {53}	16045 {1636}
		P.997	SWV (Ultra heavy load)	Wine red	φ20 (φ10)	φ50 (φ25)	40	200	10.5% (1 million shots)	2600 {265}	14904 {1228}
									13% (300,000 shots)	3219 {328}	18452 {1882}
		P.998	SWX (High speed extra heavy load)	— (no painting)	φ20 (φ9.5)	φ40 (φ20.5)	25	100	10% (10 million shots)	1275 {130}	5198 {530}

●Painting of deformed coil springs

Misumi deformed coil springs have been painted for identification and rust prevention.
(SWX is not subject to painting with consideration given to its potential use in a clean room, etc.)

●Spring load calculation method

Load=spring constant×deflection
N=N/mm × Fmm (SI unit)
kgf=kgf/mm × Fmm
(kgf=N×0.101972)