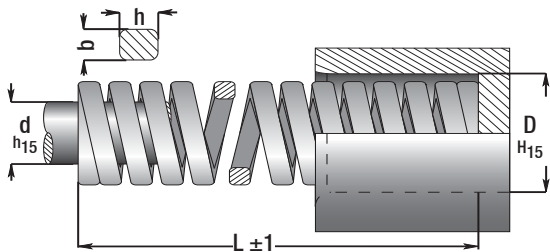




Wire Die & Mould Springs

ISO 10243 / Rectangular Section
Round Section



Technical Specifications and Production Characteristics

Research & Development ongoing in parallel of quality assurance procedures in compliance with ISO 9001, ensure high sensitivity, durability and reliability criteria. Continuous improvement in our springs performance is monitored directly in the factory through comparative and destructive tests. The excellences of these products are verified with the increasing number of the customers selecting our springs in their dies and moulds.

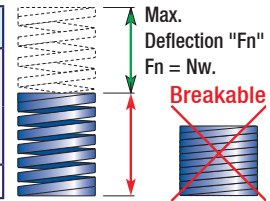
The following main characteristics show the superiority of our springs:



















- * Special profile / section usage to increase steel characteristics.
- * Usage of special spring winding machine.
- * Usage of special heat treatment developed by especially spring production.
- * Maximum care showing grinding and closing of spring ends in order to warranty optimum vertical and parallel acceleration.
- * All springs are coil shaped in order to warranty significant decrease of load losses in working conditions.
- * Special remoulding stroke methods in order to increase resistance against metal abrasion.
- * Special pretreatment and powder coating applications of our springs in order to ensure the best protection, preservation and completion.
- * Intensive control performed during production and final stage in order to warranty dimensional compliance and precision.
- * **Spring load coefficient tolerances - nominal rate at all springs is +10%.**

Values & Descriptions of the Table on the Spring Pages

N - Newton = (0.102) Kgf daN -10 Newton = (1.020) Kgf

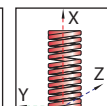
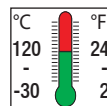
Spring Dimensions		Length	Load	Spring Capacity / Recommended Deflection - Criteria			
D	d	L	LOAD COEFFICIENT R (±10 %) Required load for 1.0 mm deflection	%..A Long spring life 3.000.000	%..B Minimum deflection 1.500.000	%..C Maximum deflection	%..D Full deflection
b x h			N / mm	mm x N	mm x N	mm x N	mm x N
mm	mm	mm	N / mm	mm x N	mm x N	mm x N	mm x N



Code	Colour Series	Wire Section	Colour	Load	Max. Deflection
AYY			Light Green	Extra Light	at 50 % length
YY	ISO 10243 		Green	Light	at 40 % length
MY	ISO 10243 		Blue	Medium	at 37.5 % length
KY	ISO 10243 		Red	Heavy	at 30 % length
SY	ISO 10243 		Yellow	Extra Heavy	at 25 % length
GY			Silver	Ultra Heavy	at 15 % length
TVY			Green	Light	at 40 % length
TBM			Blue	Medium	at 37.5 % length
TRK			Red	Heavy	at 30 % length

Force = Deflection (A.B.C) x Load Coefficient (R): Load x Newton / Kg.

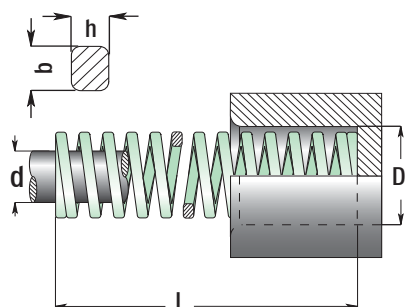
- * Please select springs carefully during the design period.
- * The bigger the guide the longer the lifetime. It is essential to always use guide pin for all springs with a free length / diameter ratio exceeding x3.5.
- * Ensure support and perpendicularity of springs to the compression area.
- * If possible, use long springs at lower loadings (preloading should be increased properly).
- * Please apply minimum preloading of 5% of the free length.
- * Never apply pressure to the springs over maximum stroke.
- * Tool maintenance can vary the original working deflection of the springs. Always check and re-set the original working stroke. High risk of early failures or damages of the die / mould.
- * Please protect springs from abrasive activities.
- * In the temperature range of 120 ÷ 250°C consider a loss between 1 to 2% of the load every 40°C.
- * Please don't change a spring at a time, instead of this, use programmed maintenance procedure that all springs can be changed at the same time.
- * Any alteration on the surface of the springs (cutting, grinding, scratches, etc.) may significantly reduce the lifetime. Always replace the damaged springs with new ones.
- * Shoulder screw (Güvenal code: G39) should be used in usage of precision mechanical spring.



Extra Light Load Spring Code: **AYY**



Extra Light Load Spring Code: **AYY**
Colour: Light Green



Especially suitable to injection mould systems.

Long Life Usage of Wire Springs:

It depends on the quality of spring material, working conditions and design conditions that are used. In all applications using springs, preloading and compression rates specified for long life usage should be adhered. Appropriate tension values can be found at the loading value table and tension / spring life table.

For long life usage, shear stress on the basis of oscillation should be maximum 800 N/mm². 400 N/mm² of this value will be used by the stress variation on the basis of spring oscillation.

By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

Order: **AYY. D x L**

Usage: It is compatible with injection mould systems and equipment designs.

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 30	B Min. Deflect. % 40	C Max. Deflect. % 50	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5.0	25	8.5	7.5	10.0	11.2	14.1
		32	6.5	9.6	12.8	14.4	18.5
		38	5.5	11.4	15.2	17.1	22.5
		44	4.8	13.2	17.6	19.8	23.2
		51	4.2	15.3	20.4	22.9	27.5
		64	3.3	19.2	25.6	28.8	34.0
		76	2.7	22.8	30.4	34.2	40.4
1.65x1.0		305	0.65	91.5	122	137.2	172
13	6.3	25	16	7.5	10.0	11.2	13.6
		32	12.2	9.6	12.8	14.4	17.9
		38	10.3	11.4	15.2	17.1	21.9
		44	8.7	13.2	17.6	19.8	26.4
		51	7.5	15.3	20.4	22.9	29.6
		64	5.8	19.2	25.6	28.8	37.1
		76	4.7	22.8	30.4	34.2	44.9
		89	4.1	26.7	35.6	40.0	53.2
		102	3.6	30.6	40.8	45.9	59.4
		2.3x1.3		305	1.25	91.5	122
16	8	25	20.2	7.5	10	11.2	14.0
		32	16	9.6	12.8	14.4	18.7
		38	12.3	11.4	15.2	17.1	22.0
		44	10.6	13.2	17.6	19.8	26.1
		51	8.9	15.3	20.4	22.9	30.4
		64	7	19.2	25.6	28.8	38.8
		76	5.8	22.8	30.4	34.2	46.4
		89	4.8	26.7	35.6	40.0	54.2
		102	4.1	30.6	40.8	45.9	62.4
		115	3.9	34.5	46.0	51.7	70.6
		3.05x1.5		305	1.5	91.5	122
20	10	25	29.4	7.50	10.0	12.5	13.9
		32	22.6	9.60	12.8	16.0	18.2
		38	18.6	11.4	15.2	19.0	22.0
		44	15.7	13.2	17.6	22.0	25.8
		51	13.7	15.3	20.4	25.5	30.3
		64	11.3	19.2	25.6	32.0	38.9
		76	9.80	22.8	30.4	38.0	47.0
		89	8.30	26.7	35.6	44.5	55.7
		102	7.40	30.6	40.8	51.0	64.2
		115	6.40	34.5	46.0	57.5	72.9
		127	5.90	38.1	50.8	63.5	80.7
139	5.40	41.7	55.6	69.5	88.4		
152	4.90	45.6	60.8	76.0	96.7		
4.3x1.7		305	2.50	91.5	122	153	196
25	12.5	25	53.9	7.50	10.0	12.5	12.9
		32	42.2	9.60	12.8	16.0	17.2
		38	35.8	11.4	15.2	19.0	20.7
		44	31.4	13.2	17.6	22.0	24.4
		51	27.0	15.3	20.4	25.5	28.5
		64	21.6	19.2	25.6	32.0	36.5
		76	18.1	22.8	30.4	38.0	43.9
5.4x2.2		305	17.2	91.5	122.0	152	184.0

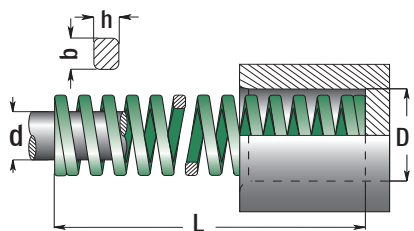
D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 30	B Min. Deflect. % 40	C Max. Deflect. % 50	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
25	12.5	102	13.2	30.6	40.8	51.0	59.3
		115	11.8	34.5	46.0	57.5	67.2
		127	10.6	38.1	50.8	63.5	74.4
		139	9.60	41.7	55.6	69.5	81.6
		152	8.80	45.6	60.8	76.0	89.5
		178	7.60	53.4	71.2	89.0	105
		203	6.70	60.9	81.2	102	121
5.4x2.2		305	4.40	91.5	122.0	153	182
32	16	38	43.1	11.4	15.2	19.0	19.9
		44	37.3	13.2	17.6	22.0	23.5
		51	32.4	15.3	20.4	25.5	27.6
		64	25.5	19.2	25.6	32.0	35.2
		76	21.6	22.8	30.4	38.0	42.4
		89	18.1	26.7	35.6	44.5	50.0
		102	15.7	30.6	40.8	51.0	57.6
		115	14.2	34.5	46.0	57.5	65.5
		127	12.7	38.1	50.8	63.5	72.5
		139	11.6	41.7	55.6	69.5	79.4
		152	10.6	45.6	60.8	76.0	87.3
178	9.00	53.4	71.2	89.0	103		
203	7.80	60.9	81.2	102	118		
254	6.40	76.2	102.0	127.0	148		
6.5x2.6		305	5.30	91.5	122.0	153	178
40	20	51	48.1	15.3	20.4	25.5	28.0
		64	39.2	19.2	25.6	32.0	36.2
		76	33.3	22.8	30.4	38.0	43.7
		89	28.4	26.7	35.6	44.5	51.7
		102	24.5	30.6	40.8	51.0	59.8
		115	22.1	34.5	46.0	57.5	67.9
		127	19.6	38.1	50.8	63.5	75.2
		139	17.7	41.7	55.6	69.5	82.4
		152	16.2	45.6	60.8	76.0	90.6
		178	13.7	53.4	71.2	89.0	106
		203	12.3	60.9	81.2	101	122
254	9.80	76.2	102.0	127.0	154		
8.0x3.4		305	8.30	91.5	122.0	152	185
50	25	64	86.3	19.2	25.6	32.0	35.1
		76	70.6	22.8	30.4	38.0	42.2
		89	59.8	26.7	35.6	44.5	50.3
		102	52.0	30.6	40.8	51.0	58.4
		115	46.1	34.5	46	57.5	66.1
		127	42.2	38.1	50.8	63.5	73.8
		139	38.2	41.7	55.6	69.5	80.9
152	34.3	45.6	60.8	76.0	89.0		
178	29.4	53.4	71.2	89.0	105.0		
203	25.5	60.9	81.2	101	121.0		
254	20.6	76.2	102.0	127.0	152.0		
10.5x4.1		305	17.2	91.5	122.0	152	184.0





Light Load Spring
ISO 10243 / Colour: Green

Code: YY



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D	d	L	R	A	B	C	D
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 25	Min. Deflect. % 30	Max. Deflect. % 40	Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
10	5	25	10.0	6.30	7.50	10.0	13.5
		32	8.50	8.00	9.60	12.8	17.5
		38	6.80	9.50	11.4	15.2	20.8
		44	6.00	11.0	13.2	17.6	23.9
		51	5.00	12.8	15.3	20.4	28.9
		64	4.30	16.0	19.2	25.6	36.1
		76	3.20	19.0	22.8	30.4	43.2
		305	1.10	76.3	91.5	122	178
1.7x1.1		305	1.10	76.3	91.5	122	178
13	6.3	25	17.9	6.30	7.50	10.0	13.2
		32	16.4	8.00	9.60	12.8	18.0
		38	13.6	9.50	11.4	15.2	21.0
		44	12.1	11.0	13.2	17.6	24.0
		51	11.4	12.8	15.3	20.4	28.7
		64	9.30	16.0	19.2	25.6	35.8
		76	7.10	19.0	22.8	30.4	42.7
		89	5.40	22.3	26.7	35.6	50.4
		102	4.10	25.5	30.6	40.8	58.4
		305	1.40	76.3	91.5	122	172

 Order: YY. D x L

Usage: It is compatible with injection mould systems and equipment designs.

D	d	L	R	A	B	C	D		
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 25	Min. Deflect. % 30	Max. Deflect. % 40	Full Deflect. Breakable		
b x h	mm	Nw.	mm	mm	mm	mm	mm		
16	8	25	23.4	6.3	7.5	10.0	12.6		
		32	22.9	8.0	9.6	12.8	16.4		
		38	19.3	9.5	11.4	15.2	19.7		
		44	17.1	11.0	13.2	17.6	22.5		
		51	15.7	12.8	15.3	20.4	26.3		
		64	10.7	16.0	19.2	25.6	33.3		
		76	10.0	19.0	22.8	30.4	40.2		
		89	8.60	22.3	26.7	35.6	47.6		
		102	7.80	25.5	30.6	40.8	55.4		
		115	6.60	28.8	34.5	46.0	60.8		
3.2x1.5		305	2.50	76.3	91.5	122	165		
20	10	25	55.8	6.3	7.5	10.0	12.1		
		32	45.0	8.0	9.6	12.8	15.3		
		38	33.3	9.5	11.4	15.2	18.9		
		44	30.0	11.0	13.2	17.6	21.5		
		51	24.5	12.8	15.3	20.4	25.0		
		64	20.0	16.0	19.2	25.6	31.1		
		76	16.0	19.0	22.8	30.4	37.3		
		89	14.0	22.3	26.7	35.6	44.5		
		102	12.0	25.5	30.6	40.8	51.1		
		115	10.9	28.8	34.5	46.0	58.2		
		127	9.50	31.8	38.1	50.8	64.9		
		139	8.40	35.0	42.0	56.0	71.5		
		152	7.50	38.0	45.6	60.8	78.8		
		4 x 2.1		305	4.00	76.3	91.5	122	157
25	12.5	25	100	6.3	7.5	10.0	11.9		
		32	80.3	8.0	9.6	12.8	16.0		
		38	62.0	9.5	11.4	15.2	18.3		
		44	52.9	11.0	13.2	17.6	21.4		
		51	44.0	12.8	15.3	20.4	24.9		
		64	35.2	16.0	19.2	25.6	31.4		
		76	28.0	19.0	22.8	30.4	37.5		
		89	24.0	22.3	26.7	35.6	43.5		
		102	21.1	25.5	30.6	40.8	51.1		
		115	18.7	28.8	34.5	46.0	58.1		
		127	16.7	31.8	38.1	50.8	64.1		
		139	15.3	35.0	42.0	56.0	70.4		
		152	14.0	38.0	45.6	60.8	77.1		
		178	12.5	44.5	53.4	71.2	93.1		
		203	10.4	50.8	60.9	81.2	103		
		305	7.00	76.3	91.5	122	156		
		32	16	38	94.0	9.5	11.4	15.2	18.3
				44	79.5	11.0	13.2	17.6	21.5
51	67.0			12.8	15.3	20.4	25.5		
64	53.0			16.0	19.2	25.6	31.9		

Light Load Spring

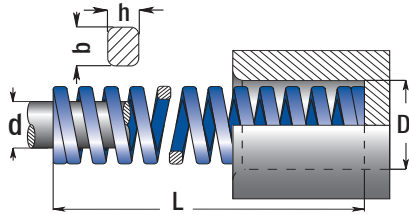
Code: YY

D	d	L	R	A	B	C	D		
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 25	Min. Deflect. % 30	Max. Deflect. % 40	Full Deflect. Breakable		
b x h	mm	Nw.	mm	mm	mm	mm	mm		
32	16	76	44.0	19.0	22.8	30.4	38.6		
		89	37.2	22.3	26.7	35.6	46.5		
		102	32.0	25.5	30.6	40.8	53.2		
		115	29.0	28.8	34.5	46.0	60.0		
		127	25.0	31.8	38.1	50.8	66.7		
		139	23.0	35.0	42.0	56.0	71.8		
		152	21.5	38.0	45.6	60.8	78.5		
		178	18.2	44.5	53.4	71.2	94.4		
		203	15.8	50.8	60.9	81.2	107		
		254	12.5	63.5	76.2	102.0	136		
		6.8x3.3		305	10.3	76.3	91.5	122.0	163
		40	20	51	92.0	12.8	15.3	20.4	25.5
64	73.0			16.0	19.2	25.6	31.4		
76	63.0			19.0	22.8	30.4	37.8		
89	51.0			22.3	26.7	35.6	44.3		
102	43.0			25.5	30.6	40.8	50.7		
115	39.6			28.8	34.5	46.0	58.1		
127	37.0			31.8	38.1	50.8	64.6		
139	32.0			35.0	42.0	56.0	70.1		
152	28.0			38.0	45.6	60.8	76.6		
178	25.2			44.5	53.4	71.2	90.4		
203	22.7			50.8	60.9	81.2	102		
254	17.0			63.5	76.2	102.0	129		
8.1x4				305	14.8	76.3	91.5	122.0	156
50	25			64	156.0	16.0	19.2	25.6	31.0
		76	125.0	19.0	22.8	30.4	37.2		
		89	109.0	22.3	26.7	35.6	43.6		
		102	94.0	25.5	30.6	40.8	50.3		
		115	81.0	28.8	34.5	46.0	58.1		
		127	71.0	31.8	38.1	50.8	63.7		
		139	66.5	35.0	42.0	56.0	69.5		
		152	60.0	38.0	45.6	60.8	76.5		
		178	52.0	44.5	53.4	71.2	91.9		
		203	44.0	50.8	60.9	81.2	105		
254	35.0	63.5	76.2	102	131				
10.9x5.3		305	28.5	76.3	91.5	122	155		
63	38	76	189.0	19.0	22.8	30.4	36.5		
		89	158.0	22.3	26.7	35.6	43.4		
		102	131.0	25.5	30.6	40.8	49.7		
		115	116.0	28.8	34.5	46.0	55.6		
		127	103.0	31.8	38.1	50.8	62.7		
		152	84.3	38.0	45.6	60.8	77.1		
		178	71.5	44.5	53.4	71.2	92.2		
		203	61.7	50.8	60.9	81.2	103		
		254	47.0	63.5	76.2	102	130		
11x7.8		305	38.2	76.3	91.5	122	157		



Medium Load Spring
ISO 10243 / Colour: Blue

Code: **MY**



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.
Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life Deflect. % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect.
b x h	mm	Nw.	mm	mm	mm	mm	mm
10	5	25	16.0	6.30	7.50	9.40	10.2
		32	13.0	8.00	9.60	12.0	14.2
		38	11.9	9.50	11.4	14.3	16.8
		44	10.3	11.0	13.2	16.5	19.4
		51	8.90	12.8	15.3	19.1	23.4
		64	7.50	16.0	19.2	24.0	28.2
		76	5.30	19.0	22.8	28.5	34.2
1.9X1.3	305	1.60	76.3	91.5	114	134	
13	6.3	25	30.0	6.30	7.50	9.40	11.9
		32	24.8	8.00	9.60	12.0	16.2
		38	21.4	9.50	11.4	14.3	18.7
		44	18.5	11.0	13.2	16.5	21.3
		51	15.5	12.8	15.3	19.1	25.6
		64	12.1	16.0	19.2	24.0	32.4
		76	10.2	19.0	22.8	28.5	39
		89	8.40	22.3	26.7	33.4	45.9
		102	6.30	25.5	30.6	38.3	52.3
		2.5X1.5	305	2.10	76.3	91.5	114
16	8	25	49.4	6.30	7.50	9.40	10.5
		32	37.1	8.00	9.60	12.0	13.2
		38	33.9	9.50	11.4	14.3	17.2
		44	30.0	11.0	13.2	16.5	19.4
		51	26.4	12.8	15.3	19.1	24.2
		64	20.5	16.0	19.2	24.0	29.2
3.2x2.0	76	17.8	19.0	22.8	28.5	36.3	

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life Deflect. % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect.
b x h	mm	Nw.	mm	mm	mm	mm	mm
16	8	89	15.2	22.3	26.7	33.4	41.7
		102	13.5	25.5	30.6	38.3	48.9
		115	11.8	28.8	34.5	43.1	53.1
3.2x2.0	305	4.8	76.3	91.5	114	142	
20	10	25	98.0	6.30	7.50	9.40	10.5
		32	72.6	8.00	9.60	12.0	13.9
		38	56.0	9.50	11.4	14.3	16.6
		44	47.5	11.0	13.2	16.5	18.8
		51	41.7	12.8	15.3	19.1	23.1
		64	32.3	16.0	19.2	24.0	27.5
		76	25.1	19.0	22.8	28.5	33.8
		89	22.0	22.3	26.7	33.4	39.7
		102	19.8	25.5	30.6	38.3	47.3
		115	18.1	28.8	34.5	43.1	52.5
		127	16.6	31.8	38.1	47.6	56.9
139	15.1	35.0	42.0	52.5	62.1		
152	13.2	38.0	45.6	57.0	67.6		
4.1X2.4	305	6.1	76.3	91.5	114	143	
25	12.5	25	147	6.30	7.50	9.4	10.2
		32	118	8.00	9.60	12.0	13.7
		38	93.0	9.50	11.4	14.3	15.7
		44	80.8	11.0	13.2	16.5	18.2
		51	68.6	12.8	15.3	19.1	21.7
		64	53.0	16.0	19.2	24.0	26.0
		76	43.2	19.0	22.8	28.5	32.3
		89	38.2	22.3	26.7	33.4	38.0
		102	33.0	25.5	30.6	38.3	43.0
		115	28.0	28.8	34.5	43.1	48.6
		127	25.9	31.8	38.1	47.6	53.7
		139	23.2	35.0	42.0	52.5	59.4
		152	20.8	38.0	45.6	57.0	63.8
		178	17.8	44.5	53.4	66.8	76.6
		203	15.8	50.8	60.9	76.1	88.4
5.4x3.3	305	10.2	76.3	91.5	114	135	
32	16	38	185	9.50	11.4	14.3	16.3
		44	158	11.0	13.2	16.5	18.9
		51	134	12.8	15.3	19.1	23.1
		64	99.0	16.0	19.2	24.0	28.5
		76	80.5	19.0	22.8	28.5	34.2
		89	69.1	22.3	26.7	33.4	40.4
		102	58.8	25.5	30.6	38.3	48.0
115	51.5	28.8	34.5	43.1	54.3		
6.8x4.0	127	44.8	31.8	38.1	47.6	59.2	

Medium Load Spring

Code: **MY**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life Deflect. % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect.
b x h	mm	Nw.	mm	mm	mm	mm	mm
32	16	139	42.3	35.0	42.0	52.5	65.3
		152	37.8	38.0	45.6	57.0	73.0
		178	32.5	44.5	53.4	66.8	84.5
		203	28.9	50.8	60.9	76.1	96.9
254	21.4	63.5	76.2	95.3	121		
6.8x4.0	305	18.3	76.3	91.5	114	147	
40	20	51	182	12.8	15.3	19.1	21.4
		64	140	16.0	19.2	24.0	26.8
		76	108	19.0	22.8	28.5	32.7
		89	90.7	22.3	26.7	33.4	39.0
		102	81.0	25.5	30.6	38.3	44.1
		115	71.8	28.8	34.5	43.1	50.6
		127	62.7	31.8	38.1	47.6	55.9
		139	57.5	35.0	42.0	52.5	61.8
		152	51.6	38.0	45.6	57.0	67.5
		178	44.1	44.5	53.4	66.8	77.2
203	36.7	50.8	60.9	76.1	91.8		
254	30.1	63.5	76.2	95.3	113		
8.2X4.7	305	24.6	76.3	91.5	114	138	
50	25	64	209	16.0	19.2	24.0	28.2
		76	168	19.0	22.8	28.5	34.9
		89	140	22.3	26.7	33.4	39.2
		102	119	25.5	30.6	38.3	47.3
		115	106	28.8	34.5	43.1	52.6
		127	97.0	31.8	38.1	47.6	59.8
		139	87.0	35.0	42.0	52.5	65.1
		152	80.0	38.0	45.6	57.0	70.8
		178	69.5	44.5	53.4	66.8	84.2
		203	59.8	50.8	60.9	76.1	96.5
229	50.9	57.3	68.7	85.9	108		
254	43.9	63.5	76.2	95.3	122		
11x5.8	305	38.6	76.3	91.5	114	147	
63	38	76	312	19.0	22.8	28.5	30.7
		89	260	22.3	26.7	33.4	36.5
		102	221	25.5	30.6	38.3	43.6
		115	187	28.8	34.5	43.1	48.9
		127	168	31.8	38.1	47.6	54.2
		152	136	38.0	45.6	57.0	65.7
		178	114	44.5	53.4	66.8	76.5
203	100	50.8	60.9	76.1	88.0		
229	89.2	57.3	68.7	85.9	104		
254	78.4	63.5	76.2	95.3	112		
11.5x9.1	305	64.7	76.3	91.5	114	134	

Order: **MY. D x L**

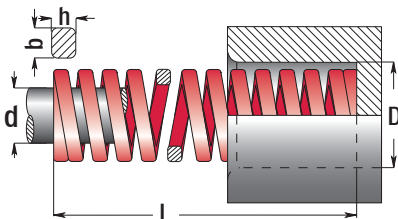
Usage: It is compatible with injection mould / die systems and equipment designs.

Order Example: **MY. 40 x 89**



Heavy Load Spring
ISO 10243 / Colour: Red

Code: **KY**



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: $R \times (A.B.C)$

Nw - Newton = (0.102) Kgf

D	d	L	R	A	B	C	D
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 20	Min. Deflect. % 25	Max. Deflect. % 30	Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
10	5	25	22.1	5.00	6.30	7.50	9.20
		32	17.5	6.40	8.00	9.60	12.1
		38	17.1	7.60	9.50	11.4	13.2
		44	15.0	8.80	11.0	13.2	15.1
		51	12.8	10.2	12.8	15.3	19.5
		64	10.7	12.8	16.0	19.2	21.8
		76	7.5	15.2	19.0	22.8	27.9
		305	2.1	61.0	76.3	91.5	127
13	6.3	25	42.1	5.00	6.30	7.50	9.80
		32	33.2	6.40	8.0	9.60	13.6
		38	29.3	7.60	9.50	11.4	14.6
		44	24.6	8.80	11.0	13.2	18.1
		51	19.6	10.2	12.8	15.3	22.3
		64	15.0	12.8	16.0	19.2	27.3
		76	13.2	15.2	19.0	22.8	33.1
		89	11.4	17.8	22.3	26.7	38.9
		102	8.40	20.4	25.5	30.6	43.8
		305	2.80	61.0	76.3	91.5	140

Order: **KY. D x L**

Usage: It is compatible with die systems and machine equipment designs.

Heavy Load Spring

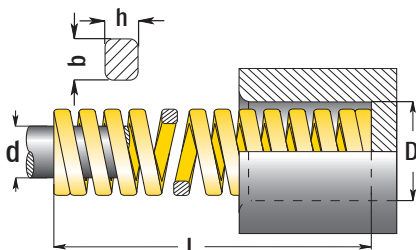
Code: **KY**

D	d	L	R	A	B	C	D
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 20	Min. Deflect. % 25	Max. Deflect. % 30	Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
16	8	25	75.7	5.00	6.30	7.50	8.40
		32	52.8	6.40	8.00	9.60	10.5
		38	48.5	7.60	9.50	11.4	13.6
		44	42.8	8.80	11.0	13.2	15.9
		51	37.1	10.2	12.8	15.3	18.9
		64	30.3	12.8	16.0	19.2	24.9
		76	25.7	15.2	19.0	22.8	29.2
		89	21.7	17.8	22.3	26.7	34.5
		102	19.3	20.4	25.5	30.6	39.1
		115	15.7	23.0	28.8	34.5	44.0
3.1x2.5	305	7.10	61.0	76.3	91.5	104	
20	10	25	216	5.00	6.30	7.50	8.30
		32	168	6.40	8.00	9.60	10.9
		38	129	7.60	9.50	11.4	12.5
		44	112	8.80	11.0	13.2	15.0
		51	94.0	10.2	12.8	15.3	17.6
		64	72.1	12.8	16.0	19.2	22.6
		76	59.7	15.2	19.0	22.8	27.5
		89	50.5	17.8	22.3	26.7	31.7
		102	44.2	20.4	25.5	30.6	37.5
		115	38.4	23.0	28.8	34.5	42.6
4 x 3.3	305	15.0	61.0	76.3	91.5	114	
25	12.5	25	375	5.00	6.30	7.50	8.5
		32	297	6.40	8.00	9.60	11.0
		38	219	7.60	9.50	11.4	12.6
		44	187	8.80	11.0	13.2	14.8
		51	156	10.2	12.8	15.3	17.9
		64	123	12.8	16.0	19.2	23.1
		76	99.0	15.2	19.0	22.8	26.3
		89	84.0	17.8	22.3	26.7	30.5
		102	73.0	20.4	25.5	30.6	37.3
		115	65.0	23.0	28.8	34.5	41.9
5.5x4.2	305	22.9	61.0	76.3	91.5	110	
32	16	38	388	7.60	9.5	11.4	12.5
		44	324	8.80	11.0	13.2	14.9
		51	272	10.2	12.8	15.3	17.8
7.1x5.4	64	212	12.8	16.0	19.2	22.4	

D	d	L	R	A	B	C	D
Outer Dia.	Rod Dia.	Length	Load Rate	Long Life % 20	Min. Deflect. % 25	Max. Deflect. % 30	Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
32	16	76	172	15.2	19.0	22.8	26.1
		89	141	17.8	22.3	26.7	30.8
		102	122	20.4	25.5	30.6	36.8
		115	107	23.0	28.8	34.5	41.4
		127	93.0	25.4	31.8	38.1	44.4
		139	86.0	28.0	35.0	42.0	48.5
		152	78.0	30.4	38.0	45.6	54.8
		178	67.2	35.6	44.5	53.4	63.6
		203	59.1	40.6	50.8	60.9	72.5
		254	46.4	50.8	63.5	76.2	92.8
7.1x5.4	305	38.0	61.0	76.3	91.5	112	
40	20	51	350	10.2	12.8	15.3	17.0
		64	269	12.8	16.0	19.2	21.9
		76	219	15.2	19.0	22.8	26.7
		89	190	17.8	22.3	26.7	31.3
		102	163	20.4	25.5	30.6	37.1
		115	142	23.0	28.8	34.5	41.0
		127	128	25.4	31.8	38.1	46.5
		139	115	28.0	35.0	42.0	53.1
		152	105	30.4	38.0	45.6	56.1
		178	89.0	35.6	44.5	53.4	67.4
203	77.0	40.6	50.8	60.9	76.2		
254	61.0	50.8	63.5	76.2	96.2		
8.4x6.2	305	51.0	61.0	76.3	91.5	115	
50	25	64	413	12.8	16.0	19.2	22.4
		76	339	15.2	19.0	22.8	26.5
		89	288	17.8	22.3	26.7	31.5
		102	245	20.4	25.5	30.6	37.6
		115	215	23.0	28.8	34.5	42.7
		127	192	25.4	31.8	38.1	47.5
		139	168	28.0	35.0	42.0	51.8
		152	154	30.4	38.0	45.6	57.8
		178	134	35.6	44.5	53.4	68.5
		203	117	40.6	50.8	60.9	77.6
254	89.0	50.8	63.5	76.2	97.9		
11x7.6	305	73.0	61.0	76.3	91.5	121	
63	38	76	618	15.2	19.0	22.8	24.7
		89	515	17.8	22.3	26.7	30.0
		102	438	20.4	25.5	30.6	35.1
		115	370	23.0	28.8	34.5	37.5
		127	333	25.4	31.8	38.1	45.9
		152	269	30.4	38.0	45.6	56.5
		178	226	35.6	44.5	53.4	66.8
		203	198	40.6	50.8	60.9	78.8
254	155	50.8	63.5	76.2	102		
11.6x12.3	305	128	61.0	76.3	91.5	122	



Extra Heavy Load Spring Code: SY
ISO 10243 / Colour: Yellow



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 17	B Min. Deflect. % 20	C Max. Deflect. % 25	D Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
10	5	25	36.8	4.30	5.00	6.30	7.70
		32	27.9	5.40	6.40	8.00	10.6
		38	23.7	6.50	7.60	9.50	12.6
		44	19.2	7.50	8.80	11.0	13.8
		51	16.5	8.70	10.2	12.8	16.2
		64	13.2	10.9	12.8	16.0	20.4
		76	10.9	12.9	15.2	19.0	25.2
1.9X1.6	305	2.60	51.9	61.0	76.3	111	
13	6.3	25	58.5	4.30	5.00	6.30	8.10
		32	43.9	5.40	6.40	8.00	9.90
		38	36.0	6.50	7.60	9.50	12.9
		44	30.3	7.50	8.80	11.0	14.1
		51	26.2	8.70	10.2	12.8	17.4
		64	21.2	10.9	12.8	16.0	21.0
		76	17.1	12.9	15.2	19.0	26.4
		89	14.5	15.1	17.8	22.3	31.5
		102	12.7	17.3	20.4	25.5	36.0
		2.6X2.0	305	4.30	51.9	61.0	76.3
16	8	25	118	4.30	5.00	6.30	8.50
		32	89.0	5.40	6.40	8.00	11.0
		38	72.1	6.50	7.60	9.50	13.2
		44	60.9	7.50	8.80	11.0	14.7
		51	52.3	8.70	10.2	12.8	17.7
		64	41.2	10.9	12.8	16.0	21.9
3.2X2.9	76	34.1	12.9	15.2	19.0	27.8	

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 17	B Min. Deflect. % 20	C Max. Deflect. % 25	D Full Deflect. Breakable
b x h	mm	Nw.	mm	mm	mm	mm	mm
16	8	89	29.5	15.1	17.8	22.3	31.2
		102	25.6	17.3	20.4	25.5	37.9
		115	22.4	19.6	23.0	28.8	44.5
3.2X2.9	305	8.4	51.9	61.0	76.3	113	
20	10	25	293	4.30	5.00	6.30	6.90
		32	224	5.40	6.40	8.00	9.40
		38	177	6.50	7.60	9.50	12.0
		44	149	7.50	8.80	11.0	13.5
		51	128	8.70	10.2	12.8	16.2
		64	99.0	10.9	12.8	16.0	21.2
		76	81.7	12.9	15.2	19.0	24.7
		89	69.5	15.1	17.8	22.3	28.8
		102	60.6	17.3	20.4	25.5	34.8
		115	53.0	19.6	23.0	28.8	39.0
		127	47.5	21.6	25.4	31.8	43.0
		139	43.0	23.8	28.0	35.0	45.3
		152	39.0	25.8	30.4	38.0	50.4
4.1X3.8	305	21.2	51.9	61.0	76.3	103	
25	12.5	25	459	4.30	5.00	6.30	7.30
		32	374	5.40	6.40	8.00	10.7
		38	300	6.50	7.60	9.50	12.0
		44	244	7.50	8.80	11.0	14.4
		51	208	8.70	10.2	12.8	17.4
		64	161	10.9	12.8	16.0	21.4
		76	131	12.9	15.2	19.0	26.9
		89	111	15.1	17.8	22.3	30.9
		102	96.3	17.3	20.4	25.5	36.7
		115	85.7	19.6	23.0	28.8	40.3
		127	76.3	21.6	25.4	31.8	45.1
		139	66	23.8	28.0	35.0	47.6
		152	63.5	25.8	30.4	38.0	53.5
		178	53.9	30.3	35.6	44.5	63.9
203	47.0	34.5	40.6	50.8	70.2		
5.4X4.6	305	30.9	51.9	61.0	76.3	110	
32	16	38	480	6.50	7.60	9.50	11.4
		44	390	7.50	8.80	11.0	13.7
		51	320	8.70	10.2	12.8	15.6
		64	269	10.9	12.8	16.0	20.0
		76	219	12.9	15.2	19.0	24.4
		89	180	15.1	17.8	22.3	29.7
102	155	17.3	20.4	25.5	35.1		
115	140	19.6	23.0	28.8	39.0		
7.3X5.9	127	124	21.6	25.4	31.8	42.8	

Extra Heavy Load Spring Code: SY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 17	B Min. Deflect. % 20	C Max. Deflect. % 25	D Full Deflect. Breakable	
b x h	mm	Nw.	mm	mm	mm	mm	mm	
32	16	139	112	23.8	28.0	35.0	48.6	
		152	102	25.8	30.4	38.0	52.4	
		178	88.2	30.3	35.6	44.5	60.9	
		203	76	34.5	40.6	50.8	69.2	
		254	60.8	43.2	50.8	63.5	88.1	
7.3X5.9	305	49	51.9	61.0	76.3	104		
40	20	51	628	8.7	10.2	12.8	15.0	
		64	487	10.9	12.8	16.0	19.5	
		76	379	12.9	15.2	19.0	23.3	
		89	321	15.1	17.8	22.3	26.7	
		102	281	17.3	20.4	25.5	33.8	
		115	245	19.6	23.0	28.8	36.2	
		127	221	21.6	25.4	31.8	40.7	
		139	195	23.8	28.0	35.0	44.5	
		152	168	25.8	30.4	38.0	49.6	
		178	150	30.3	35.6	44.5	59.9	
		203	132	34.5	40.6	50.8	67.1	
		254	107	43.2	50.8	63.5	86.3	
		8.4X7.5	305	87.8	51.9	61.0	76.3	104
		50	25	64	709	10.9	12.8	16.0
76	572			12.9	15.2	19.0	24.2	
89	475			15.1	17.8	22.3	28.0	
102	405			17.3	20.4	25.5	33.5	
115	352			19.6	23.0	28.8	38.6	
127	316			21.6	25.4	31.8	41.4	
139	289			23.8	28.0	35.0	47.3	
152	239			25.8	30.4	38.0	50.2	
178	215			30.3	35.6	44.5	61.1	
203	187			34.5	40.6	50.8	67.7	
254	153	43.2	50.8	63.5	87.0			
11X9.0	305	127	51.9	61.0	76.3	104		
63	38	76	952	12.9	15.2	-	15.5	
		89	819	15.1	17.8	-	20.0	
		102	700	17.3	20.4	25.5	30.7	
		115	620	19.6	23	28.8	34.9	
		127	565	21.6	25.4	31.8	38.0	
		152	458	25.8	30.4	38.0	47.2	
		178	384	30.3	35.6	44.5	55.8	
203	337	34.5	40.6	50.8	64.8			
254	263	43.2	50.8	63.5	86.7			
11.6X14.9	305	218	51.9	61.0	76.3	106		

Order: SY. D x L

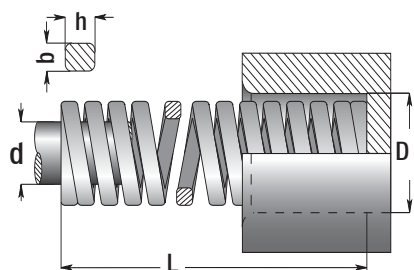
Usage: It is compatible with die systems and machine equipment designs.

Order Example: SY. 50 x 127



Ultra Heavy Load Spring Code: **GY**

Colour: Silver



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.
Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

Application Information for Long Lived Usage of Springs:

High tension levels only should be used when limited life is expected or in case of static loading. Under dynamic loading conditions, at the same time, exposing column spring to extraordinary temperatures, tensile loadings, lateral loadings, sudden loadings and high frequency usage limits the life time of springs. In all these cases, decreasing of tension / deflection values assists in terms of better spring life.

Order: **GY. D x L**

Usage: It is compatible with die systems and machine equipment designs.

Ultra Heavy Load Spring Code: **GY**

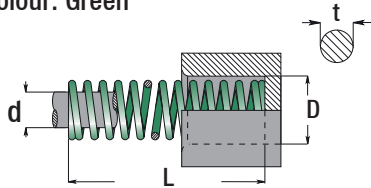
D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 10	B Min. Deflect. % 12	C Max. Deflect. % 15	D Full Deflect. Breakable	
b x h	mm	Nw.	mm	mm	mm	mm	mm	
25	12.5	64	644	6.40	7.70	9.60	13.0	
		76	556	7.60	9.10	11.4	16.0	
		89	462	8.90	10.7	13.4	20.0	
		102	390	10.2	12.2	15.3	23.0	
		115	360	11.5	13.8	17.3	26.0	
		127	326	12.7	15.2	19.1	28.0	
		152	255	15.2	18.2	22.8	34.0	
		178	230	17.8	21.4	26.7	39.0	
		203	202	20.3	24.4	30.5	45.0	
		5.6x7.5	305	136	30.5	36.6	45.8	63.0
32	16	64	1077	6.40	7.70	9.60	13.0	
		76	874	7.60	9.10	11.4	16.0	
		89	721	8.90	11.0	13.3	20.0	
		102	620	10.0	12.0	15.3	23.0	
		115	560	12.0	14.0	17.2	26.0	
		127	496	13.0	15.0	19	28.0	
		152	408	15.0	18.0	22.8	34.0	
		178	353	18.0	21.0	26.7	39.0	
		203	304	20.0	24.0	30.4	45.0	
		254	243	25.0	30.0	38.1	62.0	
7.5x9.2	305	196	31.0	37.0	45.7	75.0		
40	20	89	880	8.90	10.7	13.4	20.0	
		102	762	10.2	12.2	15.3	23.0	
		115	679	11.5	13.8	17.3	26.0	
		127	622	12.7	15.2	19.1	28.0	
		152	509	22.8	18.2	22.8	36.0	
		178	429	17.8	21.4	26.7	43.0	
		203	374	20.3	24.4	30.5	49.0	
		254	296	25.4	30.5	38.1	62.0	
		8.5x11	305	246	30.5	36.6	45.8	75.0
		50	25	89	1410	8.90	10.7	13.4
102	1215			10.2	12.2	15.3	22.0	
115	1076			11.5	13.8	17.3	25.0	
127	968			12.7	15.2	19.1	28.0	
152	806			15.2	18.2	22.8	34.0	
178	698			17.8	21.4	26.7	40.0	
203	612			20.3	24.4	30.5	45.0	
254	472			25.4	30.5	38.1	58.0	
11.8x13.5	305			388	30.5	36.6	45.8	70.0

NEW



Code: TVY

Round Wire, Light Load Spring
Colour: Green



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 40	D Full Deflect.
t	mm	Nw.	mm	mm	mm	mm	Breakable
10	5	25	4.4	6.3	7.5	10.0	13.2
		32	3.4	8.0	9.6	12.8	16.5
		38	2.8	9.5	11.4	15.2	19.8
		44	2.4	11.0	13.2	17.6	23.1
		51	2.1	12.8	15.3	20.4	26.9
		64	1.6	16.0	19.2	25.6	33.3
		76	1.3	19.0	22.8	30.4	39.6
1.1	305	0.3	76.3	91.5	122.0	157	
13	6.3	25	8.5	6.3	7.5	10.0	13.5
		32	6.5	8.0	9.6	12.8	16.8
		38	5.3	9.5	11.4	15.2	20.3
		44	4.4	11.0	13.2	17.6	23.9
		51	3.8	12.8	15.3	20.4	26.9
		64	2.9	16.0	19.2	25.6	33.3
		76	2.5	19.0	22.8	30.4	41.1
89	2.1	22.3	26.7	35.6	48.3		
1.5	305	0.6	76.3	91.5	122.0	163	
16	8	25	17.9	6.3	7.5	10.0	14.7
		32	13.5	8.0	9.6	12.8	18.5
		38	10.5	9.5	11.4	15.2	22.4
		44	8.8	11.0	13.2	17.6	25.9
		51	7.6	12.8	15.3	20.4	30.0
		64	5.9	16.0	19.2	25.6	37.8
		76	4.8	19.0	22.8	30.4	45.2
		89	4.0	22.3	26.7	35.6	52.8
		102	3.5	25.5	30.6	40.8	60.7
2.0	305	1.1	76.3	91.5	122.0	184	

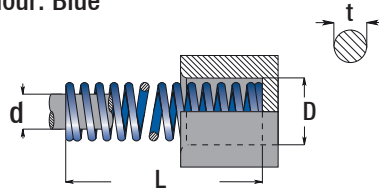


Order: TVY. D x L



Code: TBM

Round Wire, Medium Load Spring
Colour: Blue



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect.
t	mm	Nw.	mm	mm	mm	mm	Breakable
10	5	25	12.3	6.3	7.5	9.4	10.4
		32	9.5	8.0	9.6	12.0	13.2
		38	7.8	9.5	11.4	14.3	16.0
		44	6.5	11.0	13.2	16.5	18.5
		51	5.6	12.8	15.3	19.1	21.1
		64	4.5	16.0	19.2	24.0	26.4
		76	3.7	19.0	22.8	28.5	31.8
1.5	305	0.9	76.3	91.5	114	129	
13	6.3	25	21.7	6.3	7.5	9.4	11.2
		32	16.8	8.0	9.6	12.0	14.0
		38	13.8	9.5	11.4	14.3	17.3
		44	11.6	11.0	13.2	16.5	19.8
		51	10.0	12.8	15.3	19.1	22.9
		64	7.8	16.0	19.2	24.0	28.4
		76	6.4	19.0	22.8	28.5	34.3
89	5.6	22.3	26.7	33.4	41.4		
1.8	305	1.5	76.3	91.5	114	139	
16	8	25	31.9	6.3	7.5	9.4	10.9
		32	24.0	8.0	9.6	12.0	13.7
		38	19.4	9.5	11.4	14.3	16.5
		44	16.1	11.0	13.2	16.5	19.3
		51	13.8	12.8	15.3	19.1	22.1
		64	10.7	16.0	19.2	24.0	27.4
		76	8.8	19.0	22.8	28.5	33.0
		89	7.5	22.3	26.7	33.4	38.6
		102	6.5	25.5	30.6	38.3	44.5
2.2	305	2.1	76.3	91.5	114	134	

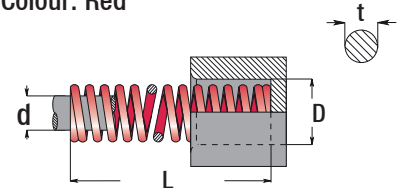


Order: TBM. D x L



Code: TRK

Round Wire, Heavy Load Spring
Colour: Red



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) Kgf

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 20	B Min. Deflect. % 25	C Max. Deflect. % 30	D Full Deflect.
t	mm	Nw.	mm	mm	mm	mm	Breakable
10	5	25	20.7	5.0	6.3	7.5	8.6
		32	16.1	6.4	8.0	9.6	10.9
		38	13.0	7.6	9.5	11.4	13.2
		44	10.9	8.8	11.0	13.2	14.7
		51	9.6	10.2	12.8	15.3	17.8
		64	7.7	12.8	16.0	19.2	22.9
		76	6.3	15.2	19.0	22.8	26.9
1.6	305	1.5	61.0	76.3	91.5	110	
13	6.3	25	37.5	5.0	6.3	7.5	8.9
		32	28.9	6.4	8.0	9.6	11.2
		38	23.5	7.6	9.5	11.4	13.7
		44	19.6	8.8	11.0	13.2	15.7
		51	17.3	10.2	12.8	15.3	18.8
		64	13.5	12.8	16.0	19.2	23.6
		76	11.2	15.2	19.0	22.8	28.4
89	9.5	17.8	22.3	26.7	33.0		
2.2	305	2.7	61.0	76.3	91.5	114	
16	8	25	81.6	5.0	6.3	7.5	9.1
		32	61.3	6.4	8.0	9.6	11.4
		38	49.9	7.6	9.5	11.4	14.2
		44	40.8	8.8	11.0	13.2	16.3
		51	35.6	10.2	12.8	15.3	18.8
		64	27.8	12.8	16.0	19.2	23.9
		76	22.8	15.2	19.0	22.8	29.0
		89	19.6	17.8	22.3	26.7	34.3
		102	17.0	20.4	25.5	30.6	39.4
2.8	305	5.4	61.0	76.3	91.5	119	



Order: TRK. D x L



Code: DCY

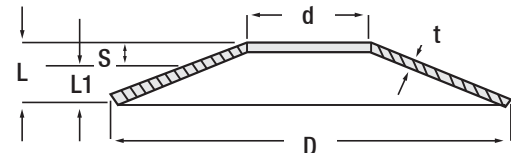
d Ø	D Ø	t mm	L mm	L1 mm	F Nw
3.2	8	0.30	0.55	0.36	104
		0.50	0.70	0.55	357
4.2		0.40	0.60	0.45	209
3.2	10	0.30	0.65	0.39	98
		0.40	0.70	0.48	179
4.2	10	0.50	0.75	0.56	294
		0.60	0.85	0.66	502
5.2	10	0.40	0.70	0.48	209
		0.50	0.75	0.56	325
4.2	12	0.40	0.80	0.50	178
		0.50	0.85	0.59	284
5.2	12	0.50	0.90	0.60	349
		0.60	0.95	0.69	506
6.2	12	0.50	0.85	0.59	326
		0.60	0.95	0.69	551
6.2	12.5	0.50	0.85	0.59	293
		0.70	1.00	0.78	659
7.2	14	0.50	0.90	0.60	279
		0.80	1.10	0.87	796
5.2	15	0.40	0.95	0.54	175
		0.60	1.05	0.71	407
6.2	15	0.50	1.00	0.63	289
		0.70	1.10	0.80	577
8.2	15	0.70	1.10	0.80	665
		0.80	1.20	0.90	982
8.2	16	0.40	0.90	0.53	154
		0.60	1.05	0.71	410
8.2	16	0.90	1.25	0.99	1012
		0.50	1.10	0.65	245
6.2	18	0.70	1.25	0.84	552
		0.80	1.30	0.92	582
8.2	18	1.00	1.40	1.10	1181
		0.70	1.20	0.83	566
9.2	18	1.00	1.40	1.10	1253
		0.60	1.30	0.77	412
8.2	20	0.80	1.40	0.95	751
		1.00	1.55	1.14	1294
10.2	20	0.80	1.35	1.94	748
		1.00	1.55	1.14	1414

d Ø	D Ø	t mm	L mm	L1 mm	F Nw
8.2	23	0.80	1.55	0.99	718
		0.90	1.60	1.07	918
10.2		1.00	1.70	1.17	1315
12.2	25	0.70	1.60	0.92	599
		0.90	1.60	1.07	862
10.2	28	0.80	1.75	1.04	661
		1.00	1.90	1.23	1129
14.2	28	0.80	1.80	1.05	801
		1.00	1.80	1.20	1107
16.3	31.5	1.25	2.15	1.48	1912
		1.50	2.40	1.73	3228
12.3	34	1.25	2.35	1.53	1814
		1.50	2.50	1.75	2719
14.3	34	1.25	2.40	1.54	1988
		1.50	2.55	1.76	2982
16.3	34	1.50	2.55	1.76	3153
		2.00	2.85	2.21	5779
14.3	40	1.50	2.75	1.81	2544
		2.00	3.05	2.26	4766
16.3	40	1.50	2.80	1.83	2748
		2.00	3.10	2.28	5166
20.4	40	2.00	3.10	2.28	5698
		2.50	3.45	2.74	9384
22.4	45	1.75	3.05	2.08	3644
		2.50	3.50	2.75	7712
20.4	50	2.00	3.50	2.38	4685
		2.50	3.85	2.84	7915
25.4	50	2.00	3.40	2.35	4760
		2.50	3.90	2.85	9058
30.5	60	3.00	4.10	3.28	11970
		2.50	4.70	2.95	7293
20.5	60	3.00	5.20	3.42	11563
		3.00	4.70	3.42	13219
30.5	60	3.50	5.00	3.88	18143
		4.00	5.70	4.04	23338
40.5	70	5.00	6.40	5.30	33653
		4.00	6.10	4.50	19384
31	80	3.00	5.30	3.58	10512
		5.00	6.70	5.42	33541
41	80	5.00	7.75	5.69	32344
		6.00	8.20	6.55	47995



Disc Springs
DIN 2093

Code: DCY



- d: Inner hole diameter
- D: Outer diameter
- t: Thickness
- L: Free length
- L1: Loading length
- F max: Flex force
- S: Flex length stroke / motion

Disc Springs: It provides resistance to higher forces at very short working strokes. The advantage of springs with very short spring is that when the pressure is applied, it produces high power with less motion. Disc springs sometimes can be used alone and also as stacked array sets.

Tension Resistance N: 25 / + 200 50 CrV Heat Resistance: -15 / +150°

Disc Spring Working Strokes: Applied forces (F / N) should be designed according to the working strokes. Specifying the working strokes should be according to the hole thickness (t) internal wall. L: 0.25 (1/4) or 0.50 (1/2) of free length.

In addition, with motion up to 0.75 (3/4), different forces (F/N) per each stroke value may be applied.

$F=N / S = \text{mm} / \text{stroke}$

Disc Spring Array (load application) / 1 Newton : 0.102 Kg.

1 x F, 4 x S

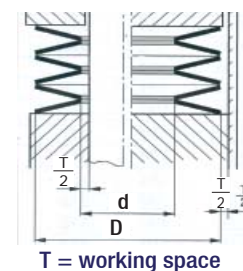
 1 F (force / N) in application 0.25 4 times S (stroke)
Light Duty

2 x F, 4 x S

 2 F (force / N) in application 0.50 4 times S (stroke)
Heavy Duty

3 x F, 1 x S

 3 F (force / N) in application 0.75 4 times S (stroke)
Extra Heavy Duty



Fixing Disc Spring with Shaft

D	T
> 8 - 16	0.2 mm
> 16 - 20	0.3 mm
> 20 - 26	0.4 mm
> 26 - 34	0.5 mm
> 34 - 50	0.6 mm
> 50 - 100	0.8 mm

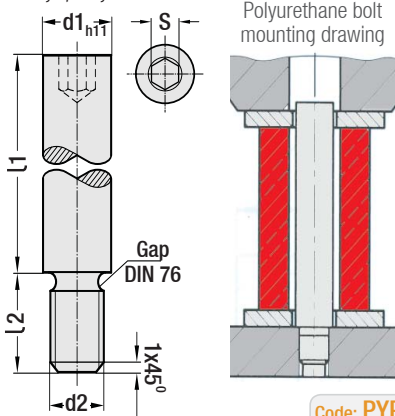
Order:
DCY. d x D x t



Code: PYP

Guide Bolt for Polyurethane Spring

During guiding of polyurethane springs, countersunk allen head metric thread connected guide bolts can be used as single spring as well as cluster by dividing springs.



Code: PYP

d1	L1	d2	L2	S	Spring Ø
Ø 6 mm	20	M4	6 mm	3	Ø 16 x 6.5
	25				
	32				
Ø 8 mm	25	M6	9 mm	4	Ø 20 x 8.5
	32				
	40				
Ø 10 mm	25	M8	15 mm	5	Ø 25 x 10.5
	32				
	40				
Ø 13 mm	50	M10	15 mm	6	Ø 32 / 40 x 13.5
	63				
	80				
	95				
	118				
Ø 16 mm	32	M12	18 mm	8	Ø 50 / 63 x 17
	40				
	50				
	63				
	80				
	95				
Ø 20 mm	40	M16	25 mm	10	Ø 80 / 100 x 21
	50				
	63				
	80				
	95				
	140				

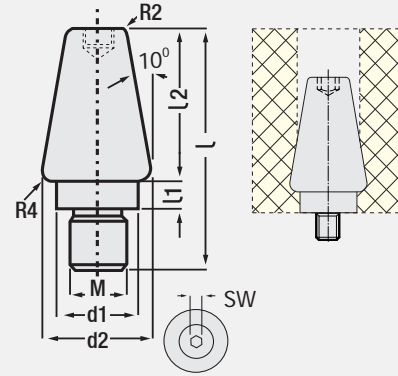
Order: PYP. d1 x L1

Material: CK45



Code: PSP

Locating Bolt for Polyurethane Spring



M	L	d1	d2	L1	L2	SW	Spring Ø
M12	56	19	28	8	30	6	63
M16	74	22	32	10	40	8	80-100
M20	100	28	38	15	55	10	125-140

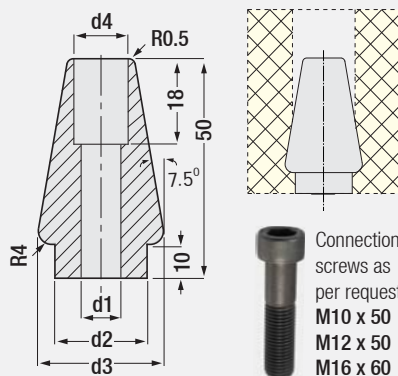
Order: PSP. M x L

Material: 1.7131 (16MnCr5)



Code: PMV

Locating Pin for Polyurethane Spring



Upper screwed locating pins for polyurethane springs

M	d1	d2	d3	d4	Spring Ø
M10	11	18	28	17	63
M12	13.5	22	32	19	80-100
M16	17.5	28	38	25	125

Order: PMV. M

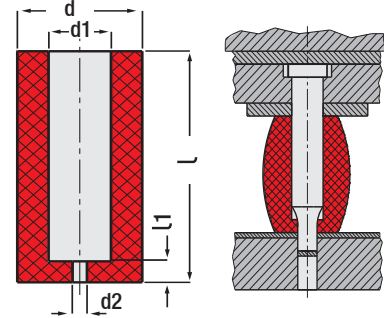
Material: 1.7131 (16MnCr5)



Code: PYB

Polyurethane Punch Stripper

Overspread on punch (shock absorber)



In dies that polyurethane punch stripper is used, there is no need to dismantle stripper plate to make repair whetting and modification on die components, there is not any effect on precise parts, it is excellent for all painted / anodized, plastic plated and polished parts. It is compatible to use with oil and grease. It is overspread on punch. Placement is done according to the stripper hardness. There is no need for extra holder. Stepped-punch hole will be opened at the first stroke of press on stripper edge. Especially, in large dies requiring very wide stripper plate, this product is very compatible.

Code: PYB

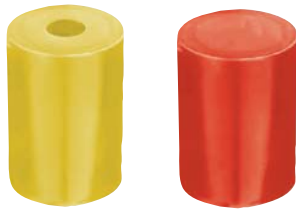
Order	d1 Ø	d Ø	d2 Ø	L1 mm	L mm	Punch Length
PYB.445	4.0	17	1.6	5.0	45	56 / 63
PYB.655	6.0	19				
PYB.855	8.0	21	3.0	5.0	55	63 71 80 90
PYB.1055	10	23				
PYB.1355	13	26				
PYB.1655	16	30	3.0	5.0	55	100
PYB.2055	20	38				
PYB.2555	25	50	3.0	5.0	55	100

d2: (1.6 - 3.0 mm) (d1) while opening hole diameter / drilling, polyurethane (punch) bush should be applied and drilled in pressed (S max) position. Spring load is obtained while extending outwards.

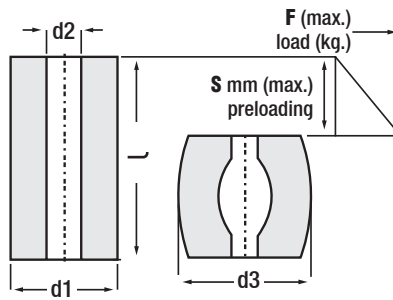
In S. max flexion, load coefficient data daN / Kg.

d mm	17	19	21	23	26	30	38	50
S daN	60	65	70	90	110	140	210	370
3 mm	daN	daN	daN	daN	daN	daN	daN	daN
S daN	115	120	130	160	190	230	360	650
6 mm	daN	daN	daN	daN	daN	daN	daN	daN
S daN	-	180	210	240	300	370	550	1020
9 mm	daN	daN	daN	daN	daN	daN	daN	daN

S max: Load coefficient daN = Kg. / (10 newton), while polyurethane bush S max in pressed, load data is advisory.



90 Shore / Red Springs Code: **PMK**
80 Shore / Yellow Springs Code: **PMS**



D = Solid / B = Hollow

Compression (Length)
 Red / 90 Shore : % 25
 Yellow / 80 Shore : % 35

Polyurethane Compression Spring

They do not create any problem at water / oil emulsions (resistance to thermal shock). They do not have any abrasion effects that can be distinguished with fixed and high load under normal temperature and environmental conditions at serial motion dies. Especially, they are efficient in ambient that do not require magnetization. Polyurethane springs can be machining with ordinary machine tools (such as lathe) as well as can be machining with traditional cutting tools (with sharp cutting edge). Polyurethane compression spring is incompressible material, spring load is obtained by extending outwards. Most of the expansion is reflected outwards. When desired higher flexion, selected spring is cut into two pieces from centre, then metal thick washer is inserted, thus flexion is increased two times. Pin diameter of polyurethane compression springs should be less than the inner diameter of spring.

Ø d1 mm	L mm	Ø d2 mm	Ø d3 mm	% 25		% 35	
				90 Shore (red)		80 Shore (yellow)	
				Max. Force S mm	Max. Force F Kg	Max. Force S mm	Max. Force F Kg
16	12	6.5	21	3.6	171	4.3	104
	16			4.8	169	5.6	100
	20			6.0	165	7.0	97
	25			7.5	161	8.7	96
20	16	8.5	36	4.8	265	5.6	156
	20			6.0	260	7.0	154
	25			7.5	258	8.7	153
	32			9.6	255	10.6	152
25	20	10.5	32	6.0	439	7.0	265
	25			7.5	428	8.7	260
	32			9.6	423	10.6	257
	40			12.0	420	14.0	255
32	32	13.5	42	9.6	653	10.6	398
	40			12.0	648	14.0	393
	50			15.0	643	17.5	390
	63			18.9	638	22.0	388
40	32	13.5	52	9.6	1122	10.6	683
	40			12.0	1112	14.0	673
	50			15.0	1101	17.5	668
	63			18.9	1097	22.0	663
50	32	17	65	9.6	1775	10.6	1102
	40			12.0	1765	14.0	1061
	50			15.0	1734	17.5	1041
	63			18.9	1698	22.0	1020
80	40	17	65	24.0	1683	28.0	1015
	50			30.0	1673	35.0	1010

Ø d1 mm	L mm	Ø d2 mm	Ø d3 mm	% 25		% 35	
				90 Shore (red)		80 Shore (yellow)	
				Max. Force S mm	Max. Force F Kg	Max. Force S mm	Max. Force F Kg
63	32	17	81	9.6	3070	11.2	1902
	40			12.0	3009	14.0	1836
	50			15.0	2947	17.5	1785
	63			18.9	2856	22.0	1734
80	80	21	104	24.0	2805	28.0	1683
	100			30.0	2784	35.0	1652
	125			37.5	2733	43.7	1632
	32			9.6	5406	11.2	3213
100	40	21	130	12.0	5151	14.0	3070
	50			15.0	4896	17.5	3049
	63			18.9	4743	22.0	2937
	80			24.0	4641	28.0	2886
125	100	37	160	30.0	4579	35.0	2866
	125			37.5	4488	43.7	286
	32			9.6	9180	11.2	5712
	40			12.0	8649	14.0	5304
160	50	37	160	15.0	8262	17.5	5100
	63			18.9	7956	22.0	4845
	80			24.0	7650	28.0	4590
	100			30.0	7446	35.0	4416
125	125	37	160	37.5	7242	43.7	4233
	32			9.6	15300	11.2	9384
	40			12.0	14535	14.0	8670
	50			15.0	13464	17.5	8160
160	63	37	160	18.9	12750	22.0	7650
	80			24.0	12036	28.0	7242
	100			30.0	11730	35.0	7191
	125			37.5	11526	43.7	7140
160	160	37	160	48.0	11352	56.0	6936

Order: Code - D or B . d1 . L
 Order Example: PMS-B.25.40

Heat resistance: 70°C
 Note: Under 18°C gradual increase in hardness.

In special forms are produced as per request!



Polyurethane Compression Spring

90 Shore / Red Springs Code: **PYK**
80 Shore / Yellow Springs Code: **PYS**

D = Solid / B = Hollow

Solid Type	d2		d1
	Hollow	d1	
90 Shore: Flexion %25 Loaded Spring	6.5	16	80 Shore: Flexion %35 Loaded Spring
	8.5	20	
	10.5	25	
	13.5	32	
	13.5	40	
	17.0	50	
90 Shore: Flexion %25 Loaded Spring	17.0	63	80 Shore: Flexion %35 Loaded Spring
	21.0	80	
	21.0	100	
	27.0	125	

Length (L): 310 mm

Order: Code - D or B . d1
 Order Example: PYK-D.32

Polyurethane Shock Absorbing Washer

Code: **PRPS** Code: **PRPK**

90 Shore - red / %25
 80 Shore - yellow / %35

d2	d1	s
Ø 16	6.5	3 mm
	11	4 mm
Ø 20	8.5	3 mm
	11	4 mm
	13	5 mm
Ø 25	10.5	3 mm
	12	4 mm
	14	5 mm
Ø 32	13.5	3 mm
	18	4 mm
	21	5 mm
	23.5	6 mm
Ø 16	6.5	3 mm
	11	4 mm
Ø 20	8.5	3 mm
	11	4 mm
	13	5 mm
Ø 25	10.5	3 mm
	12	4 mm
	14	5 mm
Ø 32	13.5	3 mm
	18	4 mm
	21	5 mm
	23.5	6 mm
Ø 40	13.5	5 mm
	17	6 mm
Ø 50	17	6 mm
	26	7 mm
	32	8 mm
Ø 63	17	6 mm
	26	7 mm
	32	8 mm
Ø 80	21	8 mm
	42	10 mm
Ø 100	21	10 mm

Order: Code. d1 x d2 x s
 Order Example: PRPS. 11 x 20 x 4