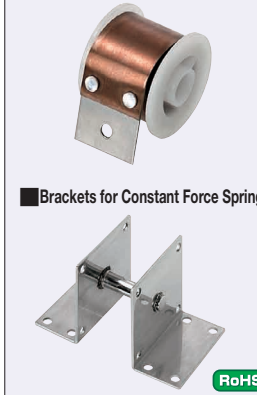


Constant Force Springs / Brackets for Constant Force Springs

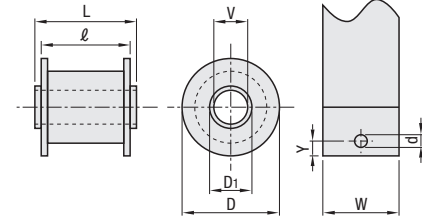
Washers for Coil Springs

Standard / Tapped / Dimension Configurable - Selectable

Constant Force Springs



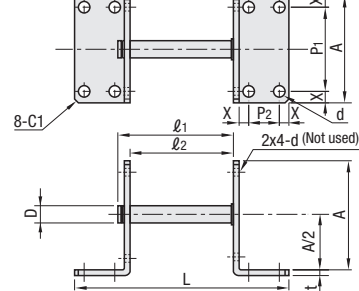
CFS (Constant Force Springs)



Material	
Main Body	Drum
301 Stainless Steel	Polypropylene

Material of the Drums: CFS0.1, CFS0.2 and CFS5.2 are polyethylene, CFS3.5 is ABS Resin.

CFSB (Brackets for Constant Force Springs)



Material		Surface Treatment		Accessories	
Main Body	Shaft	Shaft		Retaining Ring-C Type (304 Stainless Steel)	
430 Stainless Steel	SWCH Equivalent	Nickel Plating			

Part Number Type	Max. Load (kg)	Stroke	Durability Times	Spring Rate Thickness	Stroke Max. Times	D	D1	V	L	W	Y	Unit Price 1-19 pcs	Volume Discount Rate		
													20-34	35-49	50-100
0.1	50,000	0.1	26	8.2	5.2	17	18	10	3.2	5					
0.2	35,000	0.13	34	13		25.6	27.6	20							
0.4	37,000		34			30.6	32.6	25							
0.6	1,000	25,000	0.15	34		26.2	27.6	20							
0.8	1,500	25,000		34		40.6	42.6	35							
1.0	1,000	19,000	0.2	1.0	44	25.6	27.6	20	4.5						
1.2	1,500	34,000		34	13	30.6	32.6	25							
1.4	1,000	9,000		34	13	25.6	27.6	20							
1.8	1,500	9,000		34		30.6	32.6	25							
2.0		6,000	0.25	38		26.2	27.6	20							
2.2		8,000	0.3	44	14	30.6	32.6	25							
2.4		6,000	0.25	38		26.2	27.6	20							
2.6		9,000		44		30.6	32.6	25							
2.9	1,000	20,000	0.3	2.0	54	46	49	40	6.5						
3.2		8,000	1.0	44	14	35.6	37.6	30	4.5						
3.5		21,000		2.0	54	56	58	50	6.5						
3.9		8,000	1.0	44	14	40.6	42.6	35	4.5						
4.7		9,000	2.0	44	14	50.6	52.6	45	6.5						
5.2	1,500	6,000	0.45	1.0	60	37	40	30	4.5						
5.7	1,000	8,000	0.3	2.0	44	55.6	57.6	50	6.5						

Part Number Type	No.	t	A	B	P1	P2	X	d	D	L1	L2	L	Applicable Constant Force Spring	Unit Price 1-19 pcs	Volume Discount Rate		
															20-34	35-49	50-100
0.1	1.5	45	22.5	35	12.5	5	4.5	5	24.9	20.5	68.5	CFS0.1 CFS0.2					
0.4	55	27.5	43	15.5	(35)	30.4	89.4	CFS0.4 CFS0.6 CFS1.4									
0.8	55	27.5	43	15.5	(40)	35.4	94.4	CFS0.8 CFS1.8									
1.0	60	30	48	18	(35)	30.4	94.4	CFS1.0 CFS2.0									
1.2	65	32.5	53	20.5	(50)	45.4	114.4	CFS1.2 CFS3.9									
2.2	65	32.5	53	20.5	(35)	30.4	99.4	CFS2.2									
2.4	2	60	30	48	18	6	5.5	(40)	35.4	99.4	CFS2.4						
2.6	65	32.5	53	20.5	(40)	35.4	104.4	CFS2.6									
2.9	75	37.5	63	25.5	(56)	51.4	130.4	CFS2.9									
3.2	65	32.5	53	20.5	(45)	40.4	109.4	CFS3.2									
3.5	75	37.5	63	25.5	(65)	60.8	139.8	CFS3.5									
4.7	65	32.5	53	20.5	(60)	55.4	124.4	CFS4.7									
5.2	2.5	85	42.5	71	28.5	7	6.5	(47)	42.3	132.3	CFS5.2						
5.7	2	65	32.5	53	20.5	6	5.5	(65)	60.4	129.4	CFS5.7						

For orders larger than indicated quantity, please request a quotation.

Ordering Example: Part Number CFS2.4 CFSB2.4 Days to Ship Configure Online

All load tolerances are from 0 to +15%. For orders larger than indicated quantity, please request a quotation.

Feature

- A long strip of material that is wound into a role. When the strip is extended, the inherent stress resists the loading force at a constant rate.
- Once it reaches the maximum load, the resistance is constant regardless of the stroke. (The drums reach the max. output only after approximately half a rotation.)

How to Use

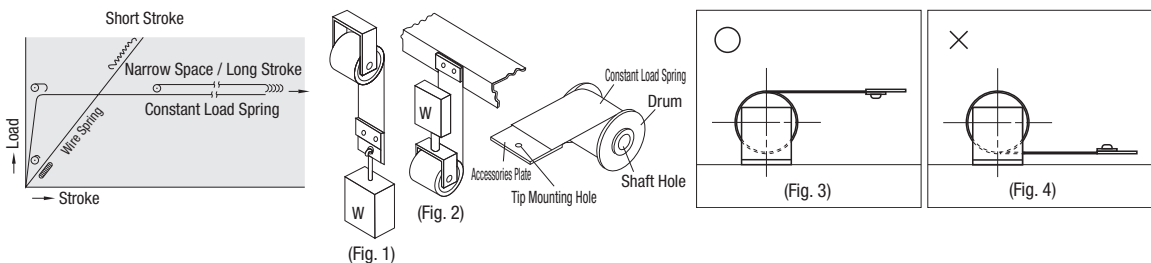
- The side on which a shaft goes through the drum is regarded as one end, and the accessory plate side as the other end. Mount with screws using mounting holes of the accessory plate.
- Can be used by either fixing the body and pulling out the accessory plate (Fig. 1) or fixing the accessory plate and pulling out the body (Fig. 2).

Cautions on Use

- A spring is coiled around a drum, but the inner edge of the spring is not fixed to the drum. Do not pull out the stroke beyond the specified length: the spring may come off of the drum.
- If a suitable load constant force spring can not be found, select a value one step higher and adjust using a counterweight on the mating load.
- Durability is as shown in specification table. A set of extension and contraction is counted as one cycle. If durability expectancy is exceeded, load capacity may decrease and cracks may appear partly on the spring surface. Continued use under such condition is dangerous. If used in pairs, both will reach the end of their service life at the same time. Please replace both of them at the same time. The above durability is for reference only. Actual durability may differ from the given value depending on factors such as the environment and conditions of use.
- After prestressing the springs (5~10 sets of extension and contraction over the entire stroke) the load will be stable. Load capacity may be higher before prestressing.

Cautions on Installation

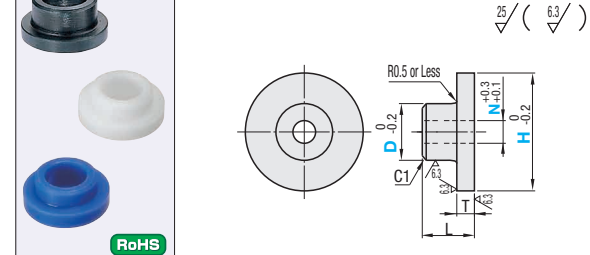
- Make sure the spring doesn't contact other structures.
- Spring draw direction should be perpendicular to the shaft axis.
- Make sure a spring doesn't contact the accessory plate when retracting.
- Set the spring so that it can be pulled out horizontally at any time in order to avoid deflection (bending).
- If drum and shaft do not rotate smoothly, the spring will deteriorate due to excessive force.
- When using brackets, orient them in the position as shown in Fig. 3. Orienting them in the position as shown in Fig. 4 may cause the spring to come into contact with the installation surface of the brackets. This may allow foreign objects such as dust inside, which can cause the spring to deteriorate.



Standard



Type	Material	Surface Treatment	Color
SPGCC	1045 Carbon Steel	Black Oxide	-
SPGCS	304 Stainless Steel	-	-
SPGCJ	Polyacetal	-	White
SPGCK	Polyacetal	-	Black
SPGCM	MC Nylon	-	Blue
SPGCW	MC Nylon	-	Ivory



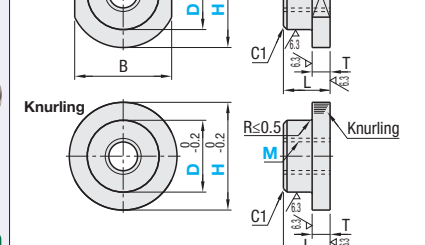
Ordering Example: Part Number SPGCS20 - 9 - 6 Days to Ship SPGCC10 - 6 - 3 Configure Online

Price Configure Online

Tapped

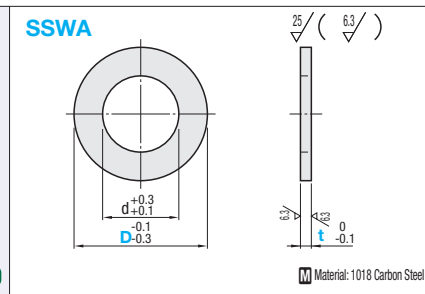


Type	Material	Surface Treatment
2-Flat	1045 Carbon Steel	Black Oxide
SPGRC	304 Stainless Steel	-
SPGRS	-	-



Ordering Example: Part Number SPGMC20 - 16 - 6 Days to Ship SPGRS25 - 20 - 12 Configure Online

Washers



Ordering Example: Part Number SSWA15 - 2.0 Days to Ship Configure Online

Part Number Type	1mm Increment H	D	N	L	T	Unit Price	
						SPGCC	SPGCS
8	6	3					
10	6-8	4					
12	7-10	5					
15	7-13	6					
20	9-17	8					
25	11-22	10					
30	15-25	12					

Part Number Type	1mm Increment H	D	N	L	T	Unit Price	
						SPGCJ	SPGCM
10	6-8	3					
15	7-13	5					
20	9-17	6					
25	11-22	8					
30	15-25	10					

Part Number Type	1mm Increment H	D	M (Course)	L	T	Unit Price	
						SPGMC	SPGMS
10	7-8	4					
15	7-13	4					
20	9-17	4					
25	12-20	4					
30	16-25	6					

Part Number Type	1mm Increment H	D	M (Course)	L	T	Unit Price	
						SPGRC	SPGRS
10	7-8	4					
15	7-13	4					
20	9-17	4					
25	12-20	4					
30	16-25	6					

Ordering Example: Part Number SPGMC20 - 16 - 6 Days to Ship SPGRS25 - 20 - 12 Configure Online

d	Applicable Springs	Part Number Type	D	t	Unit Price				
					t=1.0	t=2.0	t=3.0	t=4.0	t=5.0
3.0	6		5	1.0					
5.0	8		7						
6.0	10		9						
7.0	12		11.5						
8.0	14		13	2.0					
9.0	16		15						
10.0	18		17	3.0					
12.0	20		19						
12.0	22		21						
14.5	25		24	4.0					
15.0	27		26						
17.0	30		29	5.0					
20.0	35		34						
23.0	40		39						

Price Configure Online