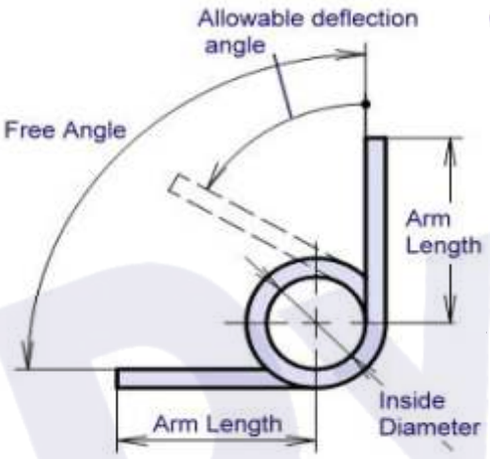
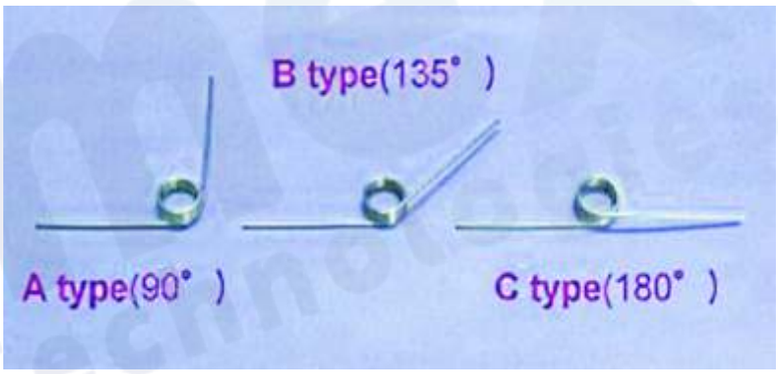
TORSION SPRING

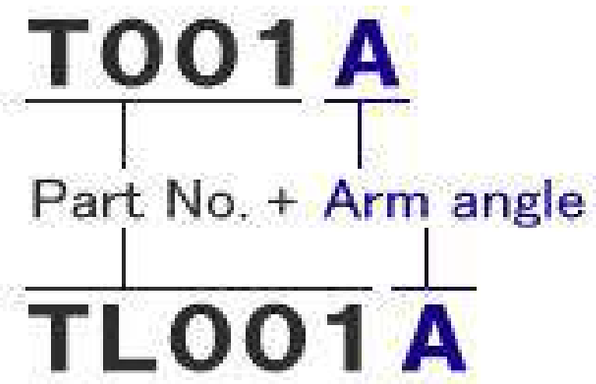
Material：SUS304-WPB

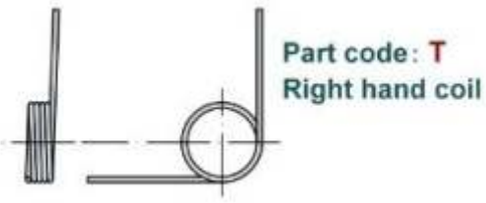


The arm's angle has 3 degrees as A (90°) B (135°) and C (180°)
There Are Three Arm Angles A, B And C



Pleas specify Part No. and Direction of helix and Arm degree.
Please specify the product number, coil winding direction and arm angle.





The usage where deflect direction follows coil winding direction is recommended.
The correct way to use a torsion spring is to wind the spring.
Generally, diameter of inner guide shaft (mandrel) shall be 90% of diameter where maximum load works because inner

Coil diameter decreases when torsion springs deflect.
When the spring is twisted in the winding direction, the coil diameter decreases,
so the guide rod (the rod that prevents the spring from falling over) is generally set to about 90% of the maximum load.
The spring rate shown in the table is determined as loading at the half point of arm and having 135 degrees of free angle.

The allowable deflection angle is determined by allowable static stress.
The spring constant in this standard is calculated with an arm length of 1/2 and a free angle of B (135°),
and the allowable displacement is based on the stress of a static load.

The spring rate can be reference values, for the load of torsion springs are influenced by the other mating parts.
The load on a torsion spring varies depending on the mating material, so the spring constant should be used as a reference value.

$$kTd = \frac{Ed^4}{3667Dn + 389(a_1+a_2)}$$

$$\sigma = \frac{Ed\Phi d}{360Dn}$$

Basic formulas for torsion springs
Basic calculation formula for torsion springs

d: Wire diameter (wire diameter) D: Mean coil diameter (Central diameter) n: Number of coils (Volumes)

a: Arm length (Arm length) σ: Bending stress (bending stress) kTd: Spring rate (spring constant)

E: Young's modulus [SUS 186×10^3N/mm^2] (modulus of longitudinal elasticity) Φd: Angle[deg] (angle)

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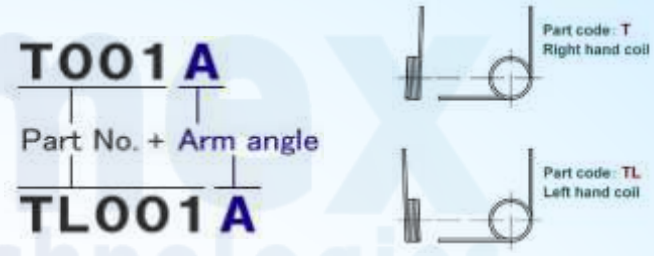

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Part No.	Inside Diameter (ID) mm	Wire Diameter (d) mm	Arm Length (a) mm	Direction of Helix	Number of coils (n)	Spring Rate (N-mm/deg)	Allowable Deflection Angle (deg)	Packing Quantity
T001	3	0.3	12	R	2	0.05	56	56
TL001				L				
T002				R	3	0.04	82	82
TL002				L				
T003				R	4	0.03	108	108
TL003				L				
T004				R	5	0.02	135	135
TL004				L				
T005	3	0.4	12	R	2	0.15	43	43
TL005				L				
T006				R	3	0.11	63	63
TL006				L				
T007				R	4	0.09	84	84
TL007				L				
T008				R	5	0.07	104	104
TL008				L				
T009	3	0.5	12	R	2	0.36	36	36
TL009				L				
T010				R	3	0.26	52	52
TL010				L				
T011				R	4	0.2	69	69
TL011				L				
T012				R	5	0.17	86	86
TL012				L				
T013	4	0.4	16	R	2	0.12	56	56
TL013				L				
T014				R	3	0.08	82	82
TL014				L				
T015				R	4	0.07	108	108
TL015				L				
T016				R	5	0.05	135	135
TL016				L				
T017	4	0.5	16	R	2	0.28	44	44
TL017				L				
T018				R	3	0.2	64	64
TL018				L				
T019				R	4	0.16	84	84
TL019				L				
T020				R	5	0.13	105	105
TL020				L				

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