

Product information: Disc springs DIN 2093



According to DIN 2093 and DIN 2092, disc springs are cone-shaped discs which can be stressed along the axis. Compared to other spring-types, these fully concentric bending springs with symmetric-rotation cross section have low spring deflection with high spring power. The characteristic line of the disc springs depends to a large extent on the relationship of the free spring height [h_0] to the flatness and disc thickness [t]. This is why the characteristic line is split into three series.

Each series is split into three groups according to their thickness. These groups differentiate themselves from each other with various production processes.

Table 1: Names

D_e	Outside diameter
D_i	Inside diameter
t	Thickness of the individual disc
l_0	Construction height of the unstressed individual disc
s	Spring deflection of the individual disc
h_0	Information parameter (spring deflection up to the height for disc springs without bearing surface); $h_0 = l_0 - t$

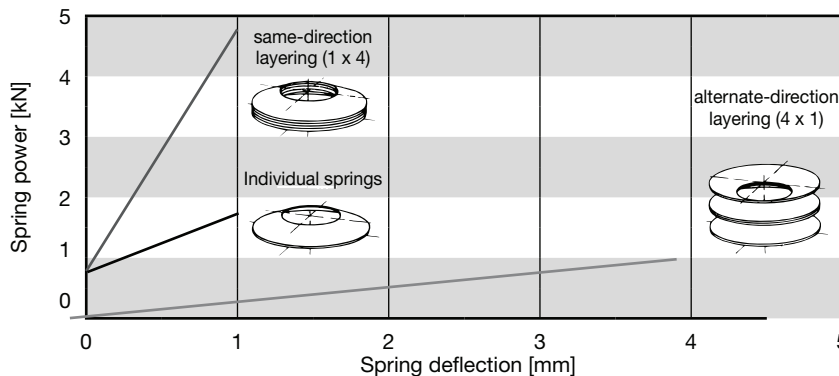
Table 2: Difference according to groups

Group	Thickness t	Manufacture/Processing
1	< 1.25 mm	cold-formed (punched), edges rounded, without bearing surface
2	1.25 – 6 mm	cold-formed-finely cut, D_e and D_i turned, without bearing surface
3	> 6 mm	cold or hot-formed, turned on all sides, with bearing surface,

Table 3: Difference according to series

Series	Factor from	
	$\frac{D_e}{t}$	$\frac{h_0}{t}$
A	~ 18	~ 0.4
B	~ 28	~ 0.75
C	~ 40	~ 1.3

Same-direction layering, alternate-direction layering or a combination of the two let disc springs be formed into columns with freely configurable characteristics. If, for example, a spring column is made up of four alternate-direction individual disc springs with the same geometry, the spring deflection increases fourfold in comparison with individual springs. With a spring packet of four same-direction layering springs, the spring power increases fourfold in relation to individual springs.



The materials named in EN 10083, EN 10089 and EN 10132-4 are permitted for disc springs (standard is the 1.8159 – 51 CrV 4), C steels, however, only for Group 1 disc springs.

The disc springs are delivered hardened and tempered with a hardness of 42-52 HRC (Group 1 disc springs: 425 HV10 to 510 HV10). The standard surface is coated in phosphate and oiled. Many additional surfaces for increasing corrosion-resistance, like for example, mechanical galvanization or zinc-flake coating, are possible.

Stainless steels are also used as disc spring material. Compared with the standard, these special springs can have different, but always lower spring power.

Disc springs DIN 2093 - in stock

Disc springs – available on request
<ul style="list-style-type: none"> - Disc springs in special dimensions - Disc springs in special materials - Disc springs with special coatings