Introduction to Springs

A spring is an elastic member which store energy and provides a force over a distance by elastic compression. Spring have ability to withstand relatively large compressions elastically. Today springs find tremendous applications in engineering and other areas, which makes wide variety of springs both in size and shapes. Springs are mainly used for following functions.

1] To cushion, absorb or control the energy either due to shocks, vibration as in railway wagons, automobiles, shock absorbers, press tools etc.
2] To exert force as in spring loaded safety valve, clutches etc.
3] To support moving masses or to isolate vibrations.
4] To store energy, as in clocks, toys, machines etc.

Springs are classified as :
1] Compression Springs.
2] Tension Springs.
3] Spiral Spring.
4] Disc Spring.
5] Spring rings and bars

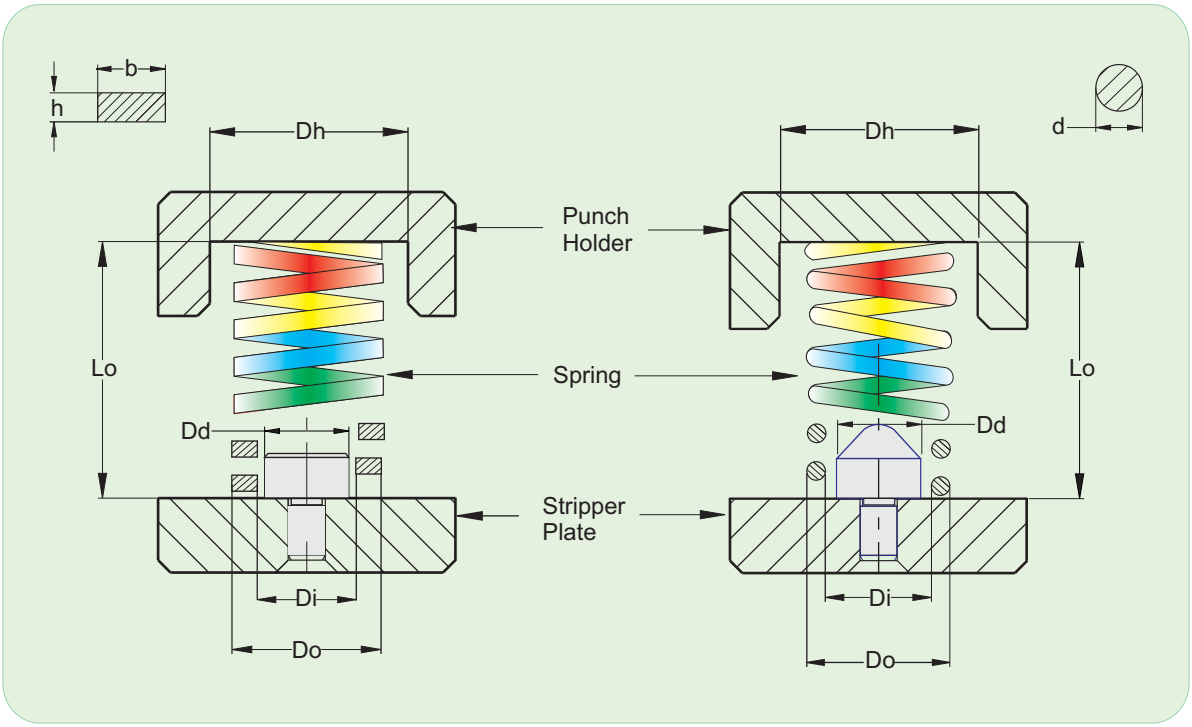
In this catalogue we are mainly provided details of compression springs used for following applications.
1] Press tool dies for sheet metal working.
2] Moulds for plastic injection moulding.
3] Jigs, Fixtures and machine tools.

The Spring Which are commonly us in such application mention above are made of rectangular Wire, This spring are knows as Die Spring. The advantage of Die Spring over round wire spring is it can give higher compression as compare to the round wire spring & also generate higher force at same compression resulting into higher life of spring in operation. It is always recommended to use spring at its long life compression & shall never be used above average life compression.
This Catalogue covers Die Spring As per ISO10243 & JIS5012B Standard. The Color of the spring identifies its Compression & Load Characteristics. The spring covered in the catalog are Stock Items.

Guide Line - Spring selection and operating condition

- Select the spring carefully at the design stage.
- For longer stroke - select light load or medium load spring.
- For more load - select heavy load or extra heavy load springs.
- Calculate spring stroke (required compression.)
- Preloading compression should be equal to 5 % of the length.
- Use guide pin, a locating bore as a guide - this is essential for spring having a free length / diameter ratio exceeding 3.5
- If possible use longer springs for lower loadings.
- Never compress springs beyond the average life load and compression.
- Always check spring holder heights and working strokes of moving elements after die tools has been reground.
- Protects springs from corrosive agents.
- Do not exceed a working temperature of 250^0 C, No significant load reduction occurs up to 120^0 C, beyond this temperature an average loss of 1 % for every 40^0 C must be calculated.
- Do not replace one spring at a time, if they are multiple in use.
- Do not alter physical characteristics of springs like cutting of coils, grinding of internal or external diameter.

Spring Geometry



Specifications

Sr. No.	Description	Terminology	Units
01]	Hole Diameter	Dh	mm
02]	Rod Diameter	Dd	mm
03]	Outside Diameter	Do	mm
04]	Inside Diameter	Di	mm
05]	Spring Mean Diameter	Dm	mm
06]	Free Length	Lo	mm
07]	Solid Length	Lb	mm
08]	Spring Compression	L	mm
09]	Spring Rate (Load required for 1mm compression)	C	Kg / mm
10]	Load - Maximum Life	Pm	Kg
11]	Compression - Maximum Life	Lm	mm
12]	Load - Medium Life	Pc	Kg
13]	Compression - Medium Life	Lc	mm
14]	Load - Average Life	Pa	Kg
15]	Compression - Average Life	La	mm
16]	Load - Out of Service	Ps	Kg
17]	Compression - Out of Service	Ls	mm
18]	Squareness	E1	mm
19]	Coiling Direction (All Die springs are right hand coiling)	RH	