

05 | Wave spring



01. Introduction

Wave springs, also known as wave springs, are elastic elements with several peaks and valleys on a thin metal ring. It is a high-end elastic element, a thin-plate annular elastic metal unit composed of multiple peaks and valleys.

02. Features

- The rigidity range is large, the buffering and vibration absorption capacity is strong, and the deformation energy per unit volume of the material is large.
- High strength, good flexibility, and strong impact resistance.
- The structure is compact, light, and small. Under the same physical parameter conditions, the required installation space is small.
- It has the effect of reducing vibration and noise.

Multilayer top-to-top wave spring



Multilayer top-to-top wave spring

03. Type

Wave springs can be divided into many types according to classification standards: stamping type and winding type according to processing technology; top-to-top, flat-end, single-layer, multi-layer, superimposed, overlapped and open according to structural characteristics. There are also WS series (continuously wound wave crest staggered type, suitable for small installation space) and WSS series (with flat coils, more uniform elastic force).

04. Materials and processing

Wave springs are usually made of 65Mn spring steel (or 60Si2MnA, 50CrVA, 0Cr17Ni7Al, SUS304) and other materials. Carbon steel, stainless steel, high-temperature alloys, etc. can also be used. The product undergoes specific heat treatment and the hardness is generally HRC44-55. Surface treatment methods include black boiling, phosphating, electroplating (chrome plating), electrophoresis, etc.

05. Application areas

Wave springs are used in applications with low load, small deformation, and where axial preload is needed. They are ideal for weight reduction and limited installation space. Common uses include aerospace, precision machinery, hydraulic seals, motors, automobiles, and textile machinery.

06. Standard

The standards for wave springs include JB/T 7590-2005 and HG/T 2479-2003.