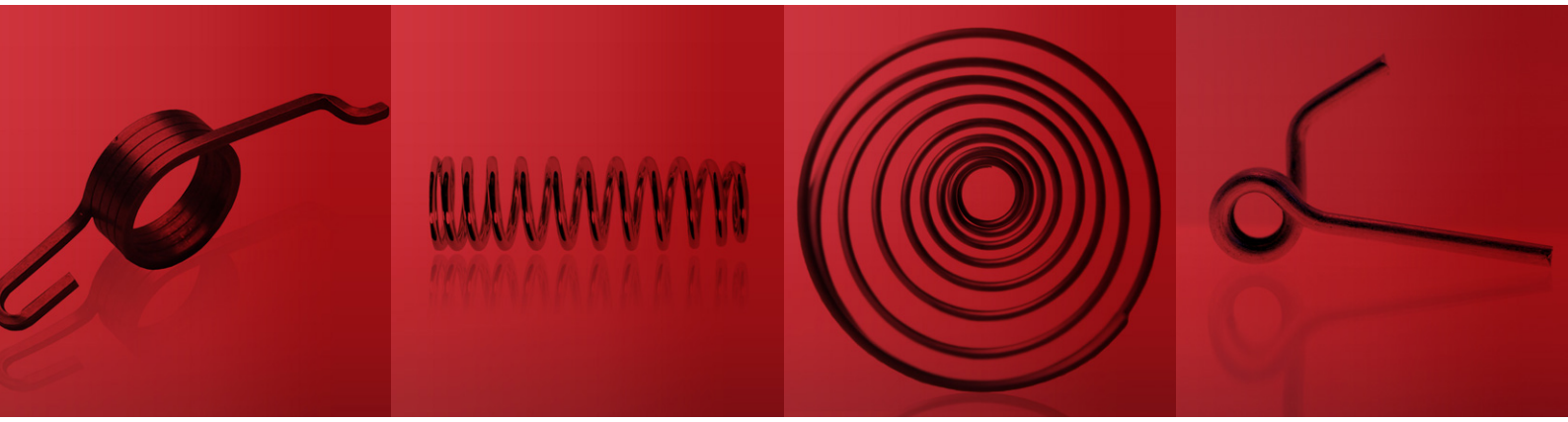
Lesjöfors is a global manufacturer and supplier with the market's widest range of springs, gas springs and strip components. Our success is the result of years of dedicated work and research into innovative problem solving across a range of major and diverse industries. Our experience, along with our unique skills, access to resources and focus on continuous development processes delivers high tech customized solutions for every need.

LESJÖFORS
SPRINGS & PRESSINGS



WAVE SPRINGS

Wave springs are spring types that have been developed as an alternative to traditional compression springs. It is ideal for narrow spaces – both axially and radially – when reasonably high forces are needed and movements are small. In some cases, the wave spring can reduce the required spring height by up to 50 percent. Our wave springs are made of flat rolled spring wire.

Why wave springs?

Wave springs provide unique opportunities thanks to their design. They can be made with a single coil and are then called washers, while multi-coil wave springs have more than one coil. The number of waves per coil has a major impact on the spring rate, which makes it possible to manufacture springs with very different characteristics from the same starting material and with the same outer dimensions.

The wave spring can fit in very small axial spaces relative to the performance of the spring. It can in many cases reduce the mounting height and is particularly suitable in spaces where the diameter of the spring body is large, but the radial space for the spring is small. The spring generally gives a good force centering compared to other spring options, but especially in this type of spaces. Even in other conditions, the wave spring can prove to be the best option.

Facts

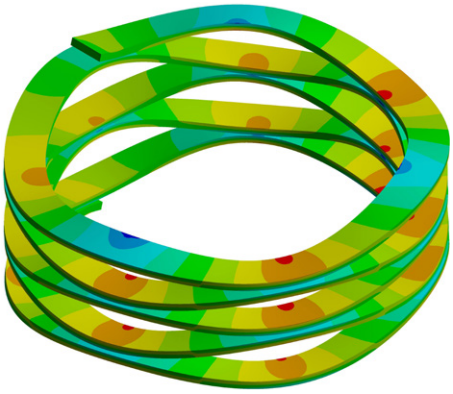
- In some applications, the mounting height can be reduced with up to 50 percent.
- The Lesjöfors group delivers wave springs with outer diameters from 9 to 250 mm.
- In general, the same materials are available as for conventional springs, i.e. non-alloyed and low-alloyed spring steel, stainless steel, nickel-based alloys etc.
- The ends can be open, i.e. with waves in the end coils or with a flat end coil.

WAVE SPRINGS

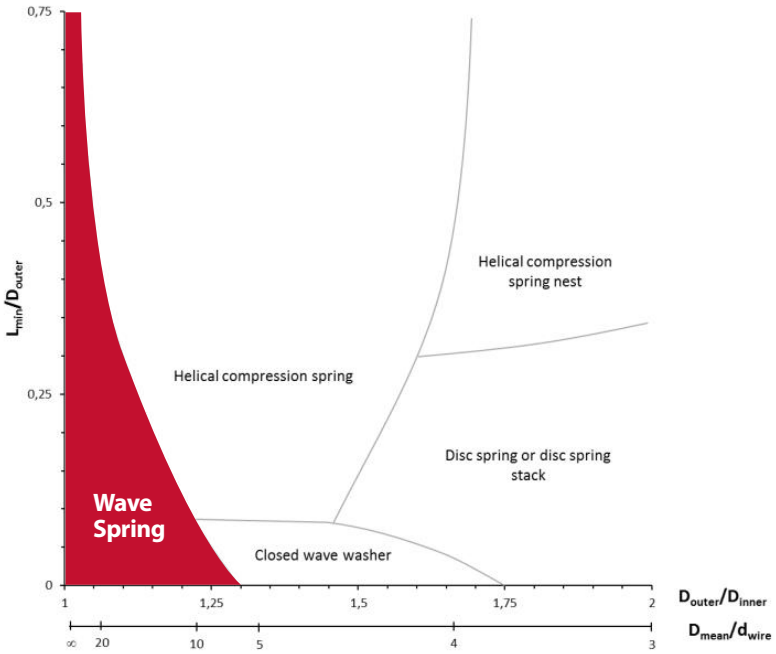
The wave spring saves both space and money

An example of when a wave spring was more suitable than a compression spring was a case where the spring would be working in a hole with a diameter of 47 mm with an inside shaft with a diameter of 38 mm. The axial movement of the spring was only 2 mm and it was desirable to reduce the building length of the construction. The building length was mainly determined by the spring.

Switching to a solution with a wave spring reduced the building length from 12 to 6 mm. At the same time, the spring force could be increased by almost 40 percent, which was also positive for the application as a whole. The wave spring was also more favorable to manufacture, due to the fact that grinding of the end coil was not required.



The image above shows the normal stress distribution in a wave spring from an FE analysis. As shown, a wave spring also uses the end coil, which makes it possible to reduce the building lengths.



The diagram above shows the type of installation spaces where different compression spring solutions can maximize energy storage. Small diameter ratios and small built-in lengths are areas where the wave spring is most suitable.

LESJÖFORS
SPRINGS & PRESSINGS