Spring Pins

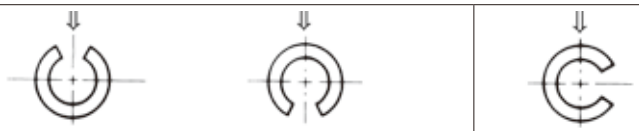
Spring pins are pins made by rolling a strip of metal into a cylinder with a slot running along its length, which is then heat-treated. The free diameter of the pins is designed to be larger than the size of the holes where the pins are installed; in that way, spring force applies pressure radially to the interior wall of the hole when installed, providing its excellent retaining function against vibrations.

Their fine mechanical strength and light weight are some of the advantages of spring pins.

However, spring pins run the risk of fracture or breaking if the instructions for use shown below are not followed. Fixing both ends of a pin is a key rule. In usage cases where they are fixed on only one end, safety factors must be carefully considered to avoid double shear loads.

1. Instructions for Use

1) When making holes in components in which pins are to be installed, do not chamfer holes where shear load is to be applied.
2) Avoid using a pin to where the direction of vibration is parallel to the pin's axis.
3) For the shear plane of the pins, a minimum length must be maintained from the pin's end, equal to the diameter of the pin.
4) Mounting holes are, as a general rule, prepared by making holes in the parts in which pins are mounted. When drilling each part individually, diameter size variations shall be restricted to the amount by which the pin slots do not fully close.
5) Make sure to perform tests before use in places where significant impact load is expected.
6) The breaking strength of pins is slightly greater (approx. 6%) when the pin's slot is placed in line with the force than when pin's slot is placed square to it. As a result, be sure to take the direction the pin's slot faces into account when shearing strength is a consideration.

Shearing force direction		
Comparison	Approx. 106%	100%

7) Please contact us before use as a double-pin usage (two pins combined). (Refer to the next section.)

2. Using in Combination

You can combine pins so as to increase their shear strength. The shear strength of both pins is combined. It is best not to align the slots in the same direction in combining two pins.

How to combine pins

3. Comparison of Shear Strength

(1) Static Shear Strength

When comparing static shear strength of straight and toothed types, provided that the shear plane area is the same, the stress concentration at the base of the teeth causes a reduction in the shear strength of toothed type pins. However, this reduction is only by 2 to 3%.

(2) Dynamic Shear Strength and Load

Toothed type slotted pins are not suitable for use as stoppers, because the stress concentration caused by the load along the teeth tends to cause fractures even with extremely small amounts of force. Use straight type slotted pins to prevent this from happening.