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WHITE PAPER

Clever Seam Design Makes the Coiled Pin Perfect for Hinges

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Figure 1. At left, Slotted Spring Pins have a "C" shape. At right, Coiled Spring Pins have 2 ¼ coils of rolled material.

Figure 2. The Slotted Pin's gap is closed when installed in a hole.

Coiled Spring Pins are manufactured with a seam which is much better for hinges than the gap or slot of Slotted Spring Pins. (*see Figure 1 and Figure 2*)

The seam is inherent to Coiled Pins because they are rolled with more than one wrap of material. The Coiled Pin's "duty" will affect material thickness and the number of wraps, but all Coiled Pins will possess a seam.

Some assume that a Coiled Pin's seam is raised above the surface of the pin. This is not the case. A Coiled Pin's seam is actually 'tucked' or rolled to ensure the pin remains round. In addition, the seam is prepared with a beveled edge to soften the transition into the 'comma' area (*see Figure 3*). As a matter of fact, a key characteristic of a properly rolled Coiled Pin is that the diameter of the pin at the seam is equal to or less than the diameter adjacent to the seam. This prevents the edge of the material from contacting the inside diameter of the hole wall and prevent skiving when inserted.

The plastic SUV rear window latch assembly photo below demonstrates basic Coiled Pin form when installed in an application. The pin conforms to the hole in which it is installed and the 'comma' area is visible as a small gap between pin and hole adjacent to the seam.

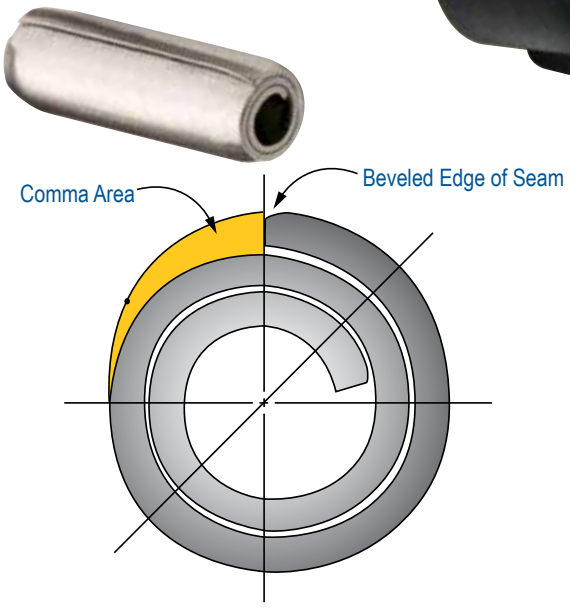

Figure 3. The Coiled Pin's the seam is prepared with a beveled edge to soften the transition into the 'comma' area. This design feature ensures that there are no "high spots" at the seam.

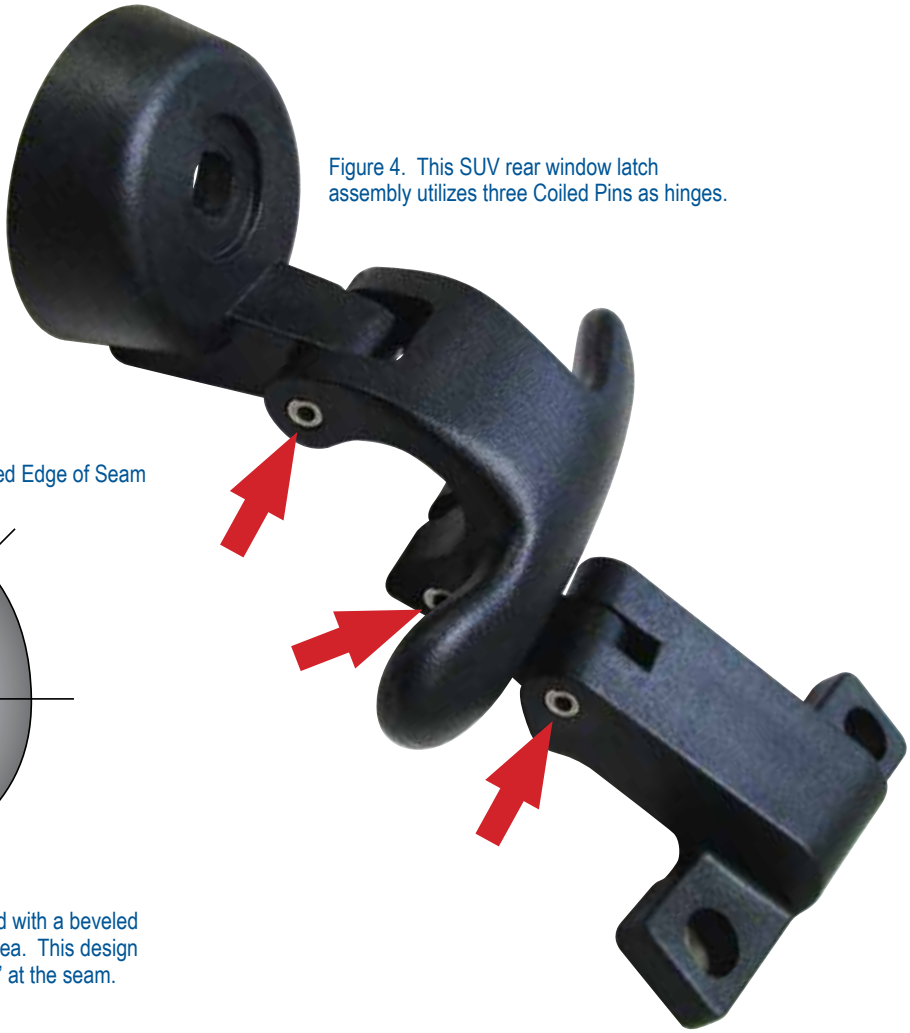

Figure 4. This SUV rear window latch assembly utilizes three Coiled Pins as hinges.

Figure 5. Coiled Pins are often used as hinge pins in durable consumer products as demonstrated in this toilet float arm assembly.

A large percentage of Coiled Pins are used in hinges and the unique seam configuration is essential to their proper function. Thus, when utilized in round holes, the seam should have absolutely no impact on performance.

The Coiled Pin's tucked seam will allow smooth, interference-free rotation of hinge/axle components in the vast majority of assemblies. In most situations where the seam is problematic, it is typically the result of poor installation methods or improper implementation. If excessive compressive force is applied to one part of the pin and not another, seam deformation may occur. This sometimes happens when assemblies are designed such that they do not properly support the pin. Similarly, pins can be damaged during installation and this can lead to deformation at the seam. Improper installation technique, equipment, hole condition, or pin material and duty are typical causes. Designers have also attempted to use Coiled Pins and Slotted Pins in assemblies where a 'pawl' or lever must ride axially on the surface of the pin as it rotates. The geometry of these components sometimes causes them to catch or 'hang up' on the seam.

SPIROL's Application Engineering team will evaluate all assemblies to determine what type of pin would best meet the specific hinge requirements.

SPIROL offers application engineering support.

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