Half Stroke Line

When the key is at half stroke

And the repetition is at half stroke

The contact point between the capstan and the heel

Should fall on a straight line between the

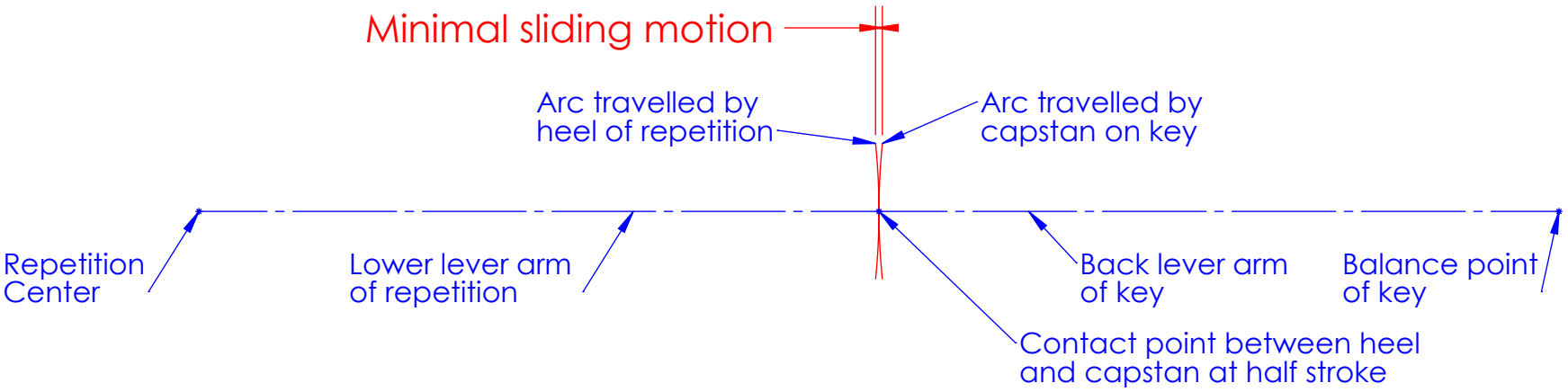
Balance point of the key and

The repetition center.

Proper attention to the half stroke is fundamental to a well designed key

Why is half stroke design important?

Good half stroke design



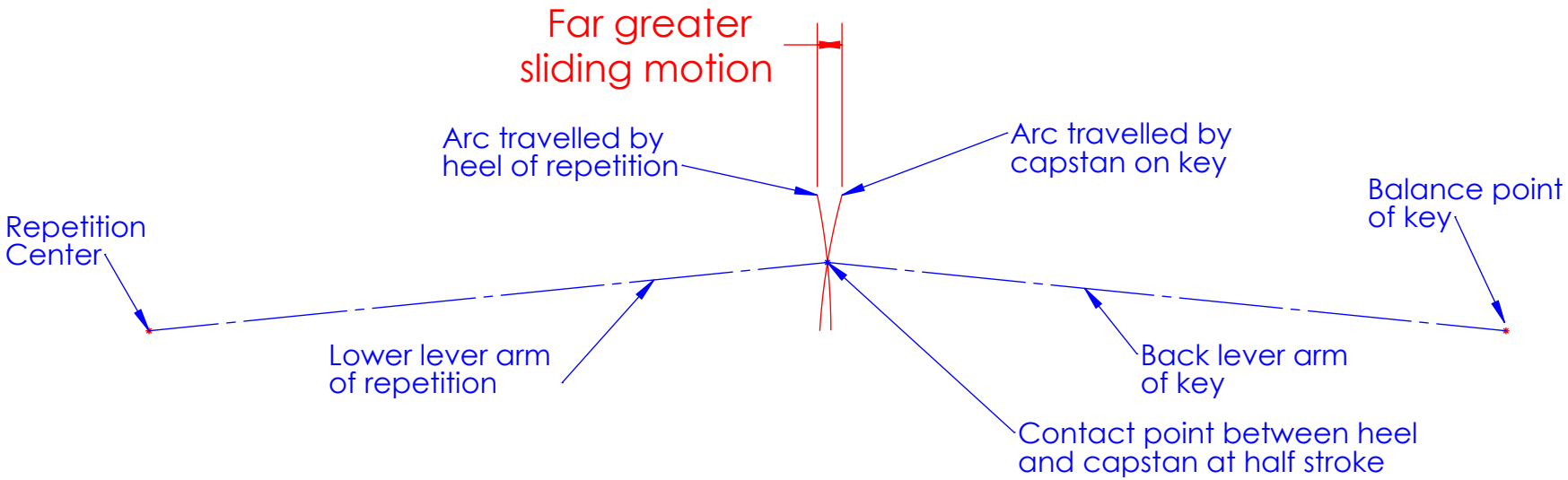
As the key is played, the capstan moves in an arc, centered on the balance point of the key. The heel of the repetition moves in another arc centered on the flange center pin.

Because of these different arcs, a certain amount of sliding motion occurs where the capstan and the heel meet. Unfortunately, sliding motion causes undesirable friction and should be minimized.

To minimize sliding friction between the capstan and the heel, the point where they meet should, when the key is half way through its travel, fall on a straight line between the centers of the two arcs.

Half stroke design results in less friction between the heel and capstan thus better upweight in relation to downweight in the key.

What happens if half stroke design is poor?



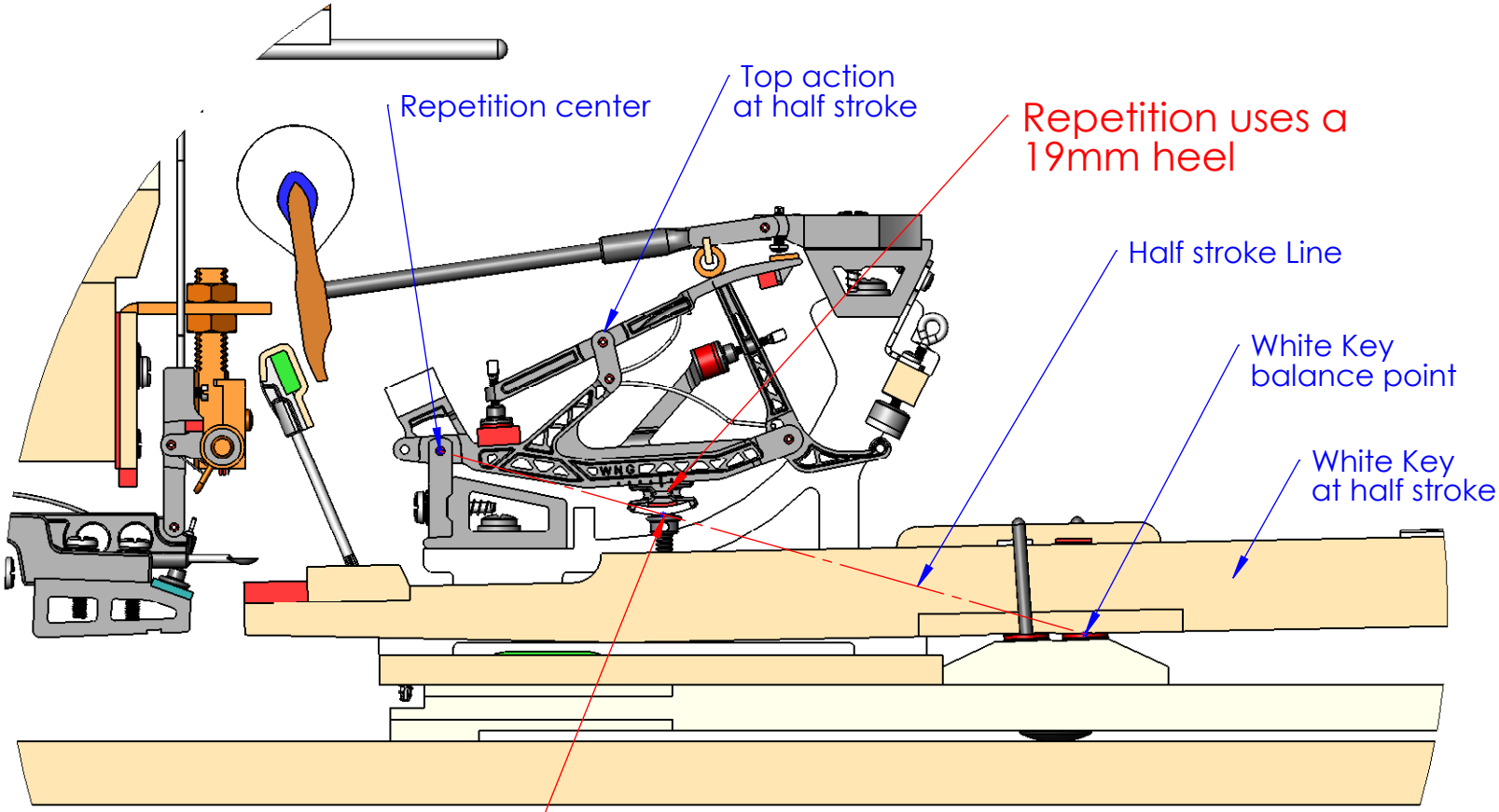
If the contact point between the heel and capstan is not on a straight line at half stroke, a far greater front to back motion results during the travel of the key

Excessive sliding motion between heel and capstan causes unnecessary friction between heel and capstan.

Poor half stroke design results in excessive friction at the capstan and thus less upweight in relation to downweight in the key

Half Stroke design for a well designed white key

At half stroke the contact point of the heel and the capstan falls on the half stroke line when the key is halfway through its travel.

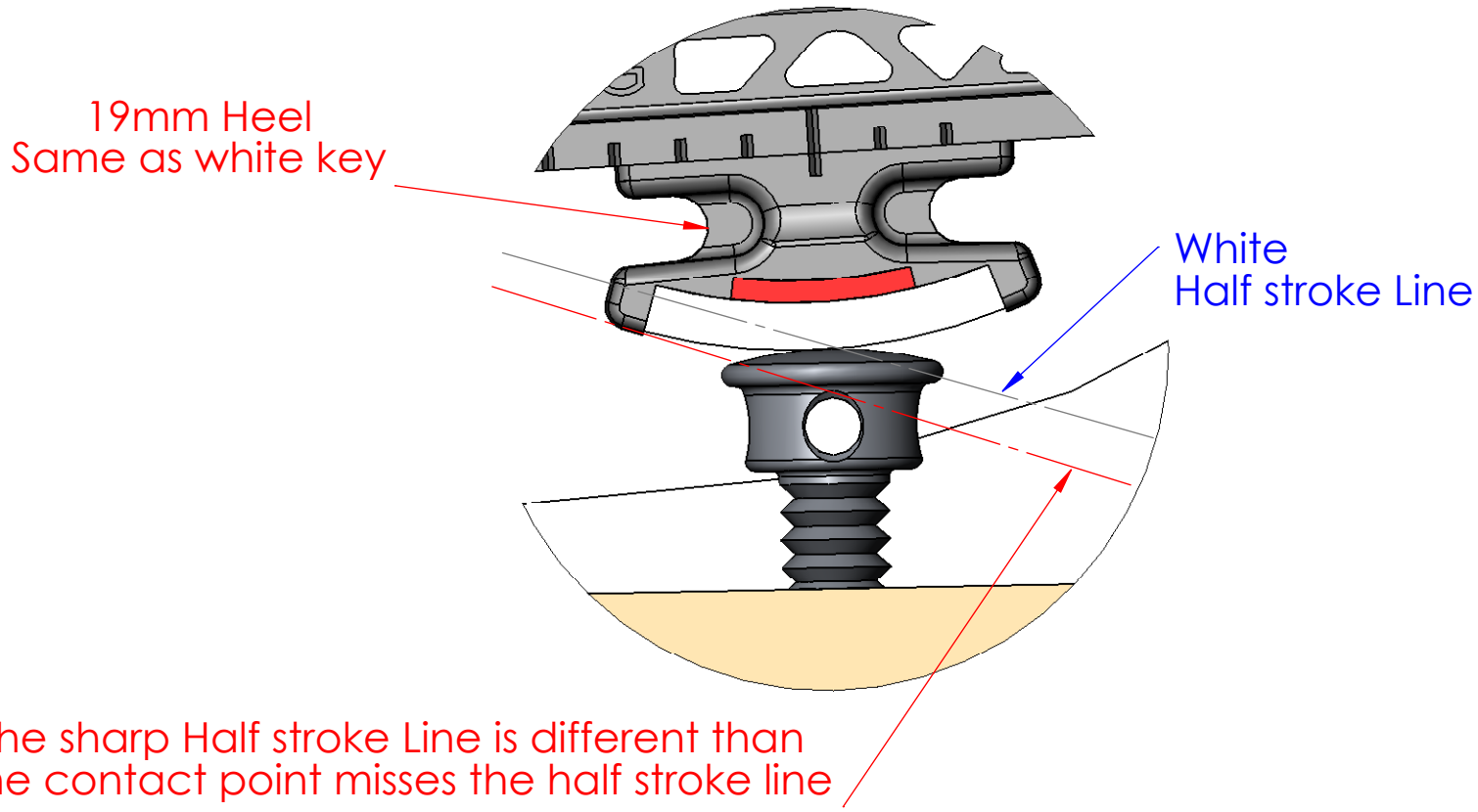


The Sharp Problem

The typical design for a white key poses a problem for the sharp key

Because the balance point of the sharp is offset back from the white key, the half stroke line is not the same for a sharp as for a white key.

Without changing the action, the contact point between the capstan and heel is no longer on the half stroke line.

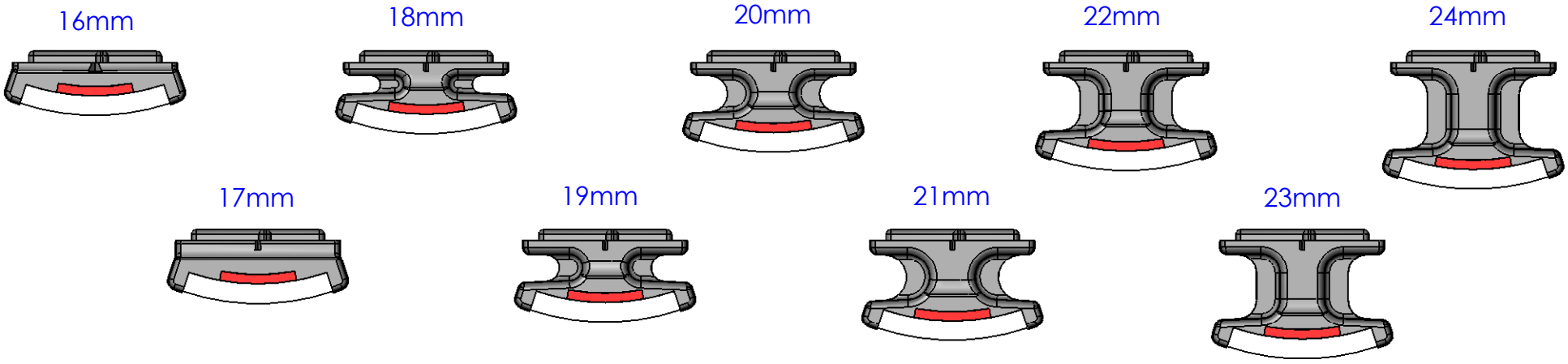


The Sharp Problem Can Be Solved

If we increase the height of the heel by 2mm, we can bring the contact point down to the sharp half stroke line.

With Wessell, Nickel & Gross parts that is easy to do.

WNG supplies 9 different heels, changing in height in 1mm increments



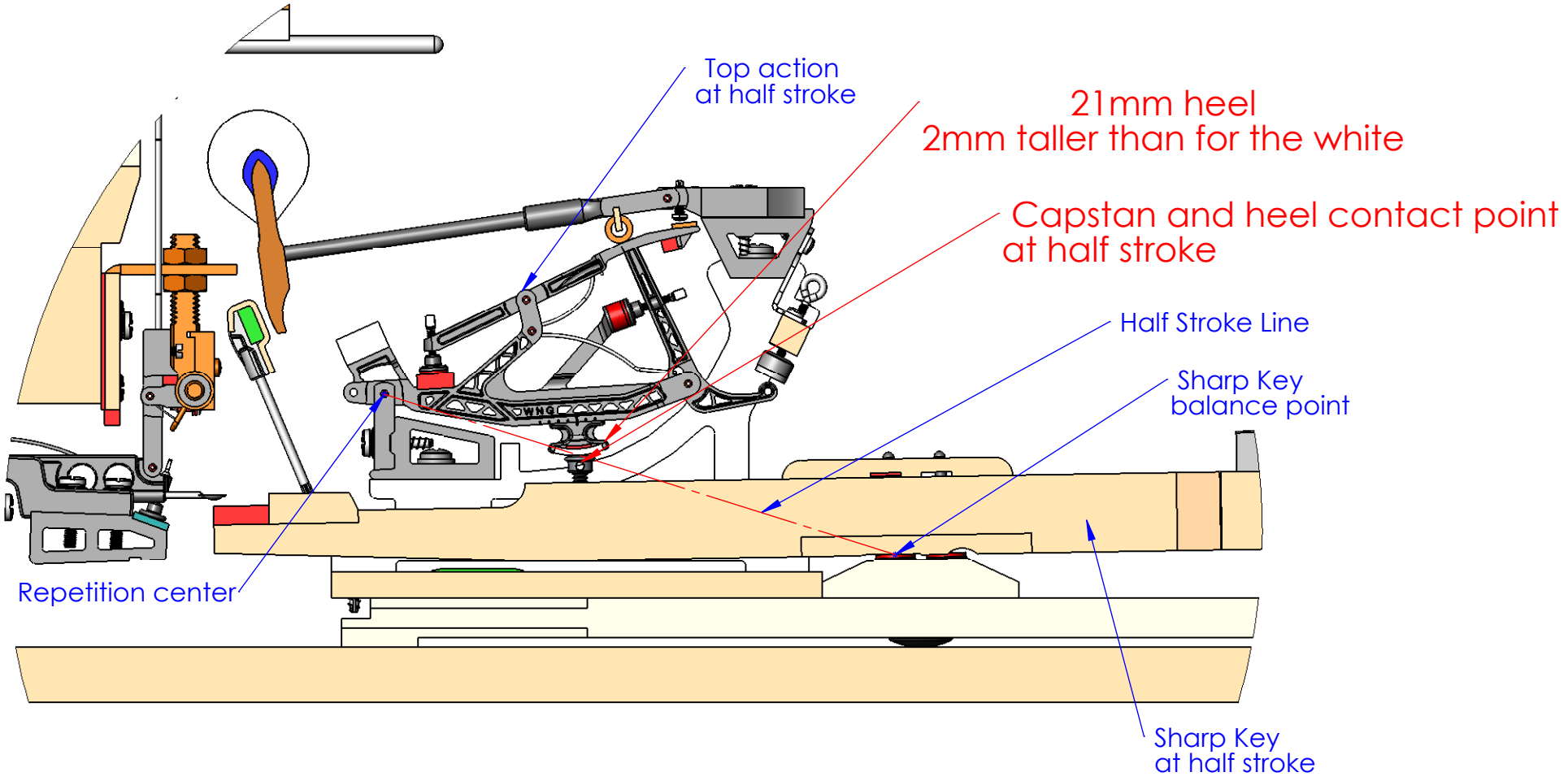
Half Stroke design for a sharp key

By increasing the heel by 2mm

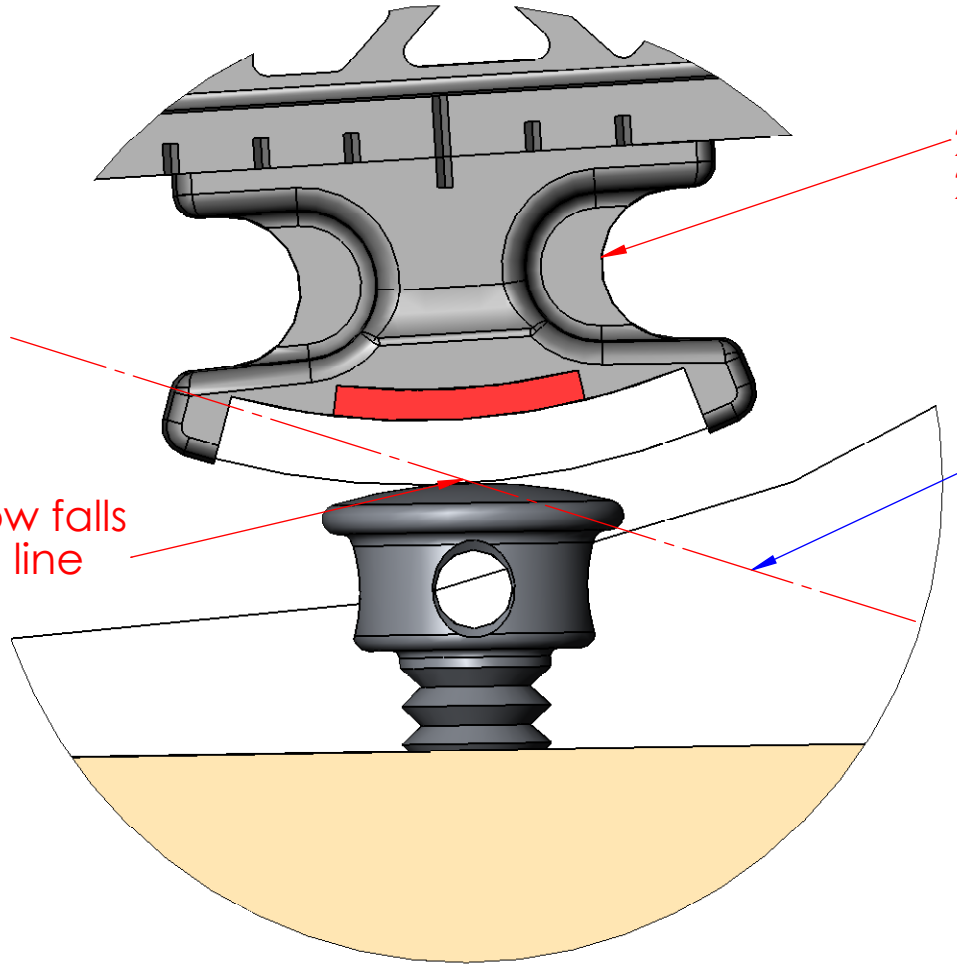
The contact point of the heel and the capstan

Can be made to fall on the half stroke line

When the key is halfway through its travel.



The Sharp Half Stroke Design



21mm heel
2mm taller than the white

Sharp half stroke line

Contact point now falls
on the half stroke line