

# SIZE AND PROFILE OF ACTIVE MECHANICAL SECUREMENT DEVICES

## Background

Catheter Securement Devices used to secure Peripherally Inserted Central Catheters and Central Venous Catheters are often scrutinized for their size and profile. The general school of thought is that a device that is low profile may help minimize the risk of site disturbances from bumping or jostling and a small surface area is better because it is less cumbersome. The problem is that general school of thought is not necessarily true. In clinical applications, it is well known that the larger the surface area for adhesive placement, the better the adhesion. Catheter securement aimed at reducing dislodgement, micro-movements within the intima of the vein and micropistoning at the insertion site must secure and hold the catheter well and many of the currently marketed low profile tape based securement systems are lacking in that respect.

## Purpose

To present the actual difference in profile and surface area of a commonly used PICC and Central Catheter Securement Device to a new innovative active mechanical securement device.

## Methods

Samples of the Bard® StatLock® (PIC0220) Catheter Securement Device with moving posts – hereinafter “Device 1” and the Starboard Medical™ Clik-FIX™ (WCS-1000) Catheter Securement Device were each measured in eight (8) specific locations with a digital caliper. The measurements were recorded and compared.

## Measurement Sites

The measurement sites are described in the list below and depicted in Figures 1-3 below.

1. Height of device when locked from skin surface to highest point.
2. Height of device when locked from skin surface to top of cover.
3. Length of Adhesive
4. Width of Adhesive
5. Length of locking base
6. Width of locking base
7. Height of angle from top of hub to skin when the catheter's positioned at zero insertion point and secured in the catheter securement device
8. Height of angle from hub/catheter junction to skin when the catheter's positioned at zero insertion point and secured in the catheter securement device.

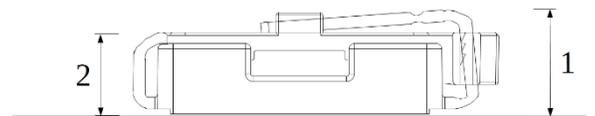


Figure 1. Measurements 1 & 2

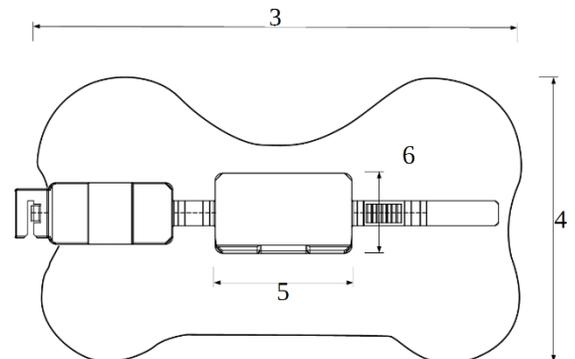


Figure 2. Measurements 3,4,5,6

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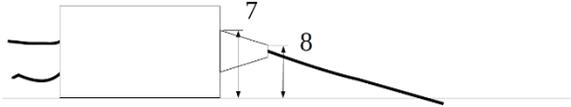


Figure 3. Measurements 7, 8

## Results

Profile, Foot Print and Catheter Height- In Millimeters			
Measured Location	Clik-FIX	Device 1	Variance
1	12	9	3
2	7	9	-2
3	79	78	1
4	46	34	12
5	28	29	1
6	17	20	-3
7	5	7	-2
8	5	6	-1

The measurements reveal that the differences in profile and foot print of the two device are minimal. The highest point on the Clik-FIX device is at the location where the strap bends to accommodate a variety of catheters. At the highest point, the Clik-FIX device is only 3mm taller than the Device 1; yet at the lowest point on the locking base the Clik-FIX device is 2mm shorter than the Device 1 demonstrating the profile of the Clik-FIX and Device 1 are nearly the same. The securement pad of each device is very similar in length, but the width of the Clik-FIX device is larger at its widest point to maximize the surface area on the skin.

Measurement 5 and 6, the length and width of the locking base, also show minor differences between the two devices. The Clik-FIX base is 1mm longer and 3mm shorter in width than Device 1's base. The most important profile measurement with a catheter securement device is the height of the angle from the skin to the top of the catheter. While secured in the device at a simulated zero insertion point, the space created between the skin surface and top of catheter was measured in two locations. Location 7 was the height between the skin and the top of the catheter hub. The space created by the Clik-FIX device was 2mm less than the space created by Device 1. Measurement 8 consisted of the height between the skin surface and the top of the catheter, Device 1 secured the catheter 1mm higher off the skin surface than the Clik-FIX device.

## Conclusion

The difference in profile and surface area of the two securement devices measured are minimal. The adhesive pad on the Clik-FIX has a slightly higher surface area in order to provide a better adhesion. The measurements taken at Location 7 and 8 also show that the Clik-FIX Catheter Securement Device is secures the catheter flusher to the skin surface. The catheter rise (angle) from the skin surface to the device is less on the Clik-FIX than on Device 1.

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