



# AvalonK2VAC Datasheet

## Comfortable and Controlled Mobility

AvalonK2VAC is designed specifically for the complex needs of limited community ambulators. Through a combination of award-winning hydraulic ankle technology, a unique optimized keel and an elevated vacuum system, AvalonK2VAC is a prosthesis that works with the user to enhance comfort, security and stability.

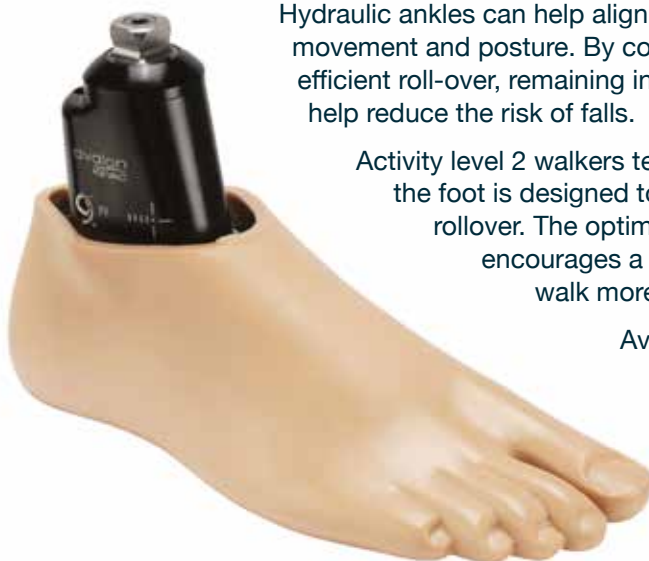
Limited community ambulators are more susceptible to falls, so an important factor in their prosthesis is to increase security and stability right from the socket connection through to the ankle and foot. By harnessing natural ankle motion, AvalonK2VAC quietly creates elevated vacuum. For the user this reduces relative movement and the risk of skin breakdown, while improving proprioception, and providing greater control of the prosthesis.

With every step, the wearer presses their weight into the prosthesis, initially expelling air through a one-way valve. Simultaneously the ankle plantarflexes, actively drawing air out of the socket. This air is held in the vacuum chamber and expelled through a secondary one way valve as the tibia progresses and the ankle dorsiflexes. The result is greater residual limb volume control and an improved connection between the residual limb and socket.

Hydraulic ankles can help align the body interface with the ground, allowing for more natural movement and posture. By continuously adjusting to absorb energy, AvalonK2VAC allows for an efficient roll-over, remaining in a dorsiflexed position through swing, increasing ground clearance to help reduce the risk of falls.

Activity level 2 walkers tend to move more slowly, with a shorter stride length. It is important the foot is designed to accommodate these changes in gait and provide a smooth rollover. The optimised keel shape of AvalonK2VAC considers such requirements and encourages a consistent, stable, and comfortable rollover so this group of users can walk more easily and move around confidently.

AvalonK2VAC has an innovative, lightweight design including a low build height as no external power source is required. With no batteries or pump to worry about, it is quiet and easy to fit.







## Innovative Technology

The popular Silcare Breathe cushion liner consists of patented technology that allows air and perspiration, which are often trapped between the liner and skin, to escape through specially designed laser drilled perforations. Air and moisture are then expelled as the wearer walks, resulting in drier skin. When used in conjunction with AvalonK2VAC, the vacuum further enhances the connection between the limb and the socket to promote a comfortable, cool and secure fit for the user.



## Explore the Evidence

An active vacuum system helps to stabilize residual limb volume to improve socket stability and proprioception. Scientific studies have shown that elevated vacuum systems can provide users with the following benefits:



**Improved residual limb health** - encourages tissue health<sup>1</sup> and wound healing<sup>2-4</sup>



**Better socket fit and control** - maintains residuum volume<sup>5</sup> and reduces pistoning by 28%<sup>6</sup>



**Increased safety** - 72% reduction falls<sup>7</sup>

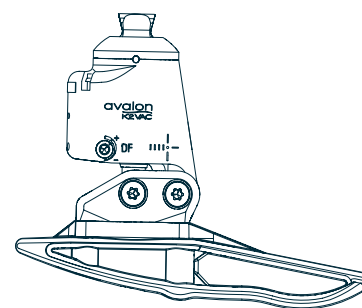


**User satisfaction** - improved socket comfort<sup>8</sup> and reduced pain with prolonged use<sup>9</sup>



## Technical Specification

<b>Activity Level</b>	2
<b>Max. user weight</b>	150kg (330lb)
<b>Build Height</b>	122mm (4 4/5")
<b>Weight</b>	583g (1lb 5oz)
<b>Size Range</b>	24-30cm
<b>Warranty</b>	36 months



## Ordering Information

**Part Number** AVAC

### References

1. Rink C, Werneke MM, Powell HM, et al. Elevated vacuum suspension preserves residual-limb skin health in people with lower-limb amputation: Randomized clinical trial. *J Rehabil Res Dev* 2016; 53: 1121-1132.
2. Hoskins RD, Sutton EE, Kinor D, et al. Using vacuum-assisted suspension to manage residual limb wounds in persons with transtibial amputation: a case series. *Prosthet Orthot Int* 2014; 38: 68-74.
3. Trallesi M, Delussu AS, Fusco A, et al. Residual limb wounds or ulcers heal in transtibial amputees using an active suction socket system. A randomized controlled study. *Eur J Phys Rehabil Med* 2012; 48: 613-23.
4. Trallesi M, Averna T, Delussu AS, et al. Trans-tibial prosthesis in large area of residual limb wound: Is it possible? A case report. *Disabil Rehabil Assist Technol* 2009; 4: 373-375
5. Board WJ, Street GM, Caspers C. A comparison of trans-tibial amputee suction and vacuum socket conditions. *Prosthet Orthot Int* 2001; 25: 202-209.
6. Darter BJ, Sinitski K, Wilken JM. Axial bone-socket displacement for persons with a traumatic transtibial amputation: The effect of elevated vacuum suspension at progressive body-weight loads. *Prosthet Orthot Int* 2016; 40: 552-557.
7. Rosenblatt NJ, Ehrhardt T. The effect of vacuum assisted socket suspension on prospective, community-based falls by users of lower limb prostheses. *Gait Posture* 2017; 55: 100-103.
8. Rosenblatt NJ, Ehrhardt T, Fergus R, et al. Effects of Vacuum-Assisted Socket Suspension on Energetic Costs of Walking, Functional Mobility, and Prosthesis-Related Quality of Life. *JPO J Prosthet Orthot* 2017; 29: 65-72.
9. Brunelli S, Averna T, Delusso M, et al. Vacuum assisted socket system in transtibial amputees: Clinical report. *Orthopädie-Technik Quarterly*. Engl Ed; 2.