



# Avalon<sup>K2</sup>

Confidence, independence  
and safety every day.

Blatchford 



# Biomechanics of Limited Community Ambulators

## Falls

A significant proportion of limited community ambulators are elderly amputees. There are many characteristics of advanced age that have been linked to increased likelihood of falling:

- Shorter stride length
- Lower limb muscle weakness
- Deteriorating vision
- Reduced reaction time
- Certain medications can impede balance
- Weakened vestibular system
- Poor circulation
- Variabilities in gait pattern

Falls can lead to physical injuries affecting a person's independence, confidence and therefore their quality of life. 60% of amputees who fall say it affects their daily life and 36% report a loss of confidence<sup>1</sup>.

## Vascular Health

The majority of elderly amputees have an amputation aetiology relating to vascular disease or diabetes<sup>2</sup>. The resulting poor circulation and impaired sensation mean the skin and soft tissue has reduced resilience and is vulnerable to damage. Any resulting wounds heal more slowly, are vulnerable to infection and an infected wound may require extensive health care.

## Musculoskeletal Health

Amputees tend to walk with more reliance on the unaffected leg. Asymmetry of gait and standing has been linked to the increased likelihood of developing osteoarthritis<sup>3-4</sup> and an increased chance of developing back pain<sup>5</sup>. In fact, 60% of amputees report moderate to extreme back pain within two years of amputation<sup>6</sup>.

There are a number of physiological and biomechanical changes that develop as a result of aging that can contribute to the risk of trips and falls. Hydraulic ankle technology can help reduce the risk and improve the mobility of limited community ambulators.



# Why Hydraulics?

Extensive studies into biomimetic hydraulic technology have been shown to provide numerous benefits and improve the user's quality of life.



34% reduction in stance time asymmetry<sup>7</sup>

**Balanced limb loading**



Increased self-selected walking speed<sup>8</sup>

**Improved mobility**



22% increase in gait satisfaction<sup>9</sup>

**User satisfaction**



Reduced socket pressure by up to 81%<sup>10</sup>

**Greater comfort**

Patients' requirements vary, depending on their needs.

\*For references please see the back cover.

“I can go  
and do my  
voluntary  
work and I  
can give it  
my all.”

Jean





# Avalon<sup>K2</sup>

The main driving force behind advancing lower limb prosthetic technology in the 21st century is biomimetic design; reproducing the biomechanical performance of natural limbs. Inherent in this is recognizing that different demographics of the amputee population have different biomechanical requirements, and that the engineering principles behind different devices must accommodate for this. With over 128 years of innovation and expertise in lower limb prosthetic technology our award-winning prosthetic products are designed with the patient in mind.



# Avalon<sup>K2</sup> Unique Design

AvalonK2 is a hydraulic ankle that has been designed specifically for the complex needs of limited community ambulators. Through a combination of award-winning hydraulic ankle technology and a unique optimized keel, Blatchford has created a prosthesis that works with the user to enhance confidence, independence and safety.

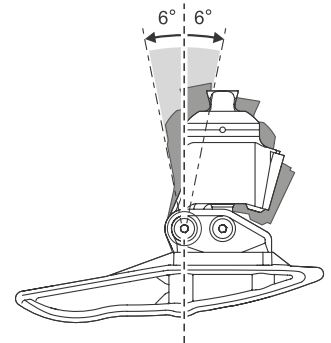
Enhancing walking confidence by hydraulically adjusting to inclines and self-aligning to secure the knee joint, AvalonK2 encourages good posture and joint position. This improves stability, helping to prevent falls and increases balanced limb loading to provide the best performance for limited community ambulators.

## Hydraulic Ankle Technology

Hydraulic ankles help align the body interface with the ground interface, allowing for more natural movement and posture. By continuously adjusting to absorb energy, our hydraulic ankles allow for an efficient roll-over, remaining in a dorsiflexed position, increasing clearance to help reduce the risk of falls. This technology has been proven to provide a number of benefits to limited community ambulators optimizing posture and comfort.

## Range of Motion

An important design consideration of Avalon<sup>K2</sup> was to enable the user to stand from a seated position in a safe and comfortable way. In addition to the keel and shape, the 6° of dorsiflexion allows the base of support to be moved closer to the body's center-of-mass making it easier to sit-stand.



## Purpose-designed Keel

Limited community ambulators tend to walk more slowly, with a shorter step and stride length. Providing a foot keel that is designed to accommodate natural changes in gait can provide a smoother rollover for such users. The optimized keel shape of Avalon<sup>K2</sup> considers such requirements and encourages a consistent, stable, and comfortable rollover so the user can walk more easily and move around confidently.





Reduces  
chance of trips  
and falls<sup>11</sup>



Safeguards  
musculoskeletal  
wellbeing<sup>7</sup>



Reduces  
pain and  
discomfort<sup>10</sup>



Improves quality  
of life and  
independence<sup>9</sup>





## Features

- Hydraulic ankle technology designed to replicate natural motion
- Optimized keel shape enhances walking stability
- Plantarflexion compliance when descending slopes
- Increased range of motion to enable greater sit-stand transfer safety
- Increased shock absorption, reduction in interface pressures
- Remains dorsiflexed for increased toe clearance in swing phase
- Waterproof
- Sandal toe footshell



A Study of Avalon<sup>K2</sup>

# Avalon<sup>K2</sup>

## Specifications

Max. User Weight:	150kg (330lb)
Activity Level:	2
Size Range:	22-30cm
Component Weight:	520g (1 lb 2 oz) <sup>†</sup>
Build Height:	115mm (4 <sup>17</sup> / <sub>32</sub> "")
Heel Height:	10mm
Range of Ankle Motion:	6° plantar to 6° dorsiflexion



Suitable for submersion

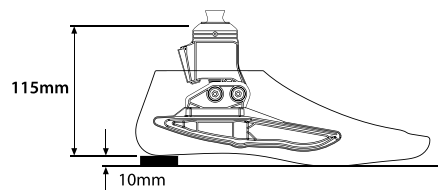
## Order Example

Product Code	Size	Side
AV	25	L

For dark tone add suffix D. Foot example: Avalon<sup>K2</sup> size 25 left.



## Build Height



<sup>†</sup>Component weight shown is for a size 26cm without foot shell.

To take a more in-depth look into Avalon<sup>K2</sup>, discover our White Paper 'A Study of Avalon<sup>K2</sup>' where the biomechanics of the limited community ambulators gait are considered along with the latest clinical evidence for biomimetic hydraulic technology. Then uncover how the biomechanical performance of Avalon<sup>K2</sup> can improve mobility and independence. To download visit the Blatchford website.

## References:

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Patents: US: 8574312, 8740991. EU/RoW: 5336386



An annual visual inspection is recommended. Check for visual defects that may affect proper function. Maintenance must be carried out by competent personnel. Before carrying out any new activities of daily living, please check with your clinician whether specific training is required.

800 548 3534 | [info@blatchfordus.com](mailto:info@blatchfordus.com)  
Blatchford Inc., 1031 Byers Road, Miamisburg, Ohio 45342, USA.

[@blatchfordUS](#) | [blatchfordus.com](http://blatchfordus.com)

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