allard
Support for better life!

Discover Meracus®

100% composite design for a seamless gait experience

Pure composite. Pure motion.

Meracus® — a new prosthetic foot from Allard

Looking for the best for your patients? With Meracus® you can offer them the opportunity to move smoothly with balanced energy return with every step they take.

Introducing Meracus®, brought to you by the dedicated team behind the Allard AFO. This unique prosthetic foot is custom-crafted from 100% composite materials, free from metal joints or extraneous components. The pure composite design combined with a rocker heel and toe facilitate a smooth transition from heel strike to toe-off, ensuring a fluid, natural and confident stride.

Let your patients experience a seamless gait with Meracus® and join us in our mission to provide Support for Better Life!

We know composite technology

At Allard we have nearly three decades of experience with producing functional dynamic orthotics from composite materials, also commonly used in aerospace, civil and military engineering, and motorsports. Our expertise in composite materials and processing techniques allows us to enhance both manufacturing efficiency and quality. With our unique competence of combining carbon and glass fibers of various functionality, we are able to craft composites of the highest standard and target specific mechanical properties in our materials. Mastering the art of lay-up and fiber selection gives our designers great freedom to shape products for optimal function. Our state-of-the-art facility employs the latest manufacturing techniques and equipment, and we have a fully equipped QA laboratory to ensure the highest product quality. By eliminating voids in the laminates, which can negatively impact mechanical properties, we have significantly improved our products over time.

Today, all our composite products are made using 100% renewable energy. Our commitment to continuous improvement ensures that we will develop even better products in the future. Our expertise and experience in composites and orthotic products have enabled us to confidently develop and launch an innovative new prosthetic foot.

Meracus® – a prosthetic foot for everyday activities

Meracus® is a dynamic response foot that features a low build height, J-shaped keel, extended heel lever, roller shape, and a unique innovation to join the heel and keel together, made from 100% composites. The Meracus® foot's dynamic properties simulate the anatomical foot by providing shock absorption during heel strike, a smooth transition to a stable stance phase, a smooth roll-off of the forefoot and an efficient energy return during push-off.

Meracus® is well suited for individuals with the ability, or potential, for ambulation with variable cadence. Typical of the community ambulator who has the ability to traverse most environmental barriers and may have therapeutic or exercise activity that demands prosthetic utilization beyond simple locomotion.

Meracus® contributes to:

- a smooth and natural walking motion throughout the gait cycle
- support and comfort while standing
- active everyday life due to its versatile features

Meracus® is tested to the latest product safety standard, our foot meets the requirements of ISO 22675.

Lightweight

Dynamic

Adapts to terrain

100% composite design for a seamless gait experience

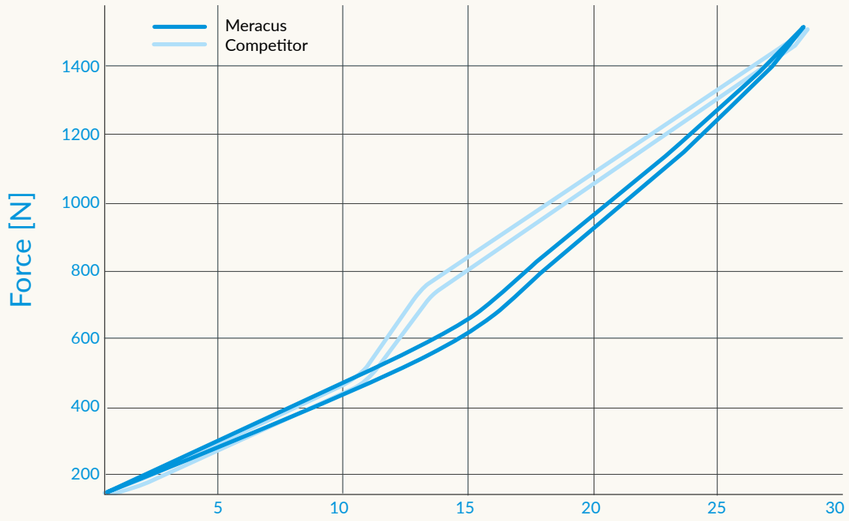
A prosthetic foot should mimic the actions of the human foot and ankle in all phases of the gait cycle. Meracus® is designed to optimize the walking pattern throughout the gait cycle. With our unique recipe and innovative design, Meracus® provides a seamless gait experience.

Hybrid composite technology

- From the attachment to the toe, the composite design of Meracus® offers a smooth transition and improved dynamic response.
- The lay-up of composites is designed to maximize function and support throughout the gait cycle.
- The heel and keel are joined with composite rivets, a new patent pending innovation that eliminates metal fasteners for improved flexibility and strength.

A smooth and confident walk with 100% composite design

Forefoot loading and unloading



Mechanical tests show that metal fasteners can result in a stiffer product at the forefoot area. With our composite rivet technology, Meracus® presents a deflection that is evenly distributed throughout the forefoot.

”So soft and flexible, feels like my own foot!”

– 53-year-old lower leg amputee

Design innovations for flexibility and stability throughout the gait cycle

Extended heel lever design

Flexible J-shape keel

Low profile design

Dynamic roller shape

Loading response

Normally the shock absorption is done by a slight knee flexion, a controlled ankle plantar flexion and a subtalar valgus. For a person with a transtibial (below knee) amputation, the prosthetic foot must act as the two latter. At initial contact, the heel section of the prosthetic foot is deflected upwards.

The relatively long lever arm on the Meracus® heel plate accomplishes a deflection of about 10 mm for a person weighing 70 kg (154 Ibs). This deflection pulls the forefoot down towards the ground, enabling the shock absorption and a stable weight bearing and initiates the tibial progression over the foot.

Midstance

When the center of gravity moves forward the deflected heel is restored and pushes the keel forward allowing for tibial progression. When the heel and keel are in total contact the keel starts its deflection and the ankle dorsiflexes. The resistance in the material controls the movement of the lower leg.

Terminal stance

The keel continues to compress when the center of gravity passes through the ball of the foot. The geometry of this area is very much inspired by the Allard AFO, ensuring a natural and smooth roll-over at terminal stance.

The compression of the keel – about 25 mm for a person weighing 70 kg (154 Ibs) – will load the keel with energy which will be released during pre-swing.

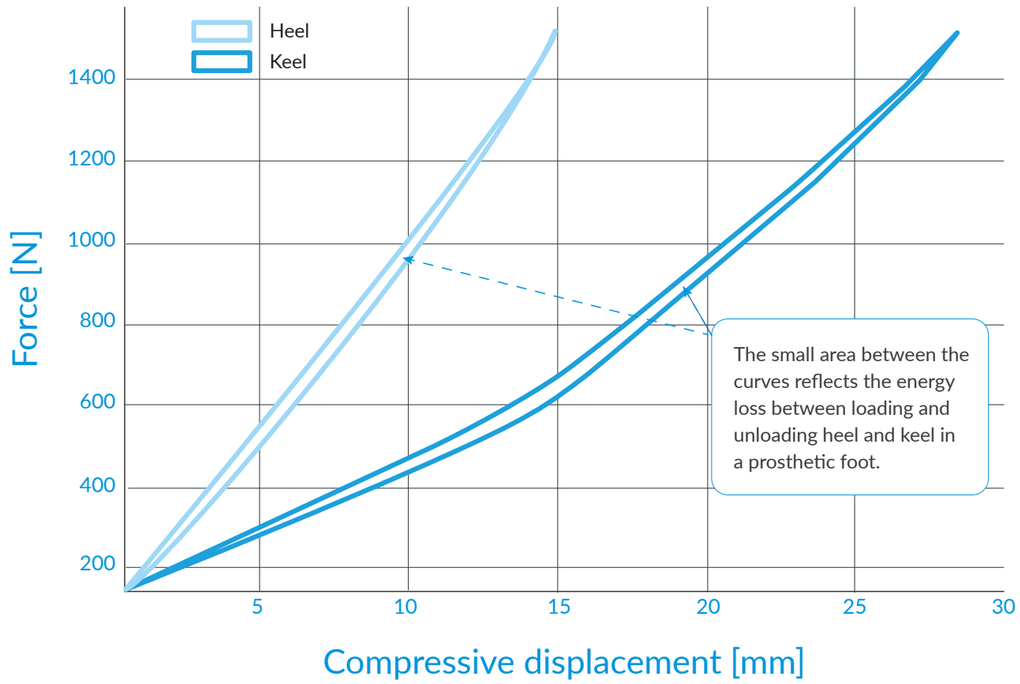
Pre-swing

When unloading the dorsiflexed (compressed) forefoot, the foot releases the energy and contributes to push-off the limb into the knee flexion needed for toe clearance during swing phase.

Effortless movement with over 95% energy return

Meracus® provides an energy return well above 95% (heel ~98%, keel~97%), empowering the user throughout gait. It is well established that the lack of functional ankle musculature in persons with lower limb loss reduces ankle push-off and can decrease walking performance[1,2]. An energy-storing prosthetic foot will assist the foot from heel-strike to midstance and provide push-off at terminal stance, mimicking a healthy foot during walking.

The geometry and lay-up in Meracus® score high in functional energy return. By closing the gap of energy loss between loading and unloading, Meracus® brings dynamics to gait.



[1] Hashim A. Quraishi, Max K. Shepherd, Leo McManus, Jaap Harlaar, Dick H. Plettenburg and Elliott J. Rouse; A passive mechanism for decoupling energy storage and return in ankle-foot prostheses: A case study in recycling collision energy. Wearable Technologies (2021), 2, e9

[2] Ava D. Segal, Karl E. Zelik, Glenn k. Klute, David C. Morgenroath, Michael E. Hahn, Michael S. Orendurff, Peter G. Adamczyk, Steven H. Collins, Arthur D. Kuo and Joseph M. Czerniecki; The effects of a controlled energy storage and return prototype prosthetic foot on transtibial amputee ambulation. Hum Mov Sci. 2012 August; 31(4): 918-931

Product selection

Selection chart

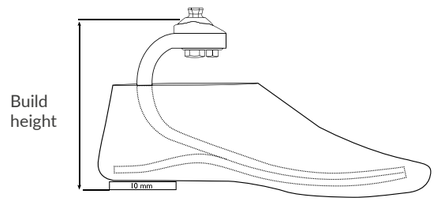
Weight, kg Weight, lbs	≤60 ≤139	≤80 ≤179	≤100 ≤224	≤125 ≤275	≤150 ≤326
Size 23	23P3	23P4	23P5	-	-
Size 24	24P3	24P4	24P5	24P6	-
Size 25	25P3	25P4	25P5	25P6	25P7
Size 26	26P3	26P4	26P5	26P6	26P7
Size 27	27P3	27P4	27P5	27P6	27P7
Size 28	-	28P4	28P5	28P6	28P7

Our selection chart is based on testing at each weight level. If a stiffer foot is preferred, you may move up one weight category.

Example:

26P4 → 26P5

Size	Build height (mm)
23	133
24	133
25	140
26	140
27	144
28	144



Meracus® is Patent Pending

Scan or click for a complete list of item numbers.

Item No.	Model	P-level	Size
29000	Meracus® Prosthetic Foot	P3-P7	23-28
29002	Meracus® Foot Shell	-	23-28
29006	Spectra Sock, Black	-	One Size

Support for Better Life

Everyone should be able to live their life to the fullest, regardless of their mobility challenges. With innovative solutions developed in close collaboration with healthcare professionals and patients, we strive to provide Support for Better Life.

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