

Foot Designs

Solid-Ankle Cushioned Heel (SACH)



The SACH foot is the most basic prosthetic foot available in United States. It is also one of the lowest cost feet on the market. The SACH foot includes a solid ankle and a rigid keel that runs along the length of the prosthetic foot sole. The heel is composed of a foam wedge that provides cushioning in the heel section during heel strike. This foot is commonly used on pediatric or geriatric amputees. It is also often used on an amputee's initial prosthesis, when the potential functional level of an amputee has yet to be determined.

Single Axis



The single axis foot includes bumpers, which control ankle flexion. This allows the prosthetic forefoot to contact the floor quickly during after heel strike. However, this type of foot provides little shock absorption or energy return and is heavier than more basic feet, such as the SACH.

Energy Storing

Energy storing feet provide moderate shock dampening during heel strike and shares many characteristics with the SACH foot. This prosthetic foot is sometimes preferred by amputees because of its realistic split toe design, where the large toe is separate, allowing for greater choice in shoe preferences.

Dynamic Response



Dynamic elastic response feet flex at heel strike and midstance and then spring back at late stance. This imitates the energy return characteristics of a normal ankle, which reduces energy expenditure and improves gait

Carbon Graphite



A carbon graphite foot is a lightweight dynamic elastic response foot with an integrated pylon that runs through to the distal toe of

the foot. It is designed for moderately active below or above knee amputees and offers excellent shock absorption, flexibility at the ankle, and energy return.

Multiaxial



This foot involves multiple components at the ankle, which provide the maximum amount of motion on all planes.

Some prosthetic feet are one continuous structure, which includes the ankle. The ankle motion is effective and is caused by the flexion and energy return of the carbon material throughout the foot plate and along the vertical shaft of the foot.



Other prosthetic feet include separate ankle joints or rotator adapters that provide additional motion near the prosthetic ankle joint.

Most prosthetic feet available, such as many carbon graphite prosthetic feet, include two main components: the inner skeletal structure of the foot, and an outer foot shell. The foot shell serves two purposes: to simulate the natural shape of a foot required for ambulation, and also to provide a more cosmetic appearance. In some foot designs, such as with a SACH foot, the inner and outer components of the foot are fabricated as one cohesive piece.

Prosthetic feet are also available for amputees participating in track and field sports. These prosthetic feet are not effective for normal ambulation and are designed specifically for runners.



Manufacturers of prosthetic components have also come to realize the desire many amputees have to wear shoes of different heel heights. The adjustable heel height foot is becoming more common and is a convenient way for the amputee to adjust the prosthetic foot heel height easily.

Microprocessors are now even thrown into the mix with the introduction of the electronic foot and ankle unit. This foot possesses artificial intelligence to sense the walking pattern of the user and automatically adjusts the ankle position to the necessary amount of flexion. By self-calibrating its movements and even anticipating the user's next step, this type of foot

