



Prosthetics • Orthotics

Microprocessor Knee



Key Benefits

- Improves balance
- Enhances and ensures stability, especially on uneven terrain, including grass and gravel
- Enables wearer to descend stairs and ramps in a natural, step-over-step manner
- Allows a quicker walking pace, and adapts promptly to changes of pace
- Allows wearer to walk without consciously thinking about it
- Builds confidence and provides security for walking in public areas
- Enables wearer to participate in a broad range of normal daily activities.
- Conserves wearer's energy; walking is less tiring

General Description

The complex technology of the microprocessor knee marries a fluid control unit, a microprocessor stance control, a microprocessor swing control, a rechargeable 24-hour battery, electronic force sensors, and a continuous gait adjustment computer that do all the work and planning of walking, leaving the wearer free to focus on other things.

This “smart knee” senses where the leg is in space; its onboard computer analyzes the stresses and forces, then compensates quickly to make sure the foot contacts the ground at the time and place where it will best support, stabilize, and balance the moving body above it.

A fluid control unit within the microprocessor allows

the knee to flex easily for walking on level surfaces, and automatically provides the proper level of resistance for descending slopes and stairs. The onboard computer continually programs and updates the knee so the wearer doesn't have to think about where and how to place his next step with the prosthetic leg, even when walking quickly, running, or changing pace.

Since the computer continuously gathers and monitors gait information at a rate of 50 times per second, the knee is always aware if the wearer is on level surfaces, walking backwards, on slopes, stairs or uneven terrain, or is about to stumble—and instantly positions the leg and foot so that it can safely balance and stabilize the descending weight.

Image courtesy of Otto Bock HealthCare

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