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Prosthetics • Orthotics

Vacuum Suspension Below-Knee/Transtibial Socket

Key Benefits

- Prevents daily limb volume loss
- Minimizes pistoning of leg within socket
- Reduces limb pressures and shear forces
- Improves overall limb health and wound healing.
- Eliminates straps, cuffs or pin-locks needed for other suspension systems
- Preserves and protects sensitive areas on the residual limb by distributing pressures evenly
- Promotes healthier skin, due to blood pumped in and out of the socket by walking pressures—like natural circulation
- Superior global "connection" of socket to leg provides the wearer with improved spatial awareness and control of the prosthesis
- Wearers report that the prosthesis feels lighter and more manageable

General Description

The vacuum suspension system is a preferred method for attaching a below-knee or transtibial prosthesis to the wearer's residual limb. The system utilizes a vacuum pump to remove air molecules from the thin, sealed air space (sheath) between the prosthesis's weight bearing socket and the liner. The vacuum created by the removal of these air molecules anchors the liner firmly and evenly to the socket wall.

Unlike other prosthesic suspension systems, which focus the weight and force of the prosthesis on one point at the bottom of the socket, vacuum systems spread the pressures evenly over the entire socket. The leg does not shift within the socket because captured air is forced out through an opening at the bottom of the socket, which maintains the vacuum with a valve that closes the opening.

Image courtesy of Otto Bock HealthCare

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