

Negative pressure



Description

Also known as Elevated Vacuum and Dynamic Vacuum (DVS), this system uses a pump to actively remove air between the socket and interface. The pump maintains a consistent negative pressure (vacuum) which is spread over the entire surface of the interface. In effect the socket is 'sucked on' to the residual limb.

An external sleeve or seal is required to seal the top of the system. Where the seal is effective the system generates a very positive suspension.

The pump generates a vacuum during both swing and stance phase. This minimizes pistoning and socket rotations. Because the socket moves less relative to the stump, less force is exerted on the stump tissues. This can be very beneficial where residual limb volume fluctuations occur.

Advantages

- Controls volume and reduces fluctuations
- Improved comfort and socket fit through consistent volume

- Enhanced suspension
- Reduces pistoning and rotation
- Improved control of the prosthesis lowers energy consumption
- Optimizes gait

Disadvantages

- Expensive
- Mechanical pumps are prone to breakdown
- Can be quite heavy and bulky