Above Knee and Below Knee Prosthesis

Seal-In™ Suction Suspension

General Description

Seal-in™ suction suspension is designed to be used with a total surface-bearing socket. Total surface bearing is a general loading of the entire residual limb.

With seal-in™ suction suspension, the user rolls a silicone liner onto the residual limb creating a seal. The seal-in™ liner includes a flexible rubber ring called the Hypobaric Sealing Membrane (HSM). The HSM creates a suction seal with the socket to suspend the prosthesis. This type of suspension works best with longer, cylindrical limbs. It can be used with some below the knee or above the knee prostheses. Seal-in™ liners are available with the seal secured in a specific position, it can be custom made where your prosthetist decides at what height it should be located, or the seal may be a separate piece where the wearer places it on the correct location on the limb. There is also a liner with multiple seals. (See pictures below). Images courtesy Ossur, Inc.
Application

1) Turn the liner inside out. Make sure the liner is clean and dry and has no dirt on it that will irritate the skin. Place the bottom end of the liner against the limb (See figure 1).
2) With light pressure, roll it up and over the limb. Make sure no air pockets exist between the liner and the skin. Do not pull or tug. Be careful not to tear it with fingernails or jewelry. (See figure 2).
3) Prosthetic socks may be worn with the Seal-in™ liner, but should not cover the rubber membrane. Pull the sock on over the liner until the cut end of the sock is above the rubber membrane. Reflect the membrane down towards the bottom of the liner. Set the cut end of the sock so that when the rubber membrane is rolled back up, the sock will be tucked between the liner and the membrane (See figures 3 and 4). Make sure the rubber membrane is rolled up, and has no wrinkles.
4) Rub a small amount of alcohol across the surface of the membrane. (See figure 5).
5) Push the residual limb into the prosthetic socket. If a self-expulsion valve is used, air will be expelled out the valve as the limb goes into the prosthesis (See figure 6). For a push button valve, the button must be held in while donning to let the air expel.
6) After going all the way into the socket, verify that the valve is closed and suction is intact.
Removal

1) Open the valve so that air is allowed to flow into the socket and suction is broken. The valve may need to be pressed or turned depending on the type of valve in your prosthesis.

2) Once suction is broken, the prosthesis may be removed. Remove the prosthetic sock and the liner. The liner can be removed by rolling it slowly down the limb.
Care and Maintenance

The inside of the liner must be hand washed daily with mild soap such as Soft Soap® Brand (no perfumes, lotions, or deodorants) and water. Blot dry with a towel. Fabric softeners and bleach, or other product or cleaning solutions may damage the liner and should not be used. Do not use any soap with deodorant, scents, or abrasives. It is important to rinse thoroughly with water and wipe both sides dry with a lint-free cloth. Return the liner to its normal position with the membrane facing out as soon as possible after cleaning. Store the liner right side out away from direct heat.

It is important that the liner never be exposed to glass, carbon fibers, chemicals, sand, or other foreign product because such materials can become embedded in the liner and cause irritation to the skin. Washing the liner may not take care of the problem. Liners damaged in this way should be shown to your prosthetist to correct the problem.

Clean socks should be worn daily.

The socket can be wiped out with mild soap and water as needed.

Tips and Problem Solving

If the prosthesis does not seem to be on the limb straight, remove the prosthesis and re-don it.

If suction does not seem to be holding, make sure the valve is closed, and nothing is covering the membrane. If suction is still not holding, contact your prosthetist.

The limb should be cleaned daily, using a mild soap. Be sure to rinse all soap residues off skin before donning liner. Do not use any deodorants or perfumes on the residual limb.