

ottobock.

Individual Solutions for You

Socket Technologies

Quality for life





Contents

- 4 Here for you right from the start
- 8 The prosthetic socket
- 10 Mobility grades
- 12 Liner materials
- 14 Suspension systems
- 16 Textiles and skin care
- 20 Winning combinations
- 24 Questions & answers



Here for you right from the start

Loosing part of your leg is going to change your life and make you face new challenges. What you need now is time for reorientation and the opportunity to adapt to your situation. We will help you along the way and are here for you right from the start.

Even though an amputation is a complicated operation even today, state-of-the-art technology ensures a high level of success. Compression therapy, which is very important in order to prepare your residual limb for the subsequent prosthetic fitting, begins right after the operation. You can rely on our experience even at this early stage.

You will probably be faced with numerous questions, especially in the period following your operation. But due to the variety of fitting options, obtaining an overview and deciding which fitting is best for you personally can be a difficult process.

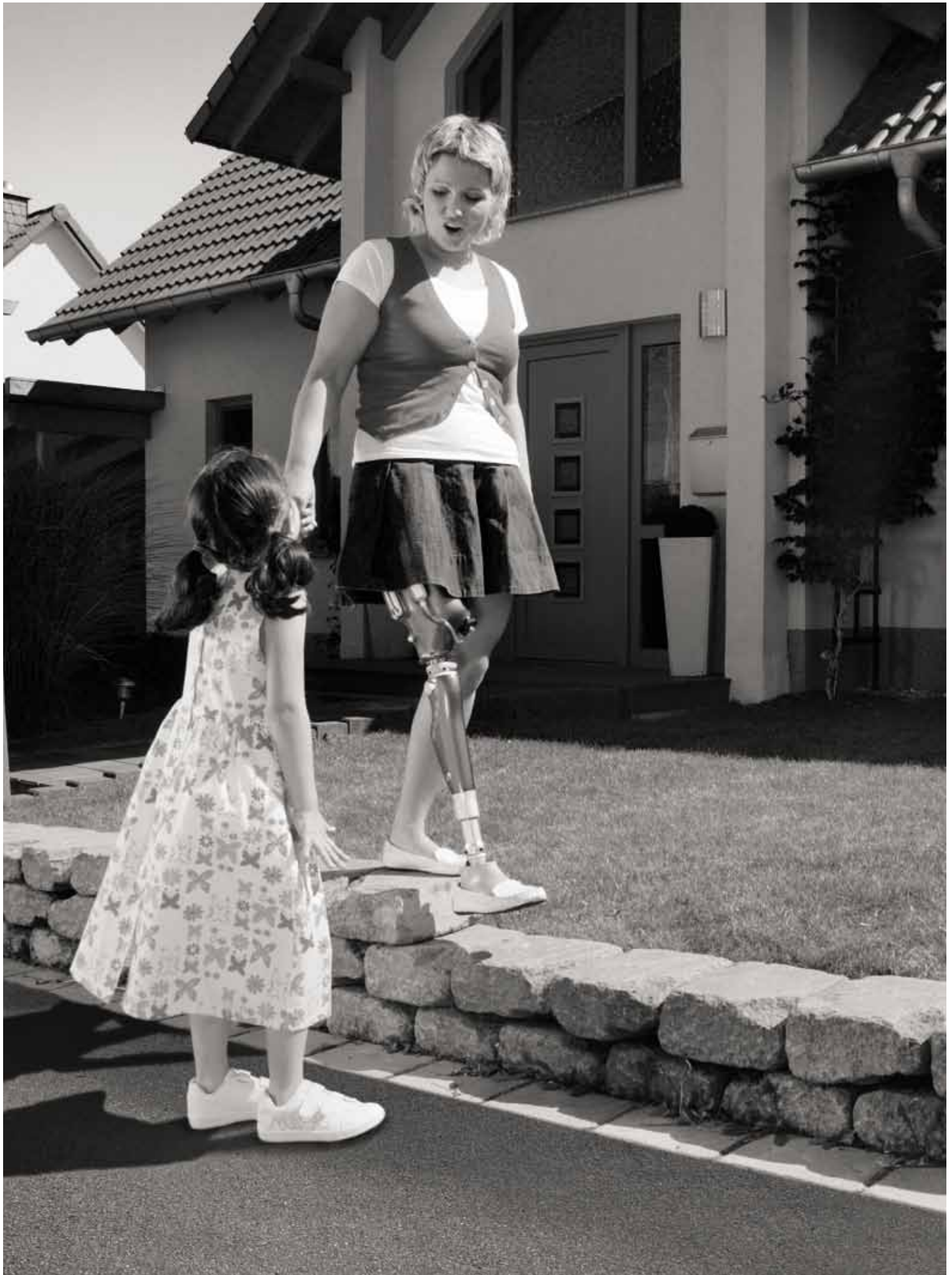
This is why we want to help you obtain an overview of various fitting techniques on the following pages. We are here for you right from the start, helping you make the right decisions. This is because choosing the right prosthesis is very important in order to achieve the objective of resuming as many of your previous activities as possible after the amputation, allowing you to enjoy a good possible quality of life.



Ocho Pock

QUALITY FOR LIFE

Copolymer Liner





Individual Solutions for You

Ottobock Socket Technologies ensure that a highly individual part of your prosthesis, the section that is in direct contact with your residual limb, is adapted to you and your specific requirements. In order to provide a high level of security and wearer comfort, we offer a large selection of liner materials (a liner is a kind of "protective cover" that is pulled over the residual limb) along with connections (suspension systems) to your prosthetic socket.

Ottobock is the only supplier in the world that gives you the option of selecting the best possible liner for your requirements in conjunction with your prosthetist from among the three materials of silicone, copolymer and polyurethane.

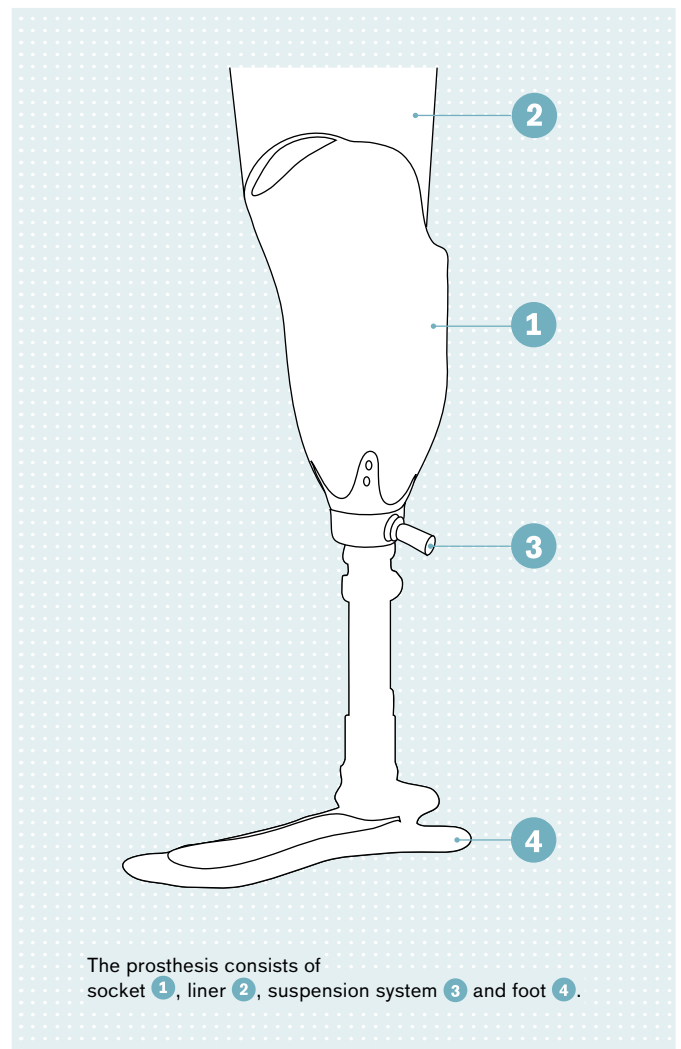
Each of the three liner materials has unique characteristics. In conjunction with the right suspension system to meet your needs, your residual limb is securely connected to the prosthesis.

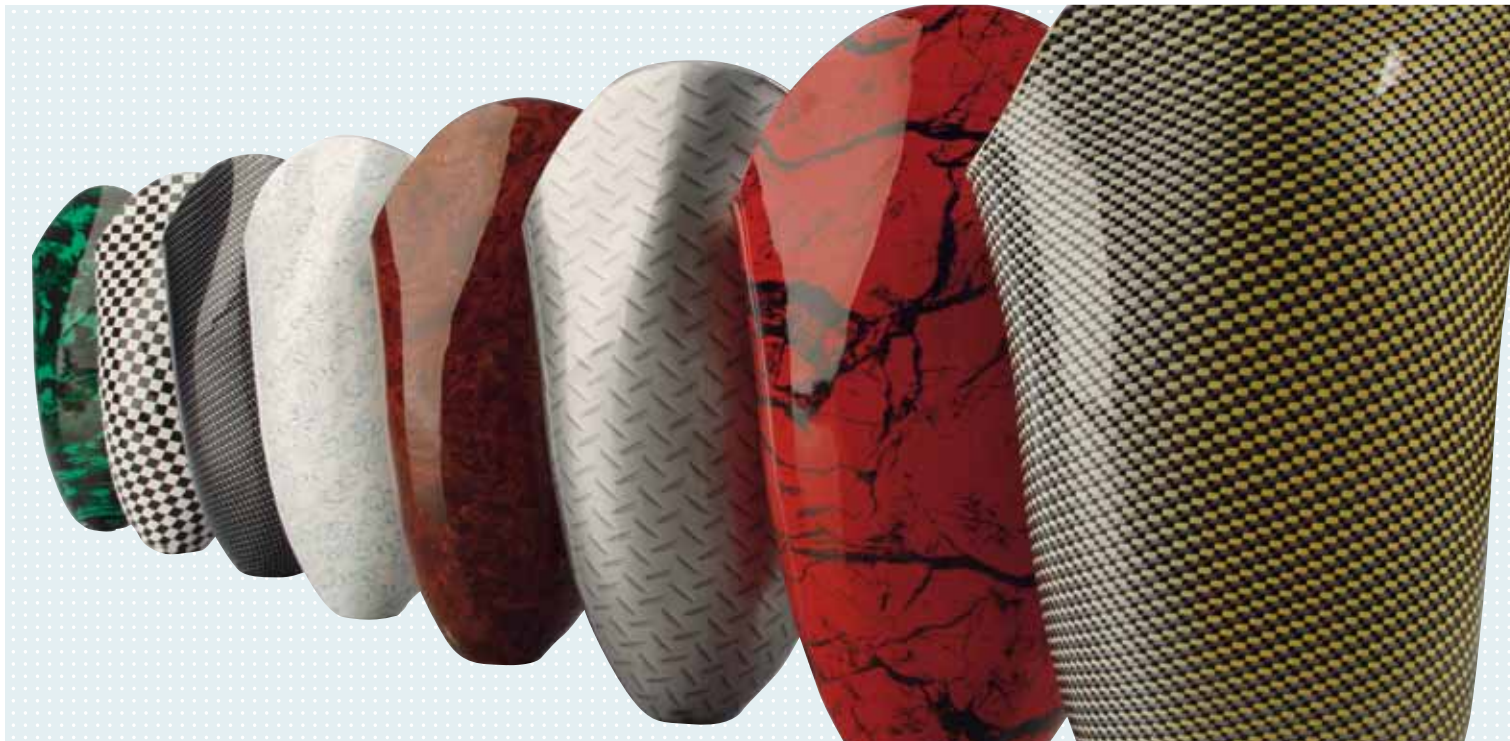
To help you obtain an overview of the variety of materials and corresponding suspension systems, we want to support you in selecting the right liner-suspension system combination for you in this brochure.

The Prosthetic Socket

The prosthetic socket joins your residual limb to the prosthesis and fulfils important functions: It provides a secure connection and assures the proper fit of your prosthesis. In order to achieve these objectives, the prosthetic socket - depending on the shape and condition of the residual limb and tailored to the respective mobility grade - is individually fabricated for each patient.

The socket is the load-bearing component of the prosthesis that holds the residual limb with the liner and suspension system, connecting them to the prosthesis components. It is typically made of a rigid material, the so-called "laminate". However, especially for a transfemoral prosthesis, it is also possible to design the rigid component as a frame and integrating a softer material into the rigid frame as the socket. Your prosthetist will inform you about the right combination of the socket design and other components.

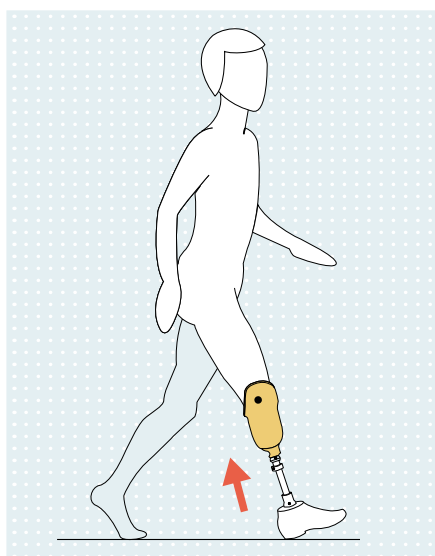




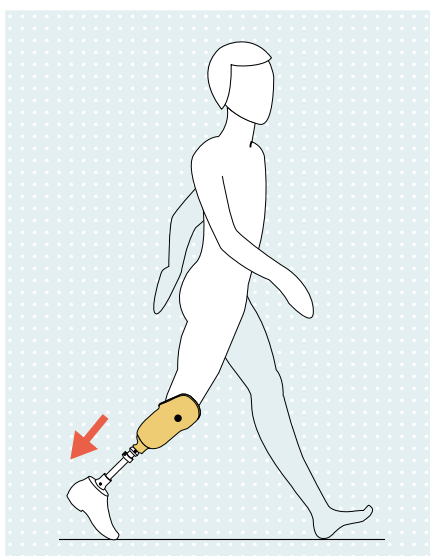
Forces in the Prosthetic Socket

Various forces are at work in a prosthetic socket, which can affect the fit and adhesion of your prosthesis. With our Socket Technologies products, we want to give you more control over these forces.

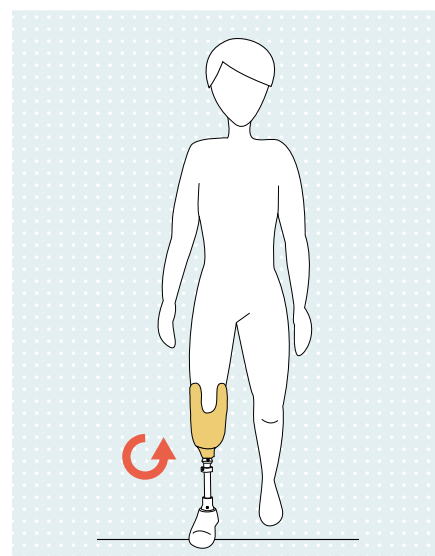
When these forces are controlled, problems such as pressure points on the residual limb can be avoided. The liner and the corresponding suspension system will be described later on.



• **Impact movement** results from the heel striking the ground. Soft liner materials and shock absorbing prosthetic feet dampen the impact movement.



• **Pulling movement** occurs during the swing phase. With the right liner material and a suitable suspension system, pulling movement can be controlled.



• **Rotational movement** occurs during the stance phase. With the help of special suspension systems and through the shape of the socket, rotational movement can be controlled.

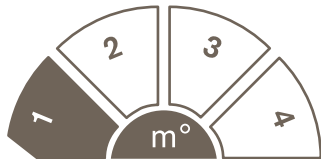
Mobility Grades

Quality and individuality take centre stage in the fabrication of a prosthesis. The choice of the correct prosthesis components by the prosthetist is a decisive factor for a successful fitting. MOBIS is the Ottobock mobility system focusing on people and their need for enhanced quality of life.

With the help of MOBIS, the prosthetist can tell at a glance for which mobility grade and up to what patient weight each prosthesis component (e.g. the shuttle lock and the Harmony system) is recommended.

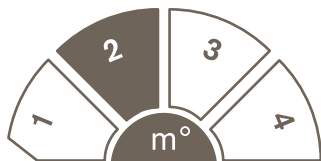


low



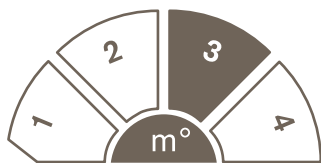
So-called indoor walkers have a low mobility grade. They are able to cover short distances on an even surface and at low speed.

moderate

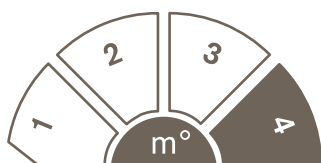


Restricted outdoor walkers have a moderate mobility grade. They are also able to walk on uneven surfaces and navigate low obstacles such as curbs and steps.

high



Unrestricted outdoor walkers have a high mobility grade. They can walk on almost any surface and at various speeds, and also cover longer distances. Able to cross most obstacles, they are able to work as well as participating in therapeutic and other activities.



Unrestricted outdoor walkers with particularly high requirements are defined by an especially high mobility grade. With their prosthesis, they are able to master more difficult challenges in a work environment or during leisure activities.

Liner Materials

The liner acts as a sort of "second skin" between the movable soft tissue of the residual limb (muscles, tissue, skin) and the hard shell of the socket. This reduces movement and friction between the skin and prosthetic socket and therefore reduces the forces in the socket described earlier.

The liner connects your residual limb to the prosthesis, cushioning the sensitive skin on the residual limb and thereby alleviating problems such as pressure points. Selecting the right liner is essential in order to ensure the prosthesis fits well and is comfortable to wear.





SIL SIL

Silicone

is durable and easy to clean. The material provides high stability and good adhesion. Silicone is suitable for fittings on residual limbs with good soft tissue coverage. This material is used for both transtibial and transfemoral prostheses. We recommend silicone liners for patients wearing a transtibial prosthesis, with a low to moderate mobility grade. Patients with a transfemoral prosthesis can wear a SIL liner regardless of their mobility grade.



TPE TPE

Copolymer

is highly elastic. It contains skin-friendly mineral white oil, making it especially suitable for residual limbs with dry skin. We recommend copolymer liners for patients with a low to medium mobility grade, insofar as they wear a transtibial prosthesis. This liner material is rarely used for transfemoral amputees.



PUR PUR

Polyurethane

ensures even pressure distribution and offers a precise, comfortable fit. Optimum dampening of impacts also makes the material suitable for sensitive, bony and/or scarred residual limbs. We recommend polyurethane for patients with a low to especially high mobility grade, regardless of the amputation level.



Suspension Systems

In addition to the right liner material, prosthetic fitting tailored to your needs also requires the correct suspension system. We offer the following suspension systems depending on the mobility grade.



Pull-In System

With a pull-in system, the user pulls the socket on manually with the help of a strap. Our KISS Lanyard System significantly reduces both rotation and pistoning within the socket. This system is suitable for patients with a transfemoral prosthesis.



Shuttle Lock Fitting

In a shuttle lock fitting, a so-called pin is attached to the lower end of the liner. The pin is inserted into a shuttle lock integrated into the socket, thereby connecting the residual limb to the prosthesis. The system is easy to unlock using a simple mechanism. Shuttle lock fittings are frequently used with transtibial prostheses.

Vacuum Systems

Some of our suspension systems use vacuum technology. They remove excess air between the liner and socket, keeping the prosthesis securely in place. The vacuum is either generated by a valve (passive) or a pump (active).



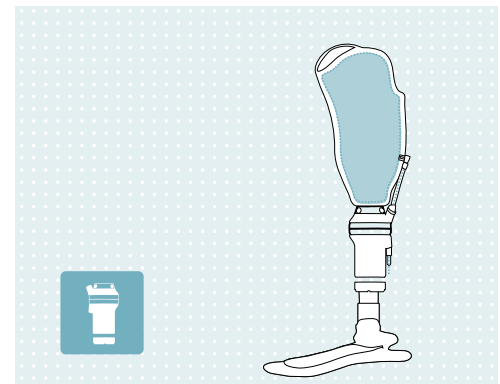
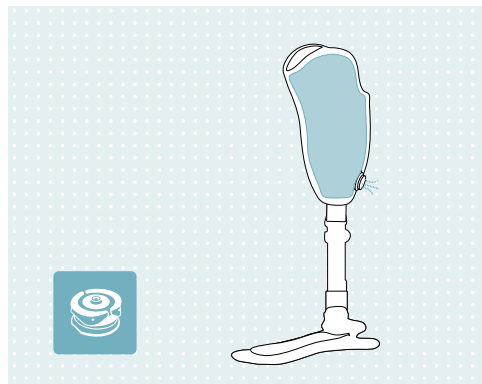
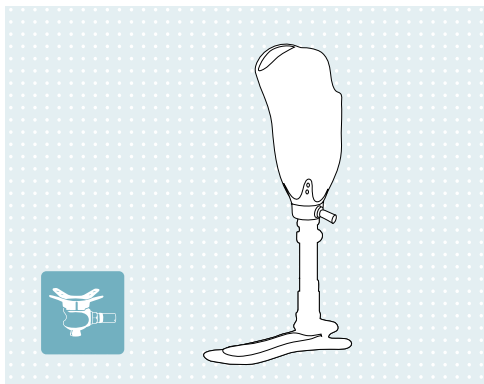
Passive Vacuum Systems: Valve System

Passive vacuum systems usually consist of a soft liner, a one-way valve and a knee sleeve. Excess air is expelled through the valve with the help of body weight, and is unable to stream back in. A knee sleeve is used with transtibial prostheses to create an airtight seal at the top edge of the system. In transfemoral prostheses, the so-called ProSeal Ring is used to create an airtight seal at the top of the system.



Active Vacuum Systems: Harmony System

Active vacuum systems such as the Harmony system work with a pump and a one-way valve. Virtually all of the air between the liner and socket is removed and the system is active at every step, regulating the vacuum level within a defined range. This results in enhanced socket adhesion compared to valve fittings (passive vacuum systems). The Harmony system reduces shear forces in the socket, controls the residual limb volume and improves circulation in the residual limb. The high level of adhesion makes it easier for the patient to perceive the surfaces he or she is walking on so that the prosthesis wearer knows what is happening underneath the prosthetic foot. This enhances safety in everyday life. A knee sleeve is used with transtibial prostheses to create an airtight seal at the top edge of the system. In transfemoral prostheses, the so-called ProSeal Ring is used to create an airtight seal at the top of the system.



Textiles and Skin Care

Our selection of various textiles and our special Derma series of skin care products allows you to prevent and counteract excessive strain on your skin.

The textiles are broadly classified into residual limb socks, Derma Seal residual limb socks and compression shrinker socks. We are by your side with compression therapy immediately after the amputation. This is where you work with your prosthetist, using our compression shrinker socks in order to prepare for a fitting with the right prosthesis at the earliest possible time.

Wearing a prosthesis often puts a lot of strain on the skin in areas that were not intended for this purpose by nature. This may cause pressure and pain due to chafing, perspiration or similar problems.



Residual Limb Socks

Improving your quality of life by offering mobility is a sensitive matter. Quality and responsibility are in demand. This is why we only use high-quality materials for our residual limb socks. New wool, cotton or blended fabrics - our large selection of residual limb socks offers an excellent fitting for a wide variety of different needs.

Residual limb socks fulfil the following functions:

- Protecting the residual limb against unpleasant chafing, reddening, inflammation and pressure points
- Compensating for volume fluctuations in the socket that may occur during the day
- Making it easier for liners without a textile cover to slide
- Protecting the liner

Derma Seal Residual Limb Socks

You can wear these special residual limb socks when you select a fitting without a liner.

Derma Seal residual limb socks are coated with a copolymer gel. Thanks to the viscous (soft, flowing, resilient) nature of the gel, unpleasant chafing, pressure and strain on the skin are reduced which results in enhanced wearer comfort in the prosthetic socket.

The gel coating represents another advantage: The copolymer gel contains a medical-grade mineral oil which is especially skin-friendly and keeps the skin supple.



Compression Shrinker Socks

Our compression shrinker socks represent an important aspect in the care of your residual limb immediately after the operation. They are used to apply even pressure that decreases from the bottom to the top while simultaneously maintaining a high level of wearer comfort.

Compression socks fulfil the following functions:

- High level of wearer comfort and easy handling
- Good fixation of soft tissue and rapid decongestion of tissue
- Can be used to prevent post-traumatic swelling after the amputation
- Even compression
- Low-cost, effective early care for the residual limb
- Suspension sleeve with silicone nubs (lower leg)
 - Keeps the residual limb compression sock from sliding down
 - Breathable with simultaneous adhesion



Derma Skin Care Series

Increased strain may result in the impairment of skin function for prosthesis wearers.

Common problems include:

- Pain due to pressure and chafing, sores
- Perspiration and odour formation
- Impairment of the skin's protective and immune functions
- Excessive hygiene and improper cleaning of stressed skin

Tailored to meet your special skin care needs, the Derma series includes the following skin care products: Derma Clean, Derma Prevent and Derma Repair. These products help prevent possible skin reactions and irritation in addition to gently relieving irritation when it does develop. All of the products are dermatologist tested and skin-friendly.

Winning Combinations









A practical recommendation is a liner and suspension system combination recommended by Ottobock. It is based on the characteristics of the liner materials and the requirements of the corresponding suspension system.

Custom fabrication of the socket and the right combination of a liner and suspension system are essential for the success of each and every prosthetic fitting.

Please note that the specified combinations of liner materials and suspension systems constitute general recommendations. Actual fittings are always customised to you and your needs. Please consult your prosthetist if you are interested in Socket Technologies. For more information, please visit our website www.ottobock.com.










Legend

-  SIL Silicone Liner
-  TPE Copolymer (TPE) Liner
-  PUR Polyurethane Liner
-  Shuttle Lock
-  KISS Lanyard System
-  Valve
-  Harmony System
-  Knee Sleeve



Our Practical Recommendations

	Liner material	Indications	Purpose of the liner material/ material characteristics	Practical recommendation
	SIL	<ul style="list-style-type: none"> Residual limbs with good soft tissue coverage Low to moderate mobility grade 	<p>Purpose:</p> <ul style="list-style-type: none"> Adhesion (on the skin) <p>Characteristics:</p> <ul style="list-style-type: none"> High durability High compression Easy to clean 	<p>The entire weight of the prosthesis pulls on the liner during the swing phase. This is why the SIL liner in combination with the shuttle lock has to exhibit high adhesion. The prosthesis is held on the residual limb thanks to the adhesion of the SIL liner.</p> 
below knee	TPE	<ul style="list-style-type: none"> Many residual limb types, especially residual limbs with dry skin Low to moderate mobility grade 	<p>Purpose:</p> <ul style="list-style-type: none"> Protection against forces in the socket <p>Characteristics:</p> <ul style="list-style-type: none"> High level of flexibility Contains medical white oil Easy to clean 	<p>Since the TPE liner material is highly flexible, the liner assumes more of a protective function in this case (rather than the adhesion function). A valve is used to generate a passive vacuum in order to keep the prosthesis securely connected to the residual limb.</p> 
	PUR	<ul style="list-style-type: none"> All residual limb types, especially sensitive, bony and/or scarred residual limbs Low to high mobility grade 	<p>Purpose:</p> <ul style="list-style-type: none"> Protection against forces in the socket <p>Characteristics:</p> <ul style="list-style-type: none"> Yielding (floating) effect of the material ensures even pressure distribution 	<p>The PUR liner material protects and cushions the residual limb particularly well and therefore assumes a protective function just like a TPE liner. With the help of an active/passive vacuum, the Harmony system / valve system assures rotation stability and therefore especially high prosthesis adhesion.</p>  

	Liner material	Indications	Purpose of the liner material/ material characteristics	Practical recommendation
above knee	SIL	<ul style="list-style-type: none"> Residual limbs with good soft tissue coverage. The user can put on the prosthesis while sitting down. 	<p>Purpose:</p> <ul style="list-style-type: none"> Adhesion (on the skin) <p>Characteristics:</p> <ul style="list-style-type: none"> High durability High compression Easy to clean 	<p>The entire weight of the prosthesis pulls on the liner during the swing phase. This is why the SIL liner in combination with the shuttle lock has to exhibit high adhesion. The prosthesis is held on the residual limb thanks to the adhesion of the SIL liner.</p> <p>SIL + </p>
	Skin	<ul style="list-style-type: none"> Residual limbs with good soft tissue coverage. The user has to stand up in order to put on the prosthesis 		<p>The skin acts as a seal in the prosthetic socket. The valve serves as a suspension mechanism. A vacuum in the socket holds the residual limb in the socket.</p> <p>Skin + </p>
	PUR	<ul style="list-style-type: none"> All residual limb types, especially sensitive, bony and/or scarred residual limbs 	<p>Purpose:</p> <ul style="list-style-type: none"> Protection against forces in the socket <p>Characteristics:</p> <ul style="list-style-type: none"> Yielding (floating) effect of the material ensures even pressure distribution 	<p>The PUR liner material protects and cushions the residual limb particularly well and therefore assumes a protective function. With the help of an active vacuum, the Harmony system assures rotation stability and therefore especially high prosthesis adhesion.</p> <p>PUR + </p>

FAQ

Questions and Answers

What does Socket Technologies represent?

Socket Technologies encompasses the products that connect the residual limb to the prosthesis. This includes liners, suspension systems, textiles, skin care products and other accessories.

Why is the proper fit of the prosthetic socket important?

The prosthetic socket is the prosthesis component that is in direct contact to the residual limb. Therefore, it is important for the residual limb to fit properly so that the user feels comfortable (similar to a shoe that fits well).

What is a liner?

The liner is a protective cover made of a flexible material that is rolled over the residual limb. It reduces movement and chafing between the skin and the prosthetic socket.

What liner materials are offered by Ottobock?

Silicone (SIL), copolymer (TPE) and polyurethane (PUR).

Why does Ottobock offer three different liner materials?

Every patient has different, individual needs and requirements (e.g. the residual limb shape and activity level). These needs can be met by offering three different liner materials with various characteristics.

What is a suspension system?

The suspension system connects the prosthesis to the residual limb. Suspension systems include the shuttle lock, KISS Lanyard system, valve system and Harmony system.

What is the KISS Lanyard System and what makes it different from other pull-in systems?

The KISS Lanyard System connects the socket to the liner near the top and near the bottom, and thereby reduces pistoning as well as rotational movement. The KISS Lanyard System is the only pull-in system on the market with two connections between the liner and the socket. Thanks to the sturdy straps, donning the KISS Lanyard system is easier compared to other systems.



What are the different Harmony systems offered by Ottobock?

The mechanical and the electronic Harmony system. The mechanical Harmony system generates the vacuum mechanically and offers additional features such as torsion reduction and impact dampening. An electronically controlled pump is used to generate the vacuum in the electronic version. This version includes various features. The most important one is that four different vacuum levels can be selected.

What is the advantage of the Harmony system compared to a valve system?

The vacuum generated by the Harmony system is five times higher compared to a conventional valve. This means disruptive forces between the residual limb and the socket are controlled more effectively. In addition, the higher vacuum of the Harmony system reduces residual limb volume fluctuations.

What is the purpose of a knee sleeve?

It seals the socket system at the upper edge of the socket.

What are practical recommendations?

Practical recommendations are combinations of liners and suspension systems recommended by Ottobock.





What factors play a role in the selection of practical recommendations?

The entire medical history of the patient may have an impact. Key factors include the residual limb characteristics, the activity level and the environment in which the patient lives.

What products complement the Socket Technologies portfolio?

Textiles (residual limb socks, Derma Seal residual limb socks, compression shrinker socks) and the Derma series of skin care products (see page 16 - 19).

Product Examples

		Liner	Suspension system		
			lower leg	thigh	
	6Y42	Standard Pro SIL Liner			
	6Y70	SilikonGel SIL Liner	6A20=10 Shuttle Lock	4R160 KISS Lanyard System	
SIL	6Y75	SkinGuard Technology SIL Liner			
	6Y80	TF Adapt SIL Liner		6A30=10 Shuttle Lock	6A20=20 Shuttle Lock
	6Y85	TF SkinGuard Technology SIL Liner			
	Custom	SIL Liner			
	6Y90	Basic TPE Liner	4R136=EL EasyLine Valve Kit	21Y21 ClickValve	
TPE	6Y92	Basic TPE Liner			
	6Y93	Balance TPE Liner		4R140 One-Way Valve	21Y12 Screw Valve
	6Y522	Simplicity Tapered PUR Liner		4R136=EL EasyLine Ventil Kit	21Y21 ClickValve
	6Y523	Simplicity Tapered PUR Liner		4R140 One-Way Valve	21Y12 Screw Valve
PUR	6Y512	Anatomic 3D PUR Liner		4R147 Harmony P3	
	6Y520	Simplicity PUR Liner		4R150 Harmony HD	4R148 Harmony e-pulse
	Custom	4U PUR Liner	1C62 Triton Harmony		

Knee Sleeves

453A2 Derma Protection
 453A3 Derma ProFlex/453A3 Derma ProFlex, short
 452A1 ProSeal Ring

Residual Limb Socks

451F2 Terry Cloth Sock (lower leg)
 451F3 Cotton Sock (lower leg)
 451F4 Nylon Sock with hole (above knee and below knee)
 451F6 Terry Cloth Sock with Opening (above knee and below knee)

Skin Care

453H14 Derma Repair
 453H12 Derma Prevent
 453H10 Derma Clean



Please contact us if you have any further questions
or would like to have more information.

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