

ottobock.



Kenevo

Reclaim your sense of security.



Quality for life

State-of-the art technology

For new safety: Kenevo



Kenevo stands for all that.
How did the product development occur?

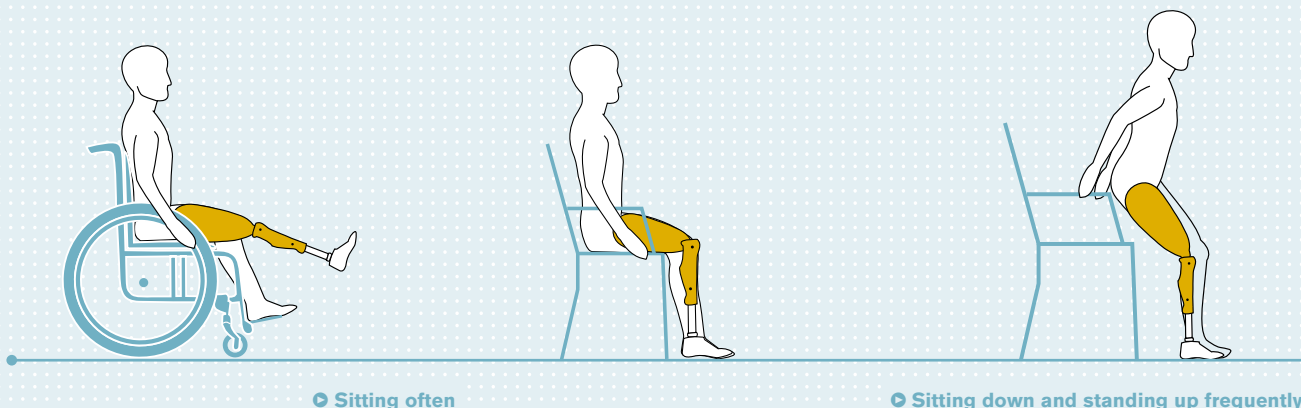
Prosthetists around the world told us that they were looking for an intelligent system for people with lower mobility grades – a system that grows with the abilities that the user gains during rehabilitation, for example, and that adapts just as well when mobility decreases.

Users wanted a knee joint that would support them in their specific movement sequences but with a clear focus: on safety.

Kenevo was inspired by this desire. It is the first prosthetic fitting solution in the world with state-of-the-art technology developed specifically for the needs of users with mobility grades 1 and 2.

Many years of experience with highly technologically sophisticated prostheses influenced the development. That was the foundation on which the Kenevo technology was able to build.

Typical everyday situations for users with reduced mobility



... the solution with a significant emphasis on safety.

... for an enormous increase in independence for users with mobility grades 1 and 2.

... with unique technology that benefits from intelligent solutions and many years of prosthetics experience.

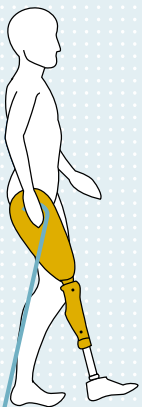


Three activity modes give the leg prosthesis system unprecedented adaptability to the user's needs: if your abilities develop, during rehabilitation for example, you can select a higher activity mode. It is equally possible to limit the mobility of the knee joint again if the user wants greater safety in everyday life.

These activity modes supplement the basic functions, which are always active and intuitive to use and were developed specifically for typical everyday situations.

Kenevo is a leg prosthesis system for people who are especially reliant on accessories to cope with everyday situations. For users who are just beginning their rehabilitation process. For people for whom the focus is on stability and safety.

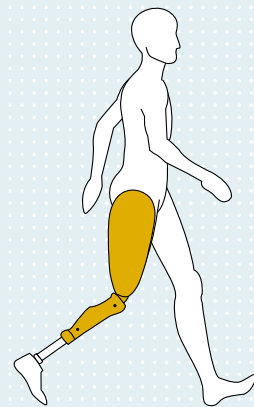
The Kenevo can allow users to cope with everyday situations significantly more independently. It forms the basis for users to be more mobile and independent – so they feel safe again.



◉ Walking with walking aids



◉ Stable standing



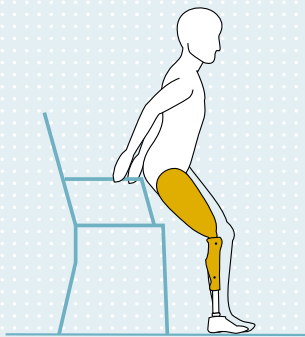
◉ Walking slowly
◉ Variable stride lengths
◉ Walking with small steps in cramped spaces

Unique safety

The basic functions



The Kenevo has basic functions that are always active – independent of the prosthesis adjustment and the activity mode selected. The user uses them intuitively.



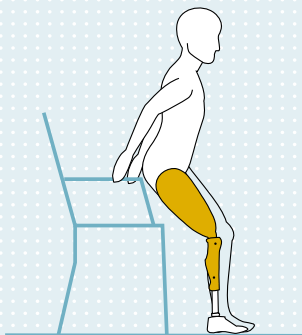
Supported sitting down

Wheelchair function Supported standing up
Standing function Enhanced safety

If the user starts to sit down, the Kenevo detects this automatically with a patented control process. It adjusts the hydraulic resistance so the knee joint will bend in a controlled manner despite the load. The stance phase bending function provides progressive support, i.e. the damping increases as the load increases. The user can also sit down with the leg extended; the knee bends in automatically during sitting. And as soon as the user is sitting, the Kenevo switches to energy saving mode.

Advantages

- Provides a high level of safety and very good balance
- No manual unlocking necessary; both hands are free for support on the armrests or walking aid
- Relieves the contralateral side by shifting load to both legs
- The joint is slightly damped in the flexion direction during sitting



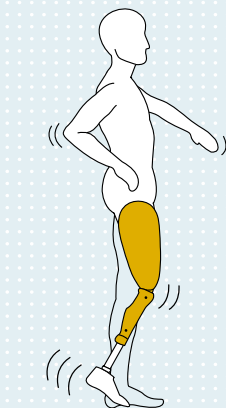
Supported standing up

Supported sitting down Wheelchair function
Standing function Enhanced safety

The Kenevo detects automatically when the user stands up. If the user cannot stand up in a single motion, the Kenevo provides support by locking the joint in the flexion direction (from 45° up to extended prosthesis).

Advantages

- It is possible to place a load on the prosthesis while standing up even before the prosthesis is extended
- The user can rest on the prosthesis if standing up in a single motion is too tiring
- If the user falls backward, the knee joint switches automatically into supported sitting down



Enhanced safety

Supported sitting down Standing function
Supported standing up Wheelchair function

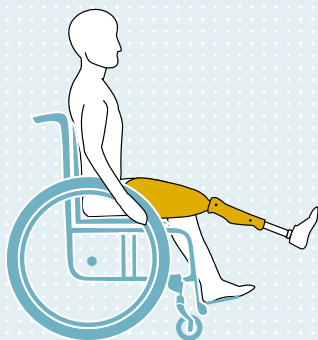
The Kenevo has various safety functions. These include Stumble Recovery Plus: during the swing phase, the Kenevo detects if the user trips. It then switches immediately to higher flexion resistance than the setting; this stumble recovery represents the highest level of safety that is technically possible. A further advantage is real-time gait and motion detection. The Kenevo detects immediately if the user interrupts a motion and switches to higher stance phase flexion resistance in this case as well. In addition, there is a safety mode with high damping: the joint switches to this mode to protect against overheating, or when the battery is empty, for example.

Advantages

- Reduced risk of falling: if the user trips, it is easier to regain his or her balance
- The increased safety can increase the user's confidence in the prosthesis
- Walking backward possible with consistently high level of safety
- Safe even in the event of overheating or if the battery is empty

Wheelchair function

Supported sitting down Supported standing up
Standing function Enhanced safety



When sitting, the user can lock the Kenevo between 45° flexion and a nearly extended leg. This is especially helpful when sitting in a wheelchair if more room is needed between the prosthesis and the ground. The user activates the function by raising the lower leg to the desired position. It is deactivated with the same motion pattern or with slight pressure on the toes.

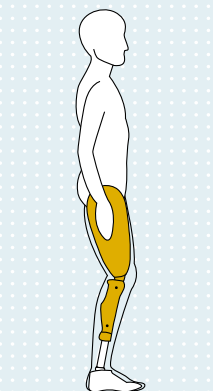
If the function is active, the Kenevo is in energy saving mode. You can switch the wheelchair function on or off as needed with the K-Soft adjustment software.

Advantages

- Wheelchair is easier to manoeuvre thanks to the ground clearance
- Easy to switch on or deactivate temporarily

Enhanced safety

Supported sitting down Wheelchair function
Stance function Supported standing up



The level of safety while standing is consistently high: in activity modes A and B, the knee is locked in the stance phase. The intuitive stance function provides support in activity mode C. With its help the user can bend the joint slightly while standing. This leads to a more natural posture, and the load is taken off the contralateral side while the joint is locked in the flexion direction. The Kenevo switches to the set stance phase flexion resistance when the user starts to move.

Advantages

- In activity modes A and B, standing is completely safe thanks to the locked stance phase
- It is possible to place a load on the flexed prosthesis, allowing a natural, intuitive stance (activity mode C)
- The user can stand on uneven surface and slopes with knee bent (activity mode C)

Unique safety

Select the activity modes individually



Three activity modes give the Kenevo exceptional adaptability. This allows the joint to adjust to the user's individual needs and the further development of his or her abilities, for example during the rehabilitation process.

The people involved in the prosthetic fitting process decide which activity mode best support and benefit the user. For initial classification, it is helpful to ask whether the user can control a freely movable knee joint during the swing phase. If not, this is an argument for the safest mode, mode A. If so, the other activity modes can be considered. You, the prosthetist, make the adjustment with the K-Soft adjustment software.

Mode A: Locked Mode

In this activity mode, the joint is locked and does not release a swing phase. Therefore, locked mode is especially appropriate for users with little control of their residual limbs who mostly only walk short distances indoors and mostly sit.

Advantages

- Maximum safety
- No unexpected movements
- Basic functions allow freedom of movement despite locked knee



Mode B: Semi locked mode without stance phase flexion

The flexion valve is closed throughout the entire stance phase in mode B. The knee joint unlocks for the swing phase. The swing phase release occurs late in the stance phase. This increases safety while walking and meets the special needs of less active users. The Kenevo re-determines the triggering threshold for each step so it always occurs at the right time and independent of the load. We have filed a patent application for this special swing phase release.

The swing phase itself is not controlled, so the Kenevo is appropriate for a maximum speed of up to 3 km/h. On the other hand, the damping at the end of the swing phase extension is controlled electronically. Mode B is especially appropriate for users who have average control over their residual limb, walk short distances and walk slowly.

Advantages

- No residual limb control necessary during the stance phase
- Swing phase easy to release
- Special swing phase release can create a special feeling of safety
- Reliable swing phase release even with small steps and variable load (e.g., when using walking aids such as wheel walkers)
- Greater ground clearance during the swing phase, even when walking very slowly
- Basic functions are active



Mode B+: Semi locked mode with stance phase flexion

This activity mode is like mode B with its special swing phase release but is supplemented with stance phase flexion up to 10° during heel strike. Stance phase extension damping is also adjusted in real time. The prosthetist can switch the stance phase flexion of mode B+ on or off in the K-Soft adjustment software.

Mode B+ is appropriate for the same group of users as mode B. However, in this case the user has sufficient confidence in the prosthesis to walk with stance phase flexion.

Advantages

- Swing phase easy to release
- Special swing phase release can create a special feeling of safety
- Reliable swing phase release even with small steps and variable load (e.g., when using walking aids such as wheel walkers)
- Greater ground clearance during the swing phase, even when walking very slowly
- Basic functions are active
- More physiological gait pattern than in mode B
- Allows walking step over step on moderate slopes



Mode C: Yielding Mode

The user achieves even more natural walking in yielding mode. In contrast to the other activity modes, in this case the stance phase is not locked but exhibits a high level of damping. This supports the user on uneven surface, slopes and stairs. The swing phase can be released earlier, which promotes more dynamic movements. You customise the stance phase flexion damping in advance. As in the other activity modes, the swing phase flexion is not controlled, and the swing phase extension damping is adjusted automatically.

Mode C is appropriate for users who have moderate control over their residual limb, can handle a variety of everyday situations and can walk short to medium distances outdoors.

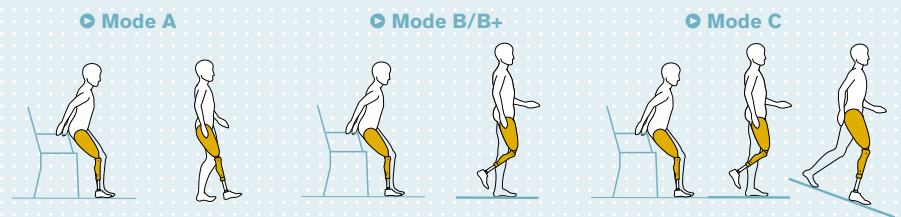
Advantages












- Walking step over step on moderate and steep slopes possible
- Walking step over step down stairs is possible
- Despite greater dynamism, modern technology provides a high level of safety while walking and standing
- More physiological gait pattern than in the other activity modes
- The swing phase releases earlier than in mode B to make the gait more dynamic
- High level of safety when standing with bent knee (intuitive standing function)
- Basic functions are active



The activity modes: an overview

The chart shows the functions of the activity modes in detail. This helps you to select the activity mode corresponding to the user's current abilities. If the user requires a high degree of safety, it is possible to reduce the mobility of the Kenevo. If the user's mobility increases, the Kenevo will actually grow with him or her by increasing the functionality.



	Mode A	Mode B/B+	Mode C
Stance phase		 or 10° flexion	high damping
Swing phase			
Stumble Recovery Plus			
Intuitive stance function			
Supported sitting down		 (all modes)	
Supported standing up		 (all modes)	
Wheelchair function		 (optional in all modes)	

Kenevo

Details



Bluetooth®

Integrated Bluetooth® technology permits straightforward communication with the joint. An existing connection is displayed with an LED.

Electronic control unit

The integrated microprocessor receives and processes the sensor signals and controls the movements of the knee joint in real time.

Inertial motion unit (IMU)

The gyroscope and the acceleration sensors allow the acceleration and position of the Kenevo in space to be measured. Prosthesis control is based on motion analysis and force vector determination.

Carbon fibre frame

In order to withstand the varied demands of everyday life, the frame is made of carbon – an especially strong, high-grade and lightweight material.

Li-ion battery

The lithium-ion battery provides the energy required to control the knee joint. It is located in a protected position in the axis of rotation of the knee joint.

Knee angle sensor

The knee angle sensor measures the knee angle and angular velocity continuously.

Hydraulic unit

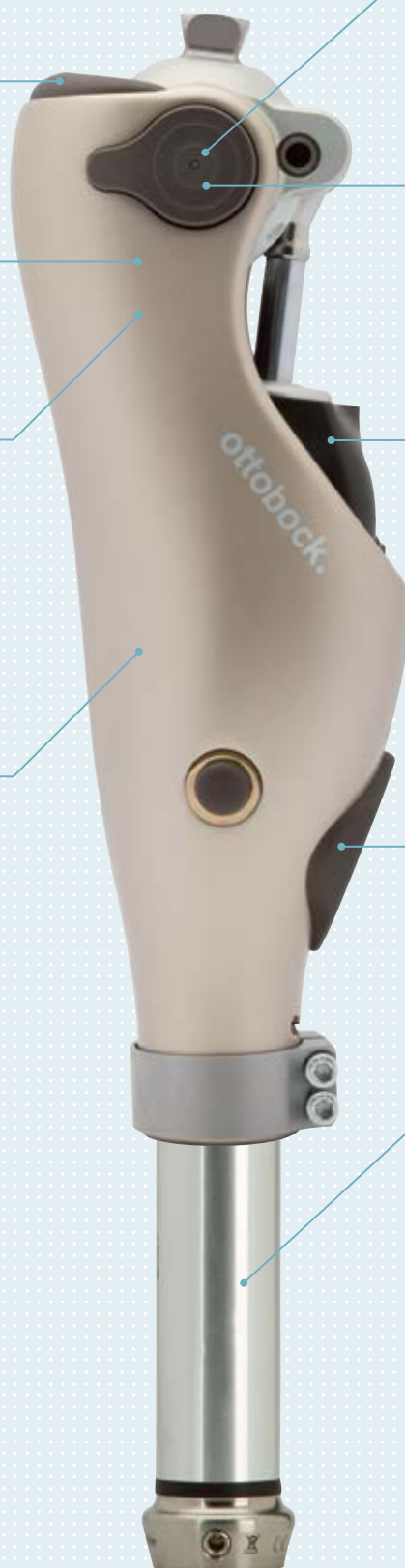
The hydraulic unit is controlled by the microprocessor. It generates the motion resistance, allowing adaptation to the individual needs of the user.

Inductive charging unit

The inductive charger is connected with magnets to the back of the knee joint. This technology permits charging through thin clothing materials.

AXON tube adapter

Additional sensors are integrated into the tube adapter. Besides the ankle moment, these measure the axial force acting on the joint.





Indications and contraindications

As the manufacturer, Ottobock recommends the following indications and contraindications. These and possibly additional indications are evaluated by the prescriber on a case-by-case basis.

Kenevo is especially appropriate for patients who

- can walk up to 3 km/h (no swing phase control)
- require significant safety while walking and standing
- require a high degree of support while sitting down and standing up



“I can imagine that is it initially off-putting to attend therapy regularly. Nevertheless, it is very important and i can only advise everyone to do it.”

Christa

Indications

- Knee disarticulation and transfemoral amputation level leg amputees (unilateral and bilateral)
- Mobility grades 1 and 2
- Maximum body weight: 125 kg / 275 lbs
- Patients who fulfil the physical and mental requirements for perceiving optical/acoustic signals and/or mechanical vibrations

Contraindications

- Amputees with mobility grades 3–4
- Mental condition or living situation that does not allow correct handling of the Kenevo
- Walking speeds above 3 km/h



Warranty and service

The comprehensive warranty package offers your customers guaranteed mobility with no repair costs for 3 years:

- 3-year manufacturer's warranty
- Repairs free of charge*
- Free service inspection in month 24.
- Free service unit during repair and service inspections

Ottobock also offers an alternative 6-year warranty package. The warranty can be extended to 6 years at a later date.

* Superficial damage and damage resulting from improper use, intent, negligence or force majeure are not covered.

Technical data

Kenevo knee joint

Article number	3C60	3C60=ST
Colour	Desert pearl	
Proximal connection	Pyramid adapter	Screw-top connector
Distal connection	Tube clamp	
Weight without tube adapter	915 g	920 g
Prox. system height up to alignment reference point	5 mm	23 mm
Minimum distal system height with 2R17 tube adapter	270 mm	
Maximum distal system height with 2R17 tube adapter	490 mm	
Knee flexion angle	124°	
Frame material	Carbon	
Moisture protection/protection rating	IP22 (protected against dripping water)	
Battery charger	Inductive charging	
Mobility grade	1, 2	
Max. body weight	125 kg	

AXON tube adapter

Article number	2R17
Weight	290 g
Material	Aluminium
Moisture protection	IP22 (protection against dripping water)
Max. body weight	125 kg

The AXON tube adapter is supplied in a standard length and is cut to size with a pipe cutter by the prosthetist. The correct length of the tube adapter is determined using the K-Soft adjustment software.

Components and accessories



All components and accessories for the Kenevo have been designed to work together. This interplay is a basic prerequisite to allow your customers to enjoy the maximum benefits of their leg prosthesis system.

Kenevo knee joint



3C60 with
pyramid adapter



3B60=ST with
screw-top connector

Kenevo protective cover



4X840

AXON tube adapter



2R17

Inductive charger/ AC adapter



4E70



757L16-2

Adapters



4R104=60, 4R104=75



4R57, 4R57=ST



4R41, 4R43, 4R89



4R72=30
4R72=45
4R72=60
4R72=75



4R118



4R119



4R40



4R76



4R78

BionicLink PC/K-Soft



60X5



4X445=*

Prosthetic foot



1H... Single Axis Foot



1S... SACH Foot



1M10 Adjust



1D35 Dynamic Motion



1C30 Trias



1D10 Dynamic foot



1D11 Dynamic foot



1A30 Greissinger plus



1C10 Terion



1C11 Terion K2

Information



647G947

Instructions for use
(qualified personnel)



646D700

Instructions for use
(user)

Kenevo Protective Cover

Attractive protection



The robust protector shields the Kenevo prosthesis system against impacts, the environment and wear. You can shorten it and customise it to the prosthesis wearer. You attach the corresponding distal cap after shortening the protector. This covers the cut edge.

Technical data

Reference number	4X840
Weight	391 g
Material	Plastic
Colour	Champagne/ anthracite

“Dusting, making beds,
cooking, shopping, carrying
bags: I can do many things
with both hands again and
without a walking aid. It is a
wonderful feeling.”

Christa



