

Advanced Prosthetic Knee Technology

Family of products



Quality for life

Ottobock introduced the world to the C-Leg® microprocessor-controlled knee in 1997, and it caused an immediate sensation. Since then the C-Leg has become the most clinically evaluated and studied prosthetic knee in history, with over 40,000 people taking advantage of its proven function and stability and helping to make C-Leg technology the Standard of Care for above-knee amputees.

Over that time, we've continued research and development efforts, and gained a lot of practical experience in microprocessor knees. We have been working toward the day when we could offer an even better solution, and that day is here, with the X3 advanced prosthetic leg. The X3 is the next generation of lower limb prostheses. Easy to fit, even easier to use, this incredibly sophisticated technology opens up a whole new realm of possibilities.

With the X3, Genium, C-Leg, and C-Leg Compact, there's a solution that's right for you. Welcome to the revolution!







X3.

No limits.

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Everything does not fit, missing two topics

and strange in last paragraph, fist column, has // in it.

The result of a collaboration between the US military and Ottobock, the X3 is quite simply the world's most technologically advanced microprocessor controlled prosthetic system.

The X3 was designed for endusers who have a challenging or adventurous lifestyle, or who simply want to keep up with everyday activities, such as showering, hiking, or running to catch a bus.

It offers advanced technology that can transform the way someone walks while also increasing their peace of mind.

Waterproof!

The X3 has undergone stringent waterproof testing. Completely submersible, the X3 allows unprecedented contact with water. Perfect for anyone working near water or for activities such as showering, washing your car, or boating.

The most natural gait possible

An accelerometer and a gyroscope intuitively know where the user's leg is in space, using the same technologies from Wii™ gaming systems and smartphones, for a virtually natural gait. That means less worry about stumbling or falling, and less concentration needed when on the go.

Robust and ready

The X3 is "ruggedized" based on conditions an active duty military member might face and includes an extra-robust protector. That means it can take whatever you can throw at it! // dish/ think up/// it's up to just about anything you can dish challenging terrain you may encounter!

Walk2Run

The innovative Walk2Run mode detects start-and-stop running (such as crossing a street or trying to catch a bus) and automatically increases your swing angle.

Or run, run, run!

Via the remote, the X3 switches into a dedicated running mode with a larger swing angle for running and other sports.

Ascend stairs step over step

Stair ascension is possible due to additional sensory inputs, which allow users to climb stairs step over step with more natural movements.

Cross obstacles more smoothly

Now everyday obstacles like curbs can be stepped right over – supported by a stable, flexed knee when weighted – instead of having to swing the prosthetic leg around.

Walk backwards, forwards ... and more

With Optimized Physiological Gait (OPG) the X3 detects the user's forward and backward motion. As a result, stance will not release when stepping backwards or changing direction, giving users the benefit of safe, multi-directional mobility.

Stand more easily

With its new Intuitive Stance Function, the X3 can tell when the user is standing and automatically resists further flexion. This allows for a natural distribution of body weight while standing, even on inclines and uneven surfaces.

Sit more naturally

X3.

Explore new horizons!

Waterproof. Completely submersible (rated IPX-7)¹.

Battery life of 5 days. More freedom, more peace of mind.

5 additional modes. More choices of activities for the user.

Remote control. Easy and convenient. Includes battery level monitor and step counter.

Inductive charging. Makes charging a snap – and no open charging ports.

Rugged protector. Extra tough cover to withstand rough environments

Knee angle up to 135°. Easier to crouch down or kneel.

...and more fitting possibilities

High weight limit of up to 275 lbs (125 kg). Now larger users and those who often carry or lift heavy loads can also benefit.

A more compact size. Shorter users and those with longer residual limbs are able to take advantage of this technology.

Computer Assisted Alignment (CAA). CAA helps the prosthetist more quickly and accurately align the prosthesis by calculating and visualizing the forces acting on the system. A groundbreaking innovation for fitting success.

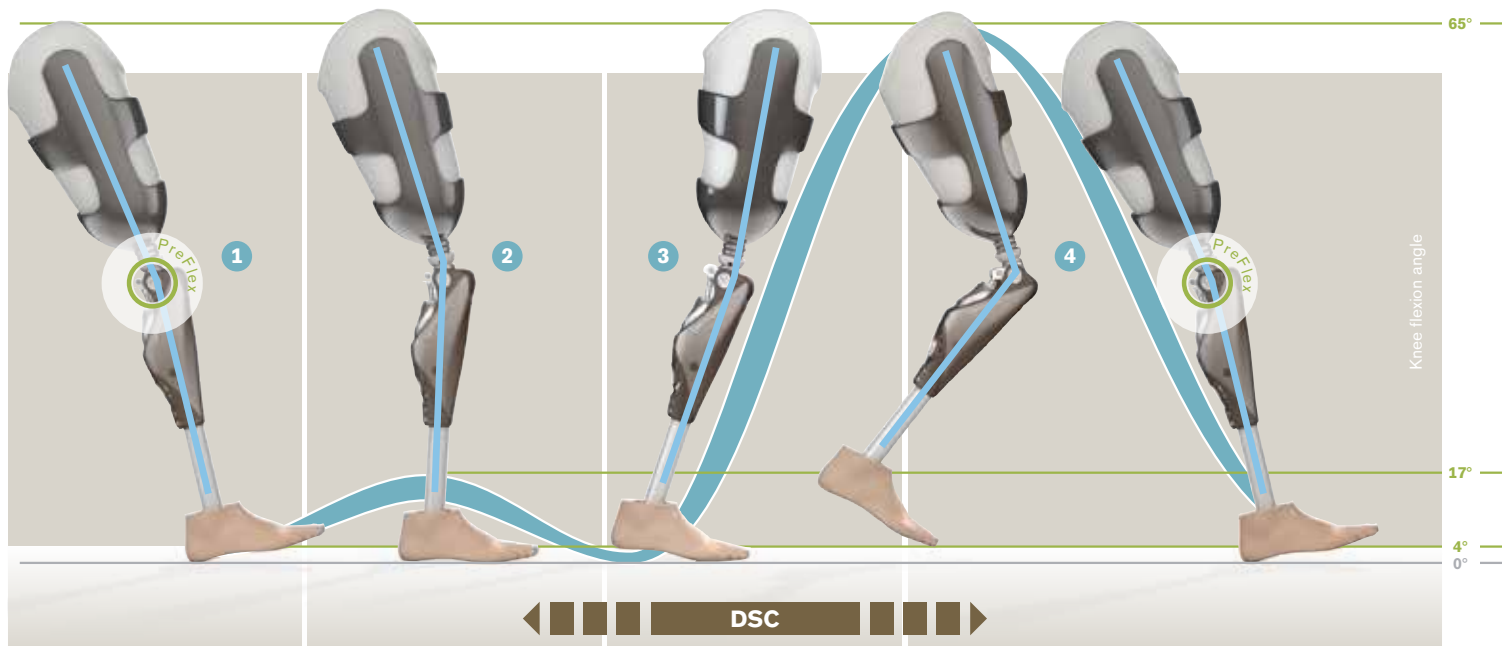
The X3 is appropriate for users who:

- Require the greatest function possible to respond to the physical and emotional demands of their daily life;
- Can benefit from waterproof function*
- Can benefit from Walk2Run function, which immediately switches from walking to running for quick steps;
- Can take advantage of a mute mode to remain inconspicuous;
- Can benefit from a more balanced load on their prosthesis, relaxing their stance and reducing any posture correction;
- Can benefit from the highest degree of intuitive function of their prosthesis, reducing cognitive effort;
- Can benefit from more natural gait, with less stress on the back, the sound side, and the hip on the prosthetic side;
- Can take advantage of more than one activity mode for varied activities such as bicycling or job tasks;
- Can benefit from the flexibility of an extended battery life of up to 5 days without charging;
- Often walk on uneven ground or slopes, or ascend and descend stairs;
- Have community or home activities which require the ability to take quick small steps in crowds, take side-steps, walk backwards, or step smoothly over obstacles with additional security;
- Need to stand for longer periods of time and can take advantage of the Intuitive Stance Function, which offers the needed resistance while weight-bearing (even in a high degree of flexion); or
- Can benefit from a high weight limit of up to 275 lbs. (125 kg).

1. The X3 has been tested and passed the international IPX waterproof specification Level IPX-7 – Protected against water immersion. Immersion for 30 minutes at a depth of up to 1 meter. IPX information accessed 9 February 2012 from the website http://en.wikipedia.org/wiki/IP_Code

Optimized Physiological Gait (OPG)

How does OPG work?



1 Preflex

The OPG maintains a hydraulically controlled, physiological 4° of preflexion of the knee joint at heel strike, allowing the foot to reach full contact more quickly.

2 Adaptive Yielding Control

Intelligent knee flexion (max. 17°, depending on the situation) gives users more efficient, intuitive control of the prosthesis.

3 Dynamic Stability Control (DSC)

The heart of the system: continuous sampling of multiple environmental inputs – including a gyroscope and 2-axis accelerometer – determines the appropriate resistance and release of stance for optimum security.

4 Adaptive Swing Phase Control

Precise control of lower leg pendulum no matter what the walking speed. Also helps to prevent falls.

- Because the knee is flexed it better absorbs shocks and helps limit future orthopedic problems.
- Easy to take off with a quick step or side step.
- Makes slopes and uneven terrain easier to handle, while reducing compensatory movements.

- Supports multi-directional movement, so you can take quick steps – forwards, backwards, and sideways.
- Increased stability when walking backwards.

- Quality of swing phase is unparalleled in other prosthetic knee joints.
- Easier to swing the knee through, helping reduce the risk of stumbles and falls.
- No limits on walking style: quick, slow, irregular – OPG handles it all.

Optimized Physiological Gait (OPG)

OPG takes advantage of several important innovations to provide the most intuitive, natural walking available.



Offers more freedom...

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The Genium Bionic Prosthetic System is the result of extensive research and development efforts as well as over 14 years of practical experience with the C-Leg® prosthesis system. Based on a completely new technology platform and fueled by advances in control technology, the Genium was the first in a new generation of prosthetic legs and provided the technological basis/platform for the X3. If your patient's active life demands more function, but not necessarily a waterproof or extremely rugged system, then the Genium is the right choice.

The Genium microprocessor prosthetic leg offers many of the advantages of the X3, including:

- **Natural walking** through its Optimized Physiological Gait (OPG)
- **Stair ascent** and descent
- Backwards walking
- **Stumble recover** and obstacle functions
- **Intuitive Stance Function** for easier standing
- **Natural Sitting** with reduced resistance
- 5 activities modes for various activities
- **Splash-water resistant (IPX-4)*** No need to worry about a spray or two (rated IPX-4)²
- Battery life of 5 days
- Built-in knee protector
- **Knee angle up to 135°** makes it easier to crouch down or kneel.
- **Remote control.** Easy and convenient. Includes battery level monitor and step counter.
- **High weight limit of up to 330 lbs (150 kg).** Now larger users and those who often carry or lift heavy loads can also benefit.
- **A more compact size.** Shorter users and those with longer residual limbs are able to take advantage of this technology.
- **Computer Assisted Alignment (CAA).** CAA helps the prosthetist more quickly and accurately align the prosthesis by calculating and visualizing the forces acting on the system. A groundbreaking innovation for fitting success.

The Genium is appropriate for users who:

- Can benefit from a more balanced load on their prosthesis, relaxing their stance and reducing any posture correction;
- Can benefit from the highest degree of intuitive function of their prosthesis, reducing cognitive effort;
- Can benefit from more natural gait, with less stress on the back, the sound side, and the hip on the prosthetic side;
- Can take advantage of more than one activity mode for varied activities such as bicycling or job tasks;
- Could benefit from the flexibility of an extended battery life of up to 5 days without charging;
- Often walk on uneven ground or slopes, or ascend and descend stairs;
- Have community or home activities which require the ability to take quick small steps in crowds, take side-steps, walk backwards, or step smoothly over obstacles with additional security;
- Need to stand for longer periods of time and can take advantage of the Intuitive Stance Function, which offers the needed resistance while weight-bearing (even in a high degree of flexion); or
- Can benefit from a higher weight limit of up to 330 lbs (150 kg).

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2. Genium has been tested and passed the international IPX waterproof specification Level 4: Protected against splashing water – water spraying from all angles at 10 liters/minute at a pressure of 80-100kN/m² for 5 min). IPX information accessed 9 February 2012 from the website http://en.wikipedia.org/wiki/IP_Code.
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Confidence in the next step.

NEW! Updated C-Leg brings even more benefits

The Ottobock C-Leg is the proven Standard of Care for transfemoral and higher levels of amputation. Now with optimized swing phase control and improved stumble recovery, the new C-Leg offers more freedom, stability and reliability to meet the challenges of everyday life.

Always thinking about security – so you don't have to

Introduced in 1997, the revolutionary microprocessor that controls the C-Leg receives feedback from its sensors, allowing the knee to recognize which phase of gait the user is in and thus make adjustments to the hydraulic system in real-time. Users can speed up, slow down, and go down stairs step-over-step with the assurance that the C-Leg is there for them.

The latest generation of C-Leg adds:

Improved swing phase control. Users experience easier initiation at swing, with a smoother, more natural movement.

Higher weight limit. 300 lbs (136 kg) Benefits even more users, including those who weigh more or who routinely carry or lift heavy loads. Genium® and C-Leg are rated for the highest weight limits in the category.

Improved stumble recovery. The system sense when the user is in an insecure position and increases resistance – helping to prevent trips and stumbles.

A third mode. Now a third additional mode can be set by the prosthetist for various activities, such as specific job tasks or riding a bike. Switching between modes is as easy as bouncing on the toe – or pressing the wireless remote control.

Adjustable safety mode. The default setting can be adjusted, personalized to the user's preference.

Improved protection. New silicone caps covering the charging and adjustment jacks are now attached to the knee, securing the caps and improving protection from foreign matter and moisture.

Stand at ease A Standing Mode lets the user lock the leg between 7° and 70° using a specific motion pattern. With the leg flexed, less energy is used while washing dishes or standing in line.

The C-Leg is appropriate for users who:

- Want the established industry Standard of Care;
- Currently are or have the potential to be an unlimited community ambulator;
- Can take advantage of a high degree of customization and control of the prosthetic knee;
- Can take advantage of more than one activity mode for varied activities such as bicycling or job tasks;
- Often walk on uneven ground or slopes, or descend stairs;
- Have the ability or potential for long distance walking with varying speeds;
- Are involved in activities requiring a high level of stance phase security as well as efficient swing phase control;
- Need to stand for long periods of time, and thus are able to utilize Standing Mode with a degree of flexion between 7° and 70° while weight-bearing;
- Value the significant body of clinical evidence demonstrating increased security, energy efficiency and cost effectiveness when compared to other prosthetic knees; or
- Can benefit from a weight limit of up to 300 lbs (136 kg).²

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2. The higher weight limit requires tube adapters 2R82=120-240 sizes.

Compact.

Security to count on.



With the C-Leg® Compact, those with lower mobility and higher security needs can also benefit from the most important aspects of C-Leg technology. The Compact offers features such as unprecedented stability and a remote control that enables the user to lock the knee between 0° and 30° for long periods of standing.

The Compact is appropriate for users who:

- Can benefit from the smooth responsiveness and more natural gait possible with a microprocessor-controlled knee;
- Currently are or have the potential to be either a limited community ambulator OR a community ambulator;
- Need a high degree of stance phase stability, but have a limited ability to vary their cadence;
- Are less likely to benefit from activity modes;
- Occasionally walk on uneven ground or slopes, or descend stairs;
- Need to stand for longer periods of time, and can use Standing Mode with a degree of flexion between 0° and 30° while weight-bearing;
- Can benefit from a weight limit of up to 275 lbs (125 kg).

Advanced Microprocessor Knees

At a glance



X3



Genium®



C-Leg®



Compact

	X3	Genium®	C-Leg®	Compact
Mobility level	Recommended for mobility grades 3 through 4	Recommended for mobility grades 2 through 4	Recommended for mobility grades 3 through 4	Recommended for mobility grades 2 and 3
Amputation level	Amputees (knee disarticulation amputation level and higher), including bilateral amputees. People with unilateral hip disarticulation amputation, and patients with hemipelvectomy amputation with good walking ability.			
Not appropriate for	Amputees with mobility grade 1 or 2			
	Amputees with mobility grade 1			
	Amputees with mobility grades 1 or 2			
	Amputees with mobility grade 1 or 4			
	Cognitive ability or living situations that do not allow proper care of microprocessor knees			
User weight	Max. 275 lbs.	Max. 330 lbs	Max. 300 lbs ³	Max. 275 lbs

3. Reduces to 275 lbs when combined with 2R81=*; reduces to 220 lbs when combined with 2R82=110. The higher weight limit requires tube adapters 2R82=120-240 sizes.



Product Info	X3	Genium	C-Leg®	Compact
Knee flexion angle	Max. 135°	Max. 135°	Max. 125°	Max. 125°
Operating time with fully charged battery	Approx. 5 days	Approx. 5 days	Approx. 40-45 hours	Approx. 40-45 hours
Adjustable activity modes	5	5	2	0
Standing mode	Intuitive Stance Function	Intuitive Stance Function	Can be set between 7° and 70° via the remote	Can be set between 0° and 30° via the remote
Software (included)	Xsoft 1.2	Bluetooth technology integrated into the knee joint X-Soft with Computer Assisted Alignment	Bluetooth interface C-Soft version 2.4	Bluetooth interface C-Soft version 2.4
Clinician education	Online prerequisite. (If Genium certified, no additional education required.)	Online training course or optional one-day classroom course for hands-on learning, or a Cooperative Care appointment with patient		
Compatible prosthetic feet	Recommended waterproof feet: Triton Lo 1C63, Triton HD 1C64	1C60 Triton, 1C61 Triton Vertical Shock, 1C62 Triton Harmony®, 1C63 Triton Low Profile, 1C64 Triton Heavy Duty, 1C31 Trias+, 1D35 Dynamic Motion, 1C40 C-Walk, 1E56 Axtion, 1E57 LoRider, 1M10 Adjust	1C60 Triton, 1C61 Triton Vertical Shock, 1C62 Triton Harmony®, 1C63 Triton Low Profile, 1C64 Triton Heavy Duty, 1C31 Trias+, 1D35 Dynamic Motion, 1C40 C-Walk, 1E56 Axtion, 1E57 LoRider, 1M10 Adjust	1M10 Adjust, 1C31 Trias+, 1D35 Dynamic Motion, 1C40 C-Walk, 1E57 LoRider (for low clearance)
Warranty and service	free inspection at 12 mo./24 mo.	3-year standard, with free service at 24 months 6-year extended, with free service at 24 and 48 months	3-year standard, with free service at 24 months 5-year extended, with free service at 24 and 48 months	3-year standard, with free service at 24 months



Ready?

Take your next great step.

If you're an amputee

Talk with your prosthetist or visit our website at www.ottobockknees.com to request a free, no-obligation tryout of a Genium or C-Leg.

If you're a clinician

Talk with your sales representative, or call us at 800.328.4058. Our expert staff is available to answer any questions and provide clinical and technical information.

About reimbursement

Ottobock has reimbursement guides to assist with the documentation required when submitting a claim for an Ottobock microprocessor knee system. The reimbursement tools can be found at www.ottobockus.com/reimbursement.



Would you like to find out more?

For more information on tryouts, questions related to training and Ottobock contact persons, please visit the Ottobock Knees website:

www.ottobockknees.com

