The Multi-Award Winning Integrated Limb System

blatchford

> “Blatchford has combined a compassionate approach to patient needs with huge ambition and exceptional systems engineering. In doing so, they have created the first ever integrated lower limb that behaves like a human leg, and produced a platform technology that signifies the beginning of the next generation of prosthetics.”

Dr Dame Sue Ion DBE FREng, Chair of the MacRobert Award judging panel

LiNX | INTEGRATED LIMB SYSTEM

Within the human body our bones, muscles and joints work seamlessly together, enabling us to walk and navigate our surroundings without having to think about it or consider our next move.

Linx has been designed to deliver an experience that mimics the incredible and complex structure of the human leg by actively sensing and analysing data on the user movement, activity, environment and terrain providing a coordinated stream of instructions to the hydraulic support system.

The result is a walking experience that is closer to nature than ever before, giving the user the freedom and confidence to get on with their life.

MacRobert Award Winner 2016

GERMAN DESIGN AWARD WINNER 2017

MEDICAL DESIGN EXCELLENCE AWARDS® 2017 GOLD WINNER

MEDICAL DESIGN EXCELLENCE AWARDS® 2017 BEST IN SHOW

“After many years, I can now enjoy going for a walk with my wife.” John

Precision Performance

Integrated sensors continually analyse data, adjusting the hydraulic technology to seamlessly align the leg for the next step. This integrated and coordinated limb response ensures fast adjustment times and easy navigation of slopes and steps, allowing the user to think about where they are going, rather than how they are going to get there.[1]

Down Ramps

Linx delivers controlled ramp descent with different response levels for steep and shallow slopes. The knee and foot work together to optimise the rate of plantar-flexion and dorsi-flexion. The knee resistance is simultaneously adapted by introducing an intermediate resistance. On intermediate ramps, Linx offers a braking effect that secures the whole body for safe descent.

Up Ramps

The knee and foot work in unison to dorsi-flex quickly. The toe remains dorsi-flexed for safe and efficient swing-through, while the heel stiffens to support the knee flexion. If stationary on a ramp, the toe will remain in dorsi-flexion to help reduce the extension moment on the knee, allowing a more upright posture for a more comfortable standing position.

Speed and Terrain

Additional synergies gained from simultaneous knee and foot programming, combined with the optimised control unit and hydraulic system means smoother transitions between speeds, and effortless progression over varied terrain.

Superior Comfort

Amputees can face health issues long after amputation, with lower limb amputees being 2-3 times more likely to develop osteoarthritis compared to the general population.[2]

Long term musculoskeletal health depends on the replication of the dynamic and adaptive qualities of natural limb movement, and Linx is the world's first lower limb prosthesis to incorporate a completely integrated response system to serve this user need.

Ergonomic Design

The ergonomic design of Linx provides the user with a sense of balance in the body, as the weight distribution has been designed to mimic that of the human leg.

Standing Support

Standing support at the knee and foot allows a subtle redistribution of body weight, making standing for longer periods feel both comfortable and natural, minimising tissue stress and physical and cognitive demand. The support can be released either on toe-off or by simply moving the foot.

Supported Sitting

Linx supports the body weight to control descent onto a seat. The foot dorsi-flexes so it can be placed safely under a chair in crowded spaces, like on the morning commute to work. If sitting with Linx extended the foot plantar-flexes automatically in a more natural way.

Biomimetic Hydraulic Technology

Hydraulics work to absorb energy and minimise tissue stress, resulting in a more comfortable socket interface. This in turn encourages the user to adopt a more symmetrical gait pattern, reducing the chance of long term limb disease.[3,4]

“The first time I wore Linx it felt a lot smoother than anything I had used before.” Paul


“Wearing Linx, you stop thinking about what’s next that day, because you don’t have to worry.” Paul

Exceptional Safety

The varying levels of stance support that Linx provides helps to increase the user's confidence and independence, reducing the risk of stumbles or falls to help ensure more balanced limb loading for greater long term health and protection. Linx provides optimal stance support, whether walking in a crowded environment, on uneven terrain, slopes, steps or when standing. This unique combination of the integrated stance support and hydraulic technology within Linx contribute to the user's safety.

Controlled Stance Support

Supportive resistance throughout stance phase provides optimal stability for walking with greater safety and less effort on a variety of surfaces.

Standing Support

Maximum resistance stabilises knee and foot on both flat and sloped terrain, encouraging better posture and balanced loading to relieve pressure on the sound limb and lower back.

Stumble Recovery

Stance resistance engages during swing phase extension to ensure knee stability, should the user stumble. Under such circumstances the flexion resistance dynamically increases to provide enhanced stumble recovery.

Dynamic Stair Descent

With immediate support from the first step, knee resistance progressively increases with knee flexion for enhanced control and safety when descending stairs.

Dynamic Slope Descent

The integrated knee and foot response allows the user to walk leg-over-leg on intermediate slopes.

Next Generation Prosthetic Technology

- Varying levels of stance resistance to optimise safety at all times:
  - Standing support

    Maximum resistance stabilises the knee and foot, on both flat and slopes, encouraging better posture and balanced loading to relieve pressure on the sound limb and lower back.
  - Supported sitting

    Progressive hydraulic resistance ensures greater support and control allowing the user to sit down with safety, confidence and more balanced loading across both limbs.
  - Controlled stance support

    Supportive resistance throughout stance phase provides optimal stability for walking with greater safety and less effort on all-terrain.
  - Stumble recovery

    Stance resistance engages during swing phase to ensure knee stability should the user stumble.
  - Dynamic stair descent

    With immediate support from the first step, knee resistance progressively increases with knee flexion for enhanced control and safety when descending stairs.
  - Dynamic slope descent

    The integrated knee and foot response allows the user to walk leg-over-leg on intermediate slopes.
- Situational Awareness

  Integrated sensors continuously collect data on the user, activity and terrain to seamlessly adapt the limb's response.
- Biomimetic Hydraulic Technology

  By considering the natural function of the limb and replacing its structure through a unique combination of design elements, Endolite biomimetic hydraulic technology provides greater safety and a more natural walking experience.
- Cycling Mode and Fixed Angle Flexion Lock Mode
- Knee Flexion to 130°
- Intuitive Programming Software
- Lithium Ion batteries with up to 3 days life
- Battery Life Indicator and Low Power Mode
- Sandal toe footshell

Specifications

LINX | INTEGRATED LIMB SYSTEM

Max. User Weight:	125kg
Activity Level:	(2), 3, (4*)
Size Range:	22 to 30
Component Weight:	2.6kg†
Build Height:	470mm to 565mm
Heel Height:	10mm

Suitable for outdoor use

Order Example

Product Code	Size	Side	Width*	Spring Set	Sandal Toe
LINX	**25**	**L**	**N**	**3**	**S**

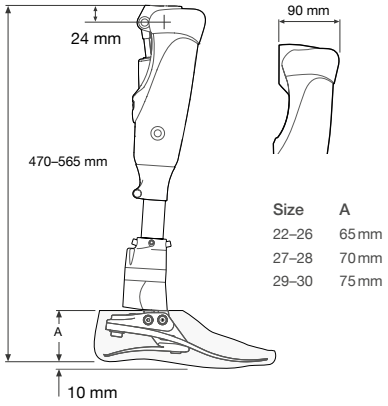
*Narrow (N) and Wide (W) available for sizes 25-27 only.
For dark tone add suffix D.
Example: foot size 25, left, narrow, spring rating 3, sandal toe.

Adaptors

Rotating Pyramid with Shift	**239017**
Non-rotating Pyramid with Shift	**239089**
Rotating Female Pyramid with Shift	**189128**
M36 Threaded Adapter	**239092**

Accessories

Long Pylon Kit	**339965**
Alignment Wedge	**940093**
Endolite Programming Tablet	**019179**
Charger Extension Cable	**239098**



Size	A
22–26	65 mm
27–28	70 mm
29–30	75 mm

Activity Level 3 has the ability or potential for ambulation with variable cadence. Typical of the community ambulator who has the ability to traverse most environmental barriers and may have vocational, therapeutic, or exercise activity that demands prosthetic utilization beyond simple locomotion. Activity level 2 and 4* users will require softer or stiffer springs as appropriate for the individual user rather than as shown in the spring selection guide.

Activity	User Weight								
	44-52	53-59	60-68	69-77	78-88	89-100	101-116	117-125	kg
	100-115	116-130	131-150	151-170	171-195	196-220	221-255	256-275	lbs
3	1	2	3	4	5	6	7	8	Spring set

*Max user weight 100kg and always use one higher spring rate. †Component weight shown is for a size 26cm without foot shell.

References

1. Abdulhasan ZM, Scally AJ, Buckley JG. Gait termination on a declined surface in trans-femoral amputees: Impact of using microprocessor-controlled limb system. Clinical Biomechanics. 2018.
2. Hungerford DS, Cockin J. Fate of the retained lower limb joints in Second World War amputees. J Bone Joint Surg. 1975; 57(1):111.
3. A.R. De Asha, R. Munjal, J. Kulkani, J.G. Buckley. Walking speed related joint kinetic alterations in trans-tibial amputees: impact of hydraulic 'ankle' damping. Journal of Neuro Engineering and Rehabilitation (JNER) 2013; 10:107
4. Moore R. Effect on Stance Phase Timing Asymmetry in Individuals with Amputation Using Hydraulic Ankle Units. JPO: Journal of Prosthetics and Orthotics. 2016; 28(1):44-8.

Patents: 6719807, 8574312, 8740991, 8641780, 5893891, 6517585, 6719806, 8403997, 7985265, 2790614, 6139558
US Application 2014/0379096
JA Application 2014/546632

Follow Blatchford: | blatchford.co.uk
@BlatchfordGrp | 01256 316600
/BlatchfordGrp | customer.service@blatchford.co.uk

blatchford

Endolite is a Blatchford Group Company. Registered address, Chas A Blatchford & Sons Ltd, Unit D, Antura, Kingsland Business Park, Basingstoke, RG24 8PZ, United Kingdom. **t:** +44 (0) 1256 316600 **f:** +44 (0) 1256 316710

CE

An annual visual inspection is recommended. Check for visual defects that may affect proper function. Maintenance must be carried out by competent personnel. Before carrying out any new activities of daily living, please check with your clinician whether specific training is required.

M00456 Iss4b 08/18. Information correct at time of print.