

Categorie Premio
Accessibilità
Sostenibilità
Qualità della vita
Product Name

KX06

Designer

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Description of innovation social values

- product category
- formal and functional features
- problems solved by innovation
 - user
 - field of application

The perfect prosthesis would provide comfort, proprioception, normal gait, good posture, acceptable cosmesis and efficient use of energy. Until all of these parameters are fulfilled there is great scope for development and innovation in Prosthetics.

Using the philosophies emerging from biomimetic studies and our work with various university research departments; internationally, we are building into each new design an evolutionary change that brings us closer to biological effectiveness. One of the most recent innovations is in the design of the KX06 knee.

In human stance the main contributing factor to stance stability is the geometry of the joint centres rather than the resistance in the joints. Uni-axial knees with hydraulic controls rely on the cylinder resistance for stability. The KX06 alternatively uses a combination of geometric and hydraulic stabilisation during the stance phase.

Description of technical features

- operations
- technology

During standing the amputee can comfortably rely on the position of the KX06 linkages to provide a geometric lock. As the knee moves into flexion the yielding resistance of the hydraulic control comes into play and supports a smooth transition through to toe off. Once it reaches toe-off position the second big innovation in the KX06 comes into play: the knee geometry assists the amputee to overcome the extension spring in the hydraulic unit and provides an effortless knee flexion in preparation for swing phase. Since it requires much less force to initiate than a uni-axial knee amputees universally comment that KX06 makes walking feel more natural.

Dimensions

230 mm long, 1200 g weight and lowest build height of 30 mm to end of residual knee

Materials

Made from 4 links designed in geometry to enhance stability made of Aluminium alloy 7068 high strength and light weight, with bronze bearings. The CaStance is hydraulic low viscosity fluid in a cylinder made of several alloys including stainless steel, titanium and special seals

Certifications

ISO 10328 P7 (A145) approved, Complies to EN 22523 for Medical Device Directive, Manufactured as per ISO 13485 and BSI Audited suitable for active amputees for all terrain function carrying payload.

Benefits for environment

All material used are recyclable and naturally produced
No need for use of electronic and batteries in this case hence no waste and recycling at end of life as well as relies on amputee voluntary control to provide optimum function and independence in mobility in all terrain and condition the user finds in their process of rehabilitation and restoration to normal function

Benefits for human being

First application of Biomimetics "The genius of man may make various inventions but it will never discover a more beautiful, a more economical, or a more direct one than nature's, since in her inventions nothing is wanting and nothing is superfluous" da Vinci
This knee naturally encourage increased loading on the prosthetic side reducing the demands placed on the sound limb specially when walking down slopes and running. The devices also offer enhanced swing phase accomodating various cadence. Through mimicking the elegant sufficiency of nature's forms the amputee can get ever closer to a perfect balance between the body and the artificial limb.