

Computerised (Microprocessor Controlled) knee



Description

Microprocessor Controlled Knees (MPK) feature an on-board micro-processor which receives feedback from sensors in the joint and foot. The micro-processor uses the received data to constantly adjust the knee in real time to match the user's walking characteristics. In this respect MPKs are a type of enhanced hydraulic system where the computer operates control valves in the knee to restrict or allow the flow of hydraulic fluid.

Micro-processor knees can adjust to different walking speeds, terrain and situations and may also exhibit 'stumble recovery' features.

Advantages

- More natural gait.
- Ability to adjust to different cadences.
- Assists in stumble recovery.
- May have more than one mode of operation.
- Requires less effort to walk & less cognitive input once learned.

- Superior control on uneven surfaces& ramps.
- The ability to descend stairs step over step.
- Powers down safely and gracefully.
- Supports weight bearing in stand to sit transition.

Disadvantages

- Requires frequent (daily) charging.
- Heaviest and largest of all knee types.
- Does not pair well with full length cosmetic covers.
- May have a limited number of foot options.
- Sensitive to environmental conditions (dust, vibration, salt or fresh water, chemicals, excess heat or cold, strong magnetic fields).
- Kneeling can cause damage.
- Very steep learning curve initially.
- For established amputees: requires significant commitment to gait re-education.
- May require trained & certified practitioner to make adjustments.
- Requires occasional return-to-manufacturer servicing.
- Very expensive.
- Requires notification to insurer for insurance purposes.