

Examples of Lower Extremity Prosthetic Components for K3 to K4 Patients

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K3 Prosthetic Knee Units

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Mauch S&S

- Passive hydraulic fluid knee unit

Pros

- Provides variable cadence for community ambulation
- Provides some resistance to falling
- More durable, able to withstand most weather conditions
- Does not need an electrical source for power

Considerations

- Does not respond as quickly as a microprocessor to changes in gait speed
- Does not provide powered knee flexion for ascending step over step
- Maximum weight 300lbs (136kg)



Rheo

- Microprocessor knee

Pros

- Immediately senses change in cadence
- Can be programmed for varying resistance

Considerations

- Maximum weight 275lbs (125kg)
- Weather considerations- cannot get wet
- Battery lasts 24-48 hours, requires recharging



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Ottobock C-Leg



- Microprocessor knee

Pros

- Immediately senses change in cadence
- Can be programmed for varying resistance
- Activity mode allows for adjustable resistance by the user (such as for bicycle riding or running)
- Stumble recovery

Considerations

- Weight maximum 300lb (136kg)
- Battery life 40-45 hours
- Weather limits- cannot get wet

Ottobock Genium

- Microprocessor Knee



Pros

- Step up capability- using hip extension
- Locked position when not sensing motion gives added stability
- Switches to free swing when the femur is horizontal- allows leg to fall to 90 degrees when user is sitting down
- User can walk backwards

Considerations

- Maximum weight 330lbs (150kg)
- Weather considerations: splash resistant, not submergable
- Battery life 5 days
- Increased cost



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Ottobock 3R80

- Rotary hydraulic knee

Pros

- Adjustable resistance during flexion and extension
- Gradually adjusts to variable cadence
- Durable in all weather conditions

Considerations

- Weight maximum 330lbs (150kg)



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Ossur Total Knee

- Polycentric hydraulic knee

Pros

- Durable
- No battery charging required
- Polycentric design allows knee to fold under socket for long transfemoral amputees.
- Gradually adjusts to variable cadence

Considerations

- Weight maximum 275lb (125kg)



K 3-4 Level Ankle and Foot Units

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Endolite Echelon

- Passive hydraulic ankle

Pros

- can change resistance for matched dorsiflexion and plantarflexion
- Manual adjustment allows prosthetist to change resistance against dorsi and plantarflexion separately
- Also pictured is Echelon VT which provides added vertical shock absorption and ankle rotation (pictured with split keel foot unit)



Considerations

- Maximum weight 100kg
- More ankle movement sacrifices stability
- Cannot run or jump with this unit



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Ossur Talux

•Single Keel Dynamic Response foot

Pros

- Carbon fiber material provides energy storing response
- Multiaxial
- Single keel provides more stability.
- Polyurethane bumper allows for some eversion and inversion.
- Foam middle compresses during stance phase to improve rollover (yellow arrow)
- Plantar strap limits dorsiflexion (blue arrow)

Considerations

- Weight maximum 325lbs, (147 kg)



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Freedom Highlander

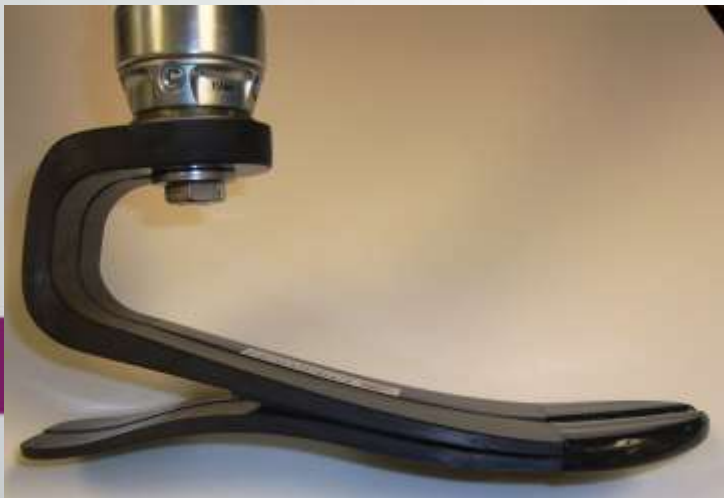
- Split Keel Dynamic Response Foot

Pros

- Carbon fiber material provides energy storing response
- Split Keel provides increased inversion and eversion flexibility, but increases instability
- Available units can accommodate users of up to 500lbs

Considerations:

- Weight maximum 365 lbs (166kg)



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Freedom Highlander

Example of split keel inversion and eversion flexibility



Please click to activate video

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Ossur Vari-flex with EVO

- Split Keel Dynamic Response Foot

Pros

- Carbon fiber material provides energy storing response
- Split Keel provides increased inversion and eversion flexibility, but increases instability
- Low profile option available for patients with longer residual limbs

Considerations:

- Weight maximum 365 lbs (166kg)



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Freedom Renegade

Single keel dynamic response foot

Pros

- Carbon fiber provides energy storing components
- Extra folds provides shock absorption and increased reactivity for running

Considerations

- Weight maximum 365 lbs (166kg)



Ossur Ceterus ankle

• Air pressurized rotating ankle unit

Pros

- Allows for rotational motion at the ankle
- Adjustable rotational resistance
- Available in low profile style for long residual limbs or to accommodate for a knee unit
- Can be used with different foot styles
- Vertical shock pylon for shock absorption



Low profile style



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Ossur Cetarus ankle

Rotating ankle



Click to activate

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Ottobock C-walk

- dynamic response foot

Pros

- Shaped to allow for smoother rollover
- Springs to cushion at end range

Considerations

- Weight maximum 220lbs (100kg)



Endolite Elite 2

- Dynamic response foot

Pros

- Split keel for inversion/eversion flexibility
- Independent carbon foot pieces for vertical shock absorption and loading

Considerations

- Weight maximum 365lbs (166kg)



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Disclaimer

This list is not meant to be all inclusive, but rather to provide examples of the types of components that can be used in a prosthesis.

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