09-L0000-06

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Reviewed: 08/27/26

Revised: 09/15/26

Subject: Lower Limb Microprocessor-Controlled Prosthetics

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Position Statement	Billing/Coding	Reimbursement	Program Exceptions	Definitions	Related Guidelines
Other	References	Updates			

NOTE: This Medical Coverage Guideline addresses microprocessor-controlled or power knee and microprocessor-controlled powered ankle-foot.

DESCRIPTION:

There are over 100 different prosthetic knee designs currently available. The choice of the most appropriate design depends on the patient's underlying activity level. For example, the requirements of a prosthetic knee in an elderly, largely homebound individual will be quite different than a younger, active individual.

In general, key elements of a prosthetic design involve providing stability during both the stance and swing phase of the gait. Prosthetic knees also vary in their ability to alter the cadence of the gait, or the ability to walk on rough or uneven surfaces. In contrast to simpler designs that are designed to function optimally at one walking cadence, fluid and hydraulic-controlled devices are designed to allow the amputee to vary their walking speed by matching the movement of the shin portion of the prosthesis to the movement of the upper leg. For example, the rate at which the knee flexes after "toe-off" and then extends before heel strike depends in part on the mechanical characteristics of the prosthetic knee joint. If the resistance to flexion and extension of the joint does not vary with gait speed, the prosthetic knee extends too quickly or too slowly relative to the heel strike if the cadence is altered. When properly controlled, hydraulic or pneumatic swing phase controls allow the prosthetist to set a pace that is adjusted to the individual amputee, from very slow to a race walking pace.

Hydraulic prostheses are heavier than other options and require gait training; therefore, these prostheses are generally prescribed to athletic or physically fit individuals. Other design features include multiple centers of rotation, referred to as "polycentric knees". The mechanical complexity of these devices allows engineers to optimize selected stance and swing phase features.

Microprocessor-Controlled (computerized) Prosthetic Knees

Microprocessor-controlled (computerized) prosthetic knees have been developed, including the Intelligent Prosthesis (IP) (Blatchford, United Kingdom), the Adaptive (Endolite, England), the Rheo Knee® (Ossur, Iceland) and the C-LEG®, Genium™ Bionic Prosthetic System, and the X2 and X3 prostheses (Otto Bock Orthopedic Industry, Minneapolis, MN) and Seattle Power Knees (3 models include Single Axis, 4-bar

and Fusion, Seattle Systems). These devices are equipped with a sensor that detects when the knee is in full extension and adjusts the swing phase automatically, permitting a more natural walking pattern of varying speeds. For example, the prosthetist can specify several different optimal adjustments that the computer later selects and applies according to the pace of ambulation. In addition, these devices (with the exception of the IP) use microprocessor use control in both the swing and stance phases of gait The C-LEG Compact provides only stance control. By improving stance control, such devices may provide increased safety, stability, and function; for example, the sensors are designed to recognize a stumble, stiffen the knee, and avoid a fall. Other potential benefits of microprocessor-controlled knee prostheses are improved ability to navigate stairs, slopes, and uneven terrain and reduction in energy expenditure and concentration required for ambulation. In 1999, the C-Leg was cleared for marketing by the Food and Drug Administration (FDA) through the 510(k) process. Next-generation devices such as the Genium Bionic Prosthetic system and the X2 and X3 prostheses use additional environmental input (eg, gyroscope and accelerometer) and more sophisticated processing that are intended to create more natural movement. One improvement in function is step-over-step stair and ramp ascent. They also allow the user to walk and run forward and backward. The X3 is a more rugged version of the X2 that can be used in water, sand, and mud. The X2 and X3 were developed by Otto Bock as part of the Military Amputee Research Program.

Powered Knee Prostheses

The Power Knee™ (Össur, Iceland), which is designed to replace muscle activity of the quadriceps, uses artificial proprioception with sensors similar to the Proprio Foot to anticipate and respond with the appropriate movement required for the next step.

Microprocessor-Controlled Ankle-Foot Prostheses

Microprocessor-controlled ankle-foot prostheses are being developed for transtibial amputees.These include the Proprio Foot® (Ossur) and the iPED (developed by Martin Bionics LLC and licensed to College Park Industries), Meridum (Ottobock), Freedom Kinnex 2.0 (Proteor) and the Elan Foot (Blatchford). Sensors in the feet determine the direction and speed of the foot's movement, a microprocessor controls the flexion angle of the ankle, allowing the foot to lift during the swing phase and adjust to changes in force, speed, and terrain during the step phase. The intent of the technology is to make ambulation more efficient and prevent falls in patients ranging from the young active amputee to the elderly diabetic patient. The Proprio Foot® and Elan Foot are microprocessor-controlled foot prosthesis that are commercially available at this time, and is a class I device that is exempt from 510(k) marketing clearance. Information on the Össur website indicates the use of the Proprio Foot® for low- to moderate-impact for transtibial amputees who are classified as level K3 (ie, community ambulatory, with the ability or potential for ambulation with variable cadence).

Powered Ankle-Foot Prostheses

In development are lower-limb prostheses that also replace muscle activity to bend and straighten the prosthetic joint. For example, the PowerFoot BiOM® (developed at the Massachusetts Institute of Technology and licensed to iWalk) is a myoelectric prosthesis for transtibial amputees that uses muscle activity from the remaining limb for the control of ankle movement. This prosthesis is designed to propel the foot forward as it pushes off the ground during the gait cycle, which in addition to improving efficiency, has the potential to reduce hip and back problems arising from an unnatural gait with use of a passive prosthesis. This technology is limited by the size and the weight required for a motor and batteries in the prosthesis.

According to the manufacturers, microprocessor-controlled prostheses are considered a class I device by the U.S. Food and Drug Administration (FDA) and is exempt from 510(k) requirements. This classification does not require submission of clinical data regarding efficacy but only notification of FDA prior to marketing. FDA product codes: ISW, KFX.

POSITION STATEMENT:

A microprocessor-controlled or power knee **meets the definition of medical necessity** when **ALL** of the following criteria are met:

- The member has a demonstrated need for long distance ambulation at variable rates (i.e., use of the limb in the home or for basic community ambulation is not sufficient to justify provision of the computerized limb over standard limb applications) OR has a demonstrated need for regular ambulation on uneven terrain or for regular use on stairs (i.e., use of the limb for limited stair climbing in the home or employment environment is not sufficient evidence for prescription of this device over standard prosthetic application); **AND**
- The member has the physical ability, including adequate cardiovascular and pulmonary reserve, for ambulation at faster than normal walking speed; **AND**
- The member has adequate cognitive ability to master use and care requirements for the technology.

A microprocessor-controlled or power knee **does not meet the definition of medical necessity** when the above criteria are not met.

A microprocessor-controlled or powered ankle-foot is considered **experimental or investigational**. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

BILLING/CODING INFORMATION:

HCPCS Coding:

L5827	Endoskeletal knee-shin system, single axis, electromechanical swing and stance phase control, with or without shock absorption and stance extension damping
L5856	Addition to lower extremity prosthesis, endoskeletal knee-shin system, microprocessor control feature, swing and stance phase, includes electronic sensor(s), any type
L5857	Addition to lower extremity prosthesis, endoskeletal knee-shin system, microprocessor control feature, swing phase only, includes electronic sensor(s), any type
L5858	Addition to lower extremity prosthesis, endoskeletal knee shin system, microprocessor control feature, stance phase only, includes electronic sensor(s), any type
L5859	Addition to lower extremity prosthesis, endoskeletal knee-shin system, powered and programmable flexion/extension assist control, includes any type motor(s)
L5969	Addition, endoskeletal ankle-foot or ankle system, power assist, includes any type motor(s)
L5973	Endoskeletal ankle foot system, microprocessor controlled feature, dorsiflexion and/or plantar flexion control, includes power source

LOINC Codes:

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for lower limb microprocessor.

Documentation Table	LOINC Codes	LOINC Time Frame Modifier Code	LOINC Time Frame Modifier Codes Narrative

Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim.
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim.
Physician operative note	28573-4	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim.

REIMBURSEMENT INFORMATION:

Refer to section entitled **POSITION STATEMENT**.

PROGRAM EXCEPTIONS:

Federal Employee Program (FEP): Follow FEP guidelines.

State Account Organization (SAO): Follow SAO guidelines.

Medicare Advantage Products:

No National Coverage Determination (NCD) was found at the time of the last guideline reviewed date.

The following Local Coverage Determination (LCD) was reviewed on the last guideline reviewed date: Lower Limb Prosthetics (L33787) located at cms.gov.

If this Medical Coverage Guideline contains a step therapy requirement, in compliance with Florida law 627.42393, members or providers may request a step therapy protocol exemption to this requirement if based on medical necessity. The process for requesting a protocol exemption can be found at Coverage Protocol Exemption Request.

DEFINITIONS:

Cadence: the rate at which a person walk, expressed in steps per minute. The average cadence is 100 - 115 steps/min.

RELATED GUIDELINES:

Orthotics 09-L0000-03

Prosthetics 09-L0000-05

OTHER:

Note: The use of specific product names is illustrative only. It is not intended to be a recommendation of one product over another, and is not intended to represent a complete listing of all products available.

Adaptive

C-Leg

Genium™ Bionic Prosthetic System

Intelligent Prosthesis

iPED

Microprocessor-controlled knee prosthesis

Otto Bock C-LEG Knee-Shin System

PowerFoot BiOM®

Power Knee™

Proprio Foot®

Rheo Knee

Seattle Power Knees

X2 and X3 prostheses

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COMMITTEE APPROVAL:

This Medical Coverage Guideline (MCG) was approved by the Florida Blue Medical Policy and Coverage Committee on 08/27/26.

GUIDELINE UPDATE INFORMATION:

02/15/04	New Medical Coverage Guideline.
03/15/05	Scheduled review; no change in coverage statement.
04/01/05	2nd quarter HCPCS coding update; added K0670.
01/01/06	Annual HCPCS coding update; added L5858, and removed K0670.
03/15/06	Scheduled review; no change in coverage statement.
05/15/07	Scheduled review; reformatted guideline; coverage position changed from investigational; added criteria for medical necessary.
05/15/08	Schedule review; no charge in position statement; references updated.

01/01/10	Annual HCPCS coding update: title change to include other lower limb microprocessor-controlled prosthetics; added new code L5973.
05/15/10	Scheduled review; position statement unchanged; descriptive information added for microprocessor-controlled ankle/foot prosthetics; references updated.
05/15/12	Scheduled review; position statement revised; Program Exception added for Medicare Advantage products; references updated.
01/01/13	Annual HCPCS coding update: added L5859.
01/01/14	Annual HCPCS coding update: added L5969. Updated Program Exceptions section.
06/15/18	Review; revise position statement. Updated description and references.
06/15/19	Review; no change in position statement. Updated references.
01/01/20	Annual HCPCS code update. Added code L2006.
06/15/20	Review; no change in position statement. Updated references.
09/15/22	Review; no change in position statement. Updated references.
09/15/23	Review; Added “or power” to position statement. Deleted experimental or investigational statement for powered knee. Updated references.
09/15/25	Review; no change in position statement. Added code L5827. Updated references.
08/15/26	Revision: Code L2006 removed (refer to policy 09-L0000-03).
09/15/26	Review; no change in position statement. Updated references.