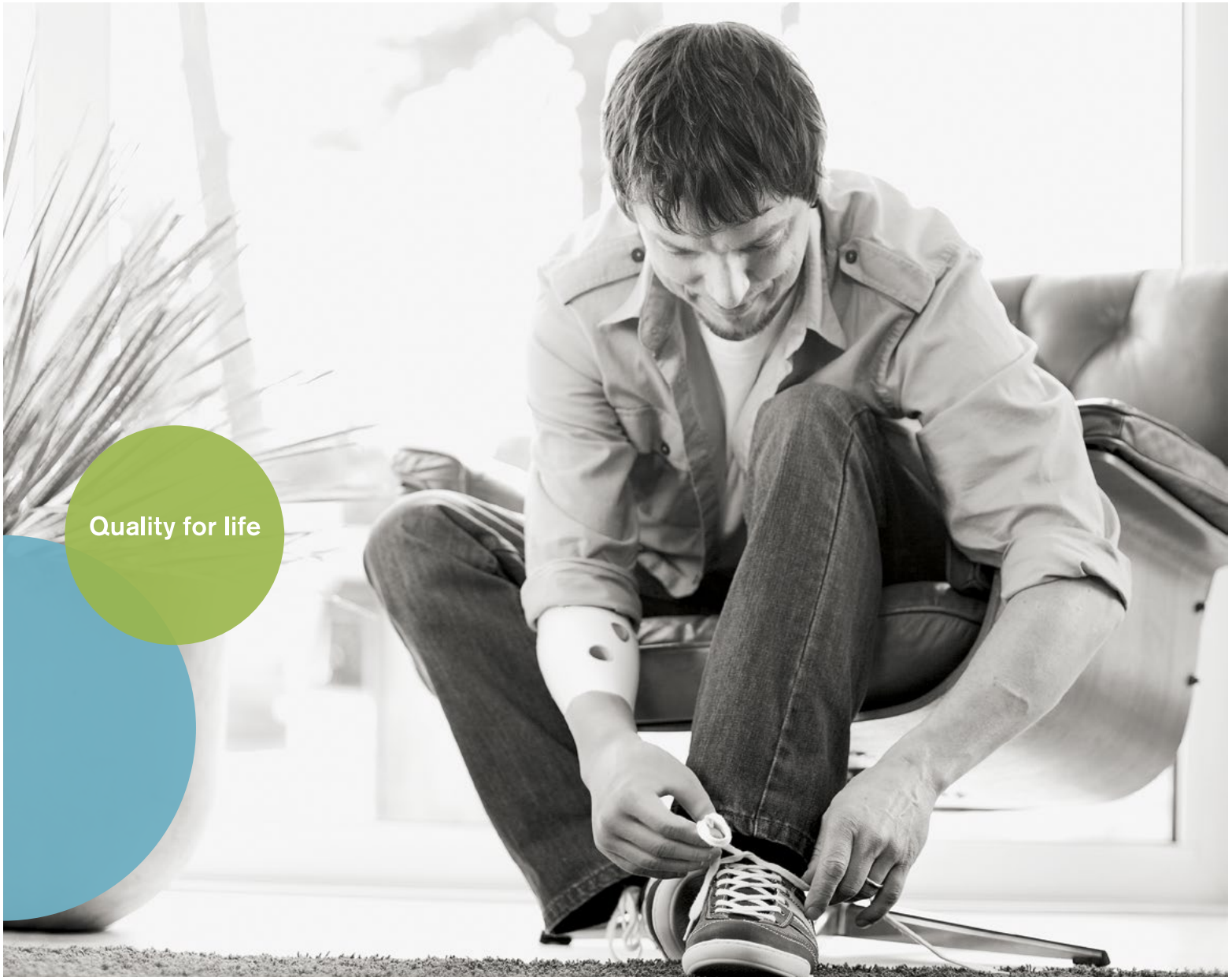


# Axon-Bus Prosthetic System (APS) Reimbursement Reference Guide

Below elbow components – Michelangelo, AxonHook, AxonRotation

Quality for life



## Axon-Bus® Prosthetic System – Below Elbow

### Features and Benefits

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#### **Michelangelo Hand Articulating Fingers:**

Michelangelo has four compliant fingers with anatomically correct alignment of the metacarpophalangeal joints (MCP) joints.

- Each finger has its own axis (MCP flexion/extension). Due to the mechanical design of the finger axes, the fingers abduct, spreading apart when the hand opens and they move together (adduct) as the hand closes.
  - Using nature as a model, the fingers were replicated in great detail.
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#### **Michelangelo Hand Active Thumb:**

Michelangelo has a fully-electronic multi-positional thumb.

- The sweeping motion of the thumb drive allows Opposition and Lateral grip patterns.
  - Rotating the thumb outward creates a palm so that additional movement options are possible.
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#### **Michelangelo Hand Functions:**

Michelangelo® has complex gripping kinematics with 7 functional grip types:

- Lateral Power Grip allows for secure grasping and handling of objects
  - Lateral Pinch allows one to easily hold thin objects such as credit cards.
  - Open Palm allows a flat hand position is achieved for holding plates and bowls.
  - Tripod Pinch allows precise grasping of small objects.
  - Power Grip for grasping large objects
  - Neutral Position allows a natural position at rest. Hand will not open while walking and the thumb is tucked in like a natural hand. The hand automatically positions itself in neutral. The user does not need to think about the hand position.
  - Finger Adduction and Abduction allows fingers to spread out as hand opens.
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#### **AxonWrist: Oval Integrated Wrist Joint on the Michelangelo Hand and Axon Hook**

- AxonWrist is comprised of two components; the AxonFlexion adapter and the AxonRotation adapter.
  - The AxonFlexion adapter is integrated into the hand and it provides flexion (75°) and extension (45°); movement is progressively dampened with 8 ratchet positions.
  - The AxonRotation adapter provides unlimited pronation and supination (360°) with 24 ratchet positions.
  - The flexion and rotation adaptors include a quick disconnect mechanism for the hand and socket. Together they provide a multi-axial movement pattern which helps avoid unnatural compensatory movements and thereby promotes a healthy, natural body posture.
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#### **AxonHook**

- Slim compact design allows user greater visibility of the handled object
  - High degree of fine proportional control
  - AxonWrist functionality is included, which allows for reduced compensatory movements.
  - Light weight with heavy duty titanium fingers
  - Durable polyurethane (rubber like) coating supports user in grasping small and complex shaped objects.
  - Automatically returns to Neutral Position when signal is relaxed. This function also can be used for soft gentle grasping of fragile objects.
  - Hook tips can be replaced by the practitioner if broken
  - Fully digital communication with prosthesis
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#### **AxonRotation**

- Automatic Neutral Positioning – hand starts from same position and doesn't have to remember in which position the hand was in.
  - Faster Rotation Speed allowing for smooth, precise and delicate motions
  - Proportional Control
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#### **APS Microprocessor Communication System:**

- Axon-bus is derived from safety-related bus systems in the aviation and automobile industries.
  - The AxonMaster control unit is mounted inside the socket and it contains the main microprocessor control feature. It controls the Axon-Bus communication process. This includes receiving and processing myoelectric signals from the electrodes and managing communication between the components.
  - For Below Elbow applications there are 4 microprocessors in addition to the AxonMaster Microprocessor Control, including 2 in the Michelangelo hand, and 1 each in the AxonMaster and AxonEnergy Integral.
  - The APS is programmed via integrated Bluetooth Module
  - APS evaluates muscle signals and optimum electrode adjustment and documents all recorded user data.
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#### **APS Programming:**

Adjustments to the prosthesis components can be performed through Bluetooth® data transfer using the AxonSoft program. The Bluetooth® module is in the control unit. Four control options and five switching modes are offered. This allows for multiple fitting options, such as:

- Proportional control (opening and closing speed as well as grip force is proportional to the muscle contraction),
  - Digital control (constant speed, gripping force is proportional to the duration of the signal,
  - One or two electrodes, or three switch options (short and long co-contraction, impulse switching, and long open signal).
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#### **APS Battery**

- Two AxonEnergy Integral (battery) options are available; an 11.1 Volt, 1500 mAh system and a smaller 11.1 Volt, 1150 mAh system. Both systems consist of a charging receptacle, Li-Ion battery, and the Axon-Bus® cable. The components are fabricated into the socket and permanently connected to each other.
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#### **APS Charger**

- The AxonCharge Integral magnetically connects to the charging port which is integrated into the socket.
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#### **Michelangelo PVC Glove**

- The AxonSkin gloves come in six different color variations. In addition to a physiological appearance, the new gloves feature excellent durability.
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## Axon-Bus<sup>®</sup> Prosthetic System

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