Product Brochure

A new generation of fully articulating myo electric hands

RSLSTEEPER
Listening to you, working with you


bebionic

bebionic Contents

bebionic Hand	4 - 5
bebionic Grip Patterns	6 - 7
bebionic Cosmetic Glove	8 - 9
bebalance Programming Software	10 - 11
bebionic System Components	12 - 13
Technical Information	14 - 15
Prescription Guides	16 - 18
Customer Service/Technical Support	19

bebionic Hand

Combining ease of control with elegance of design, the *bebionic* hand has been created with the principles of durability, performance and simplicity firmly in mind. The naturally compliant fingers and thumb provide a secure platform to perform everyday tasks using common grip patterns.

With two manually adjusted thumb positions; opposed and non-opposed, the hand has an in-built sensor to detect the position selected to achieve the desired grip pattern. The opposed position accommodates tripod grip and power grip, whilst the non-opposed position automatically changes mode to the key grip and finger point options.

Featuring 4 functional grip patterns allowing amputees to perform everyday activities such as eating, drinking, writing, typing, turning a key in a lock, using an ATM and picking up small objects. Fully proportional, the user can control the speed of the hand to master delicate tasks such as manipulating an egg or holding a filled polystyrene cup as easily as crushing an empty soda can.

bebionic Hand

On board microprocessors constantly monitor the position of the digits to ensure that grip sequences are accurate every time, with no loss of control or need to reset.

The fingers are of an extremely robust construction utilising high impact thermoplastic, with the joint connections locked with titanium pins. These materials have reduced weight whilst maintaining a high degree of strength and durability.

Electronics within the hand include an auto grip feature that senses if a gripped item is slipping, and will automatically provide additional power to maintain a secure and safe hold. A further benefit in weight distribution has been achieved by placing the motors in the palm of the hand.

Foldaway finger links allow the fingers to flex freely providing natural motion and allowing the user to push up to 90kg through the hand to aid in standing from a seated position, a feature especially useful for the bilateral amputee.

With a life-like and anatomical design, the fingers move together as the hand closes so that objects such as a fork or piece of paper can be gripped naturally between the fingers.

A soft palm area has been incorporated providing significant benefits in assisting with object grasp and protecting the internal mechanisms against impacts. The compliant material used also suppresses motor noise, which is further reduced when the silicone cosmetic glove is fitted.

bebionic Grip Patterns

Each articulated digit is driven by an individual actuator allowing movement and grip in a natural and coordinated way. This also provides compliant and conformable grips around numerous complex shapes.

Tripod Grip

When the thumb is opposed, the hand closes into a tripod grip with index and middle fingers meeting the thumb. Ring and index finger will continue to close until they meet resistance or the close signal ceases. This type of grip allows users to pick up, hold and manipulate a variety of everyday objects such as car keys, coins, jar lids and pens and pencils.

Power Grip

Also with the thumb opposed, all four fingers close into the palm until they meet resistance or the close signal ceases. When fingers are approaching a fully closed position, the thumb drives in to the fingers for additional grip security. This pattern allows round objects such as a ball or a piece of fruit to be held securely without exerting excessive force. This grip can also provide a handshake. Cylindrical shaped objects such as bottles, home & garden utensil handles are also held easily.

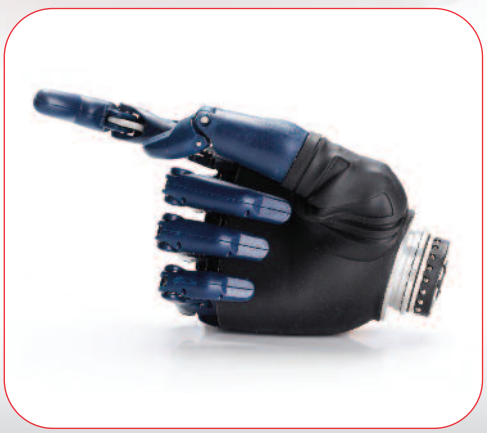
Hook Grip

In a partially closed power grip position, the hook grip is achieved. This is ideal for carrying a shopping bag or briefcase.

bebionic Grip Patterns

Key Grip

In the non-opposed thumb position, the four fingers partially close. The thumb then closes onto the side of the index finger. The thumb position may be raised and lowered without moving the other four fingers allowing for release, capture or reposition of the object being gripped. This pattern is ideal for carrying paper or letters, using a spoon and for holding a thin flat object such as a plate, a credit card or a key.



Index Point

Also with the thumb in the non-opposed setting, the user can automatically move to a finger point position without having to manually position the fingers. Middle, ring and small fingers are closed against the palm and the thumb is driven against the index finger. Once this position is selected, typing on a keyboard or input pad, pressing a bell or a button can be achieved. This position also puts the hand into the lowest width profile and is the recommended position for dressing.

bebionic Glove

Cosmesis for the *bebionic* hand is completed with our silicone glove. Available for both male and female in 19 skin shades, plus a futuristic jet black option. The gloves include our unique *True Finish*™ micro pigmentation for additional depth and realism.

A multi layered blended silicone has been specially developed to achieve the optimum balance of durability and flexibility whilst maintaining a soft feel to the material. Compliance of the hand and grip integrity has been further enhanced with the inclusion of reinforced soft finger tips inside the glove.

bebionic Glove

To maximise tear and puncture resistance, the *bebionic* glove features a full length and seamless integral strengthening matrix. This highly flexible mesh allows the glove to move freely over the hand, significantly reducing friction during operation which greatly improves hand performance and battery life. The matrix also ensures that no lubrication is required when donning the glove which may interfere with motor or gearbox function and efficiency.

Custom made silicone nails are fitted to suit both males and females, providing the high level of cosmetic finish normally associated with custom silicone products.

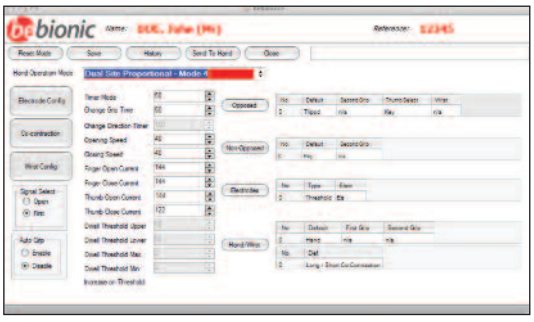
Additional highlights such as palm, knuckle and joint detailing are provided as standard further enhancing the natural appearance.

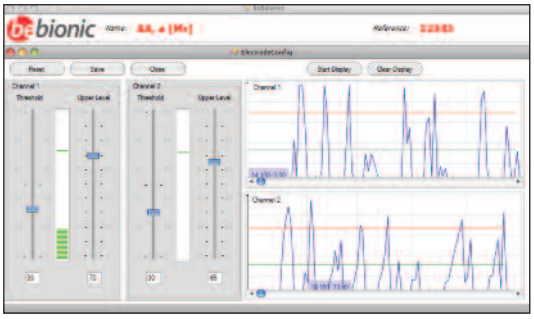
bebionic Programming Software

In order to maximise the benefits of the *bebionic* system, a control software package, *bebalance*, has been developed to allow the Prosthetist to customise the functions of the hand to suit individual user needs.

This extremely versatile system enables wireless programming and monitoring of the *bebionic* hand, giving flexibility in system set up and management.

6 pre programmed control strategies are currently available – a training mode, 3 single site and 2 double site options.





bebionic Programming Software

The training mode provides the user with the opportunity to test numerous hand functions. Once the most suitable control strategy, electrode setting and performance criteria are agreed, the information is wirelessly downloaded to the hand. The data is saved within the system and can be retrieved at a later date for modification if required.

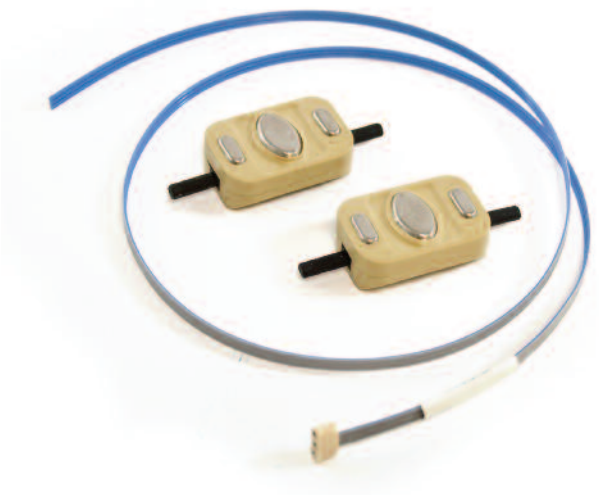
Through the software, the following elements may be simply controlled and adjusted as required:-

- **Active Grips and priority**
- **Threshold of hand operation**
- **Control strategy (mode of operation)**
- **Grip selection**
- **Speed**
- **Open/close electrode**
- **Electrode protocol**
- **Grip strength/battery life**
- **Mode change and data storage**
- **System upgrades**

bebionic System Components

A comprehensive range of system components is available from RSLSteeper to complete the *bebionic* limb build.

Two battery options are available, a 2200mAh internal and a 1300mAh split cell internal. The split cell battery may be used in long stump/wrist disarticulation applications where there is limited space with the forearm. These high performance lithium polymer cells supply the necessary power requirements for optimum performance of the *bebionic* system.



RSLSteeper electrodes provide both 50Hz and 60Hz filtering and are supplied with lamination and thermoforming fabrication blanks. Electrode cables are available in 300mm, 600mm and 1000mm lengths. In addition to standard control options such as electrodes, switches or Force Sensitive Resistors (FSR's) may also be used.

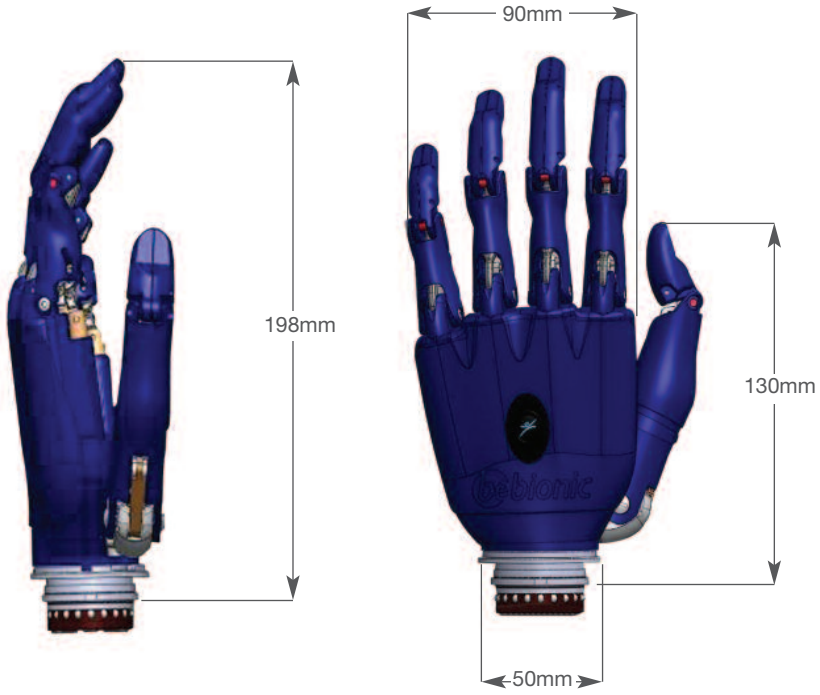
bebionic hands are supplied with four wrist options including an electric quick disconnect wrist, a standard friction wrist, studded hand plates in ½ x 20 and M12 threads and a short friction wrist to accommodate long stump/wrist disarticulation applications.

Above elbow components are also available from RSLSteeper. Please contact us for your copy of our upper limb prosthetics components catalogue - also available to download at **www.rslsteeper.com/prosthetics/upper-limb-products**

bebionic System Components

bebionic Technical Information

Principal Dimensions



Palmar circumference (no glove)	220mm
Palmar circumference (with glove)	250mm
Maximum Opening – thumb opposed (thumb to index finger)	90mm
Thumb Swing Through Angle (opposed to non-opposed)	68°

Performance Specification

Maximum Power Grip	75N
Maximum Tripod Grip	34N
Maximum Key Grip (restricted)	15N
Minimum time to open/close: Power Grip	1.90 secs
Minimum time to open/close: Tripod Grip	0.80 secs
Minimum time to close: Key Grip	1.70 secs
Minimum time to open: Key Grip	1.50 secs
Maximum static load: Hook Grip	32kg
Maximum load individual finger – Hook Grip	16kg
Finger tip extension load	6kg
Maximum safe vertical load taken through knuckles	90kg

bebionic Technical Information

Physical Specification

Part number	Description	Build Height (incl. wrist module)	Weight
BBM775LQD	*bebionic* hand with electric quick disconnect wrist – left	160mm	539g
BBM775RQD	*bebionic* hand with electric quick disconnect wrist – right	160mm	539g
BBM775LFW	*bebionic* hand with friction wrist hand plate – left	164mm	495g
BBM775RFW	*bebionic* hand with friction wrist hand plate – right	164mm	495g
BBM775LSW	*bebionic* hand with short wrist – left	120mm	515g
BBM775RSW	*bebionic* hand with short wrist – right	120mm	515g
BBM775LEU	*bebionic* hand with M12 stud – left	143mm	512g
BBM775REU	*bebionic* hand with M12 stud – right	143mm	512g
BBM775LNA	*bebionic* hand with ½ x 20 UNF stud – left	143mm	510g
BBM775RNA	*bebionic* hand with ½ x 20 UNF stud – right	143mm	510g
BBG775**/E*	*bebionic* glove	N/A	380g

Voltages and current limits†

Operating voltage	7.4V nominal
Operating voltage range	6.0V – 8.4V
Maximum current supply	5.0A
Capacity of smallest battery	1300mAh
Maximum current draw of hand	5.0A

†Batteries have been cyclically tested and as an example, give typically 1200 Tripod Grip cycles on the 1300mAh battery (BBI=1300) and 3200 cycles on the larger 2200mAh battery (BBI=2200). Other grip patterns may require more energy.

Prescription Guide/ Order Form - Trans Radial

bebionic Hand with Quick Disconnect Wrist - 1 or 2 Site Electrodes

***bebionic* Hand with EQD**
BBM775**L**/**R**QD

L qty R qty

Quick Disconnect Wrist Assembly

QDAWA =50 qty

Electrode

SEA200 qty

Power option 1

Split Cell Internal Battery 1300mAh

BBI=1300 qty

Battery Charger

BBCBI qty

Power option 2

Internal Battery 2200mAh

BBI=2200 qty

Battery Charger

BBCBI qty

Electrode Cable
300mm, 600mm or 1000mm

ECA=300 qty

ECA=600 qty

ECA=1000 qty

***bebionic* Glove**
BBG775

Male Female

Skin Shade (E0 - E18): qty

Jet Black (E20): qty

Colour Swatch - E24658: qty

Optional Extended Warranty Plan: Year 2 BBW0002 qty Year 2+3 BBW0003 qty

Client information:

Facility Name:

Facility Address:

Email Address:

Contact Name:

Order Number:

Shipping Instructions:

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Prescription Guide/ Order Form - Trans Radial & Wrist Disarticulation

bebionic Hand - Short Wrist & Friction Wrist - 1 or 2 Site Electrodes

***bebionic* Hand with Short Wrist**
BBW775**L**/**R**SW

L qty R qty

***bebionic* Hand with Friction Wrist**
BBM775**L**/**R**FW

L qty R qty

50mm Friction Wrist Unit
C12810 qty

Power option 1

Split Cell Internal Battery 1300mAh
BBI=1300 qty

Battery Charger
BBCBI qty

Power option 2

Internal Battery 2200mAh
BBI=2200 qty

Battery Charger
BBCBI qty

Electrode
SEA200 qty

Electrode Cable
300mm, 600mm or 1000mm

ECA=300 qty | ECA=600 qty | ECA=1000 qty

***bebionic* Glove**
BBG775

Male ☐ Female ☐

Skin Shade (E0 - E18): ____ qty

Jet Black (E20): qty

Colour Swatch - E24658: qty

Optional Extended Warranty Plan: Year 2 BBW0002 qty Year 2+3 BBW0003 qty

Client information:

Facility Name:

Facility Address:

Email Address:

Contact Name:

Order Number:

Shipping Instructions:

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Prescription Guide/ Order Form - Trans Radial

bebionic Hand with Threaded Stud - 1 or 2 Site Electrodes

bebionic **Hand with Threaded Stud**

L R

qty 1/2" x 20 TPI - BBM775**L**/**R**NA qty

qty M12 - BBM775**L**/**R**EU qty

Friction Wrist Housing 50mm

1/2" x 20 TPI - NHD55110 qty

M12 - NHD55110-M12 qty

Electrode

SEA200 qty

Power option 1

Split Cell Internal Battery 1300mAh

BBI=1300 qty

Battery Charger

BBCBI qty

Power option 2

Internal Battery 2200mAh

BBI=2200 qty

Battery Charger

BBCBI qty

Electrode Cable

300mm, 600mm or 1000mm

ECA=300 qty

ECA=600 qty

ECA=1000 qty

bebionic **Glove**

BBG775

Male Female

Skin Shade (E0 - E18): qty

Jet Black (E20): qty

Colour Swatch - E24658: qty

Optional Extended Warranty Plan: Year 2 BBW0002 qty Year 2+3 BBW0003 qty

Client information:

Facility Name:

Facility Address:

Email Address:

Contact Name:

Order Number:

Shipping Instructions:

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