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bebionic small

User guide

Introduction

The manual has been updated last on: 2017-04-10.

The bebionic small hand provides 14 different grip patterns, allowing the user to have a more complete device to assist them in their day to day life. The hand has two selectable thumb positions: opposed and non-opposed.

Opposed places the thumb in opposition to the fingers on the hand, allowing grips like Tripod and Power.

Non-Opposed places the thumb parallel with the fingers of the hand and allows grips like Key and Finger Point.

Opposed



Non-Opposed



Factory Settings

The hand is supplied preset in Mode 4. This provides two input operation with proportional control of grip and speed. Speed and grip force are set to maximum.

To alternate between the default and alternative grip pattern, an OPEN OPEN signal must be applied (i.e. the hand must be fully opened, the signal relaxed and then a second open signal supplied). To alternate between the primary grip pattern table and secondary grip pattern table, press the Program Switch for less than two seconds. The Auto Grip feature is turned off.

Factory setting grips -

If your hand has been reprogrammed prior to delivery individual settings will vary.

Program Switch

A Program Switch is provided on the back of the hand. This has four functions;

1. Switch the hand ON and OFF

A single press for approximately three seconds will switch the hand OFF. A single press for more than two seconds will switch the hand ON.

2. Alternate between the primary and secondary grip patterns

When the hand is switched ON, a single press of less than two seconds will alternate between the primary and secondary grip patterns. This will be accompanied by a short beep and vibration (if activated on bebalance).

3. Enable / disable the in-hand bluetooth module

With the hand switched ON, a single press for more than six seconds will enable the bluetooth module. A double beep/vibrate will indicate connection has been made. Pressing the switch again for more than two seconds or disconnecting the power to the hand will disable the bluetooth module.

4. Enter / exit glove mode as follows

With the hand switched OFF, press the switch until the thumb begins to drive in. Then release the switch. For more information please see page 20.

Primary Opposed

Default - Tripod

Alternative - Power

Primary Non-Opposed

Default - Key

Alternative - Finger Point

Secondary Opposed

Default - Active Index

Alternative - Tripod

Secondary Non-Opposed

Default - Column

Alternative - Mouse



Grips

Opposed - Thumb in opposition to the fingers



Tripod

When the thumb is opposed, the hand closes into Tripod Grip with index and middle fingers meeting the thumb. Ring and little fingers continue to close until they meet resistance or the close signal stops. 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.



Power

With the thumb opposed, all four fingers close into the palm until they meet resistance or the close signal stops. When fingers are approaching a fully closed position, the thumb drives in to cover the fingers for additional grip security. This pattern allows round objects such as a ball or a piece of fruit to be held securely. This grip can also provide a handshake. Cylindrical shaped objects such as bottles, home and garden utensil handles are also held easily and securely.



Finger Adduction

The fingers of the bebionic hand move together naturally as the fingers close. This allows the user to securely grip thin objects, such as cutlery or a toothbrush, between the fingers to achieve function in a different plane. Finger Adduction is most functional with the hand in Power Grip but can also be achieved with the hand in Key Grip and Pinch Grip.



Hook

With the thumb in opposed position, a partially closed Power Grip provides Hook Grip. This is ideal for carrying a shopping bag or briefcase. Hook Grip can also be achieved by closing the fingers from the relaxed hand position.

SERIOUS WARNING

The bebionic hand **MUST NOT** be used to operate a firearm



Active Index

With the thumb opposed Active Index Grip will grasp the handle of an object with the middle, ring and little fingers and secure the grip with the thumb. The index finger will then close – this may be positioned over the lever of the device held such as a spray bottle, it also offers the ideal finger position for typing. The index finger is under independent user control and may be positioned accordingly. To exit Active Index, an open signal will fully open the index finger before the other fingers and thumb release their grip.



Pinch

The thumb only contacts index finger and is used for the fine manipulation of objects. To achieve this grip it is necessary for the thumb to be manually repositioned by the practitioner/technician so that the thumb only contacts the index finger.



Precision Closed

This grip can be used in situations similar to the Precision Open Grip, but where extended fingers would be obstructive, such as working at a desk. Initially the middle, ring and little fingers close into the palm. The thumb moves to the midpoint of its range and pauses. The Index is then active and under user control. (To achieve this grip it is necessary for the thumb to be manually repositioned by the practitioner/technician so that the thumb only contacts the index finger.)



Precision Open

With the thumb opposed, the index finger meets the static thumb allowing the user to pick up and manipulate small objects. When this grip is selected and a close signal is applied, the thumb closes to the midpoint of its range and pauses. The index is then active and under user control. The middle, ring and little fingers remain extended. (To achieve this grip it is necessary for the thumb to be manually repositioned by the practitioner/technician so that the thumb only contacts the index finger.)

Grips

Non-Opposed - Thumb is parallel with the fingers



Key

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.



Finger Point

With the thumb in the non-opposed setting, the user can move to Finger Point position. The middle, ring, and little fingers close against the palm and the thumb moves against the middle finger. With this grip, typing on a keyboard or input pad, pressing a bell or a button can be achieved.



Open Palm

With the thumb in the non-opposed position the hand may be fully opened to provide a flat palm suitable for carrying a tray or a plate.



Column

This grip moves the thumb into the palm from a non-opposed position. The fingers then close over the thumb to provide a fixed column that can be used as a way to push heavier objects or larger buttons and switches. Column is also the recommended grip for dressing, as the thumb is kept out of the way.



Mouse

The thumb and little finger close to hold the side of the mouse, with the middle and ring fingers providing stability. The index finger closes on to the mouse button and then backs off to provide the button press. Each close signal will give a mouse click whilst an open signal will release the mouse.



Relaxed Hand

The thumb is set to the non-opposed position and partially driven in toward the palm. All the fingers are driven to a slightly flexed position.

Applying a further signal will drive the fingers into Hook Grip for a carrying position.

Switching Grip Patterns

The first grip pattern available, in each operating mode, should be the grip you will use most frequently. You can then switch to a second grip pattern by applying either a co-contraction or a double OPEN signal to the hand. It is then possible to switch to a further two grip patterns in each mode by pressing the programme switch on the back of the hand.

An additional three grips and positions - hook, finger adduction and open palm - are achieved as part of other grip patterns. This means you will be able to select up to 11 grip patterns that will be most beneficial in your day-to-day life.

Note: - Your practitioner will work with you to programme the hand with the most appropriate grip patterns to suit your lifestyle. They will also work with you to find the easiest way to change between grips. For certain grip patterns, it is necessary for the practitioner to adjust the thumb alignment, so that the contact position between finger(s) and thumb is optimised. For instance, the thumb contacts the index finger for precision and pinch, whereas in tripod the thumb contacts the index and middle finger.

Use

Your prosthetic provider will help you to become proficient in using your bionic small hand. You may attend some training sessions where different aspects of your everyday activities will be explored. You can get the most from training by listing and suggesting those tasks that you want to achieve. You can then work through this list with your team. To get the most from the hand, make sure your arm is comfortable, secure and functional.

Care

We recommend that you do not adjust, dismantle, attempt to maintain, or modify your prosthesis. If it doesn't function as you think it should, contact your prosthetic provider who will be able to provide guidance. You should inspect your prosthesis regularly to identify potential problems early.

The bionic glove is made of silicone; this can be cleaned with warm water and liquid soap. If, and when, you need a replacement glove please contact your prosthetic provider. If water, perspiration, steam, snow, dust or sand enter the internal components of the arm, corrosion and component failure is likely to occur. Inspect the prosthesis regularly for glove damage, since cuts and tears allow these materials to penetrate the prosthesis.

Safety

Treat your prosthesis as if it were your own limb. Do not expose it to a naked flame or excessive heat. Take care not to touch live electrical equipment

Important Note

Avoid impacts and do not subject the arm to excessive loads, particularly where your safety relies on the integrity of the arm and the suspension that holds it in place.

If you have a particular occupational or recreational activity that may overload the arm, please discuss it with your prosthetic provider. It may be possible to design or adapt your arm so that it is suitable for your special requirements. We accept no responsibility for any damage or injury caused through improper use.

When attaching or detaching a bebionic hand to/from a prosthesis, it is important to first disconnect power by moving the battery switch to the OFF position. This is to avoid a potential current surge to the hand when it connects/disconnects with the power source

Driving

It is the responsibility of each user to ensure they comply with local regulations before operating any motorized vehicle.

Batteries

One fully-charged battery can provide power to a bebionic hand for more than a day for average user function. We recommend that the battery is charged each night so that a regular charging pattern is established, and you start each day with a fully charged battery.

Batteries

Please ensure that you use the correct charger for the battery pack as provided with your bebionic hand.

You **MUST NOT ATTEMPT** to charge these high current Lithium Ion / Polymer batteries with a charger designed for other types of battery technology. If you have any doubts, please contact your prosthetic provider.

It is important to remove the prosthesis and place it in a stable place where it will not fall before charging the battery. Position the small round output plug on the charger into the charging port on the socket. Insert the mains plug fitted to the transformer into a socket of the domestic power supply.

Move the battery switch to the OFF position, i.e. towards the charging port. The charger lights will flash, as indicated on the charger, please allow time for the unit to settle. It is important to return the battery switch to the ON position once fully charged to return power to the hand. This should be done by moving the battery switch away from the charging port.

Warranty Terms

The bebionic hand comes with a 2-year-standard warranty from Otto Bock Healthcare Products GmbH.

In addition, the following warranty packages are available at the date of purchase:

- 3-year-product warranty
- 5-year-product warranty
- Warranty extension from a 3- to 5-year-product warranty. The 2-year warranty extension can also be purchased subsequently. But, it must be purchased no later than prior to the end of the 36th month following the delivery date.

The warranty includes:

- Free of charge repair* of the prosthesis hand
- Free of charge replacement unit for the period of repair and maintenance in case of warranty

*Superficial damage and damage resulting from negligence or improper use are not included.

The warranty does not include wear and tear parts, such as gloves and batteries. An exception is the "Minor repair package". This package includes a separate exchange of the gaiter, the clevis links and the finger pulps.

With the 3- (with or without warranty extension) and the 5-year-warranty package you will get:

- Free of charge maintenance in the 24th month and for a warranty period of 5 years an additional free of charge maintenance in the 48th month
- Free of charge "Minor repair package"

Further information to the warranty coverage can be found in the warranty terms and conditions.

Hand Policy

Hands returned to the bebionic authorized service center will be assessed and where deemed beyond repair will be replaced. Where a claim is made under warranty, this claim must be supported by appropriate documentation. The warranty will be void on all system components if any components have been subject to abuse, repair or maintenance by an uncertified person, deliberate damage, loads beyond those for which the product was designed, or by modification or neglect. You must state that you wish us to supply a replacement.

To identify the hand serial number, see outer edge of locking ring above the wrist unit.

Glove Policy

Cosmetic gloves are only replaceable under warranty where the failure is due to a manufacturing fault as we have no control over the environment in which they are used. Please inspect the glove at first fitting to identify any faults so that we can provide a replacement where necessary.

Please note: Each bebionic hand is fitted with a passive Radio Frequency Identity Device to allow identification and trace during manufacture and in case of return to our bebionic service centres.

Returns

If bebionic components are to be returned for servicing please contact us or your local distributor stating the hand's serial number. We will issue a returns number and returns form that will need completing in full so your request can be dealt with promptly.

Spare Parts Policy

Some components of a bebionic system are replaceable by bebionic accredited practitioners. For further advice on any repairs please contact your bebionic distributor or email us. For both parts and service, please mention that the hand is a bebionic small hand; include details on date of purchase, size (small) and side (left or right).

Environmental conditions

Environmental conditions	
Storage and transport in original packaging	-20°C/-4°F to +40°C/+104°F
Storage and transport without packaging	-20°C/-4°F to +40°C/+104°F max. 80% relative humidity, non-condensing
Operation	-20°C/-4°F to +40°C/+104°F max. 80% relative humidity, non-condensing
General	
Product service life	5 years

Dipsosal



In some jurisdictions it is not permissible to dispose of these products with unsorted household waste. Disposal that is not in accordance with the regulations of your country may have a detrimental impact on health and the environment. Please observe the instructions of your national authority pertaining to return and collection.

Symbols Used



Declaration of conformity according to the applicable European directives



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Legal manufacturer



Serial number



Compliance with the requirements under the "Radiocommunications Act" (AUS)



Non-ionising radiation

CE



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