

Alt-Bi**o** nics



Genesis Hand

User Manual

Version 1.0

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Introduction

Thank you for choosing the Genesis Hand to assist you on your journey towards greater independence. At Alt-Bionics, we understand the importance of this decision, and we are committed to supporting you every step of the way.

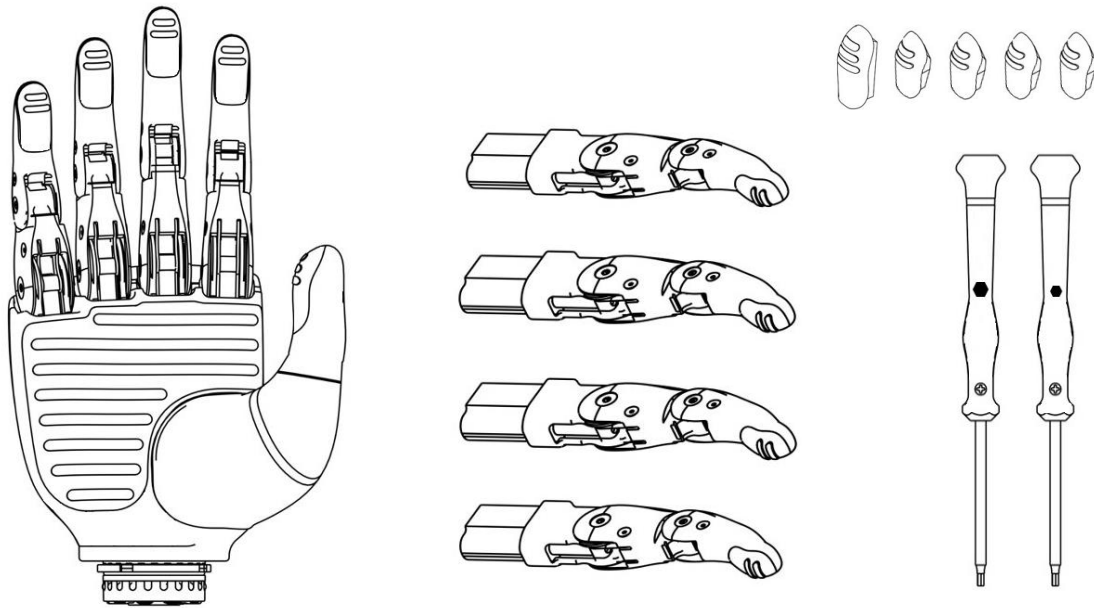
This manual is your comprehensive guide to understanding, using, and maintaining your Genesis Hand. Inside, you will find step-by-step instructions, essential safety information, and practical tips to help you integrate this innovative technology into your daily life.

We encourage you to take the time to read through this manual in its entirety before using your Genesis Hand. Thank you for trusting Alt-Bionics. We are excited to be a part of your journey toward enhanced mobility and independence.

Package Content

This section details all the parts and hardware included with The Genesis Hand.

Please refer to the list below and accompanying photos to ensure you have received all necessary components.



Item	Qty	Description
The Genesis Hand	1	The main device. A myoelectric hand designed for advanced prosthetic function.
Replacement Fingers	4	Spare fingers in case of damage or wear. Easy to replace using the included screwdriver.
Small Hex Screwdriver	1	Smaller tool for assembly and maintenance of the Genesis Hand
Large Hex Screwdriver	1	Larger tool for assembly and maintenance of the Genesis Hand.
Replacement Fingertips	5	Replacement fingertips for fingers and thumb.

Unboxing & Inspection

Before you begin using the Genesis Hand, it is crucial to ensure that all components included in the package are accounted for and undamaged. This step is important to ensure the device works as intended.

Step 1: Inspect the Shipping Box

- **Check for damage:** Before opening, inspect the outer shipping box for any signs of damage, such as dents, tears, or punctures.

Step 2: Identify and Inspect Each Component

- **Check for completeness:** Use the checklist provided in the manual to ensure that all parts are present. Compare each item to the images in the manual to confirm you have everything.
- **Inspect for damage:** Examine each component for any signs of damage, such as cracks or missing pieces.

Step 3: Document Any Issues

- **Take photos:** If you find any damaged or missing components, take clear photos to document the issue.
- **Contact support:** Reach out to Alt-Bionics customer support immediately with your photos and order details to resolve any issues. Refer to the contact information provided at the bottom of this user manual.

Step 4: Save the Packaging

- **Store the packaging:** The Genesis Hand comes with 4 additional replacement fingers inside the box as well as additional fingertips, so please store the box in a safe place. These may be needed if you have to return the product or if you or your prosthetist need to make repairs / replacements.

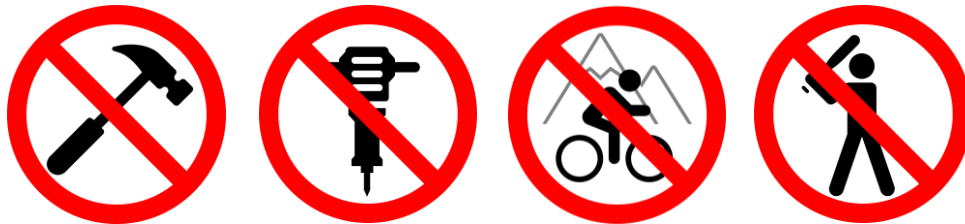
Step 5: Final Preparation

- **Prepare for setup:** Once all components are accounted for and inspected, you can proceed to the "Setup & Operation" section of the manual to begin using and configuring your Genesis Hand.

Indications for Use

Exercise caution when using the Genesis Hand under conditions that involve significant loads, vibrations, or impacts. The Genesis Hand is designed for daily activities but may not be suitable for activities that could strain the thumb, fingers, or attached wrist unit, such as extreme sports, and high-impact activities like:

- Hammering
- Using a jackhammer
- Mountain biking
- Baseball



If you would like to perform the above high-impact activities, please consider alternative prosthetic solutions or take extra precautions to protect the device.

Refrain from using the Genesis Hand exclusively to operate any form of vehicle or machinery, including but not limited to cars, construction equipment, and industrial machinery. Engaging in these activities with the Genesis Hand may compromise safety due to the potential for unexpected reactions or lack of sufficient control.

Regular checks for signs of wear and tear should be performed as outlined in the "Maintenance" section of this guide. If you encounter any issues or damage, please refer to the "Troubleshooting" and "Maintenance" sections of this guide or reach out to Alt-Bionics customer support for assistance.

Unique Features of The Genesis Hand

The Genesis Hand by Alt-Bionics is designed with advanced features that enhance both functionality and ease of maintenance. This allows users to manage daily activities more independently while ensuring long-term reliability and convenience. Some of them are as follows:

Visual Feedback Systems (Hex Ring LED)

The Genesis Hand comes equipped with a versatile visual feedback system, called the Hex Ring (short for hexagonal ring). This RGB LED based system is designed to give users a quick and intuitive way to monitor and understand key functions of their prosthetic hand.



This goal of this system is to help the user familiarize with, and understand their hand via real-time updates on essential aspects such as the following:

Battery Life: The Hex Ring LED can display your prosthetic system’s battery life via a gradient color pattern from red, to yellow, to green, as seen below. See section titled, “Multifunction Button” for further information.

EMG Signal Levels: The Hex Ring can also display EMG signal strength, helping you better understand and develop a relationship between your EMG signals and your hand.

General Status Notifications: The Hex Ring LED will also communicate other important status updates, such as when the hand is in pairing mode, locked, or in need of recalibration.

Utility Light: In addition to these functions, the Hex Ring can be used as a utility light (flashlight) in dark or low-light environments. You can even customize the color of this within the app. However, please note that prolonged use of the utility light may drain the battery faster.

Note: The Hex Ring LED can be dimmed or turned off at any time from the settings menu in the smartphone application.

Electronically Positioned Thumb

The Genesis Hand is equipped with an electronically controlled thumb that offers both automatic rotational and extension capabilities.

Unlike traditional prosthetic hands, where the thumb typically only flexes and requires manual repositioning for rotational adjustments, the electronically positioned thumb on the Genesis Hand allows for automated rotation and extension. This design provides greater flexibility and functionality, enabling the thumb to perform more natural and complex movements without the need for manual intervention.

Automatic Adjustment: The thumb adjusts electronically, allowing you to switch between different grip modes effortlessly for various tasks, such as holding small objects or larger items.

Note: Do not attempt to manually adjust the thumb. Forcing it into position can damage the device. Always use the electronic controls provided.

Adaptability to Existing Sockets

The Genesis Hand is designed to seamlessly integrate with existing prosthetic sockets, provided they have a compatible socket-side wrist connection unit 4-pin or 6-pin. This makes it easier to switch from your current myoelectric hand or other Electronic Terminal Devices to the Genesis Hand.

Compatibility: The Genesis Hand works with standard EMG sensors (electrodes) placed at one or two sites. This allows for easy control of the hand without requiring extensive modifications to your existing socket.

Compatibility Guide: For detailed information on compatible sockets, wrist units, battery systems, and EMG sensors, please refer to our comprehensive compatibility guide available on our website or through your clinician.

If you are unsure whether your current setup is compatible, consult with your prosthetist for personalized assistance.

Fully Modular Finger Design

The Genesis Hand was built with a modular finger design to simplify the typically lengthy and specialized repair process in the event a finger breaks, reaches its end-of-life, or malfunctions.

The Genesis hand can easily be disassembled by removing the five screws from the back plate using the screwdriver provided in your box. Once the back plate is off, unplug and remove the damaged or malfunctioning finger module. Replace the finger with a new module, then reassemble the hand by screwing the back plate on again.



Simple Disassembly



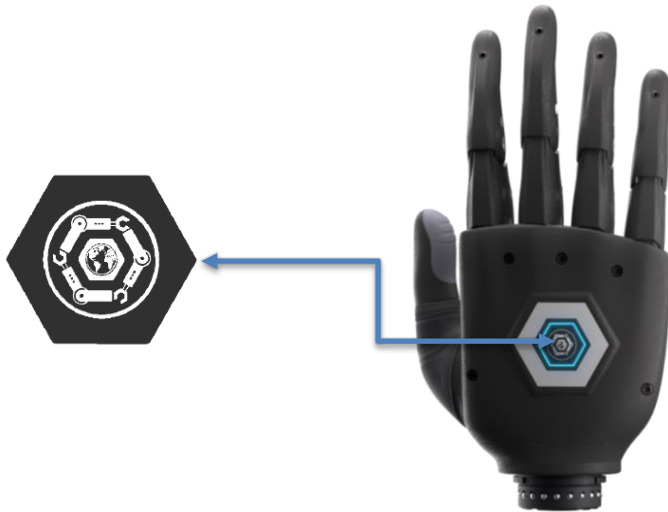
Repairs In Under 5
Minutes



This process can be safely completed in a matter of minutes by both amputees and clinicians. Please see “Repair Manual” for more detailed instructions.

Multi-Function Button

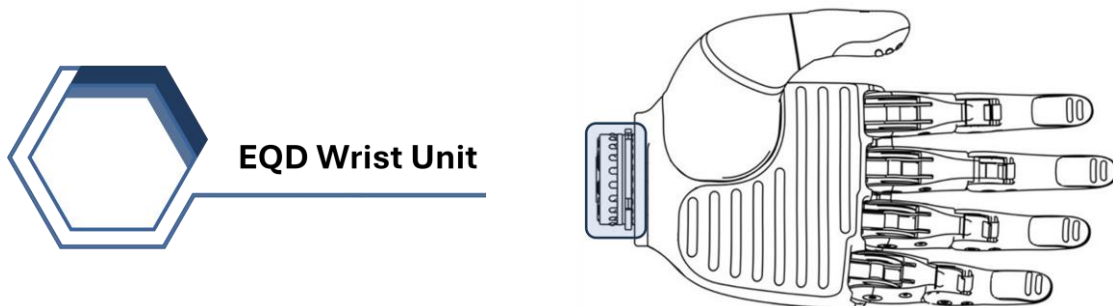
The Genesis Hand's central button controls various features, including battery display and grip pattern switching, enhancing flexibility without the need for your smartphone app. Please see the section titled, "Multi-Function Button" for further details.



Setup

Socket Connection

The Genesis Hand is equipped with an electronic quick disconnect (EQD) wrist module, located at the base of the hand, that can be inserted into any standard Myoelectric / ETD wrist connector of a prosthetic socket.

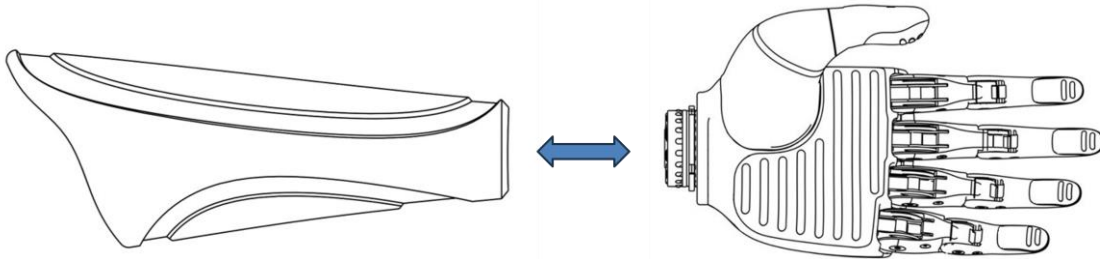


Steps:

1. Align the EQD Module:

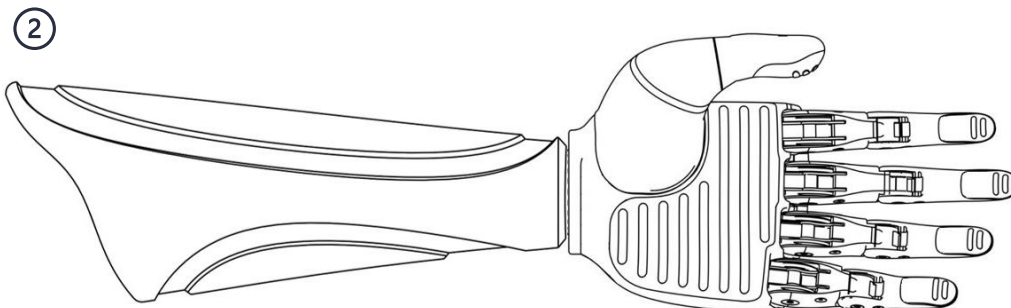
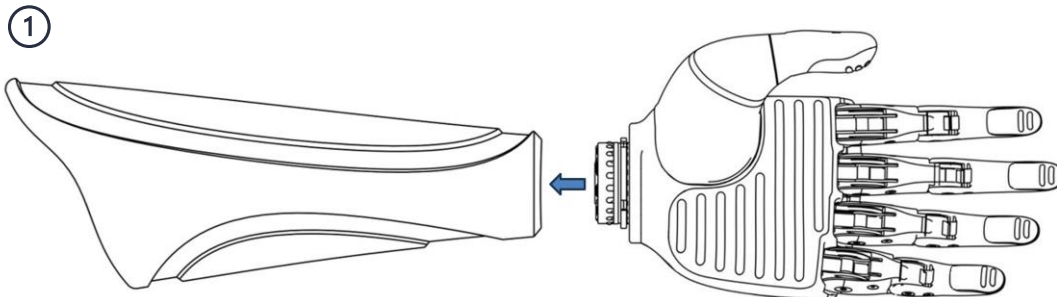
Position the Electronic Quick Disconnect (EQD) wrist module at the base of the Genesis Hand so that it aligns with the terminal end of your prosthetic socket.

Ensure that the cavity / hole in the center of the EQD lines up with the socket's 6-pin core (coaxial plug).



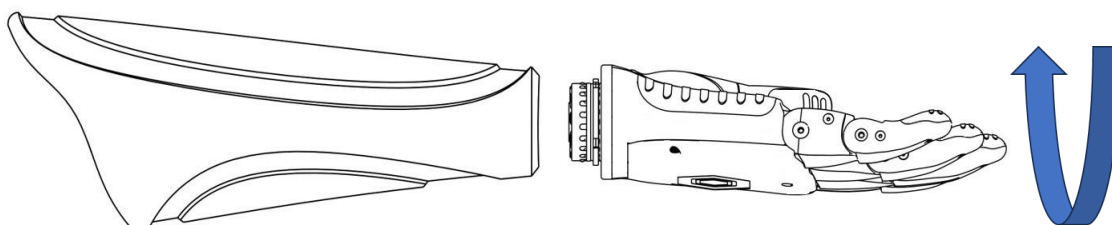
2. Insert and Lock

Insert the EQD into the socket and push until the hand is locked into your socket. You should hear an audible click. There should be no wobbling or wiggling of the hand. If there is, repeat this step until you have a secure connection. Make sure your hand is locked in before use.



3. To Release the Hand

To release the EQD from the socket, twist the hand in a counter-clockwise direction until the EQD releases. If you feel as though you cannot turn your wrist anymore, grab the hand firmly by the palm (not the fingers or thumb) and continue to twist through until the EQD releases.



Note: Ensure the EQD is securely fastened when in use. There should be very little to no wobble of the hand if securely fastened.

Power & Battery

The Genesis Hand relies on the rechargeable battery inside your prosthetic socket for power. Here's how to ensure proper operation:

Battery & Charging: Please refer to your battery system's user manual PDF for additional information.

If your prosthetic socket is equipped with a battery outside of our recommended suppliers, you will need to find the charging instructions from your prosthetic clinician.

Power Source: Ensure the socket's battery is charged to at least 10% before use, as the hand will not function if the battery is too low. Please refer to your battery system's user manual PDF for additional information.

Battery Level Check: Use the Hex Ring LED or your smartphone app to check the battery level. Refer to the Hex Ring Glossary and Multi-Function Button sections for details on the LED indicators and their meanings.

Note: You must have a battery pack with a button to turn power on and off.

Powering on The Genesis Hand

The device can only be powered on using the button associated with your battery system. Always check that the hand is unobstructed when powering on to prevent obstructions.

Calibration

Calibration Start

When you first power on The Genesis Hand, the Hex Ring LED on the back of the hand will illuminate the color Azure, indicating the start of the calibration sequence. During this process, the fingers and thumb will flex and extend to their full range of motion to identify their mechanical limits (end stops



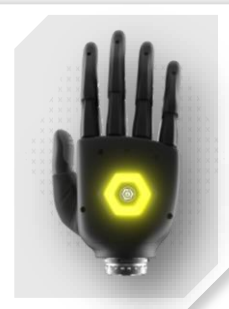
Calibration Pass

The system will automatically check if the fingers and thumb reach their full extension and flexion. If successful, the Hex Ring LED will turn green, confirming that the calibration was completed without issues. Once the green light turns off, The Genesis Hand is fully calibrated and ready for use.



Calibration Obstructed

If the calibration encounters an issue, such as an obstruction preventing full movement, the LED will turn yellow, signaling a failed calibration. In this case, ensure that nothing is blocking the hand and restart the calibration process by pressing the multi-function button on the back once.



Calibration Failed

A **flashing** red LED indicates that there was an error during calibration unrelated to obstruction. If this happens, you can reset the hand by pressing the multi-function button on the back once. After the reset, the hand will restart, and The Genesis Hand will attempt to calibrate again.

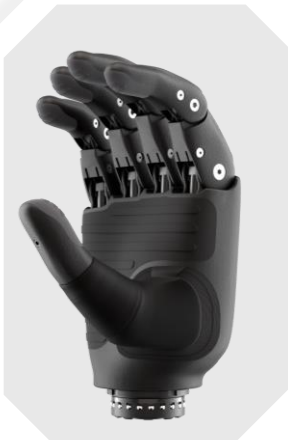


Grip Patterns

The Genesis Hand provides several pre-configured grip patterns designed to assist with common tasks involved in daily living, such as grasping objects or lifting grocery bags.

For users who want more personalized control, the smartphone application's Grip Directory allows you to create and customize your own grip patterns to better suit your individual needs.

Note: Each grip pattern will have a **Relaxed Position** and a **Flexed Position** (see below).



**Power Grip
(Relaxed)**



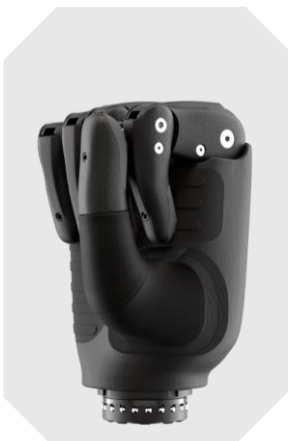
**Chuck Grip
(Relaxed)**



**Fine Pinch
(Relaxed)**



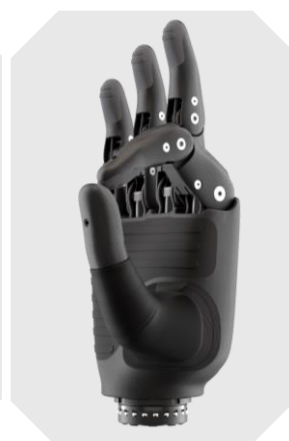
**Key Grip
(Relaxed)**



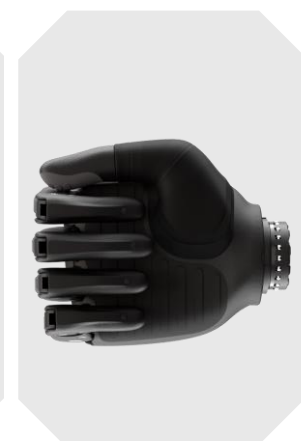
**Power Grip
(Flexed)**



**Chuck Grip
(Flexed)**



**Fine Pinch
(Flexed)**



**Key Grip
(Flexed)**

Home Position

The Genesis Hand will arrive in the box in the “Home” position (pictured below). The Home position is a neutral, relaxed state with the fingers fully extended, designed to protect the internal mechanisms during shipping and handling, and to serve as the end point for calibration once the hand is powered on.



**Home Position
(Palmar View)**



**Home Position
(Dorsal View)**

Controlling Your Hand

This section provides instructions on how to control your Genesis Hand using either one or two EMG signal sites. If this is your first time using myoelectric controls, these instructions will guide you through the basic movements and how they translate into different grip patterns.

Understanding EMG Sensors

The Genesis Hand is designed to respond to signals from sensors inside your prosthetic socket known as EMG sensors. EMG stands for Electromyography. In simple terms, whenever you try to move a muscle, your brain sends a small electrical signal to that muscle group. EMG sensors detect these muscle signals and translate them into commands that control your prosthetic hand.

These sensors are highly sensitive and can capture even subtle muscle contractions. By understanding how to use your muscles to activate the EMG sensors, you can efficiently control the movements of your Genesis Hand.

Note: Your prosthetist will help ensure that the sensors are properly positioned and calibrated to your specific muscle activity levels, allowing for a seamless and intuitive experience.

Turning Muscle Signals Into Hand Movements

Now that you know the basics of how EMG sensors pick up signals from your muscles, let's dive into how those signals help you control the Genesis Hand.

When you move a muscle group, the EMG sensors detect the signal and send a command to your hand, making it move.

There are two ways to control the Genesis Hand:

Two Muscle Site Control

With Two Muscle Site Control, you will use one muscle group to close your hand and another muscle group to open it. This will be called **Dual Site**.

One Muscle Site Control.

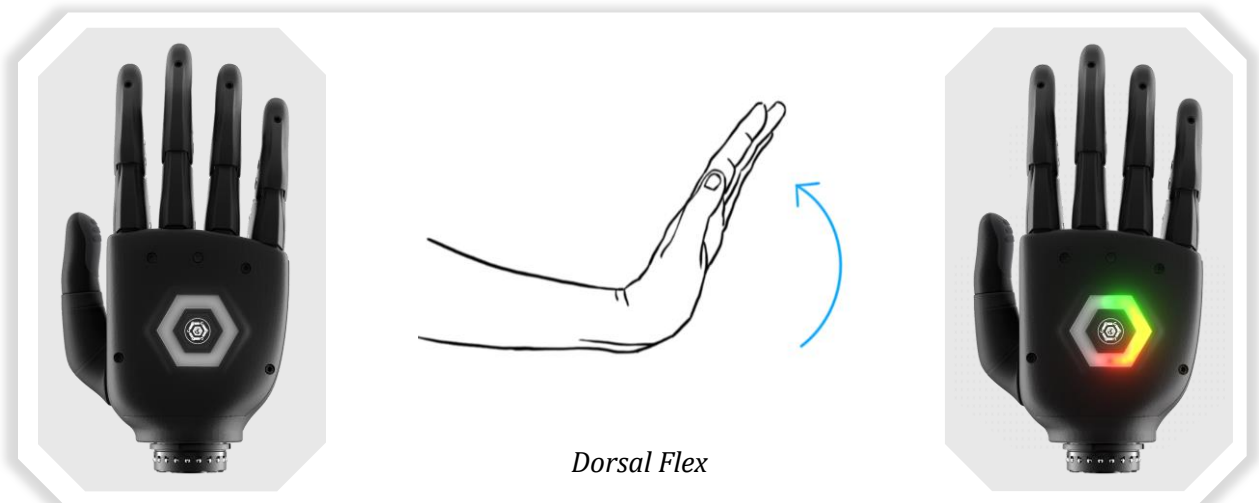
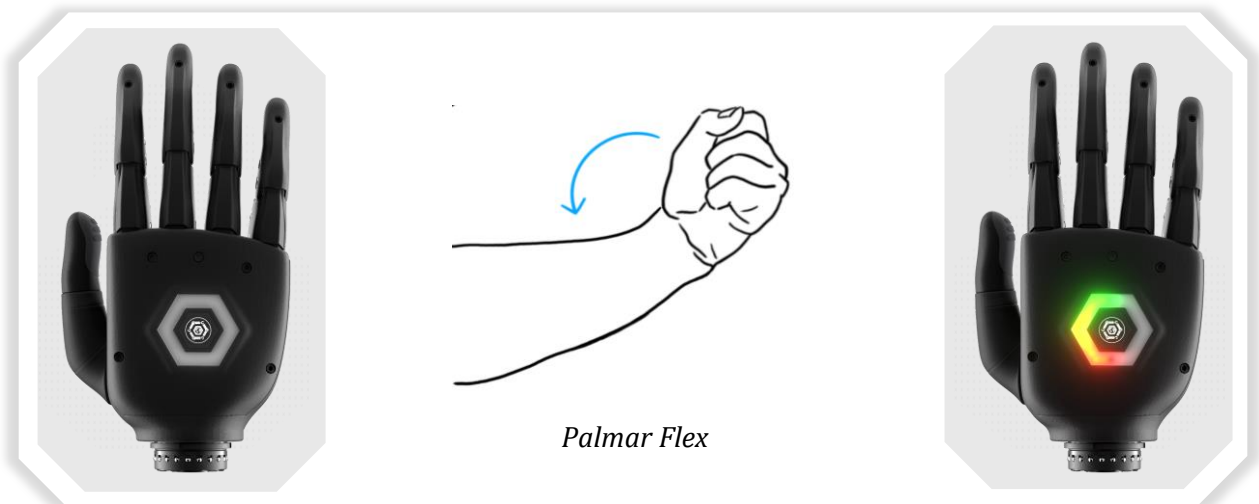
With One Muscle Site Control, you will only use one muscle group to handle both opening and closing, making it simpler for those who have fewer available or working muscle sites. This will be called **Single Site**.

Visualizing Your EMG Signals

The Genesis Hand allows you to visually track your EMG signals in real-time, without the need for an accompanying app by using the Hex Ring LED.

For **Dual Site** control, the ring is split into two halves, with each half corresponding to one of the two muscle groups. When a muscle group is activated, the respective side of the LED will light up, moving from bottom to top in a gradient from red (weak signal) to green (strong signal).

In **Single Site** control, both sides of the Hex Ring light up simultaneously, following the same red-to-green gradient.



This visualization helps you monitor the quality of your muscle contractions and ensures optimal control of your hand. Please see “Multi-Function Button” section for directions on how to activate this EMG visualization. It is off by default.

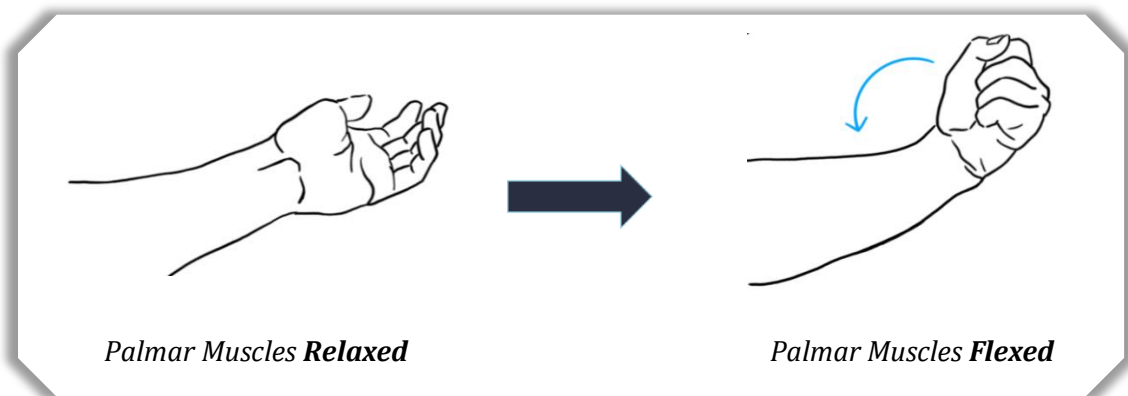
Dual Site Control

With Dual Site control, the Genesis Hand uses two EMG sensors that will both select, and control specific grips patterns. These sensors are placed on two separate muscle groups (typically on your forearm). Each muscle contraction is linked to a specific movement of the hand.

Note: The following examples may not be relatable for everyone. Be sure to consult with your prosthetist to determine the most effective placement of your EMG sensors as well as the corresponding muscle movements.

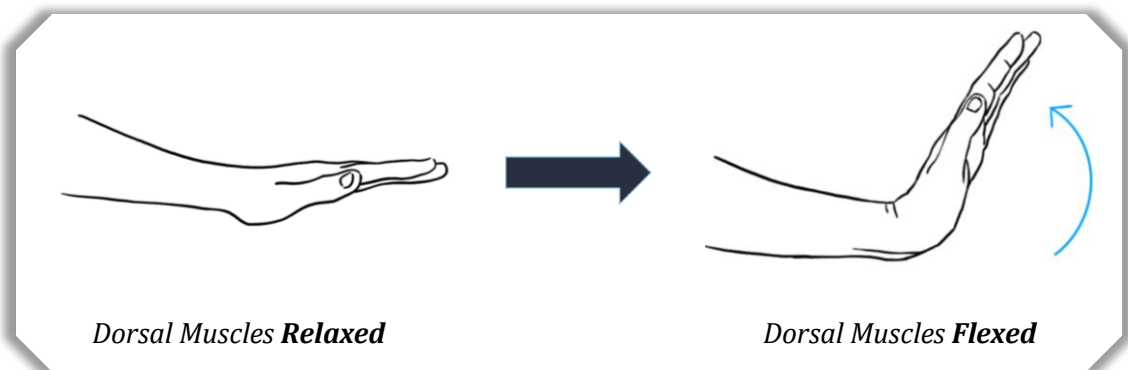
Palmar Flex

The palm side of your hand and forearm is called the “palmar” side. A typical motion to control a prosthetic would be to imagine that you are flexing your wrist towards your palm. We would call this a “Palmar Flex”. Refer to the picture below for visual reference.



Dorsal Flex

The back side of your hand and forearm is called the “dorsal” side. A typical motion to control a prosthetic would be to imagine that you are flexing your wrist backwards. We would call this a “Dorsal Flex”. Refer to the picture below for visual reference.



Single Site Control

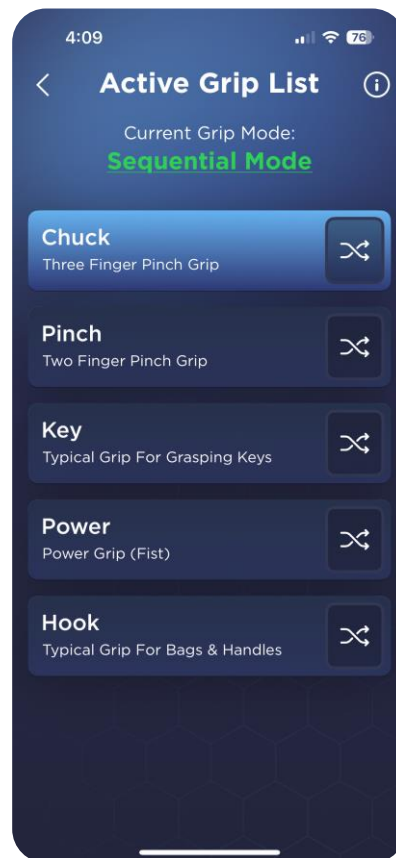
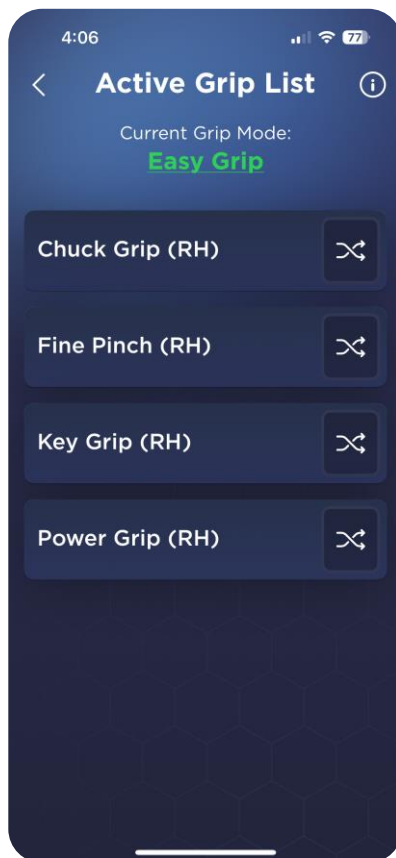
With Single Site control, the Genesis Hand uses only one EMG sensor for opening and closing the hand. This single sensor is placed on one muscle group (typically on your forearm). Each muscle contraction is linked to a specific movement of the hand. The EMG sensor can be placed on either side of your forearm / residuum, so **the same example movements pictured above can be followed**

Note: Be sure to consult with your prosthetist to determine the most effective placement of your EMG sensors as well as the corresponding muscle movements.

Grip Modes

The Genesis Hand offers two modes for setting up and changing grip patterns:

- **Easy Grip Mode** – Mode which contains only 4 grip patterns that can each be individually activated by EMG signals. These 4 grip patterns can all be changed to custom grip patterns that best suit your individual needs.
- **Sequential Mode** - Mode which contains 5 grip patterns that can only be cycled through sequentially. These 5 grip patterns can also all be changed to custom grip patterns that best suit your individual needs.



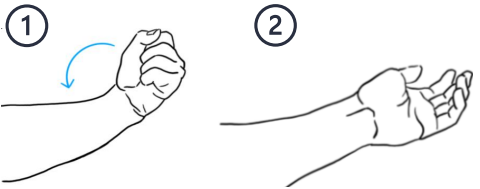
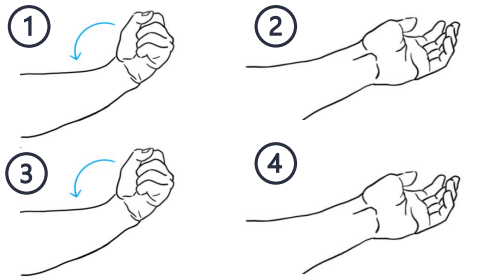
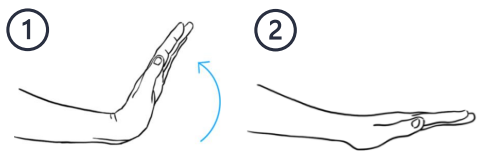
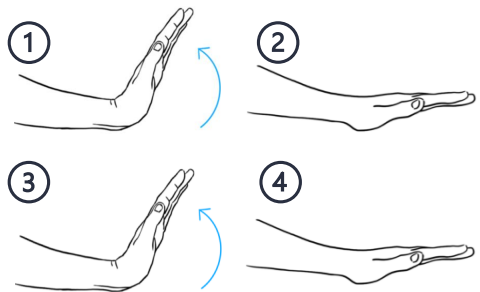
Easy Grip Mode

The Easy Grip mode (see above picture) consists of 4 grip patterns that can each be navigated to individually. This grip mode is the recommended mode, as you can quickly navigate to your preferred grip.

Note: *Easy Grip Mode is only available with Dual Site Control.*

Activating / Selecting Grip Patterns In Easy Grip Mode

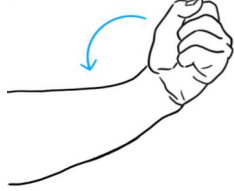

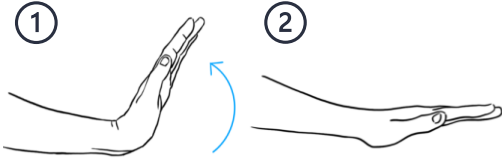
In Easy Grip Mode, The Genesis Hand recognizes both single and double flexion and extension events to navigate to grip patterns, depending on the timing of your movements. The hand must be in the home (extended) position to change grips.

<p>Single Palmar Flex</p>		<p>Activates Grip Pattern 1</p>
<p>Double Palmar Flex</p>		<p>Activates Grip Pattern 2 <i>(second palmar flex must be within 0.7 seconds of first)</i></p>
<p>Single Dorsal Flex</p>		<p>Activates Grip Pattern 3</p>
<p>Double Dorsal Flex</p>		<p>Activates Grip Pattern 4 <i>(second dorsal flex must be within 0.7 seconds of first)</i></p>

Controlling Grip Patterns In Easy Grip Mode

Once you activate a grip pattern, the grip pattern will move into a fully extended position. From there, any movement from your palmar muscle group (in this example) will begin to flex the hand. Additionally, any movement from your dorsal muscle will begin to extend the hand (move it backwards).

Below is a basic example of the movements that will control the flexion and extension of each grip pattern.

<p>Palmar Flex</p>		<p>Flexes Active Grip</p>
<p>Dorsal Flex</p>		<p>Extends Active Grip</p>
<p>Quick & Strong Dorsal Flex (From Extended Position)</p>		<p>Returns to Home Position</p>

By mastering these movements, you can efficiently control the various grip patterns available in Easy Grip Mode.

How to Change Grip Patterns In Easy Grip Mode

- **Method 1:** While the grip pattern is in its extended position, perform a quick, strong Dorsal Flex to return to the home position. You can then perform one of the 4 muscle movements to select a new grip.
- **Method 2:** Press and hold any grip in your smartphone application for 1 second. **The Genesis Hand will immediately move to that grip.**

Sequential Mode

Sequential Mode provides a straightforward way to control The Genesis Hand by cycling through five different grip patterns in a set order. You don't need to return to the home position after each grip change, which makes this mode ideal for users who may find Easy Grip Mode challenging or for those seeking a simpler, more predictable approach to operating their device.

Note: Sequential Mode is the default, and only mode for Single Site Control.

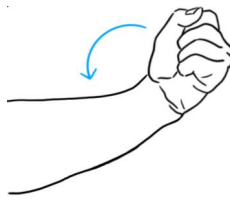

Activating Grip Patterns In Sequential Mode

In Sequential Mode, The Genesis Hand will automatically transition into the first grip pattern displayed in the list on your smartphone application. You can only cycle through the grip patterns one at a time, in the order they appear. This ensures a simple and predictable control flow.

Controlling Grip Patterns In Sequential Mode

Once a grip pattern is selected / activated, the hand moves to the fully extended / open position of that specific grip pattern. From there, any contraction of the palmar muscle group will close the hand into the desired grip. Similarly, activating the dorsal muscle group will extend the hand back to its open state, allowing smooth control of gripping actions.

Below is a basic example of the movements that will control the flexion and extension of each grip pattern.

Palmar Flex		Flexes Active Grip
Dorsal Flex		Extends Active Grip

How to Change Grip Patterns In Sequential Mode

- **Method 1:** While the grip pattern is in its extended position, perform a long Dorsal Flex (> 1 second) to switch to the next grip in the sequence.
- **Method 2:** While the grip pattern is in its extended position, press the multi-function button twice to move to switch to the next grip in the sequence.
- **Method 3:** Press and hold any grip in your smartphone application for 1 second.
 - **Caution:** Method 3 will immediately move The Genesis Hand into the selected grip.

Switching Between Modes:

There are two methods for switching between modes in The Genesis Hand.

- **Method 1:** Press the Hand multi-function button three times.
- **Method 2:** At the top of your smartphone application while inside the “Active Grips” menu, press on the green underlined mode name, “Easy Grip” or “Sequential Mode”. This will allow you to switch between the two. See “Active Grips Menu” section for further instructions on how to use the app to see and switch grip modes.

Note: You can only switch between modes while using Dual Site Control.

Multi-Function Button

The multi-function button on the back of your hand is designed to give you more independence by allowing you to adjust settings or check important information about your hand without needing to use your phone.

Below is an easy-to-follow guide on how the button works and the actions it controls.



Easy Grip Mode	
Action	Result
1x Press	Current Grip Pattern Locks & EMG signals are blocked
2x Press	N/A
3x Press	Hand Changes to Sequential Mode
4x Press	Hand Enters or Leaves EMG Live View
5x Press	Enables the Hex Ring's Flashlight Mode.
6x Press	N/A
7x Press	Hand Recalibrates
1s-4s Hold	Displays Battery Life via Hex Ring
5s-10s Hold	Disconnects Bluetooth & Begins Pairing / Searching

Sequential Mode	
Result	Action
Current Grip Pattern Locks & EMG signals are blocked	1x Press
N/A	2x Press
Hand Changes to Easy Grip Mode	3x Press
Hand Enters EMG Live View	4x Press
Enables the Hex Ring's Flashlight Mode.	5x Press
N/A	6x Press
Hand Recalibrates	7x Press
Displays Battery Life via Hex Ring	1s-4s Hold
Disconnects Bluetooth & Begins Pairing / Searching	5s-10s Hold

Hex Ring (LED) Glossary

The Hex Ring LED located on the back of The Genesis Hand serves as a visual indicator, providing valuable information regarding various status states of the hand.

This section will detail the different LED colors and patterns, along with their corresponding meanings, along with how to activate them if relevant.



Azure (Solid)

Meaning: Indicates the hand is either calibrating, switching primary grip modes, or changing grip positions.

Additional Notes: While the Hex Ring displays a solid Azure color, the button should not be pressed, and open/close commands should not be sent.



Green (Solid)

Meaning: Indicates the hand has successfully finished calibrating and is ready to use.

Additional Notes: This solid green color should only ever appear following a successful calibration.



Yellow (Solid)

Meaning: Indicates the hand has failed calibration.

Additional Notes: Press the button once to retry calibration. If this continues to fail, hand must be power cycled.



Azure (Rotating)

Meaning: Indicates that the hand is switching to/from EMG live view. After completion, the Hex Ring will display live EMG signals from either one or two sites.

Additional Notes: This rotating color only indicates the activation of EMG live view. See below for EMG Live View.



Red (Solid)

Meaning: Indicates the hand is locked and will not respond to EMG signals from the user.

Additional Notes: Toggled by pressing the button 1 time in any mode, at any time. The hand turns solid red only after a single button press. If seen otherwise, power cycle the hand.



Red (Flashing)

Meaning: Indicates the hand has encountered a critical error. The hand must be power cycled to resolve

Additional Notes: To power cycle the hand, press the button 7 times in a row. The hand will recalibrate and attempt to resolve the error automatically.



Dark Blue (Rotating)

Meaning: Indicates the hand has entered Bluetooth Pairing Mode. It will attempt to find a new Bluetooth connection.

Additional Notes: To enable Bluetooth Pairing, press and hold the multifunction button on the back of the hand (around 8-10s second) until you see the Dark Blue ring.



Red, Yellow, Green (Dynamic) - Battery

Meaning: Indicates battery. The battery level is represented in segments by a gradient; Green for high (66-100%), Yellow for medium (33-66%), and Red for low (0-33%).

Additional Notes: Toggled by pressing and holding the button for more than 1 second (not to exceed 4 seconds). The battery indication will turn off after 5 seconds.



White (Solid)

Meaning: Indicates the hand is in “Flashlight Mode”. May it be a light to you in dark places, when all other lights go out.

Additional Notes: Activated by pressing the button 5 times in any mode. This mode will automatically deactivate after 60 seconds to conserve battery. Color can be customized via app.



Red, Yellow, Green (Dynamic) – EMG

Meaning: Indicates the hand is in “EMG Live View” mode. EMG signals will display in a gradient similar to the battery life gradient. Red indicates a weak signal, while green indicates a very strong signal.

Additional Notes: Toggled by pressing the button 4 times in a row, in any mode. This EMG live view will persist until cancelled by pressing the button 4 times again in a row. Splits for Dual-Site control.

Smartphone

Application Setup

This section will walk you through the process of setting up, pairing, and customizing your Genesis Hand using the Alt-Bionics iOS application.

Designed to provide seamless control over your prosthetic hand, the app offers intuitive tools for grip management, firmware updates, and device configuration, ensuring you can tailor the hand's functionality to your specific needs.

In the following sections, you'll find step-by-step instructions for pairing your Genesis Hand with your smartphone, managing multiple devices, adjusting grip patterns, and fine-tuning both application and hardware settings. Whether you're setting up your device for the first time or looking to customize advanced features, this guide will ensure a smooth and efficient user experience.



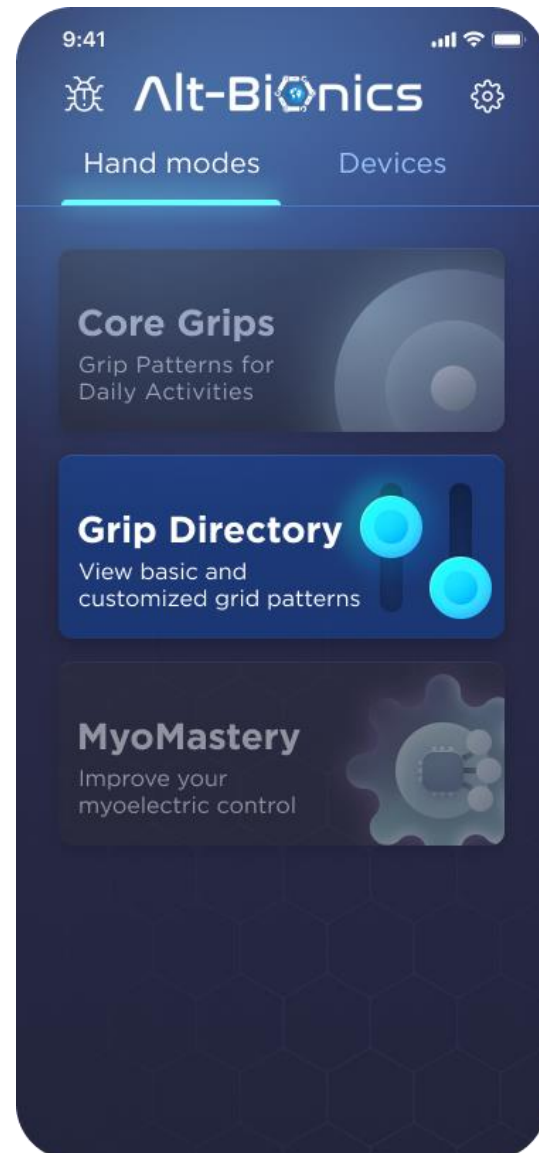
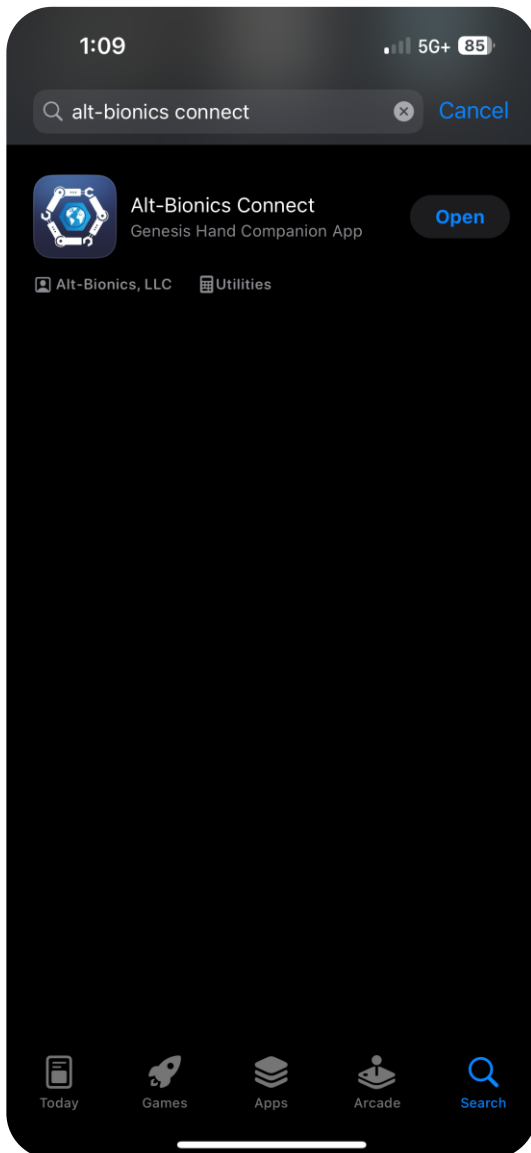
Note: The Alt-Bionics Smartphone Application is currently only available for iOS.

Note: The theme of the application depends on the selected theme on your iOS device.



Step 1: Download and Open The iOS App

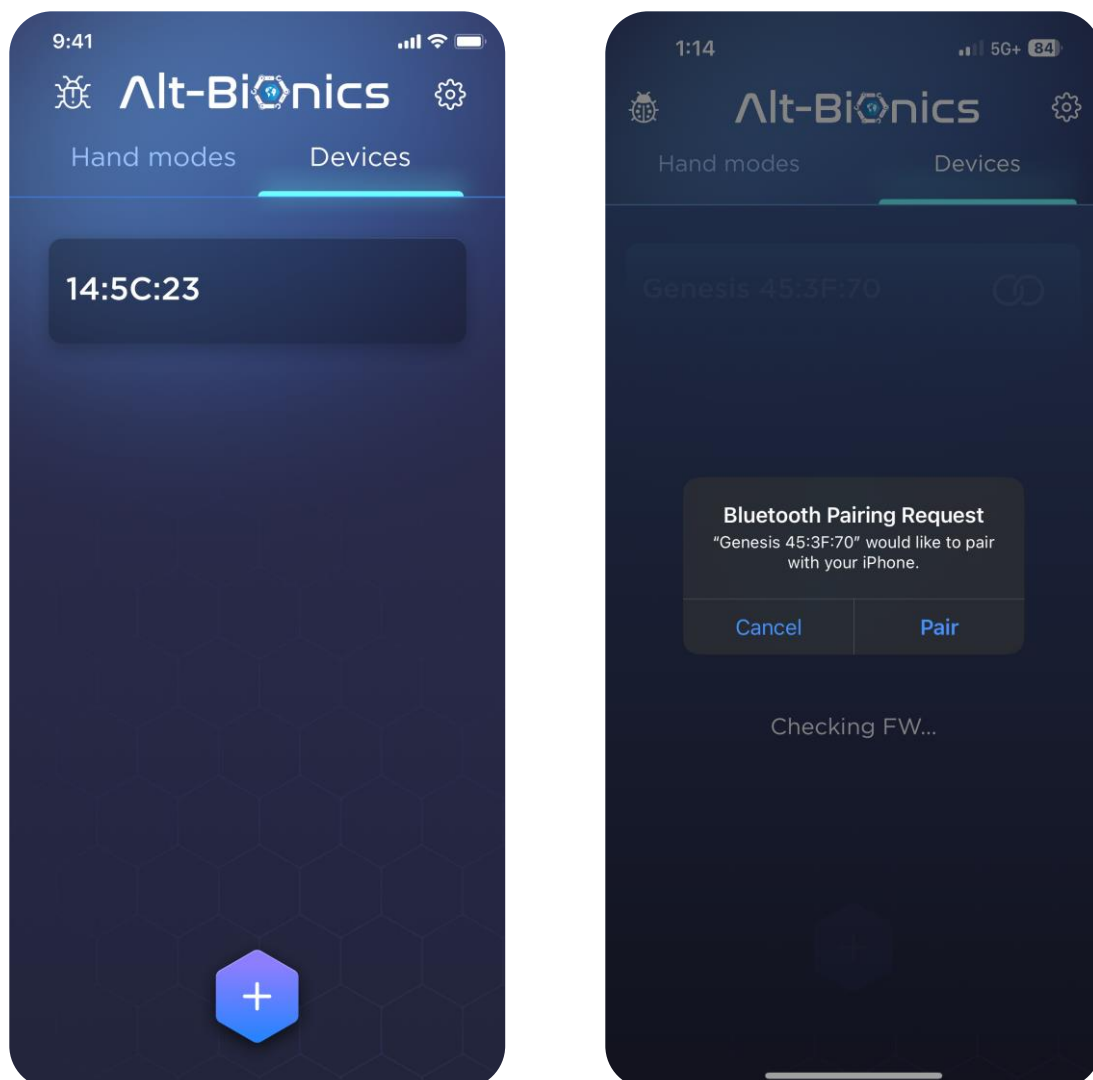
- Download the Alt-Bionics app from the iOS App Store or TestFlight. [Scan the QR code below to download directly.]
- Open the app once the download is complete and you've opened the app, the initial screen will display the main menu. Only the **Grip Directory** will be accessible until your Genesis Hand is connected (see instructions below).



Step 2: Pairing with The Genesis Hand

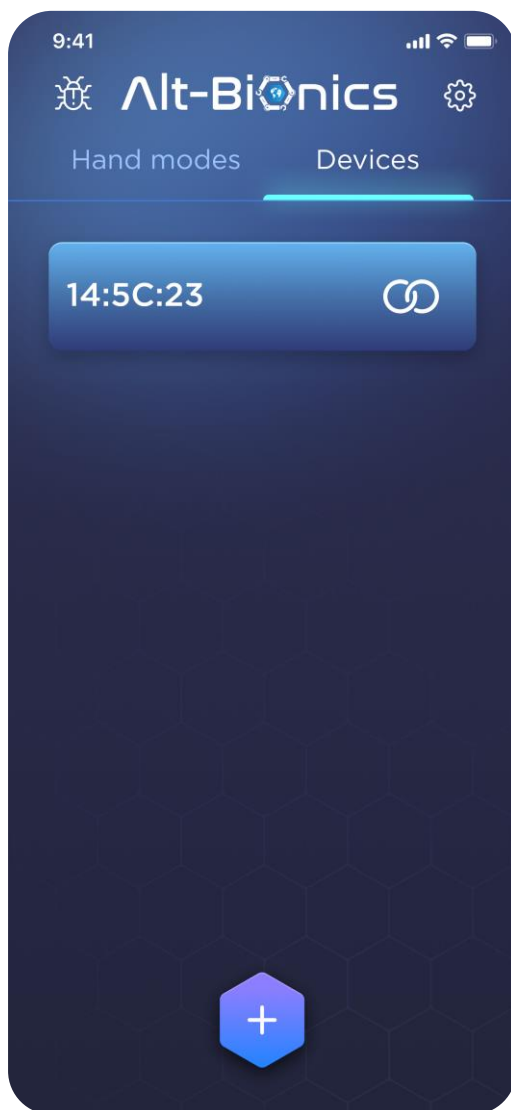
- Ensure your Genesis Hand is powered on and your phone's Bluetooth is enabled, then Navigate to the **Devices** tab. The app will begin scanning for available devices.
- Once your Genesis Hand appears on the screen with its unique identification code, select the device by tapping the device's name on your screen. This will initiate pairing. (you can customize this name later).
- Once your device is recognized by the app, you'll be met with a popup screen asking your permission to pair with the device. Please press "pair" to complete the pairing process.

Note: Pairing may happen automatically, prompting the pairing request earlier.



Step 3: Confirming Your Connection

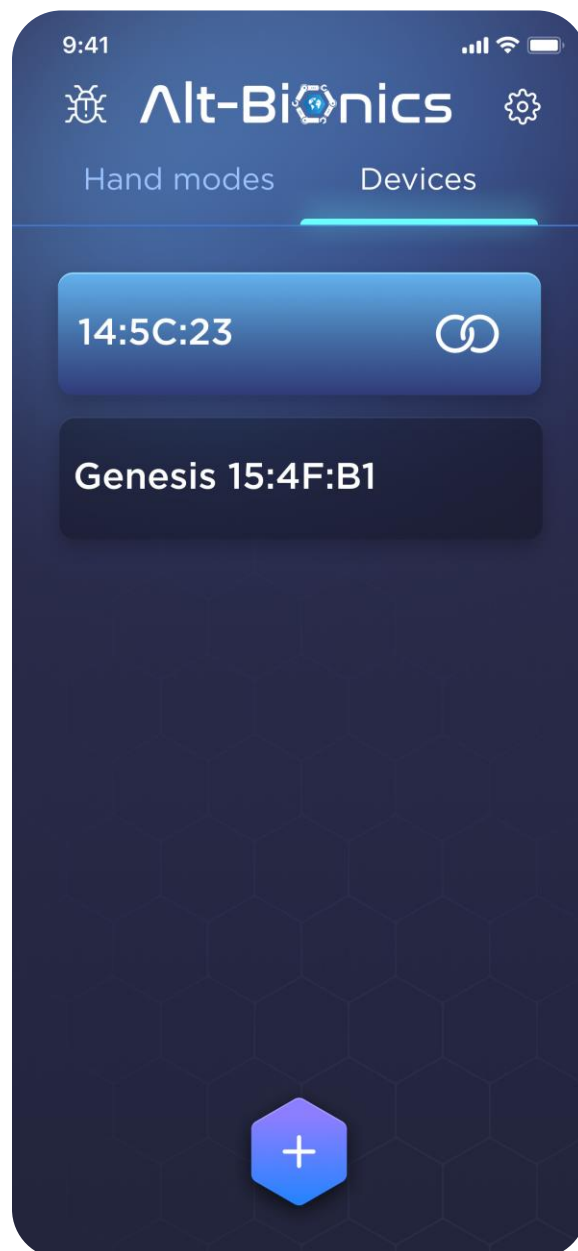
1. Confirm the device in the “Devices” tab is highlighted blue.
2. Once successfully connected, a connected / linked icon will appear, and the full functionality of the **Hand Modes** tab will be activated.
3. Navigate to the “Hand Modes” tab and confirm that all menu options are no longer greyed out.



Step 4 (Optional): Add an Additional Device

- To pair with another, secondary Genesis Hand (if using two), open the Devices tab and click the “+” button. If not already, this will reveal any other unconnected and powered on Genesis Hands in the area.
- Follow the same procedure as outlined in the pairing steps above.

Note: *The smartphone app can only control one Genesis Hand at a time. You will need to manually switch between them to adjust the settings.*

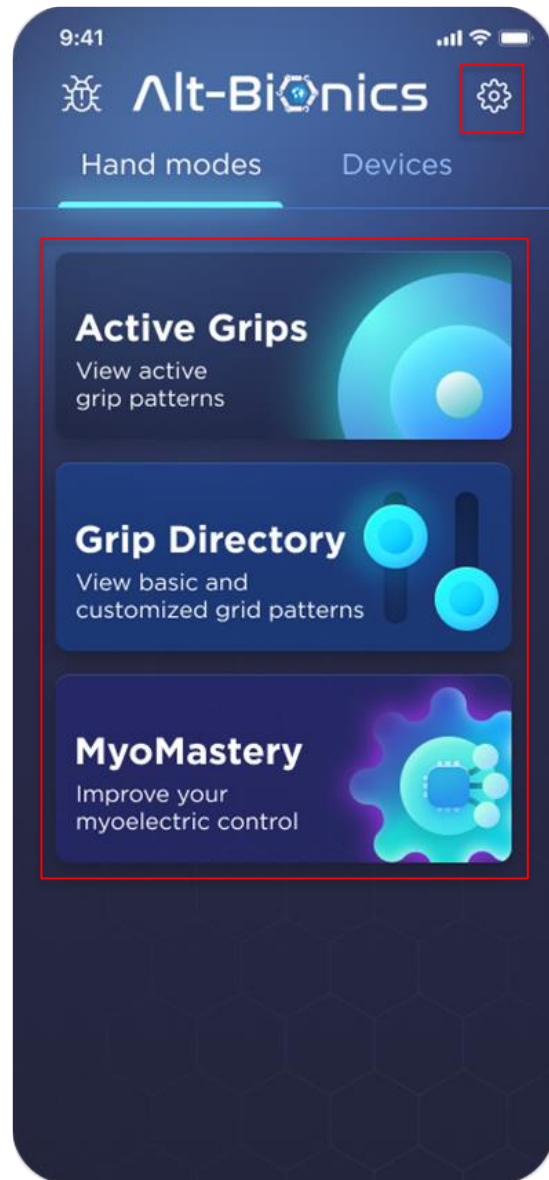


Home Screen Navigation

The Home Screen of the Alt-Bionics app allows you to manage, monitor, and customize the Genesis Hand's functionality. There are three primary menu options and a settings menu (pictured below, right) on the home screen.

Some key settings you can change within the app are as follows:

- **Grip Customization:** Modify, rearrange, or create custom grips.
- **EMG Signal Viewer:** View and adjust your EMG signals.
- **Dual Site or Single Site Control:** Easily select between Dual Site or Single Site Control.
- **LED Brightness:** Adjust the brightness of, or turn off the Hex Ring LED.
- **Flashlight Control:** Toggle the flashlight on/off and modify its brightness and color.
- **Hand Modes:** Switch between Easy Grip and Sequential Mode to control how grips are activated.
- **Activate / Switch Between Grips:** Switch between grip modes easily without needing to make muscle movements.
- **Device Naming:** Rename your Genesis Hand for easier identification during pairing.



These three menu options, along with the settings menu on the top right of the home screen, will give you complete control over all aspects of The Genesis Hand.

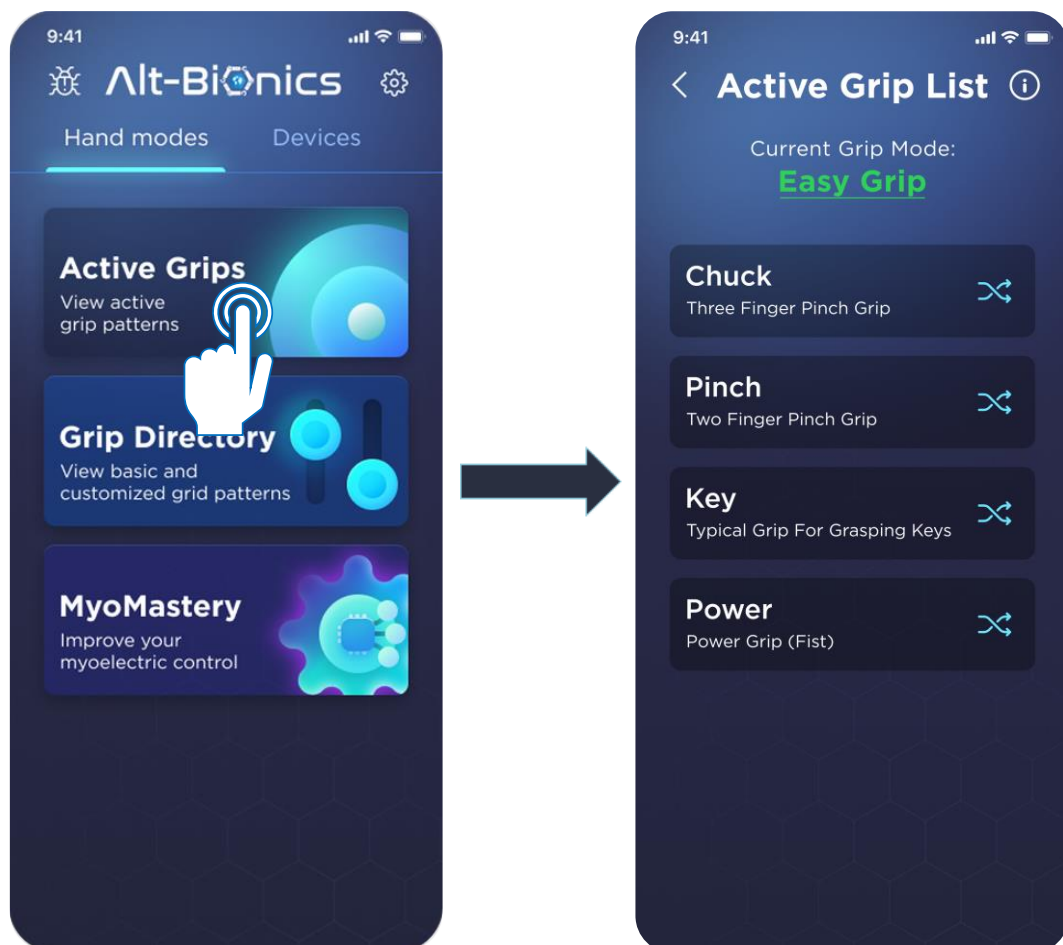
Active Grips Menu

The Active Grips menu includes a list of predefined grips in default order in Easy grip mode and Sequential mode.

To enter the Active Grips Menu, tap on the block that says, “Active Grips”. The app will then display the Active Grip page that contains the above-mentioned list. From here, you’ll be able to Switch between grip modes, view grip configuration, replace grips, and activate grips using just the app.

Navigating The Active Grips Menu - Within the active grip menu, you can switch between different control modes, view and modify grips, and quickly activate grips for your Genesis Hand. The following sections will describe the key actions you can perform within the Active Grips menu to optimize your setup:

Note: Please be sure to read the following sections carefully so that you are familiar with how to properly navigate through your smartphone application.



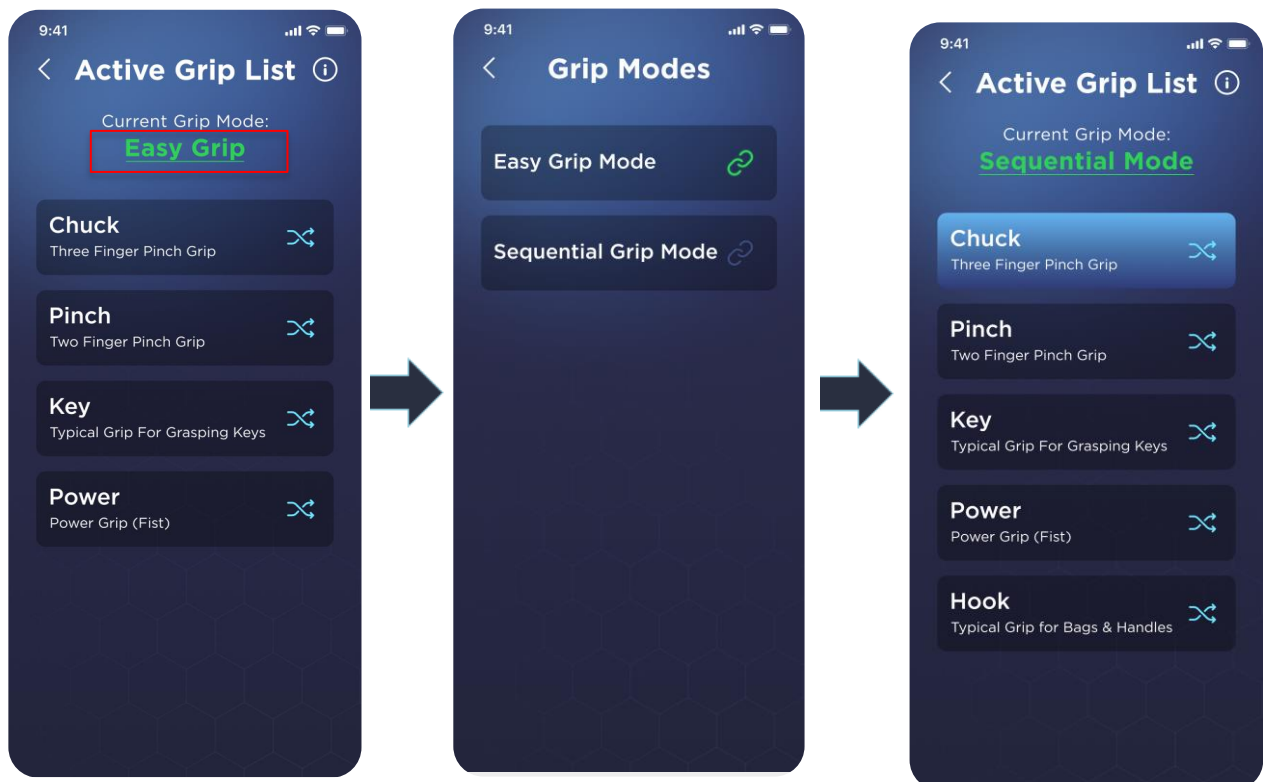
Switch Between Modes

The Genesis Hand offers two modes for setting up and changing grip patterns. To switch between these modes, simply tap the green underlined mode and select the other mode.

- **Easy Grip Mode** – Mode which contains only 4 grip patterns that can each be individually activated by EMG signals. These 4 grip patterns can all be changed to custom grip patterns that best suit your individual needs.
- **Sequential Mode** - Mode which contains 5 grip patterns that can only be cycled through sequentially. These 5 grip patterns can also all be changed to custom grip patterns that best suit your individual needs.

The default mode is Easy Grip mode, which is highlighted green and underlined. Tapping the green, underlined text allows you to toggle between **Easy Grip Mode** and **Sequential Mode**.

Note: As a safety feature, when switching between new Grip Modes, your hand will not immediately open if it is flexed. You will need to extend the hand to its relaxed position before the hand switches into the new grip mode.



View Grip Configuration

The instructions in the following sections are applicable for both Easy Grip and Sequential Modes.


Tapping on any grip will display its current configuration, detailing each finger's exact position in terms of flex percentage, via sliders. For example, a slider positioned all the way to the right will read 100%. This means that that finger is flexed all the way down. Conversely, a finger whose slider is positioned all the way to the left will read 0% and not be flexed at all.

This is especially useful as a reference if you're creating custom grips and need a starting point.

Note: You cannot edit these. They are for reference only.



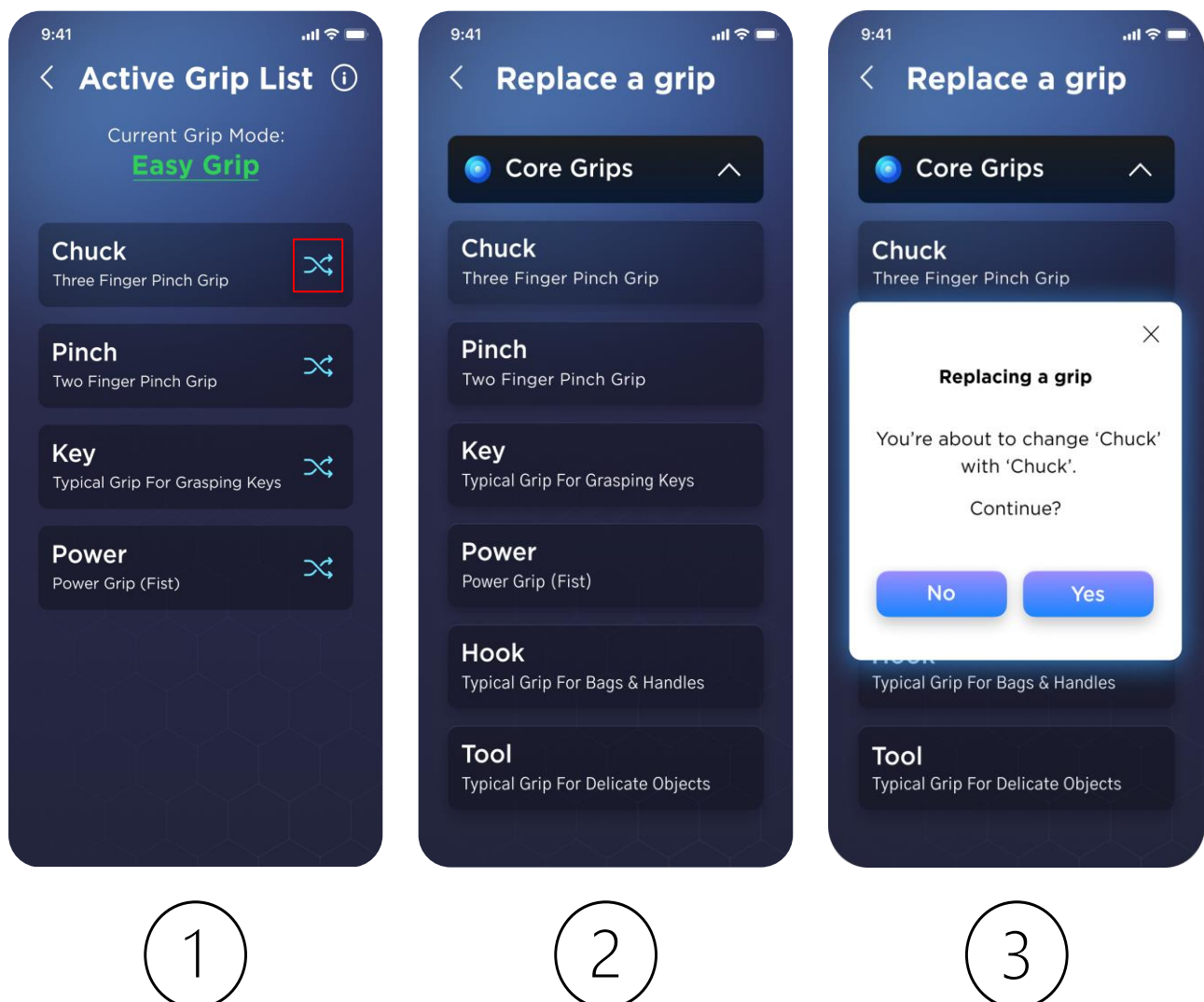
Replace a Grip

Tapping the shuffle  icon to the right of a grip's name allows you to replace the grip with another from the predefined or custom list.

Once you have tapped the shuffle icon on the grip you want to replace, you'll be able to select between grips in the following dropdown menus:

- **Core Grips** – Grips that come standard with each Genesis Hand
- **Custom Grips** - Grips that you or your prosthetist have created to suit your individual needs.

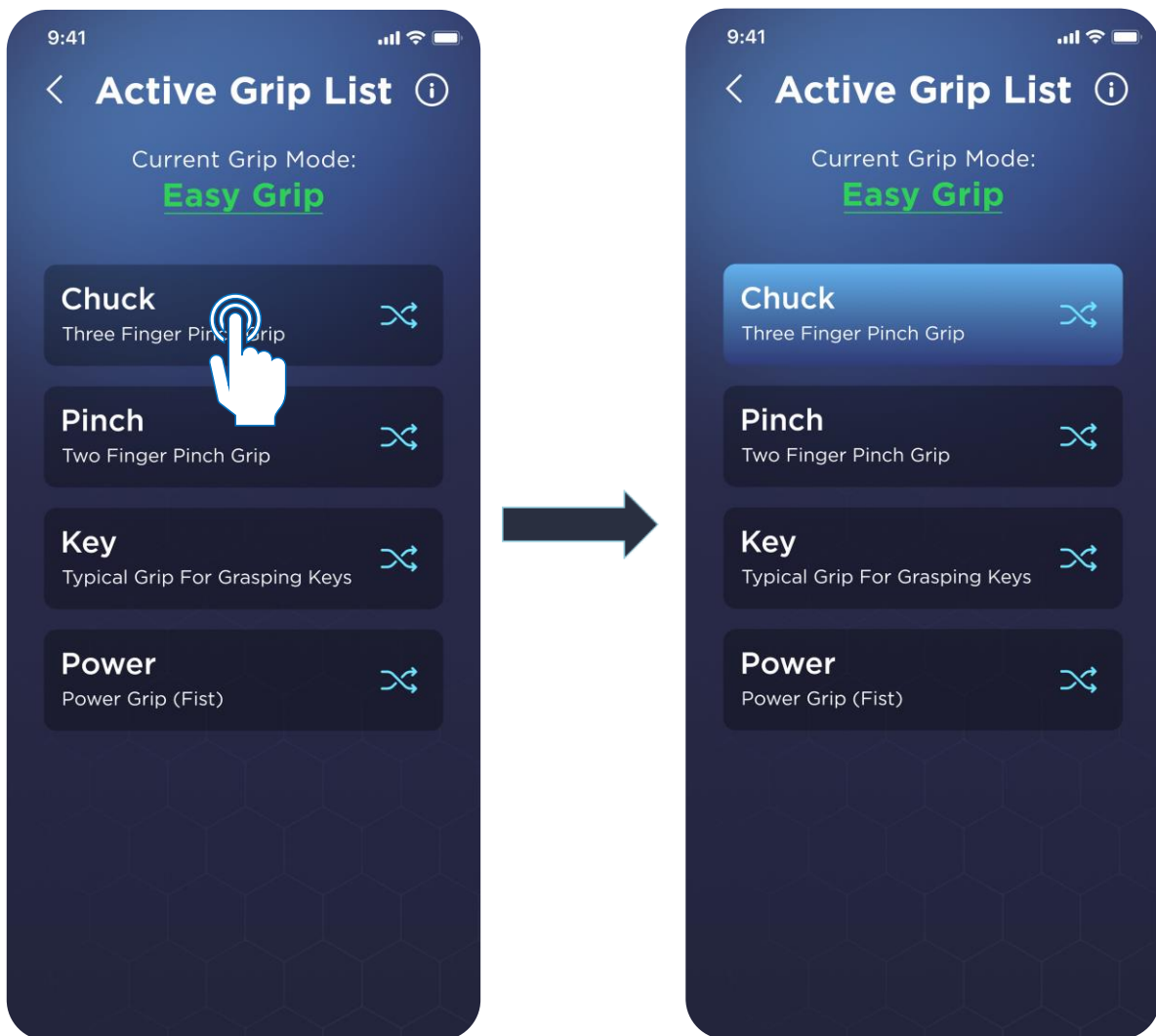
Simply **tap** the grip you'd like to use and verify which slot / grip you are replacing. The grip will then be replaced and ready to use.



Quick Activate Grips

Pressing and holding any grip while the Genesis Hand is powered on will immediately activate that specific grip. This allows for faster navigation through different grips.

Caution: *This will immediately switch the hand into the grip. Please be sure your Genesis Hand is not holding anything delicate, fragile, or dangerous.*



Grip Directory Menu

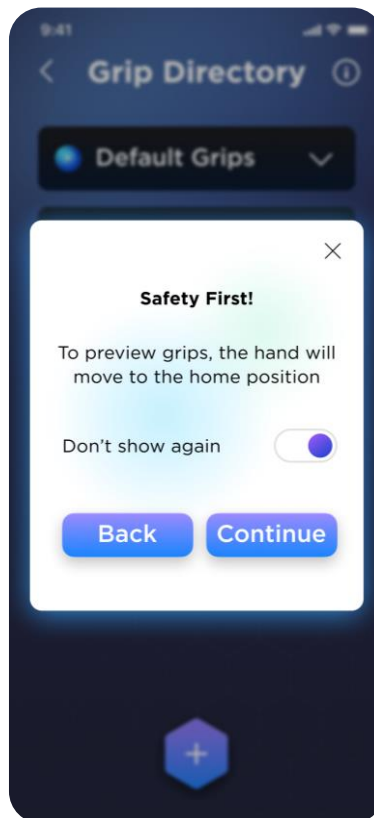
The Grip Directory Menu allows you to fully customize the grip patterns of your Genesis Hand by individually positioning each finger. This menu provides a dynamic, real-time interface where you can adjust the position of each finger using sliders within the app, with the hand responding instantly to reflect the changes.

Whether you're fine-tuning existing grips or creating entirely new ones, the Grip Directory offers a flexible way to tailor the Genesis Hand's functionality to your specific needs. Further details on customizing and saving grips are provided in the following sections.

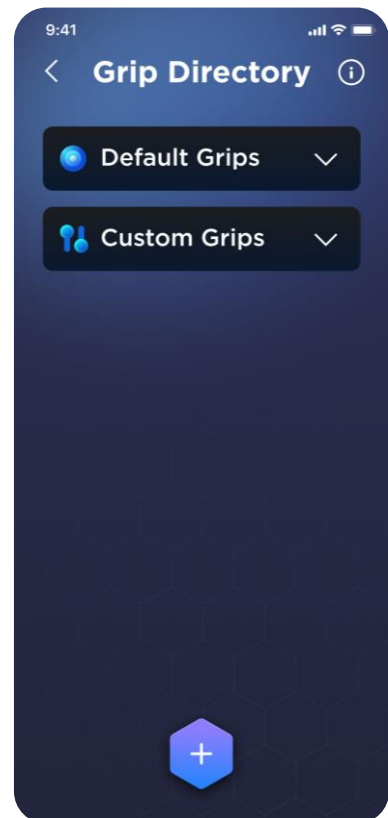
Note: As a safety measure, while inside the "Grip Directory", your EMG signals will be unresponsive, and the hand will move into a safe position while inside of the Grip Directory menu.



1



2



3

Default Grips

Once inside the Grip Directory, you will see two dropdown menu options. The first option is called Default Grips. These are the default factory programmed grip patterns that come standard with each Genesis Hand. This Default Grips menu will contain a total of 5 different grip patterns.

- 1) Chuck Grip
- 2) Pinch Grip
- 3) Key Grip
- 4) Power Grip
- 5) Hook Grip

These have been identified through rigorous research as the most common grip patterns to assist with activities of daily living.




Custom Grips


The second dropdown menu option is called Custom Grips. This will initially be empty as these are the custom programmed grip patterns that are created by either you or your prosthetist.

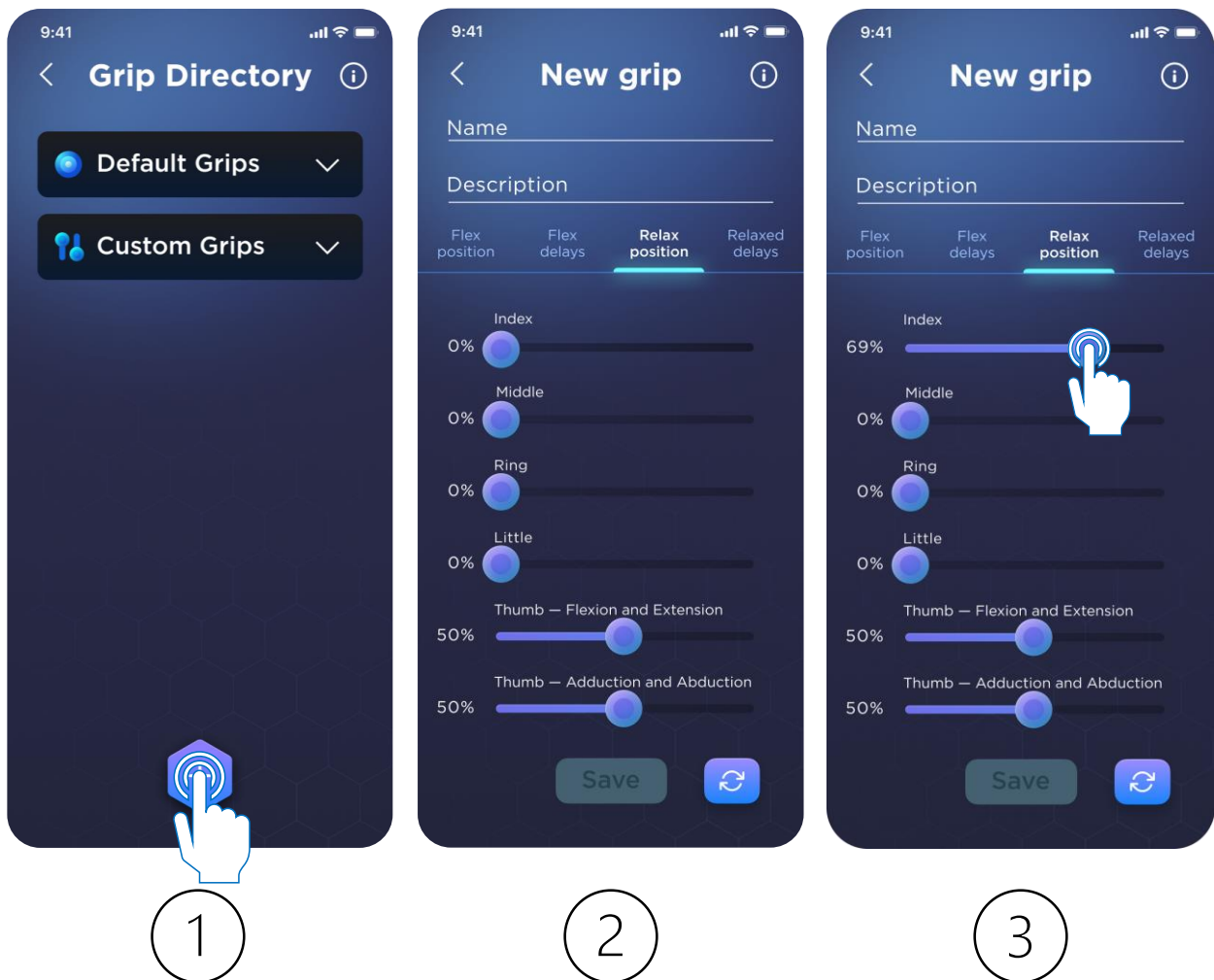
As you create new grip patterns and save them, they will appear underneath this dropdown menu. There is no limit to how many custom grips you can create.

To create your own grip please follow the instructions below:

Note: You will ALWAYS begin in the “Relax position” tab (see [Grip Patterns](#)).

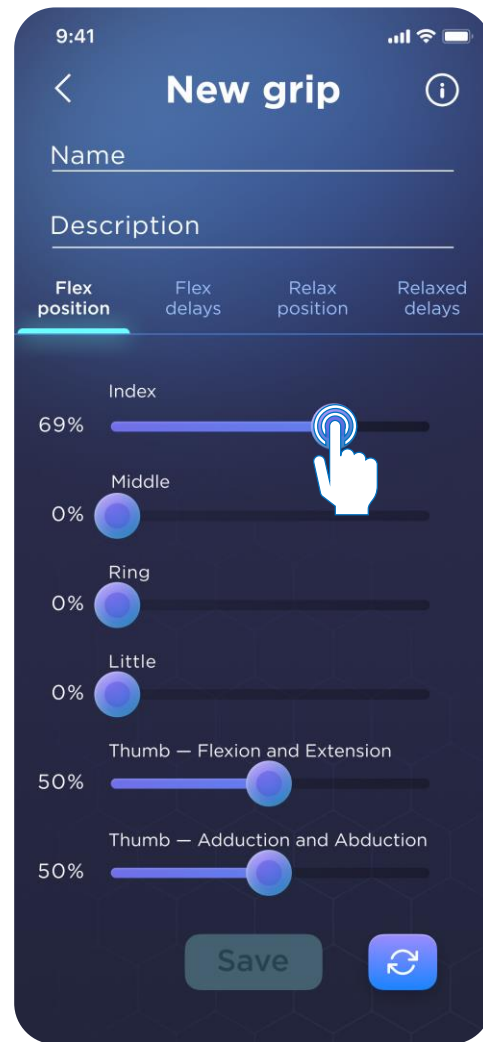
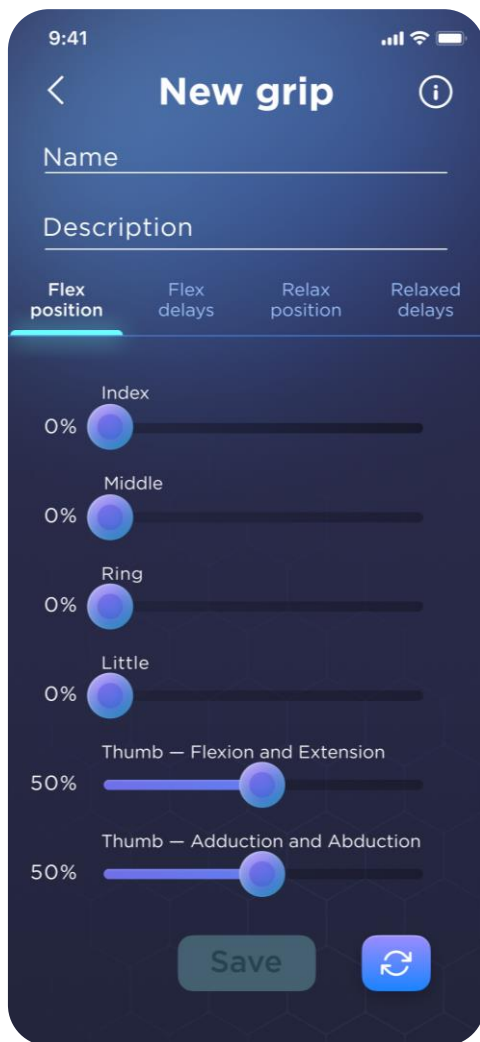
Step 1: Tap on the  sign at the bottom of the screen.

Step 2: Drag the sliders () to position your fingers into the relaxed position of your new grip. Each finger will move to the slider’s position in real time once you release your finger from the slider.



Step 3: Once you have finished adjusting your Relax Position, you can press the “Flex Position” tab to set your finger’s flex positions.

Tip: If you are trying to create a pinch grip or something similar where a finger needs to compress against the thumb (or the thumb against a finger), make sure you are positioning the slider at least 2% - 5% past where the fingers make contact. This will ensure there is strong compression.



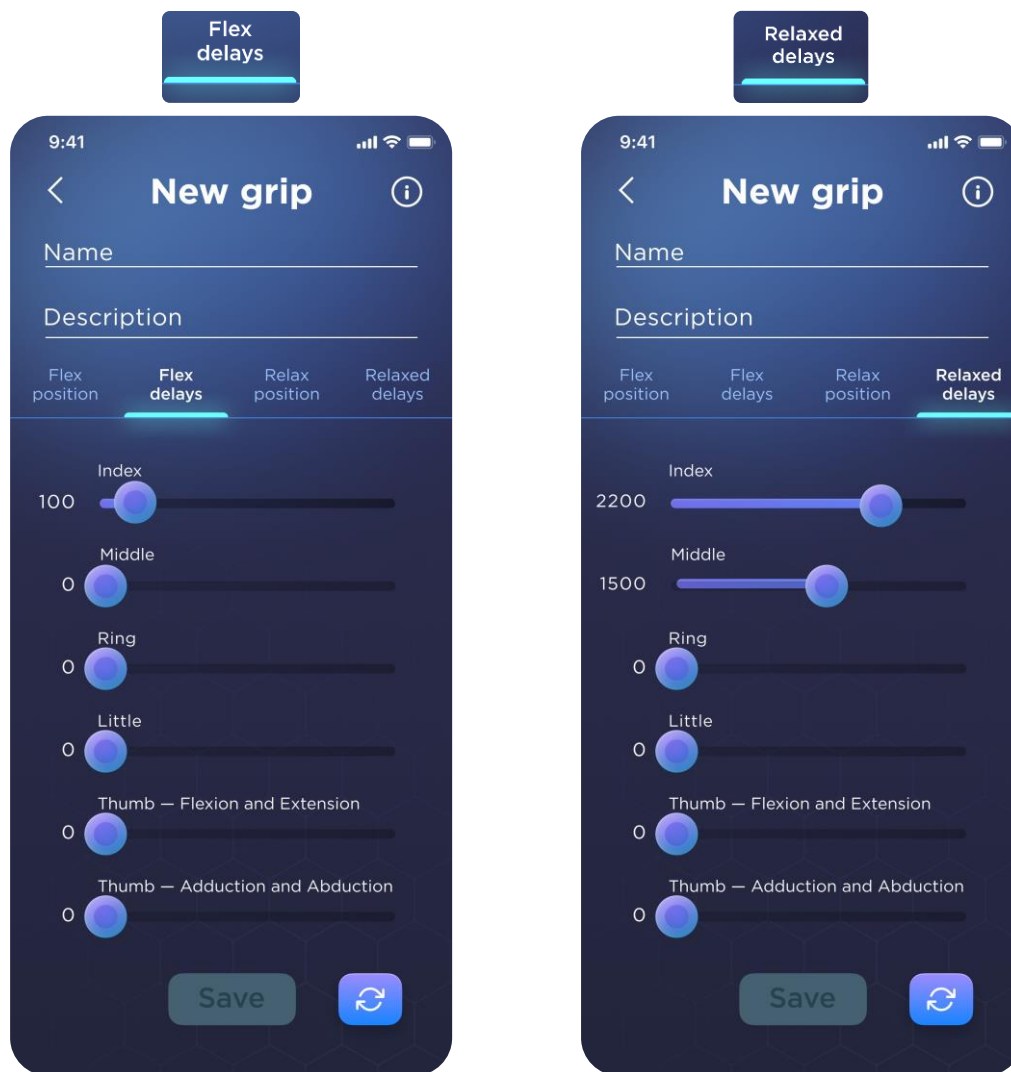
Step 4: Once you have completed positioning your Flex Position, you can switch between “Flex Position” and “Relax Position” to test your new grip.



Note: You will always be met with popup boxes that tell you which position you are adjusting. You can disable this at any time by toggling the “Do Not Show Again” button on these popups.

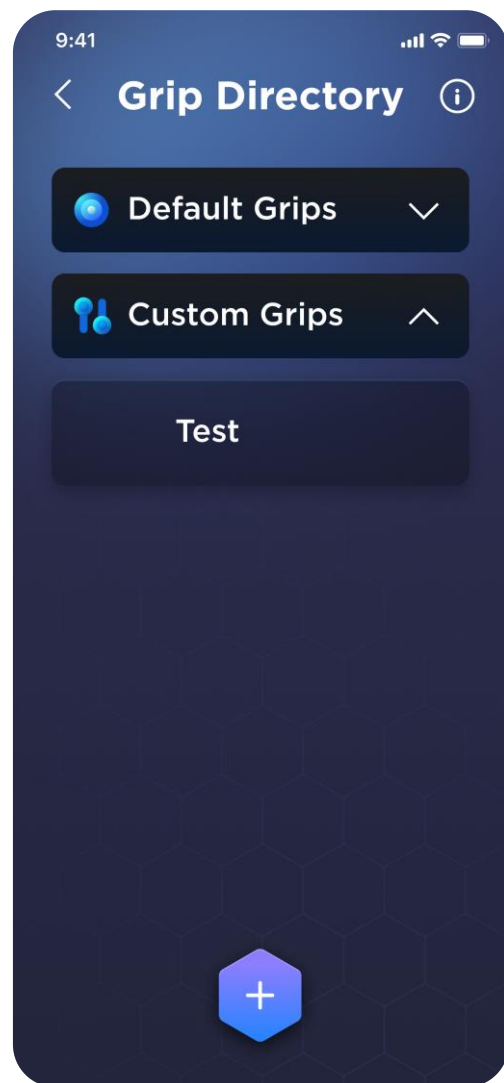
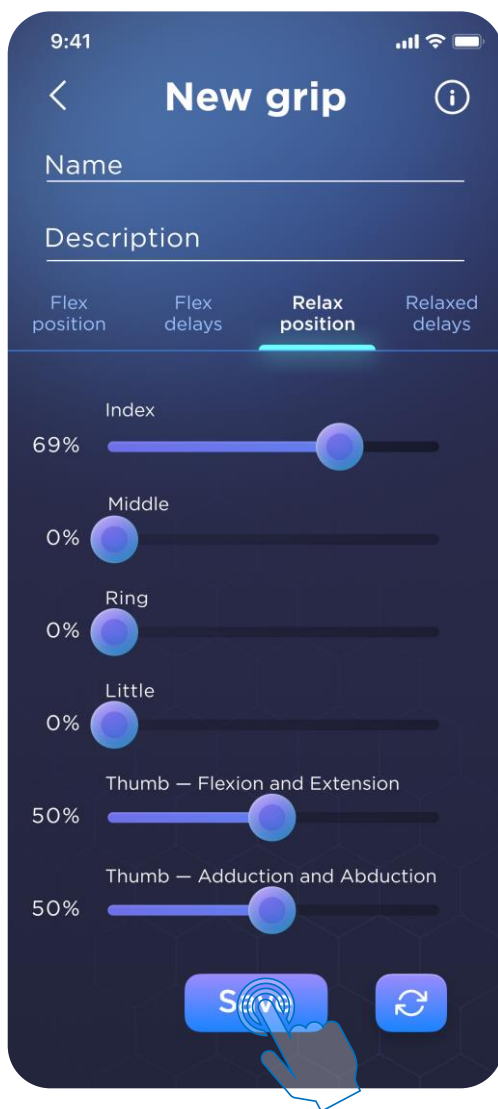
Step 5: If after you test your new grip pattern you find that your fingers are not meeting at the proper time, you can press on either “Flex Delays” or “Relax Delays”. Respectively, these will control the delay of when each finger begins to flex, or release. This ensures your grip performs as intended.

Note: All Flex Delays and Relax Delays are in milliseconds. 500ms = 0.5 seconds.



Step 6: Once you have finalized your Flex Position, Relax Position, and their delays, you can then name your grip and press the “Save” button at the bottom of the screen.

Note: The “Description” field will be displayed underneath the grip name if filled out. This field can be left empty if you like.



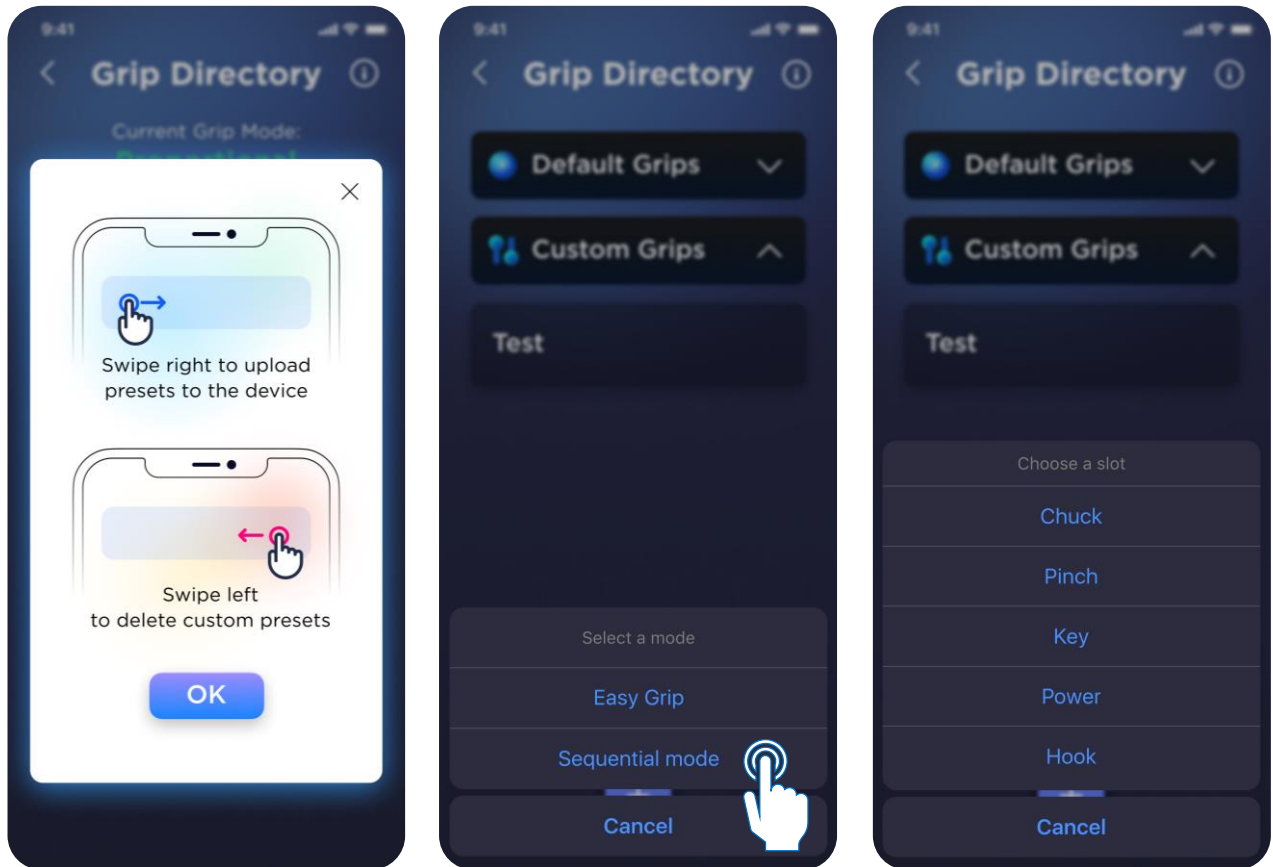
Uploading or Deleting Grips

Once you've created and saved your new grip and you'd like to try it out in Easy Grip or Sequential Mode, simply swipe right on the grip in the "Custom Grips" dropdown menu and select where you'd like to replace that grip.

You'll see a popup menu asking which Mode you'd like to use the grip in and which grip slot you'd like to replace. Once the grip has been replaced, it will immediately be available for use in the specified Mode.

Create a custom grip by Accident? You can also delete any Custom Grips you create by swiping left.

Deletion Note: If you accidentally deleted a grip, there is an "Undo" popup you can tap for a short period of time after deleting.



MyoMastery Menu

The MyoMastery Menu allows you to monitor, view, and customize the control of your Genesis Hand by adjusting your EMG signals. This menu offers a real-time interface where you can switch between single-site and dual-site control, fine-tune EMG settings, and even swap the EMG sensor locations if needed. Whether you're optimizing existing settings or configuring your control signals for a more personalized experience, the MyoMastery Menu provides the flexibility to tailor your Genesis Hand's EMG control to your unique needs.

Further details on adjusting and saving your settings are explained in the following sections.

Note: While inside the MyoMastery menu, the hand will continue to respond to EMG signals. Please lock the Genesis Hand by pressing the Multifunction Button once until the Hex Ring illuminates to a solid red color.



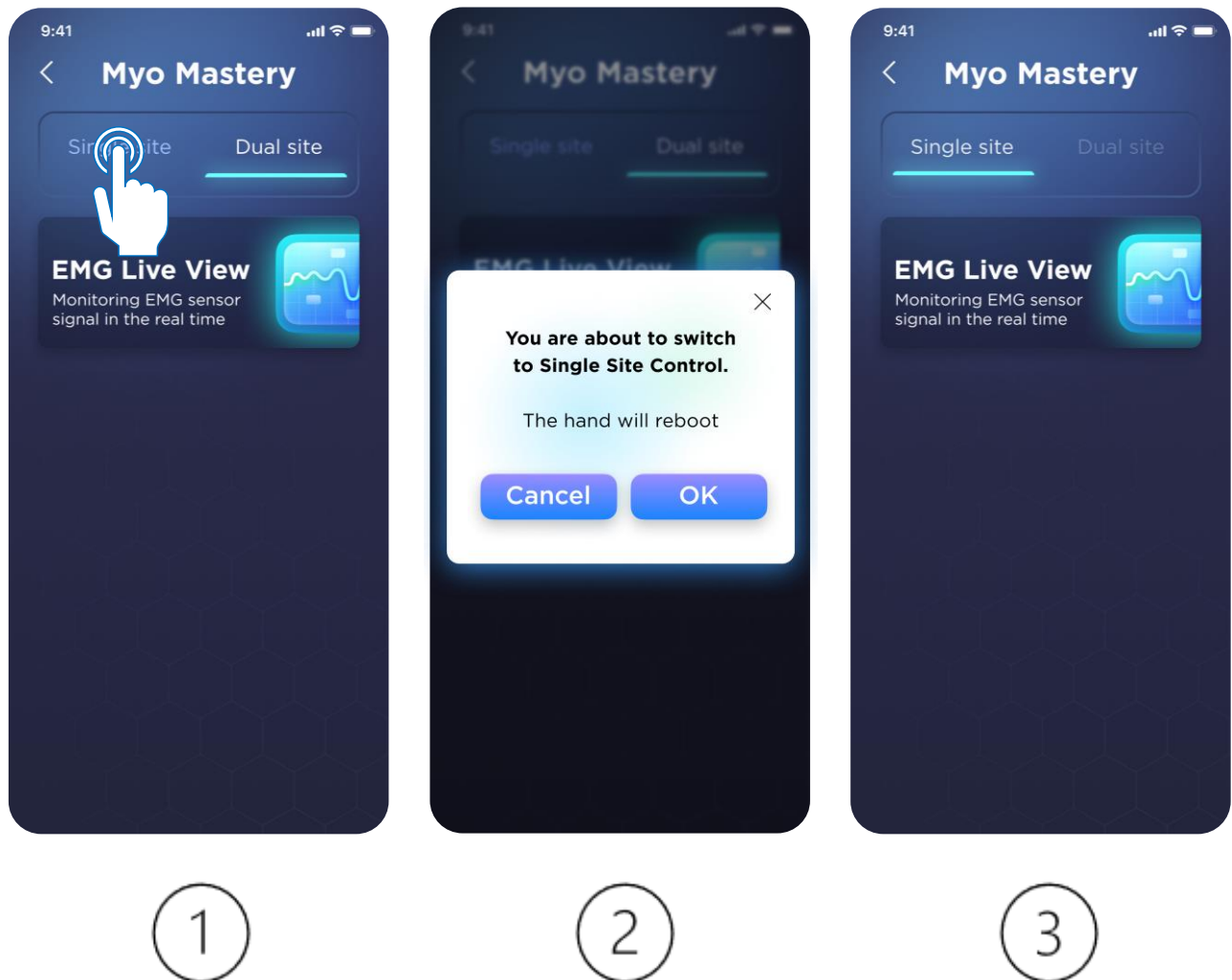
Changing Between Dual Site and Single Site

To switch between Dual Site and Single Site, simply tap the one you wish to use.

The default control method for The Genesis Hand is Dual Site. However, if you are only using one EMG, you must use Single Site control for The Genesis Hand to work. Single Site was specifically designed to work with only one EMG sensor.

The Single Site control method may also be used with two EMG sensors, but it is not recommended.

Note: The hand must reboot and recalibrate when switching between dual site and single site controls.

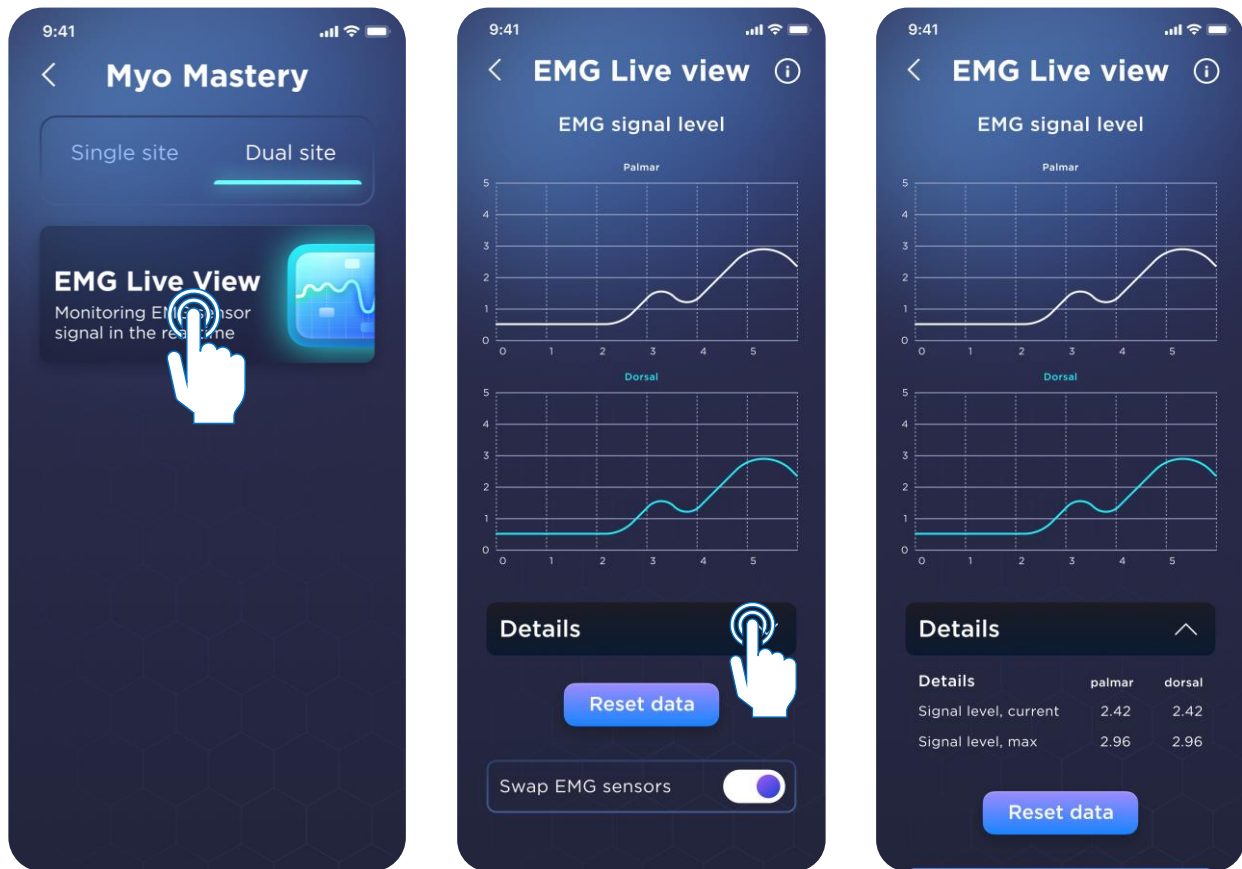


EMG Live View

The EMG Live View Menu will allow you to see your EMG signals in real-time to better assess if you are achieving the appropriate signal levels to control The Genesis Hand.

You can also tap on the dropdown tab titled, “Details” to more accurately determine the max signal level achieved. In the near future, this menu will also allow you to adjust the threshold level required to trigger grips in Easy Grip Mode.

Note: It is suggested to consult with your prosthetist if you are having trouble with your EMG signals as this could be related to socket fit or EMG sensor gain levels (which can be manually adjusted via a dial on the back of each EMG sensor).

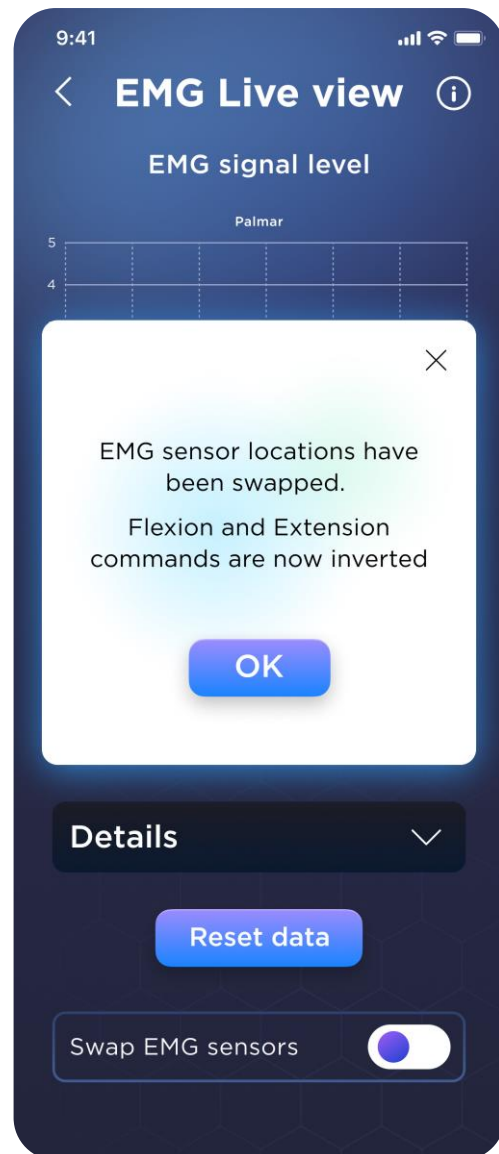
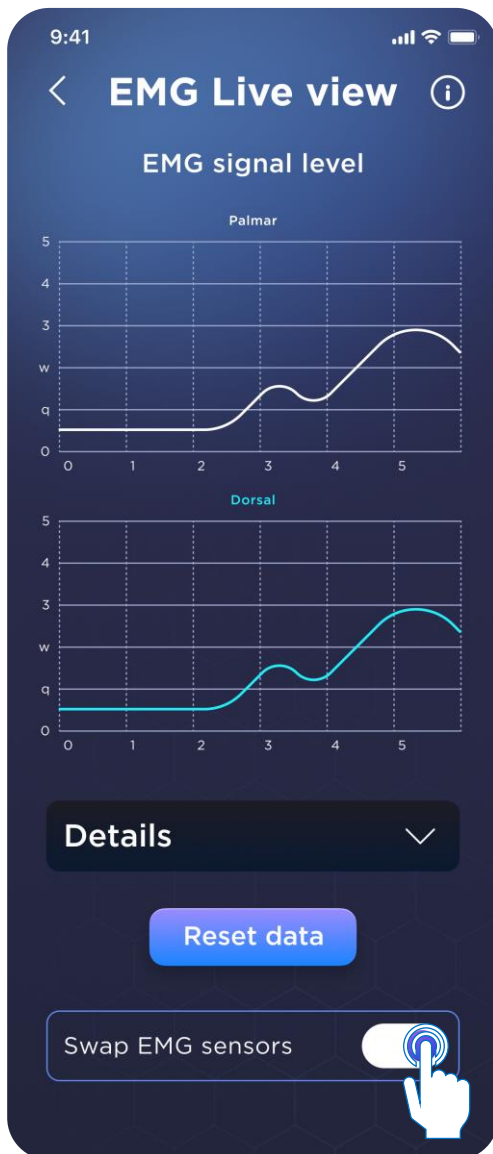


Switching EMG Sensor Locations


When using the Genesis Hand for the first time, you may find that your hand is doing the opposite of what you'd expect. (i.e. the hand closes when you want it to open). This is likely because your EMGs are setup backwards.

This is not a problem and is nothing to be alarmed about.

If you scroll down on the EMG Live View screen, you will find a toggle switch titled, "Swap EMG Sensors". Tapping this toggle switch will electronically switch the locations of your EMG sensors. For example, your palmar EMG sensor will now be recognized as your dorsal EMG sensor. Easy as that!




Settings Menu

You can change and personalize the theme settings of your smartphone app as well as LED and Flashlight settings via the settings  menu from the Home Screen.

- 1) **Theme:** Tap the toggle switch to change between Dark Mode and Light Mode themes. This will also change your smartphone app's icon.
- 2) **About us:** Learn more about our mission and the team behind the app.
- 3) **Privacy policy:** Read how we collect, use, and protect your data.
- 4) **LED Brightness:** This slider adjusts the general brightness of your Hex Ring LED.
- 5) **Flashlight Brightness:** This slider only adjusts the flashlight brightness.
- 6) **Flashlight Color:** This slider will adjust the color related to your flashlight function. This will not affect the colors associated with the Hex Ring in the Hex Ring LED Glossary section.



Factory Reset

You can perform a full factory reset via the settings  menu from the Home Screen. In the settings menu, scroll down and locate the “Reset to factory settings” button at the bottom of the screen.

The “Reset to factory settings” button, the hand will revert the hand to its factory conditions. All saved / customized grip patterns, EMG settings, and grip organizations will be lost. You will only be able to use the Default Grips.

Warning: This should only be used as a last resort after appropriate troubleshooting has taken place.

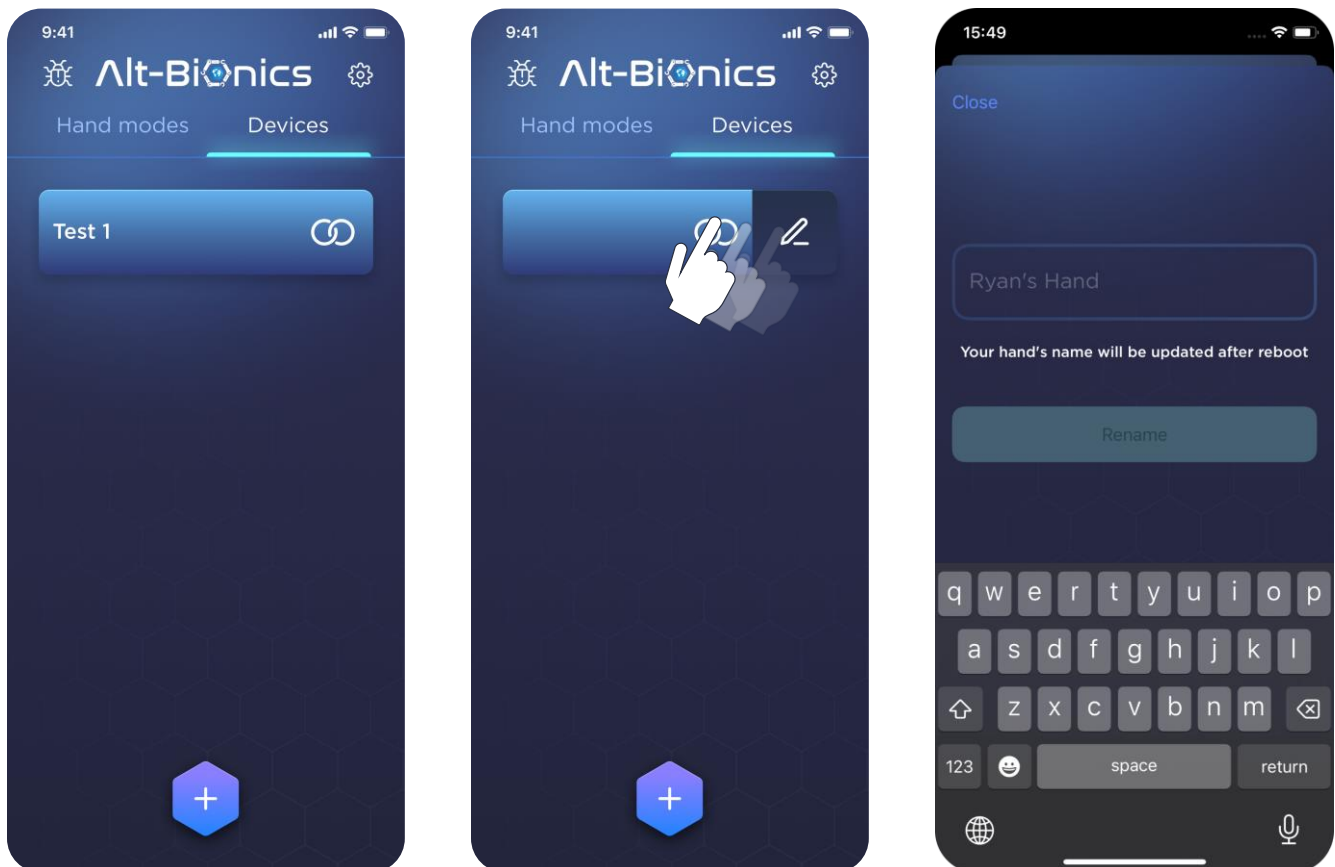


Change the Genesis Hand name

If you want a more personalized name for your hand, you can easily customize it from the “Devices” tab on the home screen.

- While on the Home Screen, click on the “Devices” tab.
- Swipe left on the connected device to enter **Edit Mode**.
- Once in **Edit Mode**, enter a new name for the device and save the changes.

Note: *The Genesis Hand will reboot and recalibrate after changing its name.*



Firmware Updates

As a part of our mission to make the Genesis Hand the world’s most advanced bionic hand, and to ensure the best possible experience for our users, The Genesis Hand will be periodically and wirelessly updated as new advancements and features are developed.

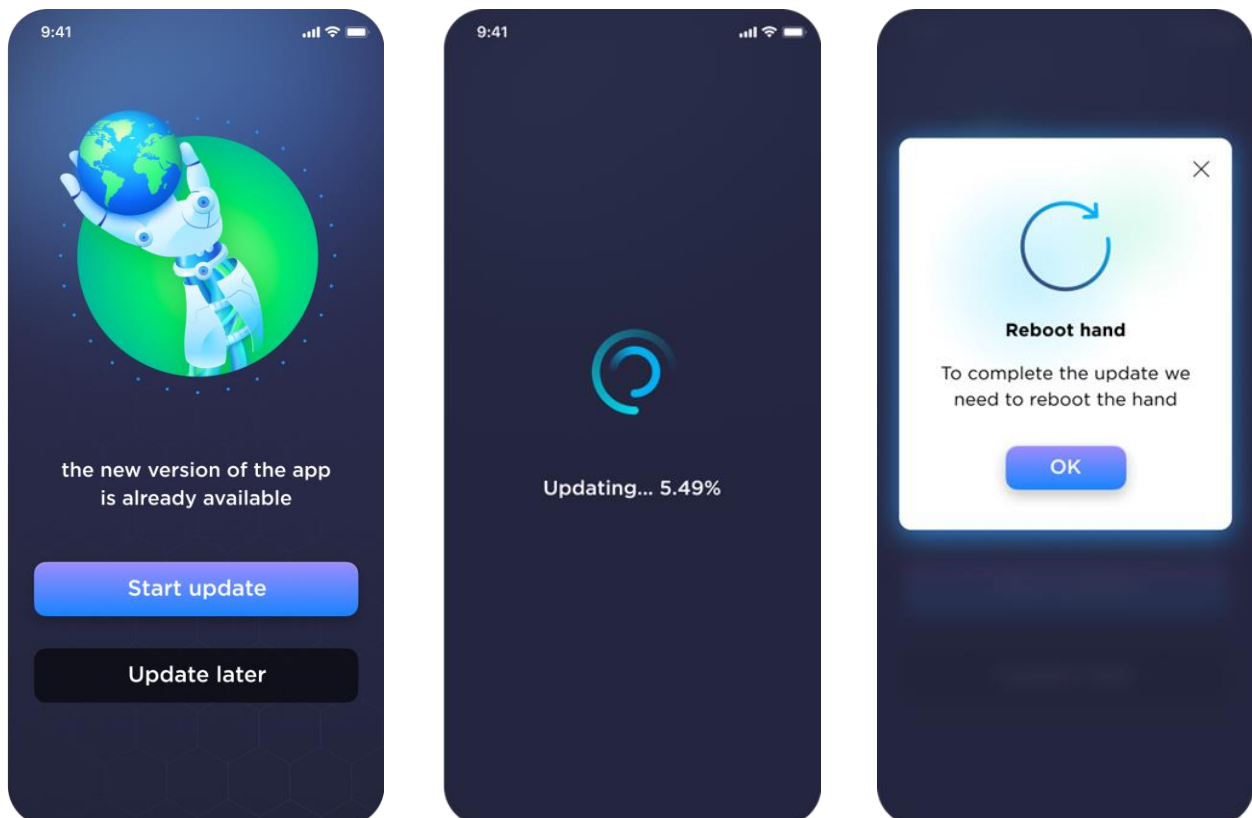
Each time you open your smartphone application, the app will check for any firmware updates. If there is a new firmware update available, you will have two options:

- 1) **Start Update:** Begins the update immediately.
- 2) **Update Later:** Prompts periodically until confirmed.

Please follow the below instructions if you choose to update the firmware.

- Keep The Genesis Hand powered on, the app open, and ensure that your Genesis Hand has at least 50% battery before beginning the update.
- After the update is installed, the hand will need to reboot. Accept the reboot notification to complete the update. The hand will recalibrate (see “[Calibration](#)”).

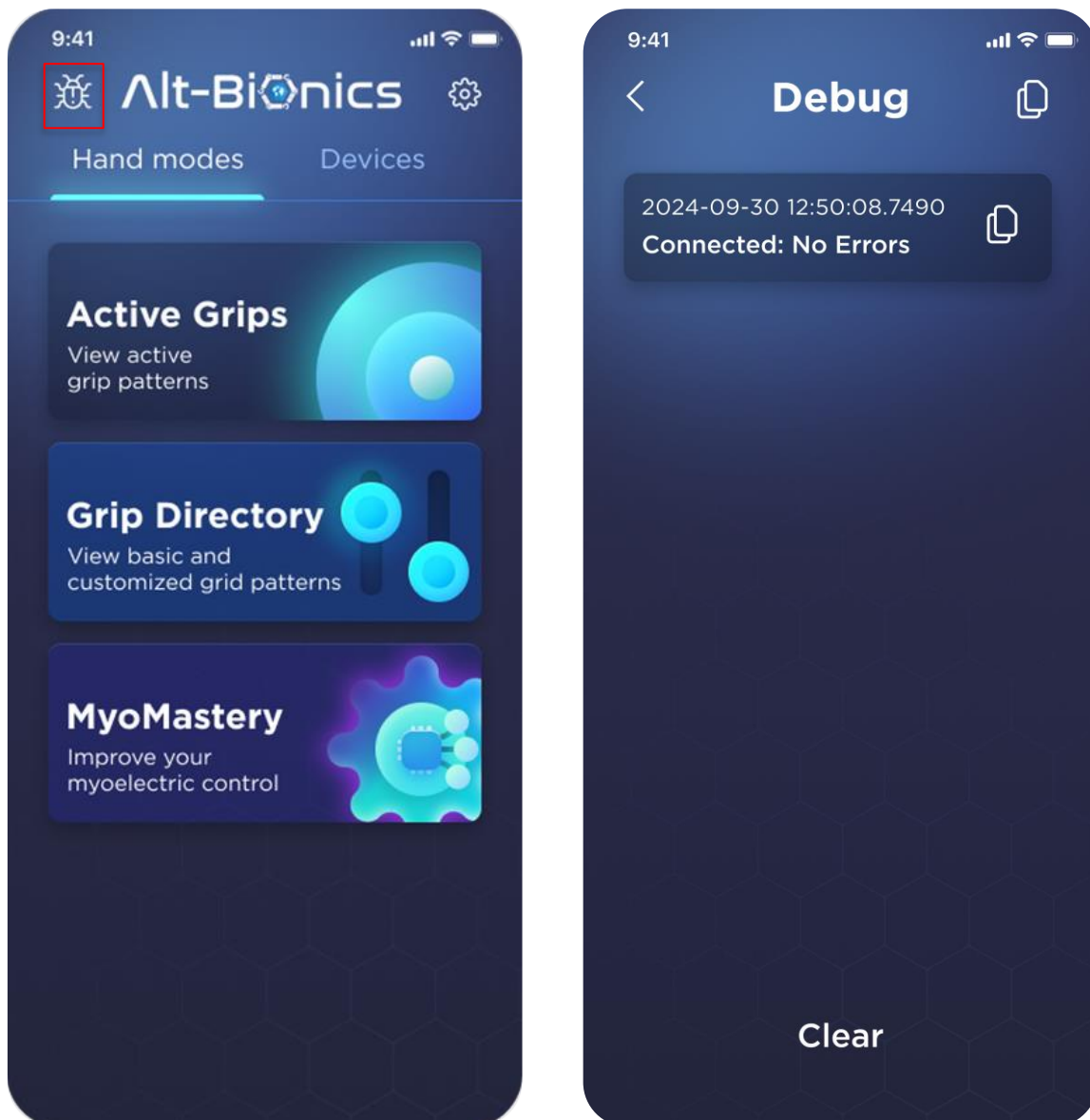
Note: When a new version of the mobile application becomes available then the FW update may also be required.



Debug Menu

On the top left of the home screen, you'll notice a small ladybug. This is the Debug menu. When clicking on the debug menu, you'll see a list of all errors associated with the hand (if any occur). This can be helpful if you or your clinician are experiencing issues with the hand.

If there are any errors displayed, please take a screenshot of the error and contact your prosthetist to evaluate further. If there is nothing wrong with the hand (it is functioning properly and without issue) and an error occurs, the error can be disregarded.



Warranty Coverage

The Genesis Hand is backed by a **1-year limited warranty** from the date of purchase, ensuring that your device functions as intended. This warranty covers the following:

What is Covered

- Coverage includes any defects in materials or workmanship that affect the performance of the Genesis Hand.
- Unknown defects in the material used to build each Genesis Hand.
- Accidental damage to the Genesis Hand that does not exceed any operational limits and disobeys any safety guidelines or appropriate usage outlined previously in this manual.
- Minor accidental damage that occurs during normal use, within operational limits, may be covered. Please contact us for an assessment.

What is Not Covered

- Improper use of the Genesis Hand, including failure to follow warnings and limitations described in the User Manual
- Any damage that does not impair the functionality of the Genesis Hand
- Intentional damage to the Genesis Hand
- Loss or theft of the Genesis Hand
- Damage from animals or insects
- Normal wear and tear vii. Connecting or installing the Genesis Hand with incompatible parts
- Exposure to hazardous conditions caused by severe weather, lightning, or natural events
- Any circumstances beyond the reasonable control or expectation of Alt-Bionics

Return Policy

Should you encounter any warranty-covered issues, contact your prosthetist with proof of purchase and a detailed description of the problem. Technical support will be involved if necessary, and a temporary Genesis Hand will be provided via overnight shipment during the replacement or repair process.

Regulatory Compliance

Alt-Bionics' Genesis Hand is registered with the U.S. Food and Drug Administration (FDA) by the Center for Devices and Radiological Health (CDRH) registration and listing office.

Contraindications

Contraindications are specific situations or conditions where using the Genesis Hand may pose risks or complications. Avoid using the device under the following circumstances:

- **Medical Conditions or Physical Limitations:** If you have medical conditions or physical limitations that may interfere with the device's performance, consult your healthcare provider before use.
- **Age Restrictions:** The Genesis Hand is not designed for children under 12 years old, as it may not fit properly or function safely.
- **Extreme Environmental Conditions:** Do not use the Genesis Hand in environments with extreme temperatures, high humidity, or where it could be exposed to water. These conditions can impair the device's functionality or cause damage.

Maintenance & Troubleshooting

Regular checks for signs of wear and tear should be part of your routine, and maintenance should be performed every 1-2 months.

If the Genesis Hand is not functioning or if it has been damaged, please contact your prosthetist to arrange a repair or replacement (if applicable).

Cleaning

To maximize the longevity of the Genesis Hand, it is best to maintain a clean device. Avoid rinsing the Genesis Hand with water, as it is not designed to handle direct exposure to liquids. Instead, use a damp cloth or cleaning wipe to remove dirt and dust from the surface of the hand. Ensure that the cleaning agent or liquid does not penetrate the main body of the hand, as this could cause damage.

Note: Avoid using cleaning agents such as detergents or bleach, as these may harm the Genesis Hand. We recommend using only mild soap and water applied to a cloth or cleaning wipe to clean the hand.

Storage

It is important to store the Genesis Hand in a dry place with room temperature conditions, ideally around 70°F (21°C). Avoid exposing the Genesis Hand to extreme temperatures outside the range of -4°F to 113°F (-20°C to 45°C) as it can cause significant harm to the device.

Operating Conditions

To ensure the optimal performance of your Genesis Hand, please follow these recommended operating conditions:

Temperature	23°F to 113°F (-5°C to 45°C)
Pressure	728 hPa to 1018 hPa
Humidity	15% to 93% RH (non-condensing)

Operating the Genesis Hand outside these conditions may affect its performance. If the device becomes unresponsive, move it to a recommended environment and allow it to acclimate before use.

Technical Support

If you're experiencing issues with the Genesis Hand, we encourage you to contact your prosthetist first. For further support, feel free to reach out to us via email at Ryan@altbionics.com or by phone at +1(210)-854-6392. Our support hours are from 10:00 AM CST to 6:00 PM CST.

Troubleshooting

If you encounter any issues with your Genesis Hand, your first step should be re-calibrating the hand by pressing the Multifunction Button 7 times in a row. The Hex Ring should display a solid Azure color, indicating that re-calibration is in progress.

If the problem persists, and the following troubleshooting steps do not help, please consult with your prosthetist as soon as possible:

❖ **Incorrect Finger direction:**

- Your EMG sensors might be swapped. If EMG sensors are working properly and fingers are still moving in the wrong direction, navigate to the MyoMastery menu, and switch your EMG sensors.

❖ **Stuck / Not Moving Finger:**

- If finger is still stuck, remove 5 screws from backplate and ensure the connection to the PCB (Printed circuit board) is secure.

❖ **Fingers open when hand is locked:**

- Verify that the red light on the HexRing LED is showing a solid red color. The hand should never open when this red light is on (solid).

❖ **Genesis Hand is not turning on (no light):**

- Ensure the battery inside your socket is charged and turned on.
- Press and hold Multifunction button until you see the gradient LED appear. It should display the battery life. (See [Hex Ring Glossary](#))

❖ **Genesis Hand is not connecting to the Alt-Bionics App:**

1. In your phone's Bluetooth settings, ensure the Genesis Hand, which may appear as a string of characters such as, "4D:EJ:7G", is connected. If you do not see it connected, or showing up at all, Press and hold the Multifunction button until the LED shows a rotating, deep blue color.
2. Close your smartphone app.
3. Reopen the app, and you should see a prompt to pair with the hand.

See "Smartphone Application Setup" section in this manual.

❖ **Grip patterns are not working:**

- Potentially indicates that the grips programmed inside the smartphone app are incorrect. Please, check under the “Active Grips” page, to ensure the correct grip patterns are selected. You can tap on each grip to see finger and thumb positions (percentages).
- If you have confirmed the grip patterns in “Active Grips” are the correct grip patterns and that their positions are also correct, but the grip patterns are still not working, try to re-calibrate the hand by pressing the button 7 times.
- If you have confirmed the grip patterns in “Active Grips” are the correct grip patterns, that their positions are also correct, and you have recalibrated the hand, and the grip patterns are still not working, please contact your prosthetist for further analysis.

❖ **The button is not responding, but the arm is on:**

- This potentially indicates a loose or damaged button connector. Please remove the dorsal plate from the hand and check that the connector with only two cables (black and red only) is securely plugged into the correct port. See Technical Repair Manual on our website’s Resources page.










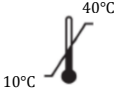









❖ **Water contact:**

- The Genesis Hand has not been certified with any IP-rating but has been designed to be resistant to accidental sprays or water drops.
- If your hand is splashed with water (more than a spritz or spray), turn it off immediately, dry it thoroughly, and wait until the hand is completely dry before turning it back on.

If you cannot solve the problem, we encourage you to contact your prosthetist first. For further support, feel free to reach out to us via email at Ryan@altbionics.com or by phone at 1-210-854-6392. Our support hours are from 10:00 AM CST to 6:00 PM CST.

Please visit our website for instructional videos and more information.

Symbols

	FCC compliance.
	Consult instructions or electronic instructions before use.
	Indicates the Manufacturer.
	Indicates the item is a Medical Device.
	Indicates the quantity.
	Serial number of the product.
	Lot number of the product.
	Model number or type number of the product.
	Date of manufacture of the medical device.
	Temperature range of the product.
	Protect the product from water. Keep it dry.
	Do not use it if the package is damaged and consult instructions for use.
	Fragile. Handle the product with care.
	Caution.
	Single patient - Multiple use.
	Type of Body Floating (BF) Part. Compliance with IEC 60601-1.
	Non-sterile. Product not subject to sterilization process.
	Federal law restricts this device to sale by or on the order of a prosthetist.
	Latex-free device. Not made with natural rubber latex.

Regulatory Compliance

FDA Registered & Listed

This device is classified as a Class I medical device by the FDA. It is manufactured by Alt-Bionics and is registered with the FDA under establishment registration number 3030650077. The device listing number is D532294.

Labeling Compliance

The labeling of this device complies with ISO 15223 and shown are the symbols used by the manufacturer (Alt-Bionics, Inc). This device complies with the requirements of ISO 13485:2016. This certifies that Alt-Bionics, Inc meets the quality standards for design, manufacture, and supply of prosthetic products.

EMC Compliance

The Genesis Hand complies with Part 15 of the FCC regulation. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Alt-Bi**o**ronics



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A special thanks to our dedicated engineers and our Ukraine partners, whose countless hours and sacrifices have brought this piece of engineering to life.

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