Motion Arm®

Forearm Cutting Tool

Instruction Manual

Fillauer® Motion Control

Special Precautions

A waterproof terminal device with a waterproof quick disconnect wrist must be installed to make the elbow waterproof. Exposing the elbow to water without a waterproof wrist installed will likely cause damage to the elbow.

Do not remove the forearm cover for any reason. This will damage the waterproof seal. The warranty will be voided for any water damage caused to the elbow if the forearm has been removed by anyone other than authorized personal.

Do not remove any covers, screws, plates or any part of the elbow not described in this manual. There are no user serviceable components within the elbow. Removal of these covers will compromise the waterproof seal and void the warranty.

Risk Management: To minimize the risk of device damage or injury to the user while maximizing the functions of this device, follow the instructions for installation, and use this device as described in this manual.

The Motion Arm will support 50 ft-lbs/65 Nm (22.6 kg) with the elbow in the locked position. Forces greater than 50 lbs could damage the elbow and are considered beyond the capabilities of the elbow. This could include but is not limited to lifting heavy loads and/or falls onto the elbow.

In the unlikely event a serious incident occurs in relation to the use of the device, users should seek immediate medical help. Clinicians should contact their regional Fillauer company immediately in the event of any device failure.

Intended Use

For in-clinic modification of the length of the Motion Arm of up to one inch from 10in (25.4cm) down to 9in (22.8cm) in 3 available increments. This tool is intended to be used only for the Motion Arm and when used properly can help to provide a smooth level surface for lamination to maintain the waterproof feature of the arm.

Please note that to maintain the waterproof nature of the elbow, the forearm cover must not be removed. If additional shortening is necessary beyond the available features of this tool, please contact Motion Control, a Fillauer Company for a customised length.

If during the fitting it is decided to either install or eliminate an electric wrist rotator, call Fillauer Motion Control to determine wire connections for the new configuration.

Introduction

VIDEO INSTRUCTIONS AVAILABLE ONLINE

The Motion Arm, both Manual Lock (ML) and Electric Lock (EL) represent the next level of functionality in automatic forearm balance elbows. Part of this increased functionality is meeting the IP67 dust-proof/waterproof standard. To maintain that standard, we recommend using this custom cutting tool if you intend to modify the length of the arm. Step by step instructions are available in this booklet or by video at the link provided.

Procedure to Cut the Hybrid Forearm to Length

The Standard length for the Motion Arm is 10 inches (25.4 cm) from the center of rotation of the elbow to the distal forearm. This is the shortest forearm possible when using an electric wrist rotator. With the Forearm Cutting Tool the forearm can be shortened up to 1 inch (2.54 cm). The forearm can be shortened an additional 1 inch but must be sent in to Motion Control for cutting. See image below:

*Minimum length to include a wrist rotator

The Forearm Cutting Tool

1. Remove screws from the end cap. With a Philips head screwdriver remove all the screws from the end cap or wrist rotator at the end of the forearm. Remember, if there is an electric wrist rotator and the arm is made shorter than the standard 10-inch length, the rotator cannot be used with the elbow.

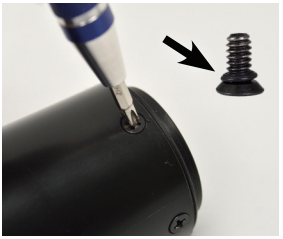


Fig 1. Remove screws.

2. Gently remove the end cap. Avoid pulling on and damaging the internal wires. Unplug the wires going to the end cap at the connectors. (Fig. 2) NOTE: Mark or record which 4-pin connector inside the forearm that the end cap is plugged into so you can plug it back in the same way upon reassembly. (Fig. 3) Take precaution to move all the connecting wires out of the path of the cutting blade.

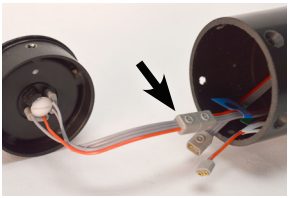


Fig 2. Remove the end cap and unplug the connection.

3. Attach the cutting tool. Be sure that the disc is snapped into the receiving end of the cutting tool (Fig. 4) then insert forearm section into the circular groove. Make sure it is fully seated. (Fig. 5) Be sure to keep the wires out of the way while inserting.

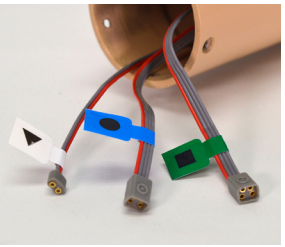


Fig 3. Record the wire configuration.

Align the guide hole in the cutting fixture to one of the screw holes in the forearm, (Fig. 6) note the position of the elbow with the top of the cutting fixture). Use one of the screws removed from the elbow to lock the forearm section securely in the cutting fixture. This ensures the accuracy of your intended cutting length.

Fig 4. Circular disk groove to secure arm, and bottom tab for vice insertion.

4. Measure the new length. Measure the desired length from the elbow center of rotation to the cutting end (Fig. 7) and note the corresponding groove on the cutting fixture with a marker (Fig. 8). Each cutting slot represents 5mm, or .2 inches in length. The first slot from the distal end is 12.5mm or ½" as long as the tool is fully seated on the forearm.

Fig 5. Insert the arm.

Fig 6. Line up the screw and secure.

Fig 7. Measure length from the center of rotation.

Fig 8. With a Sharpie marker, identify the cutting slot.

5. Secure the cutting tool and arm into a vice or table clamp. Using the tab on the bottom of the cutting tool secure the cutting tool into your clamp. (Fig. 9) Be sure to support the arm for the cleanest cut; and so that the elbow doesn't drop once cut.

6. Cut the arm. Insert the hacksaw blade into the appropriate groove and slide the cutting tool top cover into place. (Fig. 10) Cut through the forearm. Take precautions not to cut through the internal cabling in the arm and be sure to stabilize and support the arm.

Fig 9. Place the arm in a vice or clamp.

Fig 10. Cut through guide slot with a hack saw.

Take precautions not to cut through the internal cabling in the arm.

7. Remove the cutting tool. Take the arm from the clamp and remove the cutting tool. Clean off any debris that may have accumulated and then remove the cut plastic disc from inside the forearm. (Fig. 11) Be careful not to introduce debris into the cavity of the arm.

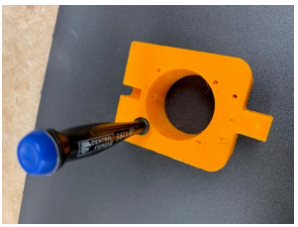


Fig 11. Remove the guide and disk.

8. Clean up the cut area. Gently deburr the edges of the forearm section with a deburring tool, or knife. Lightly sand the opening that will receive the end cap with a fine 220 grit sandpaper. (Fig. 12) Make sure the sanded surface remains flat and level to the long axis of the forearm so the end cap seats nicely and preserves the waterproof nature of the device. Use care to not allow debris to fall into the elbow.

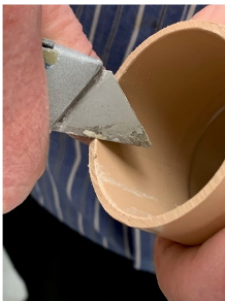


Fig 12. Deburr the edges and sand to smooth the cut end. Use caution with debris.

9. Reattach the appropriate wires. Plug the wires into the back of the end cap. Plug the 4-pin connector back into the same connection it was unplugged from in Step 1. If you are removing a wrist rotator or are unsure of placement, call Motion Control to get the correct wiring ports.

Configuration One, Standard Connection:

For a 4-band ProWrist, connect the 4-pin connector on the ProWrist to the wire coming from the Motion Arm with the blue label (Fig. 3).

If using a 6-banded ProWrist, connect the 4-pin connector on the ProWrist to the wire coming off of the Motion Arm with the blue label. The wire with a white label gets plugged into the wire on the ProWrist labeled Data Only (Fig. 13).

Configuration Two, Non-Standard:

For a 4-banded ProWrist, connect the 4-pin connector on the ProWrist to the wire coming from the Motion Arm with the green label (Fig. 3).

If using a 6-banded ProWrist, connect the 4-pin connector on the ProWrist to the wire coming off of the Motion Arm with the green label. The wire with a white label gets plugged into the wire on the ProWrist labeled Data Only (Fig. 13).

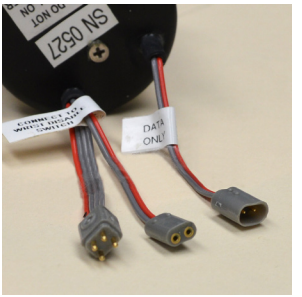


Fig 13. ProWrist configuration is either a 4-band or 6-band coaxial plug with up to three connection wires. This shows the 6-band configuration.

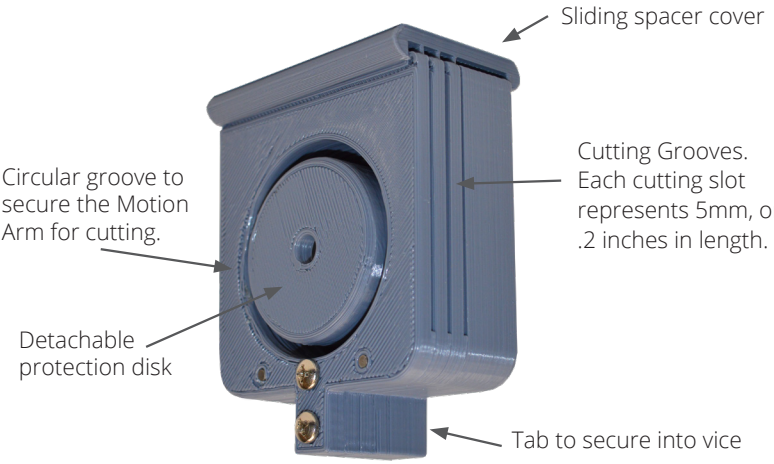
10. Hook up the terminal device and test the connections.
Make sure the connections are working properly before gluing the end cap in place. It will be very difficult to access the connections once the end cap is permanently attached.

11. Glue the end cap. We recommend that you apply 60 second Fabtech Adhesive glue (not provided) to the inside of the forearm, not the end cap. Be careful not to get any glue on the wires.

Insert the end cap, then twist a ¼ turn (disregard the holes in the end cap, they are no longer needed). The end cap should seat fully without any of the O-ring showing. If the end cap does not seat completely or the O-ring is visible, the wrist may not be waterproof. (Fig. 14)

Fig 14. You should not see the O-ring when fully seated and glued in place.

12. Allow glue to set. Full strength should be achieved in about 1 hour Wait that minimum time before applying rigorous loads to the end cap. To allow for best results wait 24 hours before fully loading the arm. The new length Motion Arm should be ready to attach to the socket at this point. For troubleshooting or other concerns feel free to contact customer service at Fillauer Motion Control.



The Forearm Cutting Tool

VIDEO INSTRUCTIONS AVAILABLE ONLINE

Documentation and video tutorial for the cutting guide is available online:

www.fillauer.com/motion-arm-education

Customer Support

Americas, Oceania, Japan
Motion Control, Inc., a Fillauer Company
115 N. Wright Brothers Drive
Salt Lake City, UT 84116
801-326-3434
motioninfo@fillauer.com

Europe, Africa, Asia
Fillauer Europe
Kung Hans väg 2
192 68 Sollentuna, Sweden
+46 (0)8 505 332 00
support@fillauer.com

Fillauer

Fillauer
2710 Amnicola Highway
Chattanooga, TN 37406
423.624.0946
www.fillauer.com

EC REP **Fillauer Europe**
Kung Hans väg 2
192 68 Sollentuna, Sweden
+46 (0)8 505 332 00

CE