

MC Triad Preamp System

Prosthetist Manual

Motion Control
division of
Fillauer®

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Introduction

Features

The Motion Control Triad Preamp System is a versatile preamp/electrode system. It provides four different installation options and interchangeability with virtually all other myoelectric prosthetic manufacturers' systems. The Triad Preamps are resistant to interference from outside sources such as cell phones, fluorescent lights, and other sources of radio frequency interference. Additionally, adjustment on the preamp allows easy access for the prosthetist or patient to change the sensitivity either initially, or throughout the day.

Four installation options:

- Flush
Utilizing a tight silicone grommet, suitable for suction sockets
- Surface
Direct-to-socket mounting for evaluation and temporary applications
- Roll-on Snap Electrode Kits
Roll-on liners can be used with the Motion Control Snap Electrode Kit
- Remote
Utilize high or low profile electrodes mounted in the socket wall and preamps mounted in a remote location, such as the humeral section in a shoulder disarticulation prosthesis for a more cosmetic prosthesis

Industry standard ribbon cable connection

High RF and 50-60 Hz interference rejection

Prosthetist/patient adjustable gain setting

Components

The Triad Kit contains:

- Triad Preamp
- Ribbon cable
- Triad Cable Plug
- Electrodes
- Electrode Thumb Wrench
- Grommet
- Inner Surface Dummy
- Grommet Opening Dummy

Figure 1

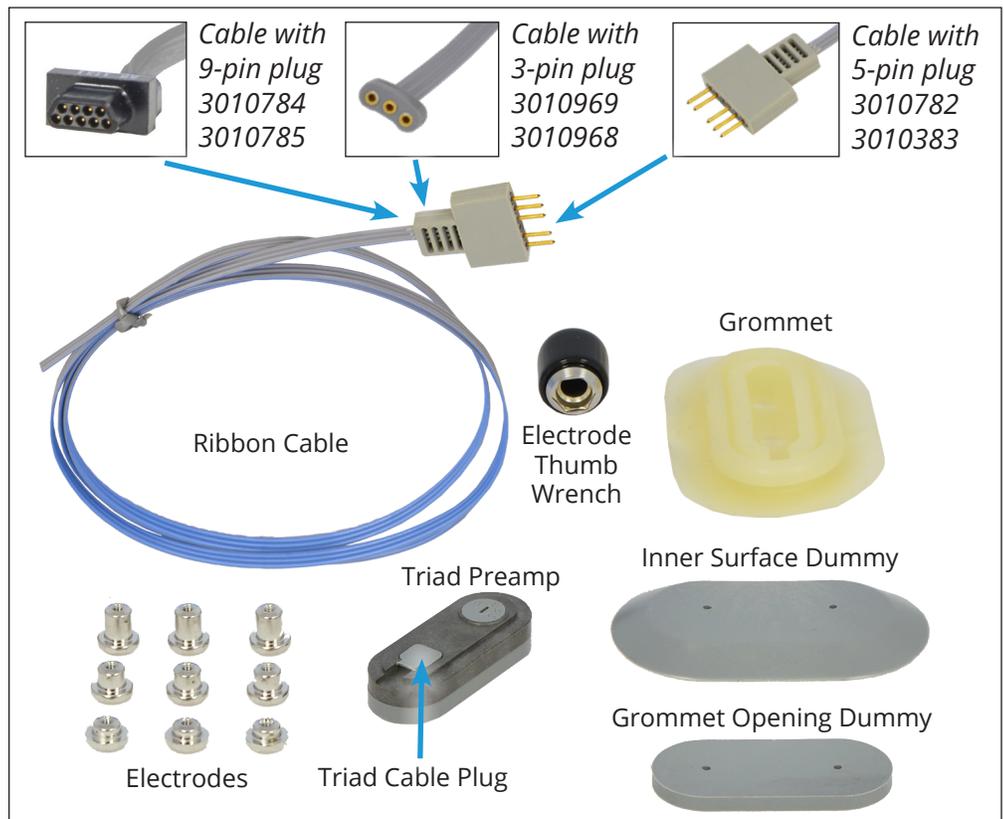


Figure 1a

Triad Preamp
electrode side

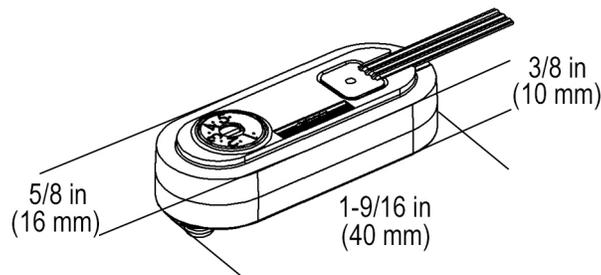


Specifications

Length: 1-9/16 in (40 mm)

Width: 5/8 in (16 mm)

Height: 3/8 in (10 mm)



Special Precautions



When using the surface mount system, do not over-tighten the electrodes or damage may occur to the Triad Preamp.



Do not use Loctite on Triad fasteners or electrodes.



Do not over-tighten electrodes or fasteners onto the Triad, as the Triad could be damaged.



When using a Fastener Kit, the lug nuts must be insulated from the surroundings to prevent shorting, and loss of signal.



When installing the legacy ribbon cable, the dark blue strand side **must** be down. With newer cables, the blue side must be down and the grey side up. If not, this will cause the entire prosthesis to operate incorrectly.

Fabrication Dummies

Two fabrication dummies are supplied with each Triad. One is the shape of the inner surface of the grommet (Inner Surface Dummy) and the other the mounting hole for the grommet (Grommet Opening Dummy, Figure 1).

Installation

Flush Mount

Evaluate the temporary socket fit. If it is snug, the Inner Surface Dummy is necessary to accommodate for the volume of the silicone grommet. If the temporary socket is slightly loose, this dummy can be omitted.

The Grommet Opening Dummy can then be either stacked upon the Inner Surface Dummy (the top of the Inner Surface Dummy will need to be flattened) or mounted directly on the model. When plastic is either vacuum formed or laminated over the dummies, the plastic can be ground flat to the surface of the dummy, to be the perfect size for the grommet (Figure 2).

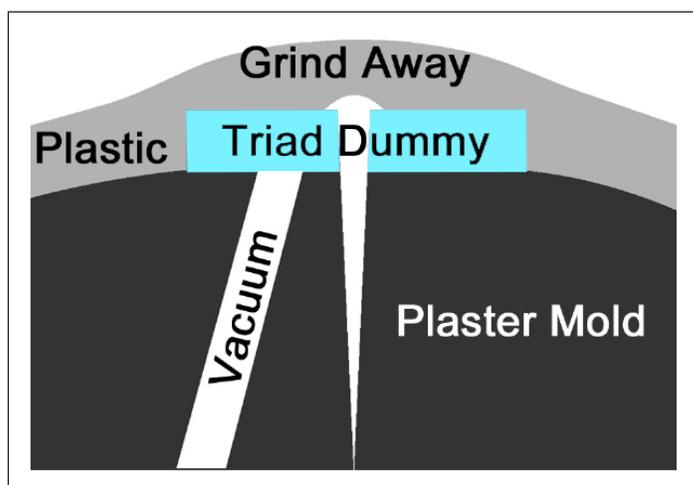


Figure 2

Alternatively, the size of the Grommet Opening Dummy can be traced onto the socket and the opening carefully ground out to fit the grommet. Care must be taken so the opening is not too large and no longer airtight, yet large enough that the preamp will slide in. If the plastic is thicker than the grommet, it will need to be ground down to the appropriate thickness (Figure 3).

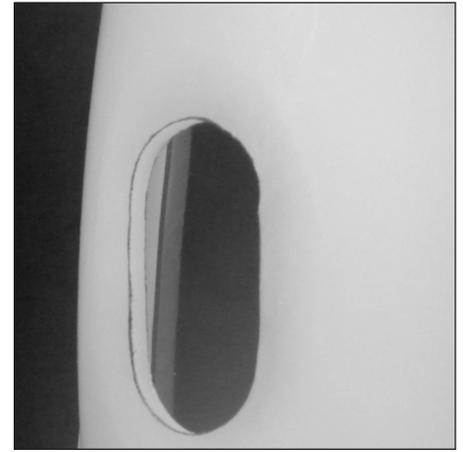


Figure 3

Install the electrodes with the Thumb Wrench (*snugly, finger tight*), install the ribbon cable (Figures 10, 11) and slide the Triad into the grommet (Figures 4, 5). High, medium and low profile electrodes can be changed out depending upon the necessity of socket fit (Figure 6).



Figure 4



Figure 5

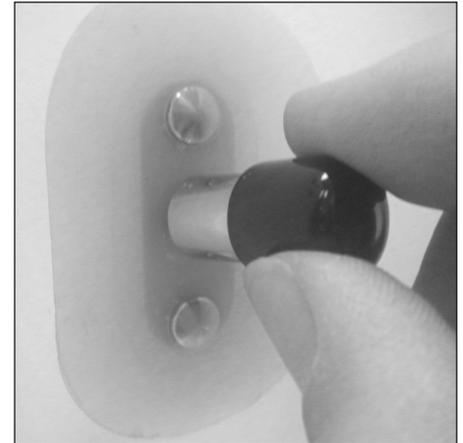


Figure 6

For suction sockets, RTV silicone should be used between the socket and the grommet, and the grommet and the Triad to ensure there is no leakage.

Surface Mount

Surface mounting is quick and easy to move on a temporary, evaluation socket. This is useful early in the fitting process when exact electrode location is yet to be determined (Figure 7).



Figure 7

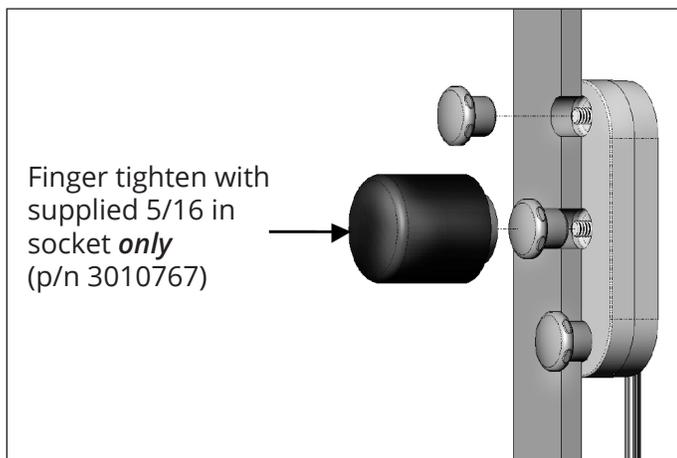


Figure 8

Select electrode position, mark the three mounting studs and drill a 7/32 in.Ø hole. Electrode length is determined by not only the necessity of socket fit, but also plastic thickness. If the plastic is too thick, simply grind it down to the desired thickness (Figure 8).

Remote Electrode Installation - for snap electrodes or remote socket electrodes

Snap electrodes are useful with roll-on liners (Snap Electrode Kit p/n 3010853 for 3 mm liner, p/n 3010854, for 6 mm liner). These kits are ordered per channel (for dual channel, order 2). Instructions for the snap electrodes are included with the kit. Use the fasteners supplied with the kit to attach the cable to the Triad Preamp. The green wire attaches to the center stud (Figure 9).

Remote electrode installation can also be used with the Remote Electrode Kit (p/n 3010880, one kit per channel, 2 kits for dual channel) in cases where there is inadequate space for the Triad but there is space in another area of the socket.

Use the Fastener Kit (Triad Lug Nuts with washers) to attach the wire to the Triad. The green wire attaches to the center pole of the Triad. Use only the Thumb Wrench to tighten the lug nuts (*snugly, finger tight*) and do not over tighten. Also, do not use any Loctite on the studs or lug nuts (Figure 9).

Once the Triad Lug Nuts are attached, use some type of insulating material around the assembly (e.g. shrink wrap, duct tape, electrical tape). The lug nuts are prone to shorting, causing loss of signal.

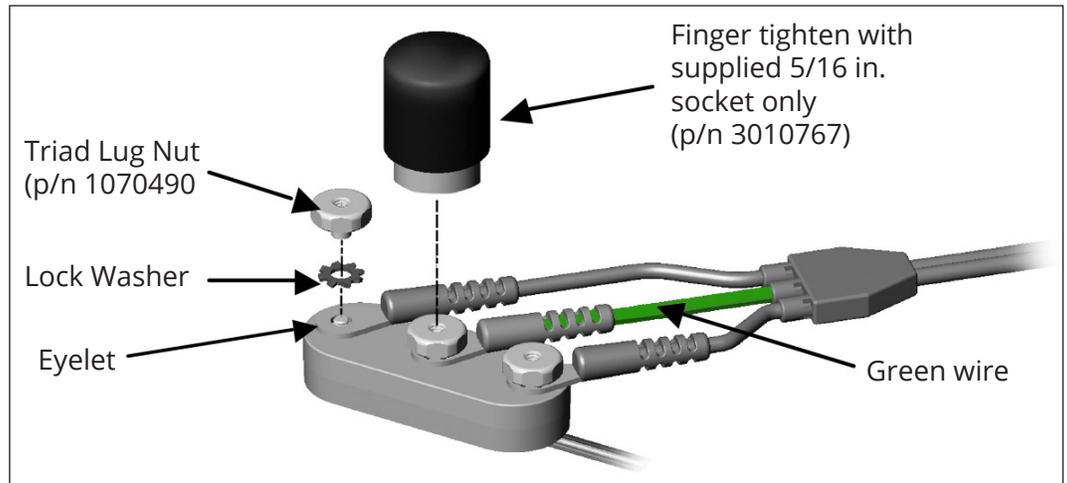


Figure 9

NOTE: The Triad Preamp ribbon cable is in transition from a light blue cable (legacy cable) to a grey/blue cable (newer cable). You may also have some of the legacy cable on hand. Instructions for both types are included.

Connecting Ribbon Cable

The Triad Preamps utilize an industry standard ribbon cable. With legacy cables, one strand of the cable is dark blue on only one side. Put the dark blue side *down*, into the Triad Cable Plug (Figure 10a). With newer cables, put the blue side down and the grey side up (Figure 10b).

Assembly

Cut ribbon cable to length (cleanly square off the end).

With legacy cables, slide the ribbon cable completely into the Triad Cable Plug with the dark blue strand down (toward the slots, and the knife-edge connectors (Figure 11a). With newer cables, insert with the blue side down, grey side up (Figure 11b). Ensure the ribbon cable slides *completely* into the cable plug.

Firmly press the cable plug into the Triad Preamp until the top is flush with the surface of the Triad.

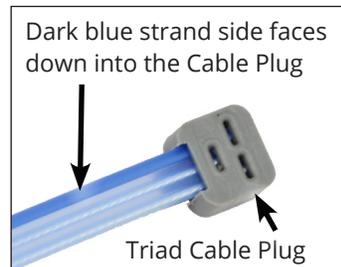


Figure 10a - Legacy Cable

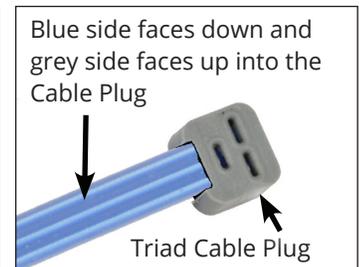


Figure 10b - Newer Cable

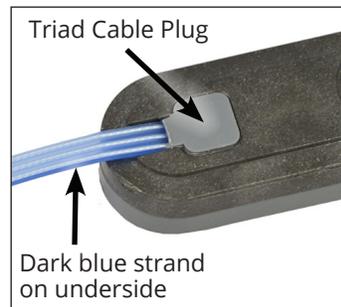


Figure 11a - Legacy Cable

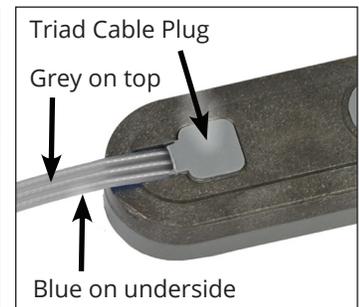


Figure 11b - Newer Cable

Adjusting Triad Sensitivity

Using a small screwdriver, turn the small screw head inside the numbered ring. Turning toward a higher number will increase sensitivity (increase gain), and turning to a smaller number decrease sensitivity (decrease gain). Sensitivity should be kept as low as possible to minimize interference, unwanted muscle signal and maximize fine control of the device.

Interchangeability

Triads can be used with other manufacturers' systems. The Triad Cable Plug will accept Otto Bock style ribbon cable (with 3-pin, half moon connectors). Simply use the other manufacturer's ribbon cable rather than the Motion Control ribbon cable.

Declaration of Conformity

The product herewith complies with the Medical Device Directive 93/42/EEC guidelines, and is registered with the United States Food and Drug Administration (Registration No. 1723997).



Parts List for Triad Electrode Kits*

Category	Connector	Description	Part No.
U3/U3+/Utah Hybrid Arm System Kit	5-pin	Dual Channel	3010782
		Single Channel	3010783
ProControl 2 Kit	9-pin	Dual Channel	3010784
		Single Channel	3010785
ProPlus Kit	3-pin	Dual Channel	3010968
		Single Channel	3010969
		Triad Preamp (without ribbon cable)	3010786
		Triad Preamp (only, without ribbon cable, electrodes, grommets, or dummies)	3010754
Snap Electrode Kit		3 mm one channel, includes electrodes, snaps, cable, fastener kit	3010853
		6 mm one channel, includes electrodes, snaps, cable, fastener kit	3010854
Remote Electrode Kit		One channel, includes high and low profile electrodes, cables, fastener kit	3010880

* Triad Electrode Kits contain Triad Preamp(s), Long, Medium, and Short Electrodes, Grommet(s), Fabrication Dummies and Ribbon Cable

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