NEW MYOELECTRODE OPTIONS
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Practitioners have been requesting improvements in myoelectrodes to facilitate better client fittings. Greater sensitivity, better immunity to external interference, more and better (linear) gain adjustment and good common mode rejection are all desirable features. Mechanical changes were also needed to create more cosmically appealing sockets. Preamplifier cases had to be small and thin and provided with electrode cables of various lengths. When LTI designed their Remote Electrode System, they addressed all of these issues. This new remote electrode system has improved performance and low-profile packaging. The CavityBack™ Electrodes are available in three sizes/shapes, so the prosthetists can choose the best for their client. In addition to the cables for test sockets and soft socket liners, cables can be adapted for snap-on attachment to roll-on silicone sleeves.

LTI Remote Electrode System:
Traditional cased electrodes have been used for years and until recently were the only choice for myoelectric signal detection. Often however, there is inadequate space for these electrodes and as a result they are placed in the socket over the muscle. Because of their thickness (”) they often result in an undesirable bulge in the outer socket. This is cosmetically unappealing and sometimes rejected by users. The remote electrode-amplifiers (which are only 0.2” thick) can be placed anywhere in the vicinity of the muscle site and therefore can easily be concealed resulting in better cosmeses.

Test sockets are formed to the client’s residual limb or torso and then electrodes are mounted to this socket for set-up and testing. Cased electrodes require the clinician to mold the electrode into the test socket surface, thus fixing their location. Remote Electrodes are mounted by drilling holes in the test socket and placing the metal electrode contacts over the intended muscle site. Since one of the purposes of a test socket is to locate the optimal muscle site, the remote electrodes facilitate this. They can easily be moved to a different/better location once the test socket is fitted to the client. After the best electrode location is established, these remote electrodes can be removed from the test socket and re-mounted on the definitive socket in the same location, thus assuring the best performance.

Electrode-Amplifier:

The electrode amplifier is the largest component in a myoelectric sensor system. With the Remote Electrode System, this component is separate from the metal electrodes and can be placed in a convenient location in the socket where it will not adversely affect the cosmetics of the prosthesis. Additionally, this case has been compressed to a thickness of just 0.2 inch (5mm), enabling it to fit in a cavity between the inner and outer socket if necessary.

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The Remote Electrode Amplifier has a gain adjustment potentiometer similar to traditional cased electrodes. This can be turned with a flat jeweler’s screw driver to increase or decrease the gain. For applications where a microprocessor-based controller is used, this electrode gain can be set at mid-range and further gain adjustments made through the controller software. This method allows minor “field adjustments” to be made by the clinician without a computer.

CavityBack™ Electrodes & Cables:
The unique design of the CavityBack™ metal electrodes allows them to draw the soft socket liner into the back, thus reducing the overall thickness and These are available in three sizes/profiles. The two adult sizes measure ½” in diameter with two different profiles – standard and deep dome. Standard dome electrodes are used for most applications or where bony protrusions are present. Deep dome electrodes are used when there is soft tissue or a deep muscle. These electrodes have significantly greater surface area for better signal detection and the deep dome penetrates the tissue better for acquiring good signals from difficult muscle sites. A third “pediatric” electrode is available for use in children’s prostheses and sometimes for partial hands where space is limited. These measure ⅜“ in diameter.