

## Above Elbow Prosthesis

### General Description:

When fitting an above elbow prosthesis, the function of the elbow and the hand must be taken into consideration. The primary function of the elbow joint is to bend (flex) and straighten (extend) the arm. The primary function of the hand is to grasp.

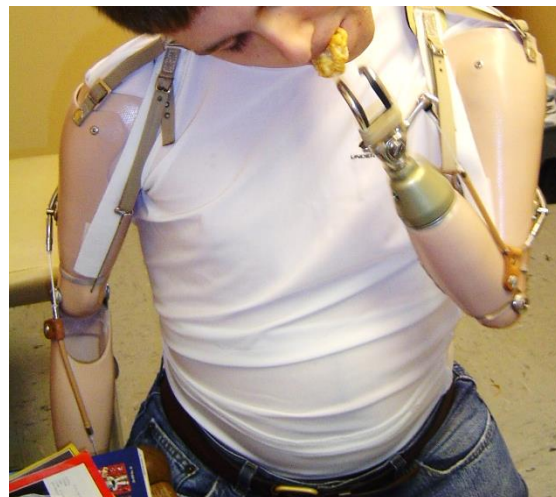
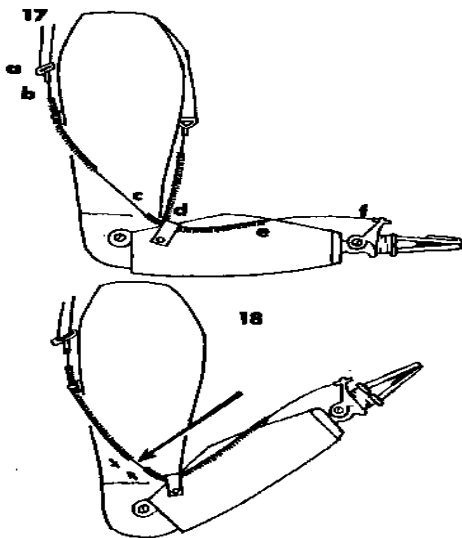
There are a wide variety of choices in components for the elbow and terminal device. The choices are dependent on what the wearer's ultimate goals are. The emphasis can be on function, on cosmetics, or a combination of both.

Listed below are some of the most common above elbow prosthesis configurations:

### Body Powered Prosthesis:

An above elbow body powered prosthesis uses the wearer's own movements to control the prosthesis. This is done through a system of straps known as the harness. The harness straps go around the opposite shoulder, similar to how a backpack is worn. The function of the harness is to hold the prosthesis on and to operate the elbow and terminal device.

The wearer raises the elbow and opens the terminal device by applying pressure through the harness. The body powered prosthesis is the most widely used style of above elbow prosthesis.



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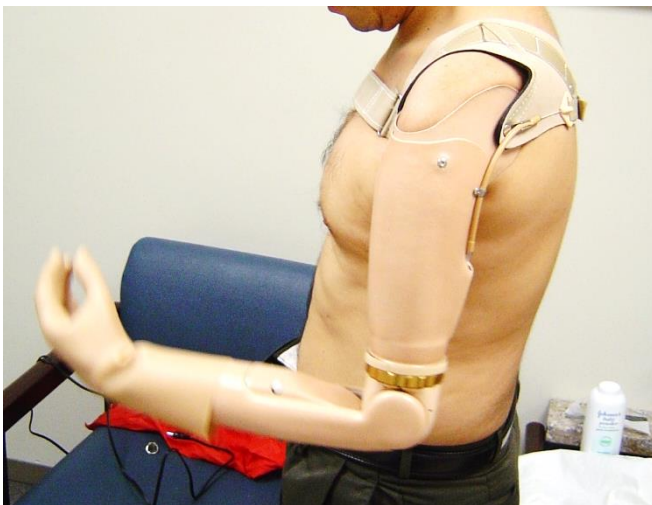
## Externally Powered Prosthesis:



Figure 1

A myoelectric prosthesis uses muscles of the affected arm to control the flexion and extension of the elbow and the opening and closing of the terminal device (hand or hook). Electrodes (See figure 1) are fit within the prosthesis. Rechargeable batteries are used to supply the power to operate the motor of the elbow and the hand. By contracting the biceps and triceps of the residual limb, electrical outputs are sent to a motor that opens and closes the artificial hand. Electrical outputs can be used to control the speed that the hand opens and closes and can also rotate the wrist with the addition of a wrist rotator.

In order to use a myoelectric prosthesis, at least one muscle of the arm must be able to generate enough charge to send a signal from the electrode to the motor. If there is not a strong enough muscle, myoelectrics could still be utilized, if desired, through the use of switches or touch pads.



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## Hybrid Prosthesis:

The hybrid design uses a combination of body powered and external power. The most common configuration is a body powered elbow and an electrically controlled hand.



Myoelectric arms are functional as well as cosmetically appealing. The disadvantages are that they are heavier, more expensive, and less functional than the traditional hook. They also require more maintenance.

## Cosmetic Prosthesis:

The above elbow prosthesis can also be configured with a passive device. These have non-functional hands where the primary purpose is to provide appealing cosmesis.

## Application

A myoelectric cannot be worn with a sock. The skin of the arm must be directly against the electrodes. To put on the prosthesis, the residual limb is just slid inside of the socket. Baby powder may be used to assist in putting on the prosthesis. If the hand does not function properly, water may need to be applied to the residual limb at the site of the electrodes. This aids in transmitting the electrical impulses from the arm to the electrode.

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Body powered or cosmetic prostheses may be worn with a prosthetic sock.

#### Removal

Remove the prosthesis in the opposite manner in which it was applied.

#### Care and Maintenance

Do not submerge the prosthesis in water!!! The socket can be wiped out with mild soap and water as needed.

The cosmetic glove can be cleaned with soap and water or rubbing alcohol.

The cosmetic glove is easily stained by inks, newspapers, and blue jeans. To lengthen the lifespan of the glove, care should be taken when handling these items.

#### Tips and Problem Solving

The battery should be put in the charger nightly.

If the prosthesis is submerged in water, contact your prosthetist immediately.

If you have any questions or problems, please contact your prosthetist.

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