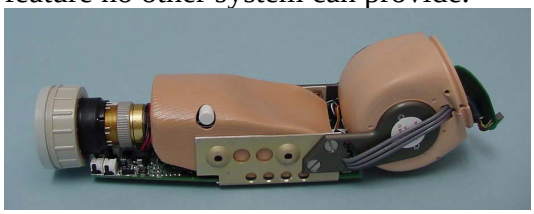
Andre Doyon
April 11, 2005
Biomedical Seminar I
New Boston Digital Arm System

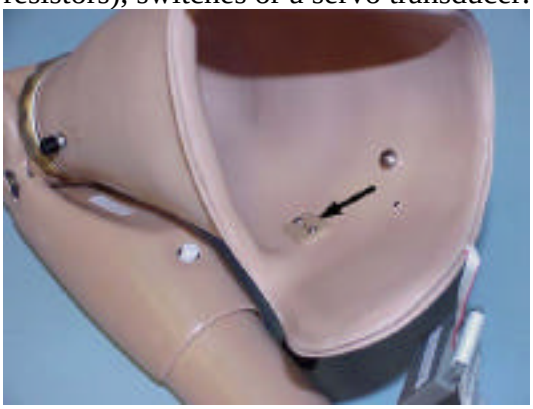
Liberating Technologies Inc. introduced the new Boston Digital Arm System early in 2001. The prosthesis has a microprocessor-based control system along with state-of-the-art mechanisms. The Boston Digital Arm System acts as a "platform" for controlling a variety of upper-limb devices such as hands, grippers, wrist rotators, and shoulder joint actuators. It is possible to control up to five devices and is compatible with nearly all manufacturers' prosthetic components. These devices can be sequentially selected and operated by the user through co-contraction switching, a feature no other system can provide.



The on-board microprocessor enables the prosthetist to evaluate the patient for suitable muscle sites and then try different control strategies in anticipation of an appropriate find.

There are numerous factors to consider when selecting powered elbow prosthesis. Some factors are: weight lifting ability, reverse locking clutch, speed, weight of the elbow, weight distribution, control options, mode selection, batteries, chargers, humeral rotation friction adjustment, forearms, terminal device compatibility, free swing, construction of the prosthesis, the drive train, the noise level, and of course the cost, warranty, and if there are any reimbursements.

The Boston Arm System has many control options to suit the patient's unique needs based on anatomical, muscular, and other physical or neurological limitations. The prosthesis can be controlled by Myoelectrodes, Touch Pads (FSR – force sensitive resistors), switches or a servo transducer.



The Boston Arm's electrode preamplifiers are considerably smaller than competitors, about half the size. This is to create a socket that does not have unsightly bumps where the electrodes are located. Myoelectrodes provide proportional control of the prosthesis. Touch Pads, which are wafer-thin disks, adhere to the inside of the socket or frame where the amputee can easily press them. They are the best alternative to Myoelectrodes for amputees who have weak muscle signals or a shoulder disarticulation. The servo is a small cable operated device that mounts to the harness. This device provides both speed and position control of the prosthesis. The Boston Arm system can be configured to operate with switches. These simply turn the motors on and off. They do not provide proportional control of the prosthesis.

http://www.liberatingtech.com/products/Input_Devices_%28Touch_Pads_Electrodes_Linear_Transducer_Switches%29.asp
http://www.nasatech.com/index.html
http://www.orion-design.com/index.htm
http://www.liberatingtech.com/products/LTI_Boston_Arm_Systems.asp