Boston Digital Arm ™ System

Boston Elbow user

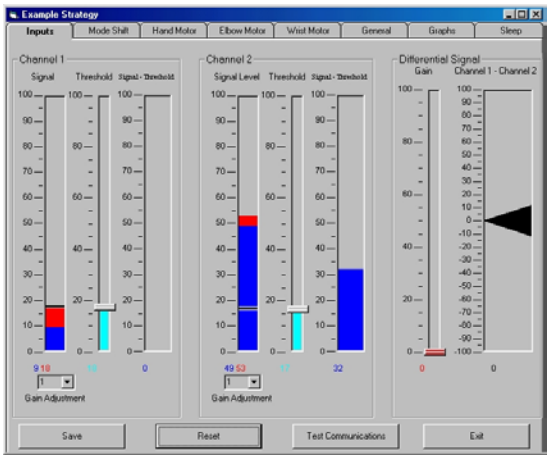
- **World's most powerful elbow**
- **State-of-the-art digital technology**
- **Compatible with all hands, grippers and wrist rotators**
- **Modular for easy repair**
- **Automatically locks and unlocks**
- **Dozens of control options**
- **Operates with inputs from Myoelectrodes, Touch Pads,™ servo controls, and switches**

LTI introduced the B**oston Digital Arm™ System** early in 2001. This state-of-the-art prosthetic system incorporates microprocessor technology for improved performance and optimal patient adjustment. The system uses the same drive mechanism as the Boston Elbow II because of its long history of reliable service. Also, this drive unit provides greater torque than any other powered prosthetic elbow on the market today – a feature most users soon recognize as a significant benefit. The Boston Digital Arm is not just for positioning a terminal device like many other elbow prostheses. This system can perform work, whether it be on-the-job, at home or doing hobbies.

The **Boston Digital Arm™ System** has many advanced features and capabilities. It can control up to four other prosthetic devices in addition to the elbow itself. For example, hands, grippers, wrist rotators, shoulder lock actuators, etc. can be operated through the Boston Digital Arm. And, these devices can be sequentially selected and operated by the user through co-contraction switching, a feature no other system can provide. A variety of other advanced control features are also available.

The **Boston Digital Arm™ System** is actually a platform for upper-limb prosthetic control. The on-board microprocessor enables the prosthetist to evaluate the patient for suitable muscle sites and then try various control strategies until a suitable one is found. This is done through the proprietary software provided with the system. Through the user-friendly graphical interface screens, the practitioner views the patient's muscle signals and makes adjustments. If a different control strategy is preferred, he simply down-loads a new strategy to the prosthesis - a 10-second task. The graphical interface also provides a useful troubleshooting tool when repairs are required. The prosthetist can see what signals are being sent to the system and can easily diagnose the problem and often fix it.

Patient evaluations are one of the most challenging tasks associated with setting up a myoelectric prosthesis. The Boston Digital Arm's software simplifies this considerably. Once connected, the user simply flexes the appropriate muscles and the system monitors these signals through dynamic bar graphs. These graphical displays allow the practitioner to make gain adjustments and to filter out unwanted noise. In addition, output signal amplitude can be set and monitored to assure optimal operation of the prosthetic devices.



Another graph showing a time history of the muscle signals is used to set co-contraction switching levels for device selection. These graphical tools simplify this process and assure that proper adjustments are achieved. Finally, voltage and current settings are available for individual device motors, allowing this system to be used with any manufacturer's components.

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The **Boston Digital Arm™ System** is the most advanced upper-limb prosthetic system available today. Its sophisticated Surface Mount Technology (SMT) circuit provides reliable and compact electronics. This system is a universal "platform" for elbow-disarticulation level amputations or higher. Since the Boston Digital Arm™ is compatible with virtually all manufacturers' products, prosthetists can assemble the best combination of prosthetic components to fulfil their patient's specific needs. The end result is a combination of the worlds best products assembled into a single prosthesis. Request a free video tape of the new Boston Digital Arm™ System for the prosthetist and for the patient!

BE300 Boston Digital Arm™ System with Forearm, Batteries and Lamination Collar
The Boston Digital Arm System comprises the following: BE301, BE302, BE303, BE304, BE305, BE306, BE309, (2) BE350s, BE255, and BE390. A Slow Charger BE256, BE257 or BE258 is also supplied.

BE301 Drive Unit, Boston Digital Arm
Supplied with Boston Digital Arm (BE300)

BE302 Lamination Collar & Clamp (BE306) (shown)
Supplied with Boston Digital Arm (BE300)

BE308 Elbow Disarticulation Collar & Clamp (BE306)
Optional short lamination collar for use with Boston Arm Systems

BE306 Clamp Ring Assembly for Lamination Collar
Supplied with Boston Digital Arm (BE300). Used to clamp BE301 Drive Unit to BE302 Lamination Collar, BE308 Elbow Disarticulation Collar, or BE309 Adjustable Check Socket Collar

BE310 Trial Fitting Adapter
Supplied with an Adjustable Check Socket Collar (BE307)
Adapter has six spokes which can be heated allowing them to conform to the shape of the check socket. Collar can be rotated up to 7° in any direction for proper alignment.

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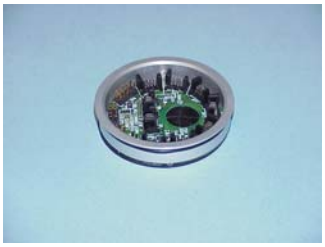
BE303/BE305 Frame with Circuit Board, Boston Digital Arm
BE305 Digital Circuit Board mounted in BE303 Forearm Frame. While either of these parts can be replaced, the mounting must be done by LTI.
Supplied with Boston Digital Arm (BE300)



BE304 Input Connector Board, Boston Digital Arm
Supplied with Boston Digital Arm (BE300)

BE309 Prefabricated Forearm, Boston Digital Arm
Supplied with Boston Digital Arm (BE300)

When ordering select wrist size and color:
11 standard colors to match Bock gloves plus custom
Default wrist diameter matches 50mm Otto Bock
Also available: 54mm Otto Bock and 37mm Centri
Forearm length: 8½ - 14" (216-355 mm) from center of rotation

BE350 Replacement Battery, 12V, 1100 mAHr, color-matched to forearm, Boston Digital Elbow
Two batteries are supplied with Boston Digital Arm (BE300)
Batteries can be charged in or out of the prosthesis.

BE255 Fast Battery Charger**,** Boston Digital Arm
Supplied with Boston Digital Arm (BE300. Not CE rated.)
Switch permits setting input for 110V, 60Hz or 220V, 50Hz.

A standard 3-wire computer cord is provided. An appropriate cord version can be obtained for use in any other country.

The CE Rated BC21 Charger-Evaluator is also available for the Boston Digital Arm, and it is supplied with all European orders.

BE256 Slow Battery Charger for BE350, US model*
BE257 Slow Battery Charger for BE350, UK model
BE258 Slow Battery Charger for BE350**,** European model
**US version supplied with Boston Digital Arm (BE300) unless otherwise specified*

BE390 Cross Elbow Cable Set, Boston Digital Elbow
Supplied with Boston Digital Arm (BE300)

Boston Digital Arm™ System Specifications

Factor/measure	Boston Digital Arm
Torque	10+ ft-lbs
Weight Lifting Ability (@14")	9 lbs
Clutch	reverse locking
Clutch release under load	yes
Speed: no load	
flexion (against gravity)	1.1 sec
extension (with gravity)	1.0 sec
Speed: with Greifer (1.2 lbs)	
flexion (against gravity)	1.2 sec
extension (with gravity)	1.0 sec
Weight of Elbow (no TD)	2 lb 4 oz
Weight of Elbow with OB TD	3 lb 5 oz
Weight with light weight TD	2 lb 15 oz
Center of Mass (from rear of housing)	3.5 inches
Control Options:	
myo-myo	yes
servo	yes (1 or 2)
switches	yes
Touch Pads (FSR) - up to 5	yes
Mode Selection	co-contraction, switches or revert
Battery Capacity (12 volt)	1100 mAHr
Removable battery	yes
On-board Charging	yes
Slow charger	yes
Fast Charger	yes (1.25 hrs)
Patient adjustable humeral rotation friction	yes
Forearms:	
wrist sizes	4 standard (plus custom)
number of colors	11
range of lengths	8.5" to 14.5"
maximum circumference	9.25"
minimum coupling collar length	2.80"
Terminal Device Compatibility:	
Otto Bock electric hand	yes
Centri electric hand	yes
Steeper electric hand	yes
Otto Bock Greifer	yes
Steeper Powered Gripper	yes
body powered split-hooks	yes
Otto Bock electric wrist rotator	yes
Modular construction (for servicing)	yes
Surface Mount Technology (SMT) circuits	yes
Drive Train	direct drive (wave generator)
Free-swing mode	yes (mechanical)
Warranty	2 year limited
Myoelectrodes/amplifier size	1" x 11/16" x 3/16" thick
HCFA L-code Boston Elbow (2003 median)	L7180 - $28,924.75
HCFA L-code Proportional Control (2003 median)	L7274 - $5,349.45
HCFA L-code “Microprocessor TD (2003 median)	L6882 - $2,489.00
Medicare Reimbursement (2003 median) – total*	$31,413.75

* The L-codes provided represent our suggestions and you as a practitioner must decide which codes to use.