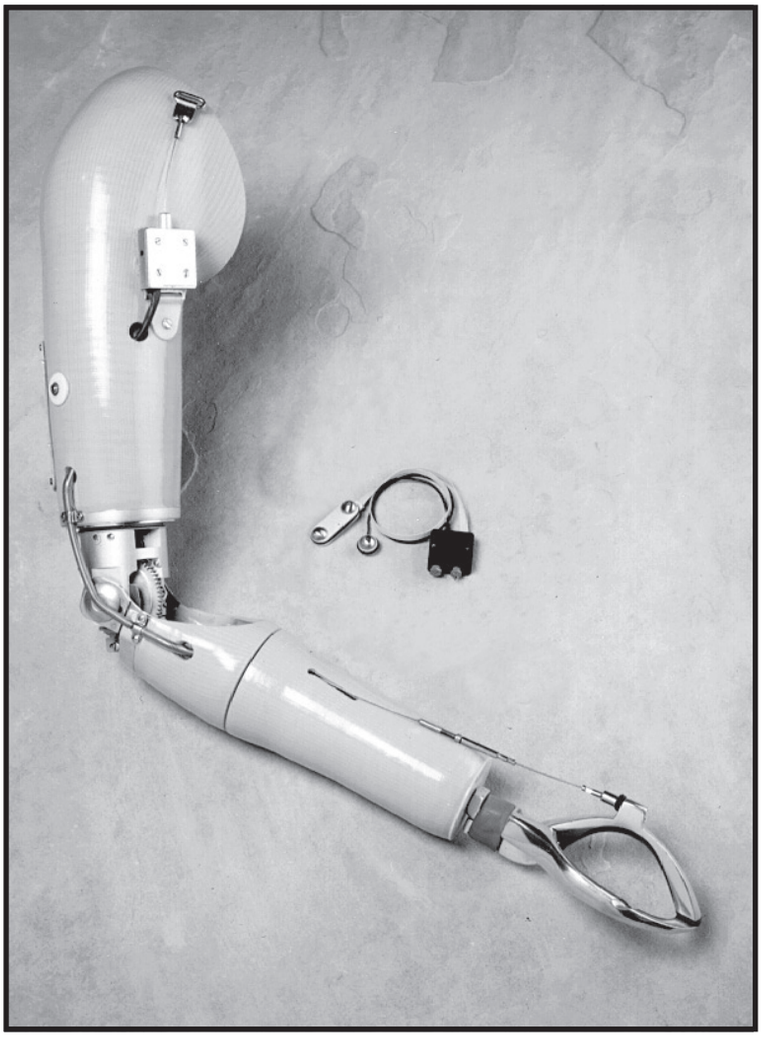
# Externally Powered Systems



The NY Electric Elbow fills the need for a rugged, reliable, and moderately priced externally-powered elbow that can be used by children as well as adults. It has been clinically tested and proven in applications around the world and offers significant benefits, particularly to the bilateral Shoulder Disarticulation or Above Elbow patient.

The electric elbow, available in exo or endoskeletal, is compatible with the Synergetic Prehensor, the Prehension Actuator, and the Michigan Electric Hook. An interchangeable variety of switching systems and myoelectric controls can be used individually or in combination to operate the externally powered components. Commonly available, rechargeable, environmentally safe, Nickel Metal Hydride batteries will power a device for a full day under normal operating conditions.

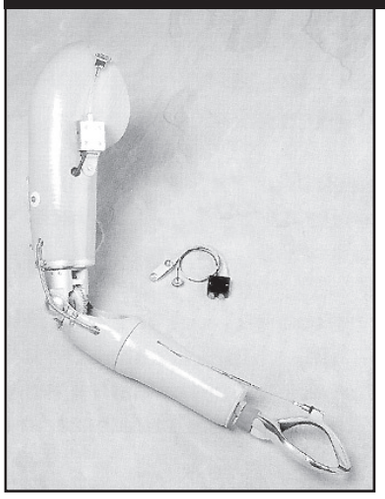
Fabrication of a complete prosthesis is also available through the Central Fabrication Department of Hosmer Dorrance.

Hosmer
Hosmer Dorrance Corporation

# Externally Powered Systems

# NY Electric Elbow

## NY Electric Elbow



- For upper extremity amputees with special requirements, such as limited excursion
- May be controlled myoelectrically or with a switch

### Features:

- Modular designs of elbow and accessories allow many prostheses configurations
- Interchangeable with the E-200 and E-400 style conventional elbows
- Exo or Endoskeletal application
- Compatible with the NY Prehension Actuator, the Michigan Child Electric Hook and the NU-VA Synergetic Prehensor
- Myoelectric or switch controlled
- Free swing at full extension
- Lightweight; extremely quiet
- Low maintenance
- Commonly available rechargeable NiMH batteries operate the elbow for a full day

### NY Electric Elbow, Exoskeletal

**57431** **Exoskeletal Electric Elbow,** Medium, Free Swing
**57432** **Exoskeletal Electric Elbow,** Large, Free Swing

### NY Electric Elbow, Endoskeletal

**57442** **Endoskeletal Electric Elbow,** Medium, Free Swing
**57443** **Endoskeletal Electric Elbow,** Large, Free Swing

# NY Electric Elbow System Components

## Control Systems

### Switch Controls

For NY Electric Elbows

**57412** **Two Position Pull Switch, NY**
**71987** **Two Position/Two Button Push Switch, OCCC**
**56277** **Two Position/Two Button Push Switch, NY**
**71977** **Three Function Pull Switch, NY** (Not Shown)
58243 Switch, On/Off Push Pad


### Modular Battery Pack

Batteries included

**56891** **5V, Remote Battery Pack**
**56356** **5V, Remote Battery Pack, Dual-In-Line**
**54729** **5V, Battery Pack in Pouch**
**56776** **6V, Endoskeletal Battery Pack**
**61859** **7.2V, Li-Ion Battery Pack**
*Includes:*
**A) 61589** **Charge Adapter**
**B) 61584** **7.2v, Li-Ion Battery**

### Battery Chargers

**54726** **5V Battery Charger,** 115V
**56993** **5V or 6V Battery Charger,** 115V
**71617** **5V or 6V Battery Charger,** 220V (For International Use)
**60949** **Timer for Battery Charger**
**61858** **7.2V, Li-Ion Battery Charger Set**

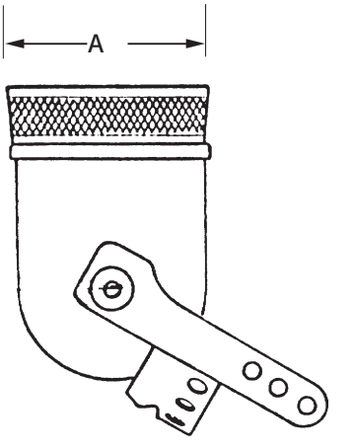
### Optional

Please Call Central Fabrication For Information

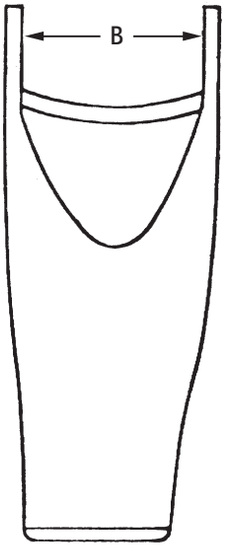
**58200** **Myo Analyzer Kit**
**57818** **Laminating Form** for EMG Electrode
**57820** **Laminating Form** for Ground Electrode
**57816** **Electrode Button,** Low Profile, .09" High
**57815** **Electrode Button,** Medium Profile, .19" High
**57814** **Electrode Button,** High Profile, .28" High
**57433** **Retrofit Electric Elbow** w/Free Swing

# NY Electric Elbow Specifications

## NY Electric Elbow Specifications




| Elbow Torque Under Forearm Load | Lift Time (flexion) $5^0$ - $135^0$ | Current | Free Forearm Swing |
|---|---|---|---|
| 0 in-lbs | 1.3 seconds | .36 amps | |
| 15 in-lbs | 2.3 seconds | 1.1 amps | |
| 28 in-lbs | 4.9 seconds | 1.7 amps | $5^0$ - $135^0$ |
| 30 in-lbs | STALL | 2.0 amps | |
| Break Away Clutch 18-20 ft-lbs | OVERLOAD | 0 | |




### Power Requirements:

Type: AA NiMH battery cell, 1.3 volts each @ 1200mAh, Alkaline batteries can be used for temporary operation but should never be recharged.

**Voltage: 5.2 volts = 4 batteries**
**6.5 volts = 5 batteries**
**7.2 volts = New 7.2 Li-Ione battery pack**

Charging Rate: Full charge @ rate of 120mA for 10 hours; charging the batteries can be easily done using the charging jack without removing batteries from prosthesis.

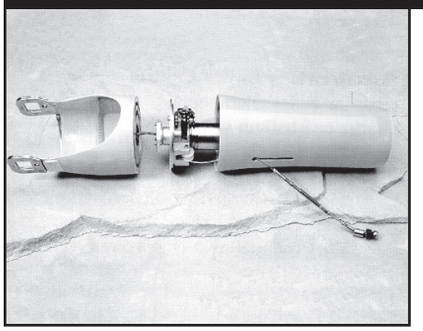
**Charger: USE ONLY HOSMER RECOMMENDED CHARGERS WITH THESE POWER PACKS. CHARGING CURRENT, VOLTAGE, AND POLARITY MUST MATCH.**

### NY Electric Elbow Specifications:

- **Myoelectric Control:** Two EMG sites required, flexion and extension, with ground
- **Switch Control:** Two function control switch, flexion and extension, push or pull switches
- **Weight:** Medium elbow (E-200 size) 15.5oz (439g); large elbow (E-400 size) 16oz, (453g)
- **Height:** Large or medium elbow axis to socket end: 2-1/2" (6.4cm)
- **Diameter:** Socket interface (turntable) (measurement A): medium elbow, 2-3/8" (6cm); large elbow, 2-13/16" (7.1cm)
- **Saddle Width,** (measurement B): Medium elbow, 2-1/4" (5.7cm); large elbow, 2-3/8" (6cm)

# NY Prehension Actuator (P.A.)

## NY Prehension Actuator (P.A.)

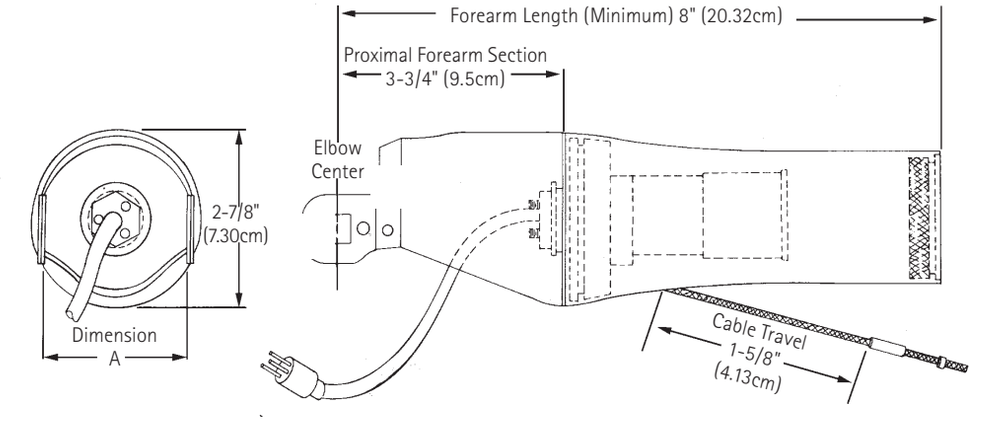


- Motor assisted forearm allows patient with limited excursion to more easily operate a variety of terminal devices
- Significantly decreases the amount of excursion required to open the terminal device
- Forearm custom fabricated to your specifications and requirements

### Features:

- Switch or myoelectrically controlled
- Manual pronation/supination with adjustable friction allowed from mid-forearm turntable
- Operates for several days on one charge of commonly available AA NiMH batteries
- Power cutoff feature prevents inadvertent draining of power pack
- Low maintenance
- Available in two wrist sizes ( 1-3/4" and 2") and compatible with all adult elbows

| | Dimension A |
|---|---|
| NY Elbow, Medium | 2.25"(5.72cm) |
| NY Elbow, Large | 2.38"(6.05cm) |
| E-200 Elbow, Medium | 2.12"(5.38cm) |
| E-400 Elbow, Large | 2.38"(6.05cm) |




### P.A. Configurations for Fabrication

- Wrist and elbow saddle must be fabricated into the forearm when a P.A. is ordered
- Any Hosmer 1-3 /4" or 2" diameter wrist is suitable
- Select the saddle from Hosmer's conventional or electric elbows

**NOTE:** When ordering a P.A. with Outside Locking Hinges, the laminating straps are not included.

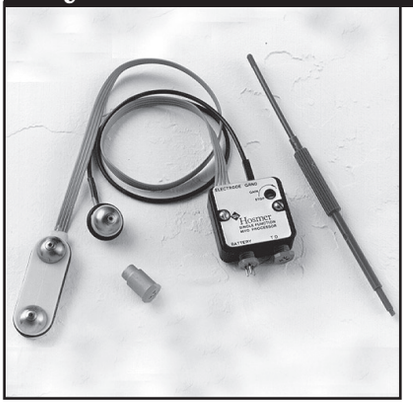
**Please supply the following information when ordering the PA:**

- **Forearm length from elbow axis to end of wrist.** Minimum forearm length: 8" (20.32cm)
- **Pigment Color** (Standard, Kingsley)
- **Right or Left Side**
- **Wrist Style: Use 1-3/4" or 2" Diameter Wrists**
- **Elbow Style**
- **Myoelectric or Switch Control**
- **Power Supply** (Modular Battery Pack)
- **Charger**

| Prehension Actuator P/N | Elbow Size | Wrist Diameter |
|---|---|---|
| 59165 | Medium: E-200 | 2" (5.08cm) |
| 59166 | Medium: E-200 | 1-3/4" (4.45cm) |
| 59167 | Medium: NY Electric | 2" (5.08cm) |
| 59168 | Medium: NY Electric | 1-3/4" (4.45cm) |
| 59163 | Large: NY Electric or E-400 | 2" (5.08cm) |
| 59164 | Large: NY Electric or E-400 | 1-3/4" (4.45cm) |
| 59319 | E-500 or E-5500 Elbow Disarticulation Forearm | Custom Order |

# NY Prehension Actuator System Components

## Myoelectric Control Package



• For NY Prehension Actuator

**57791 Myoelectric Control Kit**

Includes:

**58671 Myoelectric Processor**
**57804 EMG Electrode Assembly** (1 Electrode Included)
**57809 Ground Electrode Assembly** (1 Electrode Included)
**57815 Electrode Button, Medium** (3 Buttons Included)
**57454 Jumper Connector**
**54487 Gain Adjustment Tool**

## Switch Controls

• For NY Prehension Actuator

**57405 Single Position Pull Switch, NY,** For Conventional 1/2" Harness Attachment
**53036 Single Position/Single Button Push Switch, NY**
**71940 Single Position/Single Button Push Switch, OCCC**
**71977 Three Function Pull Switch, NY,** (Not Shown)

### NY Prehension Actuator (P.A.) Specifications:

- **Myoelectric Control:** One EMG site and one ground required
- **Switch Control:** Single function control, push or pull switch
- **Power Supply:** AA NiMH rechargeable batteries
- **Weight:** 1 lb (445g) w/9-1/2" forearm and 2" CAPP Delrin Wrist
- **Length:** Minimum length for forearm: 8" (20.32cm)
- **Cable Travel:** Maximum cable travel 1-5/8"
- **Pull:** 12 lbs. or 3 rubber bands MAXIMUM

### Modular Battery Packs

Batteries included

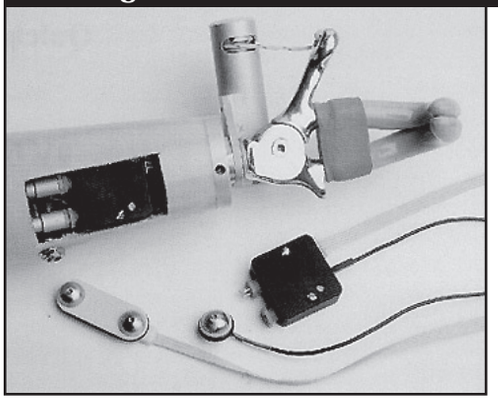
**56891 5V Remote Battery Pack**
**56356 5V Remote Battery Pack, Dual-In-Line**
**54729 5V Battery Pack in Pouch**
**56776 6V Endoskeletal Battery Pack**
**58058 9V Battery,** (Requires Wiring Harness 56876)
**61859 7.2V, Li-Ion Battery Pack**

### Battery Chargers

**54726 5V Battery Charger,** 115V (Standard)
**56993 5V or 6V Battery Charger,** 115V
**71617 5V or 6V Battery Charger,** 220V (For International Use)
**57823 9V Battery Charger**
**60949 Timer For Battery Charger**
**61858 7.2V, Li-Ion Battery Charger Set**

# Michigan Electric Hook

## Michigan Electric Hook



- Child size electric hook
- Assists younger patients with limited excursion in operating a terminal device more effectively
- Utilizes a modified 10P or 10X hook

### Features:

- Switch or Myoelectric control
- Available as self contained BE prosthesis with Myoelectric control
- May be used in conjunction with the NY Electric Elbow
- Utilizes nitrile rubber or plastisol covered hooks

### Michigan Electric Hook Specifications:

- **Myoelectric Control:** One EMG site and one ground required
- **Switch Control:** Single function control, push or pull switch
- **Power Supply:** AA NiMH rechargeable batteries
- **Weight:** 4oz (113g) 10X Electric Hook (nitrile rubber lined fingers): 5oz (142g) 10P Electric Hook (plastisol covered fingers)
- **Wrist:** Any child size wrist with 1/2-20 threads can be used

### Michigan Electric Hook, Nitrile rubber Lined Fingers

**70790** **Michigan Electric Hook,** 10X Right
**70792** **Michigan Electric Hook,** 10X Left

### Michigan Electric Hook, Plastisol Covered Fingers

**70791** **Michigan Electric Hook,** 10P Right
**70793** **Michigan Electric Hook,** 10P Left

### Myoelectric Control Package

**57791** **Myoelectric Control Kit**
Includes: Processor, 1 EMG Electrode, Ground Electrode, Medium Buttons, and Jumper Connector

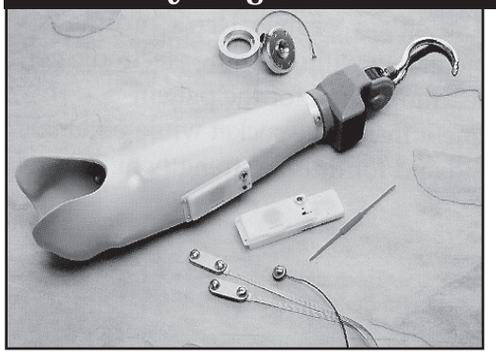
### Switch Controls

Can be used when the Michigan Electric Hook is used alone or incombination with other electric or myoelectric components

NOTE: See System Components for P.A. on page H114

# NU-VA Synergetic Prehensor

## NU-VA Synergetic Prehensor Terminal Device



- Lightweight, myoelectrically controlled terminal device
- Opens and closes with true proportional speed
- Pinch force up to 25 lbs (11.3 kg)

### Features:

- True Proportional Myoelectric control
- Pinch force maximum 25 lbs (11.3kg)
- Quick and easy interchanging of terminal devices with specially designed wrists
- Convenient 9V battery design, operates a full day on an overnight charge
- Low current drain
- Automatic safety breakaway
- Lyre-shaped, nitrile rubber lined fingers

### Gray Terminal Device w/ Black palmar and side pad

| | |
|---|---|
| 57840 | **Synergetic Prehensor,** Right, Gray |
| 57841 | **Synergetic Prehensor,** Left, Gray |
| 60983 | **Synergetic Prehensor,** Utah Euro Wrist Conversion, Right, Gray |
| 60984 | **Synergetic Prehensor,** Utah Euro Wrist Conversion, Left, Gray |
| 60981 | **Synergetic Prehensor,** Euro Wrist Hosmer Control, Right, Gray |
| 60982 | **Synergetic Prehensor,** Euro Wrist Hosmer Control, Left, Gray |

### Beige Terminal Device w/ Black palmar and side pad

| | |
|---|---|
| 57840-S | **Synergetic Prehensor,** Right, Beige |
| 57841-S | **Synergetic Prehensor,** Left, Beige |
| 60983-S | **Synergetic Prehensor,** Utah Euro Wrist Conversion, Right, Beige |
| 60984-S | **Synergetic Prehensor,** Utah Euro Wrist Conversion, Left, Beige |
| 60981-S | **Synergetic Prehensor,** Euro Wrist Hosmer Control, Right, Beige |
| 60982-S | **Synergetic Prehensor,** Euro Wrist Hosmer Control, Left, Beige |

# NU-VA System Components

## Myoelectric Control Processor Assembly

**59860 Myoelectric Processor Assembly Package**

Includes:

**59850 Myo Processor,** On/Off Switch and Charging Jack
**57804 EMG Electrode Assembly,** (2 Electrodes Included)
**57809 Ground Electrode Assembly** (1 Electrode Included)
**57815 Electrode Buttons, Medium,**(5 Buttons Included)
**58058 9 Volt Rechargeable Ni-Cad Battery**
**57823 9 Volt Battery Charger**
**54487 Gain Adjustment Tool**

## Wrists with Electrical Connectors

• For NU-VA Synergetic Prehensor

**58052 WE-500N Style**
**58708 WE-500N Style** w/Laminating Ring
**58713 FD 2", Friction Disconnect**
**58704 FM-100 Style** w/Laminating Ring

## Fabrication

•Call Our Central Fabrication Department For Information

**58250 BE Prosthesis Fabrication, Using Synergetic Prehensor.**

### Options

**60152 Processor and Electrodes** Only, (No Charger)
**57818 Laminating Form,** For EMG Electrode
**57820 Laminating Form,** For Ground Electrode
**59854 Laminating Form,** For Prehensor Processor

### Electrode Buttons

**57814 High Profile,** .28" High
**57815 Medium Profile,** .19" High
**57816 Low Profile,** .09" High

# NU-VA Synergetic Prehensor Specifications

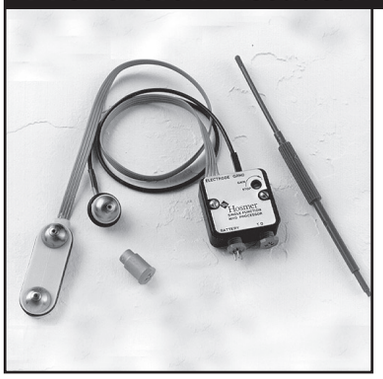
## NU-VA Synergetic Prehensor Specifications

### NU-VA Synergetic Prehensor Specifications:

- Proportional Myoelectric Control: Two EMG sites, one to open, one to close and a ground electrode
- Weight: 13.23oz (375g) - Synergetic Prehensor only
- Length: 7-3/32" (180mm), from surface of wrist to top of hook tynes
- Power Supply: 9V rechargeable ni-cad battery. Use only compatible 9V battery charger, 57823, supplied w/ Myoelectric Processor Assembly
- Quiescent Current Drain: 25 micro amps
- Safety Breakaway: 30 lbs. at finger tips
- Pinch Force: 0-25 lbs based on 9V constant power supply. May vary due to patient EMG or condition of battery
- Cycles: 1,300 cycles (more than one full day's normal use) tested on one full charge of ni-cad 9V rechargeable battery. One cycle is defined as full open to full close w/5 lbs pinch force and back to full open. These are relative figures which may vary.

# Controls for Electric Components

## Prehension Actuator or Michigan Hook Myoelectric Control



**57791 Myoelectric Control Kit for One EMG Site,**
Single Site/Single Function EMG and Ground Electrodes. Interfaces w/ Prehension Actuator or Michigan Electric Hook

## NY Electric Elbow Switch Controls

**71987 Two Function/Two Button Push Switch, OCCC**
Two Function, Extension and Flexion, Internally Mounted
**56277 Two Function/Two Button Push Switch, NY** Two Functions, Extension and Flexion, Externally Mounted
**57412 Two Function Pull Switch, NY**
Operates Extension and Flexion From Conventional 1/2" Harness Attachment
**71977 3 Function Pull Switch, NY** Activate Three Functions From One Control Switch: Elbow Extension and Flexion and Operation of P.A. or Michigan Hook.

## Prehension Actuator or Michigan Hook Switch Controls

**71940 Single Button Push Switch, OCCC**
Single Function, Internally Mounted
**53036 Single Button Push Switch, NY**
Single Function, Externally Mounted
**57405 Single Function Pull Switch, NY** Conventional 1/2" Harness Attachment

### Controls for Electric Components

- Simple plug-in modules
- Either myoelectric or switch control
- Modular design enables prosthetist to customize an electric system and interchange controls for the best possible application

# Power Supplies and Chargers

## 5V Remote Battery Pack

- Small Size Is Ideal For Mounting This Pack Distal To The Socket Or Directly Above The Elbow Turntable.

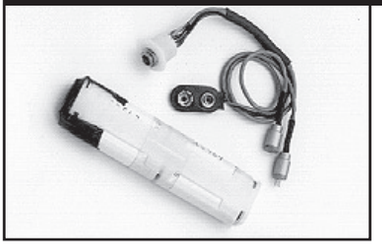
**56891 5V Remote Battery Pack** (4 AA NiMH Batteries)

## 5V Battery Pack w/Batteries

- Most Commonly Used For Cosmetic Build-Ups When Space Is Not Available Within The Socket Walls.

**54729 5V Battery Pack w/Batteries,** Case, Pouch (4 AA NiMH Batteries)

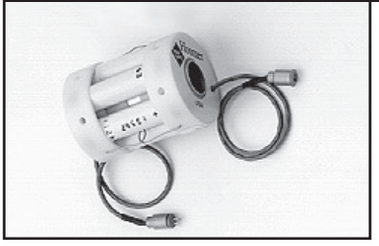
## Dual-in-Line 5V Remote Battery Pack



- The Long, Narrow Configuration Of This Battery Pack Allows It To Be Placed Within The Socket Walls When Space Above The Elbow Turntable Is Not Sufficient.

**56356 5V Remote Battery Pack, Dual-in-Line** (4 AA NiMH Batteries)

## 6V Modular Battery Pack



- Because Of Its Circular Design, This Battery Pack Is Easily Placed And Supported On The Modular Pylon.

**56776 6V Modular Battery Pack,** Endoskeletal (5 AA NiMH Batteries)

# Power Supplies and Chargers

## Li-Ion Battery System

- Small size is ideal for mounting this pack distal to the socket or directly above the elbow turntable
- Includes charger AC + DC adapter and battery

**61583 7.2 Li-Ion Battery System**

## Replacement Batteries

**54737 Battery, 1.25V Rechargeable NiMH,**
For Use In 5V or 6V Battery Packs

**58058 Battery, 9V Rechargeable Ni-Cad,**
For Use w/Synergetic Prehensor

**61584 Battery, 7.2V Li-Ion,** For Use w/NY Electric Elbow

### Power Supplies/Chargers for Switch or Myoelectric Systems

- Commonly available rechargeable Nickel Metal Hydride batteries will power a device for a full day under normal operating conditions
- Nickel Metal Hydride (NiMH) batteries are environmentally safe

Note: Alkaline batteries can be substituted temporily when normal recharging is not possible

## Battery Chargers

**54726 5V Battery Charger, 115V,**
Designed for Hosmer 5V Modular Battery Pack

**56993 6V Battery Charger, 115V,**
Designed for Hosmer 6V Modular Battery Pack

**71617 5 or 6V Battery Charger, 220V,** For International Use, or Where 220 Voltage is Customary

**57823 9V Battery Charger, 115V,** Specifically Designed for the NU-VA Synergetic Prehensor

**61585 7.2 Li-Ion Battery Charger,** Specifically Designed for the Li-Ion Power System

**60949 Timer for Battery Charger**

# Myoelectric and Electric Accessories

## Myoelectric Accessories

**57804** **EMG Electrode Assembly**
**57809** **Ground Electrode Assembly**
**57814** **Button, Electrode,** High Profile
**57815** **Button, Electrode,** Medium Profile
**57816** **Button, Electrode,** Low Profile
**57818** **Laminating Form,** EMG Electrode
**57820** **Laminating Form,** Ground Electrode

## Electric Accessories

**70409** **Forearm Jumper Cable**
Specialized Cable Required When Using the
P.A. or Michigan Electric Hook in Conjunction w/Electric Elbow
**58247** **On/Off Push Button Switch Cable Assembly**
**71625** **European Plug Adaptor Kit**
**57454** **Jumper Connector,** for Use w/Myo P.A.
**54735** **3 Pin Connector,** Female
**54736** **3 Pin Connector,** Male
**71975** **5 Pin Connector,** Female
**56224** **5 Pin Connector,** Male
**58196** **Shipping Plug,** Prevents Activation During Shipping
**54737** **Battery, 1.25v Rechargeable Ni-Cad**

## MyoLab II Analyzer


- Superior training and fitting aid for myoelectric prostheses
- Readings register immediately without using electrode gel
- Biofeedback reduces learning curve for the patient
- Verify electrode placement inside the socket while patient is wearing the prosthesis
- Ideal as a diagnostic aid and for muscle strengthening or relaxation training

### MyoLab 11 Features:

- Two independent channels
- Locate EMG site on muscle groups for myoelectrode placement
- Allows patient to develop separation of signals through visual feedback
- Compact 7.5" x 4" x 1.2" (19cm x 10cm x 3cm)
- Weights 2 lbs., (445g)

**61040** **Myolab II** w/Adaptor
**61039** **Myolab II**
**61038** **Adaptor** for Hosmer Myo System