

# Motion E2 Elbow

Selection & Prosthetist Manual

Motion Control  
division of  
*Fillauer*®



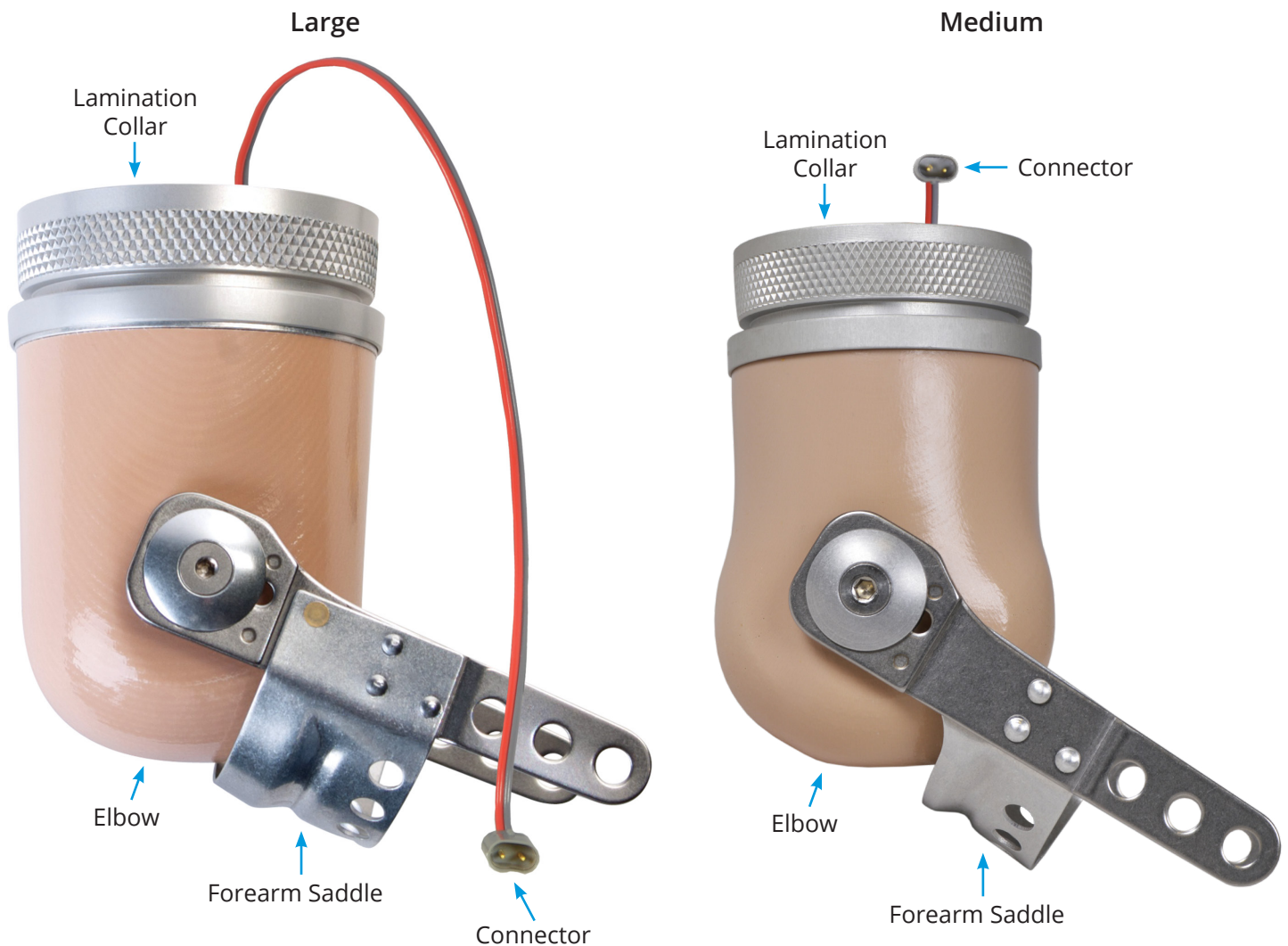
# Motion E2 Elbow

## Introduction

The Motion E2 Elbow is a lightweight electric elbow that can be used with simple switch control, or proportional myoelectric control. It is small enough to be used by adolescents or smaller adults. Forearms can either be prefabricated, or custom fabricated from Fillauer Central Fabrication.

## Motion E2 Elbow

Figure 1



## Warnings



The E2 elbow should not be exposed to water.



Because of the lightweight nature of the elbow, it should not be used to support forearm loads greater than 19 ft-lbs/25.8 N-m.



The E2 elbow should not be used in environments where volatile, explosive agents may be present.



There are no field serviceable parts inside the elbow. Removal of the elbow cap may void the warranty.

## Forearm Options

Several options are available for the forearm section of the elbow. Prefabricated forearms are available in 4 colors and may be ordered with the elbow (Chart 14). Forearms may also be custom fabricated by Fillauer.

## Control Configurations

The Motion E2 Elbow can be operated with many different switches and myoelectric inputs. Additionally, multiple terminal devices including in-hand controller TDs may be used such as Motion Control ProPlus devices, Taska®, i-limb®, and bebionic® hands. The result is a range of systems from low cost simplicity to complex, multi-digit hands, operated with or without an electric wrist rotator.

The versatility of the Motion E2 Elbow allows placement of the batteries and switches throughout the prosthesis, whether in the forearm, within the humeral section of the prosthesis, or switches placed on a shoulder disarticulation socket. As such, the splitter and adaptor cables have been purposely made short, and extension cables may then be used where indicated. The diagrams on pages 6-12 depict extension cables in every place they might be used. It is strongly suggested to order all cables that may be necessary, then return any unused components. Refer to Charts 1-14 (pages 13-14) for lengths and part numbers.

## Technical Specifications

	Large	Medium
Excursion Range	135 degrees	135 degrees
Height Elbow center to Lamination Collar	2½ in/6.4 cm	2½ in/6.4 cm
Diameter	2-13/16 in/7.1 cm	2-3/8 in/6 cm
Weight	16 oz/454 gm	15.5 oz/439 gm
Live Lift	2.2 ft-lbs/3 N-m	2.2 ft-lbs/3 N-m
Lift Time	1.3 – 4.9 seconds	1.3 – 4.9 seconds
Static Load	19 ft-lbs/25.8 N-m	19 ft-lbs/25.8 N-m

## System Selection

To determine the correct components for a Motion E2 System, first determine the control system desired for the elbow (simple switch operation or myoelectric, including a linear potentiometer), what type of terminal device, (either Motion Control Standard (motor direct) or an in-hand controller TD such as Motion Control ProPlus, Taska®, i-limb®, Bebionic® etc., and if it is to be switch operated or controlled with myoelectrics (including linear potentiometer). The last choice is if an electric wrist rotator is to be used and how it is to be controlled.

Next, follow down the list of options until a system matches the chosen components. The corresponding chart then gives you the choices for switches and inputs.

If at any point you need assistance, please contact Motion Control, 801-326-3434.

## Limited Warranty

Seller warrants to Buyer that the equipment delivered hereunder will be free from defects in materials and manufacturing workmanship, that it will be of the kind and quality described and that it will perform as specified in Seller's written quotation. The preceding limited warranties shall apply only to failures to meet said warranties that appear within the effective period of this Agreement. The effective period shall be two years (24 months) from the date of delivery to the fitting center that has purchased the components. Refer to the shipping receipt for the date of shipment.

For more information regarding the Limited Warranty, see the MC FACT SHEET - Limited Warranty at [www.UtahArm.com](http://www.UtahArm.com).

## Return Policy

Returns are accepted for a full refund (not including any repairs that may be required) for up to 30 days from date of shipment. Returns 31-60 days from date of shipment will be accepted, subject to a 10% restocking fee. Returns 61-90 days from date of shipment will be accepted, subject to a 15% restocking fee. Returns must be in re-saleable condition. Beyond 90 days, returns are not accepted.

If you have any questions, please do not hesitate to call Motion Control, 801.326.3434.

**1. Switch Elbow / Switch TD**

Switch Operated Motion E2 Elbow – Switch Operated Terminal Device (Page 6)

- a. Simplest low cost system
- b. Simple operation

**2. Myo Elbow / Myo TD - ProControl 2**

ProControl 2 – Myoelectric Control of Motion E2 Elbow – Myoelectric Control of Terminal Device (Page 7)

- a. Proportional Myoelectric Control of Elbow and Terminal Device
- b. Utilizes simpler MC Standard Terminal Devices (blue coaxial plug)
- c. Input options
  - i. EMG
  - ii. Linear Potentiometer
  - iii. Touch Pad
- d. NOT interchangeable with in-hand controller terminal devices, (MC ProPlus, Taska®, i-limb®, bebionic®)

**3. Myo Elbow / Switch Wrist / Myo TD**

Three Degree of Freedom System – Myoelectric Control of Motion E2 Elbow – Switch Operated Standard Wrist – Myoelectric Control of Terminal Device (Page 8)

- a. Proportional Myoelectric Control of Elbow and Terminal Device
- b. Utilizes simpler MC Standard Terminal Devices (blue coaxial plug)
- c. Input options
  - i. EMG
  - ii. Linear Potentiometer
  - iii. Touch Pad
- d. NOT interchangeable with in-hand controller terminal devices, (MC ProPlus, Taska®, i-limb®, bebionic®)
- e. Allows use of a Standard Electric Wrist Rotator operated with a simple switch

**4. Switch Elbow / Myo TD**

Switch Operated Motion E2 Elbow – ProPlus Terminal Device (Page 9)

- a. Simple switch operated Motion E2 Elbow
- b. Utilizes MC ProPlus Terminal Devices (green coaxial plug)
- c. Allows interchangeability with other in-hand controller terminal devices (MC ProPlus, Taska®, i-limb®, bebionic®)

**5. Switch Elbow / Myo Wrist / Myo TD**

Switch Operated Motion E2 Elbow – ProWrist Electric Wrist Rotator – ProPlus Terminal Devices (Page 10)

- a. Simple switch operated Motion E2 Elbow
- b. Utilizes MC ProPlus Terminal Devices (green coaxial plug)
- c. Allows interchangeability with other in-hand controller terminal devices (MC ProPlus, Taska®, i-limb®, bebionic®)
- d. Allows use of MC ProWrist Electric Wrist Rotator

**6. Myo Elbow / Myo TD - ProPlus**

ProControl 2 - Motion E2 Elbow Control – ProPlus Terminal Device Control (Page 11)

- a. Allows Simultaneous, Myoelectric Control of Elbow and Terminal Device
- b. Input options for both Elbow and Terminal Device
  - i. EMG
  - ii. Linear Potentiometer
  - iii. Touch Pad
- c. Allows interchangeability with other in-hand controller terminal devices (MC ProPlus, Taska®, i-limb®, bebionic®)

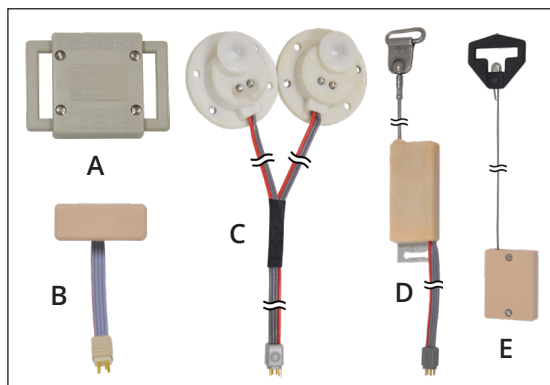
**7. Myo Elbow / Myo Wrist / Myo TD**

ProControl 2 - Motion E2 Elbow Control – ProWrist Electric Wrist Rotator, ProPlus Terminal Devices (Page 12)

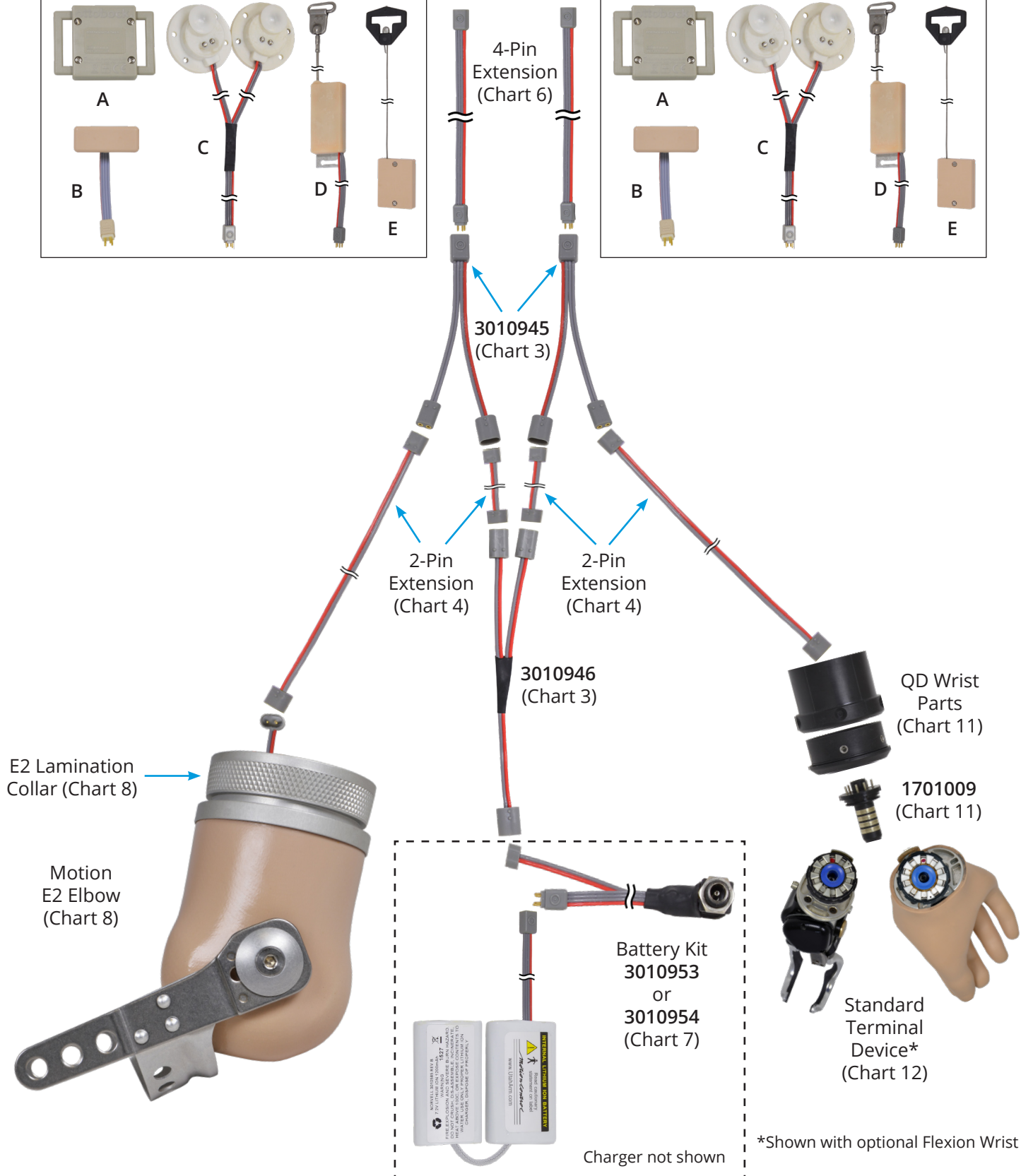
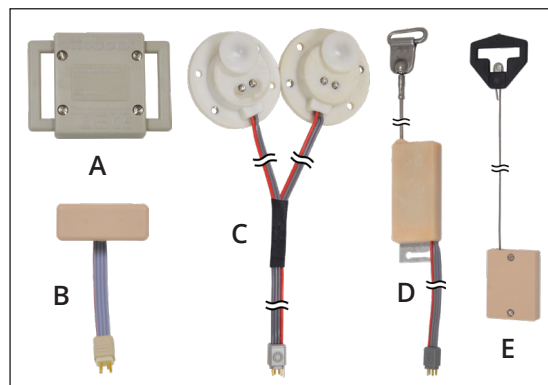
- a. Allows Simultaneous, Myoelectric Control of Elbow and Terminal Device
- b. Input options for Elbow, ProWrist, and Terminal Device
  - i. EMG
  - ii. Linear Potentiometer
  - iii. Touch Pad
- c. Allows interchangeability with other in-hand controller terminal devices (MC ProPlus, Taska®, i-limb®, bebionic®)
- d. Allows use of MC ProWrist Electric Wrist Rotator

# 1. *Switch Elbow / Switch TD* – Switch Operated Motion E2 Elbow – Switch Operated Terminal Device

Elbow Switch Options (Chart 1)



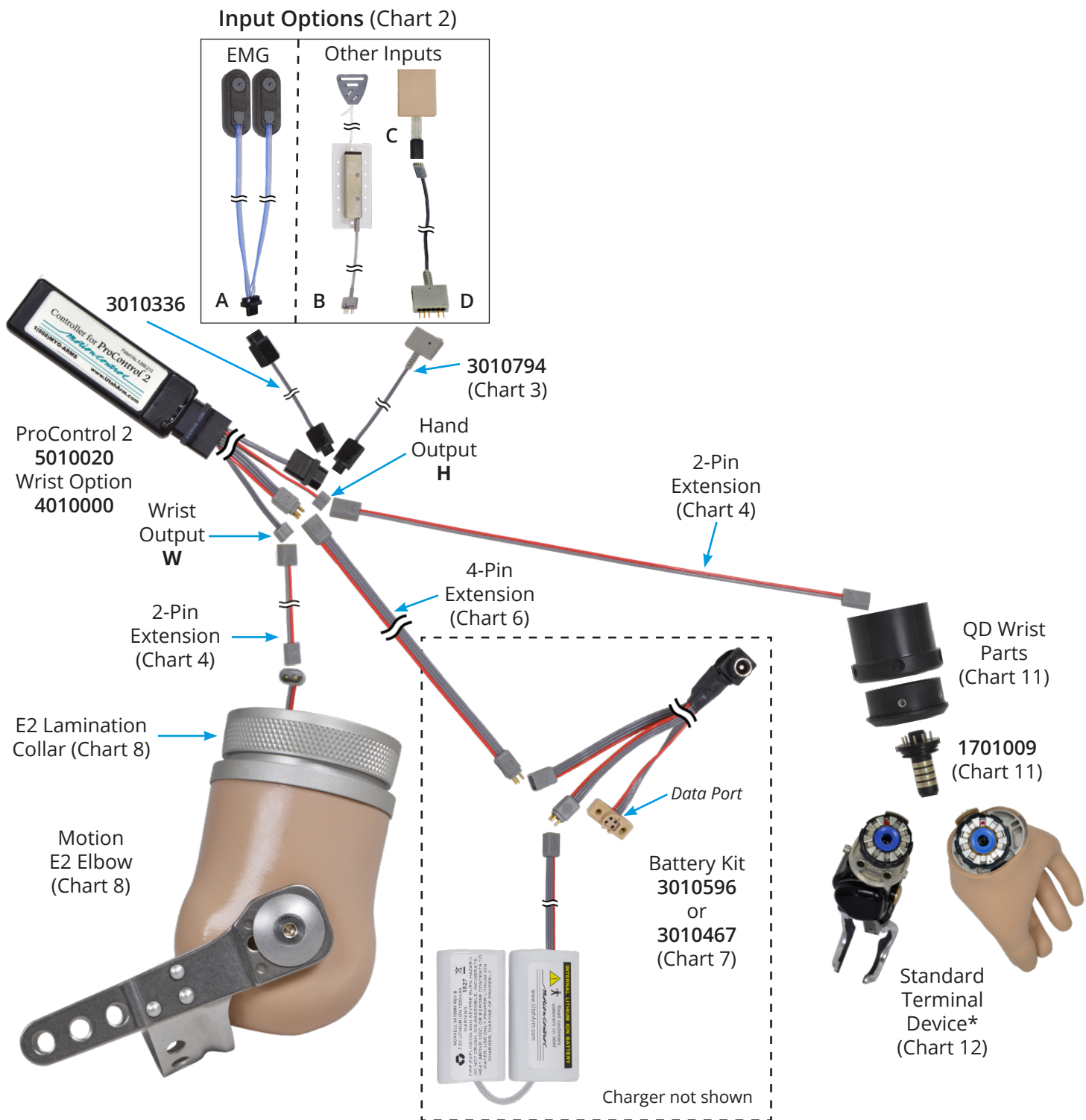
Terminal Device Switch Options (Chart 1)



\*Shown with optional Flexion Wrist

**NOT TO SCALE**

## 2. Myo Elbow / Myo TD - ProControl 2 – ProControl 2 – Myoelectric Control of Motion E2 Elbow – Myoelectric Control of Terminal Device

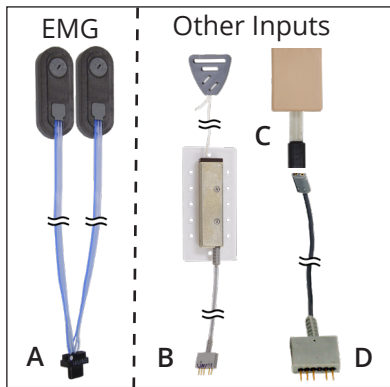


\*Shown with optional Flexion Wrist

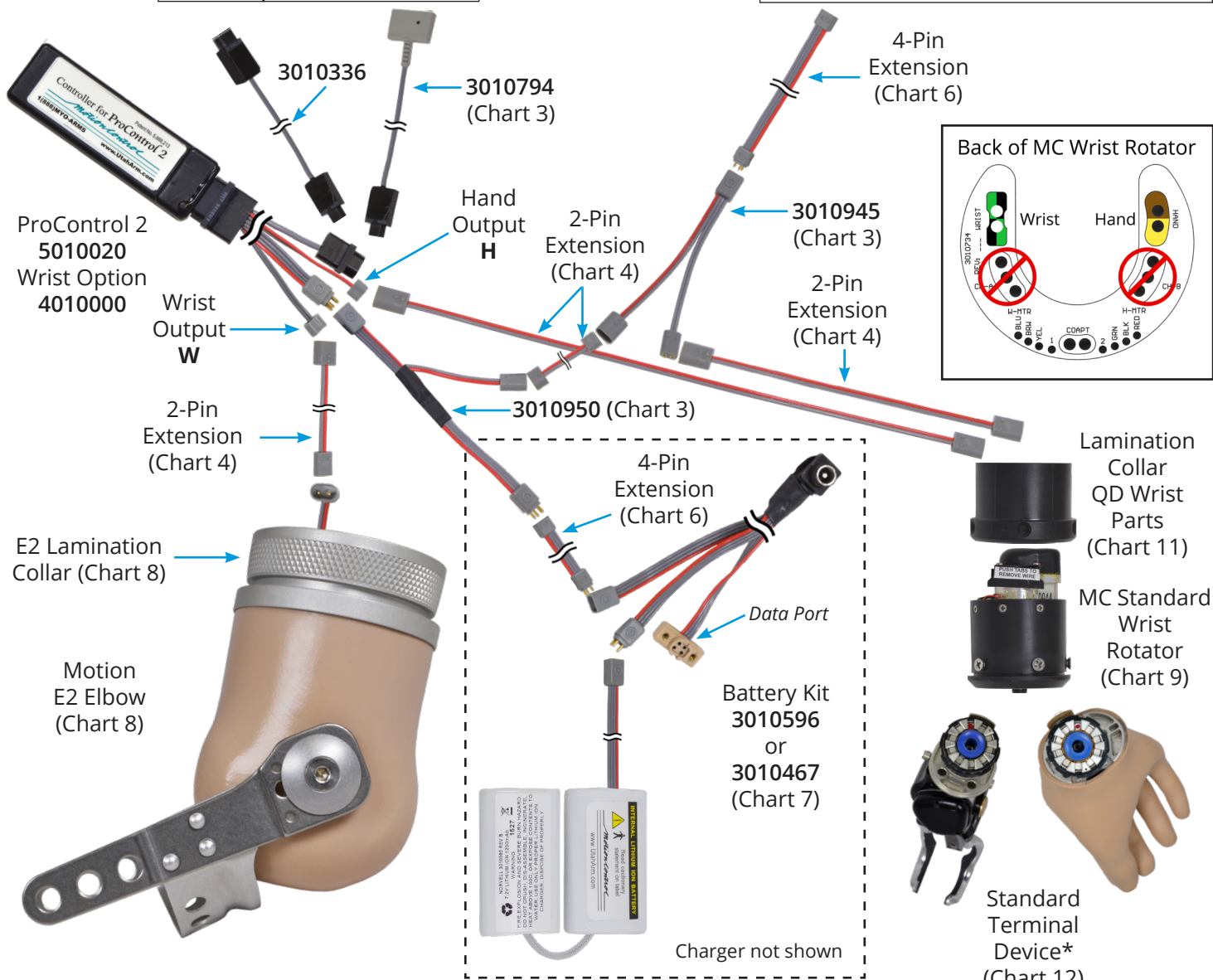
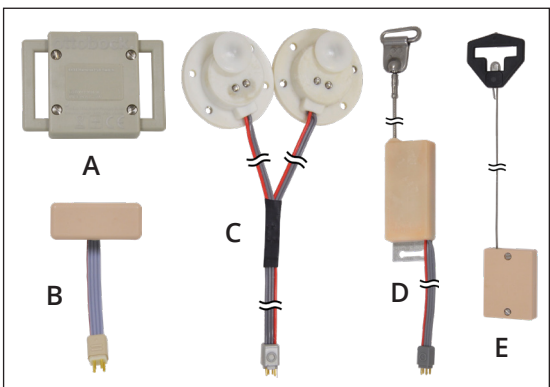
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### 3. *Myo Elbow / Switch Wrist / Myo TD* – Three Degree of Freedom System, Myoelectric Control of Motion E2 Elbow – Switch Operated Standard Wrist - Myoelectric Control of Terminal Device

Elbow & Hand Input Options (Chart 2)



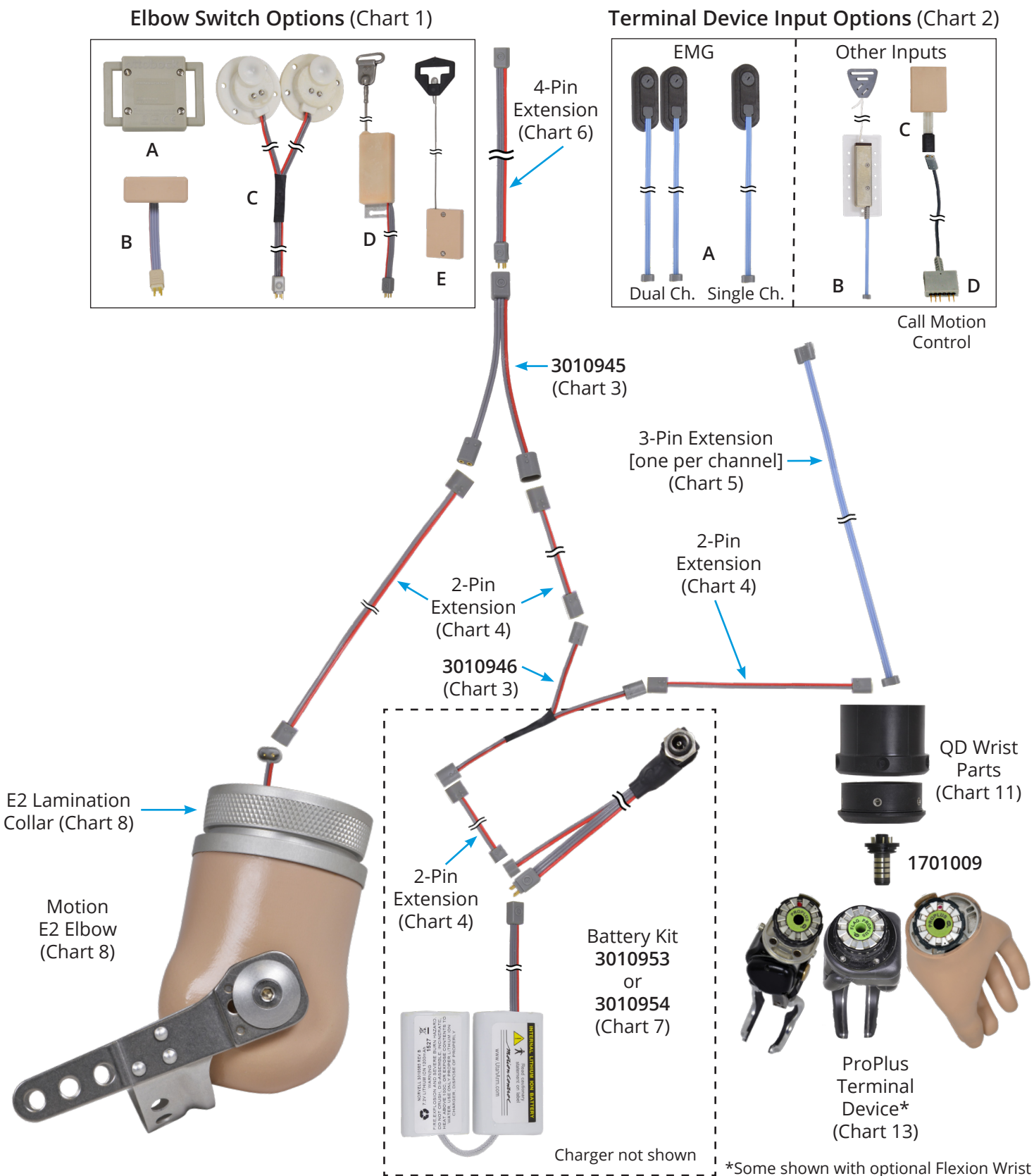
Wrist Switch Options (Chart 1)



\*Shown with optional Flexion Wrist

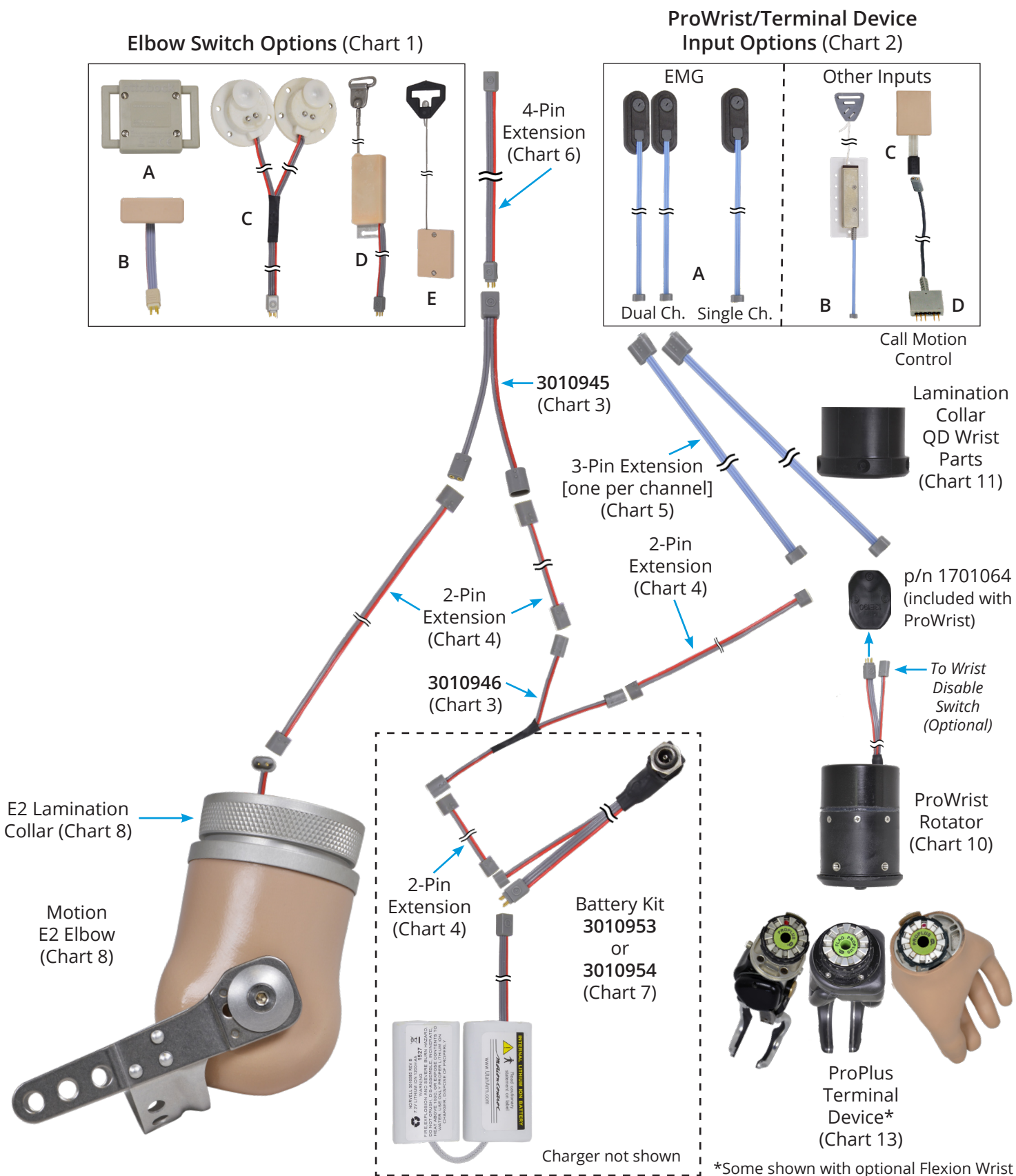
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#### 4. *Switch Elbow / Myo TD* – Switch Operated Motion E2 Elbow – ProPlus Terminal Device



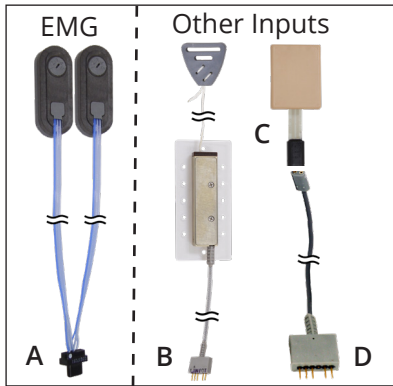
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5. **Switch Elbow / Myo Wrist / Myo TD** – Switch Operated Motion E2 Elbow – ProWrist Electric Wrist Rotator – ProPlus Terminal Devices

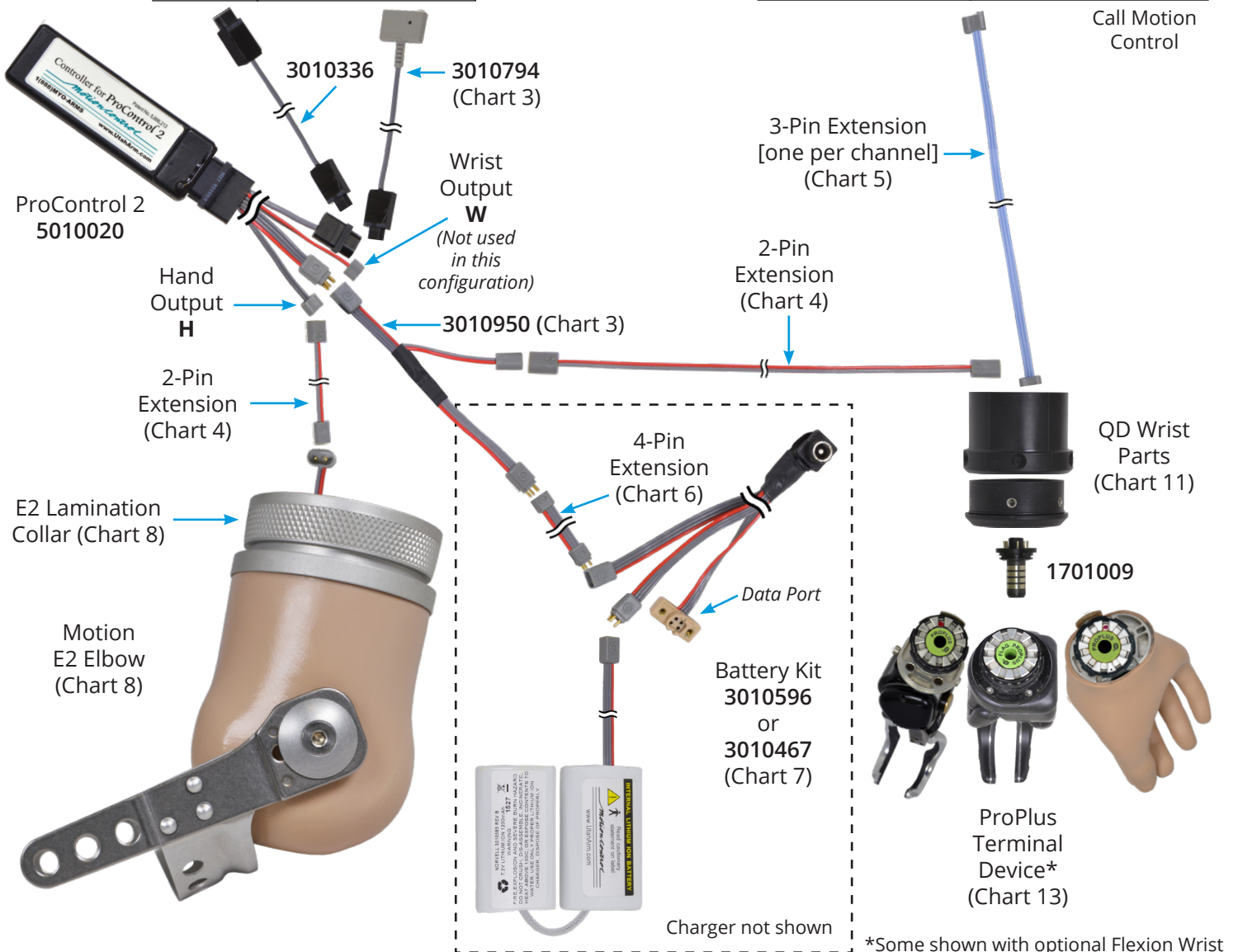
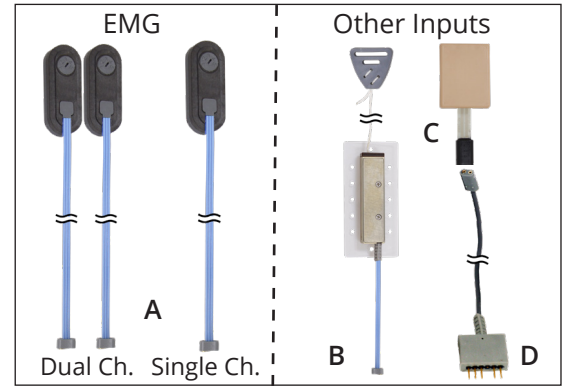


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Elbow Input Options (Chart 2)

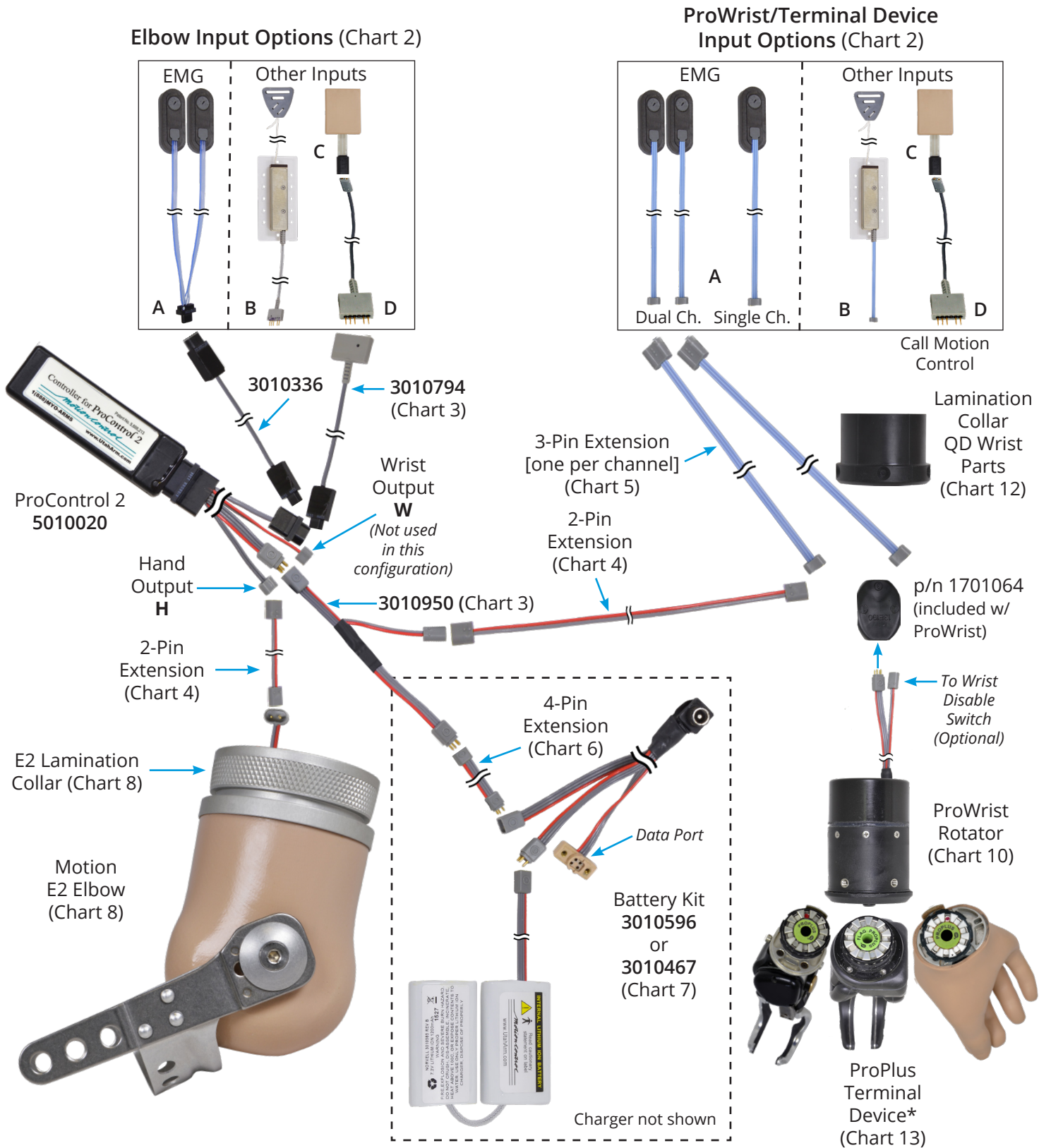


Terminal Device Input Options (Chart 2)



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7. **Myo Elbow / Myo Wrist / Myo TD** – ProControl 2 - Motion E2 Elbow Control – ProWrist Electric Wrist Rotator - ProPlus Terminal Devices



**NOT TO SCALE**

## Motion E2 Elbow Parts

### Chart 1 - Switch Options

Description	Cable Length	Part No.
<b>A</b> Otto Bock Harness Pull Switch	20 in/ 51 cm	1701022
<b>B</b> Otto Bock Rocker Switch 9X25	1.5 in/8 cm	1701021
<b>C</b> Motion 2 Button 2 Position Push Switch MC 4 pin	20 in/51 cm	3050015
<b>D</b> Motion 2 Position Pull Switch MC 4 pin	14 in/36 cm	3050013
<b>E</b> Otto Bock Cable Pull Switch	N/A	1701023

### Chart 2 - Proportional Input Options

Description	Cable Length	Tan	Brown	Black	Part No.
<b>A</b> Triad Preamp Set (Grey), Dual Channel, ProControl/ProHand	24 in/61 cm	-	-	-	3010868
Triad Preamp Set (Grey), Single Channel, ProControl/ProHand	24 in/61 cm	-	-	-	3010869
<b>B</b> Linear Potentiometer	22 in/56 cm	-	-	-	3010546
Linear Potentiometer, 3-pin Halfmoon Connector	22 in/56 cm	-	-	-	3010988
<b>C</b> Touch Pad	1 in/2.5 cm	3010669	3010670	3010721	-
<b>D</b> Touch Pad Cable, Single Channel	20 in/51 cm	-	-	-	3010548
Touch Pad Cable, Dual Channel	20 in/51 cm	-	-	-	3010549

### Chart 3 - Adapter Cables

Description	Cable Length	Part No.
5-Pin to 9-Pin Adapter for Alternate Input to ProC2/ProPlus for non-EMG inputs	8 in/20 cm	3010794
Cable Adapter Switch Control w/ Batt. Input	2.25 in/6 cm	3010945
Battery Splitter Cable, 2 Pin Connectors	4 in/8 cm	3010946
Battery Splitter Cable, 4 Pin and 2 pin Connectors	4 in/8 cm	3010950

### Chart 4 - 2-Pin Extension Cables

Description	Cable Length 12 in/30 cm	Cable Length 18 in/46 cm	Cable Length 24 in/60 cm
Extension Cable 2-Pin Halfmoon	3010951	3010842	3010952

### Chart 5 - 3-Pin Extension Cables

Description	Cable Length 12 in/30 cm	Cable Length 18 in/46 cm	Cable Length 24 in/60 cm
Extension Cable 3-pin	3010989	3010990	3010991

### Chart 6 - 4-Pin Extension Cables

Description	Cable Length 12 in/30 cm	Cable Length 18 in/46 cm	Cable Length 24 in/60 cm
Extension Cable 4-pin 3010304	3010325	3010326	3010304

### Chart 7 - Battery Kits

Description	Long/thin	Split-cell
Battery/Charger Set - Internal, 7.2V, Li Ion, (incl. wiring harness)	3010467	3010596
Battery/Charger Set - Int. 7.2V, Li Ion, 2 Pin (incl. wiring harness)	3010954	3010953

### Chart 8 - Motion E2 Elbows & Humeral Lamination Collars

Description	Tan	Lt. Brown	Brown	Black	Part No.
Motion E2 Elbow, Medium, 2-3/8 in/6 cm diam	5010094	5010100	5010095	5010096	-
Motion E2 Elbow, Large, 2-13/16 in/7.1 cm diam	5010097	5010101	5010098	5010099	-
Motion E2 Elbow, Humeral Lamination Collar, Medium	-	-	-	-	1072006
Motion E2 Elbow, Humeral Lamination Collar, Large	-	-	-	-	1072007

### Chart 9 - MC Standard Wrist Rotators

Description	Tan	Brown	Black
MC Standard Wrist Rotator	5010054	5010055	5010045

### Chart 10 - MC ProWrist Rotators

Description	Tan	Brown	Black
MC - ProWrist Rotator	5010057	5010058	5010056

### Chart 11 - QD Wrist Parts

Description	Tan	Brown	Black	Part No.
Lamination Collar for MC Wrist, 7 1/4 Hand	1100292	1100296	1100288	-
Lamination Collar for MC Wrist, 7 3/4 Hand, ETD	1100293	1100297	1100289	-
Lamination Collar for MC Wrist, 8 1/4 Hand	1100294	1100298	1100290	-
Lamination Collar for MC Wrist for Hosmer Prefab (LRG), Boston or AFB	1100295	1100299	1100291	-
Forearm Endcap	3010804	3010805	3010758	-
Wrist Lamination Dummy Kit	-	-	-	3010886
Otto Bock style Coaxial Plug	-	-	-	1701009

### Chart 12 - Standard Terminal Devices

Description	7 1/4	7 3/4	8 1/4	Part No.
Motion Control Hand - Standard Left	5010022	5010024	5010028	-
Motion Control Hand - Standard Right	5010023	5010025	5010029	-
Heavy Duty Stainless Steel Fingers Option MC Hand	-	-	-	3010878
Description	Left	Right		
ETD - Standard	5010032	5010033	-	-
ETD - Standard, with Titanium Hook Fingers	5010059	5010060	-	-
ETD - Standard, with Black Anodize Hook Fingers	5010073	5010074	-	-

### Chart 13 - MC ProPlus Terminal Devices

Description	7 1/4	7 3/4	8 1/4	Part No.
ProPlus Hand - Left	5010046	5010048	5010050	-
ProPlus Hand - Right	5010047	5010049	5010051	-
Heavy Duty Stainless Steel Fingers Option MC Hand	-	-	-	3010878
Description	Left	Right		
ProPlus ETD	5010052	5010053	-	-
ProPlus ETD, with Titanium Hook Fingers	5010061	5010062	-	-
ProPlus ETD, with Black Anodize Hook Fingers	5010071	5010072	-	-
ProPlus ETD2	5010084	5010082		
ProPlus ETD2, Heavy-Duty Fingers	5010106	5010107		

### Chart 14 - Prefabricated Forearm Options

Description	Tan	Lt. Brown	Brown	Black	Part No.
Prefabricated Forearm, Motion E2 Elbow, Medium	1702104	1702106	1702105	1702107	-
Prefabricated Forearm, Motion E2 Elbow, Large	1702108	1702110	1702109	1702111	-
External Cable Housing for Motion E2 Elbow	-	-	-	-	3050022





[www.UtahArm.com](http://www.UtahArm.com)

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