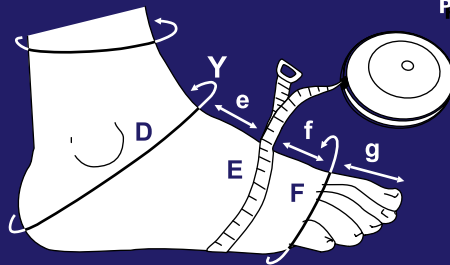


MEASURING FOR CUSTOM-MADE PRESSURE GARMENTS

THE UPPER EXTREMITY



Pressure Garments • Custom & Ready-Made



Revised January 2008

©Copyright 2003, Bio-Concepts, Inc., All Rights Reserved

2424 East University Drive, Phoenix, Arizona 85034
voice: 602-267-7854 • toll-free: 800-421-5647 • fax: 602-273-6931

20080121_A

Sleeves for #31 Sleeved Vest, Left & Right

Requested features:

1. color: Royal Blue
2. bilateral anterior elbow inserts to prevent irritation in the elbow crease
3. Silon-TEX lining is requested and a sketch with detailed measurements is provided on the attached Sketch Pad
4. bilateral zippers to the elbow on the left arm and from the end of the sleeve to the axilla level on the right arm
5. expansion panels are requested on both sleeves that would match those requested on the torso

The distance between the last two circumferences is not the standard 1.5". The actual distance (1 inch in the example) is written with a carat next to the corresponding circumferences.

UPPER EXTREMITY MEASUREMENT CHART

Patient Doe, Jane
 Last Name First Name
 Bio-Concepts Use Only
 Date 10/8/07 Age 38 Sex F
 Garment color C07
 Insert Anterior elbow (R) & (L)
 Lining Silon lining
see sketch pad
 Left hand zipper: Dorsal Palmar Ulnar Radial
 With hook & loop zipper stop tab
 Length (if not full) _____
 Right hand zipper: Dorsal Palmar Ulnar Radial
 With hook & loop zipper stop tab
 Length (if not full) wrist to elbow
 Expansion panel: Left Right
 (Expansion panels are full length by default; ulnar when sleeve separate from torso, palmar when attached to a torso garment)
 Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.
 Additional instructions or comments:
Close-knit Material
Sleeves for vest

BIOCONCEPTS

2424 E. University Drive, Phoenix, Arizona, U.S.A. 85034-6911
 800-421-5647 • 602-267-7854 • FAX: 602-273-6931
 e-mail: bio-con@bio-con.com • worldwide: http://www.bio-con.com

CIRCLE ITEMS ORDERED

Bio-Concepts Use Only:

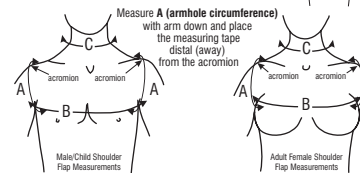
F=

Shoulder Flaps



	LEFT	RIGHT
A		
B		
C		

Shoulder flaps may be attached to any sleeve that reaches the axilla (No. 1, No. 2, No. 5, No. 8). Select flap style above, sleeve style to lower left. Enter shoulder flap measurements at left and sleeve measurements below.



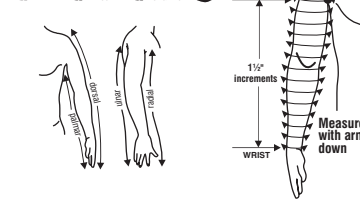
Sleeves



Sleeves for Gloves & Gauntlets



Sleeves for Briefs, Suits, & Vests



Stump Measurement

STUMP	LEFT	RIGHT
b		
c		

Stump cover style: Orange peel
 Insert

FROM WRIST or AXILLA	LEFT ARM	RIGHT ARM
0	11 0	11 6
1½	10 4	11 2+
3	10 3	10 6
4½	9 4	9 4
6	8 7	9 1
E 7½	9 0+	9 2
9	9 0+	9 4
10½	8 6	9 0
12	8 0	8 2+
13½	7 0	7 0
15	6 0	6 1+
16½	5 7	6 0
18		
19½		
21		

BCI_39294
 © Jan. 2008 BIO-CONCEPTS, INC., PHOENIX, ARIZONA

See page 15 for an explanation of the shorthand measurement notation system.

Upper Extremity Chart -- NEW PATIENT EXAMPLE

MEASURING THE UPPER EXTREMITY

Sleeved Vests, Sleeved Body Briefs, and Sleeved Body Suits come with sleeves; please do not circle a **Sleeve to Wrist or Elbow (#1 or #2)** if you are ordering a garment which includes sleeves. **Shoulder Flaps, #10A to #10E** do not come with sleeves. Please do circle a sleeve if you are also ordering a shoulder flap.

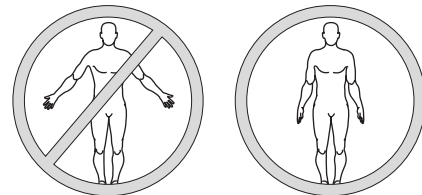
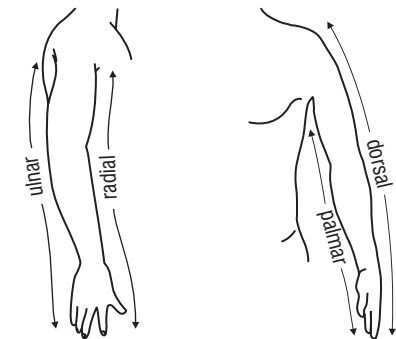
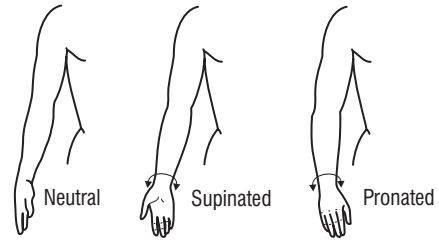
The capacity of the forearm for partial rotation around its vertical axis sometimes makes it hard to communicate the exact locations of important optional features, such as expansion panels, linings, inserts, pockets, and Silon-TEX on the arm. The anatomical chart position presents the hand and forearm with the palmar surface anterior, however, with the arm relaxed at the side the palmar surface becomes medial. We emphasize the importance of measuring for upper extremity garments on patients with the arms relaxed at the sides in a neutral position, this is how your patients will wear the garments, and it is how you should describe your optional features to us.

Measurement Techniques

There are two primary measurement techniques for the extremities: the "Mark and Measure Method" and the "Paper Tape Method." Neither method is inherently superior to the other. Both methods, when properly done, will yield correct measurements. If you or your facility have no previous experience measuring extremities for custom garments, we suggest you begin by learning the Mark and Measure Method. This is the method that all Bio-Concepts technicians are trained to use and we can, therefore, be more helpful in guiding you in the use of this method.

The Mark and Measure Method involves making a mark on the patient with a pen every 1½ inches from where the sleeve will begin to where the sleeve will end. Very often, the last mark will not be 1½ inches from the second to the last mark. Measure the actual distance between the last two marks and record it on the **Upper Extremity Measurement Chart** as shown in the example on page 36. Using the retractable tape measure or the wide tape measure, measure the circumference of the arm at each mark.

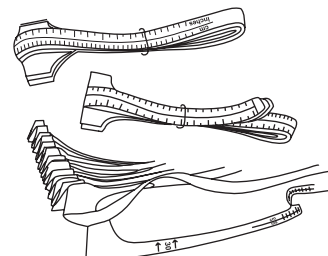
The Paper Tape Method involves the use of paper measuring tapes, which are simple paper straps spaced every 1½ inches along a central spine. Place the spine against the arm beginning where the sleeve is to begin, wrap each strap around the arm and secure with cellophane tape. Keep wrapping around the arm until the desired end is reached and tear off any remaining straps. Then tear each strap so the whole assembly can be removed from the limb. Read the measurements along the straight part of the paper tape spine.



Retractable Tape



Wide Tape



Paper Tape

Mark & Measure Method

Beginning at the Axilla

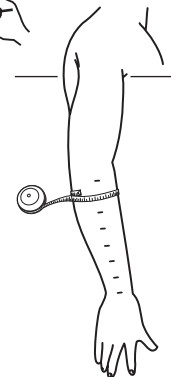
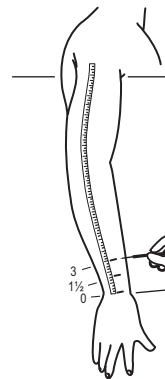
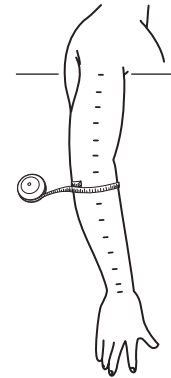
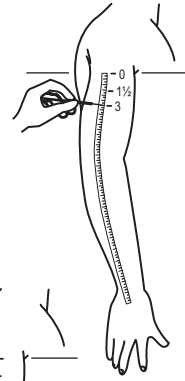
- Have the patient raise the arm enough to wrap the retractable measuring tape around the top of the arm. Snug the tape up and into the axilla and ask the patient to relax the arm at the side.
- Adjust the tape as needed to make it perpendicular to the arm. Make a mark on the outside of the arm.
- Place the measuring tape vertically against the outside of the arm and make a mark every $1\frac{1}{2}$ inches from the axilla to the desired end of the garment. If the last mark is not $1\frac{1}{2}$ inches from the previous mark, measure the actual distance and mark the **Upper Extremity Chart** with a carat, "<", and the actual distance (see example chart).
- Only record as many circumferences as are needed to cover the affected area of the arm. For example, if a **Sleeve Wrist to Elbow** is desired, do not measure all the way to the axilla.
- With the arm at the patient's side, measure the circumference at each of the marks. Record each circumference on the **Upper Extremity Chart**. Write the first circumference on the 0 inch blank, and continue to the desired end of the garment.
- For a sleeve over the elbow, record the location of the elbow on the measuring chart by writing an "E" next to the circumference closest to the elbow.

Beginning at the Wrist

- Have the patient hold the arm out just enough to determine the location of the wrist, wrap the tape measure around the wrist, and make a mark on the dorsal side of the wrist at the 0 inch mark.
- Make a mark on the dorsal arm surface at the desired top of the sleeve. Hold the measuring tape vertically against the dorsal arm and mark every $1\frac{1}{2}$ inches from top to bottom. The last mark may not be $1\frac{1}{2}$ inches from the previous mark. Just measure the actual distance and mark the **Upper Extremity Chart** with a carat, "<", and the actual distance as shown in the example chart.
- If the sleeve is to go over the elbow, be sure to record the location of the elbow on the measuring chart by writing an "E" next to the circumference closest to the elbow.

Only record as many circumferences as are needed to cover the affected area plus 1-0.5 inches (1.3-2.5 cm) above and below.

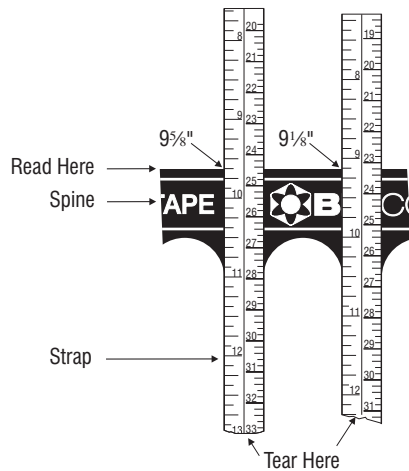
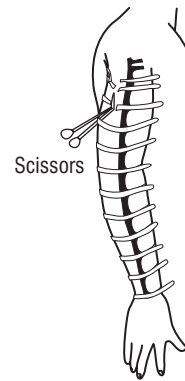
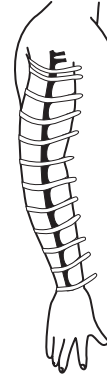
For example, if a **Sleeve Wrist to Elbow** is desired, do not measure all the way to the axilla



Paper Tape Method

The Bio-Concepts Upper Extremity paper tape includes a wrist strap and 13 straps (total length 19 1/2 inches) above the wrist.

- Have the patient hold the arm out just enough to get the wrist strap around the wrist, secure it to the spine of the tape.
- Pull the straps around the arm and secure each one as you move up the arm, being very careful to adjust each tape to make sure it is perpendicular to the arm.
- Have the patient hold the arm out from the body just enough to allow you to wrap the straps around the arm and secure each one. DO NOT have the patient raise the arm more than a few inches.
- The last tape might not be 1 1/2 inches from the previous strap. Just pleat the paper tape spine and secure. Then measure the actual distance between the last two tapes, mark the **Upper Extremity Chart** with a carat, "<", and write the actual distance as shown in the example chart (p. 36).
- If the sleeve is to go over the elbow, be sure to record the location of the elbow on the measuring chart by writing an "E" next to the circumference closest to the elbow.



Measuring for a Shoulder Flap

A shoulder flap is considered an upper extremity garment, please do not use the **Torso Measurement Chart** to record measurements for a shoulder flap.

Shoulder flaps do not automatically come with sleeves. You must select a sleeve, full length or short, to attach to the shoulder flap. If a hand garment is to be attached to a full-length sleeve, measurements will be required for a glove, gauntlet, mitten, or stump cover in addition to the measurements for the sleeve and for the shoulder flap.

The purpose of a shoulder flap is to hold up a sleeve. It is not designed to apply therapeutic pressure to the upper torso. Some benefit may be obtained to the upper shoulder, especially the acromial region, but a shoulder flap should not substitute for a vest.

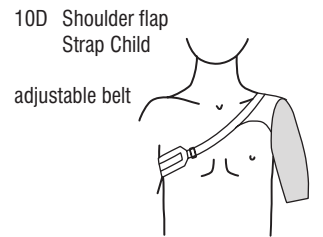
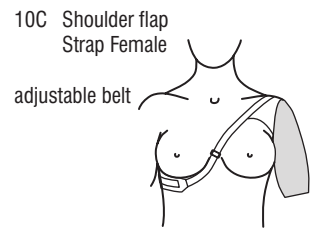
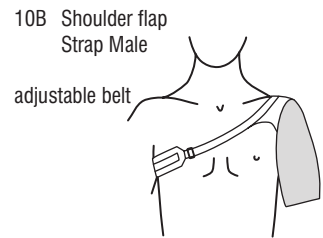
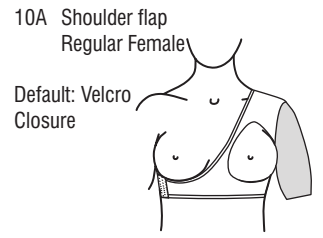
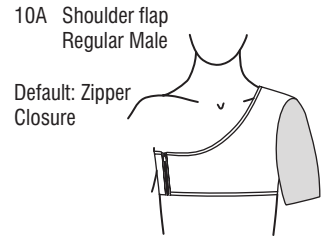
If the affected area does not include the upper arm, it may be possible to achieve the purpose of the shoulder flap with a one to two-inch wide band at the top of the sleeve, lined with Silon-TEX. This material will hold the garment up just as well as a shoulder flap and may prove to be much more comfortable for your patients.

NOTE: The #10A Male Style Shoulder Flap may be requested for a male or female child and for an adult female with small breasts or bilateral radical mastectomy. Please be sure to indicate "no breast hole" on the measurement chart. #10A Male Style Shoulder Flaps made for adult females and children have velcro as the closure instead of a zipper.

A #10A Female Style Shoulder Flap may be requested with no breast hole for a small-breasted adult female or for a unilateral radical mastectomy patient. Again, please indicate "no breast hole" on the measurement chart.

Whether velcro or zipper, the #10A style shoulder flaps closures are usually positioned on the opposite side of the torso from the affected upper extremity. These closures may be requested in the center of the torso instead.

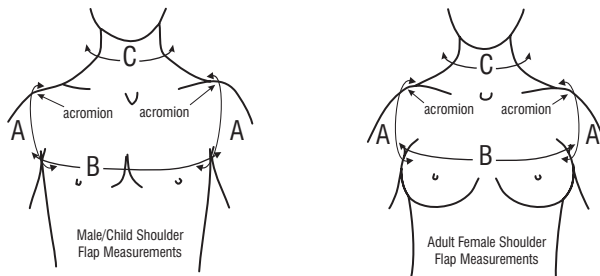
Shoulder Flap Styles



Required Measurements

- A** Circumference around the shoulder at the axilla. Please make sure the tape is placed distal to the acromion, as shown in the illustration.
- B** Circumference of the torso at the axillae for both males and females.
- C** Circumference of the neck.

These are the only measurements we need to fabricate a shoulder flap to fit your patient (in addition to sleeve measurements).



NOTE: No matter how well a shoulder flap is measured, designed, and made, some patients will be unable to tolerate this garment style. We recommend that you consider a sleeve to axilla with a Silon-TEX lined band at the top to hold the garment up.

Measuring for a Stump Closure

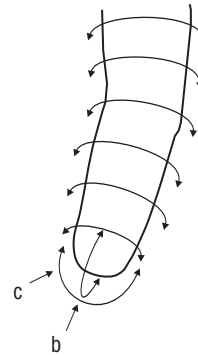
Measure the extremity circumferences as usual every 1 1/2 inches from the desired top of the garment or from the axilla to the stump. Use the most distal circumference as a guide to take at least two measurements across the end of the stump. In the case of an irregular stump ending, it may be necessary to take three measurements across the end of the stump.

Insert Style

The extremity garment ends in a circular patch of insert material. This style conforms well to irregular stumps.

Orange-peel Style

Four seams join the fabric across the end of the stump.



Insert Style



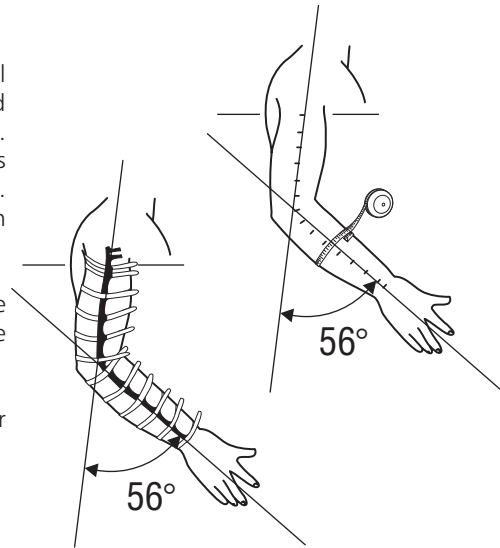
Orange-Peel Style

Measuring a Contracted Arm

Burn patients may present with scar band contractures in the antecubital fossa severe enough to cause the fabric in that region to bunch and wrinkle. This may be avoided by incorporating a 'dart' into the garment. This is done by removing a wedge-shaped area of fabric in the radial axis at the elbow, leaving a seam nearly all the way around the arm. Alternatively, the dart may be incorporated into an elbow insert, which would avoid the circumferential seam at the antecubital fossa.

In order to create either a contracture seam or an elbow insert with the dart included, we need the degree of flexion contracture as shown in the illustrations.

Measure the arm circumferences as usual, using either the paper tape or the mark-and-measure methods.



Common Options for Upper Extremity Garments

Zippers

On a sleeve which is open at the wrist, zippers are generally placed to open at the wrist. This allows the patient to get the hand through the smallest part of the sleeve. A sleeve which would be attached to a glove or gauntlet would open at the top of the sleeve. Many patients do not require a zipper on a sleeve. A patient with good hand and finger strength on the opposite side usually does not need a zipper unless the extremity presents too much pain and difficulty. We strongly recommend against a zipper for a sleeve to be used in lymphedema management of the upper extremity. Most lymphedema patients will be more comfortable with an expansion panel.

It is best to avoid placing a zipper over the front or back of the elbow, although there may be occasions where this may be unavoidable. Specify a "dorsal zipper" for most patients. A dorsal sleeve zipper would run dorsally from the wrist, mid-way between the ulnus and the radius, to laterally between the antecubital fossa and the elbow and then to the lateral upper arm opposite the axilla. See the illustration on page 37.

Inserts

For some patients, bunching of fabric in the antecubital fossa (the front of the elbow) can be uncomfortable. An "anterior elbow insert" made with our stretchy soft Insert Material (page 11) will help prevent that. Inserts over the back of the elbow are sometimes requested for patients with skin breakdown. See below for the procedure for incorporating a 'contracture dart' into an elbow insert.

Expansion Panels

An expansion panel is made of the same soft and stretchy fabric we use to make inserts (see page 11). A panel of this fabric along the ulnar side of the arm (the back of the elbow) allows for minor fluctuations in patient measurements and growth in small children. The expansion panel is designed into the garment in such a way as to ensure that the required pressure is not compromised.

Linings

It is possible to line an entire garment with our Lining Material (see page 11), but for many patients this would be uncomfortably bulky. When considering a lining on any garment always keep in mind that the lining means two layers of material and doubly thick seams. For many patients it may be more effective to make the whole garment out of a light fabric, such as our Soft Material (see page 11).

Elbow linings are the most common lining option on an upper extremity garment. This would consist of a fully circumferential layer of lining fabric wide enough to include the whole elbow and the antecubital fossa.

Many patients experience difficulty in keeping their sleeve from slipping down the arm. In some cases the patient may have had a decrease in measurements, but in many cases the patient's form will prevent a sleeve from staying up unaided. Look at your sleeve measurements, if the top one or two measurements are bigger than the next measurements, the sleeve may slide down. We suggest lining the top elastic band of a sleeve with Silon-TEX (see page 11). Silon-TEX is resistive to the skin and acts as a very good mechanism to prevent the sleeve from falling. Indicate, "Silon top band" on the measurement chart on the "Lining" option. In some cases the standard 1 inch wide band may not provide sufficient support to hold up a sleeve, even with Silon-TEX lining. You may wish to request a 1½ or 2 inch wide band instead. If this is not feasible due to involvement in the upperarm, scapular, or clavicular region, then a shoulder flap is required.

Additional Options

The distal opening of a sleeve normally does not end with an elastic band. A few patients find this uncomfortable. You may request a distal band on your sleeve order. Write "add distal band" in the "Additional Instructions."