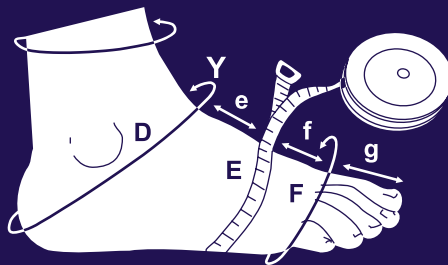




MEASURING FOR CUSTOM-MADE PRESSURE GARMENTS



Revised August 2013

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Bio-Concepts, Inc. Phoenix, Arizona

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INTRODUCTION

Bio-Concepts is committed to providing the highest quality pressure garments available. You will not find a more flexible or adaptable custom garment maker. Although we have been as complete as possible in this measurement manual, many special situations will arise. If you think you need help call our 800 telephone number, we will be happy to assist. Thank you for selecting Bio-Concepts for your pressure garment needs.

Custom-Made Elastic Pressure Garments

Custom-made pressure garments are constructed to ensure the most favorable distribution of pressure over the targeted surface. Detailed measurements are required in order to construct even the most basic custom garment. Download the latest measurement charts and forms from <http://www.bio-con.com/>.

Ready-Made Elastic Pressure Garments

We've taken as much of the work out of ordering the ready-mades as possible -- you only need to take one or two measurements of the patient and we can send you a quality product in practically no time. These garments are ideal for patients who require immediate compression therapy, but who may not yet be ready for a custom garment.

Billing/Payment Options

30-Day Open Account Direct Billing: Approved credit for facilities only.
Contact customer service for an easy to use open account credit application.
Purchase orders are the preferred billing/payment method at Bio-Concepts.

Insurance/Worker's Compensation/State Medicaid: Send us a completed order along with applicable patient insurance documentation and we will check coverage and eligibility. **NOTE: Medicare does not cover pressure garments except in extremely rare circumstances.**

Credit Card: VISA, MasterCard, American Express, Discover.

COD: For trusted facilities and patients.

Customer Service

Call: Toll Free (U.S. & Canada)
Voice : 800-421-5647
Fax: 800-650-9424

Local & Overseas
Voice: 602-267-7854
Fax: 602-273-6931

Mail: Bio-Concepts, Inc.
2424 E. University Dr.
Phoenix, Arizona 85034

Internet: <http://www.bio-con.com/>
Email: bio-con@bio-con.com
See our website for a complete email directory.

This manual, in its entirety and by chapter, as well as all measurement charts and forms are available for download in PDF format. Please visit <http://www.bio-con.com/>.

A Complete Online Training & Credentialing Program

A complete series of training videos are available for free at our website, www.bio-con.com. View the videos at your convenience or take an online training and testing program to certify yourself as a Bio-Concepts custom garment fitter. It's all free and available 24/7.

Here's What You'll Need

In addition to the marking and measuring devices pictured on page 14, you will need the Bio-Concepts **Order Form** to record important shipping, patient, and billing information. You will also need the Bio-Concepts measurement chart for each class of garment: **Head and Neck**, **Hand**, **Torso**, **Upper Extremity**, **Lower Extremity**, and **Foot**. For hand measurements, you will need the **Hand Tracing Guide** (separate right and left hand versions) and the **Foot Tracing Guide** (also separate right and left foot versions), for **Foot Glove**, **Gauntlet**, and **Mitten** measurements. In order to illustrate the locations of special inserts, linings, and other garment accessories and features, use the **Sketch Pad** with detailed instructions and measurements.

To Order

Fax: Toll Free (U.S. & Canada): 800-650-9424
Local & Overseas: 602-273-6931

Call: Toll Free (U.S. & Canada): 800-421-5647
Local & Overseas: 602-267-7854

Mail: Bio-Concepts, Inc.
2424 East University Dr.
Phoenix, Arizona 85034-6911

Please do not use pencils, light colored ink pens or colored felt pens, some colors do not fax well, and some do not fax at all.

Recording and Transmitting Measurements

You must record and transmit your custom-made pressure garment order using the appropriate Bio-Concepts measurement chart(s). Please make sure that all of the required information is entered clearly and accurately. If you do not have a reasonably clean copy call Bio-Concepts toll free phone number and we will send you a clean set of order forms right away. Or you may download a complete set of Bio-Concepts measurement charts or individual charts from our Internet site at <http://www.bio-con.com>. Please call and request clean new forms if yours are undated or outdated.

Please do not fax photocopies or photographs. These are always turned into black blurs by the facsimile machine.

In addition, this measurement manual is also available for download at <http://www.bio-con.com>. You may download and print the entire manual, or you may download individual chapters.

Nearly all of our customers transmit orders by fax, but you may also mail completed order forms. Many customers choose to call our toll-free phone number, 800-421-5647, and dictate the order directly to our customer service representatives. For our overseas customers, it may be possible to submit orders by email. Please do not do so, however, until it is arranged beforehand. Direct such inquiries to bio-con@bio-con.com.

Amazon.com

Visit our Amazon webstore to order Bio-Concepts Ready-Made Garments online. Visit <http://www.amazon.com/>.

Shipping Terms**Ready-Made Garments**

Subject to current rates for any shipping method you specify. There are no handling fees for any order for any reason.

Custom Garments

Shipping within the US and Canada by First Class Mail is free. Shipping to any other destination or shipping by any method other than regular mail is extra. Call for current rates. Bio-Concepts does not mark up shipping charges and there are no handling fees for any order for any reason.

Customers Outside the United States

Bio-Concepts enjoys a worldwide reputation as a leader in the design and manufacture of custom and ready-made pressure garments. We provide garments for customers all over the world. Payment in U.S. dollars is required, but for low-volume accounts and occasional transactions, purchase by credit card is surprisingly easy. For trusted customers it is possible to set up direct deposit arrangements or bank demand drafts. These arrangements must be negotiated prior to filling any orders.

Ready-Made Product Return Policy

Ready-Made garments are sold without warranty, however, items may be returned for an even exchange or for credit or refund if returned promptly in the original package.

Custom Garment Product Warranty

30 days from the time the patient receives the garment, full replacement or no-cost alteration for defects in workmanship, materials, or design.

Alterations

An existing garment may be altered to accommodate changes in patient measurements or to incorporate new features into the garment. If you have a garment which is not working for a patient, a simple alteration is usually all that is needed. Return the garment with detailed instructions. If you are not sure whether new measurements are needed, call our toll-free 800-421-5647 telephone number and request assistance. An elective alteration fee will be charged in addition to any added features not included in the original garment. Garments returned for alteration must include the patient's name and your name and telephone number at the minimum. See page 72, use the Bio-Concepts Reorder Form.

Returns/Refunds

Custom garments are manufactured from detailed measurements taken directly from the patient. A custom garment cannot be repackaged and sold to another customer. Consequently, a garment manufactured and sold in compliance with our stated warranty terms cannot be returned for refund or credit. If the garment is within the warranty period and you believe an error was made in design, workmanship, or materials, simply return the garment with a detailed description of the issue and request a 'no-charge' alteration or replacement.

ORDER FORM

In many ways the **Order Form** is the most important form. Scrupulous attention to every detail will help avoid needless delays.

The **Order Form** should be used when transmitting measurements for a patient new to Bio-Concepts, existing Bio-Concepts patients, and alteration requests. Contact our Order Desk if you or your facility may order frequently. We would be happy to customize the **Order Form** for your unique billing and shipping situation.

Order Information

Patient Number: If the patient is new to Bio-Concepts, leave this blank. Otherwise, entering the six digit id number will assist processing.

New or Existing Patient: Check if the patient is new to Bio-Concepts, or an existing patient.

Order Date: The date you fill out the **Order Form**.

Need By Date: We usually need about five business days between the time we receive a complete order until we can actually ship it. Fill this in, if the patient has a specific date when you will need to fit the garment.

Ship To: Check whether we need to ship the completed order to you at your facility, or to the patient's residence.

Shipping Method: The default shipping method in the US and Canada is First Class US Mail, which is free. Alternate methods may be charged extra.

Required Patient Information

Like any busy medical facility keeping track of our patients is an on-going challenge. Please fill in the Required Patient Information for every order for every new patient, existing patient, and alteration request.

Patient Name

We organize all of our patient records by the Last Name (Surname), First Name (Given Name), so it is important that you spell the name correctly. Do not use nicknames or abbreviations: "William" not "Bill," "Patricia" not "Patty," "Mohammed" not "Mohd."

Date of Birth

Fill in the birth date for every order for new and existing patients.

Diagnosis

Our custom pressure garments are, by default, designed for 25 mmHg pressure at distal extremities (the standard for burn scar treatment). If you check another diagnosis, we will design the garment with the appropriate pressure ranges. If the physician has indicated a different pressure requirement on the prescription, please write that in the blank, "Desired Pressure".

If Shipping to Patient

Many facilities ask us to ship orders directly to the patient. In order to minimize the protected patient information in our possession, we ask that you only give us the patient's address if we will be asked to ship to the patient.

Facility Information

Purchase Order Number

Write the purchase order number in the appropriate blank. If we are billing the patient or the patient's insurance carrier, enter "Patient" or "Insurance" as appropriate. If you or your facility has not ordered from us before, please call and we will open an account for you. Usually this will require a completed credit application and agreement on billing and shipping terms.

Measurer/Fitter

Please enter the name of the person to contact who can help resolve issues and answer questions about how measurements were taken and what is being ordered. Include the telephone number (office, desk, cell, or pager) that would help us get in touch with this person as quickly as possible. Sometimes email would be the best contact option.

Billing Information

Please include the name of the person in your purchasing department and the phone number. Enter the name of your facility and please do not use acronyms or abbreviations. In addition, we will need an address to send the invoice to.

If Billing Insurance/Workman's Comp/Health Plan

Some hospitals do not purchase our products directly. Instead, we will arrange to obtain reimbursement from the patient's health insurance carrier. Use this part of the form to transmit the patient's health coverage information so that one of our reimbursement specialists can contact the carrier in order to obtain authorization. If the hospital is paying for the garment, then this information is not needed.

In order to obtain the proper authorization in advance, Bio-Concepts will require that you attach copies of the hospital face sheet (if available), valid physician prescription, and insurance card (front and back enlarged). Additional documentation, including a letter of medical necessity signed by the prescribing physician and doctor's notes, may also be required.

List the Garments Ordered

List the garments ordered. It is recommended that you do not list all of the options and features. Just list the garments as shown on the Example Order Form. Be sure to write the quantity left, right, and total. Remember that garments such as gloves and stockings one each, not in pairs, so we will interpret a quantity of one as exactly one, not a pair.

Always list the garments on the **Order Form**, we cannot infer the garment from the measurements alone.

BIO-CONCEPTS GARMENT FABRICS

Fabric Content

All of the seven fabrics described below contain no latex. LuxFab™ is Dorlastan® Lycra® while all of the other fabrics are Nylon® Lycra®. Each fabric has its own stretch properties. Be sure to indicate the desired pressure range on the **Order Form**. Keep in mind that 25 mmHg at the distal extremities is the standard for burn scar management. Other diagnoses may require different pressure ranges. ***All pressure ranges are available in all fabric types (except Silon-TEX) and all fabrics are available in all 30 colors (except Silon-TEX).***

Regular Material

Default material for adults and children 11 years or older. This is a heavy open weave, with a maximum stretch resistance.

Close Knit Material

Default material for children 10 and under and for elderly patients 75 and older. This fabric is very similar to the Regular Material, however, the threads are much finer and the weave is slightly more open.

Soft Material

Patients with extremely sensitive areas of skin may not be ready for Regular Material or even Close Knit fabric. The skin side of our Soft Material is very smooth and the fabric is very light as well. We often construct whole garments of Soft Material for small children and the very elderly.

Lining Material

We normally use Lining Material to line the inside of the garment over particularly sensitive areas, such as elbows, axillae, and knees. We can line entire garments as well. The lining material is very soft.

Insert Material

Insert Material stretches well in every direction and conforms extremely well to irregular surfaces. Elbows, knees, chins, tops of heads, heels, abdomens, and other sites are good places for inserts. Because Insert Material conforms so well, we also use it to cover stumps and to end a mitten.

LuxFab™

Our newest fabric, LuxFab™ is perfect for management of a wide variety of vascular conditions, especially lymphedema resulting from breast cancer surgery. Sleeves & stockings made from LuxFab™ may be recommended as a substitute for night-time wrapping for certain patients. It has outstanding three-way stretch characteristics and is durable and comfortable.

Silon-TEX®

Silon-TEX is a medical-grade silicone elastomer sheet bonded to a Lycra Spandex fabric. Silon-TEX may be sewn into the garment in virtually any configuration needed to treat troublesome hypertrophic and keloid scars. Typically, Silon-TEX is used as a lining, sewn into the inside of the material of the rest of the garment. Silon-TEX is available only in white.

Call Bio-Concepts for free samples of our compression fabrics.

Silon-TEX® is a registered trademark of Bio-Med Sciences, Inc., Allentown, Pennsylvania, USA. Nylon® and Lycra® are registered trademarks of E.I. du Pont de Nemours & Co. and its affiliates. Dorlastan® is a registered trademark of Asahi Kasei Spandex Europe.

COMMON GARMENT OPTIONS

Color

Bio-Concepts custom pressure garments are available in 30 colors. The default color is tan (beige). Two or more fabric colors in the same garment are considered an optional feature and will be charged accordingly, but thread color and fabric color on the same garment may be mixed at no extra charge. Your Bio-Concepts information portfolio contains a guide to our garment colors. You may specify the color using its descriptive name, such as "Country Blue," or you may use the corresponding code, "C05," shown on the color guide. To specify a fabric color and thread color, write, "C05 w/C09," for Country Blue fabric color and Navy Blue thread color. You may also use the descriptive names, "Country Blue with Navy Blue." Do not write "C05 & C09," or "C05/C09," when you are indicating a fabric color with a thread color, or we might misinterpret that to mean you want two sets of garments, one Country Blue and one Navy Blue.

Inserts

Some patients require additional comfort and in some areas, including elbows, ankles, axillae, heels, and chins. We cut out a piece of the "self" material (the material that the garment is made from) and sew in a piece of soft stretchy "Insert Material" (see page 10) in its place. Insert Material stretches well in every direction and is soft and comfortable. Inserts are especially useful for preventing the regular garment material from bunching in the front of the ankle, elbow, and the back of the knee. Common insert locations include the anterior elbow, posterior knee, chin, crown of the head, thumb web, and breasts. Elbow and knee inserts can only be placed accurately if you specify the location of the elbow and knee on the measurement chart.

Expansion Panels

An insert more than 6 inches long is considered to be an expansion panel. Expansion panels are often requested for extremity garments and vests to allow for minor changes in patient measurements, especially children, in order to extend the life of the garment. Expansion panels are also useful for the upper extremity lymphedema patient who often experiences cyclic measurement changes throughout the day. The panels are typically $1\frac{1}{2}$ - $2\frac{1}{2}$ inches wide and are, by default installed posteriorly on a lower extremity garment and laterally on vests and posteriorly (ulnarly) on sleeves. Inserts and expansion panels are made of the same fabric we call "Insert Material" (see page 11). Inserts are generally small pieces, rectangular or oval. Expansion panels, on the other hand, are long narrow strips.

Linings, Pockets, and Pads

Linings are very useful for those patients with highly sensitive areas, especially donor sites, recently grafted regions, and areas of skin breakdown. Linings are most useful in preventing skin breakdown where the garment would rub. We use our "Lining Material" which is very smooth and soft and sew it to the inside of the garment in the specified area. We can also line the entire inside of the garment. We can leave one side of an area of lining unsewn, making a pocket, so that padding or orthoplastic devices may be inserted. This could be useful to help apply pressure to a concave area of the body, such as the palm of the hand, the axillae, or an area of tissue removal. Bio-Concepts can provide the padding and leave it open or sew it in place, or we can leave the pocket open and you can insert your own devices.

Silon-TEX® Silicone-bonded Textile

Many therapists are familiar with the use of medical-grade silicone products in the treatment of troublesome hypertrophic and keloid scars. Our Silon-TEX product is used as a lining on the inside of our regular garment fabrics. It will last the life of the garment and, since it is sewn into the garment, it cannot become loose or dislodged. Specify the location or locations on the

garment where Silon is required. In addition, the high friction surface of the Silon-TEX material makes it useful to prevent garments from slipping. At your request we can line the top band of a stocking or a sleeve with Silon-TEX. We can leave one side of an area of lining unsewn, making a pocket, so that padding or orthoplastic devices may be inserted. This could be useful to help apply pressure to a concave area of the body, such as the palm of the hand, the axillae, or an area of tissue removal. Bio-Concepts can provide the padding and leave it open or sew it in place, or we can leave the pocket open and you can insert your own devices.

Zippers

Torso zippers are standard feature of **Vests (#30, #31)**, **Body Briefs (#24, #25)**, and **Body Suits (#26, #29)**, just tell us whether the zipper should be located in the back or front of the garment. Zippers are optional features for all other garments. Zippers may be located in virtually any position or length you can imagine, so it is important that you be complete and specific in telling us where to locate a zipper and how long to make it. In addition, you may want to consider that zippers are stiffer than the rest of the garment and they tend to buckle when flexed. Generally, it is not a good idea to locate a zipper over the anterior ankle or anterior or posterior elbows or knees. There could be situations, however, in which otherwise undesirable placements would be necessary. For toddlers and infants, consider locating zippers in the back of vests and suits to prevent the child from opening the zipper.

Hook & Loop Zipper Stop Tab

All of our zippers come with a locking mechanism, however, some of the more active patients may find that the zipper opens on some garments, especially vests and gloves. Request a "Zipper Stop Tab" for these patients. It consists of a one to two inch long hook & loop strap that covers the top of a zipper, holding the two sides of the zipper together.

Hook & Loop Waist Tabs

Patients wearing a vest together with a brief or leotard may experience discomfort when they bend and the two garments separate. We can design the garments to overlap and we would incorporate hook & loop patches to allow the two garments to be joined. The default configuration is to place the loop piece on the inside of the vest, and the hook piece on the outside of the brief or leotard.

Hook & Loop Closures

Hook & loop, often known by the trade name Velcro® (registered trademark of Velcro Industries B.V.), may substitute for a zipper. This may be useful for patients who require expandability in their garment closure. It is important to realize that the hook & loop is even stiffer than a zipper and may cause discomfort for some patients.

Hook & Eye Closure

This is the same clasp used in women's brassieres. The obese or physically challenged patient may be unable to coordinate holding the two sides of a zipper on a large garment (such as a vest or full-length stocking) and zipping them together. Consider adding a hook & eye, one at the bottom of the zipper, one at the middle, and one at the top. The hook & eye clasp is installed on the inside of the zipper so the patient can secure the clasp, then be free to negotiate the zipper.

MEASUREMENT BASICS

Bio-Concepts custom-made pressure garments are United States, FDA regulated, durable medical equipment. It is not sufficient that the garment or garments simply fit. It is necessary that the prescribed pressure is applied to the affected region. To achieve this requires detailed, accurate, and correct measurements of the patient. Attention to detail is vital. For the novice we recommend careful study of the relevant forms and charts before first attempting to measure. Call us at 800-421-5647 and review the proper procedures before you start. Practice on a spouse, child, or co-worker before attempting to measure a patient. Please do not take "extra" measurements because you think we might need them, instead concentrate on taking the correct measurements. If you are uncertain of what the correct measurements are, please call us. It is frustrating to measure a patient, send in an order, and then be told that the measurements are not correct and the patient must return to the clinic to be re-measured.

Bio-Concepts will provide additional measuring tools free of charge. Just call and ask for a "Starter Kit" with your pressure garment order.

Call and ask for refills and replacements as needed.

In addition, measurement charts, order forms, and this measurement manual are all available for download at <http://www.bio-con.com>. You may download and print the entire manual, or you may download individual chapters.

There may be more than one method of taking correct measurements and each custom garment fitter will find his or her own preferred practices. Bio-Concepts is not so much concerned about how the measurements are taken, so long as they are the correct measurements. For example, all Bio-Concepts fitters use the "Mark and Measure" method of taking measurements of the extremities. Many fitters, however, prefer to use the "Paper Tape" method and are very good at taking the correct measurements. We supply tools for both techniques.

Basic Measurement Tools

Clear Plastic Ruler

Marked in inches and metric, the clear plastic ruler is useful for taking the distance measurements (as opposed to circumferences) of the head and hand. The inches are subdivided in eighths of an inch.

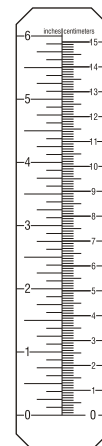
Retractable Tape

The retractable tape measure, marked in inches on one side and metric on the other, is typically used for measurements of circumferences, including, the head, torso, and limbs. The inches are subdivided in sixteenths of an inch.

Wide Tape

The wide tape measure is also marked in inches on one side and metric on the other. It is useful for measurements of large circumferences. The inches are subdivided in eighths of an inch.

Clear Plastic Ruler



Retractable Tape



Wide Tape

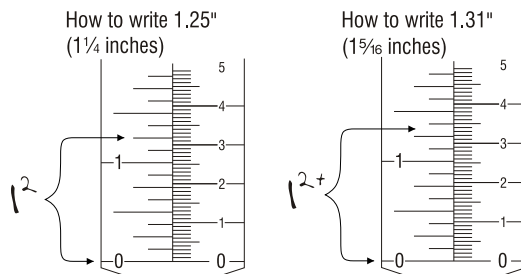


Paper Tape

The paper tapes are used only for measuring the extremities -- legs and arms. It consists of a central paper spine with paper straps spaced every $1\frac{1}{2}$ inches. Place the spine along the length of the limb, wrap the straps around it, and secure them with cellophane tape. When all the straps are secured, tear them or cut them with scissors so that the whole assembly can be removed and read at leisure. The paper tape straps are divided in eighths of an inch and centimeters. We supply paper tapes for the arm, leg below the knee, and the whole leg.

Shorthand Notation For Measurements

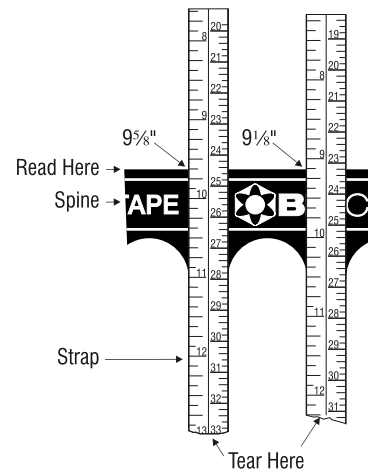
If you wish to submit your measurements in English units, we encourage you to use a shorthand notation system based on one-eighth of an inch units. Abbreviate units of an eighth of an inch by writing the numerator (the top number) of the fraction only. The Longhand table at the right shows measurements with fractions written out. It is very cumbersome and many measurements will be unreadable on the fax that we receive. The Shorthand Equivalent table at right shows the equivalent shorthand form. If the measurement falls between eighths of an inch, write a "+" sign next to the numerator to indicate a sixteenth of an inch. It is not necessary to write a ditto mark ("), "in", "inches," or "cm" after each measurement. Just write the numbers.



Submitting Photographs

Our experience has been that photographs of the patient are usually not useful. Good measurements, clearly written instructions, accurate sketches, and careful consideration of the patient's needs are generally more useful than photographs. In some cases, though, photographs may be crucial to ensuring a good fit. Photographs may be mailed to us in hard copy or emailed (bio-con@bio-con.com) in digital form. Our receiving clerks will have to know to match up your emailed or mailed photographs with an order. **Please do not fax photographs.**

Make sure the area of interest is in focus and also make sure that there are several views which show the whole area so that our designers can get some idea of the relation of the targeted area to the whole patient. Hold limbs and position torsos and heads at right angles to the camera view. In some cases it may be necessary to measure and mark the patient so that our designers can read dimensions directly off the photograph.



Longhand

A ₁	6 $\frac{3}{8}$ "	
A	5 $\frac{7}{8}$ "	
B	7 $\frac{5}{8}$ "	
C	1 $\frac{7}{8}$ "	
D	2 $\frac{9}{16}$ "	

Shorthand Equivalent

A ₁	6 3	
A	5 7	
B	7 5	
C	1 7	
D	2 4+	

#32A Full Face Mask

Requested features:

1. color: C21 Beige (Tan)
2. crown insert to conform to an irregular cranium
3. chin lining to prevent skin breakdown from rubbing
4. no left ear opening

Informal sketches such as the chin lining shown here can be helpful. Use the illustrations on the appropriate measurement chart, a hand or foot tracing, the **Sketch Pad**, or a separate clean sheet of paper. You might start with pencil and then go over it with a dark ink pen so it will come through in the fax.

Be careful to ensure that your written description of the feature is in agreement with the sketch.

In the case of this chin lining, detailed measurements are not necessary, but for some features measurements could be crucial. Call and speak with one of our designers before you send it if you are unsure.

HEAD & NECK MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Do, Jane
Last Name First Name

Date 06/07/2013

Garment color C21 Tan

Insert Crown

Lining Chin see sketch

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.



PLEASE DO NOT WRITE IN MARGINS

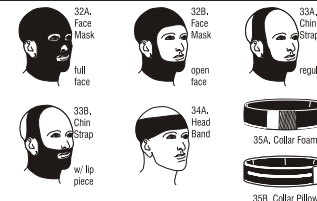
2424 East University Drive, Phoenix, Arizona, U.S.A. 85034-6911
VOICE: 800-421-5647 / 602-267-7854 • FAX: 800-650-9424 / 602-273-6931
e-mail: bio-con@bio-con.com • worldwide web: http://www.bio-con.com

CIRCLE ITEMS ORDERED

Bio-Concepts Use Only: F=

Additional instructions or comments:

omit left ear opening

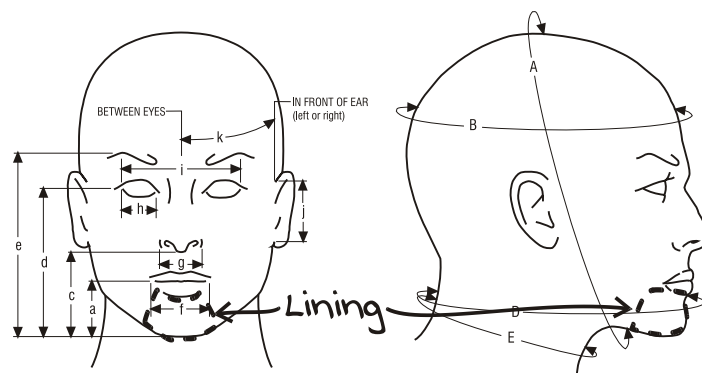


STANDARD FEATURES

Face Mask: Hook & loop closure with hair protector
Chin Strap: Hook & loop closure
Head Band: Slip-on, no closure
Collar: Hook & loop closure

REQUIRED MEASUREMENTS

Face Mask: ALL
Chin Strap: A-E, a, e & f, j & k
Head Band: B, and desired height of band in front
Collar: E, and desired height of collar



PLEASE DO NOT WRITE IN MARGINS

FACE MASK MEASUREMENTS		CHIN STRAP MEASUREMENTS	
A	24 ¹		
B	22 ⁴		
D	17 ²		
E	13 ⁴⁺		
a	1 ⁴		
c	2 ⁴		
d	5 ²		
e	6 ¹		
f	2 ⁰⁺		
g	1 ²		
h	1 ²		
i	4 ¹⁺		
j	2 ⁴		
k	5 ²		

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We recommend that measurements taken in inches are recorded in a shorthand notation system described on page 15. A measurement of 1 1/8 inch is written as 11. A measurement of 1 1/2 inches (1 inches) is written as 1^{1/2}. We welcome measurements in centimeters. Record these in standard decimal notation, for example, 1.5 cm. Since the majority of measurements we receive are in inches, it is a very good idea to let us know when you use centimeters.

Head Chart -- NEW PATIENT EXAMPLE

MEASURING THE HEAD

Make sure the head is level and facing straight ahead. The head should not be tilted or turned. It is usually best for the measurer to stand while the patient is seated. If there is a lot of hair on the head, determine whether the patient will wear the garment over the hair. If so, then the measurements should be taken over the hair.

Required Measurements

- Face Mask:** All.
Chin Strap: A-E, a, e, & f, j & k.
Head Band: B, and desired height of the band in front.
Collar: E, and desired height of the collar.

Standard Features

- Face Mask:** Posterior Hook & Loop closure with hair protector.
Chin Strap: Posterior Hook & Loop closure.
Head Band: Slip-on, no closure.
Collar: Hook & Loop closure.

Material

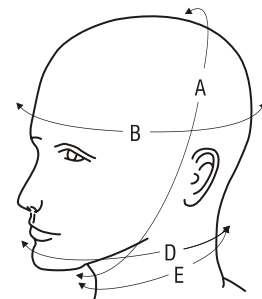
Unless otherwise specified, head garments will be made of close-knit material.

Procedure

Use the Bio-Concepts retractable tape for the circumference measurements, **A-E**, and the clear plastic ruler for the surface distances, **a-k**. Circumference measurements are designated with capital letters, **A-E**, and surface distances are indicated by lower case letters, **a-k**.

Begin with the circumference measurements, **A-E**, using the Bio-Concepts retractable tape. It is usually best for the measurer to stand while the patient is seated.

- A** From the chin-neck junction to the top of the back of the head. Place the tape just in front of the ears.
- B** Circumference around the top of the head, over the forehead just above the eyebrows.
- C** There is no **C** measurement for the head.
- D** Around the base of the head, from the nape of the neck to the chin. Place the tape on the nape of the neck between the lip and the point of the chin.
- E** The neck circumference from the nape of the neck to around the throat. For patients with a large "Adam's Apple" measure over the protrusion.



For a **#33A Chin Strap**, **#32A Full** or **#32B Open Face Mask**, all of the circumferences are required. For a **#34A Head Band**, only the circumference **B** (and the height of the head band) is required. For a **#35A-C Neck Collar**, only the circumference **E** (and the height of the collar) is required.

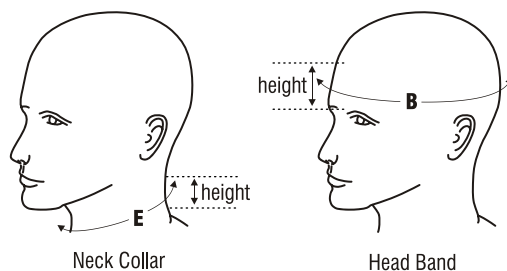
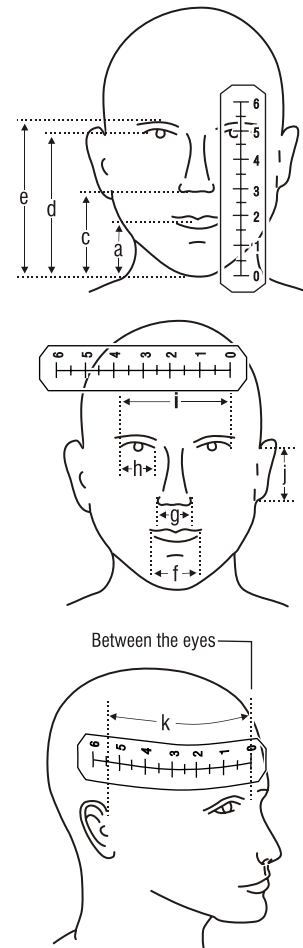
The distance measurements of the face should be taken using the clear plastic ruler. For these measurements, it is usually best to have the patient seated directly in front of the measurer who should also be seated. Use the clear plastic ruler for these measurements.

- a-e** Distance from the chin to center of the mouth opening, bottom of the nose, center of the eye, and the top of the eyebrow. Hold the clear plastic ruler perpendicular to the face and next to the nose. Position the 0.0 inch line of the ruler even with the point of the chin.
- g** Width of the nose.
- h** Width of the eye opening.
- i** Distance between the outsides of the eyes.
- j** Length of the ear vertically, from the top of the ear to the bottom of the ear where the ears attach to the head, not from the top of the lobe to the bottom of the lobe.
- k** Distance from the center of the brow, between the eyes to the front of the ear. Be sure to press the flexible clear plastic ruler against the patient.

For a **#32A Full** or **#32B Open Face Mask**, all of the measurements **a-k** are required. For a **#33A Chin Strap**, only the measurements **a, e-f, j-k**, are required. For a **#34A Head Band**, only the circumference **B** (and the height of the head band) is required. For a **#35A-C Neck Collar**, only the circumference **E** (and the height of the collar) is required.

Head Bands

A head band is typically used to apply pressure to the forehead. Circumference of the head at **B** and the desired height of the band measured in the center of the forehead. On the **Head & Neck Measurement Chart**, write **B** in the space provided on the form and write the height in the blanks for "Additional Instructions".

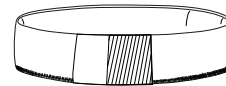


Neck Collars

Circumference **E** around the neck and the desired height of the collar. On the **Head & Neck Measurement Chart**, write **E** in the space provided on the form and write the height in the blanks for "Additional Instructions". Neck collars are available in two styles:

35A Collar Foam

A foam pad to encircle the neck, fastened with hook & loop.



35A.
Collar
Foam

35B Collar Pillow

A fabric garment sewn in a tube configuration with an opening on the outside to insert padding, fastened with hook & loop.



35B.
Collar
Pillow

Common Options for Head & Neck Garments

Inserts

Crown and chin inserts are the most commonly requested insert styles for a head garment. A crown insert to provide conformability over an irregular cranium, and a chin insert to allow the patient to flex the mandible more easily. The nose or the ears may be made of Insert Material (see page 11) also.

Linings

Lining Material (see page 10) may be used to cover the chin for a patient who may experience skin breakdown. The elastic band at the bottom of the neck may also be lined with Lining Material to eliminate rubbing from the slightly coarser edges of the band. This is called a "drapelining".

Zippers

Face Masks, #32A and #32B, come with a hook & loop closure in the back of the head. Patients may occasionally request that the hook & loop closure be replaced with a zipper.

Additional Options

Ear, eye, mouth, and nasal holes on the face masks and chin straps may be omitted. This may be a very useful option if it is intended to install an orthoplastic or gel device under the garment, using it to hold the device in place. Alternatively, the therapist may wish to cut a hole in order to minimize the area exposed. Our fabrics do not fray or unravel when cut, although some have a tendency to tear at an unfinished opening.

#6 Glove to Wrist, Left & Right

See pages 25-26 for corresponding Hand Tracing Guides.

Requested features:

1. color: Scarlet Red fabric with Black stitching. C17W/C26 is a shorthand method for specifying this using the color codes on the Color Guide
2. thumb web insert to prevent skin breakdown in the thumb web space for the right hand
3. regular lining for the dorsal left hand, palmar Silon-TEX lining with an incorporated pad on the right hand. Both features are sketched on the respective hand tracings
4. ulnar zipper on the left glove, dorsal zipper offset 1" ulnarly on the right glove
5. common opening for the 4th & 5th digits on the right glove as shown on the hand tracing. Circumferences C, D, E, and F are provided because otherwise we would not know how big to make the common opening

See page 24, for definition of gloves, gauntlets, and mittens.

HAND MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane
Last Name First Name
Date 06/07/2013

Garment color C17W/C26

Insert thumb web - R only

Lining regular lining dorsal left

silon lining right w/pad

Left hand zipper: ☐ Dorsal ☐ Palmar ☒ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Right hand zipper: ☒ Dorsal ☐ Palmar ☐ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Glove and Gauntlet zippers normally open at the proximal end of the garment and extend to just proximal to the knuckles (MCPs).

☐ Finger/thumb tips closed ☐ Finger/thumb tips open

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.

Additional instructions or comments:

common opening

right D4-D5

offset right glove

zipper 1" ulnar

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CIRCLE ITEMS ORDERED

Bio-Concepts
Use Only:

F =



HAND TRACINGS
ARE REQUIRED
for all Gloves,
Gauntlets, &
Mittens

Use the UPPER
EXTREMITY
CHART
for adding
sleeves to
gloves &
gauntlets.

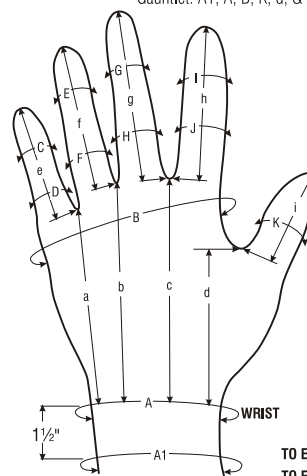
REQUIRED MEASUREMENTS

Gloves: All
Mittens: All, except C thru J
Gauntlet: A1, A, B, K, d, & i

Refer to the
Bio-Concepts
Measuring
Manual for
instructions
on measuring
contracted
fingers.

Use the
hand tracing
to illustrate
special
features &
options.

NOTE:
Always take
distances
(a-i) from a
hand tracing
not from the
patient



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TO END OF FINGER
TO END OF GLOVE FOR OPEN TIPS

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	LEFT HAND	RIGHT HAND
A1	6 2	6 4
A	5 7+	6 0+
B	7 5	7 4
C	1 5	1 6
D	2 2	2 0
E	1 7	2 1
F	2 2+	2 3
G	2 1	2 2
H	2 3	2 4+
I	2 0	2 3
J	2 4	2 4
K	2 3+	2 7
a	3 7	3 6
b	4 3+	4 2
c	4 4	4 1+
d	3 2	2 6+
e	2 3	1 4
f	2 6	1 6
g	3 2	2 7+
h	3 2	2 6+
i	2 1+	1 0

See page 16 for an explanation of the shorthand measurement notation system.

Hand Chart -- EXAMPLE

MEASURING THE HAND

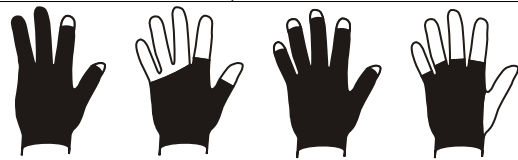
- No matter what specific hand garment is intended for the patient, always begin by tracing the hand. Use the Bio-Concepts **Hand Tracing Guide**.
- Measure the hand and finger circumferences and record them on the **Hand Measurement Chart**.
- Sketch any special features directly on the hand tracing, or on a second and clearly labeled copy of the hand tracing.

Required Measurements

GLOVES: All, A & a-i

A **#6 Glove to Wrist** may extend 4½ inches proximal to the wrist, beyond that it is considered a **#7 Glove to Elbow** or **#8 Glove to Axilla**. A glove has openings for at least two digits, including the thumb. Any combination of the fingers and thumb may be open or closed, short, or long. Special modifications may be needed for one or more finger amputations, but the garment would still be considered a glove.

Examples of Gloves



GAUNTLETS: A1, A, B, K, d, i

A **#3 Gauntlet to Wrist** may extend 4½ inches proximal to the wrist, beyond that, it would be considered a **#4 Gauntlet to Elbow** or **#5 Gauntlet to Axilla**. A gauntlet has an opening for the thumb and a common opening for all four of the remaining digits. The thumb may be closed or open-tipped or a clearance opening.

Examples of Gauntlets



MITTENS: All, except C through J

A **#9 Mitten to Wrist** may extend 4½ inches proximal to the wrist, beyond that it is considered a **#9 Mitten to Wrist** and an attached **#1 Sleeve to Elbow** or **#9 Mitten to Wrist** and an attached **#2 Sleeve to Axilla**. A mitten is generally used for multiple digit amputations and has an open or closed thumb and a common covering for the remaining digits made of insert material.

Examples of Mittens



Left Hand Tracing Guide -- NEW PATIENT EXAMPLE

LEFT HAND TRACING GUIDE

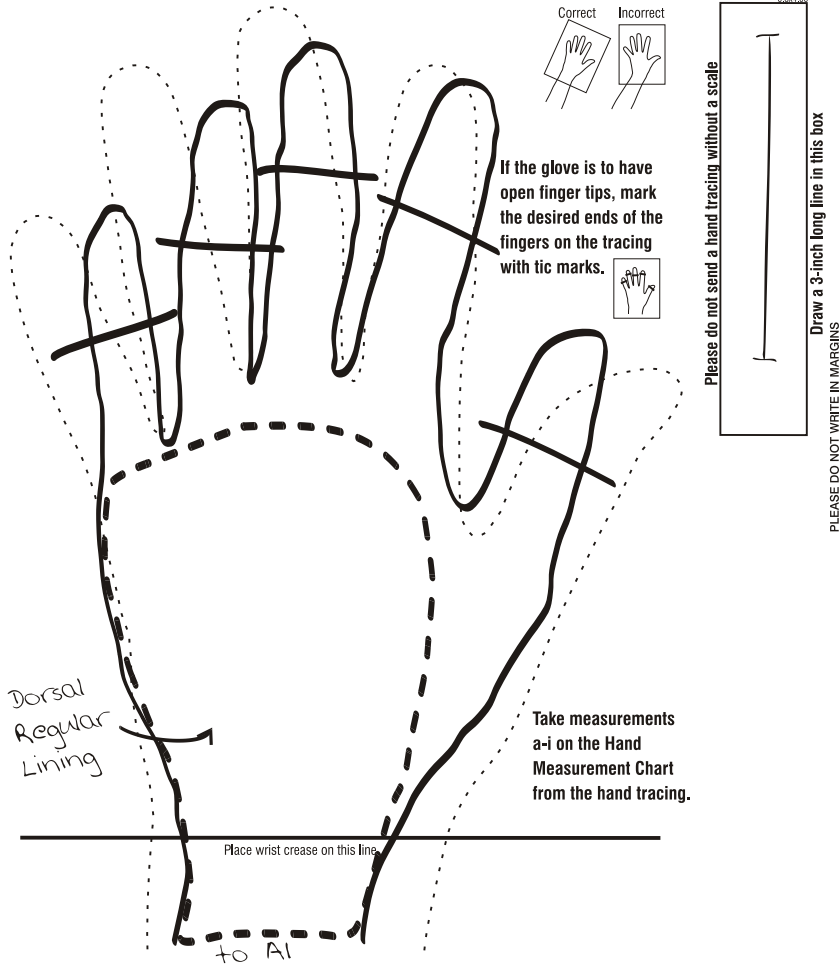


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REQUIRED in conjunction with HAND MEASUREMENT CHART • Position and trace patient's hand within outline

Patient Doe, Jane

Date 06/07/2013



Left Hand Tracing

Exact location of the regular dorsal lining referred to on the **Hand Measurement Chart** (page 20) is shown on the hand tracing. Open finger tips are indicated by lines drawn across the finger.

Use the tracing to sketch extra features, but be sure to indicate whether the features are to be dorsal or palmar. If you need to illustrate both dorsal and palmar features, make a copy of the tracing and label one "palmar view" and the other "dorsal view."

Unless the patient presents with severely contracted digits or hands, measurements a-i on the **Hand Measurement Chart** must always be measured from the hand tracing not from the patient.

If the fingers are contracted, see page 26 for instructions.

Right Hand Tracing Guide -- NEW PATIENT EXAMPLE

RIGHT HAND TRACING GUIDE



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e-mail: bio-con@bio-con.com • worldwide web: http://www.bio-con.com

REQUIRED in conjunction with HAND MEASUREMENT CHART • Position and trace patient's hand within outline

Patient Doe, Jane Date 06/07/2013

PLEASE DO NOT WRITE IN MARGINS
Please do not send a hand tracing without a scale

Correct Incorrect

If the glove is to have open finger tips, mark the desired ends of all fingers on the tracing with tic marks.

Draw a 3-inch long line in this box

common opening D4-D5

Palmar Silon lining w/ pad

Place wrist crease on this line

Take measurements a-i on the Hand Measurement Chart from the hand tracing.

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Right Hand Tracing

Exact location of the palmar Silon-TEX lining with velfoam pad referred to on the **Hand Measurement Chart** (page 20) is shown on the hand tracing.

Open finger tips are indicated by lines drawn across the finger.

In this example a common opening is desired for D4-D5. This is indicated on the tracing and noted on the **Hand Measurement Chart** (page 20). Finger circumferences are still necessary (otherwise we will not know how big to make the opening).

Fax machines are programmed to reduce or enlarge originals to fit the output page size. Therefore, it is very important that the tracings we receive have a scale. Please draw a three inch long line in the box in the upper left.

If the fingers are contracted, see page 26 for instructions.

To begin:

- Place the hand on the **Hand Tracing Guide** so the wrist is at the wrist line with fingers relaxed. The wrist should not be deviated at all. Young children often splay the fingers very widely, please try not to let them do this. We want the hand and fingers in the most neutral positions possible.
- Regular pens and pencils are too thick to accurately trace web spaces of most patients. We recommend a pen refill.
- Be sure the tracing pen is vertical. Push the pen into the web spaces.

Measure the circumference of the hand at the wrist, $1\frac{1}{2}$ inches above the wrist, around the knuckles, and around every finger joint (the thumb is a finger). Record all finger joint circumferences, even if the fingers on the glove are to be much shorter than the fingers on the patient.

Circumference Measurements

Measure **A1**, **A**, and **B**, and all of the finger circumferences **C - K** using the retractable tape or the hand & finger tape. Tighten tape until lightly snug, but not snug enough to wrinkle the skin. Record all measurements on the **Hand Measurement Chart**.

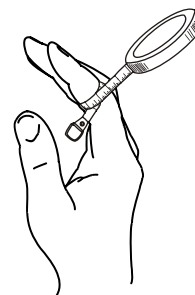
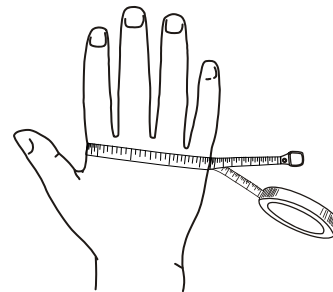
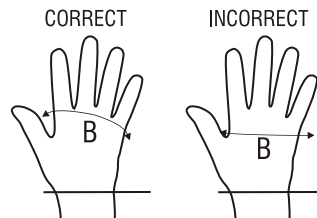
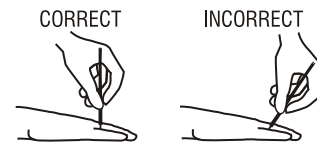
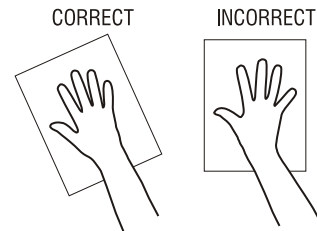
A1 Circumference $1\frac{1}{2}$ inches proximal to wrist line. Additional circumferences (**A2** and **A3**), proximal to **A1** at $1\frac{1}{2}$ inch increments, can be added for longer length gloves.

A Circumference at the wrist line.

B Circumference of the hand at MCP's. This is a critical measurement for proper fit. Wrap the measuring tape around the hand across the metacarpal phalanges (the knuckles) with the curve of the palm straightened.

C-J The finger joint, PIP and DIP, circumference measurements. **Please take circumferences of all the joints even if you want some or all of the fingers to be shorter.** If a common opening is desired for two or more digits (see tracing on page 23), we still must have the respective digit circumferences. This is different from a gauntlet, which has a common opening for D2-D5 and only the thumb (D1) circumference (plus B, A, and A1).

K Circumference of thumb. Measurement should be taken around the joint.



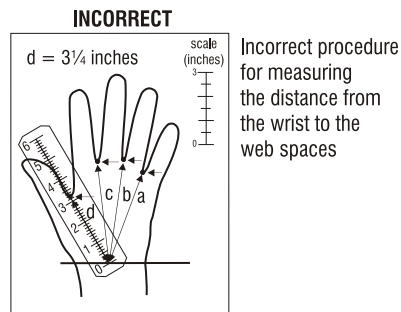
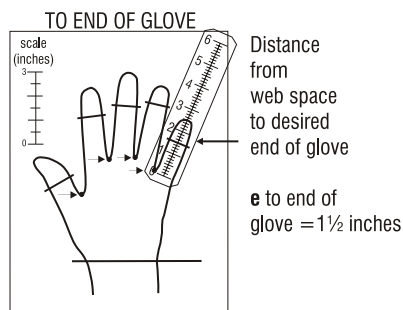
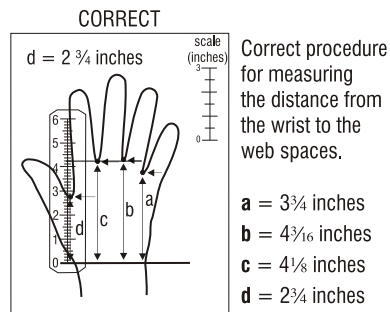
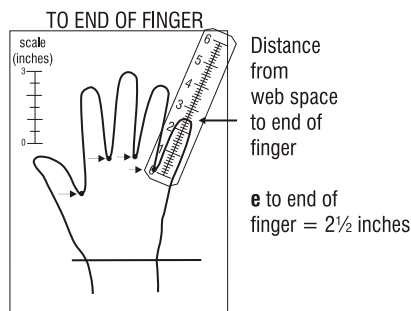
Distance Measurements

a-d Wrist to web space distances. Mark web spaces on the tracing with a dot. Draw a line (**a** through **d**) from each web space to the wrist line. These lines should be perpendicular to the wrist line. Measure the lengths of lines **a** through **d** on the tracing and then write them into the appropriate boxes on the **Hand Measurement Chart**.

e-i Finger lengths. Measure the length of the fingers from the base of the finger to the tip (**e** through **i**). Then write these measurements in the boxes on the **Hand Measurement Chart** indicated "TO END OF FINGER".

e-i Glove finger lengths. If the glove is to have open finger tips, mark the desired ends of the fingers on the tracing by drawing a line across each finger at the desired end of the glove. Then measure the distance from the base of the finger to the desired end of the glove. Write these measurements in the boxes on the **Hand Measurement Chart** indicated "TO END OF GLOVE".

DO NOT take measurements **a-d** and **e-i** from the patient. Unless the fingers are contracted, **ALWAYS** measure from a tracing. (see p. 26 for instructions on measuring contracted fingers).



NEVER FAX A HAND OR FOOT TRACING WITHOUT A SCALE

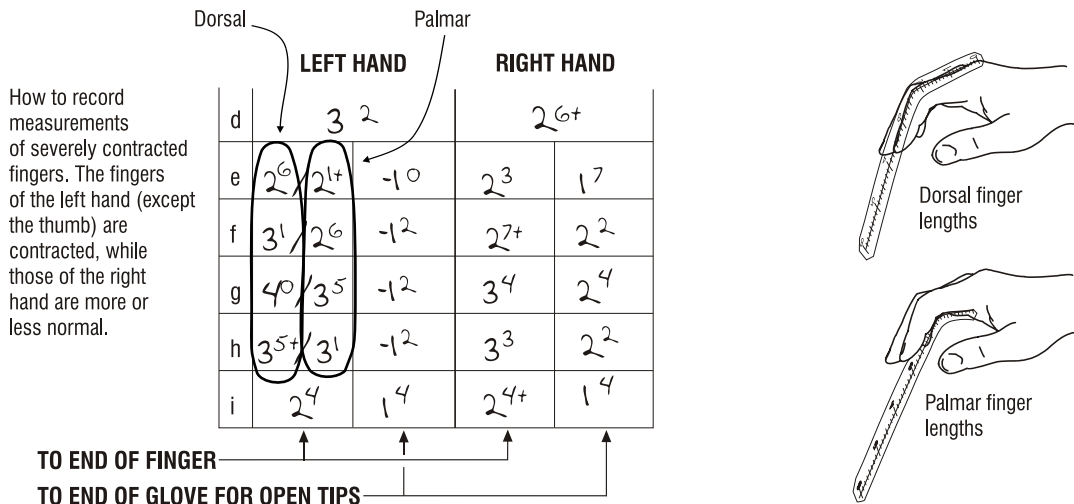
We always check recorded hand measurements against the hand tracing, but we can only do so if the tracing we receive is the same size as your original. Please draw a three-inch long line on the hand tracing so we can check it.

Severely Contracted Hands

Place the hand on the edge of a table, a rolling pin, or similar aid, and position the **Hand Tracing Guide** to follow the curvature underneath. Take the measurements **a-d** from the tracing. Then use the clear plastic ruler to measure **e-f**, the lengths of the fingers and the desired length of each finger on the glove on the dorsal and palmar surface of each contracted finger. Write both numbers in the space indicated "TO END OF FINGER" on the **Hand Measurement Chart**.

In the example below, the dorsal and palmar lengths of each finger of the left hand are recorded. The left thumb and the digits of the right hand are not contracted. The desired length of the glove for each finger is recorded in the right column by subtracting from the tip of the finger. For example, the index finger, **h**, would be open 1.25 inches from the tip of the finger.

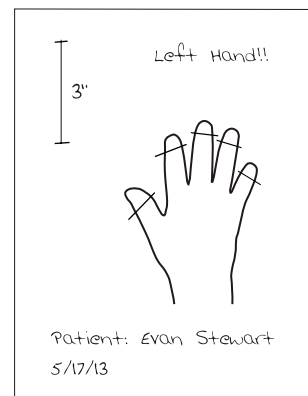
It is not necessary to indicate which set of measurements is dorsal and which is palmar, the longer measurement is always dorsal.



Active/Uncooperative Children

Make a photocopy of the child's hand(s), but DO NOT fax the photocopy (photocopies are always rendered as indistinguishable blurs by facsimile machines). Instead, put a sheet of paper over the photocopy, hold it up to against a window or computer monitor and trace the outline of the hand on the clean sheet of paper. Before you fax the traced outline, make sure you draw a 3 inch long line on the sheet and write the date and the patient's name on the tracing.

****Important** Your traced outline of the photocopy of the hand will appear to be reversed. It will appear to us to be the opposite hand. You must let us know this, otherwise we may think that you recorded the measurements in the wrong column on the Hand Measurement Chart (a very common mistake) and make a glove for the wrong hand.**



Common Options for Hand Garments

Inserts

Thumb web inserts made of our stretchy soft Insert Material (page 11) is the most commonly requested insert for a hand garment. This is a small wedge of insert material placed along the web between the thumb and index finger to prevent irritation and skin breakdown.

An ulnar insert, usually 1 - 2 inches wide and extending from the base of the fifth digit to the proximal end of the glove, is sometimes added to a glove or gauntlet to provide for extra flexibility in the glove or to assist the patient in donning the garment.

Zippers

Zippers are common features of hand garments, however, a patient with good hand and finger strength who is not experiencing extraordinary pain or discomfort probably does not need a zipper on a glove or gauntlet. Most patients who need a zipper find that a dorsal zipper works best for them. In some cases a dorsal zipper is not indicated, as for a recent dorsal skin graft site. For these patients a palmar, ulnar, or even radial zipper might be better options.

Hook & Loop Closure

Hook & loop may be used to substitute for a zipper to provide for some additional adjustability in the garment fit. Location and length should be carefully specified on the ***Hand Measurement Chart***.

Hook & Loop Zipper Stop Tab

Glove and gauntlet zippers may occasionally come open on some patients. To prevent this we can install a hook and loop tab across the zipper to hold it together.

Hook & Loop Wrist Tab

For some patients, getting the hand through the wrist band can be challenging, but a zipper is not needed. This difficulty is solved by installing a hook & loop tab across a break in the wrist band. A common practice is to order the first hand garment version with a zipper and the second without, or just with a wrist tab.

Lining

Lining Material (page 11) linings may be indicated for a patient with a very sensitive dorsum or palm. Inserts are better for smaller areas of the hand than linings. A lining results in two layers of fabric and four sets of seams, while an insert is only one layer of fabric and two seams. The entire hand garment could be lined, but the resulting garment would be bulky and difficult to don. In this case we would recommend constructing the whole garment of soft or insert material. We also use a soft neoprene (rubber) pad sewn into the dorsal inside of a glove for lymphedema patients who tend to experience excess pooling of lymph fluid in that area.

Finger Tips

Except for complete finger and thumb amputations, all hand garments have at least a thumb. This may be closed-tipped or open. **For open tips**, on the hand tracing, which is required for every hand garment, **draw a line** across the finger where you want the garment to end. **For closed-tips do not draw a line** across each finger and be sure to check the box labelled "Finger/thumb tips closed" on the ***Hand Measurement Chart***.

#31 Sleeved Vest

Requested features:

1. color: Royal Blue
2. bilateral breast inserts for comfort
3. bilateral expansion panels
4. front zipper with hook & loop tab to keep the zipper from opening at the top
5. the neck will be scooped 1.5" below the sternal notch
6. waist hook & loop tabs to allow the upper torso garment to be attached to the lower torso garment (K and k are provided to overlap the garments)
7. Silon-TEX with velfoam padding, illustrated with detailed measurements on the *Sketch Pad*
8. Close-knit fabric, lighter and more open than the default Regular material, see page 11.

For adult female patients, circumference C is taken immediately below the breasts (don't forget to also measure the torso circumference over the breasts). For male patients and for children, circumference C is taken about halfway between the axillae and the waist (circumferences B and D).

TORSO MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane Last Name First Name

Date 06/07/2013

Garment color C07

Insert breast - bilateral

Lining Silon-TEX see sketch pad

Zipper: ☒ Front or ☐ Back ☒ Hook & loop zipper stop tab

☐ Regular neck

☒ Scoop neck: Distance below sternal notch 1.4

Turtleneck: ☐ 3/4" ☐ 1" ☐ 1 1/4" ☐ 2" ☐ 2 1/2"

Expansion panel: ☒ Left side ☒ Right side (default expansion panel location is lateral)

☒ Soft armpit panels (N/C) ☒ Waist hook & loop tabs to attach to pants (N/C)

☐ Mesh armpit panels (N/C)

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.

Additional instructions or comments:

Close-knit Material

add velfoam padding
to back Silon see
sketch pad



PLEASE DO NOT WRITE IN MARGINS

2424 East University Drive, Phoenix, Arizona, U.S.A. 85034-6911
VOICE: 800-421-5647 / 602-267-7854 • FAX: 800-650-9424 / 602-273-6931
e-mail: bio-con@bio-con.com • worldwide web: http://www.bio-con.com

CIRCLE ITEMS ORDERED

Bio-Concepts Use Only:

F=

For a Vest (Items 30A, 31)

required: A, B, C, D, G, H, b, c, d

for adult female: brassiere cup size

torso circumference over breasts

optional: K, k (see illustrations below)

For a Body Brief or Suit (Items 24, 25, 26, 27, 28, 29)

required: All, except K and k

for adult female: brassiere cup size

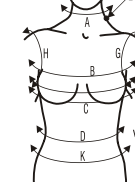
torso circumference over breasts

optional: None

For other torso garments refer to the Measuring Manual

CIRCUMFERENCES

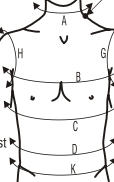
Adult Female Torso



For adult females C is directly below the breasts. Don't forget to take an additional circumference of the torso over the breasts.

CIRCUMFERENCES

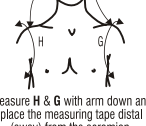
Male & Child Torso



For adult males and children, C is halfway between D and B.

HOW TO MEASURE CIRCUMFERENCES G & H

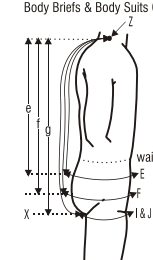
Acromial Process



Measure H & G with arm down and place the measuring tape distal (away) from the acromion.

ADDITIONAL DISTANCES & CIRCUMFERENCES

Body Briefs & Body Suits Only



E and F are evenly spaced between the waist and the gluteal fold.

A	13.4
B	33.5
C	29.2+
D	30.0
E	
F	
G	14.2
H	15.2+
I	
J	
K	35.6
b	7.4
c	14.0
d	18.0
e	
f	
g	
k	2.4

PLEASE DO NOT WRITE IN MARGINS

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

Torso Chart -- EXAMPLE

MEASURING THE TORSO

For a Vest (Items 30A, 31)

required: A, B, C, D, G, H, b, c, d

for adult female: brassiere cup size
torso circumference over breasts

optional: K, k

For a Body Brief or Suit (Items 24, 25, 26, 27, 28, 29)

required: All, except K and k

for adult female: brassiere cup size
torso circumference over breasts

optional: None

Procedure for a Vest

- Measure the circumferences **B, C, D, G**, and **H**. Include **K** only if you want the bottom of the garment to extend below the waist. Otherwise **K** is not needed.
- Using a ballpoint pen, make a mark on the front of the patient at the location of each circumference.
- Follow the instructions on page 34 to take measurements **b-d**. If you included **K**, then also measure the distance from **D** down to the **K** circumference. This is **k**.
- Use the **Upper Extremity Chart** for vests and body suits with attached arms.

Circumference Measurements

A Circumference of neck at mid-point.

B Circumference of the torso at the axillae.

C Torso circumference:

ADULT FEMALES - Directly below breasts.

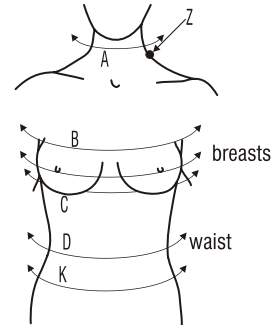
MALES & CHILDREN - Halfway between circumferences **B** and **D**.

D Circumference at waist (the waist is defined as the level at which the patient wears pants, panties, briefs, or skirts). If the garment will include the lower torso, make a mark on the patient where this measurement is taken just above one of the buttocks. This is needed in order to continue measuring circumferences of the lower torso, see page 35.

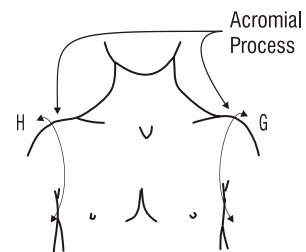
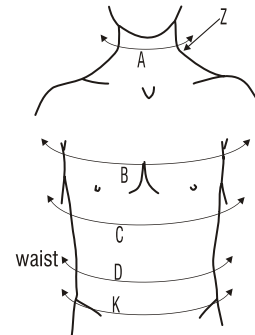
G-H Axilla circumference taken distal to acromion. Measure with arms down. Tape should be positioned so that it almost is falling off.

K Circumference below waist (only if it is necessary to extend the vest to below the waist).

ADULT FEMALE
TORSO MEASUREMENTS
Circumference "C"
directly below breasts



MALE & CHILD TORSO
MEASUREMENTS
Circumference "C" is
halfway between
"B" and the waist



Surface Measurements

Point Z is located at the base of the neck at the top of the bulge of the trapezius. Make a mark to locate **Point Z**. The surface measurements discussed below, **b**, **c**, and **d** must be taken from **Point Z**. Measurements **a** through **d** (and the optional **k**) are critical for proper fit of garment. Surface measurements are taken from **Point Z** at the base of neck at top of shoulder, to the corresponding circumference marks (**A** through **D**, and the optional **K**).

- b** Distance from **Point Z** to circumference **B**.
- c** Distance from **Point Z** to circumference **C**.
- d** Distance from **Point Z** to circumference **D** (waist).
- k** Optional -- distance from waist circumference **D** to **K**. Extending a vest to below the waist would only be desired if it is intended to overlap with a leotard or brief, otherwise it will roll up to the waist.

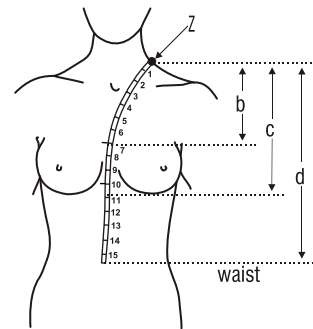
Adult Females

- Brassiere cup size.
- Torso circumference over nipples.

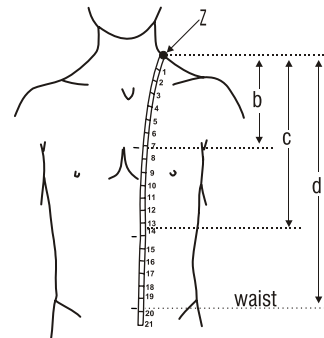
Mastectomy Patient

If the patient presents with no breasts or one breast due to mastectomy, determine whether a prosthetic device will be worn. If the garment will be worn under or without a prosthetic breast, measure the patient according to the male/child procedure described above and indicate on the **Torso Measuring Chart** that the breasts are missing due to mastectomy in the "Additional Instructions." If only one breast is absent, measure according to the adult female measurement procedure described above and be sure to indicate which breast is missing in the "Additional Instructions" on the **Torso Measuring Chart**.

ADULT FEMALE
TORSO MEASUREMENTS
Circumference C
directly below breasts



MALE & CHILD TORSO
MEASUREMENTS
Circumference C is
halfway between
"B" and the waist



Procedure for a Body Brief or Body Suit

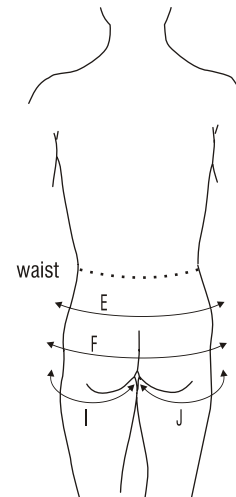
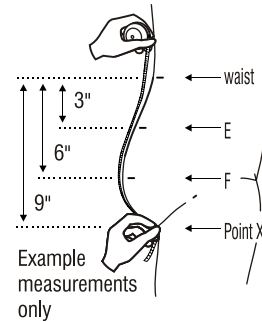
Take all of the upper torso measurements discussed on pages 33-34 (except measurements **K** and **k** which are only needed for **Sleeved** and **Sleeveless Vests** that are intended to extend to below the waist).

NOTE: The measurements described below are only needed if the garment will incorporate the lower torso. For Sleeved and Sleeveless Vests, these measurements are not needed.

Circumference Measurements

Lower torso circumferences, **E** and **F**, are evenly spaced between the waist and **Point X**, the fold of the buttocks. Measure the distance between the waist and **Point X** and divide that by three. For example, if the distance between the waist and **Point X** is 9 inches, then make a mark on the buttock 3 inches below the waist and measure circumference **E**. Then measure 6 inches below the waist, make a mark on the buttock and measure circumference **F**. The spacing between **E** and **F** does not have to be exact, for example, if the distance from the waist to **Point X** is 10 inches, then take circumference **E**, $3\frac{1}{2}$ inches below the waist and circumference **F**, 7 inches below the waist.

- E** Circumference of the lower torso approximately one-third of the distance between the waist and **Point X**. Make a mark on one of the buttocks where the measurement was taken.
- F** Circumference of the lower torso approximately two-thirds of the distance between the waist and **Point X**. Make a mark on one of the buttocks where the measurement was taken.
- I-J** Circumferences of the tops of the legs.



Surface Measurements

You already located **Point Z** (p. 30). The measurements discussed below, **e**, **f**, and **g** must be taken from **Point Z**. Measurements **e**, **f**, and **g** are critical for proper fit of garment.

- e** Distance from **Point Z** to circumference **E**.
- f** Distance from **Point Z** to circumference **F**.
- g** Distance from **Point Z** to **Point X** (fold of the buttocks).

Infants

If the patient will be wearing the garment over a diaper, take the lower torso measurements over the diaper.

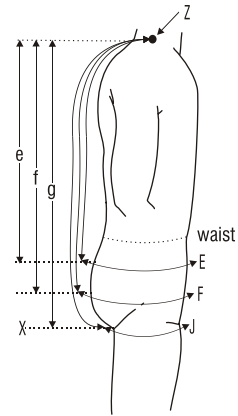
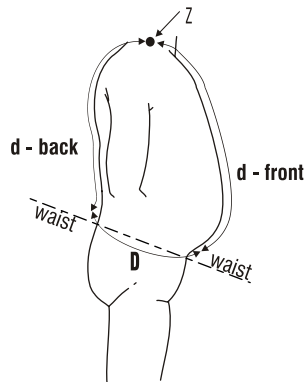
The Obese Patient and Small Children

The obese patient and very young children from infancy to approximately three years of age may present with a large belly. Unless some compensation is made for this feature in the measurements, the vest may be too long in the back and too short in the front.

As shown to the right, simply take two **d** measurements, one in the front and one in the back and write both measurements on the **Torso Measurement Chart** in the box provided for **d**. It is not necessary to label or explain the two measurements, the difference between the two lengths will be used to make the vest longer in the front than in the back.

Example measurements for a vest showing the procedure for recording a longer front than back.

b	74
c	14°
d	22 ⁶ /18°
e	

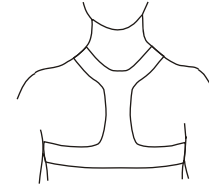


Sternal Strap

30B Sternal Strap is intended to apply pressure to the sternal region of the chest. It is especially useful in applying Silon-TEX to troublesome post-sternotomy scars. It is not intended to apply pressure to the any other part of the torso including the shoulders or lateral torso. Silon-TEX lining along the sternum may be configured as a pocket for the insertion of foam or orthoplasty.

Required Measurements

Same as for a **30A Sleeveless Vest** (p. 29-30).



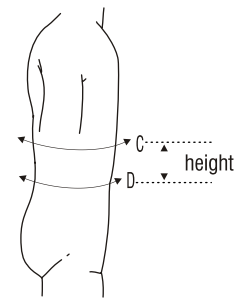
30A Sternal Strap

Belly Band

A **34B Belly Band** is useful for applying pressure to the abdomen below the rib cage. The default closure is an anterior zipper. Hook & loop closure may be requested as an alternative.

Required Measurements

Measure the circumference at the desired bottom of the garment and write it in the blank provided for **D**, in the **Torso Measurement Chart**. Measure the circumference at the desired top of the garment and write it in the blank for **C**. Write the desired height of the garment in "Additional Instructions". A **Belly Band** may be higher in the front than the back.



34B Belly Band

Common Options for Torso Garments

Neckline

Regular Neckline should be at the sternal notch.

Scoop Neckline is dropped to below the sternal notch, from $\frac{1}{2}$ to 3 or more inches. You specify the depth.

Turtleneck A band is attached to the neckline in order to raise a collar from $\frac{3}{4}$ inch to $2\frac{1}{2}$ inches high. You specify height.

NOTE: Pressure on the torso is achieved by stretching the garment across the body. A deep neckline may result in less pressure across the upper torso.



Regular Neck



1.0 inch Scoop Neck

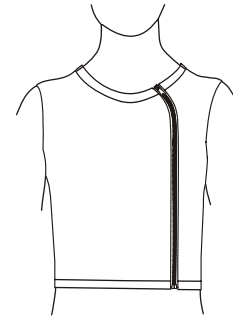


1½ inch Turtleneck

Zippers

Torso garments, such as vests, body briefs, and suits come with a zipper as a standard feature. Zippers are anterior by default for all torso garments. Many torso garment orders for toddlers and infants request a posterior zipper. Zippers for upper and lower extremities attached to torso garments would be considered optional features and should be specified on the **Upper Extremity Chart** or the **Lower Extremity Chart**, as appropriate.

Zippers on the torso, whether anterior or posterior, may be offset several inches in order to avoid a sensitive area. In "Additional Instructions" specify which side to move the zipper to and how much. For example, "Offset zipper three inches left".



Torso zipper offset
to left 3 inches

Hook & Loop Zipper Stop Tab

Torso garment zippers may occasionally come open on some patients. To prevent this we can install a hook and loop tab across the zipper to hold it together.

Hook & Eye

Torso garment zippers may be very difficult to close for those with little or no hand or finger strength. You may consider requesting two or three hook & eye latches (the same hook & eye used to close a brassiere), for example, one at the bottom, one at the middle, and one at the top of a vest zipper to assist these patients. The hook & eye latches are installed inside the zipper bands so the patient can close the bottom hook & eye, then negotiate the zipper, then close the middle hook & eye, and then zip up to that level, and so on. Although most commonly requested for torso garment zippers, hook & eye closures are technically feasible for any zipper.

Waist Hook & Loop Tabs

Patients wearing a vest together with a brief or leotard may experience discomfort when they bend and the two garments separate. We can design the garments to overlap and we would incorporate hook & loop patches to allow the two garments to be joined. The default configuration is to place the loop piece on the inside of the vest, and the hook piece on the outside of the brief or leotard.

Expansion Panels

A panel of Insert Material (page 11), 1 - 3 inches wide, may be installed along the lateral side of a torso garment, from the bottom of the garment to the axilla. If the garment has sleeves, the expansion panel could be made continuous from the bottom of the garment to the end of the sleeve. Expansion panels may be used to allow for growth in the pediatric patient and minor fluctuations in patient measurements

Inserts

The default breast style is to construct a breast cup out of the regular material of the garment using the chest circumferences and brassiere cup size provided, however, breast panels may alternatively be constructed out of our stretchy soft Insert Material (page 11). Breast inserts are frequently requested for adult female patients. Sleeves that come with **Sleeved Vests**, **Sleeved Body Briefs**, and **Sleeved Body Suits** may have inserts in the anterior elbow crease to prevent bunching of the garment material.

Underarm Gussets

Some patients may experience discomfort and skin breakdown from the material rubbing in the axillae. A gusset is a wedge of Insert Material incorporated into the axilla. If an expansion panel has been requested, the gusset may be incorporated into the expansion panel.

Linings

Some patients find the neck band of a torso garment irritating. This may be alleviated by lining the neck band with Lining Material (page 11). We call this, "drapelining", because the lining material is draped around the band. Similarly, zipper bands and arm holes of sleeveless torso garments may be drapelined to reduce rubbing.

Linings may be incorporated in torso garments in order to reduce the discomfort from rubbing. For a sleeved garment, axilla linings may be added.

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 (< or >) next to the corresponding circumferences.

UPPER EXTREMITY MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane
Last Name First Name
Date 06/07/2013

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

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compression garments
2424 East University Drive, Phoenix, Arizona, U.S.A. 85034-6911
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e-mail: bio-con@bio-con.com • worldwide web: http://www.bio-con.com

CIRCLE ITEMS ORDERED

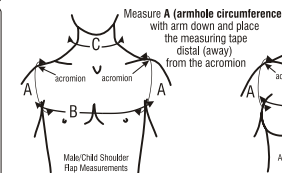
Bio-Concepts Use Only: F=

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.



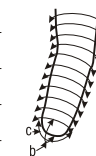
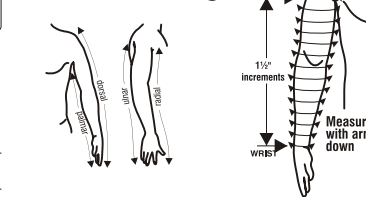
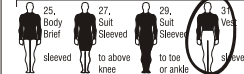
Sleeves



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
1 1/2	10 4	11 2
3	10 3	10 6
4 1/2	9 4	9 4
6	8 7	9 1
7 1/2	9 0+	9 2
9	9 0+	9 4
10 1/2	8 6	9 0
12	8 0	8 2+
13 1/2	7 0	7 0
15	6 0	6 1+
16 1/2	5 7	6 0
18		
19 1/2		
21		

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

Upper Extremity Chart -- 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.

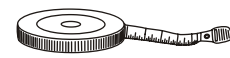
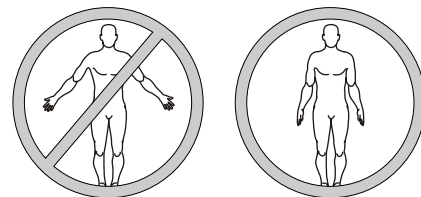
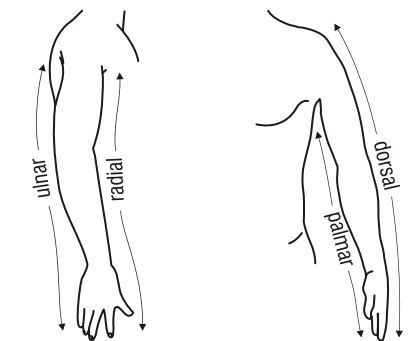
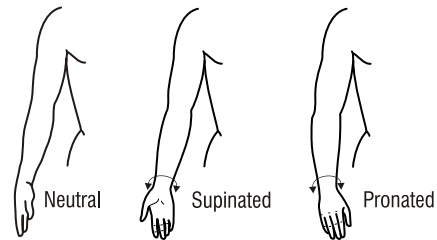
The capacity of the forearm for partial rotation around its vertical axis sometimes makes it hard to communicate the exact locations of important optional features, such as expansion panels, linings, inserts, pockets, and Silon-TEX on the arm. The anatomical chart position presents the hand and forearm 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.

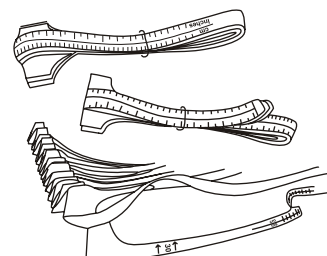
The Paper Tape Method involves the use of paper measuring tapes, which are simple paper straps spaced every 1½ inches along a central spine. Place the spine against the arm beginning where the sleeve is to begin, wrap each strap around the arm and secure with cellophane tape. Keep wrapping around the 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

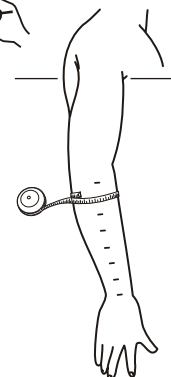
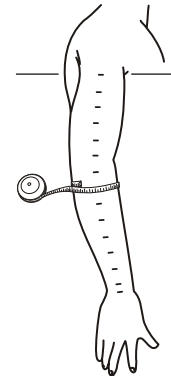
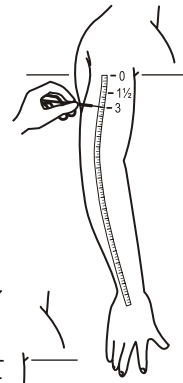
- Have the patient raise the arm enough to wrap the retractable measuring tape around the top of the arm. Snug the tape up and into the axilla and ask the patient to relax the arm at the side.
- Adjust the tape as needed to make it perpendicular to the arm. Make a mark on the outside of the arm.
- Place 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.

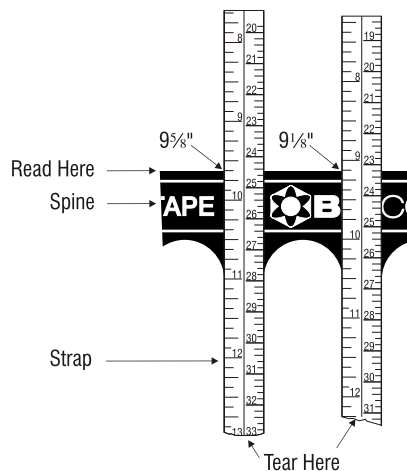
For example, if a **Sleeve Wrist to Elbow** is desired, do not measure all the way to the axilla



Paper Tape Method

The Bio-Concepts Upper Extremity paper tape includes a wrist strap and 13 straps (total length $19\frac{1}{2}$ 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 $1\frac{1}{2}$ 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.

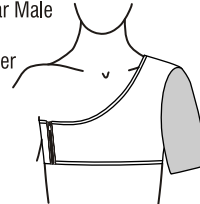
A #10A Female Style Shoulder Flap may be requested with no breast hole for a small-breasted adult female or for a unilateral radical mastectomy patient. Again, please indicate "no breast hole" on the measurement chart.

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

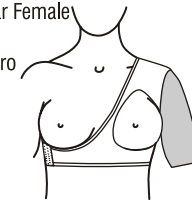
10A Shoulder flap
Regular Male

Default: Zipper
Closure



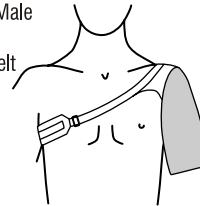
10A Shoulder flap
Regular Female

Default: Velcro
Closure



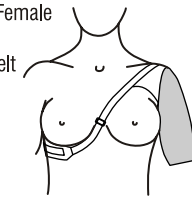
10B Shoulder flap
Strap Male

adjustable belt



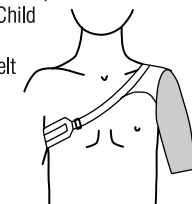
10C Shoulder flap
Strap Female

adjustable belt



10D Shoulder flap
Strap Child

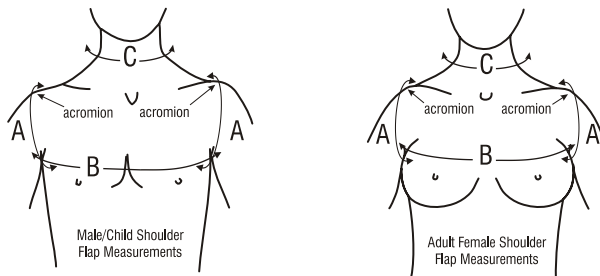
adjustable belt



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

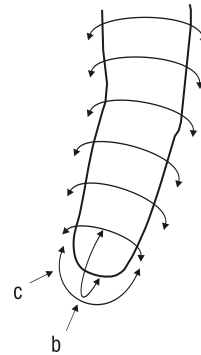
Measure the extremity circumferences as usual every 1½ inches from the desired top of the garment or from the axilla to the stump. Use the most distal circumference as a guide to take at least two measurements across the end of the stump. In the case of an irregular stump ending, it may be necessary 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



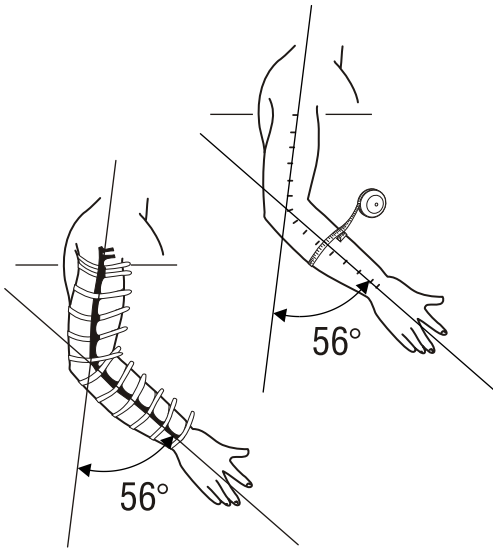
Orange-Peel Style

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 42.

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 10), 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 1 1/2 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."

#19 Two Legs to Waist

Requested features:

1. color: C07 Royal Blue
2. posterior knee inserts
3. lateral zippers, waist down 12 inches
4. expansion panels (2 inches wide, posterior from the waist to the planter foot would be the default)
5. open pubis
6. hook & loop at the top of the garment to connect it to the torso garment.
7. Silon-TEX lining is requested and shown on an attached **Sketch Pad** illustration (p. 60).

The distance between the last two circumferences is not the standard 1.5 inches. The actual distance (5/8 inch in the example) is written with a carat between the last two circumferences.

The fold-floor distance of 29 1/8 inches compares well to the leg length of 26 1/8 inches. See pages 47 or 49 (depending on your choice of measuring method) for a discussion of one of the most common errors in measuring the lower extremity.

LOWER EXTREMITY MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane Last Name First Name

Date 06/07/2013

Garment color C07

Insert Posterior Knee- bilateral

Lining Silon-TEX see sketch pad

Zipper(s):
☒ Left ☒ Lateral ☐ Medial ☒ Hook & loop zipper stop tab
☒ Right ☒ Lateral ☐ Medial ☒ Hook & loop zipper stop tab

Length (if not full) & Location: 12" L & R from waist

Expansion panel ☒ Left ☒ Right (default location is posterior leg)

Suspenders: ☐ Attached ☐ Removable
☒ Open pubis ☒ Waist hook & loop tabs to attach to torso (N/C)
☐ Closed pubis

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.

Additional instructions or comments:

Close-Knit Material

PLEASE DO NOT WRITE IN MARGINS

Bio Concepts compression garments

2424 East University Drive, Phoenix, Arizona, U.S.A. 85034-6911
 VOICE: 800-421-5647 / 602-267-7854 • FAX: 800-650-9424 / 602-273-6931
 e-mail: bio-con@bio-con.com • worldwide web: http://www.bio-con.com

CIRCLE ITEMS ORDERED

START AT X or Y

	LEFT LEG	RIGHT LEG
0		
1 1/2	8 4+	8 4
3	9 0+	9 6
4 1/2	10 4	11 0
6	12 0	11 5
7 1/2	12 6	13 2+
9	14 0	15 0
10 1/2	14 6	15 0
12	14 6	14 5
13 1/2	13 7+	13 4
15	13 3	13 6+
16 1/2	14 4	15 4
18	15 2	16 5
19 1/2	16 6	17 1
21	18 0	18 7
22 1/2	18 7+	20 0
24	21 4	21 3
25 1/2	22 3	22 6
27	22 4	23 0
28 1/2		
30		
31 1/2		
33		

Use this form for all garments requiring measurements of the leg(s). Use the FOOT MEASUREMENT CHART for all measurements of the foot (including the heel circumference).

Stump cover style: ☐ Orange peel ☐ Insert

NOTE: See the Bio-Concepts Measuring Manual for important information on the Fold to Floor measurement

1 1/2" increments

FOLD TO FLOOR

29 1/8

29 5

21

5/8"

5/8"

TORSO

A	30 0
B	34 6
C	38 4
a	2 5+
b	6 4
c	10 4
A ₁	29 5
a ₁	2 1

PLEASE DO NOT WRITE IN MARGINS

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See page 16 for an explanation of the shorthand measurement notation system.

Lower Extremity Chart -- EXAMPLE

MEASURING THE LOWER EXTREMITY

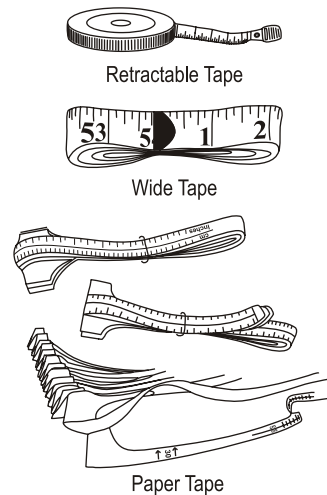
- Circumference measurements are designated with capital letters (**A1** through **C**). Surface distance measurements are indicated with lower case letters (**a1** through **c**).
- Measurements of the lower leg and foot may be taken with the patient sitting, but for the lower torso and upper legs the patient should be standing.
- Measurements of the lower torso should always be made from the back, not the side or front.
- **The waist is where the patient normally wears trousers, briefs, or skirts.** For some patients, particularly the obese patient, the waist may be higher in the back than in the front. See page 52. For these individuals, it would be acceptable to specify two values for **c**, one for the back and one value for the front. Write both numbers in the appropriate **Torso Measurement Chart** box.

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 over 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 $1\frac{1}{2}$ inches from where the stocking will begin to where the stocking will end. Very often, the last mark will not be $1\frac{1}{2}$ inches from the second to the last mark. Measure the actual distance between the last two marks and record it on the **Lower Extremity Measurement Chart** as shown in the example on page 44. Using the retractable tape measure or the wide tape measure, measure the circumference of the leg at each mark.

The Paper Tape Method involves the use of paper measuring tapes, Full Length Leg or Knee High, which are paper straps spaced every $1\frac{1}{2}$ inches along a central spine. Place the spine against the leg, beginning where the stocking is to begin, wrap each strap around the leg and secure with cellophane tape. Keep wrapping around the leg until the desired end is reached and tear off any remaining portion of straps. Then tear the straps so the whole assembly can be removed from the limb. Read the measurements along the straight part of the paper tape spine.



Mark and Measure Method

Lower Torso Only

We require a circumference around the waist, **A**, and two more circumferences, **B** and **C**, approximately evenly spaced between the waist and the fold of the buttocks, **Point X**, and the distances between the circumferences and **Point X**.

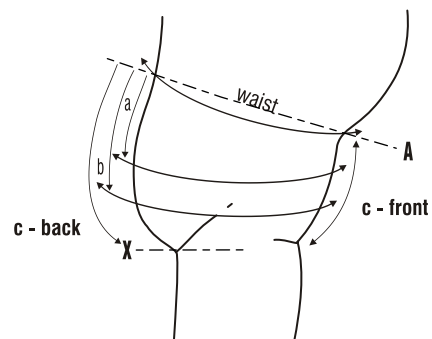
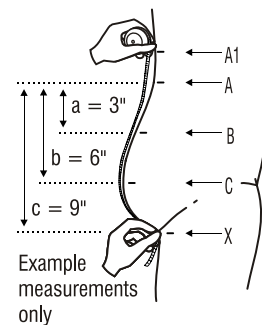
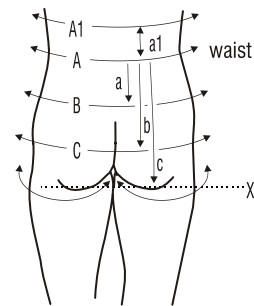
The circumference **A1** would be needed if the lower extremity garment will be worn with a vest and it is desired that the two garments should overlap. In this case, **A1** would be the circumference at the top of the garment and **a1** would indicate how high the top of the garment would be above the waist.

Measure **A**, the waist circumference, and make a mark on the patient just above one of the buttocks. Measure **c**, the distance between the waist and **Point X**, the fold of the buttocks. Write both measurements on the **Lower Extremity Chart**. Measure circumferences **B** & **C** approximately one-third of **c** apart from each other between **A** and **X** and make a mark on the patient to locate these measurements. For example, if **c** is 9 inches, then measure **B** 3 inches below **A** and measure **C** 6 inches below **A**.

The Obese Patient and Small Children

The obese patient and very young children from infancy to approximately three years of age may present with a large belly. Unless some compensation is made for this feature in the measurements, the lower torso portion of the garment may be too low in the back and too high in the front.

As shown below, simply take two **c** measurements, one in the front and one in the back and write both measurements on the **Lower Extremity Measurement Chart** in the box provided for **c**. It is not necessary to label or explain the two measurements, the difference between the two lengths will be used to make the vest longer in the front than in the back.



Example measurements for a lower torso garment showing the procedure for recording a longer back than front.

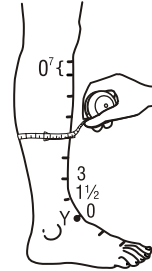
a	7 ²
b	10 ⁶
c	14 ¹ / 11 ⁰
A ₁	

Legs and Feet

Detailed measurement procedures for the foot are covered in the next chapter (page 52).

Begin at Point Y

Measure the circumference of the heel and make a mark on the patient at the anterior of the ankle at **Point Y**. This is circumference **D** and is entered into the appropriate blank on the **Foot Measurement Chart**. With the 0 inch mark of the measuring tape at **Point Y**, make a mark on the front of the leg every $1\frac{1}{2}$ inches up to as far as you want the garment to extend. Record these leg circumferences on the **Lower Extremity Chart** as shown in the example. The top two circumferences may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two and record this on the chart as shown in the example.



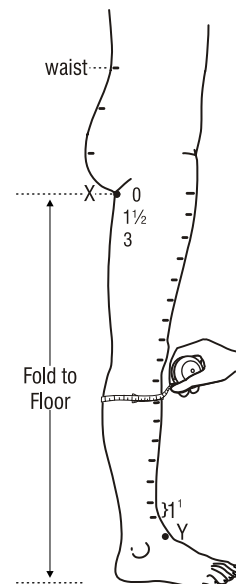
Measuring for the Lower Torso, Legs, and Feet

Detailed measurement procedures for the foot will be covered in the next section.

Measure the lower torso as described at the beginning of this section (page 45).

Begin at Point X

With the 0 mark of the measuring tape at **Point X**, make a mark on the front of the leg every $1\frac{1}{2}$ inches down to as far as you want the garment to extend. The bottom two measurements may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two. Measure the circumferences and record them on the **Lower Extremity Measurement Chart**. With the patient standing erect, use the measuring tape to measure the distance from the fold of the buttocks to the floor. Be sure to hold the measuring tape as vertical as possible, and always take this measurement from the back of the patient. Record this measurement in the special box on the **Lower Extremity Measurement Chart**.



Note

A common error is to take too many leg circumferences, resulting in little or no difference between the recorded height of the leg above Point Y and the fold-floor distance.

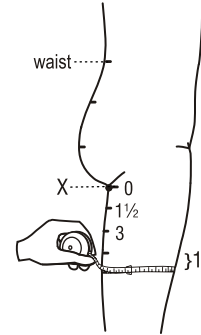
When measuring for a garment which includes the lower torso, legs, and feet, always check the difference between the leg length and the fold-floor distance. This measurement is a way to check the accuracy of the leg measurements. In the example measurement chart on page 50, the left leg circumferences end at $26\frac{3}{8}$ in. above **Point Y**. Subtracting this from the fold-floor measurement of $29\frac{3}{8}$ in. leaves 3 in. for the height of the foot. Approximately correct for an adult female.

Lower Torso and Legs

If the garment includes the lower torso and the legs above the feet, take the lower torso measurements as described above, then take leg circumferences beginning at **Point X** as described below.

Begin at Point X

With the 0 mark of the measuring tape at **Point X**, make a mark on the back of the leg every $1\frac{1}{2}$ inches down to as far as you want the garment to extend. The bottom two measurements may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two. Measure the circumferences and record them on the **Lower Extremity Measurement Chart**.

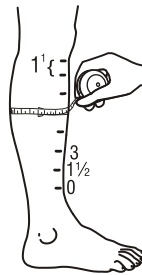


Legs Only

These lower extremity garments include the **#14 Stocking to Knee, no foot**, **#15 Stocking to Thigh, no foot**, and **#16 Stocking Knee to Thigh**. Garments which do not include the lower torso or the foot can be measured from the back or front of the leg. Start your measurements at the top or bottom of the the desired top or bottom of the garment, although you may find that it is most convenient to measure from the back if the garment is above the knee, and from the front if the garment is below the knee.

Begin at Top or Bottom of Garment

Make a mark on the leg where you want to begin. Hold the measuring tape vertical against the leg and make additional marks every $1\frac{1}{2}$ inches to the desired end of the garment. Measure the circumference at each mark and record the measurements on the **Lower Extremity Measurement Chart**.



Paper Tape Method for the Legs

Lower Torso, Legs, and Feet

If the garment is to include the lower torso and the feet, measure the lower torso according to the instructions given previously.

Begin by securing the strap marked "HEEL" around the ankle to the back of the heel as shown. This is circumference **D** and is entered into the appropriate blank on the **Foot Measurement Chart**. Align the spine of the tape, that is, the straight edge of the colored portion, with the front of the foot and leg.

Secure the foot tapes around the foot; there could be from two to five foot tapes depending on the length of the foot. Secure additional straps around the thigh up the leg to **Point X**. The top two circumferences may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two and record this on the chart as shown in the example.

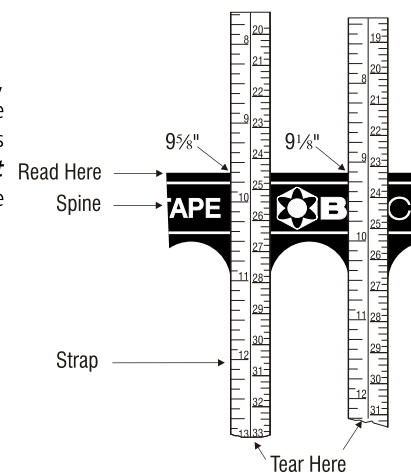
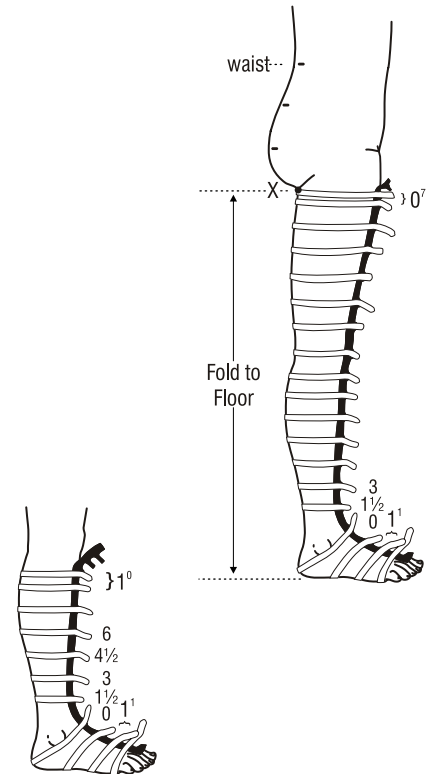
Note

A common error is to take too many leg circumferences, resulting in little or no difference between the recorded height of the leg above Point Y and the fold-floor distance.

When measuring for a garment which includes the lower torso, legs, and feet, always check the difference between the leg length and the fold-floor distance. This measurement is a way to check the accuracy of the leg measurements. In the example measurement chart on page 50, the left leg circumferences end at $26\frac{1}{8}$ in. above **Point Y**. Subtracting this from the fold-floor measurement of $29\frac{1}{8}$ in. leaves 3 in. for the height of the foot. Approximately correct for an adult female.

Legs and Feet

If the garment is to include the feet and legs, but not the lower torso, begin by wrapping and securing the strap marked "HEEL" around the ankle to the back of the heel as shown. This is circumference **D** and is entered into the appropriate blank on the **Foot Measurement Chart**. Align the spine of the tape, that is, the straight edge of the colored portion, with the front of the foot and leg.

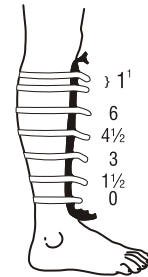


Secure the foot tapes around the foot; there could be from two to five foot tapes depending on the length of the foot. Continue wrapping and securing the tapes around the leg to as high as you want the garment to extend. The circumference at the very top of the garment should be slightly smaller than the circumference immediately below. Otherwise the garment is likely to slide down. Please speak with one of our designers if the nature of the patient and the patient's diagnosis is such that the top circumference cannot be smaller. There are ways to design garments that will stay up on most patients.

The top two circumferences may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two and record this on the **Lower Extremity Chart** as shown in the example.

Legs Only

The procedure for using the paper tapes for measuring legs without including either the lower torso or the foot is similar. Wrap the first strap around the leg wherever you want the garment to begin. Continue wrapping straps around the leg as high as you want the garment to extend. Pleat the spine of the tape if the last circumference is less than $1\frac{1}{2}$ inches from the previous circumference.

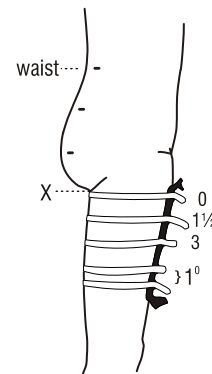


Lower Torso and Legs

If the garment is to include the lower torso and legs, measure the lower torso according to the instructions given previously.

Begin by securing the first strap around the top of the leg. Align the spine of the tape, that is, the straight edge of the colored portion, with the front of the leg.

Secure additional straps around the thigh down the leg to as far as you want the garment to extend. The bottom two circumferences may not be $1\frac{1}{2}$ inches apart. If so, measure the actual distance between the two and record this on the chart as shown in the example.



Common Options for Lower Extremity Garments

Inserts

Posterior knee inserts are frequently requested for lower extremity garments incorporating the knee. The insert is a piece of soft stretchy **Insert Material** (page 11) positioned over the popliteal crease. This helps prevent bunching of the regular garment fabric. Abdominal Inserts may be requested for patients with distended or tender abdomen.

Linings

Any part of the garment may be lined with Lining Material (page 11). Linings work especially well to prevent soreness resulting from rubbing, such as the knee or the anterior thigh.

Expansion Panels

Expansion panels, made of soft stretchy Insert Material (page 11), are normally installed posterior in a lower extremity garment. A posterior expansion panel in a stocking includes the back of the leg the heel and the plantar foot surface. Expansion panels may add to the life of a garment for a growing pediatric patient or for an adult with changing measurements.

Zippers

For some patients a zipper may be needed in a lower extremity garment so the patient can get it over the foot. Zippers may be lateral or medial, and normally end at **Point Y**. Anterior or posterior zippers are technically feasible, but should only be requested in extreme cases where the lateral and medial surfaces are too painful or otherwise involved.

Pubis Construction

The default pubis for a male lower torso/extremity garment is closed with a horizontal fly, while the default pubis for a female is closed with a soft crotch gusset. Specify "open pubis" and we make the garment with a large pubic opening.

Feet for #19 Two Legs to Waist

Requested features:

1. bilateral anterior ankle inserts to reduce irritation caused by fabric bunching in the ankle crease
2. open toe left foot
3. #36 Foot Glove, right foot, foot tracing attached
3. bilateral expansion panels from the #19 legs (page 51) will continue to the heel and plantar foot

Foot Gloves, Foot Gauntlets, and Foot Mittens (items #36, #37, and #38, respectively) are specialty items required for the separation of toes, they would normally be attached to some other lower extremity garment such as stockings or anklets. A tracing of the foot (see p. 58) and toe circumferences would be required.

FOOT MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane
Last Name First Name

Date 06/07/2013

Garment color _____

Insert anterior ankle L/R

Lining _____

Zipper(s):
☐ Left ☐ Lateral ☐ Medial ☐ Hook & loop zipper stop tab
☐ Right ☐ Lateral ☐ Medial ☐ Hook & loop zipper stop tab

Expansion panel: ☐ Left ☐ Right
 (default location is posterior leg to plantar foot)

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.

Additional instructions or comments:

open toe left foot,
foot glove w/ open toes
right foot



PLEASE DO NOT WRITE IN MARGINS

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CIRCLE ITEMS ORDERED

Bio-Concepts Use Only:

F =

For additional measurements above the 4½ inch circumference use the LOWER EXTREMITY CHART

FOOT MEASUREMENTS

	LEFT	RIGHT
4½		
3		
1½		
D	11 6	11 4
E	8 7+	8 6
F	9 2	8 7+
e	1 3	2 1
f	2 0+	1 5
g	2 7	2 7

Self toe ☐ Soft toe ☐ Open toe ☒



STANDARD TOES

Self Toe: the toe box is made from the same fabric as the rest of the garment.

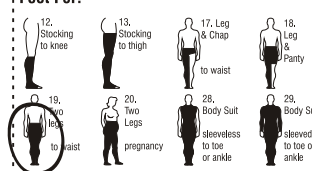
Soft Toe: the toe box is made of a soft lining material; there is a seam around the foot joining it to the rest of the garment.

Open toe: stocking ends at your last circumference.

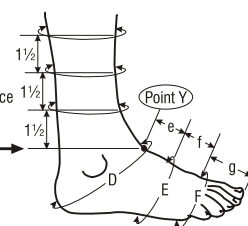
Use this form for all garments requiring foot measurements. Use the LOWER EXTREMITY CHART for measurements of the leg and lower torso

PLEASE DO NOT WRITE IN MARGINS

Feet For:



Do not measure circumference here



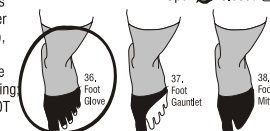
TOE CIRCUMFERENCES and FOOT TRACINGS are ONLY REQUIRED for:

36. Foot Glove
37. Foot Gauntlet
38. Foot Mitten

	LEFT FOOT	RIGHT FOOT
a		3 2
b		2 0
c		1 7+
d		1 7+
e		1 7

Foot Gloves, Gauntlets, and Mittens are specialty items (normally attached to other lower extremity garments), used only when separate enclosures for the toes are needed. Attach a foot tracing use the Bio-Concepts FOOT TRACING GUIDE.

Individual toes: Open ☒ Closed ☐



SPECIALTY TOES

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

Foot Chart -- EXAMPLE

MEASURING THE FOOT

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 over 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 $1\frac{1}{2}$ inches from where the stocking will begin to where the stocking will end. Very often, the last mark will not be $1\frac{1}{2}$ inches from the second to the last mark. Measure the actual distance between the last two marks and record it on the **Foot Measurement Chart** as shown in the example on page 59. Using the retractable tape measure or the wide tape measure, measure the circumference of the leg at each mark.

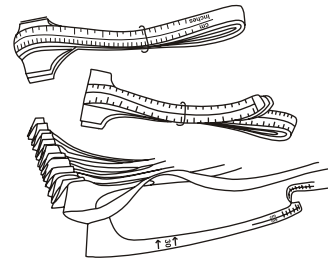
The Paper Tape Method involves the use of paper measuring tapes, which are paper straps spaced every $1\frac{1}{2}$ inches along a central spine. Place the spine against the leg beginning where the sleeve is to begin, wrap each strap around the leg and foot and secure with cellophane tape. Keep wrapping around the leg and foot until the desired end is reached and tear off any remaining portion of straps. Then tear the straps 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



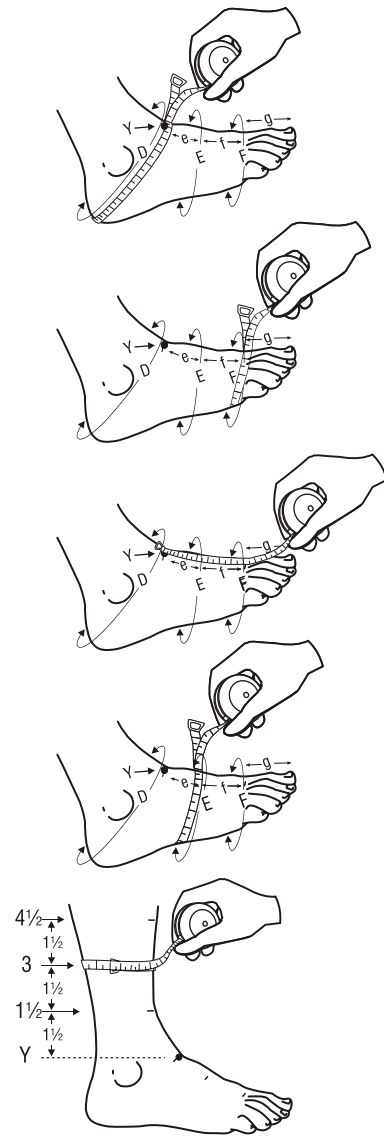
Paper Tape

Mark and Measure Method

Wrap the retractable tape measure around the foot from the back of the heel to the front of the ankle. It is best to have the patient seated with the toes pointed up and the heel at rest. Measure the circumference of the heel and make a mark on the patient at the anterior of the ankle at **Point Y**. This is circumference **D** and is entered into the appropriate blank on the **Foot Measurement Chart**.

Wrap the retractable tape around the end of the foot at the bases of the toes, and make a mark on the foot to indicate the location of the measurement. This is circumference **F** and is entered into the appropriate blank on the **Foot Measurement Chart**.

Find a point about halfway between the two marks you made for **D** and **F** and wrap the tape measure around the foot. Make a mark on the foot to indicate the location of the measurement. This is circumference **E** and is entered into the appropriate blank on the **Foot Measurement Chart**. Use the retractable tape measure or the clear plastic ruler to measure the actual distance between **D**, **E**, and **F** along the top of the foot. These are measurements **e** and **f** and are entered into the appropriate blank on the **Foot Measurement Chart**.



Using the retractable tape measure or the clear plastic ruler, measure the actual distance between the mark you made at circumference **F** and the end of the longest toe (usually, but not always the great toe). This is measurement **g** and is entered into the appropriate blank on the **Foot Measurement Chart**.

If this foot garment is part of a stocking or some other garment incorporating the foot, then all of the lower leg circumferences, beginning at $1\frac{1}{2}$ inches above **Point Y**, will be entered on the **Lower Extremity Chart** beginning in the $1\frac{1}{2}$ inch box.

- If the garment will include the foot and only the lower portion of the lower leg, ($4\frac{1}{2}$ inches or less above **Point Y**), then you can put all of the lower leg measurements in the three boxes above **D** on the **Foot Measurement Chart**, $1\frac{1}{2}$ inches, 3 inches, and $4\frac{1}{2}$ inches).

	LEFT	RIGHT
Measurements for a right #11 Ankle entered in the Foot Measurement Chart .	$4\frac{1}{2}$	12 ⁵
	3	10 ²
	$1\frac{1}{2}$	10 ¹
	D	13 ⁰
	E	9 ²
	F	8 ⁷
	e	2 ¹
	f	2 ¹
	g	2 ²

- If the garment includes the foot and it goes higher than $4\frac{1}{2}$ " above **Point Y**, then put all of your lower leg measurements on the **Lower Extremity Chart**.

	LEFT	RIGHT
Measurements for a right foot to be attached to a garment that extends higher than $4\frac{1}{2}$ inches above Point Y entered in the Foot Measurement Chart .	$4\frac{1}{2}$	
	3	
	$1\frac{1}{2}$	
	D	13 ⁰
	E	9 ²
	F	8 ⁷
	e	2 ¹
	f	2 ¹
	g	2 ²

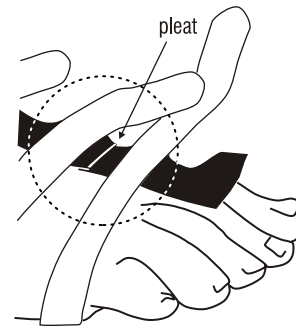
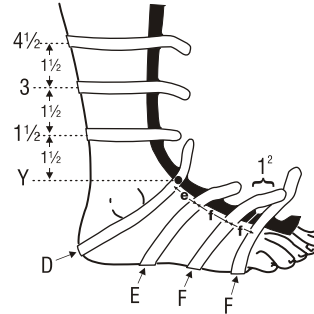
Paper Tape Method

Begin by wrapping and securing the strap marked "HEEL" around the ankle to the back of the heel as shown. This is circumference **D** and is entered into the appropriate box on the **Foot Measurement Chart**. Align the spine of the tape, that is, the straight edge of the colored portion, with the front of the foot and leg.

Secure the foot tapes around the foot. There could be from one to five foot tapes depending on the length of the foot. Continue wrapping and securing the tapes around the leg to as high as you want the garment to extend.

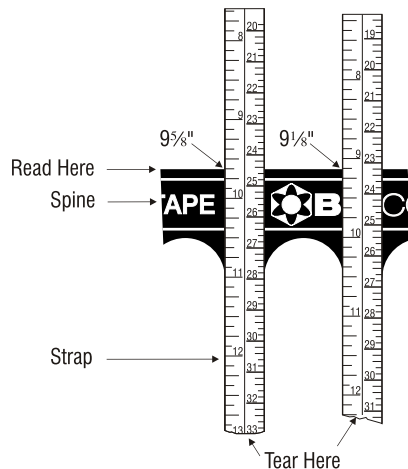
If the garment is to be a **#11 Anklet**, use the $1\frac{1}{2}$, 3, and $4\frac{1}{2}$ inch boxes on the **Foot Measurement Chart** to record the lower leg circumferences. Any other lower extremity garment, such as a **#12 Stocking to Knee**, or **#19 Two Legs to Waist**, will require that the lower leg measurements be entered into the appropriate boxes on the **Lower Extremity Measurement Chart**. If so, leave the $1\frac{1}{2}$, 3, and $4\frac{1}{2}$ blanks on the **Foot Measurement Chart** empty and write all of the lower leg measurements on the **Lower Extremity Chart** beginning with the $1\frac{1}{2}$ inch box.

The straps on the paper tapes are $1\frac{1}{2}$ inches apart. The two most distal straps on the foot are usually not going to be $1\frac{1}{2}$ inches apart. Pleat the tape by folding the spine over itself and measure the distance between the last two foot tapes using the retractable tape or the clear plastic ruler. Use boxes **E** and **F** to record the circumferences and use boxes **e** and **f** to record the distances. If there are more than two foot circumferences between point **Y** and the bases of the toes, write them side-by-side as shown in the example foot chart to the lower right.



Measurements for a right **#11 Anklet** entered in the **Foot Measurement Chart**. A foot tracing is not required.

	LEFT	RIGHT
$4\frac{1}{2}$		12 ⁵
3		10 ²
$1\frac{1}{2}$		10 ¹
D		13 ⁰
E		9 ²
F		8 ⁷ /8 ⁶
e		1 ⁴
f		1 ⁴ /1 ²
g		2 ²



Foot Gloves, Gauntlets, and Mittens

The standard foot garment with closed toe is made with a "Soft toe" closure. Request a "Self toe" when you want the toe to be made from the same material as the rest of the garment. **Foot Gloves, Foot Gauntlets, and Foot Mittens** are specialty items which would generally only be ordered if the patient is experiencing severe scarring of the toes, particularly in the toe web spaces. Some patients with lower extremity vascular dysfunction may also benefit from these garments.

A **Foot Glove, Foot Gauntlet, or Foot Mitten** is considered a separate garment which would be attached to another foot garment, including **#12 Stocking to Knee, #13 Stocking to Thigh, #17 Leg & Chap to Waist, #18 Leg & Panty to Waist**, etc.

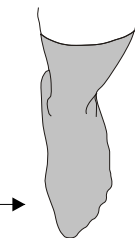
A foot tracing and toe circumferences are required for a **Foot Glove, Foot Gauntlet, or Foot Mitten**. A foot tracing and toe circumferences are not required for standard, soft toe or self toe garments. The **Foot Measurement Chart** includes a chart to record the circumferences of the toes. For a **Foot Glove**, measure the circumference of each toe and record it in the appropriate box.

Measurements for a right **#11 Ankle** with a **#36 Foot Glove** entered in the **Foot Measurement Chart**. These must be accompanied by a foot tracing.

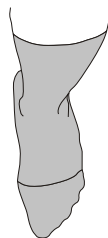
	LEFT	RIGHT
4½		12 ^s
3		10 ²
1½		10 ¹
D		13 ⁰
E		9 ²
F		8 ⁶
e		1 ⁴
f		1 ⁴
g		2 ²

	LEFT FOOT	RIGHT FOOT
a		2 ⁴
b		1 ⁸
c		1 ⁶
d		1 ³
e		1 ³

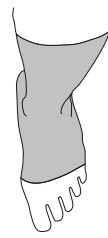
STANDARD FOOT CLOSURE STYLES
Foot tracing & toe circumferences not required



Self Toe, Toe made of same material as rest of garment.



Soft Toe, Toe made of lining material, default toe closure for closed toe foot garments.

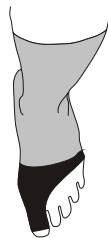


Open Toe, stocking ends at the most distal circumference

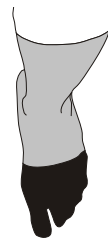
SPECIALTY FOOT CLOSURE STYLES
Foot tracing & toe circumferences required



36. Foot Glove, the great toe and at least one other toe individually enclosed. Toes may be open or closed



37. Foot Gauntlet, great toe enclosed, other toes in common opening. Great toe may be open or closed.



38. Foot Mitten, great toe enclosed, other toes in common closure. Great toe may be open or closed.

Foot Gloves, Foot Gauntlets, and Foot Mittens (items **#36, #37, and #38**, respectively) are specialty items used only when separate enclosures for the toes are required.

They would normally be attached to some other lower extremity garment such as stockings or anklets.

Foot Tracing Guide -- FOOT GLOVE EXAMPLE

FOOT TRACING GUIDE

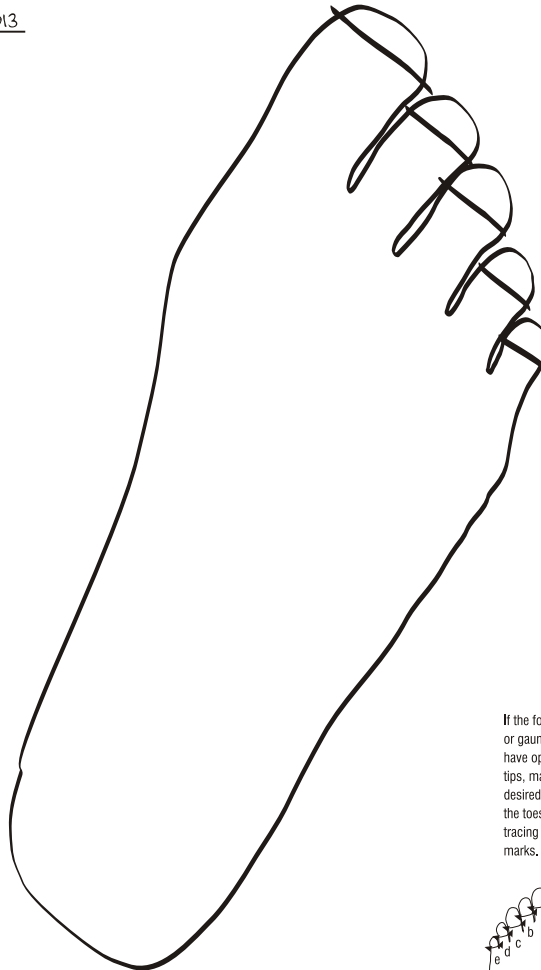


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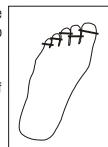
Patient Doe, Jane

Date 06/07/2013

PLEASE DO NOT WRITE IN MARGINS
Please do not send a hand tracing without a scale
0.8x4.00
Draw a 3-inch long line in this box



If the foot glove or gauntlet is to have open toe tips, mark the desired ends of the toes on the tracing with tic marks.



Take one circumference measurement for each toe and write it in the appropriate box on the Foot Measurement Chart.

Required ONLY for Foot Gloves, Foot Gauntlets, and Foot Mittens (Items 36, 37, & 38)

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Right Foot Tracing

Open toe tips are indicated by lines drawn across the digits.

Foot tracings are not useful for most foot garments, but they are required for Foot Glove, Foot Gauntlets, and Foot Mittens. Foot tracings may also be needed for deformed feet or feet with toe amputations.

Common Options for Foot Garments

Foot Closure

The standard foot garment with closed toe is made with a "Soft toe" closure. Request a "Self toe" when you want the toe to be made from the same material as the rest of the garment.

Check "Open" on the **Foot Measurement Chart** to leave the foot open and do not enter a measurement for **g** (leave it blank).

A **Foot Glove, Foot Gauntlet, or Foot Mitten** is considered a separate garment which would be attached to another foot garment, including **#12 Stocking to Knee, #13 Stocking to Thigh, #17 Leg & Chap to Waist, #18 Leg & Panty to Waist**, etc.

Inserts

An "Anterior Ankle Insert" is a circular piece of soft stretchy Insert Material (page 11) positioned over the front of the ankle. This helps prevent bunching of the regular garment fabric at the ankle.

Heel Inserts are made of a layer of Insert Material from about the middle of the plantar foot surface to approximately two inches above the ankle. The heel insert assists the patient in pulling the stocking over the heel and it may be used to avoid the standard seam over the bottom of the foot.

Linings

Any part of the foot may be lined with Lining Material (page 11) for patient comfort. Linings work especially well to prevent soreness resulting from rubbing, such as the back of the heel, or the dorsum of the foot.

Expansion Panels

Expansion panels, constructed of soft stretchy Insert Material (page 11), are normally installed posteriorly in a lower extremity garment. Lateral expansion panels are occasionally requested. A posterior expansion panel in a stocking includes the back of the leg, the heel, and the plantar foot surface. It is a comfortable means to allow for growth of the patient, facilitate donning the garment, and avoid the posterior/plantar garment seam.

Zippers

For some patients a zipper may be needed in a lower extremity garment so the patient can get it over the foot. Zippers may be lateral or medial, and normally end at a level even with **Point Y**. Anterior or posterior zippers are technically feasible, but should only be requested in extreme cases where the lateral and medial surfaces are too painful or otherwise involved.

Sketch Pad

This example *Sketch Pad* illustrates the exact locations of certain special features noted on the *Torso Measurement Chart* (p. 28), the *Upper Extremity Measurement Chart* (p. 36), and the *Lower Extremity Measurement Chart* (p. 44).

This example shows Silo-TEX silicone-bonded textile linings on the back, right arm, and left leg. In addition, the therapist requests vellofoam padding along the spinal region to ensure adequate contact.

The *Sketch Pad* is really not adequate to illustrate features which require detail. This is why the chin lining was shown on the *Head & Neck Measurement Chart* and other features were illustrated on the *Hand Tracing Guides*.

Make sure your verbal descriptions are in agreement with your illustrations.

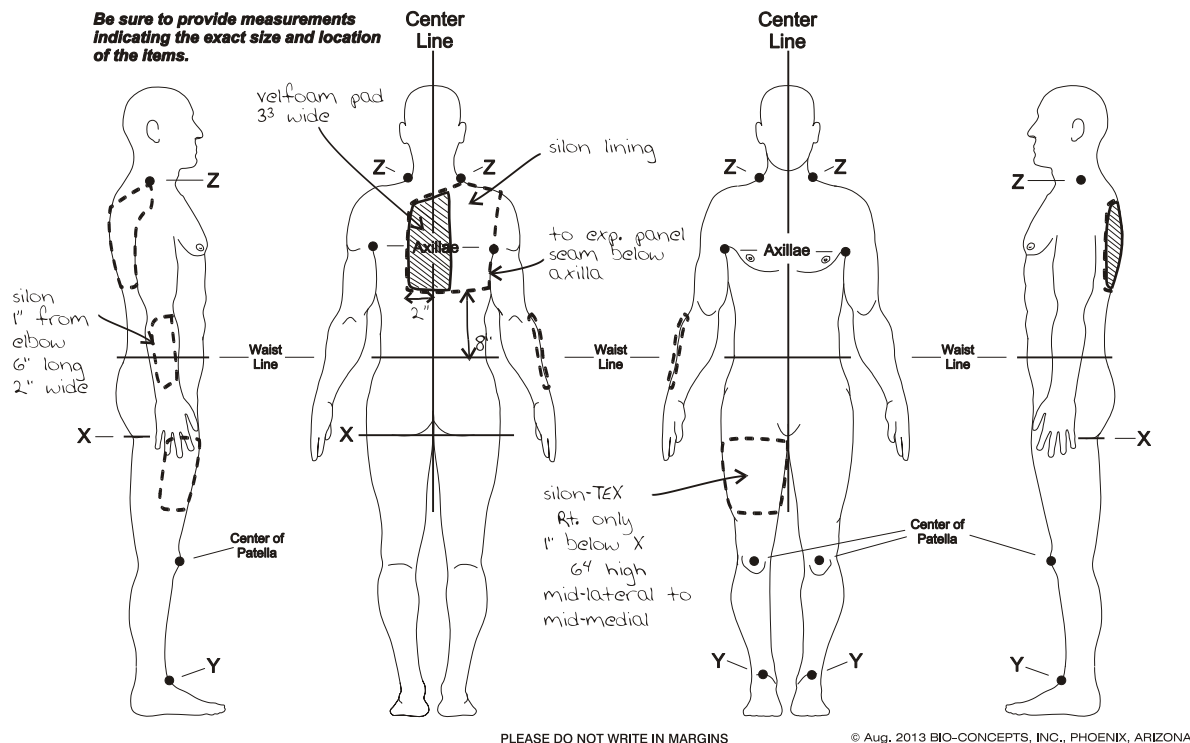
SKETCH PAD CUSTOM PRESSURE GARMENTS



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Use this sketch pad to draw or mark the locations of special inserts, linings, gussets, and other custom features that cannot be indicated on the appropriate order form. Be sure to use a **black** pen or pencil, and write as legibly as possible. Use the lettered points of reference to relate this drawing to your Bio-Concepts order forms. **Fill in the patient name and the date.**

Patient Name: Doe, Jane Date: 06/07/2013



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

Sketch Pad -- SILON-TEX PLACEMENT EXAMPLE

SKETCH PAD

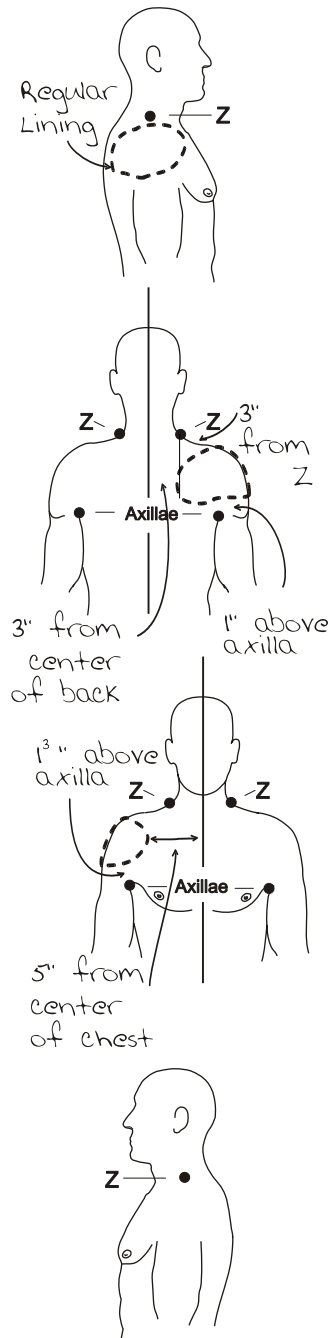
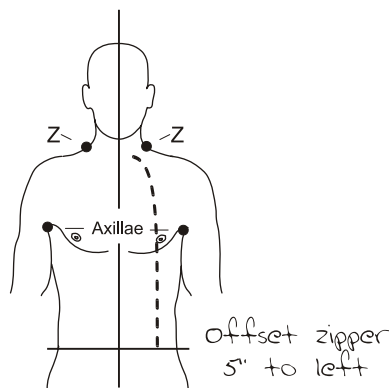
No two patients are alike and, therefore, no custom garments are exactly alike. So too are the requirements of features and options different for each patient. One patient may require a zipper, another may not. One patient may require a lining of Silon-TEX, silicone-bonded textile over a scar site, while another may not. With Bio-Concepts you get truly custom garments, not just a series of cleverly assembled sizes and a few features.

The **Sketch Pad** is where you get to add that touch of customization for your patient that may make the difference between compliance and non-compliance and results and disappointments.

Using the four perspective views of the human body, outline or sketch the feature or area required. On the appropriate measuring chart, be sure to note that additional information is included on the **Sketch Pad**. As is shown on the example chart on page 60 and in the example to the right, be sure your sketches are consistent across all four views. In the example to the right, notice that nothing is sketched on the left side view at bottom and the area in question is consistently illustrated across the right side, front, and back views, where the area should be shown.

Notice on the **Sketch Pad** example on page 60 that the Silon-TEX piece on the back of the torso is shown with width and height. For an irregular shape, such as that shown to the right, just try to determine the boundaries of the area relative to known landmarks, in this case, the centerline of the figure, the right axilla, and **Point Z**. These are landmarks we will be able to identify on the garment pattern. The "scapular region", or the "clavicular region," although anatomically accurate terms, would be of no use to this particular application.

Useful landmarks are shown on the **Sketch Pad** -- centerline, axillae, **Point Z**, **Point X**, the waist line, center of the patella, and **Point Y**. In addition, the garment itself will always provide at least two useful landmarks -- the top of the garment and the bottom of the garment (or proximal and distal ends).



Reorder #6 Glove to Wrist, #31 Sleeved Vest, #19 Two Legs to Waist, and #32 Face Mask. New #11 Left Anklet.

Simply list the desired items and the quantity desired. If only a few or no changes are needed, list them with the items. If new measurements are required, attach the appropriate measurement chart. In this example, there are no changes for the gloves ("as is"), new measurements for the vest which are attached, changes for the pants and face mask. A new garment, the left anklet, is added and measurements are attached.

Never refax the old measurements to reorder. We already have them. Sending old measurements only causes confusion and a significant delivery delay.

ORDER FORM

CUSTOM PRESSURE GARMENTS

SUBMIT THIS FORM WITH ALL ORDERS, REORDERS & ALTERATIONS



PLEASE DO NOT WRITE IN MARGINS

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Bio-Concepts Patient Number **PAT 8 8 8 3 1** ☐ New Patient ☒ Existing Patient

ORDER DATE 06/25/2013 NEED BY DATE 07/8/2013 SHIP TO ☐ Facility ☒ Patient Specify Shipping Method: UPS Ground

MM/DD/YYYY MM/DD/YYYY

REQUIRED PATIENT INFORMATION

Date of Birth 02/14/1968 Gender F NOTE: Bio-Concepts Custom Pressure Garments are available only under physician's orders.

MM/DD/YYYY

Last Name Doe First Name Jane

IS THIS A BURN PATIENT? ☒ Yes ☐ No ☐ Edema ☐ Traumatic Scar ☐ Lymphedema

Desired Pressure: mmHg Other:

FACILITY INFORMATION

Purchase Order # _____ Measured by Lisa Mills, OTR

Billing Contact Purchasing Dept. (602) 123-4567

Billing Telephone (602) 123-8910 Quickest way to contact you: Telephone/Fax/Email

Name of Facility Desert General

Shipping Address

401 6th Street
Apt. 108
Phoenix, AZ 85200

Billing Address

Accounts Payable
P.O. Box 5555
Phoenix, AZ 85200-5555

The full destination address. Include the department, room number, apartment number, etc. If shipping to patient, include the patient's phone number.

The address where we will send our invoice if different from the shipping address. If we are to bill insurance, write "insurance" and provide information below.

IF BILLING INSURANCE/WORKMAN'S COMP/HEALTH PLAN

NOTE: Please leave these spaces blank unless you want us to try billing the patient's health plan. Attach a copy of the prescription, letter of medical necessity, insurance card, and, if available, a copy of the hospital face sheet.

Insurance Carrier _____ Date of Injury _____

Insurance Telephone _____ MM/DD/YYYY

Garment(s) Ordered

Part No.	Description	Qty L	Qty R	Total Qty
06	Glove to Wrist As Is	3	3	6
	2 sets C21 Tan, 1 set C23 Peach			
31	Sleeved Vest, C23 Peach			2
	New measurements attached			
19	Two Legs to Waist, C23 Peach			2
	Omit foot glove, change to soft toe			
32A	Full Face Mask, C21 Tan			2
	Changes: A= +1/2, E=-3/8			
11	Left Anklet	1		1
	new garment, measurements attached			

Please fax price quote to (602) 567-1234
attention of Lisa Mills. Hold order for
approval & P.O. Number

NEVER RESEND OLD CHARTS OR OLD MEASUREMENTS TO REORDER

BIO-CONCEPTS USE ONLY
(Please write nothing in this block)

Download these charts at: www.bio-con.com/custom_garments.php

PLEASE DO NOT WRITE IN MARGINS

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EXISTING PATIENT ORDERS

Bio-Concepts retains all patient records, including orders, letters, measurements, and patterns for a minimum of seven years. The procedure for ordering custom garments for an existing Bio-Concepts patient is very simple. Use **Order Form**, list the garment(s) desired, the quantity, and any changes including new color(s). If new measurements are needed, attach new measurement charts.

- Minor changes are added to the most recent pattern for that patient's garment.
- New measurements result in the creation of a new pattern.

Please do not:

1. **Refax or remail original measurement charts.** Our receiving clerks might process it as a new patient, which would mean creation of a new pattern and a considerable additional delay in shipping your patient's garment.
2. **Reorder by sending a copy of an invoice of the previous order.** In many cases it is difficult for our receiving clerks to determine if it is an order or an inquiry regarding a billing question. Again, shipment of your patient's garment may be delayed.

"As Is" Reorder

A reorder with no changes (except a new color) is considered an "As is" reorder. The example **Order Form** to the left shows a reorder of several garments some with changes and some "As is".

Reorder With Changes

The example **Order Form** to the left shows a reorder of several garments some with changes. Make a simple list of the changes desired. For some special features, including Silon-TEX placement, it may be best to sketch the desired change on a clean **Sketch Pad**.

Reorder With New Measurements

"As is" reorders result in a garment made from the same pattern as the latest previous order for the same garment. Reorders with changes also result in a garment made from the latest pattern, but with the changes added. Eventually, however, most patients will require new measurements and a new pattern. The **Order Form** example to the left indicates that a **#31 Sleeved Vest** is requested according to new measurements attached. Pages 64 and 64 show new measurements for the vest. In order to avoid inadvertently omitting important features included in previous versions of the garment, the therapist notes that all of the options and features incorporated into the most recent version of the same garment are to be carried over to the new version. Otherwise, the new garment would be made with only the features specified on the new measurement charts.

You must respecify all options and features when supplying new measurements for an old garment. Or you may simply write, "All options and features as previous," in the Additional Instructions on the measurement chart. Otherwise the garment will be made only with the features specified with the new measurements.

#31 Sleeved Vest

This is a reorder of a previous garment with new measurements. Two optional features will be changed. Bio-Concepts designers will create a new garment pattern based on the new measurements. Other previous features will be incorporated into the new garment.

We do not automatically carry previous options, features, or measurements forward. If not told otherwise the garment would be made only with standard (default) features. Missing measurements are not automatically filled in from previous orders. We certainly can incorporate previous specifications, but we must be instructed to do so specifically (or generally as is done in this example).

This chart would be accompanied by an **Order Form**.

TORSO MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane
 Last Name First Name
 Bio-Concepts Use Only
 Date 6/25/13 Age 38 Sex F
 Garment color C23
 Insert _____
 Lining _____
 Zipper: ☐ Front or ☐ Back ☐ Hook & loop zipper stop tab
☐ Regular neck
☐ Scoop neck: Distance below sternal notch _____
 Turtle neck: ☐ 3/4" ☐ 1" ☒ 1 1/2" ☐ 2" ☐ 2 1/2"
 Expansion panel: ☐ Left side ☐ Right side
 (default expansion panel location is lateral)
☐ Soft armpit panels (N/C) ☐ Waist hook & loop tabs to attach to pants (N/C)
☐ Mesh armpit panels (N/C)

Refer to the Bio-Concepts Measuring Manual for detailed procedures, additional instructions, and example measuring charts.

Additional instructions or comments:

NOTE: Change axillae panels to linings R&L. Change neck to T-Neck

All other features and options as previous

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 Bio Concepts
 compression garments

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CIRCLE ITEMS ORDERED

Bio-Concepts Use Only:

F =

For a Vest (Items 30A, 31)

required: A, B, C, D, G, H, b, c, d

for adult female: brassiere cup size

torso circumference over breasts

optional: K, k (see illustrations below)

For a Body Brief or Suit (Items 24, 25, 26, 27, 28, 29)

required: All, except K and k

for adult female: brassiere cup size

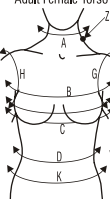
torso circumference over breasts

optional: None

For other torso garments refer to the Measuring Manual

CIRCUMFERENCES

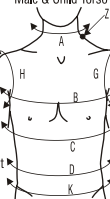
Adult Female Torso



For adult females C is directly below the breasts. Don't forget to take an additional circumference of the torso over the breasts.

CIRCUMFERENCES

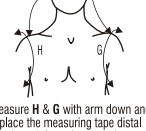
Male & Child Torso



For adult males and children, C is halfway between D and B.

HOW TO MEASURE CIRCUMFERENCES G & H

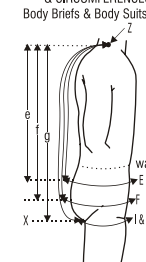
Acromial Process



Measure H & G with arm down and place the measuring tape distal (away) from the acromion.

ADDITIONAL DISTANCES & CIRCUMFERENCES

Body Briefs & Body Suits Only



E and F are evenly spaced between the waist and the gluteal fold.

A	140
B	347
C	303
D	327
E	
F	
GL	142
HR	145
IL	
JR	
K	371
b	75
c	150
d	194
e	
f	
g	
k	12

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

Torso Chart -- REORDER WITH NEW MEASUREMENTS

Sleeves for #31 Sleeved Vest

New measurements for a previous garment. All previous features and options to be retained except we are asked to add an anterior elbow insert in the left sleeve.

New measurements of most of both sleeves are provided, but most of the right sleeve will retain the same measurements as previous.

This chart would be accompanied by an **Order Form**.

UPPER EXTREMITY MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Doe, Jane
Last Name First Name
Date 6/25/13 38 F

Garment color C23

Insert anterior elbow left only

Lining _____

Left arm zipper: ☐ Dorsal ☐ Palmar ☐ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Length (if not full) _____

Right arm zipper: ☐ Dorsal ☐ Palmar ☐ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Length (if not full) _____

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:

Sleeves for vest
new measurements only
features and options
as previous except add
anterior elbow insert.

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CIRCLE ITEMS ORDERED

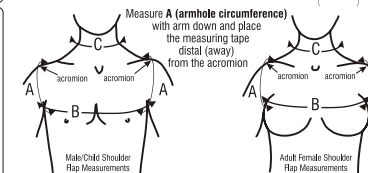
Bio-Concepts Use Only: F=

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.



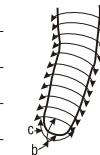
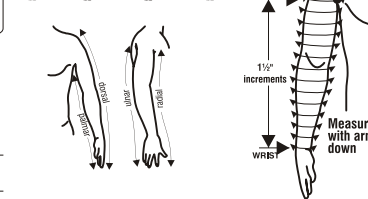
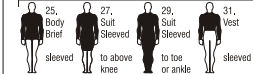
Sleeves



Sleeves for Gloves & Gauntlets



Sleeves for Briefs, Suits, & Vests



Stump Measurement

STUMP	LEFT	RIGHT
b		
c		

Stump cover style: ☐ Orange peel
☐ Insert

PLEASE DO NOT WRITE IN MARGINS

	FROM WRIST or AXILLA	LEFT ARM	RIGHT ARM
0		12 ¹	12 ³
1 1/2		11 ⁰	11 ⁷
3		10 ⁷	11 ²
4 1/2		10 ⁰	10 ⁰
6		9 ⁵	
7 1/2		9 ⁶	
9		9 ⁶	
10 1/2		9 ⁰	
12		8 ⁴	
13 1/2		7 ⁴	
15		6 ³	
16 1/2		6 ¹	
18			
19 1/2			
21			

Same

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

Upper Extremity Chart -- REORDER WITH NEW MEASUREMENTS

Omitting the band at the wrist for a lymphedema patient is indicated in order to avoid compromising lymph fluid return. Likewise, extending the glove proximally an additional 1.5 inches is a good idea in order to avoid too narrowly overlapping the sleeve and creating a tourniquet.

Soft Material

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LEFT HAND		RIGHT HAND	
A ₁	6 ₂		
A	5 ₇		
B	7 ₅		
C	1 ₅		
D	2 ₂		
E	1 ₇		
F	2 ₂		
G	2 ¹		
H	2 ³		
I	2 ⁰		
J	2 ⁴		
K	2 ³		
a	3 ⁷		
b	4 ³⁺		
c	4 ⁴		
d	3 ₂		
e	2 ³	1 ⁴	
f	2 ⁶	1 ⁶	
g	3 ²	2 ⁷⁺	
h	3 ²	2 ⁶	
i	2 ¹⁺	1 ⁰	

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

Hand Chart -- LYMPHEDEMA EXAMPLE

CUSTOM GARMENTS FOR LYMPHEDEMA

Lymphedema is a chronic swelling of specific areas of the body due to damage to the lymph system. This condition results from pooling of protein-rich lymph fluid in a compromised lymph vascular system. Bio-Concepts custom pressure garments are highly effective in managing both primary and secondary lymphedema when used in combination with a conscientiously applied comprehensive lymphedema management program.

Manual Lymph Drainage. A light-touch massage to clear lymph paths and stimulate the movement of trapped lymph.

Compression Bandaging. Condition-specific bandages and foam inserts to force excess lymph fluid back into the lymphatic system.

Therapeutic Exercises. Geared to the patient's ability and promoting lymph drainage and optimize range of motion and increased physical strength.

Custom Pressure Garments. To be worn daily to maintain lymph paths established with drainage, bandaging, and exercise.

Lymphedema of the Upper Extremity

The measuring and fitting procedures described in preceding pages apply to custom garments used for many conditions. Here we describe procedures for measuring and fitting a custom garment to be used in managing lymphedema resulting from radical mastectomy. We have worked closely with lymphedema experts to develop a custom garment solution for this patient group. This particular example presumes a patient with lymphedema evident or suspected in the hand and arm, but which does not involve the axilla or any part of the torso, and it presumes that the patient is undergoing regular therapy.

#2 Sleeve to Axilla

- Silicone-lined band at the top to prevent it from sliding down.

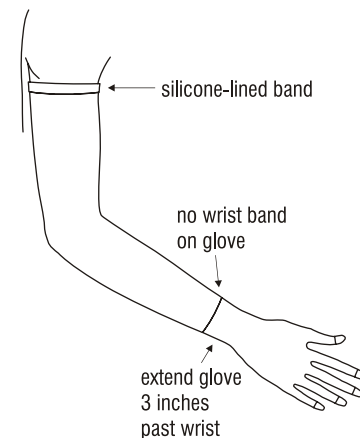
#6 Glove to Wrist

- No elastic band at wrist to avoid a tourniquet effect.
- Proximal end of the glove extended to 3 inches from the wrist instead of the usual 1½ inches to ensure greater overlap with the sleeve.

NOTE: Every option listed above must be specified on the appropriate measuring charts. Additional options may include an insert at the antecubital fossa (elbow crease) to prevent irritation from bunching of the fabric and an expansion panel to accommodate minor fluctuations in measurements.

Now with LuxFab™!

Bio-Concepts is pleased to announce the availability of LuxFab™ our new Dorlastan/Lycra 3-way stretch fabric LuxFab™ is especially useful for compliant patients as a substitute for high-tension wrapping. It's sturdy firm pressure maintains prescribed pressures well throughout the day and throughout the life of the garment. Please call for pricing information.



Typical LuxFab™ lymphedema sleeve with glove combination

Left Hand Tracing Guide -- LYMPHEDEMA EXAMPLE

LEFT HAND TRACING GUIDE

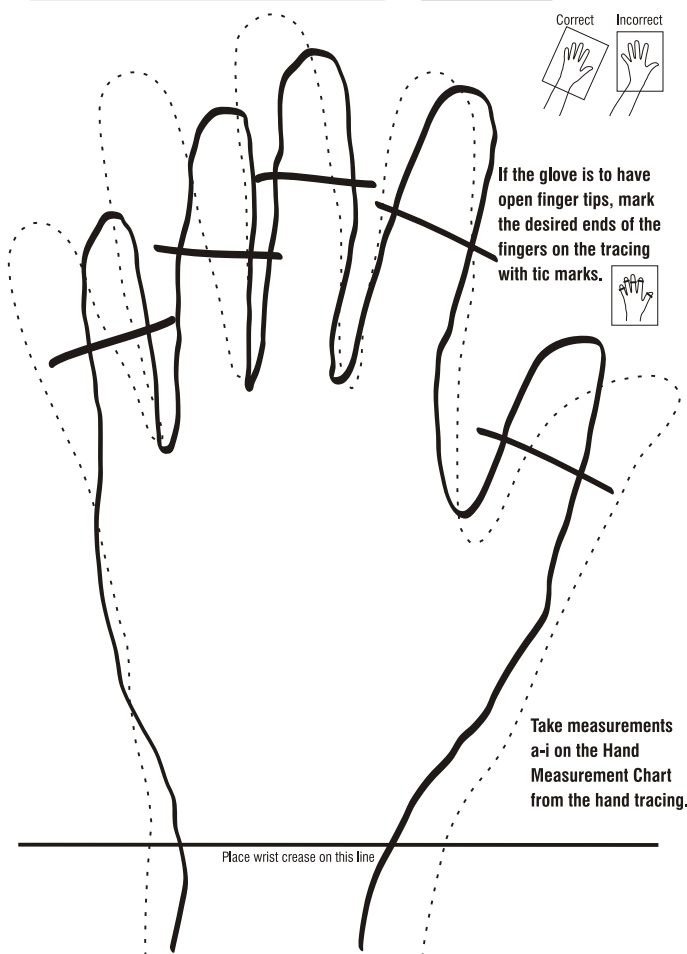


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REQUIRED in conjunction with HAND MEASUREMENT CHART • Position and trace patient's hand within outline

Patient Doe, Jane

Date 06/07/2013

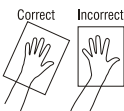


If the glove is to have open finger tips, mark the desired ends of the fingers on the tracing with tic marks.



Take measurements a-i on the Hand Measurement Chart from the hand tracing.

Place wrist crease on this line



Please do not send a hand tracing without a scale



Draw a 3-inch long line in this box

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Left Hand Tracing

Open finger tips are indicated by lines drawn across the digits.

#2 Sleeve Wrist to Axilla

Requested Features:

1. insert at the antecubital fossa (elbow crease) to prevent discomfort of material bunching
2. expansion panel to facilitate donning and to accommodate fluctuations in measurements
3. silon-TEX lining on the elastic band at the top of the sleeve to keep it from sliding down

LuxFab™ material is an excellent fabric to use for compression garments in managing lymphedema. The three-way stretch gives it a responsiveness that patients find very easy to wear.

UPPER EXTREMITY MEASUREMENT CHART

Bio-Concepts Custom Pressure Garments are available only under Physician's Order

Patient Do, Jane
 Last Name First Name
 Date 06/07/2013 38 F

Garment color C23

Insert Anterior elbow

Lining Silon top band

Left arm zipper: ☐ Dorsal ☐ Palmar ☐ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Length (if not full) _____

Right arm zipper: ☐ Dorsal ☐ Palmar ☐ Ulnar ☐ Radial
☐ With hook & loop zipper stop tab

Length (if not full) _____

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:

LuxFab

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CIRCLE ITEMS ORDERED

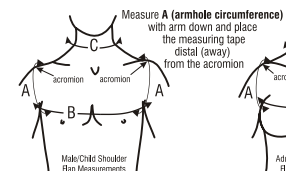
Bio-Concepts Use Only: F=

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.



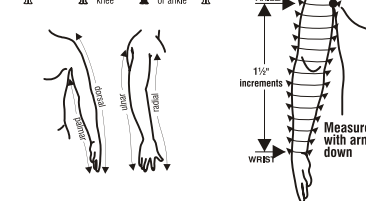
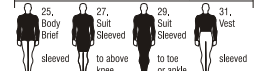
Sleeves



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	5 ⁷	
1½	6 ⁰	
3	7 ⁰	
4½	8 ⁰	
6	8 ⁶	
7½	9 ⁰	
9	9 ⁰	
10½	8 ⁷	
12	9 ⁴	
13½	10 ³	
15	10 ⁴	
16½	11 ⁰	
18		
19½		
21		

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NOTE: An insert is where we replace the self material of the garment with a piece of soft stretchy **Insert Material** (see page 11). It is not something that is placed between the garment and the skin of the patient.

Upper Extremity Chart -- LYMPHEDEMA EXAMPLE

The example charts on pages 66 and 68-69 include a **Hand Measurement Chart** and **Hand Tracing Guide** for the **Glove to Wrist** and an **Upper Extremity Measurement Chart**. Include the **Order Form** and be sure to indicate the correct diagnosis by checking the box labeled "Lymphedema".

The Silon-TEX band at the top of the sleeve eliminates the need to attach the sleeve to a shoulder flap. If lymphedema is evident in the axillary region or near the acromial region, then a **10A Shoulder Flap** would be necessary. A **10A Male Shoulder Flap** would be used for a patient with a complete mastectomy, while a **10A Female Shoulder Flap** would be indicated for the patient with partial mastectomy, reconstructed breasts, or prosthetic breasts. In some cases the lymphedema becomes prevalent throughout the upper torso, on one or both sides. For these patients a **#31 Sleeved Vest** is needed.

Our standard glove construction includes an elastic band at the proximal end. This band is not required when used in combination with a sleeve, and can, for some lymphedema patients, cause painful constrictions at the wrist.

Please note the way the measurements are recorded and the specifications are given for the various options and features. Keep in mind that this protocol works well with many post-mastectomy lymphedema patients, but numerous alternative configurations are available which may work even better for your patient.

Lymphedema of the Upper and Lower Torso

Injury, accidental or purposeful removal, or congenital absence of lymph nodes anywhere in the body may result in the potential for lymphedema. Shoulder regions in the upper torso, the lower torso, and upper thighs adjacent to the groin are frequently affected by lymphedema.

Lymphedema of the Upper Torso

In a few cases the upper extremities may be clear of lymphedema while the adjacent torso is heavily involved. In these cases a **#31 Sleeved Vest**, with one or both sleeves attached is preferred over a simple **#10A Shoulder Flap**. The purpose of the **Shoulder Flap** is to hold up a sleeve, it is not intended to apply therapeutic pressure to the torso.

Lymphedema of the Lower Torso

Lymphedema of the lower torso and upper thighs would be best managed with a **#19 Two Legs to Waist**. In a few cases it may be possible to use a **#23 Brief Two Legs to Above Knee**, but unless compression is applied from regions well distal of the source of the lymphedema, the garment may prevent movement of lymph fluid towards lymph nodes; the opposite of what is intended.

Lymphedema of the Lower Extremity

Custom pressure garments for lymphedema of the feet, ankles, and lower legs may be managed with a comprehensive treatment program similar to that used to treat post-mastectomy lymphedema.

The following lists the garments and features we have found works best for this patient group:

#12 Stocking to Knee (or #13 Stocking to Thigh)

- Silicone-lined band at the top to prevent it from sliding down.
- Medial zipper.
- Anterior ankle insert of the same stretch fabric to prevent irritation of bunching fabric in the ankle crease.
- Posterior expansion panel may be needed for some patients who fluctuate measurements and need extra assistance in donning the garment.

For the adult patient, the lower extremity lymphedema garment is most effective when made using Regular Material or LuxFab™. For some patients, the standard 1 inch band lined with Silon-TEX at the top of the stocking may not be enough. You should consider requesting a 1½ or 2 inch wide band instead.

Glove to Wrist
Sleeveless Vest
Sleeves Wrist to Axilla

In this example four garments have been returned for alteration: a left Glove to Wrist, Sleeved Vest, and two Sleeves Wrist-Axilla.

We are requested to contact the patient for payment, but we are to send the altered garments to the facility.

Include the instructions with the garment when you send it to us. Do not fax the instructions separately. Nothing can be done until we receive the garment to be altered.

[illegible]

OSHA regulations require garments returned for alterations must be laundered prior to returning in order to ensure a safe workplace for our alterations staff. Thank you for your consideration.

CUSTOM GARMENT ALTERATIONS

Elective Alterations

Elective alterations are a simple and inexpensive means of extending the life of a custom made pressure garment. Most garments can be altered to achieve better fit for a patient who has gained or lost weight and a garment can sometimes be altered to include a feature which was not thought to be necessary when first ordered. We can add zippers, shorten garments, and add material to garments.

In order to ensure a safe and healthy workplace environment, OSHA rules mandate that any garments sent to us for alterations must be laundered first.

Enclose an **Order Form** with the garment. Make sure your instructions are specific. In many cases you will be able to use a ball point pen to mark the garment exactly where the altered feature is to be placed or changed. For a garment that is too loose on a patient who has lost weight, pinch the fabric between your index finger and thumb so it stretches tightly and make a mark on both sides of the pinch. Continue all the way up and down the garment as needed. For a garment that is too tight on a patient who has gained weight, we usually add an insert or expansion panel and design it to add circumference to the problem area. We will need to know how much to increase the circumference.

Not all desired alterations can be made as requested. For example, it is not practical to increase or decrease all of the measurements of a glove. It would be much better to simply make a new glove. It is technically feasible to increase the length of a sleeve, but there would be a seam where the new material is joined to the old. Many patients would object to that, and for the lymphedema patient, in particular, circumferential seams may tourniquet the limb, impeding the flow of lymph that was intended. Please call and speak with our alterations specialists if you have an idea for a garment alteration, but would like us to confirm that it is feasible and will accomplish your therapeutic goals before you send it.

There is a fee for elective alterations for each garment. In addition, any new features incorporated into an altered garment would also be charged.

Warranty Alterations

The procedure for returning a garment for warranty alteration or replacement is the same as above. Please describe the problem and why the garment qualifies for a warranty replacement or alteration. If the garment cannot be altered to correct the mistake (for example, a glove that is too small in all dimensions) a new garment will be constructed. In most cases we will have to ask that you return the garment so that we can determine the cause of the problem.

Our warranty covers defects in workmanship, materials, and design, for 30 days from the time the patient receives the garment. If you believe a garment qualifies for a warranty alteration or replacement please call right away.