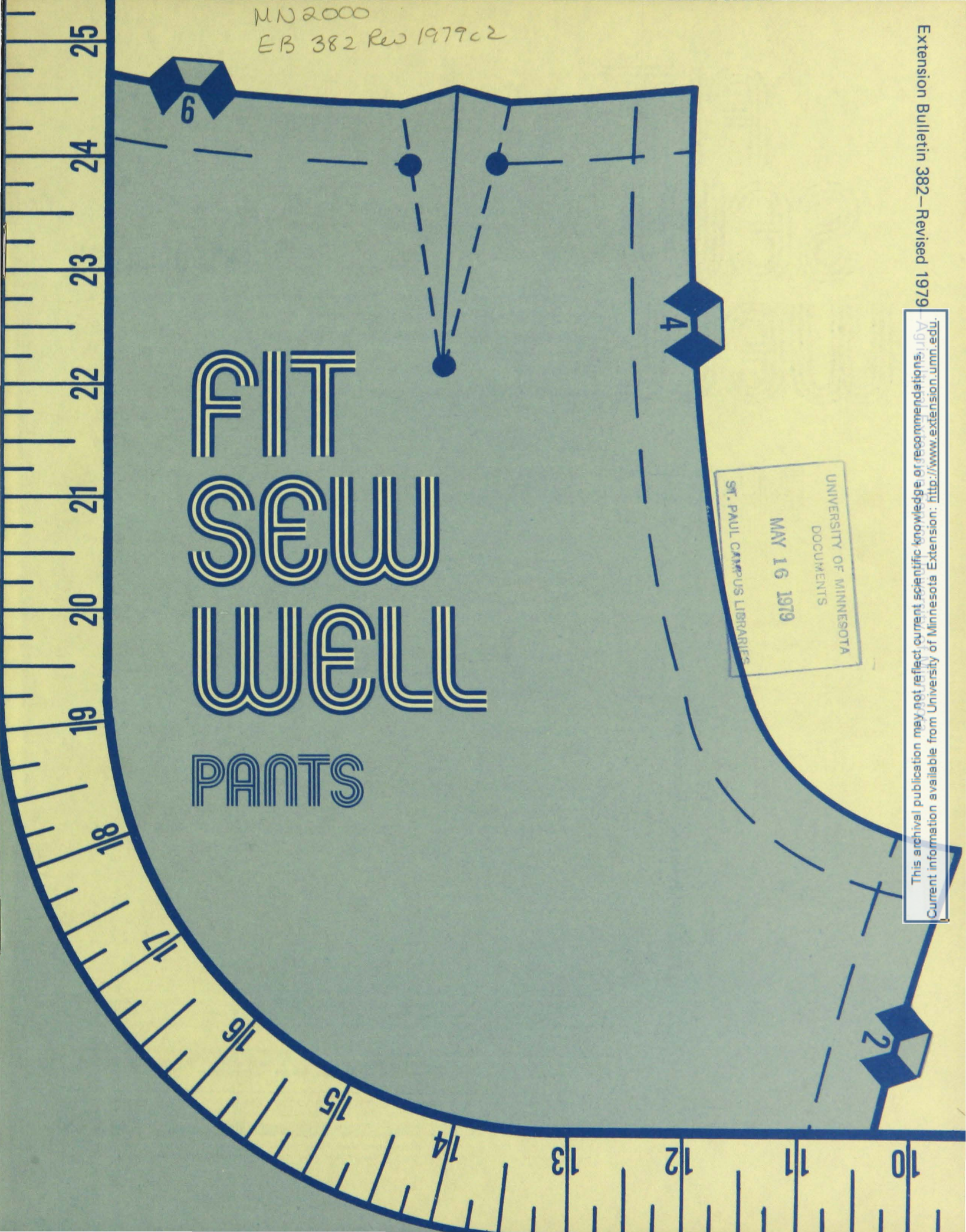


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FIT SEW WELL PANTS

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FIT SEW WELL PANTS

INTRODUCTION

Every woman who wears pants wants them to look good and feel comfortable when she stands, sits, or walks. You can make comfortable garments if you start with accurate body measurements and an honest analysis of your body type and posture. After measuring and analyzing your figure you can make the needed adjustments on a basic pattern and check them out on a test garment. When you have achieved the desired fit, you can use your basic pattern to make all the style variations; shorts, flares, cuffs, hipsters, or any style in current fashion.

Supply List

Materials and tools you will need (listed in the order you will use them):

To take body measurements:

- Narrow belt
- Cord or string (about 3 yards)
- Tape measure

To adjust pattern:

Basic pants pattern from one of the commercial pattern companies (fitted at natural waistline, waistline darts front and back, straight leg or slightly tapered)

Unglazed, white shelf paper or wrapping paper (about 2½ yards)

Tracing wheel and dressmaker's carbon

Weights (such as paper weights, heavy ashtrays, books, stones)

Ruler

Drafting triangle

Colored pencils

Transparent tape (be sure you can write on it with a pencil)

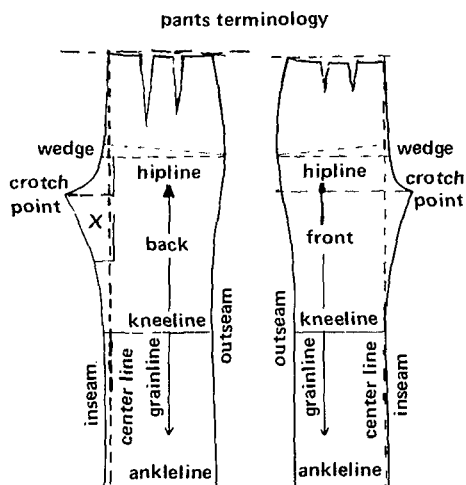
Miscellaneous sewing supplies including pins and shears

To make test garment:

Plain color, inexpensive, woven fabric in the amount required on pattern envelope for your size and fabric width or plaid or stripe (on grain)

Contrasting thread

Sewing machine

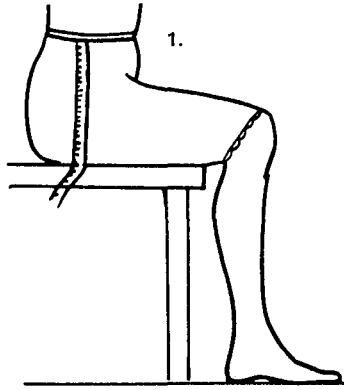


Wanda Johnson, former instructor, University of Minnesota expresses her appreciation to Mrs. Jan Minott, clothing instructor, Adult Education, University of California Los Angeles, for her permission to use material from her book *Pants and Skirts Fit for Your Shape*, Extension Bulletin 382 revised by Lois Goering, Extension Specialist, Textiles and Clothing, University of Minnesota.

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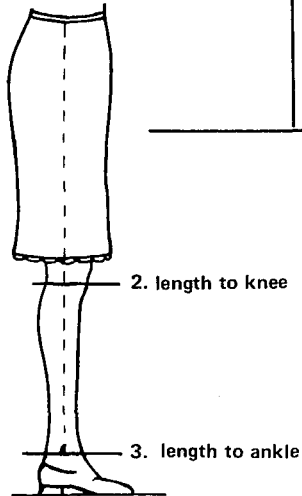
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BODY MEASUREMENTS



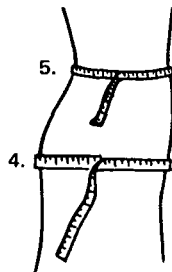
Wear a slip when having your measurements taken. If you expect to wear a pants girdle with the pants you will be making, wear one while being measured. Place a narrow belt or string around the natural waistline. Take all measurements from the bottom of the belt. Record your measurements in the Personal Pants Pattern Adjustment Chart provided.

1. Crotch depth: The person being measured should sit on a hard, flat surface, such as a table. Measure both sides of the body. Place the tape measure at the bottom of the belt at the waistline. Follow an imaginary sideseam straight to the table top and record the measurement for each side.



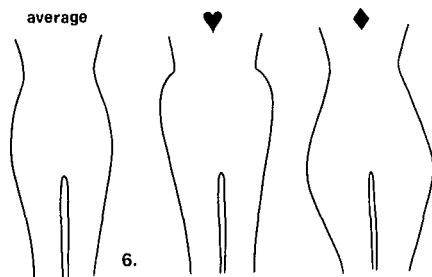
2. Length to knee: Measure from the high hip side. Place the tape measure along the side of the figure where a side seamline would be located and measure from the bottom of the belt at the waistline to the middle of the knee.

3. Length to ankle: Continue the tape from bottom of belt at waistline, past knee, to just below the anklebone.

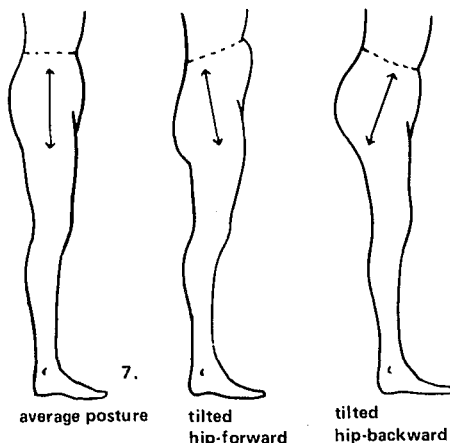


4. Hip circumference: Tie a cord around hips at fullest part of seat. Keep the cord level with the floor. Measure where cord is tied.

5. Waist circumference: The person being measured stands relaxed. Measure at natural indentation, at the point where body bends sideways.



6. After measurements are taken you must analyze your figure to achieve the most accurate fit. Hip types are described as average, heart shape, and diamond shape. Circle your type on the adjustment chart.



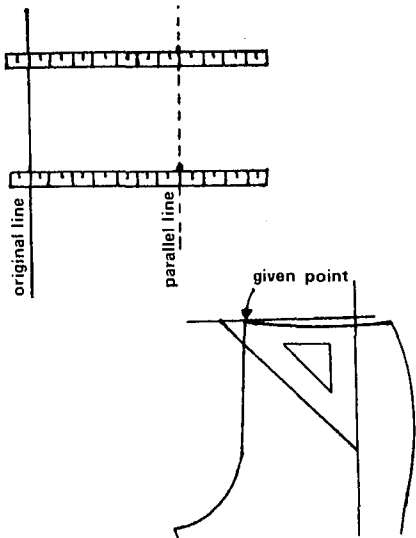
7. Posture types are described as average, tilted hip forward, and tilted hip backward. Circle your type on the adjustment chart.

Selecting Pattern Size

Purchase the size pants pattern closest to your hip circumference measurement. If your measurement falls between the two sizes, select the smaller size if you are small boned or the larger size if you are large boned.

Some patterns combine pants with a jacket, vest or tunic top and will be sold by bust measurement. Patterns that are pants alone will be sold according to waist measurement. For the best fitting pants always choose according to your **hip measurement** since that is the most important area of fit.

PANTS ADJUSTMENT LINES



To maintain accuracy in the pattern outline and grainline, draw all adjustment lines parallel or squared to the grainline.

Parallel and Squared Lines

Parallel lines - To make parallel lines, measure an equal distance at two points from a straight line and put a dot at each point. Then place a ruler at these two points and draw the new line which will be parallel to the first line.

Squared lines - You can make squared lines by using a triangle provided in the study guide. Place one of the two short sides evenly and accurately on a straight line. Place the other short side on a given point or measurement. Draw a line from the straight line through this new point to form a right angle at the intersection of the two lines. Your line has now been squared from another line at a given point.

(It may be necessary to extend the grainline on the pattern piece in order to square a line from it at the required measurement or point.)

Adjustment Lines

Trace a copy of the basic pants front and back pattern pieces onto plain paper. Trace along the stitching lines, not the cutting lines. Before you adjust the pattern place these lines on your traced copy of the pattern **FRONT**:

Grainline - extend the full length of pattern (front and back)

Crotchline - square at the crotch point

Hipline - about 3 inches above the crotchline

Kneeline - halfway between hipline and ankleline

Draw your adjustment lines on the copy of the **front** pattern piece. Use one of your colored pencils for the A, B, C, and D lines. The colored lines will make it easier for you to remember which lines will be cutting lines for adjusting the pattern.

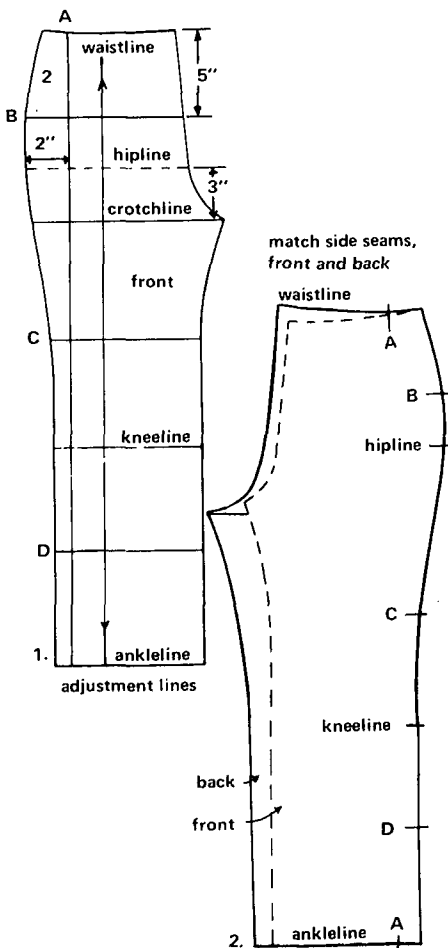
A line - 2 inches in from sideseam at hipline

B line - 5 inches down from waistline

C line - halfway between crotchline and kneeline

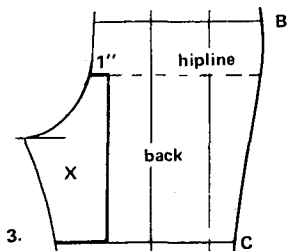
D line - halfway between kneeline and ankleline

Number section 2 that is created by lines A and B at sidewaist. (Diag. 1)



Place **BACK** pattern on top of front, match side seamlines together and mark off all lines, except crotchline, at the sideseam. Mark each end of the A line. Square the lines on the back pattern to the points marked. Square the crotchline through the crotch point area only. (Diag. 2)

Section X - On the **BACK** pattern draw a line 1 inch long on the hipline. Draw a second line to the C line parallel to the grainline. Draw a third line back to the in-seam along the C line. Label this section X. (Diag. 3)



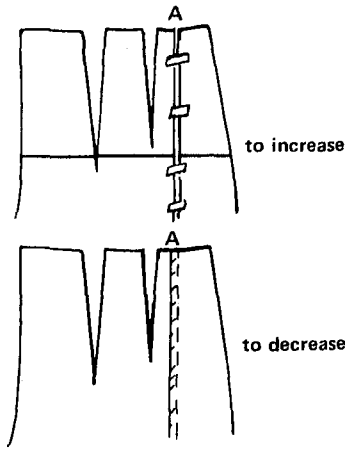
GENERAL RULES FOR PATTERN ADJUSTMENT

Make all adjustments by cutting the pattern apart on the adjustment lines and spread or overlap the pattern sections an equal distance vertically or horizontally.

Increasing or Decreasing

To increase: Cut the pattern apart on the line(s) to be used for one adjustment. Place a strip of paper underneath, securing it with tape. Draw a parallel line on this strip to indicate the desired amount of increase. Tape remaining pattern section in place along this line. True the seamlines.

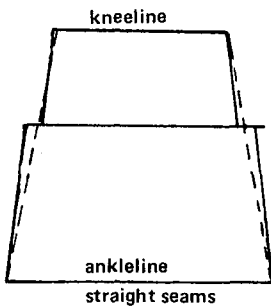
To decrease: Cut the pattern apart on the line(s) to be used for one adjustment. Rule a line from one of the cut edges the amount the pattern is to be decreased. Overlap the section and tape in place. True the seamlines.



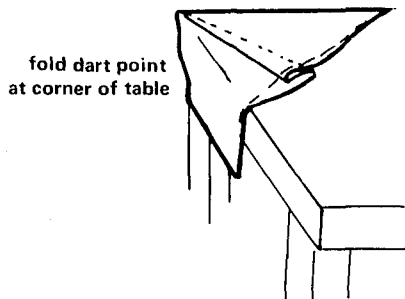
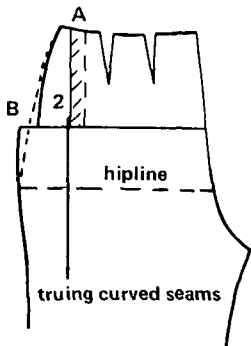
Truing Seamlines

Whenever a change in a pattern piece causes an uneven seamline you must blend the seamline jog to make it even again. This is called "truing."

Straight seams: True in a straight line from beginning point to ending point on the seamline.



Curved seams: True from end points to the midpoint of the jog that has been created. Use the curve of the original pattern as a guide.

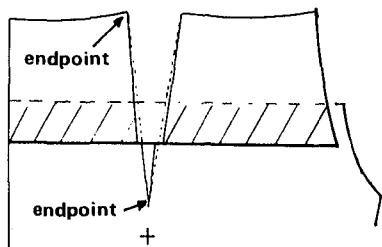


Darted seams: Fold the dart closed in the pattern as it would lie in the finished garment. Place the point of the closed dart on the corner of a table, allowing the seamline to lie flat and true according to the rules for straight and curved seams.

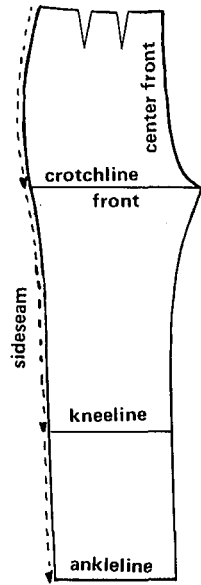
Truing darts

When you change dart stitching lines because of an adjustment, you must true the dart stitching lines following the same techniques as for seams. True a straight dart from the point of the dart to the end point at the seamline.

True a shaped dart from the dart end points to the midpoint of any jog that has been created. Use a French curve or the dart curve on the original pattern.



PANTS ADJUSTMENTS



Follow the sequence of adjustments listed. **Adjust the pants front first**, then adjust the same amount on the back pattern. Use your measurements for the **high hip side** if you measured differently right and left. Cut the pattern apart on the A, B, C, and D lines to make any necessary adjustments. Move pattern sections parallel or perpendicular to the grainline when increasing or decreasing the pattern.

Adjustment One: Crotch depth

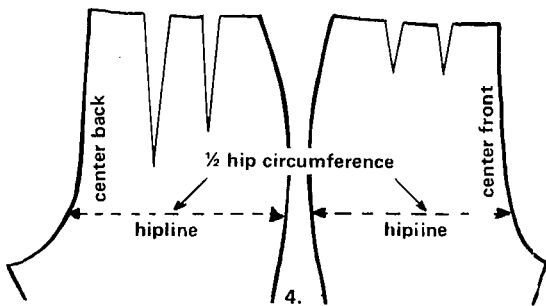
Apply your measurement plus ease along front side seam. Adjust along the B line.

Adjustment Two: Length to knee

Apply your measurement along front side seam. Adjust along C line.

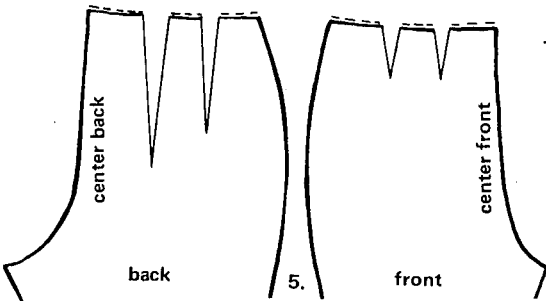
Adjustment Three: Length to ankle

Apply your measurement along front side seam. Adjust along D line.



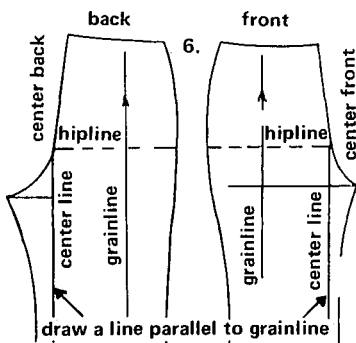
Adjustment Four: Hip circumference

Add ease to your measurement. Measure the front and back patterns along the hipline and multiply by two. Compare the two measurements and adjust for any differences along full length of the A line. Divide the amount of difference to be adjusted by 4. Adjust the front pattern and the back pattern each 1/4 of the total change.



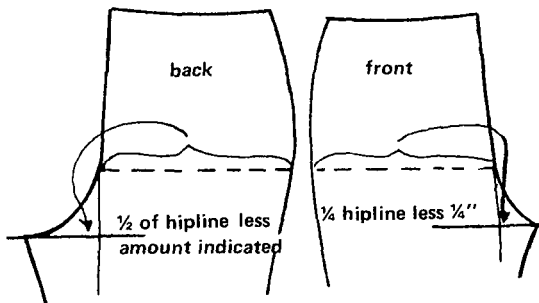
Adjustment Five: Waist Circumference

Add a minimum of 1 inch of ease to your measurement. Measure the pattern pieces along the waist curve omitting the dart spaces in the measurement. Compare the measurements and adjust for any differences by moving section 2 in or out evenly. Divide the amount of difference to be adjusted by 4. Change the pattern front and back 1/4 of the total amount. All heart shaped hip types and extremely tilted hip forward posture types require more than 1 inch of waistline ease.



Adjustment Six: Crotch points

Draw the center front and center back lines down from the crotch seams at the hipline to be parallel with the grainline. Measure along the crotchline to determine any necessary change.



The **BACK** crotch point should measure one half of the back hip pattern measurement on the adjusted pattern less any amount indicated below:

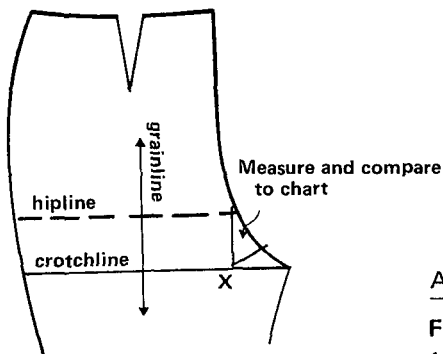
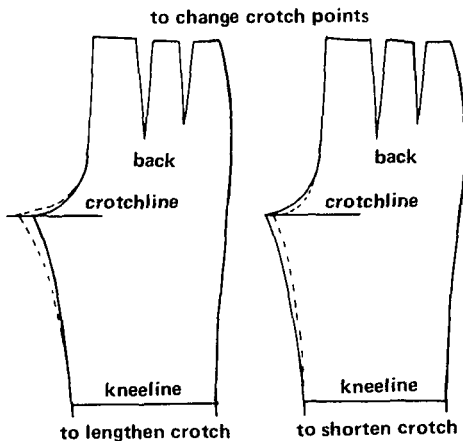
- For average, heart, or diamond shapes of small to medium hip size subtract 1/2 to 3/4 inch.
- For average, heart, or diamond shapes of large hip size and tilted hip backward posture types, subtract nothing.
- For average, heart, or diamond shapes with tilted hip forward posture type, and flat-seated heart shapes, subtract 1/2 to 1 inch.
- For figures with full front thighs, never subtract more than 1/2 inch.

The **FRONT** crotch point should measure one fourth of front pattern hip measurement on the adjusted pattern less 1/4 inch. Individuals with full front thighs should not subtract the 1/4 inch.

If a change is required, measure along the crotchline and redraw the crotch curve.

To redraw the crotch curve, check chart below for your hip size and circle the correct amounts for front diagonal and back diagonal.

Mark point X on pattern as shown below. Draw a line at a 45° angle from point X out to crotch curve. Compare the length of this line with the diagonal amount on chart. Correct the length of the diagonal and redraw curve.

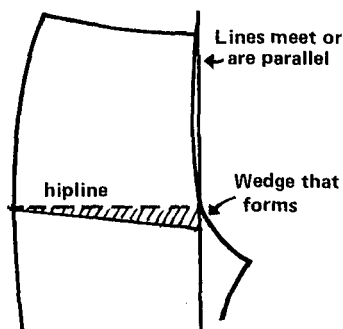
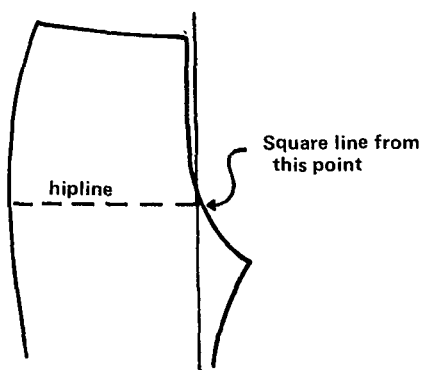


Hip Size	Front Diagonal	Back Diagonal
Small	7/8" to 1"	1-1/8" to 1-1/4"
Medium	1-1/8"	1-3/8"
Large	1-1/4" to 1-3/8"	1-1/2" to 1-5/8" or more

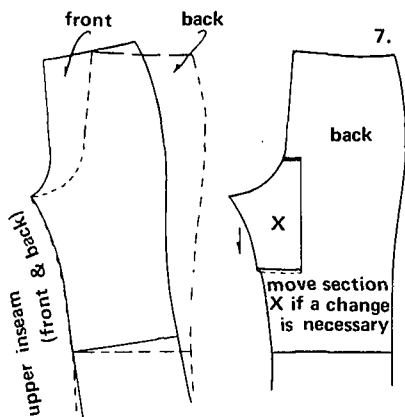
Adjustment Seven: Front and Back Wedges

Front and Back Wedges

- Square a line from the point where the hipline meets the center front (or center back) seam line.
- Cut on center front (or center back) seamline to the hipline. Next, cut across on hipline to side seam.
- Drop this entire section down so that the center front (or center back) seamline meets or is parallel to the squared line you drew in.
- Measure overlap in the wedge that forms.
- Compare overlap to chart using appropriate measurement for correct posture type. If there is no difference, put pattern back together as it was. If there is a difference, adjust the wedge.



Posture Type	Figure Size	Front Wedge	Back Wedge
Average Flat	Small, medium front and back	1/2"	1/2"
Average	Medium, large Very large	1" 1 1/2"	1" 1 1/2"
Flat seated or tilted hip forward	Small, medium or large Very large	1" 1 1/2"	1/2" 1"
Tilted hip backward	Small to medium flat tummy Medium, large	1/2" 1"	1" 1 1/2"



check to see if these seams have same relation to each other as in original

Adjustment Eight: Section X

If you change the crotch points, compare the front and back inseams together, and if necessary move section X up or down until the inseams have the same relationship as they did in the original pattern. The front inseam should have 1/4 inch ease allowed.

When you have completed the pattern adjustments, true all of the changed seamlines. Compare corresponding seams so they will match when constructed.

How to Construct a Test Garment

1. Use plain color, firmly woven, inexpensive fabric such as muslin, broadcloth, denim or a stripe or plaid (on grain).
2. Preshrink and straighten the fabric.
3. Cut pattern pieces. Allow 5/8-inch seam allowances on the front and back crotchseams. Allow 1-inch seam allowances on the waistline, inseams, and outseams. Add a 2 inch hem allowance.
4. Transfer all seamlines, hemlines, darts, notches, and the crotchline to the fabric with dressmaker's carbon and tracing wheel.
5. Use a long machine stitch to construct the garment.
6. Press seams open. Locate front and back creases by pinning the inseam and outseam together at the ankle, knee, and crotch points. Press crease.

ANALYZING THE FIT

Pants that fit satisfactorily should rest easily against the body from waist to crotch level. Vertical side seamlines should align properly to divide the body in half, becomingly and naturally. There should be no tension strains, wrinkles, sagging, bunching, extra fullness, or tightness in any area. When you wear pants that fit properly you should be comfortable whether standing, sitting, walking, or bending.

Wear the pants you made as a test garment for a day or two. Then make another pair with only two or three changes. Never attempt to assess fit or wrinkles until you are certain that the crotch depth and the hip circumference are adequate. Double check pattern for errors. Do not try to add any style features while you are perfecting your pattern fit.

Wrinkle Chart

Refer to diagrams A through T to recognize possible fitting problems you may have.

A

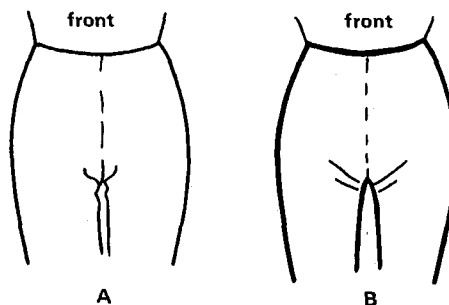
Problem: Rippling on inseams just at or below *front* crotch (usually occurs on figure with large inner thighs).

Cause: Crotch depth is either too short or inseams may have to be let out for ♥ or, ♦ or legs close together.

B

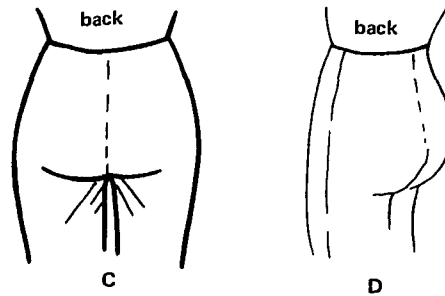
Problem: Tension pulls upward from *front* crotch.

Cause: Crotch depth is too short.



C

Problem: Tension pull below *back* crotch.
Cause: Crotch depth is too short or Section X is not down.

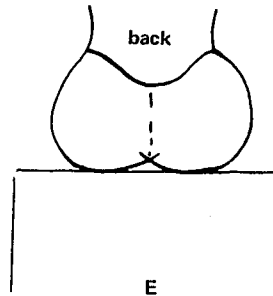


D

Problem: Overfitted seat.
Cause: Crotch depth is too short.

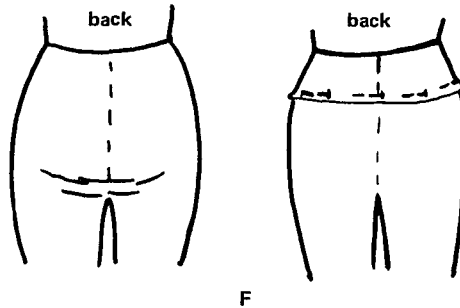
E

Problem: *Back* waist dips down when you sit.
Cause: Crotch depth is too short, back points are too short, or hip circumference is too small.



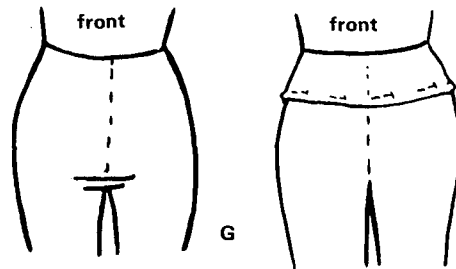
F

Problem: There is a surplus of fabric under the seat that can be picked up. Pin a tuck all around to test.
Cause: Crotch depth is too long.



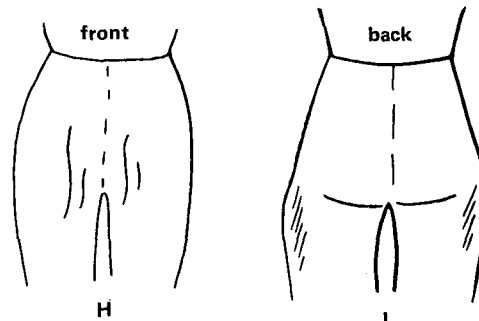
G

Problem: Crotch looks too long or there is a fold below the *front* crotch when you bend forward. Pin a tuck *all* around to test.
Cause: Crotch depth is too long.



H

Problem: Vertical folds or extra fabric at center *front*.
Cause: Hip circumference is too large.



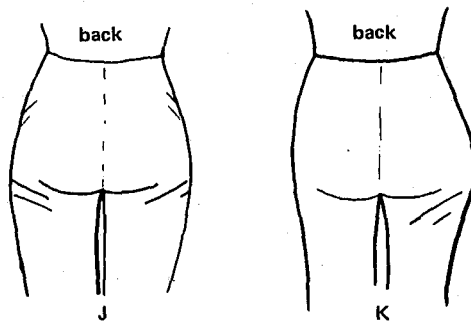
I

Problem: Fabric stands out at sides; pants large.
Cause: Hip circumference is too large.

J

Problem: Tension pulls from sideseam; pants tight.

Cause: Hip circumference is too small.



K

Problem: Tension pull on one side.

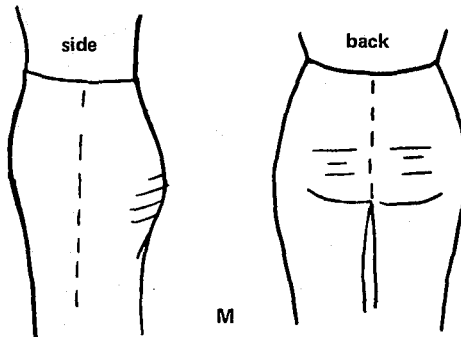
Cause: One thigh larger than other. Let sideseam out from waist to knee on that side.



L

Problem: Fabric pulls across front thighs.

Cause: Back points are too short or hip circumference too small.



M

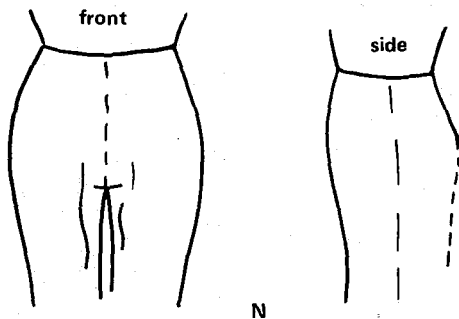
Problem: Fabric pulls tight across back seat or pants pull in under tummy; may pull from back crotch when walking.

Cause: Back crotch points are too short. Check hip circumference also.

N

Problem: Too much fullness in the front crotch area or over the back seat. Pin a vertical tuck over the seat (see side view).

Cause: Back crotch points are too long. Check hip circumference also.



O

Problem: Sad sack appearance; back of pants sag below seat and ripples fall down sides from front to back.

Cause: Front wedge is too narrow or back wedge too wide. (This usually happens when Average wedges are used for the tilted hip-forward posture type.)

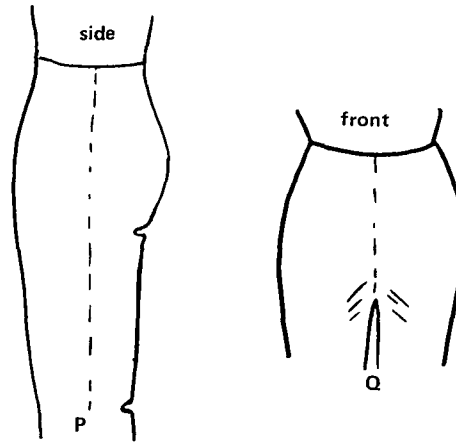
Change the wedge relationship front to back.



P

Problem: Break below seat or dent at *back* knee.

Cause: Front wedge is too wide in relation to back. Figure may be backward hip tilt.



Q

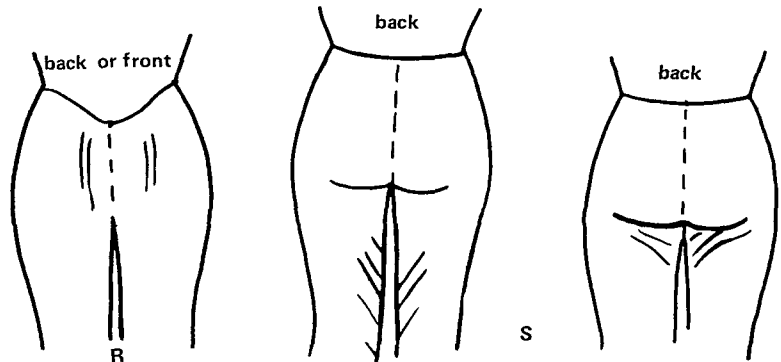
Problem: *Front* crotch appears too long.

Cause: Front wedge is too wide. Make wedge narrower.

R

Problem: Center *front* or center *back* waist is too low.

Cause: Waist depth is too deep at center. Redraw. Incorrect wedge size. Adjust.



S

Problem: Pants legs *fall against* or pull from the inside of the leg.

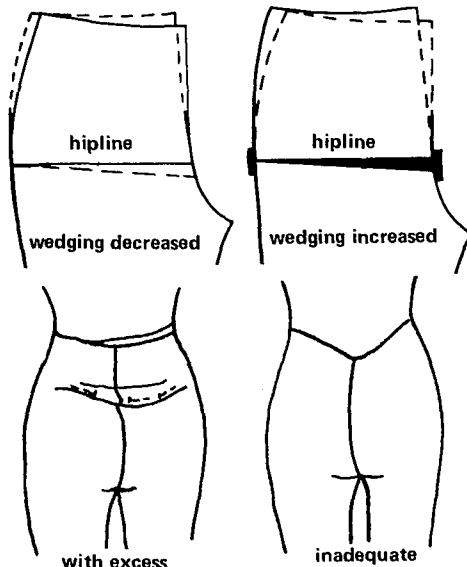
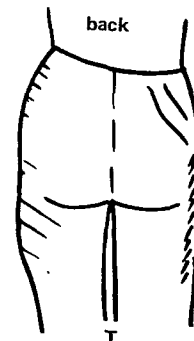
Cause: The legs, knees, or thighs are close together. Many ♥ and ♦ have this problem because the hips are wide from *side to side*.

Let the inseams out and take the out-seams in. Check the waist curve; the pants may be sagging in the back and falling against the inner legs.

T

Problem: The pants are too loose on one side seam and too tight on the other. The pants sag below the waist on the low hip side.

Cause: The pattern was not adjusted for asymmetric hip width and depth.

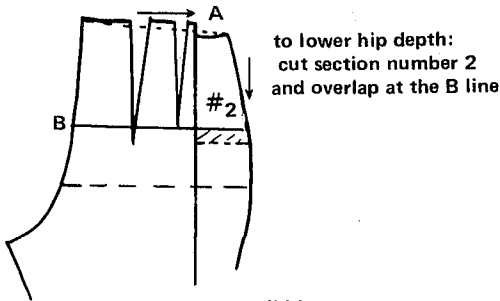


Additional adjustments after fitting

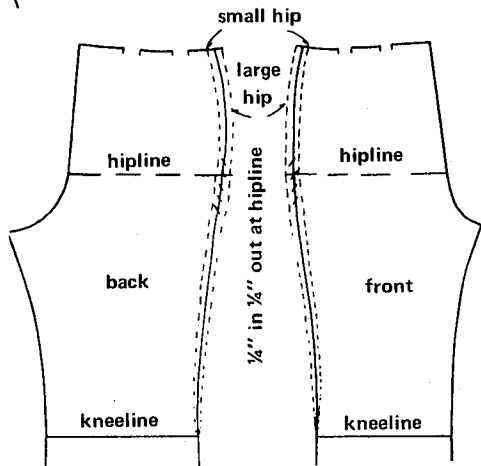
Wedges

The wedge allows adequate length along the center front and center back seam-line of the pants. To change the size of the wedges cut along the hipline from the center, to, but not through, the sideseam, then spread or overlap until you have the size wedge you need. Wedges vary from ½ to 1½ inches depending upon hip size and posture type. Larger hip sizes require larger wedges. Average posture types can use the same size wedge back and front. Forward hip tilts require larger front wedges. Backward hip tilts require larger back wedges.

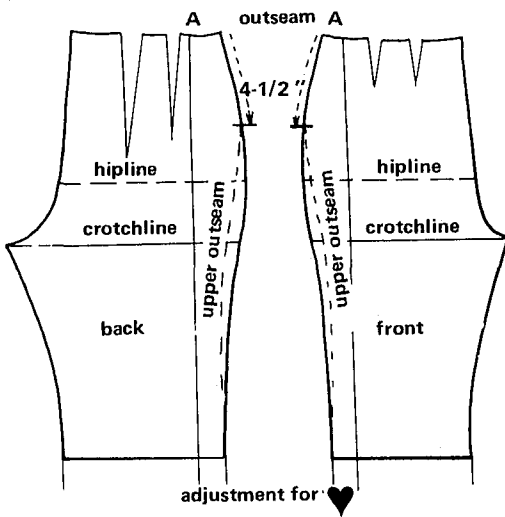
Excess wedge size can be pinned out in a triangular fold of fabric during the test fitting. Inadequate wedge size can be determined when the waistline seam dips at the center seams.



Asymmetric (Figure that is not even, or the same, on both the right and left side).
 To adjust hip depth you can lower the waistline curve on the low hip side by moving section 2 down.



To change hip width, let out sideseam $\frac{1}{4}$ inch on large hip side and take in side-seam $\frac{1}{4}$ inch on small hip side (same for thighs).

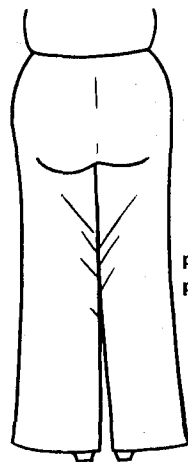


Heart Shape Hips

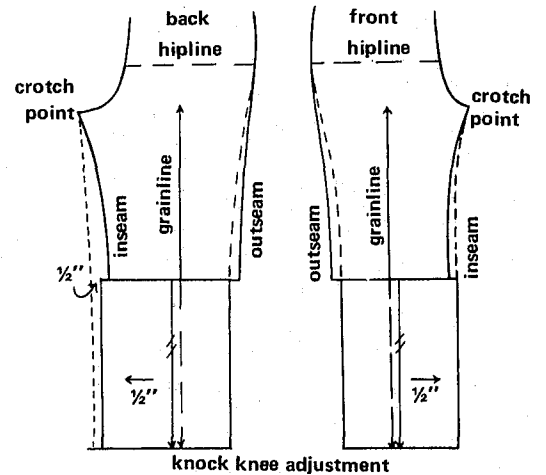
Select pattern size according to your measurement taken $3 \frac{1}{2}$ inches below waist rather than at seat level. When truing the sideseam, true the hip curve from a point $4 \frac{1}{2}$ inches down along the sideseam to the kneeline.

Knockknees; Large Inner Thighs

Cut the pattern along the kneeline and shift the lower leg $\frac{1}{2}$ inch toward the inseam. Add $\frac{1}{2}$ inch on the back ankle and kneelines.

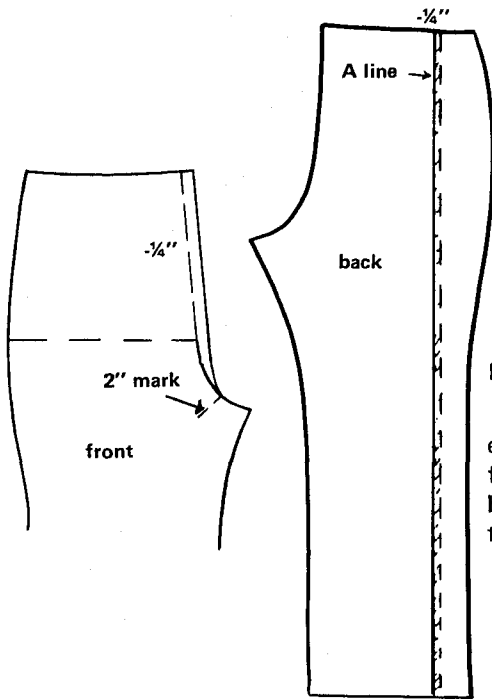


pants before pattern corrections



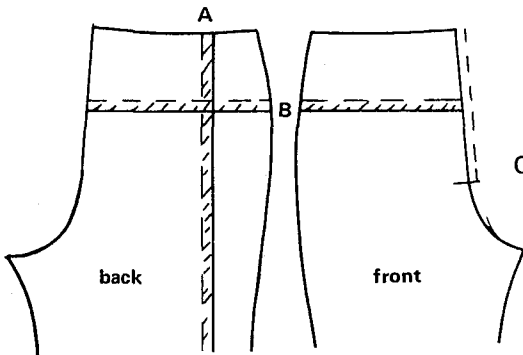
STYLE VARIATIONS FOR PANTS

Once you have your basic pants fitting attractively and comfortably you can adapt the pattern for many style changes without having to purchase a new pattern. To preserve your pattern, always remember to trace a copy of the final, adjusted pattern and make any style changes on the traced copy.

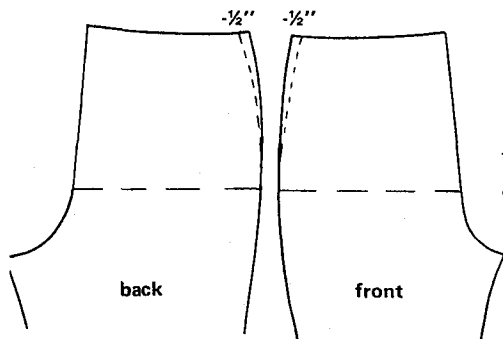


Knit Pants

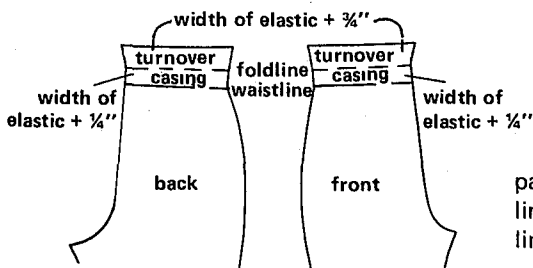
Knit pants do not require as much ease as woven pants. One inch of circumference ease can be removed. On the pants **front** subtract $\frac{1}{4}$ inch parallel to the center front seamline from the waistline to 2 inches above the crotch point. On the pants **back** remove $\frac{1}{4}$ inch by cutting and overlapping on the A line the entire length of the pattern.



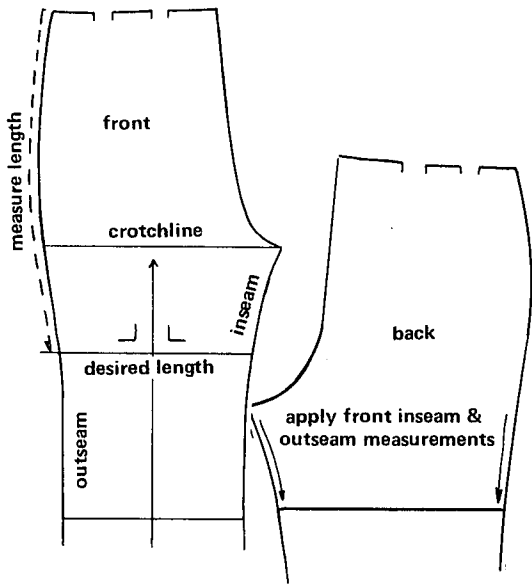
To use an elastic casing you must remove some crotch length from the pattern. Cut and overlap on the B line equal to the width of the elastic to be used.



Before drawing the extension for the elastic casing, remove $\frac{1}{2}$ inch or more ease from the waistline by reshaping the side seams from the $\frac{1}{2}$ inch point to the hipline. Also omit the darts.

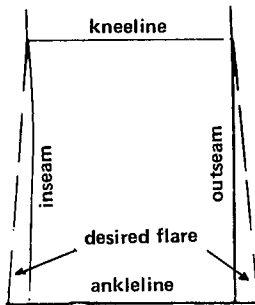


To make a casing draw a straight line from center to side waist point. Draw a parallel line above it the width of the elastic plus $\frac{1}{4}$ inch. Draw a second parallel line above the first the width of elastic plus $\frac{3}{4}$ inch. Fold the pattern on the foldline and trace the center and side seams for the casing end line.



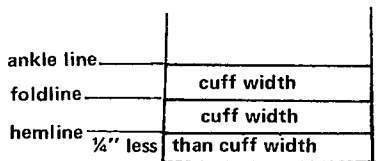
Shorts

On a traced copy of your final pattern, measure along the **front** inseam the length desired for shorts. Square a line from this point to the outseam. Apply the inseam and outseam measurements to the back pattern and draw a line connecting the two points.



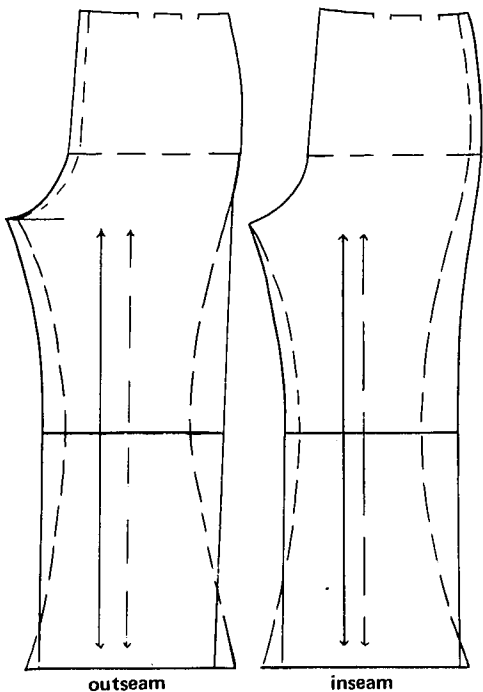
Flares

Measure out along the ankleline from both the inseam and outseam the desired amount of added flare. True the new seamlines from the kneeline to the extended points on the ankleline. Add equal amounts to **both outseams** and **both inseams** to maintain the proper hang of the pant legs.



Cuffs

To add cuffs draw a parallel line below the ankleline the desired width of the cuff and label this new line as the foldline. Draw a second parallel line below the first, the same distance, and label it hemline. Draw a third parallel line for the hem allowance. Its depth should be $\frac{1}{4}$ inch less than the desired width for the cuff. Cuff widths may vary from $1\frac{1}{2}$ to 3 inches. Measure desired amounts between the lines accordingly.



Commercial Pants Pattern Leg Styles

Adjust the leg length of the commercial style pants pattern of your choice, **above and/or below the knee** as required to correspond with your personal basic pants pattern. True the seamlines.

Outseams

With the grainlines parallel, match the sideseams of the commercial pattern with the sideseams of your pants pattern at the approximate hip level. Trace the outseam style lines onto a working copy of your front and back pants pattern.

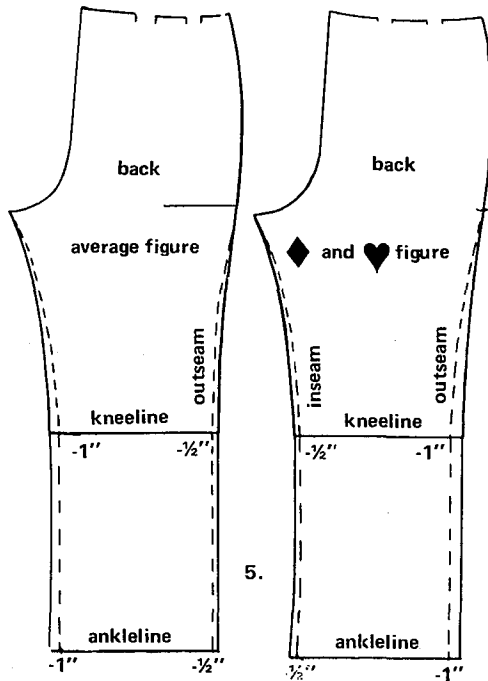
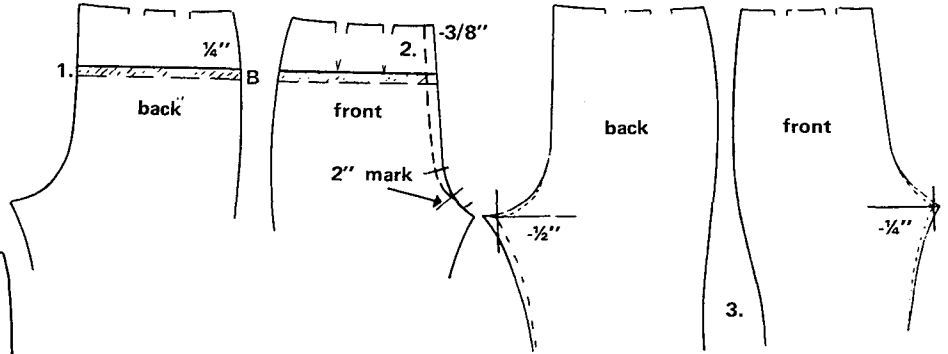
Inseams

Match crotch points and, with the grainlines parallel, trace the inseam style lines onto the front and back of your personal basic pattern.

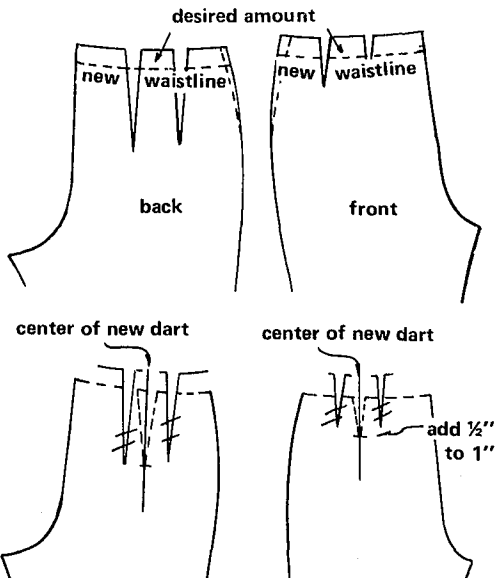
Jeans

On a traced copy of the final, adjusted pants pattern perform the following modifications for a basic jeans pattern.

- f. Shorten front and back crotch depth by overlapping $\frac{1}{4}$ inch on the B line.
2. Remove $\frac{3}{8}$ inch parallel to the center front line, from the waistline to a point 2 inches above the crotch point.
3. Shorten crotch points: $\frac{1}{4}$ inch on the front, $\frac{1}{2}$ inch on the back.
4. Add $\frac{1}{2}$ inch to the back wedge, subtract $\frac{1}{2}$ inch from the front wedge.



5. The legs may also be tapered for a closer fit at the knees and ankles. For average figures taper outseams $\frac{1}{2}$ inch at knee and ankle, taper inseams 1 inch at knee and ankle. Diamond and heart-shaped figures do the reverse, taper outseams 1 inch, taper inseams $\frac{1}{2}$ inch at knee and ankle.



Hip Huggers

On a traced copy of your pattern, measure down on the side and center seams the desired amount below the waistline and draw a new waistline curve. Some side-seam ease may be removed during a fitting for a closer fit over the hips.

If your pattern has more than one waistline fitting dart in the front and back, they may be incorporated into one dart midway between the two existing darts. Make the new dart $\frac{1}{2}$ to 1 inch longer than the original darts.

PERSONAL PANTS PATTERN ADJUSTMENT CHART

FOR _____

	Your Measurement	Ease Needed	Total Needed	Pattern Measurement	Adjustment Needed (+ or -)
Crotch depth Hip Size Small - up to 36½" Medium - 37" - 40½" Large - 41" +		¾" 1" 1¼"			
Length to knee					
Length to ankle					
Hip circumference Average small medium large Heart small medium large Diamond small medium large		1 - 1½" 1½" 2" 1½" 2" 2" 1" 1" 1"			
Waist circumference					

Weight _____

Hip Type average



Posture Type average

tilted hip-forward

tilted hip-backward

Pattern Size _____