

PASSAP[®] abc





ABC of Perfect Knitting

**Patterns
Pockets, Collars
Hints**

PASSAP[®]

Dear PASSAP Friend,

Perfect knitting means knitting true to measurement and if you want to learn it, you will have to start with the fundamentals which in our case are the basic patterns. The main object of this book is to explain to you the principle of calculating stitches and rows to a given measurement in centimeters. Once you know how to set up a basic pattern, you will soon be able to bring a fashionable style into your own patterns while strictly adhering to the individual measurements. You will have no trouble in developing your own ideas of a knitted garment. Our standard rules on depth of armhole, armhole shaping, neck shaping, decreasing for head (cap) of sleeve, raglan decreases, etc. will prove to be a useful help.

With reference to our list of PASSAP sizes: Unfortunately, sizes for garments vary greatly from one country to another. For instance, what is size 38 in one country, may correspond to size 42 or size 14 in another country. It is therefore not possible to set up a list of sizes applicable to all countries. We

found a way out of this problem by giving in our list the individual measurements for eight different PASSAP sizes. If you will compare these measurements with the required body measurements, you will immediately see which PASSAP size comes nearest to the planned garment and what you may have to alter slightly.

An interesting selection of pockets, collars, and various hints – a wealth of experience gathered for you all over the world – will be found in the closing chapters of this book. We would not fail to convey to you illustrations and descriptions of these useful suggestions.

Thus we hope that the «ABC of Perfect Knitting» will help you to become a creative PASSAP artist, capable of developing your own ideas of style and fashion, independent of printed patterns. If we succeed in that, this book has accomplished its purpose.

Yours PASSAP EXPORT

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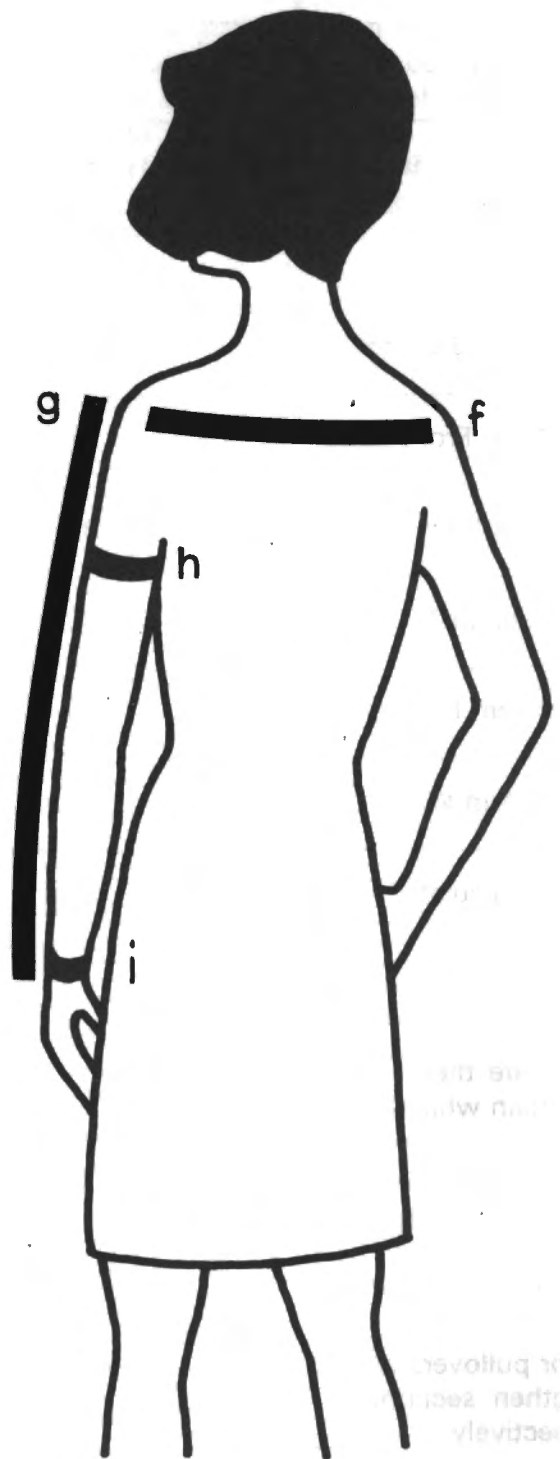
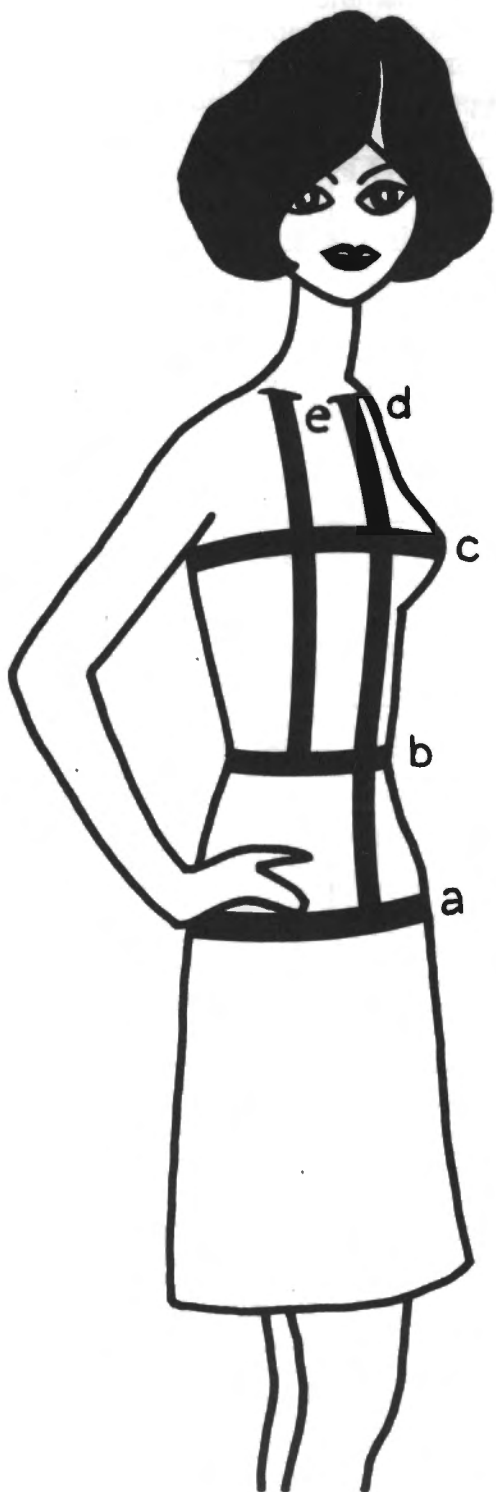
List for PASSAP Sizes in cm

Note: All the measurements contained in this book are given in centimeters. Considering that, before long, this system will also be introduced in Great Britain, we refrained from converting centimeters into inches, but for your information we may indicate that 4 inches equal 10 centimeters. Moreover, a tape measure showing inches on one side and centimeters on the other can be obtained in any department store.

	8	9	10	11	12	13	14	15
Hip Measure, upper*	82	82	84	84	88	92	100	110
Waist	62	62	64	68	72	78	84	92
Bust, actual width	84	86	88	90	94	98	104	110
Length of Front	38	38	39	40	41	42	43	44
Width of Back	34	35	36	37	38	39	40	42
Total Length*	56	57	57	58	59	60	60	62
Outer Arm Length*	50	51	52	53	54	55	56	58
Upper Arm Width, calculated	30	32	34	35	36	37	39	42
Wrist, calculated	18	18	20	20	21	21	22	23

Compare these measurements with the measurement charts in your own country in order to ascertain which PASSAP size corresponds to the size you need.

* For pullovers whose length varies according to style, measure hips where they are widest and lengthen sections A and B below front length by the required additional cms and inches respectively.



or pullover
or other neck
respectively

Chapter 1

This is how to measure for an exact basic pattern

If you take these measurements correctly, you may work out all other measurements from them.

Important:

Measure over light clothing only!

a = Upper hip measure

Measure tightly at the level of desired length of pullover or jacket.

b = Waist

Only when making a skirt, measure around narrowest part of waist. Otherwise merely tie a ribbon around waist in order to determine exact level of waistline.

c = Bust

Actual measurement, taken under the arms and over the widest part of the bust or chest. Allowing for liberty of movement, add:

for long sleeve: 6 to 10 cm

for short sleeve: 4 to 6 cm

when sleeveless: add for seam only

For stocking stitch with fine wool, allow somewhat more and with coarse wool somewhat less. With double-bed knitting, no allowance as a rule is necessary.

d = Total length

(Front with bust difference without shoulder shaping.) Measure from hollow above collar-bone over bust elevation to desired lower edge. Corresponds to length of back from nape of neck.

For dress or skirt, increase total length to desired lower edge.

For total length, the following measurements are standard:

PASSAP sizes 8 and 9 = total length 56 cm

PASSAP sizes 10 and 11 = total length 57 to 58 cm

PASSAP sizes 12 and 13 = total length 58 to 60 cm

PASSAP sizes 14 and 15 = total length 60 to 62 cm

For PASSAP sizes see list on page 3.

e = Front length

First mark waistline with a ribbon. Measure from hollow above collar-bone over bust elevation straight down to waistline ribbon. This measurement includes the necessary extra length to allow for bust. See also remarks on p. 8.

f = Width of back

(Width of shoulder.) Measure from left to right shoulder bone.

g = Outer arm length

With stretched arm, measure from shoulder bone to wrist. From this measure, we obtain: outer sleeve length

less depth of sleeve head

less possible depth of welt

= sleeve seam (piece to be knitted from wrist to beginning of cap)

h = Upper arm width

Measure loosely around widest part of arm above elbow (check-measurement for later reference).

i = Wrist

Measure tightly, adding 5 cm for liberty of movement of welt. For sleeves without welt, allow for seam or desired width.

This is how to draw a basic pattern for a normal figure

Though in the next chapter you will find patterns for different ladies' sizes enabling you to read off your proper measurements, we would like to explain to you now how you can make your own pattern.

For that purpose, you either may trace one of the following patterns and then fill in the corresponding measurements or you may cut a paper pattern in original size. This results in greater accuracy inasmuch as there is a better chance of checking, using the test square.

Our Example:

Basic pattern with set-in sleeve

Assumed measurements for PASSAP size 14:
Total length without shoulder shaping 60 cm. Hip measure 100 cm / actual bust width 104 cm, adding 6 cm to allow for liberty of movement with long sleeves = 110 cm / front length 42 to 43 cm / width of back 40 cm / outer arm length 56 cm.

Paper Pattern

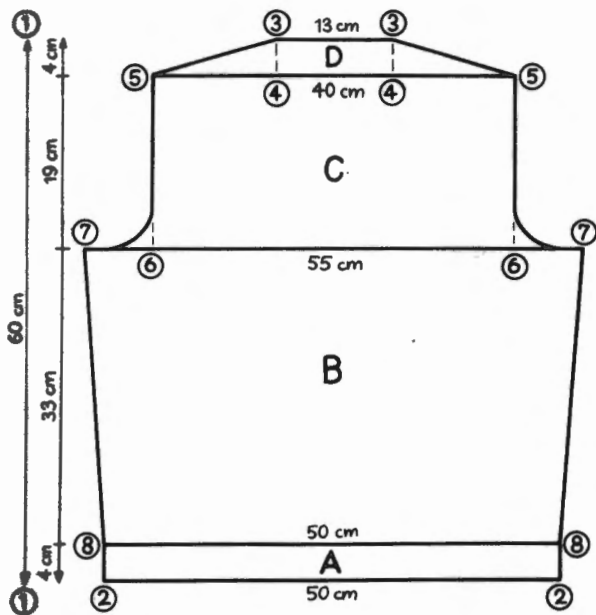
Fold in half lengthwise a piece of paper 60 cm wide and 60 cm long. The fold in centre represents middle line of pullover.

*** Open paper out, draw lines and fill in centimeters (or inches) in accordance with the measurements taken. This is a natural size pattern which may be checked against a worn pullover.

*** You may leave the paper folded up and enter only half of the horizontal lines and one side-contour. When all the measurements have been filled in, cut along the contour and fold paper apart. Now you have the complete pattern in its original size.

Traced Pattern

Put transparent paper (any kind of parchment paper) on pattern and trace all the lines. Then fill in first the centimeters (or inches) which were derived as follows from the measurements taken:



Back

1 to 1 =
Vertical line / total length = 60 cm
 measured at the front = 64 cm less 4 cm
 additional length for bust difference

2 to 2 =
Horizontal line / half hip measure
 = 50 cm
 100 cm ÷ 2

3 to 3 =
Horizontal line / width of neck
 approx. 13 cm
 always approx. 1/3 of width of back,
 40 cm ÷ 3 = 13 or 14 cm

3 to 4 =
Dotted line, vertical /
depth of shoulder shaping = 4 cm
 (rough rule: ladies 4 cm, children 3 cm, babies
 2 cm)

5 to 5 =
Horizontal line / width of back
at shoulder shaping = 40 cm
 enter at level of point 4

5 to 6 =
Dotted line, vertical / depth of
armhole = 19 cm
 The armhole is calculated as follows:
 measured front length 42-43 cm
 less depth of shoulder - 4 cm
 remaining 38-39 cm
 divided by 2 = 19-19,5 cm
 Our example: 19 cm for armhole

Experience shows that with a set-in sleeve, the armhole is at least 16 cm deep (teenager), at the most 22 cm deep (stout figures).

If the corsage should be exceptionally long and require additional centimeters (or inches), they will be added to the part underneath the armhole.

The armhole may also be calculated from width of back, as follows:

Width of back ÷ 2, less 1 to 2 cm, in our case: 40 cm ÷ 2 = 20 cm, less 1 cm = 19 cm.

7 to 7 =
Horizontal line / half bust
width = 55 cm
 i.e. measured bust width plus allowance for
 liberty of movement, divided by 2, 110 cm ÷ 2

8 to 2 =
Vertical line / depth of welt,
 f. inst. = 4 cm

7 to 8 =
Vertical line / length of
side seam = 33 cm
 results from total length 60 cm
 less depth of shoulder 4 cm
 less depth of armhole 19 cm
 less welt 4 cm - 27 cm
 33 cm

7 to 6 =
Horizontal line / width of armhole
 on each side 7,5 cm
 resulting from half bust width
 55 cm
 less width of back -40 cm
 15 cm ÷ 2 = 7,5 cm

7 to line 6/5
Round off armhole
 Adults 4 cm deep Babies 2 cm deep
 Children 3 cm deep

5 to 3 =
Shoulder lines approx. 1/3 of width
 of back each approx. 13 cm each
 40 cm ÷ 3 = 13 or 14 cm

And now we name the individual sections of our pattern:

- A = Welt
- B = Lower pullover length up to beginning of armhole
- C = Upper pullover length, height of armhole
- D = Shoulder

Whenever the outer contour changes, a new section begins.

Introduction to Front

When do we allow for extra measurement?

For normal figures up to an actual bust width of 90 cm (measured **without** allowance for liberty of movement) back and front are knitted equally long.

For normal figures with an actual bust width of over 90 cm and in general for ladies with larger figures, knit some extra length into front between welt up to 4 cm underneath armhole.

For your guidance, we recommend the following standards:

Actual bust width	Back	Front
90 to 100 cm	normal length	+3 cm extra length
100 to 104 cm	" "	+4 cm extra length
104 to 110 cm	" "	+5 cm extra length
over 110 cm	" "	+6, 7 cm, etc. extra length

The same applies to gentlemen with a certain embonpoint. In this case, the chest should not be measured under the arms, but around the widest part of the body.

Naturally, when finishing the pullover (or jacket) the additional centimeters and inches respectively, have to disappear along the edge so that back and front will neatly fit onto each other at the side seam.

How is the extra length made to disappear?

1. If the extra length does not exceed 4 cm, it can be eased into the front when sewing the side seams:

- with ladies' garments in the upper part of section B,
- with men's garments in the lower part of section B, in both cases evenly distributed.

2. If the extra length exceeds 4 cm, there are three possibilities:

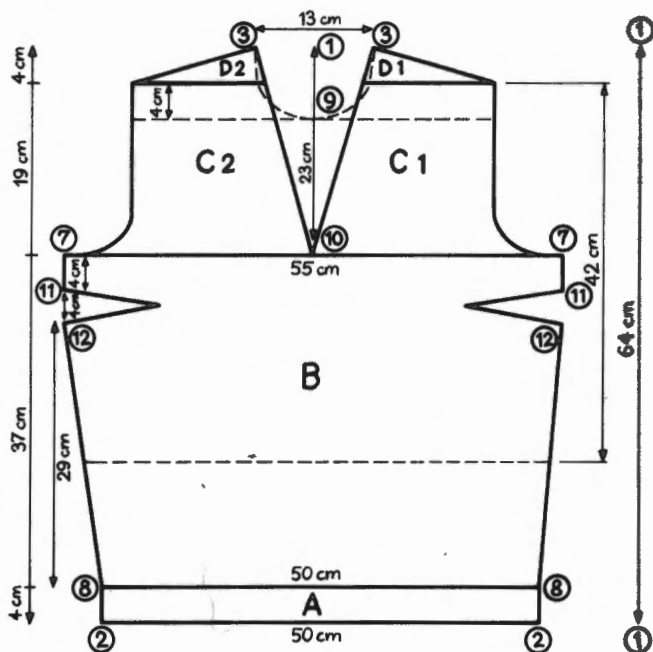
a) Form a dart at bust level by knitting short rows (graduations), starting approximately 4 cm underneath armhole.

With men's pullovers, this should be done in the lower part of section B, immediately following the welt.

b) Knit whole front longer and sew a dart at bust level before sewing side seam. Subsequently, the dart will be pressed flat. This method can only be employed with fine wool because at back of dart the knitting will be threefold.

c) Knit a slit at bust level: Approximately 6 cm underneath armhole, cast off stitches as far as point of breast and immediately cast on again same number of stitches. Prior to sewing side seam, sew dart and press flat on wrong side. This method is advisable for thick wool since due to the slit, the knitting will be only twofold.

d) Bust dart with crochet stitch patterns: Keeping continuity of pattern stitch, first cast off by steps and then cast on again by steps.



Front

Corresponds to back, except for the following alterations:

1 to 1 =
Vertical line / total length = 64 cm
 inclusive of 4 cm bust difference. Knit extra length of 4 cm in section B and make it disappear by dart or gathering on side seam.

3 to 9 to 3 =
Contour round neck

3 to 10 to 3 =
Contour V-neck

1 to 9 =
Depth of round neck = 8 cm
 Twice depth of shoulder, 4 cm + 4 cm

1 to 10 =
Depth of V-neck = 23 cm
 Depth of armhole plus depth of shoulder, 19 cm + 4 cm

7 to 11 =
Straight piece above darts = 4 cm
 Do not increase any more in this part of front.

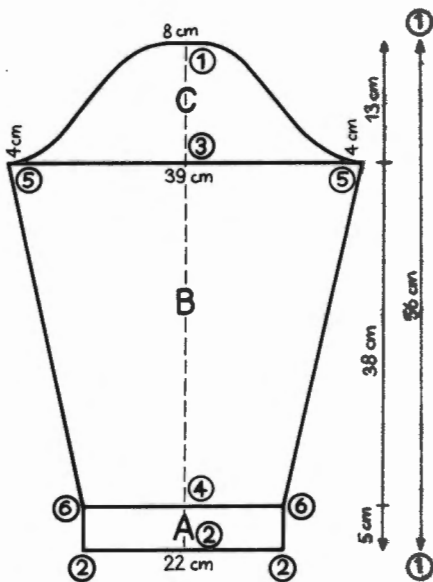
11 to 12 =
Dart = 4 cm
 shortens side seam by 4 cm and is worked to level of breast point.

8 to 12 =
Length of side seam = 29 cm
 results from total length 64 cm
 less depth of shoulder 4 cm
 less depth of armhole 19 cm
 less straight piece 7 to 11 4 cm
 less dart 4 cm
 less welt 4 cm - 35 cm
 29 cm

And now we name the individual sections of the front:

- A = Welt
- B = Lower pullover length
- C1 = Upper pullover length, armhole and neck on right hand side
- C2 = Upper pullover length, armhole and neck on left hand side
- D1 = Shoulder and remaining part of neck on right hand side
- D2 = Shoulder and remaining part of neck on left hand side

Whenever the outer contour changes, a new section begins.



For height of cap, the following standards may be used:

Children	
Size/Age	Height of cap in cm for long sleeves
Baby	5 to 6
1 to 2 years	6 to 7
3 to 5 years	7 to 8
6 to 8 years	8 to 9
9 to 11 years	9 to 10
11 to 12 years	10 to 11
Adults	
PASSAP size	Height of cap in cm for long sleeves
8 and 9	10 to 11
10 and 11	11 to 12
12 and 13	12 to 13
14 and 15	13 to 14
For PASSAP sizes see list on page 3.	

2 to 4 =

Vertical line / depth of welt = 5 cm
f. inst. for long sleeves, less for short sleeves

3 to 4 =

Vertical line / inner arm length up to cap = 38 cm
Resulting from outer arm length 56 cm
less depth of cap 13 cm
less welt $\frac{5 \text{ cm} - 18 \text{ cm}}{38 \text{ cm}}$

5 to 5 =

Horizontal line / upper arm width for long sleeves = 39 cm
Three times depth of cap, $3 \times 13 \text{ cm}$

5 to 6 =

Sleeve seam without welt
Along here we increase for sleeve.

6 to 2 =

Welt, knit without increasing

5 to 1 to 5 =

Shape cap. Start flat on both sides at 5, then shape steeply and end flat on top.

Rough rule: Flat top 8 cm, flat beginning of cap 4 cm each side.

And now we name the individual sections of the sleeve:

A = Welt

B = Inner arm length between welt and cap

C = Depth of cap

Whenever the outer contour changes, a new section begins.

Sleeve

1 to 1 =

Vertical line / outer arm length = 56 cm

2 to 2 =

Horizontal line / wrist width
including allowance of 5 cm = 22 cm
Cast-on width of welt;
Rough rule: Ladies approx. 22 cm, gentlemen approx. 25 cm

1 to 3 =

Vertical line / depth of cap (sleeve head) = 13 cm
For long sleeves approximately $\frac{1}{3}$ of width of back. In case of unequal division, take smaller measure. $40 \text{ cm} \div 3 = 13$ or 14 cm. See also list on this page.

This is how to calculate a sweater to one's own measurements

Many women have an aversion to calculating. However, it is not that difficult once you know how to do it. For those among our readers who prefer to follow their own ideas when knitting garments, independent of prescribed shapes, we would like to explain hereafter by means of three examples how to calculate a pattern.

To begin with, a few general explanations which apply to everything:

1. The test square is the basis of all garment knitting

Any garment knitted to measure always begins with the test square. Directions as to how to knit and use a test square will be found in the instruction book for your PASSAP machine under the respective heading. In addition to these explanations we would like to give you here a few special hints:

Cast on 100 stitches using yarn in contrasting colour and knit a few rows. With main yarn knit 100 rows in stocking stitch or in desired pattern stitch. Knit a few more rows with contrast yarn.

Drop test square from machine without binding off, i.e. «release».

It is not advisable to make a small test square of, say, only 5 cm in width and height since the unavoidable inaccuracies when measuring the test square would add up to disagreeable discrepancies of stitches and rows.

Example: Test square 100 stitches = 35 cm, 14 stitches = 5 cm.

If in a test square of 5 cm, as a result of inadvertent stretching, you measure 15 instead of 14 stitches, you will have a difference of 11 stitches in half a bust width of 55 cm. This is equal to 4 cm and your sweater would thus be 8 cm too wide!

Now make a note immediately of how you set the lock for this particular wool, pattern stitch and test square.

How is the test square to be handled before calculating?

On principle: Just as we handle the test square, so we will later have to handle the finished garment.

There are two different methods, namely:

Either the test square is pinned flat and covered with a damp cloth; raised patterns are simply left to dry under the cloth, smooth patterns are pressed with a hot iron over the damp cloth; then measure stitches and rows;

or it is not pinned and not pressed.

a) Stocking stitch, jersey, and woven patterns: Measure stitches and rows accurately and unaltered.

b) Double-bed knitting, in general: For stitches, measure exact width of test square and add 2 cm. For rows, measure exact height of test square unaltered.

c) Pearls and Fisherman's Rib (single sided and double sided Fisherman's Rib) as well as loose patterns: Measure stitches and add 4 cm. Measure rows accurately and unaltered, adding 2 cm.

As soon as the test square has been accurately measured, you ascertain by means of the PASSAP Chart (see p. 70 at the end of this book) the required stitches and rows corresponding to the centimeters of your paper pattern and enter these figures next to the respective cms on your pattern.

Stitch column and row column of the test square will always be found across the top of the Chart. The required measurement in centimeters will be found in the first and last vertical column of the Chart.

Hereafter we are giving you two examples for converting the centimeters into stitches and rows by means of the PASSAP Chart.

Test square: 100 stitches = 35 cm, 100 rows = 20 cm

Note setting of lock! ▶

Example a :

100 stitches = 35 cm, therefore use stitch column 35. How many stitches to 55 cm?

Measurement required cm	Table for test squares of 100 sts and 100 Measurement obtained													
	30	30,5	31	31,5	32	32,5	33	33,5	34	34,5	35	35,5		
0,5	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
1	3-4	3-4	3-4	3-4	3	3	3	3	2-3	2-3	2-3	2-3	2-3	2-3
2	7	7	6	6	6	6	6	6	6	6	6	6	6	6
3	10	10	10	10	9	9	9	9	9	9	9	9	9	8
4	13	13	13	13	13	12	12	12	12	12	12	11	11	11
5	17	16	16	16	16	15	15	15	15	14	14	14	14	14
6	20	20	19	19	19	18	18	18	18	17	17	17	17	17
7	23	23	23	22	22	22	21	21	21	20	20	20	20	20
8	27	26	26	25	25	25	24	24	24	23	23	23	23	23
9	30	30	29	29	28	28	27	27	26	26	26	26	25	25
10	33	33	32	32	31	31	30	30	29	29	29	29	28	28
20	67	66	65	64	63	62	61	60	59	58	57	56	56	56
30	100	98	97	95	94	92	91	90	88	87	86	85	85	85
40	133	131	129	127	125	123	121	119	118	116	114	113	113	113
50	167	164	161	159	156	154	151	149	147	145	143	141	141	141
60	200	197	194	191	188	185	181	179	176	174	171	169	169	169
70	233	230	226	222	219	215	212	209	206	203	200	197	197	197
80	267	262	258	254	250	246	242	239	235	232	229	225	225	225
90	300	295	290	286	281	277	273	269	265	261	257	254	254	254

At the top of the conversion chart, look for figure 35. Follow this column downwards until you are at level with figure 50 at the extreme left. At the point where the vertical and horizontal lines meet, there is figure 143 (therefore 143 stitches). However since we want the number of stitches for 55 cm, we again have to go upwards in the vertical column 35 until we are at level with figure 5 at at the extreme left. At the point where the two lines meet, we now find the figure 14 (therefore 14 stitches). Consequently, 55 cm correspond to (143+14 stitches) 157 stitches. However, since if possible, we always work with an even number, we round up to **158 stitches**.

Example b)

100 rows = 20 cm, therefore use row column 20. How many rows to 33 cm?

Measurement required cm	Table for test squares of 100 sts and 100 Measurement obtained													
	20	20,5	21	21,5	22	22,5	23	23,5	24	24,5	25	25,5		
0,5	2-3	2-3	2-3	2-3	2-3	2	2	2	2	2	2	2	2	1-2
1	5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4	4	4	4	4	4
2	10	10	10	9	9	9	9	9	9	9	8	8	8	8
3	15	15	14	14	14	13	13	13	13	12	12	12	12	12
4	20	20	19	19	18	18	17	17	17	16	16	16	16	16
5	25	24	24	23	23	22	22	21	21	20	20	20	20	20
6	30	29	29	28	27	27	26	26	25	24	24	24	24	24
7	35	34	33	33	32	31	30	30	29	29	28	27	27	27
8	40	39	38	37	36	36	35	34	33	33	32	31	31	31
9	45	44	43	42	41	40	39	38	38	37	36	35	35	35
10	50	49	48	47	45	44	43	43	42	41	40	39	39	39
20	100	98	95	93	91	89	87	85	83	82	80	78	78	78
30	150	146	143	140	136	133	130	128	125	122	120	118	118	118
40	200	195	190	186	182	178	174	170	167	163	160	157	157	157
50	250	244	238	233	227	222	217	213	208	204	200	196	196	196
60	300	293	286	279	273	267	261	255	250	245	240	235	235	235
70	350	341	333	326	318	311	304	298	292	286	280	274	274	274
80					356	348	340	333	327	320	313	313	313	313
90													353	353

When converting centimeters into rows, the procedure is exactly the same:

Column 20

Junction point at height of 30 cm = 150 rows

Junction point at height of 3 cm = 15 rows

33 cm = 165 rows

Round up to **166 rows**.

Please note: Column of stitches and column of rows never correspond.

2. Calculating the increase in a certain section

Example: Assuming that you entered in the paper pattern for the back:

170 stitches bust width
158 stitches lower edge
160 rows side length

bust width	170 sts
less lower edge	- 158 sts
there is a total difference of	12 sts
half of this for each side	= 6 sts

On each side, we have to increase 1 stitch 6 times over a side length of 160 rows.

How do we ascertain the intervals between increases?

The number of rows (160) is divided by the number of increases (6) : $160 \div 6 = 26$, remainder 4.

Simple method: On each side you have to increase 1 stitch 6 times and knit 26 rows (first increase in first row). In the end, following the last 26 rows, you knit the remaining 4 rows.

More accurate method: You may arrange intervals between increases more accurately by evenly distributing the remaining 4 rows on the first 4 increases. In this case, you calculate as follows:

$$\begin{array}{r} 160 \text{ rows} \div 6 = 26 \text{ rows} \\ 40 \\ \text{remainder } 4 \quad - 4 \text{ (rows)} \\ \hline 2 \end{array}$$

4 times between increases you knit 1 row more (27 rows) than the originally calculated 26 rows.

Consequently, first: Increase 1 stitch 4 times every 27th row and then: Increase 1 stitch twice every 26th row.

Check:

Stitches	Rows
$4 \times 1 \text{ st} = 4 \text{ stitches}$	$4 \times 27 \text{ rows} = 108 \text{ rows}$
$2 \times 1 \text{ st} = \frac{2 \text{ stitches}}{6 \text{ stitches}}$	$2 \times 26 \text{ rows} = \frac{52 \text{ rows}}{160 \text{ rows}}$

In PASSAP characters, this is shown thus:

Definition of Characters

- = every (every row)
- × = times
- + = increase
- = decrease (bind off)

- $\pm 4 \times 1 \bullet 27\text{th row}$ (increase 1 stitch and knit 27 rows, repeat this 3 times)
- $\pm 2 \times 1 \bullet 26\text{th row}$ (increase 1. stitch and knit 26 rows, repeat this once more)

3. Calculating decreases is done in the same way as calculating increases

Greater number of stitches less smaller number of stitches shows difference. Divide difference by 2 and ascertain intervals. In case of Raglan decreases, the more accurate method should be applied.

4. Comparative examples for calculating increases or decreases on single or double-bed work

On one side 60 stitches are to be evenly increased or decreased over 134 rows.

For single-bed work – 1 stitch at a time, 60 times

$$\begin{array}{r} 134 \text{ (rows)} \div 60 \text{ (sts)} = 2 \text{ (rows)} \\ \text{Remainder } 14 \quad - 14 \text{ (rows)} \\ \hline 46 \end{array}$$

$\pm 14 \times 1 \bullet 3\text{rd row}$ (increase or decrease 1 stitch and knit 3 rows, repeat this 13 times more)

$\pm 46 \times 1 \bullet 2\text{nd row}$ (increase or decrease 1 stitch and knit 2 rows, repeat this 45 times more)

Check:	Stitches	Rows
$14 \times 1 \bullet 3\text{rd row}$	14	42
$46 \times 1 \bullet 2\text{nd row}$	46	92
	60	134

For double-bed work – always 2 stitches, 1 on front and 1 on back bed, 30 times

$$\begin{array}{r} 134 \text{ (rows)} \div 30 \text{ (sts)} = 4 \text{ (rows)} \\ \text{Remainder } 14 \quad - 14 \text{ (rows)} \\ \hline 16 \end{array}$$

$\pm 14 \times 2 \text{ stitches} \bullet 5\text{th row}$ (increase or decrease 2 stitches and knit 5 rows, repeat this 13 times more)

$\pm 16 \times 2 \text{ stitches} \bullet 4\text{th row}$ (increase or decrease 2 stitches and knit 4 rows, repeat this 15 times more)

Check:	Stitches	Rows
$14 \times 2 \bullet 5\text{th row}$	28	70
$16 \times 2 \bullet 4\text{th row}$	32	64
	60	134

5. Rough rules for neck opening

a) **V-neck:** If subsequently a narrow border (2 to 3 cm wide) is to be sewn onto neck, always start to shape neck at level of armhole of basic pattern, even if the pattern was altered. Moreover, always knit first 2 to 6 rows without decreasing.

b) **Round neck:** The depth of this opening is always twice as deep as the shoulder shaping. For inst. if the shoulder shaping is 4 cm deep, the round neck will be started 4 cm below the beginning of the shoulder shaping. It will therefore be 8 cm deep.

c) **The width of the neck opening,** on principle, is $\frac{1}{3}$ of the width of the back; depending on width of neck and desired opening, it may be slightly more or less in centimeters and stitches.



Chapter 2

Basic Pattern for Ladies

At the end of this chapter you will find basic patterns with centimeter measurements for 8 different PASSAP sizes.

Thus you merely have to select the pattern corresponding to your personal measurements and to enter the required numbers of stitches and rows which you may ascertain by means of the PASSAP Chart at the end of this book. In the previous chapter we explained to you how this is done.

However, we have not yet explained how to calculate the shaping, how to round an arm-hole and how to decrease for a neck opening or a shoulder.

We therefore begin this chapter with an example based on an assumed test square of 100 stitches = 35 cm and 100 rows = 20 cm and where the corresponding numbers of stitches and rows have already been entered next to the measurements in centimeters.

And now we will explain how to shape.



Shaping for Basic Pattern with set-in sleeve

PASSAP size 14, stocking stitch with all needles

Back - Explanation of Pattern

Section A:

Welt, work straight, see description of back on page 17.

Section B:

Calculating the increases on side seam which is 166 rows deep.

How many stitches must be increased on each side?

Half bust width	158 sts
less half hip measure	- 144 sts
difference	14 sts ÷ 2 = 7 sts

On each side 7 stitches must be increased within 166 rows.

How are these increases to be distributed among the 166 rows?

$166 \text{ rows} \div 7 = 23 \text{ rows, remainder } 5 \text{ rows.}$

Increase on each side 1 st 7 times every 23rd row. There will be 5 remaining rows.

These 5 remaining rows will be knitted subsequent to the last increase, as follows:

+7×1 st ● 23rd row (increase 1 st and knit 23 rows, repeat this 6 times more)

knit 5 rows without increasing.

Section C:

Calculating the decreases for armhole in section C which is 96 rows deep.

How many stitches must be decreased to shape the armhole?

Half bust width	158 sts
less width of back	- 114 sts
difference	44 sts ÷ 2 = 22 sts

On each side 22 stitches must be decreased to shape the armhole.

At the end of chapter 6 (page 69) you will find a list showing decreases to shape the armhole with different numbers of stitches.

According to this list, 22 stitches within 20 rows are decreased as follows:

Decrease on each side 6 sts and knit 2 rows

Decrease on each side 4 sts and knit 2 rows

Decrease on each side 3 sts and knit 2 rows

Decrease on each side 2 sts and knit 2 rows

Decrease on each side 2 sts and knit 2 rows

Decrease on each side 1 st and knit 2 rows, repeat this 4 times more.

First decrease in 1 st row of section C. After 20 rows, knit straight. On the back if desired, the armhole may be given a straighter shape by knitting 2 rows between the first two decreases only whereas the following decreases will be worked with intervals of 4 or 6 rows.

Section D:

Calculating the decreases for shoulder shaping in section D which is 20 rows in depth.

How many stitches must be decreased for each shoulder?

Width of back	114 sts
less approx. $\frac{1}{3}$ for width of neck	- 38 sts
difference	76 sts ÷ 2 = 38 sts

On each side 38 stitches must be decreased for shoulder shaping.

Usually, the shaping of the shoulder is done in every 2nd row. Consequently, the number of the rows is divided by 2. $20 \text{ rows} \div 2 = 10$ graduations. The 38 stitches on each shoulder must be decreased in 10 graduations and always on the side nearest to the lock.

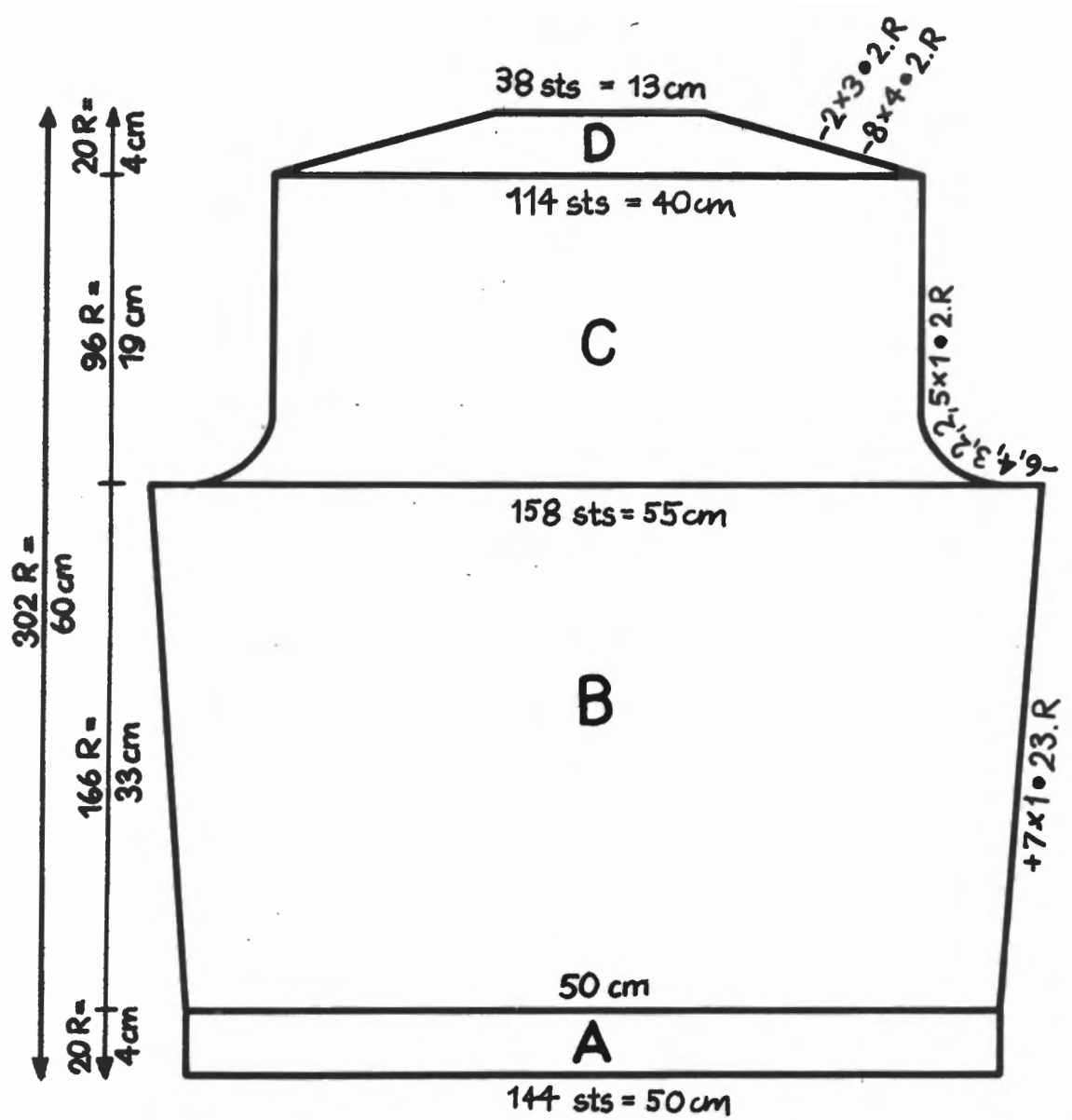
Stitches to be decreased:

$38 \div 10 \text{ graduations} = 3 \text{ sts to each graduation}$
8 stitches remain

The remaining 8 stitches will be distributed among the first 8 graduations, i.e. instead of 3 stitches, we first decrease 8 times 4 stitches (3+1 st).

-8×4 sts ● 2nd row (decrease 4 sts and knit 2 rows, repeat this 7 times more)

-2×3 sts ● 2nd row (decrease 3 sts and knit 2 rows, repeat this once more)



Check:

Stitches

$8 \times 4 \text{ sts} = 32 \text{ sts}$

$2 \times 3 \text{ sts} = 6 \text{ sts}$

38 sts

Rows

$8 \times 2 \text{ rows} = 16 \text{ rows}$

$2 \times 2 \text{ rows} = 4 \text{ rows}$

20 rows

Description of the Back

Section A: For welt, cast on 144 sts and knit 20 rows in 1:1 rib. For stocking stitch, transfer stitches from back to front bed. RC 000.

Section B: Knit 166 rows, increasing on both sides. RC 000.

Section C: Decrease on both sides to shape armholes. Then work straight until row counter shows 96. Set RC back to 000.

Section D: Now decrease gradually on both sides for shoulders. Row counter shows 20. In the end, loosely bind off (cast off) remaining 38 sts all at once.

Front with Bust Darts and V-Neck — Explanation of Pattern

Section A:

Welt, 1 : 1 rib same as back, page 17.

Section B:

Bust dart in section B which is 186 rows in height.

In its middle part, section B is 4 cm longer than the back. On both sides, it is reduced to the length of the back by knitted-in (or sewn) bust darts.

For the side seam, increase the same number of stitches as on the back. However, the increasing must be terminated before beginning to make the bust dart, i.e. before the row counter shows 146. Consequently, you have to increase on each side 7 sts within 146 rows.

$146 \text{ rows} \div 7 = 20 \text{ rows}$, remainder 6 rows.

The remaining 6 rows will be knitted after the last increase, as follows:

7×1 st ● 20th row (increase 1 st and knit 20 rows, repeat this 6 times more)

knit 6 rows without increasing.

Now knit on both sides graduations (short rows) for bust darts, observing the following rule:

Number of rows: A bust dart always needs an additional number of rows equal to those necessary for the extra length of the front.

Therefore, 4 cm = 20 rows (in test square 100 rows = 20 cm).

Since short rows are progressively decreased in every 2nd row, $20 \text{ rows} \div 2$ result in 10 graduations.

Number of stitches: Depending on the bust width, a bust dart is 8 to 12 cm deep; our example: 10 cm = 30 stitches (in test square 100 sts = 35 cm).

30 sts must be progressively decreased (remain unknitted) in 10 graduations. Therefore $30 \text{ sts} \div 10 = 3 \text{ sts}$ to each graduation.

In PASSAP characters, this is expressed as follows:

▲ – 10×3 ● 2nd row ▲

The black triangle '▲' means short rows (graduations).

Knitting bust dart: Lock on BX, for every working needle bring one pusher into work-

ing position. On both sides, in every other row, leave 10 times 3 sts unknitted, i.e. always return 3 pushers into Rest Position.

As soon as all the 30 stitches have been gradually decreased (RC 166), put into W.P. all the pushers at the side opposite to the lock, knit one row. Repeat from other side. Then with all the needles knit until RC reads 186. In centre of section B there are 186 rows and on the sides only 166 rows, same as on back. Other possibilities of working bust darts, see page 8.

Section C 1 and D 1:

Armhole and V-neck in section C 1 which is 96 rows in depth.

For shaping the V-neck, the work must be divided as follows, with left half of stitches being put in Rest Position:

either:

put left half of stitches on transfer combs

or:

knit left half of stitches with contrast yarn and large stitch size, returning needles into Neutral Position

or:

knit with BX and pushers, returning all the pushers on the left half within blocking rail. See also page 67, chapter 6.

Usually the work is divided at the level where the shaping of the armhole begins. With certain fashion styles it is advisable to start the V-neck only after terminating the armhole decreases (approx. 4 cm after beginning to shape the armhole).

On principle, the neckband fits better if after dividing, you first knit 2 to 6 rows straight before starting to decrease for neck.

For armhole, same as for back, decrease 22 sts according to list on page 69.

Decrease on each side 6 sts and knit 2 rows

Decrease on each side 4 sts and knit 2 rows

Decrease on each side 3 sts and knit 2 rows

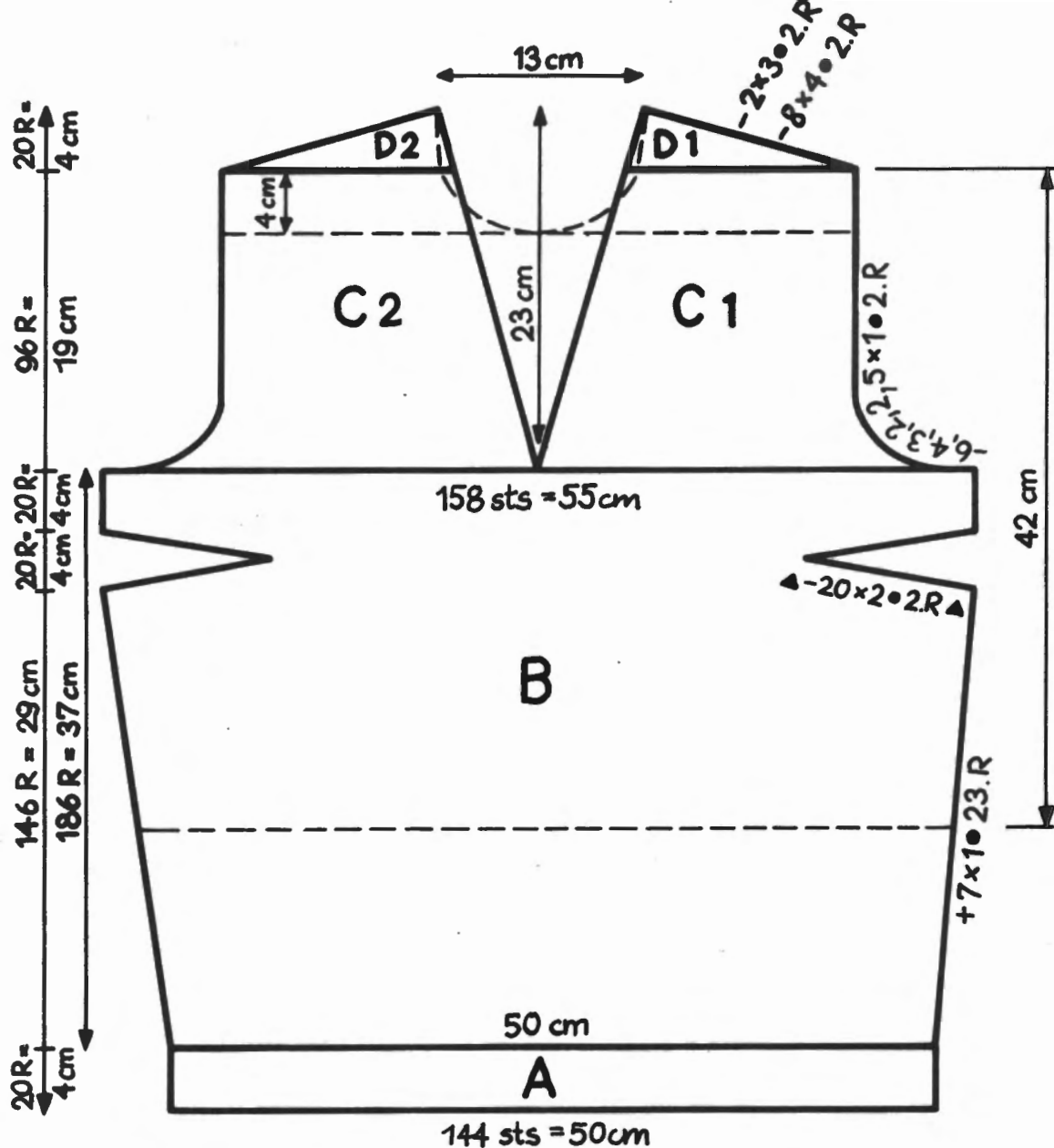
Decrease on each side 2 sts and knit 2 rows

Decrease on each side 2 sts and knit 2 rows

Decrease on each side 1 st and knit 2 rows,

repeat this 4 times more.

First decrease in 1st row of section C 1. After 20 rows work straight.



First part of V-neck

In our example it starts at the same time as the armhole shaping and extends over sections C1 and D1.

Number of rows:

Section C1	96 rows
Section D1	+ 20 rows
	<u>116 rows</u>
knit 2 rows without decreasing	- 2 rows
difference	<u>114 rows</u>

114 rows are available for the shaping of the V-neck.

Number of stitches which must be decreased:

Neck ($\frac{1}{2}$ of width of back) $38 \text{ sts} \div 2 = 19 \text{ sts}$. 19 sts must be decreased within 114 rows. $114 \div 19 = 6 \text{ rows}$.

Consequently, first knit 2 rows, then decrease 1 st and knit 6 rows, repeat this 18 times more.

At the same time, on the other side, shape armhole section C1 and shoulder section D1 as on back.

Section C2 and D2:

Work to correspond to C1 and D1, i.e. at left, shape armhole and shoulder while decreasing at right for the second part of the V-neck. ▶

Description of the Front

Section A: Same as back. RC 000.

Section B: Up to RC 146 same as back, then work darts on both sides up to RC 166. Then knit straight up to RC 186. Set RC back to 000.

Section C 1: Divide work; on the right decrease for armhole and on the left for neck opening, up to RC 96. Set RC back to 000.

Section D 1: On the right, decrease for shoulder shaping and on the left continue decreasing for neck opening, up to RC 20.

Section C 2 and D 2: Work to correspond to C 1 and D 1.

Sleeve – Explanation of Pattern

Section A:

Welt, see description page 21

Section B:

Calculating the increases for sleeve length which is 192 rows.

How many stitches must be increased on each side?

Upper arm width	112 sts
less wrist	- 64 sts
total difference	48 sts

half of it for each side 24 sts.

On each side 24 sts must be increased within 192 rows.

How are these increases to be distributed among the 192 rows?

$$192 \text{ rows} \div 24 = 8 \text{ rows}$$

On each side 1 st must be increased 24 times every 8th row.

+24×1 st ● 8th row (increase 1 st and knit 8 rows, repeat this 23 times more)

Check:

Stitches	Rows
24×1 st = 24 sts	24×8 rows = 192 rows
First increase in 1st row of section B	

Section C:

Calculating the decreases for the cap which is 66 rows deep.

For this, there are two subsidiary rules:

a) Divide number of stitches into three groups (cap = sleeve head)

1. Top of cap. For adults with normal upper arm, the rule is 8 cm, for stout upper arm 10 cm.

In our case 8 cm = 23 sts,
rounded up

24 sts

2. Beginning of cap. Same number of stitches as for top of cap half of this for each side

24 sts

3. Centre of cap. Distribute remaining stitches according to list i.e. $64 \text{ sts} \div 2 = 32 \text{ sts}$ on each side, corresponding to upper arm width of

64 sts

112 sts

b) Divide number of rows into groups of 10 rows each

Depth of cap $66 \text{ rows} \div 10 = 6 \text{ groups}$, remainder 6 rows.

Distribution of stitches among rows

Beginning of cap, 12 sts in 6 rows

For these 12 sts we use the remainder of 6 rows and decrease as follows:

5 sts, 4 sts, 3 sts in every other row. (The beginning of the cap is always decreased rapidly in 3 or 4 times.)

Centre of cap, 32 sts on each side in 60 rows

6 groups of 10 rows each
For the decreasing of centre of cap in groups of 10 rows each, we worked out a standard list. The individual groups of 10 rows may be applied in any desired sequence, but always reading from top to bottom.

In our example, 32 sts must be decreased on each side in 6 groups of 10 rows each. We apply the rules as follows: ▶

Group	De-creases	Distribution	Row Counter shows
1st	- 3	1-0-1-0-1	10
2nd	- 3	1-0-1-0-1	20
3rd	- 5	1-1-1-1-1	30
4th	- 7	1-2-1-2-1	40
5th	- 7	1-2-1-2-1	50
6th	- 7	1-2-1-2-1	60
	<u>32 sts</u>		

Top of cap

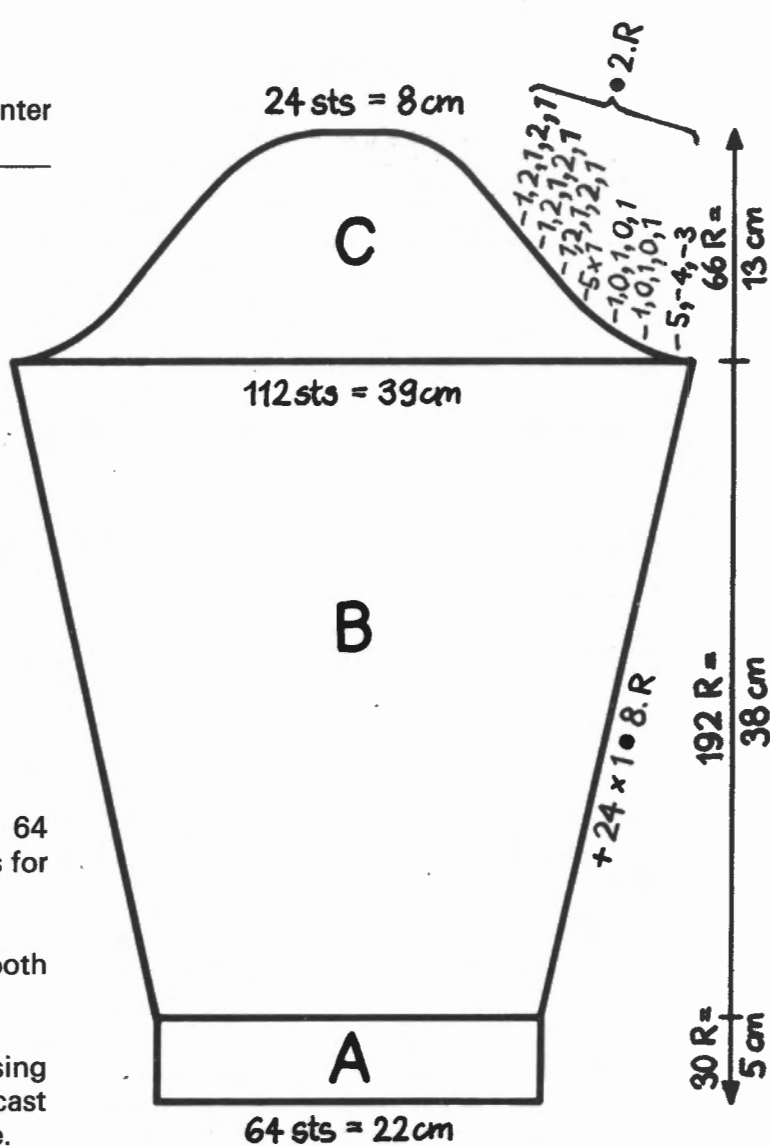
Bind off (cast off) remaining 24 sts all at once.

Description of the Sleeve

Section A: For welt in 1:1 rib cast on 64 stitches and knit 30 rows. Transfer stitches for stocking stitch. RC 000.

Section B: Knit 190 rows, increasing on both sides. RC 000.

Section C: Knit 66 rows for cap, decreasing on both sides for cap. Finally bind off (cast off) the last 24 sts loosely and all at once.

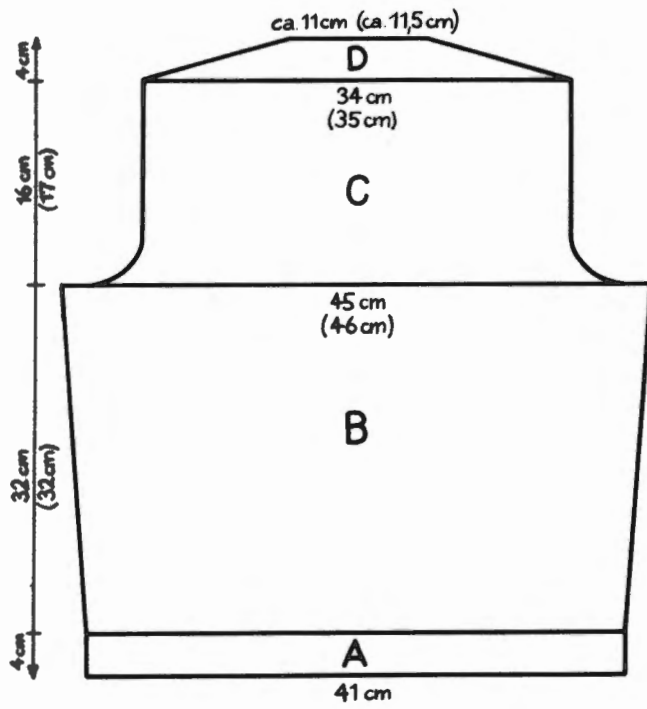


Rules for decreasing stitches for cap in groups of 10 rows each

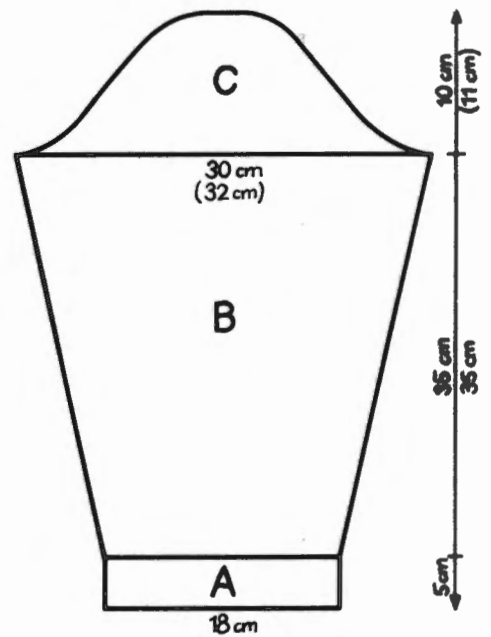
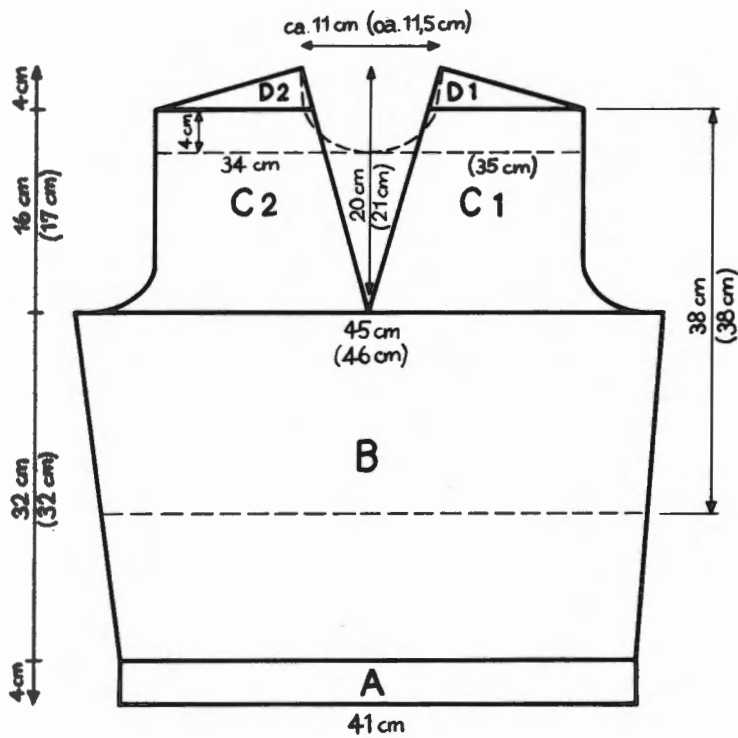
- 2 sts = 0-1-0-1-0 every 2nd row, i.e. dec 0 st, knit 2 rows, dec 1 st, knit 2 rows, etc.
- 3 sts = 1-0-1-0-1 every 2nd row, i.e. dec 1 st, knit 2 rows, dec 0 st, knit 2 rows, etc.
- 5 sts = 1-1-1-1-1 every 2nd row, i.e. dec 1 st, knit 2 rows, dec 1 st, knit 2 rows, etc.
- 7 sts = 1-2-1-2-1 every 2nd row, i.e. dec 1 st, knit 2 rows, dec 2 sts, knit 2 rows, etc.
- 10 sts = 2-2-2-2-2 every 2nd row, i.e. dec 2 sts, knit 2 rows, dec 2 sts, knit 2 rows, etc.
- 15 sts = 2/1-2/1-2/1-2/1-2/1 i.e. always: dec 2 sts and knit 1 row, dec 1 st and knit 1 row, etc.
- 20 sts = 2/2-2/2-2/2-2/2-2/2 i.e. always: dec 2 sts and knit 1 row, dec 2 sts and knit 1 row, etc.

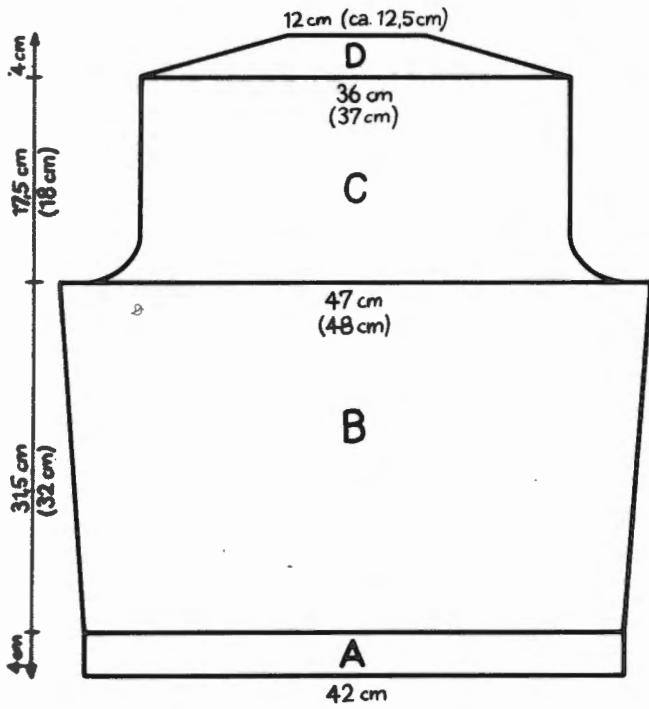
For decreasing, transfer stitches with single decker tool only, which sometimes may result in 3 sts on edge needle. On principle, always decrease on both sides every other row only, i.e. if the lock is at right, excepting the groups of rows where 15 and 20 stitches are decreased as may be seen from the rules.

Basic Patterns



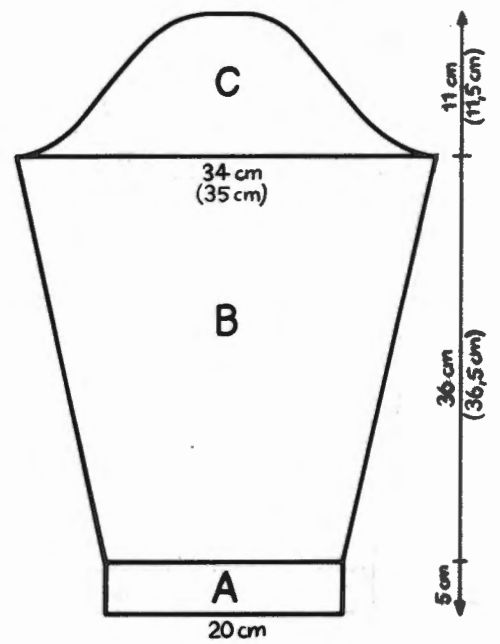
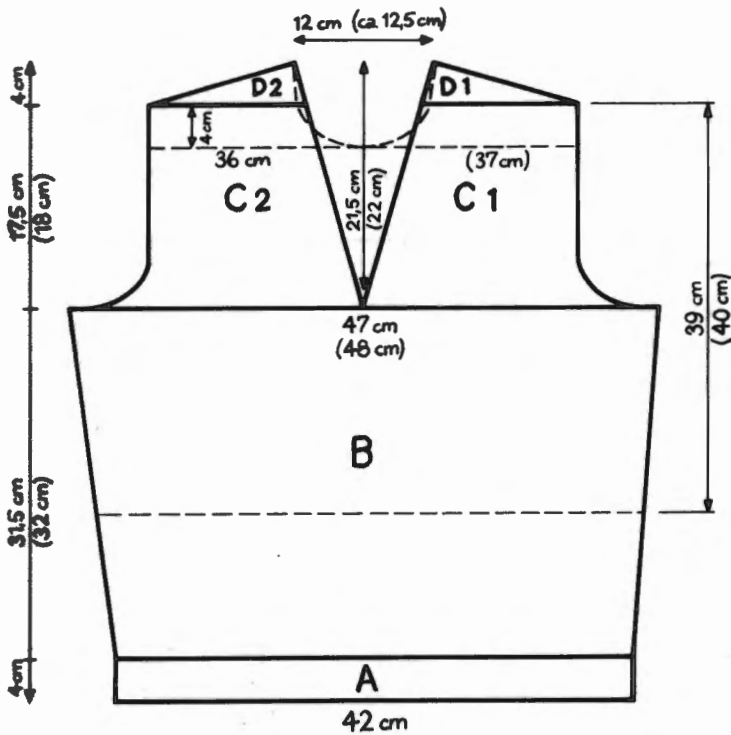
Basic Pattern for PASSAP sizes 8 and 9
The figures in brackets refer to size 9.

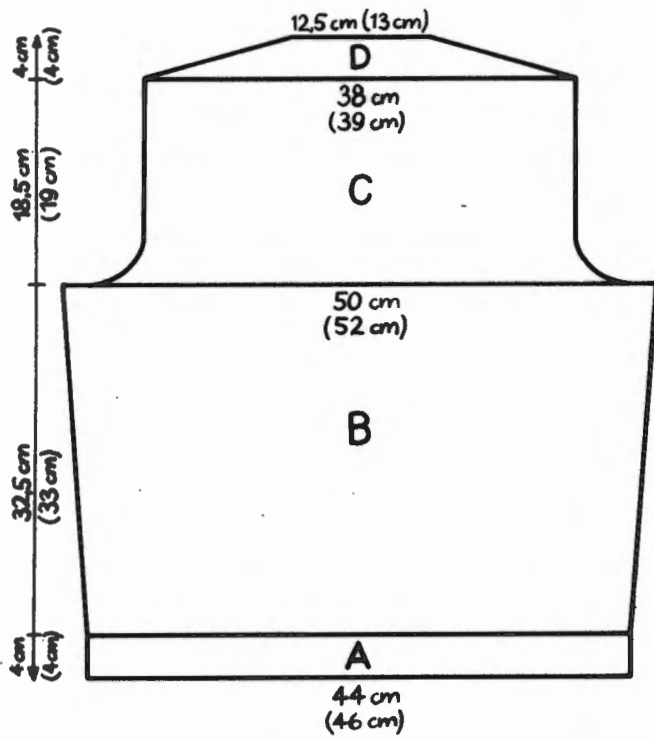




Basic Patterns for PASSAP sizes 10 and 11

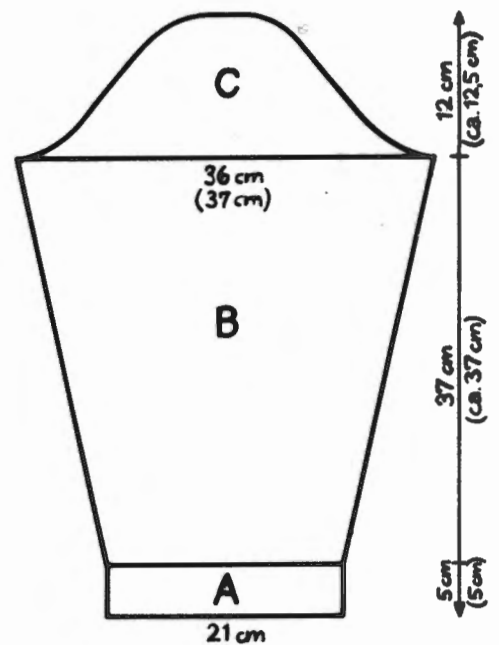
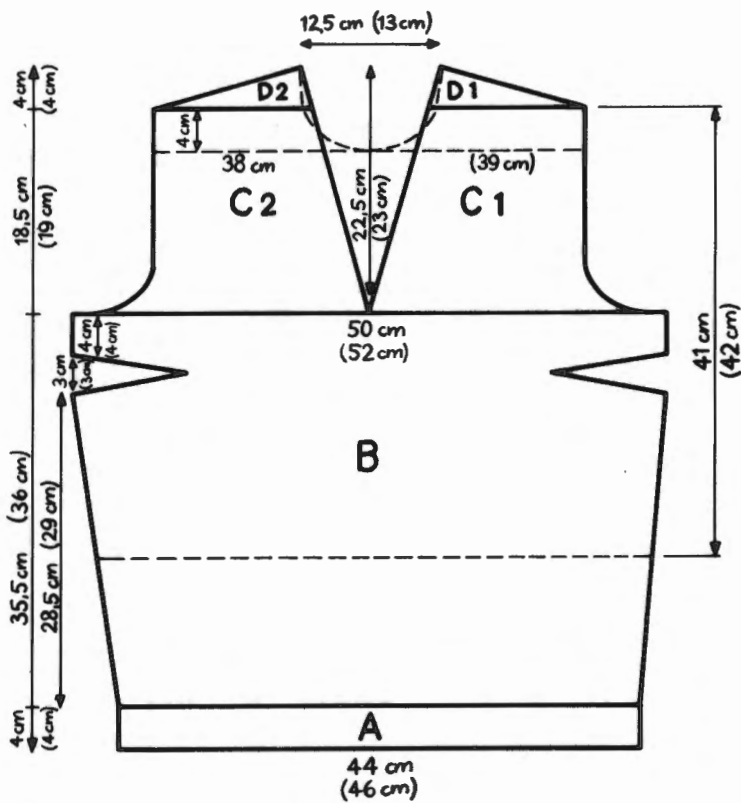
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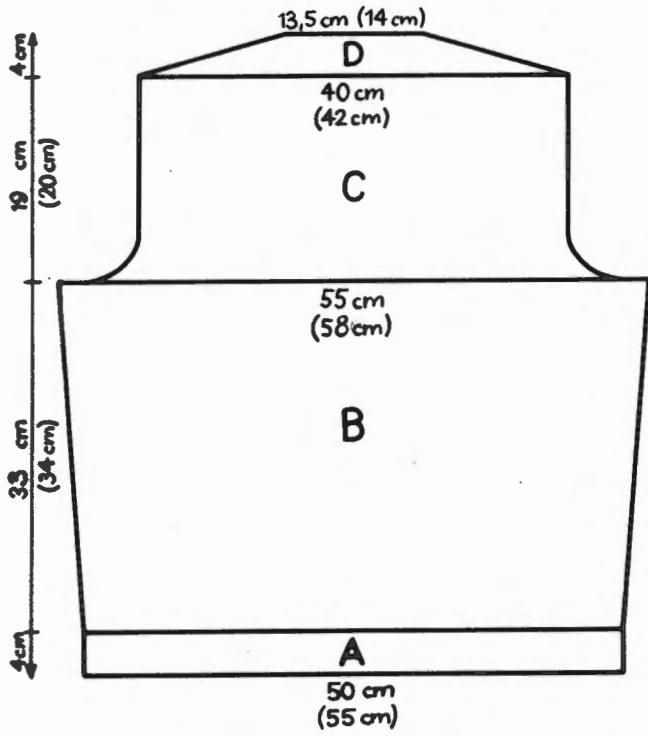




Basic Patterns for PASSAP sizes 12 and 13

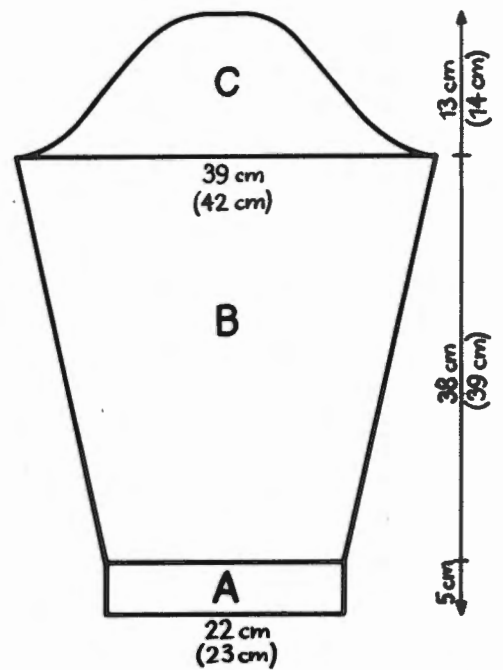
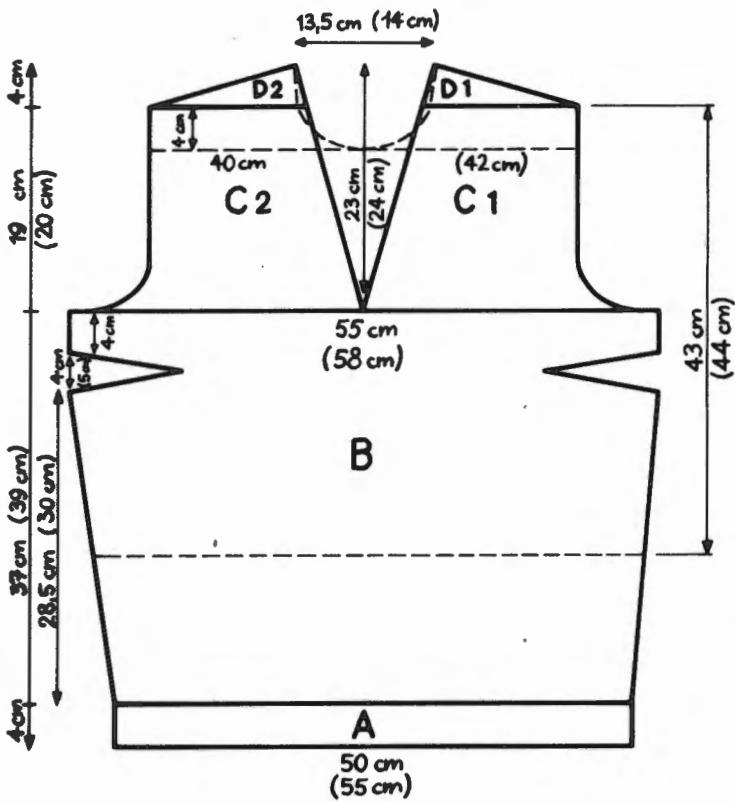
The figures in brackets refer to size 13.





Basic Patterns for PASSAP sizes 14 and 15

The figures in brackets refer to size 15.





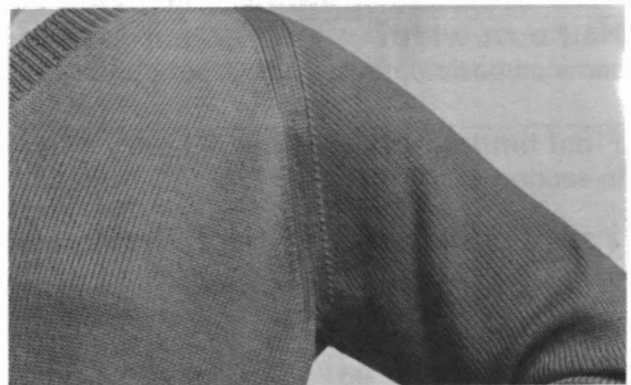
Chapter 3

Raglan Pattern for Ladies

This chapter shows various raglan patterns which we derived from the basic patterns illustrated in chapter 2. Therefore again, all you have to do, is to select the suitable raglan pattern and to enter the corresponding numbers of stitches and rows.

To begin with, we demonstrate on size 14 how to calculate the shaping for raglan. Here, too, our basis is a test square of 100 sts = 35 cm and 100 rows = 20 cm. The corresponding numbers of stitches and rows have been entered next to the measurements in centimeters.

And now we will explain how to shape.



Shaping for Raglan Pattern with long sleeves

stocking stitch with all needles, derived from basic pattern PASSAP size 14

Back – Explanation of Pattern

For the raglan pattern, all measurements are derived from those of the basic pattern. The pattern shows clearly where measurements are identical and where they have been altered:

Total length	60 cm / 300 rows
same as basic pattern	
without bust difference and less 2 rows	
(which in the basic pattern were rounded up)	

Raglan depth	26 cm / 130 rows
comprising: Depth of shoulder shaping in basic pattern 4 cm	
plus depth of armhole in basic pattern 19 cm	
plus 3 cm for lower beginning of armhole	
	<u>+ 2 to 3 cm</u>
	26 cm

Length of sweater	30 cm / 150 rows
comprising: Depth of section B of basic pattern 33 cm	
less 3 cm for lower beginning of armhole	
	<u>- 3 cm</u>
	30 cm

Depth of welt	4 cm / 20 rows
same as basic pattern	

Casting on for welt	50 cm / 144 sts
same as basic pattern	

Half bust width	55 cm / 158 sts
same as basic pattern	

Final binding off	approx. 13 cm / 38 sts
in section C	

Section A:

Welt, knit straight, same as in basic pattern.

The following standards may be used for the raglan depth for adults (ladies):

PASSAP size	Raglan depth in cm measured straight
8	22 to 23
9	23 to 24
10	23 to 24
11	24 to 25
12	24 to 25
13	25 to 26
14	26 to 27
15	28 to 29
Gentlemen's sizes	30 to 32

For PASSAP sizes see list on page 3.

For adults, begin to shape armhole 3 cm lower.

For children, begin to shape armhole 2 cm lower.

Section B:

On side seam, increase same number of stitches as on back of basic pattern, but knit only 150 rows.

Increase on each side 7 sts within 150 rows.
 $150 \text{ rows} \div 7 = 21 \text{ rows}$, remainder 3 rows.

Increase on each side 1 st 7 times every 21 st row. There will be 3 remaining rows which will be knitted after the last increase, as follows:

+7×1 st ● 21st row (increase 1st and knit 21 rows, repeat this 6 times more)
 knit 3 rows without increasing.

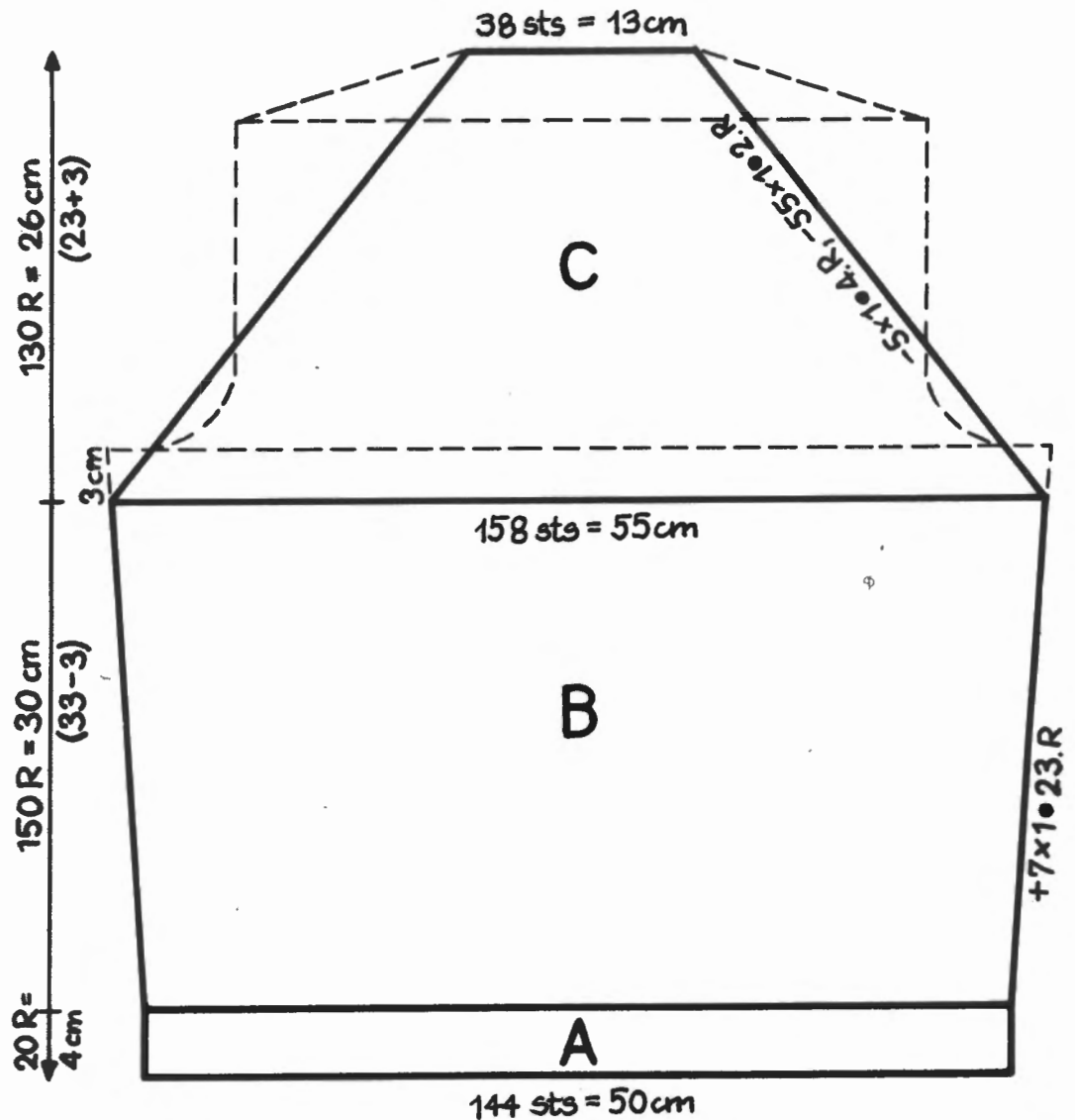
Section C:

Raglan decreases in section C which is 130 rows in depth.

How many stitches must be decreased on each side for raglan?

Half bust width	158 sts
less neck width, same as in basic pattern	
	<u>- 38 sts</u>
	$120 \text{ sts} \div 2 = 60 \text{ sts}$
	on each side

On each side, 60 sts must be decreased within 130 rows.



How are the decreases distributed among the rows? This is governed by certain rules which are set forth in the list following:

Rules for raglan decreasing

For each individual stitch decreased on one side, knit

2 rows	decrease 1 st /knit 2 rows
	decrease 2 sts/knit 4 rows
	decrease 3 sts/knit 6 rows

Exceptions

- If the number of stitches to be decreased is greater than the rows available, the excess of stitches will be decreased within the first 4 to 5 cm of raglan decreasing.
- If there are too many stitches, it is also possible, contrary to the above rules, to decrease 2 or 3 sts at the same time and then to knit only 2 rows.
- If the number of stitches to be decreased is smaller than the rows available, it is possible (such as in our example) to knit 4 rows (or even 6 rows) between the individual decrease within the first 3 to 4 cm.
- In the event of patterns, keep continuity of pattern stitch, which may result in uneven numbers of rows between decreases.

In our example, we have exception c) to the rule, namely a smaller number of stitches than rows available.

Therefore, within the first 4 cm (20 rows) we decrease slowly, i.e. every 4th row and after that only every 2nd row, according to the rules. Consequently, the 60 decreases on each side will be spread over the 130 rows as follows:

$130 \text{ rows} \div 60 = 2 \text{ rows, remainder } 10 \text{ rows.}$
The remaining 10 rows = 5×2 rows will be distributed among the first 5 decreases. Consequently:

Check:

– 5×1 st every 4th row =	5 sts and 20 rows
– 55×1 st every 2nd row =	55 sts and 110 rows
raglan on back,	
each side	60 sts and 130 rows ▶

Description of Back in Raglan Pattern

Section A: Knit welt with 144 sts, same as in basic pattern. RC 000.

Section B: Knit 150 rows, increasing on both sides. RC 000.

Section C: Decrease for raglan on both sides until RC shows 130, then bind off (cast off) remaining 38 sts all at once.

Front – Explanation of Pattern

Conventional Raglan

All raglan edges of back, front and sleeves have the same length and meet on the shoulder at the top edge of the neck opening. On the front with V-neck, raglan and neck meet in a sharp triangle. At the top edge of the sleeve, there remain 2 to 6 stitches which will be bound off.

Raglan sweater with turtleneck

Here, too, all raglan edges meet on the shoulder, same as in conventional raglan. The front may either be knitted identical to the back or it may be given a slightly rounded neck for which you decrease gradually. By rounding off the neck, you can avoid the formation of a crosswise fold in the top part of the front. In order to knit the turtleneck onto the sweater, the last row of stitches of each individual part is put onto transfer combs (on front, first knit graduations with BX and pushers) whereupon the stitches are put back on the machine for 1:1 rib in the sequence:

Back / 1st sleeve / front / 2nd sleeve. Where the different parts meet, we recommend you always to place 2 stitches on top of each other to avoid a hole; at the same time, the number of stitches for the turtleneck can thus be slightly reduced.

Now knit desired depth of collar and bind off.

In the end, all you have to do is to sew a seam between back and 2nd sleeve to close the collar.

Modern Raglan

Here the raglan on the front is shorter by half the height of the shoulder shaping (of basic pattern). For the V-neck, you decrease in such a way as to leave only about 2 stitches for binding off when the raglan on the front is finished.

To make up for the shortened raglan on the front, the sleeve is slanted more rapidly on one side in section D (half depth of shoulder shaping). This slanting will form the missing continuation of the neck opening (slant 2nd sleeve to correspond!) i.e. with reversed shapings.

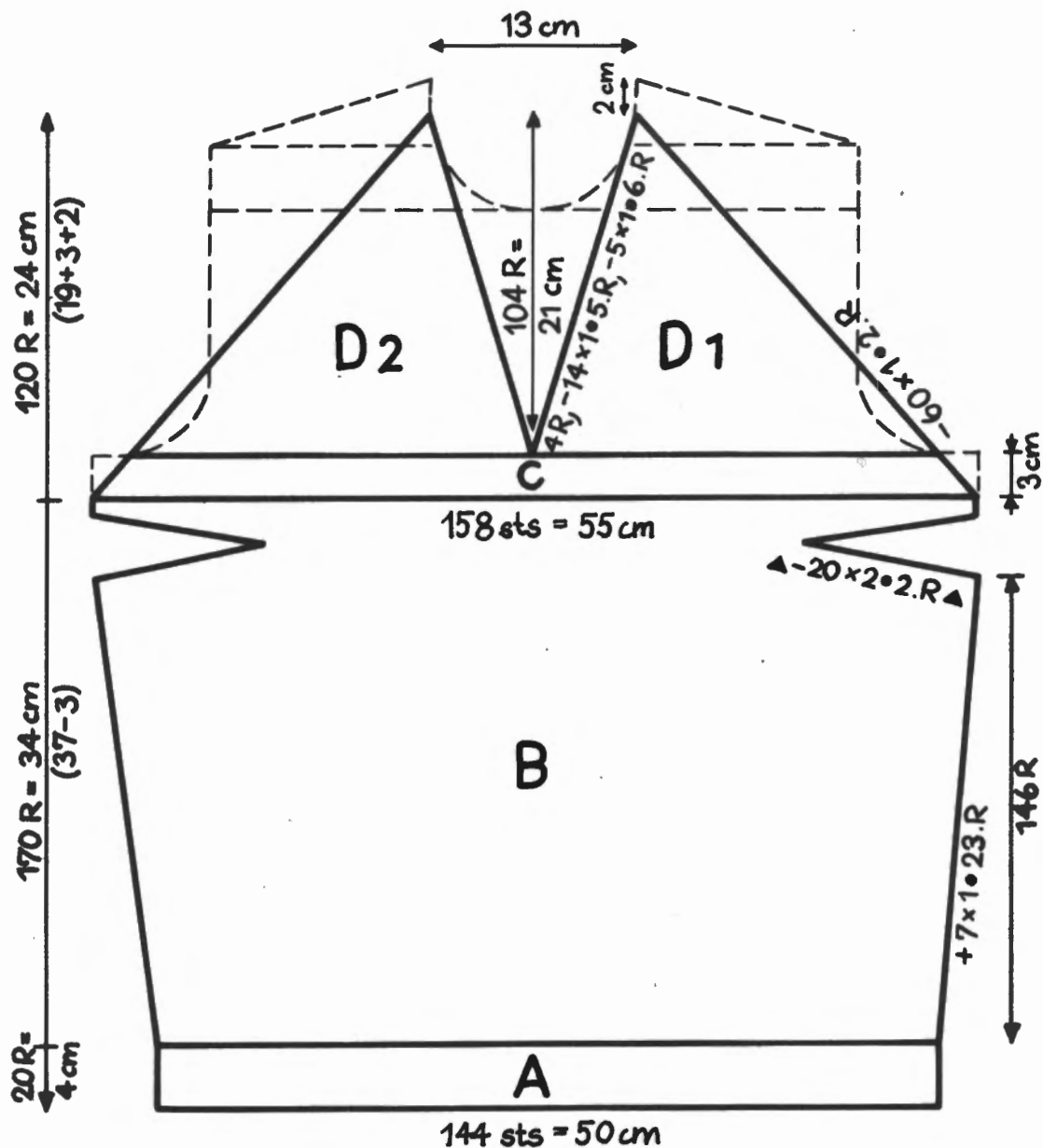
The shortened raglan on the front has the advantage of a better fitting of the neck.

Our pattern of the front refers to modern raglan.

The measurements for the raglan front are derived from those of the raglan back and of the basic pattern. The pattern shows where the measurements are the same and where they were altered:

Total length	62 cm / 310 rows
comprising basic pattern	64 cm
(including bust difference)	
less half shoulder depth	<u>- 2 cm</u>
	62 cm

Raglan depth	24 cm / 120 rows
2 cm shorter than on back	



Length of front	34 cm / 170 rows
between welt and raglan	
comprising: depth section B	
of basic pattern	37 cm
less 3 cm for lower beginning	
of armhole	- 3 cm
	<u>34 cm</u>

Depth of welt	4 cm / 20 rows
same as basic pattern	

Casting on for welt	50 cm / 144 sts
same as basic pattern	

Half bust width	55 cm / 158 sts
same as basic pattern	

Neck depth	21 cm / 104 rows
Begins at level of armhole of basic pattern,	
not at level of raglan beginning, and is	
shorter (2 cm) than that of basic pattern by	
half the shoulder depth.	

Section A:
Welt, knit straight, same as in basic pattern.

Section B:
Increase on side seam, same as in basic pattern, until RC shows 146, then knit in darts up to RC 166. However now, knit only 4 more rows until RC shows 170 since due to raglan, the side seam is 3 cm shorter than in the basic pattern.

Section C (and section D):**Raglan decreasing**

Raglan begins in section C and continues to the end of section D. It is calculated as follows:

Raglan depth of back	26 cm = 130 rows
less shortening on shoulder	- 2 cm = 10 rows
raglan depth of front	- 24 cm = 120 rows

An equal number of stitches are decreased for the raglan of the front as on the back. However, since 10 rows less are available now, we have to decrease faster, namely on each side 60 stitches within 120 rows (instead of within 130 rows as on the back).

According to the raglan principle, we have to decrease every other row and thus we obtain $120 \text{ rows} \div 2 = 60 \text{ steps}$

$60 \text{ sts} \div 60 = 1 \text{ st each step}$

Therefore: - $60 \times 1 \bullet 2\text{nd row} = 60 \text{ sts}$ and 120 rows.

First knit 16 rows for section C, decreasing for raglan on both sides. Thereafter, divide work for neck and from now on continuously decrease for raglan on the sides and for neck in the centre.

Section D 1:**Divide work for neck**

How many stitches must be decreased for the V-neck?

Starting from half of the bust width at the beginning of section C, namely 158 stitches, we need half for each shoulder = 79 stitches.

Each side	79 stitches
less raglan stitches	- 60 stitches
remain	19 stitches

These 19 sts are half the neck width of the back, namely $38 \text{ sts} \div 2 = 19 \text{ sts}$.

How many rows are available for decreasing these 19 stitches?

Raglan depth of front	120 rows
less depth of section C	- 16 rows
	104 rows

less the 4 rows which are knitted immediately after dividing,

without decreasing	- 4 rows
	100 rows

For the neck, 19 sts must be decreased within 100 rows.

$100 \text{ rows} \div 19 = 5 \text{ rows}$, remainder 5 rows.

Distribute the remaining 5 rows among the last 5 decreases. Therefore, work as follows for neck:

Knit 4 rows even

- $14 \times 1 \text{ st} \bullet 5\text{th row}$ (i. e. decrease 1 st and knit 5 rows, repeat this 13 times more)

- $5 \times 1 \text{ st} \bullet 6\text{th row}$ (i. e. decrease 1 st and knit 6 rows, repeat this 4 times more)

Check:

	sts	rows
4 rows even	0	4
- $14 \times 1 \text{ st} \bullet 5\text{th row}$	14	70
- $5 \times 1 \text{ st} \bullet 6\text{th row}$	5	30
	19	104

While shaping the neck in the centre of the work, continue decreasing for raglan on both sides.

Description of Front in Raglan Pattern

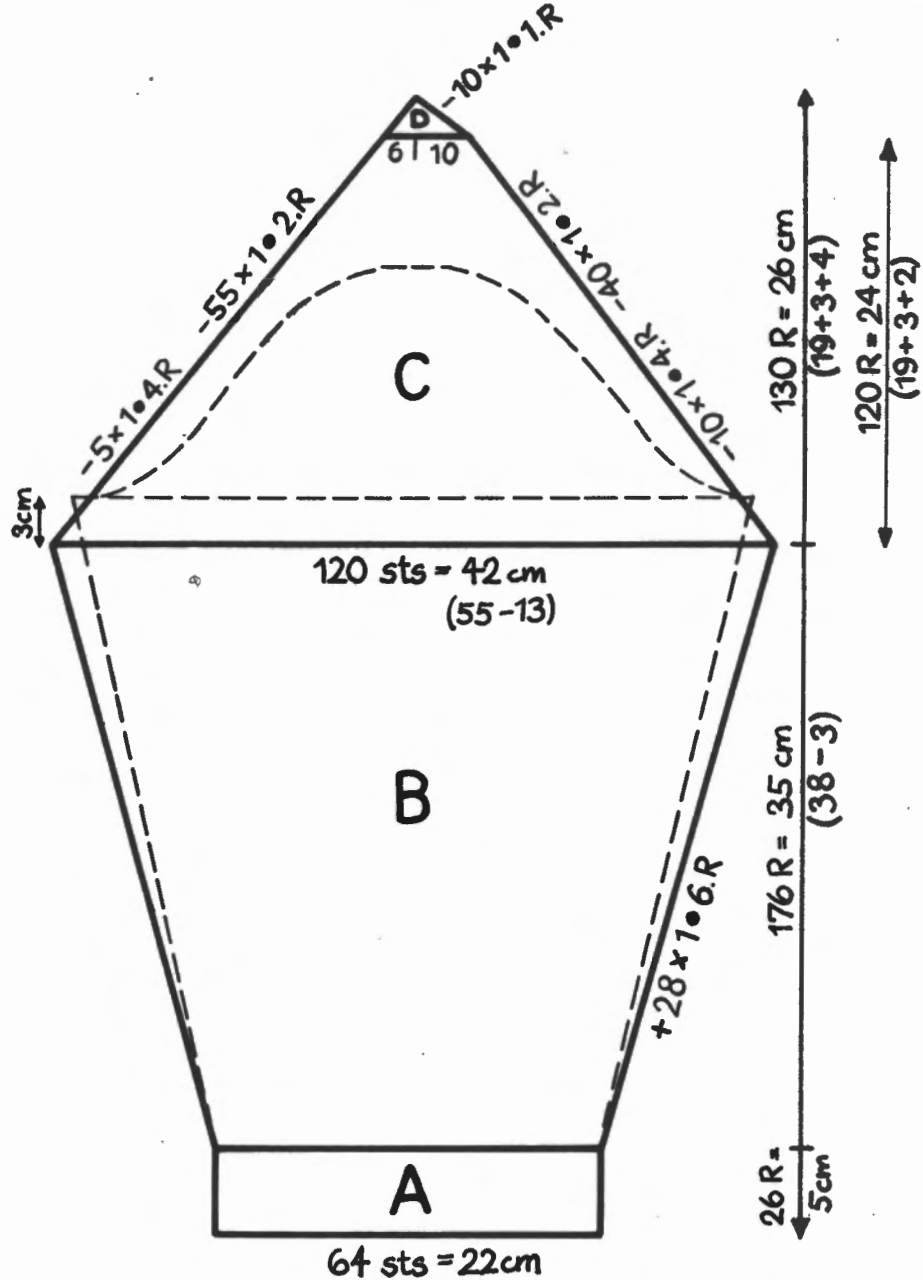
Section A: For welt in 1:1 rib, cast on 144 stitches and knit 20 rows. RC 000.

Section B: Increase on both sides and knit to RC 146. Then knit bust darts with 20×2 stitches. RC 166. Knit 4 rows straight with all the stitches. RC 170. Set RC to 000.

Section C: Decrease for raglan on both sides and knit 16 rows. Set RC to 000.

Section D 1: Divide work. At outer edge, continue decreasing for raglan. In centre, knit first 4 rows straight, then decrease for neck. At RC 120, all the stitches are bound off (cast off). Set RC to 000.

Section D 2: Knit to correspond to D 1, i.e. with reversed shapings.



Sleeve – Explanation of Pattern

The measurements for the raglan sleeve are derived from those of the raglan back and of the basic pattern.

Raglan depth 26 cm / 130 rows
same as back

Sleeve length 35 cm / 176 rows
Side seam between welt and beginning of cap (sleeve head) comprising: sleeve length of basic pattern 38 cm
less lower beginning of armhole $\underline{- 3 \text{ cm}}$
35 cm

Depth of welt 5 cm / 26 rows
same as basic pattern

Upper arm width 42 cm / 120 sts
comprising: Half bust width back 158 sts
less sts for neck $\underline{- 38 \text{ sts}}$
120 sts

Casting on for welt 22 cm / 64 sts
same as basic pattern

Total length 66 cm / 330 rows
comprising: raglan depth 26 cm
plus sleeve length + 35 cm
plus depth of welt + 5 cm
 $\underline{\hspace{1.5cm} 66 \text{ cm}}$

Section A:
Welt, knit even, same as in basic pattern. ▶

Section B:

Increase for side seam which is 176 rows in height.

How many stitches must be increased?

Upper arm width	120 sts
less casting on	<u>- 64 sts</u>
	56 sts

half for each side $\div 2 =$ 28 sts

On each side, 28 sts must be increased within 176 rows.

How are these 28 increases distributed among the 176 rows?

$176 \text{ rows} \div 28 = 6 \text{ rows}$, remainder 8 rows.

The remaining 8 rows will be knitted at the end of section B. Consequently, we work as follows:

+28×1 st ● 6th row (increase 1 st and knit 6 rows, repeat this 27 times more)

knit 8 rows straight

Check:	sts	rows
Increase 28×1 st and knit		
28×6 rows	28	168
Knit 8 rows without increasing	<u>0</u>	<u>8</u>
	28	176

Section C and D:

Raglan decreasing

Since on one side the sleeve joins the back and on the other side the front, we must decrease differently on each side.

How many rows must be knitted?

Altogether as many as for the back, therefore 130 rows.

Upper width of sleeve calculated from half bust width back	120 sts
	158 sts
less neck	<u>- 38 sts</u>
	120 sts

half of this for each side 60 sts

On the side to be joined to the back, decrease 60 sts within 130 rows, same as on back. The side to be joined to the front, will be governed by the front.

The raglan of the front is 2 cm (in our case 10 rows) shorter than the back. The missing 10 rows must be knitted on the sleeve. Consequently, on this side, the rows to be knitted on the sleeve are distributed as follows:

Section C: Raglan depth same as on front	120 rows
Section D: Continuation for neck adds up to the necessary total length of	<u>+ 10 rows</u>
	130 rows

How are the stitches to be decreased distributed among the rows?

If, on this side, the raglan depth has been reached, there should, on principle, remain on the machine a number of stitches corresponding to 5 to 7 cm, depending on the size of the sweater and the thickness of the wool.

In our case, on reaching the 120 rows, there should remain on the machine 5 to 6 cm, i.e. 14 to 17 stitches of which, on the side next to the back, 6 sts are to be decreased every other row (1st decrease in 1st row of the last 10 rows).

8 to 11 sts = average figure 10 sts, still remain to be decreased for the continuation of the neck. For that purpose, these 10 sts must be decreased rapidly, i.e. 1 st every row.

Thus there are for the side next to the front:	
Total decreasing	60 sts
less 10 sts for continuation of neck	<u>- 10 sts</u>
raglan decreasing	50 sts

In section C, on the side of the sleeve next to the front, 50 sts must be decreased for raglan within 120 rows:

We work according to the «Rules for Raglan Decreasing, exception c»

$120 \text{ rows} \div 50 = 2 \text{ rows}$, remainder 20 rows.

The remaining 20 rows = 10×2 rows will be distributed among the first 10 decreases as follows:

- 10×1 ● 4th row (decrease 1 st and knit 4 rows, repeat this 9 times more)
- 40×1 ● 2nd row (decrease 1 st and knit 2 rows, repeat this 39 times more)

Check:	sts	rows
Decrease 10×1 st and knit		
10×4 rows	10	40
Decrease 40×1 st and knit		
40×2 rows	<u>40</u>	<u>80</u>
	50	120

Consequently, there remain for section D and for the continuation of the neck respectively, 10 sts to be decreased within 10 rows:

- 10×1 ● 1 row

Check:	sts	rows
Decrease 10×1 st and knit		
10×1 row	10	10

Description of Sleeve in Raglan Pattern

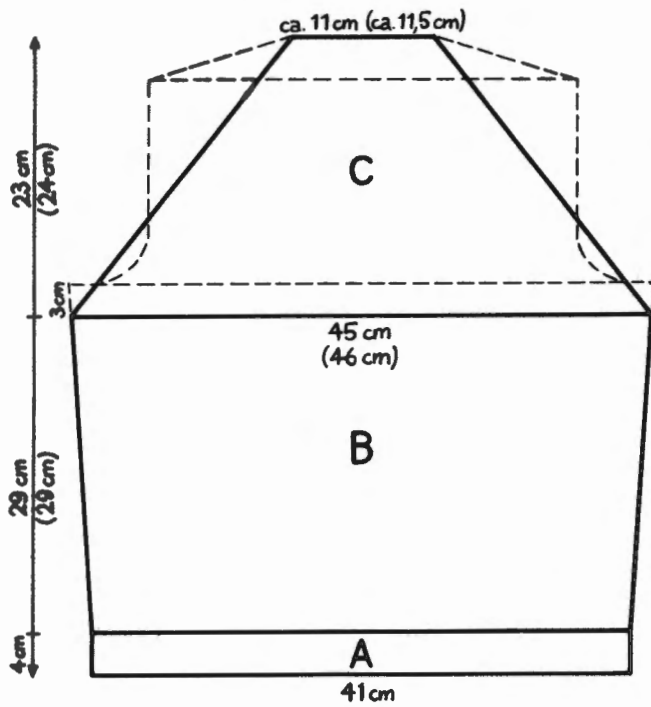
Section A: For welt in 1:1 rib cast on 64 stitches and knit 26 rows. RC 000.

Section B: Increase on both sides and then knit even to RC 176. Set RC to 000.

Section C: Decrease on both sides for raglan and knit 120 rows. Set RC to 000. Work second sleeve to correspond.

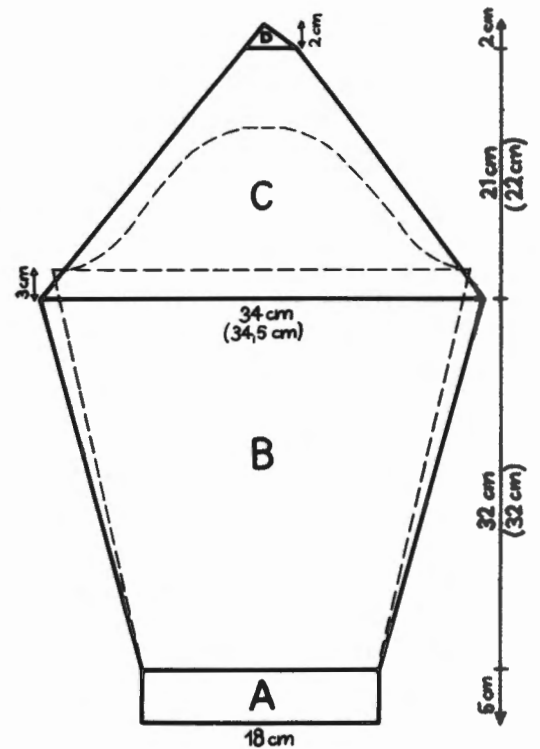
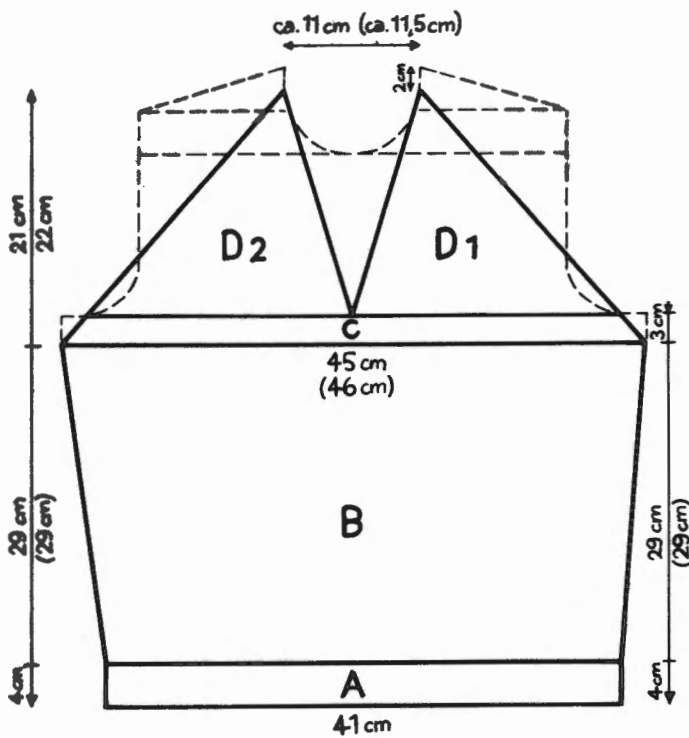
Section D: Knit 10 rows while continuing to decrease on side which is to be joined to the back in the same way as on back; on the other side, decrease 10 times 1 st every row. – Work second sleeve to correspond.

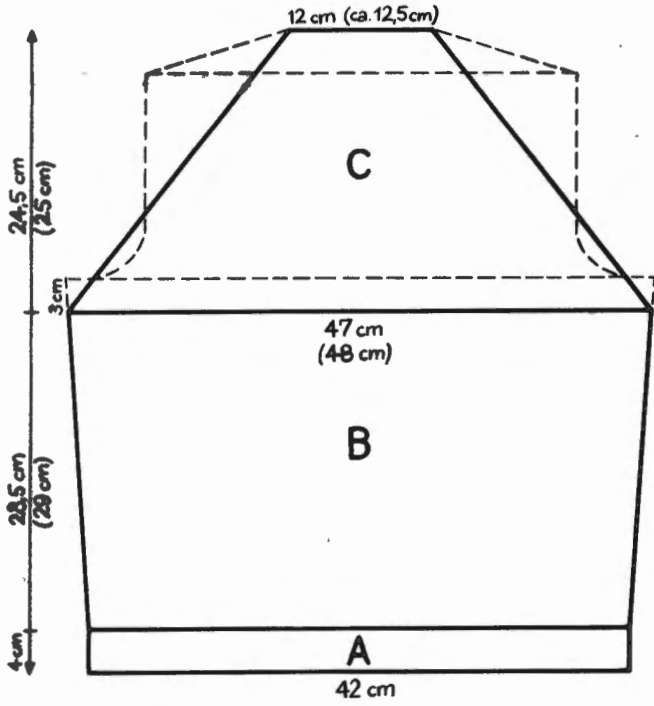
Raglan Patterns



Raglan Patterns for PASSAP Sizes 8 and 9

The figures in brackets refer to size 9. The dotted lines show the shape of the basic pattern from which the raglan pattern was derived.

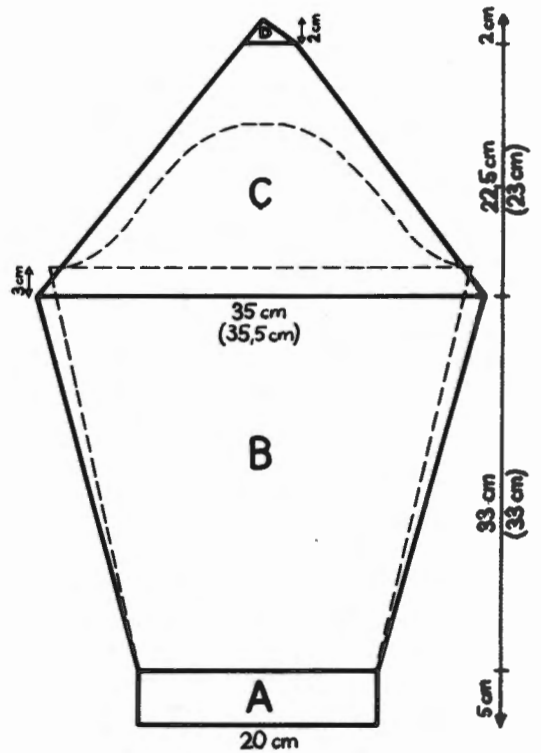
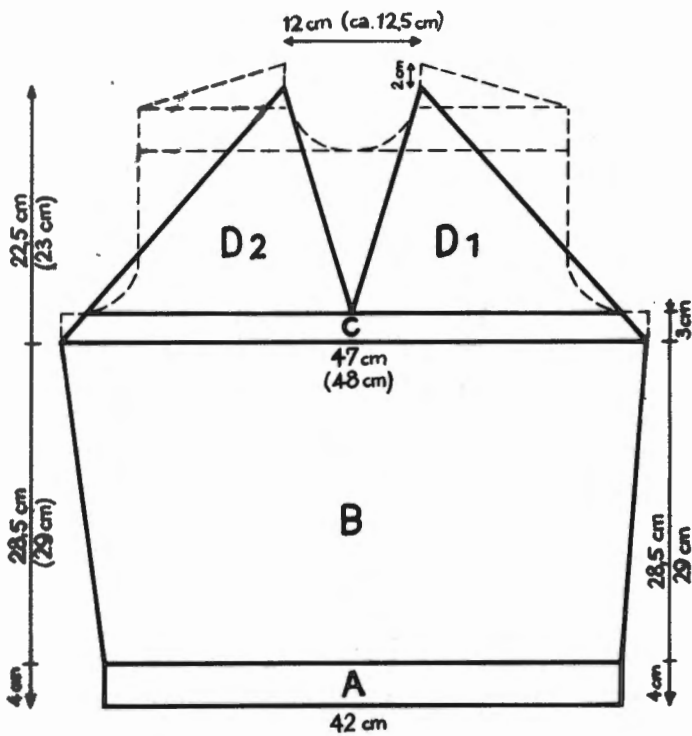


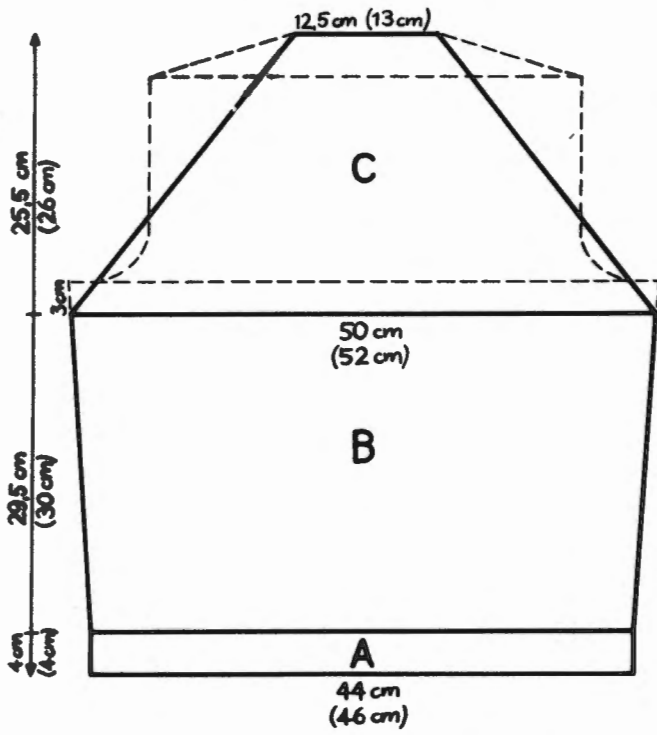


Raglan Patterns for PASSAP Sizes 10 and 11

The figures in brackets refer to size 11.

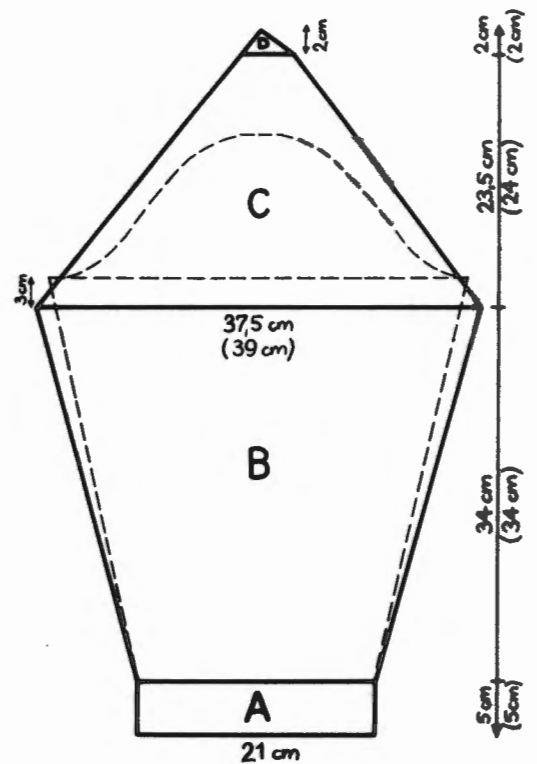
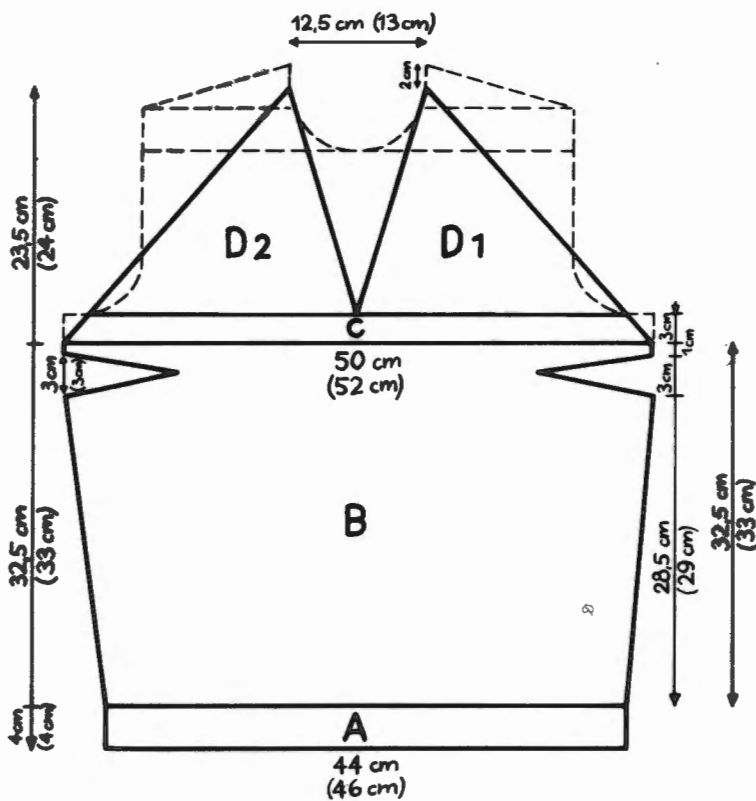
The dotted lines show the shape of the basic pattern from which the raglan pattern was derived.

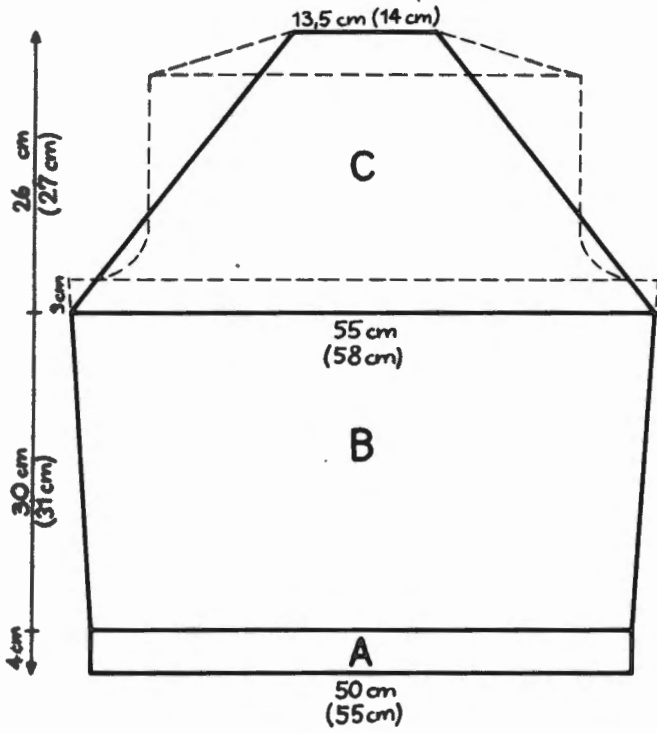




Raglan Patterns for PASSAP Sizes 12 and 13

The figures in brackets refer to size 13. The dotted lines show the shape of the basic pattern from which the raglan pattern was derived.

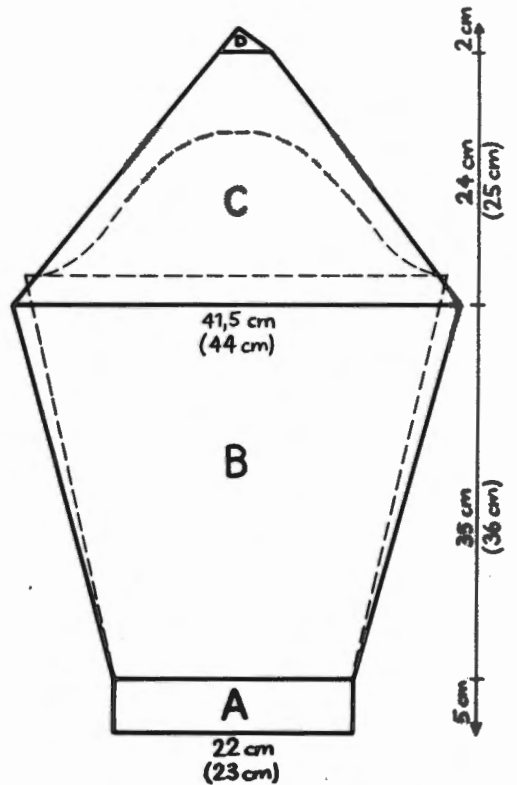
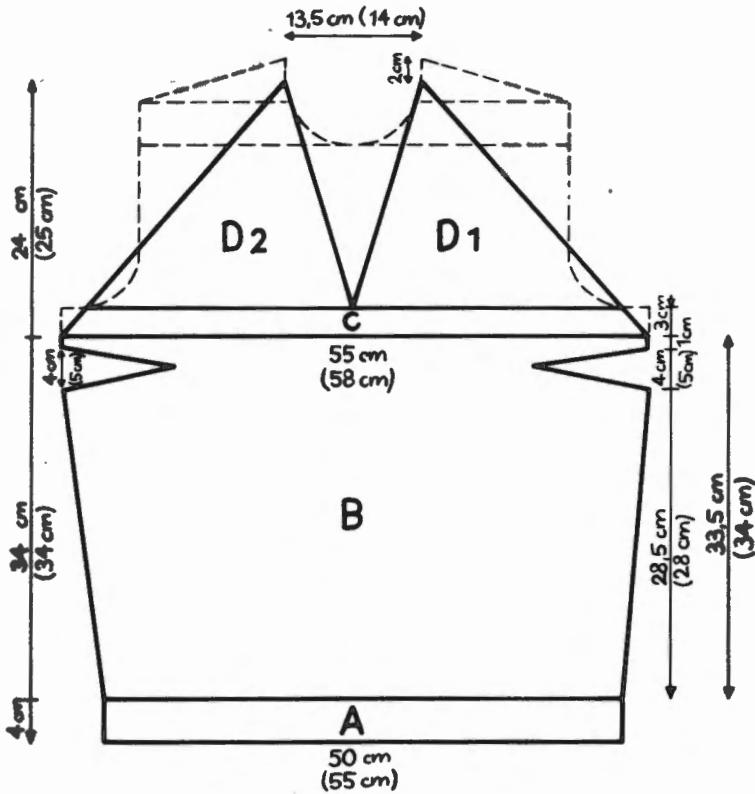




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Raglan Patterns for PASSAP Sizes 14 and 15

The figures in brackets refer to size 15. The dotted lines show the shape of the basic pattern from which the raglan pattern was derived.





Chapter 4

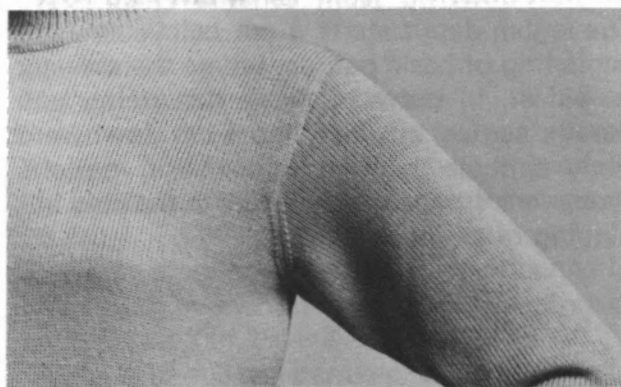
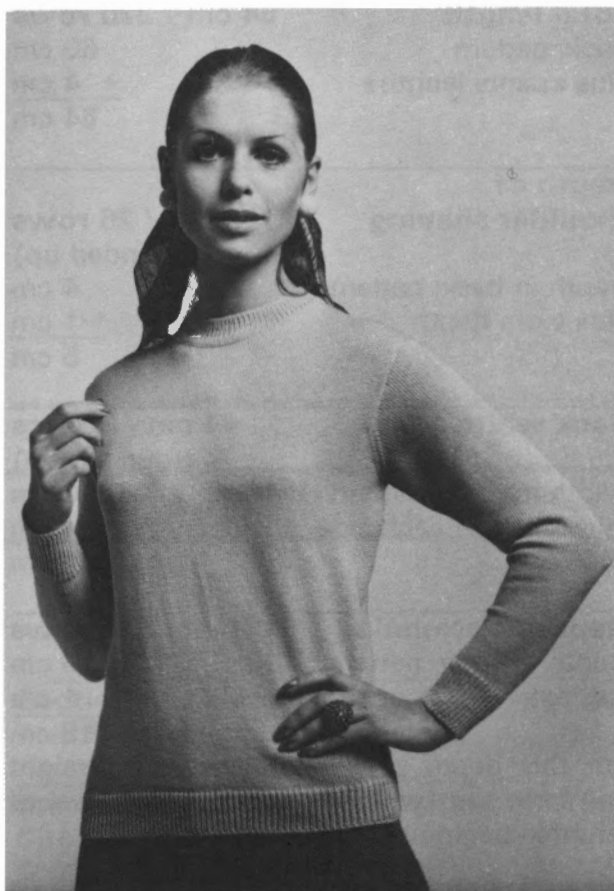
Pattern with deep set-in sleeve

for ladies

Very popular with all the sports fans because it is casual and comfortable – the pattern with deep set-in sleeve. It is made to «pants length», i.e. it is 3 to 4 cm longer than the basic pattern. Since a casual sweater will not be worn by stout women, there is no need for bust darts in the front. Here, too, we used as basis the patterns of chapter 2 so that you only have to enter the numbers of stitches and rows next to your measurements in centimeters.

For a better understanding of the shaping in the pattern with deep set-in sleeve, we again demonstrate on size 14 how to calculate increases and decreases. As usual, our basis is a test square of 100 sts = 35 cm and 100 rows = 20 cm and the corresponding numbers of stitches and rows have been entered next to the measurements in centimeters.

And now we will explain how to shape.



Shaping for Pattern with deep set-in sleeve

Stocking stitch with all needles, derived from basic pattern, PASSAP size 14

Back – Explanation of Pattern

For this pattern of the back, all measurements are derived from those of the basic pattern. The pattern clearly shows where measurements are identical and where they have been altered.

Total length	64 cm / 320 rows
Basic pattern	60 cm
plus «pants length»	+ 4 cm
	<u>64 cm</u>

Depth of shoulder shaping	5 cm / 26 rows
	(rounded up)
Depth in basic pattern	4 cm
plus extra depth	+ 1 cm
	<u>5 cm</u>

Back width	44 cm / 126 sts
	(rounded up)
Width in basic pattern	40 cm
plus 2 cm on each side = 2×2 cm =	+ 4 cm
	<u>44 cm</u>

Depth of armhole	18 cm / 90 rows
Depth in basic pattern	19 cm
less extra depth of shoulder shaping	- 1 cm
	<u>18 cm</u>

For this depth of armhole, draw a straight line from top (widened back) to the level of armhole beginning in basic pattern.

Raglan depth 4 cm / 20 rows
The raglan depth starts 4 cm below armhole beginning of basic pattern, where the sweater is widest. In order to reach this point, you draw a vertical auxiliary line 4 cm downward from armhole beginning of basic pattern. From here draw an oblique line to the new beginning of armhole.

Length of sweater	33 cm / 166 rows
between welt and raglan	
comprising depth of section B	
of basic pattern	33 cm
less raglan deepening	- 4 cm
	<u>29 cm</u>
plus «pants length»	+ 4 cm
	<u>33 cm</u>

Depth of welt	4 cm / 20 rows
----------------------	-----------------------

Casting on for welt	50 cm / 144 sts
same as basic pattern	

Half bust width	55 cm / 158 sts
same as basic pattern	

Depth of raglan, each side	5,5 cm / 16 sts
same as basic pattern	
comprising half bust width	55 cm
less back width	- 44 cm
	<u>11 cm</u>
11 cm ÷ 2 = each side	5,5 cm

Section A:

Welt, knit straight with 144 sts, same as in basic pattern.

Section B:

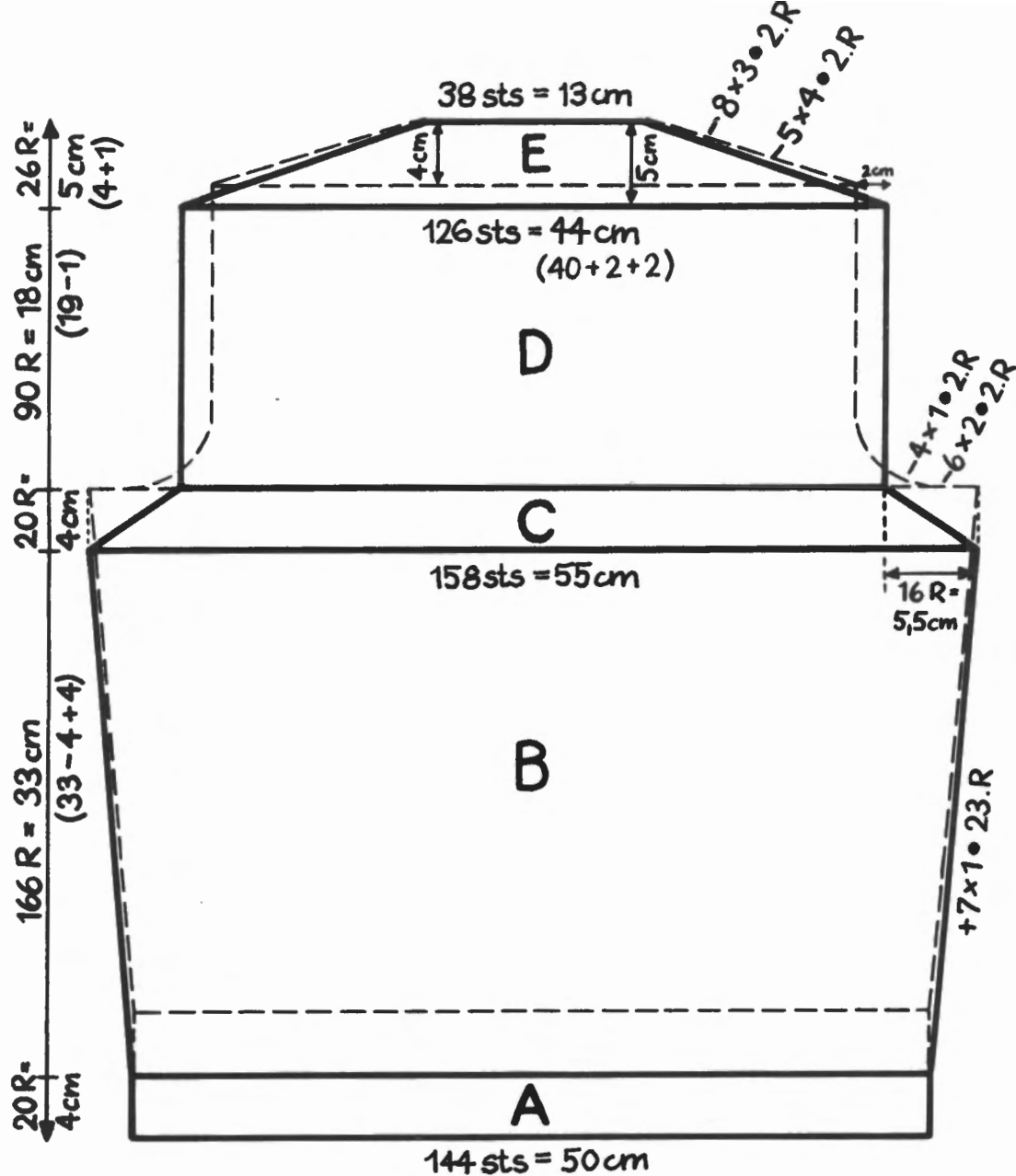
Since the deepening for raglan is minus 4 cm and the lengthening for «pants length» plus 4 cm, the side seam is knitted same as in basic pattern, namely increasing on both sides 1 st 7 times every 23rd row, with a total of 166 rows.

Section C:

Raglan decreasing which is 20 rows in depth.

How many stitches must be decreased on each side for raglan?

Half bust width	158 sts
less back width	- 126 sts
	<u>32 sts</u>
half of this for each side, 32 ÷ 2 =	16 sts



On each side, 16 sts must be decreased within 20 rows.

Since, on principle, we decrease for raglan every other row, these 16 sts must be decreased in $20 \div 2 = 10$ steps.

$16 \text{ sts} \div 10 = 1 \text{ st per step, remainder } 6 \text{ sts.}$

The remaining 6 sts are spread over the first 6 steps and according to «exception b) of Raglan Rules» we work as follows:

dec 6×2 sts ● 2nd row (i.e. dec 2 sts and knit 2 rows, repeat this 5 times more)

dec 4×1 st ● 2nd row (i.e. dec 1 st and knit 2 rows, repeat this 3 times more)

Check :

6×2 sts every 2nd row

4×1 st every 2nd row

sts	rows
12	12
4	8
<hr/> 16	<hr/> 20

Section D: Armhole

Knit 90 rows with 126 stitches.

Section E:

Shoulder shaping which is 26 rows in depth.

How many stitches must be decreased on each side?

Back width	126 sts
less neck same as basic pattern	- 38 sts
	<hr/> 88 sts

$88 \text{ sts} \div 2 = \text{each side}$

44 sts

On each side, 44 sts must be decreased within 26 rows.

Since the shaping of a shoulder is obtained by decreasing every other row, these 44 sts must be decreased in $26 \div 2 = 13$ steps.

$44 \text{ sts} \div 13 = 3 \text{ sts per step, remainder } 5 \text{ sts.} \blacktriangleright$

The remaining 5 sts will be distributed among the first 5 steps. To that effect, we work as follows:

Dec 5×4 sts ● 2nd row (dec 4 sts and knit 2 rows, repeat this 4 times more)

Dec 8×3 sts ● 2nd row (dec 3 sts and knit 2 rows, repeat this 7 times more)

Check:	sts	rows
– 5 times 4 sts every 2nd row	20	10
– 8 times 3 sts every 2nd row	24	16
	<u>44</u>	<u>26</u>

Bind off the remaining 38 sts all at once.

Description of the Back

Section A: For welt in 1:1 rib, knit 20 rows with 144 sts, same as in basic pattern. RC 000.

Section B: For side seam knit 166 rows, increasing as in basic pattern. RC 000.

Section C: Decrease on both sides for raglan until RC 20. Set RC to 000.

Section D: Knit for armhole 90 rows with 126 stitches. RC 000.

Section E: Decrease on both sides for shoulder shaping and knit 26 rows. Bind off (cast off) remaining 38 sts all at once.

Front – Explanation of Pattern

For this pattern of the front, the measurements are derived from those of the back with deep set-in sleeve. For guidance, the front of the basic pattern is indicated by a dotted line. See pattern.

Total length 64 cm / 320 rows
including «4 cm pants length»

Depth of shoulder shaping 5 cm / 26 rows
same as back

Width at beginning of armhole 44 cm / 126 sts
corresponds to back width

Depth of armhole 18 cm / 90 rows
same as back

Raglan depth 4 cm / 20 rows
same as back

Length of sweater 33 cm / 166 rows
between welt and raglan
same as back, without bust darts

Depth of welt 4 cm / 20 rows
same as back

Casting-on for welt 50 cm / 144 sts
same as back

Half bust width 55 cm / 158 sts
same as back

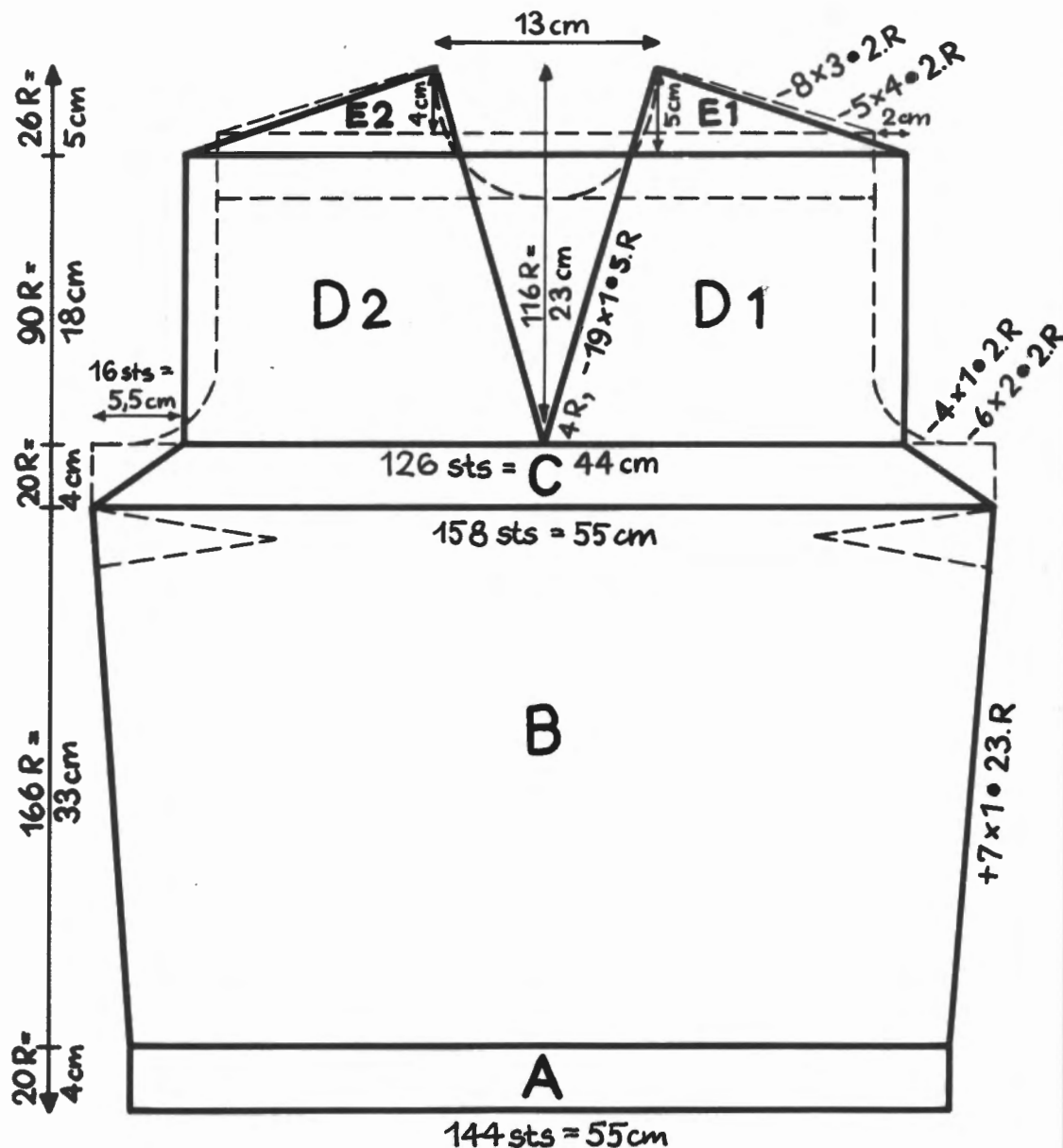
Depth of raglan 5,5 cm / 16 sts
same as on back, each side

Depth of V-neck 23 cm / 116 rows
comprising measurements for back:
Depth of armhole 18 cm
plus shoulder shaping + 5 cm
23 cm

Section A:
Welt, knit straight with 144 sts, same as back.

Section B:
Same as on back, knit 166 rows and increase on both sides 1 st 7 times every 23rd row.

Section C:
Raglan on both sides, decrease as for back and knit 20 rows.



Section D 1 and E 1: Armhole and V-neck

Section D 1 is 90 rows in depth: At right knit straight.

Section E 1 is 26 rows in depth: At right work the shoulder shaping.

Both sections are 116 rows in depth: At left decrease for neck in both sections.

How many stitches must be decreased for one side of the neck?

Width at beginning of armhole 126 sts
less twice shoulder width, $2 \times 44 = - 88$ sts
remains neck width of back 38 sts

half for each side of neck,

$38 \text{ sts} \div 2 = 19 \text{ sts}$

For one side of neck, 19 sts must be decreased

within 116 rows.

How are the decreases spread over the 116 rows?

First (this time instead of 2) knit 4 rows straight.

116 rows
less 4 rows
 4 rows
112 rows

$112 \text{ rows} \div 19 = 5 \text{ rows, remainder } 17 \text{ rows.}$

We knit the remaining 17 rows after the last decrease and work as follows:

Knit 4 rows even

Decrease $19 \times 1 \text{ st} \bullet 5 \text{ th row}$ (i.e. dec 1 st and knit 5 rows, repeat this 18 times more)

Knit 17 rows straight

Check:

	sts	rows
4 rows even	—	4
$19 \times 1 \text{ st} \bullet 5 \text{ th row}$	19	95
17 rows even	—	17
	<u>19</u>	<u>116</u>

Description of the Front

Section A: For welt in 1:1 rib, knit 20 rows with 144 sts, same as for back. RC 000.

Section B: Increase on both sides, same as on back, and knit 166 rows. RC 000.

Section C: Decrease on both sides for raglan and knit 20 rows. RC 000.

Section D 1: Knit 90 rows, at right even, at left decreasing for neck. RC 000.

Section E 1: Knit 26 rows, at right decreasing for shoulder shaping, at left for neck.

Section D 2 and E 2: Work to correspond, i.e. with reversed shapings, to D 1 and E 1, with armhole and shoulder at left and neck at right.

Sleeve – Explanation of Pattern

The measurements for these sleeves are partly derived from those of the back (for deep set-in sleeve), partly from those of the basic pattern. Since the shoulder is very much widened, the cap of the sleeve must be proportionately lower.

The top of the cap must be approx. 2 cm narrower than the armhole depth of back and front since, when the sleeves are sewn in, the stitches of the top of the cap stretch more easily than the rows of armhole edges, and the shoulder seam alone does not absorb this stretch. In order to avoid the sleeve turning out too wide, the 2 cm stretch is already deducted at the upper sleeve width.

Upper sleeve width	45 cm / 128 sts
level with beginning of cap (raglan) of basic pattern calculated from:	
Twice armhole depth of back,	
2 × 18 cm =	36 cm
plus twice raglan width of back,	
2 × 5,5 cm =	+ 11 cm
	47 cm
less 2 cm due to stretch	
	- 2 cm
	45 cm

Thus on each side 3 cm wider than in basic pattern.

Raglan depth	4 cm / 20 rows
same as on back, but 4 cm above beginning of cap of basic pattern	

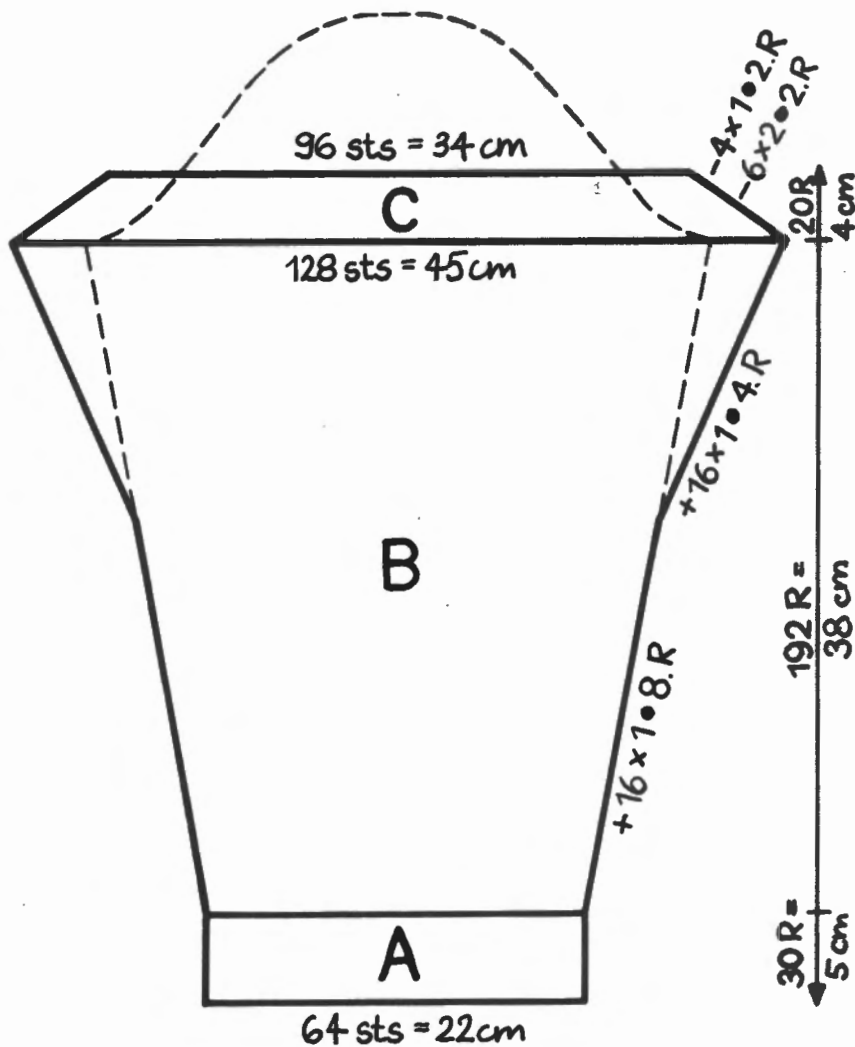
Top of cap (sleeve head)	34 cm / 96 sts
calculated from upper sleeve width = 45 cm	
less twice raglan width of back,	
2 × 5,5 cm =	- 11 cm
	34 cm

For the raglan shaping connect on both sides the line of the upper sleeve width with the line of the top of cap.

Casting-on for welt	22 cm / 64 sts
same as in basic pattern	

Depth of welt	5 cm / 30 rows
same as in basic pattern	

Underarm length	38 cm / 192 rows
between welt and raglan beginning	
same as in basic pattern (rounded up).	



Section A:

Welt, knit straight, same as in basic pattern.

Section B:

Increase for side seam which is 192 rows in depth.

How many stitches must be increased?

Upper sleeve width 128 sts
 less stitches cast on for welt - 64 sts
 64 sts

half of this for each side, $64 \div 2 = 32$ sts

How are these 32 stitches to be increased over the 192 rows?

Since the deep set-in sleeve must have a large upper width, we naturally have to increase more stitches along the side seam here than in the basic pattern, namely 32 on each side instead of 24 sts, consequently 8 sts more. These 8 sts will be in addition increased

within the last third of the rows. Therefore, we first work same as in basic pattern, increasing every 8th row and thereafter every 4th row as follows:

- +16x1 • 8th row (inc 1 st and knit 8 rows, repeat this 15 times more)
- +16x1 • 4th row (inc 1 st and knit 4 rows, repeat this 15 times more)

Check:	sts	rows
increase 16 times 1 st and knit 16 times 8 rows	16	128
increase 16 times 1 st and knit 16 times 4 rows	16	64
	<u>32</u>	<u>192</u>

Section C:

Raglan decreasing same as on back.

Bind off remaining 96 sts all at once. ▶

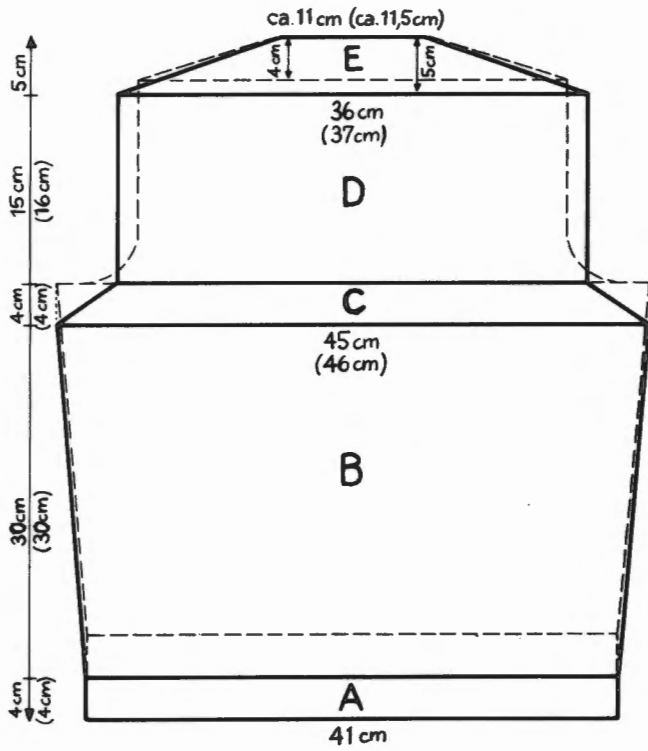
Description of the Sleeve

Section A: Cast on 64 stitches for welt in 1:1 rib and knit 30 rows. RC 000.

Section B: Increase on both sides and knit to RC 192. Set RC to 000.

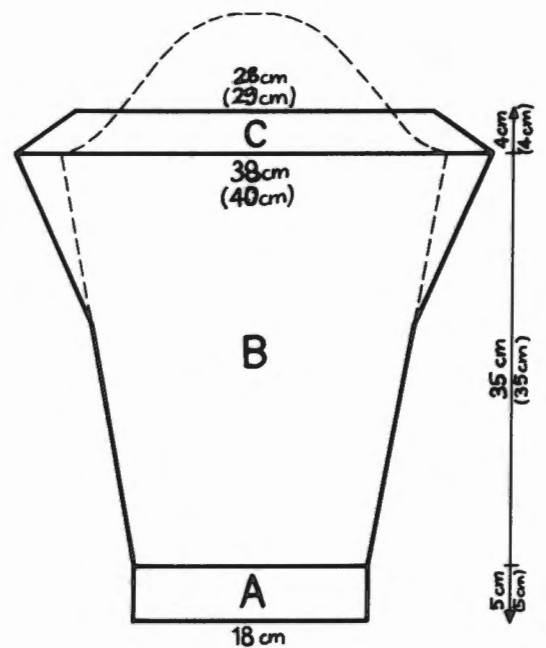
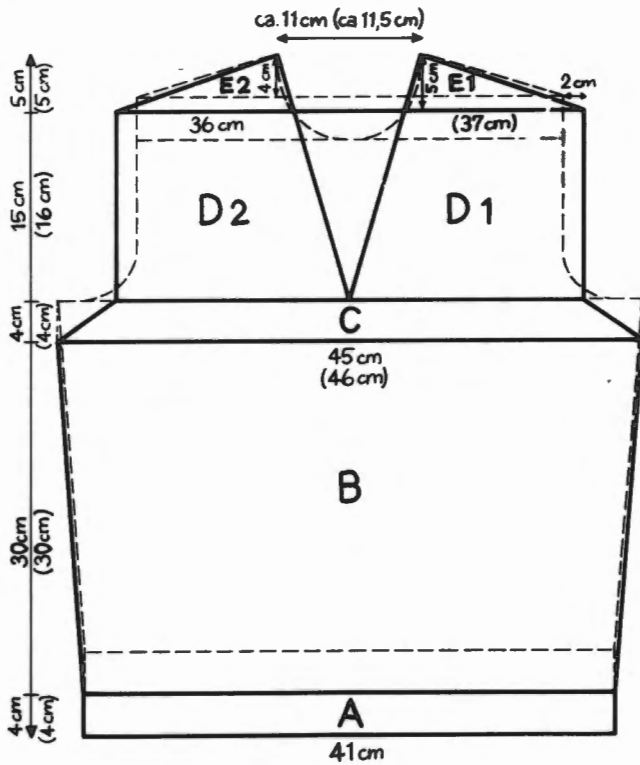
Section C: Decrease for raglan on both sides and knit to RC 20. Bind off (cast off) the last 96 stitches all at once.

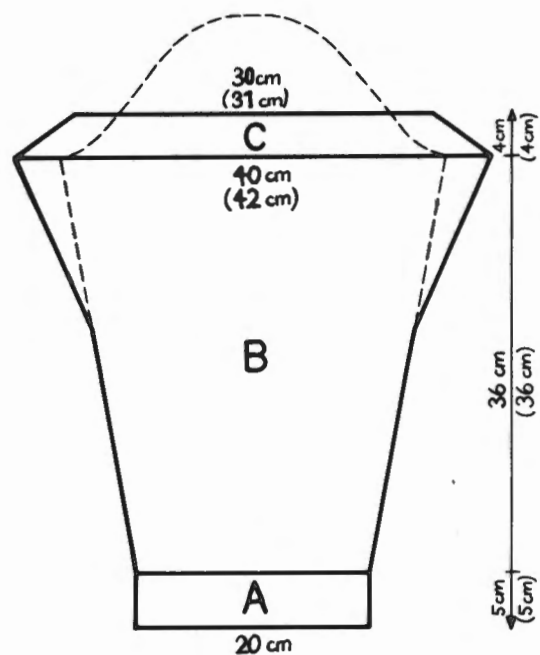
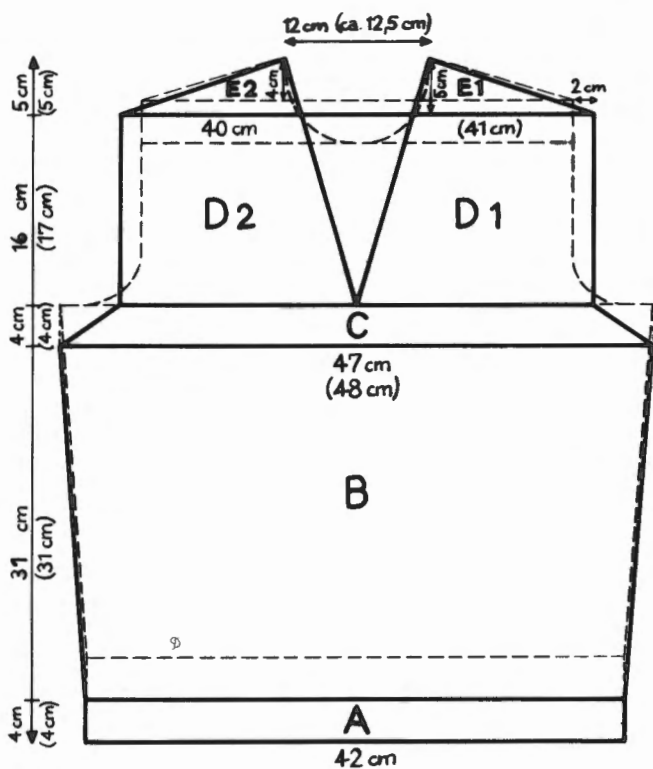
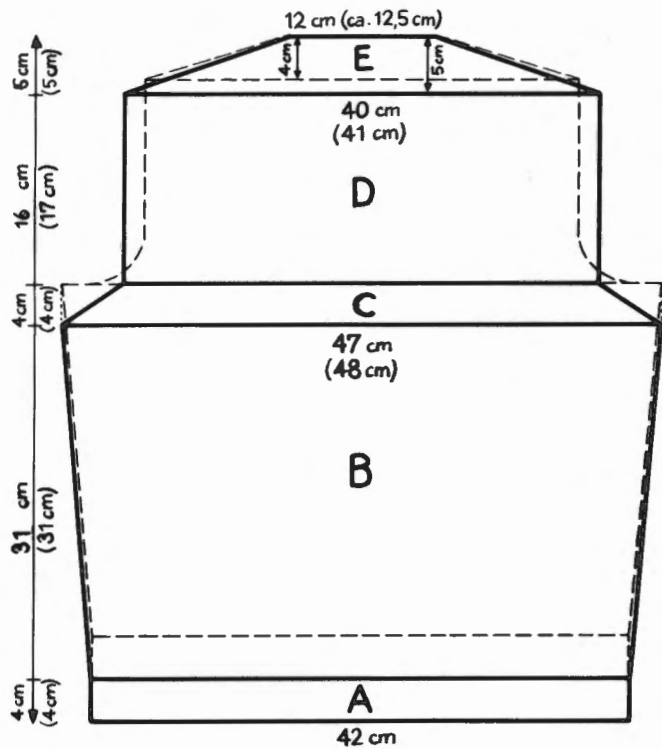
Patterns with deep set-in sleeve



Patterns with deep set-in sleeve for PASSAP sizes 8 and 9

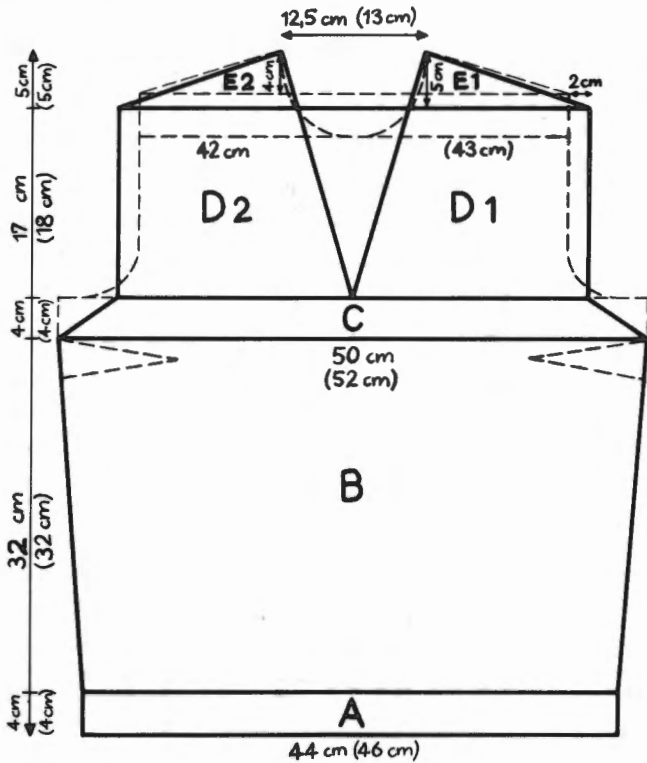
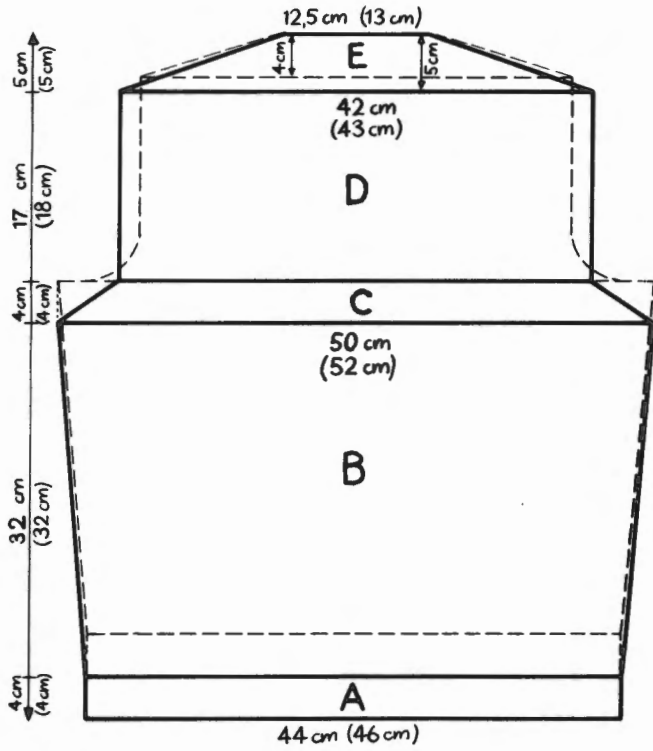
The figures in brackets refer to size 9. The dotted lines show the shape of the basic pattern from which the pattern with deep set-in sleeve was derived.





Patterns with deep set-in sleeve for PASSAP sizes 10 and 11

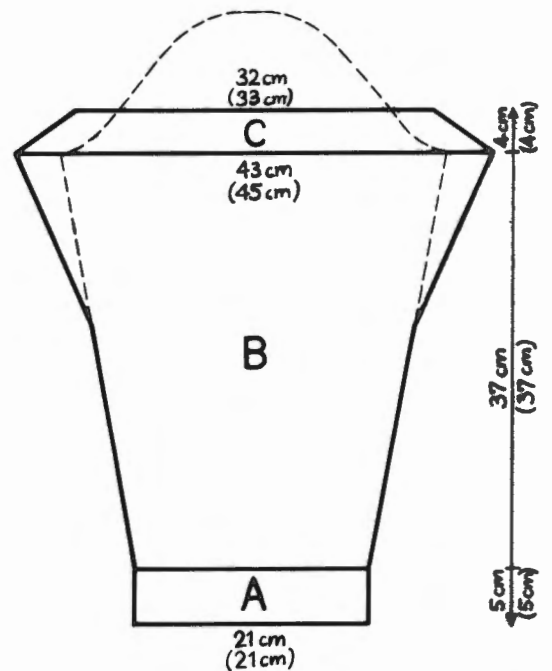
The figures in brackets refer to size 11. The dotted lines show the shape of the basic pattern from which the pattern with deep set-in sleeve was derived.

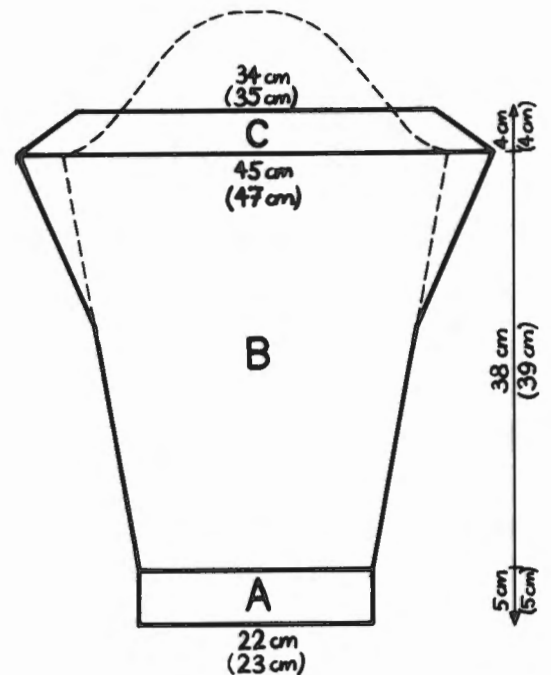
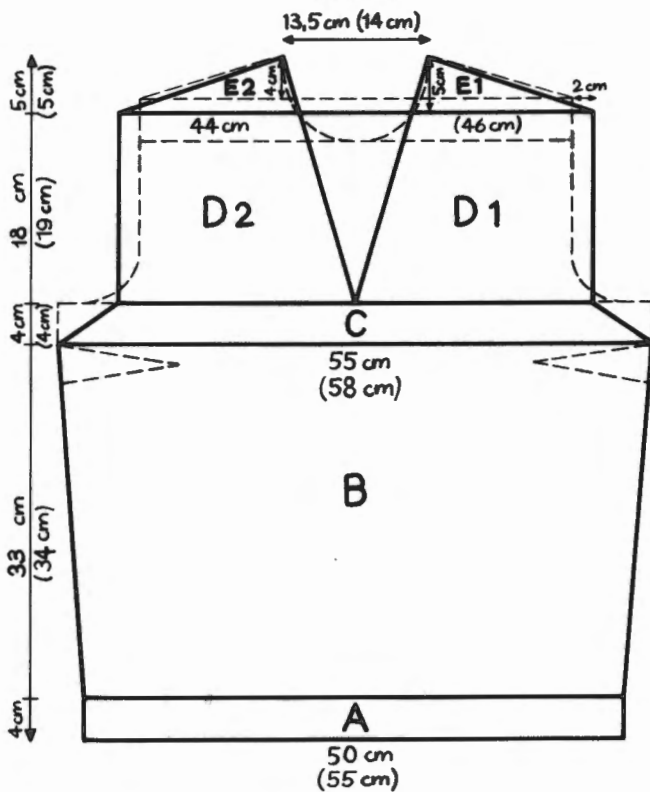
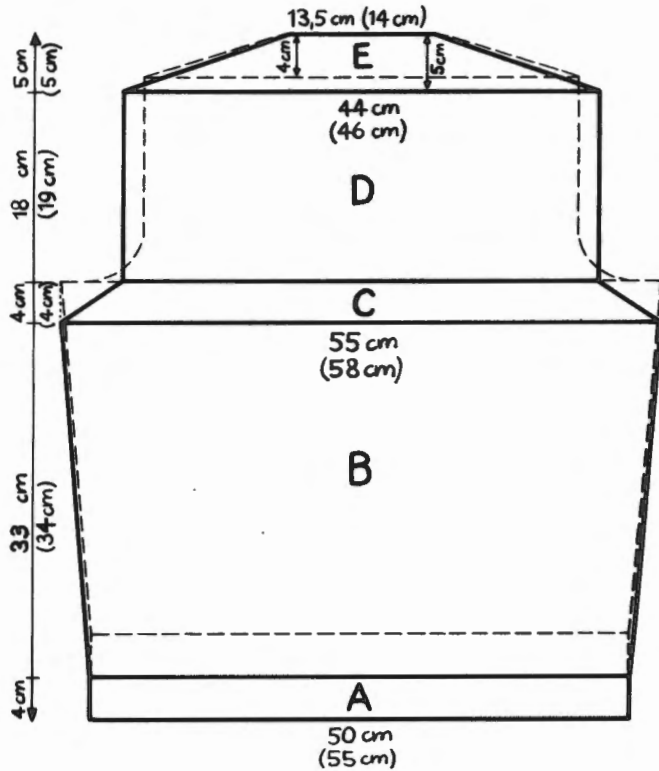


Patterns with deep set-in sleeve for PASSAP sizes 12 and 13

The figures in brackets refer to size 13.

The dotted lines show the shape of the basic pattern from which the pattern with deep set-in sleeve was derived.



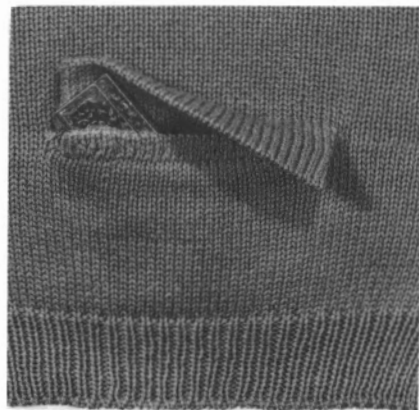


Patterns with deep set-in sleeve for PASSAP sizes 14 and 15

The figures in brackets refer to size 15. The dotted lines show the shape of the basic pattern from which the pattern with deep set-in sleeve was derived.

Chapter 5

Pockets, Openings and Collars



Conventional pocket with pocket band and flap in stocking stitch

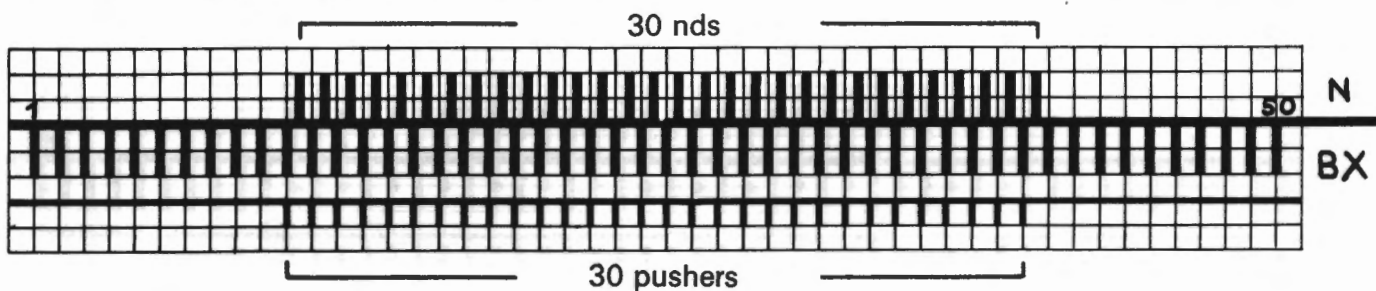
Part 1: Casting-on

Cast on 50 sts and knit 14 rows in 1:1 rib. Then transfer all the sts from back to front bed and knit 30 rows in stocking stitch. Break off yarn.



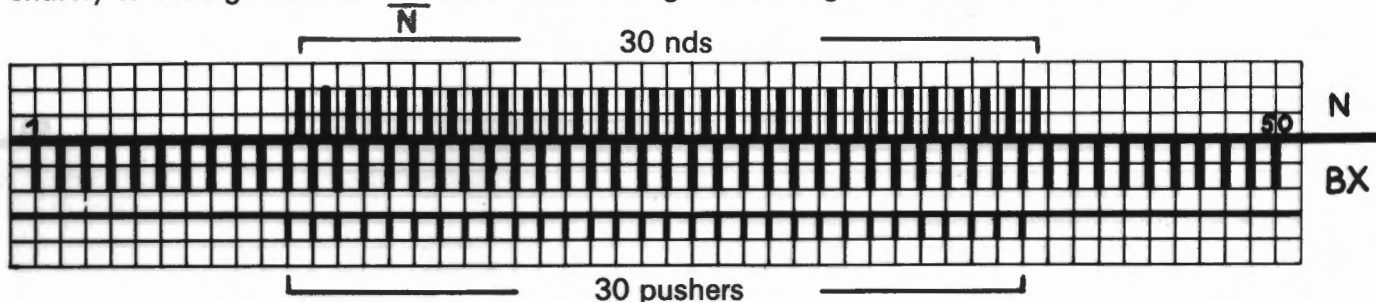
Part 2: Pocket band and pocket

For casting-on put 30 needles on back bed and 30 pushers on front bed into Working Position. Lock on back bed to N, on front bed to BX. Set stitch size regulators of back and front lock approx. 2 numbers lower. Knit 1 row. Now back lock to GX (leave front lock on BX) and knit 11 rows with regular stitch size for stocking stitch. Then transfer all the stitches from back to front bed and knit 60 rows for pocket on front bed.



Part 3: Flap

Cast on as in part 2. Then back lock to GX, front lock to BX and knit 31 rows for flap. Transfer all the stitches from back to front bed. Back needles in Neutral Position. Break off yarn. Lock entirely to the right and on GX Continue knitting in stocking stitch over all the stitches.

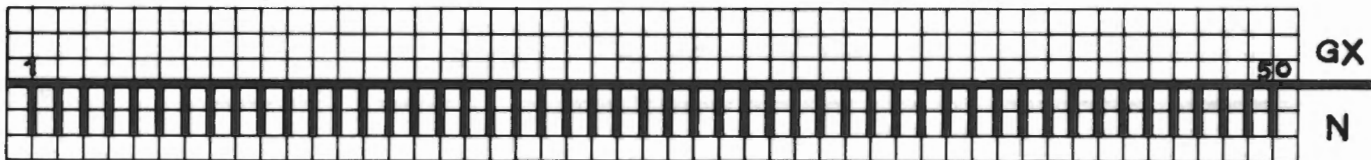




Pocket with 1:1 Rib band

Part 1: Casting-on

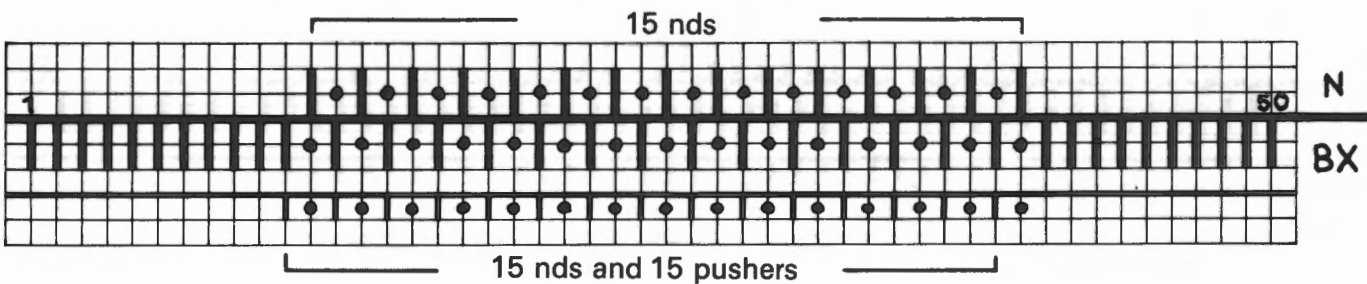
For welt in 1:1 Rib cast on 50 sts and knit 14 rows. Transfer sts from back to front bed and knit 30 rows in stocking stitch.



Part 2: Pocket band in 1:1 Rib

In centre, transfer 15 sts from front to back bed (1:1 division). On front bed 15 pushers in Working Position. Set lock to \overline{N} Break off yarn and knit 20 rows for pocket band in 1:1 Rib

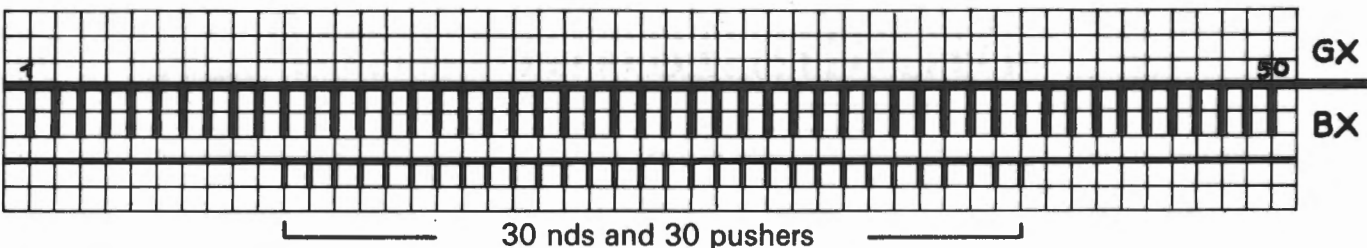
with reduced stitch size and red strippers. Now transfer all the stitches from back bed onto empty needles of front bed. Lower bed and hang the loops of the purl stitches of the last row knitted prior to the band (part 1) onto the 30 front bed nds. Put all the needles of back bed out of action (in Neutral-Position).



Part 3: Pocket

Lock \overline{GX} With 30 sts knit 60 rows in stocking stitch. Push lock to the right. Break off yarn and

with lock-setting \overline{GX} , normal stitch size and all the needles continue knitting in stocking stitch.

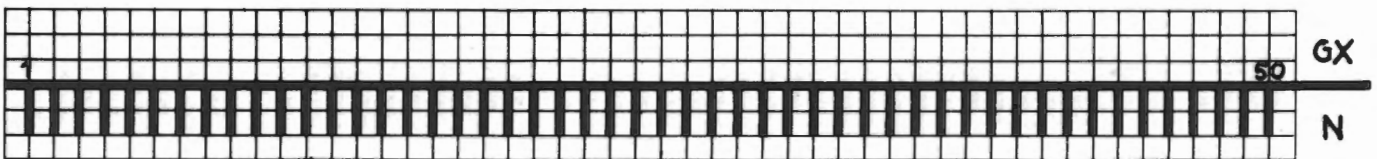




Pocket with band in stocking stitch

Part 1: Casting-on

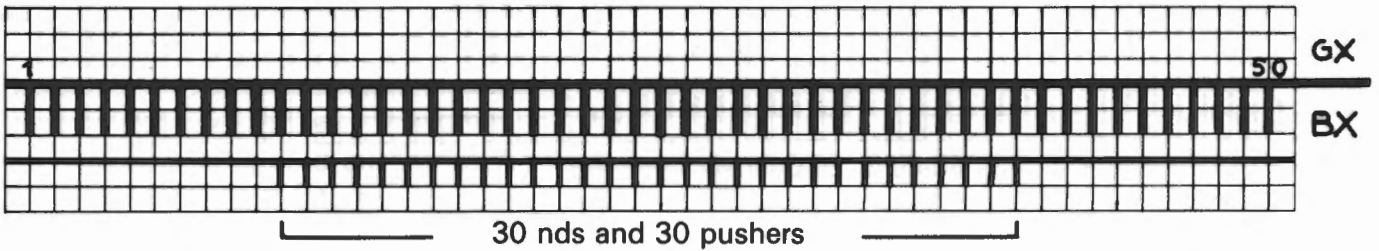
For welt in 1 : 1 Rib cast on 50 stitches and knit 14 rows. Then transfer all the stitches from back onto front bed and with 50 stitches knit 30 rows in stocking stitch. Lock at right. Break off yarn.



Part 2: Pocket band and pocket

Lock GX In centre, 30 pushers in Working Position, knit 20 rows with pushers. Now hang the BX loops of the purl stitches of the last row knitted prior to the band (part 1) onto the 30 front bed needles. Knit 60 rows for pocket. Break off yarn and push lock entirely to the right. Lock GX N

and continue knitting with all needles.

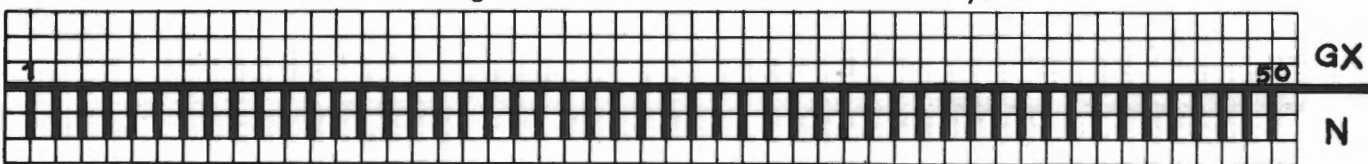




Neck with overlap and underlap for ladies

For gentlemen reverse sides: In part 2, knit facing on the right, in part 3 on the left.

Part 1: Cast on 50 sts for stocking stitch and knit 50 rows. Break off yarn.

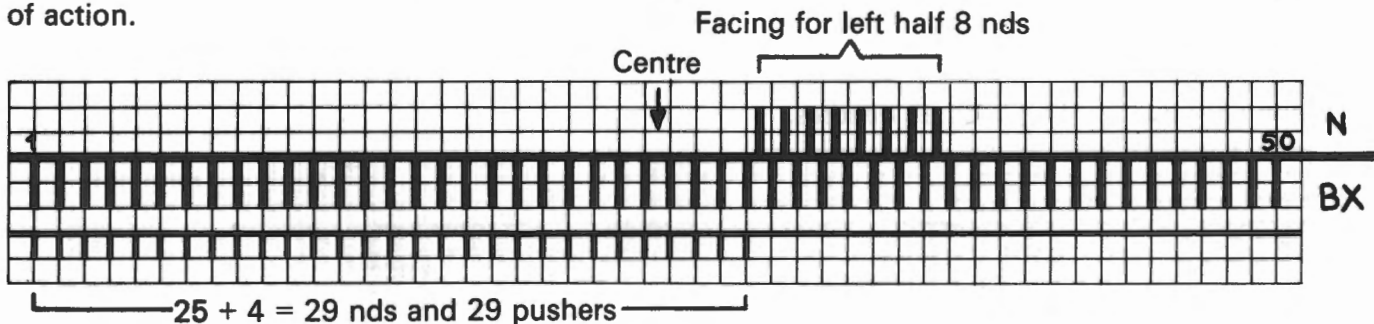


Part 2: Left half

Lock N Left half = 25 sts + 4 sts overlap + 8 sts facing = totalling 37 sts. Knit 30 rows. Now

BX

bind off for neck as follows: First 16 sts (8 sts on back bed, 8 sts on front bed), then 4 sts, 3 sts, 4×1 st every other row. Bind off remaining 10 sts. Empty needles and all the pushers out of action.



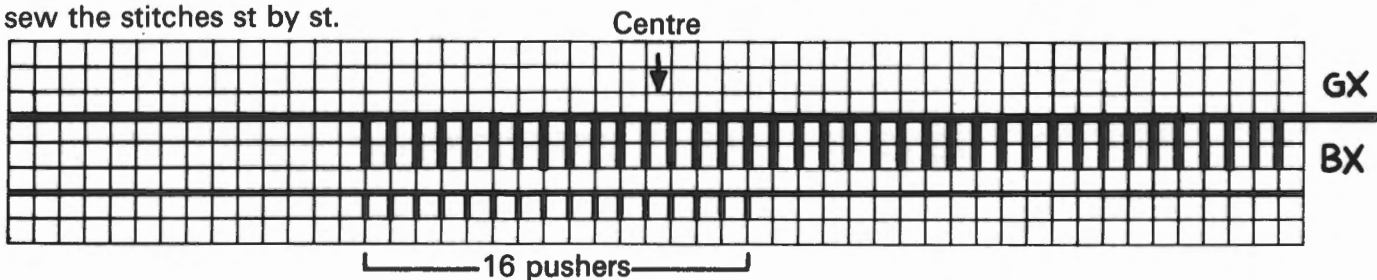
Part 3: Right half

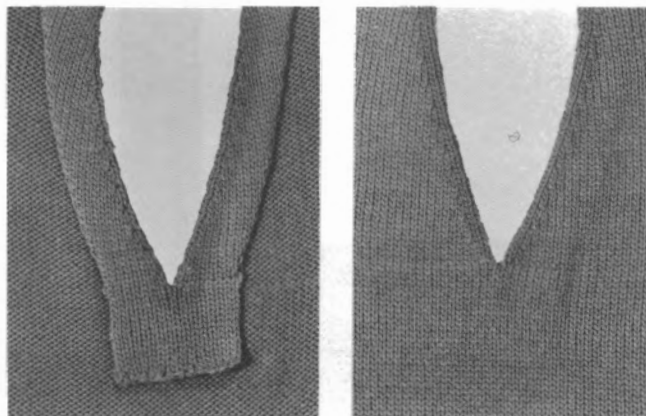
On front bed near centre 16 needles and 16 pushers in Working Position. Lock GX

BX

Cast on 16 sts with contrast yarn and knit approx. 6 rows. Then thread regular wool, set lock on GX and knit 30 rows with all 37 needles.

Now decrease for neck same as on left half, but reversing all shaping. Unravel contrast yarn and sew the stitches st by st.

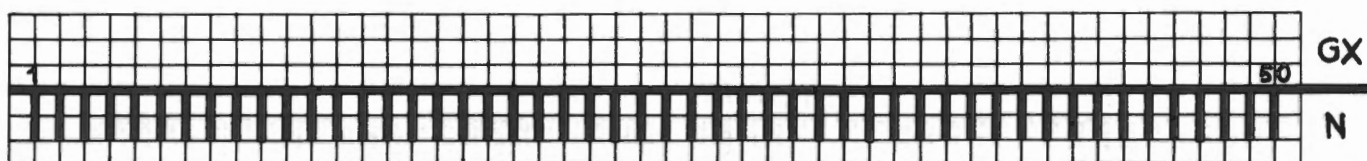




V-neck

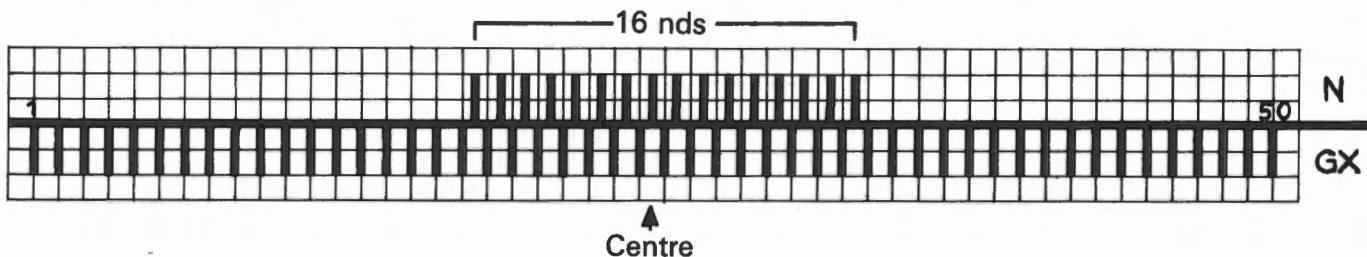
(without neckband, with knitted-on facing)

Part 1: Cast on 50 sts for stocking stitch and knit 40 rows. Lock at right. Break off yarn.



Part 2: For facing, 16 needles in Working Position on back bed, lock $\frac{N}{GX}$

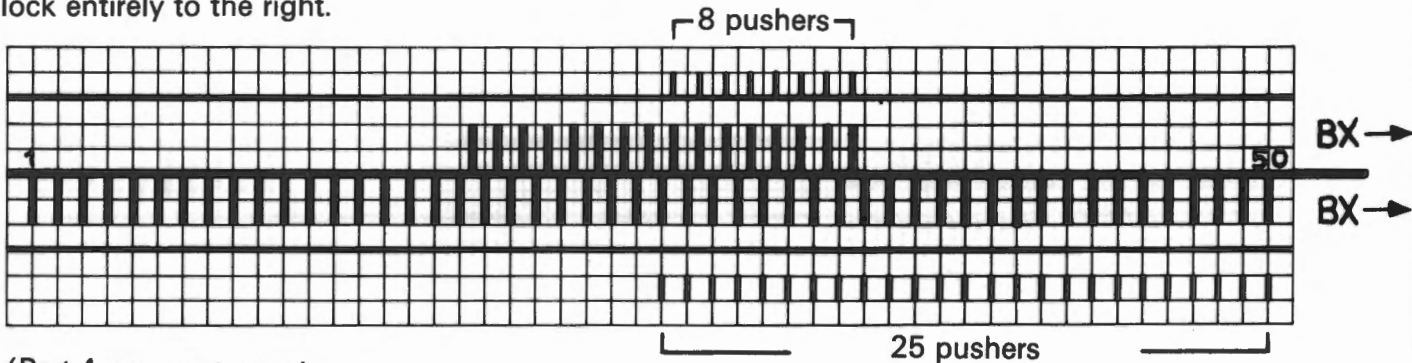
Cast on 16 sts on back bed and knit 14 rows. Break off yarn and push lock entirely to the left.



Part 3: Right shoulder

On back bed, at right, 8 pushers in Working Position, on front bed, at right, 25 pushers in Rest Position. Lock at left $\frac{BX \rightarrow}{BX \rightarrow}$

Knit 4 rows, then on front and back bed, at left, decrease 1 st with triple decker (1 needle and 1 pusher out of action), on back bed, at right, push 1 needle and 1 pusher from Neutral into Working Position. Repeat this 9 times more. Thereafter cast off right shoulder and facing. Push lock entirely to the right.



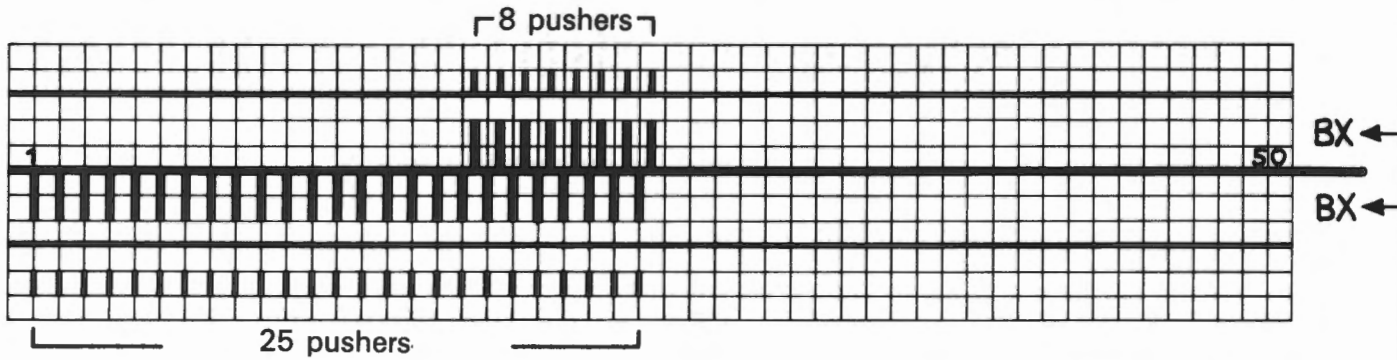
(Part 4, see next page)

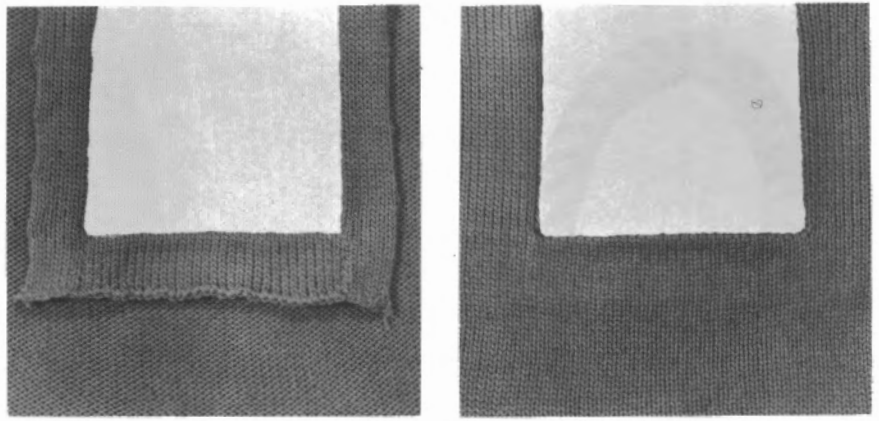
Part 4: Left shoulder

On back bed 8 pushers in Working Position and on front bed 25 pushers in Rest Position. Lock

at right BX ←
 BX ←

Knit 4 rows, then on front and back bed, at **right**, decrease 1 st with triple decker (1 needle and 1 pusher out of action), on back bed, at **left**, push 1 needle and 1 pusher from Neutral into Working Position. Repeat this 9 times more. Thereafter cast off left shoulder and facing.

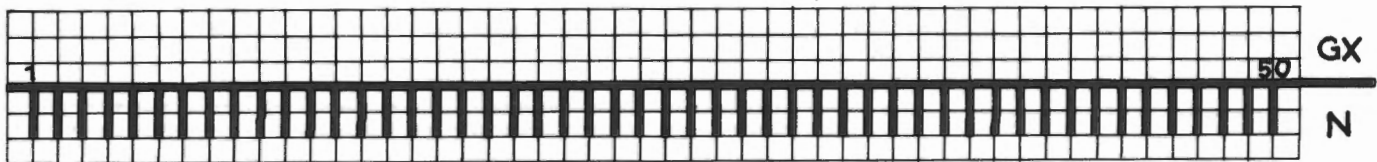




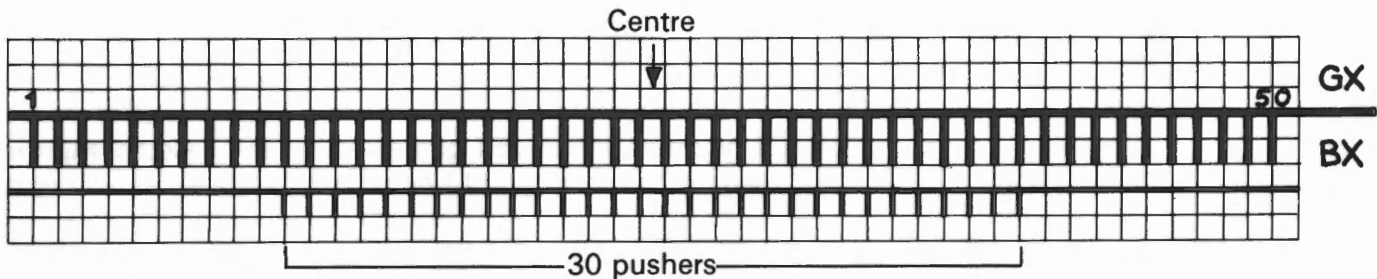
Square neck

(without neckband, with knitted-on binding)

Part 1: Cast on 50 stitches for stocking stitch and knit 40 rows, lock at right. Break off yarn.

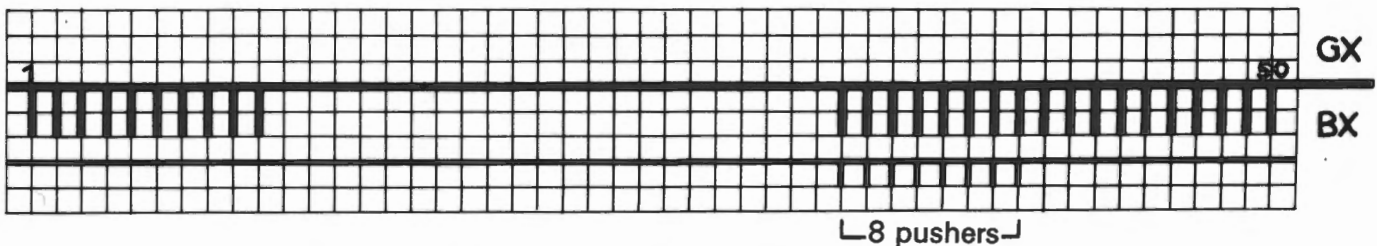


Part 2: In centre 30 pushers in Working Position. Lock $\frac{GX}{BX}$ Knit 14 rows and bind off 30 sts in centre. Push lock entirely to the right. Put empty needles and pushers out of action.



Part 3: Right shoulder

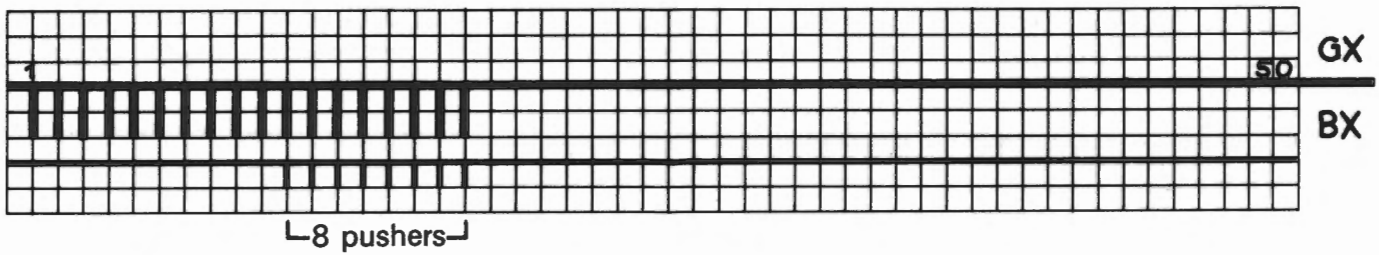
At right, directly adjoining the needles in Working Position, put another 8 needles and 8 pushers in Working Position and knit 14 rows with these. Then, at right, for the other needles, put 10 more pushers in Working Position and knit 30 rows. Bind off right shoulder.



(Part 4, see next page)

Part 4: Left shoulder

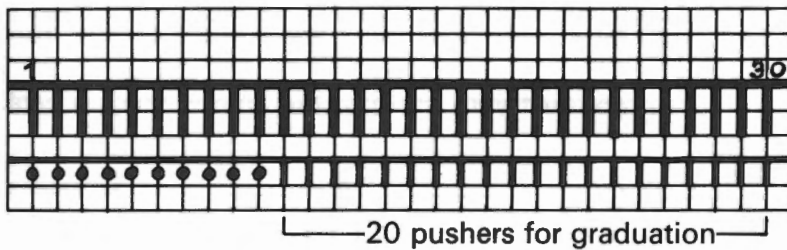
At left, directly adjoining the needles in Working Position, put another 8 needles and 8 pushers in Working Position and knit 14 rows with these. Then at left, for the other needles, put 10 more pushers in Working Position and knit 30 rows. Bind off left shoulder.





Rolled collar knitted on the bias

Casting-on: With contrast yarn and at the extreme left of machine, cast on 30 sts for stocking stitch. Knit approx. 4 to 6 rows (lock at right). Then knit collar with regular wool as follows:



Needle and pusher arrangement for collar

A) Lock $\frac{GX}{N}$

at right increase 1 st (1 needle and 1 pusher in Working Position)
at left decrease 1 st (1 needle and 1 pusher out of action)
knit 2 rows with main colour

} twice

B) Lock $\frac{GX}{BX}$ for graduation

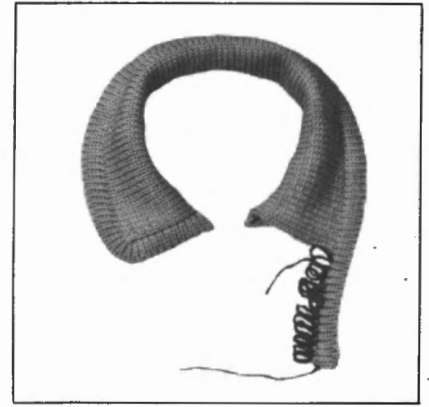
at right increase 1 st (1 needle and 1 pusher in Working Position)
at left decrease 1 st (1 needle and 1 pusher out of action)
knit 2 rows with trimming colour

} once

Repeat A and B consecutively until desired length of collar has been reached. In the end, again knit 4 to 6 rows with contrast yarn and release.

Finishing

1. Press collar lightly under a damp cloth. 2. Sew seam by grafting. 3. Sew collar by its shorter edge onto neck, using main colour. 4. If desired, crochet around outer edge with trimming colour.



Round Collar (Eton Collar)

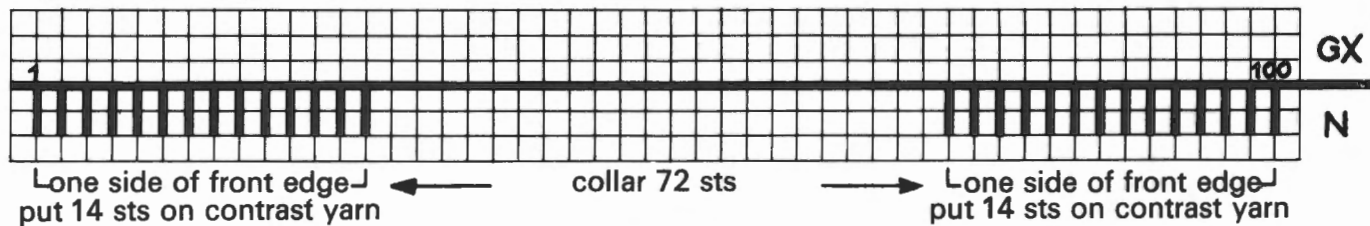
Start at outer edge band. Cast on 100 stitches each on front and back bed for tubular and knit 10 rows tubular with **very large** stitch size since it will later be gradually reduced. Set lock on **GX** and to the left.

N

Transfer sts from back bed onto front bed and knit 1 row. Now there are 100 sts on the front bed, lock at right.

For front edge bands, at each end put 14 sts on contrast yarn and put the empty needles back into Neutral Position.

There remain 72 sts in centre for the collar.



For continuation of work, hang front edge bands onto the needles as follows

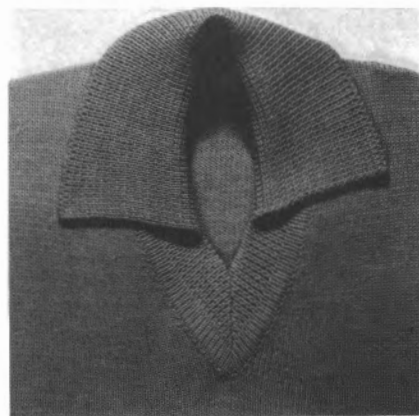
At right, hang 3 sts of front edge band onto first needle of collar. Knit 1 row. Lock at left.

At left, hang 3 sts of front edge band onto first needle of collar. Knit 1 row. Lock at right.

From now on, consecutively hang first on the right, then on the left and always on the same side as lock, 1 st of front edge band onto first needle of collar and knit one row until all the sts of the front edge band are hanging on needles. At the same time, reduce stitch size by $\frac{1}{4}$ after every 6th row. In the end, knit 2 rows and a few rows with contrast yarn. Drop off knitting.

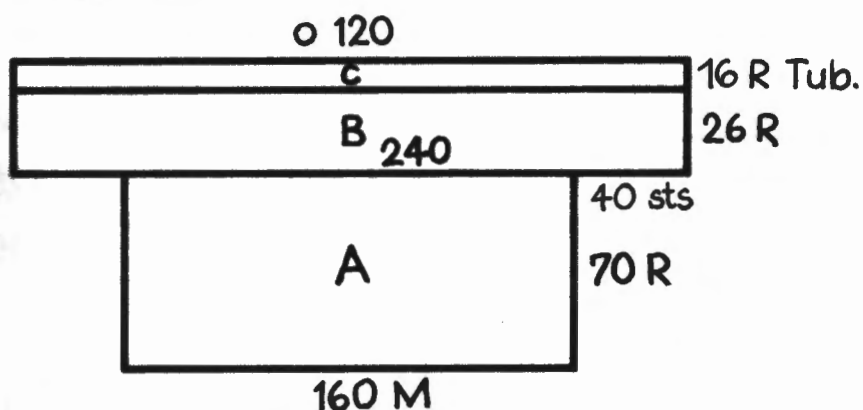
Finishing

Press collar under a damp cloth, then sew it onto neck, stitch by stitch, gradually unravelling the contrast yarn.

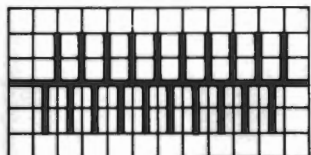


Shirt collar with V-neck

Knitted in one piece



Pattern



	Front	Back
2 rows	N	N (K/K)
2 rows	CX	CX (= 2 rows tubular)

Section A: Cast on 160 sts and knit approx. 70 rows in pattern to the end of the last tubular row.

Section B: On both sides, cast on an additional 40 sts and knit approx. 26 rows in pattern to the end of the last tubular row.

Section C: Knit 16 tubular rows, then a few tubular rows with contrast yarn and 1 row K/K. Release.

Finishing

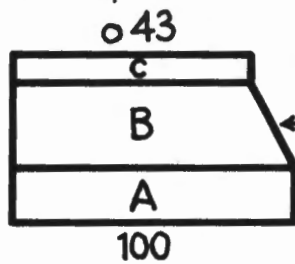
Press collar under a damp cloth. Then sew section C, stitch by stitch, around neck, first on outside, then on inside, gradually unravelling the contrast yarn and forming a nice V-shape in front. Press apart the corners of the V-neck folded to the inside.



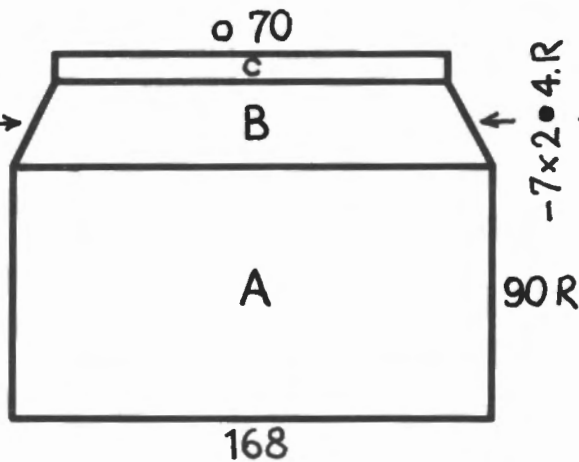
Shirt collar with overlap and underlap

This collar consists of three parts

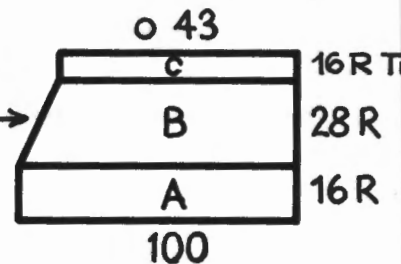
Underlap



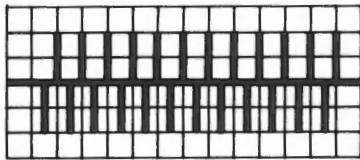
Collar



Overlap



Pattern



	Front	Back
2 rows	N	N (K/K)
2 rows	CX	CX (= 2 rows tubular)

Collar

Section A: Cast on 168 sts and knit approx. 90 rows in pattern.

Section B: Knit 28 rows in pattern, decreasing on both sides 2 sts every 4th row 7 times with triple decker, i.e. always on K/K row.

Section C: Knit 16 tubular rows, a few tubular rows and 1 row K/K with contrast yarn and release.

Underlap

Section A: Cast on 100 sts and knit 16 rows in pattern stitch.

Section B: Knit 28 rows in pattern stitch, decreasing on one side 2 sts every 4th row 7 times.

Section C: Knit 16 tubular rows, a few tubular rows and 1 row K/K with contrast yarn and release.

Overlap: Knit to correspond to underlap.

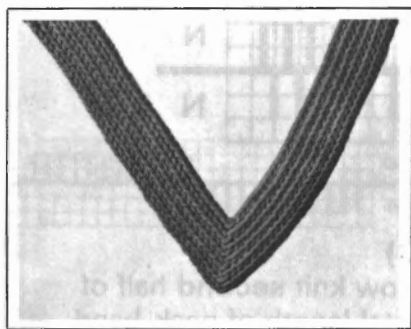
Finishing

Sew bias edges of overlap and underlap onto bias edges of collar. Press complete collar under a damp cloth and join its tubular rows onto neck opening (see ill.), st. by st. first on the outside, then on the inside and gradually unravelling the contrast yarn.

Chapter 6 Various Hints

Hint 1 Neckband for knitwear with V-neck

Knitted in Fisherman's Rib with racking



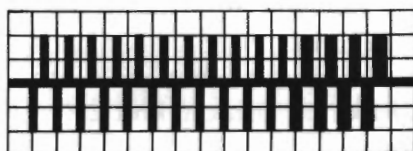
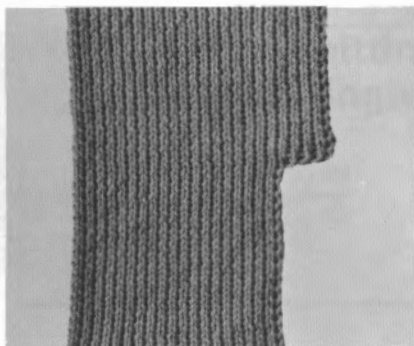
Cast on 12 sts, then lock
to EX
EX

Pattern sequence

rack 1 nd to the left, knit 1 row
rack 1 nd to the right,
knit 1 row
Repeat this until the **first**
half of the total length of the
neckband has been knitted.
Then knit 1 row **without**
racking and repeat pattern
sequence.

Hint 2 Increasing by several stitches in double-bed work

(by winding yarn around needles)



Example

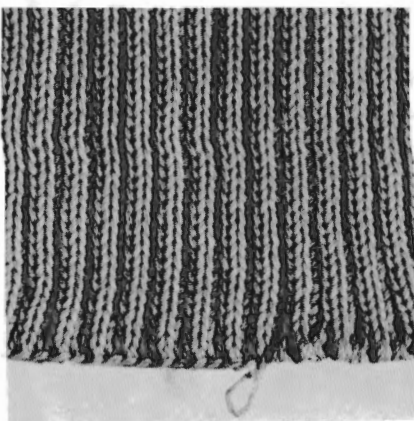
Increase 8 sts at right, lock at
right.
Bring 8 nds into Working
Position.



Wind yarn around needles
without pulling too tightly
and continue knitting. (If you
wish to increase on the left,
work correspondingly.)

Hint 3 Welt in 2:2 Rib with crocheted cast-on row

On principle, the casting on is worked according to Instruction Book.



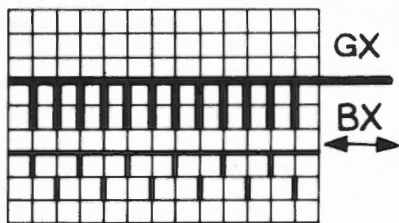
Instruction Book

DUOMATIC page 28/29.
The only difference is that the
stitch size for the cast-on
row must be set approx.
1 number higher than will be
required later for the welt.

Example: For casting on in
DUOMATIC, divide needles
for welt in 2 : 2 Rib.

Rack 1 needle to the left
Stitch size 4½, lock $\frac{N}{N}$ knit
1 row.
Stitch size 3½, lock $\frac{CX}{CX}$ knit
4 rows.
Rack 1 needle to the right.
Stitch size 3½, lock $\frac{N}{N}$ and
continue knitting. $\frac{N}{N}$
When knitting is finished,
crochet through every 2nd
loop of cast-on row!

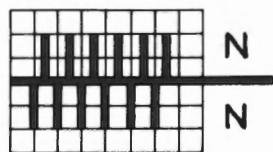
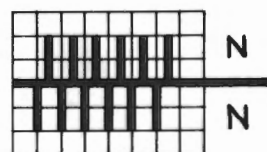
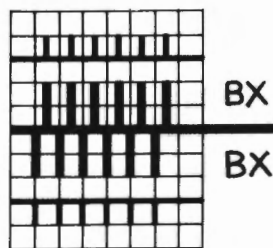
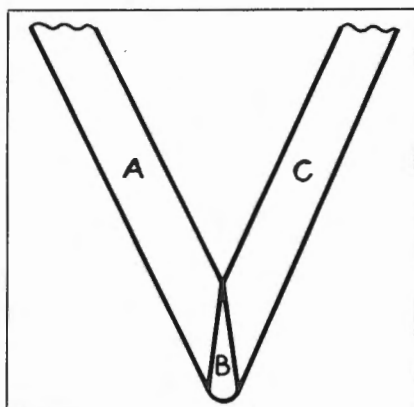
Hint 4 Casting on with pushers in single-bed work



4 to 6 cast-on rows are knitted with the above pusher division and lock on BX \longleftrightarrow . Then change to stocking stitch or desired pattern stitch. (Do not move lock fast and reduce stitch size for the first row by approx. 1 number.)

Hint 5 Neckband for knitwear with V-neck

(Knitted with graduations)



A)
Cast on 12 sts and knit first half of total length. Lock is at right.

B) Graduations

On the side opposite to the lock, therefore on the left, on back and front beds, put 1 pusher out of action, knit 2 rows, lock is again at right. Repeat this 4 times.

On the side opposite to the lock, on back and front beds, move inner pusher back into Working Position, knit 2 rows.

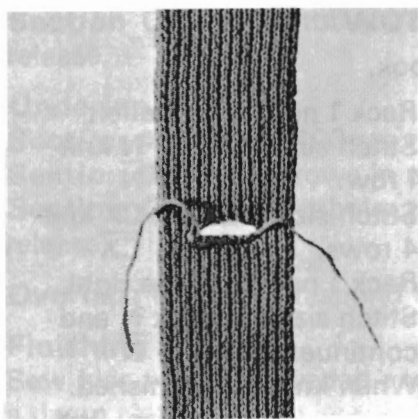
Repeat this 4 times until all the needles are in work.

C)

Now knit **second** half of total length of neck-band, bind off.

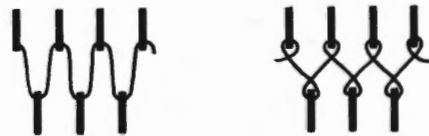
The example explained here applies to K/K knitwear.

Hint 6 Buttonhole over 7 needles in K/K



Transfer 3 sts from front onto back bed.

Knit through the double stitches in the needle heads to form one stitch each.

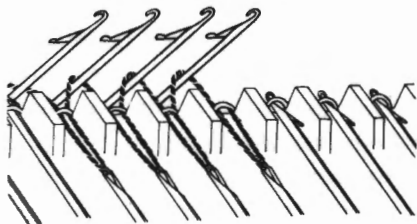


On back bed, bind off the 4 sts with a piece of wool of the same colour.

Leave the 7 empty needles in Working Position and knit 1 row.

Now twist the zig-zag thread and continue knitting.

Hint 7 Divide knitting for neck with stocking stitch and all single-bed patterns



Method 1: Cast on 40 sts and knit 40 rows. Lock is at right. Over half of all needles, i.e. 20, on the side opposite to the lock, at left, knit 1 row (by hand) with contrast yarn.

Now push up completely 20 needles on back bed for left half of work. Thereafter, knit off by hand 20 needles with contrast yarn at left of front bed, pulling needles back into Neutral Position (long stitches). By doing this, loops will be placed over the back needles in Neutral Position (see drawing). Drop off these loops by hand **before knitting** the right half (return back needles into Neutral Position).

This will provide the front needles in Neutral Position with sufficient thread and avoid their automatically coming into operation through the pull of the strippers when knitting is continued.

When the right half is finished, unravel contrast yarn until the original stitches are in the needles and complete the left half.

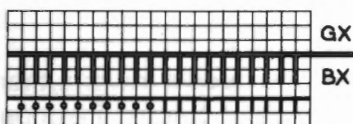


Method 2: At the moment when the knitting is to be divided, transfer on the side opposite to the lock half of all stitches onto back bed (see diagram).

Set back lock to GX and complete knitting the part still hanging on the front bed, either on N or setting according to pattern stitch.

Now transfer again to the front bed all the stitches hanging on the back bed and knit second half to correspond, i.e. with reversed shapings.

Hint 8 Divide knitting for neck with stocking stitch and K/K as well as with single and double bed BX patterns



Important: This method is only possible when the lock is never set to N)

1. First half with single-bed knitting

a) **In order to divide the knitting with stocking stitch:** At the same side as the lock bring pushers corresponding to half the number of needles in Working Position. Lock to BX and knit right half.

b) **In order to divide the knitting with BX patterns:** At the same side as the lock, for one half of needles, leave pushers as arranged and for the other half, put pushers back into Neutral Position (blocking rail). Back lock to GX, front lock to be left on BX and knit right half.

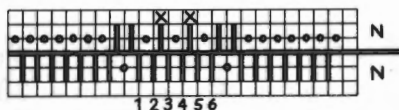
2. First half with double-bed knitting

Back lock also on BX and arrange needles and pushers as on front bed, then work on front and back bed simultaneously as described above.

3. Second half for all types of knitting

When right half is completed, work left half to correspond.

Hint 9 Easy way of cable knitting



Knit 9 rows omitting needles marked with X.

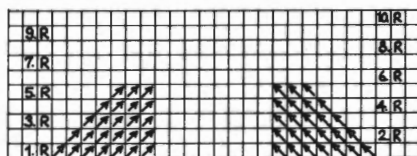
Then bring up into Working Position the needles marked with X. Knit 1 row.

Drop off zig-zag thread from needles marked with X and shift empty needles back into Neutral Position.

Now cross for cable sts 1, 2, 3 with sts 4, 5, 6.

Repeat.

Hint 10 Decorative raglan decreasing (Special fashion decreasing)



Begin with lock at right. On both sides, with triple or quintuple decker, hang 5th, 6th, 7th st by 1 needle inward, then move other stitches likewise. Empty edge needle in Neutral Position, knit 1 row / RC 1.

On both sides, hang 4th, 5th, 6th stitch one needle inward, then move other sts likewise. Empty edge needle in Neutral Position, knit 1 row / RC 2.

Do the same with 3rd, 4th, 5th st / RC 3.

Do the same with 2nd, 3rd, 4th st / RC 4.

Do the same with 1st, 2nd, 3rd st / RC 5.

Knit 5 rows without decreasing, RC 10.

Repeat.

The number of rows knitted without decreasing depends on the number of rows necessary for raglan decreasing.

In our example, 5 sts are decreased within 10 rows with 5 rows being knitted without decreasing (5 rows + 5 rows).

If the number of rows of the raglan is divisible by 8 only, not more than 3 rows may be knitted without decreasing (5 rows + 3 rows).

If the number of rows of the raglan is divisible by 11 only, 6 rows must be knitted without decreasing, etc. (5 rows + 6 rows).

It is important that the groups of decreases are always knitted at even intervals.

Hint 11 Hint for blocking and pressing

Normally a knitted piece is spread out and pinned out to size along the edges (blocked) before being pressed.

A safer and simpler method is the following: Fold part along the middle, purl side on outside. With cheap yarn and in large overlock, stitch together the edges of the folded part.

Now press first one side, then the other under a damp cloth. Be careful not to produce a pressed fold in the middle! Remove overlock stitches, unfold the piece and also press middle line.

This method has the advantage that side and shoulder seams as well as armholes will be identical on both sides and are not distorted in different ways.

List for decreasing in stocking stitch with basic pattern with set-in sleeve

For armhole and round neck decrease as follows every other row within approx. 4 cms' height:

- 10 sts = - 4, 2, 1, 1, 1, 1	in 12 rows
- 11 sts = - 4, 3, 1, 1, 1, 1	in 12 rows
- 12 sts = - 4, 3, 2, 1, 1, 1	in 12 rows
- 13 sts = - 4, 3, 2, 1, 1, 1, 1	in 14 rows
- 14 sts = - 4, 3, 2, 2, 1, 1, 1	in 14 rows
- 15 sts = - 5, 3, 2, 2, 1, 1, 1	in 14 rows
- 16 sts = - 5, 3, 2, 2, 1, 1, 1, 1	in 16 rows
- 17 sts = - 5, 4, 2, 2, 1, 1, 1, 1	in 16 rows
- 18 sts = - 5, 4, 2, 2, 2, 1, 1, 1	in 16 rows
- 19 sts = - 5, 4, 2, 2, 2, 1, 1, 1, 1	in 18 rows
- 20 sts = - 6, 4, 2, 2, 2, 1, 1, 1, 1	in 18 rows
- 21 sts = - 6, 4, 3, 2, 2, 1, 1, 1, 1	in 18 rows
- 22 sts = - 6, 4, 3, 2, 2, 1, 1, 1, 1, 1	in 20 rows
- 23 sts = - 6, 5, 3, 2, 2, 1, 1, 1, 1, 1	in 20 rows
- 24 sts = - 6, 5, 3, 3, 2, 1, 1, 1, 1, 1	in 20 rows
- 25 sts = - 6, 5, 4, 3, 2, 1, 1, 1, 1, 1	in 20 rows

If more than 25 stitches are to be decreased, add 'surplus stitches' to the first decrease.

Decreasing in double-bed knitting

In double-bed knitting, decrease also within approx. 4 cms' height, the number of rows and the distribution of the stitches to be decreased depending on the pattern stitch.

PASSAP chart

Measurement required cm	Table for test squares of 100 sts and 100 rows measuring 10 to 19,5 cm																		Measurement required cm		
	Measurement obtained																				
	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16	16,5	17	17,5	18	18,5	19	19,5	
0,5	5	4-5	4-5	4-5	4-5	4	3-4	3-4	3-4	3-4	3-4	3-4	3	3	3	2-3	2-3	2-3	2-3	2-3	0,5
1	10	10	9	8-9	8	8	7-8	7-8	7	7	6-7	6-7	6-7	6	6	5-6	5-6	5-6	5-6	5	1
2	20	19	18	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	11	10	2
3	30	29	27	26	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	3
4	40	38	36	35	33	32	31	30	28	28	27	26	25	24	24	23	22	22	21	21	4
5	50	48	45	43	42	40	38	37	36	34	33	32	31	30	29	29	28	27	26	26	5
6	60	57	55	52	50	48	46	44	43	41	40	39	38	36	35	34	33	32	32	31	6
7	70	67	64	61	58	56	54	52	50	48	47	45	44	42	41	40	39	38	37	36	7
8	80	76	73	70	67	64	62	59	57	55	53	52	50	48	47	46	44	43	42	41	8
9	90	86	82	78	75	72	69	67	64	62	60	58	56	55	53	51	50	49	47	46	9
10	100	95	91	87	83	80	77	74	71	69	67	65	63	61	59	57	56	54	53	51	10
20	200	190	182	174	167	160	154	148	143	138	133	129	125	121	118	114	111	108	105	103	20
30	300	286	273	261	250	240	231	222	214	207	200	194	188	182	176	171	167	162	158	154	30
40			348	333	320	308	296	285	276	267	258	250	242	235	229	222	216	211	205	40	
50								357	345	333	323	313	303	294	286	278	270	263	256	50	
60														353	343	333	324	316	308	60	
70																				358	70
80																					80
90																					90

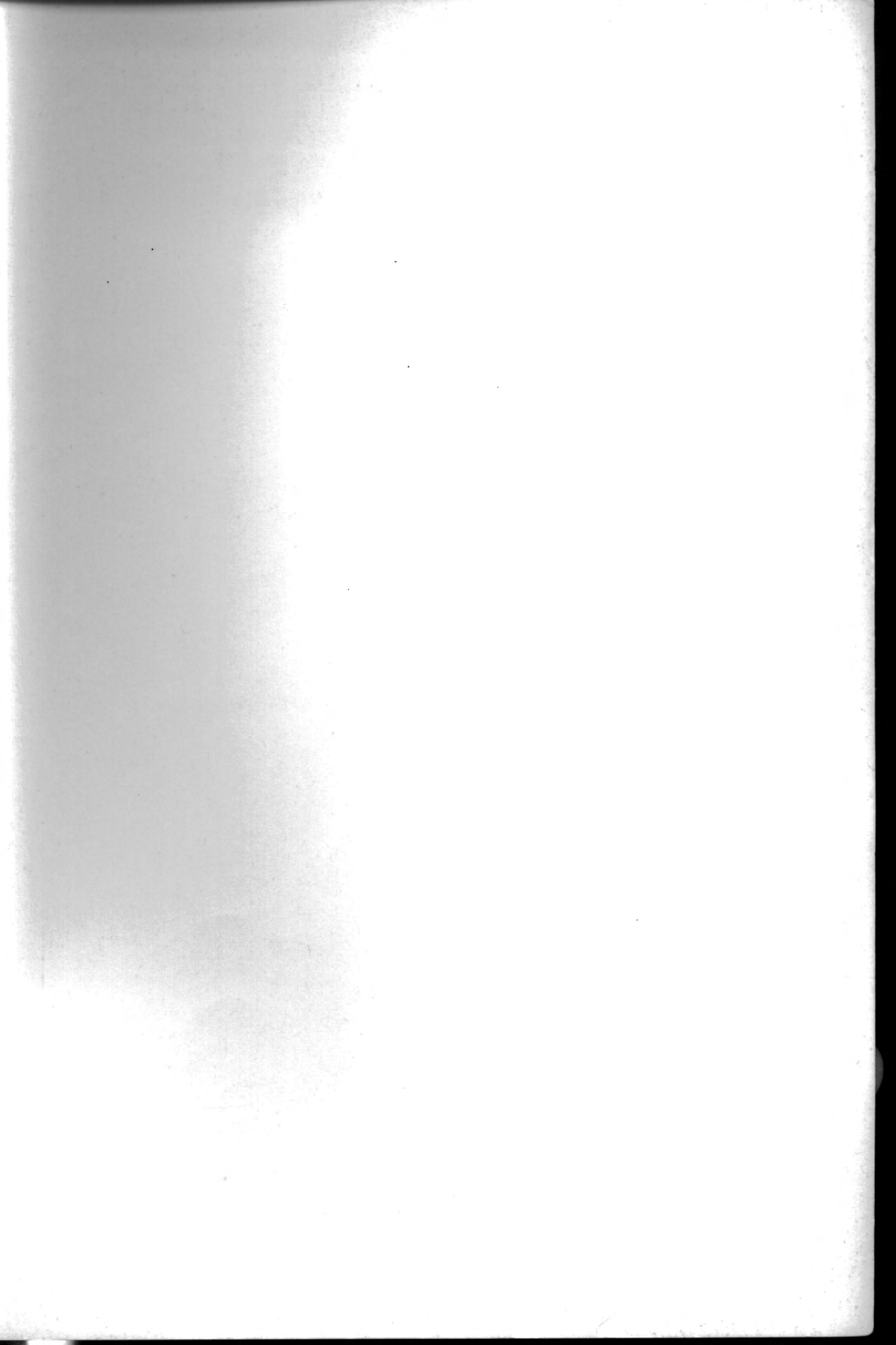
Measurement required cm	Table for test squares of 100 sts and 100 rows measuring 20 to 29,5 cm																		Measurement required cm		
	Measurement obtained																				
	20	20,5	21	21,5	22	22,5	23	23,5	24	24,5	25	25,5	26	26,5	27	27,5	28	28,5	29	29,5	
0,5	2-3	2-3	2-3	2-3	2-3	2	2	2	2	2	2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	0,5
1	5	4-5	4-5	4-5	4-5	4-5	4-5	4	4	4	4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	1
2	10	10	10	9	9	9	9	8	8	8	8	8	8	8	7	7	7	7	7	7	2
3	15	15	14	14	14	13	13	13	12	12	12	12	11	11	11	11	11	11	10	10	3
4	20	20	19	19	18	18	17	17	17	16	16	16	15	15	15	15	14	14	14	14	4
5	25	24	24	23	23	22	22	21	21	20	20	20	19	19	19	18	18	18	17	17	5
6	30	29	29	28	27	27	26	26	25	24	24	24	23	23	22	22	21	21	21	20	6
7	35	34	33	33	32	31	30	30	29	29	28	27	27	26	26	25	25	25	24	24	7
8	40	39	38	37	36	36	35	34	33	33	32	31	31	30	30	29	29	28	28	27	8
9	45	44	43	42	41	40	39	38	38	37	36	35	35	34	33	33	32	32	31	31	9
10	50	49	48	47	45	44	43	43	42	41	40	39	38	38	37	36	36	35	34	34	10
20	100	98	95	93	91	89	87	85	83	82	80	78	77	75	74	73	71	70	69	68	20
30	150	146	143	140	136	133	130	128	125	122	120	118	115	113	111	109	107	105	103	102	30
40	200	195	190	186	182	178	174	170	167	163	160	157	154	151	148	145	143	140	138	136	40
50	250	244	238	233	227	222	217	213	208	204	200	196	192	189	185	182	179	175	172	169	50
60	300	293	286	279	273	267	261	255	250	245	240	235	231	226	222	218	214	211	207	203	60
70	350	341	333	326	318	311	304	298	292	286	280	274	269	264	259	255	250	246	241	237	70
80					356	348	340	333	327	320	313	308	302	296	291	286	281	276	271	80	
90												353	346	340	333	327	321	316	310	305	90

PASSAP chart

Measurement required	Table for test squares of 100 sts and 100 rows measuring 30 to 39,5 cm																		Measurement required		
	Measurement obtained																				
cm	30	30,5	31	31,5	32	32,5	33	33,5	34	34,5	35	35,5	36	36,5	37	37,5	38	38,5	39	39,5	cm
0,5	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	0,5
1	3-4	3-4	3-4	3-4	3	3	3	3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	1
2	7	7	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	2
3	10	10	10	10	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	3
4	13	13	13	13	13	12	12	12	12	12	11	11	11	11	11	11	11	10	10	10	4
5	17	16	16	16	16	15	15	15	15	14	14	14	14	14	13	13	13	13	13	13	5
6	20	20	19	19	19	18	18	18	18	17	17	17	17	16	16	16	16	16	15	15	6
7	23	23	23	22	22	22	21	21	21	20	20	20	19	19	19	19	18	18	18	18	7
8	27	26	26	25	25	25	24	24	24	23	23	23	22	22	22	21	21	21	21	20	8
9	30	30	29	29	28	28	27	27	26	26	26	25	25	25	24	24	24	23	23	23	9
10	33	33	32	32	31	31	30	30	29	29	29	28	28	27	27	27	26	26	26	25	10
20	67	66	65	64	63	62	61	60	59	58	57	56	56	55	54	53	53	52	51	51	20
30	100	98	97	95	94	92	91	90	88	87	86	85	83	82	81	80	79	78	77	76	30
40	133	131	129	127	125	123	121	119	118	116	114	113	111	110	108	107	105	104	103	101	40
50	167	164	161	159	156	154	151	149	147	145	143	141	139	137	135	133	132	130	128	127	50
60	200	197	194	191	188	185	181	179	176	174	171	169	167	164	162	160	158	156	154	152	60
70	233	230	226	222	219	215	212	209	206	203	200	197	194	192	189	187	184	182	179	177	70
80	267	262	258	254	250	246	242	239	235	232	229	225	222	219	216	213	211	208	205	203	80
90	300	295	290	286	281	277	273	269	265	261	257	254	250	247	243	240	237	234	231	228	90

Measurement required	Table for test squares of 100 sts and 100 rows measuring 40 to 50 cm																		Measurement required			
	Measurement obtained																					
cm	40	40,5	41	41,5	42	42,5	43	43,5	44	44,5	45	45,5	46	46,5	47	47,5	48	48,5	49	49,5	50	cm
0,5	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1	1	1	1	1	1	1	1	1	1	0,5	
1	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2	2	2	2	2	2	2	2	2	1	
2	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	2	
3	8	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	3	
4	10	10	10	10	10	9	9	9	9	9	9	9	9	9	8	8	8	8	8	8	4	
5	13	12	12	12	12	12	12	11	11	11	11	11	11	11	11	10	10	10	10	10	5	
6	15	15	15	14	14	14	14	14	14	13	13	13	13	13	13	12	12	12	12	12	6	
7	18	17	17	17	17	16	16	16	16	16	15	15	15	15	15	14	14	14	14	14	7	
8	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	17	16	16	16	16	8	
9	23	22	22	22	21	21	21	21	20	20	20	20	20	19	19	19	19	18	18	18	9	
10	25	25	25	24	24	24	23	23	23	22	22	22	22	22	21	21	21	21	20	20	10	
20	50	49	49	48	48	47	47	46	45	45	44	44	43	43	43	42	42	41	41	40	20	
30	75	74	73	72	71	71	70	69	68	67	67	66	65	65	64	63	62	62	61	61	30	
40	100	99	98	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	82	81	40	
50	125	123	122	121	119	118	116	115	114	112	111	110	109	108	106	105	104	103	102	101	50	
60	150	148	146	145	143	141	140	138	136	135	133	132	130	129	128	126	125	124	122	121	60	
70	175	173	171	169	167	165	163	161	159	157	156	154	152	151	149	147	146	144	143	141	70	
80	200	198	195	193	190	188	186	184	181	180	178	176	174	172	170	168	167	165	163	162	80	
90	225	222	220	217	214	212	209	207	205	202	200	198	196	194	192	189	187	186	184	182	90	

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