



KNITTING
CALCULATOR

+ 5

0

1

÷

2

7

brother[®]

KA-3000

-

8

1⁹

3

x

3

ヒヤロ

©1988 BROTHER INDUSTRIES. LTD., JAPAN.
All rights reserved.

© 487632001①
Printed in Japan

CONTENTS

● TOP VIEW OF THE CALCULATOR

Name and Function of Controls Page 3

● HOW TO OPERATE THE CALCULATOR

..... Page 4-16

● HOW TO CALCULATE THE CORRECT STITCHES AND ROWS FOR PULLOVER

..... Page 17-22

NAME AND FUNCTION OF CONTROLS

GAUGE (TENSION) CALL BUTTON

Current gauge (tension) memorized is indicated on digital indicator display only during the period you are pushing this button.

ON-OFF SWITCH

Automatic switch-off function works after 10 minutes, even if you forget to switch off.

CHANGE OVER SWITCH

You can change the system from 1 to 3 through 2 in order of the directions of arrows each time you press button.

- 1 ... Standard calculator
- 2 ... Knitting calculator
- 3 ... Alarm

INDICATOR FEED BUTTONS

When one of the three arrow marks (↑, ↓, ↕) appear on the digital indicator display, push either the "UP" or "DOWN" arrow button as indicated in the instructions for the mode you are using.

STITCH-ROW-CM BUTTONS

These Unit buttons are to be used after numerical buttons.

BUTTONS

Each button is laid out in the same position as those of the standard calculator.

CLEAR BUTTON

Push this button to eliminate any incorrect numerical value which was mistakenly put in.

ALL CLEAR BUTTON

All present calculations are released and put back to the original position with this button.

FRONT PANEL

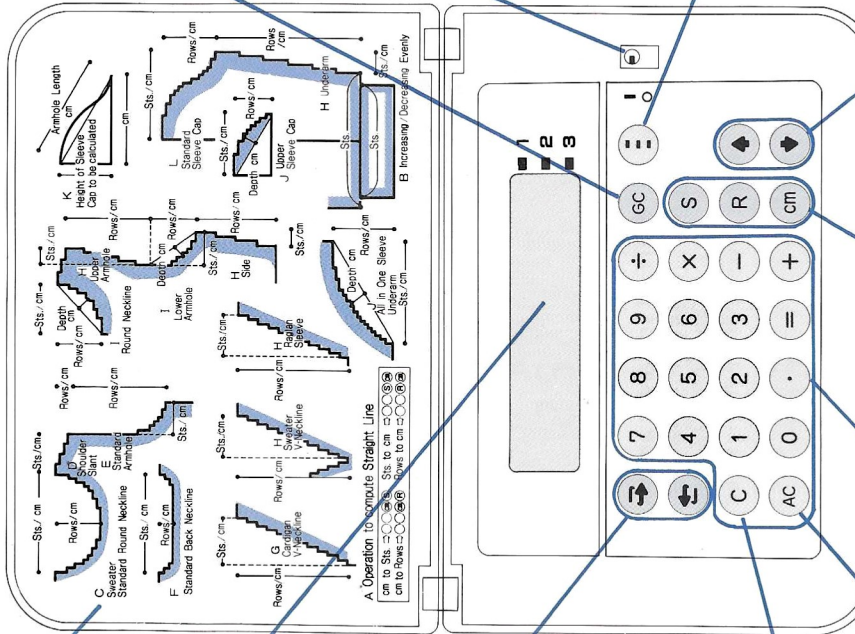
Sections of Patterns shown with alphabetical signs A,B,C, ... K,L are called MODE.

DIGITAL INDICATOR DISPLAY

MODE SELECTOR BUTTONS

These buttons select signs in alphabetical order A,B,C, ... K,L for picking sections of Patterns.

- ⊙ Forward
- ⊙ Backwards



CAUTION

- Do not use or leave the calculator:
- In direct or strong sunlight.
- Close to a hot object such as a heater.
- In humid or dusty places.
- Close the lid when you are not using the calculator.
- Do not give the calculator a shock such as dropping or hitting it.
- Clean the calculator with a soft, dry cloth.
- * Do not use water or volatile liquids such as benzene or thinners.

HOW TO OPERATE THE CALCULATOR

1 STANDARD CALCULATOR



Indicator is opposite 1.

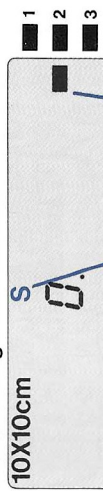
When you position ON-OFF switch to ON, this unit first acts as a regular calculator. You can add, subtract, multiply and divide. Answer is provided in up to 7 digits.

NOTE; If "E" (error mark) appears on the digital indicator display window, push (AC) button to correct.

2 KNITTING CALCULATOR

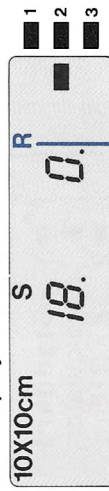
HOW TO ENTER GAUGE (TENSION)

Press change over switch.



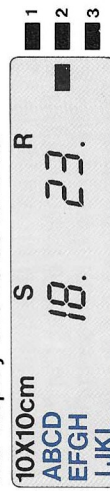
SIGNAL ... Enter number of stitches here by pushing buttons. Indicator is opposite 2.

Enter number of stitches and push (S) key. (Ex. ① (8) (5)) The display shows as follows.



SIGNAL ... Enter number of rows here by pushing buttons.

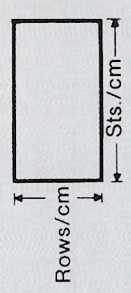
Enter number of rows and push (R) key. (Ex. ② (3) (8)) The display shows as follows.



SIGNAL ... Select the MODE you want to use.

MODE A

HOW TO CONVERT FROM CM TO STITCHES OR STITCHES TO CM OR, CM TO ROWS OR ROWS TO CM



Press mode selector button to MODE A.

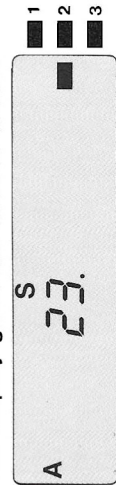


SIGNAL ... Enter cm or stitches and or rows by pressing designated buttons.

When you want to find out the number of stitches in a dimension, enter that dimension. (Ex. ① (2) (5))

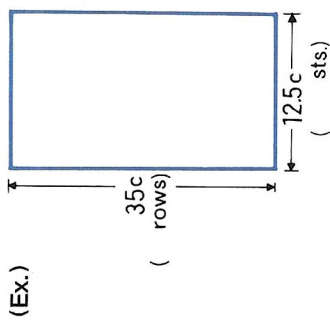
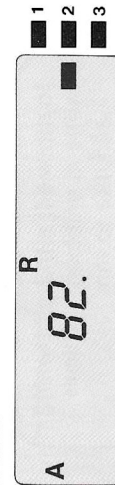


After making sure that you entered correct number, push (CM) then (S). The display gives the answer below.



When you want to find out the number of rows in a dimension, enter that dimension. Push (CM) then (R). (Ex. ③ (5) (8) (R))

The display will give the answer as shown below.



The digital indicator display window shows immediately how many stitches or cm designated, whenever you press (S (CM)) or (R (CM) (S)).

Whenever you press (R (CM)) or (S (CM) (R)), the display window will answer immediately.

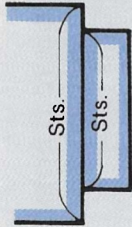
NOTE; Numerical values for either stitches or rows can only be indicated up to 999.

● **MODE B**

INCREASING (DECREASING) EVENLY

When you increase or decrease stitches evenly instead of increasing/decreasing at the edge of the knitting, you can find out where to increase/decrease stitches with **MODE B**.

This method is used for the bottom of the body, cuff, flare or gathers.
You can use this mode when the bigger number of stitches is less than twice the amount of the smaller number.

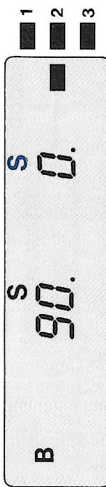


Press mode selector button to **MODE B**.

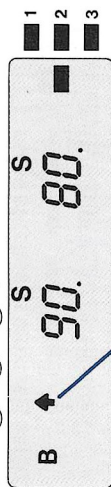


SIGNAL ... Enter number of stitches

Enter number of stitches and push **(S)** key.
(Ex. **(9) (0) (S)**)

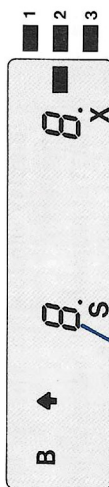


Enter another number and push **(S)** key.
(Ex. **(8) (0) (S)**)



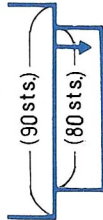
The "UP" arrow now appears on the display.

Press the "UP" arrow button.

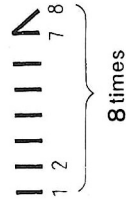


8s 8x
= Decrease 1 stitch every 8th stitch 8 times.

(Ex.) Decreasing from 90 stitches to 80.



You can enter either number of stitches first.

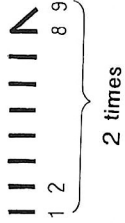


Press the "UP" arrow button again.



If you press the "DOWN" button, the display goes back to the previous screen.

9s 2x
= Decrease 1 stitch every 9th stitch 2 times.

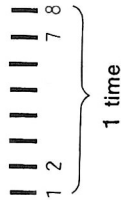


Press the "UP" button again.



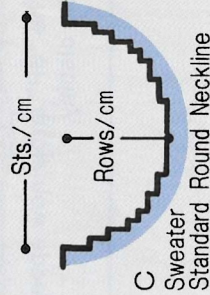
The "DOWN" arrow now appears. This indicates completion. To return to previous position, press the "DOWN" button.

Work 8 stitches without decreasing.

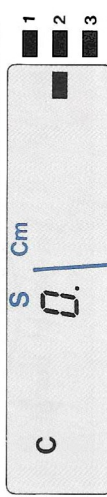


● **MODE C**

HOW TO COMPUTE STANDARD ROUND NECK



Press mode selector button to **MODE C**.



SIGNAL ... Enter the width of neckline in either cm or stitches.

In this example, enter the number in cm.
(Ex. ① ⑧)



Check display window. Press (CM) then (S).
The display shows as below.



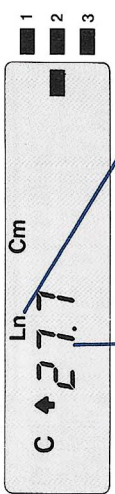
SIGNAL ... Enter the depth of neckline in either cm or rows.

(Ex. ⑧ ⑤ (CM) (R))



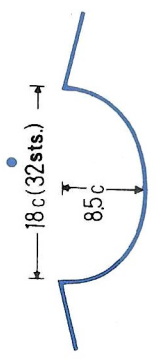
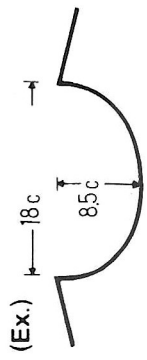
The "UP" arrow now appears on the display.

Press the "UP" arrow button.

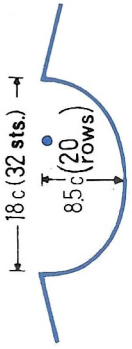


Now you can obtain the length of the curve in cm.

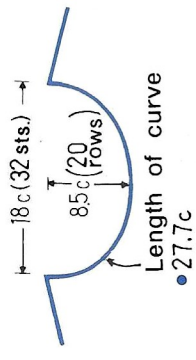
Ln = Length



The display shows that the width of neckline should be 32 stitches which is equal to 18cm long. Record the figures as shown above.



The depth of neckline is 20 rows corresponding to 8.5cm.
*Please note the calculator will always work to an even number of rows when you enter the depth in rows.



Push the "UP" button again.



S* tells you to hold the stitches indicated in the display.
Ex. 10 S*: Hold 10 stitches.

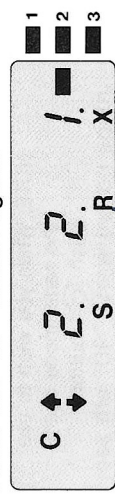
Press the "UP" button.



If you press the "DOWN" button, the display goes back to the previous screen.

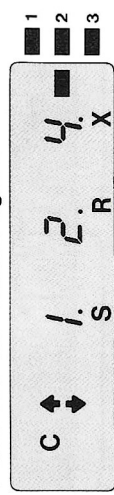
4S 2R 1X
= Decrease 4 stitches every 2nd row 1 time.
= Decrease 4 stitches at 2nd row.

Press the "UP" button again.

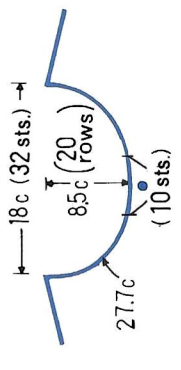


Decrease 2 stitches every 2nd row 1 time.

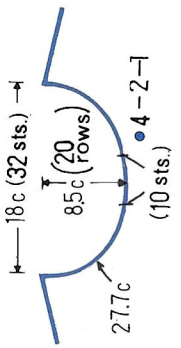
Press the "UP" button again.



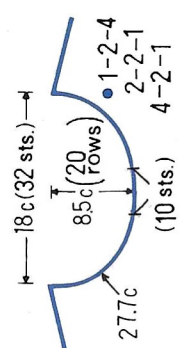
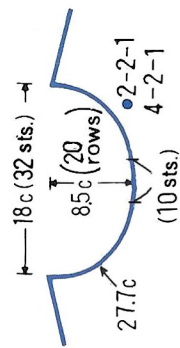
Decrease 1 stitch every 2nd row 4 times.



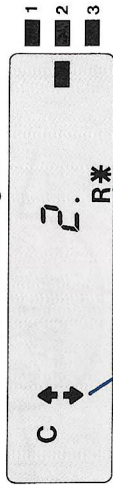
When recording figures, work from the bottom up.



*The row number for decreasing and increasing will always be an even one—for example every 2nd or 4th row, this will keep you work even.



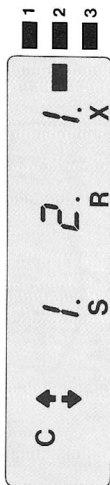
Press the "UP" button again.



Take note of the "UP" arrow and continue.

R* tells you to work even/ work without shaping indicated rows.
Ex. 2 R* : Work 2 rows even.

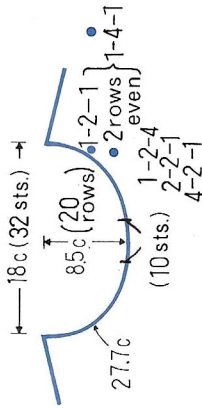
Press the "UP" button again.



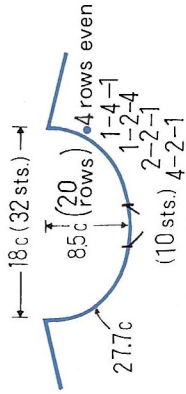
Press the "UP" button again.



The "DOWN" arrow now appears. This indicates completion. To return to previous position, press the "DOWN" button.



Take notes 1-4-1, combining this 1-2-1 with the previous 2 rows even.



NOTE: When you wish to use the same mode again push (C) button.

MODE D

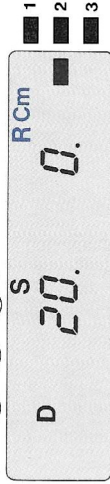
HOW TO COMPUTE SHOULDER SLANT



Press mode selector button to MODE D.

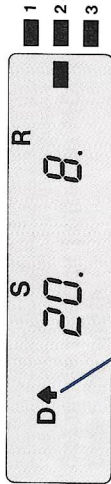


In this example, enter the number in stitches and rows.
Enter shoulder width.
(Ex. (2) (0) (S))



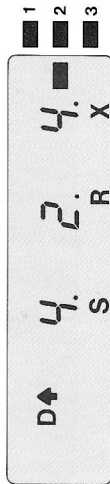
Enter shoulder height.

(Ex. (8) (R))

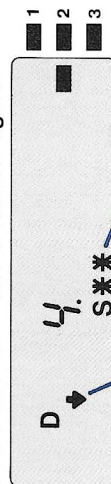


The "UP" arrow now appears on the display.

Press the "UP" arrow button.



Press the "UP" arrow button again.



The "DOWN" arrow now appears. This indicates completion.

S** tells you to leave the indicated stitches.
Ex. 4 S** : Leave 4 stitches as they are.

You may also enter the shoulder width and height in cm at MODE D instead of stitches and rows, as you did at MODE C.

(Ex.) ← (20 sts.) →



*Please note the calculator will always work to an even number of rows in this type of situation. For example if you enter 9 rows the calculator will read 10—this will give an even finish to your work.

← (20 sts.) →



← (20 sts.) →

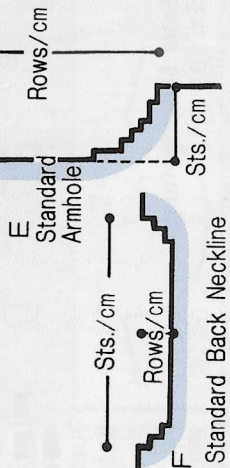


● **MODE E • MODE F**

MODE E ... HOW TO COMPUTE STANDARD ARMHOLE
MODE F ... HOW TO COMPUTE BACK NECKLINE

Procedure for entering dimensions is exactly the same as for MODE C and D.

If your row gauge (tension) is more than 45 rows, you can not use MODE I. So use MODE A and I to calculate your armhole.

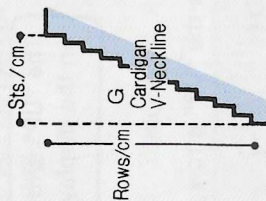


● **MODE G**

HOW TO COMPUTE SLANT SECTION STARTING WITH 1 STITCH DECREASE

This MODE applies to the slant sections where the rows are over 2 times larger than the stitches, for example, V neck shapings.

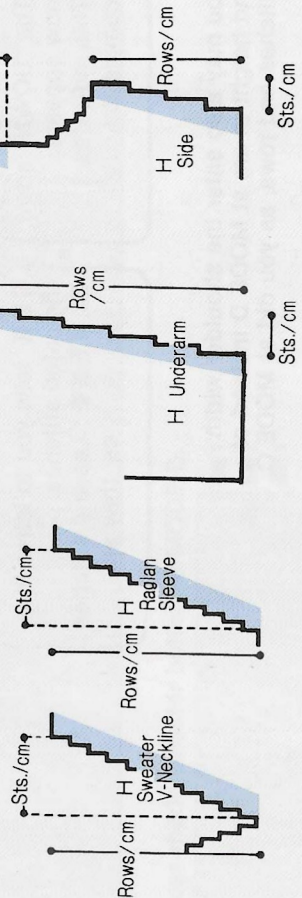
Procedure for entering dimensions is exactly the same as for MODE C and D.



● **MODE H**

HOW TO COMPUTE SLANT SECTION STARTING WITHOUT 1 STITCH DECREASE

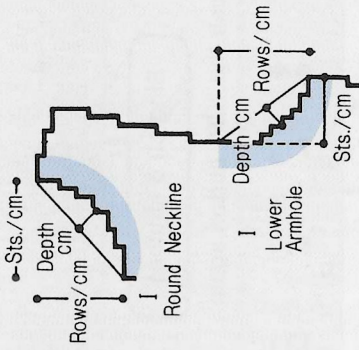
This MODE is used when the slant has rows over twice (but not only twice as large as stitches). Used when figuring slant for v-neck, raglan sleeve cap, side body, and underarm etc.



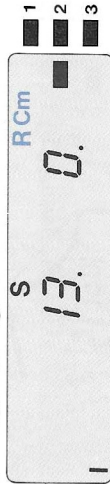
● **MODE I**

HOW TO COMPUTE ROUND NECKLINE AND LOWER ARMHOLE

This is used for computing your own originally designed round neckline and armholes.



Set mode selector button to MODE I.
 Enter the width.
 (Ex. 7) (cm) (S)



Enter the length.
 (Ex. 6) (cm) (R)



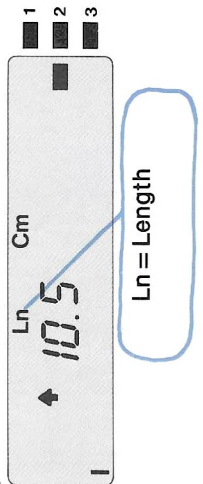
The "UP" arrow appears.

Push the "UP" arrow button.

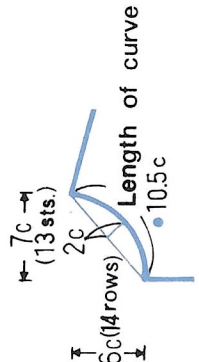
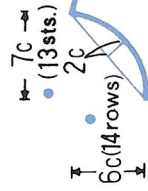
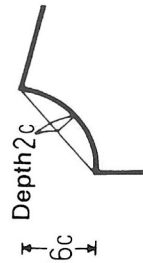


SIGNAL ... Enter the neckline depth in cm.
 Dp = Depth

(Ex. 2) (cm))
 if you do not specify the neckline depth, push "UP" button.



(Ex.) ← 7c →

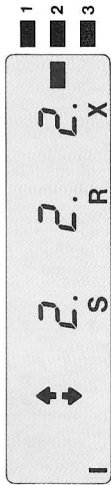


Push the "UP" button.



Bind off 6 stitches.

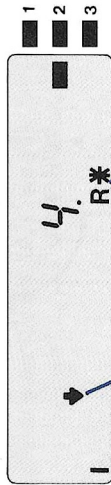
Push the "UP" button again.



Push the "UP" button again.



Push the "UP" button again.



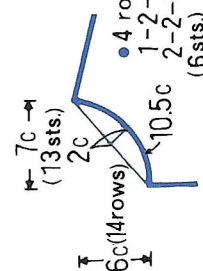
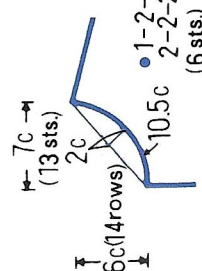
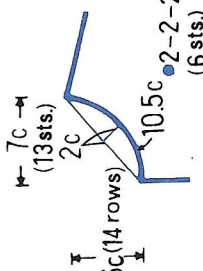
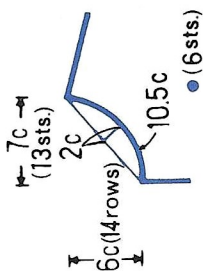
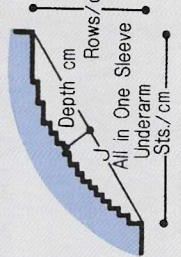
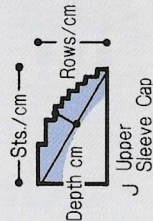
The "DOWN" arrow now appears. This indicates completion.

Work 4 rows even.

MODE J

HOW TO COMPUTE ALL IN ONE SLEEVE UNDERARM AND SLEEVE CAP

It applies both to the concave under part of all in one sleeve and also the upper convex garment shape. To enter dimensions, use instructions exactly as you did for MODE I.

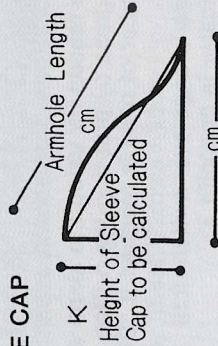


MODE K

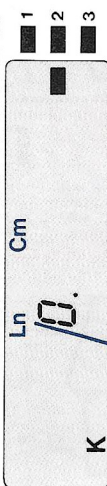
HOW TO COMPUTE THE HEIGHT OF SLEEVE CAP

To calculate the height of a sleeve cap you need two elements.

The length of the armhole which you obtained when you calculated using MODE E or I plus 1/2 the width of the sleeve. See example.

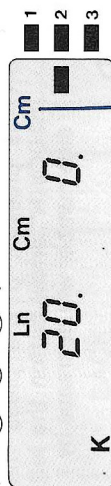


Press mode selector button to MODE K.



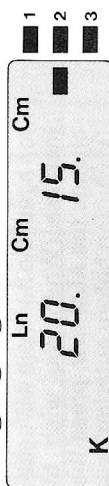
SIGNAL ... Enter the length of the armhole in cm.

(Ex. 20 (cm))



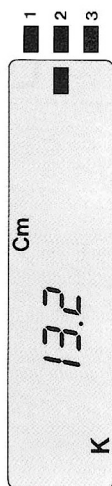
SIGNAL ... Enter 1/2 the width of the sleeve.

(Ex. 15 (cm))



The above display shows result when you press (5), then press button (cm).

You now have the height of the sleeve cap.



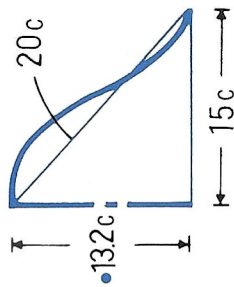
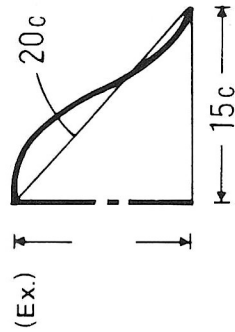
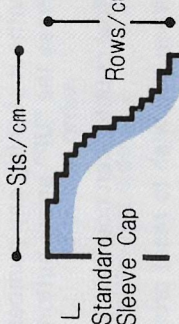
If you enter 13.2cm for height of the sleeve cap, computer will supply 15cm as 1/2 the width of sleeve.

MODE L

HOW TO COMPUTE STANDARD SLEEVE CAP

This MODE is used for computing curved sleeve cap as in the Fig. at right.

To enter dimensions follow instructions of MODE C or D.



3 CALCULATIONS OF DIMENSIONS FOR BACK

Following dimensions ①-④ are calculated with MODE A.

① BACK BODY WIDTH

Push four buttons of (4) (8) (Cm) (S).
The display shows 77 stitches.

Write 77 in the blank pattern chart as shown in the Fig.

② SIDE HEIGHT

Push four buttons of (2) (5) (Cm) (R).
The answer appears on the display, 56 rows.

③ ARMHOLE HEIGHT

Make the following input.
(1) (7) (Cm) (S) (8) (Cm) (R) in that order.
The display answers back with 40 rows.

④ LENGTH OF BACK WAIST BAND

Press three buttons of (7) (Cm) (R).
Answer is 16 rows.

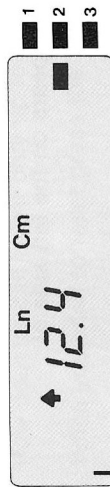
⑤ SHAPE OF BACK ARMHOLE

Change to MODE I by pressing mode selector buttons. Press the following buttons (7) (Cm) (S) (8) (Cm) (R).
The "UP" arrow will appear on the display.
Press the "UP" arrow button.

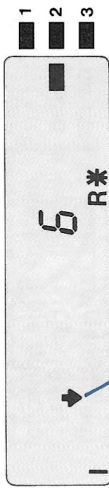


SIGNAL ... Enter the armhole depth in cm.

If the armhole is standard press the "UP" arrow button NOT the numbered buttons.

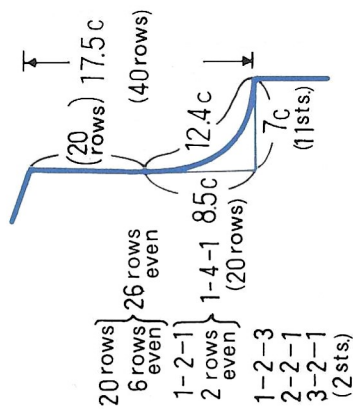


Continue pressing the "UP" arrow button and write down the figures on your pattern chart. It is possible to go back one step while the "UP/DOWN" arrow is on the display.



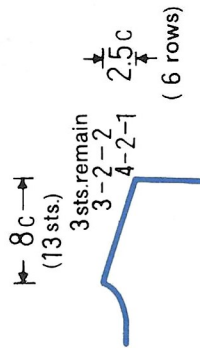
Computation is complete when the "DOWN" arrow appears.

Armhole consists of 20 rows for a curved line and another 20 rows for a straight line. Write in the total height of armhole as 26 rows even by adding a straight 20 rows to the 6 rows even.



REMARKS

Press the (C) button to correct entries. If you find a mistake after pressing any of the following buttons, (S), (R), (Cm) to correct press either mode selector buttons and start again. If you press the (AC) button by mistake you lose your stitch gauge (tension).



⑥ SHOULDER SLANT

Set at MODE D.

Press the following eight buttons.

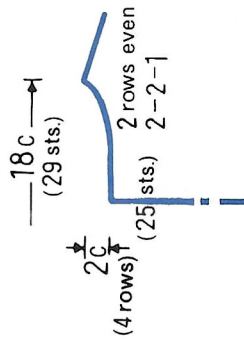
(8) (Cm) (S) (2) (Cm) (S) (8) (Cm) (R).

Compute the dimension of the shoulder slant by pressing the "UP" arrow button.

⑦ BACK NECK LINE

Set to MODE F.

Press the "UP" arrow button and calculate the dimension of the back neckline after pressing the following seven buttons (1) (8) (Cm) (S) (2) (Cm) (R) in order. Write the result on the pattern chart.

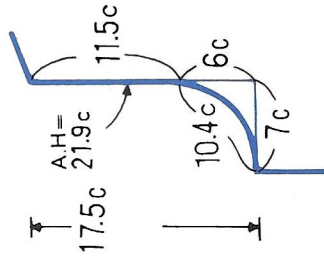
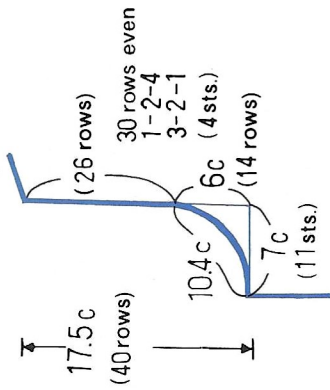


4 CALCULATIONS OF DIMENSIONS FOR FRONT

The body width, side height, armhole height, length of waist band and shoulder slant are all computed in the same way as the back body.

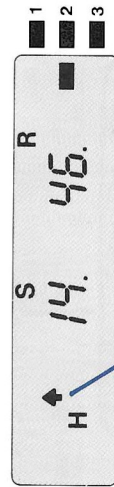
① FRONT ARMHOLE SHAPE

Calculation is exactly the same as for the back armhole shape.
Write the last computation as 4 rows even plus 26 rows, making a total of 30 rows even (straight up).
Armhole curve is 10.4 cm long.
Calculate the total length of front armhole as follows;
 $17.5\text{cm} - 6\text{cm} = 11.5\text{cm}$
 $11.5\text{cm} + 10.4\text{cm} = 21.9\text{cm}$



② FRONT NECKLINE

Set at MODE H by pressing the mode selector buttons. As the back neckline is 29 stitches wide, the number of stitches is 14 (by dividing 28 by 2 after deducting 1 stitch at the center of neckline). The height of the neck line is 46 rows. (46 = 40 (armhole height) plus 6 (shoulder slant height)) Push the following six buttons ① ④ ⑤ ④ ⑥ ②.



The "UP" arrow appears on the display.

Press the "UP" arrow button three times for calculation of stitches and rows. The readout is as follow.

1-2-6, 1-4-8 and 2 rows even.

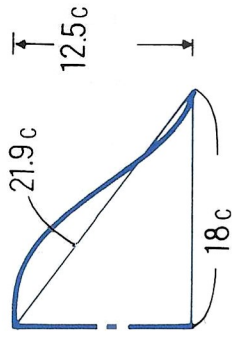
Add one stitch for the center of neckline on the pattern so as not to forget it.

5 HOW TO COMPUTE SLEEVE

① HEIGHT OF SLEEVE CAP

Use the length of front armhole, 21.9cm plus 1/2 the sleeve width, 18cm.

Set to MODE K and press the following eight buttons, ② ① ③ ③ ① ⑧ ⑥ ① in order. The display will show 12.5cm as the height of the cap.



② SHAPE OF SLEEVE CAP

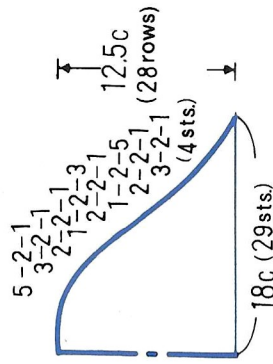
Set to MODE L.

Push the following 10 buttons.

① ⑧ ⑥ ⑤ ① ② ③ ⑤ ⑥ ② in order. The "UP" arrow appears on display window.

Press "UP" arrow button.

Write results on the pattern chart.



③ UNDERARM

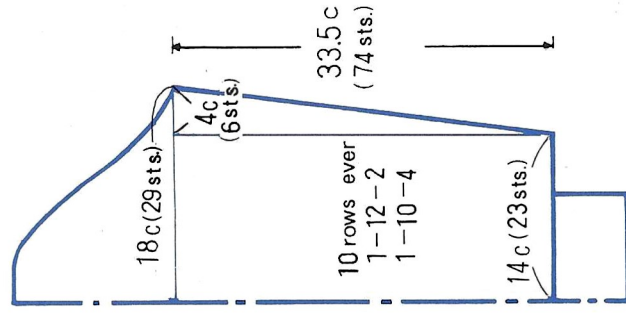
To obtain length deduct cuff and sleeve cap.

$52\text{cm} - 12.5\text{cm} - 6\text{cm} = 33.5\text{cm}$.

Set to MODE H.

Press the following buttons ④ ⑥ ⑤ ③ ③ ③ ③ ⑤ ⑥ ② in order.

Press "UP" arrow button and record figures.

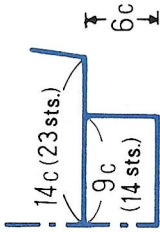


④ LOWER SLEEVE WIDTH

Using figures obtained from 5-2 and 5-3, 29 stitches - 6 stitches = 23 stitches.

⑤ SLEEVE CUFF WIDTH

Set to MODE A.
Press the following 3 buttons (9) (OFF) (S).
Shows 14 stitches.

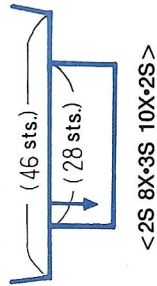


⑥ SLEEVE CUFF HEIGHT

Set to MODE A.
Press the following 3 buttons (6) (OFF) (R).
Shows 14 rows.

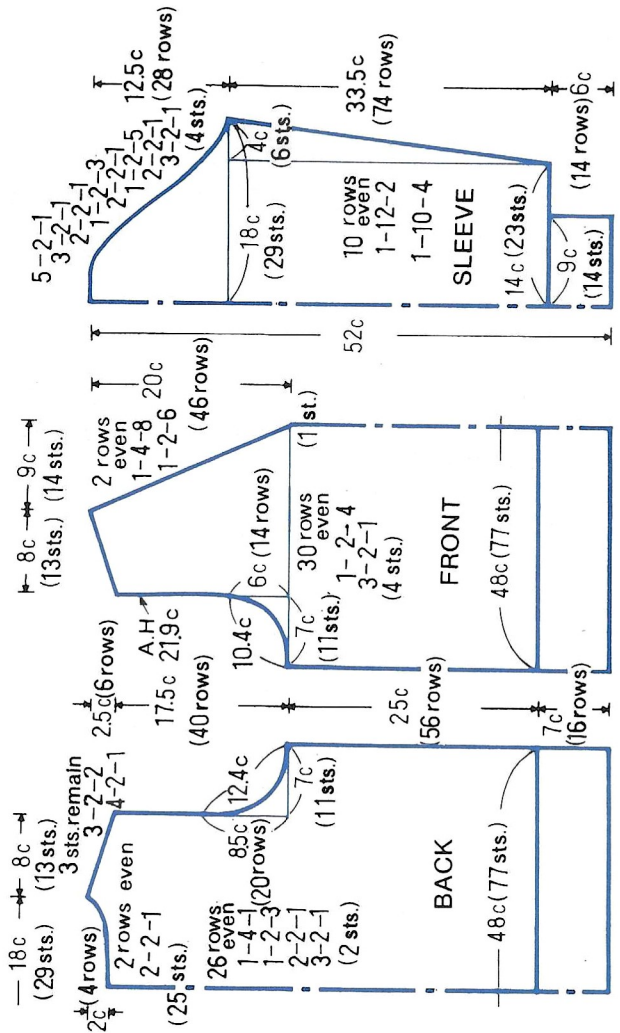
6 DECREASING EVENLY (SLEEVE CUFF)

Use the number of stitches of lower sleeve width, 46 (23sts. x 2) plus the sleeve cuff width, 28 (14sts. x 2).
Set to MODE B.
Press the following buttons
(4) (6) (5) (2) (8) (S).
Press the "UP" arrow button and record figures.



This concludes the computations for a pullover. From this example you can recognize that the calculator is a very convenient and easy way to accurately compute measurements.

(Ex.) gauge (tension): 16sts, 22rows = 10cm



This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and televisions reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the computer with respect to the receiver

Move the computer away from the receiver

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC20402, Stock No.004-000-00345-4.