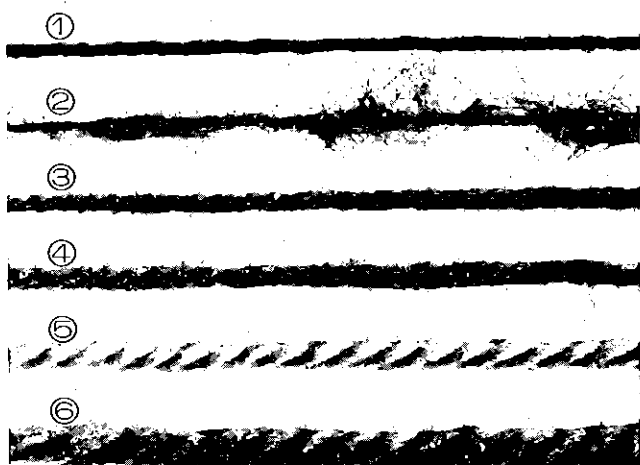


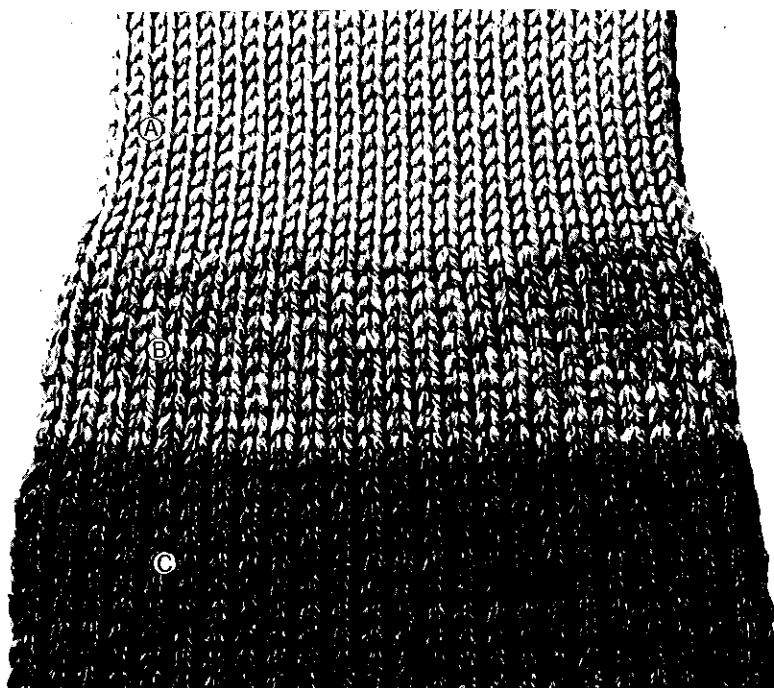
## YARN AND STITCH DIAL



To obtain suitable stitch size, or suitable tension for a garment, set the Stitch Dial Number according to the thickness of the yarn, referring to the yarns and table opposite.

TYPE OF YARN	STITCH DIAL
① Medium thick	1 ~ 2
② Mohair	3 ~ 4
③ Very thick	5 ~ 6
④ Extra thick	6 ~ 8
⑤ Super extra thick	8 ~ 10
⑥ Super extra thick (every second needle)	6 ~ 7

*The thicker the yarn, the higher the Stitch Dial Number, and the thinner the yarn, the lower the Stitch Dial Number.*



A — Stitch Dial at 1 with medium thick yarn.

B — Stitch Dial at 5 with very thick yarn.

C — Stitch Dial at 9 with super extra thick yarn.

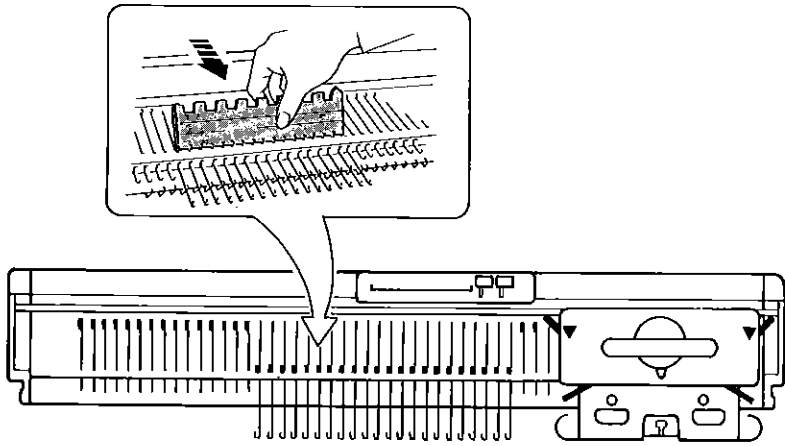
# CAST-ON AND KNITTING

## Cast-on (1) — weaving method —

Push the required number of needles from A position to D position.

Set the Carriage as follows.

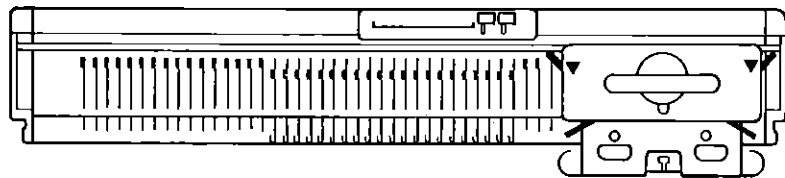
- Cam Lever..... ○
- Side Levers..... ▼
- Russel Levers..... ||
- Weaving Knobs..... ○



Slowly move the Carriage across the Needle Bed until it has passed all the needles.

The needles are aligned in B position.

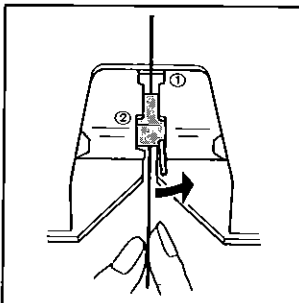
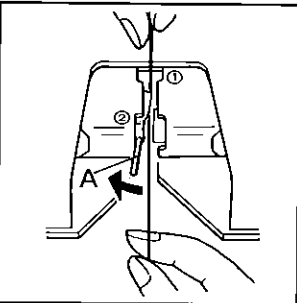
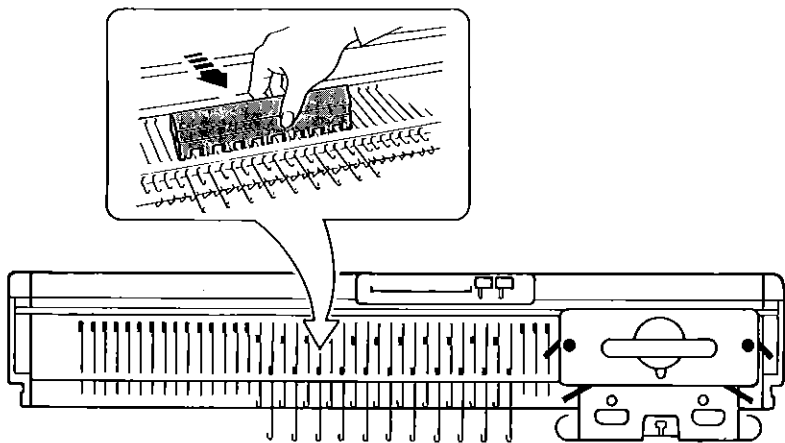
Leave the Carriage at the right side.



Using the Needle Pusher, push every 2nd needle from B to D position.

- Side Levers..... ●
- Weaving Knobs..... ~

Set the Stitch Dial referring to the table on page 10.



Open Yarn Feeder by moving the Yarn Feeder Gate "A" to the left. Remove the main yarn end from Yarn Clip and bring it to the Yarn Feeder.

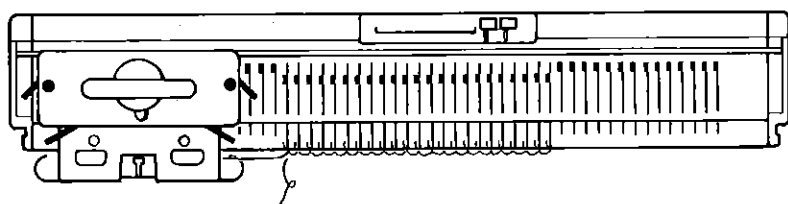
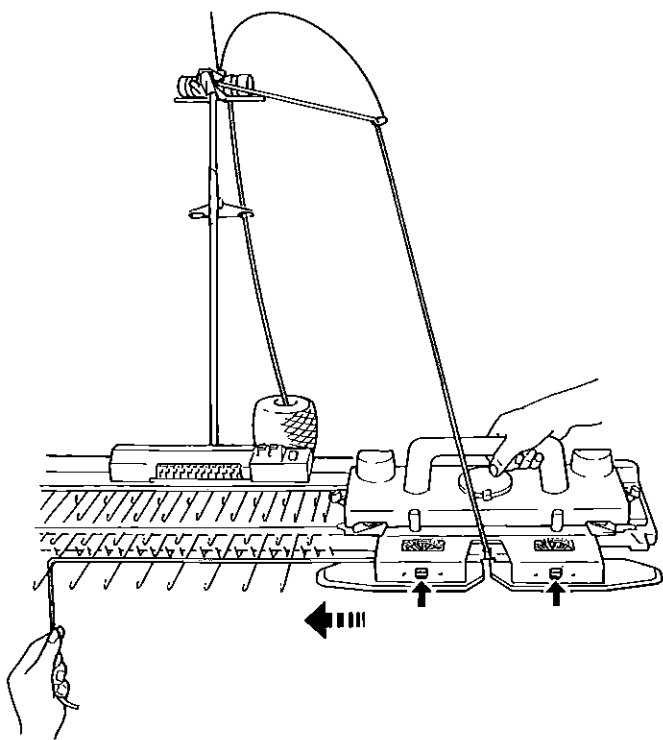
Hold the yarn with both hands and slide it into the Yarn Feeder. Close the Yarn Feeder by moving the Yarn Feeder Gate to the right.

Pull the yarn end from underneath the Arm and lay it over all needles in D position.

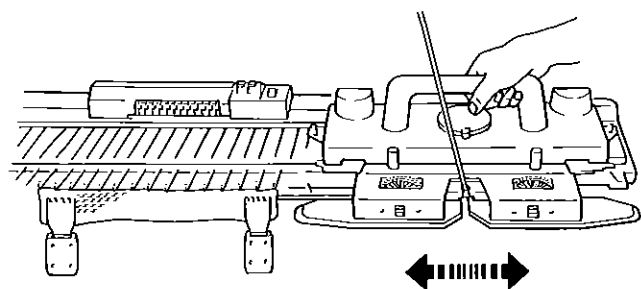
Hold the yarn loosely at the left, about 30cm. from the yarn end.

Slowly move the Carriage from right to left until it has passed all the needles, knitting 1 row.

Ensure that the Arm has passed the last knitted needle by approximately 2~3cm. before beginning the next row.



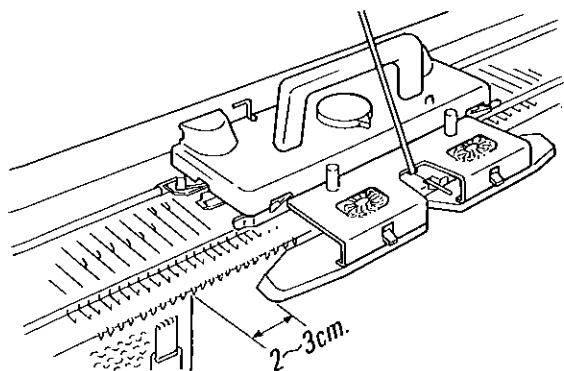
Continue to knit 2~3 rows.  
Cast-on has been finished.



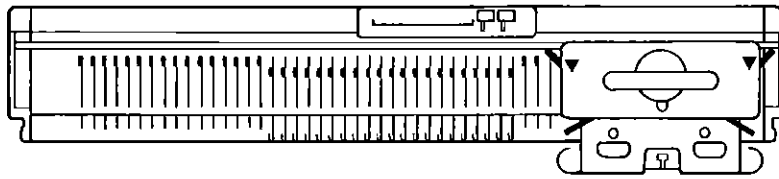
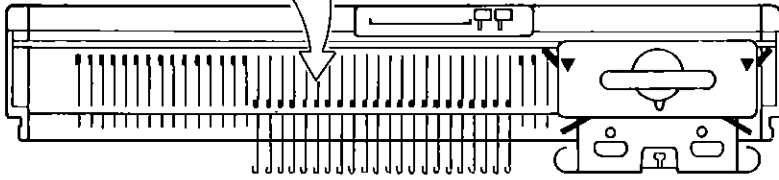
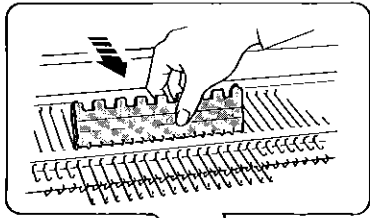
Set the Side Levers at ▼ and Weaving Knobs at ○.

Knit 4 ~ 5 rows and hang Claw Weights at both ends of the fabric.

Move the Carriage from side to side to knit Stockinet.



Ensure that the Arm has passed the last knitting needle by approximately 2 ~ 3cm. before starting the next row.



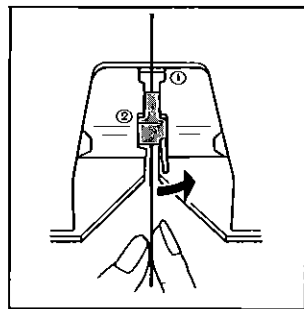
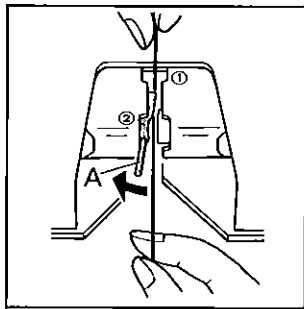
### Cast-on (2)

Push the required number of needles from A position to D position.

Set the Carriage as follows:—

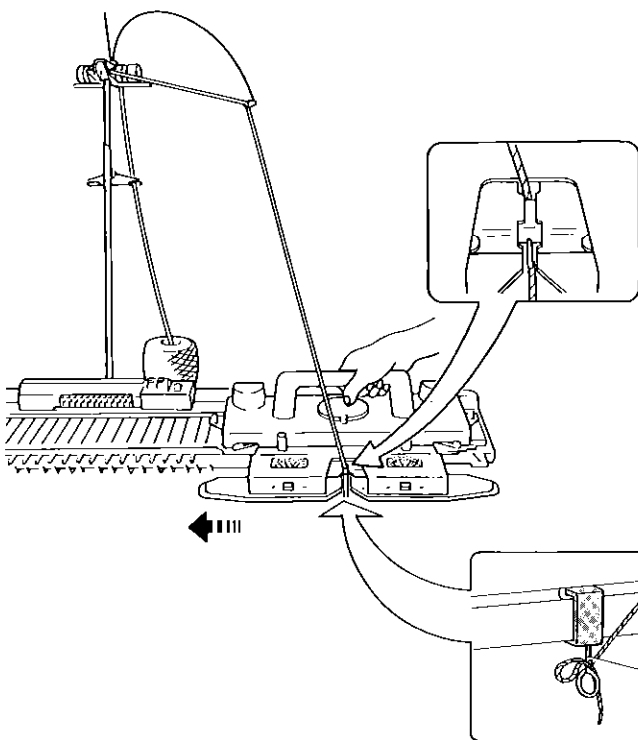
- Cam Lever..... ○
- Side Levers..... ▼
- Russel Levers..... II
- Weaving Knobs..... ○

Slowly move the Carriage across the Needle Bed until it has passed all the needles in D position. The needles align in B position. Leave the Carriage at the right side of the needle bed.



Open Yarn Feeder by moving the Yarn Feeder Gate "A" to the left. Remove the main yarn end from Yarn Clip and bring it to the Yarn Feeder.

Hold the yarn with both hands and slide it into the Yarn feeder. Close the Yarn Feeder by moving the Yarn Feeder Gate to the right.

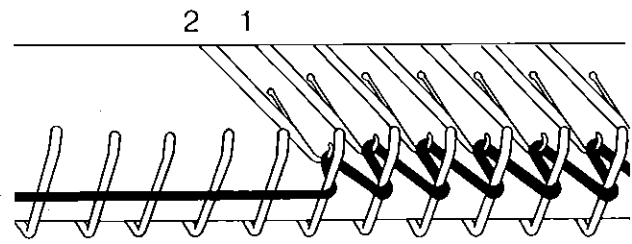


Tie the yarn end to the Clamp Screw Grip "A".

Set the Stitch Dial referring to the table on page 10.

Slowly move the Carriage from right to left until it has passed all the needles in B position.

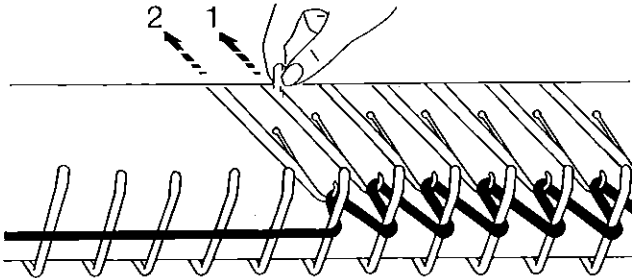
**Be sure to pass the Carriage over the last knitting needle by about 2~3cm.**



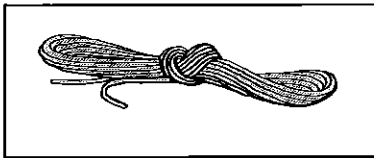
When knitting the first row, the loops may get smaller towards the edge.

To achieve a successful cast-on, these smaller loops must be increased in size.

To correct, hold yarn above the Yarn Feeder and pull it down to allow some slack.



Starting from the loop on the needle "1", push the needles with small loops one by one back to B position.



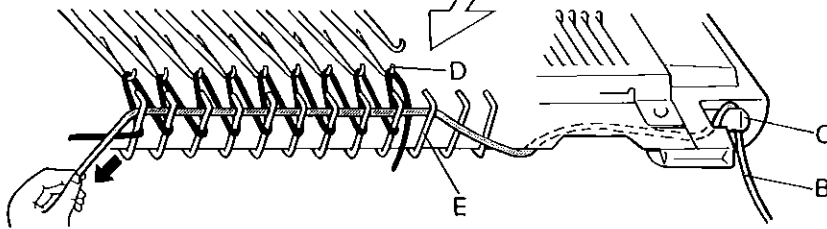
Take the Ravel Cord from the accessory box, and undo it.

Make sure that there is no knot in the cord.

Place the end of the Ravel Cord "B" in the clip "C" at the right end of the needle bed as shown.

Lay the Ravel Cord across the yarn loops between needle hooks "D" and sinker posts "E". Pull the Ravel Cord with the left hand.

*Ensure that the Ravel Cord lies correctly across the loops and is not caught in the needle hooks.*

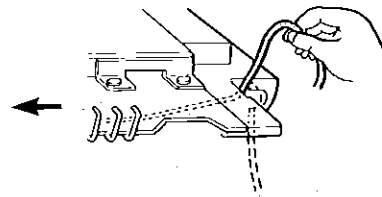
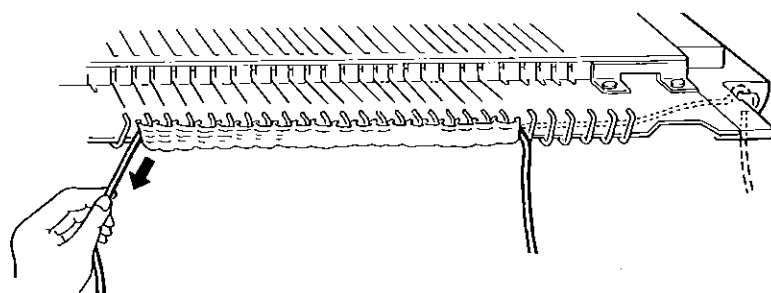
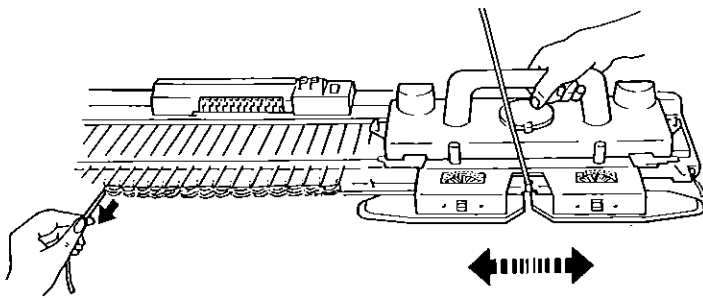


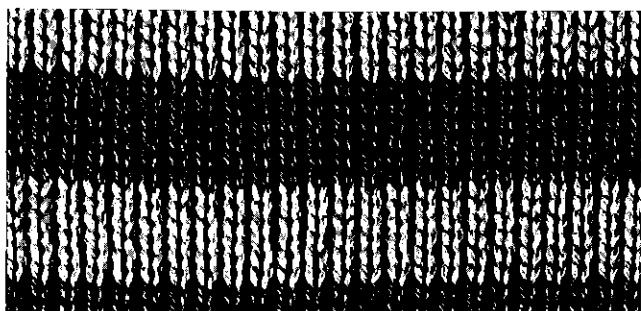
While pulling down the left end of the Ravel Cord, move the Carriage to the right side.

Continue to knit 5~6 rows.

Release the end of the Ravel Cord from the clip and pull it out from the left end.

Cast-on has been finished.





## Knitting Stripe Pattern

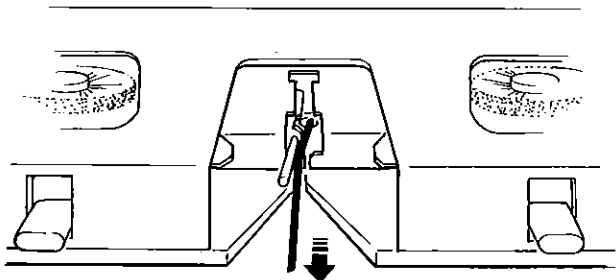
Knit stripes by changing the yarn in feeder ① every few rows.

Cast-on with main yarn. (either method is acceptable.)

Knit 4~5 rows in Stockinet and hang Claw Weights at both edges of the fabric.

Unfasten the yarn end from the Clamp Screw Grip if you have used Cast-on method 2.

Open the Yarn Feeder by moving Yarn feeder Gate "A" to the left. Remove main yarn from the Yarn Feeder.

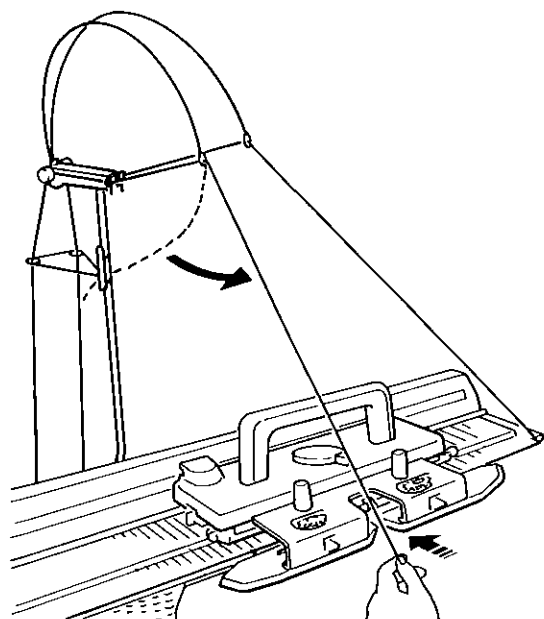
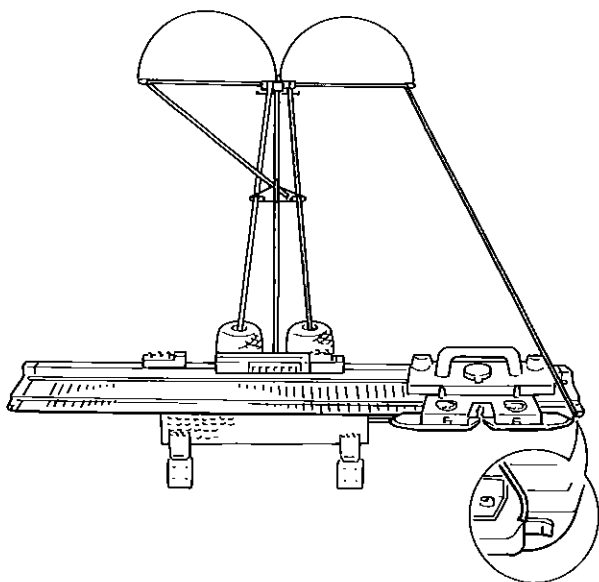


Place the main yarn in the yarn rest at the side of Needle Bed.

### **IMPORTANT**

*The yarn in the left Tension Spring must always be placed in the yarn rest at the left end of the needle bed and the yarn in the right Tension Spring in the right yarn rest.*

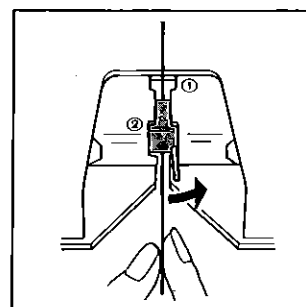
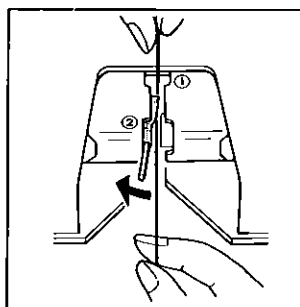
*You must always rest the yarn at these ends of needle bed, no matter which side you change yarns.*

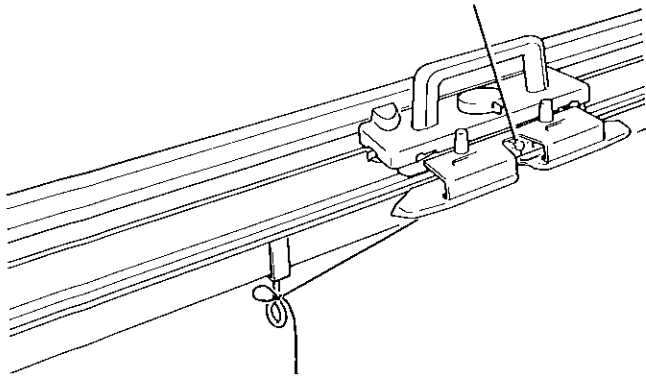


Remove the second colour yarn from the lower Yarn Clip and pull it down towards the Yarn Feeder.

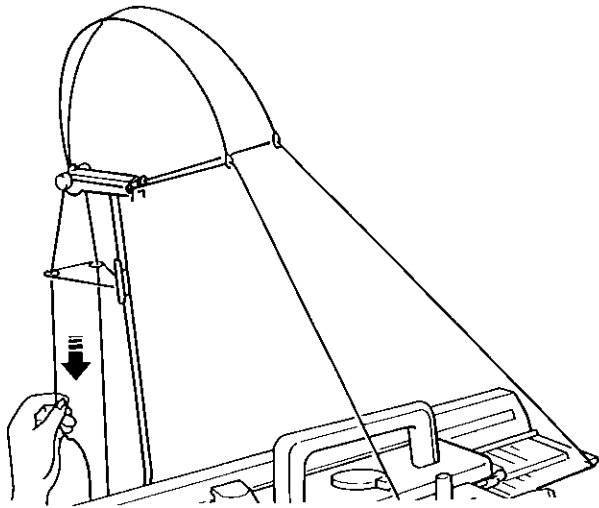
Open Yarn Feeder by moving the Yarn Feeder Gate to the left and place the yarn in the Yarn Feeder.

Close the Yarn Feeder by moving the Yarn Feeder Gate to the right.



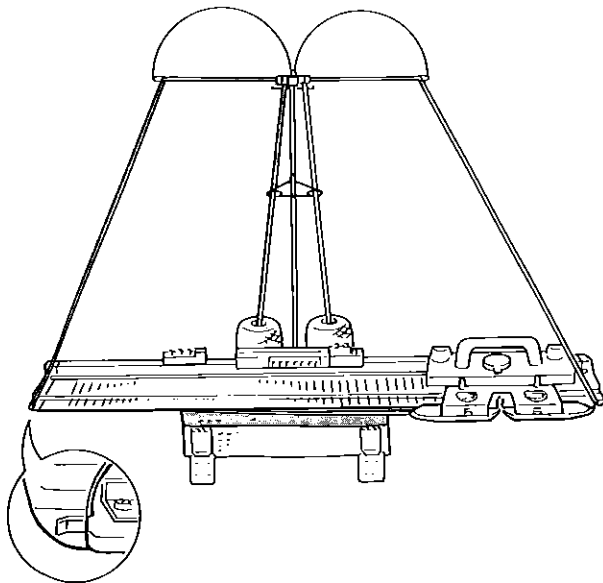


Fasten the yarn end to either Clamp.

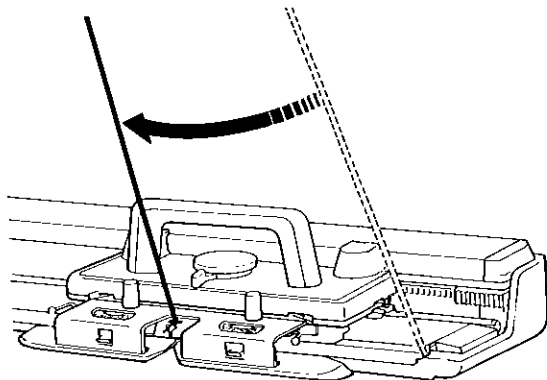


Eliminate slack yarn by pulling the yarn down at the back of Yarn Rod.

Knit an even rows.



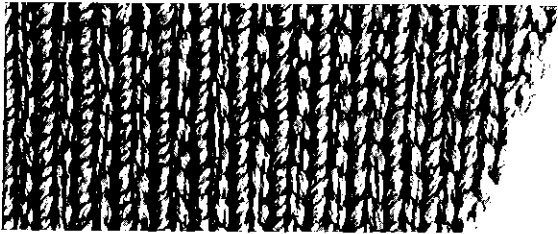
Remove the second colour yarn from Yarn Feeder ② and place it in the empty yarn rest.



Remove the main yarn from the yarn rest and place it into the Yarn Feeder ①.

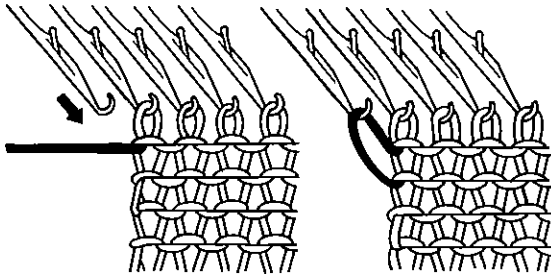
Eliminate slack yarn.

Knit an even rows, using two yarns alternately.



## INCREASING 1 STITCH

You can increase 1 stitch at a time only on the Carriage side of the knitting.



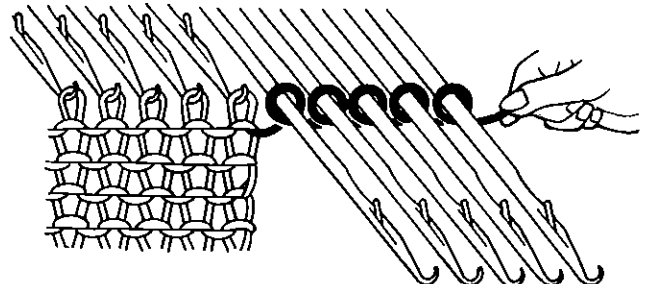
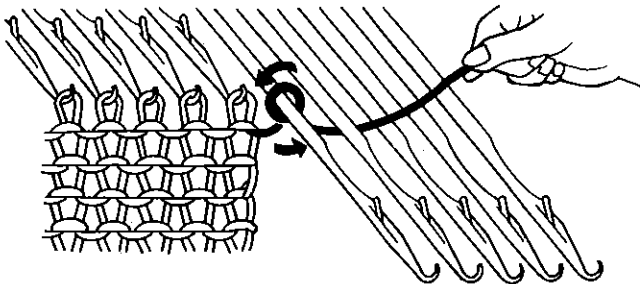
Push 1 needle at the Carriage side from A to B position.



## INCREASING MULTIPLE STITCHES

You can increase only on the Carriage side.

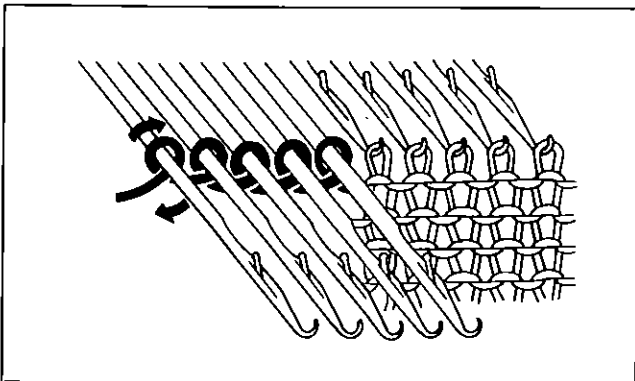
Russel Levers at II.



When the Carriage is at right side:—

1. Push the required number of needles from A to D position. Pull some yarn from the Yarn Feeder and wind it loosely around the empty needles in the anti-clockwise direction.

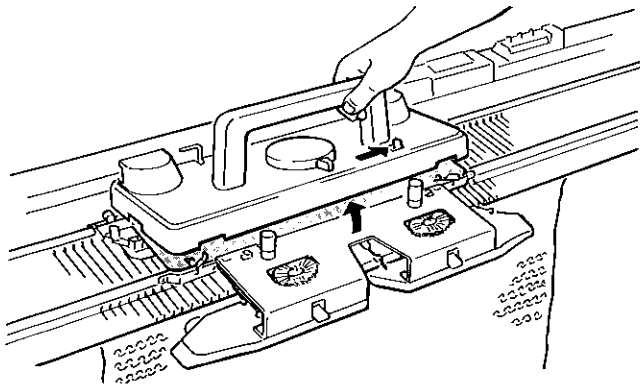
2. Push loops against sinker posts, eliminate slack yarn, and continue knitting.



When the Carriage is at the left side, wind yarn around needles in the clockwise direction.





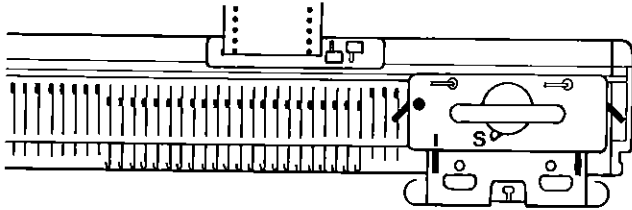


## Passing the Carriage without Knitting

Stop the Row Counter, Pattern Panel, Knit Contour (Optional).

### Using Release Lever:—

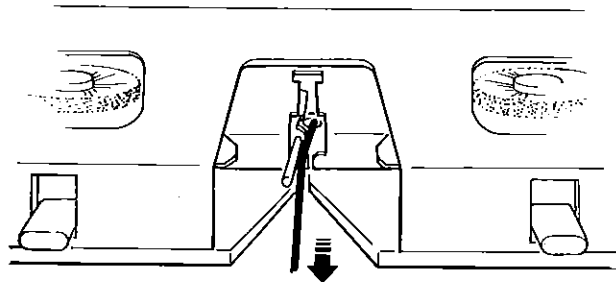
Push this Lever to the arrowed direction to raise the main part of the Carriage and move the Carriage across the fabric.



### Using Cam Lever:—

Set the Carriage as follows and move it across the fabric.

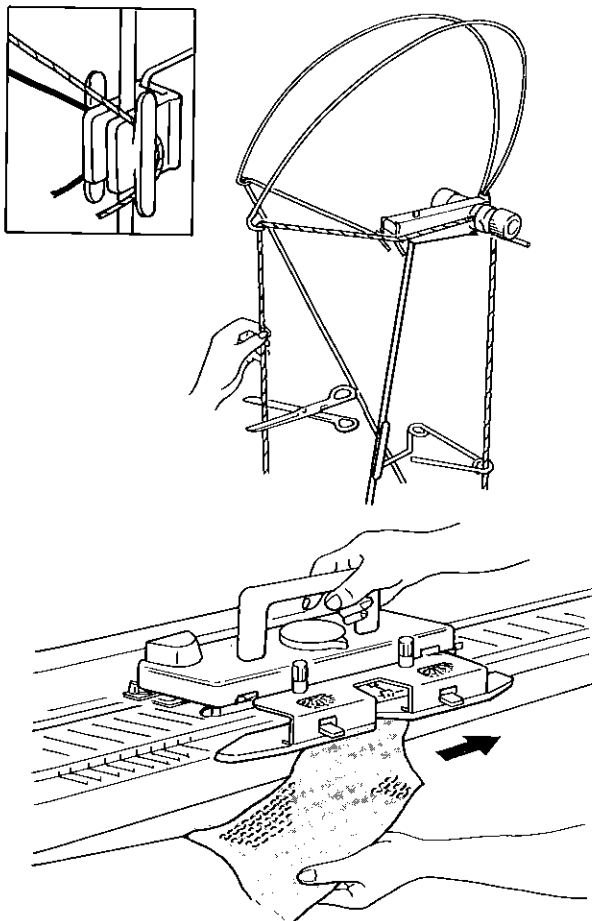
Cam Lever..... **S**  
 Side Lever (on side next to knitting)..... **●**  
 Russel Lever (on side next to knitting)..... **I**



## Removing Knitted Fabric

### — without casting off —

This is useful for removing tension gauge and samples quickly.  
 Remove the yarn from Yarn Feeder.



Hold the yarn between the Carriage and Tension Spring and cut it.

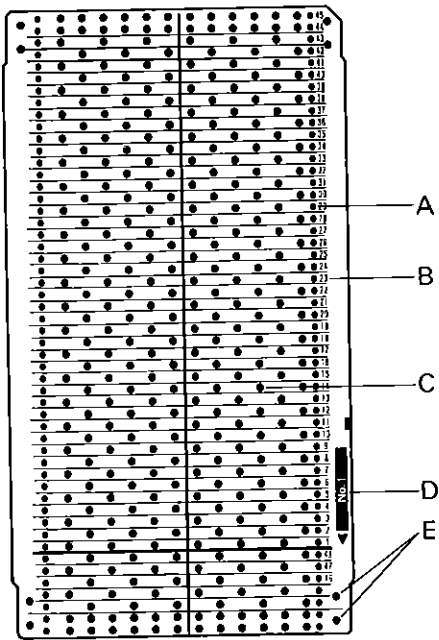
Place the yarn ends into the Yarn Clips.

Remove weights from the fabric.

Set Cam Lever to "O" and move Carriage across the fabric

The fabric comes off the needles.

# PATTERN KNITTING



## Standard Punch Cards

Five Punch Cards are supplied.

- A — Card Feeding Hole
- B — Pattern Row Number
- C — Punched Pattern Holes
- D — Card Number
- E — Card Snap Holes

Optional NP Card Set is also available.

### IMPORTANT

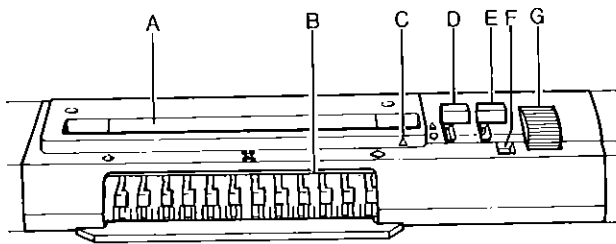
Keep the Cards away from heat and avoid the direct rays of the sun.

Do not fold or bend the Card.

Card No.	A	B	C	D	E
1	○	○	○	○	○
2			○		○
3	○	○			○
4	○	○	○		
5	○			○	

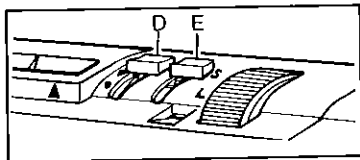
With the Punch Cards, the following patterns can be knitted.

- A FAIR ISLE/KNIT-IN
- B SLIP STITCH PATTERN
- C TUCK STITCH PATTERN
- D PUNCH LACE
- E WEAVING



## Pattern Panel

- A — Punch Card Insertion Slot
- B — Touch Levers
- C — Pattern Row Number Indicator
- D — Stop Knob
- E — L Knob
- F — L Knob Indicator
- G — Punch Card Feeding Dial

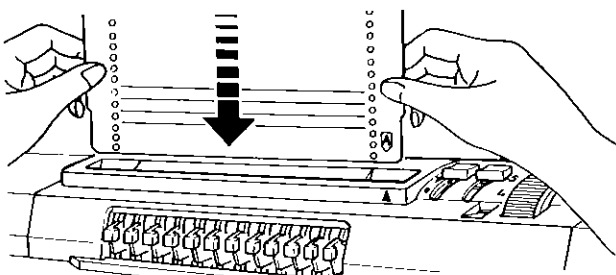


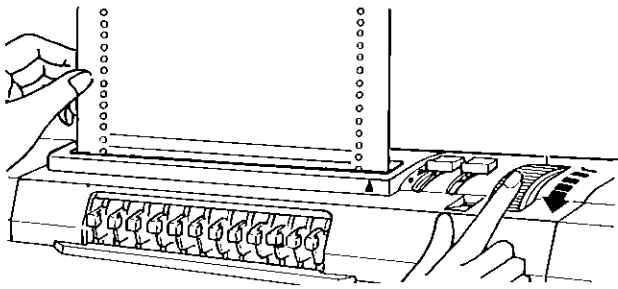
## Inserting Punch Card

Prepare two Card Snaps and a Punch Card.

- Stop Knob "D" ..... ▼
- L Knob "E" ..... S

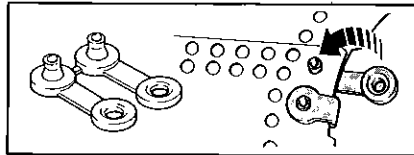
Holding the Punch Card straight with numbers at the right, insert it into Punch Card Insertion Slot and push it down slightly.





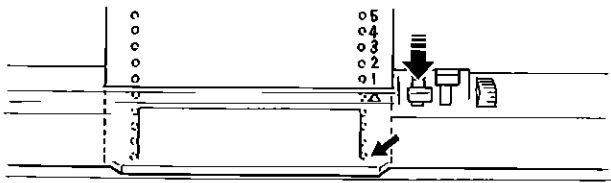
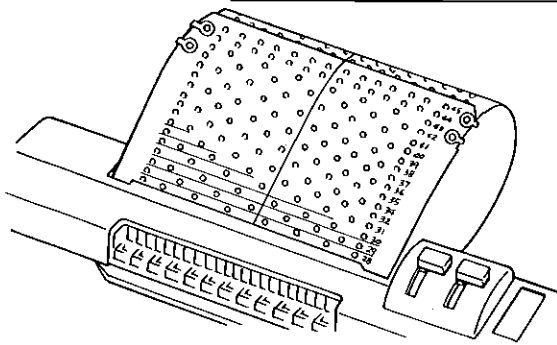
Turn the Punch Card Feeding Dial towards you and at the same time check that the horizontal lines on the Punch Card are parallel with the Punch Card Insertion Slot.

Continue turning the Feeding Dial until the card end comes out at the back.



Overlap the ends of the Card as shown in the diagram. It is important that the card is joined in this way.

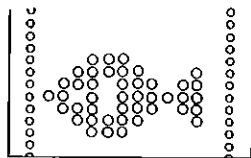
Line up the 2 holes on each side.  
Join the ends of the card with the card snaps.



Turn the Feeding Dial until pattern row number 1 shows above the pattern row number indicator.

Set the Stop Knob to ●.

There is a 5-row difference between the row being knitted and the row showing above the pattern row number indicator.



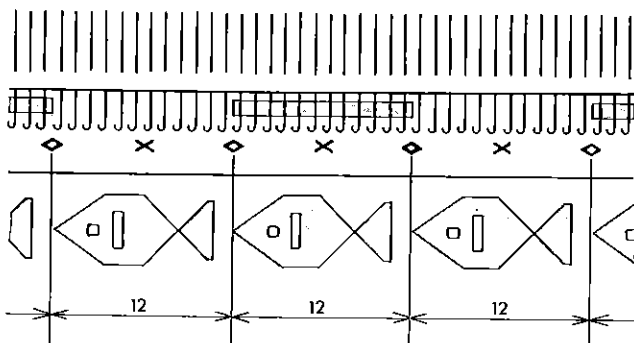
On the front of the Pattern Panel and at the front of the Needle Bed are markings ◇ and ×.

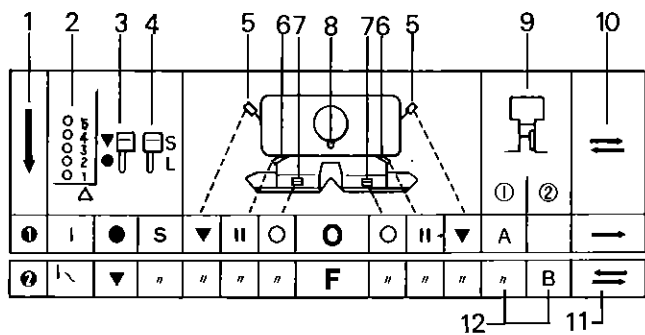
× — indicates the centre of a pattern.

◇ — indicates width of pattern.

Between two ◇ markings are 12 needles.

The centre of a pattern comes at the centre(0).





### Reading Operation Table

- |                        |  |
|------------------------|--|
| 1 — Order              | 9 — Yarn Feeder ① and ②.<br>Yarn Feeder ② column<br>also means Weaving<br>Yarn Holder. |
| 2 — Pattern Row Number |  |
| 3 — Stop Knob          |  |
| 4 — L Knob             |  |
| 5 — Side Levers        | 10 — Carriage direction.   |
| 6 — Russel Levers      | 11 — Number of rows to<br>be knitted.  |
| 7 — Weaving Knobs      | 12 — A, B and C stand for<br>different colours.  |
| 8 — Cam Lever          |  |

### Caution on Pattern Knitting

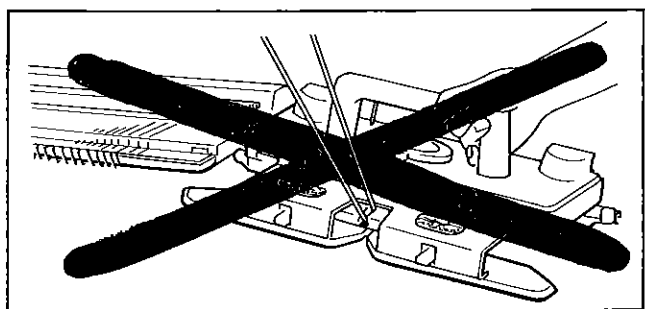
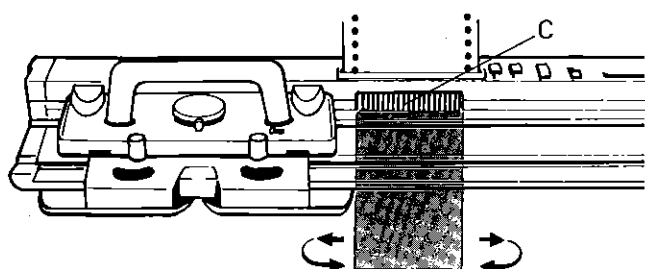
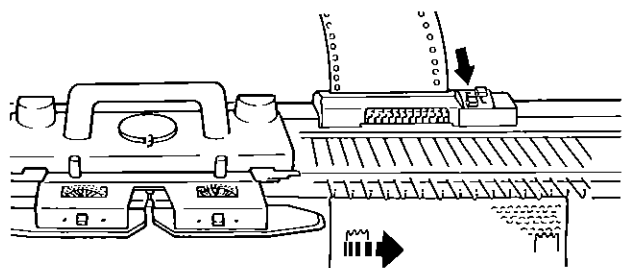
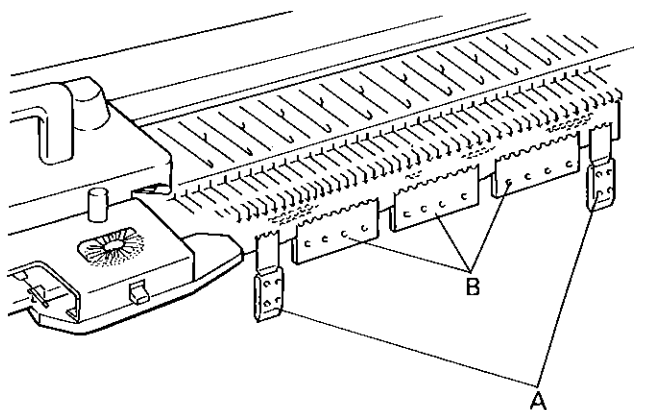
— Before starting pattern knitting, knit 7~8 rows of Stockinet or waste knitting and leave the Carriage at the left of the Needle Bed.

— Always use Weights.  
Hook Claw Weights "A" at both edges of the knitting.  
Hook Wide Claw Weights "B" evenly across the knitting when you are knitting Slip Stitch or Tuck Stitch and also when using extra thick yarn or rough yarn. (Hook them 3~4 rows below the needles and move them up as knitting progresses.

— Set the Punch Card. (see pages 20~21)  
Stop Knob at ●, knit 1 row from the left to the right with main yarn to memorize the 1st row of the pattern. (Operation Table, Order ●)  
Stop Knob at ▼, start pattern knitting following the Operation Table.

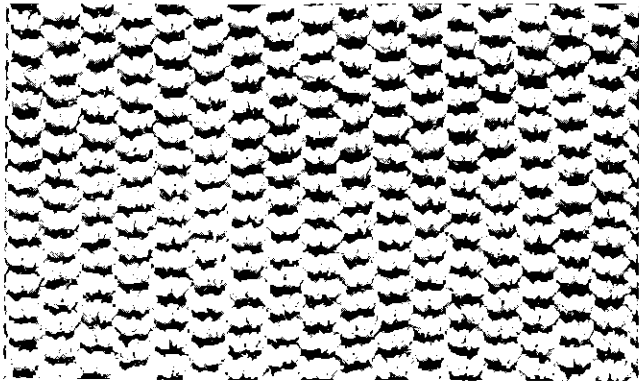
— When moving the Carriage back and forth, ensure that the Carriage has completely passed all the Touch Levers "C".  
Move the Carriage at an even speed.

— Do not remove the Carriage from the Needle Bed.  
If the Carriage has been removed by accident, see pages 62~63 to reset pattern.









## TUCK STITCH

Perforated area of Punch Card knits Stockinet and non-perforated area leaves a loop of yarn in needle hooks.

You can tuck up to 6 rows using medium thick smooth yarn.

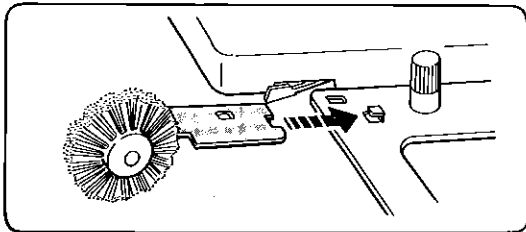
The sample is knitted with Punch Card No.1.

Hang Claw Weights and Wide Claw Weights on the fabric.

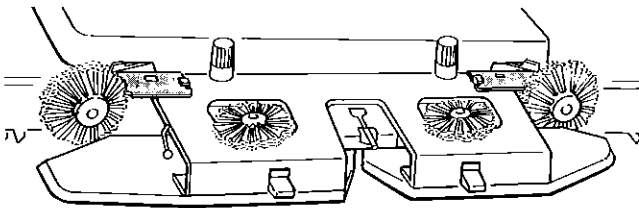
Set the controls as required in ORDER ①.

Knit 1 row from left to right.

↓ 60000 L S											① ② =		
	①	I	●	S	▼		○	○		▼		A	—
	②	↖	▼	"	"	"	"	T	"	"		"	"

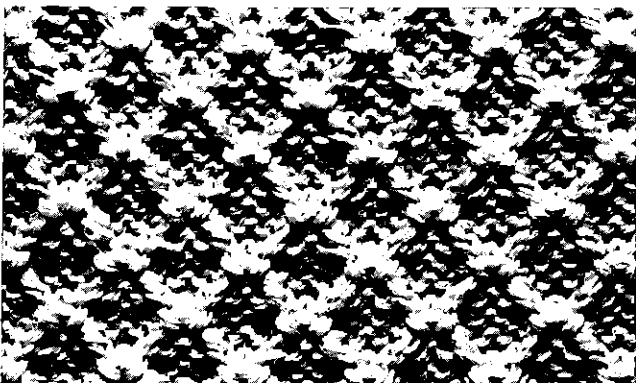


Attach Tuck Brushes.  
(Refer to page 7)



Set the controls as required in ORDER ②.

Continue knitting.

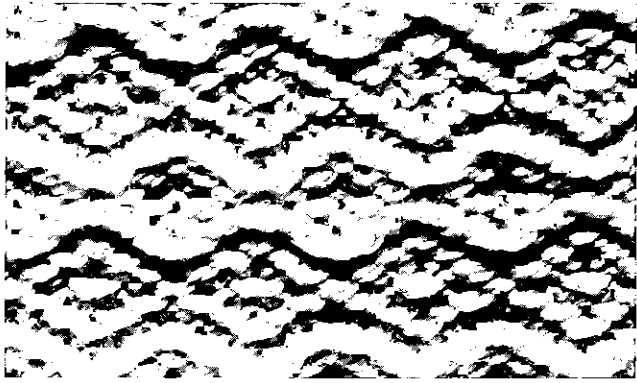


Card No.2

Knit following the same Operation Table as for Card No.1.







## SLIP STITCH

Perforated area of Punch Card knits Stockinet and non-perforated area leaves float of yarn on the purl side of the fabric.

The sample is knitted with Punch Card No.3.

Hang the Claw Weights at both edges of the fabric.

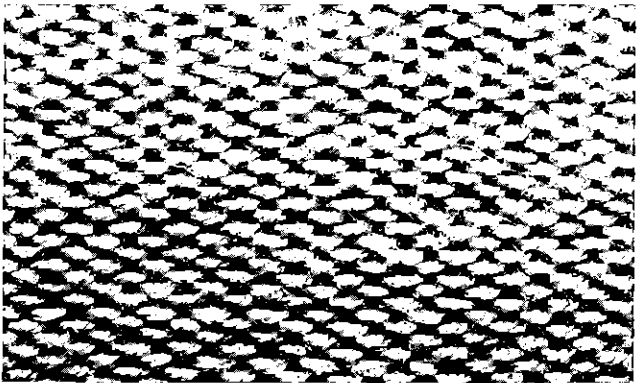
	①	I	●	S	▼		○	○	○				▼	①	②	A	—
	②	I	▼	"	"	"	"	S	"	"			"	"	"	"	"

Set the controls as required in ORDER ①.

Knit 1 row from left to right.

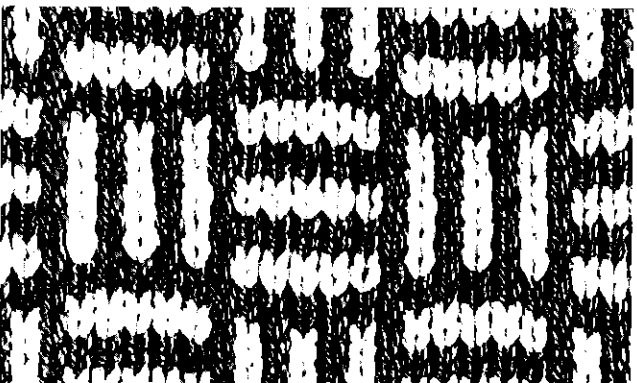
Set the controls as required in ORDER ②.

Continue knitting.



Card No.1

Knit following the same Operation Table as for Card No.3.



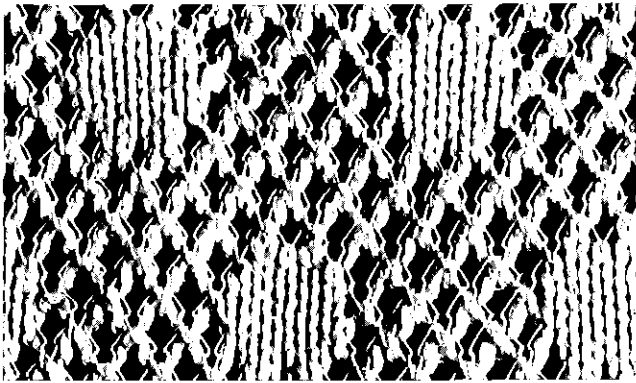
## SLIP STITCH IN COLOURS

Knit two or more different colour yarns alternately in slip stitch pattern.

The sample is knitted with Punch Card No.4.

	①	I	●	S	▼		○	○	○				▼	①	②	A	—
	②	I	▼	"	"	"	"	S	"	"			"	"	"	"	≡
		"	"	"	"	"	"	"	"	"	"	"	"	B	≡	2	

Knit following the Operation Table changing the different colour yarns in the same manner as done for "KNITTING STRIPE PATTERN" on pages 15~16.



## PUNCH LACE

Combination of thick yarn and the self coloured very fine yarn produce a lace effect pattern.

Perforated area of Punch Card knits the yarn in Yarn Feeder ② (thinner yarn) and non-perforated area knits yarns together.

The sample is knitted with Punch Card No.5.

Hang Claw Weights at both edges of the knitting.

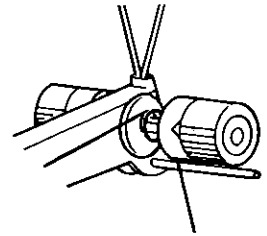
Set the controls as required in ORDER ①.

Knit 1 row from left to right.

Set the controls as required in ORDER ②.

Thread thinner yarn through the Auto-Tension.

If the yarn is loose on the Auto-Tension, wind it once around the shaft of Tension Disc.



Put thicker yarn "A" into the Yarn Feeder ① and thinner yarn "B" into the Yarn Feeder ②, left side of Guide Pin "C".

Bring 1st and last needle to D position.

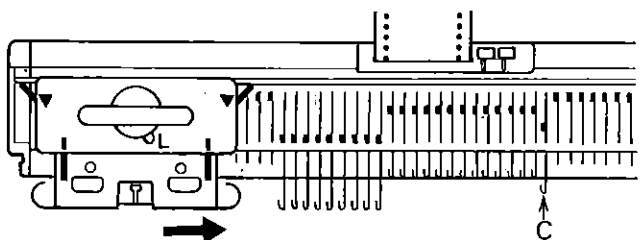
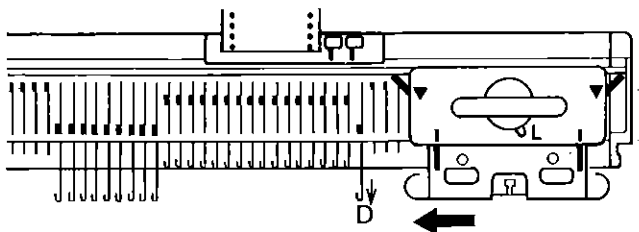
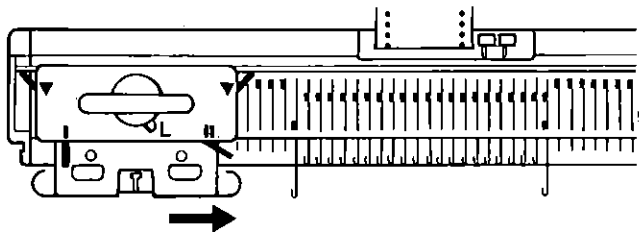
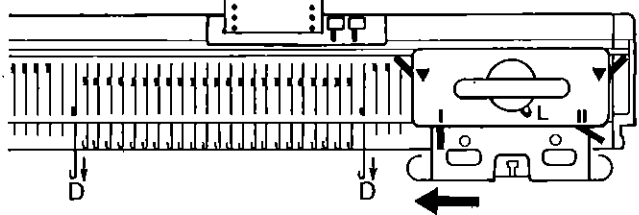
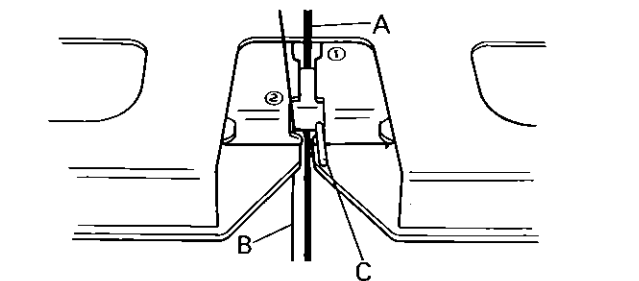
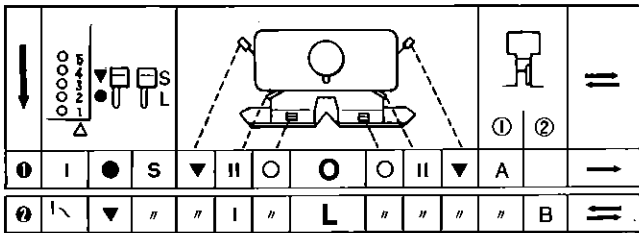
Knit from right to left.  
The end needles will not knit.

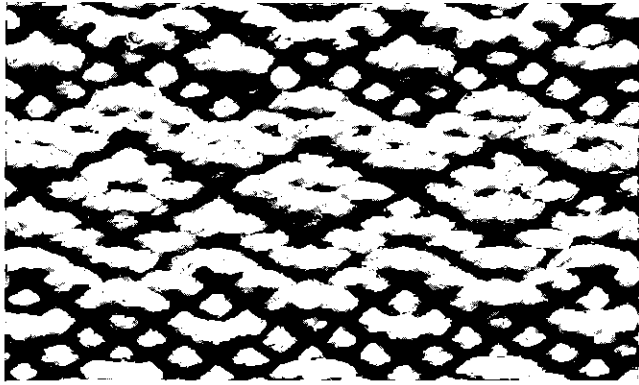
Knit from left to right.

The end needles will be knitted back to B position.

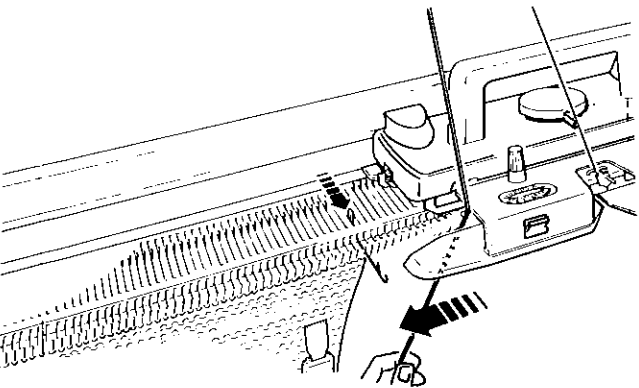
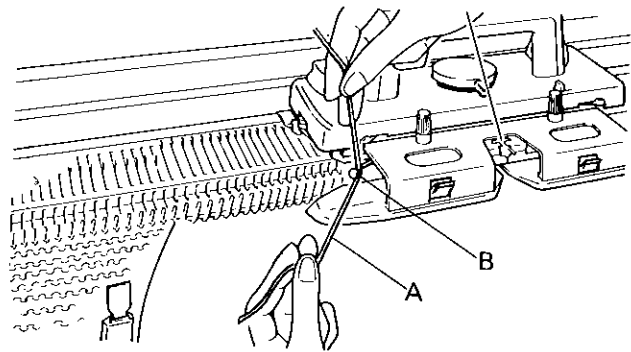
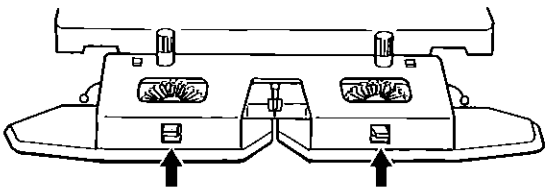
Knit the required number of rows pushing 1st and last needles to D position when Carriage is at the right.

When partial knitting, set both Russel Levers to I, push 1 needle at opposite side to resting needles to D position to knit from right to left and push back the needle to C position to knit from left to right.





①	I	●	S	▼		○	○	○		▼	①	*	=	
											A			
②	∩	▼	"	"	"	~	"	~	"	"	"	"	B	≡



## WEAVING

By passing fancy yarn or different materials (hereafter called weaving yarn) between the Stockinet stitches on purl side, a pattern is made on the surface of the fabric.

Perforated area of the Punch Card passes the Weaving yarn over the needle, and non-perforated area passes the Weaving yarn under the needle.

The sample is knitted with Punch Card No.3.

Hang the Claw Weights at both edges of the fabric.

Set the controls as required in ORDER ①.

Knit 1 row from left to right.

Thread the weaving yarn into the Auto-Tension and pull it down towards the Needle Bed.

Adjust the Tension Dial.

Set the controls as required in ORDER ②.

To set the Weaving Knob to ~, push up these knobs.

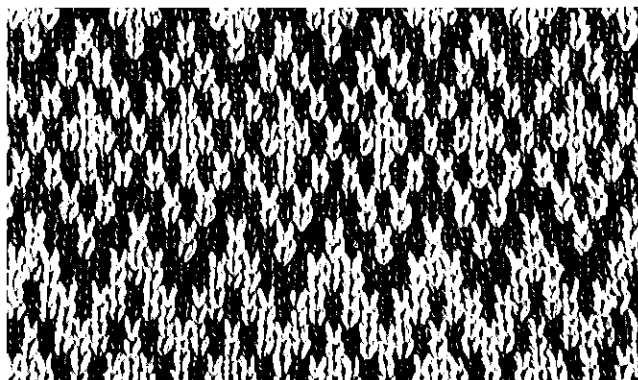
\* mark in the Yarn Feeder column refers Weaving Yarn Holder.

Put the main yarn into Yarn Feeder ①, hook weaving yarn "A" into the left Weaving Holder "B" (always put weaving yarn in Weaving Holder nearest to the knitting, as shown in the illustration left.) Set the Stitch Dial 1 number higher than for Stockinet.

Push one end needle on the Carriage side to D (or C in partial knitting) position.

Slowly move the Carriage from right to left.





## L KNOB FUNCTION

When the L Knob is set to L, the Punch Card moves only on every alternate row, thus producing an elongated pattern. To get correct pattern using L Knob, set the Stop Knob and L Knob as follows.

The sample is knitted in Fair Isle with Card No.3.

Set the controls as required in ORDER ①.

The 1st row (ORDER ②)

Stop Knob..... ●

L Knob..... S

Following rows (ORDER ③)

Stop Knob..... ▼

L Knob..... L

Colours in the L Knob Indicator alternate.

Blue..... the current row will be repeated.

Red..... the Punch Card moves to the next row and a new pattern row will be knitted next.

Work other operations in the same way as for other types of patterns.

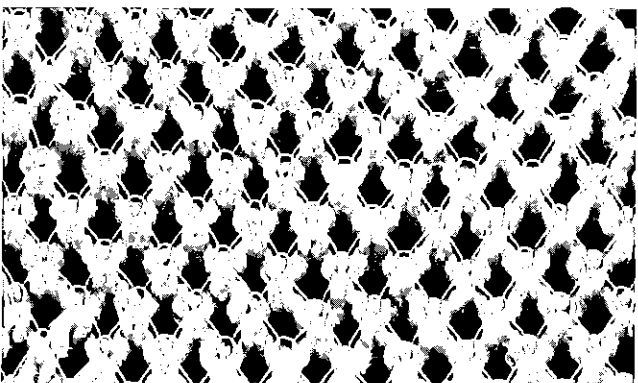
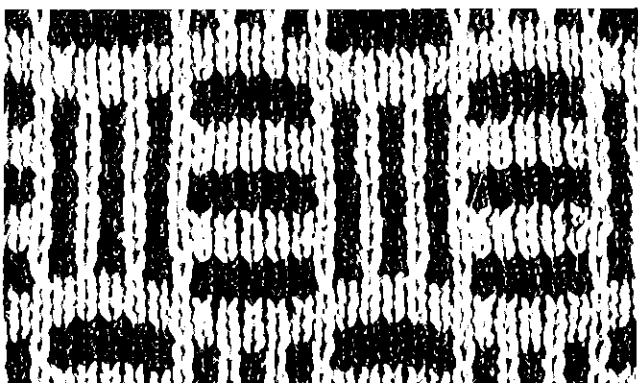
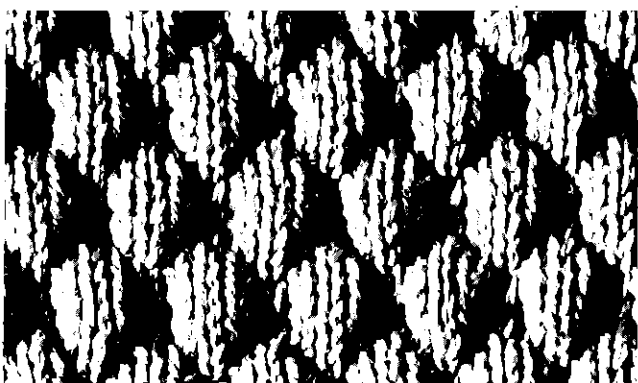
Tuck Stitch using Punch Card No.2.

Slip Stitch in colours using Punch Card No.4.

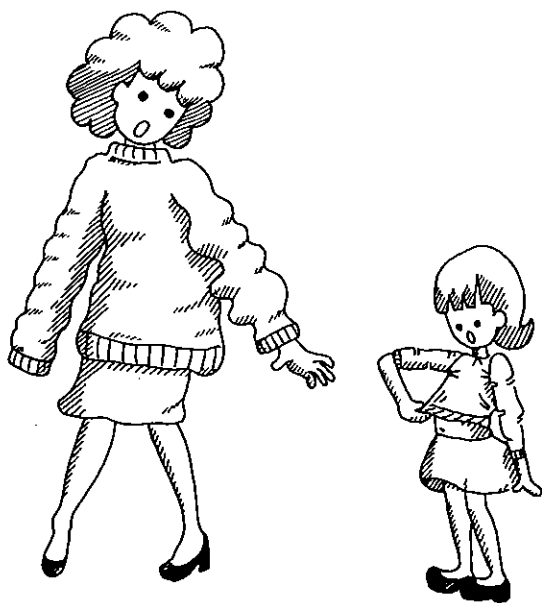
Punch Lace using Punch Card No.1.

*The L Knob can also be used, if the Punch Card is suitable, for FAIR ISLE, WEAVING, SLIP STITCH AND PUNCH LACE.*

①	I	●	S	▼		○	○	○		▼	A	—	
②	I	"	"	"	"	"	F	"	"	"	"	B	—
③	I	▼	L	"	"	"	"	"	"	"	"	"	—



# TAKING A TENSION GAUGE



## Tension Gauge

Tension gauge indicates how many stitches and rows per 10cm.

It is very important to take correct tension gauge to knit a desired garment in the size you selected.

To take correct tension gauge, the tension swatch must be knitted in the same stitch type, with the same yarn and Stitch Dial as to be used for a garment.

Knit a Tension Swatch.

Prepare the yarn you selected and little amount of different colour yarn for marking on the swatch.

Determine the Stitch Dial referring to page 10, but it is recommended to try knitting by changing stitch dial setting till you obtain suitable stitch dial number for the yarn and stitch type.

Then knit the swatch in the manner as instructed below.

(1) Arrange 15 needles on both sides of the centre(0), 30 needles in total for cast-on.

(2) Cast-on with main yarn and knit 10 rows continuously in selected stitch type with suitable Stitch Dial.

(3) Exchange the main yarn in the Yarn Feeder for the contrast yarn, and knit two rows in stockinet.

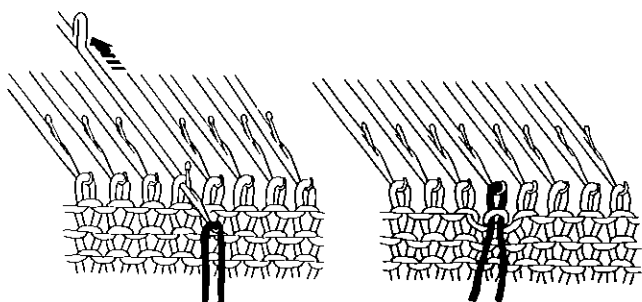
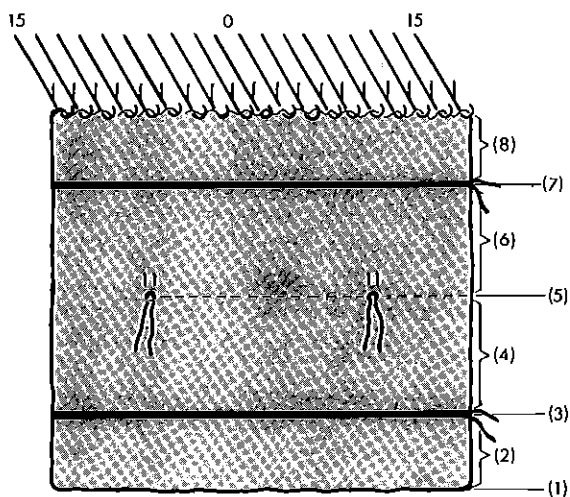
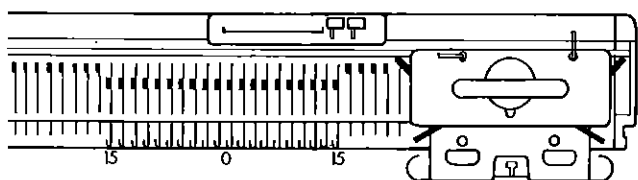
(4) Cut the contrast yarn and rethread the main yarn, and knit 15 rows in selected stitch type with suitable Stitch Dial.

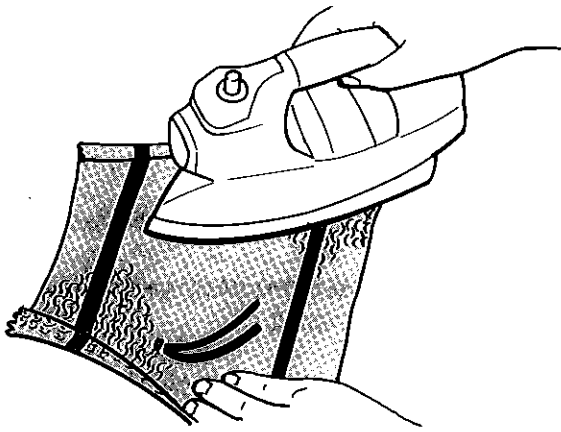
(5) Push both 11th needles from the centre(0) to D position and place a piece of contrast yarn on each of those needle hooks. Then push those needles back toward B position by hand.

(6) Knit another 15 rows.

(7) Thread the contrast yarn and knit 2 rows in Stockinet.

(8) With main yarn, knit 10 rows in selected stitch type with suitable Stitch Dial.





Remove the yarn from the Yarn Feeder and remove the swatch from the machine by moving the Carriage once.

***TAKE NOTE OF THE STITCH DIAL NUMBER.***

Allow several hours for the swatch to return to its natural condition. Press the swatch lightly with a steam iron, or with an ordinary iron over a damp cloth.



**Gauge Scale**

This scale is designed to get how many stitches and rows per 10cm., measuring between yarn marks on the tension swatch.

The scale has two sides. The side "S" is used for measuring stitches and the side "R" is for rows.



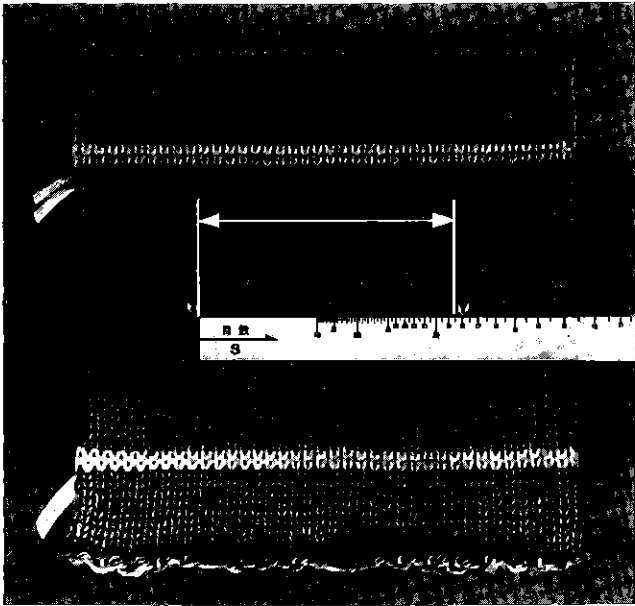
Following the instructions on the next page, measure and get correct tension gauge.



## How to measure the tension swatch

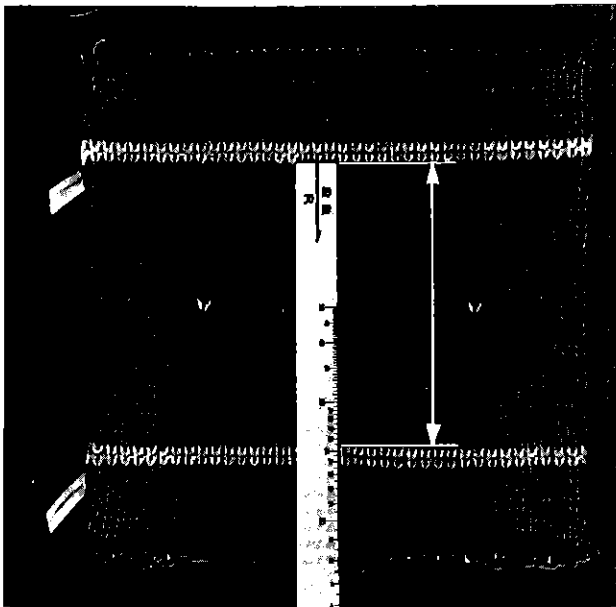
### Stitch (Horizontal)

Place the Gauge Scale (blue) with the "S" side up, onto the tension swatch so as the left end of the Scale is touching the inside of the stitch in a contrast yarn. Measure to the point of the other contrast stitch and the number which corresponds with this stitch. The Scale should be read from the side indicated by the arrow, i.e. from the left side.

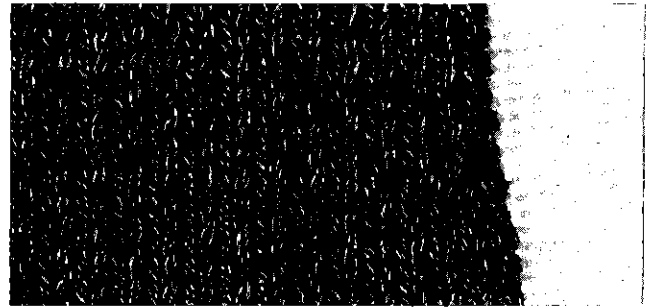
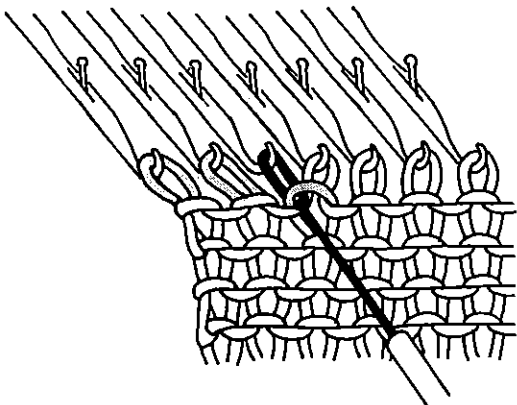
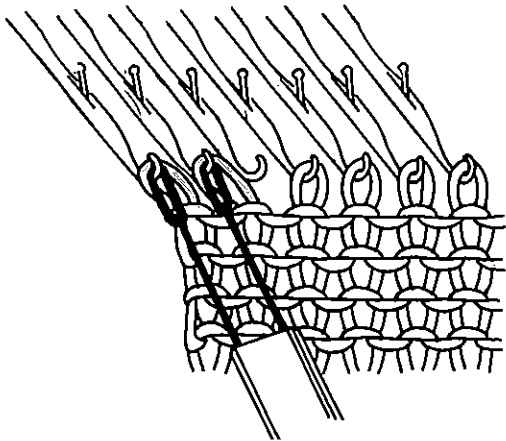
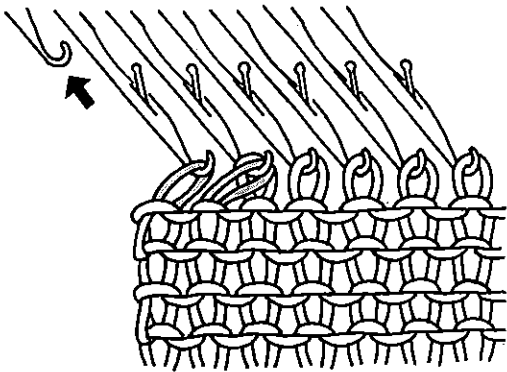
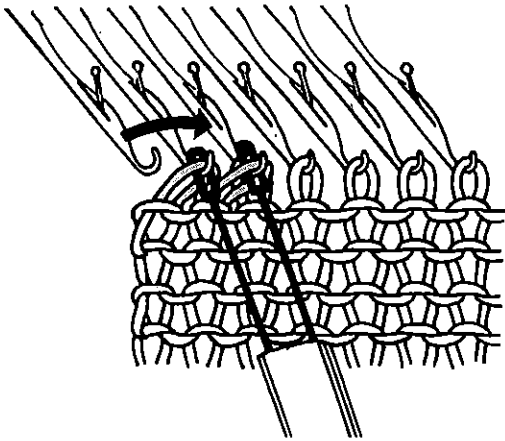


### Row (Vertical)

Place the Gauge Scale (blue) with the "R" side up, onto the tension swatch so as it covers the length in between the rows knitted in a contrast yarn. Measure this length and the number indicated on the Scale should be read from the side indicated by the arrow.

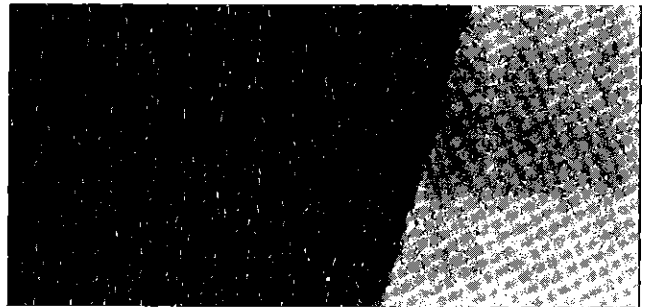


# KNITTING TECHNIQUES



## Fully fashioned decrease

1. With two prong Transfer Tool, transfer the two end stitches onto one needle inside.  
In case of every other needle selection, use three prong Transfer Tool.
2. Push the end empty needle back to A position.  
Continue to knit.



## Fully fashioned increase

1. Push the adjacent empty needle to B position. With 2 prong Transfer Tool, transfer the two end stitches one needle out.  
In case of every other needle selection, use three prong Transfer Tool.
2. Pick up the loop below the third stitch and place it onto the empty needle as shown.  
Continue to knit.