



INSTRUCTION BOOK

RIBBING ATTACHMENT

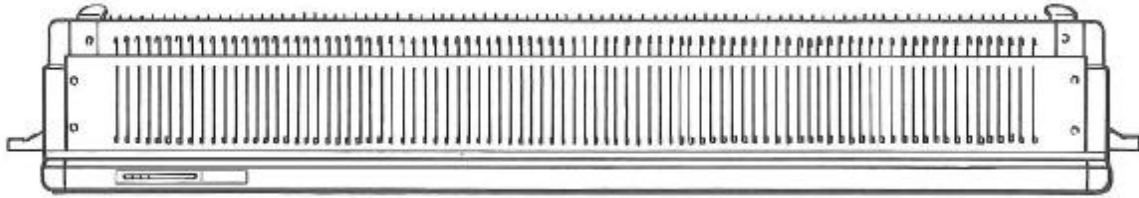
SR 860

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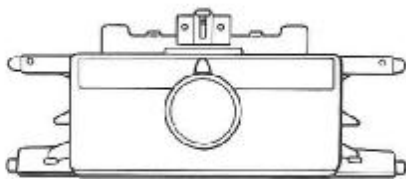
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MACHINE AND ACCESSORIES

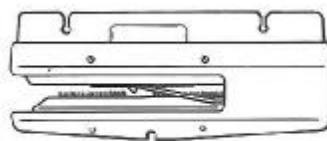
RIBBER NEEDLE BED



CARRIAGE



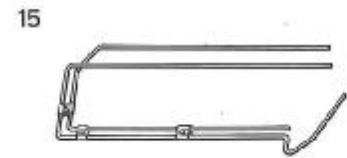
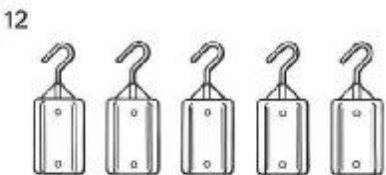
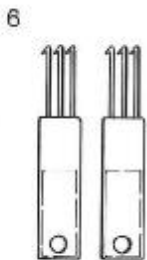
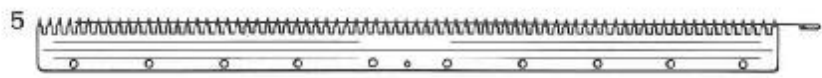
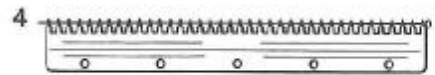
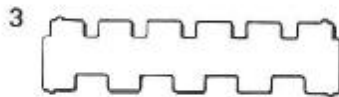
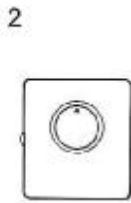
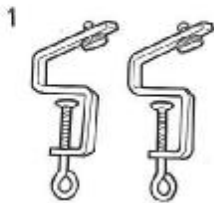
ARM



SWING HANDLE

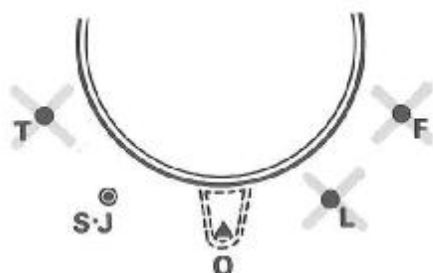
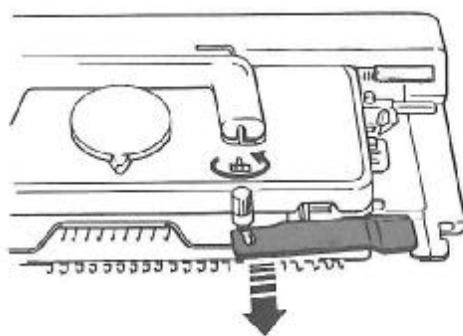
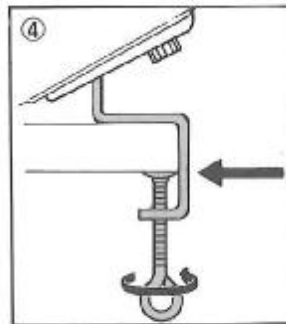
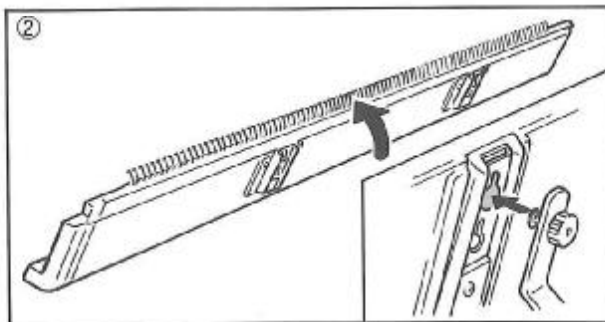
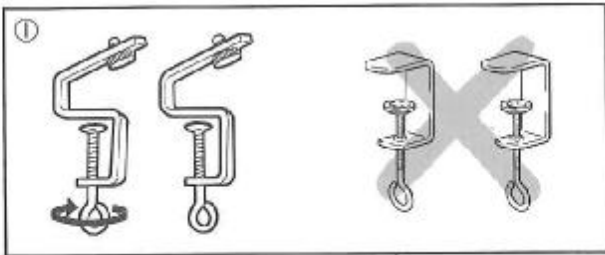


ACCESSORIES



- | | |
|-------------------------|-------------------------------|
| 1. Ribber Clamp (2) | 8. Close Knit Bar |
| 2. Needle Aligner | 9. Hook Tool |
| 3. Needle Pusher | 10. Spare Needle (2) |
| 4. Cast-on Comb (short) | 11. Double-eye Transfer Tool |
| Cast-on Wire (short) | 12. Ribber Weight (large) (5) |
| 5. Cast-on Comb (long) | 13. Edge Weight (2) |
| Cast-on Wire (long) | 14. Ribber Tuck Brush |
| 6. Hanger Comb (2) | 15. Yarn Rest |
| 7. Side Hanger (2) | |

SET UP MACHINE



Set up Knitter

1. Fasten the Knitter to a table, using Ribber Clamps instead of Knitter Clamps.

① Take Ribber Clamps and turn screws in arrow direction as far down as they go.

② Raise front of Knitter and insert screw head into keyhole slot.

③ Pull clamps upwards and fasten screws.

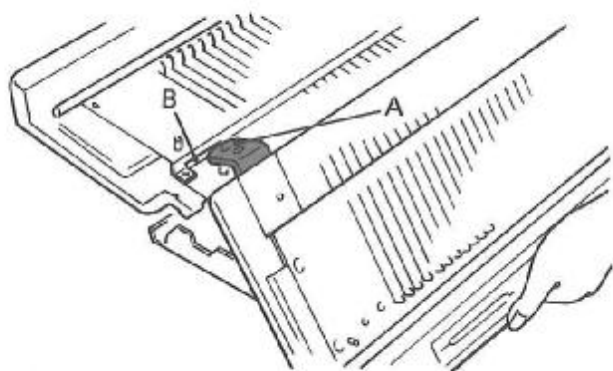
④ Place clamps on table edge and push them backwards until they are flush with table. Tighten clamps firmly by turning screws in arrow direction.

2. Remove Carriage Fastener.

3. Set Cam Lever on Knitter to STOCKINET (●).

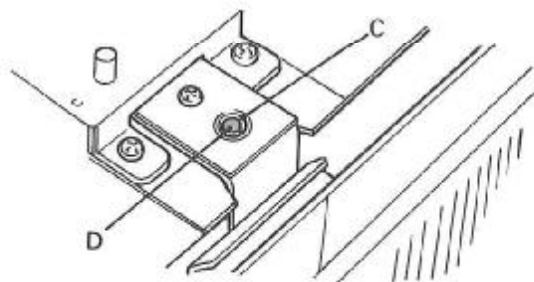
IMPORTANT:

Do not set Knitter Cam Lever to FAIR ISLE (F), PUNCH LACE (L), or TUCK (T), when using Ribber. Otherwise, machine failure or knitting defects may result.

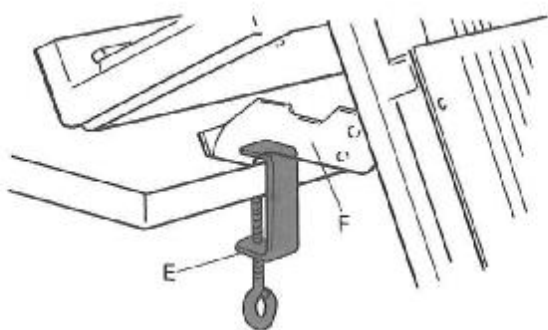


Attach Ribber Needle Bed to Knitter

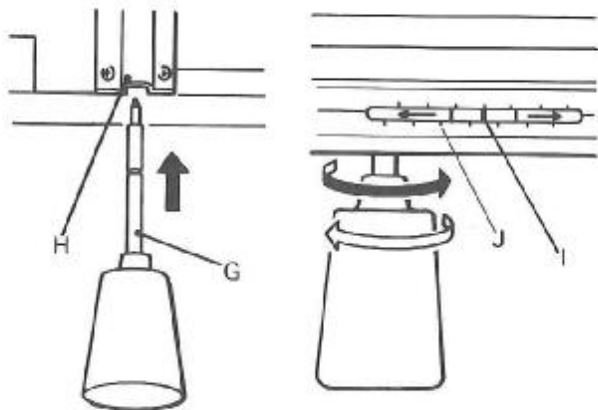
1. Hold the Ribber with both hands and insert the Ribber Joiners "A" at both ends of the Ribber into Ribber Joiner Sockets "B" at both ends of the Knitter.



Fit the locational hole "C" on the Joiner to the locational pin "D" at each end of the knitter.

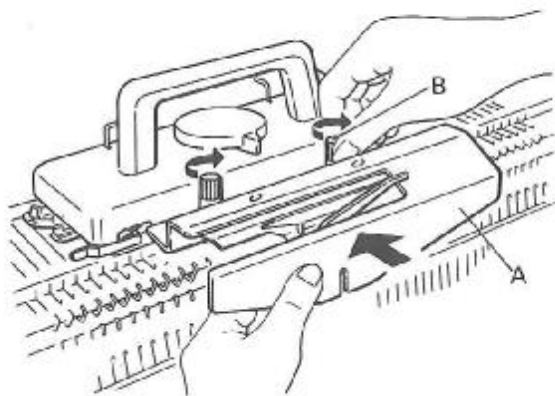


2. With Knitter Clamps "E", secure foot of Ribber Joiner Support "F" on table.



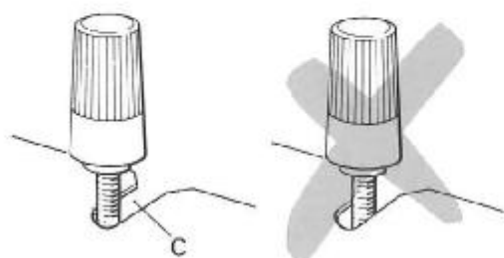
3. On back of left side of Ribber, insert Swing Handle shaft "G" from underneath into Swing Bearing "H". Push Handle in a twisting manner until you hear a click with a slight jerk.

Ensure that Pointer "I" on Swing Indicator "J" moves when the Swing Handle is rotated in the right or left direction.

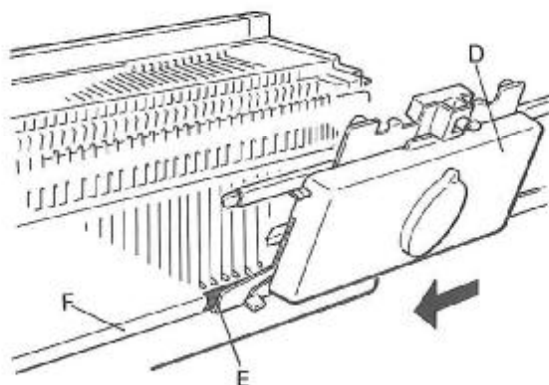


Coupling Ribber Carriage and Knitter Carriage

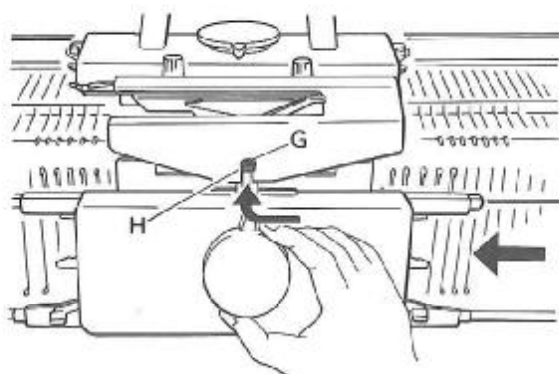
1. Loosen both Arm Nuts of Knitter Carriage.
Take Ribber Arm "A" and slide it under two Arm Nuts "B".
Push Ribber Arm as far back as it goes and tighten Arm Nuts firmly by turning them in arrow direction.



Important
Ensure that Arm Nuts fit correctly into cutout "C" of Ribber Arm.

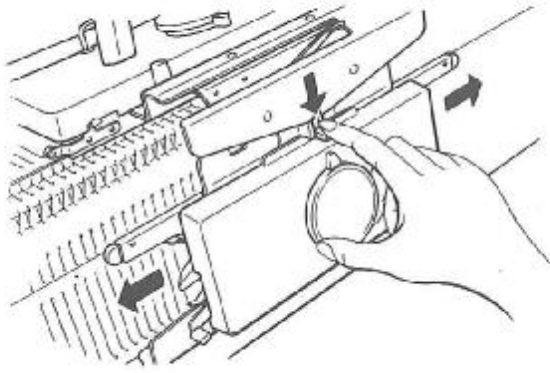


2. Take Ribber Carriage "D", and slide Pipe "E" onto the Ribber Rail "F" from the right side.
Tilt the Ribber Carriage towards you to clear the Stopper Pin on Ribber Needle Bed.

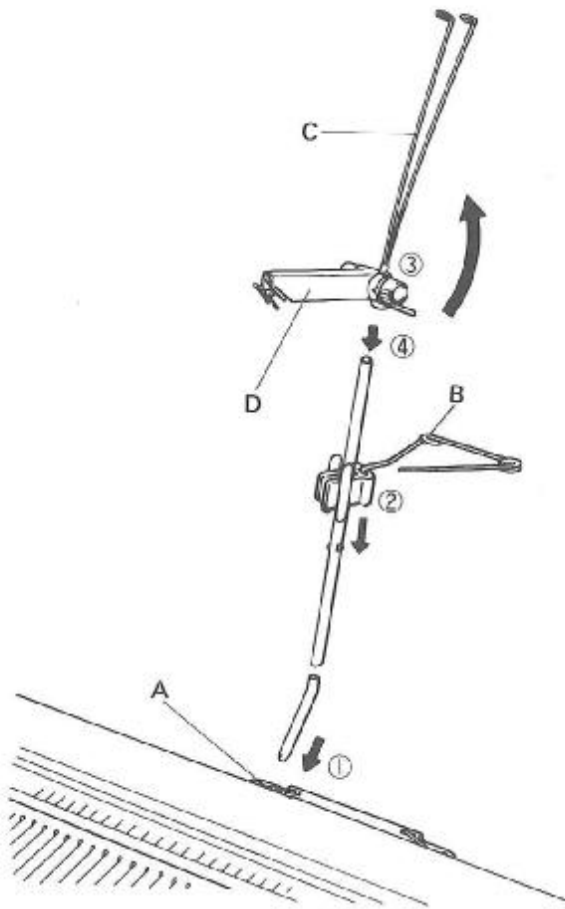


3. Slowly move Ribber Carriage toward Knitter Carriage until Link Knob "G" fits into the slot "H" of Ribber Arm.
The Link Knob on Ribber Carriage will fold down along the slope of Ribber Arm and automatically engage with the mating slot to join Ribber Carriage.

CHECK POINT:
Move Carriage a few times across Needle Bed to ensure Knitter/Ribber Carriage and Ribber Arm are assembled correctly.



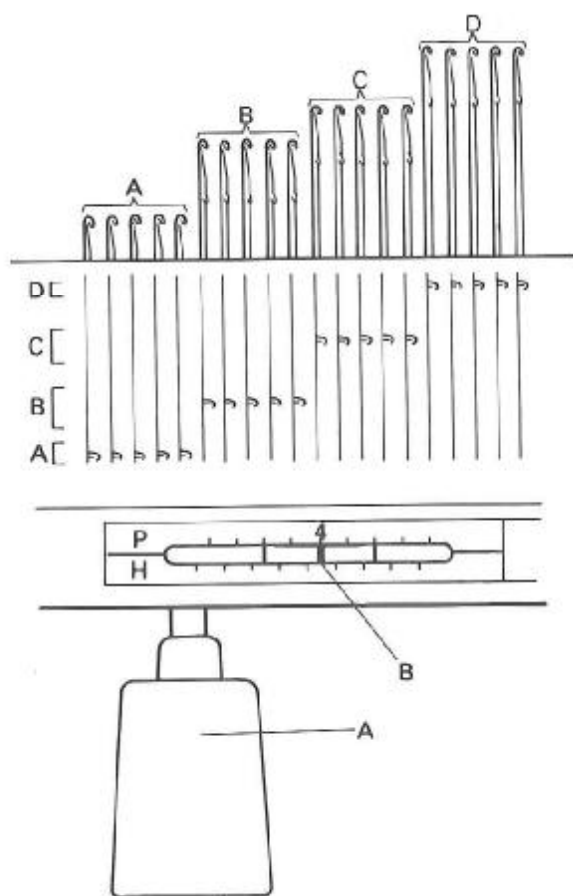
To release Ribber Carriage from Ribber Arm, press down Link Knob with forefinger as illustrated, and slide Ribber Carriage to either side with the knob held in its lowest position.



Assemble Auto-Tension and Yarn Rod

- ① Insert the bent end of Yarn Rod into either bracket socket "A" at both sides of Carrying Handle.
The Yarn Rod should be inserted in the direction opposite to the direction for knitting without the ribber.
- ② Align the notch of the Yarn Rod with the groove of the Tension Guide "B" and slide the plastic part down until it locates on the metal "ears".
- ③ Turn Tension Spring "C" upwards till they click into position.
- ④ Place the Auto-Tension "D" on top of the Yarn Rod.

RIBBER NEEDLE BED



Needle Positions

On both left and right sides of Needle Bed, you will see markings A, B, C and D associated with brackets "I".

These four needle positions are selected during knitting.

- A — Non-working position
- B — Working position
- C — Needles in this position always operate.
- D — Holding position (Needles in this position are knitted back to B position when Russel Levers are at = position.)

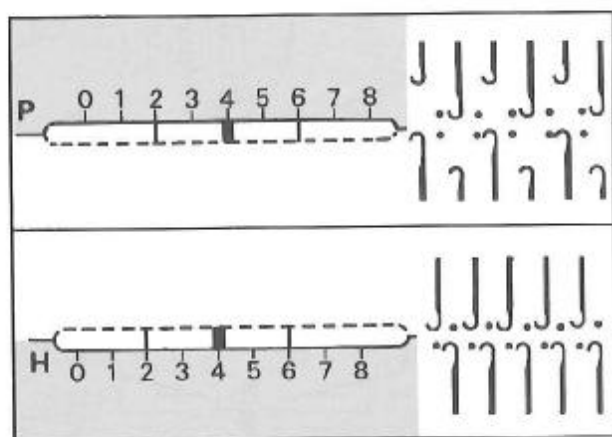
Swing Handle

By rotating the Swing Handle "A", the Ribber Needle Bed is moved to right or left.

At every click position of the Swing Handle the Ribber Bed is moved by half a needle pitch.

Swing Indicator

The Swing Indicator "B" shows the position of the Ribber Needle Bed against the Knitter Needle Bed.

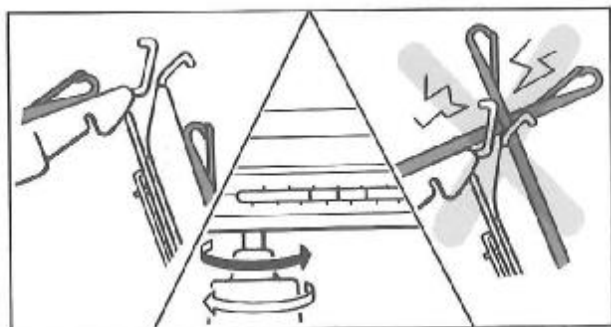


P Scale

If the pointer is pointing at a number on the P Scale, the needles on the Ribber are in face to face position with Knitter needles. This scale is used when every other needle is used.

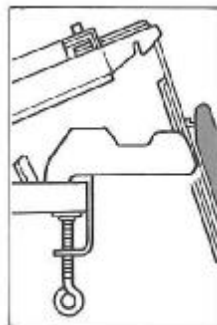
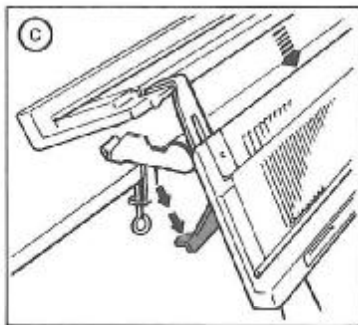
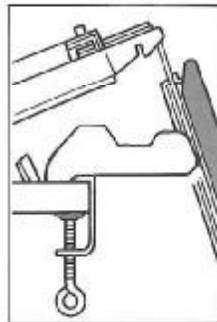
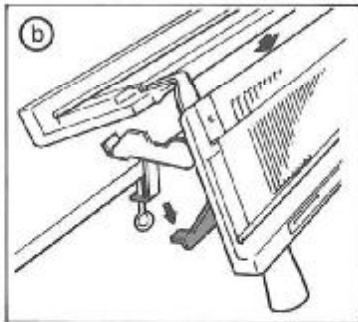
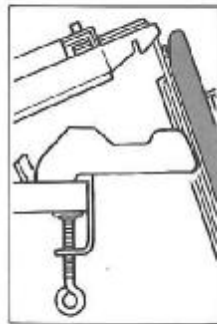
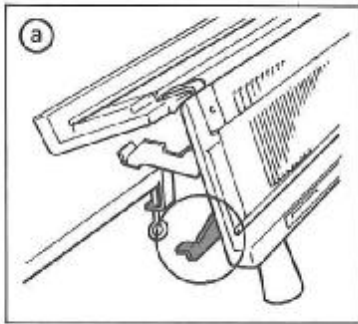
H Scale

If the pointer is pointing at a number on the H Scale, the needles on the Ribber are shifted by half a needle pitch. This scale is used when every needle is used.



Important

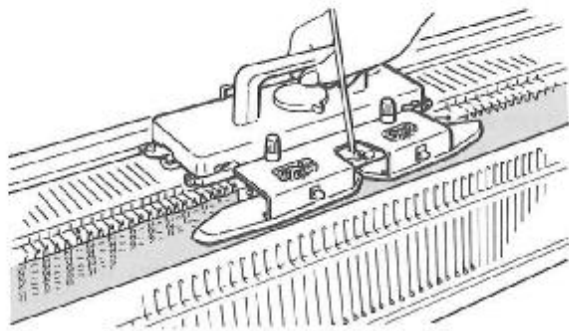
Do not turn Swing Handle when needles on Ribber are crossed with those of Knitter.



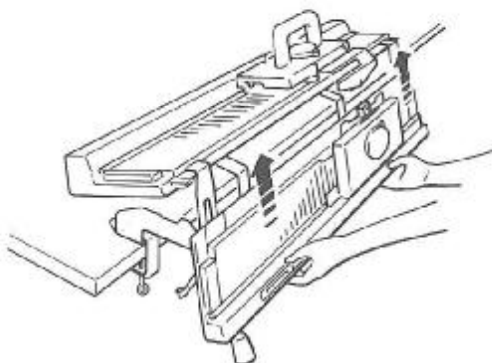
Drop Levers

On both left and right sides of Needle Bed you will find Drop Levers. Using these levers you can change position of Needle Bed.

- (a) Top position (knitting position)
This position is used for knitting Rib stitches.
- (b) Middle position
Depress Drop Levers on both sides once, and Ribber Bed is lowered to its middle position.
This position is used when picking up stitches.
- (c) Lowest position
Depress Drop Levers twice, and Ribber Bed is lowered to its lowest position.
This position is used when knitting only on Knitter.

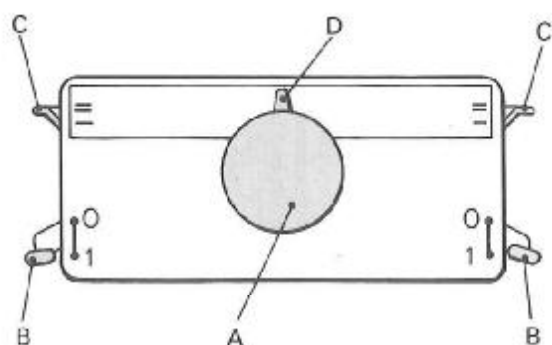


When you knit only on Knitter, lower the Ribber to the lowest position and install Knitter Arm instead of Ribber Arm and start knitting.

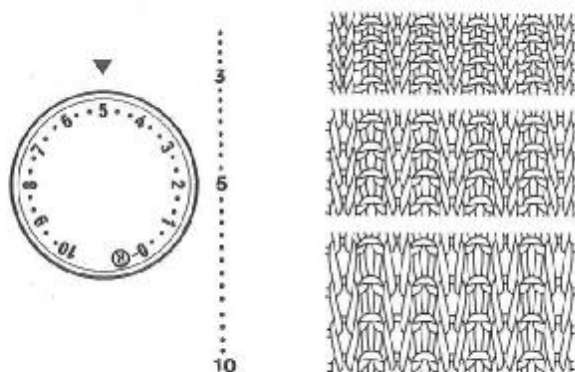


To restore Ribber Bed to its top position, tilt the Ribber Carriage towards you and lift up both ends of the Bed with your hands. Connect the Ribber Carriage to the Arm.

RIBBER CARRIAGE



- A — Stitch Dial
- B — Set Levers
- C — Russel Levers
- D — Cam Lever



A. Stitch Dial

Controls stitch size.

Set a selected number or dot to ▼ mark.

The larger the number the larger the stitch, and the smaller the number the smaller the stitch.

The position ① produces the stitch size smaller than those knitted in the Stitch Dial at 0. This position is used for cast-on.

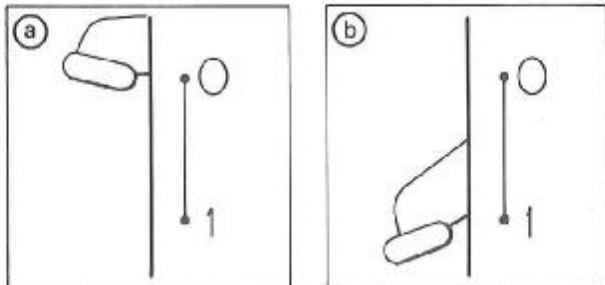
According to the thickness of yarn to be used, select proper setting of Stitch Dial. (Refer to page 9)

B. Set Levers

When the Cam Lever is set at "O", the Set Levers function as described below:

- (a) Levers at position "0", the needles in B position pass through non knitting course.
- (b) Levers at position "1", the needles in B position pass through knitting course.

Left Lever works when the Carriage moves to the left. Right Lever works when the Carriage moves to the right.

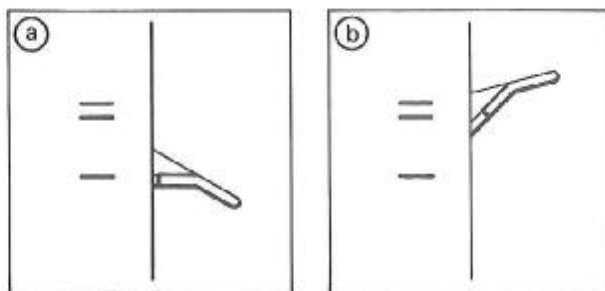


C. Russel Levers

Control needles in "D" position.

- (a) NON KNITTING POSITION, needles remain in D position.
- (b) KNITTING POSITION, needles in D position will knit back to B position.

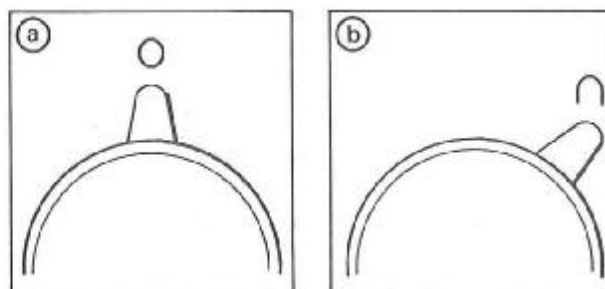
Left Lever works when Carriage moves to the left. Right Lever works when Carriage moves to the right.



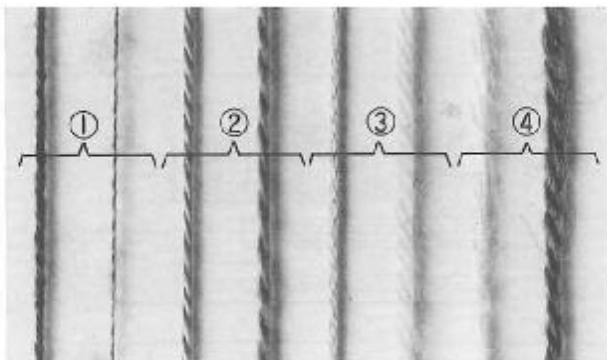
D. Cam Lever

Cam Lever is given two positions.

- (a) Position "O", this position is selected for the normal rib knitting.
- (b) Position "Π", this position functions when the Set Lever is set at "0", and is selected for tuck stitches on the ribber side as for English Rib.



YARN AND STITCH DIALS

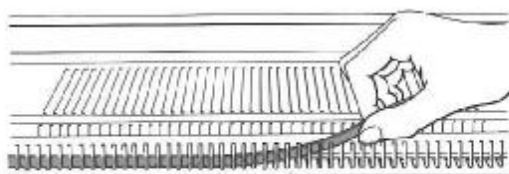


An appropriate Stitch Dial number must be selected according to thickness of yarn and type of knitting.

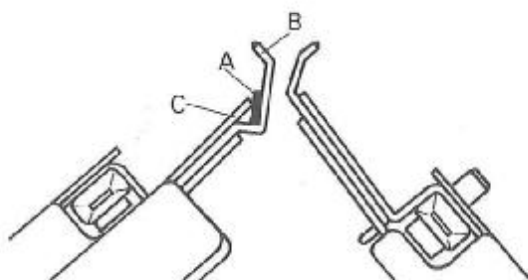
For your reference, recommended numbers are shown below.

Photograph shows actual size of yarns.

TYPE OF YARN		① medium (4-ply)	② thick	③ very thick	④ extra thick	
CAST-ON	every other needle selection	initial row	Ⓡ	Ⓡ	Ⓡ	Ⓡ
		subsequent rows	Ⓡ	Ⓡ	Ⓡ	0 ~ 1
	every needle selection	initial row	Ⓡ	Ⓡ	Ⓡ	—
		subsequent rows	Ⓡ	Ⓡ	Ⓡ ~ 0	—
MAIN KNITTING	K1.P1. RIB		—	0 ~ 1	0 ~ 2	3 ~ 4
	DOUBLE RIB		Ⓡ ~ 0	0 ~ 2	1 ~ 2	—
	K2.P2. RIB		0	0 ~ 2	2 ~ 3	4 ~ 5
	WIDE RIB	Knitter	Ⓡ ~ 1	2 ~ 3	3 ~ 5	6 ~ 8
		Ribber	1 ~ 3	4 ~ 5	5 ~ 7	8 ~ 10
	TUBULAR KNITTING	Knitter	2 ~ 3	5 ~ 6	6 ~ 7	7 ~ 8
Ribber		4 ~ 5	7 ~ 8	8 ~ 9	9 ~ 10	



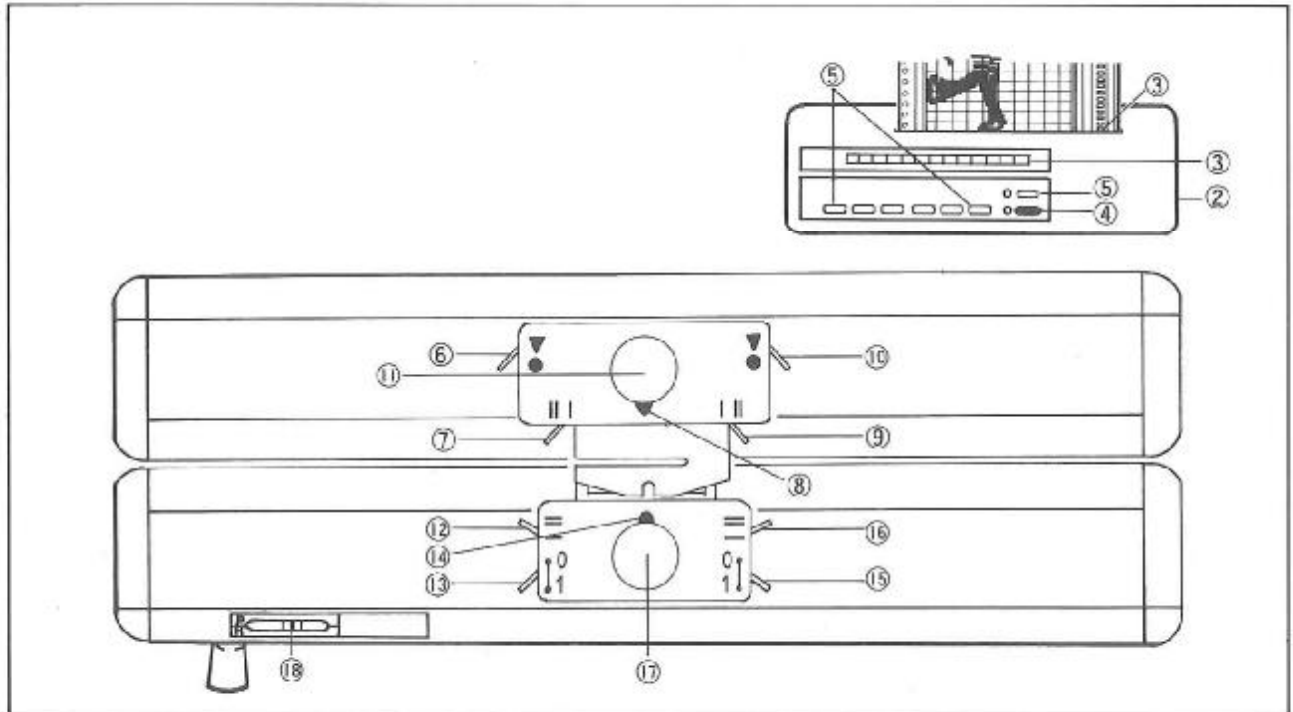
When knitting with the Stitch Dial at low number, use Close Knit Bar.



Before arranging needles, place Close Knit Bar "A" between Sinker Posts "B" and front edge "C" of Knitter Needle Bed.

OPERATION TABLE

To cast-on and knit Rib Stitches, Operation Table gives settings and operation of machine.



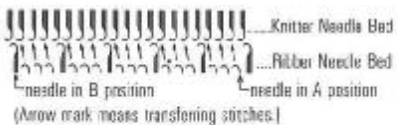


Relate the every operating part of the machine, numbered as above, with the each column of the Operation Table below for their settings at each step of knitting.

	①	②	③	④	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱
1	■	▼	●	●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4	
2																→	
3																	
4																←	
5																→	
6																←	
7	Set the Pattern Switch as instructed.																
8																	
9			●	▼	○		▼	1		1					1		↔

How to read Operation Table

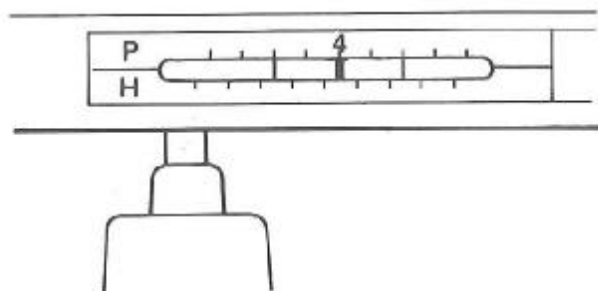
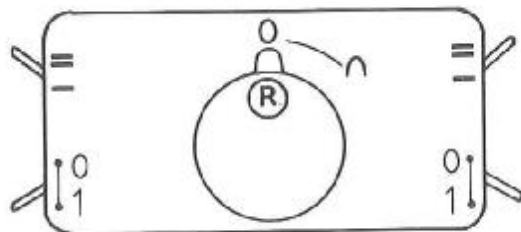
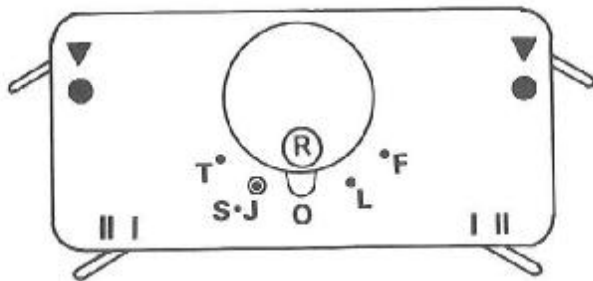
	①	Procedural order of the Operation Table		
PATTERN CONTROLLER	②	ON-OFF Switch	■ — Turn on the Pattern Controller	
	③	Pattern Card & Pattern Width Indicator	↓ — Set the Pattern Card and pattern width	
	④	Inspection Switch	● — Light is ON ○ — Light is OFF	
	⑤	Pattern Switch & Direction Switch	Set the Pattern Switches and Direction Switch as instructed.	
	⑥	Side Lever (left)	Set the Stitch Dials referring to table on page 9.	
KNITTER CARRIAGE	⑦	Russel Lever (left)		
	⑧	Cam Lever		
	⑨	Russel Lever (right)		
	⑩	Side Lever (right)		
	⑪	Stitch Dial		
	RIBBER CARRIAGE	⑫		Russel Lever (left)
		⑬		Set Lever (left)
⑭		Cam Lever		
⑮		Set Lever (right)		
⑯		Russel Lever (right)		
⑰		Stitch Dial		
⑱		SWING INDICATOR		Set the Pointer at the instructed number on either "H" or "P" scale by rotating the Swing Handle.
⑲	KNITTING DIRECTION	Arrow mark indicates knitting direction of the Carriage. In case number is next to arrow marks, it shows the number of row required to be knit.		

CAST-ON	①	1	Set the machine controls for initial row.
		2	Arrange needles, set Point Cams and Needle-1 Cam and knit the initial row from the left to the right.
		3	Suspend Cast-on Comb as shown in diagram and hook Weights onto Cast-on Comb. 
		4~6	Change machine controls for knitting subsequent 3 rows.
CHANGE FOR MAIN KNITTING		7	Press the Pattern Switches as shown in diagram. 
		8	Rearrange needles for main knitting by transferring stitches. (Not necessary if needle arrangement for main knitting is the same as for Cast-on) Knitter Needle BedRibber Needle Bed needle in B position needle in A position (Arrow mark shows transferring stitches.)
MAIN KNITTING	②		Reset machine controls for working main knitting and start to knit.

CAST-ON AND KNITTING ON EVERY OTHER NEEDLE

For practice, using thick yarn work cast-on and knit K1.P1. RIB following Operation Table below.
 For the rib stitches without the Pattern Card, it is not necessary to switch on the Pattern Controller.

1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	P-4	
2														→		
3																
4										○						←←
5					S											→→
6					○											←←
7								1		1				1		→→→



CAST-ON

① — 1 Set machine controls for the initial row.

ON-OFF SWITCH.....OFF

PATTERN CONTROLS

No Pattern Switches are operated.

KNITTER CARRIAGE

Side Levers (left & right).....●

Russel Levers (left & right).....||

Cam Lever.....○

Stitch Dial.....Ⓜ

RIBBER CARRIAGE

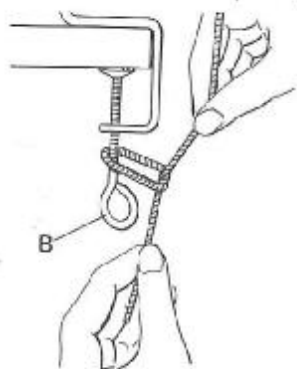
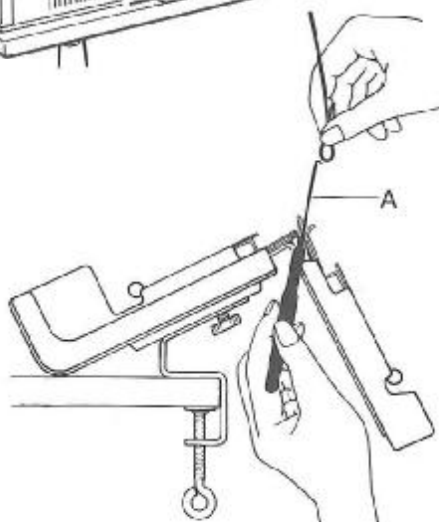
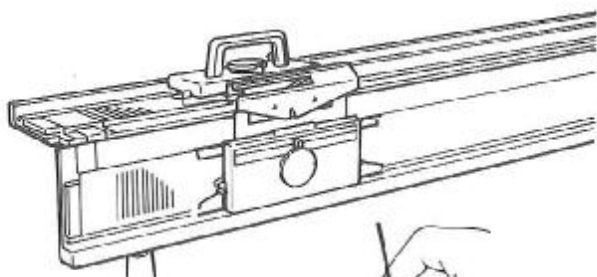
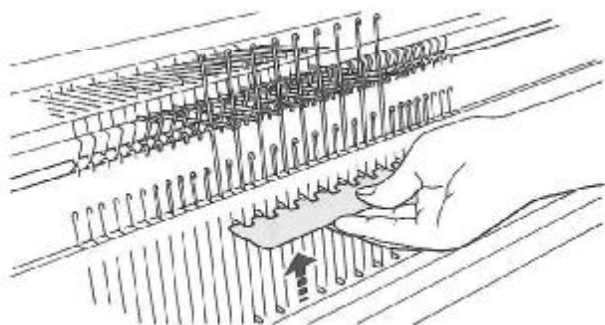
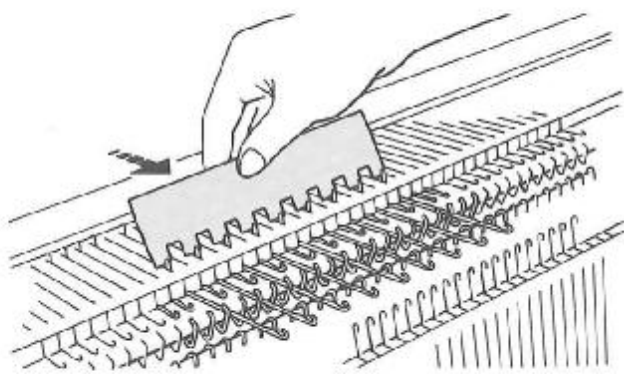
Russel Levers (left & right).....=

Set Levers (left & right).....1

Cam Lever.....○

Stitch Dial.....Ⓜ

Swing Indicator.....P-4



① — 2 Arrange needles for knitting the initial row.

1. Arrange needles of both beds for cast-on.

(1) Using 1/1 Needle Pusher, bring 15 needles to D position on both sides of centre(O) of Knitter Needle Bed.

(2) Bring the needles of Ribber to D position while keeping them alternated with the needles of Knitter.

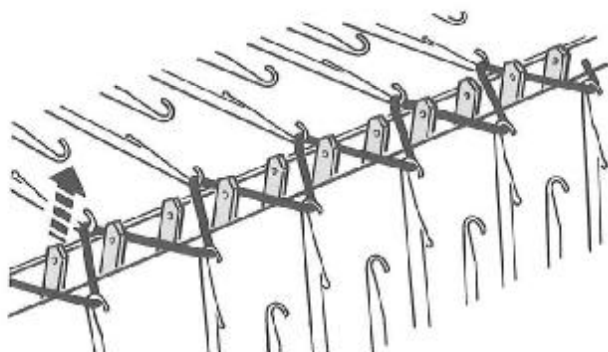
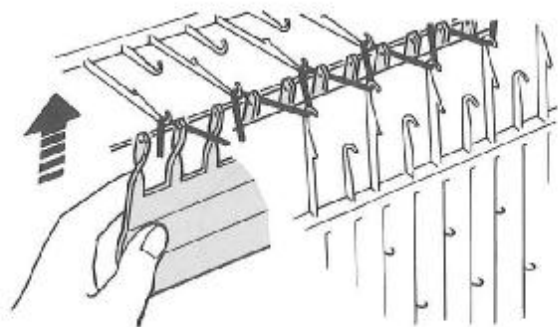
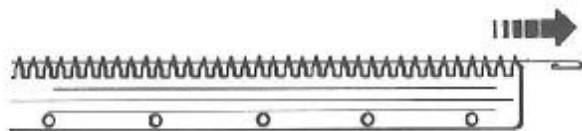
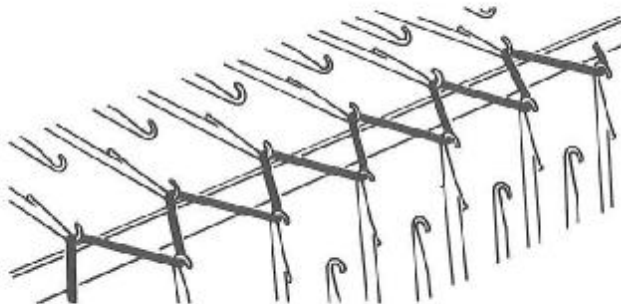
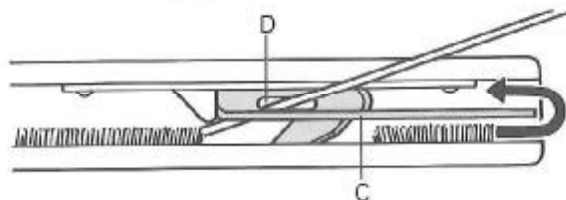
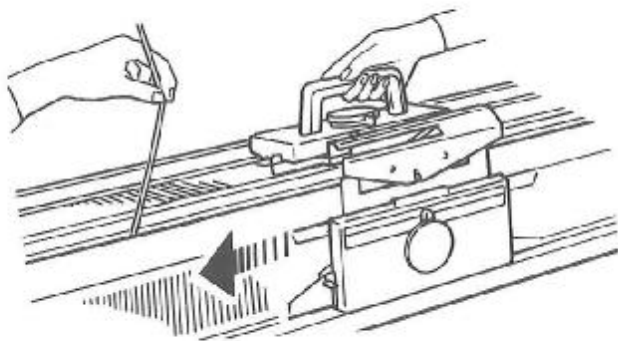
(3) Move Carriage 1 ~ 2 times carefully across needles in D position and leave it at right side.
(Needles in D position will be aligned in B position on both beds.)

2. Thread yarn into Yarn Feeder.

(1) After threading yarn through Auto-Tension, make a loop at the end of yarn and hold it at the left side of both beds.

(2) Insert Hook Tool "A" from underneath, catch yarn end, and pull it down.

(3) Hold yarn end and tie it around Clamp Screw Grip "B".



(4) Move Carriage from right to left till yarn goes onto Yarn Feeder.

(5) Guide yarn along Yarn Guide "C" to thread it into Main Yarn Feeder "D".

Move Carriage to left end of Needle Bed.

3. Knit the initial row.

Take up slack of yarn and move Carriage from the left to the right.

Yarn will be hooked alternately on Knitter and Ribber needles in zigzag.

① — 3 Suspend Cast-on Comb with Weights.

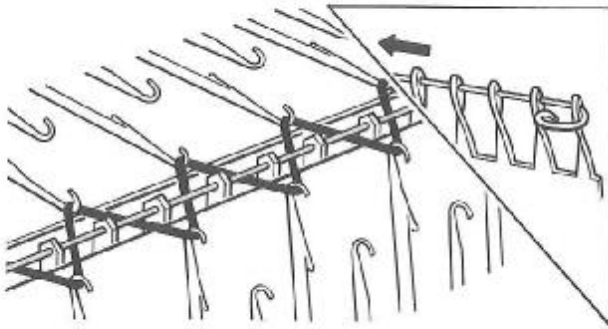
1. Suspend Cast-on Comb.

(1) Take out short Cast-on Comb and remove wire from its teeth.

(2) From underneath, insert Comb between Knitter and Ribber Bed, then push it carefully upwards until teeth clear zigzagged yarn.

Hang Comb so that it is balanced horizontally between working needles.

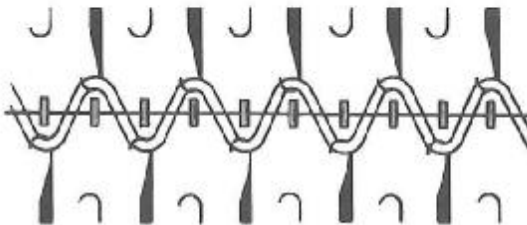
Make sure the yarn is centralized on the Comb, or the knitting will be incorrectly weighted.



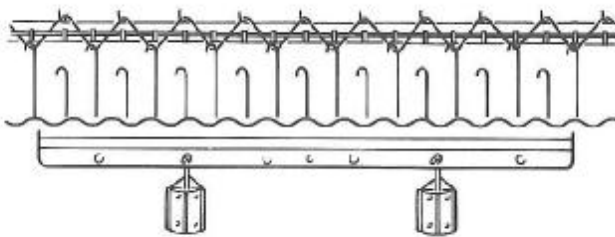
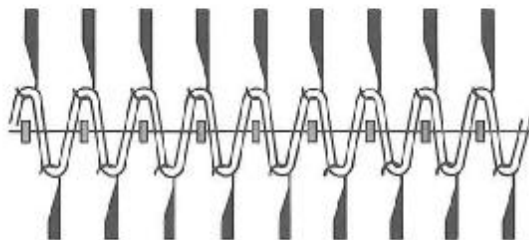
(3) Insert Wire through holes of Cast-on Comb teeth.

Hang Cast-on Comb as shown below.

for alternate needle knitting

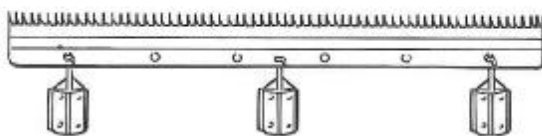


for every needle knitting



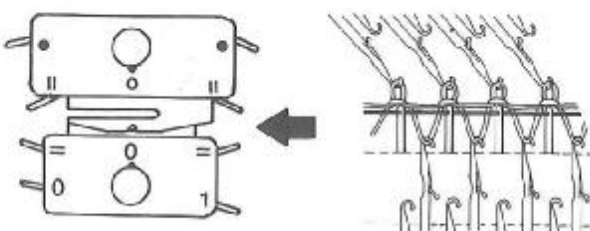
2. Hook Weights.

Use two Ribber Weights (large) and hook them onto left and right sides of Cast-on Comb.

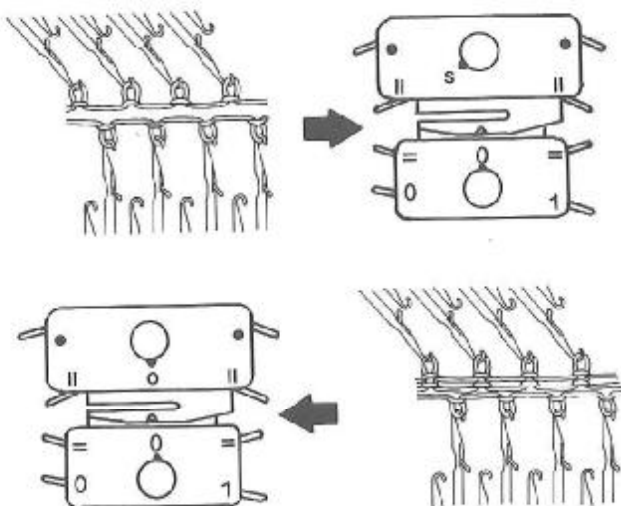


for your reference use up to
 60 needles 2 Weights
 90 needles 3 Weights
 120 needles 4 Weights
 150 needles 5 Weights

Hook Weights at even intervals.



- — 4 ~ 6 Change machine controls for knitting subsequent 3 rows.
- 4 Set left Set Lever to "0" and move Carriage from the right to the left. (Knitter needles will knit the first row of the subsequent rows.)

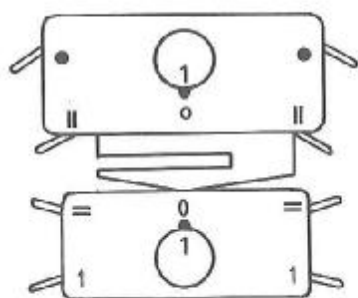


- ① — 5 Set Knitter Cam Lever to "S" and return Carriage to the right.
(Ribber needles will knit the second row.)

- ① — 6 Reset Knitter Cam Lever to "O" and move Carriage once more from the right to the left.
(Knitter needles will knit the third row.)

CAST-ON IS COMPLETED.

Remove yarn end from Clamp.



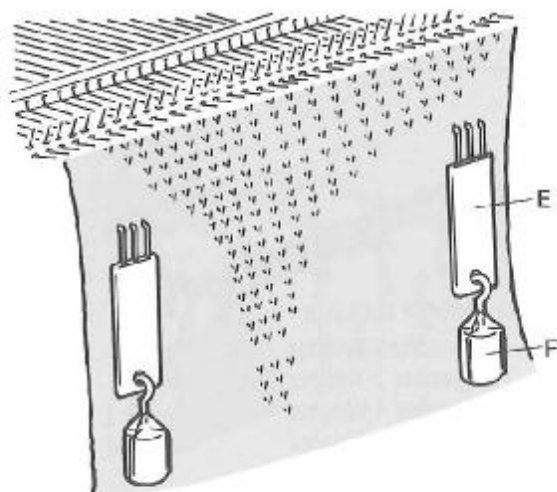
MAIN KNITTING

- ② Reset machine controls for working main knitting.
(Needle arrangement for main knitting is the same as for cast-on.)

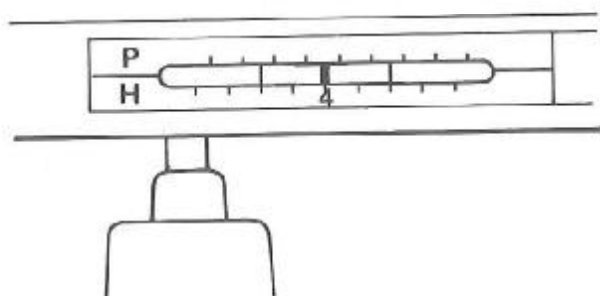
1. Change Carriage settings.

Set Lever (left)..... 1
Stitch Dials (Knitter & Ribber)..... 1
Other settings unchanged.

2. Knit several rows of K1.P1. Rib and hang Hanger Comb "E" with Edge Weight "F" on both sides of the fabric.
After approx. 10 rows are knitted, move Hanger Comb up in order to obtain better results.

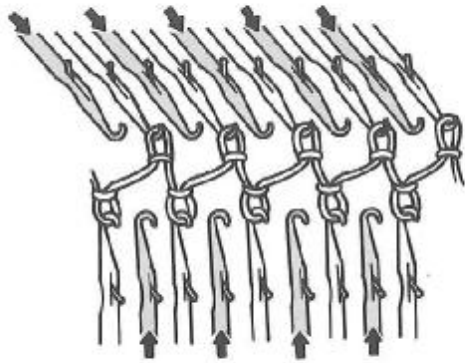


* If the Cast-on Comb reaches the floor, remove the Weights from the Comb, roll the fabric up with the Comb, and hook Weights again.



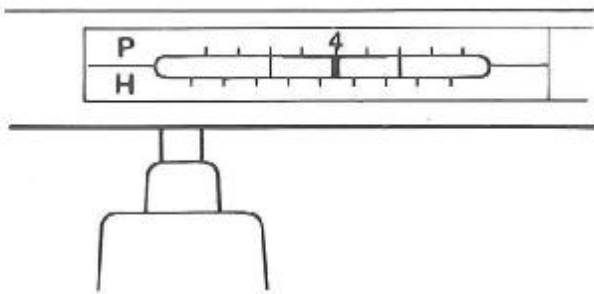
For practice, continue to knit DOUBLE RIB following instructions.

1. Set the Swing Indicator to H-4.



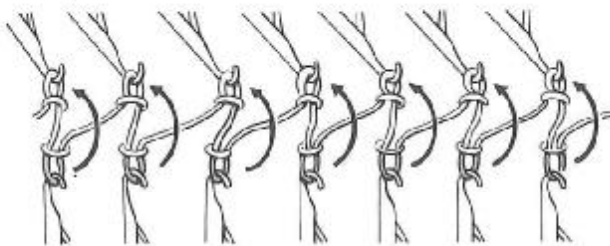
2. Push up empty Knitter and Ribber needles to B position.

3. Knit 10 rows.

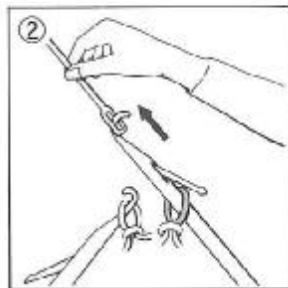
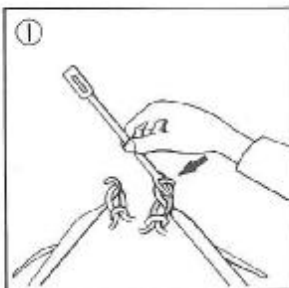


For practice, continue to knit only on the Knitter following instructions below.

1. Set the Swing Indicator to P-4.

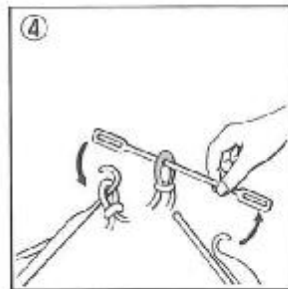
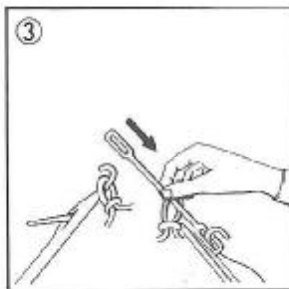


2. Transfer every Ribber stitch to the corresponding Knitter needle using Double-eye Transfer Tool.



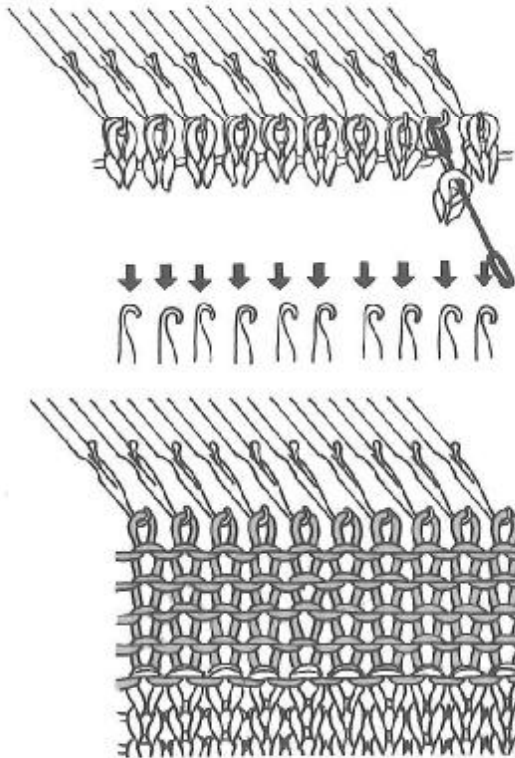
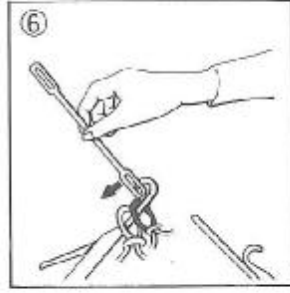
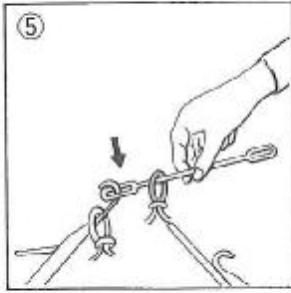
① Place eye of Double-eye Transfer Tool into Ribber needle hook.

② Pull Ribber needle to D position.



③ Push Ribber needle to A position.

④ Remove eye of Transfer Tool from Ribber needle hook.

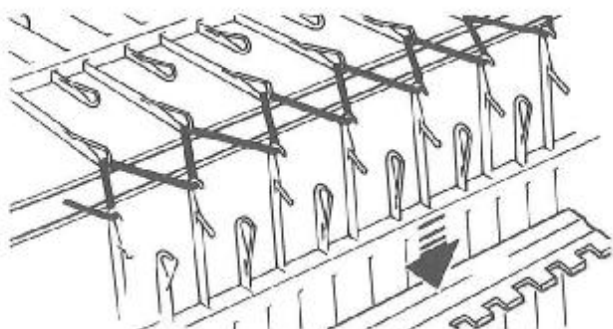
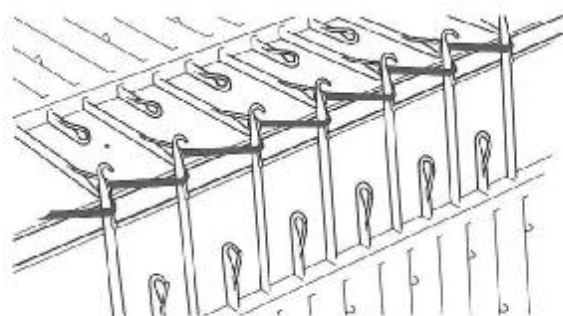
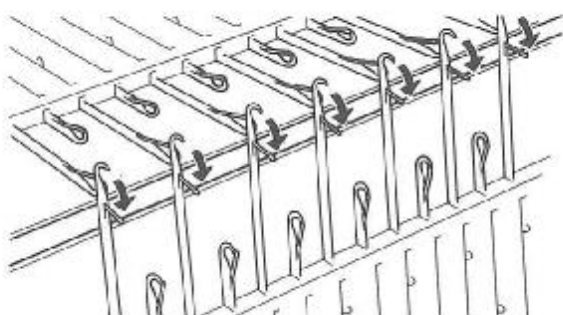
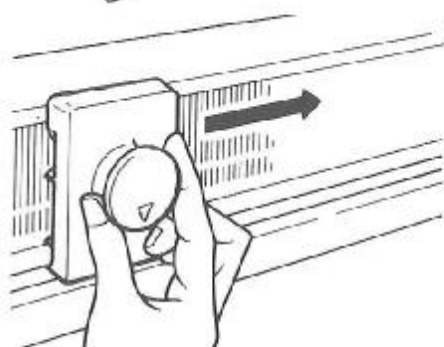
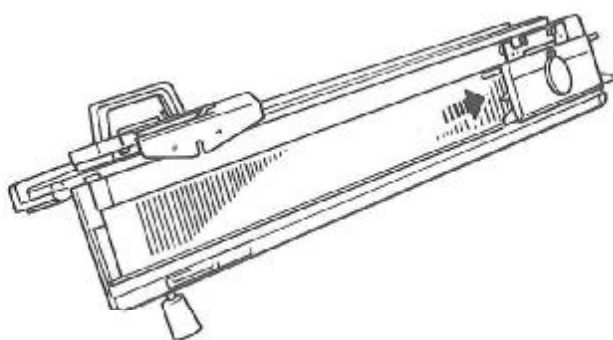


- ⑤ Place opposite eye into Knitter needle hook.
- ⑥ Tilt Transfer Tool until stitch slides into Knitter needle hook. Remove Transfer Tool. Push needle in B position slightly towards A position to ensure that transferred stitch lies correctly in needle hook.

- 3. Push every Ribber needle in B position to A position.
- 4. Disconnect Ribber Carriage from the Arm and rest Ribber Bed in the lowest position.

- 5. Exchange Ribber Arm for Knitter Arm and thread yarn into Feeder ①. Continue to knit.

CAST-ON FOR TIGHTER EDGE

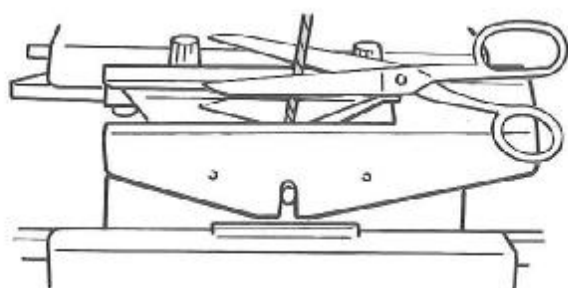


To make the cast-on edge of fabric tighter, when knitting with thinner yarn such as medium yarn or thick yarn, operate the initial row following the procedure below.

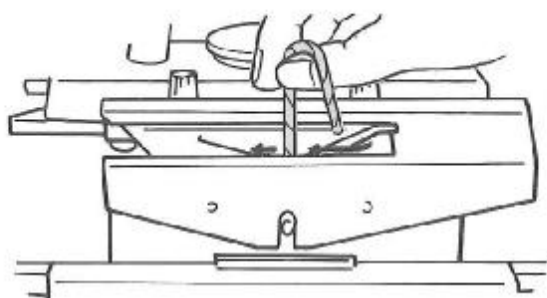
* Place Close Knit Bar referring to page 9.

1. Set machine controls for the initial row as instructed in the Operation Table.
2. Arrange the needles for K1.P1. Rib or Double Rib (refer to page 21) in B position.
3. Disconnect the Ribber Carriage from Arm and have Knitter Carriage on the left and Ribber Carriage on the right.
4. Place Needle Aligner on the left side of Ribber Needle Bed as illustrated, and slide it to the right to push up needles to C position.
5. Remove the Needle Aligner.
When all working needles are aligned in C position, open the latch of all the needles.
6. Thread the Yarn Feeder and move Knitter Carriage only from left to right.
Yarn is now passed through hooks of Knitter needles and over open latches of Ribber needles.
7. With the needle pusher, push the Ribber needles in C position down to B position.
8. Attach the Cast-on Comb and Weights.
9. Connect the Ribber Carriage with the Knitter Carriage, continue to work subsequent 3 rows following the Operation Table.

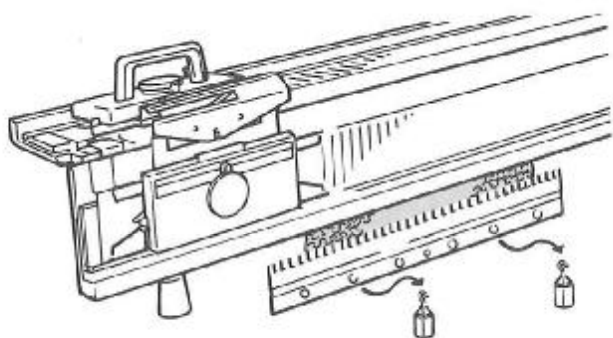
REMOVE FABRIC FROM MACHINE



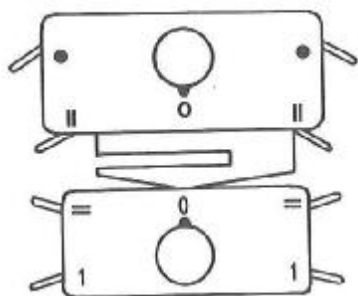
1. Cut yarn above Yarn Feeder.



2. Remove the yarn from Feeder and drop yarn end between Knitter and Ribber Sinker Posts.

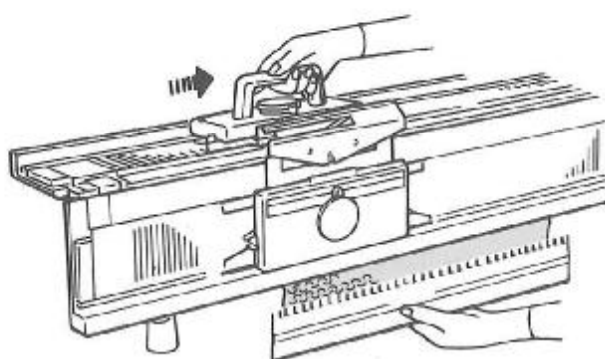


3. Remove Weights from Cast-on Comb.



4. Change Carriage settings as follows.

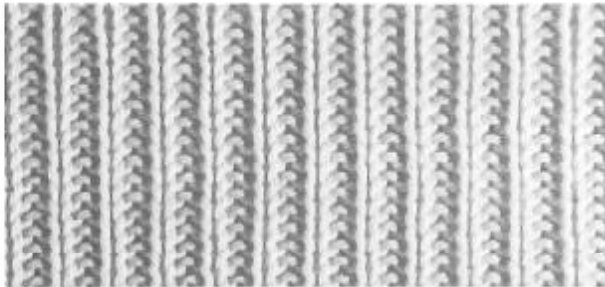
Cam Levers..... **O**
 Side Levers (left & right)..... **●**
 Set Levers (left & right)..... **1**
 Russel Levers (left & right)..... **II, =**



5. Holding Cast-on Comb, move Carriage once across needles.
 The stitches are released from needles.

VARIOUS RIB STITCHES

● Rib stitches without using Pattern Card



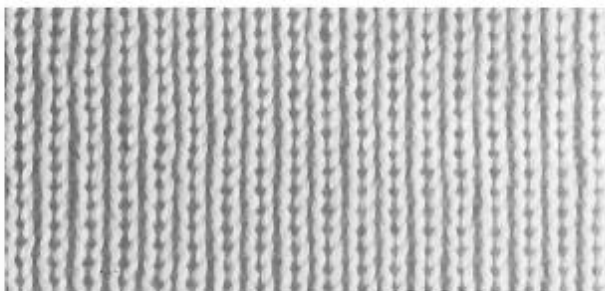
K1.P1. RIB

This is most basic ribbing formed on every other needle on the Knitter and Ribber.

Knit stitch alternates with purl stitch, and the fabric of this rib is very elastic crosswise.

The sample is knitted using thick yarn.

Knit following the Operation Table on page 12.



DOUBLE RIB

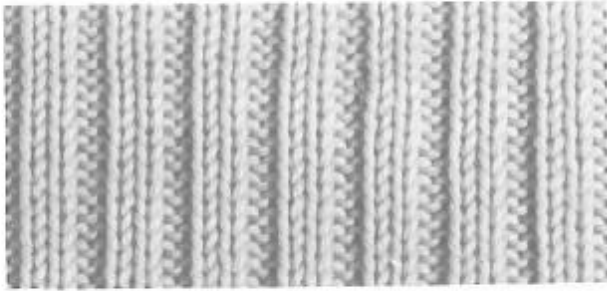
The fabric is very identical to the K1.P1. Rib fabric, but knitted with every needle on the Knitter and the Ribber.

This method is applied for the yarns of thick or rather thinner types.

The sample is knitted using thick yarn.

Use Close Knit Bar.

● 1				● ○ ● ®	= 1 ○ 1 = ®	H-4		
2							→	
3								
4					○		←	
5				S			→	
6				O			→	
②					1	1	1	↔



K2.P2. RIB

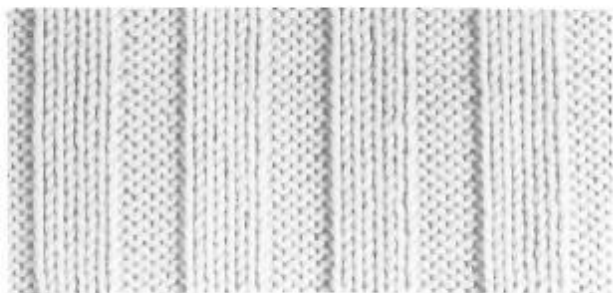
Two knit stitches alternate with two purl stitches.

The sample is knitted using very thick yarn.

Two methods for K2.P2. Rib are introduced below:—

①	1		●		○		●	Ⓡ	=	1	○	1	=	Ⓡ	H-4		
	2														→		
	3																
	4								○		○				○	←←	
	5							S								→→	
	6							O								←←	
②									3		1				3	H-5	↔↔

①	1		●		○		●	Ⓡ	=	1	○	1	=	Ⓡ	H-4	
	2														→	
	3															
	4								○		○				○	←←
	5							S								→→
	6							O								←←
	7														P-4	
②									3		1				3	↔↔

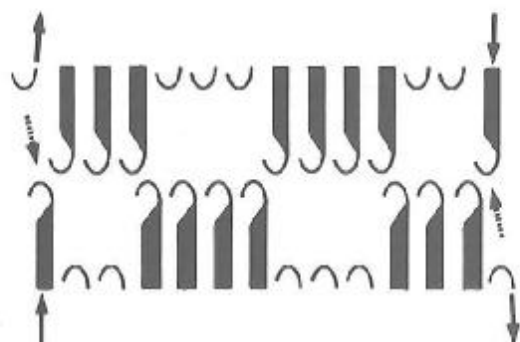


WIDE RIB

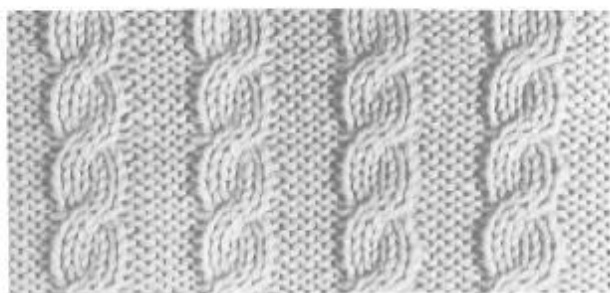
Wider than three knit stitches alternate with more than three purl stitches.

The sample is knitted using very thick yarn over 4 knit stitches alternating with 4 purl stitches.

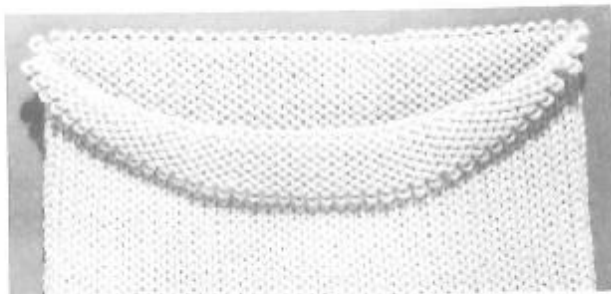
1			● ○ ●	Ⓜ = 1 ○ 1 = Ⓜ	H-4		
2						→	
3							
4				○	○	○	←
5				S			→
6				O			←
7							
②				4	1	6	↔



Before starting main knitting, transfer a stitch at the side edge onto the corresponding needle on the Ribber or Knitter if more than two stitches are knitted on one side at the edge.



As an application of this Wide Rib, cross the stitches on the knitter side to have cable stitch if the yarn is smooth and the Stitch Dial is loose enough.



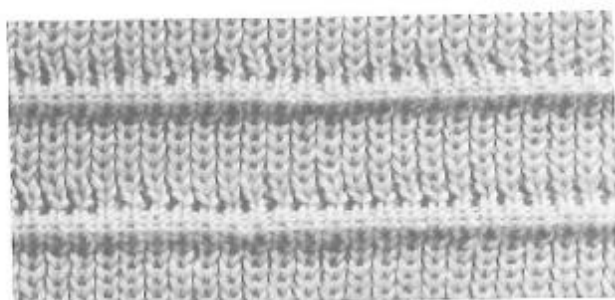
TUBULAR KNITTING

Tubular knitting is performed by knitting on the Knitter side in a direction and on the Ribber side in a reversing direction.

Cast-on over the every needle on the Knitter and the Ribber.

1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4	
2													→			
3																
2			▼	S				6						8		↔*

* When knitting from left to right, push Ribber needles to C position using Needle Aligner. (Refer to page 19.) When knitting on the Knitter side, move Needle Aligner from the right.



PIN TUCK

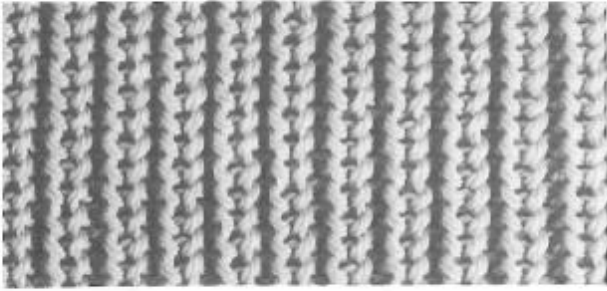
In the Double Rib, knit extra 4 ~ 5 rows on the Ribber side.

The sample is knitted using thick yarn.

Use Close Knit Bar.

NOTE: If stitches tend to float while main knitting, knit pushing needles on Ribber to C position using Needle Aligner. (Refer to page 19.)

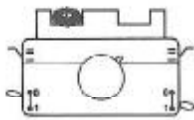
1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4	
2													→			
3																
4										0						↔
5				S												↔
6				O												↔
2	1			O				2		1				2		↔)8
2				S												↔)4



ENGLISH RIB

This fabric is formed in K1.P1. Rib or Double Rib by tucking the stitches on every other row on the Ribber side.

The sample is knitted using very thick yarn over the K1.P1. Rib.



Attach the Ribber Tuck Brush on the side with the Set Lever set at "0".

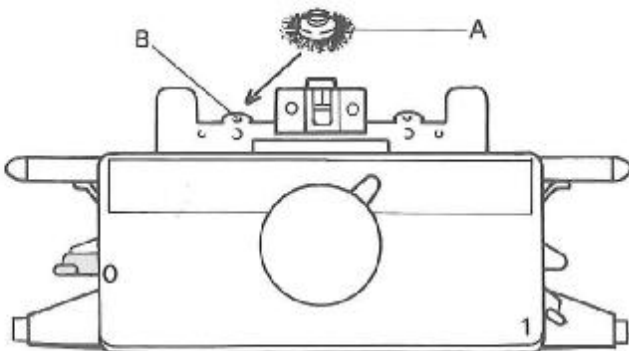
1	1				●		0		●	Ⓜ	=	1	0	1	=	Ⓜ	P-4	
	2																	
	3																	
	4												0					
	5							S										
	6							0										
	2										2			n			2	

When making the English Rib over Double Rib, set the Swing Indicator at "H-4" and the Stitch Dial to the number suitable for the thickness of the yarn.

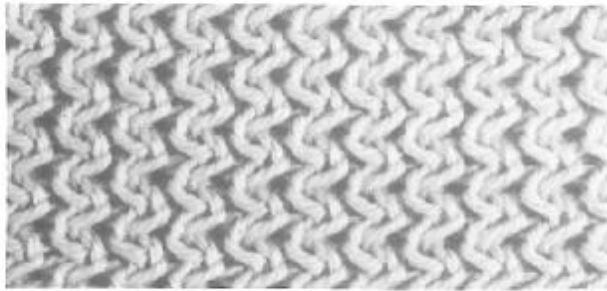
Ribber Tuck Brush

When the stitches may tend to become loose on needles, the Ribber Tuck Brush will be of help.

Attach Ribber Tuck Brush to the front edge of Ribber Carriage in the following manner:



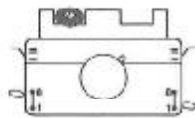
1. Disconnect Ribber Carriage from Ribber Arm.
2. Fit the screw of the Brush "A" into threaded hole "B" at the side where Set Lever is set to "0".
3. Tighten the screw using a coin.



SWUNG ENGLISH RIB

While knitting English Rib, swing the Ribber by 1 needle if knitted over every needle, or by 2 needles if knitted over every other needle.

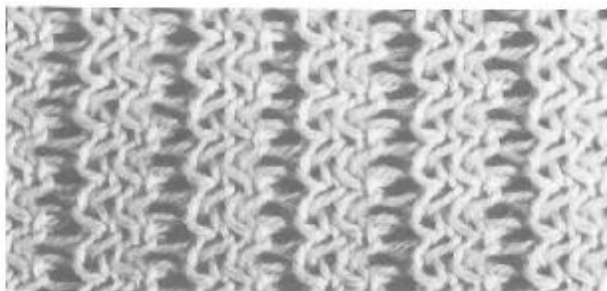
The sample is knitted using very thick yarn over every other needle.



Attach the Ribber Tuck Brush on the side with the Set Lever set at "0".

↓																		
①	1				●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	P-4	
	2															→		
	3																	
	4												○					←
	5																	→
	6																	←
②	1										2							←→) 2
	2																	←→) 2

If the Swung English Rib is knitted over every needle, change the setting of the Swing Indicator in the Operation Table, "P-4" for "H-4" and "P-6" for "H-5".



Swung English Rib over different needle arrangement

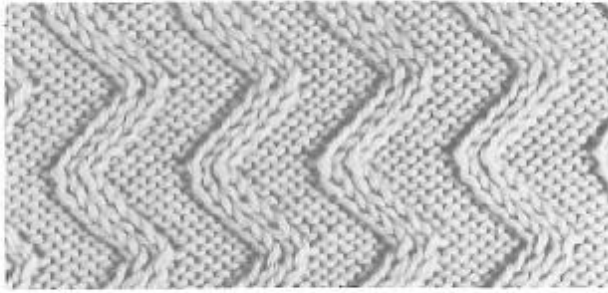
Cast-on over every needle and change the needle arrangement by transferring stitches as shown opposite.

Knit following the instruction below.

Set the Knitter and the Ribber Carriages in the same as for knitting Swung English Rib.

1. Set the Stitch Dial at 2.
2. Set the Swing Indicator at "H-4", and knit 2 rows.
3. Set the Swing Indicator at "H-3", and knit 2 rows.

Repeat above steps 2 ~ 3.



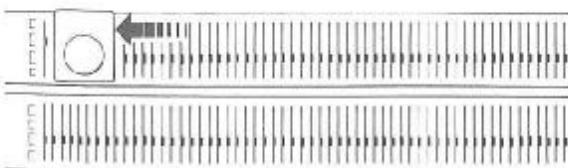
VARIATION SWING (1)

While Knitter Carriage knits in Stockinet, Ribber Carriage knits with selected needles making ridges. By swinging Ribber, these ridges make various swung patterns.

The sample is knitted using very thick yarn.

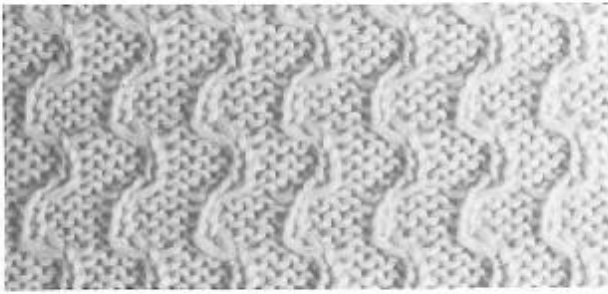
①	1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4				
	2															→				
	3																			
	4											○					←			
	5																→			
	6																←			
	7																			
②	1										3						3	H-4	→	
	2																		H-3	←
	3																		H-2	→
	4																		H-1	←
	5																		H-0	→
	6																		H-1	←
	7																		H-2	
	8																		}	*
	9																		H-4	
	10																		}	
	13																		H-8	
	14																		}	
	16																		H-5	

* Knit swinging the Ribber by 1 pitch every row to the extreme right, and then to the extreme left, to make zigzag pattern. Push 1 ~ 5 end needles to D position before knitting the next row.



If stitches tend to float...

Knit pushing needles on Knitter to C position using Needle Aligner.



VARIATION SWING (2)

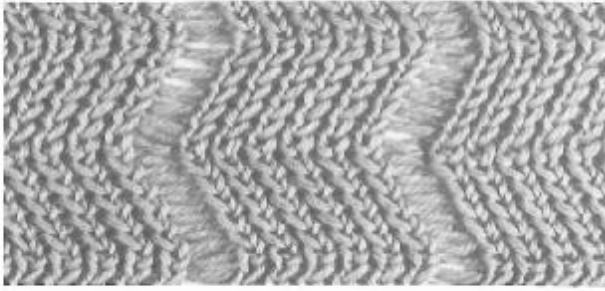
A pattern made through swinging the Ribber to right and left by three needles.

The sample is knitted using thick yarn.

①	1			● ○ ●	Ⓜ	= 1 ○ 1 =	Ⓜ	H-4				
	2											
	3											
	4						0					
	5				S							
	6				O							
	7											
②	1					2	1			2	H-4	
	2										H-1	

This pattern is made by swinging every 4th row, but you can swing every 3rd or 2nd or every row.

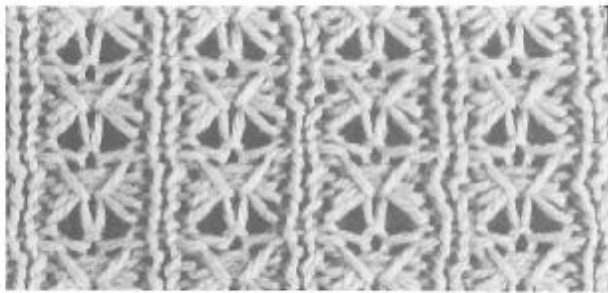
You can change the needle arrangement on the Ribber. But arranging 2 or more needles adjacently is not recommended, as it might be difficult to knit.



HERRINGBONE SWING

Place non-working needle at the desired position, and swing the Ribber by two needles if knitted on every other needle, or one needle if knitted on every needle in the knitting for English Rib.

①	1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4	
2																→	
3																	
4											○						←
5						S											→
6						○											←
7																	
②	1									2			n		2	H-4	→
																H-5	←
2																H-5	→
																H-4	←



TUCK RIB (1)

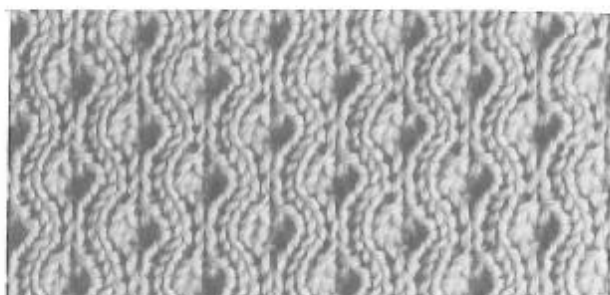
The sample is knitted over the needles arranged as shown below, but you can try on the different needle arrangement.

Use Close Knit Bar.

↓																
①	1		●		○		●	Ⓡ	=	1	○	1	=	Ⓡ	H-4	
	2															→
	3															
	4									0						←
	5						S									→
	6						O									←
	7															
②	1				I		I		1		1				1	
	1															⇔)4
	2															⇔)2

Push up ○ marked needles to D position.

NOTE: If stitches tend to float, hang Wide Claw Weights.



TUCK RIB (2)

On the Ribber side, tuck the stitches four rows.

The sample is knitted using thick yarn.

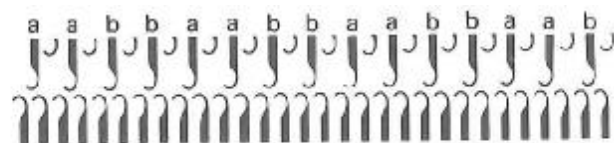
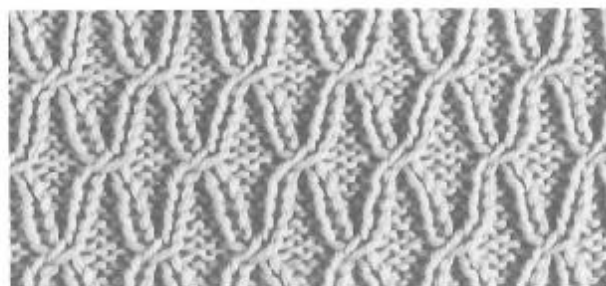
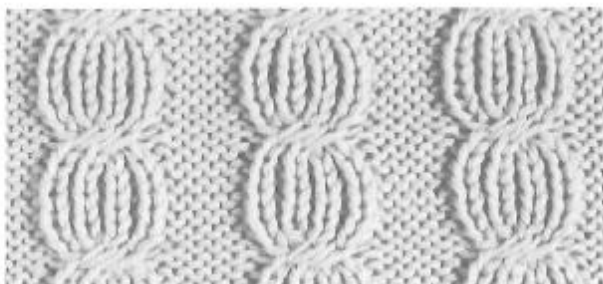
Use Close Knit Bar.

①	1			●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4	
	2																
	3																
	4											○					←
	5						S										→
	6						○										←
	7									2		1				2	↔)2
②												○	n	○			
	1																
	2																

Push up ○ marked needles to D position on each row.

Crossing and transferring stitches

In the knitting of Double Rib, or other type of rib stitches, cross the stitches or transfer the stitches on the knitter side for making pattern.



Crossed Rib Stitch (1)

Cast-on over every needle, and then rearrange the stitches before continuing to knit in rib stitch.

1. Knit 8 rows in rib stitch.
2. Skipping one stitch, cross two stitches with their adjacent two stitches on the knitter side.

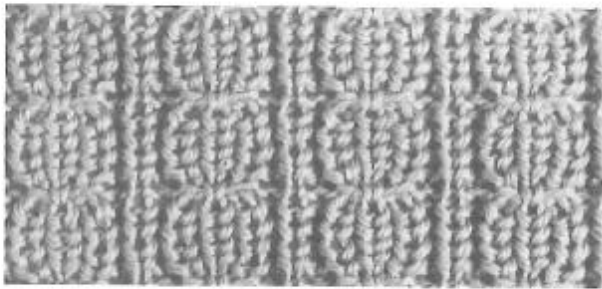
Repeat above two steps.

Crossed Rib Stitch (2)

Cast-on over every needle, and then rearrange the stitches as shown before continuing to knit in rib stitch.

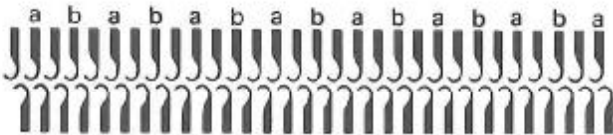
1. Knit 6 rows in rib stitch.
2. On the knitter, cross the stitches with the same markings.
3. Knit 6 rows in rib stitch.
4. On the knitter, cross the neighbouring stitches.

Repeat steps 1 ~ 4.



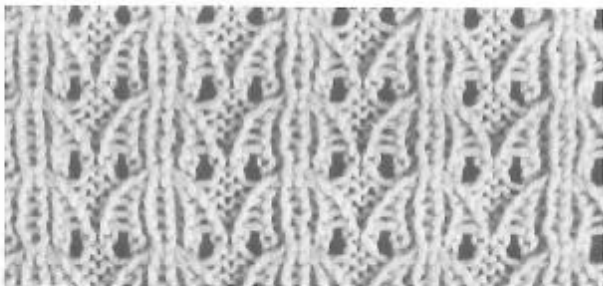
Crossed stitch in English Rib

While knitting in English Rib, cross the Knitter stitches at every few rows of knitting.



1. Knit 10 rows in English Rib.
2. On the Knitter cross the stitches on needles (a) with those on needles (b).

Repeat above two steps.



Rib transferring Stitch Pattern



Cast-on over every needle, and then rearrange the stitches as shown before continuing to knit in rib stitch.



1. Knit 6 rows in rib stitch.
2. On the knitter side, for every three needles, transfer stitches on right and left needle onto the centre needle, and leave the empty needles in B position.

Repeat above two steps.

● Rib stitches using Pattern Card

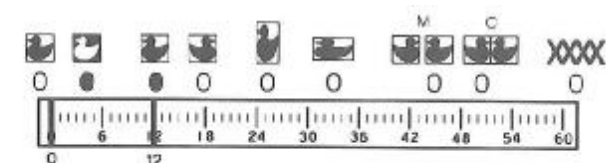


PIN TUCK

This sample is knitted with thick yarn using the Pattern No.2 on page 42.

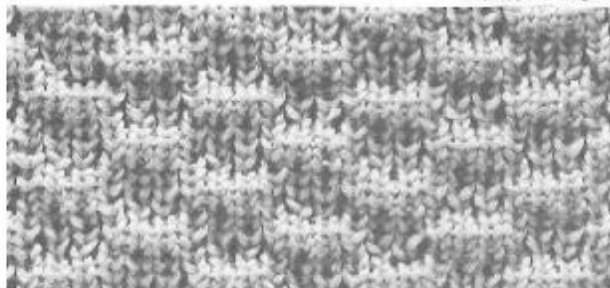
Do not use the Pattern Switch 1 with its left light on and Pattern Switch 3 and 6.

Use Close Knit Bar.

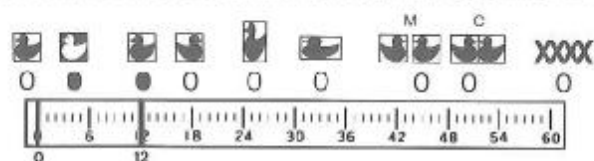
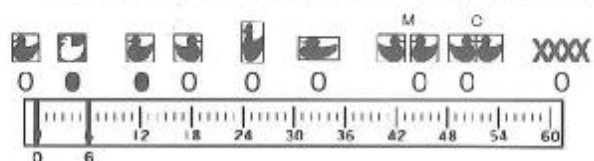
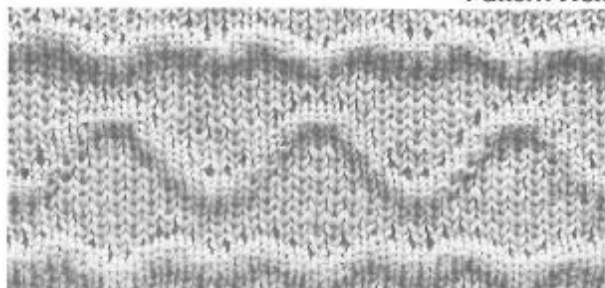


①	②	③	④	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲
①	1						0			Ⓡ	=	1	0	1	=	Ⓡ	H-4
2																→	
3																→	
4									0								←
5							S										→
6							0										←
7	Press the Pattern Switch-1 to turn on the right light.																
②						S			2							2	→

Pattern No.1



Pattern No.3





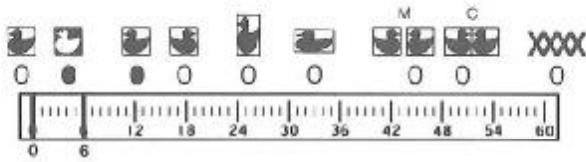
SLIP RIB

Knit in Slip Stitch using Pattern Card on Knitter, arranging needles on Ribber according to the pattern.

The sample is knitted with very thick yarn using the Pattern No.1 on page 42.

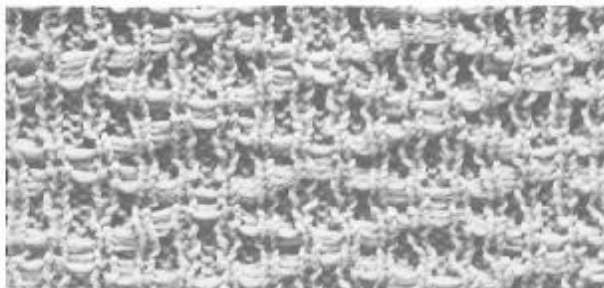
Use Close Knit Bar.

NOTE: Knit pushing needles on Ribber to C position using Needle Aligner.

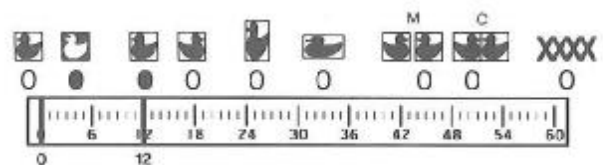
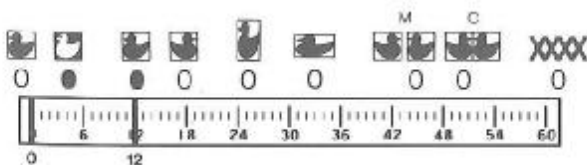
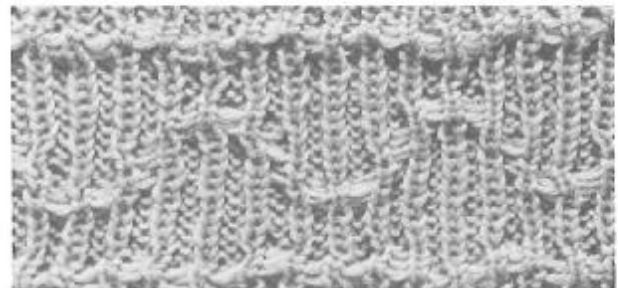


↓																					
①	1	■	↓	●	●		○		●	Ⓜ	=	1	○	1	=	Ⓜ	H-4				
2													→								
3																					
4											○										←
5											S										→
6											O										←
7	Press the Pattern Switch-1 to turn on the right light.																				
8																					
②				Ⓜ	▼		S	▼	4		1					4				↔	

Pattern No.2

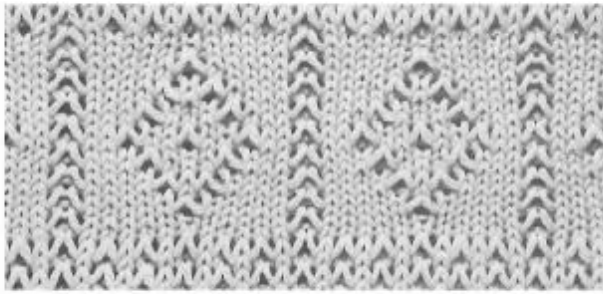


Pattern No.3



To knit Pattern No.2 or No.3, cast-on in Double Rib, and then rearrange the needles as shown before main knitting.

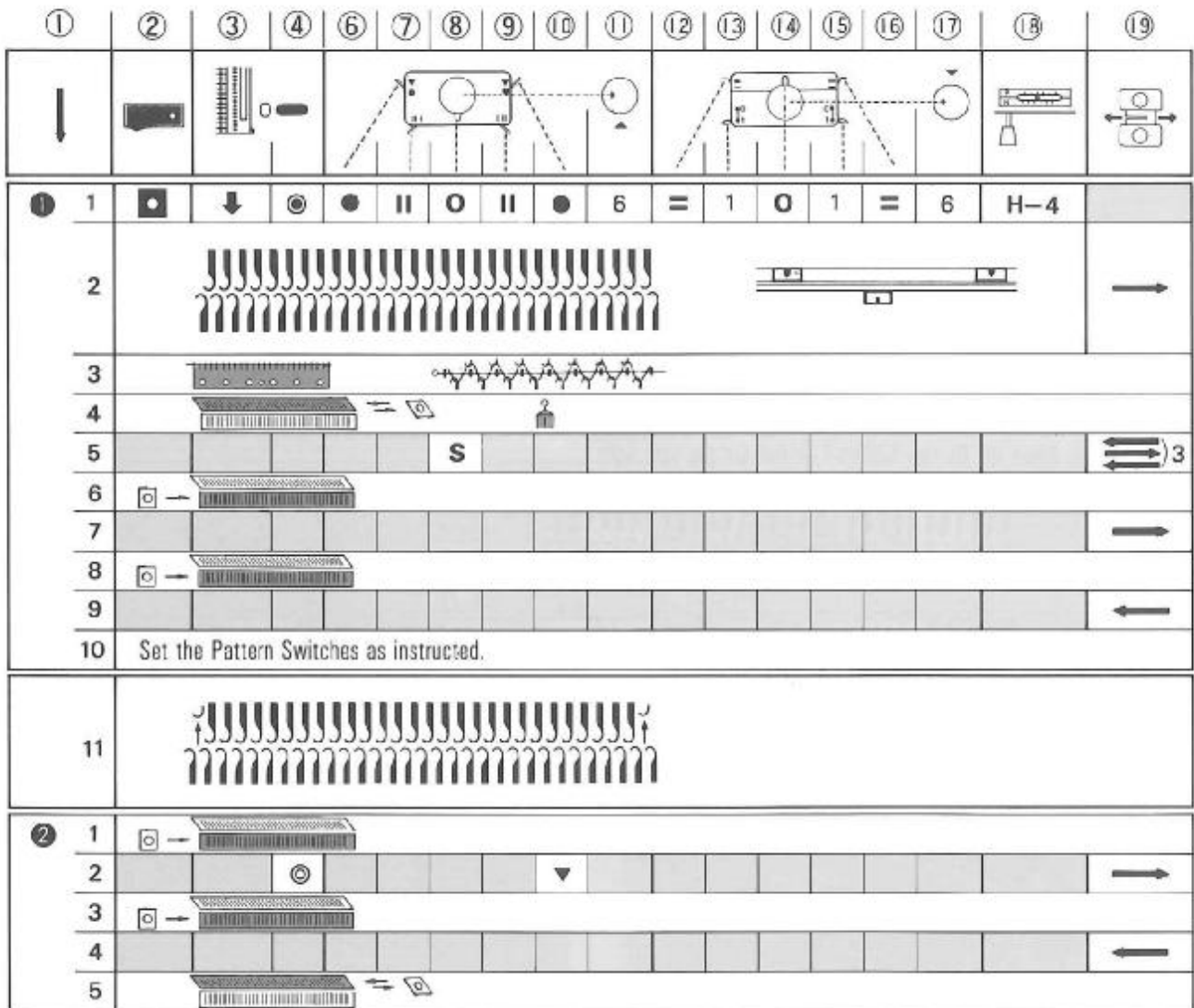
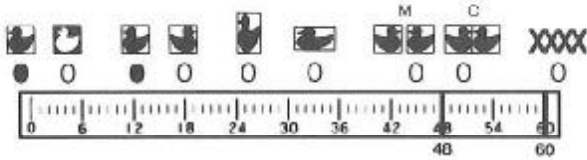


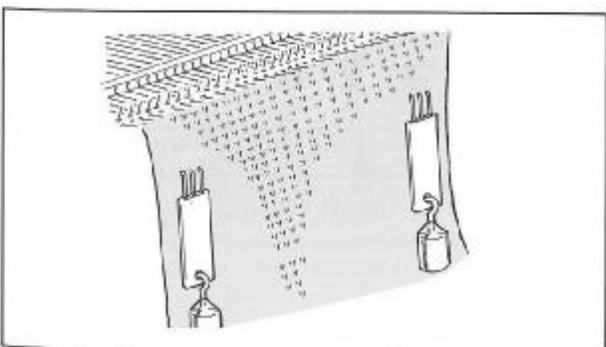
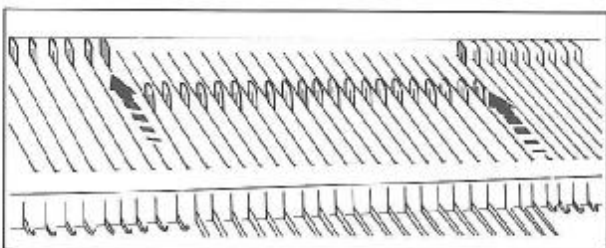
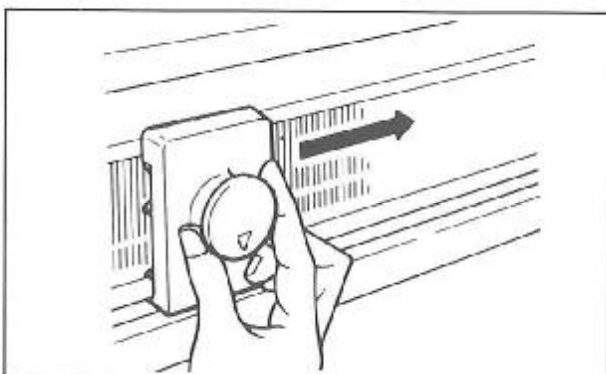
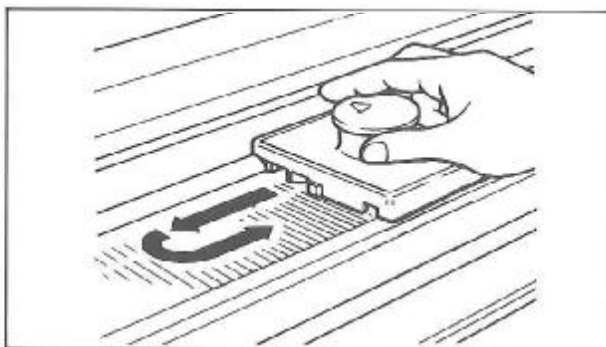
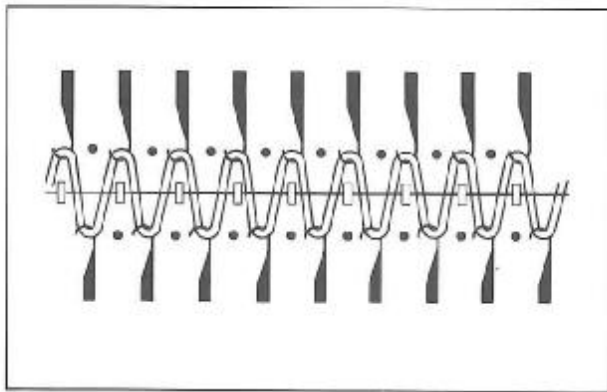


DRIVE LACE

Stockinet on Ribber side, and Slip Stitch on Knitter side with a Pattern Card, removing Knitter stitches every second row will form lacy knitting.

The sample is knitted with thick yarn using the Pattern No. 7 on page 42.

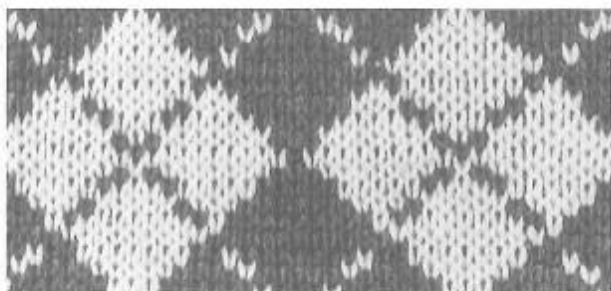




- ① — 1 Set machine controls as instructed.
Set Stitch Dials to the same as main knitting.
- 2 Arrange needles as instructed, set the Point Cams and Needle 1 Cam and knit from the left to the right with waste yarn.
- 3 When suspending Cast-on Comb (without Weights), insert it so that its teeth face Ribber Sinker Posts as illustrated.
If Cast-on Comb is suspended incorrectly, it will drop on the floor when Knitter stitches are removed.
- 4 Place Needle Aligner on the right side of Knitter Needle Bed.
Move Needle Aligner to the left and back again so that stitches are removed and the needles align in B position again.
Hook Weights onto Cast-on Comb.
- 5 Set Knitter Cam Lever to "S" and knit 3 rows with waste yarn.
- 6 Place Needle Aligner on the left side of Ribber Needle Bed, and slide it to the right to push up needles to C position.
- 7 Exchange waste yarn for main yarn in Yarn Feeder and knit from the left to the right.
- 8 Slide Needle Aligner on Ribber from the left to the right.
- 9 Knit from the right to the left.
- 10 Set the Pattern Switches as instructed below the picture on page 36.
- 11 Push both end needles on Knitter back to A position.
- ② — 1 Slide Needle Aligner on Ribber from the left to the right to push up needles to C position.
- 2 Press the Inspection Switch to turn off the light and set right Side Lever to ▼, then knit 1 row from the left to the right. (On Ribber, all the needles in C position knit, and on Knitter, only selected needles knit.)
- 3 Push up Ribber needles to C position using Needle Aligner.
- 4 Knit 1 row from the right to the left.
- 5 Remove stitches on Knitter using Needle Aligner.

Repeat ② — 1 ~ 5 for main knitting.

Suspend Hanger Combs with Weights after 10 rows and advance them every 10 rows upwards.



DOUBLE JACQUARD

Double Jacquard is knitted with the use of Pattern Card, and has no floats of yarn on its back.

The pattern is formed on the Knitter side, with the Cam Lever set at "J" (JACQUARD).

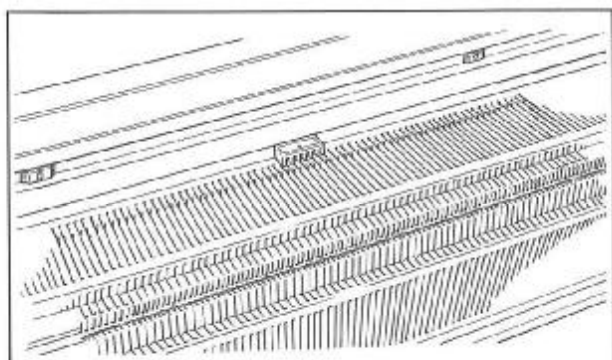
Any Fair Isle Card can be used for knitting Double Jacquard on the Electronic Knitter.

The sample is knitted with thick yarn using the Pattern Card attached to the Pattern Controller, No.4-(30).

Use Close Knit Bar.

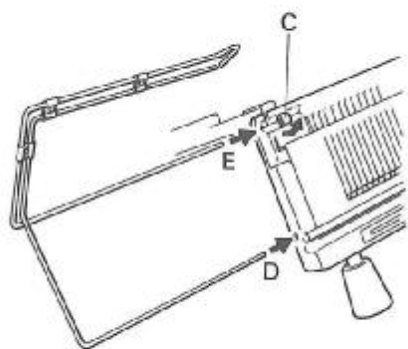
	①	②	③	④	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲		
①	1	■	↓	●	●		○		●	Ⓡ	=	1	○	1	=	Ⓡ	H-4			
2																→				
3																				
4												○						←		
5							S											→		
6							O											←		
7							S											→		
8	Set the Yarn Rest and hook the contrast yarn "B" on it. Press the Pattern Switch-6 to turn on the light.																			
②	1		◎	▼	J	▼	2		1					2				←	A	
	2																		→	B
	3																		←	B
	4																		→	A

A.....main (ground) yarn, B.....contrast yarn



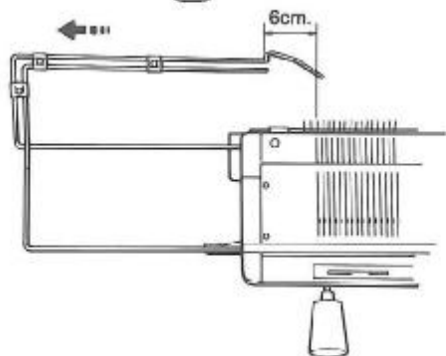
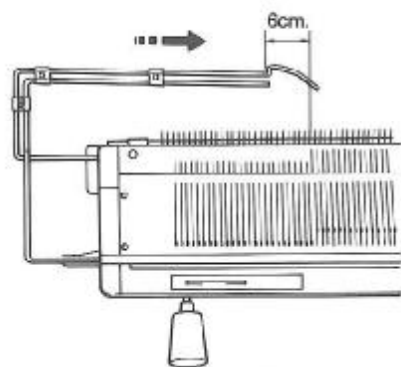
Cast-on

- ① — 1 Set the machine controls for the initial row.
- 2 Arrange needles, set Point Cams and Needle-1 Cam, and knit from the left to the right.
- 3 Suspend Cast-on Comb with Weights.
- 4 Set the left Set Lever on the Ribber Carriage to "O" and knit 1 row.
- 5 ~ 7 Changing the positions of the Cam Lever as instructed on the Operation Table, knit 3 rows.

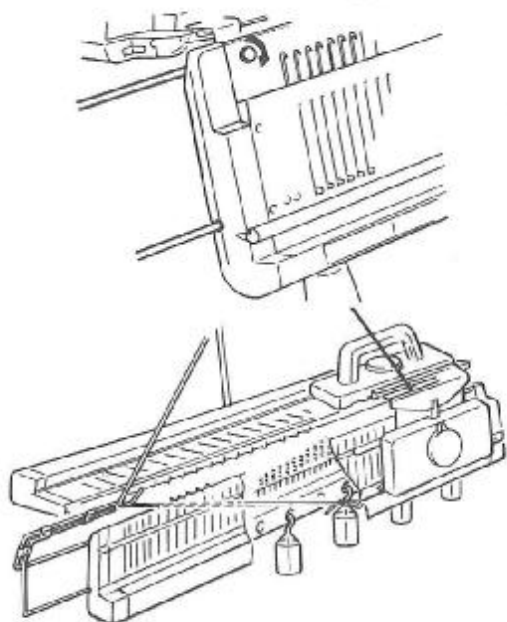


① — 8 Set the Yarn Rest as follows.

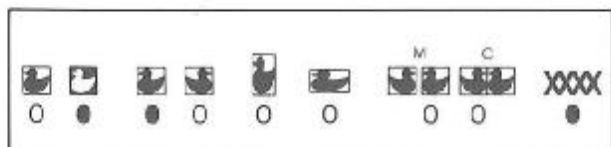
- (1) Loosen the Securing Nut "C" on the left end of Ribber Needle Bed.
- (2) Insert one end "D" of the Yarn Rest into the hole on the left side of the Ribber, and slide another end "E" of the Yarn Rest into V-shaped groove of the Ribber Stopper as shown opposite.
- (3) Adjust the position of the Yarn Rest so that the distance between the crooked part of Yarn Rest and the last knitting needle is more than 6cm.



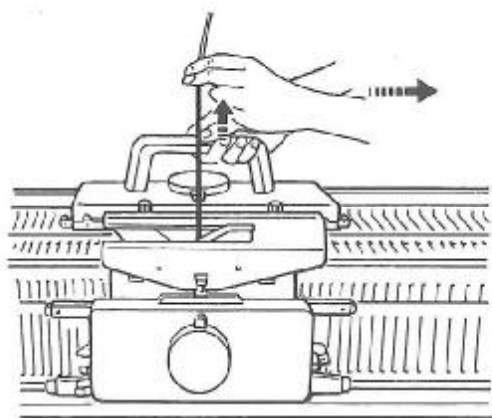
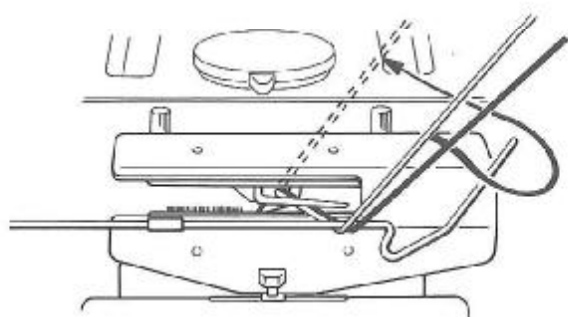
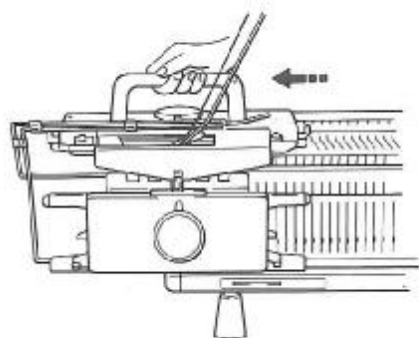
- (4) Tighten the Securing Nut, and Yarn Rest is firmly in place.



Thread the contrast yarn "B" through the Auto Tension and hook it on the Yarn Rest. Drop yarn and between Knitter and Ribber and then tie it to Weight.



Press Pattern Switch 6 to turn on the light just before knitting Double Jacquard and make sure that the right light of Switch 1 is on. (The Carriage is on the right.)



Main knitting

- ②— 1 Change machine controls to knit Double Jacquard. Start knitting with the main yarn "A". Move the Carriage from the right to the left till the main yarn pass the crooked part of the Yarn Rest to be removed from the Yarn Feeder. Now both the main yarn and the contrast yarn are on the Yarn Rest.

Remove the contrast yarn "B" from the Yarn Rest and guide it into the Yarn Feeder. (Guide the contrast yarn behind the main yarn to prevent yarns from being tangled with each other.)

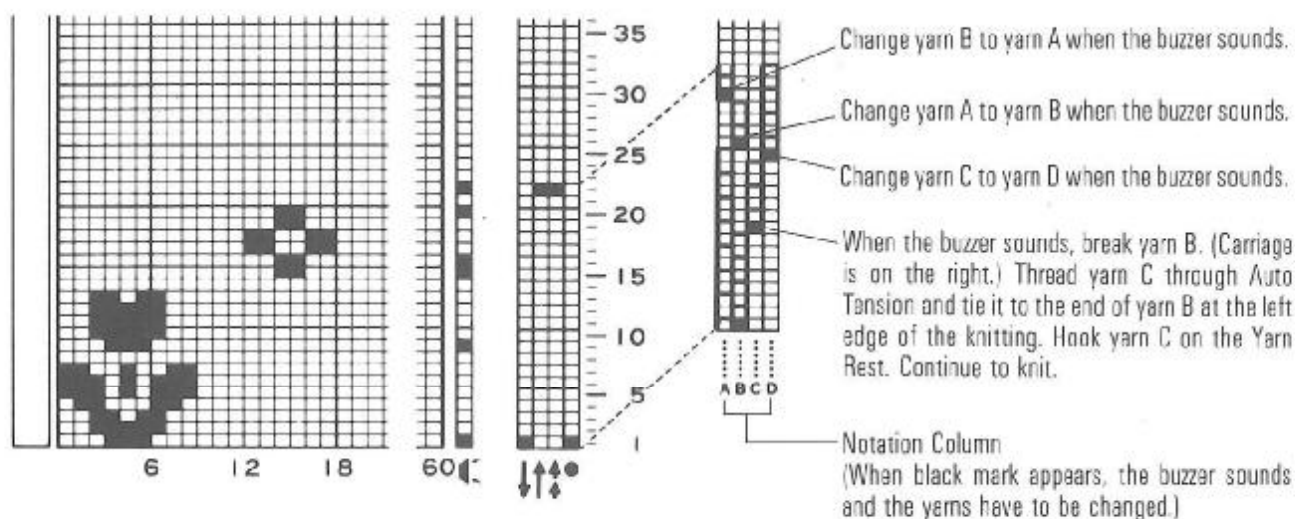
NOTE: Make sure the contrast yarn is correctly in the Yarn Feeder. If it isn't, the knitting will come off needles.

- 2 Move the Carriage a little to the right and remove the contrast yarn caught on the Yarn Rest. Knit 1 row holding the contrast yarn above the Yarn Feeder to eliminate slack yarn.

NOTE: Make sure the main yarn is removed from the Yarn Feeder and stays on the Yarn Rest.

- 3 Move the Carriage from the right to the left till the contrast yarn pass the crooked part of the Yarn Rest. Exchange the contrast yarn for the main yarn in the same way as above.
- 4 Knit with the main yarn "A", moving the Carriage from the left to the right.
- 5 Repeat steps ②— 1 ~ 4, exchanging the yarns every two rows with the Carriage on the left. Two lights of the Pattern Switch 1 lights on alternately every two rows.

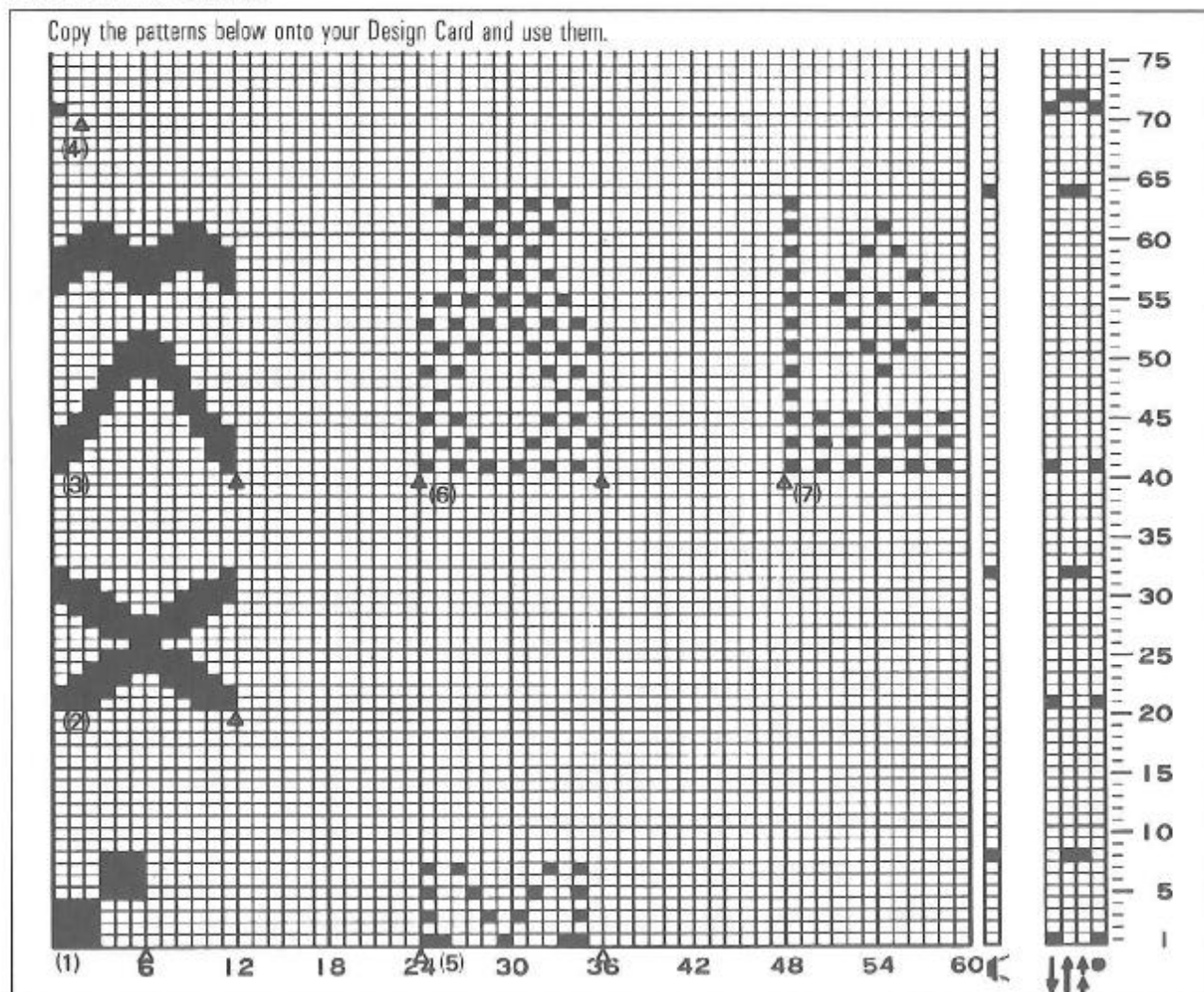
HINT: Use Notation Column to note the row to change yarn.



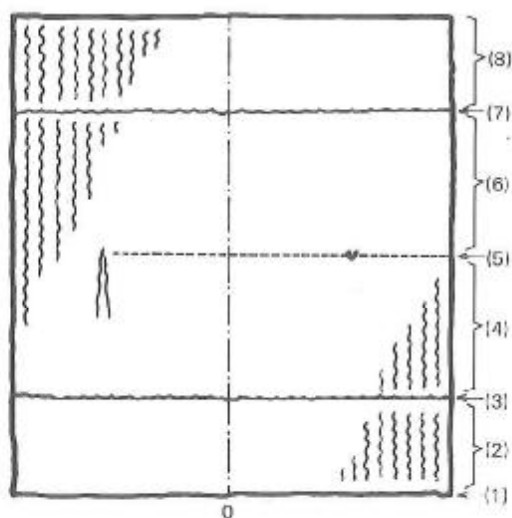
IMPORTANT In Double Jacquard, it takes two complete movements of the linked Carriages to make one row of finished knitting on the main bed. The light of Pattern Switch 1 shows whether you are knitting background (right) or contrast (left).

PATTERN CARD

Copy the patterns below onto your Design Card and use them.



TAKING A TENSION GAUGE

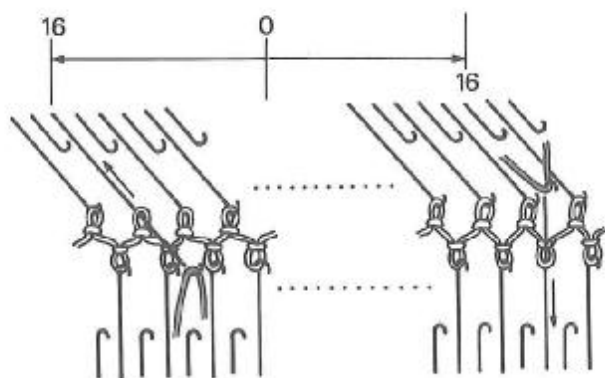


Tension Gauge

The following instructions should be used when knitting the tension swatch and taking a tension gauge.

Try different Stitch Dial settings till you obtain a suitable tension for the yarn and stitch pattern chosen.

- (1) Regardless of stitch type, always arrange 25 needles on both sides of centre(0) on both beds.
- (2) Cast-on and knit 15 rows with main yarn in selected stitch pattern.
- (3) With contrast yarn, knit 2 rows.
- (4) With main yarn in selected stitch pattern knit 20 rows.



- (5) Put yarn marks on the 16th needles on both sides of centre(0) on either Knitter or Ribber. (Yarn marks do not have to be on the same bed.)
- (6) Knit 20 rows.
- (7) With contrast yarn, knit 2 rows.
- (8) With main yarn, knit 15 rows.
- (9) Remove the swatch from the machine.

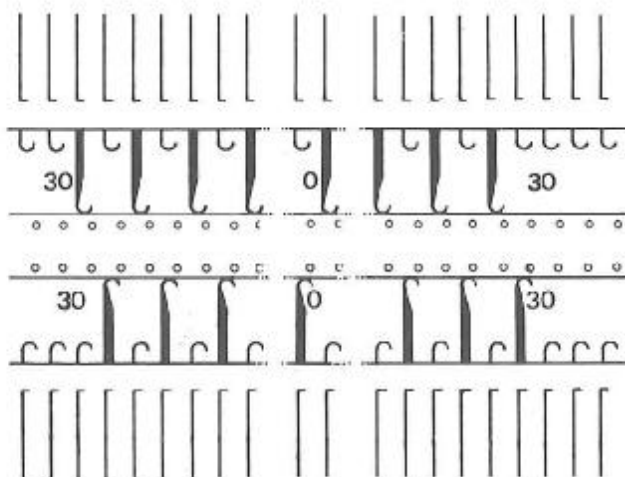
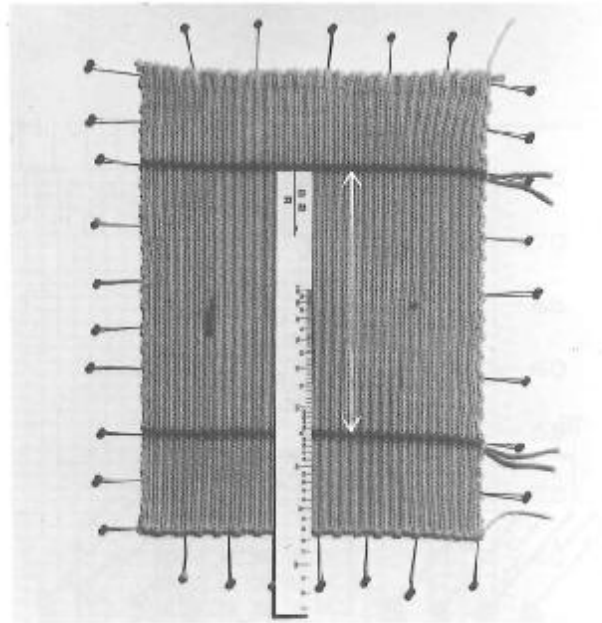
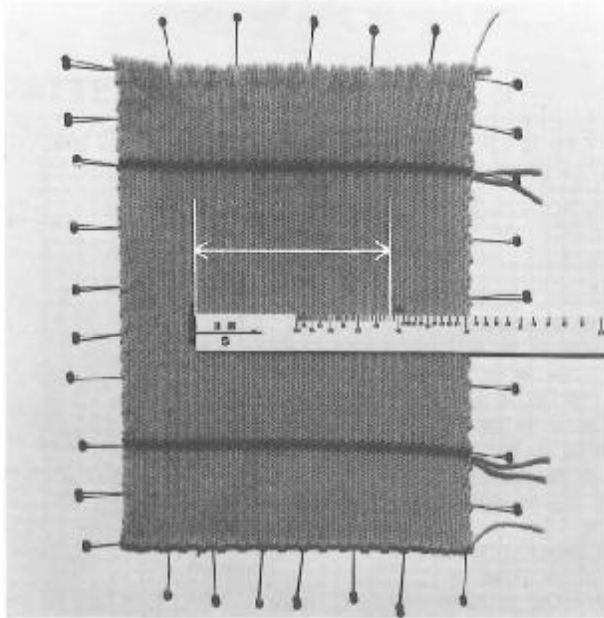


When the tension swatch is completed, remove it from the machine and leave it for several hours so that it can relax, then stretch the swatch widthways, until it looks how you want the finished garment. Pin it flat and square.

Hold a steam iron above the knitting, and blow steam evenly all over the swatch.

Allow the swatch to dry, take a tension gauge over it as it is pinned down.

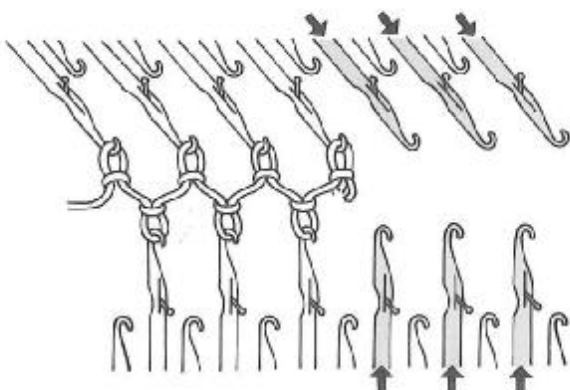
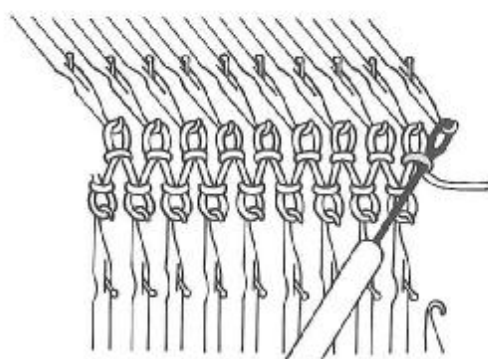
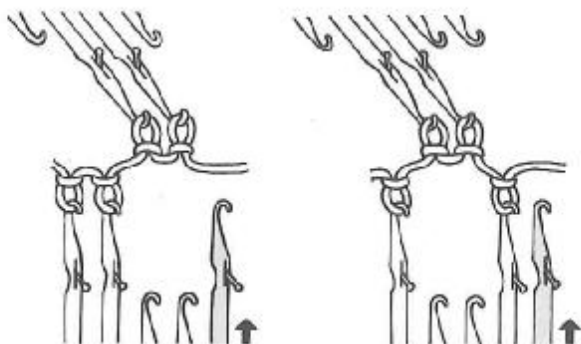
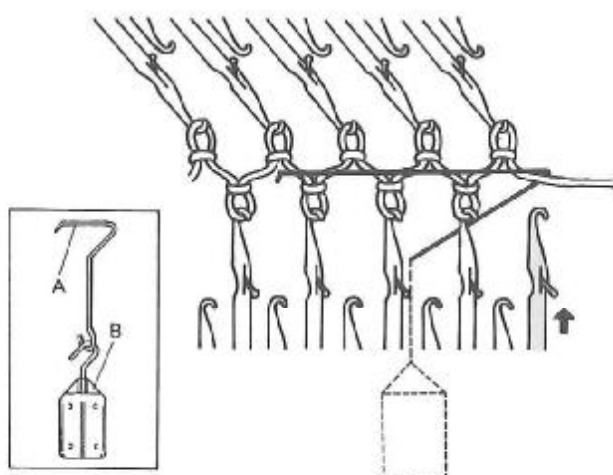
Measure the tension swatch to obtain the correct tension gauge using Gauge Scale between yarn marks.



After taking tension gauge, arrange needles for the width of the total number of needles, including non-working needles as required for the garment piece to be knitted.

Example: If 60 stitches are counted on the pattern for K1.P1. rib, arrange needles for 1 × 1 within the total of 60 needles.

KNITTING TECHNIQUES



Increasing 1 stitch

In case of K1.P1. rib:

You can increase only on the Carriage side.

1. Push 1 needle on opposite Needle Bed of the end needle from A to B position.
i.e. If end needle is on Knitter, push needle to B position on Ribber.
2. Use Side Hanger "A" with Edge Weight "B", hereafter called Edge Weight.
From underneath, insert hook of Side Hanger between Knitter and Ribber Needle Bed and lay hook over zigzag stitches.
Move the Edge Weight up as knitting progresses.

3. Continue to knit.

In case of K2.P2. rib:

1. On Carriage side, push the needle to be increased to B position.
2. Hang Edge Weight and continue to knit.

In case of Double rib:

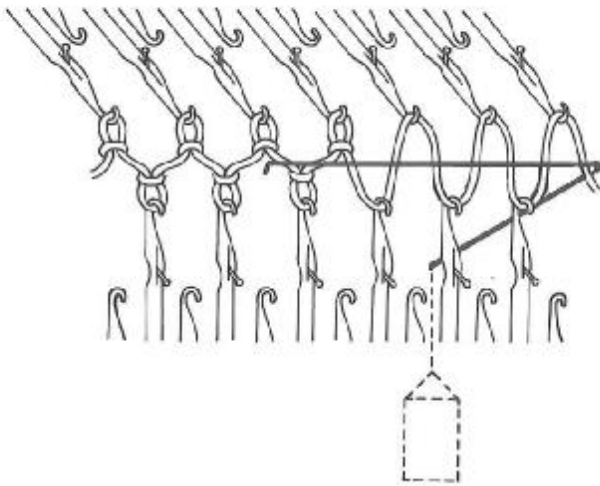
1. Push 1 adjacent Knitter/Ribber needle at Carriage side from A to B position.
Pick up the loop below the end stitch and place it onto the empty needle as shown.
2. Push 1 Ribber/Knitter needle from A to B position.
3. Hang Edge Weight and continue to knit.

Increasing multiple stitches

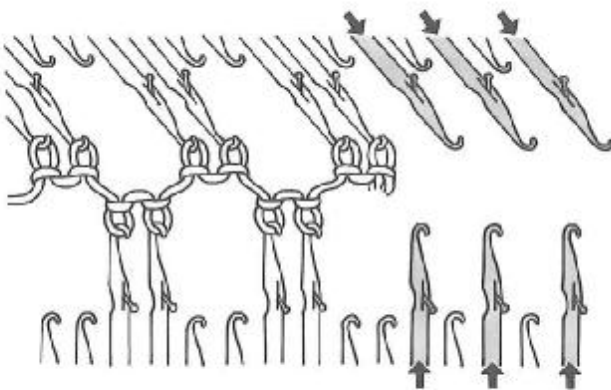
You can increase on the opposite side of the Carriage.

In case of K1.P1. and Double rib:

1. On opposite side of Carriage, push required Knitter and Ribber needles to B position.

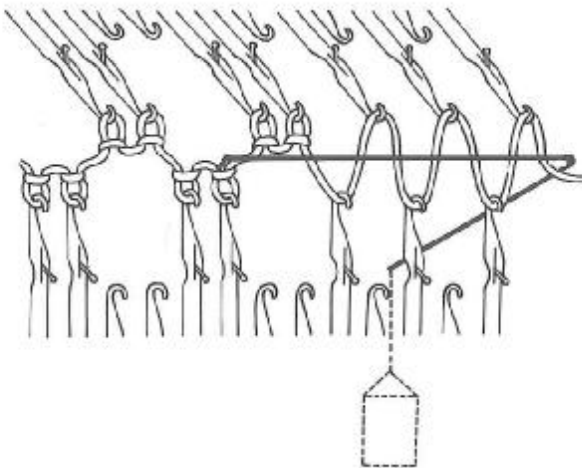


2. Knit 1 row.
Yarn lies alternately in Knitter and Ribber needle hocks.
3. Hang Edge Weight and continue to knit.

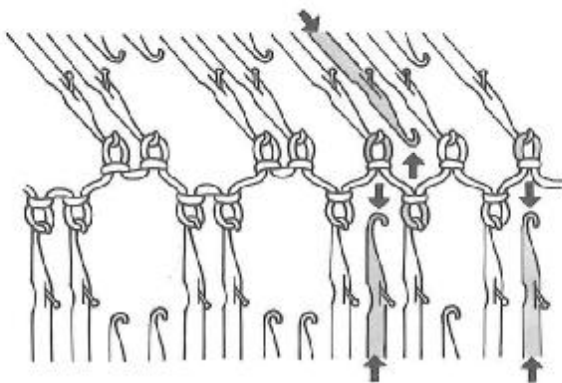


In case of K2.P2 rib:

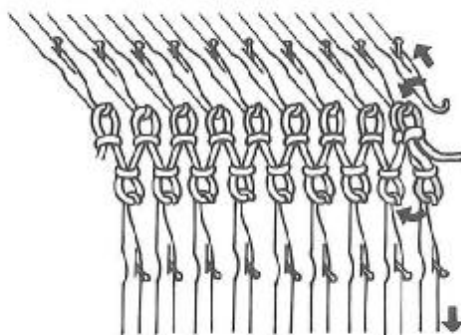
1. On the side opposite the Carriage, push required Knitter and Ribber needles to B position as shown in diagram.



2. Knit 1 row and hang Edge Weight.



3. Knit 1 row and rearrange needles by transferring stitches as shown opposite.
4. Push empty needles back to A position.
Continue to knit.

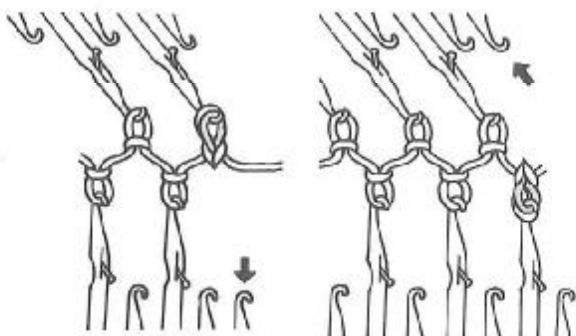


Decreasing 1 stitch

You can decrease 1 stitch at both edges of the row at the same time.

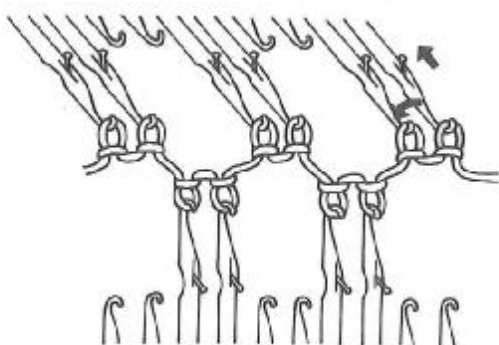
In case of Double rib:

1. Transfer the end stitches on both Knitter and Ribber onto adjacent needles.
2. Push the empty needles to A position and continue to knit.



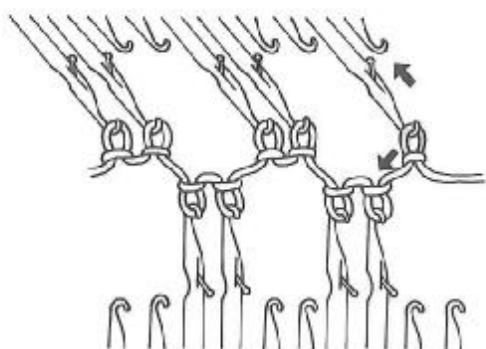
In case of K1.P1. rib:

1. Using Double-eye Transfer Tool, transfer the end stitch from Knitter to Ribber or vice versa.
2. Push empty needle back to A position and continue to knit.

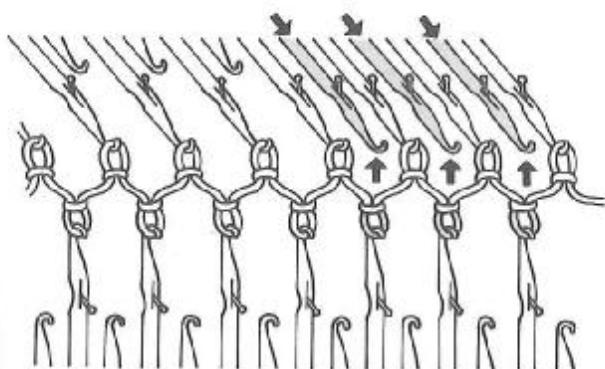


In case of K2.P2. rib:

If two end stitches are on the same Needle Bed, transfer the end stitch to its adjacent needle.



If the 1st two stitches are on different Needle Beds, transfer the end stitch to the needle on the opposite Needle Bed.

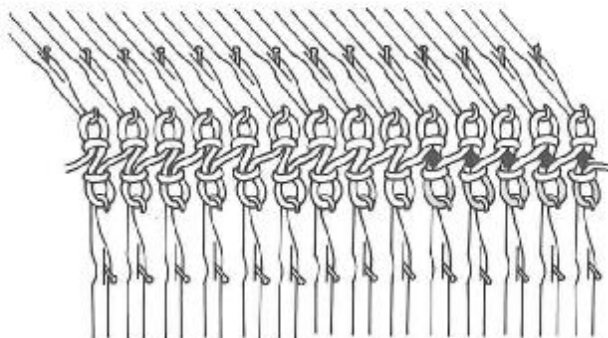
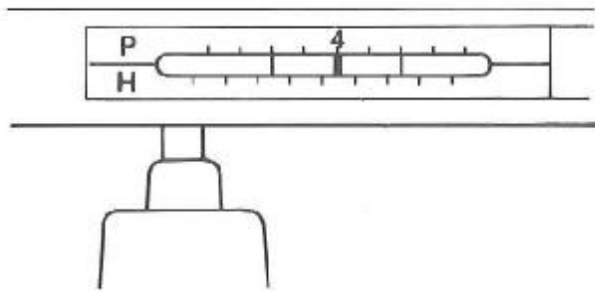
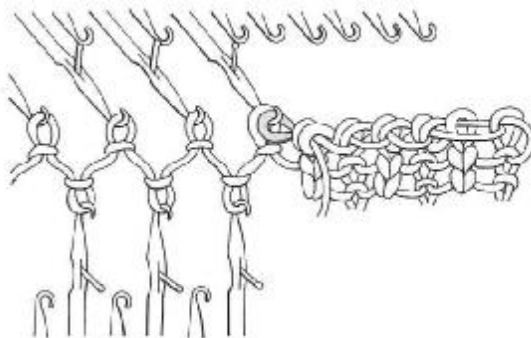
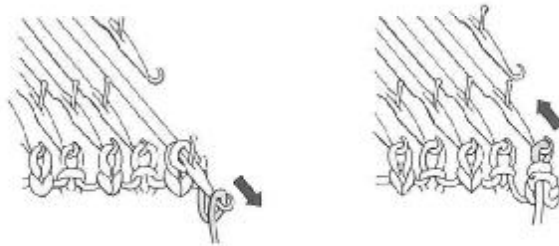
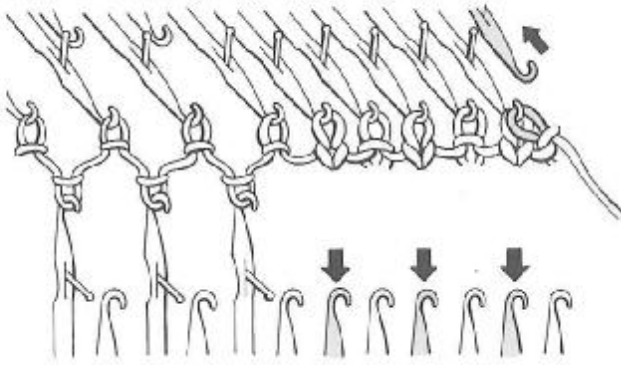


Decreasing multiple stitches

You can decrease only on the Carriage side.

In case of K1.P1. and K2.P2. rib:

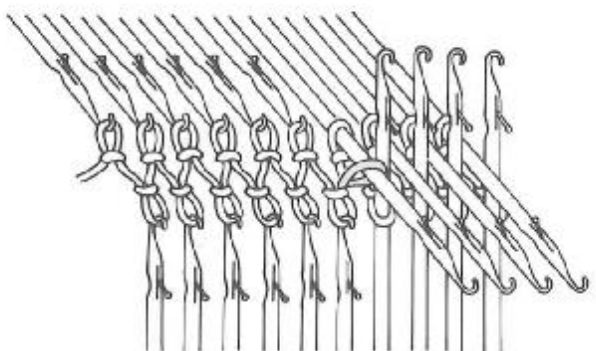
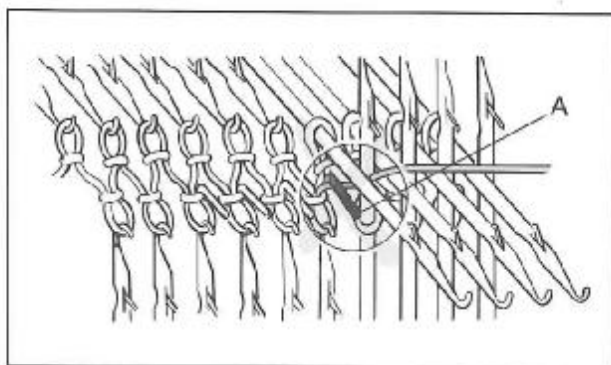
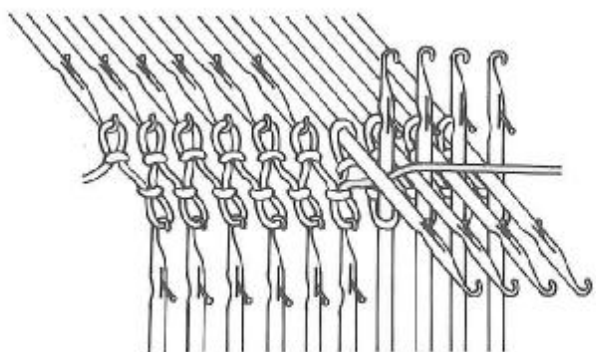
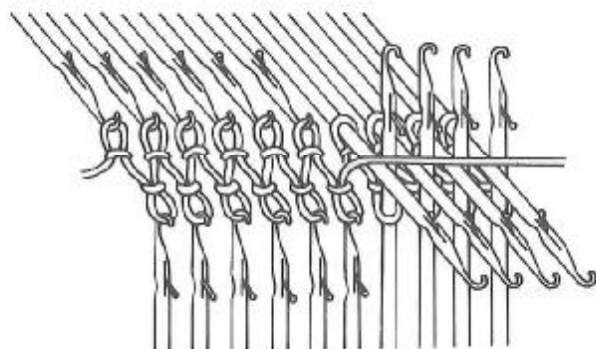
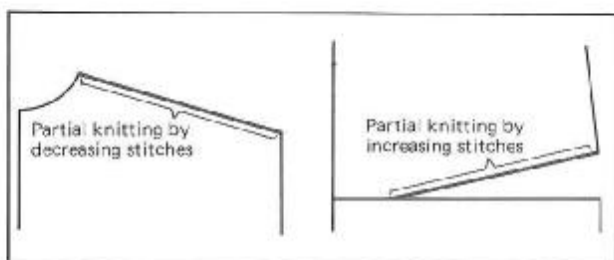
1. Push required number of empty Knitter needles to B position.
2. Transfer stitches from Ribber to their corresponding empty Knitter needles.



3. Push empty Ribber needles back to A position.
4. Transfer the end stitch to its adjacent needle and push empty needle back to A position.
5. Push the end working needle to D position. The two stitches are behind latch. Lay the yarn inside the needle hook.
6. Holding yarn end slightly downwards, push the needle back to B position. Repeat steps 4 ~ 6 until required number of stitches have been decreased.
7. Place the last stitch onto adjacent needle.

In case of Double rib:

1. Set the Swing Indicator to P—4.
2. Transfer the required number of Ribber stitches to their corresponding Knitter needles.
3. Cast off the stitches in the same way as given for K1.P1. rib.
4. Set the Swing Indicator to H—4 to continue knitting.



Partial knitting

PARTIAL KNITTING is used to shape a gentle slope, such as shoulder, darts, etc.

You can work partial knitting only to the opposite end to the Carriage. If you wish to shape both sides, work left and right alternately.

Decreasing stitches

Set Russel Levers on Knitter and Ribber Carriage to **I** and **—** positions respectively.

1. On the side opposite the Carriage, push needles to be decreased to D position.
2. Knit 1 row. (The needles in B position knit the yarn. The needles in D position remain inactive and the yarn passes over them.)
3. To prevent a hole forming, pass the yarn under the first inside needle in D position and over the remaining needles.

(If partial knitting is required at both sides, repeat step 1 before knitting next row.)

Be sure that yarn is not caught in Sinker Post "A".

4. Knit 1 row. (If partial knitting is required at both sides, apply step 3)
5. Repeat steps 1 ~ 4.

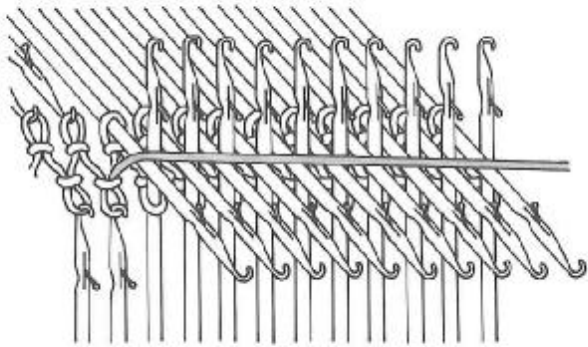
After completing partial knitting, continue as follows.

A. Rib without pattern

Push the needles in D position at the opposite end to the Carriage back to C position. Knit 1 row. Repeat this step if partial knitting has been worked at both ends.

B. Pattern knitting.

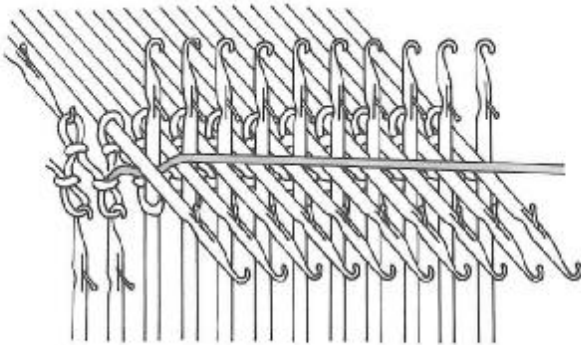
Using a Transfer Tool, return the needles in D position to B position, at the opposite end to the Carriage. Knit 1 row. Repeat this step if partial knitting has been worked at both ends.



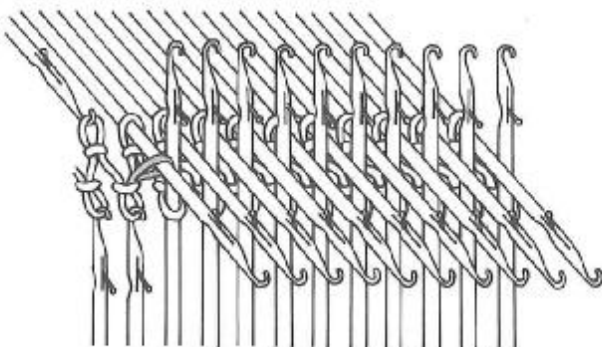
Increasing stitches

Set Russel Levers on Knitter and Ribber Carriage to I and — positions respectively.

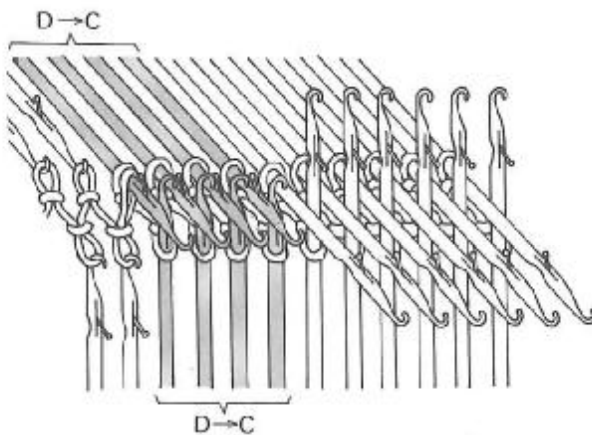
1. On the side opposite the Carriage, push needles for the width to be shaped by partial knitting to D position.
2. Knit 1 row. The needles in B position knit the yarn. The needles in D position remain inactive and the yarn passes over them.



3. To prevent a hole forming, pass the yarn under the first inside needle in D position and over the remaining needles. (If partial knitting is required at both sides, repeat step 1.)



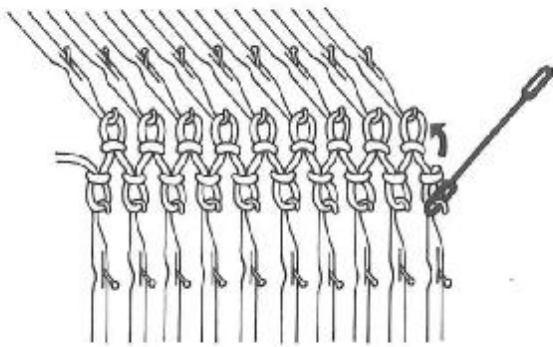
4. Knit 1 row. (If partial knitting is required at both sides, apply step 3.)



5. On the side opposite Carriage, push needles in D position to be increased back to C position, and knit 1 row.

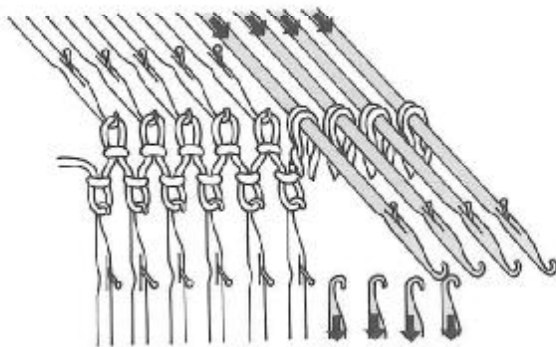
When the pattern knitting is required, using a Transfer Tool, return the needles to be increased to B position, and knit 1 row.

6. Repeat steps 3 ~ 5. (If partial knitting has been worked at both sides, repeat steps 3 and 5 only.)



Partial knitting involving "swing"

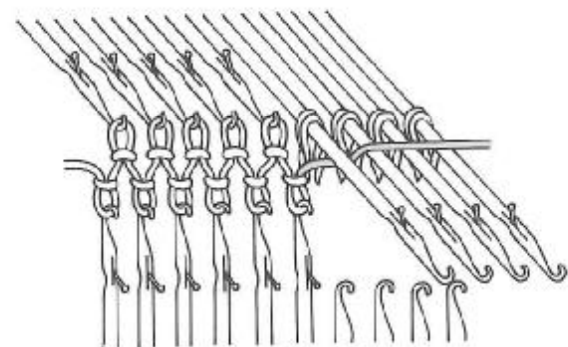
Knitter needles in D position cross the opposite Ribber needles in D position. Under this condition of needles, you must not swing (by using Swing Handle) Needle Bed, or you will damage the crossed needles. So, a special technique of partial knitting as undermentioned is required for Swung English Rib, Variation Swing, Herringbone Swing and the like, all of which involve "swing".



Decreasing stitches

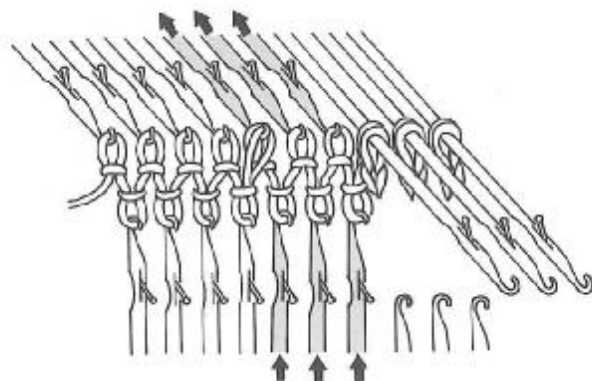
Set the Knitter Russel Levers to II position.

- (1) At the position to start partial knitting, transfer the stitches to be decreased from the Ribber to the Knitter on the side opposite the Carriage.
- (2) Push up the needles holding two stitches to D position and back the empty Ribber needles to A position.



- (3) Knit one row.
- (4) Bring the yarn under the first inside needle in D position.
(If partial knitting is required on both sides, apply steps (1) ~ (2) on the opposite side of the Carriage.)
- (5) Knit 1 row.
(If partial knitting is required on both sides, apply step (4).)

Repeat the steps (1) ~ (5).



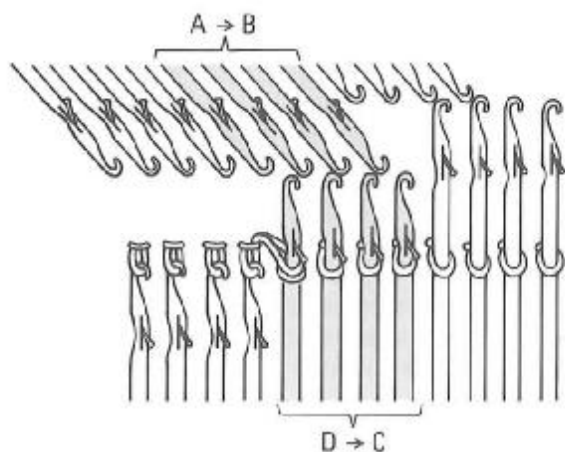
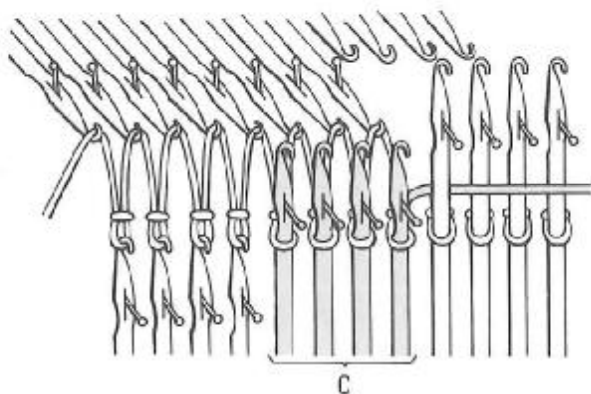
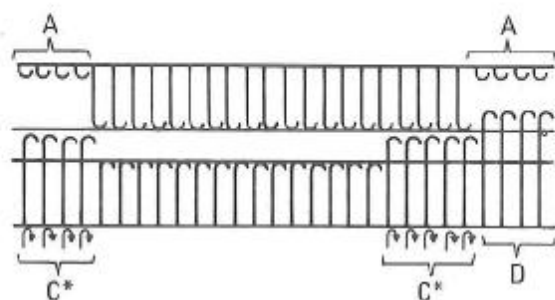
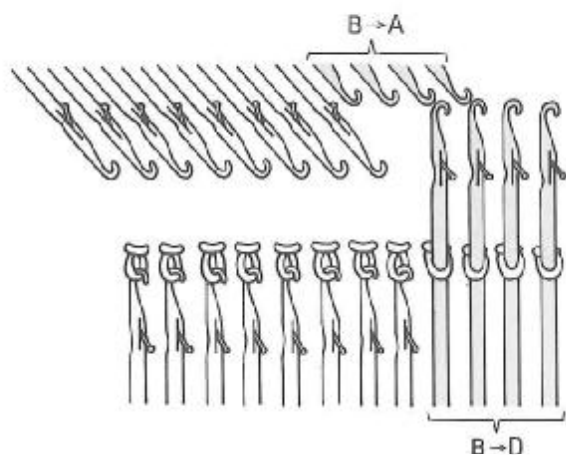
Increasing stitches

Set the Knitter Russel Levers to II position.

On the side opposite Carriage, transfer Ribber stitches to be shaped by partial knitting to corresponding Knitter needles and push back empty needles to A position. Push the Knitter needles having the Ribber stitches up to D position.

At each step in increasing stitches, transfer required number of Ribber stitch from the knitter to corresponding Ribber empty needles pushing back the Knitter needles to B position.

Other operations should be carried out in the same manner as decreasing.



Partial knitting in Drive Lace knitting

Set Ribber Russel Levers to — position.

Begin partial knitting after removing stitches on Knitter using Needle Aligner.

Decreasing stitches

(1) On the side opposite Carriage, push Knitter needles to be decreased back to A position, and push up Ribber needles to be decreased to D position.

(If partial knitting is required on both sides, push only Knitter needles to be decreased back to A position on the Carriage side.)

(2) On both sides of Ribber Bed push and 4 or 5 working needles up to D position and then back to C position(*) instead of bringing Ribber needles with Needle Aligner because it cannot be used in partial knitting.

(3) Knit 1 row.

(4) To prevent a hole, bring yarn under the first inside needle in D position.
(If partial knitting is required on both sides, push up Ribber needles to be decreased to D position on the side opposite Carriage.)

(5) Work the same manner as done for step (2) and knit 1 row.

(6) Repeat steps (1) ~ (5).

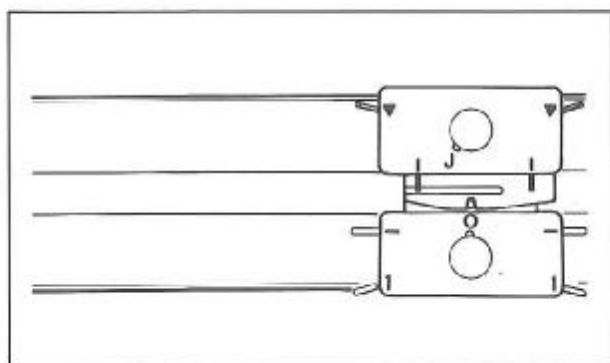
(If partial knitting is required on both sides, bring yarn under the first inside needle in D position and then repeat steps (1) ~ (5).)

Increasing stitches

On the side opposite Carriage, push Knitter needles back to A position and push up Ribber needles to D position for the width to be shaped by partial knitting.

Push Knitter needles to be increased to B position and push back Ribber needles to be increased to C position.

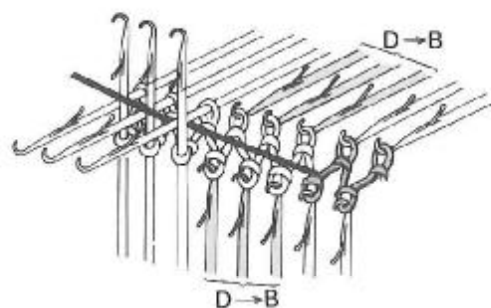
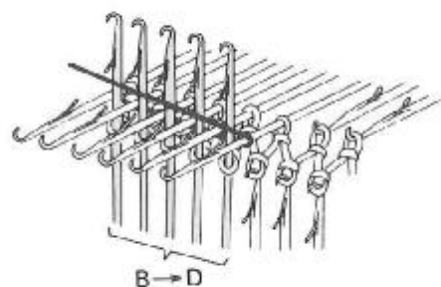
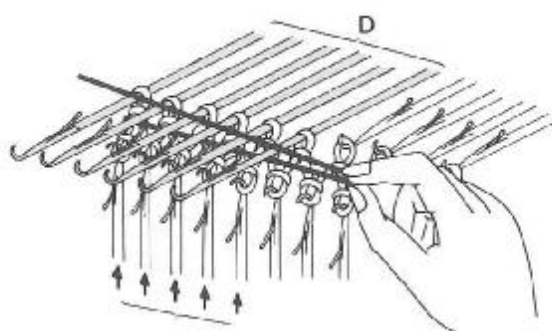
Other operations should be carried out in the same manner as decreasing.



Partial knitting while knitting Double Jacquard

Partial knitting at right side is worked in the same way as given for Double Rib.

For partial knitting at left side, set Russel Levers on Knitter and Ribber Carriage to **I** and **—** positions respectively and follow the instructions below.

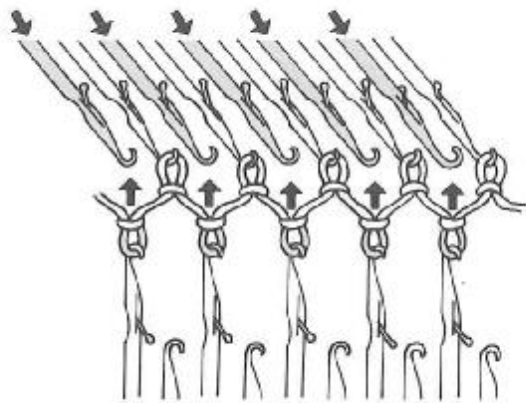


Decreasing stitches

1. Carriage is at the right side.
Before knitting from right to left, hold the yarn to be knitted next as shown, and push the Knitter needles to be decreased to D position.
2. Push up the same number of Ribber needles to D position.
(The yarn must be under those needles in D position.)
3. Knit 1 row from right to left.
Change the yarn and knit from left to right.
4. Repeat steps 1 ~ 3.

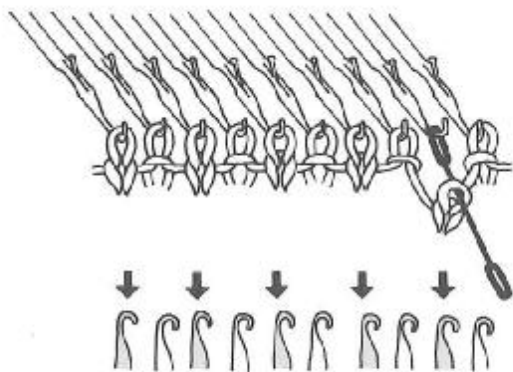
Increasing stitches

1. Carriage is at right side.
Using Transfer Tool, push the needles in D position to be increased, back to B position.
2. Bring the yarn to be selected next under the first inside needles on Knitter and Ribber in D position.
3. Knit 1 row from right to left. Change the yarn and knit to right.
4. Repeat steps 1 ~ 3.

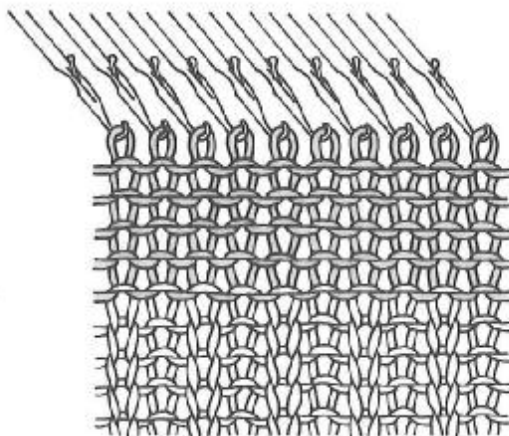


Waste knitting

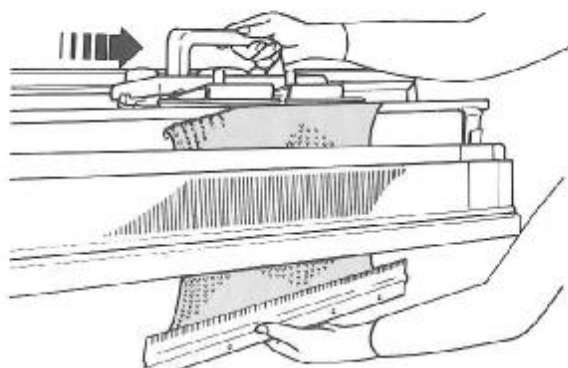
1. On Knitter, push empty needles to B position.



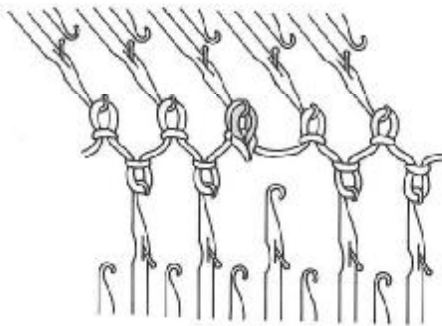
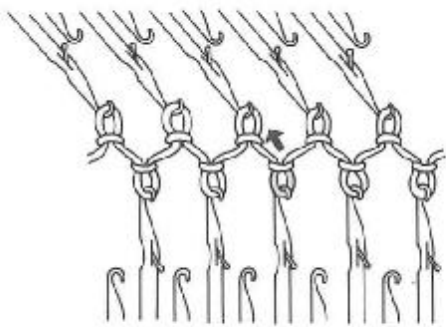
2. Transfer Ribber stitches to the corresponding Knitter needles. Drop Ribber to its lowest position.



3. Exchange Ribber Arm for Knitter Arm and thread contrast yarn into Yarn Feeder. Knit 9 ~ 10 rows with Stitch Dial 4 ~ 5 higher than for double bed knitting, with Cam Lever set to Stockinot (●).



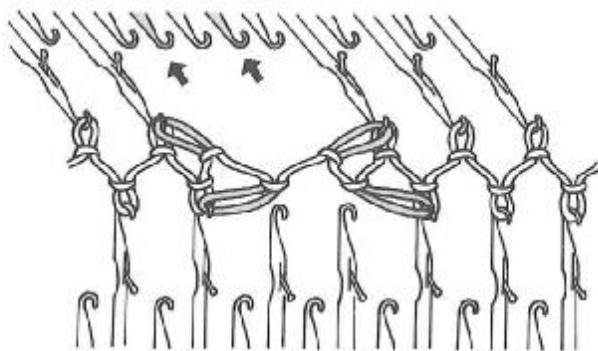
4. Remove yarn and Weights. Holding Cast-on Comb, move Carriage to remove fabric from machine.



Buttonhole

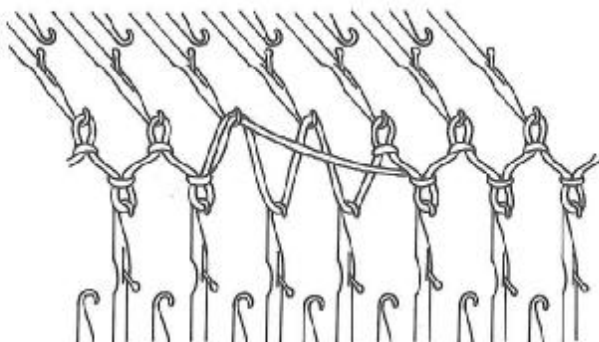
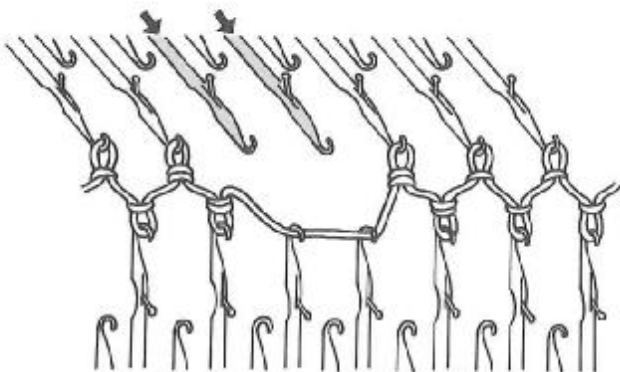
Single stitch eyelet

1. At the point for buttonhole, transfer 1 stitch from Ribber to Knitter.
2. Leave empty needle in B position. Continue to knit.



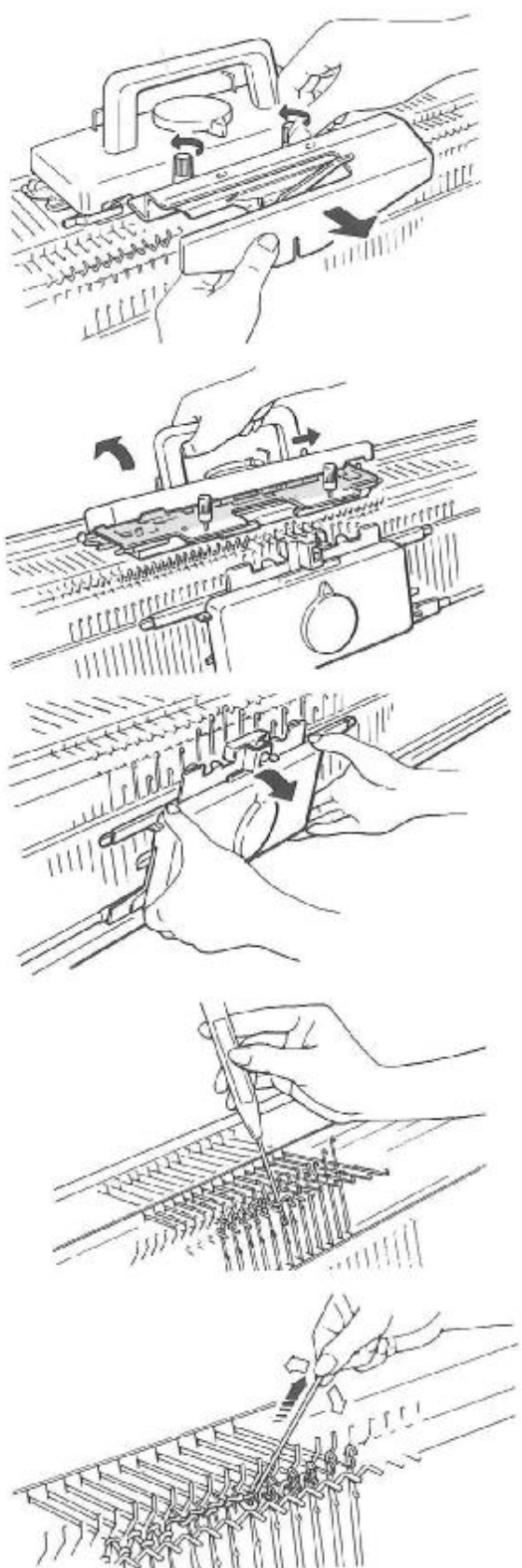
Double stitch eyelet

1. Transfer 2 stitches at the point of the buttonhole to their adjacent needles on Knitter and Ribber.
2. Push empty needles on Knitter back to A position. Leave empty needles on Ribber in B position.
3. Knit 1 row and push the needles left in A position on step 2 to B position.
4. Knit 1 row.



5. Hook hanging yarn on a Knitter needle. Continue to knit.

WHAT TO DO IF



If Carriage has jammed...

DO NOT PUSH OR PULL THE CARRIAGE BY FORCE.

1. By pressing down Link Knob, disconnect the Ribber Carriage from Ribber Arm.
2. Remove yarn from Yarn Feeder.
Remove Ribber Arm from Knitter Carriage.

3. Lift up the top of the Knitter Carriage by using the Release Lever.
Move it in the direction it was going, until it clears the working needles.

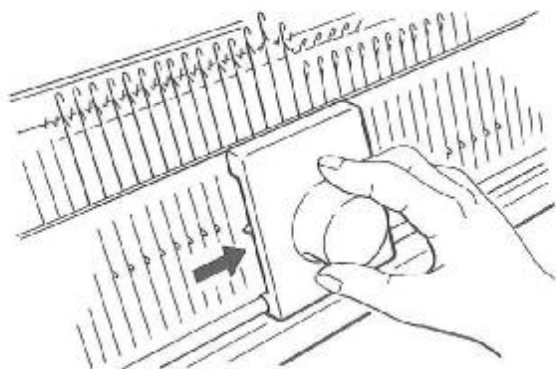
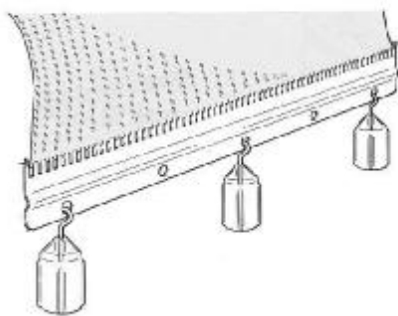
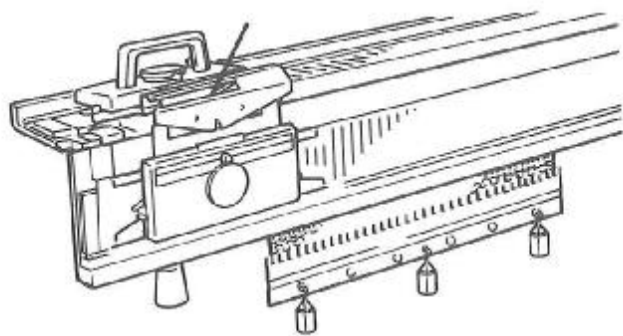
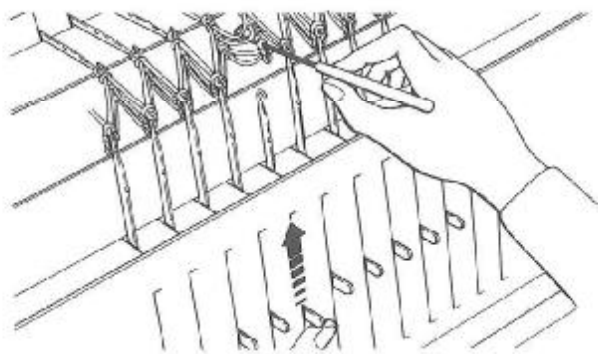
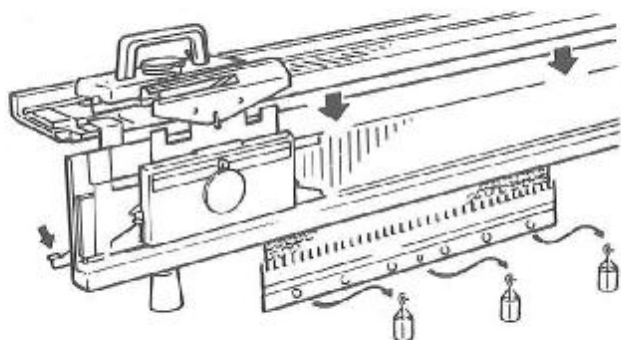
If the Point Cams are in use, move the Carriage until it passes the Cam.

4. Tilt Ribber Carriage towards you and move it to either end of the Needle Bed.

5. Check the stitches, and if stitches have moved behind the latches, replace them into the hooks using a Transfer Tool.

6. Align the working needles in B position and unravel the incomplete row as follows.
Hold the yarn and unhook it from Knitter and Ribber needle hooks by pulling it in the arrowed directions in a zigzagging manner.
7. Move the Carriage to the side with the yarn and press down the top of the Carriage.
8. Connect the Ribber Arm and Carriage to the Knitter Carriage. Continue knitting.

If the Row Counter, the Knit Contour and/or the Pattern Card is/are in use, refer to "If incorrectly knitted..." on pages 59 ~ 60 before knitting again.



If a stitch has dropped...

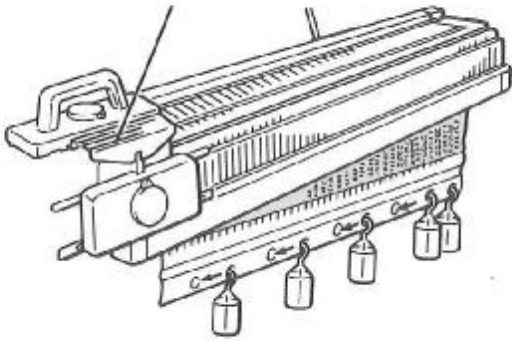
1. Remove Weights from Cast-on Comb as they may cause dropped stitch to run.
2. Depress Drop Levers and lower Ribber to middle position.
3. With Hook Tool, pick up dropped stitch and place it back on needle hook.
Then reform stitches by moving needle back and forth or by using Tappet Tool.
4. Tilt the Ribber Carriage towards you and raise Ribber to original position. Connect the Ribber Carriage to the Arm. Hook Weights on Cast-on Comb and align needles.

If stitches float...

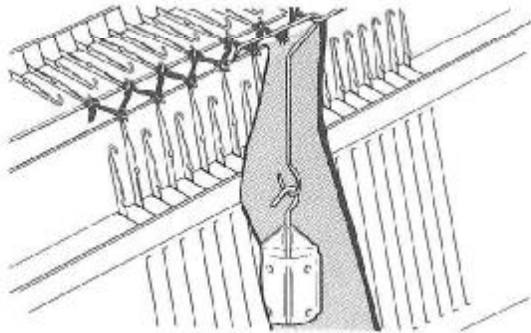
When stitches on full length float

- *Increase the number of Weights.
- *Check the yarn and Stitch Dials.

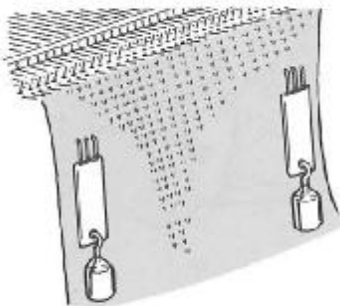
*Push the needles to C position every row using Needle Aligner.



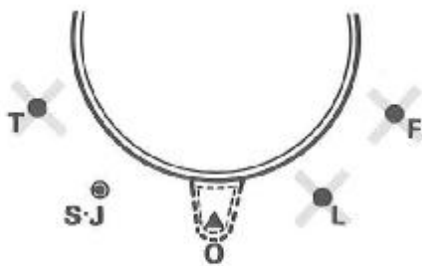
When stitches of half length of knitting float
 *Check if Cast-on Comb with Weights is suspended horizontally.



When edge stitches tend to float
 *Suspend Edge Weights when increasing multiple stitches.

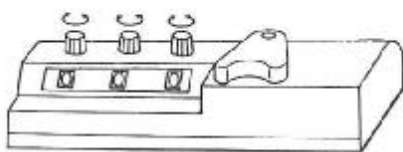
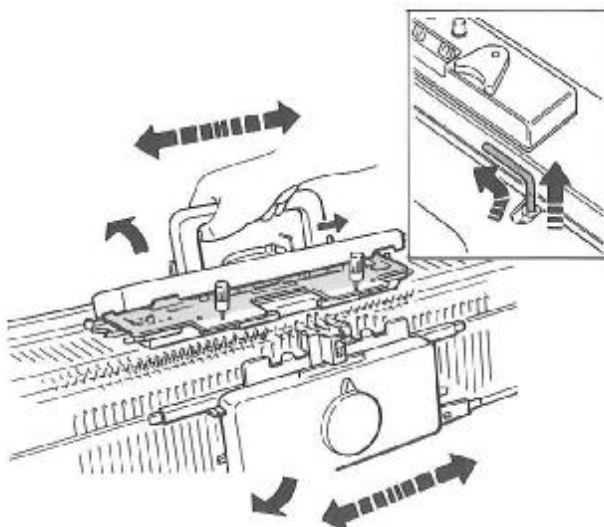
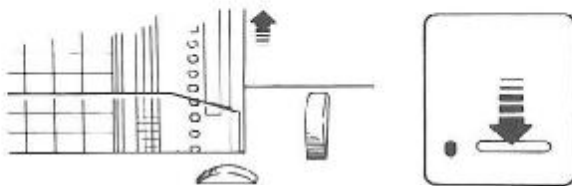
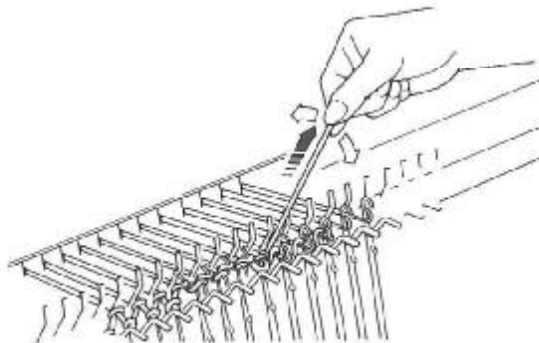
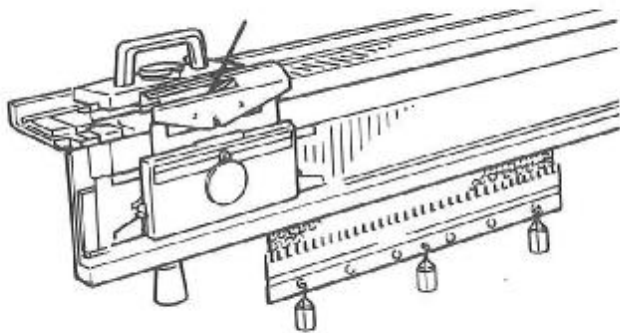


*Suspend Hanger Combs with Weights when partial knitting or knitting sectionally.



If the Ribber Arm does not fit on the Knitter Carriage properly...

1. Check the setting of the Cam Lever. It should be set at "O" before mounting the Ribber Arm, never at "F" (FAIR ISLE), "L" (PUNCH LACE) or "T" (TUCK).
2. Check if the top of the Knitter Carriage closed properly. The top of the Carriage must be down.



If incorrectly knitted...

(In case of knitting without the Pattern Card, follow the procedures 1, 2, 4, 5 below.)

1. Have the Carriage clear of the working needles and remove the yarn from the Yarn Feeder.

2. Refer to page 56, and unravel the incorrectly knitted rows.

IN CASE OF USING PATTERN SWITCH 3:

If an odd number of rows are unravelled, unravel an extra row making the total unravelled rows an even number.

IN CASE OF DOUBLE JACQUARD:

Unravel an even number of rows.

IN CASE OF DOUBLE JACQUARD USING PATTERN SWITCH 3:

As it takes 4 complete movements of the linked Carriages to knit one row of the Pattern Card, unravel a multiple of four rows.

3. Press Inspection Switch so the light comes on.

4. If the Carriage is on the side opposite the yarn, move it to the yarn side following the instructions below.

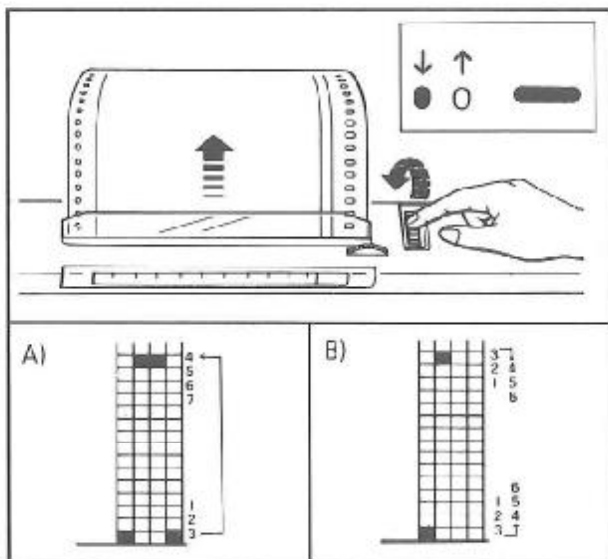
(1) Disconnect Ribber Carriage from Arm and move it to yarn side while tilting Carriage.

(2) Remove the Ribber Arm from the Knitter Carriage.

(3) Turn the right Feeding Tripper of the Knitter Carriage to the side to disengage it from the Row Counter. Move the Carriage to the yarn side using the Release Lever.

(4) Connect the Ribber Arm and Carriage to the Knitter Carriage. Reset the Carriages to the original settings.

5. Return the Row Counter by the same number as you have unravelled. (If the Knit Contour is in use, return the Pattern Paper, too.)



6. Return the Pattern Card by the same number of rows as unravelled in the direction opposite to that shown by the Feeding Direction Pointer.

A) When returning the Pattern Card, if you reach the first row of the pattern before returning the total rows required, turn the Card to the top row, and count the remaining rows from the top of the Pattern Card.

B) If the pattern is knitted in reverse from the top to the first row, count the rows in the direction reverse to that the Card advances.

Do not count the top or bottom end row twice.

IN CASE OF USING PATTERN SWITCH 3:

Return the Pattern Card by half the number of rows unravelled.

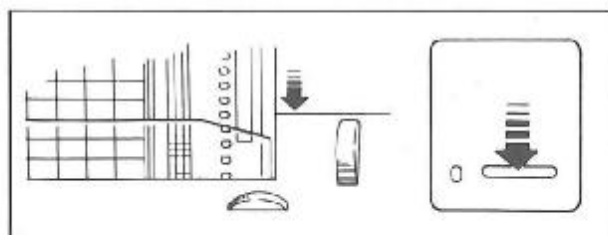
IN CASE OF DOUBLE JACQUARD:

Return the Pattern Card only half the number of rows unravelled. Since two lights of Switch 1 light on alternately every two rows, reset Pattern Switch 1 according to the number of rows unravelled.

IN CASE OF DOUBLE JACQUARD USING PATTERN SWITCH 3:

Return the Pattern Card only quarter the number of rows unravelled.

There will be no need to reset the Pattern Switch 1.



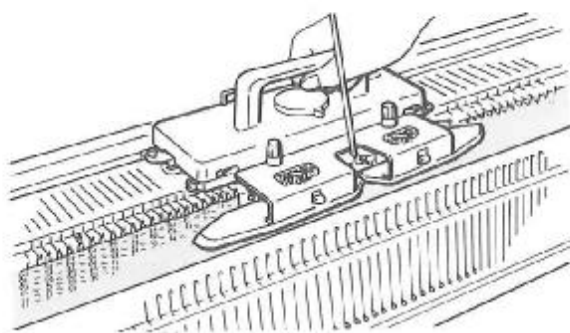
7. Press Inspection Switch so the light goes off. (The Pattern Card is fed downwards by 10 rows and the row to be knitted is read.)

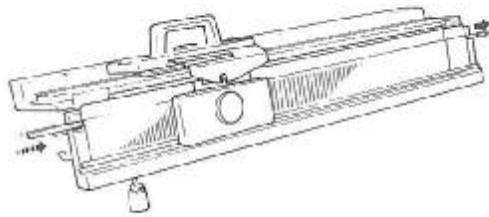
* Unless your Carriage has passed the second (last) Point Cam, there will be no need to touch the pattern mechanism or turn the Pattern Card back.

The only thing you have to do is to return the Carriage to the beginning of the row.

If you knit with the Knitter only with the Ribber connected...

1. Disconnect Ribber Carriage and Arm from Knitter Carriage.
2. Lower Ribber to its lowest position by depressing Drop Levers twice.
3. Fit Knitter Arm and start knitting.



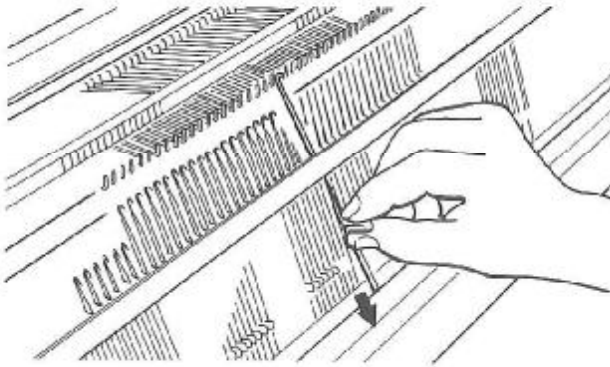


If a needle has been damaged...

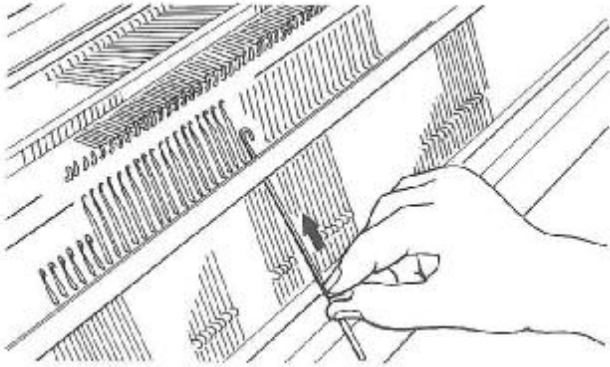
A Ribber needle can be replaced in the same manner as applied for replacing a needle on Knitter.

1. Pull Needle Retainer towards one end until it clears the needle to be replaced.

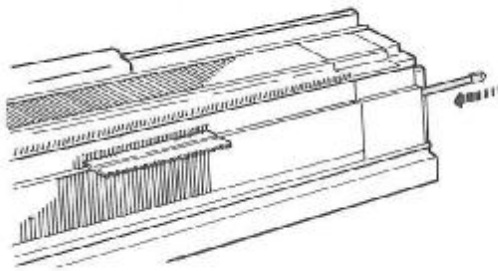
2. Push damaged needle to D position. Close its latch and lift it out of groove by lifting butt.



3. To replace a new needle, open its latch and insert it into groove with its hook first.



4. Depressing needles with Needle Pusher, insert Needle Retainer.



HELPFUL HINTS TO KNIT RIB STITCHES USING PATTERN CARDS

To change the pattern controls or the other settings of the machine while knitting

To change the pattern width or the Pattern Cards.

- 1 — Press the Inspection Switch so the light comes on.
- 2 — Reset the Pattern Width Indicator or exchange the Pattern Cards.
- 3 — Press the Inspection Switch so the light goes off.
- 4 — Start to knit.

To reset the Pattern Switches.

- 1 — Press the selected Pattern Switch so its light comes on or goes off.
- 2 — Start to knit.

To change the positions of the Needle-1 Cam and/or the Point Cams.

- 1 — Press the Inspection Switch so the light comes on.
- 2 — Replace the Needle-1 Cam and/or the Point Cams, and disconnect the Ribber Carriage from the Arm.
- 3 — Move the Knitter Carriage twice without knitting by pushing the Release Lever.
- 4 — Press the Inspection Switch so the light goes off.
- 5 — Connect the Ribber Carriage and start to knit.

IMPORTANT

In case of knitting Double Jacquard:

Place the Carriage on the right side and follow the procedures above.

Press the Pattern Switch-6 just before knitting Double Jacquard and make sure that the right light of the Pattern Switch-1 is on.

To knit Double Rib which looks like the same as Double Jacquard

- 1 — After the pattern in Double Jacquard has been completed, press the Inspection Switch so the light comes on.
- 2 — Set the Pattern Card at the blank position of the Card.
- 3 — Press the Inspection Switch to read the blank position.
- 4 — Press the Inspection Switch so the light comes on and continue to knit in the same manner as for the ordinary Double Jacquard.
If you knit Double Jacquard in combination with Double Rib, the knitting effect is different.

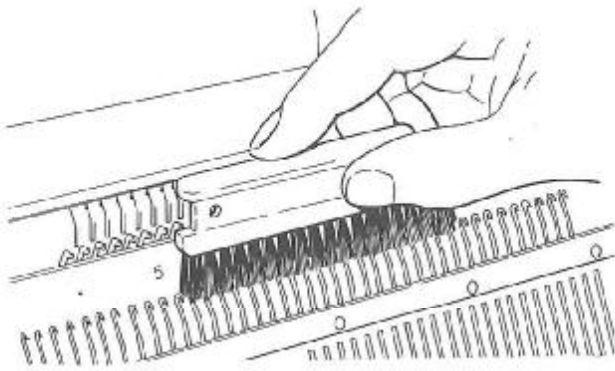
To knit Single Motif in Double Jacquard

- Set Point Cams and N1 Cam at the required positions and knit in the same manner as for ordinary Double Jacquard.
N.B. To change the positions of Point Cams and/or N1 Cam while knitting, refer the instructions opposite.
When resetting the left Point Cam there will be no need to move the Knitter Carriage twice without knitting.

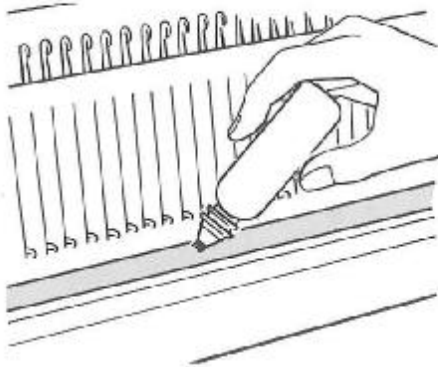
To knit Double Jacquard using Switch 3

- Press Switch 3 simultaneously with Switch 6 and knit in the same manner as for ordinary Double Jacquard.
- To use Pattern Switch 3 with its light on while knitting Double Jacquard, press Switch 3 so the light comes on with the Carriage on the right.

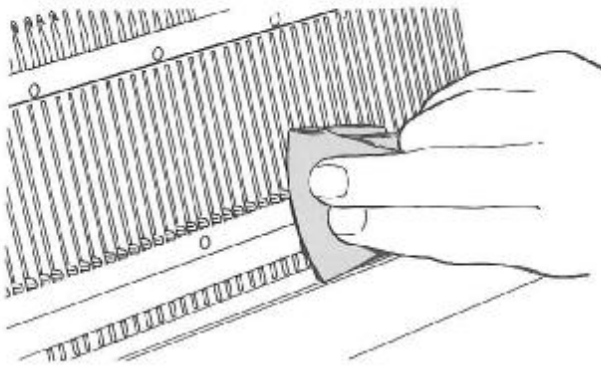
MAINTENANCE



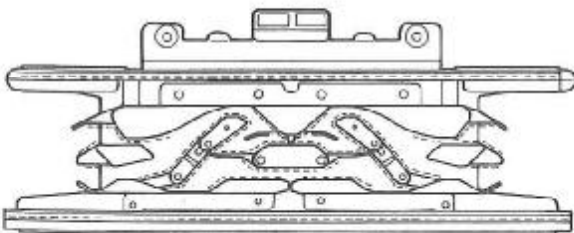
1. With Cleaning Brush remove lint or dust from Needle Bed.



2. Apply oil along the rail, front guide of Needle Bed.
Do not apply excessive oil.



3. Rub latch needle butts with oil damped cloth.



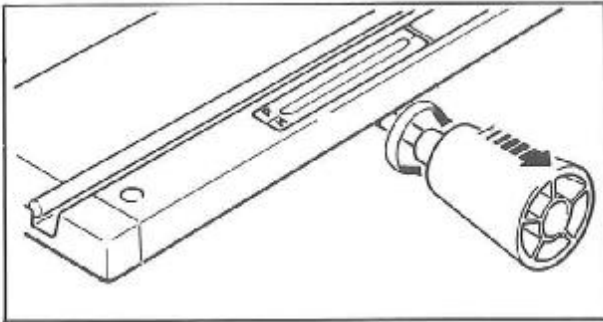
4. Wipe the places indicated by the dotted line with oil damped cloth and apply oil to Cams.

TO STORE THE MACHINE

Keep the machine away from.

1. Too much moisture.
2. Abnormal change of temperature.
3. Salt or chemicals.

REPACK RIBBER



Before disassembling the Ribber Bed from the Knitter, remove the Ribber Carriage from the Ribber Bed.

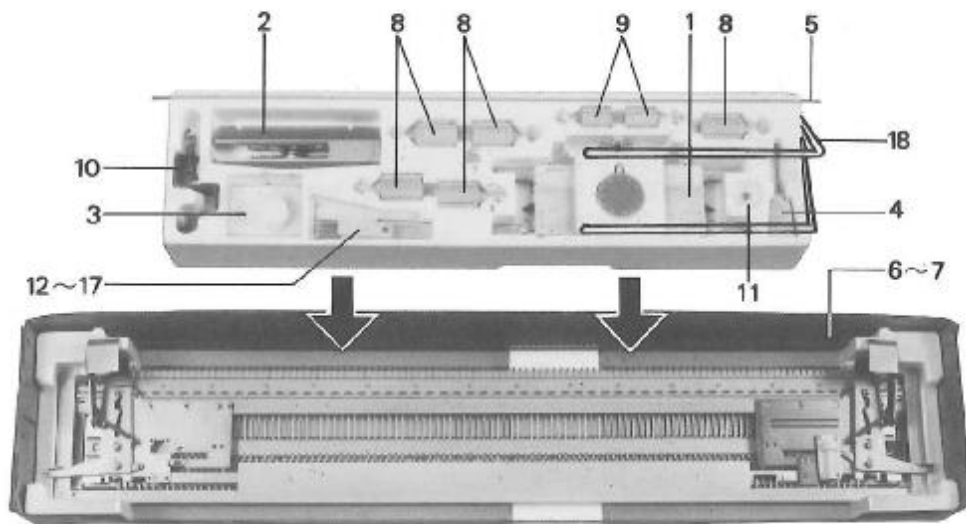
Rotate the Swing Handle to bring the pointer of the Swing Indicator to H-8 before pulling out the Swing Handle.

Place the styrofoam packing at each end of the carton box, and place the Ribber Bed with its rear side up on the packing properly.

Replace Ribber Carriage, Ribber Arm, and other standard accessories into the styrofoam packing as shown below.

Place the packing over Ribber Needle Bed.

Place the Yarn Rest on the packing as shown below.



- | | |
|--------------------------|--|
| 1. Ribber Carriage | 9. Edge Weight |
| 2. Ribber Arm | 10. Ribber Clamp |
| 3. Needle Aligner | 11. Ribber Tuck Brush |
| 4. Swing Handle | 12. Needle Pusher |
| 5. Close Knit Bar | 13. Side Hanger |
| 6. Cast-on Comb (long) | 14. Hanger Comb |
| 7. Cast-on Comb (short) | 15. Hook Tool |
| 8. Ribber Weight (large) | 16. Double-eye Transfer Tool |
| | 17. Spare Needle Envelope (inc. 2 needles) |
| | 18. Yarn Rest |