



INSTRUCTION BOOK

RIBBING ATTACHMENT

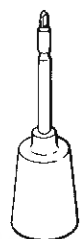
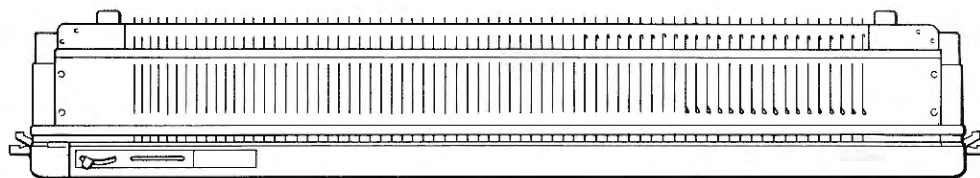
SRJ 70 / FRJ 80

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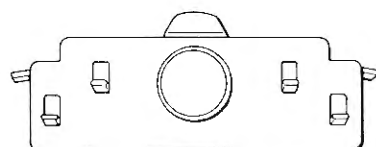
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MACHINE AND ACCESSORIES

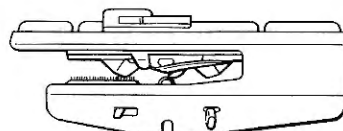
RIBBER NEEDLE BED



SWING HANDLE

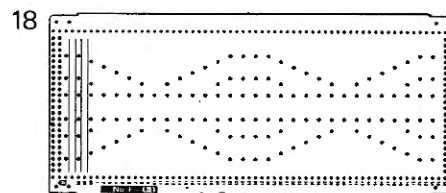
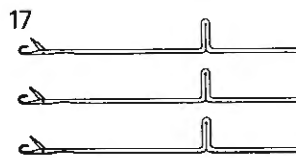
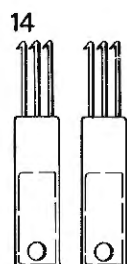
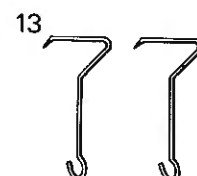
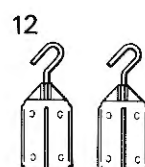
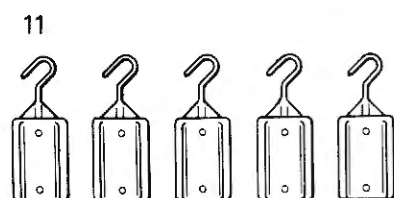
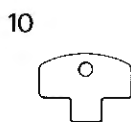
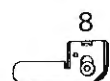
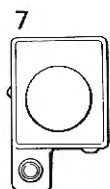
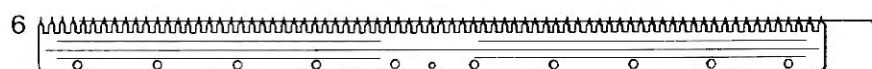
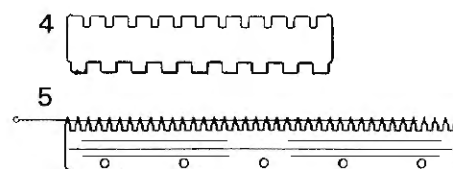
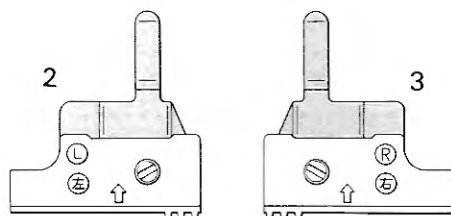
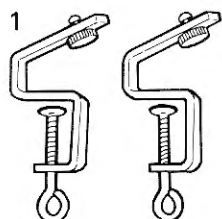


RIBBER CARRIAGE



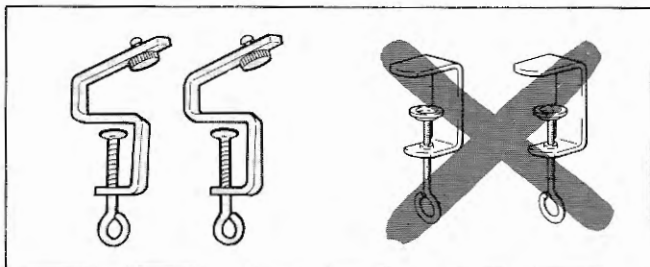
RIBBER ARM

ACCESSORIES



1. Ribber Clamp (2)
2. Auxiliary Piece (L)
3. Auxiliary Piece (R)
4. Needle Pusher (2/2-2/1)
5. Cast-on Comb (short)
Cast-on Wire (short)
6. Cast-on Comb (long)
Cast-on Wire (long)
7. P Carriage
8. P Presser
9. Close Knit Bar
10. Screw Driver
11. Ribber Weight (5)
12. Edge Weight (2)
13. Side Hanger (2)
14. Hanger Comb (2)
15. Double-eye Transfer Tool
16. Hook Tool
17. Spare Needle (3)
18. Punch Card (10)

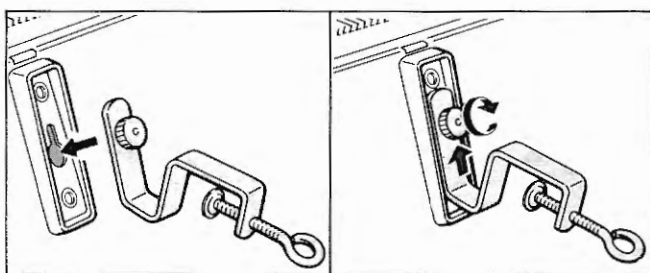
SETTING THE RIBBER ON THE KNITTER



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

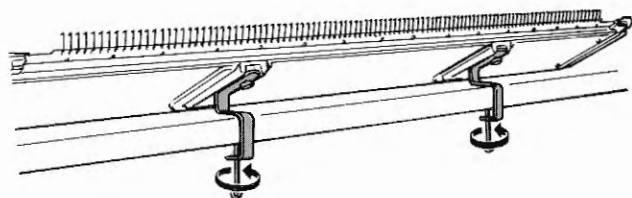
① Take Ribber Clamps and turn screws in arrowed direction as far as they go.

DO NOT USE KNITTER CLAMPS.



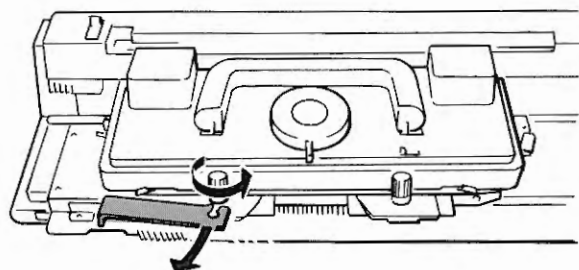
② Raise front of Knitter and insert screw head into keyhole slot.

③ Pull Clamps upwards and tighten screws.



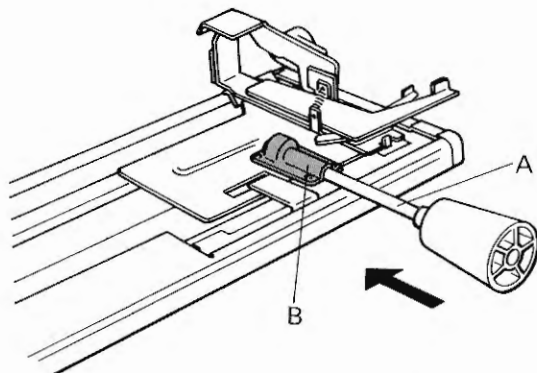
④ Place Clamps on table edge and push them backwards until they are against the table. Tighten Clamps firmly by turning screws in arrowed direction.

DO NOT OVER TIGHTEN.



2. Remove Carriage Fastener.

DO NOT ATTACH KNITTER ARM TO CARRIAGE. LACE CARRIAGE MUST NOT BE USED WITH RIBBER.



3. Insert Swing Handle shaft "A" into Swing Bearing "B" at the back of the left side of Ribber.

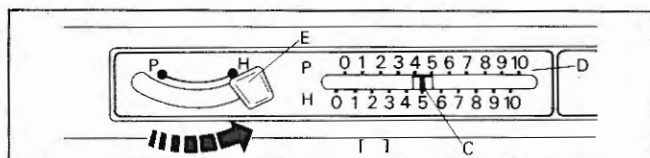
Push and twist handle until it clicks into position.

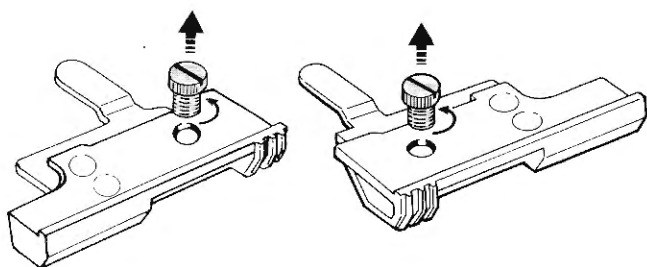
Ensure that Pointer "C" on Swing Indicator "D" moves when turning Handle to the left and the right.

Set Half-Pitch Lever "E" to **H**.

By turning Handle, set Indicator Pointer "C" to 5 on lower scale **H**.

Note: When Half-Pitch Lever "E" is set to **P**, read upper **P** scale. When Half-Pitch Lever is set to **H**, read lower **H** scale.

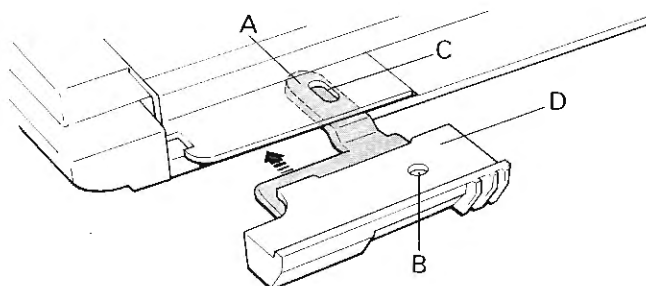




4. Take out Auxiliary Pieces, marked (L) and (R), and remove screws from them.

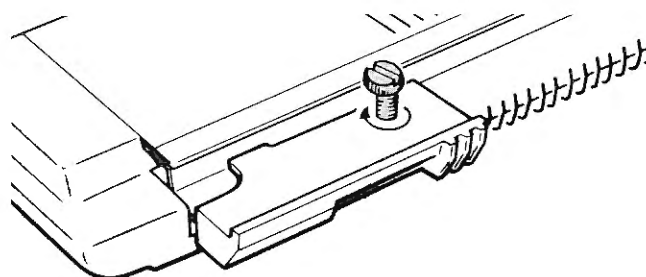
To MOD.700/600 users:

Remove Ribber Holders and Auxiliary Plates if previously installed, referring to the Insertion.



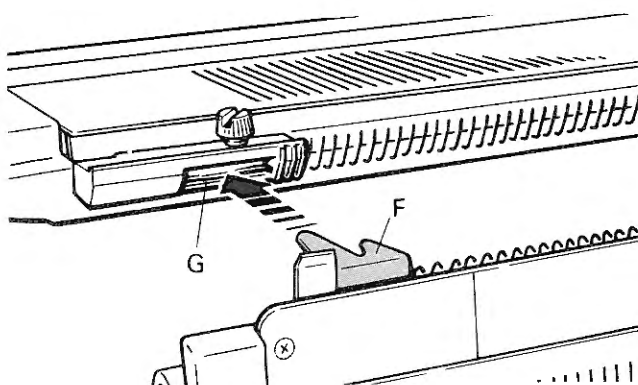
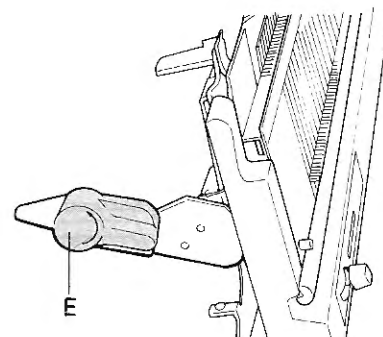
5. Insert finger "A" of Auxiliary Piece into underneath the front end of Knitter, (L) for left and (R) for right respectively, and push until plastic part "D" of Auxiliary Piece covers front edge of Bed.

Ensure hole "B" of Auxiliary Piece corresponding with slot "C" on Bed.



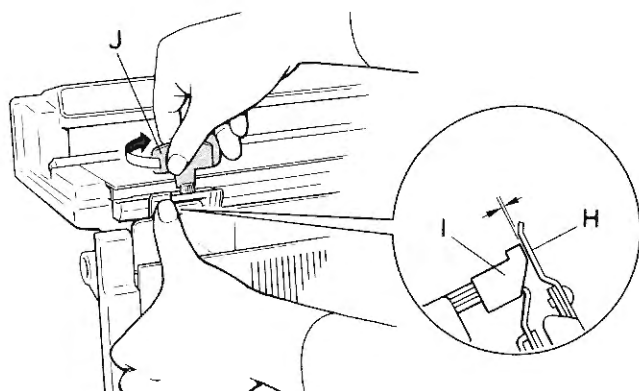
6. Insert Ribber Joiner Screws into Auxiliary Pieces and fix loosely.

7. Lay down both Push-up Cams "E" towards you.



8. Hold Ribber with both hands and insert Ribber Joiner "F" on both sides into slots of Auxiliary Pieces "G", placing both Ribber Joiner Supports on the table. It will be easier to insert the right side first.

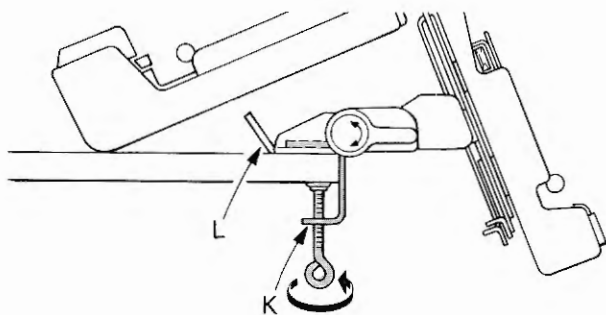
Ensure Ribber Needle Bed is at its highest position. If not, push the Bed with both hands as far up as it goes.



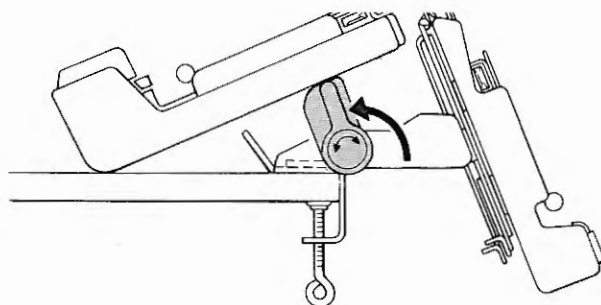
9. Fitting Ribber Stopper "H" to Auxiliary Piece "I" snugly, fasten both screws with Screw Driver "J".

CHECK POINT

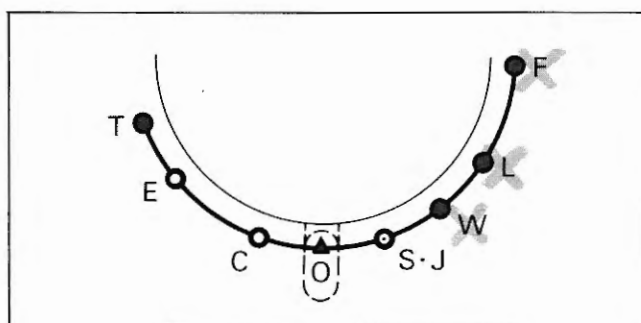
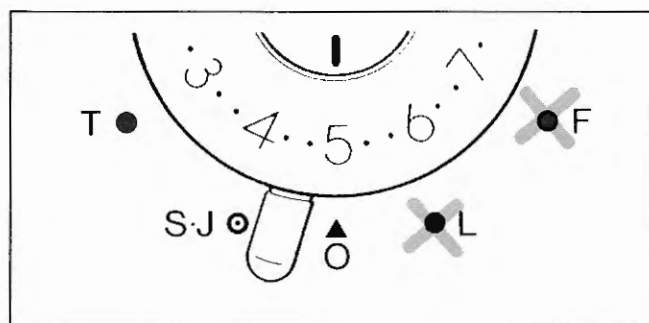
When joining Ribber to Knitter has been finished, check the positioning of Ribber against Knitter by pushing up several needles on both beds. The needles on both beds must confront with each other with Half Pitch Lever set at "P".



10. With Knitter Clamps "K", secure foot of Ribber Joiner Supports "L" to the table.



11. Raise Push-up Cams in arrow direction to support Knitter.



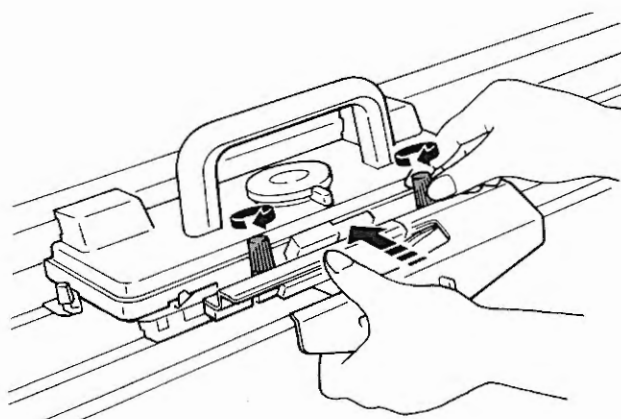
12. Set Cam Lever on Knitter Carriage to Stockinet.

IMPORTANT

Cam Lever should never be set to FAIR ISLE (F) or PUNCH LACE (L) when attaching Ribber Arm to Knitter Carriage.

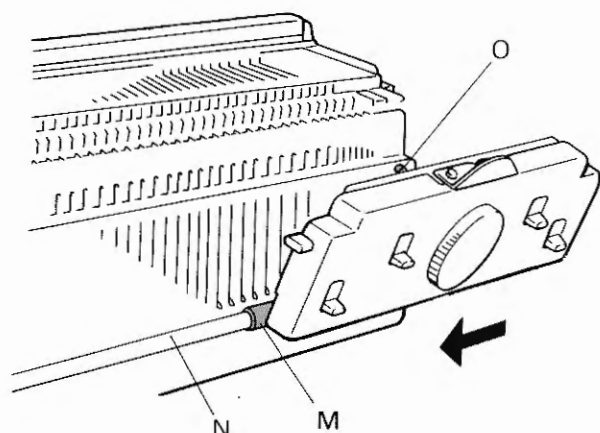
13. Loosen both Arm Nuts of Knitter Carriage.

Take Ribber Arm and slide it under two Arm Nuts. Push Ribber Arm as far back as it goes and tighten Arm Nuts firmly by turning them in arrow direction.



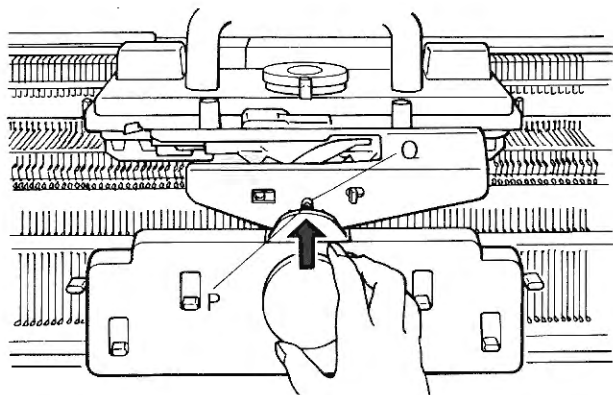
IMPORTANT

Ensure that Arm Nuts fit correctly into cutout of Ribber Arm. Do not remove or attach Ribber from/to Knitter with the Ribber Arm on Knitter Carriage.



14. Take Ribber Carriage and slide Pipe "M" on the Ribber Rail "N" from the right side.

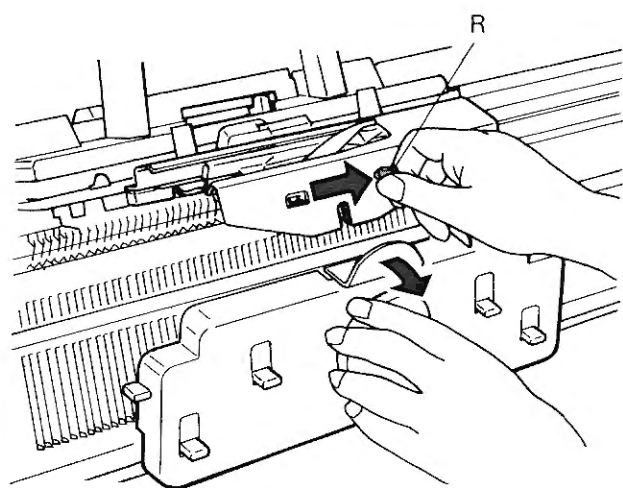
Tilt the Ribber Carriage towards you to clear the Stopper Pin "O" on Ribber Needle Bed.



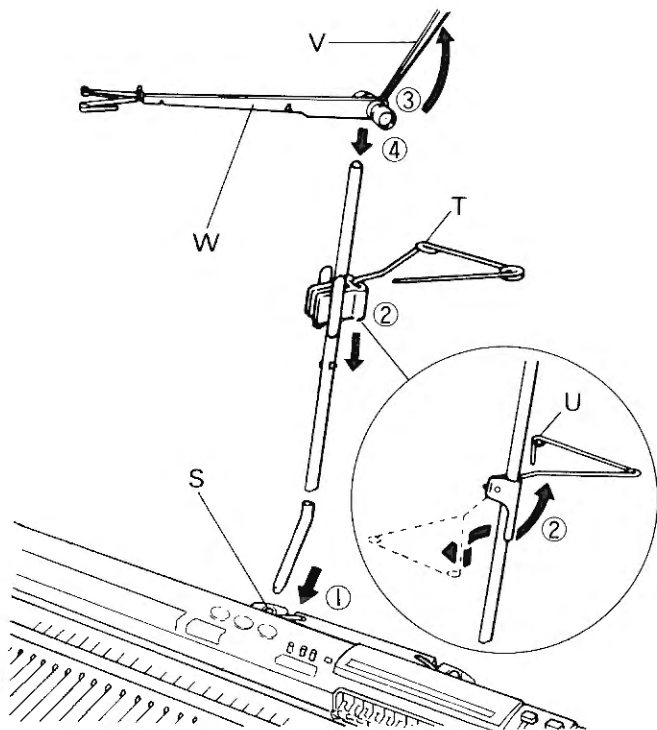
15. Slowly move the Ribber Carriage towards the Knitter Carriage and tilt the Carriage to position it in front of the Ribber Arm. Press Link Pin "P" into slot "Q" of Ribber Arm until it clicks into position.

CHECK POINT

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



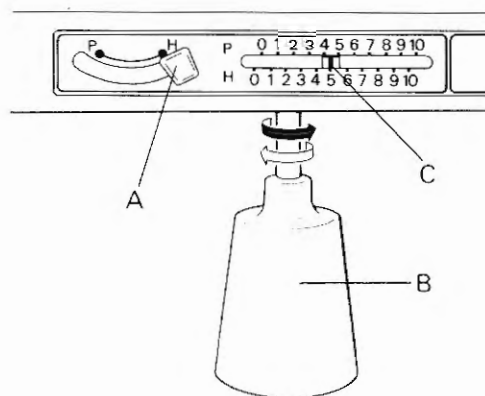
- To release Ribber Carriage from Ribber Arm, push Link Knob "R" towards right and tilt the Carriage.



16. Assemble Auto-Tension and Yarn Rod.

- ① Insert the bent end of Yarn Rod into either bracket socket "S" 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 *If you have "T" type of Tension Guide, align the notch of the Yarn Rod with the groove of the Tension Guide and slide the plastic part down until it locates on the metal "ears".
*If you have "U" type of Tension Guide turn it to the back of the Yarn Rod.
- ③ Turn Tension Springs "V" upwards till they click into position.
- ④ Place the Auto-Tension "W" on the top of the Yarn Rod.

RIBBER NEEDLE BED



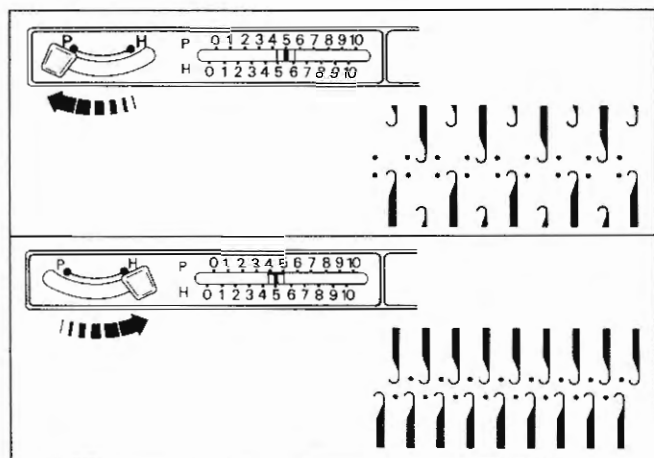
Half-Pitch Lever

There are two setting positions (**P** or **H**) for Half-Pitch Lever "A". Moving the Half-Pitch Lever changes the position of the ribber needles in relation to the knitter needles.

Swing Handle

By rotating Swing Handle "B" to the right or left, Ribber Needle Bed can be moved to either right or left.

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



Swing Indicator

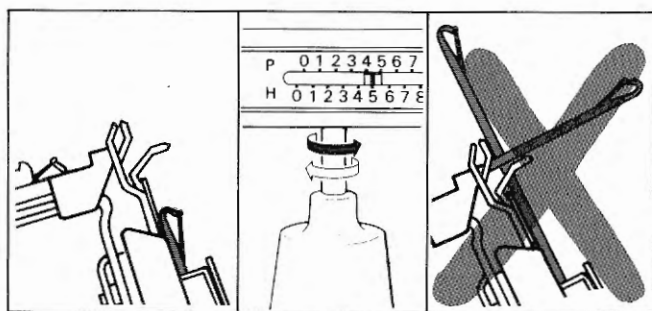
Swing Indicator "C" shows position of Ribber Needle Bed against Knitter Needle Bed.

P Scale

When the Half-Pitch Lever is set at **P** position, the needles on the Ribber are directly opposite Knitter needles. This scale is used when every alternate needle is used.

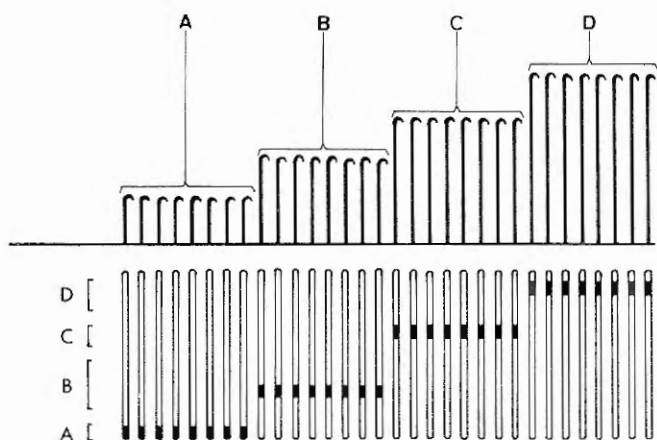
H Scale

When the Half Pitch Lever is set at **H** position, the needles on the Ribber are shifted by half a needle pitch. Ribber needles are in the centre of two Knitter needles. This scale is used when every needle is used.



IMPORTANT

Do not turn Swing Handle while needles are in C or D position on both beds.

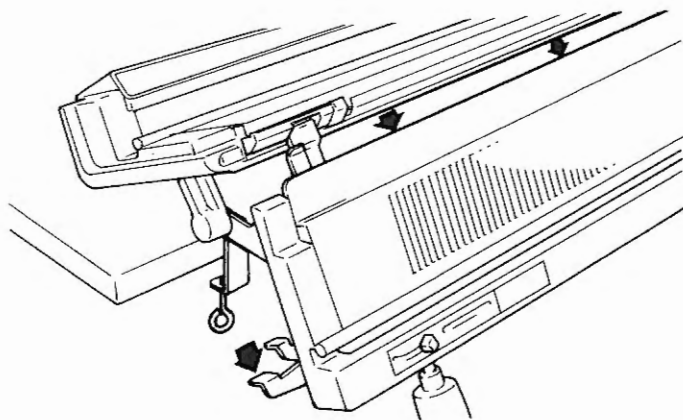


Needle Positions

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

These four needle positions are used 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. They do not knit when Russel Levers are at — position.)

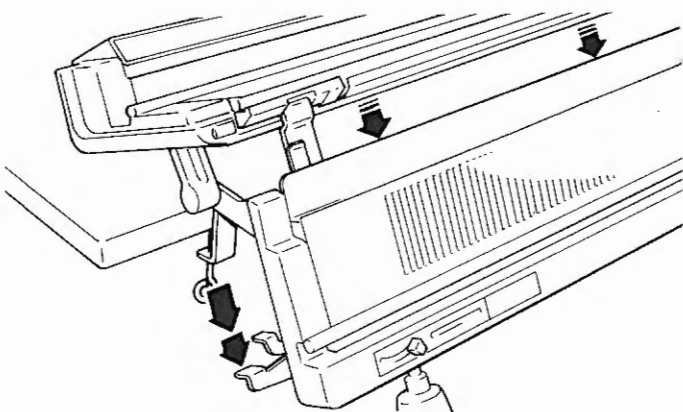


Drop Levers

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

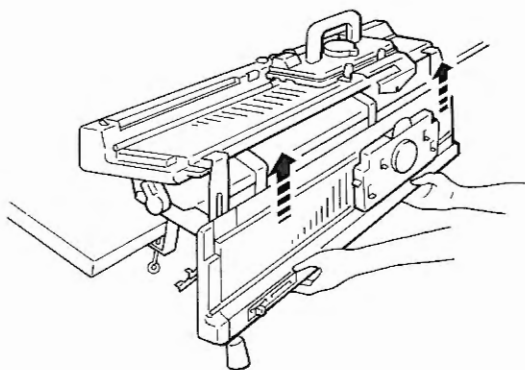
Middle position

Depress Drop Levers on both sides once, and Ribber Bed is lowered to its middle position. This position is used when picking up stitches.

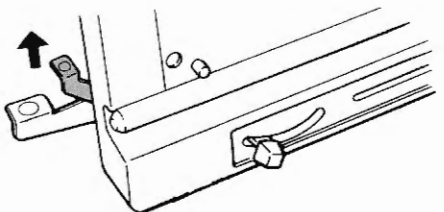
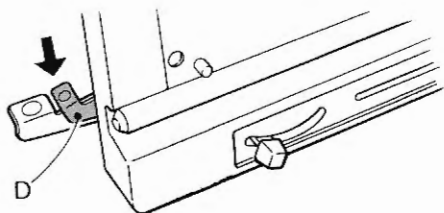


Lowest position

Depress Drop Levers twice, and Ribber Bed moves to its lowest position. This position is used when knitting only on Knitter.



To restore Ribber Bed to knitting position, tilt the Ribber Carriage towards you and push up both ends of the Ribber simultaneously. Knit Rib stitches in this position.



Pile Levers

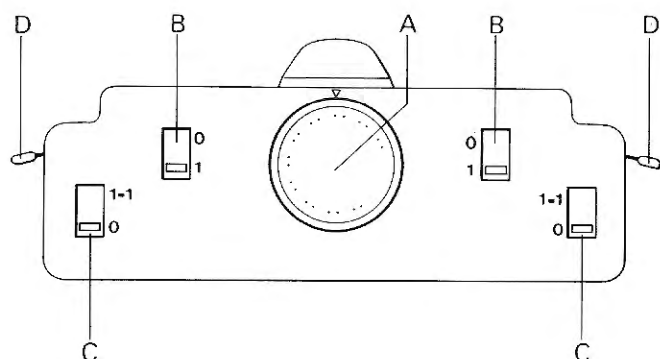
Pile Levers are located above Drop Levers and used to broaden the gap between Knitter and Ribber.

For pile knitting, press down the Pile Levers "D" until they click.

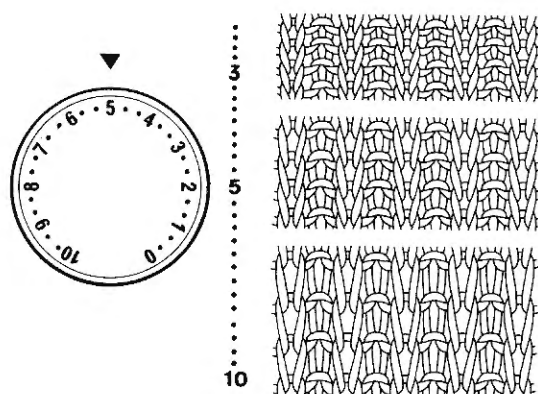
For normal knitting, ensure both Pile Levers are in upper position.

To restore the levers to upper position, lift them with your fingers.

RIBBER CARRIAGE



- A — Stitch Dial
- B — Set Levers
- C — Select Levers
- D — Russel Levers



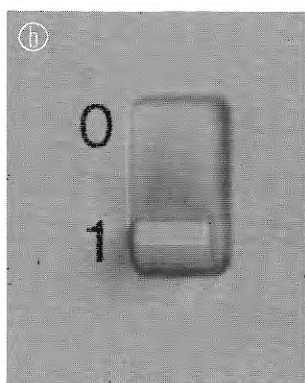
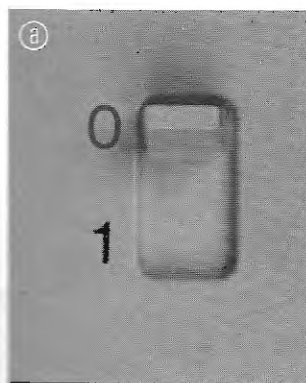
Stitch Dial

Controls stitch size.

Set a selected number or dot to ▼ mark.

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

According to the thickness of yarn to be used, select proper setting of Stitch Dial. (Refer to pages 16 ~ 17)



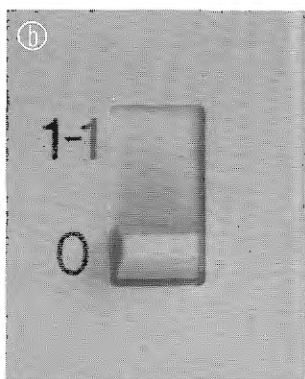
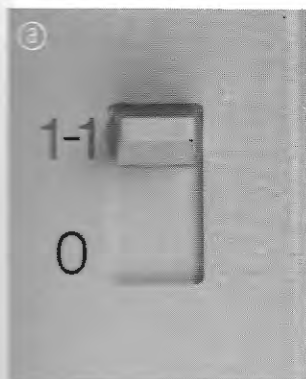
Set Levers

Control needles in "B" position.

- (a) NON KNITTING POSITION, needles in B position will not knit.
- (b) KNITTING POSITION, needles in B position will knit.

Left Lever works when the Carriage moves to the left.

Right Lever works when the Carriage moves to the right.



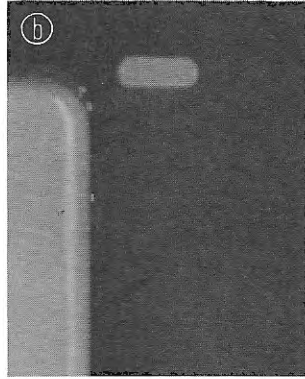
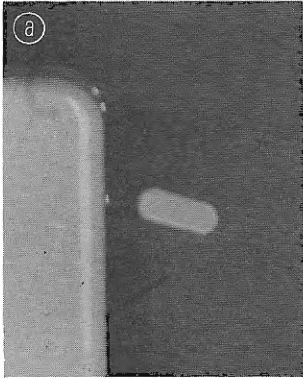
Select Levers

Used to knit Double Jacquard or Multi Coloured Jacquard.

- (a) 1-1.....Every alternate needle knits Slip Stitch
- (b) 0.....Every needle knits Stockinet

Left Lever works when the Carriage moves to the left.

Right Lever works when the Carriage moves to the right.



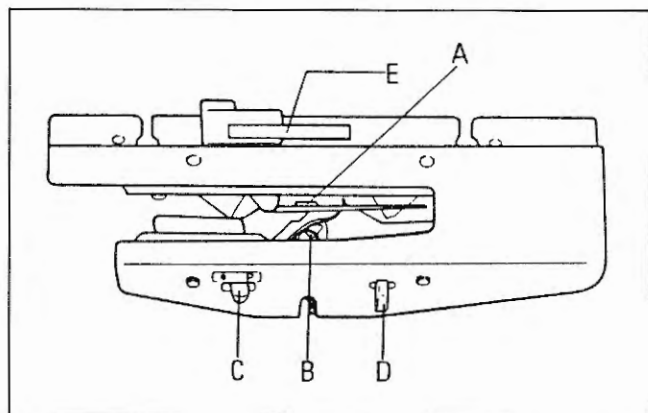
Russel Levers

Control needles in "D" position.

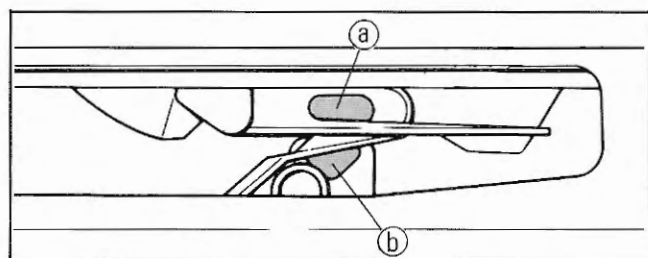
- Ⓐ NON KNITTING POSITION, needles remain in D position.
- Ⓑ KNITTING POSITION, needles in D position will knit back to B position.

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

RIBBER ARM

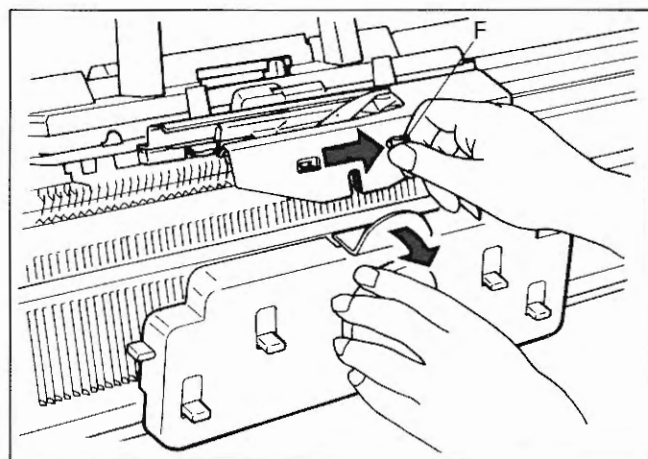


- A — Main Yarn Feeder
- B — Auxiliary Yarn Feeder
- C — Auxiliary Yarn Feeder Lever
- D — Link Knob
- E — Driving Lever



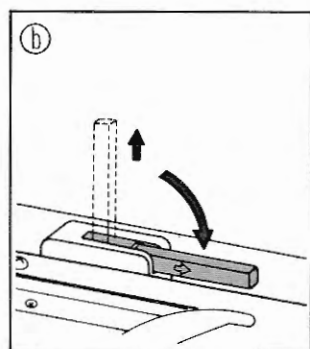
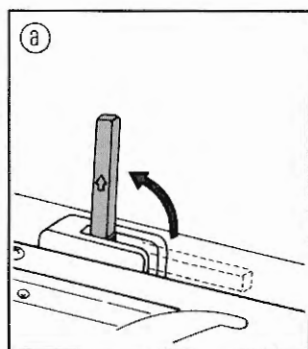
Yarn Feeders

- (a) Main Yarn Feeder, used for ordinary rib stitches.
- (b) Auxiliary Yarn Feeder, used with Main Yarn Feeder in Pile Knitting only.



Link Knob

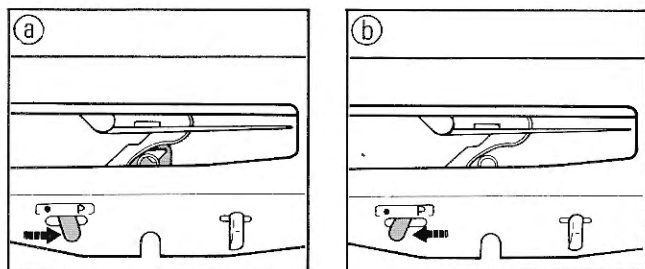
Push the Knob "F" to the right to disconnect Ribber Carriage.



Driving Lever

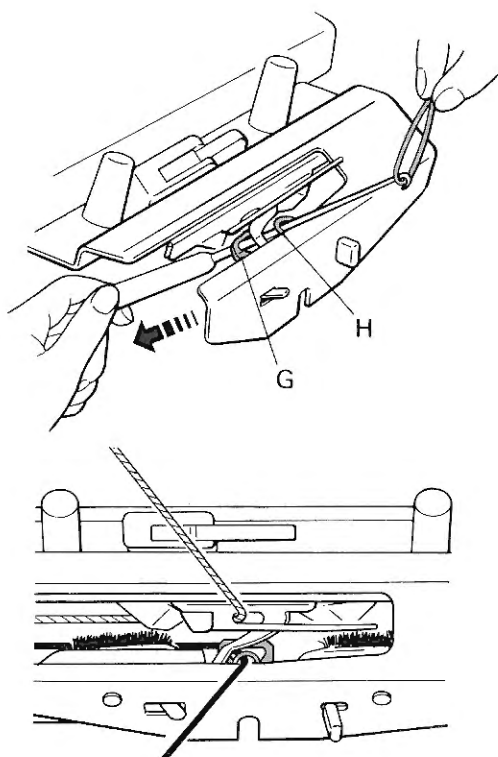
- (a) When knitting with Yarn Changer (option), raise this lever.
- (b) When knitting without Yarn Changer, keep this lever in the rest position.

To lay down, slightly pull it upwards with your fingers and then lay it down.



Auxiliary Yarn Feeder Lever

- Ⓐ In Pile Knitting only, set this lever to P mark.
- Ⓑ In ordinary knitting, be sure to set this lever to ● mark.



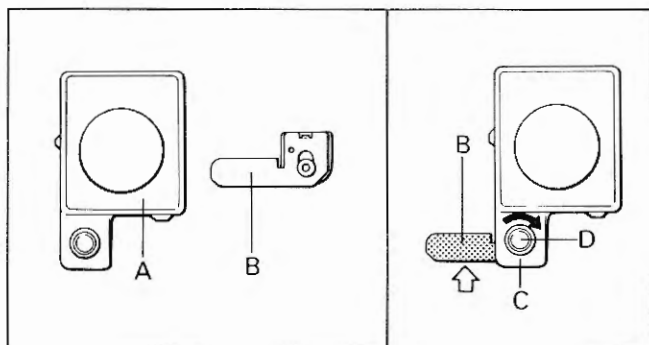
How to thread Auxiliary Yarn Feeder

1. Remove Ribber Carriage from Arm using Link Knob, and lower the Ribber Bed to the middle position by depressing Drop Levers once.
2. Move the Carriage to the left end of the Needle Bed until the Yarn Feeder is free of the Bed. (Do not remove Carriage from Bed.)
3. Make a loop of yarn and hold it above Auxiliary Yarn Feeder.
4. Insert Hook Tool from underneath through Auxiliary Yarn Feeder "G" and Yarn Guide "H", then catch yarn loop.
5. Pull Hook Tool downwards threading yarn through Yarn Guide and Auxiliary Yarn Feeder.
6. Insert the yarn between both Needle Beds, tie the yarn end to hook of Weight on Cast-on Comb and restore the Ribber Bed to its original position.
7. Connect Ribber Carriage to Arm.

Ensure Ribber needles are correctly lined up in B position.

Always set Auxiliary Yarn Feeder Lever to ● mark except when Pile Knitting.

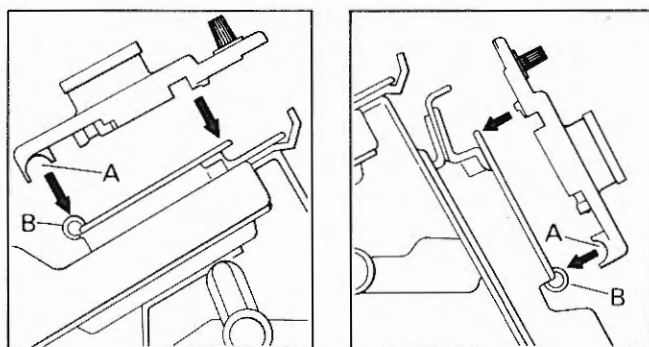
P CARRIAGE



In Drive Lace, use P Carriage "A" without P Presser "B".

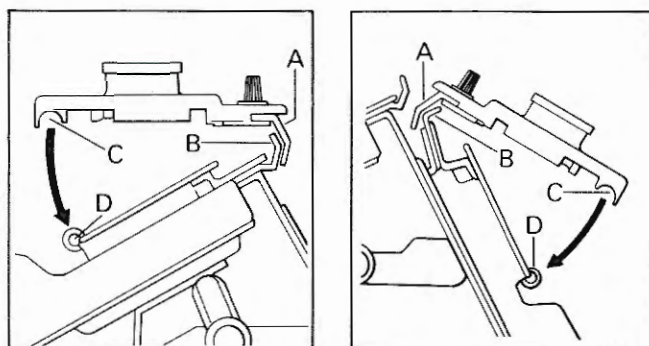
In Pile Knitting, use P Carriage "A" with P Presser "B" attached.

Place P Presser "B" underneath finger "C" and secure with fastening screw "D".



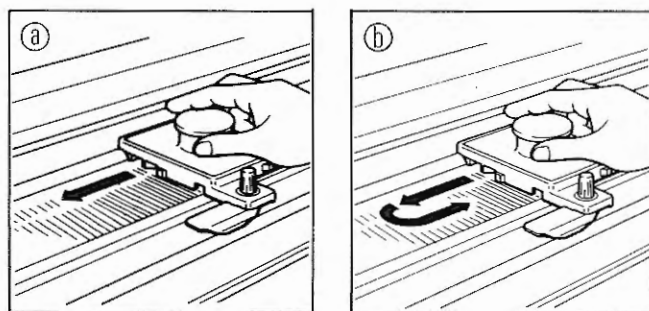
WITHOUT P PRESSER

Place P Carriage straight onto Knitter or Ribber Needle Bed ensuring rail guide "A" fits correctly on rail "B".



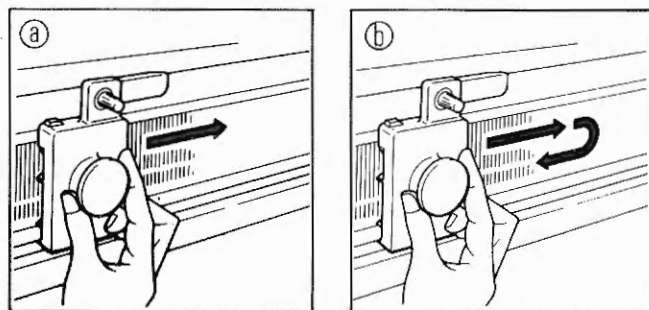
WITH P PRESSER ATTACHED

Place P Presser "A" over sinker posts "B" first, then place rail guide "C" onto rail "D".



On Knitter always start from the right side.

- (a) Move P Carriage once (right → left).
Stitches will be behind latches and needles are aligned in C position.
- (b) Move P Carriage twice (right → left → right).
Stitches have slipped off needles.



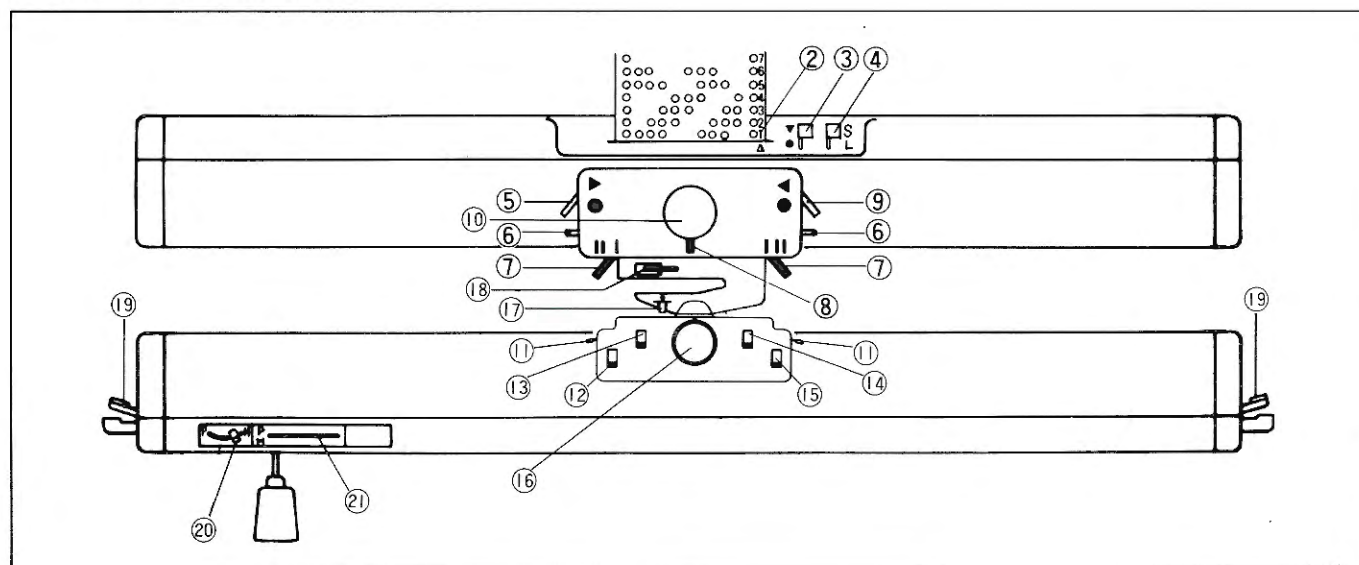
On Ribber always start from the left side.

- (a) Move P Carriage once (left → right).
Stitches will be behind latches and needles are aligned in C position.
- (b) Move P Carriage twice (left → right → left).
Stitches have slipped off needles.

OPERATION TABLE

For Cast-on and main knitting, Operation Table gives settings and operation of machine.

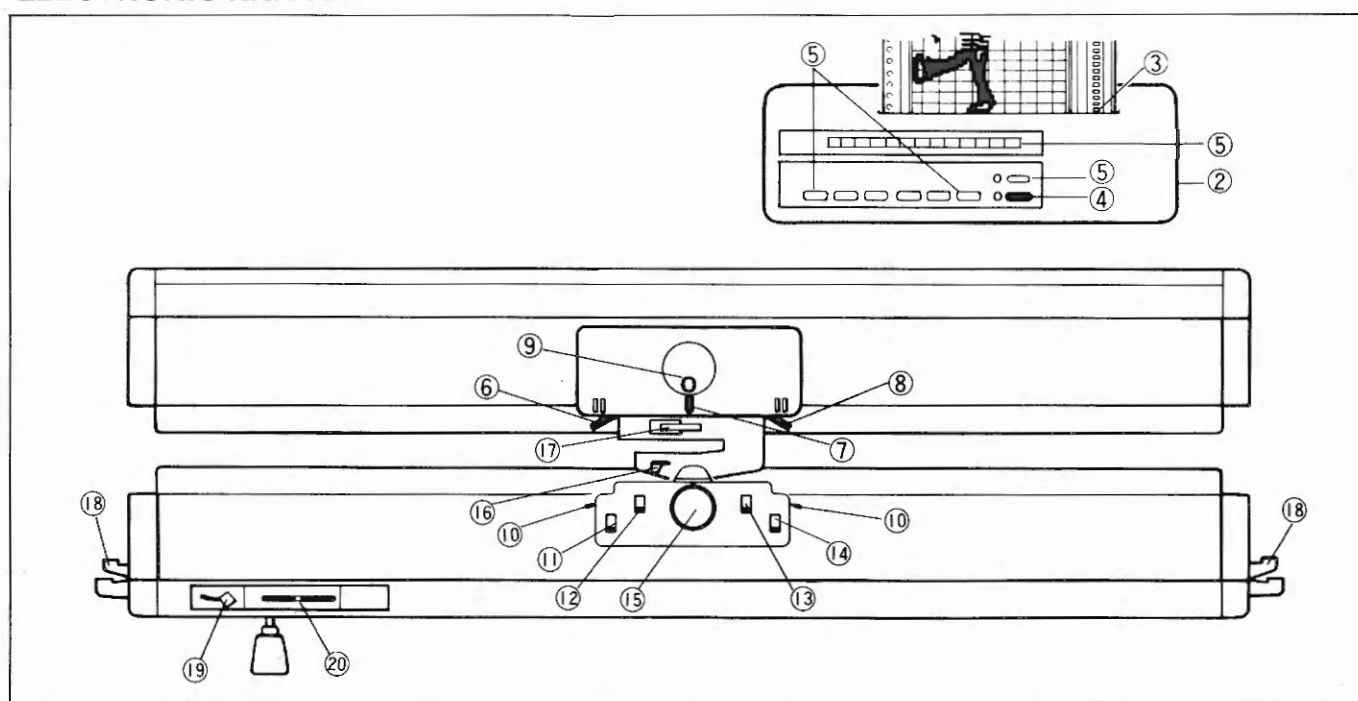
PUNCH CARD KNITTER



	①	Procedural order of the Operation Table	
PATTERN PANEL	②	Pattern Row Number	↓ — Set the Punch Card and lock at 1
	③	Stop Knob	
	④	L Knob	
	⑤	Side Lever (left)	
KNITTER CARRIAGE	⑥	Intarsia Levers (left & right)	Always set at 1 when using Ribber (Mod. 700/600)
	⑦	Russel Levers (left & right)	Always set at II, except when partial knitting
	⑧	Cam Lever	
	⑨	Side Lever (right)	
	⑩	Stitch Dial	Refer to NOTE on page 15 and tables on pages 16 ~ 17.
	⑪	Russel Levers (left & right)	Always set at =, except when partial knitting
RIBBER CARRIAGE	⑫	Select Lever (left)	
	⑬	Set Lever (left)	
	⑭	Set Lever (right)	
	⑮	Select Lever (right)	
	⑯	Stitch Dial	Refer to NOTE on page 15 and tables on pages 16 ~ 17.
	⑰	Auxiliary Yarn Feeder Lever	
RIBBER ARM	⑱	Driving Lever	→ — resting position ↑ — working position
	⑲	Pile Levers (left & right)	↑ — upper position ↓ — lower position
RIBBER NEEDLE BED	⑳	Half-Pitch Lever	
	㉑	Swing Indicator	
	㉒	Arrow mark indicates knitting direction of Carriage and number shows the number of rows required to be knitted.	

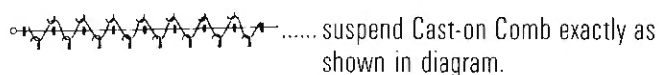
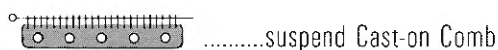
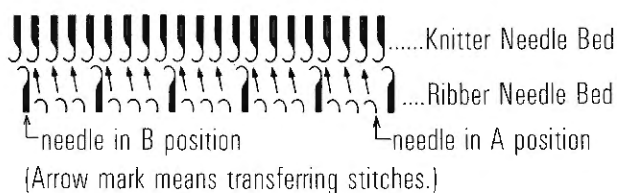
①	②	③	④	⑤	⑧	⑨	⑩	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒
①	1	●	S	●	O	●	O	0	1	1	0	0	●	→	↑	P	5	
2																		→
3																		
4				▼	S				0									→→→ 3
②				●	O		2		1			2						→→

ELECTRONIC KNITTER



	①	②	③	④	⑥	⑦	⑧	⑨	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑
①	1	■		◎	11	O	11	O	0	0	1	1	0	0	●	→	↑	P	5
2																			→
3																			
4																			→→→ 3
②						O		2		1			2						→→

	①	Procedural order of the Operation Table	
PATTERN CONTROLLER	②	ON-OFF Switch	■ — Turn ON the Pattern Controller
	③	Pattern Row Number	↓ — Set the Pattern Card
	④	Inspection Switch	● — Light is ON ◎ — Light is OFF
	⑤	Pattern Controls	Set Pattern Controls (Pattern Width, Direction Switch and Pattern Switches) as instructed.
	KNITTER CARRIAGE	⑥	Russel Lever (left)
⑦		Cam Lever	
⑧		Russel Lever (right)	
⑨		Stitch Dial	Refer to NOTE below and tables on pages 16 ~ 17.
RIBBER CARRIAGE	⑩	Russel Lever (left & right)	Always set at = , except when partial knitting.
	⑪	Select Lever (left)	
	⑫	Set Lever (left)	
	⑬	Set Lever (right)	
	⑭	Select Lever (right)	
	⑮	Stitch Dial	Refer to NOTE below and tables on pages 16 ~ 17.
RIBBER ARM	⑯	Auxiliary Yarn Feeder Lever	
	⑰	Driving Lever	➡ — resting position ⬆ — working position
RIBBER NEEDLE BED	⑱	Pile Levers (left & right)	⬆ — upper position ⬇ — lower position
	⑲	Half-Pitch Lever	
	⑳	Swing Indicator	
	㉑	Arrow mark indicates knitting direction of Carriage and number shows the number of rows required to be knit.	



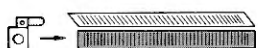
Move P Carriage without P Presser on Knitter to the left and back.



Move P Carriage without P Presser on Ribber to the right.



Move P Carriage with P Presser on Knitter to the left and back.



Move P Carriage with P Presser on Ribber to the right.

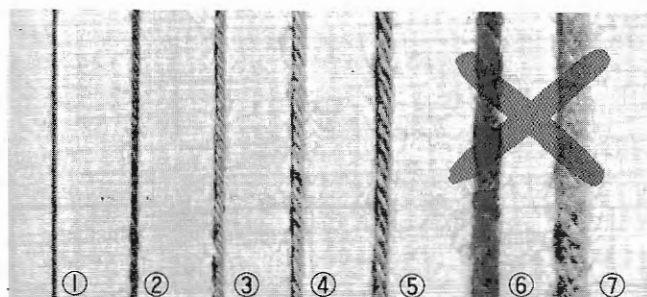
NOTE for Stitch Dial:Stitch Dial number for 4.5mm pitch (standard gauge) machines

2(3)Stitch Dial number for 3.6mm pitch (fine gauge) machines

2Stitch Dial number for both 4.5mm pitch and 3.6mm pitch machines

YARN AND STITCH DIALS

(4.5mm pitch machine)

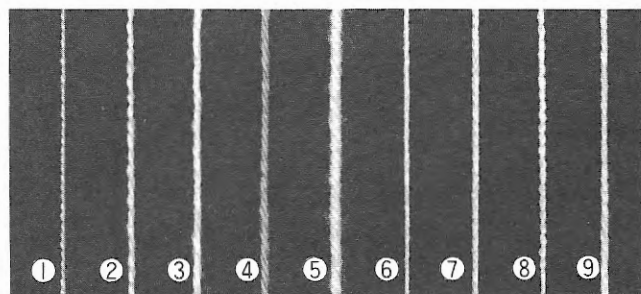


Stitch Dial setting will vary according to thickness of yarn and type of knitting. Picture shows actual size of yarns. Very thick yarns (⑥, ⑦) are not suitable for Rib Knitting. The table below shows the recommended Stitch Dial settings for each type of yarn and type of knitting.






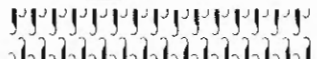
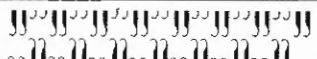
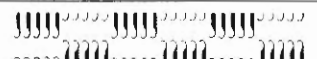

TYPE OF YARN		thin ① ②		light ③ ④		medium ④ ⑤		thick ⑤ ⑥	
STITCH DIAL									
CAST-ON (every needle selection)	initial row	0	0	0	0	0	0	—	—
	subsequent rows	0	0	1	1	2	2	—	—
CAST-ON (every other needle selection)	initial row	—	—	0	0	0	0	0	0
	subsequent rows	—	—	0	0	0	0	2	2
DOUBLE RIB		0 – 1		1 – 2		3 – 4		—	
K1.P1. RIB		—		0 – 1		2 – 3		6 – 7	
K2.P2. RIB		—		2 – 3		3 – 4		6 – 7	
* WIDE RIB		—		3-4	5-6	4-5	6-7	6-7	8-9
*TUBULAR KNITTING		2-3	4-5	4-5	6-7	5-6	7-8	—	

* Set the Ribber Stitch Dial two full numbers higher than that of the Knitter.

(3.6mm pitch machine)

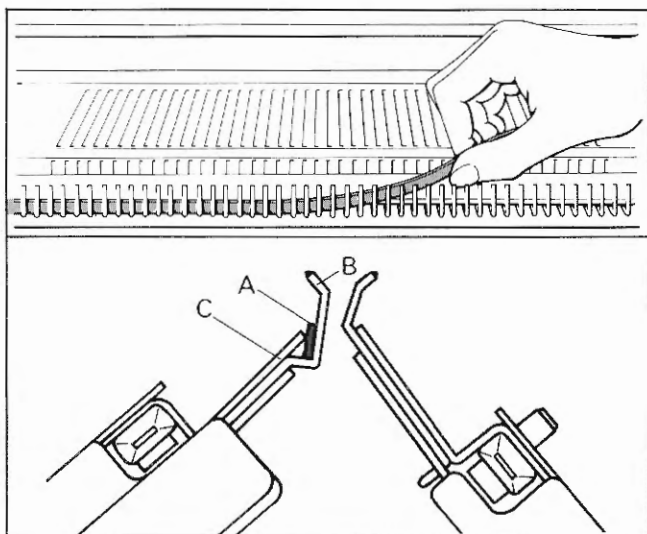


Stitch Dial setting will vary according to thickness of yarn and type of knitting. Picture shows actual size of yarns. The table below shows the recommended Stitch Dial settings for each type of yarn and type of knitting.

TYPE OF YARN		extra fine ①, ②		fine ③, ⑥		medium fine ④, ⑦, ⑧		medium ⑤, ⑨	
STITCH DIAL									
CAST-ON (every needle selection)	initial row	0	0	0	0	0	0	—	—
	subsequent rows	0	0	1	1	2	2	—	—
CAST-ON (every other needle selection)	initial row	0	0	0	0	0	0	0	0
	subsequent rows	0	0	0	0	0	0	2	2
DOUBLE RIB		1 — 2		2 — 3		3 — 4		—	
K1. P1. RIB		0 — 1		1 — 2		2 — 3		5 — 6	
K2. P2. RIB		1 — 2		2 — 3		3 — 4		6 — 7	
* WIDE RIB		2—3	4—5	3—4	5—6	4—5	6—7	6—7	8—9
* TUBULAR KNITTING		3—4	5—6	4—5	6—7	5—6	7—8	—	

* Set the Ribber Stitch Dial two full numbers higher than that of the Knitter.

(Both 4.5mm pitch and 3.6mm pitch machines)



When knitting with thinner yarn or in tuck ribs, use Close Knit Bar.

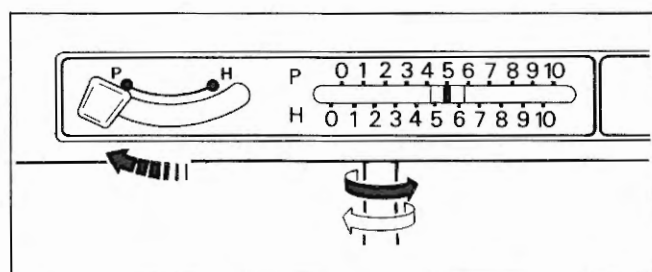
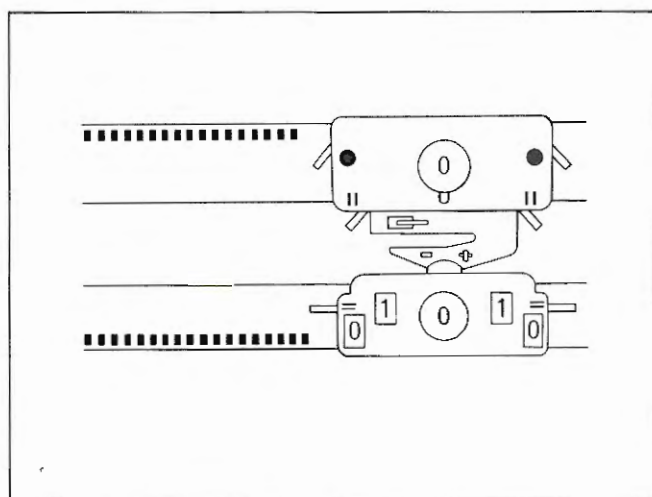
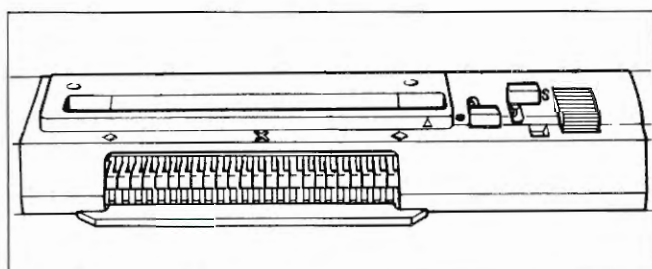
Before arranging needles, place Close Knit Bar "A" between Sinker Posts "B" and front edge "C" of Knitter Needle Bed.

CAST-ON AND KNITTING

Following the Operation Table, cast-on and knit K1.P1. Rib using suitable yarn referring to the tables on pages 16 ~ 17.

Punch Card Knitter

①	1	●	S	●	O	●	O	0	1	1	0	0	●	→	↑	P	5	
	2																→	
	3																	
	4		▼	S					0									↔↔↔3
②		●	O		2		1		2									↔↔



CAST-ON

① —1 Set machine controls for the initial row.

PATTERN PANEL

Punch Card not in use.

Stop Knob.....●
L Knob.....S

KNITTER CARRIAGE

Side Levers (left & right).....●
Cam Lever.....O (Stockinet)
Russel Levers (left & right).....||

To Mod. 700/600 users:

Set Intarsia Levers (left & right) to 1.

RIBBER ARM

Auxiliary Yarn Feeder Lever.....●
Driving Lever.....resting position

STITCH DIALS

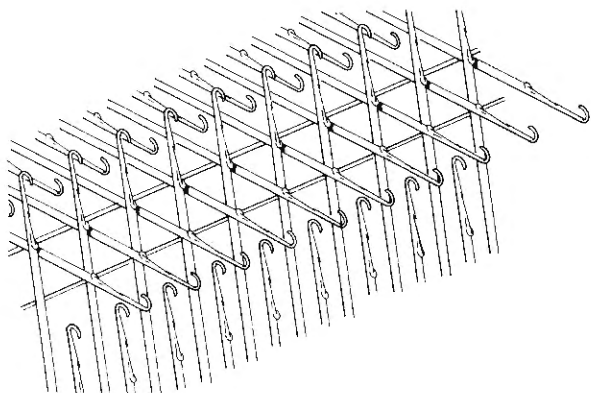
Knitter & Ribber.....0

RIBBER CARRIAGE

Set Levers (left & right).....1
Select Levers (left & right).....0
Russel Levers (left & right).....=

RIBBER NEEDLE BED

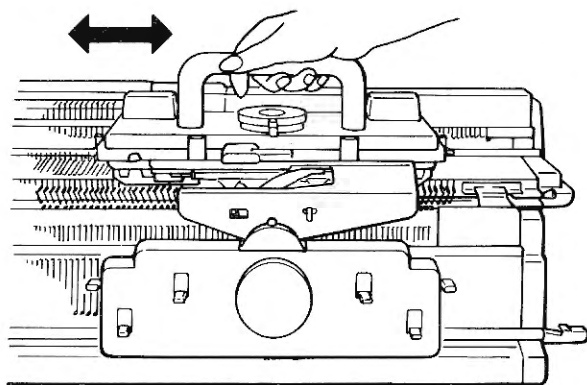
Pile Levers (left & right).....upper position
Half-Pitch Lever.....P
Swing Indicator.....5



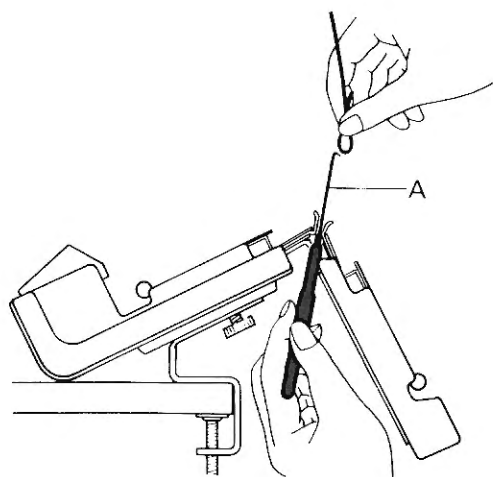
① —2 Arrange needles for knitting the initial row.

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

- (1) Using 1/1 Needle Pusher, bring 25 needles to D position on both sides of centre(O) of Knitter Needle Bed. (Alternate needles.)
- (2) Bring ribber needles to D position, alternating them with needles of Knitter.

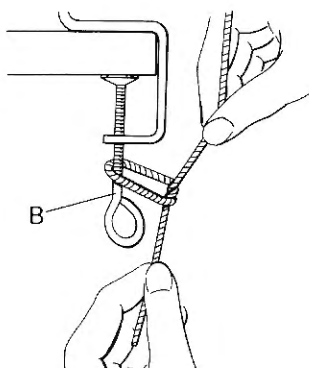


- (3) Move Carriage 1 ~ 2 times carefully across needles in D position and leave it at right side. (Needles in D position will be aligned in B position on both beds.)

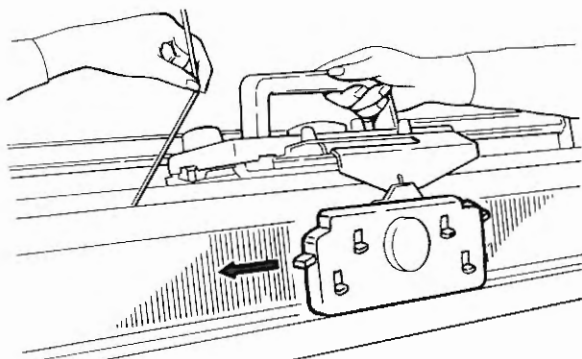


2. Thread yarn into Yarn Feeder.

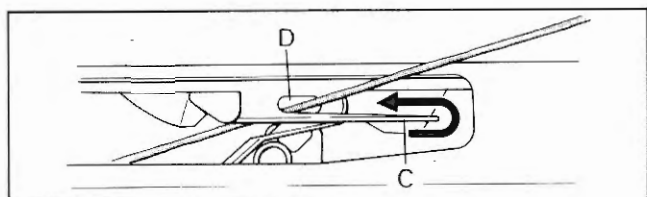
- (1) After threading yarn through Auto-Tension, make a loop at the end of yarn.
- (2) Insert Hook Tool "A" between Knitter and Ribber beds, from underneath, catch yarn end, and pull it down.



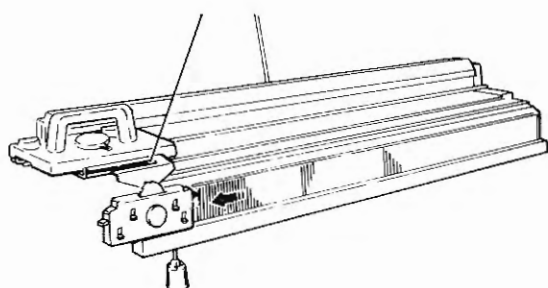
- (3) Hold yarn end and tie it around left Clamp Screw Grip "B".



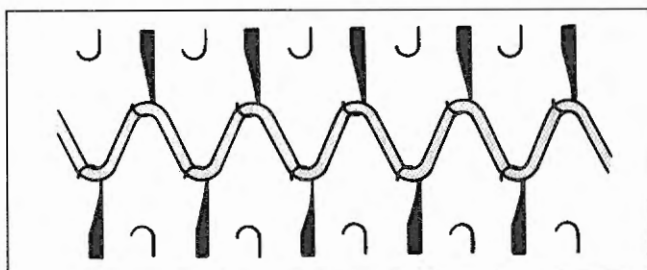
- (4) Move Carriage from right to left till yarn goes into Yarn Feeder.



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



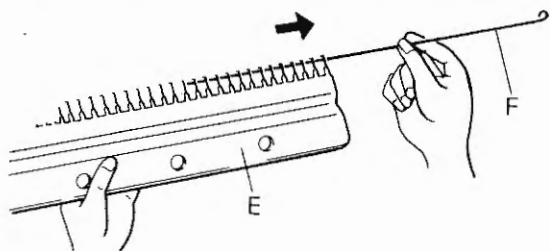
- (6) Move Carriage to left end of Needle Bed.



3. Knit the initial row.

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

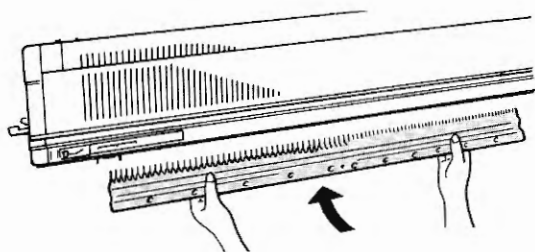
Yarn will be hooked alternately on Knitter and Ribber needles.



① —3 Suspend Cast-on Comb with Weights.

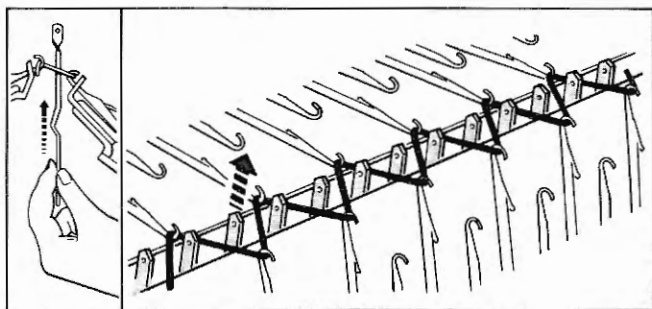
1. Suspend Cast-on Comb.

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

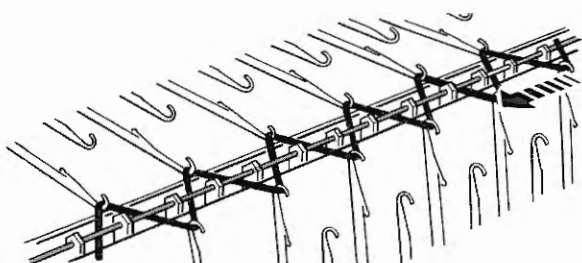


- (2) From underneath, insert Comb between Knitter and Ribber Bed, then push it carefully upwards until teeth clear zig-zagged yarn.

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

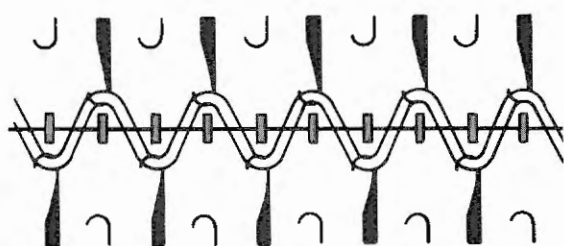


- (3) Insert Wire through holes of Cast-on Comb teeth.

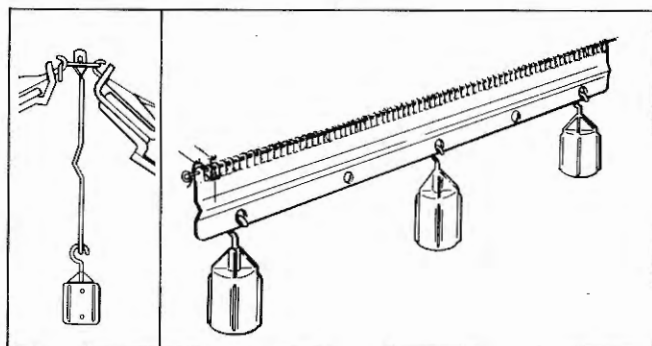
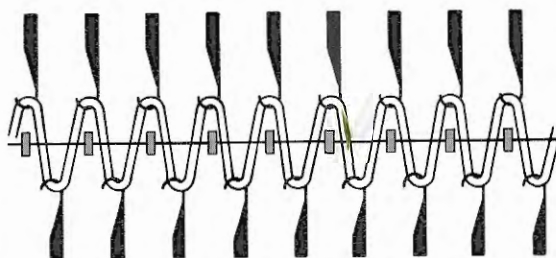


Hang Cast-on Comb as shown below.

for alternate needle selection



for every needle selection



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

4.5mm pitch machine

80 needles 2 Weights

120 needles 3 Weights

160 needles 4 Weights

200 needles 5 Weights

(3.6mm pitch machine)

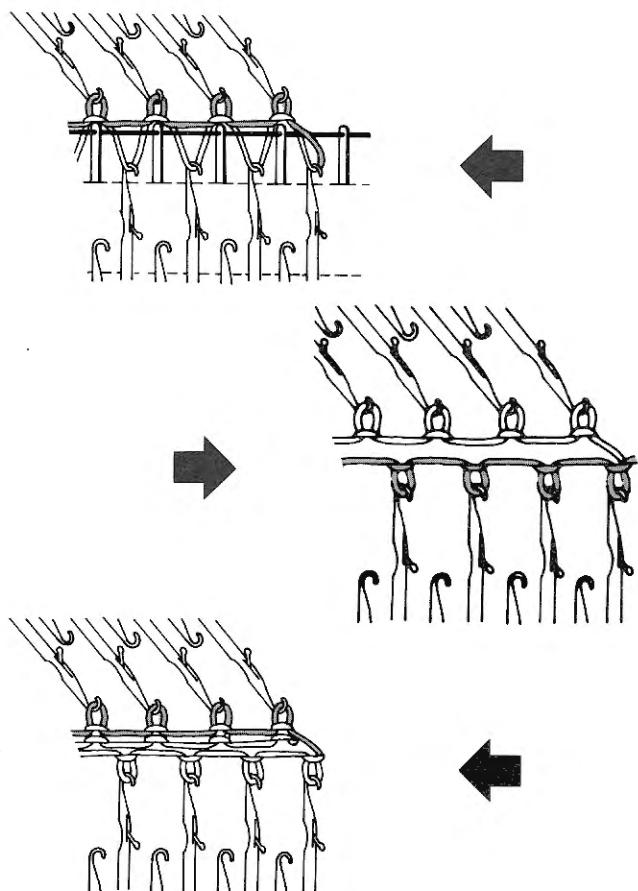
(100 needles 2 Weights)

(150 needles 3 Weights)

(200 needles 4 Weights)

(250 needles 5 Weights)

Hook Weights at even intervals.



① — 4 Change machine controls for knitting subsequent 3 rows.

Change Carriage Settings.

(Punch Card Knitter)

Cam Lever..... **S** (Slip)

Side Lever (left)..... **▼**

Set Lever (left)..... **0**

(Electronic Knitter)

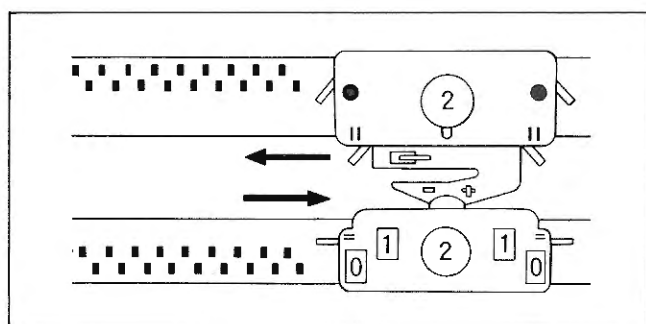
Cam Lever..... **C** (Circular)

Set Lever (left)..... **0**

Knit 3 rows.

CAST-ON IS COMPLETED.

Remove yarn end from Clamp.



② Main knitting

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

1. Change Carriage settings.

(Punch Card Knitter)

Cam Lever..... **0** (Stockinet)

Side Lever (left)..... **●**

Set Lever (left)..... **1**

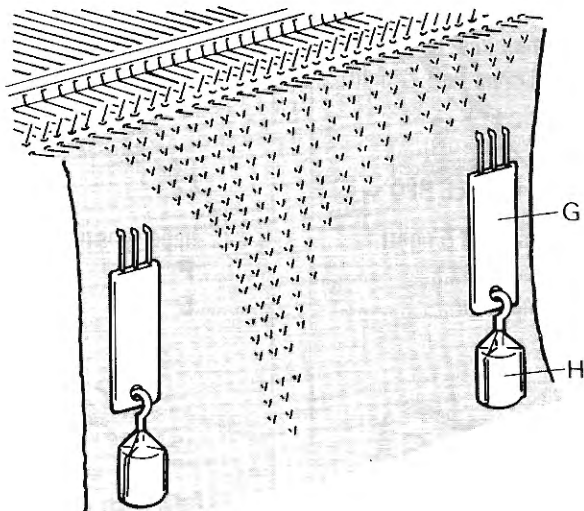
Stitch Dial (Knitter & Ribber)..... **2**

(Electronic Knitter)

Cam Lever..... **0** (Stockinet)

Set Lever (left)..... **1**

Stitch Dial (Knitter & Ribber)..... **2**



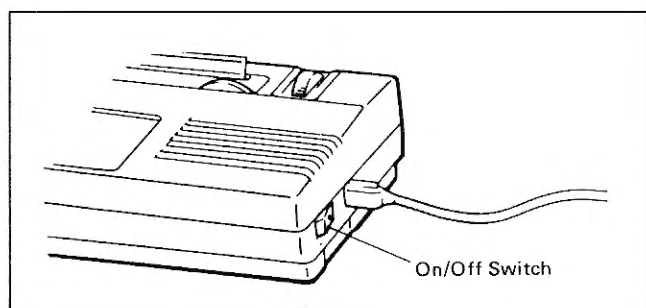
2. Knit several rows of K1. P1. Rib and hang Hanger Comb "G" with Edge Weight "H" on both sides of the knitting.

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 knitting up with the Comb, and hook Weights again.

Electronic Knitter

①	1			⊙		O		O	0	0	1	1	0	0	●	→	↑	P	5	
	2																			→
	3																			
	4				C				0											≡≡≡ 3
②					O		2		1			2								≡≡



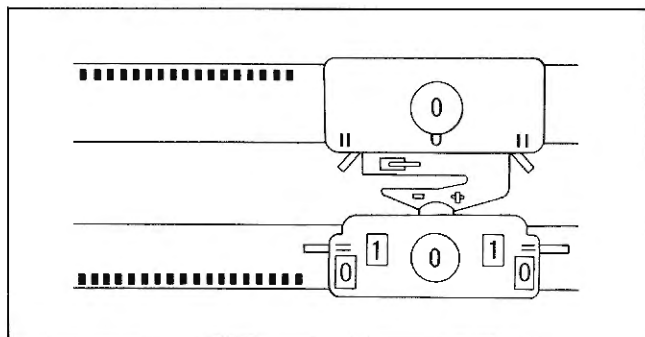
CAST-ON

① — 1 Set machine controls for the initial row

ON-OFF SWITCH.....OFF

PATTERN CONTROLS

No Pattern Switches are operated.



KNITTER CARRIAGE

Russel Levers (left & right)..... **II**
Cam Lever..... **O** (STOCKINET)

RIBBER ARM

Auxiliary Yarn Feeder Lever.....●
Driving Lever.....resting position

STITCH DIALS

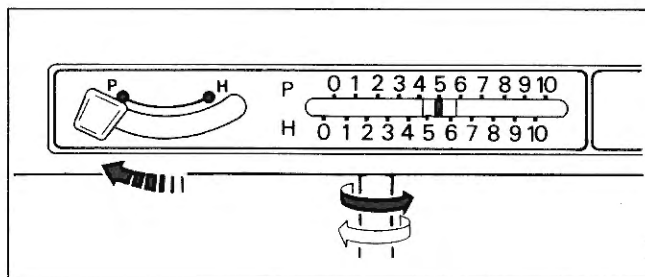
Knitter & Ribber..... 0

RIBBER CARRIAGE

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

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

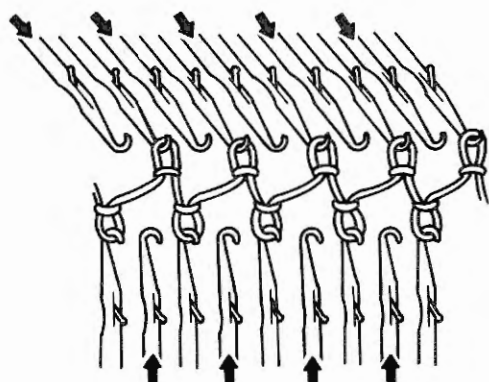
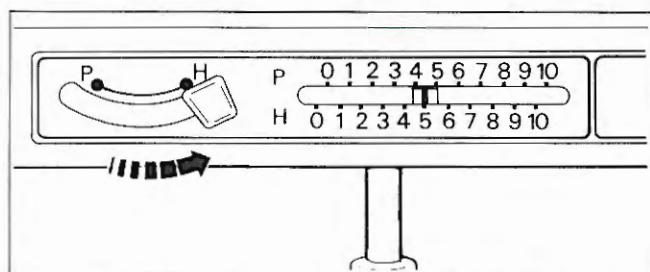
Select Levers (left & right).....0



RIBBER NEEDLE BED

Pile Levers (left & right).....	upper position
Half-Pitch Lever.....	P
Swing Indicator.....	5

① — 2 ~ ② Follow the instructions of the same steps as for Punch Card Knitter.

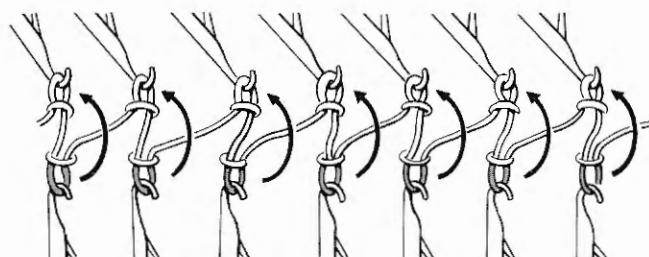
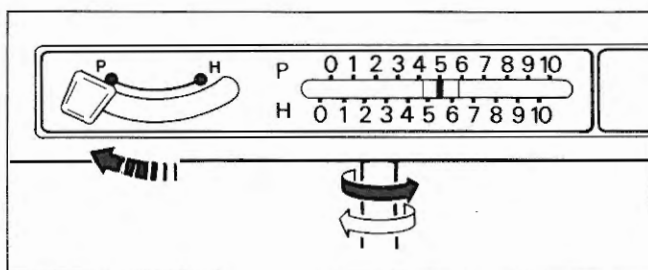


For practice, continue to knit DOUBLE RIB following instructions below.

1. Set Half-Pitch Lever to H.

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

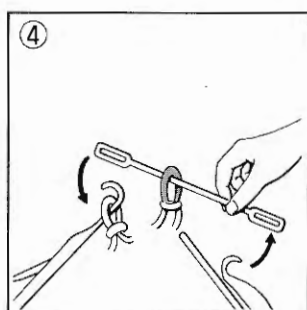
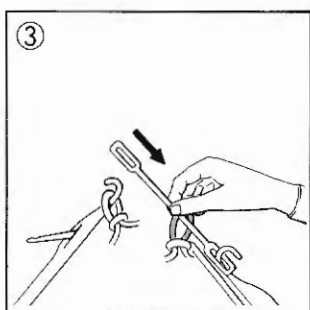
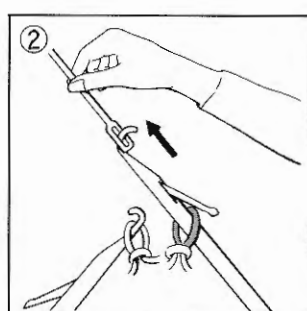
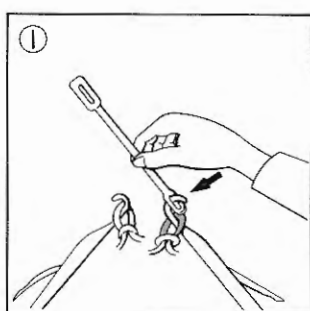
3. Knit 15 rows.



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

1. Set Half-Pitch Lever to P.

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

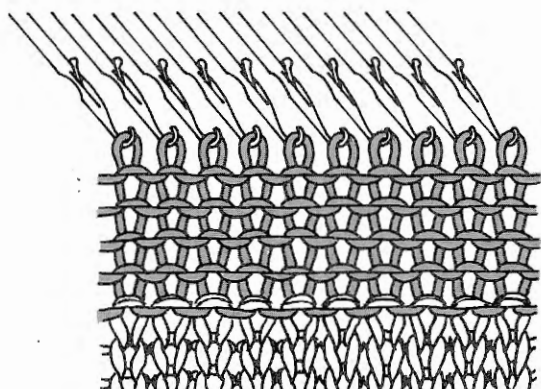
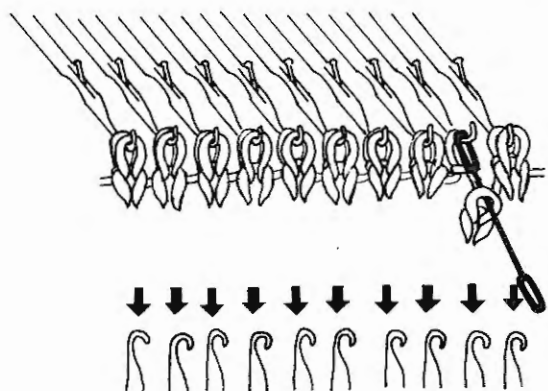
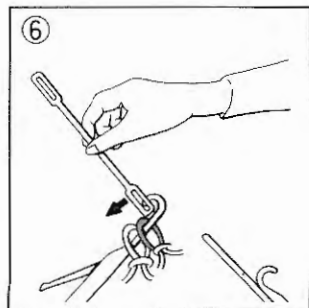
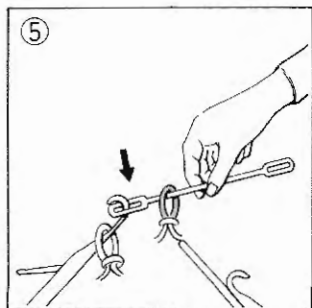


① Place eye of Double-eye Transfer Tool into Ribber needle hook.

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.

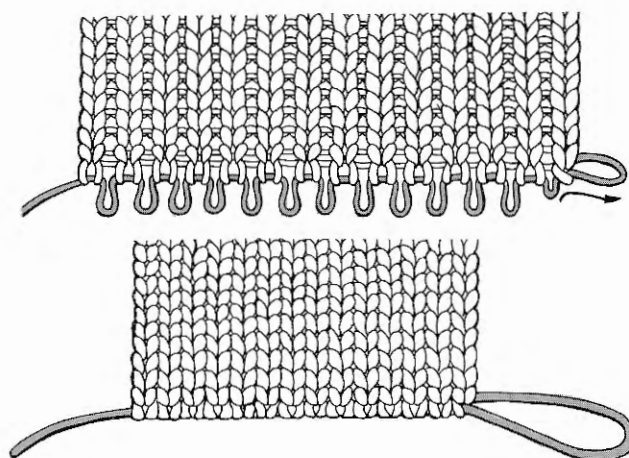
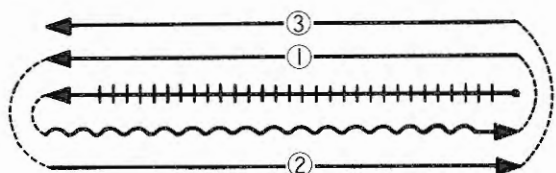
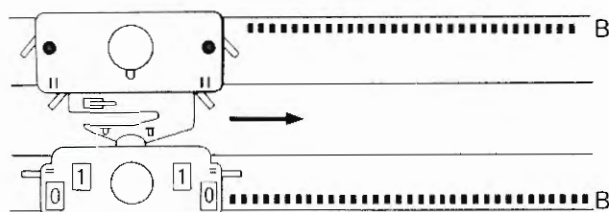
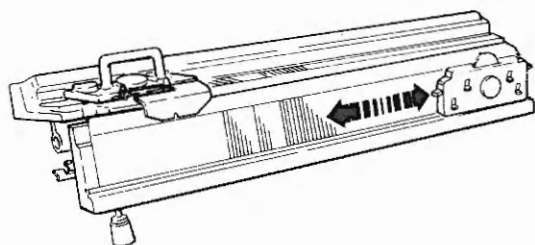
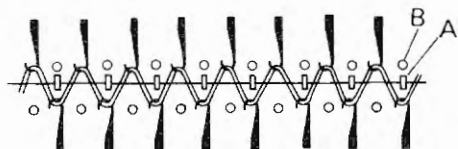
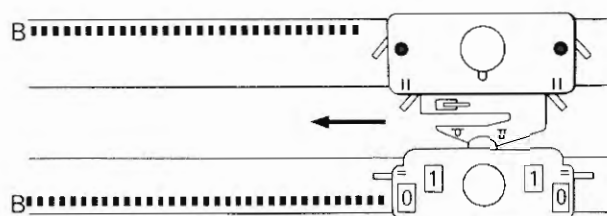
⑥ Tilt Transfer Tool until stitch slides into Knitter needle hook. Remove Transfer Tool. Push needle in B position slightly towards A position to ensure that transferred stitch lies correctly in needle hook.

3. Push every Ribber needle in B position back to A position.

4. Disconnect Ribber Carriage from the Arm and lower Ribber Bed to its 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 knitting tighter, when knitting with thinner yarn, work the initial row following the procedure given below.

* Insert Close Knit Bar.

- ① — 1 Set machine controls for the initial row as instructed in the Operation Table.
- 2 Arrange the needles and knit the initial row from the right to the left.
- 3 Suspend Cast-on Comb with Weights.

Insert Cast-on Comb so that its teeth "A" are in line with knitter Sinker Posts "B" as illustrated.

* Disconnect the Ribber Carriage from Arm and move it twice across the needles to drop stitches on Ribber needles.

If Cast-on Comb is suspended incorrectly, it will drop onto the floor.

* Connect Ribber Carriage with Arm and knit one row with the same Carriage settings.

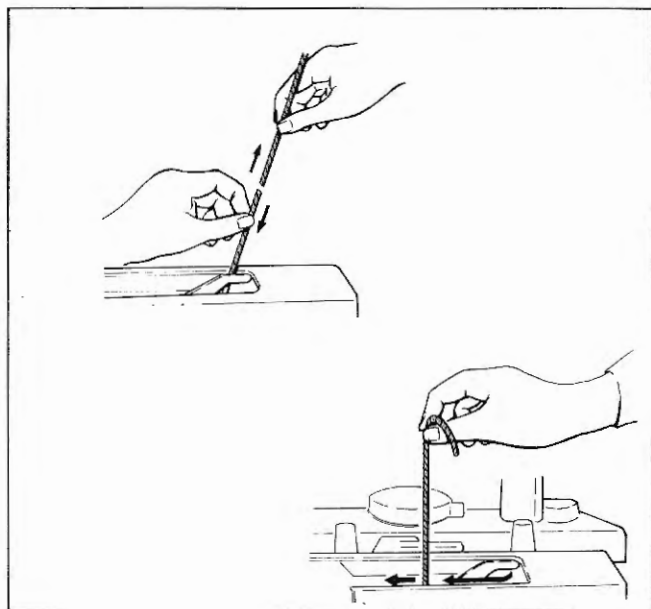
- ① — 4

As required in Operation Table, knit subsequent 3 rows.
CAST-ON FOR TIGHTER EDGE IS COMPLETED.

* When the garment has been completed, pull the yarn of the initial row from the opposite side to the yarn end. This will hold the cast-on edge tight during steaming.

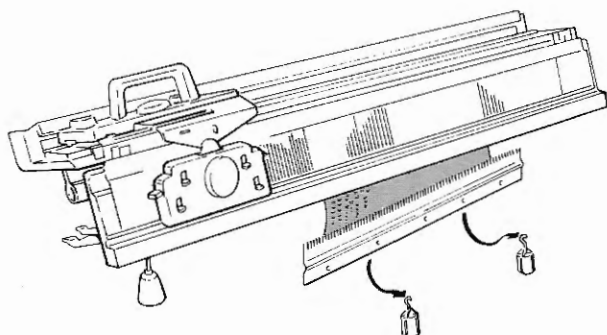
After steaming, pull out the yarn completely in the same direction as above.

REMOVE THE FABRIC FROM THE MACHINE



1. Cut yarn above Yarn Feeder.

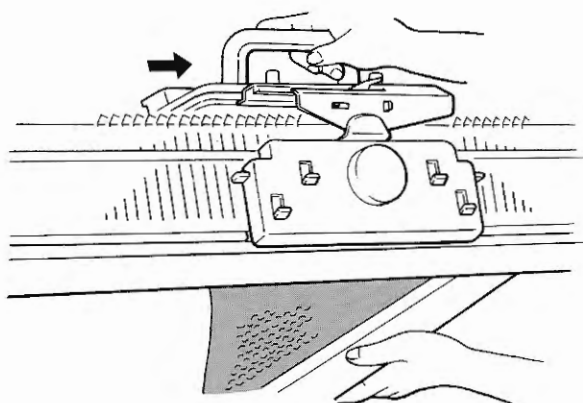
2. Remove yarn from Yarn Feeder and drop yarn end between Knitter and Ribber Sinker Posts.



3. Remove Weights from Cast-on Comb.

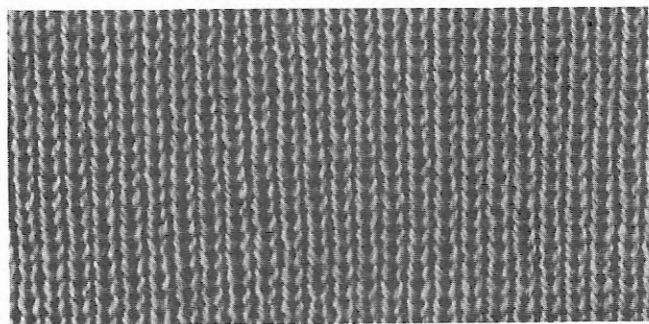
4. Change Carriage settings as follows.

Cam Lever.....	0
Set Levers.....	1
Select Levers.....	0
Russel Levers.....	II, =



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

DOUBLE RIB



The fabric is similar to the K1.P1. Rib fabric, but knitted with every needle on the Knitter and the Ribber.
This method is used for thinner yarns.

The sample is knitted with 4.5mm pitch machine using thin yarn. (To knit this type of knitting with 3.6mm pitch machine, extra fine yarn is suitable.)

Use Close Knit Bar.

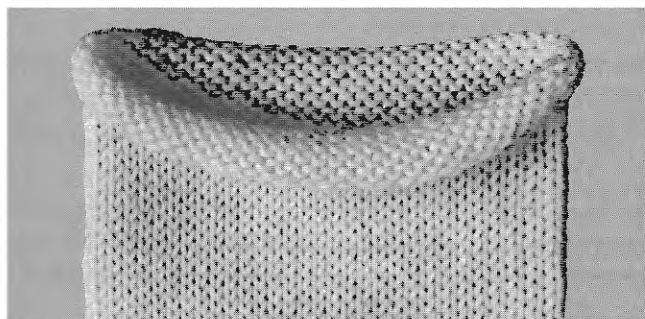
Punch Card Knitter

[illegible]

Electronic Knitter

[illegible]

TUBULAR KNITTING



As you move Carriage back and forth, Knitter Carriage and Ribber Carriage knit alternately.

This is mainly used for waste knitting.

The sample is knitted with 4.5mm pitch machine using medium yarn. (To knit this type of knitting with 3.6mm pitch machine, medium fine yarn is suitable.)

Set the Ribber Stitch Dial 2 numbers looser than that of the Knitter.

Punch Card Knitter

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Electronic Knitter

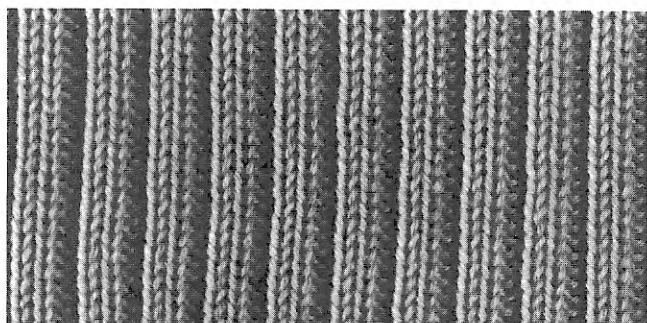
①	1			◎		O		O	□	1	1	□	O	●	➡	⬆	H	5	
2																			➡*
3																			
②				C	6(5)	□			8(7)				P		↔**				

* Knit with Ravel Cord, or waste yarn when using a lot of needles.

**** Before moving Carriage from left to right, bring four or five needles at both ends of Ribber to D position, or push all needles of Ribber to C position using P Carriage (without P Presser).**

Before moving Carriage from right to left, bring four or five needles at both ends of Knitter to D position, or push all needles of Knitter to C position using P Carriage.

K2.P2. RIB



The following ribs both look the same when knitted.

Method A uses a 2×1 needle arrangement on both beds, and is used for medium yarn when knitting with 4.5mm pitch machine. (It is used for medium fine yarn when knitting with 3.6mm pitch machine.)

Method B uses a 2×2 needle arrangement on both beds, and is used for thick yarn when knitting with 4.5mm pitch machine. (It is used for medium yarn when knitting with 3.6mm pitch machine.)

Punch Card Knitter

A																		
①	1	●	S	●	O	●	O	0	1	1	0	0	●	➡	⬆	H	5	
2																		➡
3																		
4				▼	S				0									⬅⬅⬅)3
②				●	O		4		1			4					6	⬅⬅

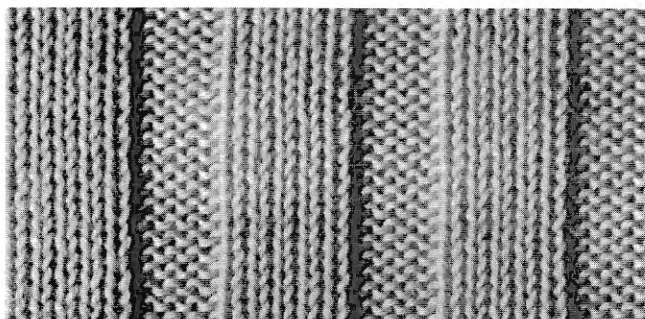
[illegible]

Electronic Knitter

A															
①	1			⊙	II	O	II	0	0	1	1	0	0	●	→
	2													↑	H 5
	3														
	4				C				0						→→→)3
②					O			4		1				4	→→→

B															
①	1			⊙	II	O	II	0	0	1	1	0	0	●	→
	2													↑	H 5
	3														
	4				C				0						→→→)3
②					O			7		1				7	P 6

WIDE RIB



This is the Rib with more than K3. P3. stitches aligned alternately. (K5. P5. Rib is shown as an example.)

Two methods for Wide Rib are shown below.—

One is for using medium yarn when knitting with 4.5mm pitch machine, or for medium fine yarn when knitting with 3.6mm pitch machine (Operation Table "A"). And the other is for thick yarn when knitting with 4.5mm pitch machine, or for medium yarn when knitting with 3.6mm pitch machine (Operation Table "B").

Punch Card Knitter

A																			
①	1	●	S	●	O	●	O	0	1	1	0	0	●	→	↑	H	5		
	2																	→	
	3																		
	4		▼	S		3		0			5							↔	3
	5																		
②		●	O		5		1			7								↔	

B																			
①	1	●	S	●	O	●	O	0	1	1	0	0	●	→	↑	P	5		
	2																	→	
	3																		
	4		▼	S		3		0			5							↔	3
	5																		
②	1	●	O		6		1			8								↔	

* Rearrange needles as shown above if needed, to knit edge needles perfectly. This may change the needle arrangement, but it is essential.

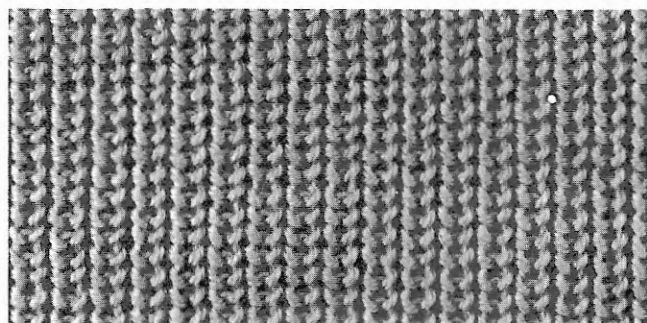
Electronic Knitter

A													
①	1			⊙	II	O	II	0	0	1	1	0	0
	2												→
	3												
	4				C		3		0		5		↔)3
	5												
②	1					O		5		1		7	↔

B													
①	1			⊙	II	O	II	0	0	1	1	0	0
	2												→
	3												
	4				C		3		0		5		↔)3
	5												
②						O		6		1		8	↔

* Rearrange needles as shown above if needed, to knit edge needles perfectly. This may change the needle arrangement, but it is essential.

ENGLISH RIB



This Rib has a tuck pattern on Knitter side. It can be knitted in K1.P1. Rib, or in Double Rib.

The sample is knitted in K1.P1. Rib using medium yarn with 4.5mm pitch machine. (To knit this type of knitting with 3.6mm pitch machine, medium fine yarn is suitable.)

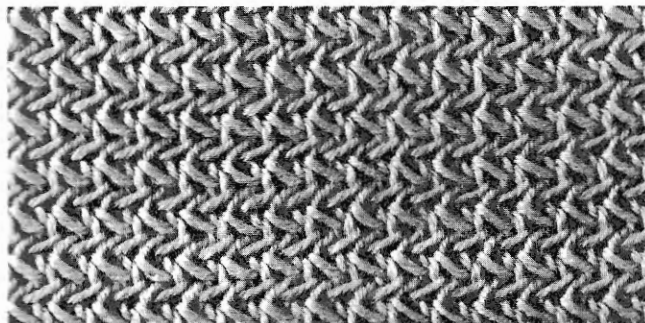
Punch Card Knitter

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Electronic Knitter

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SWUNG ENGLISH RIB








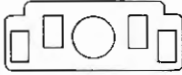












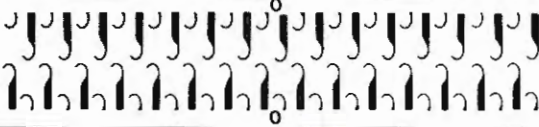







This Rib has a tuck pattern on Knitter side with a 2-pitch swing in K1.P1. Rib or 1-pitch swing in Double Rib.

The sample is knitted in K1.P1. Rib using medium yarn with 4.5mm pitch machine. (To knit this type of knitting with 3.6mm pitch machine, medium fine yarn is suitable.)

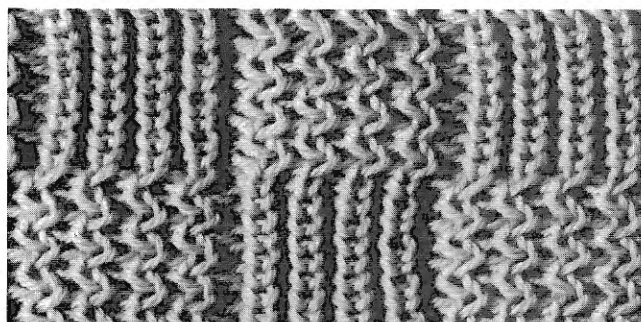
Punch Card Knitter

[illegible]

Electronic Knitter

																				
①	1				II	O	II	O		1	1		O				P	5		
	2																			
	3																			
	4				C						2								3	
②	1				E		5				5							5		2
	2																	7		2

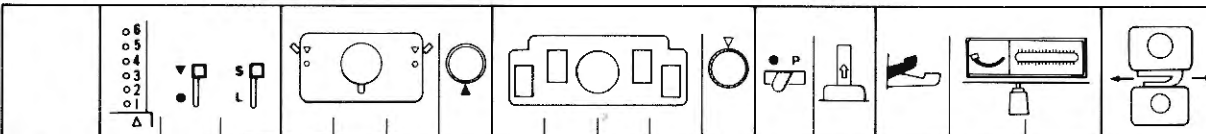


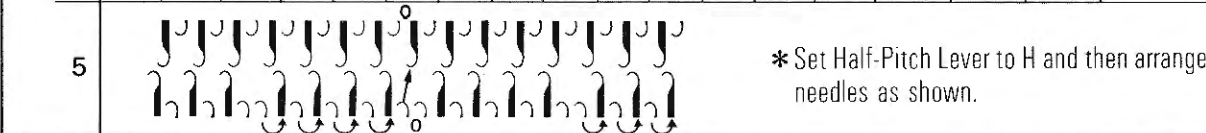
VARIATION OF ENGLISH RIB



The fabric combines English Rib and Swung English Rib by using the needle arrangement shown in the operation table below.

The sample is knitted using medium yarn with 4.5mm pitch machine. (To knit this type of knitting with 3.6mm pitch machine, medium fine yarn is suitable.)

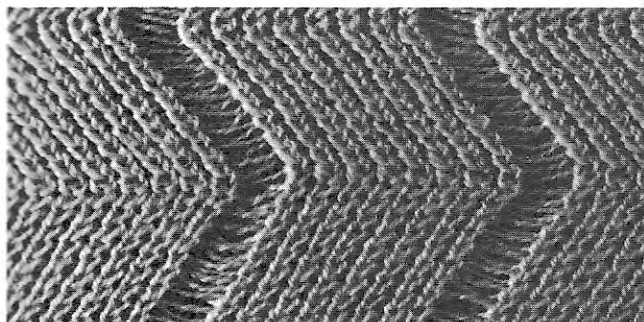
Punch Card Knitter

																		
①	1	●	S	●	O	●	0	0	1	1	0	0	●	→	↑	P	5	
2																		←
3																		
4			▼	S				0				2						⇌ 3
5																		*Set Half-Pitch Lever to H and then arrange needles as shown.
②				T		4		1			4					H	5	⇌ 16
1																		⇌ 16
2																		⇌ 16
																		⇌ 16
																		⇌ 16

Electronic Knitter

[illegible]

HERRINGBONE SWING



This fabric combines tuck stitch with swing operation of Ribber.

The sample is knitted with 4.5mm pitch machine using thin yarn. (To knit this type of knitting with 3.6mm pitch machine, extra fine yarn is suitable.)

Use Close Knit Bar.


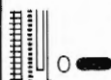
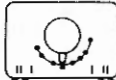















Punch Card Knitter





[illegible]

Note: Swing Ribber by 2 pitches for K1.P1. Rib needle arrangement and 1 pitch for Double Rib needle arrangement.

Repeat swinging back and forth for the desired number of rows, then change the direction of swinging.

Electronic Knitter

																			
①	1		⊙		O		0	0	0	1	1	0	0	●	→	↑	H	5	
	2																		←
	3																		
	4					C				0									
	5																		
		1 2 3 4 5 6 7 8 9 10																	

②	1					E		2		1								5	
																		6	
	2																	6	
																		5	

Note: Swing Ribber by 2 pitches for K1.P1. Rib needle arrangement and 1 pitch for Double Rib needle arrangement.

Repeat swinging back and forth for the desired number of rows, then change the direction of swinging.

Electronic Knitter

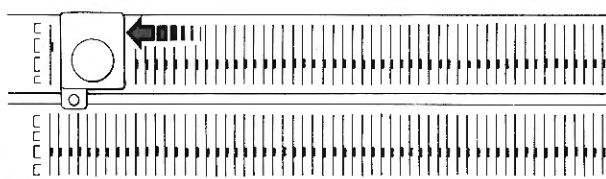
①	1			◎		O		0	□	1	1	□	0	●	→	↑	H	5		
	2																			
	3																			
	4				C		2		□			4								3
	5																			

②

					O		6		□										5	
																			4	
																			3	
																			2	
																			1	
																			0	
																			1	
																			2 5 10 6	}

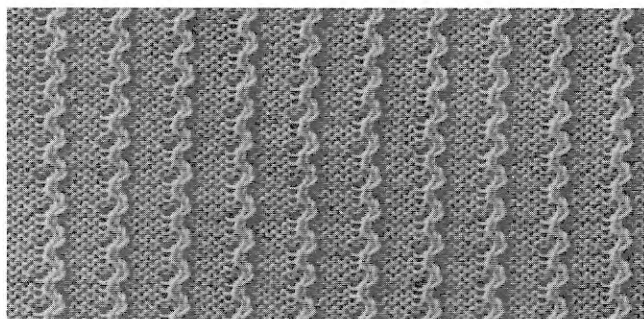
*

* 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...

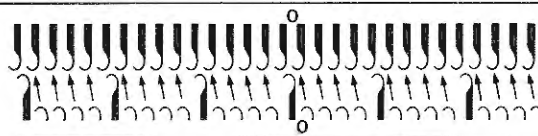
Knit pushing needles on Knitter to C position using P Carriage.



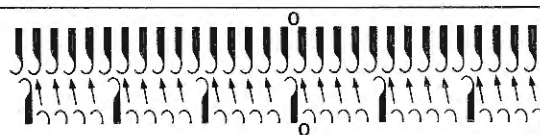
Knit in the same manner as for steps ① — 1 ~ 4 on previous page.

From step ① — 5, follow diagram below.

Punch Card Knitter

5																	
	② 1				●	0		5		1			5			5	⇌ 2
2																7	⇌ 2

Electronic Knitter

5																	
	② 1					0		5		1			5			5	⇌ 2
2																7	⇌ 2

● Rib stitches using Punch Card (Punch Card Knitter)

STANDARD PUNCH CARDS FOR RIB KNITTING

10 Punch Cards No.1 (R-2) ~ No.10 (R-2) are supplied with 4.5mm pitch Ribber.
(10 Punch Cards No.FR-1 ~ No.FR-10 are supplied with 3.6mm pitch Ribber.)

Each Punch Card can be used in two ways and is marked "A" and "B".

Instructions for setting the Punch Card are given in Instruction Book of Knitter (Operation Manual).

Card No. for 4.5mm pitch Ribber	Card No. for 3.6mm pitch Ribber	A	B	C	D	E
No.1 (R-2)	No. FR-1			○		
No.2 (R-2)	No. FR-2			○		
No.3 (R-2)	No. FR-3			○		
No.4 (R-2)	No. FR-4			○		
No.5 (R-2)	No. FR-5			○		
No.6 (R-2)	No. FR-6			○		
No.7 (R-2)	No. FR-7				○	○
No.8 (R-2)	No. FR-8				○	○
No.9 (R-2)	No. FR-9	○			○	○
No.10 (R-2)	No. FR-10	○			○	○

With Punch Cards, the following patterns can be knitted.

- A — PIN TUCK
- B — TUCK RIB
- C — DRIVE LACE
- D — MESH KNITTING
- E — PILE KNITTING

The Knitter Punch Cards shown in the tables below can be used for Rib stitches.

Card No. for 4.5mm pitch Knitter	A	B	C	D	E
No.1				○	
No.2		○		○	
No.4		○			
No.7		○			
No.9		○			
No.10		○		○	
No.12		○			
No.13				○	
No.17				○	

Card No. for 3.6mm pitch Knitter	A	B	C	D	E
No. F-1				○	
No. F-2			○		
No. F-4		○			
No. F-5		○			
No. F-6		○			
No. F-7		○			
No. F-8		○			
No. F-9			○		
No. F-10			○		
No. F-11				○	
No. F-12			○		
No. F-13				○	
No. F-16				○	

● Rib stitches using Pattern Card (Electronic Knitter)

Prepare the machine for Pattern Knitting.

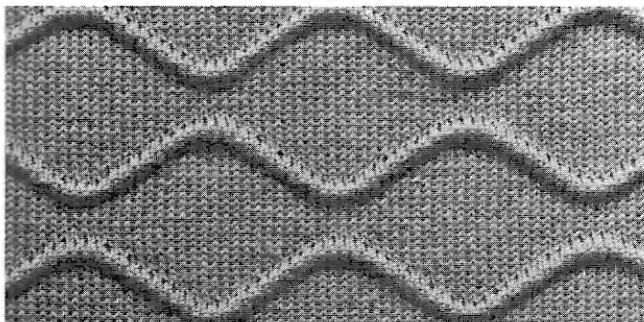
Set Pattern Switches and Pattern Width Indicator as instructed.



If the diagram shown on the left is given beside the needle arrangement diagram in the Operation Table, set the Point Cams and Needle-1 Cam at the same step.

PIN TUCK

Punch Card Knitter



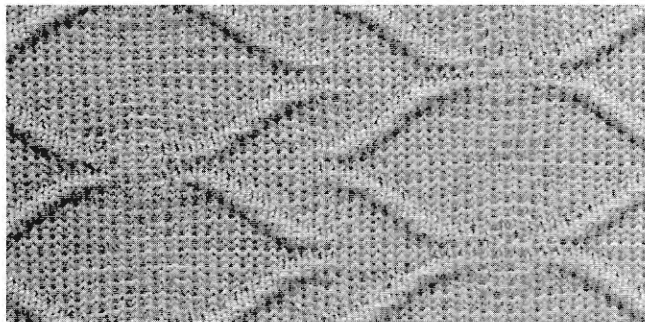
This fabric is a variation of Pin Tuck using Punch Card.

Use Close Knit Bar.

The sample is knitted using Punch Card No.9 **R-2**-A with 4.5mm pitch machine using light yarn. (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)

[illegible]

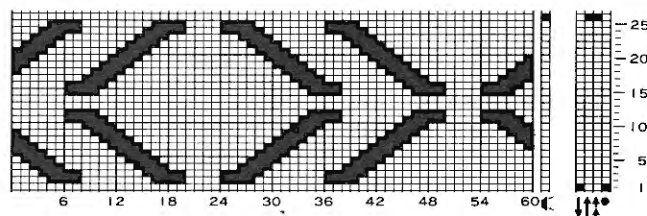
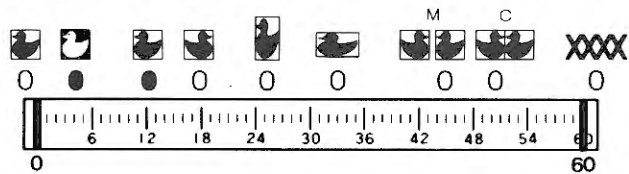
Electronic Knitter



The sample is knitted with the Pattern Card shown below with 4.5mm pitch machine using light yarn (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)

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

Use Close Knit Bar.



A close-up photograph of a dark-colored, textured fabric, likely a sweater or knitwear, featuring a complex cable or ribbed pattern. The texture is highly detailed with vertical ridges and valleys, creating a three-dimensional effect. The lighting is even, highlighting the intricate weave of the material.

Using the same pattern with the same settings in the same operation as above, but in different needle arrangement, you can have different effect on the fabric.

Punch Card Knitter

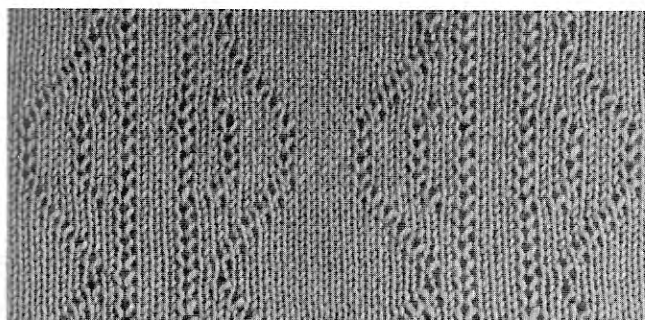
[illegible]

Electronic Knitter

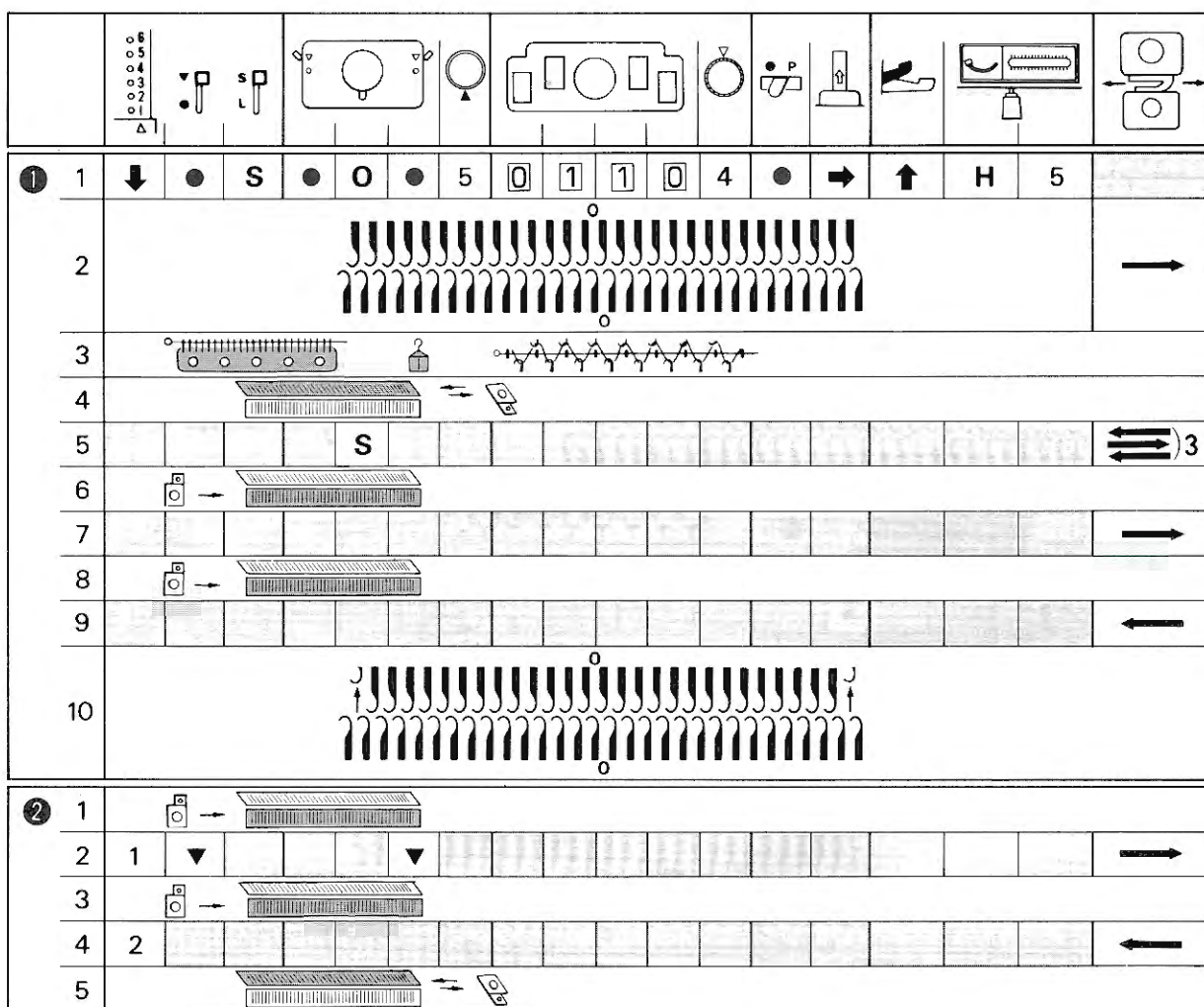
[illegible]

DRIVE LACE

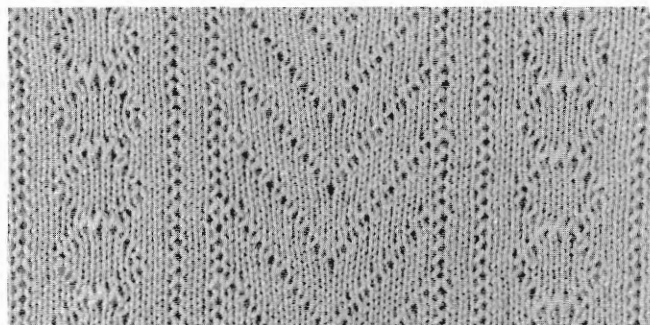
Punch Card Knitter



Use the same needle arrangement as for Double Rib. Knitter needles, selected by the Punch Card hold the loop. These loops are released from the needles with the P Carriage, and form the lace pattern. The Ribber needles knit every stitch every row. The sample is knitted using Punch Card No.1 **(R-2)**-A with 4.5mm pitch machine using light yarn. (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)



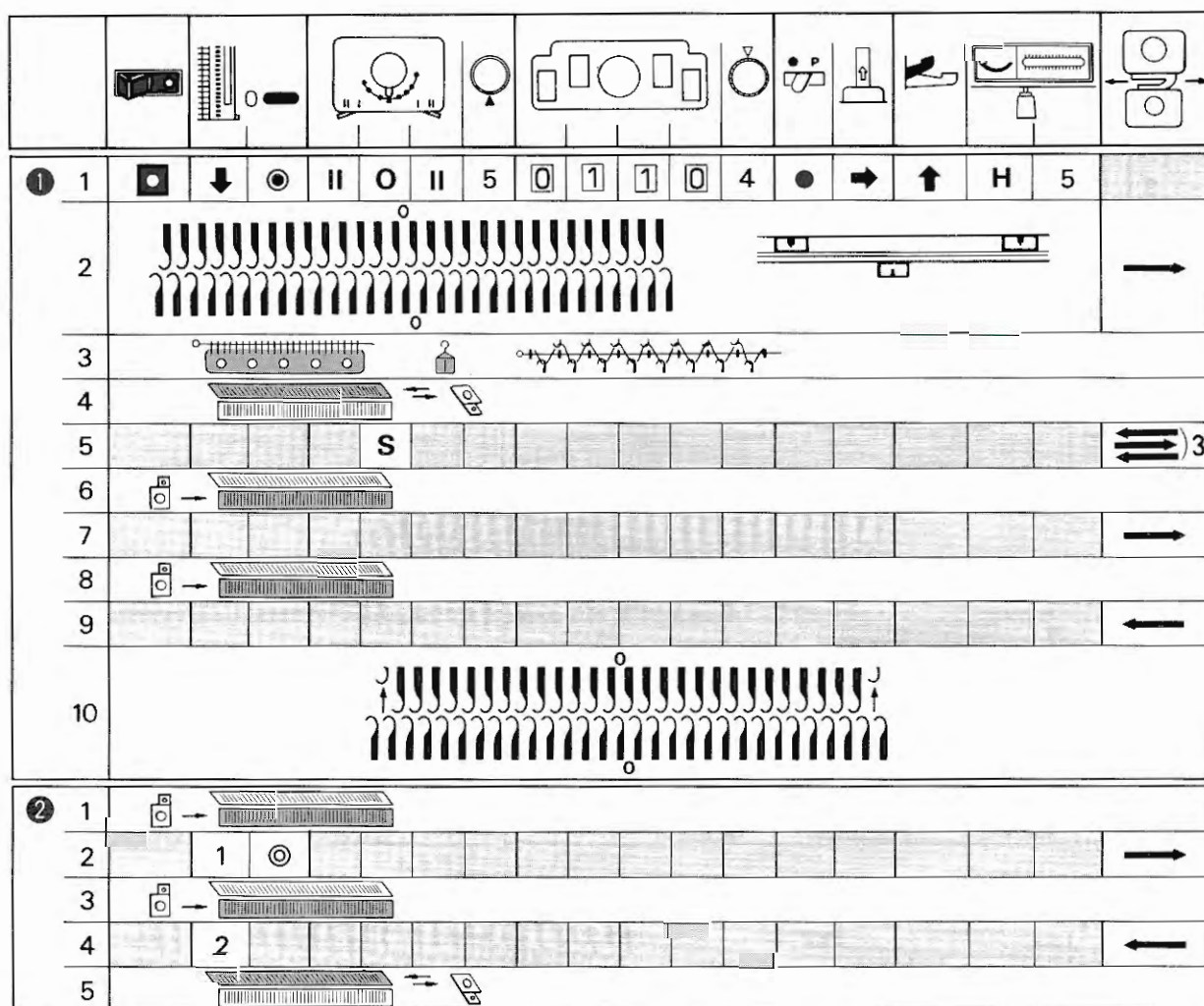
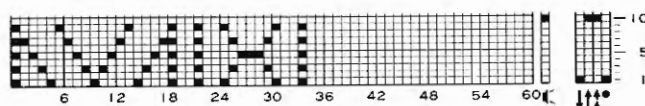
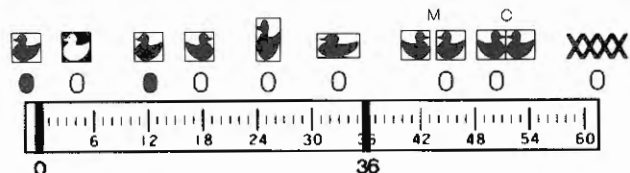
Electronic Knitter



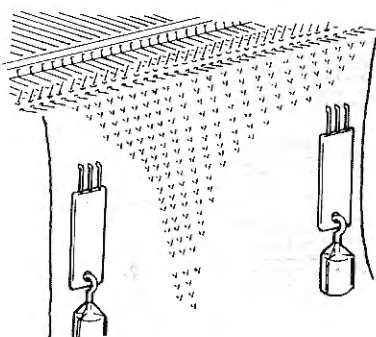
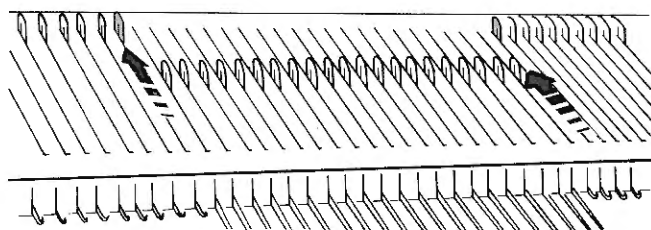
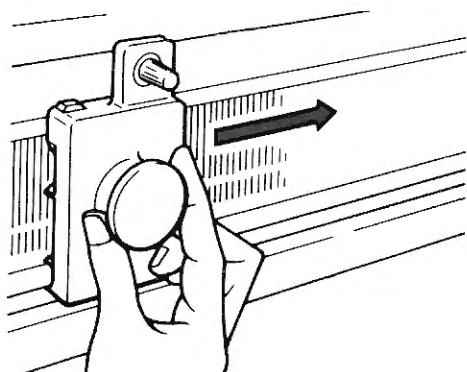
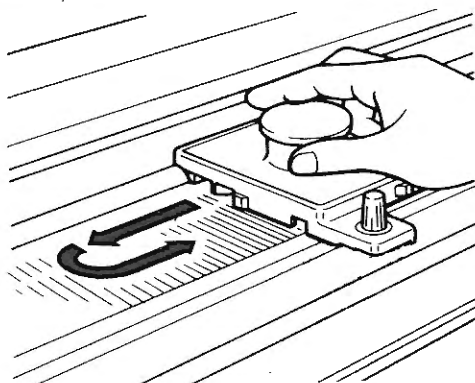
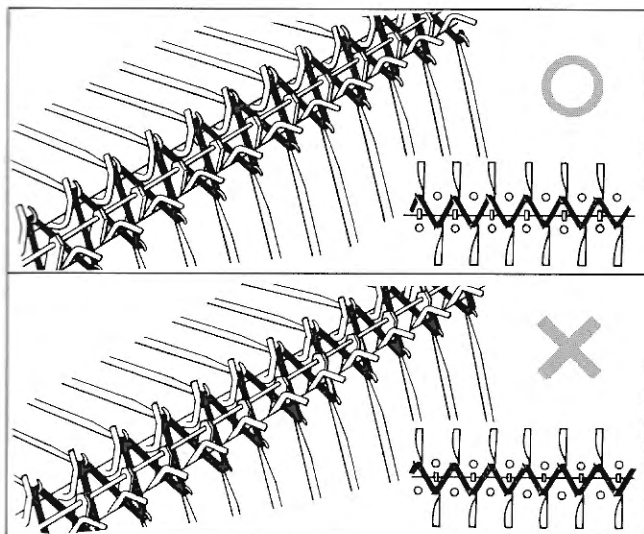
The needle arrangement is the same as for Double Rib, but on the Knitter, the needles selected by the Pattern Card hold the loops, and those loops are released to form bigger loops while on the Ribber all the needles knit every row.

The sample is knitted using the Pattern Card shown below with 4.5mm pitch machine using light yarn. (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)

Do not use the Pattern Switch 1 with its right light on and Pattern Switch 3, 4 and 6.



When inserting the Pattern Card, make sure that the light of Inspection Switch is ON.



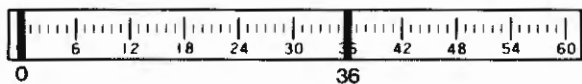
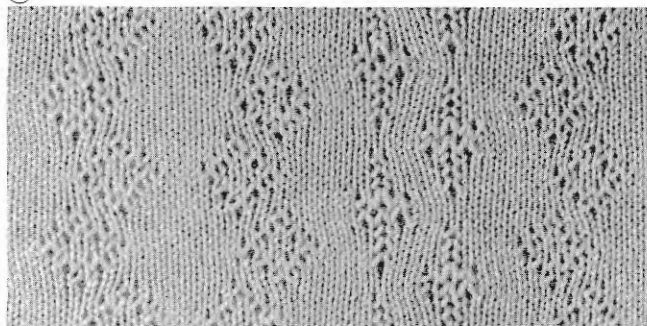
- ① — 1 Set machine controls as shown.
Set Stitch Dials to the same as for main knitting.
- 2 Arrange needles as shown and knit from the left to the right with waste yarn.
- 3 When suspending Cast-on Comb insert it so that its teeth face Ribber Sinker Posts as illustrated.
- 4 Place P Carriage (without P Presser) on the right side of Knitter Needle Bed (refer to page 12). Move P Carriage to the left and back again so that stitches are removed and the needles align in B position again.
- 5 Set Cam Lever to SLIP (**S**) and knit 3 rows with waste yarn. (only the ribber needles will knit.)
- 6 Place P Carriage on the left side of Ribber Needle Bed (refer to page 12), 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 Using P Carriage on Ribber, bring needles to C position.
- 9 Knit from the right to the left.
- 10 Push both end needles on Knitter back to A position.
- ② — 1 Using P Carriage on Ribber, bring needles to C position.
- 2 Set Stop Knob to ▼ and right Side Lever to ▼ on the Punch Card Knitter (On the Electronic Knitter, press OFF the Inspection Switch).
Knit 1 row from left to right. (On Ribber, all the needles in C position knit, and on Knitter, selected needles hold a loop of yarn.)
- 3 Push up Ribber needles to C position using P Carriage.
- 4 Knit one row from the right to the left.
- 5 Remove stitches on Knitter using P Carriage.

Repeat ② — 1 ~ 5 for main knitting.

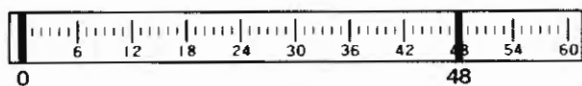
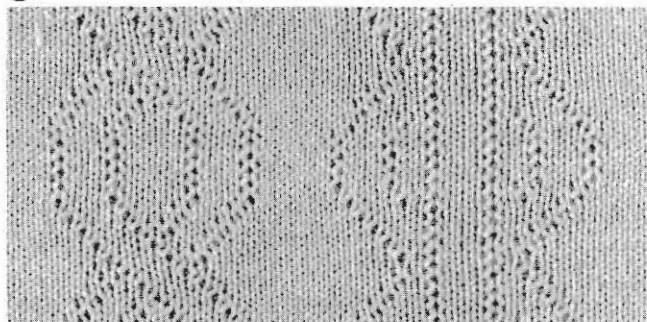
Suspend Hanger Combs with Weights after 10 rows and move them up every 10 rows.

The samples on the next page can be knitted in the same way as above.

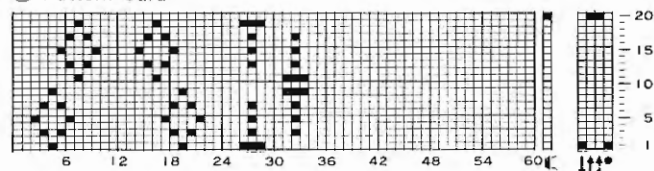
Ⓐ



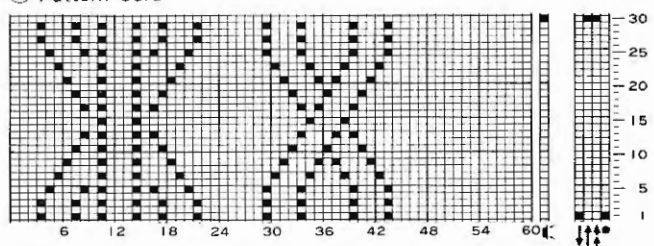
Ⓑ



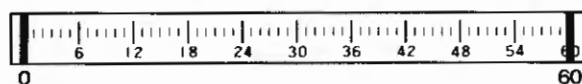
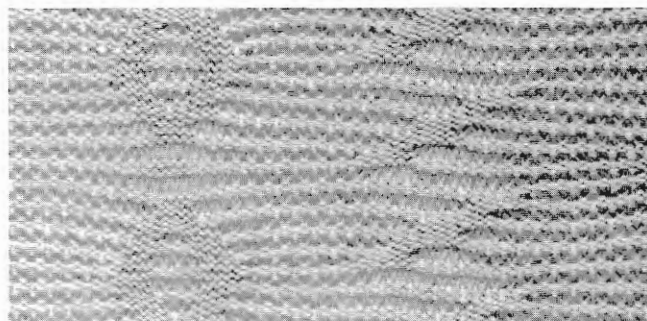
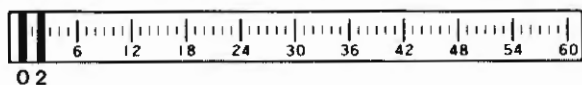
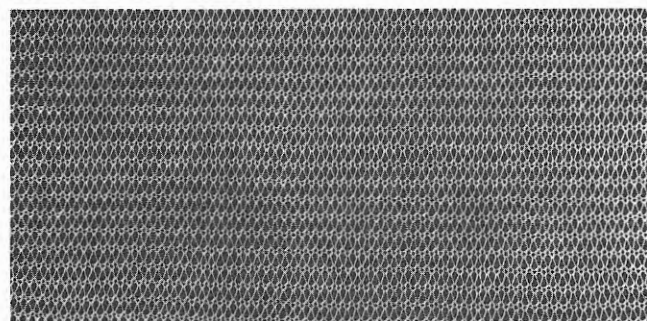
Ⓐ Pattern Card



Ⓑ Pattern Card



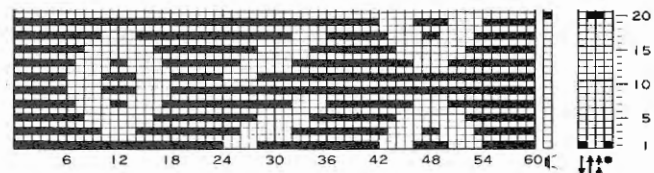
MESH KNITTING



Mesh Knitting is worked in the same manner as for Drive Lace using thin yarn when knitting with 4.5mm pitch machine. (To knit with 3.6mm pitch machine, extra fine yarn is suitable.)

The sample on left is knitted without Punch Card on the Punch Card Knitter. To knit the sample on left on the Electronic Knitter, use the same Pattern Card as shown below but set Pattern Width Indicator as instructed.

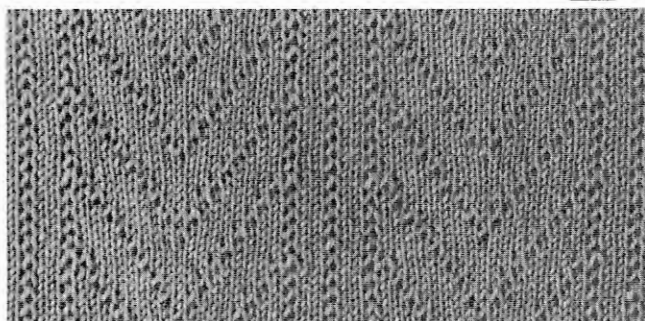
When pressing, slide the iron from top to bottom of the fabric, not from side to side.



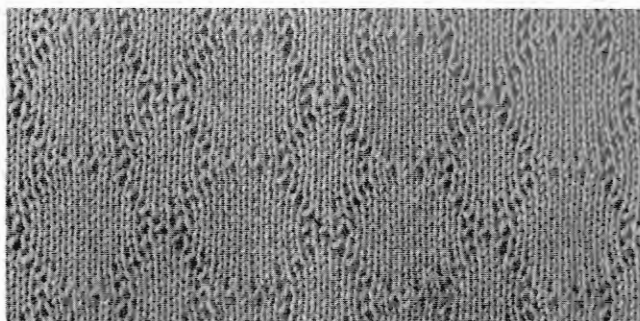
Samples for DRIVE LACE with Punch Card

(4.5mm pitch machine)

No.2 **R-2** -A

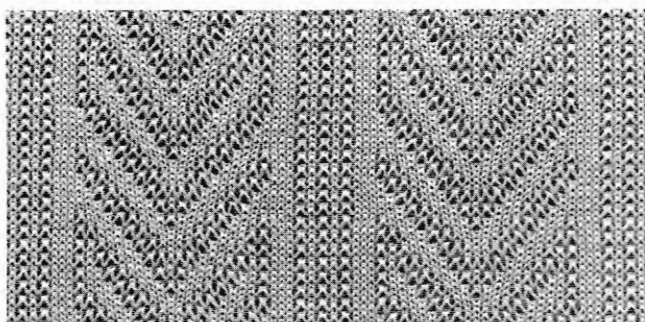


No.5 **R-2** -A

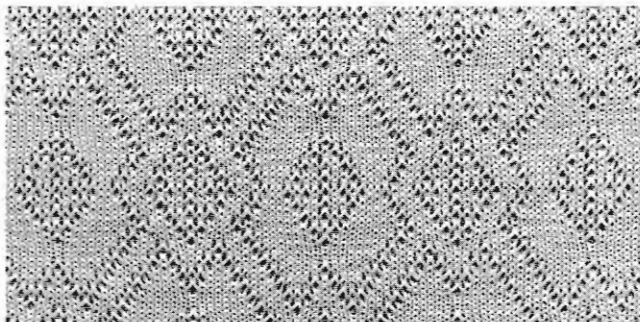


(3.6mm pitch machine)

No.FR-2-A



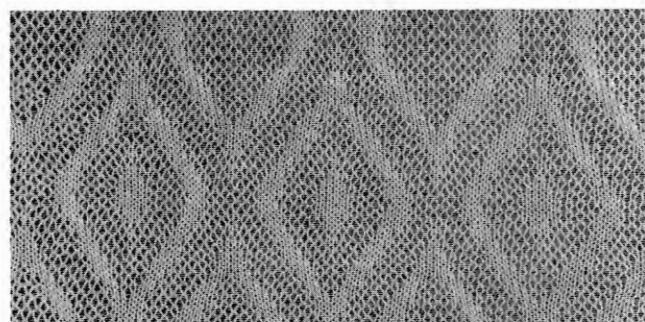
No.FR-5-A



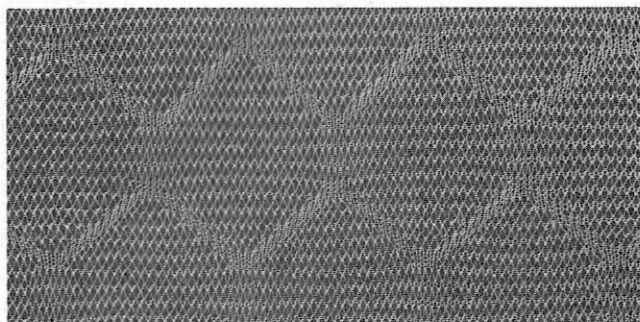
Samples for MESH KNITTING with Punch Card

(4.5mm pitch machine)

No.7 **R-2** -A

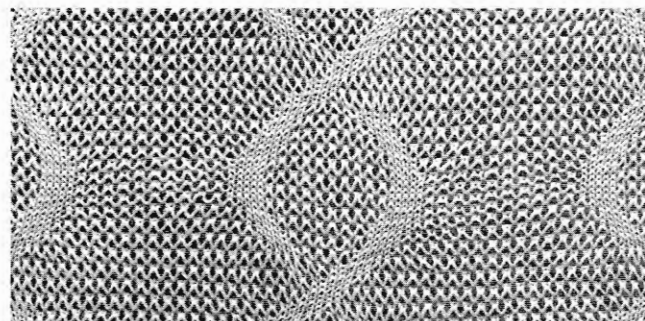


No.9 **R-2** -A

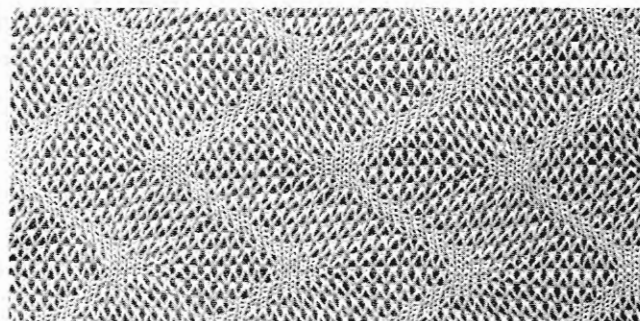


(3.6mm pitch machine)

No.FR-8-A

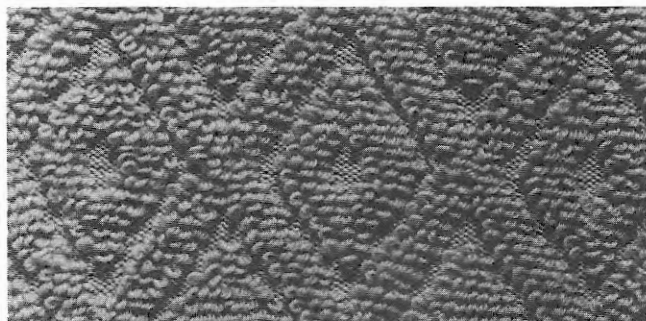


No.FR-10-A



PILE KNITTING

Punch Card Knitter

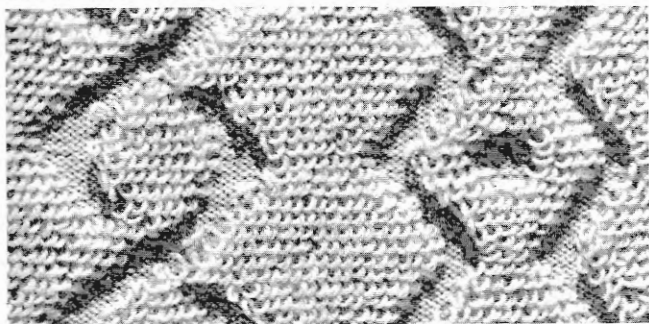


The stitches in this knitting are formed using both ground yarn and pile yarn. Knit using pile yarn only on Knitter and both yarns on Ribber, removing loops on knitter every two rows.

The sample is knitted with 4.5mm pitch machine with Punch Card No.7 **R-2** -A using wooly nylon (ground yarn) and light yarn (pile yarn). (To knit this type of knitting with 3.6mm pitch machine, wooly nylon (ground yarn) and medium fine yarn (pile yarn) are suitable.)

[illegible]

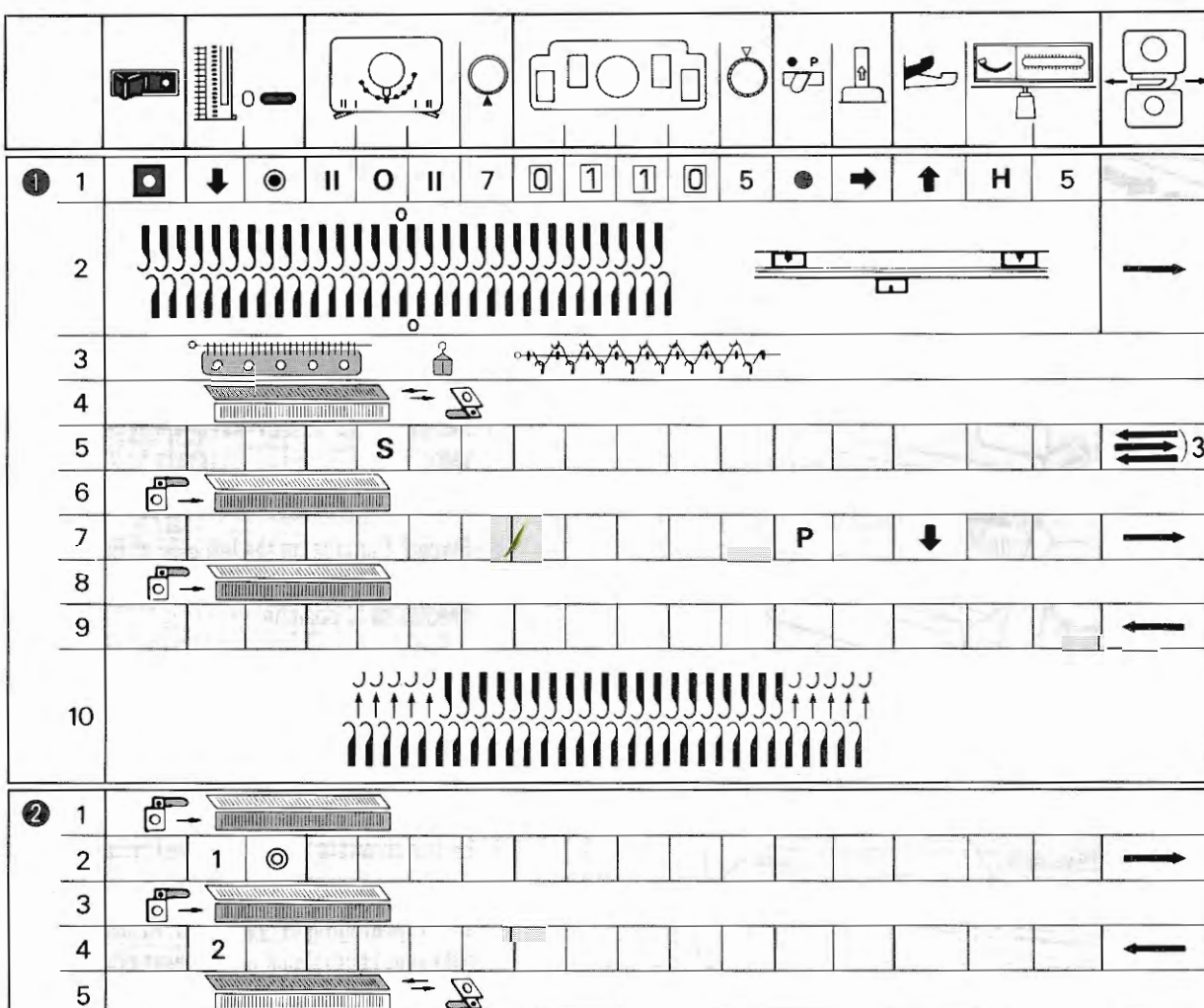
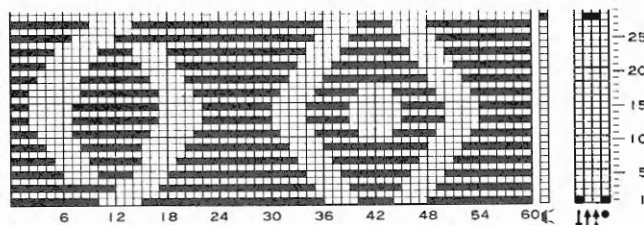
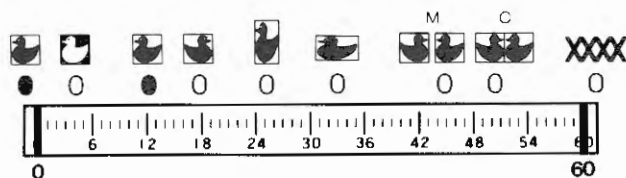
Electronic Knitter



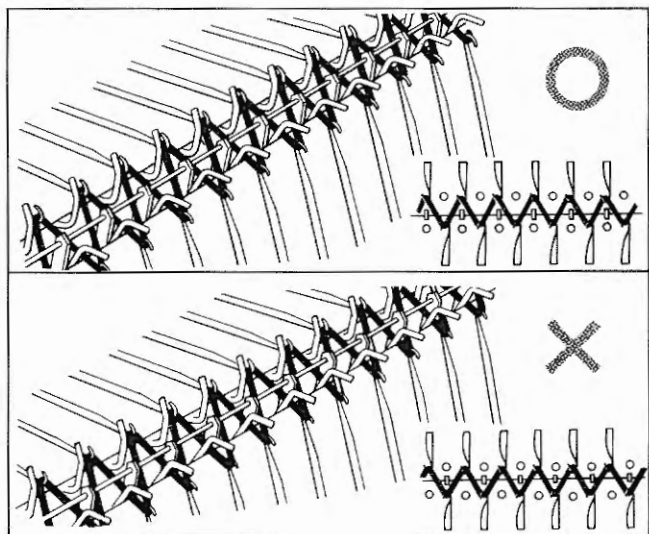
The stitches in this knitting are formed using both ground yarn and pile yarn. Knit using pile yarn only on Knitter and both yarns on Ribber, removing loops on Knitter every two rows.

The sample is knitted with 4.5mm pitch machine with the Pattern Card shown below using wooly nylon for ground yarn, and light yarn for pile yarn. (To knit this type of knitting with 3.6mm pitch machine, wooly nylon (ground yarn) and medium fine yarn (pile yarn) are suitable.)

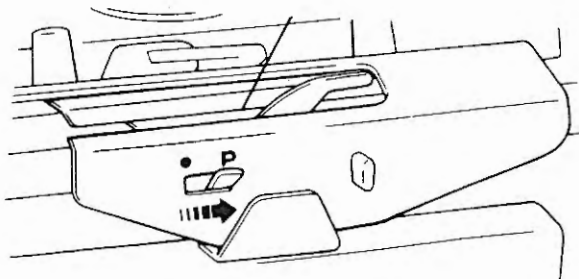
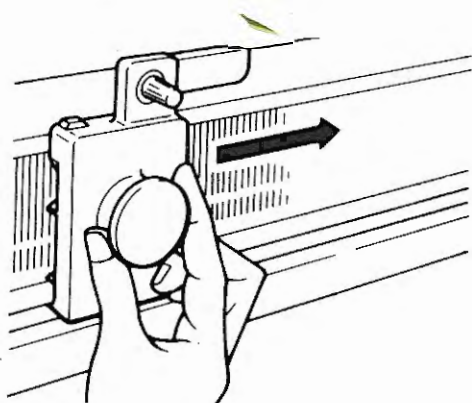
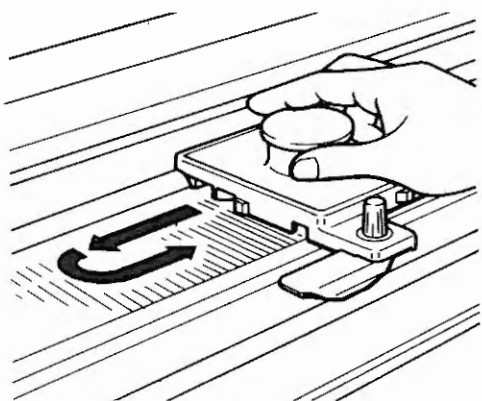
Do not use the Pattern Switch 1 with its right light on and Pattern Switch 3 and 6.



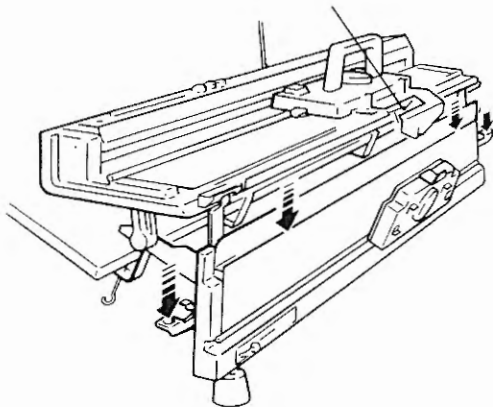
When inserting the Pattern Card, make sure that the light of Inspection Switch is ON.



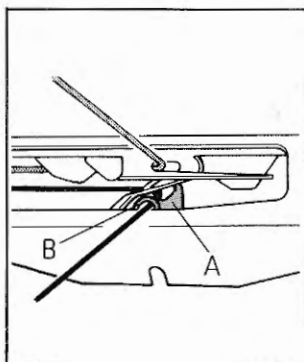
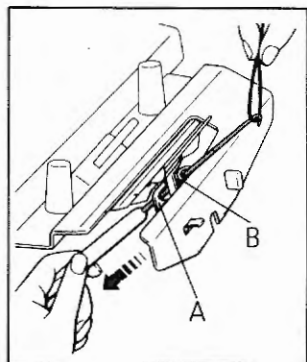
- ① — 1 Set machine controls as instructed.
Set Stitch Dial to the same number as for main knitting.
- 2 Arrange needles as shown and knit from the left to the right with waste yarn.
- 3 When suspending Cast-on Comb, insert it so that its teeth face Ribber Sinker Posts as illustrated.



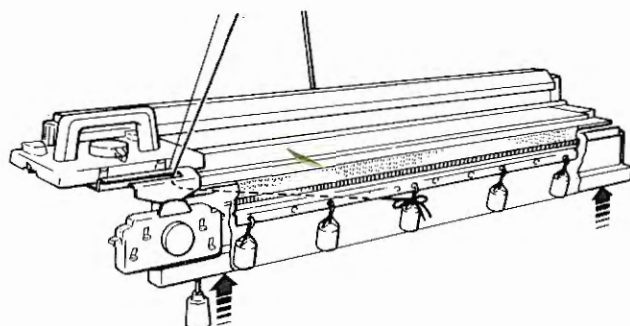
- ① — 4 Place P Carriage with P Presser attached on the right side of Knitter Needle Bed (refer to page 12). Move P Carriage to the left and back again so that stitches on Knitter are removed and the needles are aligned in B position again.
- 5 Set Cam Lever to SLIP (**S**) and knit 3 rows with waste yarn.
- 6 Place P Carriage on the left side of Ribber Needle Bed (refer to page 12), and slide it to the right to push up needles to C position.
- 7 Exchange waste yarn for pile yarn in main Yarn Feeder.
Set Auxiliary Yarn Feeder Lever to **P** (right) position, and thread ground yarn into Auxiliary Yarn Feeder following instructions on the next page.



- (1) Lower Ribber Needle Bed to the middle position by depressing Drop Levers (marked red) once.



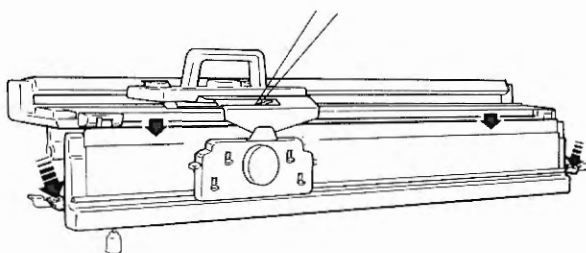
- (2) Thread ground yarn through Auto-Tension.
- (3) Make a loop on yarn end and hold it above Auxiliary Yarn Feeder.
- (4) Insert Hook Tool from underneath through Auxiliary Yarn Feeder "A" and Yarn Guide "B", then catch yarn loop. (refer to page 11.)
- (5) Pull Hook Tool downwards threading yarn through Yarn Guide and Auxiliary Yarn Feeder.



- (6) Tie yarn end to hook of Weight on Cast-on Comb.
- (7) Tilt the Ribber Carriage towards you and push up Ribber Needle Bed to its top position. Connect the Ribber Carriage to the Arm. Ensure Ribber needles are correctly lined up in C position.

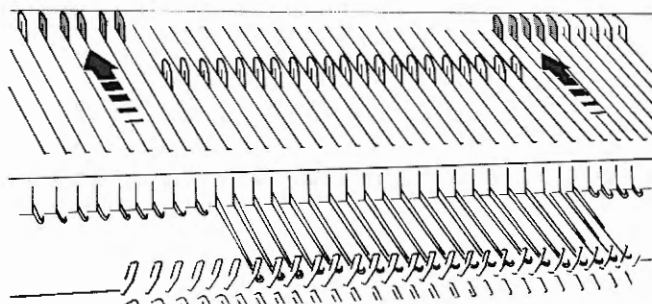
IMPORTANT:

Ensure Link Pin on Ribber Carriage is joined properly to Ribber Arm.

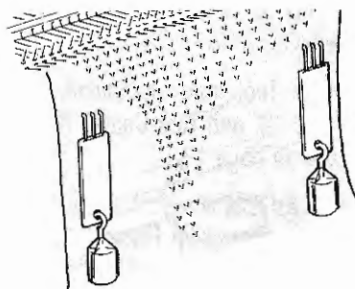
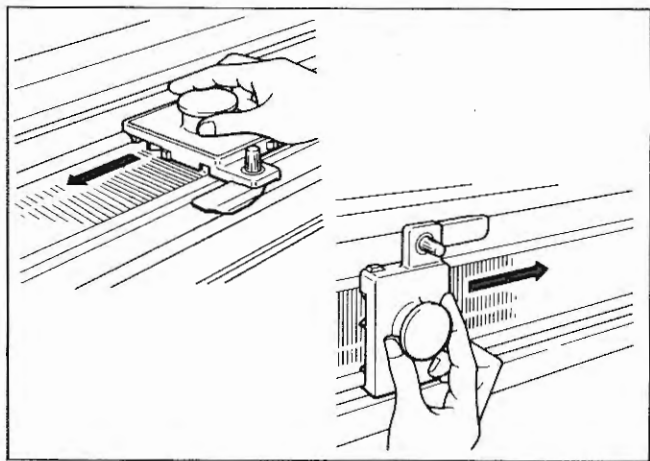


- (8) Depress both Pile Levers (marked blue) to widen space between Knitter and Ribber Needle Bed.
- (9) Knit from the left to the right.

If the yarns are loose, pull them back from below the Auto-Tension before moving Carriage.



- 8 Bring Ribber needles to C position using P Carriage.
- 9 Knit from the right to the left.
- 10 On Knitter, push 5 needles back to A position at both sides of knitting to leave plain edges for seaming.



② — 1 Bring Ribber needles to C position using P Carriage.

— 2 Set Stop Knob to ▼ and right Side Lever to ▼ on the Punch Card Knitter (On the Electronic Knitter, press OFF the Inspection Switch).
Knit 1 row from left to right.

— 3 Slide P Carriage on Ribber from the left to the right.

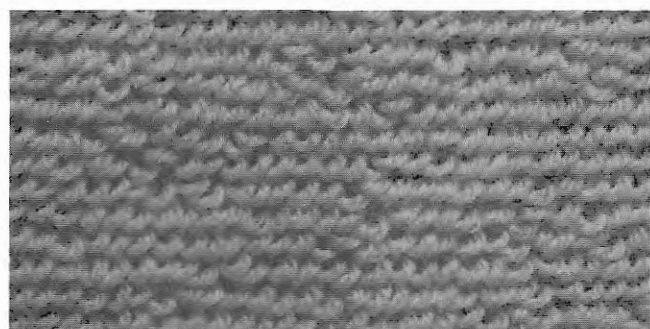
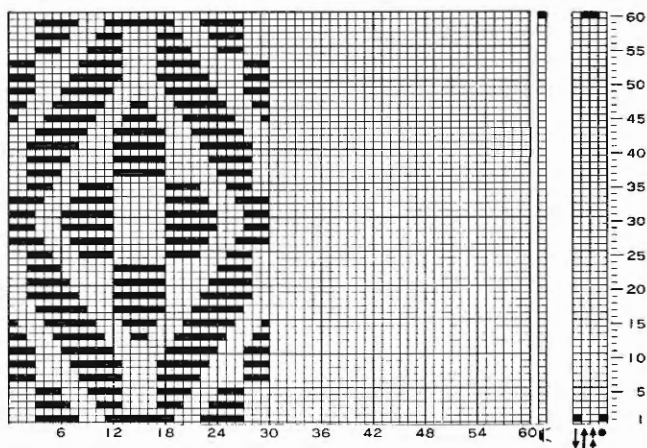
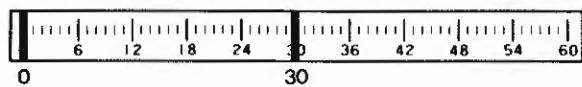
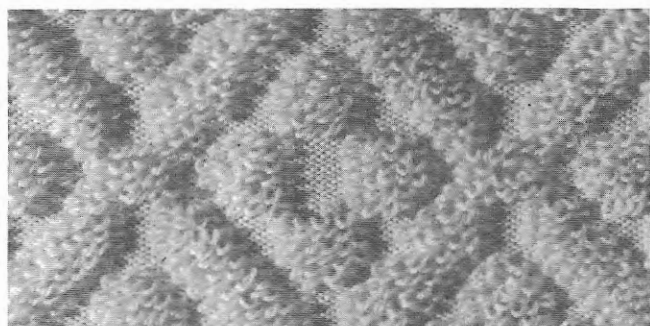
— 4 Knit 1 row from the right to the left.

— 5 Remove stitches on Knitter using P Carriage.

Repeat ② — 1 ~ 5 for main knitting.

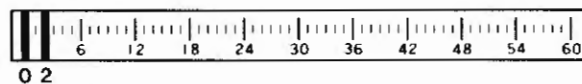
Suspend Hanger Combs with Weights after 10 rows and move them up every 10 rows.

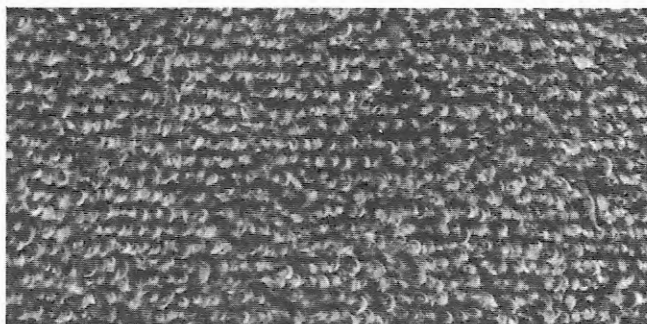
The following samples can be knitted in the same way as above.



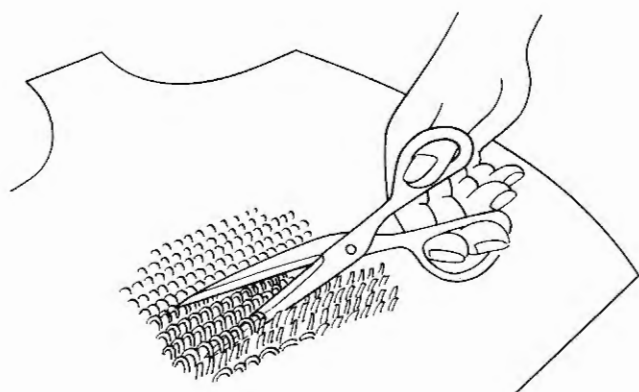
The sample on the left is knitted without using Punch Card on the Punch Card Knitter.

To knit the same fabric on the Electronic Knitter, use the same Pattern Card as for Mesh Knitting on page 53, but set Pattern Width Indicator as instructed below.





You can cut the loops of pile knitting if you wish.



To cut loops, spread fabric on a flat surface.

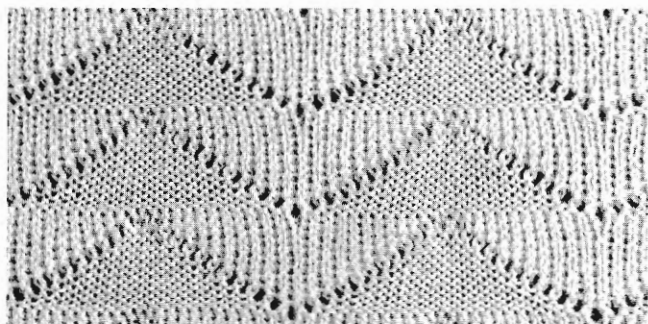
Insert one scissor blade into centre of loops and cut open.

Steam the surface of the fabric.

DO NOT PRESS.

SHADOW LACE


Punch Card Knitter



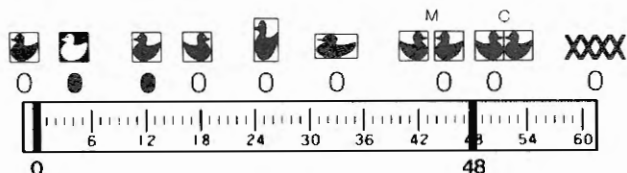
This pattern is made in Double Rib. While the Ribber needles knit every stitch, the Knitter needles selected by the Punch Card form loops. Stitches are transferred from the Knitter to the Ribber at an interval of several rows, as required.

The sample is knitted on 4.5mm pitch machine with light yarn, using Punch Card No.22 (R) supplied with Shadow Lace Transfer Tool (option). (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)

1	1	●	S	●	O	●	0	0	1	1	0	0	●	→	↑	H	5	
2																	→	
3																		
4			▼	S				0			2							→→→)3
5	↓			O	▼	3		1			5							→→→)2
6																		
2	1	¹ 12	▼	S														→→→)12
2																		
3	¹³ 24																	→→→)12
4																		

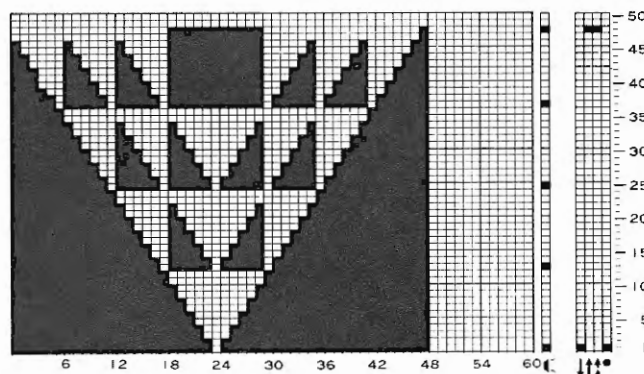
 When you knit with 4.5mm pitch machine, transfer stitches from the Knitter to the Ribber, using the Shadow Lace Transfer Tool (option). (When you knit with 3.6mm pitch machine, transfer stitches from the Knitter to the Ribber using Double-eye Transfer Tool.)

Electronic Knitter




This pattern is made in Double Rib. While the Ribber needles knit every stitch, the Knitter needles selected by the Pattern Card form loops. Stitches are transferred from the Knitter to the Ribber at an interval of several rows, as required.

The sample is knitted on 4.5mm pitch machine with the Pattern Card shown below using light yarn. (To knit this type of knitting with 3.6mm pitch machine, fine yarn is suitable.)



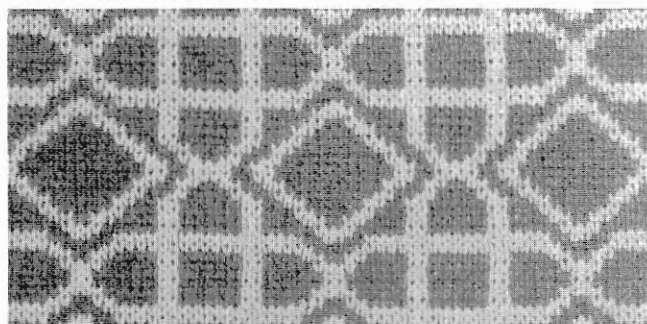
①	1				II	O	II	O					O				H	5	
2																			
3																			
4				C							2								3
5				O		3					5								2
6																			

②	1			S															12
2																			
3																			12
4																			

 When you knit with 4.5mm pitch machine, transfer stitches from the Knitter to the Ribber, using the Shadow Lace Transfer Tool (option). (When you knit with 3.6mm pitch machine, transfer stitches from the Knitter to the Ribber using Double-eye Transfer Tool.)

DOUBLE JACQUARD

Punch Card Knitter

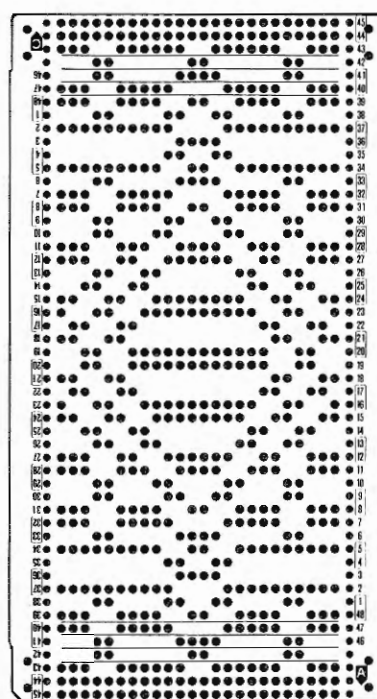


Double Jacquard is a fabric with two colours in a row, but with no floats of yarn on the reverse side of the knitting.

Using the Yarn Changer (option) and a Punch Card, pattern is made on Knitter side, with Cam Lever at SLIP, and Ribber knits Slip Stitch over alternate needle.

The sample is knitted on 4.5mm pitch machine with thin yarns, using the Punch Card given on the right. (To knit this type of knitting on 3.6mm pitch machine, use extra fine yarns.)

Use Close Knit Bar.

[illegible]

* Set up Automatic Yarn Changer.

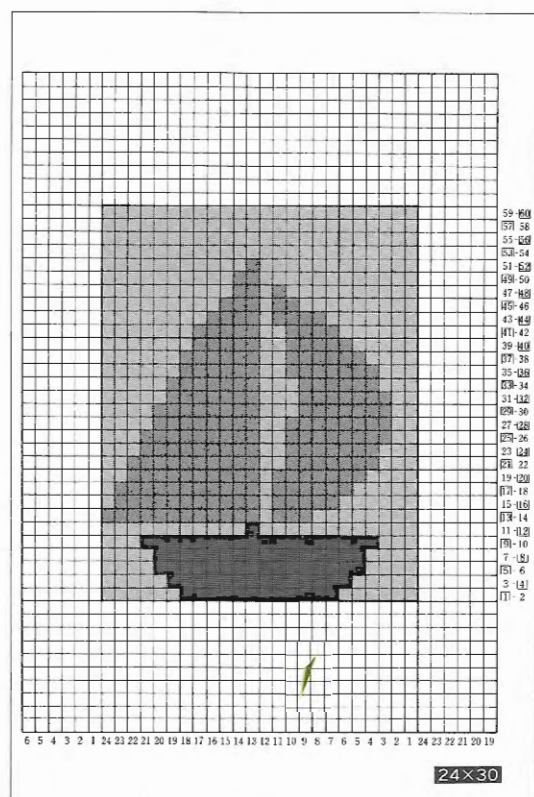
{

A.....Holder A	①	} positions of Holders
B.....Holder B	①	
C.....Holder C	②	
D.....Holder D		

Double Jacquard can also be knit by setting both Select Levers to **0** and Set Levers to **1** at step **2** — 1. For this setting, set both Knitter and Ribber Stitch Dials 2 numbers smaller than the Stitch Dial numbers instructed at step **1** — 5 in the above operation table. However, the pattern of the finished knitting can be elongated in comparison with the pattern on the Pattern Card.

With the settings instructed in the above operation table the Carriage operation is much smoother and lighter.

Punching a Card for Double Jacquard

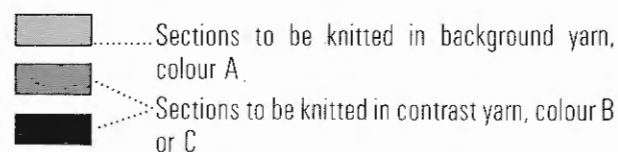


To punch a card for Double Jacquard using a blank card it is important to realise that each row of Double Jacquard pattern consists of two rows of slip stitch knitting. One is with background yarn and the other is with contrast yarn.

Follow the procedure below.

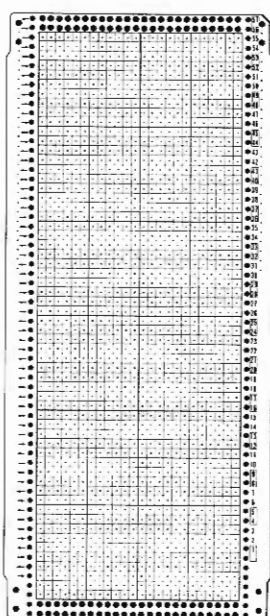
1. Draw your pattern on the graph paper supplied with the blank card set. Use the side marked **24 × 30**.

Maximum size of a pattern is 30 rows by 24 stitches to fit in a standard card, because one row of a pattern requires two rows of punching on the card.



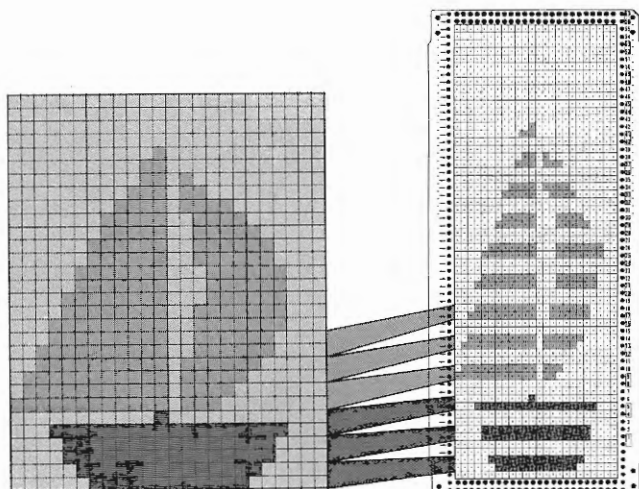
IMPORTANT:

Even number of rows must be knitted in each colour, so the total number of rows for the pattern must also be an even number.



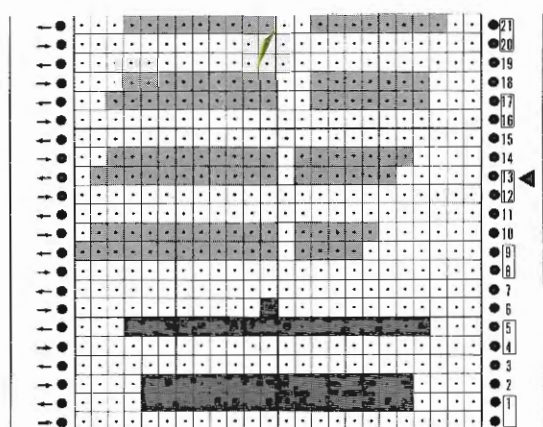
2. Mark the pattern from the graph paper onto the Card. Use the Card with the rectangular numbers at the right edge.

- (1) Colour the first row of the Card, then the 4th and 5th rows missing 2nd and 3rd rows. Repeat in the same way throughout so that 2 rows of background yarn (coloured rows) alternate with 2 rows of contrast yarn. The division of coloured and plain rows is the same as the orange and blue rows on the check card.



- (2) Mark the parts of contrast yarn on the first and second rows of the pattern onto the second and third rows of the Card (non-coloured rows) respectively.

In the same manner mark the parts of contrast yarn of every 2 rows of the pattern onto non-coloured rows of the Card.

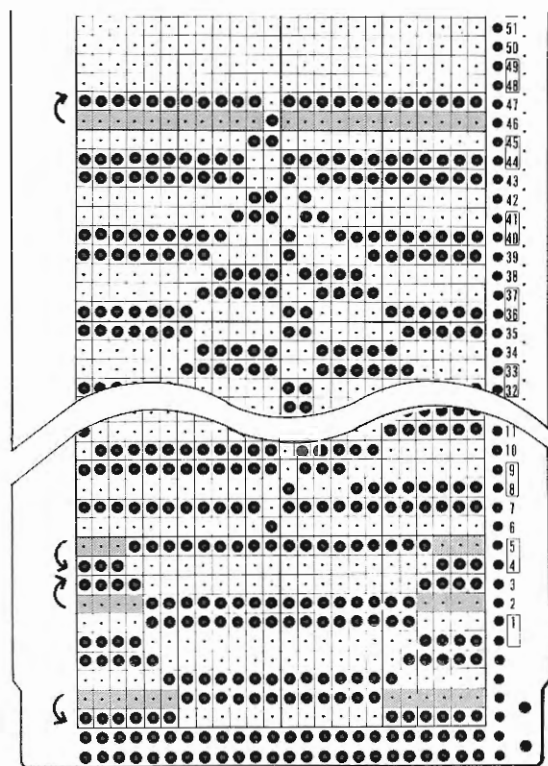


- (3) If more than two yarns are to be used for the pattern, mark the position to change the yarn (at the odd row number).

The row number to appear at the Pattern Panel while knitting corresponds to the row of five rows below.

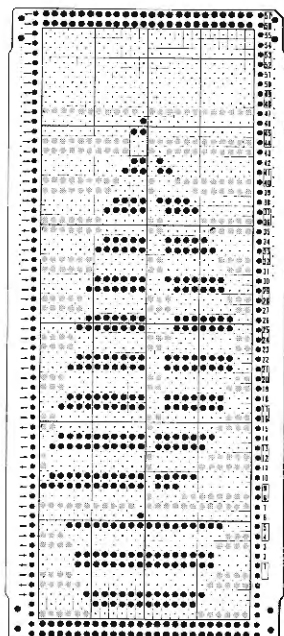
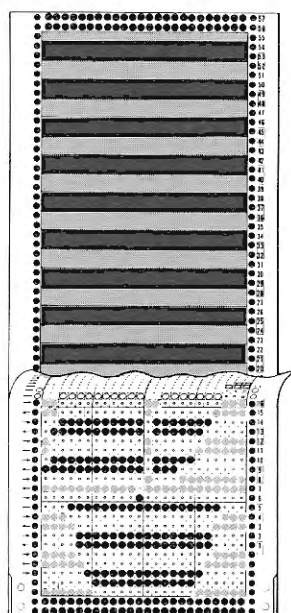
Holder button for the yarn to be selected next is pushed when the Carriage is at right side, so the yarn changing mark must be positioned one row before the yarn is knitted.

3. Punch the sections marked.



4. Punch the sections for background yarn which correspond to the non-punched sections of the pattern rows in the following manner.

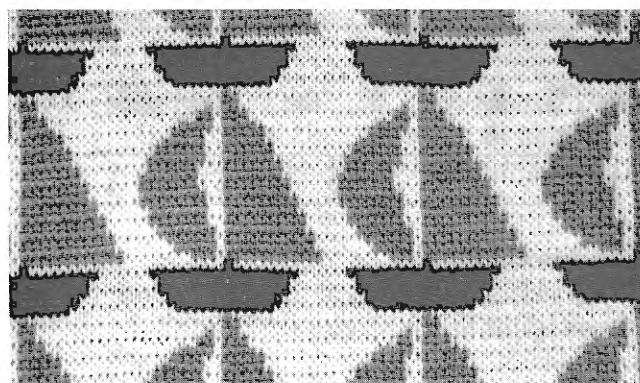
- (1) For the first row, punch the sections which correspond to the non-punched sections on the second row.
- (2) Of the two consecutive coloured rows of the Card, punch the lower row to match the non-punched section of the row below, and punch the upper row to match the non-punched section of the row above.
- (3) The last row of punching must be for the background yarn so that the pattern will be consecutive.



5. To check that the card is correctly punched, lay it over Check Card.

Make sure that the edges of punched card match the Check Card.

Punched holes in orange colour.....background yarn
Punched holes in blue colour.....contrast yarn



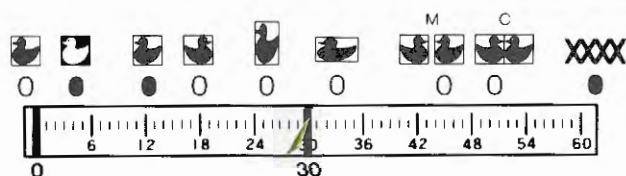
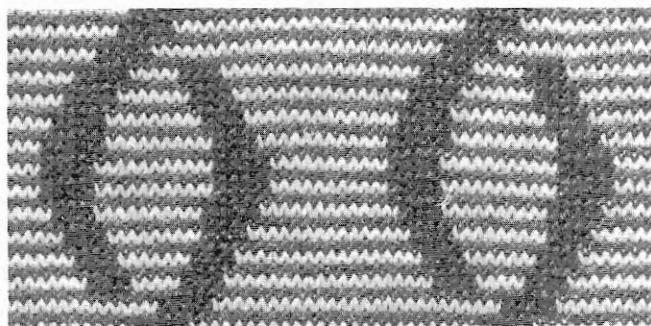
6
5
4
3
2
1

Row numbers rectangled Knit with background yarn.

Row numbers not rectangled Knit with contrast yarn.

Extra Pre-Punched Card sets for Double Jacquard (Series 73 & 74) are also available for 4.5mm pitch machine.

Electronic Knitter



*Use Close Knit Bar.

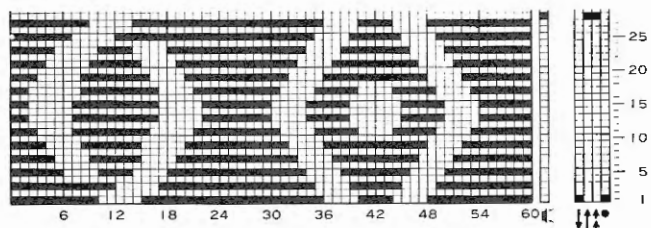
*Before pressing No.6 Switch at step ❶ — 6, make sure that the left light of Switch 1 is on.

Double Jacquard is a fabric with two colours in a row but with no floats of yarn on the reverse side of the knitting.

Using Yarn Changer (option) and Pattern Card, pattern is formed on the Knitter side, with the Cam Lever set at **J** (JACQUARD) and Ribber knits Slip Stitch over every alternate needle.

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

The sample is knitted on 4.5mm pitch machine with thin yarns, using the Pattern Card as shown below. (To knit this type of knitting on 3.6mm pitch machine, extra fine yarns are suitable.)

[illegible]

* Set up Automatic Yarn Changer.

A..... Holder A ①
B..... Holder B ② } positions of Holders
C..... Holder C
D..... Holder D

Double Jacquard can also be knit by setting both Select Levers to **0** and Set Levers to **1** at step **2** — 1. For this setting, set both Knitter and Ribber Stitch Dials 2 numbers smaller than the Stitch Dial numbers instructed at step **1** — 5 in the above operation table. However, the pattern of the finished knitting can be elongated in comparison with the pattern on the Pattern Card.

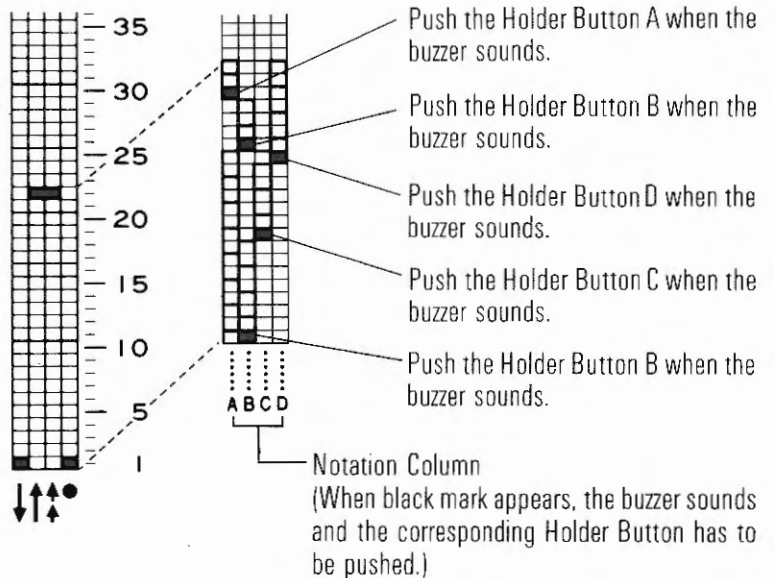
With the settings instructed in the above operation table the Carriage operation is much smoother and lighter.



- 1 — 1 Set the machine controls for the initial row.
- 2 Arrange needles and set Point Cams and Needle-1 Cam and knit from the left to the right.
- 3 Suspend Cast-on Comb with Weights.
- 4 Change machine controls for knitting subsequent 3 rows. Knit 3 rows.
- 5 Change machine controls and knit 1 row.
- 6 Hook contrast yarn on Holder B. Set Pattern Switches as shown on the left.

Main Knitting

- ② — 1 ~ 3 Change machine controls to knit Double Jacquard. Start knitting from the right to the left till Driving Lever hits Feeding Lever to change the yarn every two rows. (Two lights of the Switch 1 light on alternately every two rows.)
- While knitting, change the yarns following the mark on the Notation Column by pushing the corresponding Holder Button when a buzzer sounds.



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

To change pattern while knitting Double Jacquard

To change the pattern width or the Pattern Card.

- 1- Place the Carriage on the right and press Inspection Switch so the light comes on.
- 2- Re-set the Pattern Width Indicator or exchange the Pattern Card.
- 3- Press Inspection Switch so the light goes off.
- 4- Start knitting.

To re-set the Pattern Switches

- 1- Place the Carriage on the right.
- 2- Press the selected Pattern Switches so its light comes on or goes off.
- 3- Start knitting.

To change the positions of N1 Cam and/or the Point Cam on the side with the Carriage.

- 1- Place the Carriage on the right and press Inspection Switch so the light comes on.
- 2- Replace the N1 Cam and/or right Point Cam and disconnect the Ribber Carriage from the Arm.
- 3- Move the Knitter Carriage twice without knitting by using the Release Lever.
- 4- Press Inspection Switch so the light goes off.
- 5- Connect the Ribber Carriage and start knitting.

IMPORTANT!

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

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 above. 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.

To knit Double Rib which looks the same as Double Jacquard

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

If incorrectly knitted in the course of Double Jacquard

- 1- Unravel an even number of rows.
 - 2- Press Inspection Switch so the light comes on and return the Pattern Card only half the number of rows unravelled. Press Inspection Switch so the light goes off.
 - 3- Return the Row Counter and Pattern Paper the same number of rows unravelled.
 - 4- Since two lights of Switch 1 light on alternately every two rows, reset Pattern Switch 1 according to the number of rows unravelled.
 - 5- Re-arrange the Holder Buttons of the Yarn Changer to correspond with the mark in the Notation Column.
- * 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 incorrectly knitted in the course of Double Jacquard using Switch 3

- 1- In Double Jacquard using Pattern Switch 3, it takes 4 complete movements of the linked Carriages to knit one row of the Pattern Card, therefore unravel a multiple of four rows.
 - 2- Press Inspection Switch so the light comes on and return the Pattern Card only quarter the number of rows unravelled.
 - 3- Return the Row Counter and Pattern Paper the same number of rows unravelled.
 - 4- Re-arrange the Holder Buttons of the Yarn Changer to correspond with the mark in the Notation Column.
- * There will be no need to reset the Pattern Switch 1.

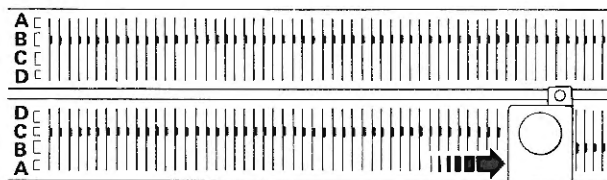
Cast-On

- ① — 1~4 Set machine controls, arrange needles as instructed, and work cast-on.
- 5 Change machine controls and knit 2 rows.
- 6 Hook contrast yarn on Holder B and C respectively.
Press Switch 3 so the light comes on.

N.B. Make sure of pressing No.3 Switch ON just before starting main knitting. (The Carriage is on the left.)

Main Knitting

- ② — 1 Press Inspection Switch so the light goes off.
Set Cam Lever to **S** (SLIP).
Set Driving Lever to upright position.
Set Select Levers to **1-1** and Set Levers to **0**.
Knit 1 row from the left to the right.
Bring Holder A to ② position and Holder B to ① position.
- 2 Knit 1 row from the right to the left.
Make sure that the Driving Lever operates Feeding Lever and the yarn in the Main Yarn Feeder is exchanged for the yarn in Holder B.
- 3 Knit 1 row from the left to the right and bring Holder C to ① position.
- 4 Knit 1 row from the right to the left.
- 5 Knit 1 row from the left to the right and bring Holder A to ① position.
- 6 Knit 1 row from the right to the left and repeat steps ② — 1~6.



If stitches tend to float...

Knit pushing needles on Ribber to C position using P Carriage.

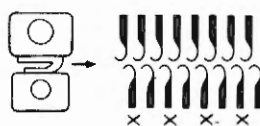
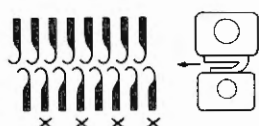
HINTS WHEN KNITTING DOUBLE JACQUARD AND MULTI COLOURED JACQUARD WITH BOTH SELECT LEVERS SET AT [1-1] AND SET LEVERS SET AT [0]

Select Levers

These are the additional mechanisms used to knit Double Jacquard and Multi Coloured Jacquard.

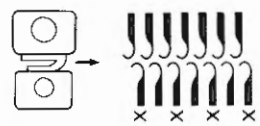
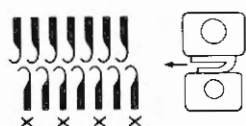
- * By setting Select Levers to [1-1] and Set Levers to [0], every alternate needle knits Slip Stitch on the Ribber and stripes of one row will be formed on the wrong side of the fabric.
- * By setting Select Levers to [0] and Set Levers to [1], every needle knits Stockinet on the Ribber and stripes of two rows will be formed on the wrong side of the fabric. (When knitting Double Jacquard with this setting, decrease stitches, increase stitches or work partial knitting in the same manner as done for Double Rib.)

Be sure to have an even number of needles in working position on the Ribber at all times because every alternate needle, starting with the first needle nearest to the Carriage, knits Slip Stitch.



*Needles marked with x will knit Slip Stitch.

If an odd number of needles are in working position on the Ribber, the same needles will knit Slip Stitch every row.



Decreasing stitches at the edge

To decrease one stitch at both edges.

- 1- On the Ribber, transfer two stitches onto the adjacent needles at the side where the ribber needle lies to the outside of the knitter needle and push the empty needles back to A position.



N.B. Always decrease two stitches at one side instead of decreasing one stitch at each side.

- 2- On the Knitter, transfer both edge stitches onto their adjacent needles and push the empty needles back to A position.



To decrease several stitches at the edge.

You can decrease only on the Carriage side. (see page 79)

- 1- Set Half Pitch Lever to P.
- 2- Transfer the required even number of ribber stitches to their corresponding knitter needles.
N.B. If an odd number of stitches are required to be decreased, subtract or add one stitch to make the total decreased stitches an even number.
- 3- Cast off the required number of stitches to be decreased, using the yarn.
- 4- Set Half Pitch Lever to H to continue knitting.

Increasing stitches at the edge

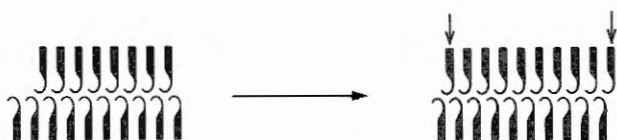
To increase one stitch at both edges.

- 1- On the Ribber, push two empty needles from A to B position at the side where the knitter needle lies to the outside of the ribber needle.



N.B. Always increase two stitches at one side instead of increasing one stitch at each side.

- 2- On the knitter, push one empty needle from A to B position at each side.



To increase several stitches at the edge.

You can increase on the opposite side of the Carriage. (see pages 76 ~ 77)

- 1- On the Knitter, push the required number of needles to B position.
- 2- On the Ribber, push the required even number of needles to B position.

N.B. If an odd number of stitches are required to be increased, subtract or add one stitch to make the total increased stitches an even number.

- 3- Knit one row.
- 4- Hang Edge Weight and continue to knit.

Partial Knitting

To decrease stitches.

*Follow the instructions on page 80, provided that an even number of needles must always be pushed to D position on the Ribber.

To increase stitches

*Follow the instructions on page 81, provided that an even number of needles must always be pushed back to B position on the Ribber.

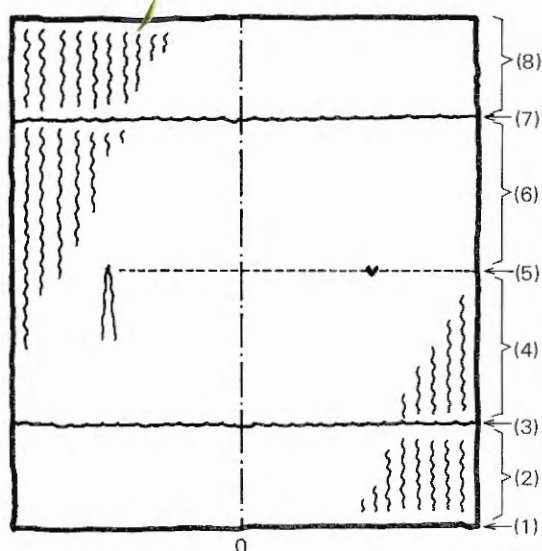
Recommended Stitch Dial settings for each type of yarn

4.5mm pitch	thin yarn	light yarn	medium yarn
Knitter	2 ~ 4	4 ~ 6	7 ~ 8
Ribber	2 ~ 4	4 ~ 6	7 ~ 8

3.6mm pitch	extra fine yarn	fine yarn	medium fine yarn
Knitter	3 ~ 5	4 ~ 6	6 ~ 8
Ribber	3 ~ 5	4 ~ 6	6 ~ 8

*For cast-on, refer to the Stitch Dial settings for Double Rib on pages 16 ~ 17.

TAKING A TENSION GAUGE



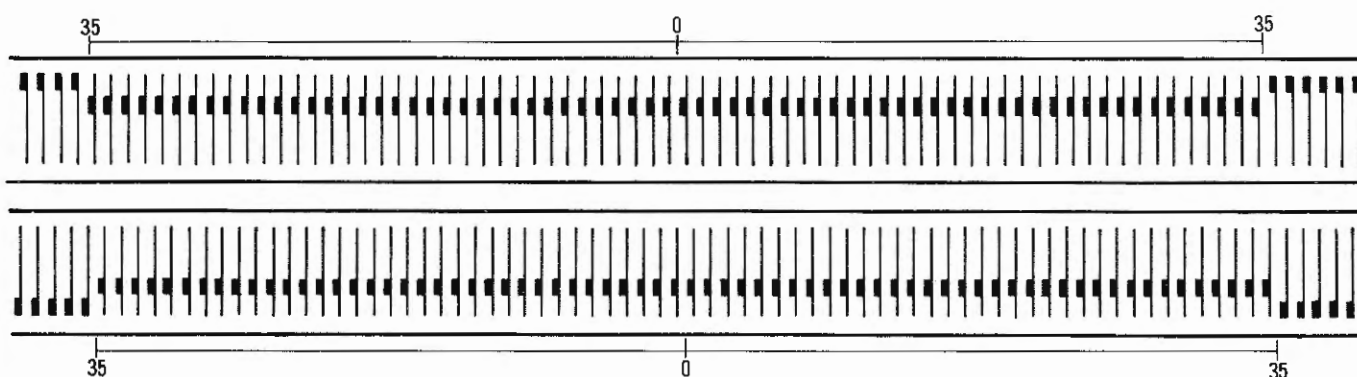
Tension Gauge

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

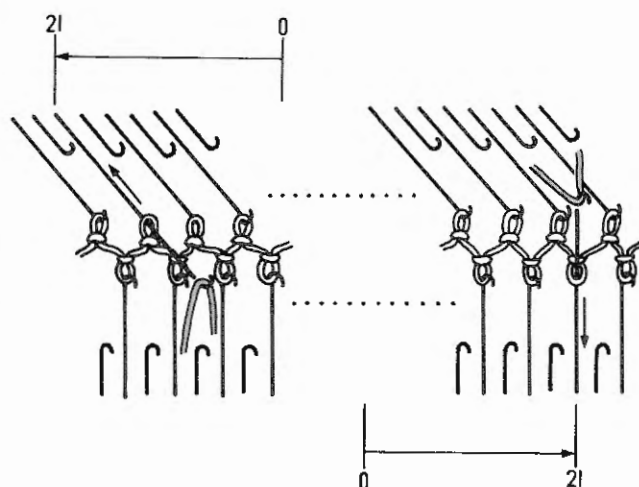
Try different stitch dial settings till you obtain a suitable tension for the yarn and stitch pattern chosen.

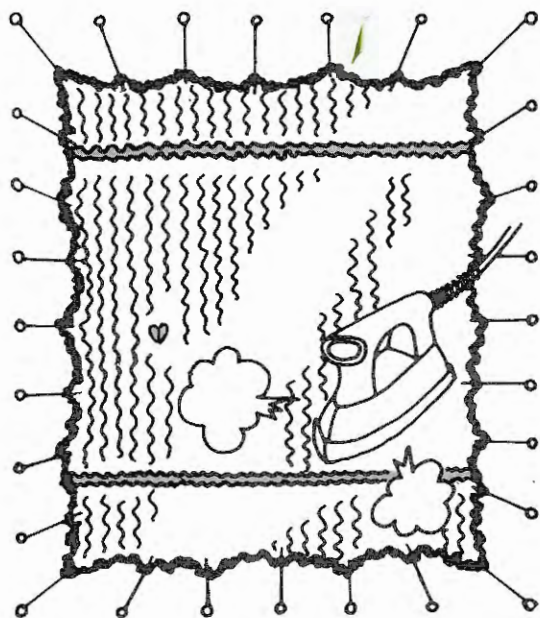
To knit a Tension Swatch:—

- (1) Regardless of stitch type, always arrange 35 needles on both sides of centre(0) on both beds.



- (2) Cast-on and knit 20 rows with main yarn in selected stitch pattern.
- (3) With contrast yarn, knit 2 plain rows.
- (4) With main yarn in selected stitch pattern knit 30 rows.
- (5) Put yarn marks on the 21st needles on both sides of centre(0) on either Knitter or Ribber. (Both yarn marks do not have to be on same bed.)
- (6) Knit 30 rows.
- (7) With contrast yarn, knit 2 plain rows.
- (8) With main yarn, knit 20 rows.
- (9) Remove the swatch from the machine.



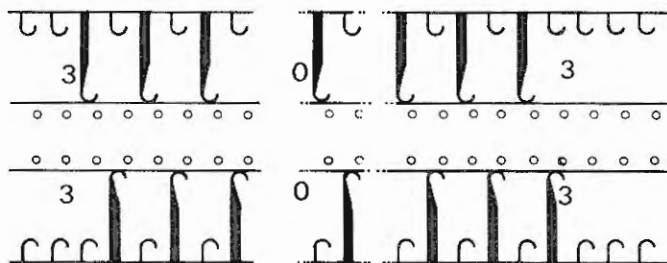
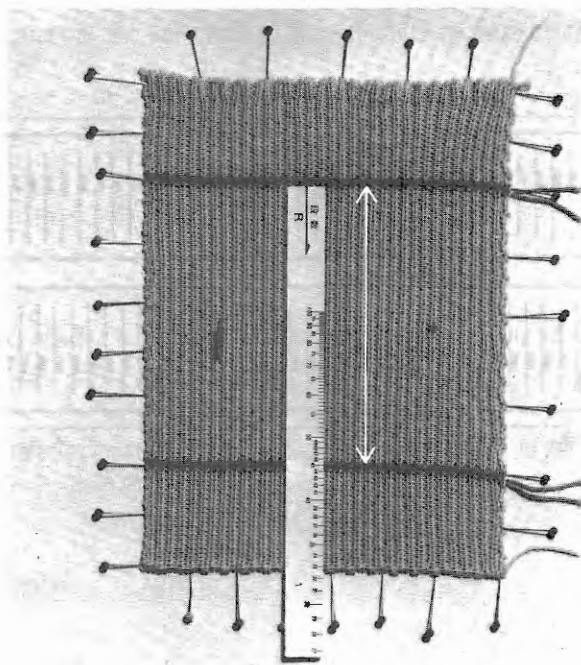
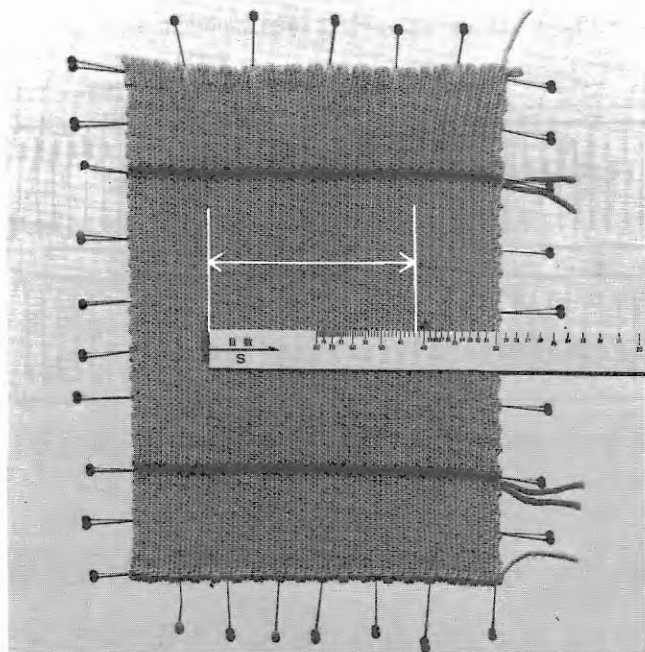


When the tension swatch is completed, remove it from the machine and leave it for several hours so that it can relax, then stretch the swatch widthways, until it looks how you want the finished garment. Pin it flat and square.

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 pinned down.

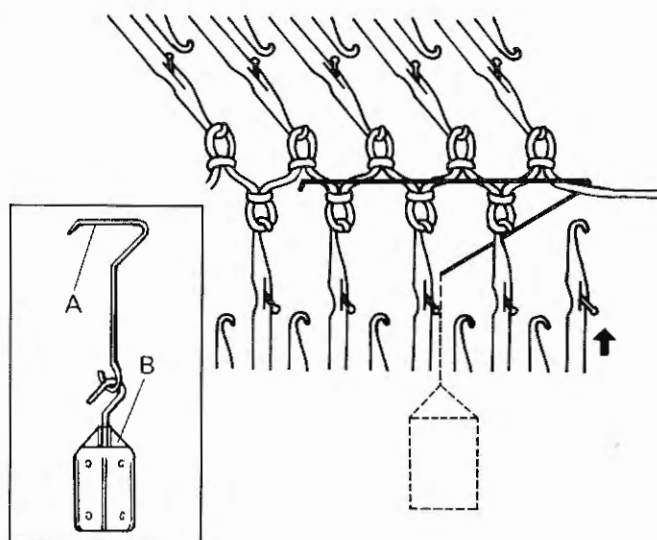
Measure the tension swatch to obtain the correct tension gauge using Gauge Scale between yarn marks.



When knitting a garment based on the tension gauge taken in the foregoing procedure, push the required number of needles for the width, including non-working needles, to B position.

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:

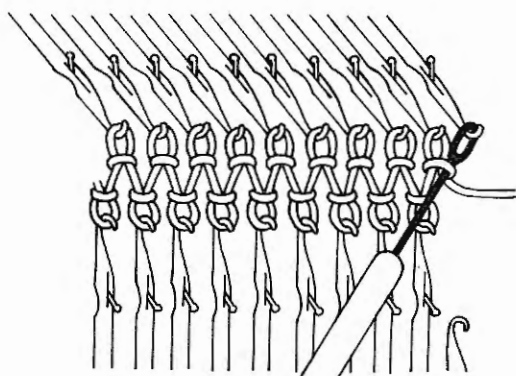
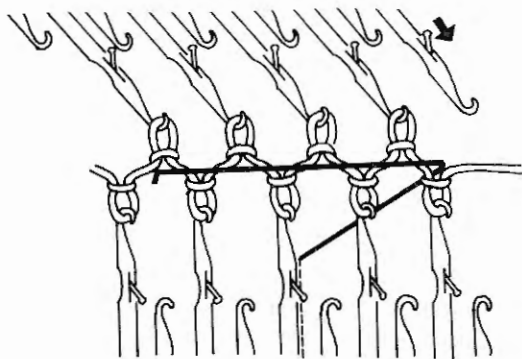
You can increase only on the Carriage side.

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.

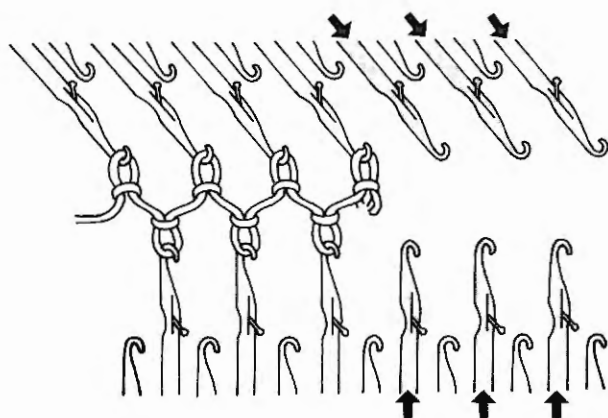
Move the Edge Weight up as knitting progresses.

3. Continue to knit.



In case of 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.

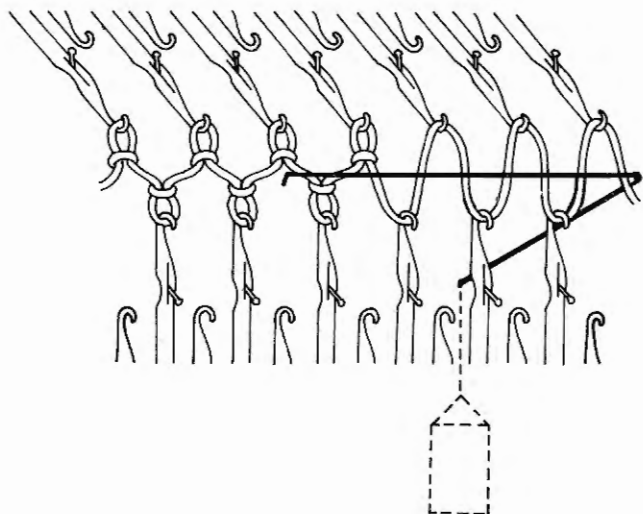


Increasing multiple stitches

You can increase on the opposite side of the Carriage.

In case of K1.P1. Rib and Double Rib:

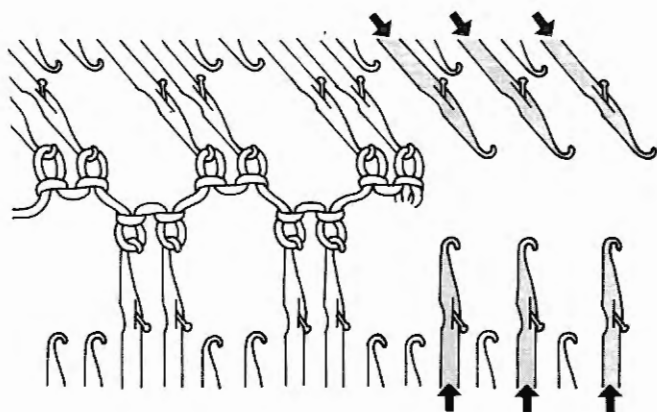
1. On opposite side of Carriage, push required Knitter and Ribber needles to B position.



2. Knit 1 row.

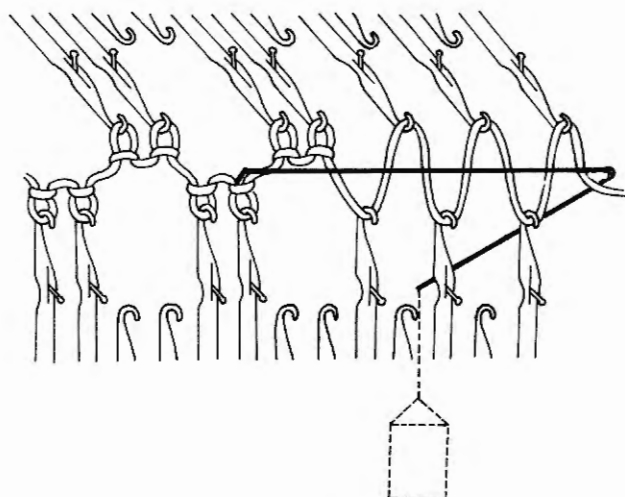
Yarn lies alternately in Knitter and Ribber needle hooks.

3. Hang Edge Weight and continue to knit.

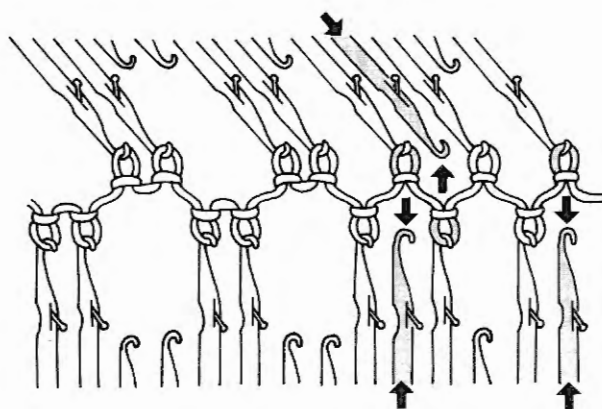


In case of K2.P2. Rib:

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

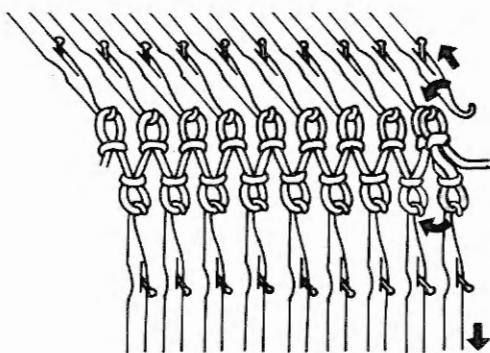


2. Knit 1 row and hang Edge Weight.



3. Knit 1 row and rearrange needles by transferring stitches as shown opposite.

4. Push empty needles back to A position. Continue to knit.

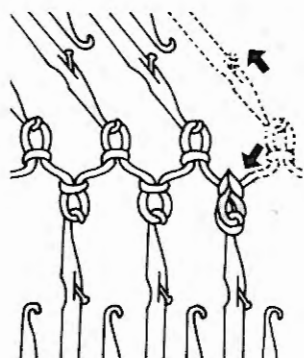


Decreasing 1 stitch

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

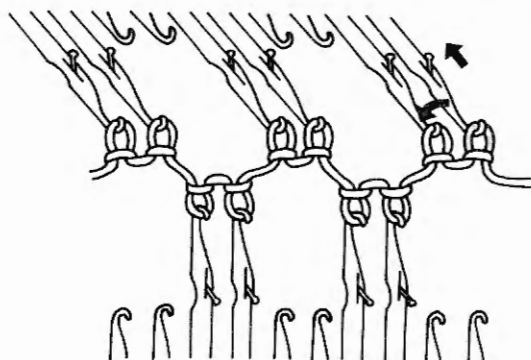
In case of Double Rib:

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



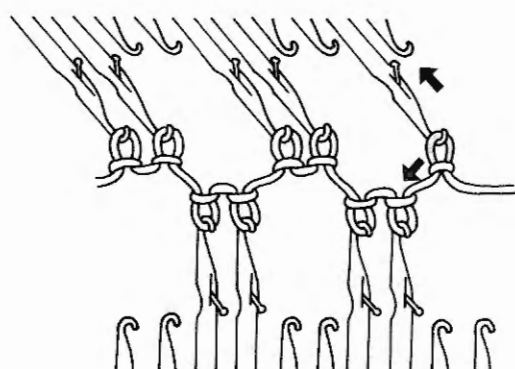
In case of K1.P1. Rib:

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

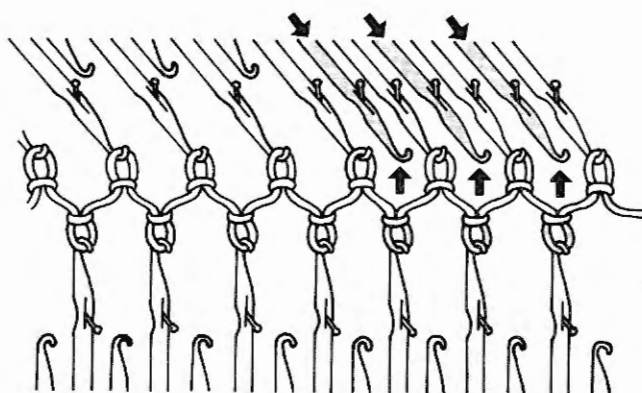


In case of K2.P2. Rib:

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.

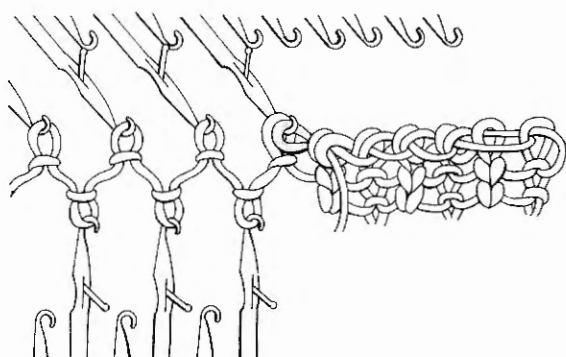
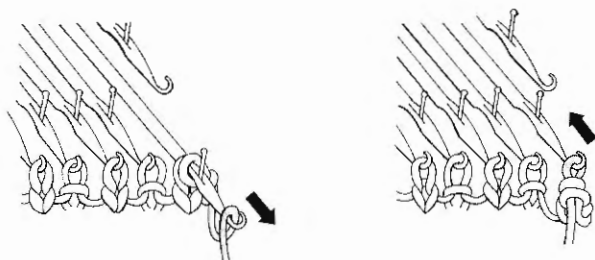
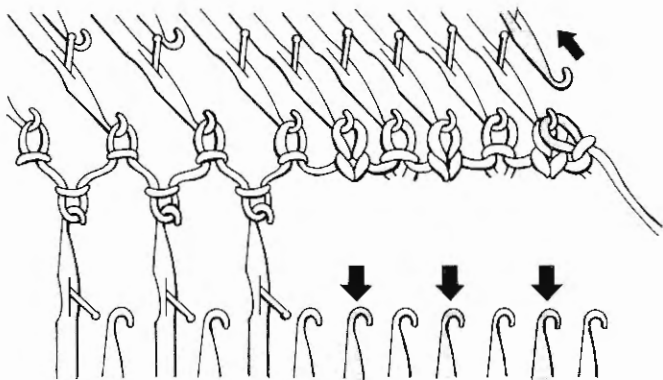


Decreasing multiple stitches

You can decrease only on the Carriage side.

In case of K1.P1. Rib 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.

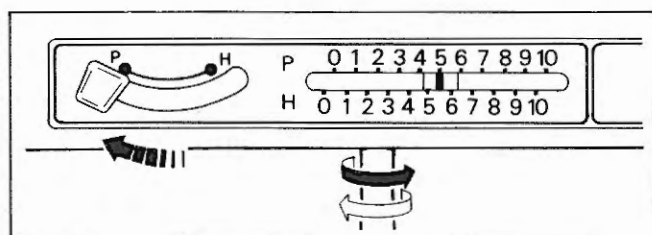


3. Push empty Ribber needles back to A position.
4. Transfer the end stitch to its adjacent needle and push empty needle back to A position.

5. Push the end working needle to D position. The two stitches are behind latch. Lay the yarn inside the needle hook.

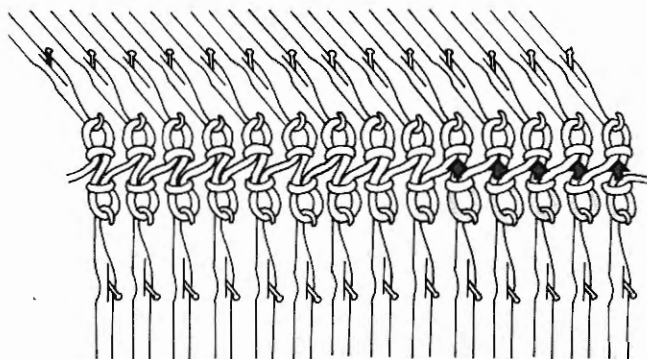
6. Holding yarn end slightly downwards, push the needle back to B position.
Repeat steps 4 ~ 6 until required number of stitches have been decreased.

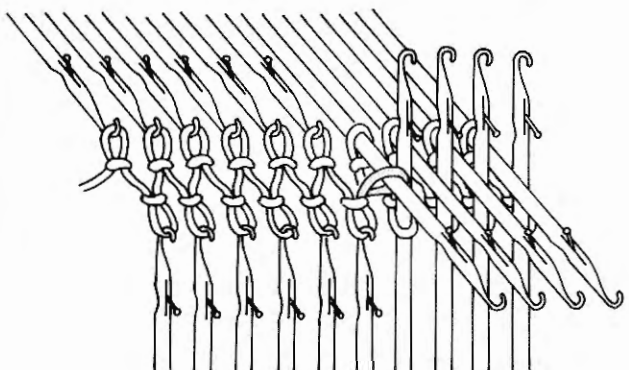
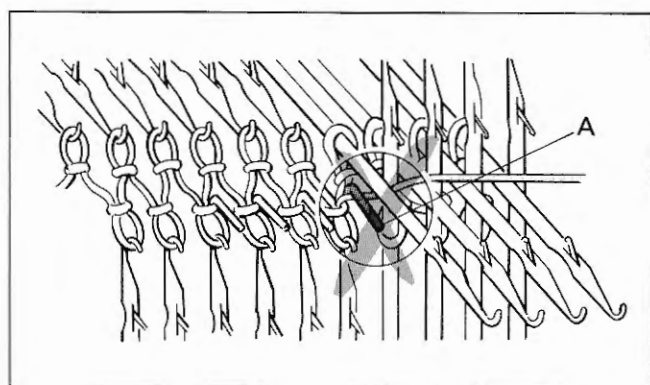
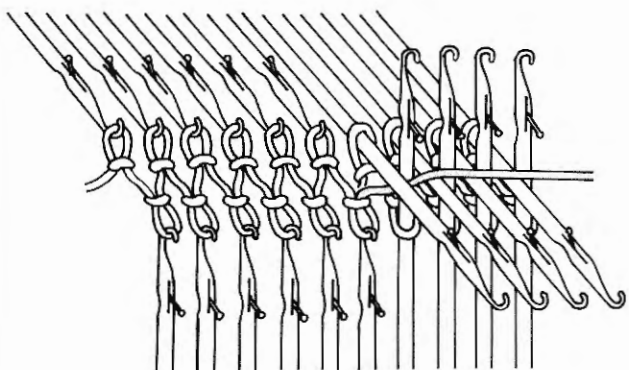
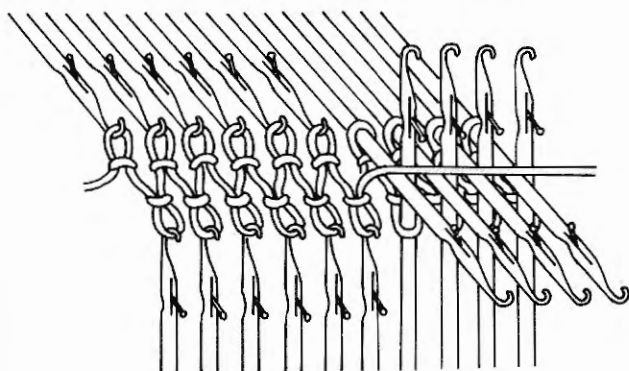
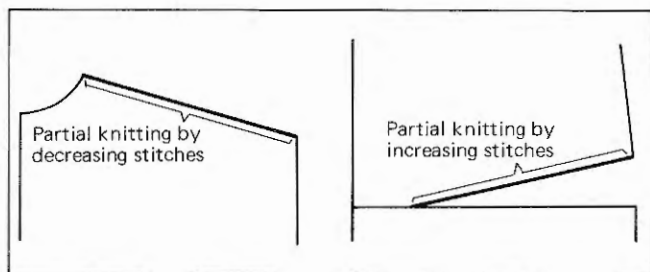
7. Place the last stitch onto adjacent needle.



In case of Double Rib:

1. Set Half-Pitch Lever to P.
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 Half-Pitch Lever to H 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.

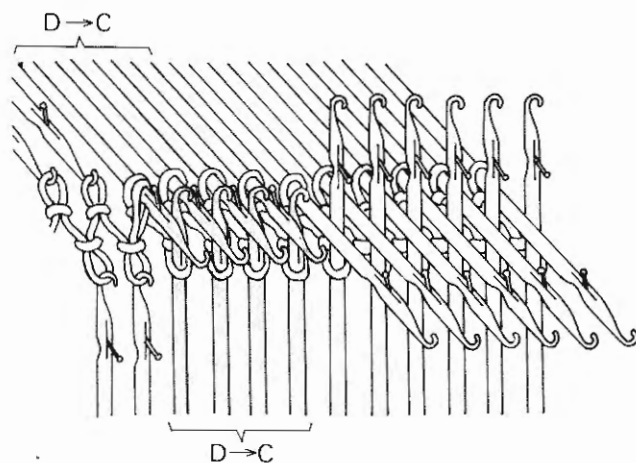
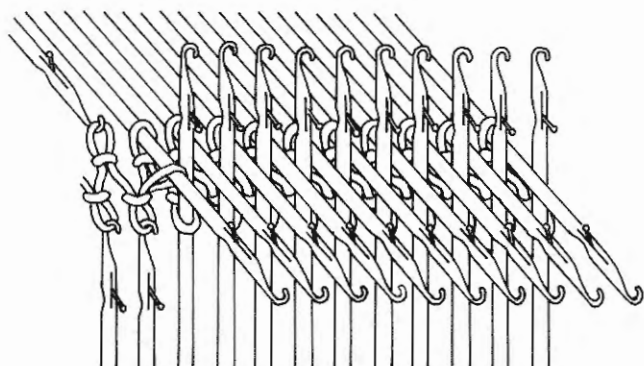
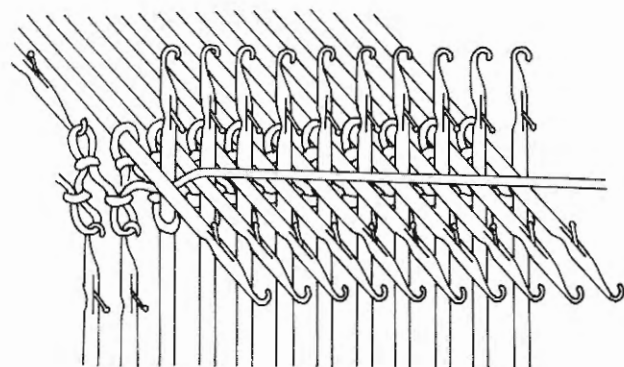
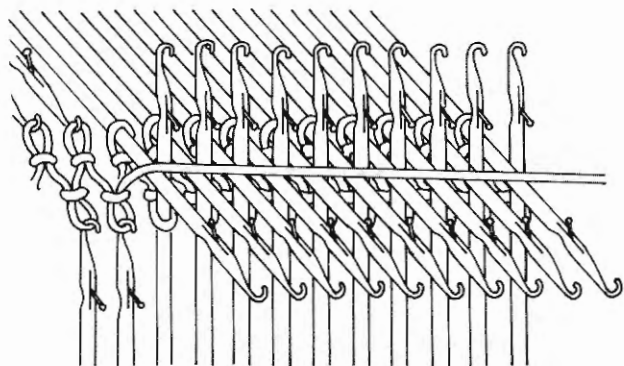
After completing partial knitting, continue as follows.

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.)

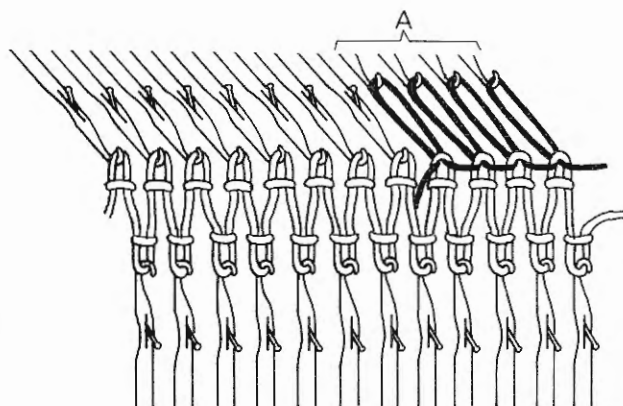
4. Knit 1 row.

(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.

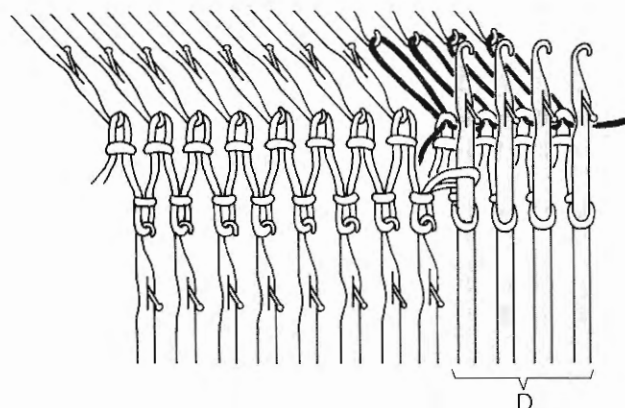
When the pattern knitting is required, using a Transfer Tool, return the needles to be increased to B position, and knit 1 row.

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 like stitches all of which involve "swing".



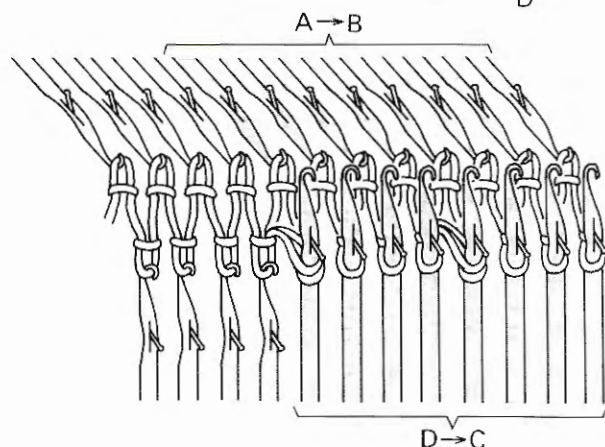
*When working partial knitting in Variation Swing, knit pushing up 4 or 5 needles in B position to C position.

Partial knitting by decreasing stitches

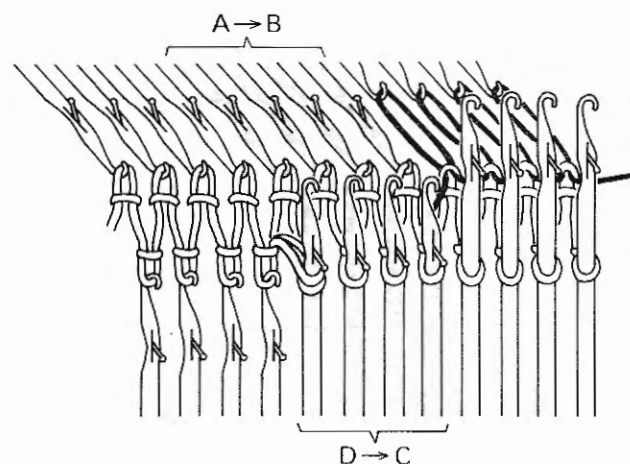
Work in the same manner as for partial knitting without involving swing, but work as follows instead of step 1.

On the side opposite Carriage, to hold stitches on Knitter to be decreased, knit with Ravel Cord by hand and push needles back to A position.

Push up corresponding Ribber needles to D position.



At the completion of partial knitting, push needles in D position on Ribber back to C position and replace stitches held on Ravel Cord into hooks of needles on Knitter.



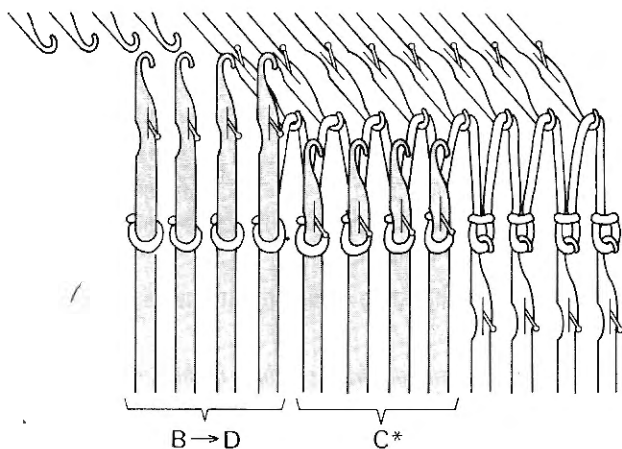
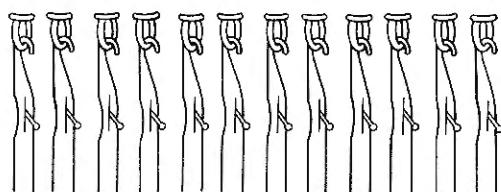
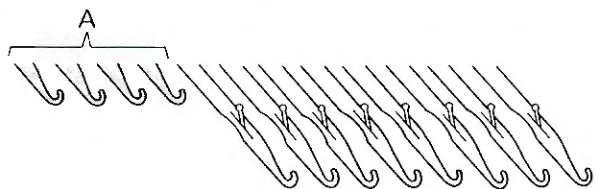
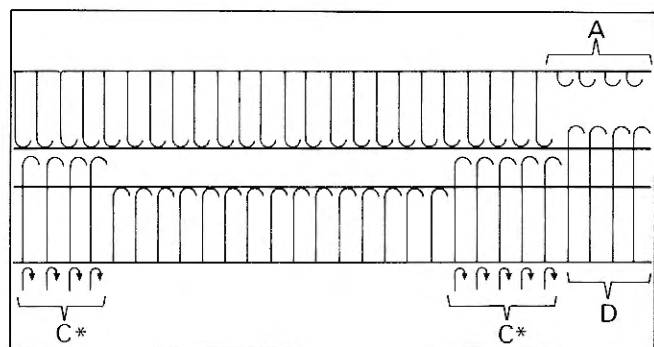
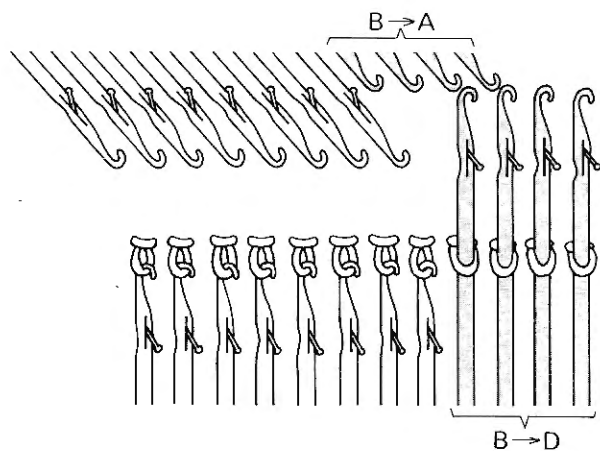
Partial knitting by increasing stitches

On the side opposite Carriage, hold Knitter stitches to be shaped by partial knitting, with Ravel Cord, in A position and corresponding Ribber needles in D position.

At each step in increasing stitches, replace Knitter stitches back into hooks and push corresponding Ribber needles in D position back to C position, before knitting.

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

To prevent the Ravel Cord from catching in the Knitter or Ribber Carriage, drop the ends between the needle beds.



Partial knitting in Pile Knitting and Drive Lace

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

Start partial knitting with the Carriage at left after removing stitches on Knitter using P Carriage.

Decreasing stitches at the right edge.

Carriage at left:

1. On the side opposite the Carriage, push Knitter needles to be decreased back to A position and Ribber needles to be decreased to D position.
2. On both sides of Ribber Bed, push the end 4 or 5 working needles up to D position and then back to C position (*) instead of bringing Ribber needles up with P Carriage because it cannot be used in partial knitting.
3. Knit 1 row.
4. To prevent a hole forming, pass the yarn under the first inside Ribber needle in D position.
5. Repeat step 2 and knit 1 row.
6. Remove the stitches on Knitter using P Carriage.

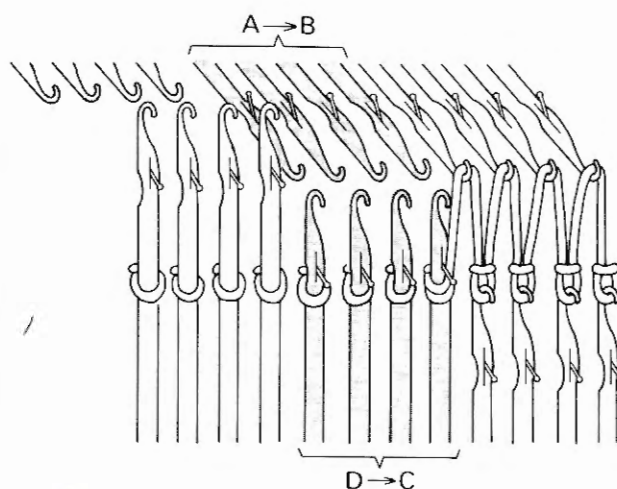
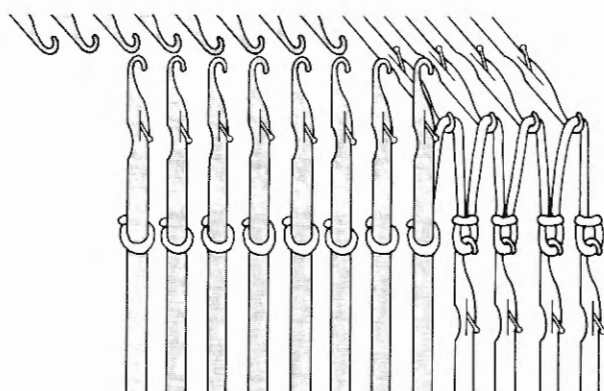
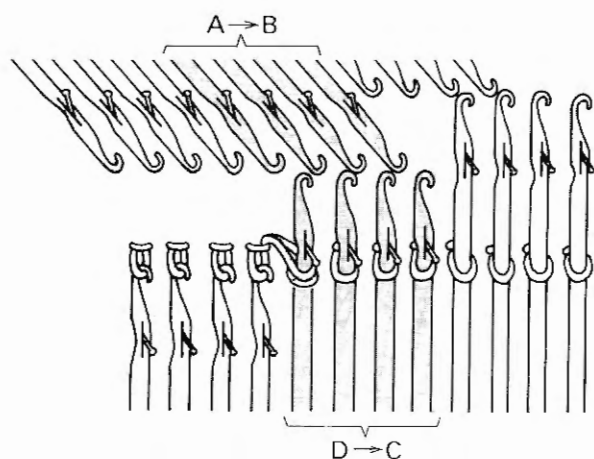
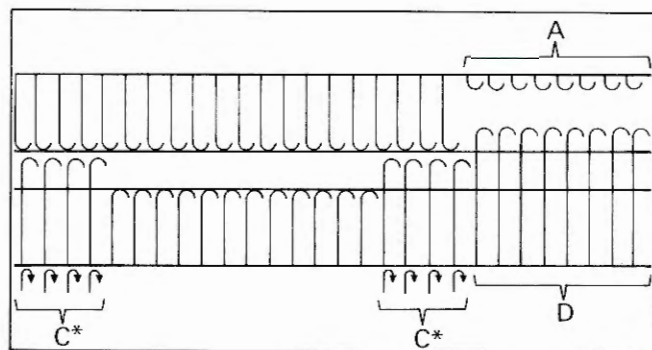
Repeat steps 1 ~ 6.

Decreasing stitches at the left edge.

Carriage at left:

1. Push Knitter needles to be decreased back to A position on the Carriage side.
2. On both sides of Ribber Bed, push the end 4 or 5 working needles up to D position and then back to C position instead of bringing Ribber needles up with P Carriage.
3. Knit 1 row.
4. Push Ribber needles to be decreased to D position on the side opposite the Carriage.
Repeat step 2 and knit 1 row.
To prevent a hole forming, pass the yarn under the first inside Ribber needle in D position.
5. Remove the stitches on Knitter using P Carriage.

Repeat steps 1 ~ 5.



Increasing stitches at the right edge

Carriage at left:

1. On the side opposite the Carriage, push Knitter needles back to A position, and Ribber needles to D position for the width to be shaped by partial knitting.
2. On both sides of Ribber bed, push the end 4 or 5 working needles up to D position, and then back to C position (*) instead of bringing up Ribber needles with P Carriage.
3. Knit 1 row.
4. To prevent a hole forming, pass the yarn under the first inside Ribber needle in D position.
Repeat step 2 and knit 1 row.
5. Remove the stitches on Knitter using P Carriage.
6. At the side opposite the Carriage, push Knitter needles to be increased to B position, and Ribber needles to be increased back to C position.
Repeat step 2 and knit 1 row.

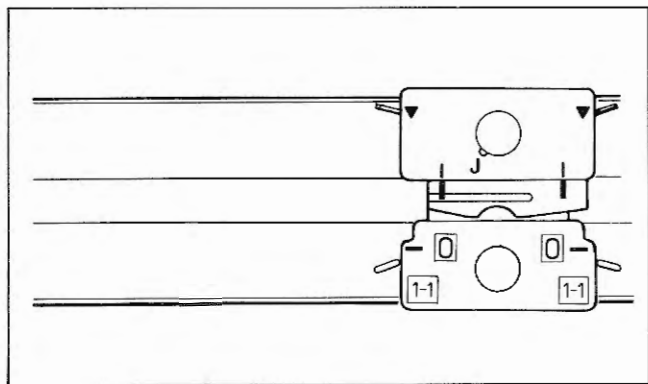
Repeat steps 4 ~ 6.

Increasing stitches at the left edge.

Carriage at left:

1. Push Knitter needles for the width to be shaped by partial knitting back to A position on the Carriage side.
2. On both sides of Ribber bed, push the end 4 or 5 working needles up to D position and then back to C position.
3. Knit 1 row.
4. Push Ribber needles for the width to be shaped by partial knitting to D position on the side opposite the Carriage.
Repeat step 2 and knit 1 row.
5. Remove the stitches on Knitter using P Carriage.
6. To prevent a hole forming, pass the yarn under the first inside Ribber needle in D position.
Repeat step 2 and knit 1 row.
7. At the side opposite the Carriage, push Knitter needles to be increased to B position and Ribber needles to be increased back to C position.
Repeat step 2 and knit 1 row.

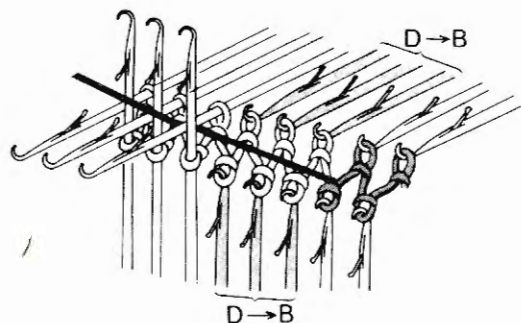
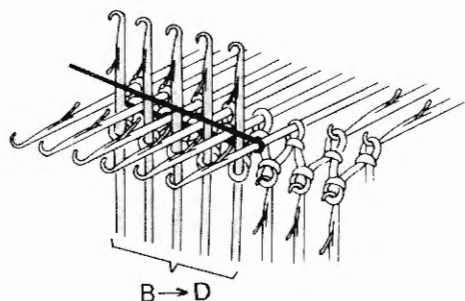
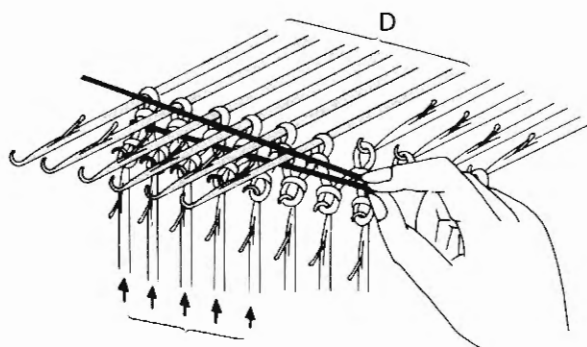
Repeat steps 5 ~ 7.



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.

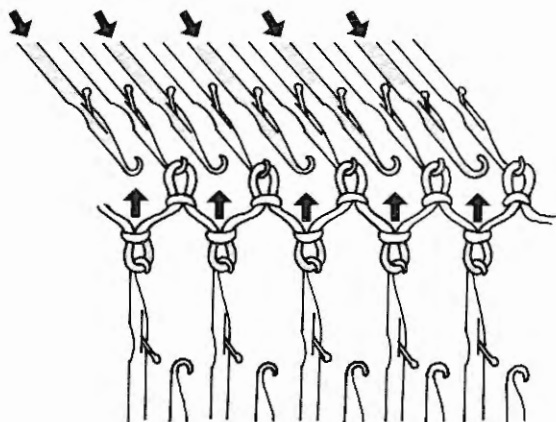


Decreasing stitches

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.

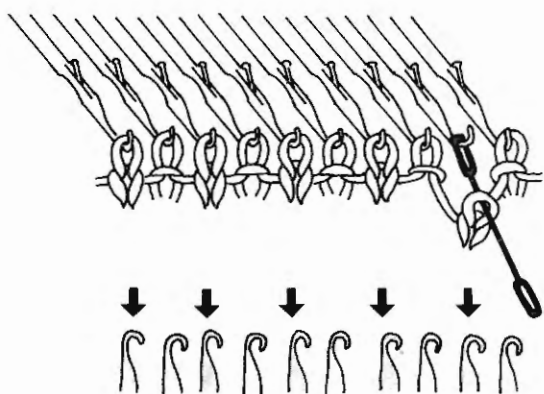
Increasing stitches

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.

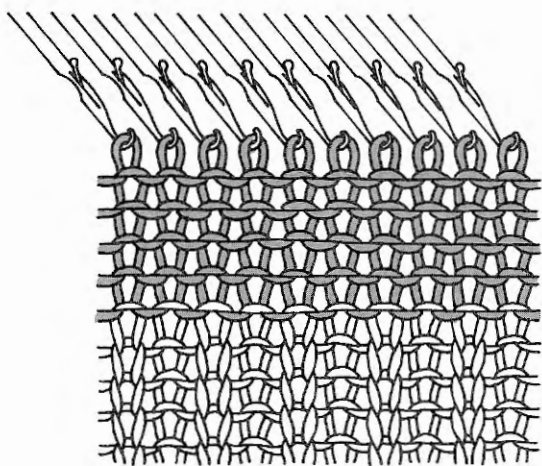


Waste knitting

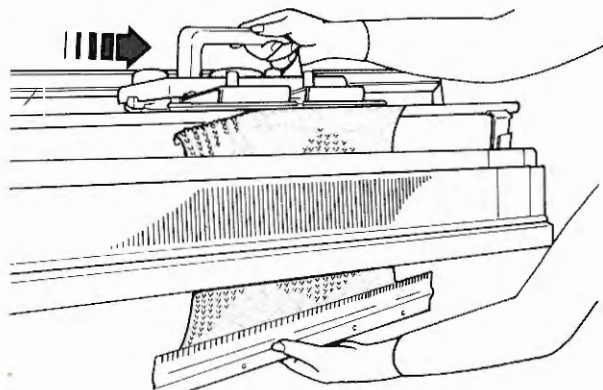
1. On Knitter, push empty needles to B position.



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

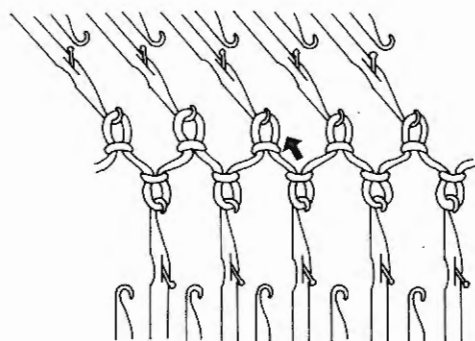


3. Exchange Ribber Arm for Knitter Arm and thread contrast yarn into Yarn Feeder.
Knit 9 ~ 10 rows with Stitch Dial 4 ~ 5 higher than for double bed knitting, with Cam Lever set at Stockinet (●).



4. Remove yarn and Weights.

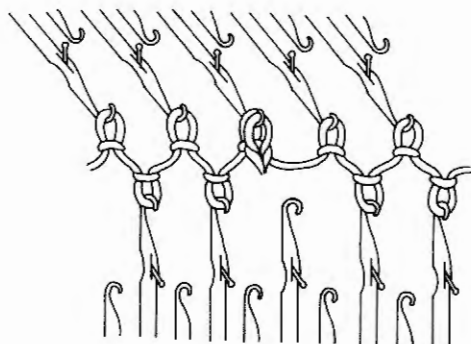
Holding Cast-on Comb, move Carriage to remove fabric from machine.



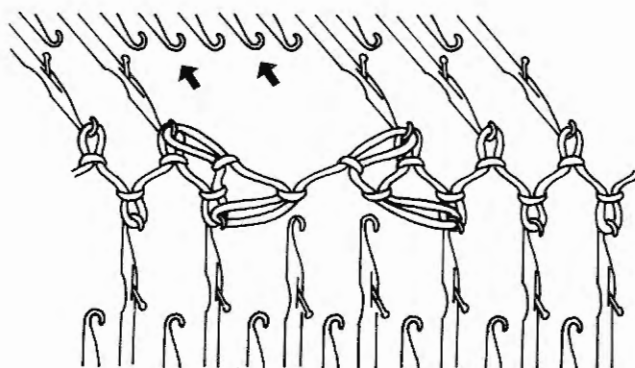
Buttonhole

Single stitch eyelet

1. At the point for buttonhole, transfer 1 stitch from Ribber to Knitter.

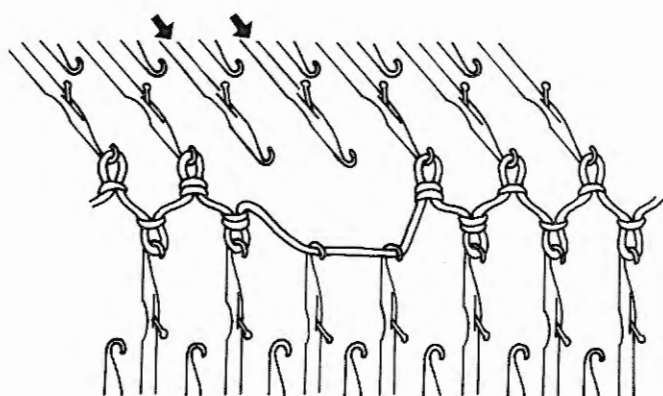


2. Leave empty needle in B position.
Continue to knit.

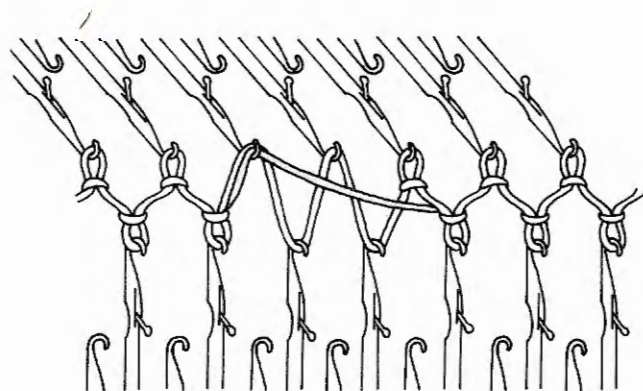


Double stitch eyelet

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.

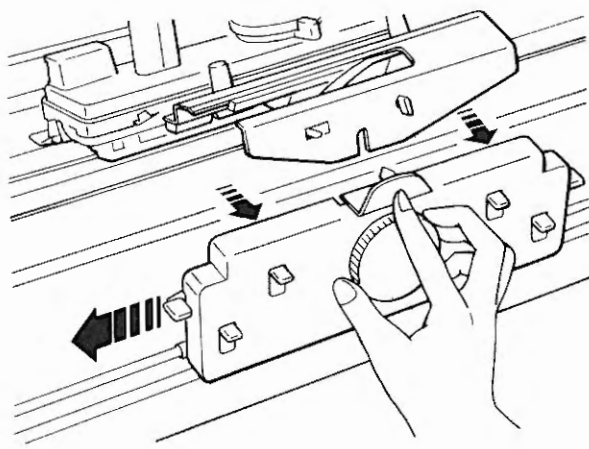


3. Knit 1 row and push the needles left in A position at step 2 to B position.
4. Knit 1 row.



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

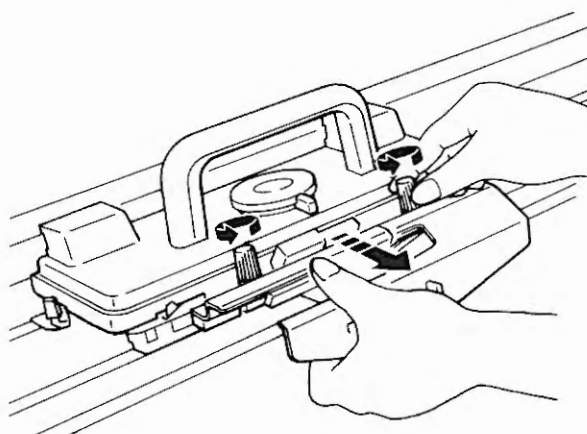
WHAT TO DO IF...



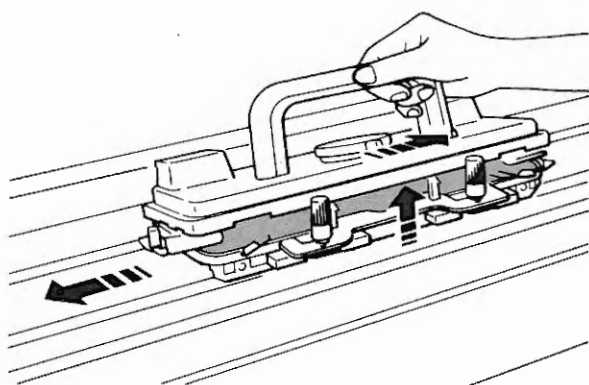
If the Carriage has jammed during knitting...

1. By pushing the Link Knob, disconnect the Ribber Carriage from the Arm and tilt it towards you, then move it to either end of the needle bed.

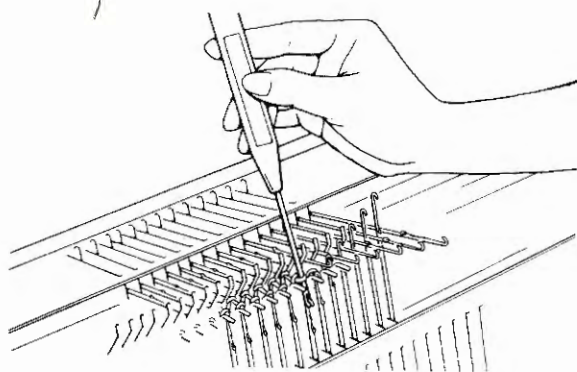
DO NOT PUSH OR PULL THE CARRIAGE BY FORCE.



2. Remove the Ribber Arm from the Knitter Carriage.

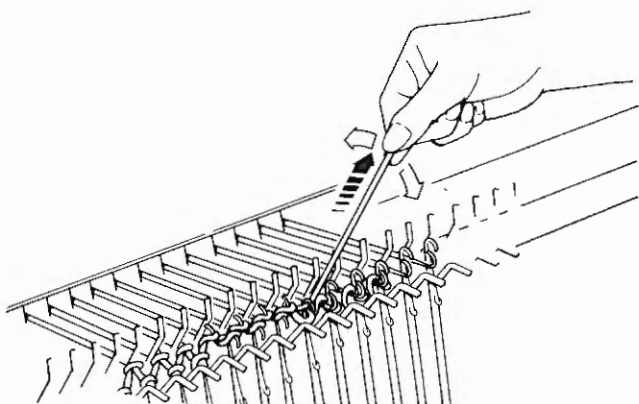


3. Lift up the top of the Knitter Carriage by pushing the Release Lever, and move it in the direction it was going, until it clears the working needles.



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

If a stitch has dropped, refer to the next page.



5. 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.

6. Pass the Carriage to the side with the yarn end. Reset the Carriages to the original settings to continue knitting.

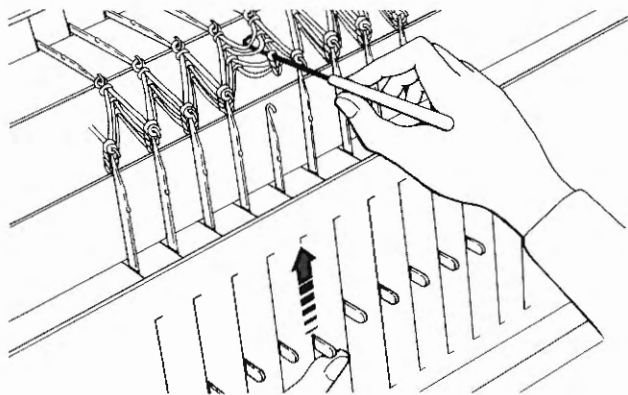
If the Row Counter, the Knit Contour and the Punch Card / the Pattern Card are in use, refer to "If incorrectly knitted..." on the next page before knitting again.

If a stitch has dropped...

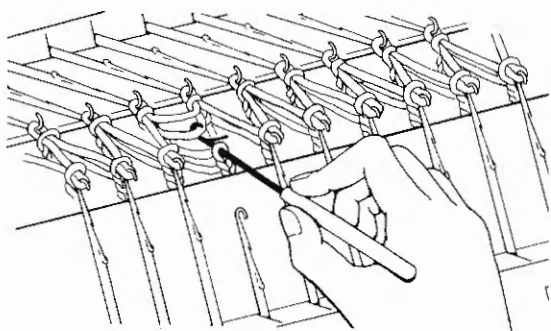
1. Remove Weights from Cast-on Comb as they may cause dropped stitches to run.

2. Depress Drop Levers and lower Ribber Bed to middle position.

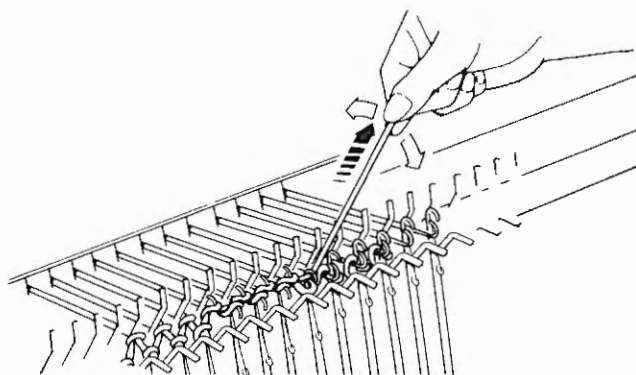
3. With Hook Tool, pick up a dropped stitch and place it back on needle hook.



4. Reform stitches by moving needles back and forth or by using Tappet Tool.



5. Restore Ribber Bed to original position. Connect the Ribber Carriage to the Arm. Hook Weights on Cast-on Comb and align needles.

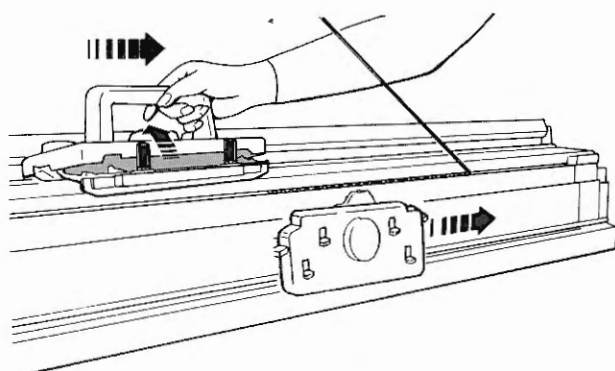


If incorrectly knitted...

1. Remove the yarn from the Yarn Feeder and unravel the incorrectly knitted row as follows.

Hold yarn and unhook it from Knitter and Ribber needle hooks by pulling it in the arrowed directions in a zigzagging manner.

2. Align needles in B position, and replace the yarn into the Yarn Feeder.

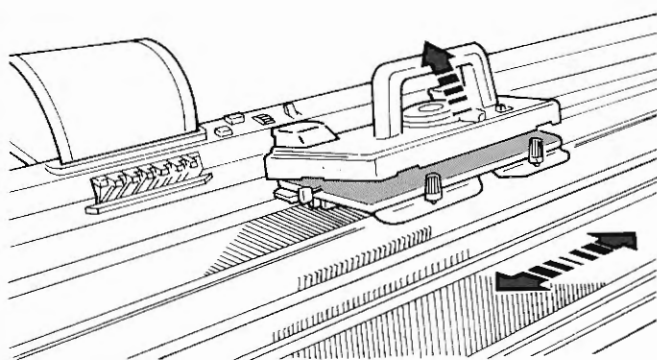


If the Carriage is at the side opposite the yarn:

- (1) Disconnect Ribber Carriage from Arm and move it to yarn side while tilting Carriage.
- (2) Remove the Ribber Arm from the Knitter Carriage.

*To the users of Electronic Knitters;
The Knitter Carriage can be released by using the Carriage Release Lever with the Ribber Arm attached.*

- (3) Operate the Carriage Release Lever, and move the Carriage to the side of the yarn.
- (4) Connect the Ribber Arm and Carriage to the Knitter Carriage.

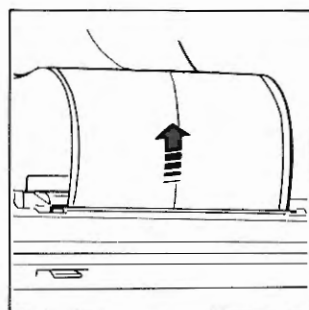
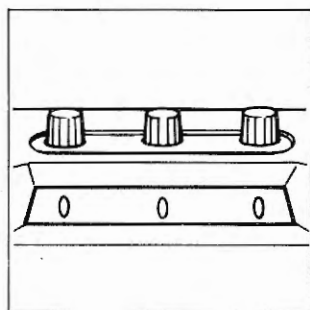


If a Punch Card is in use:

- (1) Return the Card by the same number of rows as unravelled and set Stop Knob to ●.
- (2) Work in the same manner as above, "If the Carriage is at the side opposite the yarn".

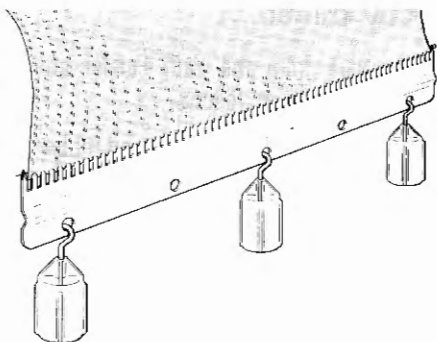
If a Pattern Card is in use:

- (1) Push ON the Inspection Switch. (Light is on and the Pattern Card comes up 10 rows.)
- (2) Return the Card by the same number of rows as unravelled.



If a Row Counter and Knit Contour are in use:

Return them by the same number of rows as unravelled.

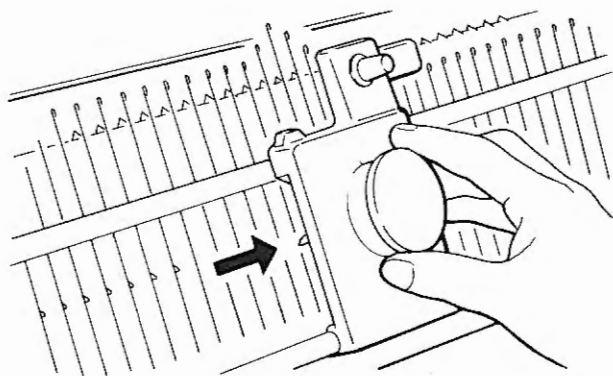


If stitches float...

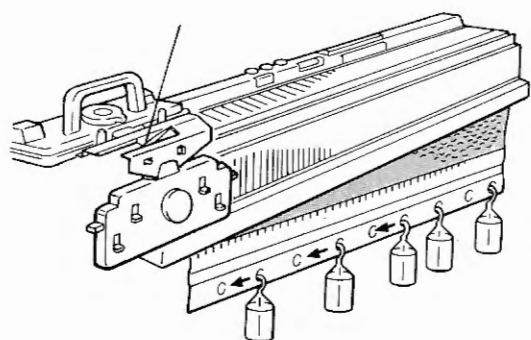
When stitches on full length float

*Increase the number of Weights.

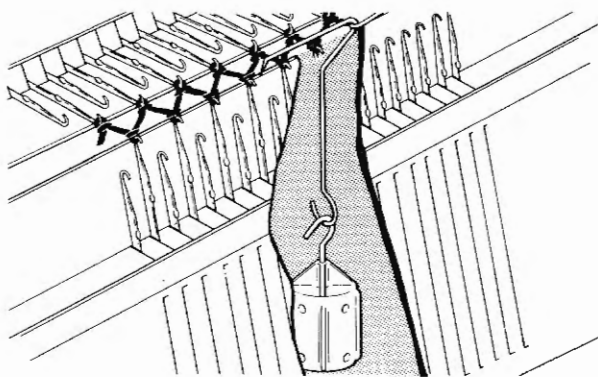
*Check the yarn and Stitch Dials.



*Push the needles to C position every row using P Carriage.

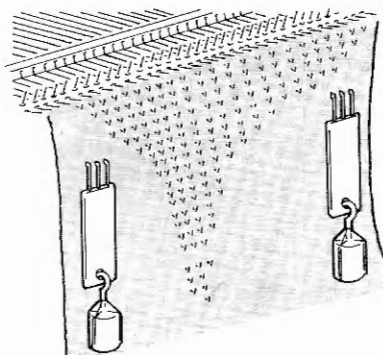


When stitches of half length of knitting float, check if Cast-on Comb with Weights is suspended horizontally.

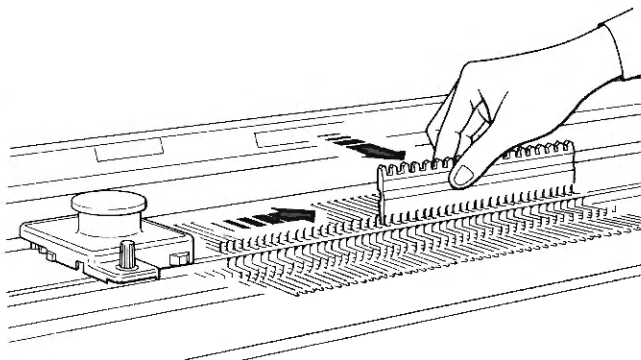


When edge stitches tend to float

*Suspend Edge Weight when increasing multiple stitches.



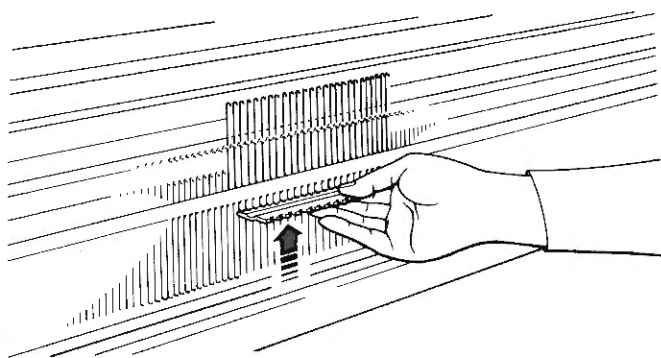
*Suspend Hanger Comb with Weight when partial knitting or knitting sectionally.



If P Carriage has jammed...

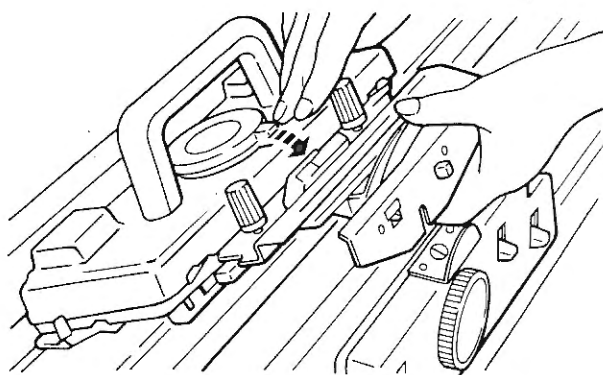
While removing the stitches from the needles

Regardless of direction in which you are moving P Carriage, remove it and push all the needles to D position. Then move P Carriage from the left on the Knitter (from the right on the Ribber) to the opposite direction.



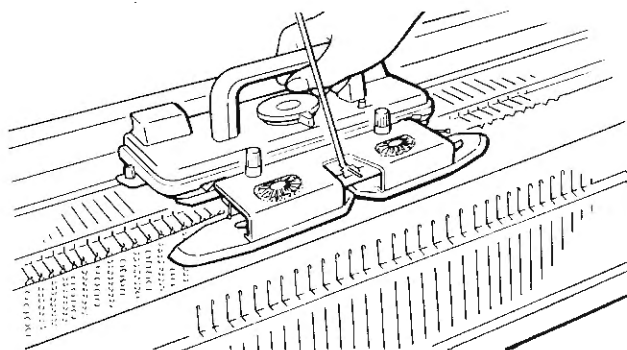
While pushing needles to C position

Remove P Carriage and push all the needles to D position using Needle Pusher, then knit the next row.



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

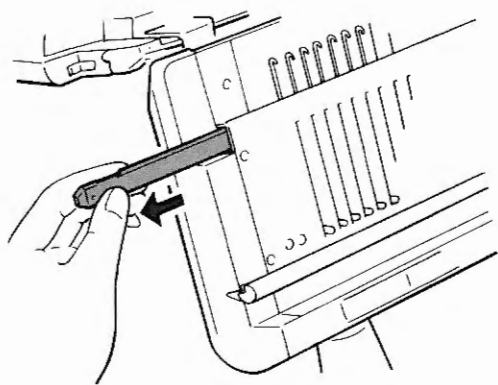
1. Check if the top of the Knitter Carriage closed properly. The top of the Carriage must be down.
2. Check the setting of the Cam Lever. It should be set at "O" (STOCKINET) before mounting the Ribber Arm, never at "F" (FAIR ISLE) or "L" (PUNCH LACE).



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

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

To use the Lace Carriage when the Ribber is connected, refer to Operation Manual.

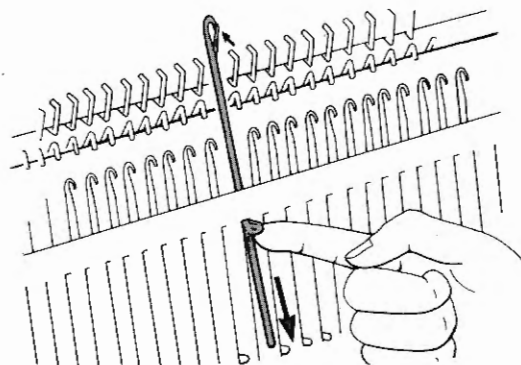


If a needle has been damaged...

Using a pencil or a screw driver, push the Needle Retainer in either direction

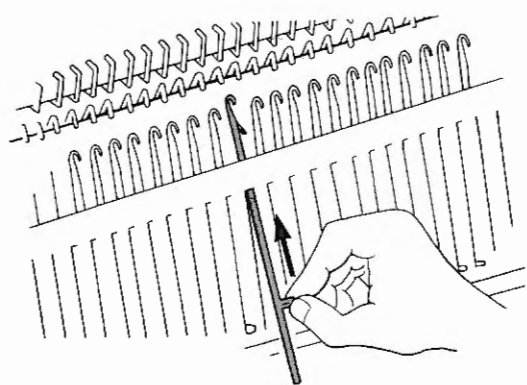
Pull the Needle Retainer toward one end until it clears the needle to be replaced.

If a stitch is hooked on the needle, use the Tappet Tool to pick up the stitch.



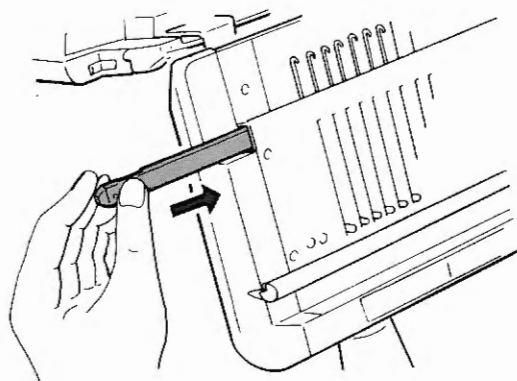
Push the damaged needle to D position. Close the latch. The shank will come out of the Needle Bed.

Pull it out from the Needle Bed.



To replace a new needle, open its latch and slide it into the Needle Bed groove until the hook comes out of the top opening of the Needle Bed.

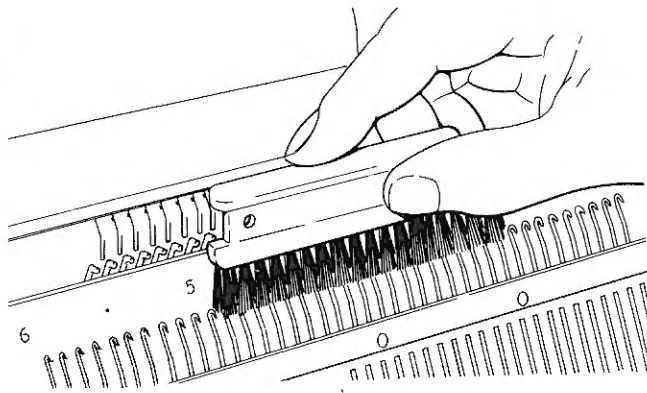
Push the needle back to A position by holding the butt.



Insert the Needle Retainer back into the Needle Bed by pushing the protruding end. To insert the Needle Retainer, press the floated needles at the front edge of the Needle Bed using the Needle Pusher.

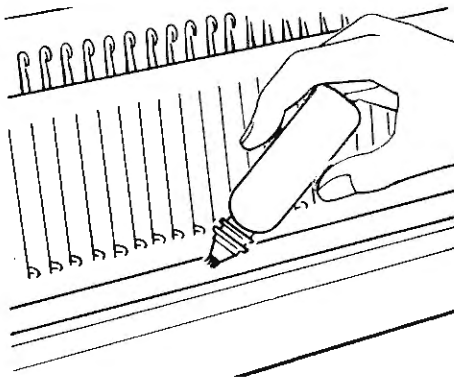
If a stitch is held on a Tappet Tool, replace it on the new needle.

MAINTAINING THE MACHINE

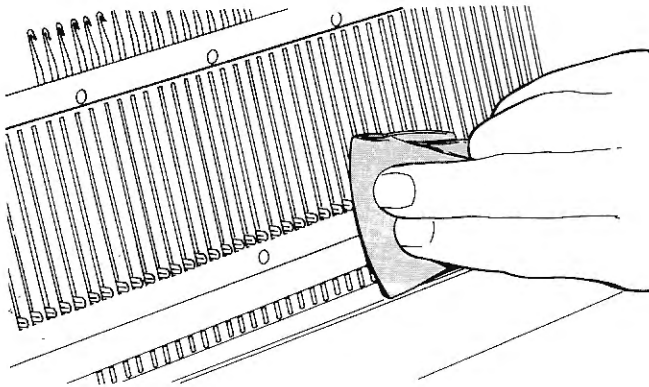


Needle Bed

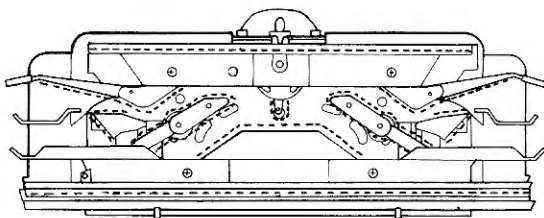
With Cleaning Brush remove lint or dust from Needle Bed.



Apply oil along the rail and front guide of the Needle Bed.
(Do not apply excessive oil.)



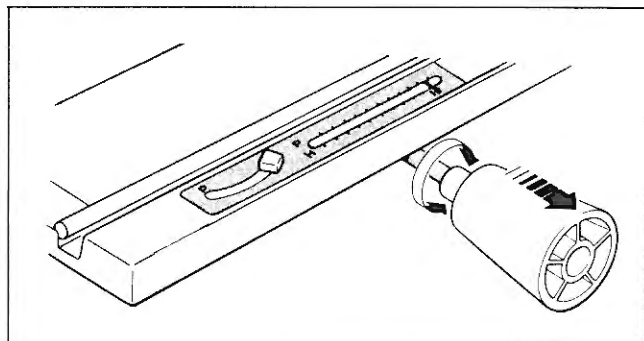
Rub latch-needle butts with oil damped cloth.



Carriage

Clean underside of Carriage and apply oil over sliding parts with oil damped cloth.

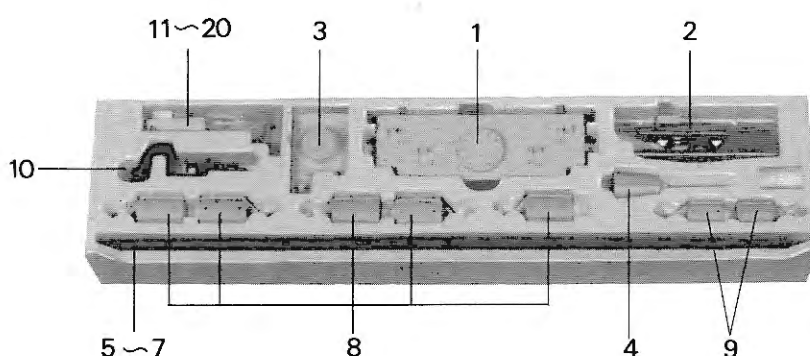
REPACKING THE RIBBER



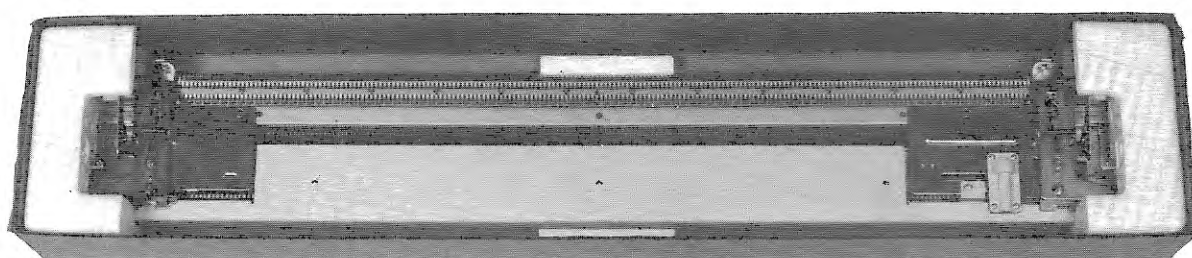
1. Disassemble Ribber by reversing the procedure for assembling. Set Swing Handle at H-10 and pull it out by twisting and pulling it.

2. Before putting back Needle Bed into the box, fit polystyrene packings to both ends of Needle Bed in the following manner:—

With the back of the Needle Bed facing you, and with the sinker posts at the top, fit the polystyrene marked "R" to the right end, and "L" to the left end.



3. Replace Accessories as shown above, then place polystyrene on top of Needle Bed in box.



1 Ribber Carriage

2 Ribber Arm

3 P Carriage

4 Swing Handle

5 Close Knit Bar

6 Cast-on Comb (long)

Cast-on Wire (long)

7 Cast-on Comb (short)

Cast-on Wire (short)

8 Ribber Weight (large)

9 Edge Weight

10 Ribber Clamp

11 P Presser

12 Needle Pusher (2/1, 2/2)

13 Side Hanger

14 Hanger Comb

15 Hook Tool

16 Double-eye Transfer Tool

17 Spare Needle (incl. 3 needles)

18 Auxiliary Piece (L)

19 Auxiliary Piece (R)

20 Screw Driver

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