

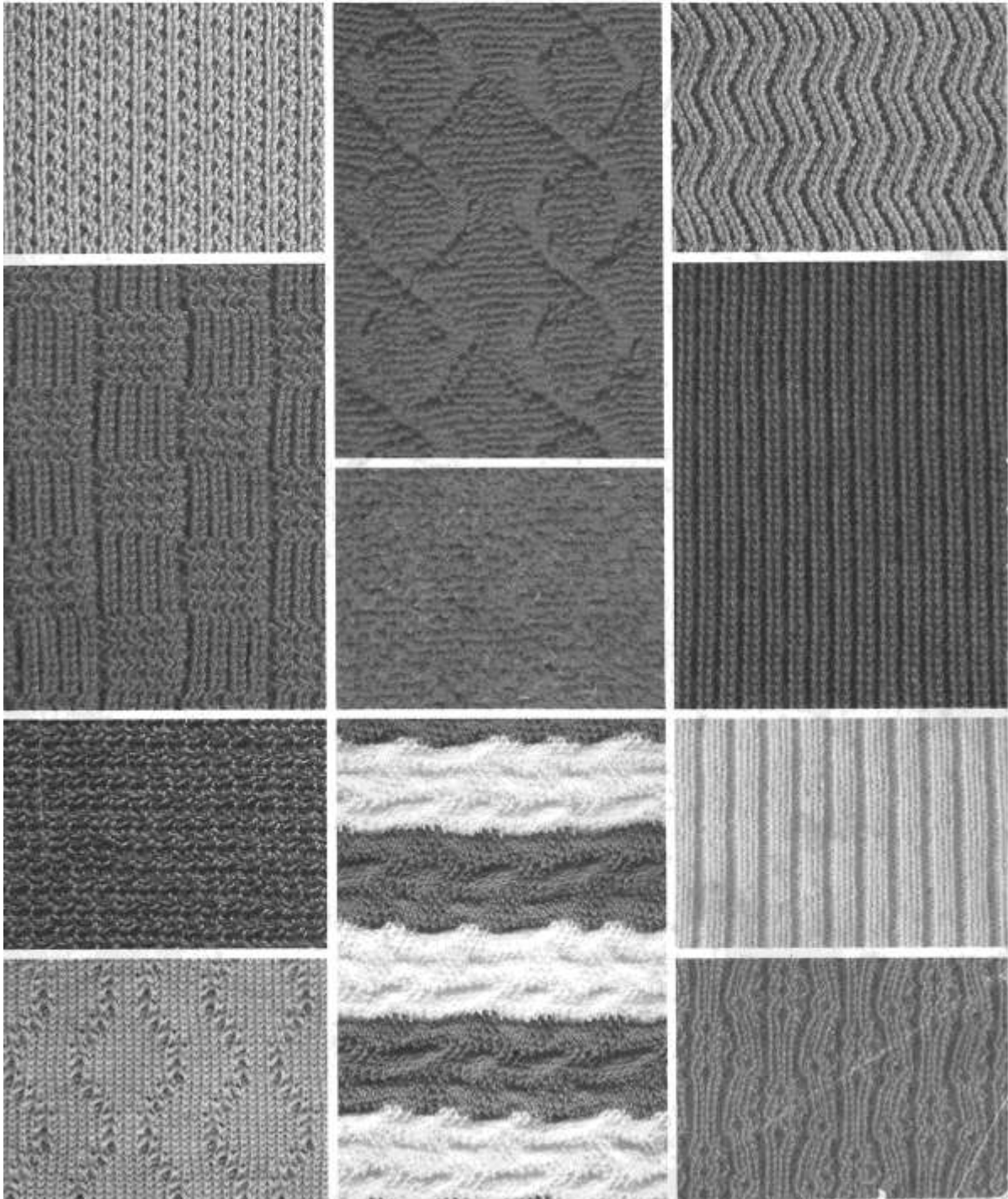
INSTRUCTION BOOK

RIBBER MANUAL



INSTRUCTION BOOK

RIBBER MANUAL



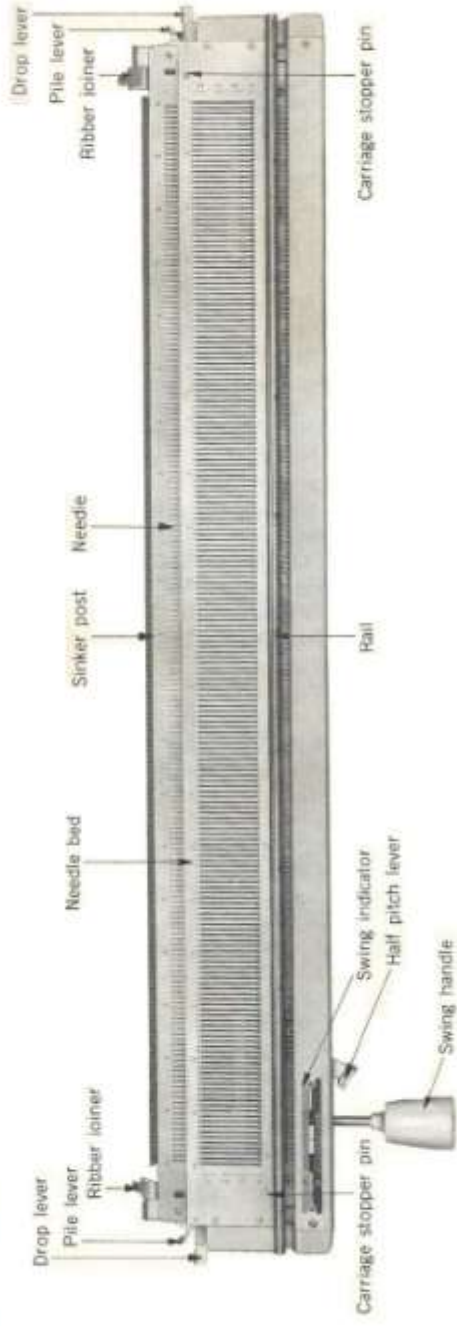
**INSTRUCTION MANUAL
FOR THE RIBBING ATTACHMENT (RIBBER)**

This is an ideal attachment for the knitting machine, MOD.321, 322, (325), 323. The ribber converts the 200 needle knitting machine into a 400 needle unit that will perform all of the functions of a double bed knitting machine while maintaining the ease of operation, simplicity and the portability of a single bed machine.

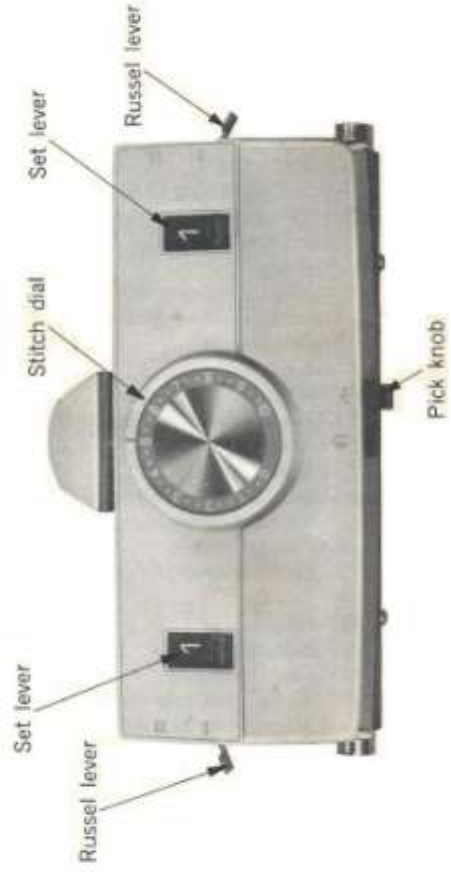
It is very natural that you are excited and eager to start using this valuable attachment. However, please take a little time to make sure you are quite happy you can handle your main knitting machine before getting started with the advanced double bed knitting.

Please read the instruction manual for the main knitting machine before you start with this manual.

*** MAIN BODY ***



*** CARRIAGE ***



*** ACCESSORIES ***



Cast-on comb (long)

Close knit bar



Cast-on comb (short)



Punched card



P carriage



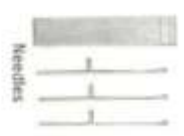
Ribber arm



P presser



Screw driver



Needles



Hook tool



Double eye transfer tool



Plastic pieces



Clamps



Weights



Edge weights



Side hangers

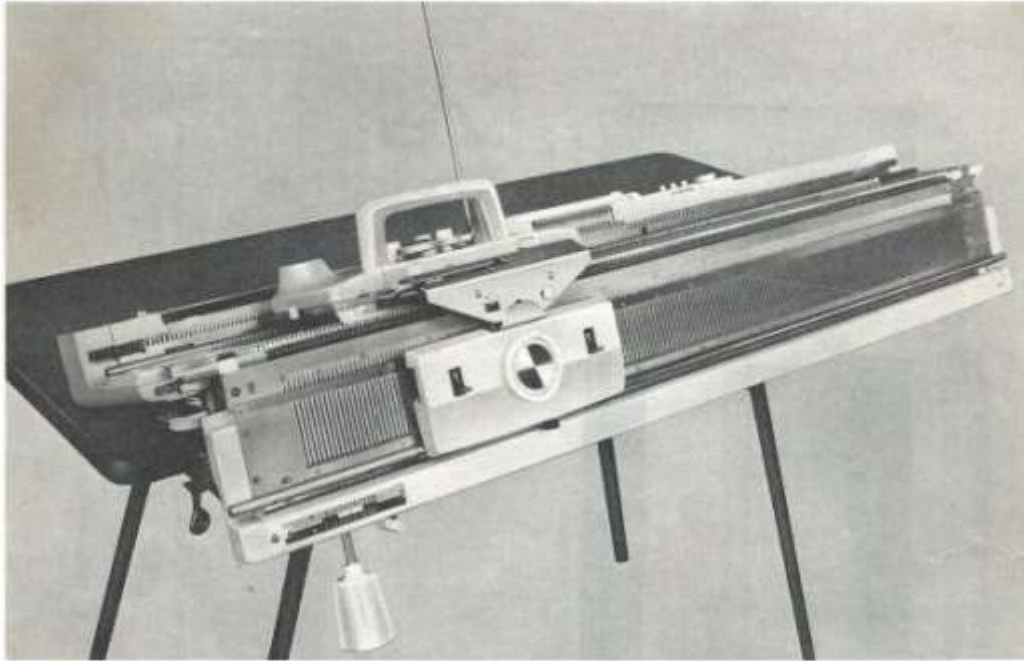


Hanger combs

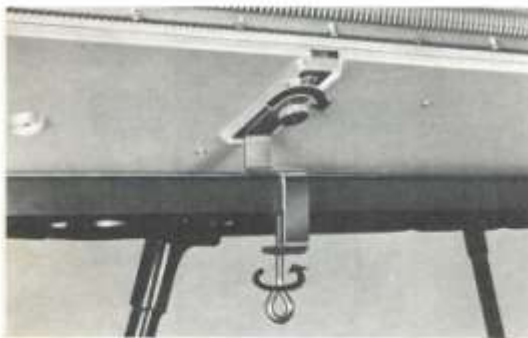
CONTENTS

NOMENCLATURE	
Main Body, Carriage, Accessories.	
1. SETTING UP THE RIBBER	1
2. BASIC INFORMATION	5
• Needle Positions	5
• Ribber Carriage	5
(1) Set Levers	5
(2) Pick Knob	5
(3) Russel Levers	6
(4) Stitch Dial	6
(Stitch Dial Setting Guide)	6
• How to Join or Remove the Ribber Carriage and the Main-Machine Carriage	7
• Relation Between Half-Pitch Lever and Needle Arrangement	7
• Swing Handle	8
• Drop Lever	9
• Pile Lever	10
• Auxiliary Yarn Feeder	10
• P Carriage	11
• Hanger Comb	11
3. BOUND OFF CAST-ON	12
(1) Needle Arrangement	12
(2) Carriage Setting	12
(3) Yarn Threading	13
(4) Cast-on	15
(5) Weights	15
(6) Binding Off	16
(7) Edge Weights	16
• How to Use Close Knit Bar	17
• Technique for Making an Attractive Cast-on (How to make a Tighter Cast-on using the P Carriage)	17
4. BASIC TYPES OF KNITTING	19
1 1 Knit 1 Purl Rib	19
2 Double Rib	20
3 Tubular Knitting	20
4 2 Knit 2 Purl Rib	21
5 2 Knit 1 Purl Rib	22
6 3 Knit 3 Purl Rib	23
5. PATTERN KNITTING	24
1 English Rib	24
2 Double English Rib	25
3 Swung English Rib	26
4 Variation of English Rib	27
5 Herring Bone Swing	28
6 Variation Swing	29
7 Pin Tuck	30
8 Pile Knitting	31
• How to Make Cut-Pile Fabric	34
6. PATTERN KNITTING USING PUNCHED CARDS	35
1 Punch Pile Knitting	35
2 Drive Lace Knitting	37
3 Punch Pin Tuck	38
4 Punch Tuck Rib	39
5 Tuck Rib Stitch	41
7. BASIC TECHNIQUES	42
• How to Make Stitch Gauges	42
• How to Transfer Stitches	43
• How to Increase Stitches	44
• How to Decrease Stitches	45
• Partial Knitting	47
(Partial Knitting for Stitches without Involving "Swing")	47
(Partial Knitting for Stitches Involving "Swing")	49
(Partial Knitting in Pile Knitting and Drive Lace Knitting)	50
• How to Cast-off (Removing the Ribbed Fabric)	51
• How to Knit Border and Wrist Band in Ribbing	52
8. PRACTICE KNITTING	53
• Lady's Bedroom Slippers in Pile Knitting	53
• Two Piece Suit in Drive Lace Knitting	54
• Pleated Skirt for Child	55
9. USEFUL HINTS	57
• What to do when one or more Stitches have Dropped	57
• How to Knit with the Main-Machine only While the Ribber is Attached	57
• What to do if the Carriage Jams	58
• Unravelling Incorrect Knitting	58
• Replacing Damaged Needles in the Ribber	59
• When the Edge Stitches tend to Float	59
• What to do if the P Carriage Jams	59
10. MAINTENANCE AND SERVICE	60
11. RE-PACKING FOR STORAGE	61
• Thickness of Yarn	60

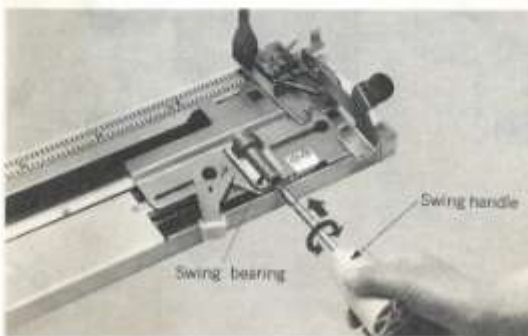
I. SETTING UP THE RIBBER



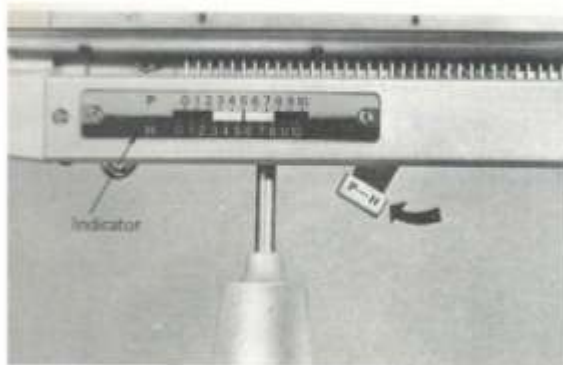
Mount the ribber on the main-machine so that it is ready for knitting as shown in the photograph.



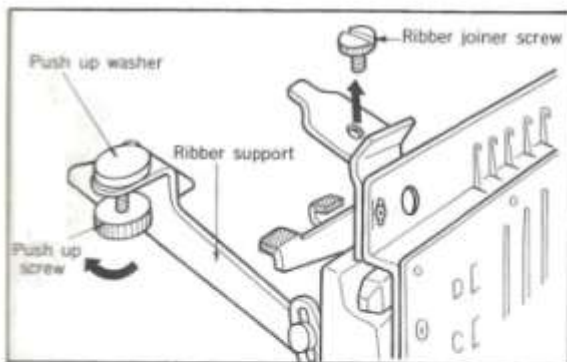
- (1) Mounting holes are provided on the bottom of the main-machine. Secure the ribber clamps to these holes, and mount the main machine on the table by means of these clamps. (Do not use any other clamps.)



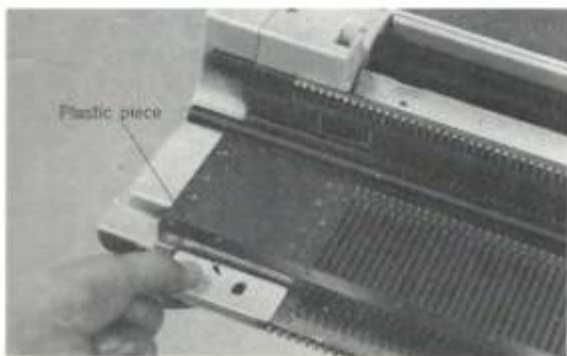
- (2) Insert the forward end of the swing handle into the swing bearing, which is located in the lower left-hand side of the ribber. Push the handle in a twisting manner until you hear a sharp click with a slight jerk.



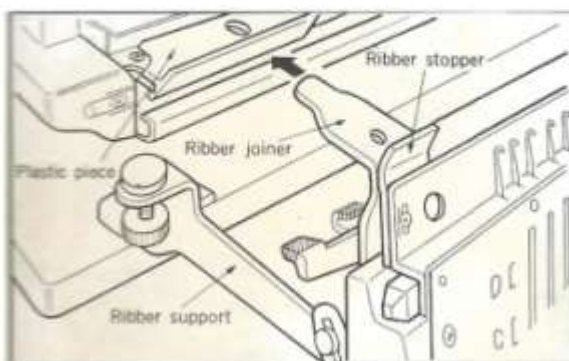
- (3) Swing the half-pitch lever to the left (P)
Turn the handle to 5 on the indicator.



- (4) Remove the ribber joiner screws on both sides of the ribber and loosen the push-up screws until their washers contact the ribber supports.



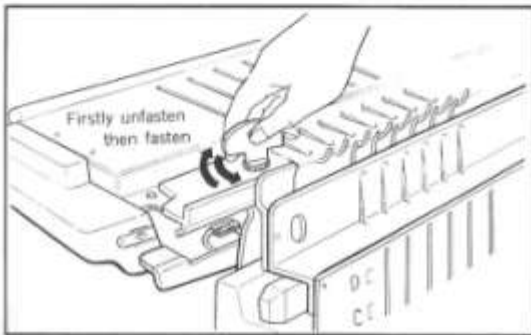
- (5) Line the auxiliary pieces on the edge of the needle bed so that the oval shaped holes overlap with the holes on both sides of the needle bed, on the main-machine, used for the installation of the ribber.



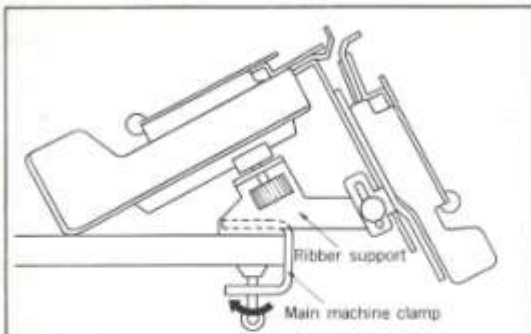
- (6) Rest the ribber supports, one on each side of the ribber, on the table top. Insert the ribber joiners into the ribber mounting holes, so that the holes on the ribber-joiners overlap with those of the plastic pieces, placed on the main machine.
Push the ribber until the ribber stopper is set firmly against the plastic pieces.



- (7) Lifting the ribber needle bed, fasten the ribber joiner screws inserted in the plastic pieces, with screw driver.



- (8) Release your hand holding the ribber and unfasten the ribber joiner screws $\frac{1}{2}$ –1 complete turn. The ribber slides to the plastic piece by itself. Then fasten the ribber joiner screws again firmly.



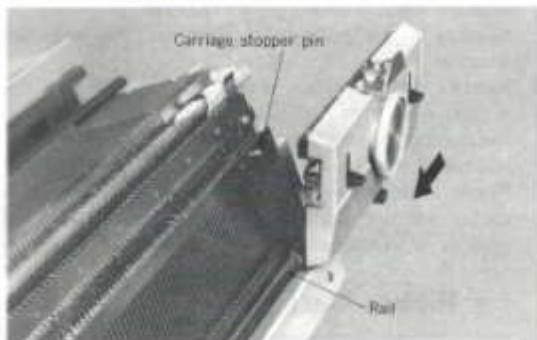
- (9) Secure the Clamps (belonging to the main-machine) to the inner side of the ribber supports and fasten them to the table.



- (10) Tighten the push-up screws until they come in contact with the ribber supports and become quite firm in order to correct the warpage on the main-machine.



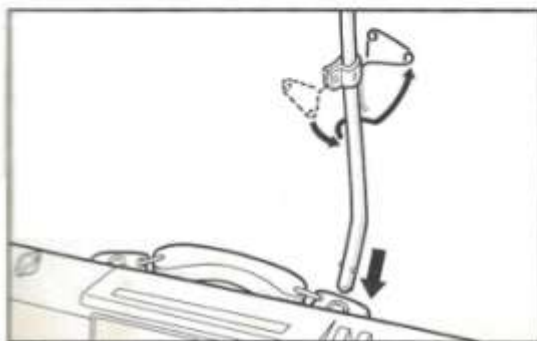
- (11) Loosen the main-machine carriage arm nuts. Insert the ribber arm into this carriage as far as it will go, and secure the arm by tightening the nuts.



- (12) Mount the ribber carriage by fitting its pipe onto the rail from the right-hand side. Tilt the carriage towards you a little, so that it will clear the carriage stopper pin. (The ribber carriage can be attached "only" from the right-hand side.)

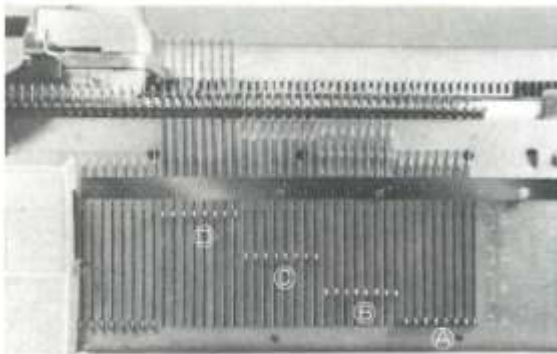


- (13) Connect the ribber carriage to the arm, by fitting the link pin into the slot provided in the arm which has been mounted to the main-machine carriage. Be sure to push this pin into the hole until a click is heard.



- (14) Insert the yarn rod on the main-machine and set up the auto-tension and tension guide. The yarn rod should be inserted in the direction opposite to the direction for knitting without the ribber. (When the tension guide is attached to the yarn rod it is on the front side. In this case, before lifting up the tension guide, push it to the left and turn forward. Lift the tension guide for threading.)

2. BASIC INFORMATION

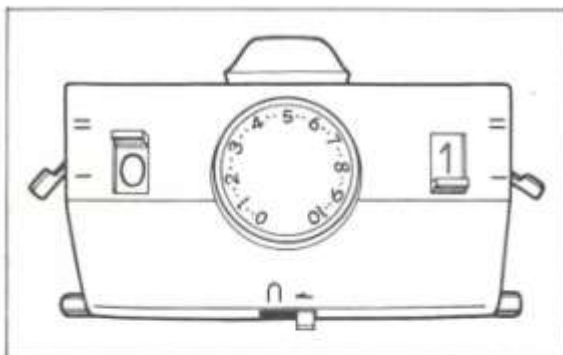


* Needle Positions *

There are four positions, A, B, C and D, where needles are used in different ways respectively. Each position refers to a range marked by]. For instance, needles to be in A position must have their butts aligned with in the range of A.

- A position** Needles in this position do not operate.
- B position** Needles in this position perform knitting with Set levers at 1.
- C position** Needles in this position always operate. This position is used mainly in partial knitting, such as increasing the number of stitches.
- D position** Needles in this position are resting (not working) with Russel levers at —. This position is used mainly in partial knitting, such as decreasing the number of stitches, or in manual selection of needles.

* Ribber Carriage *



<1> Set Levers

The set levers are means of choosing between knitting and non-knitting for B position needles, and have two positions: 1 and 0.

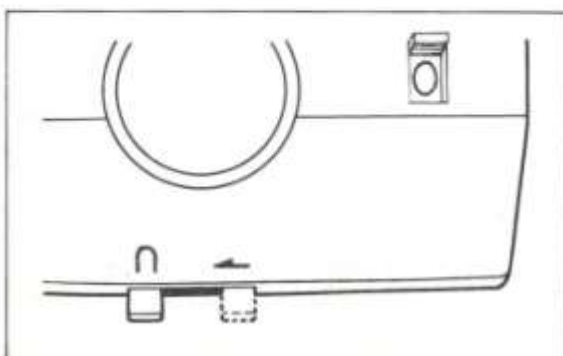
1 Position

Needles in B position will knit.

0 Position

Needles in B position will not knit.

The right set lever works when the carriage moves toward the right and the left set lever toward the left.



<2> Pick Knob

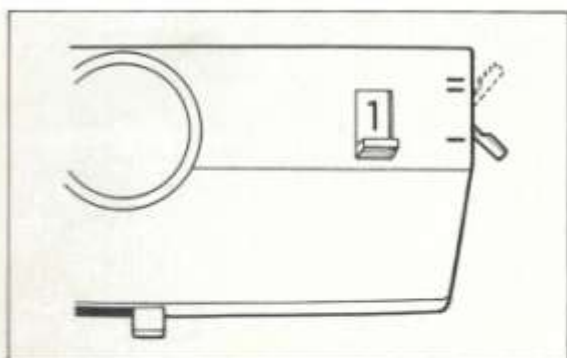
This knob is effective when the set lever is in 0 position. It controls the knitting action of B position needles, as follows:

0..... Tuck stitch position.

The B position needles catch the yarn. (Not knitting but tucking)

←..... Slip stitch position.

The yarn does not hook onto the needles in B position. (Not knitting; yarn is left out of hook forming a slipped stitch)



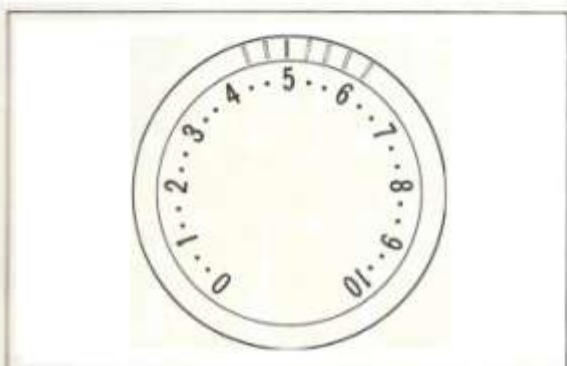
〈3〉 Russel Levers

These levers control needles in D position. They have two positions: — and =.

=.....D position needles will knit and be lowered to B position.

—.....D position needles remain and will not knit.

The right Russel lever works when the carriage moves towards the right, and the left lever towards the left.



〈4〉 Stitch Dial

This dial determines the size of the stitch to be made. The larger the number on the dial, the larger the stitch and the smaller the number on the dial, the smaller the stitch. The factors of proper stitch dial settings are:

1. WEIGHT OF YARN:
2. TYPE OF KNITTING:
3. SETTING of MAIN-MACHINE STITCH DIAL:

〈Stitch Dial Setting Guide (Suggested Stitch Tension)〉

Type of Knitting		Weights of Yarn*			
		Thin	Light	Medium	Heavy
		① ~ ②	③	④	⑤
1K - 1P rib	Casting-on	—	0	0	0
	Binding-off	—	0 (2)	0 (2)	2
	Main knitting	—	0 ~ 1	2 ~ 3	6 ~ 7
Double rib	Casting-on	0	0	0	—
	Binding-off	0 (2)	1 (3)	2 (4)	—
	Main knitting	0 ~ 1	1 ~ 2	3 ~ 4	—
2K - 2P rib	Main machine	—	2 ~ 3	3 ~ 4	6 ~ 7
	Ribber	—	2 ~ 3	3 ~ 4	6 ~ 7
2K - 1P rib	Main machine	—	2 ~ 3	3 ~ 4	6 ~ 7
	Ribber	—	2 ~ 3	3 ~ 4	6 ~ 7
3K - 3P rib	Main machine	—	1 ~ 2	3 ~ 4	5 ~ 6
	Ribber	—	3 ~ 4	5 ~ 6	7 ~ 8
Tubular knitting	Main machine	2 ~ 3	4 ~ 5	5 ~ 6	—
	Ribber	4 ~ 5	6 ~ 7	7 ~ 8	—

Note: The number in the brackets in the column of "Binding-off" shows the dial No. on the ribber carriage in the case of binding off on 2 rows on the ribber side. (Binding-off for knitting on page 24 through 41) * See the picture on page 60.



*** How to Join or Remove the Ribber Carriage and the Main-Machine Carriage ***

The two carriages joined together form a complete carriage unit (referred to simply as the carriage). Joining and removing is very simple, involving the use of only two parts: link pin and knob.

How to join

Bring the link pin to the arm, with the ribber carriage slightly lifted off the needle bed. Push the pin into the slot provided in the arm. The pin will snap into position.

How to remove

Push the knob to the right, as shown, and pull the ribber carriage forward to get the pin out of the slot.



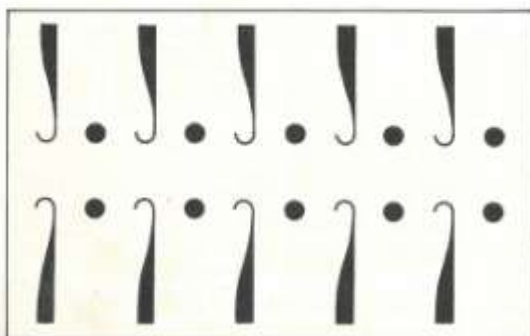
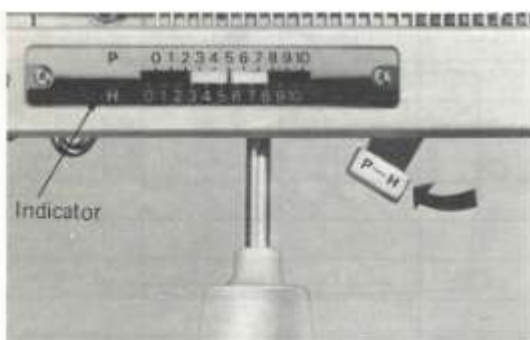
*** Relation Between Half-Pitch Lever and Needle Arrangement ***

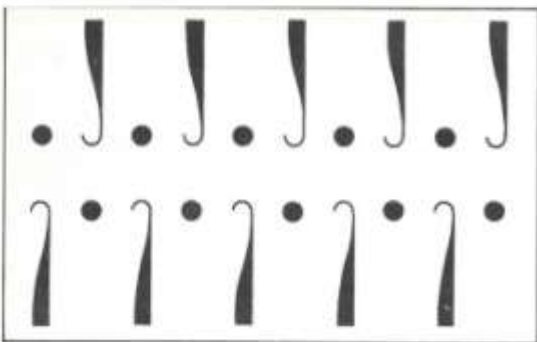
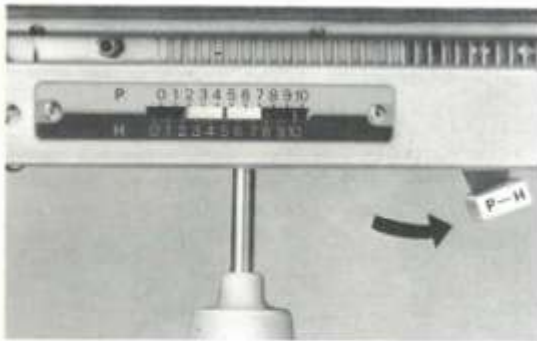
〈How to Match Ribber Needles to Main-Machine Needle〉

There are two possible positions the ribber needles can take with respect to those of the main-machine. Which position the ribber needles will take is determined by the half-pitch lever, as follows:

P position (When half-pitch lever is moved in the P direction on the left side.) This is the left-hand position of the lever.

In this position, the two groups of needles are lined point-to-point. Advancing both groups of needles at the same time will make them collide, and must be avoided to protect the needles. In this case, push every other needle to A position so that needles of both beds are staggered. This line up is for 1-K 1-P ribbing. With the half-pitch lever in this position, the indicator pointer comes to a number on the P scale.





H position (When half-pitch lever is moved in the H direction on the right side.)

Moving the lever to the right staggers the ribber needles by a half-pitch relative to the main-machine needles, as shown. The indicator pointer gives a number on the H scale. Needles cannot collide with this arrangement. Double ribbing is made with this staggered line-up.

With the half-pitch lever moved to the right (H) side, the amount of swing is to be read on the H (lower) scale.

(Note: "Pitch" is the distance between two adjacent needles.)

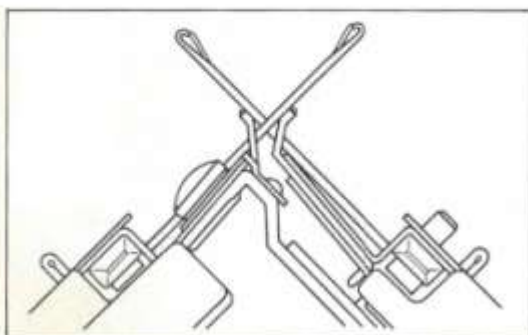
* Swing Handle *

The swing handle is for swinging, or shifting the ribber needle bed from side to side. Maximum swinging is 10 pitches. Rotating the handle, as shown, shifts the ribber towards the right or the left.

This feature is used in making such swing patterns as HERRINGBONE, WEB etc.

The amount of swing or movement is indicated by a number. With the half-pitch lever moved to the left (P) side, the amount of swing is to be read on the P (upper) scale.

Caution: The full length of the needle bed can be used in making a broad fabric. In this case, there is not much space at the right and left-hand sides of the bed for carriage over-travel. The carriage may hit the carriage stopper pin. NEVER BANG THE CARRIAGE AGAINST THE PIN. Banging, or strong shock against the pin can disturb the swing setting of the machine.



Note: When both main-machine and ribber needles are in D or C position and will cross each other as shown, do not swing the needle bed, or the needles may be damaged.

When the knitting operation does not involve any swing, turn the handle so that the pointer is at 5 on the scale.



* Drop Lever *

Using the drop levers, you can change the position of the needle bed to the three positions as follows:

1. Upper position:
2. Middle position:
3. Lower position:

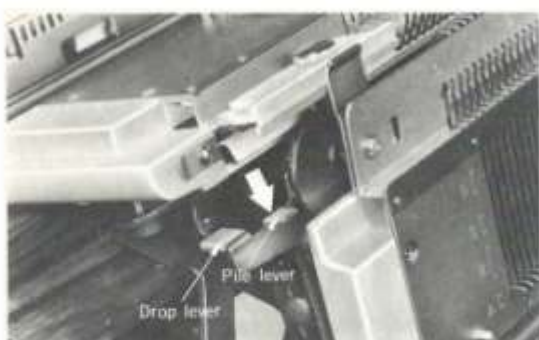
- (1) There are two drop levers, one (in red) at each side of the ribber. By depressing these levers, the ribber can be lowered as much as 2 centimeters (Middle position). This feature is to be used when;
 - (1) Picking up dropped stitches.
 - (2) Watching the fabric being knitted.
 - (3) Threading the yarn feeder with yarn, etc.



- (2) When pushing down the drop levers further, the ribber is lowered up to about 4 centimeter (Lower position). When knitting with the main machine only but with ribber connected, knit in this position.



- (3) To restore the ribber to the original position, lift it by hand as shown until a click is heard. When knitting with the ribber, knit in this position.



* Pile Lever *

The pile lever is used to broaden the distance between the main machine and the ribber.

<How to broaden the distance between the Main Machine and the Ribber>

When depressing fully the pile levers on both sides until a click is heard, the ribber is lowered by about 1 mm., and the distance is broadened. This aspect is used for pile knitting.



<How to restore the broadened distance to the original one>

- (1) Push down the drop lever to lower the ribber to the Middle position and then push up the P lever as far as it goes until a click is heard.

Note: * Be sure not to push up the pile lever without first pushing down the ribber to the Middle position.



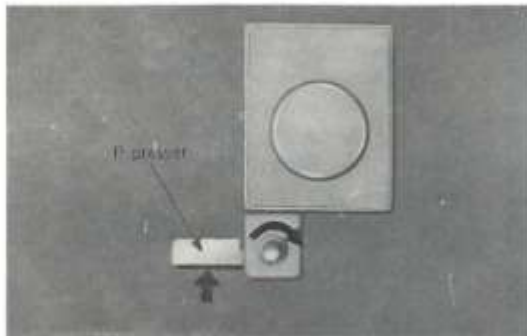
- (2) Push up the ribber with both hands and restore it to the upper position. The distance between the main machine and the ribber will then be narrowed and the original distance will be restored.

This feature is to be used for 1 knit 1 purf rib, double rib, etc., other than pile knitting.



* Auxiliary Yarn Feeder *

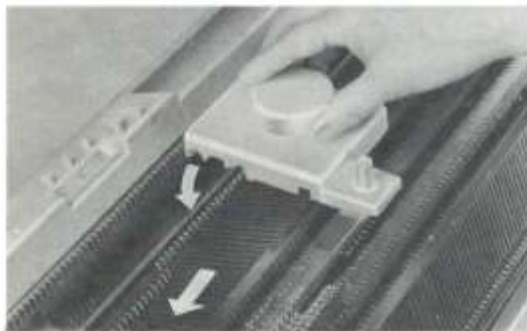
In pile knitting only, set the auxiliary yarn feeder lever mounted on the arm to the (P) mark on the right side. Be sure to set the lever to the (●) mark on the left side when pile knitting is finished.



* P Carriage *

The P carriage is used for removing the loop on the main machine side in pile and drive lace knitting and bringing needles on the ribber side into C position.

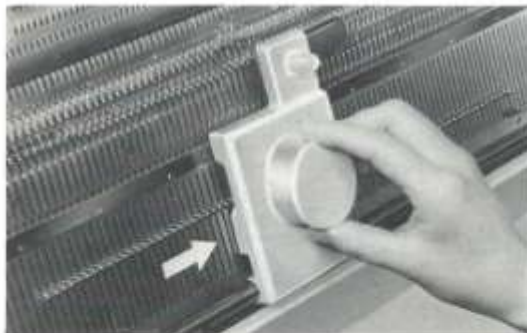
When using the P carriage during pile knitting, attach the P presser to it. In other cases, the P presser is not used.



(1) When removing loops on the Main Machine Side:

Put the P carriage on the needle bed on the right side of the knitting needles on the main machine. (When the P carriage is attached with the P presser, place the P presser firstly on the fore part of the sinker posts on the needle bed and then the rear part of the P carriage onto the rail on the needle bed).

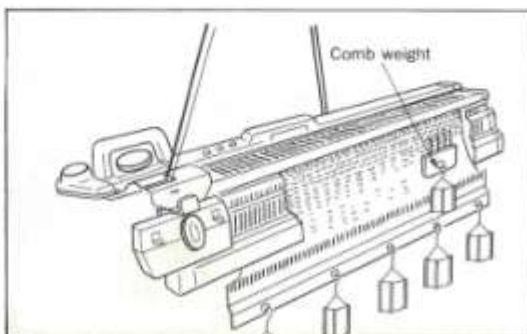
- When moving the P carriage from right to left, needles on the main machine side are lined in C position.
- When moving the P carriage from left to right, needles on the main machine side are restored to B position. (The loops on the main machine are removed.)



(2) In the Case of Bringing Needles on the Ribber Side to C Position:

Put the P carriage on the needle bed on the left side of the knitting on the ribber. (When the P carriage is attached with the P presser, place the P presser firstly in the sinker post on the needle bed and put it on the rail of the needle bed.)

- When moving the P carriage from left to right, the needles on the ribber side are brought to D position once and then returned to C position forming in a line.
- Whichever the side of the carriage may be, the P carriage must be moved from left to right.



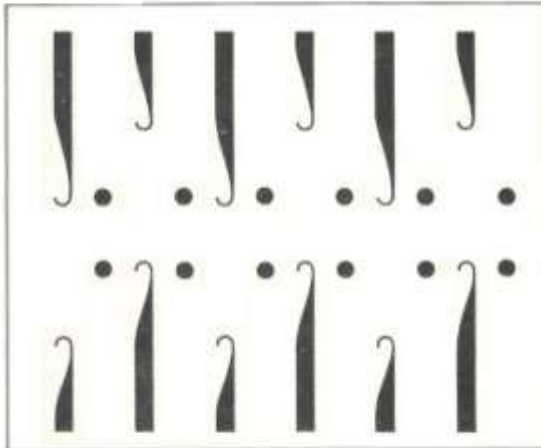
* Hanger Comb *

The hanger comb is to be used when the end stitches float or the stitches slip off in pile knitting, drive lace knitting and variation swing.

When using the hanger combs, hang the hanger comb on the necessary portion and insert weight hooks in the round holes.

3. BOUND-OFF CAST-ON

With the main-machine connected with the ribber, knitting can begin right away from a "bound-off" row. There being no need of making waste knitting, or a "bound-off" row by hand.
 Note: For making a prettier cast-on, refer to page 17.

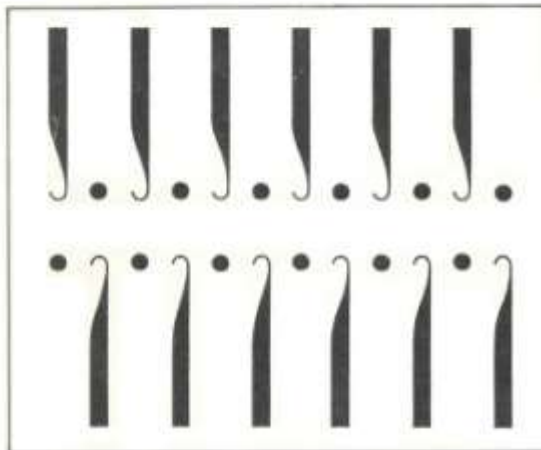


(1) Needle Arrangement

Needles are to be arranged according to the type of knitting. Two types will be demonstrated here.

* Type A. 1-Knit 1-Purl Rib *

(Every other needle)
 Set the half-pitch lever to P position (left position).
 Bring the necessary number of every other needles on the main-machine to B position, using the 1 x 1 needle pusher and centering these needles at the "0" mark on the needle bed.
 Bring every other needle on the ribber to B position staggering them with needles on the main machine.



* Type B. Double Rib *

(every needle on each bed)
 Set the half-pitch lever to H position (right position).
 Needles will be staggered. Bring the necessary number of main-machine needles to B position, using all needles. Use the straight edge of the needle pusher, centering these needles at the "0" mark.
 Bring the desired needles on the ribber to B position using all needles.
 Needle setting for other types of knitting will be explained later.

(2) Carriage Setting

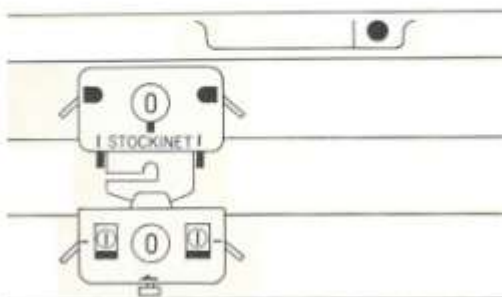
Set the two carriages as follows:

Main-machine carriage	Position
Cam lever	STOCKINET
Russel levers	(both)
Side levers	▲ (both)
Stitch dial	0

Ribber carriage	Position
Set levers	1 (both)
Pick knob	▲
Russel levers	- (both)
Stitch dial	0

Pass the carriage (two carriages locked together) across two or three times to line the needles evenly.

Place the carriage at the left hand side of the needle bed.





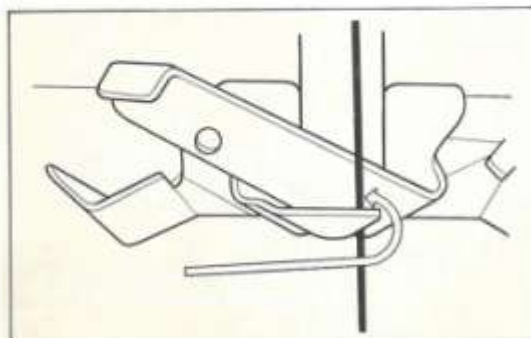
(3) Yarn Threading

• The First Method

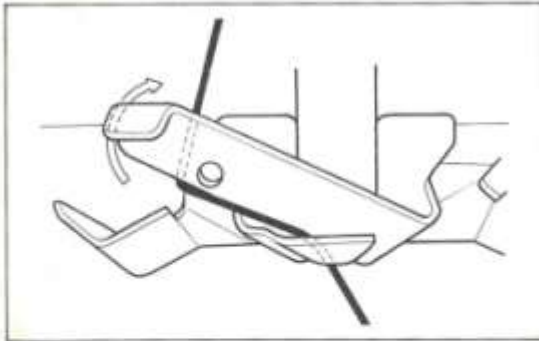
- (1) Bring the carriage to the left side of the machine. Pull the yarn from the auto-tension, loop the free end of the yarn, and let it drop through the yarn feeder.
- (2) From underneath, extend the hook tool through the yarn feeder. Catch the yarn loop with the hook tool and pull the yarn down.

• The Second Method

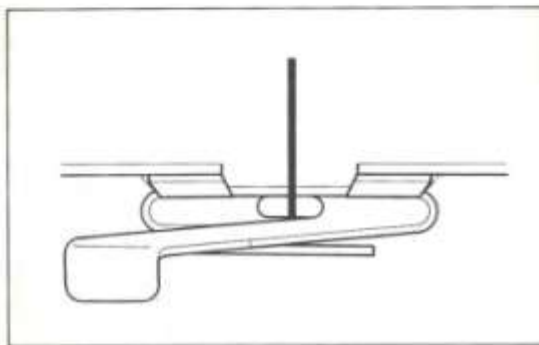
- (1) Bring the carriage all the way to the left side of the machine so that only half of the carriage is on the machine bed.
- (2) Pull the yarn from the auto-tension, and pass it through the groove in the left portion of the arm, bringing the yarn end toward the center.



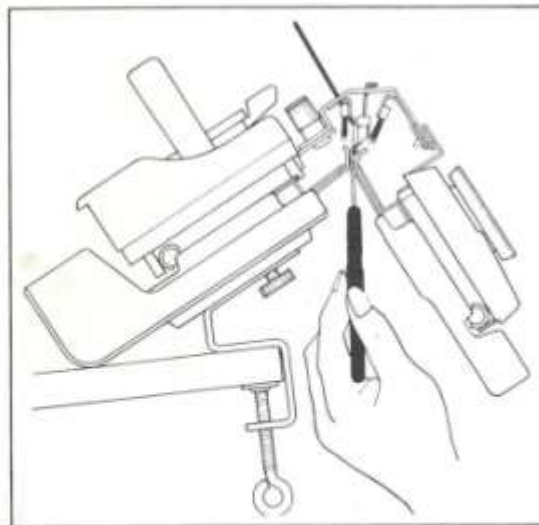
- (3) Feed the yarn into the right outer fold of the yarn feeder.



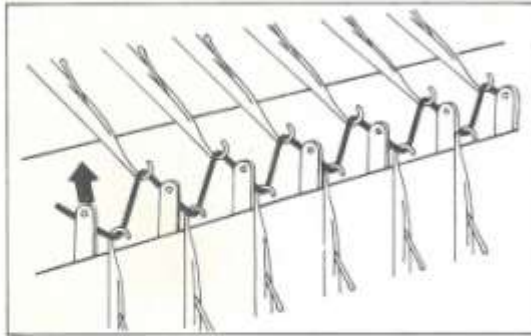
- (4) Route the yarn along the clearance in the fold, pull the yarn end all the way to the left, and pass it into the feeder.



- (5) Pull the yarn downwards, so the yarn will enter the hole in the center of the yarn feeder.



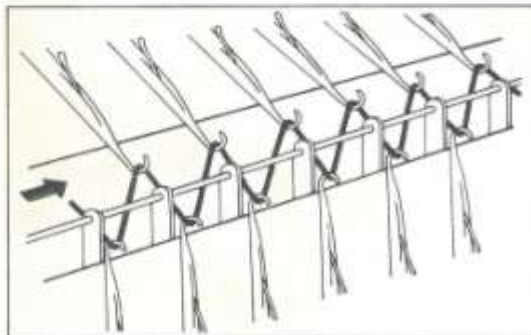
- (6) Move the carriage to the right until the yarn feeder comes up between the two needle beds. Pull the yarn down through the clearance between the two rows of sinker posts by using the hook tool.



(4) Cast-on
(Passing the Yarn Over the Needles)

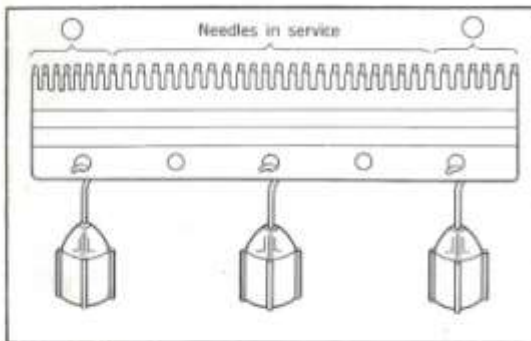
Hold the hanging end of yarn by one hand. Move the carriage from left to right. The yarn will be laid alternately onto the two rows of needles in service in a zigzag pattern.

- **Suspending the Cast-On Comb.**
Two combs are furnished with the machine. The long one is a 200-tooth comb; the shorter is a 100-tooth comb. Use the one that suits the number of needles to be worked.



- (1) Remove the wire from the comb. Insert the comb between main-machine and ribber, as shown. Make sure the comb teeth clear the zigzagged yarn above the needles.
- (2) Insert the wire through the comb teeth, and let the comb hang.

- Be sure the comb is well balanced against the working needles to keep it in a horizontal position.
- It is very important to distribute two or more weights to obtain a good balance as shown in the illustration.



(5) Weights

- The chart below serves as a reference for determining the number of weights that should be attached to the comb.

(SUGGESTED NUMBER OF WEIGHTS FOR DIFFERENT WIDTHS OF KNITTING)

Number of stitches	Number of weights
Up to 40	1
40 ~ 80	2
80 ~ 120	3
120 ~ 160	4
160 ~ 200	5

The chart is good for 1-K 1-P rib using medium weight yarn and can be used as a rough guide for other types of knitting.

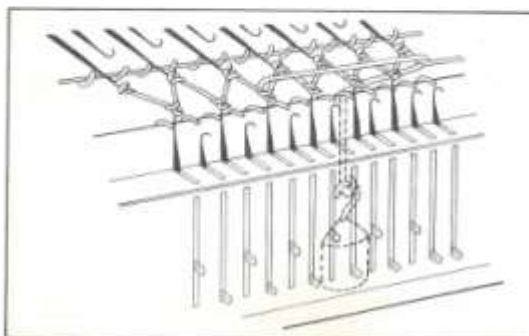
〈6〉 Binding off

Preceding steps (1) to (b), are a preparatory cast-on procedure. In the combination of main-machine and ribber, knitting can begin by "binding off" the initial row of rib stitches. An operational chart is given to cover the complete sequence for "cast on" and "bind-off".

NEEDLE ARRANGEMENT										
1K 1P rib			Double rib			※ Half pitch lever P for 1K 1P rib H for Double rib				
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE				DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER			HALF PITCH LEVER
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	※	Suspend the cast-on comb with weights.
	2	#	#	#	② ②	#	#	#		
	3	SLIP	#	#	#	#	#	#		Bound off cast-on
	4	STOCK-INET	#	#	#	#	#	#		

- (1) In the above chart, "needle arrangement", "half-pitch lever" and step 1 in "order" have all been covered by previous chapters (1) through (5) ,, page 12-15.
- (2) In order 2, move the carriage from right to left, with the levers and knobs set as shown (symbols are used in the chart). The main-machine needles knit one row while the ribber needles do not knit.
- (3) In order 3, move the carriage from left to right. (The ribber needles knit).
- (4) In order 4, move the carriage from right to left. (The main-machine needles knit).
- (5) Order 4 completes the binding off of a fabric to be knit. There are many types of knitting, some of which are explained in the next section. Select the desired type of knitting and continue the operation following Order 4.

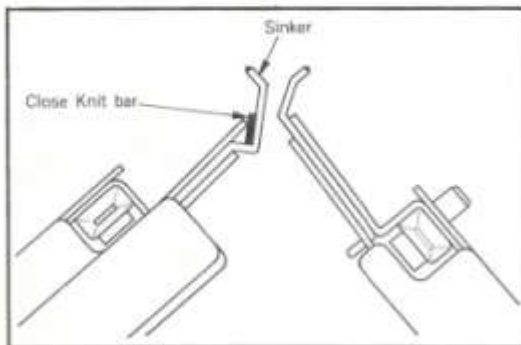
Note: In the chart, "remarks" column carries some explanatory notes, special instructions or changes in needle arrangement etc.



〈7〉 Edge Weights

There are two edge weights with the accessories. These weights with side hangers should be suspended from the yarn zigzagging between the two groups of needles, as shown, in order to prevent the tendency of edge portions to float.

The edge weight must be brought in from underneath, through the clearance between main-machine and ribber, to pass the hook over the zigzagging yarn. Resume knitting and knit ten or more rows. Repeat the above procedure by moving the edge weights up in order to attain better results.



* How to Use Close Knit Bar *

When knitting with medium thin or light weight yarn, attach the Close knit bar to the main machine sinker posts.

- (1) Before arranging needles for cast-on, place the bar between the main-machine sinker posts and the front edge of the needle bed as illustrated.
- (2) Arrange needles and start knitting in the ordinary way.

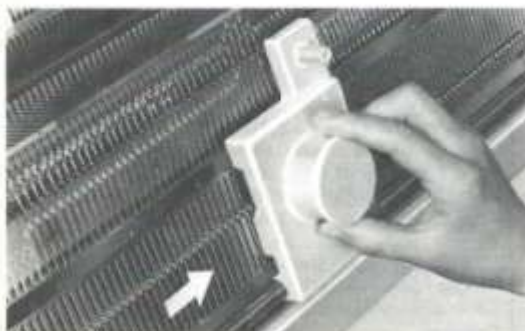
* Technique for Making an Attractive Cast-on (How to make a Tighter Cast-on using the P Carriage)*

* Before arranging needles for cast-on, place "the Close Knit Bar" between the main machine sinker posts and the front edge of the needle bed.

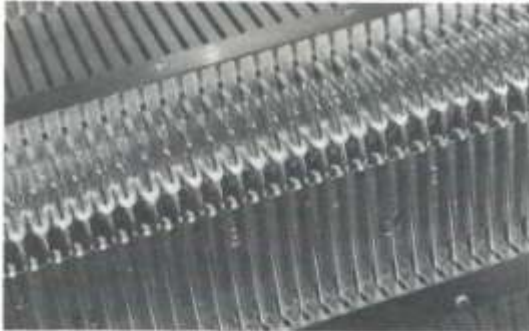
Have the needles arranged for 1-K 1-P rib or double rib knitting and set the carriage in the usual manner.



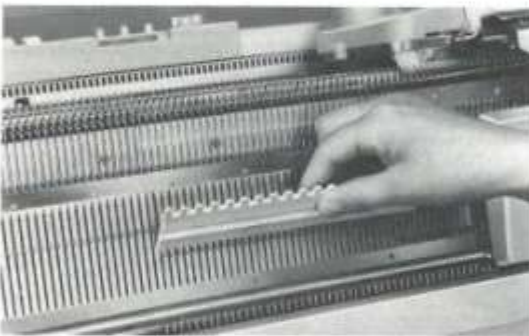
- (1) Disconnect the ribber carriage from the main carriage, and move the ribber carriage all the way to the right.
- (2) Arrange needles for 1K-1P rib or Double rib and align the needles in B position.



- (3) Locate the P carriage (without P presser) on the left side of the ribber needle bed and move the P carriage to the right and across the needle bed. Remove the P carriage. Note that the working needles have now been aligned in C position from B position. Latches of the working needles are opened.



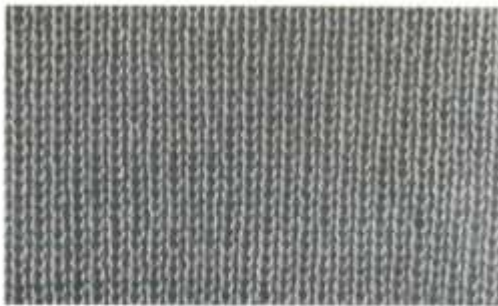
- (4) Set the main carriage for normal casting on with stitch dial at 0. Thread the yarn feeder and move the main carriage only from left to right. The yarn is now passed through the hooks of the main machine needles and over the open latches of ribber needles.



- (5) With the needle pusher, push the ribber needles in C position down to B position.
- (6) Attach the cast-on comb and weights.
- (7) Connect the ribber carriage with the main machine carriage, and complete the bound-off cast-on.

As to the bound-off casting on and other operations, refer to page 16.

2 DOUBLE RIB



Every needle within the range for the desired width of the fabric performs the knitting action on both main-machine and ribber. The structure of the fabric is practically identical to that of the 1-K 1-P rib fabric.

- The example here uses thin-weight yarn.
- For heavier weight yarn, use 1-K 1-P ribbing.
- Refer to page 6 for suggested stitch tension.

NEEDLE ARRANGEMENT										
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE				HALF PITCH LEVER	DIRECTION	REMARKS
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER			
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	H	Suspend the cast-on comb with weights. Bound-off cast-on
	2	"	"	"	② ①	"	"	"	"	
	3	SLIP	"	"	"	"	"	"	"	
	4	STOCK-INET	"	"	"	"	"	"	"	
(2) MAIN KNITTING	1	"	"	"	① ①	"	"	"	"	
	2	"	"	"	"	"	"	"	"	

(Main knitting to be repeated.)

Note: The knitting sequence is the same as for the 1-K 1-P rib stitch. The differences are in the setting of the half-pitch lever and the needle arrangement.

3 TUBULAR KNITTING



The fabric takes a tubular form in stockinet stitches.

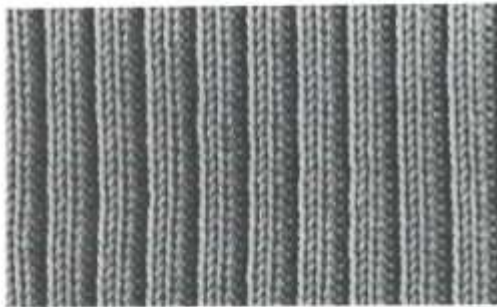
- As you move the carriage back and forth, the main carriage knits one way and the ribber carriage knits on its way back alternately. Two strokes make one row of tubular.
- Set the stitch dial of the ribber to the number slightly larger than that of the main machine.
- This sample uses medium-weight yarn.

Stitch dial: Main machine 6 Ribber 8

NEEDLE ARRANGEMENT										Push up the required number of needles on the main machine and same number of needles on the ribber to B position.	
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1 STOCK-INET		■ ■	① ①	▲	— =	5	H	→	Knit with the ravel cord & attach the cast-on comb and weights.	
(2) MAIN KNITTING	1 SLIP	#	▲ ■	① ①	#	#	#	P	←	When moving the carriage from left to right, knit bringing 4 or 5 needles at both ends of the ribber to D position.	
	2	#	#	#	#	#	#	#	→		

(Main knitting to be repeated.)

4 2 KNIT 2 PURL RIB



This is a ribbed fabric, with 2 knit and 2 purl stitches alternating.

Note: There are two ways of arranging the working needles. Chart 1 and 2.

Needle arrangement in chart 1 is for medium or lighter weight yarn and that of chart 2 for heavy weight yarn.

* Stitch dial when using medium weight yarn: Main carriage 4 Ribber carriage 4

Chart 1-For medium or lighter weight yarn


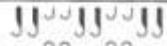

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1 STOCK-INET		■ ■	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound-off cast-on	
	2	#	#	① ①	#	#	#	#	←		
	3 SLIP	#	#	#	#	#	#	#	→		
	4 STOCK-INET	#	#	#	#	#	#	#	←		
(2) MAIN KNITTING	1	#	#	#	① ①	#	#	6	#	→	
	2	#	#	#	#	#	#	#	#	←	

(Main knitting to be repeated.)

* Stitch dial when using heavy weight yarn:

Main carriage 7
Ribber carriage 7

Chart 2-For heavy weight yarn

NEEDLE ARRANGEMENT 											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1	STOCK-INET		■ ■	① ①		--	5	H	→	Suspend the cast-on comb with weights. Bound-off cast-on
	2	"	"	"	① ①	"	"	"	"	←	
	3	SLIP	"	"	"	"	"	"	"	→	
	4	STOCK-INET	"	"	"	"	"	"	"	←	
(2) MAIN KNITTING	1	"	"	"	① ①	"	"	6	P	→	
	2	"	"	"	"	"	"	"	"	←	

(Main knitting to be repeated.)

5 2 KNIT 1 PURL RIB

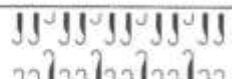


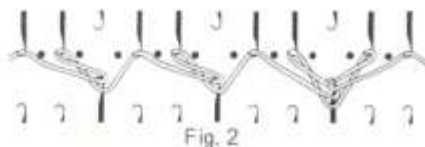
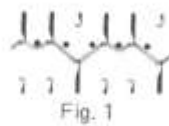
This is another variation of ribbing with two knit stitches (on the main machine) and 1 purl stitch (on the ribber).

* The sample here is made with medium-weight yarn.

Stitch dial: Main carriage 3
Ribber carriage 3

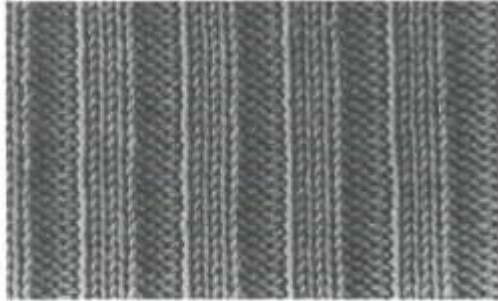
* All operations other than needle arrangement and cast-on, made in the same manner as used for 1 knit 1 purl rib. Knit referring to the operation table, page 19.

Needle arrangement: 	Note: * Stitch dial Casting-on 4 Bind-off 3
---	--



- (1) Order 1 of cast-on lays the yarn over the needles as shown in Fig. 1.
- (2) Transfer the yarn between the two main-machine needles to one ribber needle by using the transfer tool. See Fig. 2.
- (3) Attach the cast-on comb and weights. Knit on following the operation table of 1 knit 1 purl rib.

6 3 KNIT 3 PURL RIB



This is ribbed fabric with 3 or more face and wrong side stitches.

- * The sample here is made in 3 knit (face side) 3 purl (wrong side), rib but wider ribbing with 4 or more knit and purl stitches can be also knitted in the same way.
- * The sample here is made with medium weight yarn.

Stitch dial: Main carriage 3
Ribber carriage 5

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE				SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound-off cast-on
	2	"	"	"	① ①	"	"	"	"	→	
	3	SLIP	"	"	"	"	"	"	"	→	
	4	STOCK-INET	"	"	"	"	"	"	"	→	
	5	The illustration shows the 3K-3P needle arrangement. Transfer the stitches from those needles to be inactivated to the corresponding needles on the opposite bed. Push back to A position all needles inactivated on both beds. (This method is adopted when knitting with medium yarn or thinner yarn.)									
(2) MAIN KNITTING	1	"	"	"	① ①	"	"	"	"	→	
	2	"	"	"	"	"	"	"	"	←	

(Main knitting to be repeated.)



- * When knitting with heavy yarn cast-on in 1 knit 1 purl rib and start main knitting with the needle arrangement as shown on the left. The half-pitch lever must then be in P position (left).



- * **Needle arrangement at the end stitch.**
When the fabric is to be knitted in 2 knit 2 purl rib, 2 knit 1 purl rib, 3 knit 3 purl rib etc. In succession of 2 stitches or more on the main machine or ribber transfer the last stitch to the needle on the opposite side.

* Various Knittings *

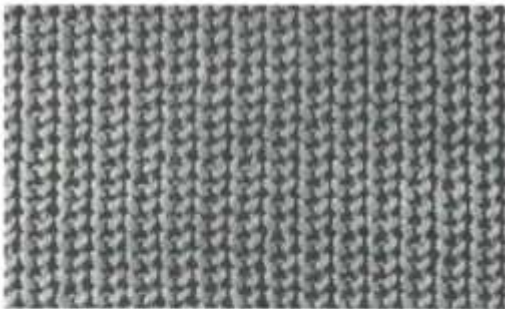
5. PATTERN KNITTING

The following are some typical pattern knitting which can be knitted with the ribber. It is recommended to knit your work in variation of pattern stitches on a more wider range.

(Some Hints for the Operation Table)

- * When knitting in pattern stitch, put the carriage on the left side at the beginning and knit the first row from left to right.
- * Repeat knitting as instructed in the "Main Knitting" column according to the procedure on the operation table.

1 ENGLISH RIB



This stitch results from effecting the tucking or pulling-up operation on one side of the fabric made in 1-K 1-P rib or double rib stitches.

- * The example shown here uses medium-weight yarn. It is made from a 1-K 1-P rib knitting.

Stitch dial: Main carriage 4
Ribber carriage 4

NEEDLE ARRANGEMENT										
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE				DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER			HALF PITCH LEVER
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	P	Suspend the cast-on comb with weights. Bound-off cast-on
	2	SLIP	" "	■ ▲	① ①	" "	" "	" "	←	
	3	" "	" "	" "	" "	" "	" "	" "	→	
	4	" "	" "	" "	" "	" "	" "	" "	←	
(2) MAIN KNITTING	1	TUCK	" "	" "	① ①	" "	" "	" "	→	
	2	" "	" "	" "	" "	" "	" "	" "	←	

(Main knitting to be repeated.)

- * To obtain this knitting from the double rib knitting, the half-pitch lever is set in its right (H) position and alter the needle arrangement. The sequence of knitting operation is the same as that for the 1-K 1-P rib.

2 DOUBLE ENGLISH RIB



This knitting results from effecting the tucking or pulling-up operation on both sides of the fabric alternately made in 1-K 1-P rib or double rib stitches.

- * The example shown here uses medium-weight yarn. It is made from 1-K 1-P rib knitting.

Stitch dial: Main carriage 3
Ribber carriage 3

NEEDLE ARRANGEMENT										
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.				
(1) CASTING ON	1	STOCK-INLET		■ ■	① ①	▲	— —	5	P	Suspend the cast-on comb with weights. Bound-off cast-on.
	2	SLIP	#	■ ▲	① ①	#	#	#	←	
	3	#	#	#	#	#	#	#	→	
	4	#	#	#	#	#	#	#	←	
(2) MAIN KNITTING	1	TUCK	#	#	#	∩	#	#	#	→
	2	#	#	#	#	#	#	#	#	←

(Main knitting to be repeated.)

To obtain this knitting from the double rib knitting the half pitch lever is set in the right (H) position and you should alter the needle arrangement.

SWUNG ENGLISH RIB



A 1-K 1-P rib knitting with a 2-pitch swing or a double rib knitting with a 1-pitch swing gives you this ribbed fabric, provided that one side is "tucked".

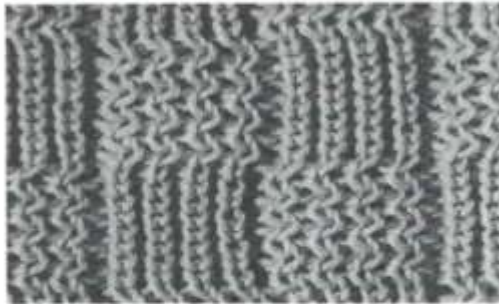
* The example, made with medium-weight yarn, is a swung variation of the 1-K 1-P rib, for which the following chart shows the sequence and necessary settings.

Stitch dial: Main carriage 4
Ribber carriage 4

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	P	→	Suspend the cast-on comb with weights. Bound-off cast-on
	2	SLIP	" "	■ ▲	① ②	" "	" "	" "	" "	←	
	3	" "	" "	" "	" "	" "	" "	" "	" "	→	
	4	" "	" "	" "	" "	" "	" "	" "	" "	←	
(2) MAIN KNITTING (TO BE REPEATED)	1	TUCK		" "	① ①	" "	" "	5	" "	→	Bring 2 needles at both ends of the main machine to D position before knitting.
	2	" "	" "	" "	" "	" "	" "	" "	" "	←	
	3	" "	" "	" "	" "	" "	" "	7	" "	→	
	4	" "	" "	" "	" "	" "	" "	" "	" "	←	

* When knitting in the double rib, arrange needles so as to be knitted in the double rib and set the half-pitch lever in the (H) side and turn the swing handle to 6 instead of 7.


4 VARIATION OF ENGLISH RIB



This is knitted fabric in English Rib and Swung English Rib at the same time according to the needle arrangement condition.

* The sample shown here uses medium-weight yarn.

Stitch dial: Main carriage 4
Ribber carriage 4

NEEDLE ARRANGEMENT 											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1	STOCK-INLET		● ●	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights.
	2	SLIP	"	● ▲	① ①	"	"	"	"	←	
	3	"	"	"	"	"	"	"	"	→	Bound-off cast-on
	4	"	"	"	"	"	"	"	"	←	
(2) MAIN KNITTING (TO BE REPEATED)	1	TUCK	"	"	① ①	"	"	5	"	→	Repeat 4 times. (Knit 16rs.)
	2	"	"	"	"	"	"	"	"	←	
	3	"	"	"	"	"	"	6	"	→	
	4	"	"	"	"	"	"	"	"	←	
	5	"	"	"	"	"	"	7	"	→	Repeat 4 times. (Knit 16rs.)
	6	"	"	"	"	"	"	"	"	←	
	7	"	"	"	"	"	"	6	"	→	
	8	"	"	"	"	"	"	"	"	←	

5 HERRING BONE SWING



This is a combination of tucking and swing. Swing the ribber 2 pitches for 1-K 1-P rib and 1-pitch for double rib, and tuck one row on the ribber before you swing it back. Repeat and swing back and forth for desired rows, then change the direction of the swing.

* Shown here is a herring bone in thin yarn, a variation of double rib.

Stitch dial: Main carriage 2
Ribber carriage 2

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
(1) CASTING ON	1	STOCK-INET		▲ ▲	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound-off cast-on
	2	SLIP	" "	▲ ▲	① ②	" "	" "	" "	" "	←	
	3	" "	" "	" "	" "	" "	" "	" "	" "	→	
	4	" "	" "	" "	" "	" "	" "	" "	" "	←	
	5	Skip two adjacent needles at intervals of 8 needles on the main machine and the Ribber. Transfer the stitch on each needle to be skipped to the adjacent needle. Push the vacant needles to A position.									
(2) MAIN KNITTING (TO BE REPEATED)	1	TUCK	" "	" "	① ①	" "	" "	5	" "	→	Repeat as desired (10 times)
	2	" "	" "	" "	" "	" "	" "	6	" "	←	
	3	" "	" "	" "	" "	" "	" "	" "	" "	→	
	4	" "	" "	" "	" "	" "	" "	5	" "	←	

6 VARIATION SWING



While main carriage knits plain, the ribber carriage knits with selected needles making ridges. By swinging the ribber, these ridges make various swung patterns.

* Medium-weight yarn is used in this example.

Stitch dial: Main carriage 4
Ribber carriage 2

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING PINTER	HALF PITCH LEVER	DIREC- TION	REMARKS	
(1) CASTING ON	1	STOCK- INET		■ ■	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound off cast-on
	2	SLIP	#	■ ▲	① ②	#	#	#	←		
	3	#	#	#	#	#	#	#	→		
	4	#	#	#	#	#	#	#	←		
	5	Except for the 8, 10, 18, 20th, etc. needles on the ribber from the left end, transfer the stitches of other needles onto the stitches of the main machine needles. Then push these vacant needles back to A position.									
(2) MAIN KNITTING (TO BE REPEATED)	1	STOCK- INET		■ ■	① ①	#	#	5	#	→	Swing the ribber one pitch by one, knit to make it zigzag, bringing 1-5 both end needles to D position.
	6	#	#	#	#	#	#	0	#	←	
	11	#	#	#	#	#	#	5	#	→	
	16	#	#	#	#	#	#	10	#	←	
	20	#	#	#	#	#	#	4	#	→	

- * As the ribber is continuously swung to either side, the ribber end needles may finally go to a position where there is no opposite needle on the main-machine. Just before this situation occurs, transfer the stitches on the ribber end needles to the opposite main-machine needles and push the vacated needles into A position. These needles are to be advanced to B position when the ribber is sufficiently swung back. And, just start knitting again.
- * After the bound off edge is completed, you may make several rows of tubular stitches before changing the needle arrangement to swing the needle bed. This manner of making initial rows will give a firmer fabric edge.

7 PIN TUCK



While continuing a rib knitting operation, make 3 or 4 extra rows with the ribber only, and repeat this at regular intervals.

* The example here is made with thin yarn and by repeating the extra row knitting in the double rib operation.

Stitch dial: Main carriage 2
Ribber carriage 3

NEEDLE ARRANGEMENT											
* Use the edge weights.											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE					DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER	HALF PITCH LEVER			
(1) CASTING ON	1	STOCK-INET		■ ■	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound-off cast-on
	2	SLIP	"	■ ▲	① ②	"	"	"	"	←	
	3	"	"	"	"	"	"	"	"	→	
	4	"	"	"	"	"	"	"	"	←	
(2) MAIN KNITTING (TO BE REPEATED)	1	"	"	▲ ▲	① ①	"	"	"	"	→	Repeat as desired (ribbed part)
	2	"	"	"	"	"	"	"	"	←	
	3	"	"	■ ■	"	"	"	"	"	→	(Pin tuck part) move the edge weights up of the knitting pin tuck part.
	4	"	"	"	"	"	"	"	"	←	
	5	"	"	"	"	"	"	"	"	→	
	6	"	"	"	"	"	"	"	"	←	

* In knitting with yarn thicker than medium weight yarn, knit, removing the knit bar to prevent the stitches from floating.

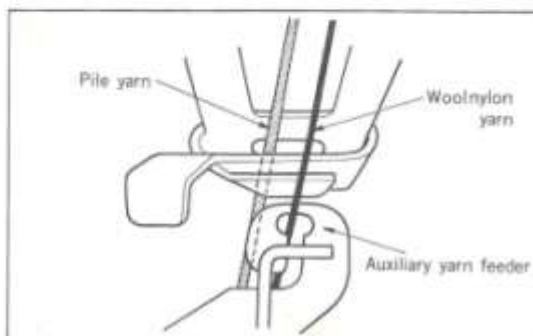
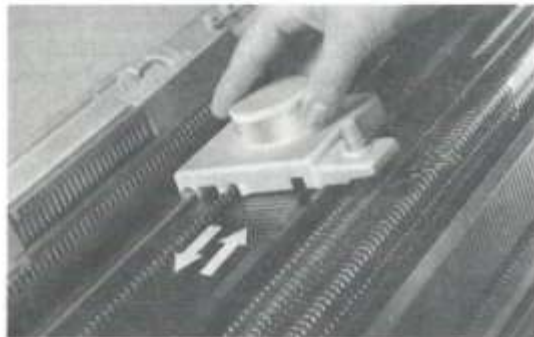
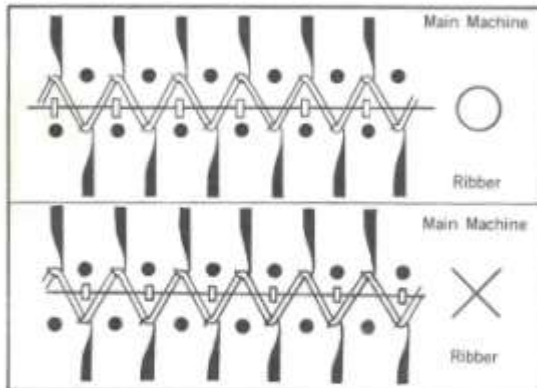
☞ PILE KNITTING

This is an unique pattern peculiar to your knitting machine. The stitches are formed using both ground yarn and pile yarn. Knit every 2 rows using pile yarn only on the main machine and every row using both yarns on the ribber removing the loops knitted by the main machine.



- * This knitted fabric is suitable for suits, coats and carpets for interior decoration. Besides, this fabric give effect for collars cuffs of coat, etc.,
- * The sample here uses woolnylon yarn (ground yarn) and thin yarn (pile yarn).
Stitch dial: Main carriage 6
Ribber carriage 4
- * For the pile knitting, a special yarn (woolnylon yarn) must be used as the ground yarn together with the pile yarn.
The nature of this woolnylon yarn is elastic and strong and accounts for the elasticity of the finished garment.

NEEDLE ARRANGEMENT											
ORDER	MAIN MACHINE CARRIAGE			RIBBER CARRIAGE			SWING POINTER	HALF PITCH LEVER	DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	SET LEV.	PICK KNOB	RUSSEL LEV.					
1	STOCK-INET		▲ ▲	① ①	▲	==	5	H	→	Knit with waste yarn and suspend cast-on comb. Knit 4 rows with waste yarn. Knit with raveling cord. Knit with pile yarn.	
2	Remove loops on the main machine with P carriage (without P presser) and hang weights.										
3	SLIP	" "	" "	" "	" "	" "	" "	" "	←		
4	" "	" "	" "	" "	" "	" "	" "	" "	→		
5	" "	" "	" "	" "	" "	" "	" "	" "	←		
6	" "	" "	" "	" "	" "	" "	" "	" "	→		
7	" "	" "	" "	" "	" "	" "	" "	" "	←		
8	Push 5 needles on the main machine down to A position at both ends. Thread the auxiliary yarn feeder with ground yarn.										
(2) MAIN KNITTING (TO BE REPEATED)	1	Bring needles on the ribber to C position with P carriage (with P presser).									
	2	" "	" "	▲ ▲	" "	" "	" "	" "	" "	→	
	3	Bring needles on the ribber to C position with P carriage (with P presser).									
	4	" "	" "	" "	" "	" "	" "	" "	" "	←	
	5	Remove loops on the main machine with P carriage (with P presser).									



(Casting-on)

(1) Arrange needles as in double rib and set the main machine and the ribber as shown in line 1 of the operation table. Set the stitch dial same as main knitting and knit one row with waste yarn. Insert the cast-on comb to the sinker post of the ribber.

(2) Move the P carriage (without the P presser) from right to left and back again to remove the loops on the main-machine. Arrange the needles, out of place on the main-machine, into B position and suspend the weights on both sides of the fabric so that it may be well-balanced.

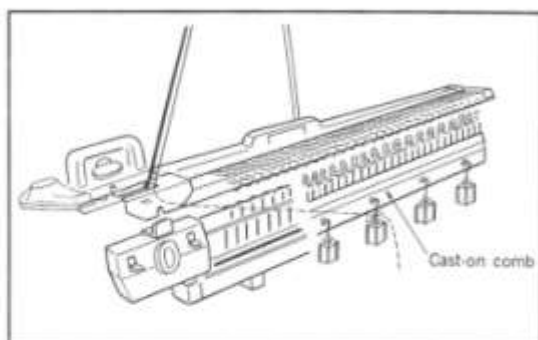
(3) Set the cam lever on the main machine carriage to SLIP and knit 4 rows using waste yarn.

(4) Change the waste yarn through the yarn feeder to ravel cord and knit one row from right to left.

(5) Change ravel cord to pile yarn and knit 2 rows.

(6) Move the carriage to the left end so far as it goes and leave it. Set the auxiliary yarn feeder lever to the P mark (right), push down the drop levers to the middle position.

(7) Thread the auto tension with woolnylon yarn and then thread the auxiliary yarn feeder with woolnylon yarn as illustrated.



- (8) Pull the yarn down through the clearance between the main machine and the ribber and fasten the yarn end to the weight on the right side from the center so that the yarn passes over the side of the cast-on comb, (main machine side)

Restore the ribber to the upper position and connect the ribber carriage with the main machine carriage. (Make sure that the threaded ground yarn is not caught between the ribber stopper and the plastic piece on the front edge or is not entangled with the sinker post.)

- (9) Depress the pile levers on both sides to broaden the distance between the main machine and the ribber. (Refer to Page 10)

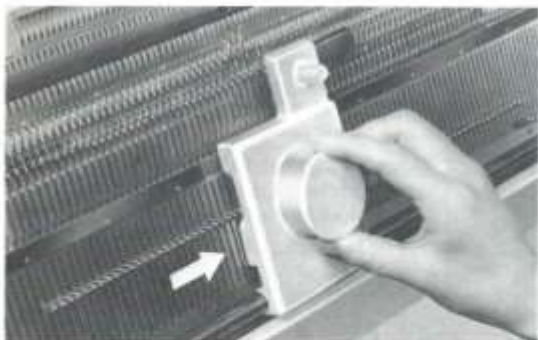
- (10) Push 5 or 6 needles on the main-machine back to A position at both ends. (Providing there is no pile section on either end so as to make it easier to seam the garment).



(Main Knitting)

- (1) Bring needles on the ribber to C position using the P carriage (Refer to Page 11). Set the main machine and the ribber as indicated in column (2) "Main knitting," and knit one row from left to right.

- (2) Bring needles on the ribber to C position with the P carriage and knit one row from right to left. (Only the needles on the ribber will knit.)



- (3) Move the P carriage from right to left and left to right to remove the loops on the main machine.

Repeat the procedure of the above (1)–(3).



Note:

- Set the auto tension dial for nylon yarn to 5. (Adjust the auto tension dial for pile yarn according to the thickness of the yarn.)
- In pile knitting, since the movement of the carriage is slightly heavier than that for ordinary knitting, care should be taken to prevent the carriage from floating while knitting.
- If the pile yarn entangles with the ground yarn, knit pulling the yarn slightly by hand above the yarn feeder when you start moving the carriage.
- When the end stitches float or the loops do not go behind the latch, suspend small weights on the hanger combs and hang them on the 3rd or 4th row on both sides of the fabric counting from the upper parts.

(Stitch Dial for Pile Knitting and Punch Pile Knitting)

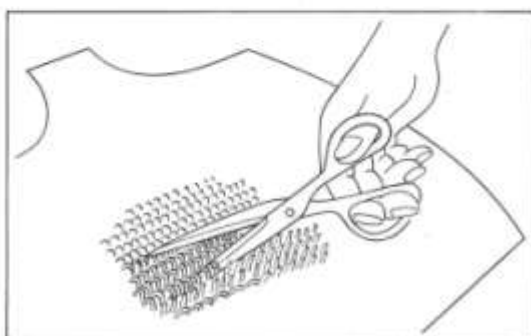
Knitting Thread of Combination	Pile Yarn	Medium weight	Medium weight	Thin	Thin	Thin
	Ground Yarn	Nylon thread	Wool-nylon	Nylon thread	Wool-nylon	Light weight
Main Machine		4 ~ 6	4 ~ 6	4 ~ 6	4 ~ 6	4 ~ 6
Ribber		4 ~ 5	4 ~ 5	4 ~ 5	3 ~ 4	4 ~ 5

- In both cases of casting-on and main knitting, leave the stitch dial at the same position.



*** How to make cut-pile fabric ***

This type of fabric is made by cutting the loops of knitted pile fabric, so it gives a velvet or carpet effect.



- (1) Spreading the knitted fabric, lay it on a plane stand.
- (2) Inserting the tip of scissors into the loops, cut them. Be sure to cut, if possible, the center of the loops.
- (3) Steam the surface of the fabric with a steam iron. (Be sure not to press it down.)

• Various Knittings •

6. PATTERN KNITTING USING PUNCHED CARDS

Using a ribber and punched-cards, various patterns can be knitted. Unique fabrics such as punch pile knitting, drive lace knitting, punch pin-tuck and punch tuck rib, etc. are achieved through a brief operation.

- Besides 10 sheets of the punched card supplied together with the ribber, those which are associated with the main machine are also usable.
- When using punched cards, observe the precautions given in the main machine instruction book. Should you wrongly knit, correct, referring to Page 86, of the main machine instruction book.
- Set the punched cards before knitting the last row in the line of casting-on.

1 PUNCH PILE KNITTING

Card No. 1R-A, Punch pile knitting (1)



This type of knitting is the unique feature peculiar to your knitter. These patterns are composed of the piled and unpiled portions formed using punched cards.

- This knitted fabric is used for carpets, and also, for outer garments according to the rib of materials.
- The sample shown here uses woolnylon yarn and thin yarn.
- Except for the use of punched cards, operate in the same manner as for the ordinary pile knitting.

Stitch dial: Main carriage 7
Ribber carriage 5

NEEDLE ARRANGEMENT													
ORDER	MAIN MACHINE CARRIAGE					RIBBER CARRIAGE					DIRECTION	REMARKS	
	CAM LEV.	RUSSEL LEV. (BOTN)	SIDE LEV. (BOTN)	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER	HALF PITCH LEVER			
1	STOCK-INET			▲	●	① ①	▲	= =	5	H	←	(1) CASTING ON	Knit with waste yarn and suspend the cast-on comb.
2	Using P carriage, remove the loops on the main machine and hang the weight. (Refer to Pile Knitting)												
3	SLIP	#	#	#		#	#	#	#	#	←		Knit 4 rows with waste yarn.
4	#	#	#	#		#	#	#	#	#	→		
5	#	#	#	#		#	#	#	#	#	←		Knit with raveling cord.
6	#	#	#	#		#	#	#	#	#	→		
7	#	#	#	#	Insert punched card	#	#	#	#	#	←		Knit with pile yarn.
8	Push 5 needles on the main machine to A positions at both ends. Thread the auxiliary yarn feeder with the ground yarn.												
(2) MAIN KNITTING (TO BE REPEATED)													
1	Bring needles on the ribber to C position with the P carriage (with P presser).												
2	#	#	▲	▲	▼		#	#	#	#	#	←	
3	Bring needles on the ribber to C position with the P carriage (with P presser).												
4	#	#	#	#	#	2	#	#	#	#	#	←	
5	Remove loops on the main machine with the P carriage (with P presser).												

Card No. 2R-A, Punch pile knitting (2)

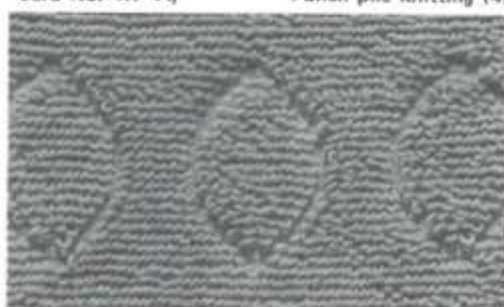


- * The following patterns are knitted in the same manner.
- * You may cut loops of these fabrics.

Card No. 3R-A, Punch pile knitting (3)



Card No. 4R-A, Punch pile knitting (4)



2 DRIVE LACE KNITTING

Card No. 5R-A, Drive lace knitting (1)



This type of knitting is also unique. In this drive lace knitting, knit in stockinet on the ribber and partially knit on the main machine removing loops every two rows.

- Thin yarn is suitable for this type of knitting.
- It is effective to knit cardigans blouses, etc. using light weight yarn or synthetic yarn.
- The sample shown here uses thin yarn.

Stitch dial: Main carriage 4
Ribber carriage 3



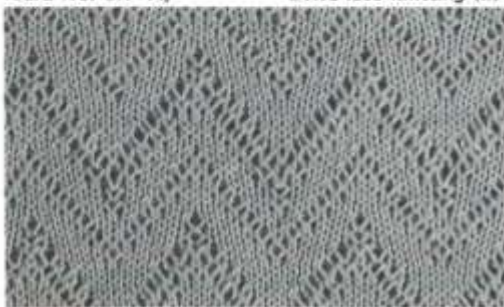
ORDER	MAIN MACHINE CARRIAGE					RIBBER CARRIAGE					DIRECTION	REMARKS
	CAM LEV.	RUSSELLEV. (BOTH)	SIDE LEV. (BOTH)	STOP KNOB	CARD MEM.	SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER	HALF PITCH LEVER		
1	STOCKINET		■ ■	●		① ①	▲	= =	5	H	→	Knit with waste yarn and suspend the cast-on comb*
2	Remove loops on the main machine with the P carriage (without P presser).											
3	SLIP	#	#	#		#	#	#	#	#	→	Knit 4 rows with waste yarn.
4	#	#	#	#		#	#	#	#	#	→	
5	#	#	#	#		#	#	#	#	#	→	Knit with raveling cord.
6	#	#	#	#		#	#	#	#	#	→	
7	#	#	#	#	Insert punched card	#	#	#	#	#	←	Knit with yarn for the garment.
8	Push one needle on the main machine to A position on both sides.											
1	#	#	■ ▲	▼	1	#	#	#	#	#	→	Using P carriage, needles on the ribber to C position every row before knitting*.
2	#	#	#	#	2	#	#	#	#	#	←	
3	Remove loops on the main machine with P carriage (without P presser).											

(Main knitting to be repeated.)

* Refer to page 32-33.

Card No. 6R-A,

Drive lace knitting (2)



Stitch dial: Main carriage 4
for thin yarn: Ribber carriage 3

Card No. 7R-A,

Drive lace knitting (3)



Stitch dial: Main carriage 5
for thin yarn: Ribber carriage 3

Card No. 8R-A, Drive lace knitting (4)



Stitch dial for thin yarn: Main carriage 6
Ribber carriage 3

3 PUNCH PIN TUCK



Card No. 9R-A, Punch pin-tuck knitting (1)



This is a variation of pin-tuck using punched cards. Different from the ordinary pin-tuck knitting, curves and zigzag patterns can be knitted through brief operations.

- * This knitting, fabric has a feeling of firm thickness and is suitable for knitting outer garments.
- * The sample shown here uses thin yarn.

Stitch dial: Main carriage 3
Ribber carriage 4

		NEEDLE ARRANGEMENT											
												* Use hanger combs.	
ORDER		MAIN MACHINE CARRIAGE			STOP KNOB	CARD MEM.	RIBBER CARRIAGE				DIRECTION	REMARKS	
		CAM LEV.	RUSSELLEV. (BOTH)	SIDE LEV. (BOTH)			SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER			HALF PITCH LEVER
(1) CASTING ON	1	STOCK-INLET		■ ■	●		① ①	▲	—	5	H	→	Suspend the cast-on comb with weights. Bound-off cast on
	2	SLIP	"	■ ▲	"		① ①	"	"	"	"	→	
	3	"	"	"	"		"	"	"	"	"	→	
	4	"	"	"	"		"	"	"	"	"	→	
	5	"	"	▲ ▲	"		① ①	"	"	"	"	→	
	6	"	"	"	"	Insert punched card	"	"	"	"	"	←	
(2) MAIN KNITTING	1	"	"	"	▼	1	"	"	"	"	"	→	
	2	"	"	"	"	2	"	"	"	"	"	→	

(Main knitting to be repeated.)

Card No. 10R-A, Punch pin-tuck knitting (2)

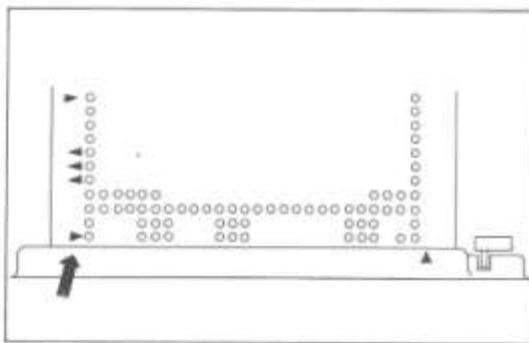


Stitch dial Main carriage 3
for thin yarn: Ribber carriage 4

Card No. 9R-A, Punch pin-tuck knitting (Appli)



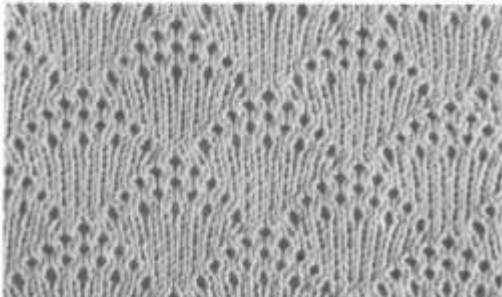
Stitch dial Main carriage 8
for thin yarn: Ribber carriage 8



- * By adding swing to the punch pin tuck knitting, you can produce a stitch as shown in the above picture, by using card No. 9R. Knit following the instructions marked ► on the left end of the punched card. Knit swinging 1 pitch to the right at ► mark and 1 pitch to the left at ◀ mark.
- * Since "Swing" operation is needed in this type of knitting, set the stitch dials on both the ribber and main-machine to a bigger number than usual.
- * If stitches tend to slip off, remove the knit-bar and continue knitting.

4 PUNCH TUCK RIB

Card No. 10-A, Punch Tuck Rib (1)



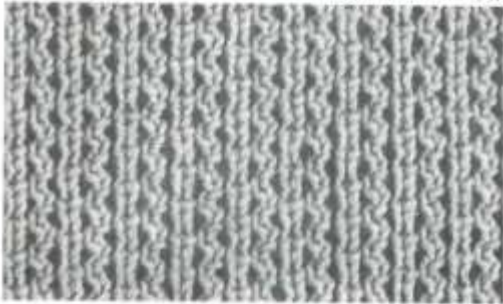
This is a combination of punched card tucking on the main machine and double rib on the ribber.

- * Punched cards No. 2, 4, 7, 9, 10 and 12 of the 20 punched cards supplied with the main machine are suitable for tuck ribbing patterns.
- * The sample shown here uses thin yarn.
- * Stitch dial: Main carriage 3
Ribber carriage 3

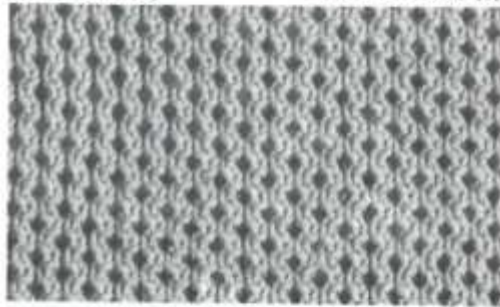
NEEDLE ARRANGEMENT												
ORDER	MAIN MACHINE CARRIAGE				CARD MEM.	RIBBER CARRIAGE					DIRECTION	REMARKS
	CAM LEV.	RUSSEL LEV. (BOTH)	SIDE LEV. (BOTH)	STOP KNOB		SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER	HALF PITCH LEVER		
(1) CASTING ON	1	STOCK-INET		■ ■	●	① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights. Bound off cast-on
	2	SLIP	" "	■ ▲	"	① ①	"	"	"	"	→	
	3	"	"	"	"	"	"	"	"	"	→	
	4	"	"	"	"	Insert plunger card	"	"	"	"	"	
(2) MAIN KNITTING	1	TUCK	" "	▲ ▲	▼	① ①	"	"	"	"	→	
	2	"	"	"	"	"	"	"	"	"	←	

(Main knitting to be repeated.)

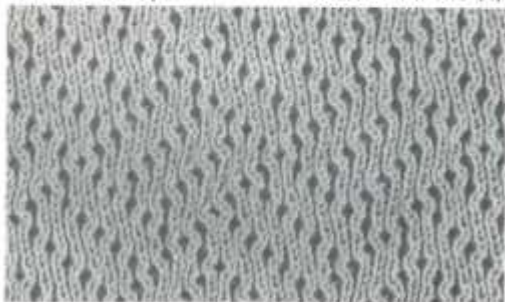
Card No. 2--A, Punch Tuck Rib (2)



Card No. 7--A, Punch Tuck Rib (3)



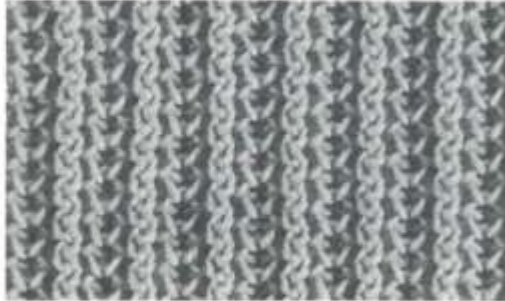
Card No. 9--A, Punch Tuck Rib (4)



5 TUCK RIB STITCH

Card No. 7-A,

Tuck ribbing (1)



Knit in tuck stitch using punched cards on the main machine and arranging needles according to the pattern, on the punched cards, on the ribber.

- * Use the punched cards for tuck knitting supplied together with the main machine.
- * Sample shown here uses thin yarn.

Stitch dial: Main carriage 3
Ribber carriage 2

NEEDLE ARRANGEMENT													
ORDER	MAIN MACHINE CARRIAGE				CARD MEM.	RIBBER CARRIAGE					DIRECTION	REMARKS	
	CAM LEV.	RUSSFL LEV. (BOTH)	SIDE LEV. (BOTH)	STOP KNOB		SET LEV.	PICK KNOB	RUSSEL LEV.	SWING POINTER	HALF PITCH LEVER			
(1) CASTING ON	1	STOCK-INLET		● ●	●		① ①	▲	— —	5	H	→	Suspend the cast-on comb with weights.
	2	SLIP	#	▲ ▲	#		① ②	#	#	#	#	←	
	3	#	#	#	#		#	#	#	#	#	→	Bound-off cast-on
	4	#	#	#	#	Insert punched card	#	#	#	#	#	←	
	5	Arrange needles on the ribber aligning them to X and O marks on the needle bed of the main machine as shown in the illustration on the right.											
(2) MAIN KNITTING	1	TUCK	#	▲ ▲	▼	1	① ①	#	#	#	#	→	
	2	#	#	#	#	2	#	#	#	#	#	←	

(Main knitting to be repeated.)

Card No. 10-A,

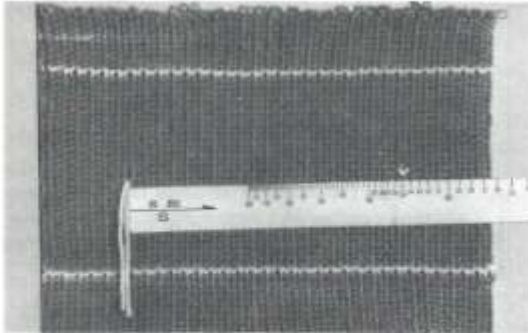
Tuck ribbing (2)



- * In the case of using No. 10-A cards, arrange needles as follows:



7. BASIC TECHNIQUES



* How to Make Stitch Gauges *

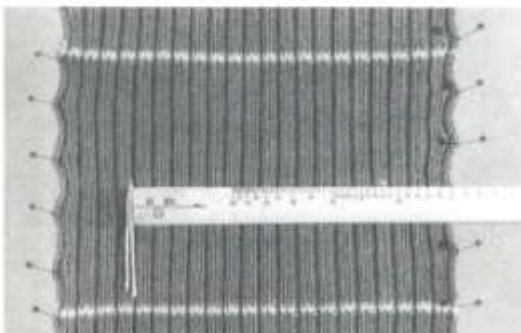
Take the gauge using the gauge scale. The procedure is as instructed on pages 15 and 16 of the main machine instruction book. However, when using the ribber, stitches are knitted on both the main machine and ribber and, in many cases, the ribber is used after resting needles in A position, so it is not always used after all needles are arranged. Therefore, take note following the instructions mentioned below.

- Always arrange needles between the 35th needles on both the main machine and ribber centering on the 0 mark on the needle bed and make a gauge swatch. Knit 20 rows with main knitting yarn first and then 2 rows with contrast yarn, 60 rows with main knitting yarn (mark the 30th row with contrast yarn by hand), 2 rows with contrast yarn and a further 20 rows with the main knitting yarn. Then remove the fabric from the machine.
- When marking the number of stitches, count the number of needles on the needle bed instead of counting the number of stitches of the fabric. Mark the 21st stitch on either side of the needle bed with contrast yarn. When the 21st needle has been rested in A position and there is no stitch, mark the needle on the main machine or ribber on the opposite side with contrast yarn by hand.

Yarn Mark

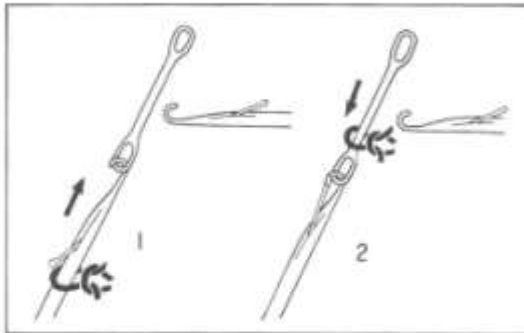


- Take gauge inside the yarn mark using the gauge scales in the same manner as for the main machine.
- When knitting the garment based on such a gauge, count the number of needles referring to the carved mark on the needle bed before needle arrangement. For instance, if you count 50 stitches, arrange needles on both the main machine and ribber with the scope of 50 needles in the manner proper to this type of knitting.



(In case of taking gauge by stretching fabric)

When taking gauge for knitting in 1 knit 1 purl rib or 2 knit 2 purl rib, stretch it in a horizontal direction considering the conditions to be worn as clothing, and pin it on a sheet of paper. Then make gauge with the gauge scale.

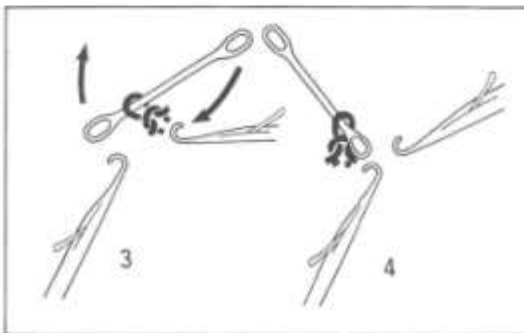


*** How to Transfer Stitches ***

With Double-Eye Transfer Tool

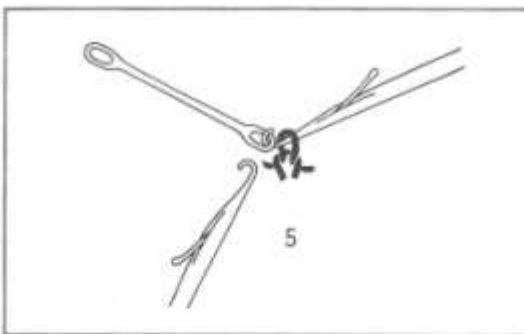
With a double eye tool (having an eye at each end), you can transfer stitches between main-machine needles and ribber needles. The procedure here assumes that you are to transfer stitches from ribber to main-machine.

(1) Catch the ribber needle hook by passing the hook through the eye of the transfer tool. Slide the stitch over onto the tool. (Fig. 1, 2)

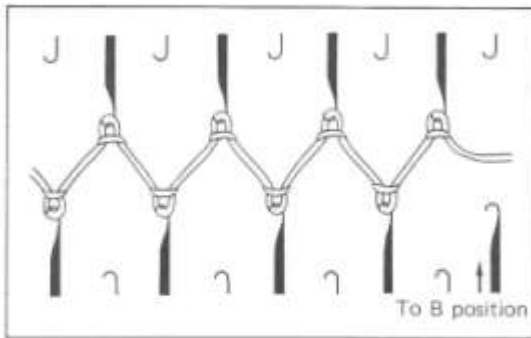


(2) Tilt the tool and slide the stitch towards the other eye. (Fig. 3, 4)

(3) Engage the other eye onto the main-machine needle hook, and slide the stitch off the tool onto the needle. (Fig. 5)



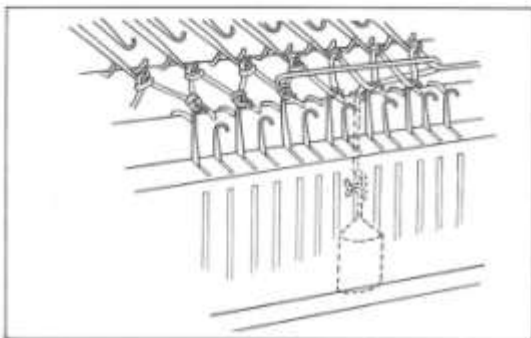
* This method applies to transferring stitches from main-machine to ribber.



* How to Increase Stitches *

<Increasing one stitch at the edge>

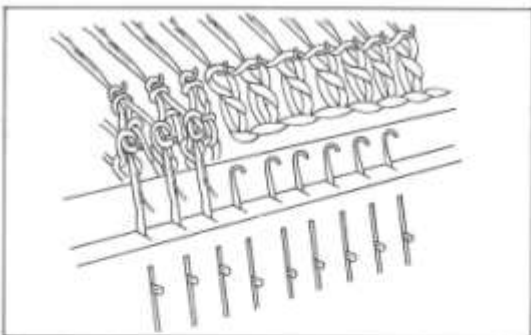
- * Move the carriage to the side to be increased. (The other side does not permit any stitch increase, unless the carriage is moved to the other side.)
- * Advance an idle needle (immediately next to the last working needle) to B position, and knit one row by moving the carriage. The new row will have one more stitch than before.



<Increasing two or more stitches at the edge>

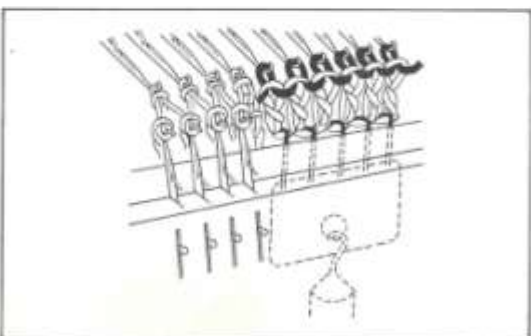
* The First Method

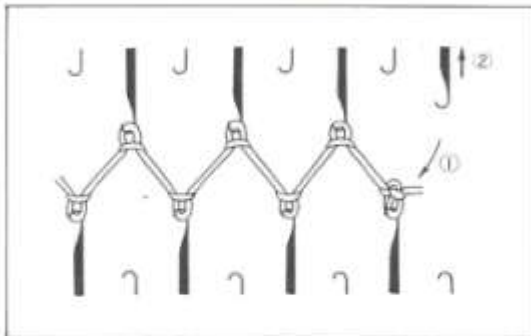
- (1) Bring the required number of needles on the main machine and ribber alternately. (Needle arrangement for the double rib or 1 knit 1 purl rib.)
- (2) Knit 1 row. Yarn will be laid alternately onto the two rows of needles in a zig-zagging pattern.
- (3) Attach the edge weight with side hanger to the yarn laid alternately onto the 2 rows of needles. After knitting 1 or 2 rows, transfer each stitch to the position of needle arrangement according to the type of knitting.



* The Second Method

- (1) First of all, knit cast-on cord in chain stitch or double crochet slightly longer than the width of needles which you are to increase must be prepared.
- (2) Drop the ribber to the middle position by depressing the drop lever.
- (3) Bring the desired number of needles to be increased on the main machine. Pick up stitches from loops of the above cast-on cord, and bring the needles to D position. Hang the above cast-on cord on the hook and bring the needles to D position.
- (4) Knit the increased needles with raveling cord by hand. Suspend hanger combs and weights on the cast-on cord.
- (5) Restore the ribber to the original position and transfer the stitches to the position of needle arrangement proper to each knitting.



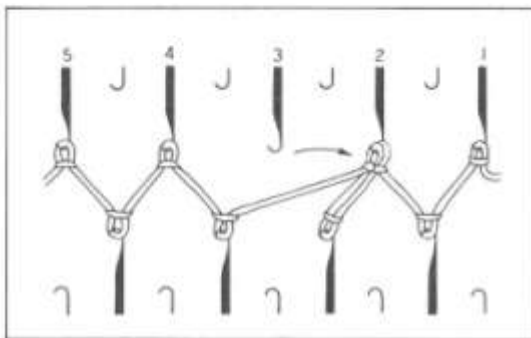


* How to Decrease Stitches *

<The method of decreasing one or two stitches at the edge>

* The First Method

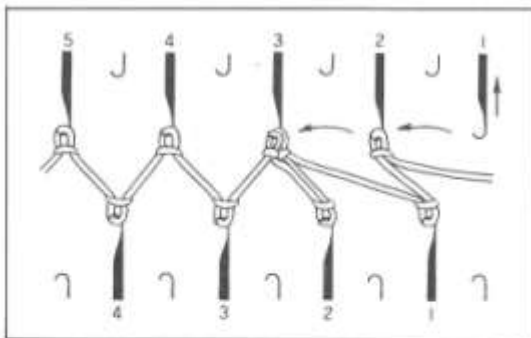
- (1) Using the transfer tool, decrease the edge stitch to the next working needle (from main-machine to ribber, or from ribber to main-machine).
- (2) Push the empty needle to A position.



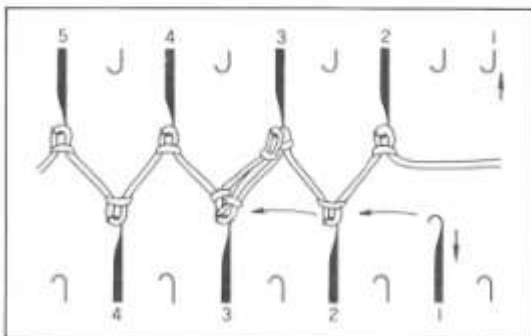
* The Second Method

The following procedure assumes that the main-machine is knitting the face side of the fabric.

- (1) Transfer the stitch on the third main machine needle from the end, to the second main-machine needle.

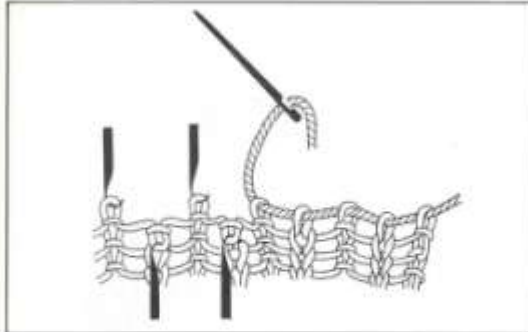


- (2) Move the two stitches, on the second main-machine needle to the vacated third needle. Move the stitch on the first main-machine needle to the vacated second needle.



- (3) Now, transfer the second ribber stitch onto the third ribber needle, and the first ribber stitch onto the second ribber needle. Push the vacated needles to A position.

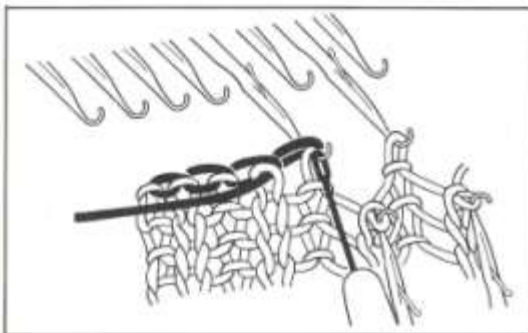
* If the ribber is to knit the right side of the fabric, follow instructions described above, reversing "main-machine" to read "ribber" and "ribber" to read "main-machine".



〈The method of decreasing more than two stitches at the edge〉

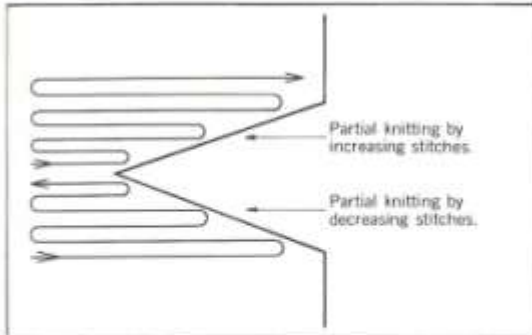
• **The First Method**

- Using the tapestry needle with waste yarn. Remove the loops of the stitch which you desire to decrease and transfer them to the yarn.



• **The Second Method**

- (1) Transfer the stitches to be decreased, to the ribber from the main machine, when the ribber side of the knitted piece is to be the right side, or to the main machine from the ribber when the ribber side of the knitted piece is to be the right side.
- (2) Decrease the stitches transferred following the instructions described on page 24, of the main-machine instruction book.

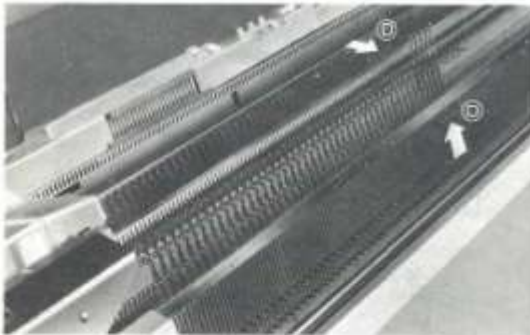


* Partial Knitting *

- Partial knitting is effected with Russel levers in I position (main-machine) and — position (ribber). Leaving these levers in II position (main machine) or = position (ribber) will knit the needles in D position and disrupt the knitting operation.
- In the case of knitting bringing the end needle to D position like 3 knit 3 purl rib (wide ribbing), variation swing, pile knitting and drive lace knitting, etc., bring the needle to C position since needles in D position can not knit when partial knitting.

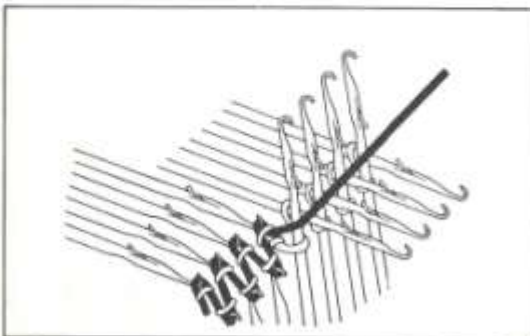
〈Partial Knitting for Stitches without Involving "Swing"〉

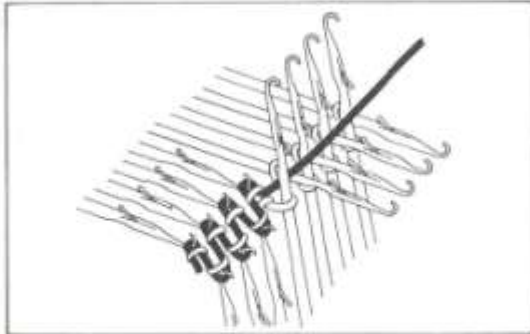
This method applies to double rib, 1 knit 1 purl rib, 2 knit 2 purl rib, 2 knit 1 purl rib, 3 knit 3 purl rib (wide ribbing), punch tuck rib, pin-tuck, English and double English rib, etc.



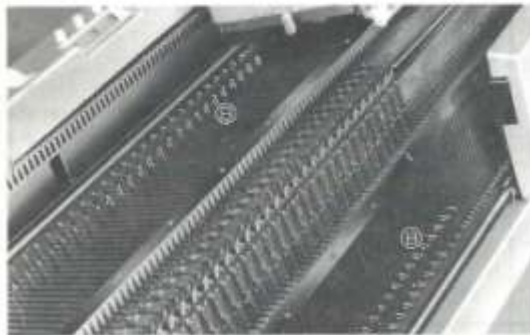
* How to decrease *

- (1) Set the Russel levers on the main machine and ribber carriages to I mark and — mark before knitting.
- (2) The carriage must be on the opposite side of the stitches to be decreased (partial). For example, the carriage should be at the left side if the partial is on the right side. Bring only the needles to be decreased on the right side to D position.
- (3) Move the carriage from left to right. The yarn will pass over the needles in D position and the needles will not knit.

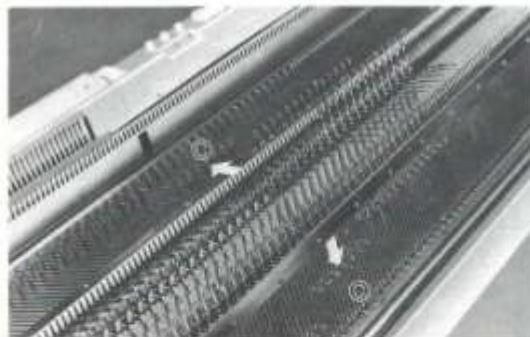




- (4) To avoid a hole formation, wrap the yarn onto the needle in D position immediately next to the last inside stitch, by bringing the yarn up from underneath.
(When partial knitting is to be effected on both sides, carry out the preceding step (2) on the needles at the opposite side (left side).)

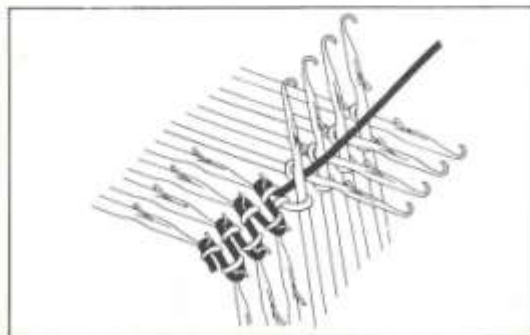


- (5) Knit one row. This completes one cycle of partial knitting.
Repeat the preceding steps (2) through (5).
When the partial knitting is completed, set the Russel levers to **II** position (main machine) and **=** position (ribber). All needles will knit when the carriage is moved across, and the needles will align in B position.

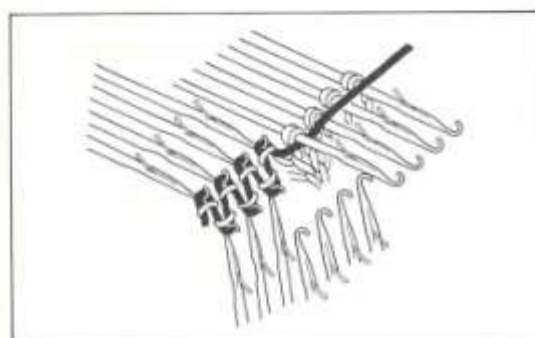
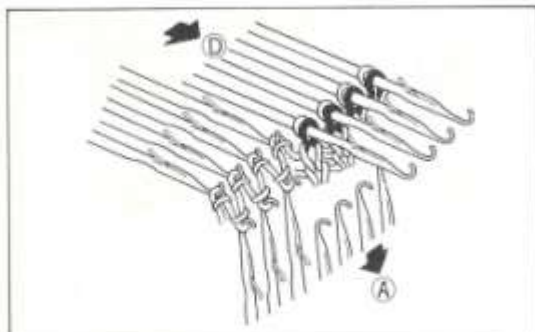


〈Partial knitting by increasing stitches〉

- (1) First of all bring out to D position all needles in the area where rows of partial knitting take place, in order to obtain a gentle slope. Push back the needles to be increased (partial) on the opposite side of the carriage to C position. Be sure to push back needles to C position having their butts aligned within the range of C.
(2) Knit one row and the needles at B and C position will knit and the yarn will pass over the needles in D position.



- (3) To avoid a hole, wrap the yarn onto the needle in D position immediately next to the last inside stitch, bringing the yarn up from underneath.
* (When partial knitting is to be effected at both sides, carry out the foregoing step (1) on the opposite side.)
(4) Knit one row. This completes one cycle of partial knitting.
Repeat the preceding steps (1) through (4).



《Partial Knitting for Stitches Involving "Swing"》

- * Main-machine needles in D position cross the opposite ribber needles in D position. You have noted this in other methods thus far explained. Under this condition of needles, you must not swing (by using the swing handle) the needle bed, or you will damage the crossed needles. So, a special technique of partial knitting as undermentioned is required for the swung English rib, variation swing, herringbone swing and the like stitches, all of which involve "swing".
- * Set the Russel levers to the I mark (main-machine) and the — mark (ribber).

* How to decrease *

- (1) Transfer the stitches to be decreased on the ribber onto the corresponding needles on the main-machine.
 - (2) Bring the main machine needles to be decreased to D position.
 - (3) Knit one row.
 - (4) To avoid a hole formation wrap the yarn onto the needle in D position immediately next to the last stitch knitted on the main machine, as illustrated.
(When partial knitting is to be effected at both sides, carry out the preceding steps (1) and (2) on the needles at the opposite side.)
 - (5) Knit one row.
- * This completes one cycle of partial knitting. Repeat the preceding steps (1) through (5).

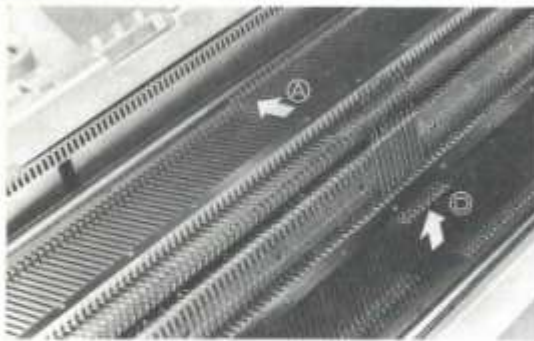
* How to increase *

Contrary to decreasing, transfer the ribber stitches lying upon the main-machine needles, to the ribber, so the knitting needles on the ribber will be increased.

Increase the knitting needles on the main-machine pushing back to C position.

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

Note: * When working partial knitting in variation swing knit bringing 4 or 5, end needles to C position instead of D position.

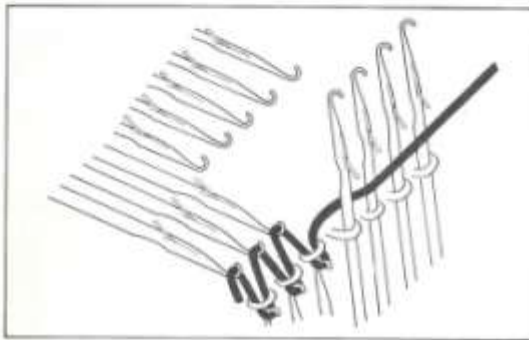


〈Partial Knitting in Pile Knitting and Drive Lace Knitting〉

- * Set Russel lever to the **I** mark (main-machine) and the **-** mark (ribber).
- * Use the P carriage in case of removing loops on the main machine only.

* How to decrease *

- * In pile knitting, start partial knitting after removing loops on the main-machine using the P carriage.



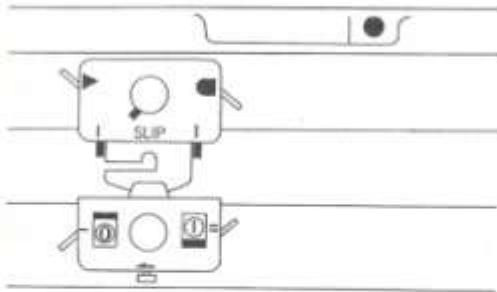
- (1) Return the main machine needles to be decreased on the opposite side of the carriage to A position, and bring the ribber needles to be decreased to D position.
(When the partial knitting is to be effected at both sides, bring down only the main-machine needle on the carriage side to be rested to A position.)
 - (2) Knit one row.
 - (3) To avoid a hole formation wrap the yarn onto the needle in D position immediately next to the last stitch knitted on the ribber as illustrated, (When the partial knitting is to be effected at both sides, bring the ribber needles to be decreased on the opposite side of the carriage to D position.)
 - (4) Knit one row.
- * Repeat the foregoing steps (1)–(4).

* How to increase *

Contrary to increasing return the main-machine needles to be increased to B position and push back the ribber needles to be increased to C position.
Other operations should be carried out in the same manner as decreasing.

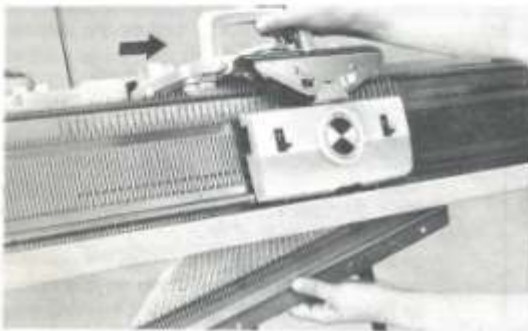


Note: * In pile knitting and drive lace knitting, knit bringing the ribber needles to C position using the P carriage, but in partial knitting, as the P carriage cannot be used, bring 4 or 5 needles to C position on both ends (4 or 5 needles inside the needles to be rested in D position, if any, on that side) and knit on.

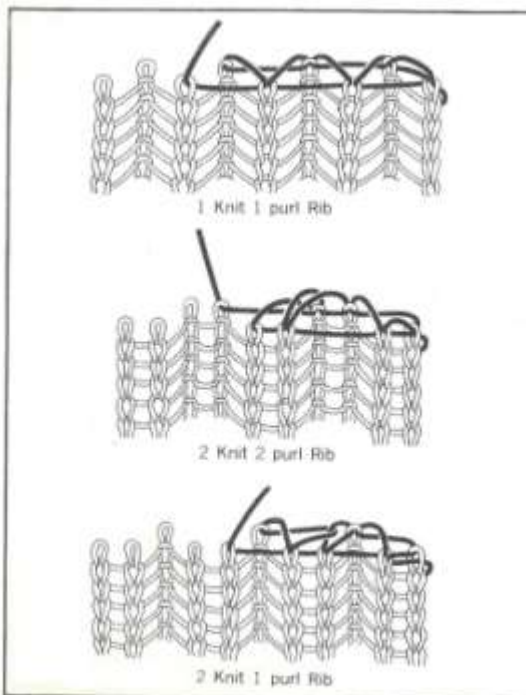


* How to Cast-off (Removing the Ribbed Fabric)

- (1) Change the cam arrangement of both the main and ribber carriages, and set it as for tubular knitting. Knit 8 to 10 rows with scrap yarn (waste knitting).



- (2) Remove the weights. Unthread the yarn feeder. Move the carriage across. This will release the fabric from the working needles. When you move the carriage across, the fabric will come off the machine. Be sure to hold the cast-on comb in such a manner as to support it so that you may catch the falling fabric.



*How to bind-off the Ribbed Fabric *

This is a way to bind off open stitches on the upper edge of fabric knitted in ribbing.

The following is an explanation to finish fabric in 1 knit 1 purl rib, 2 knit 2 purl rib and 2 knit 1 purl rib which are usually used.

- (1) Cut the yarn leaving approximately three times the knitting width.
- (2) Bind off the open stitches with a threaded tapestry needle, as illustrated.

* How to Knit Border and Waist Band in Ribbing *

- * The explanation is given as follows concerning a clean and neat finishing of waist band and neck band for pullover and cardigan.

(How to cast-on)

┆ . . knit

When the main machine is to knit the right side of the fabric, depending on the type of knitting, arrange the needles so that the main-machine needles are on the right side of the stitch.

— . . purl

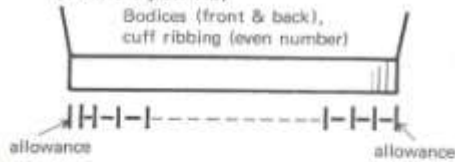
When the face side of the fabric is on the ribber side, arrange needles to cast on stitches on the ribber side.

- * When the end stitches, more than two stitches, are on the main machine or the ribber knit bringing the last needles to D position. (Be sure to set the Russel lever to the II or III mark.)

* Pullover

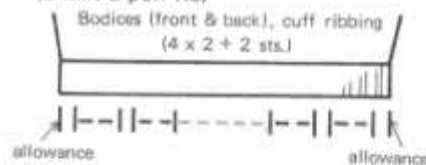
(1 knit 1 purl rib)

Bodices (front & back),
cuff ribbing (even number)



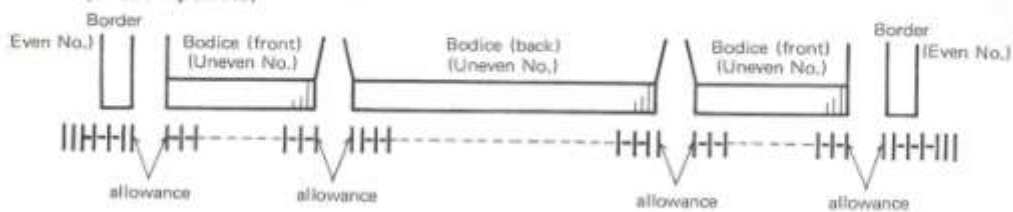
(2 knit 2 purl rib)

Bodices (front & back), cuff ribbing
(4 x 2 + 2 sts.)

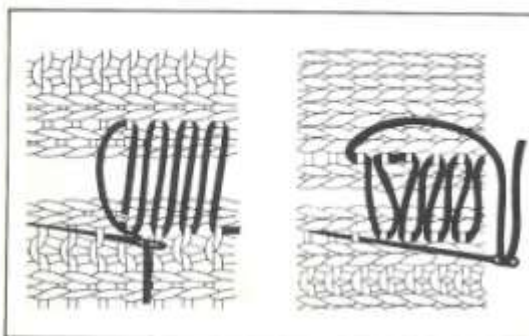
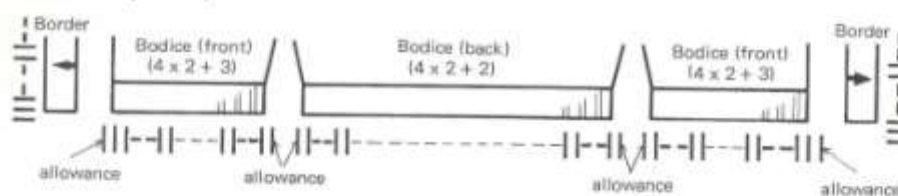


* Cardigan

(1 knit 1 purl rib)



(2 knit 2 purl rib)



(How to Join)

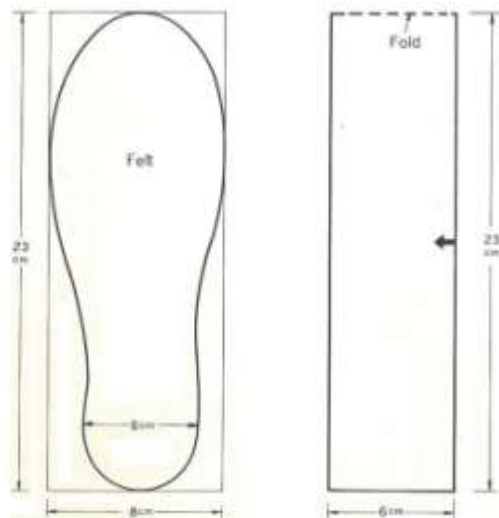
Seaming edges as illustrated will give your garment a fine finish.

8. PRACTICE KNITTING



* Lady's Bedroom Slippers in Pile Knitting *

- * Materials:
Bedroom Slippers Thin yarn 50grs,
Wool-nylon a little amount
Felt (for sole) amount per pairs
- * Stitch dial: Main carriage 6
Ribber carriage 3
- * (Gauge): 34 sts., 57 rs. to 10cm.



Preparatory Steps

- (1) Bring the required number of needles for 46 cm, plus 10 stitches for an allowance to B position on both main-machine and the ribber, and start knitting following the instructions of casting on in line 1, page 31, of the operation table.
Then knit on as shown on the pattern paper.

(How to knit)

- (1) Repeating the procedure in line ②, page 31, of the operation table, work pile knitting by 6cm in length, according to the pattern.
- (2) Remove the ground yarn from the auxiliary yarn feeder. Set both side levers on the main-machine to the ■ mark. Using pile yarn, knit 2 rows in STOCKINET. Cast off with waste knitting.

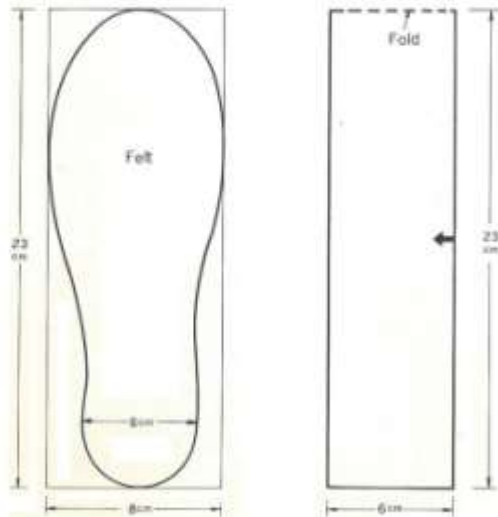
8. PRACTICE KNITTING

TOY PICTURES REMOVED



* Lady's Bedroom Slippers in Pile Knitting *

- * Materials:
Bedroom Slippers Thin yarn 50grs.
Wool-nylon a little amount
Felt (for sole) amount per pairs
- * Stitch dial: Main carriage 6
Ribber carriage 3
- * (Gauge): 34 sts., 57 rs. to 10cm.

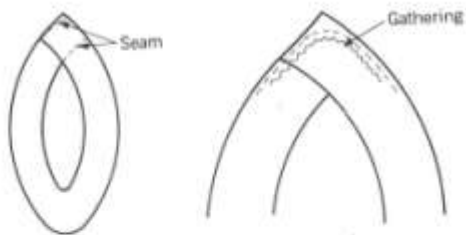


Preparatory Steps

- (1) Bring the required number of needles for 46 cm, plus 10 stitches for an allowance to B position on both main-machine and the ribber, and start knitting following the instructions of casting on in line 1, page 31, of the operation table.
Then knit on as shown on the pattern paper.

(How to knit)

- (1) Repeating the procedure in line ②, page 31, of the operation table, work pile knitting by 6cm in length, according to the pattern.
- (2) Remove the ground yarn from the auxiliary yarn feeder. Set both side levers on the main-machine to the ■ mark. Using pile yarn, knit 2 rows in STOCKINET. Cast off with waste knitting.



- (3) Finish the open stitches using a crochet needle and give the final finish with a steam iron.
- (4) Fold toe as illustrated and sew on.
- (5) In order to round the angle of the toes, have the tops gathered as illustrated using tapestry needle with waste yarn.

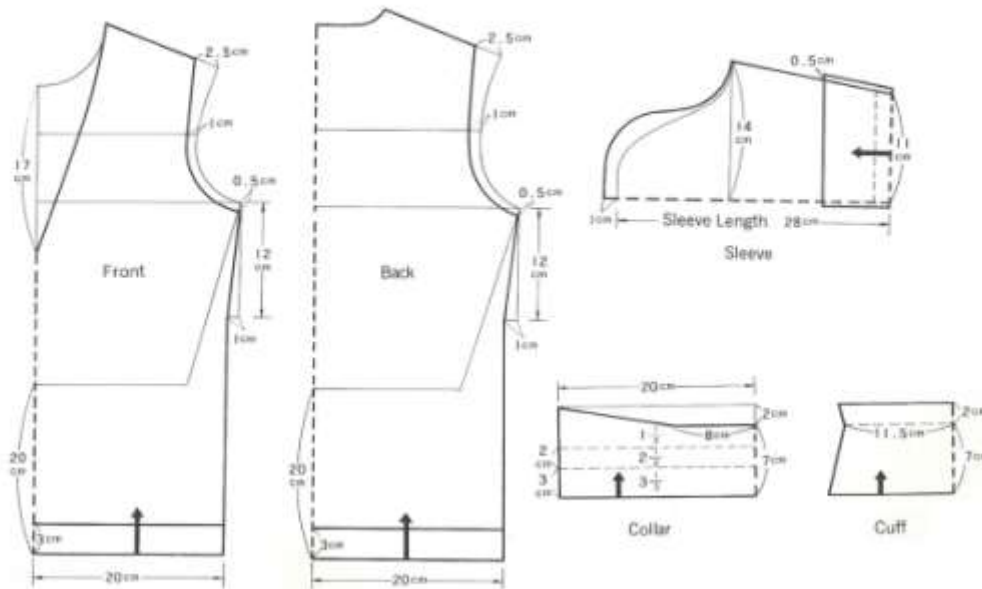
(Finish)

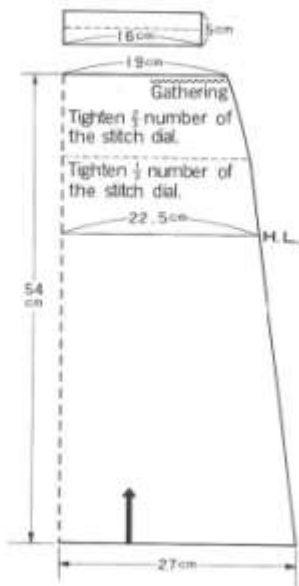
- (1) Make the sole with felt or leather as illustrated.
- (2) Knit one row in single crochet around the sole, seam with the crochet needle the sole and the instep in the pile stitch knitted.
- (3) Finish the edges of the ankle in single crochet or any other knitting of your taste.



*** Two Piece Suit in Drive Lace Knitting ***

- * Materials:
Summer yarn white 250g.
 green 300g.
- * Pattern:
Punched Card No. 8R
- * Stitch dial: Main carriage 6
 Ribber carriage 3
- * Draft a pattern half in size on the pattern paper for the knit contour.





How to knit

(Bodice and Sleeve)

- (1) Read the number of stitches on the Stitch Scale. Arrange as many needles as indicated by the Stitch Scale to B position on the main machine and the same number of stitches arranged on the main machine. Plus 2 stitches for allowance to B position on the ribber. (Refer to page 37)
- (2) Knit according to the contours of the pattern. Tighten the stitch dial by $\frac{2}{3}$ from the standard dial from the position to start shaping the front neck line.
- (3) Knit sleeves starting from cuff ribbing.

(Skirt)

- (1) Refer to the method of knitting skirt on page 42, main machine instruction book. At the H.L., tighten the stitch dial by $\frac{1}{3}$ from the original dial and continue to knit up to mid-way between the H.L. and W.L. Then tighten the stitch dial again by $\frac{1}{3}$ and continue to knit up to the W.L.

(Collar and Cuffs)

- (1) Knit collar in double rib., tightening the stitch dial as illustrated.
- (2) Knit cuffs in double rib.
- (3) When you give final pressing, stretch the outside of the collar needle arrangement for casting on: Swing scale: H-5

* Pleated Skirt for Child *

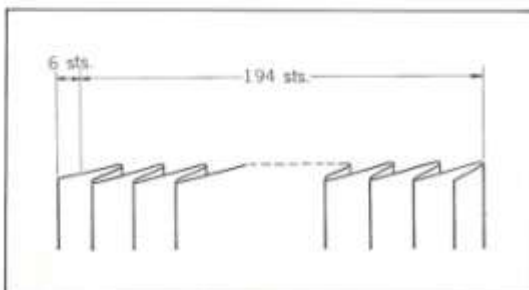
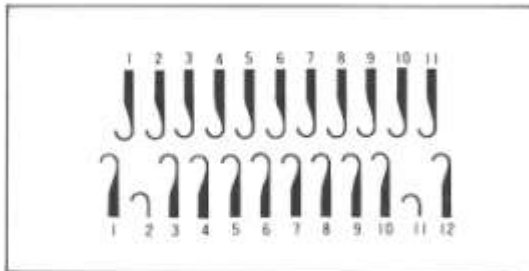
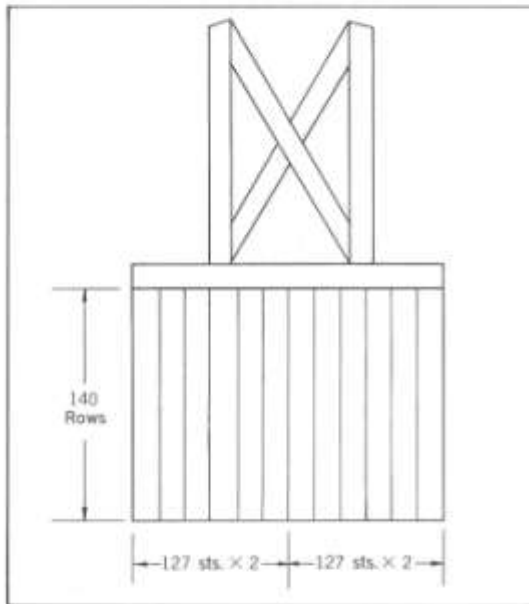
- * Material:

Light weight yarn	200grs.
Elastic belt	2.5cm wide, 60 cm long
- * Suggested Stitch Dial:

Main carriage	2
Ribber carriage	2
- * Presumed knitting gauge for pleats: 80 sts. (160 knit and purl sts.) and 58 rows to 10cm. To count stitches, fold the pleats, measure 10cm and mark it. Then unfold the pleats and count sts. between the marks.

(Skirt in four sections)

- (1) For the first section, bring out to B position 254 needles (127 on both main machine and ribber) and perform double rib-cast on. One stitch on both ends is for seaming (1 on main at left and 1 on ribber at right).
- (2) Stitch dials at 0. Bound off cast on with garment yarn.



- (3) Change needle arrangement for knitting pleats transferring stitches on the needles to be vacated to adjacent needles on the same bed, 20 needles on and one needle off, 20 on 1 off, etc.

Needle arrangement for knitting pleats. Swing scale: H-5

- (4) Row counter at 0. Both stitch dials at 2. Using edge weight, knit carefully up to 140th row without shaping.
- (5) Transfer all ribber sts. to corresponding needles on main-machine. Knit one row on the main-machine with the garment yarn and cast off with 10 rows of a scrap yarn.
- (6) Knit likewise the other three sections (2 pieces for front and 2 for back). Press them lightly.

(Suspenders. . . . two pieces)

- (1) Bring out 21 needles to B position for double rib cast-on (11 on machine and 10 on ribber). Both stitch dials at 0. Bound off cast-on.
- (2) After the cast-on, transfer both end stitches to the next outside needles on the ribber.
- (3) Change stitch dials to 2, knit straight up to the 300th row. Cast-off with a scrap yarn in Tubular knitting. Knit another suspender in the same manner.

(Belt)

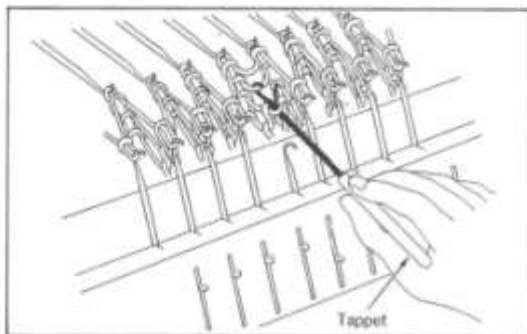
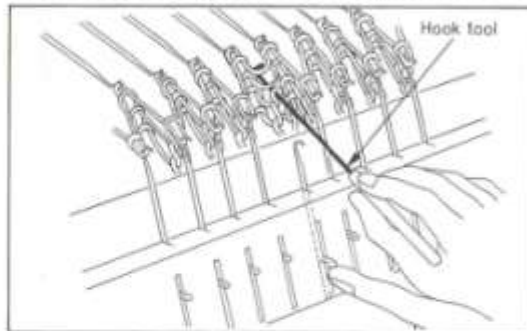
* Use the main machine only.

- (1) Join the two front sections of the skirt, and both back sections. Join one side of the skirt.
- (2) Pick up 6 sts. of the inside fold on the left hand side of the skirt. Cast off with about 10 rows of a scrap yarn.
- (3) Now, we are able to pick up 192 sts. across the entire waist line to start with the belt portion. Pick up stitches from next to those 6 sts. and cast off, folding the pleats. Since the pleats are folded together, we have three layers of fabric at the folding portion. Therefore, one needle will take three stitches. Other portions will have just one stitch to a needle and 6 right end needles will have 2 st. to a needle.
- (4) At both ends, bring out one extra needle for seaming allowance. Stitch dial at 3. Bring out these 194 needles to D position. Russel levers at 11. Carefully knit one row.
- (5) Stitch dial back to 2. Knit straight up to 33 rows. (To be folded in half later-17 rows.)
- (6) Cast off with waste knitting and remove the fabric.

(Finishing)

- (1) Fold the belt the wrong side in and sew it on.
- (2) Seam the side of the skirt leaving a small opening for inserting the elastic. Sew onto the back of belt the loose portion (the inside fold of 6 sts.) at the side. Remove waste knitting. Bind off two suspenders.
- (3) Insert the elastic to the belt. Sew the suspenders on the wrong side of the belt. Block to shape.

9. USEFUL HINTS



* What to do when one or more Stitches have dropped *

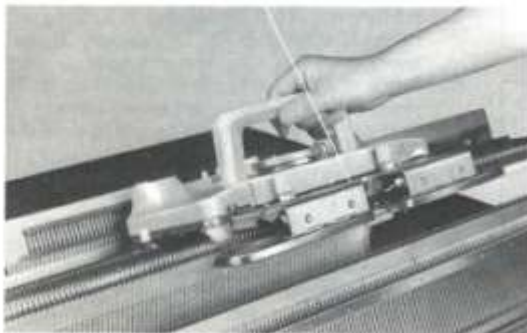
- (1) During knitting, a "run" or unraveling can develop easily from a dropped stitch if weights are hanging (according to the standard practice). The weights stretch the fabric being knit.
 - (2) As soon as a dropped stitch is discovered, remove the weights from the comb. Lower the ribber by pushing down the drop levers, to medium position.
- * A dropped stitch up to three rows down can be picked up by use of the hook tool and put back onto the needle.

Suppose the stitch three rows down is now put back on the needle, and two loose threads are also on the needle, place the two loose threads in the hook and the stitch behind the latch.

Have the stitch slide down by pushing needle backwards (a stitch is formed). Now place the second row stitch behind the latch and top row thread in the hook. Push the needle backward so that a stitch is formed and it is right on the needle all picked up.

- * When stitches have dropped for several rows, pick them up one by one with the tappet. This tool is to be inserted from behind the fabric if the drops have occurred on the main-machine. If the dropped stitches are on the ribber, insert the tool from your side.
- * After picking up dropped stitches and restoring the ribber to the original position, be sure to adjust and line up the needles neatly in the knitting course before resuming the knitting operation.

* How to Knit with the Main-Machine only While the Ribber is Attached *



- (1) Transfer all ribber stitches to the main machine needles.
- (2) Disconnect the ribber carriage from the main-machine carriage by pushing the connecting knob to the right.
- (3) Lower the ribber to its extent by pushing down the drop levers twice.
- (4) Remove the ribber arm.
- (5) Install the main-machine arm, and operate the main-machine.



* What to do if the Carriage Jams *

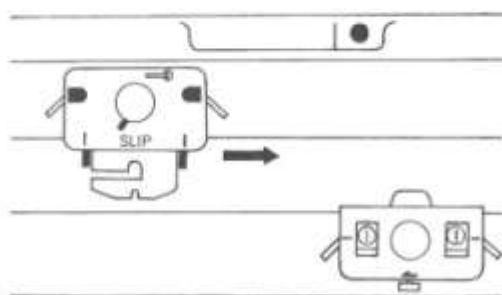
- (1) Disconnect the ribber carriage from the main-machine carriage. Tilt the ribber carriage back, to move it back across.
- (2) Remove the arm from the main-machine carriage, tilt it backward and move it back across.
- (3) Restore the two rows of needles to original positions in the knitting course. If a stitch has slipped behind the latch on a needle to be moved to B position, use a transfer tool to put the stitch back inside the hook and the needle back to original position.



- (4) Hold the yarn end between your fingers and pull slightly. Work the yarn back and forth across the knitted row (two rows of needles). Unravel the yarn from the needle hooks. Continue unraveling in a zigzag pattern until unraveled and the yarn comes to the carriage side.

* Unravelling Incorrect Knitting *

- (1) Unravel the necessary number of rows already made.
- (2) When unraveling is completed, the yarn may be on the side opposite the carriage. In this case, move the ribber carriage in a tilted position over to the yarn side, then move the main-machine carriage, with the following settings; over to the same side.
 Cam lever SLIP
 Side levers ● (right and left)
 When knitting with punched card, turn the punched card back by the number of rows unravelled. Set the stop knob to ● mark, and operate the carriage to memorize the pattern of the next row. (Refer to P. 86, of the main-machine instruction book.)

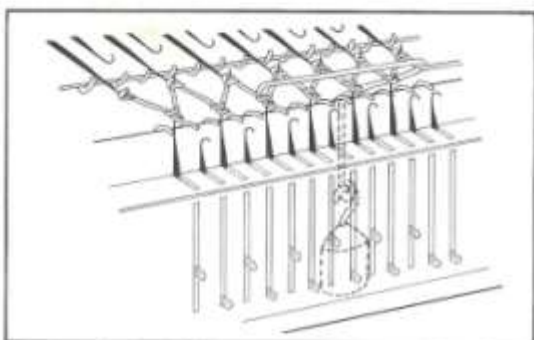




* Replacing Damaged Needles in the Ribber *

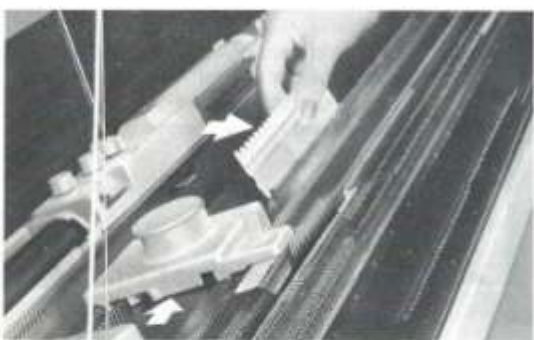
The method of needle replacement explained for the main-machine applies to the ribber. The procedure is as follows:

Pull the needle retainer out of the needle bed, Move the damaged needle all the way to the upper end of the needle groove (D position), Lift the needle out of the groove by lifting the butt. To replace the new needle, insert it into the groove with the hook first.



* When the Edge Stitches tend to Float *

- * When the Edge Stitches Tend to float use of the edge weights is a standard practice, and has been explained previously. This tendency, to float if noted, is due mostly to too many rows between the weighted row and the row on the needle bed.
- * Moving the weights up, as shown, at regular intervals of 10 to 15 rows during the progress of your knitting operation will remedy floating stitches.



* What to do if the P Carriage Jams *

If the P carriage jams or slips off while knitting the pile and drive lace knitting, follow the steps mentioned below.

(Main machine side)

From whichever side you move the carriage, remove it and bring all needles on the main machine to D position using the needle pusher. Then, move the P carriage from left to right.

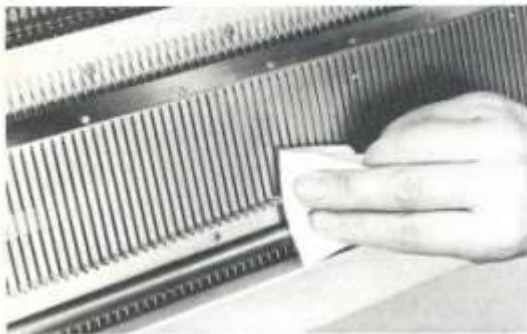
(Ribber side)

Remove the P carriage and bring the needles on the ribber to D position using the needle pusher and knit the next row in the same way.

(In the case of (3), page 17, bring needles to D position and further, move the P carriage from right to left on both ways, so needles will be placed in a row in C position.)



I O. MAINTENANCE AND SERVICING



Proper care and lubrication is the key to excellent operation and condition for a long enjoyable life of your knitting machine.

* Lubrication *

- (1) Clean the machine with a dry cloth, removing stains, dust, lint, etc. The rails, needle beds, carriage pipes and the like should be wiped with greater care. After cleaning, rub the latch-needle butts with a clean cloth dampened with machine oil.
- (2) Give a drop of oil to the rail at two or three places, and run the carriage back and forth two or three times. This will spread the oil evenly along the rail.
- (3) Store the ribber in a dry place when it is not in use.

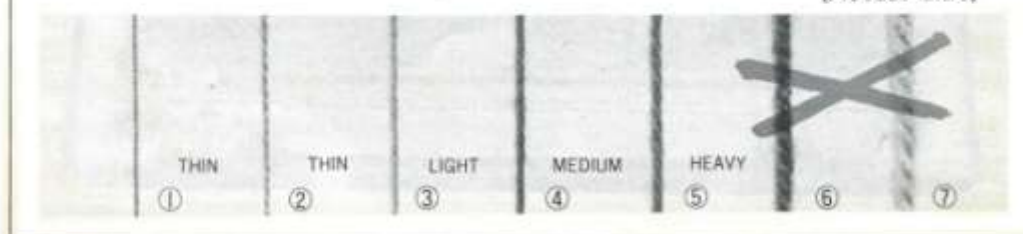


* After each use *

- (1) Brush the lint off the needle bed and associated parts.
- (2) Wipe the metal surfaces with oil cloth to prevent rust.
- (3) When the case becomes dirty, wipe off the dirt with a soft cloth dampened with solution of neutral cleanser to clean the case.

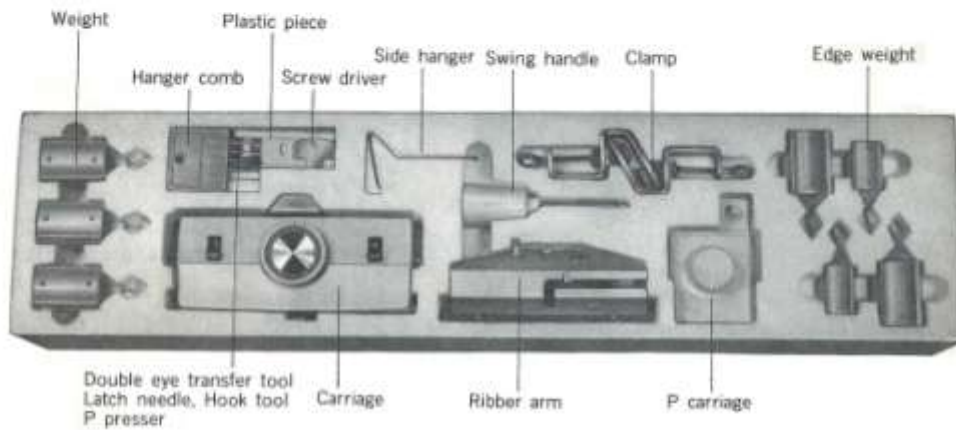
* Weights of Yarn *

(Actual size)



11. RE-PACKING FOR STORAGE

- (1) Disassemble the ribber by reversing the assembling procedure. The swing handle should be set at 10 before pulling it out in a twisting manner. So that you will not misplace the ribber joiner screws secure them to the ribber joiners.
- (2) Set the carriage and accessories in the styrofoam case:



- (3) Place them into the carton box as illustrated.

