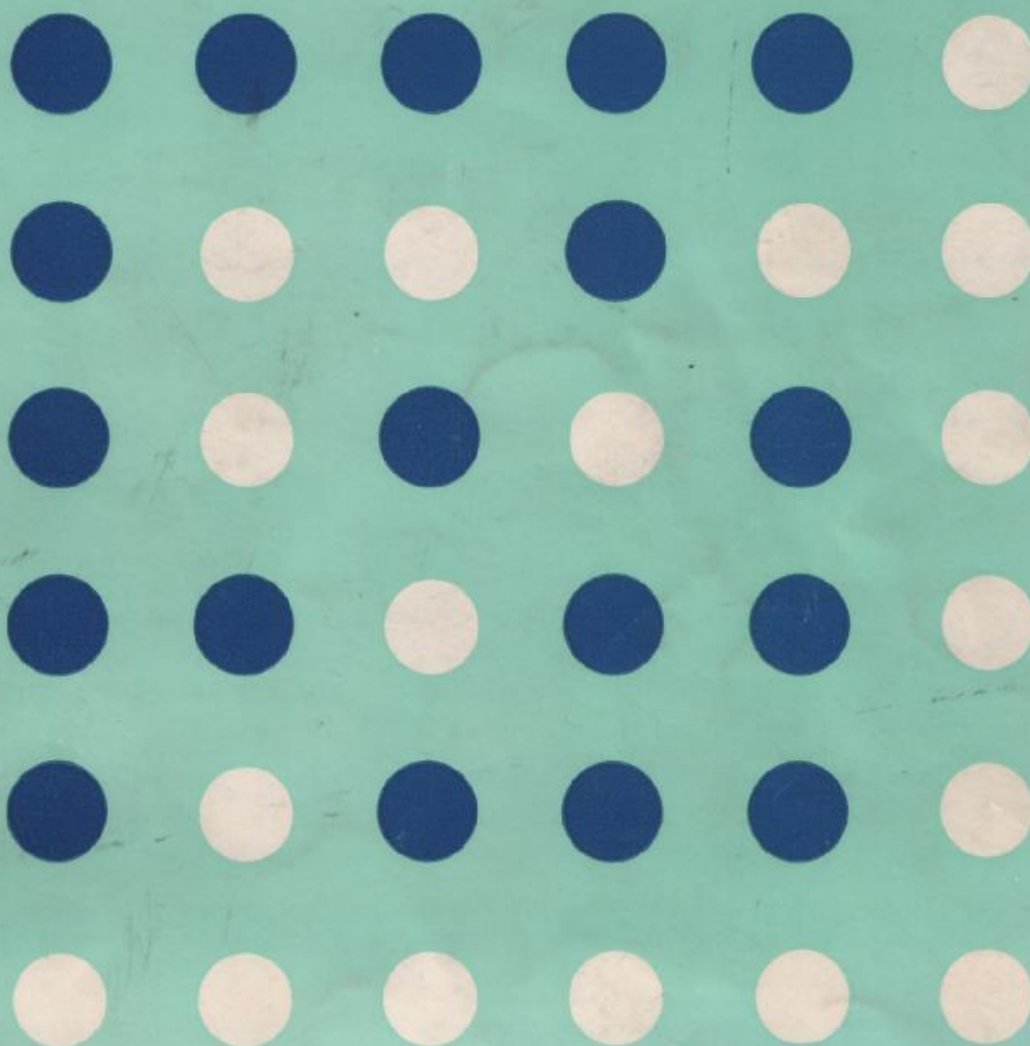
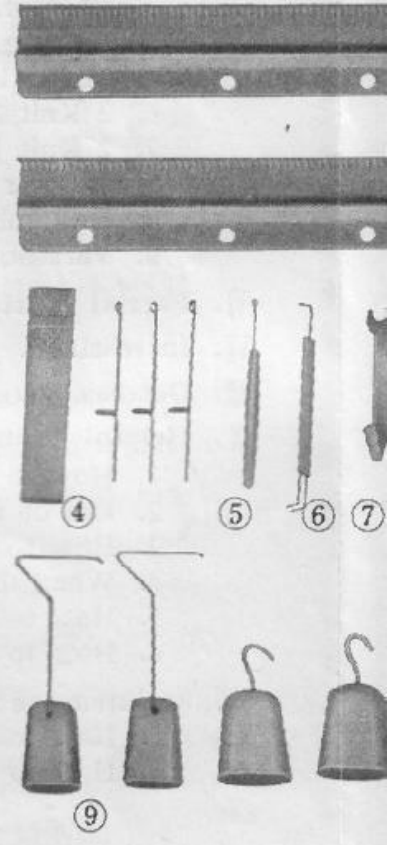
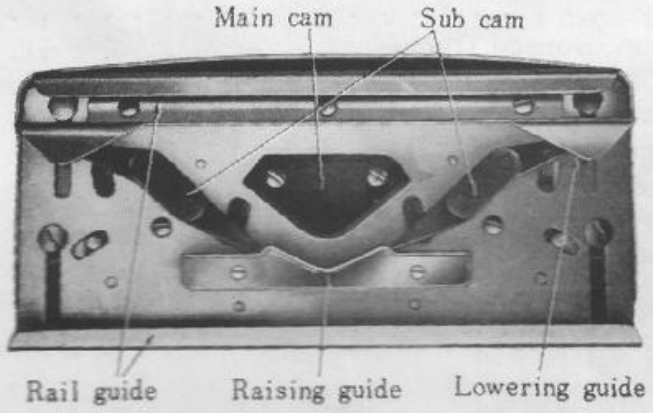
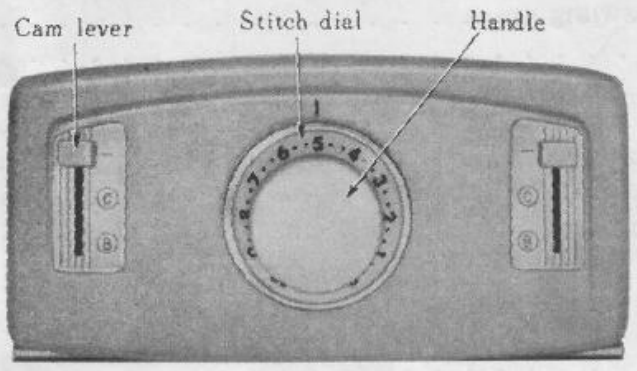
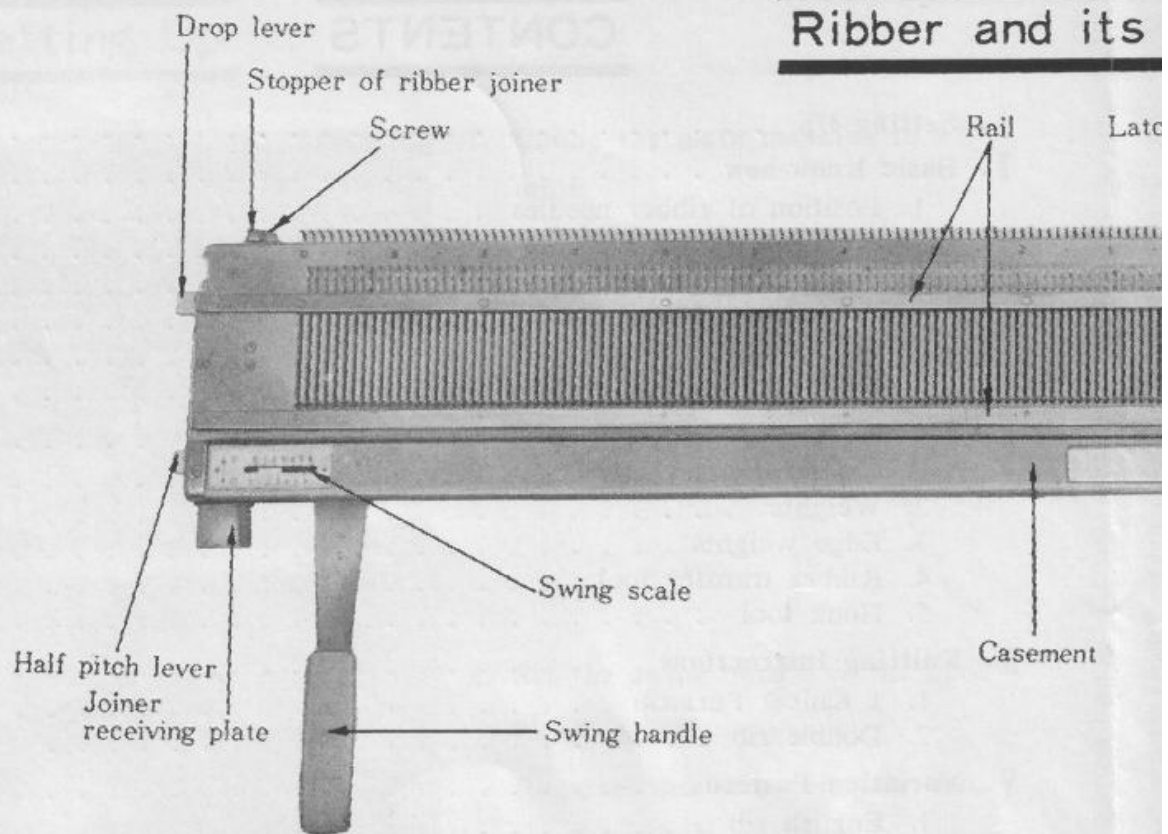


INSTRUCTION MANUAL

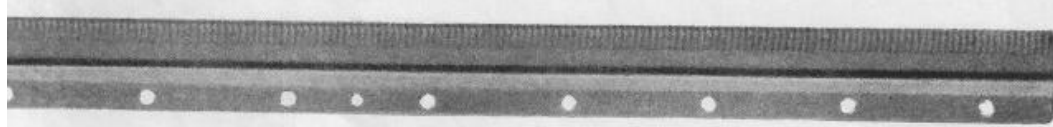
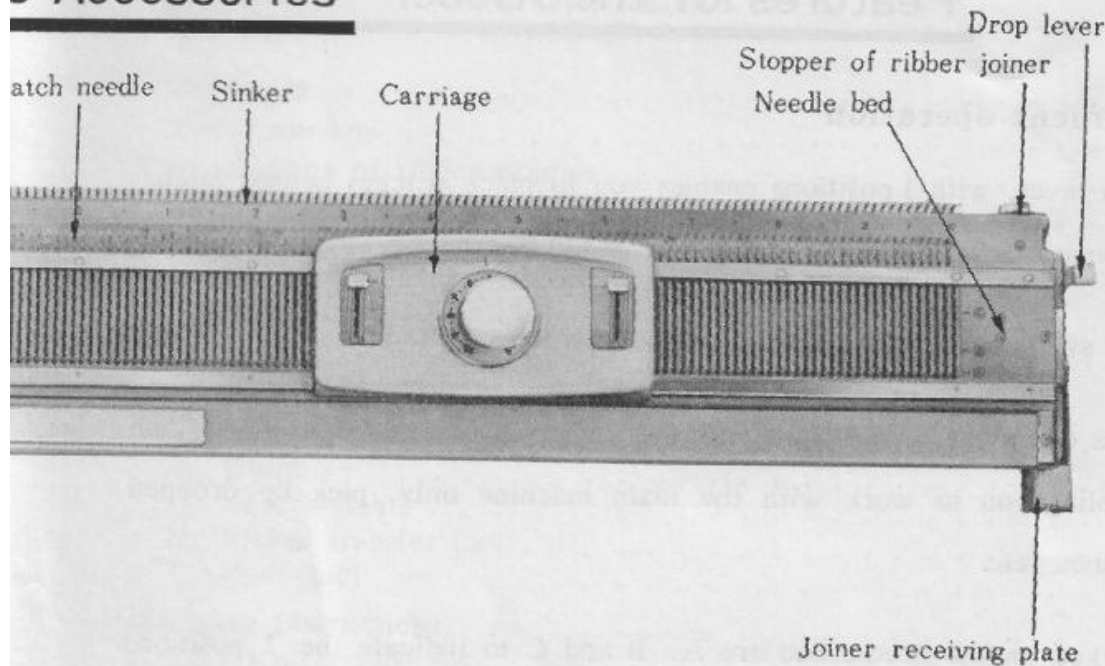
for RIBBING ATTACHMENT



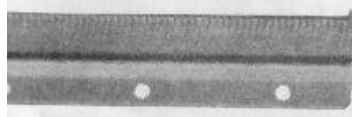
Ribber and its



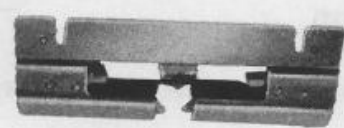
Accessories



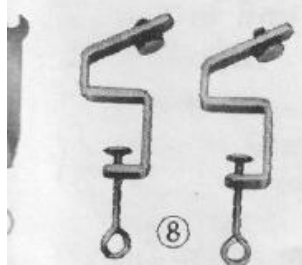
①



②

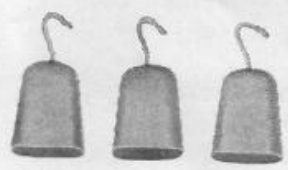


③



⑧

- ① Cast on comb (long)
- ② Cast on comb (short)
- ③ Ribber arm
- ④ Latch needle
- ⑤ Hook tool
- ⑥ Ribber transfer tool
- ⑦ Screw driver
- ⑧ Ribber clamps
- ⑨ Edge weights
- ⑩ Weights



⑩

Features of the Ribber

Convenient operation

- ★ Cam lever, with 3 positions enables you to place stitches behind latches automatically.
- ★ The swing scale clearly indicates the position of the ribber.
- ★ Press down the drop levers and the ribber is lowered $\frac{3}{4}$ of an inch enabling you to work with the main machine only, pick up dropped stitches, etc.
- ★ Marked on the needle bed are A, B and C to indicate the 3 positions of needles.
- ★ The Half Pitch lever will set the ribber needles in relation to the main machine needles.

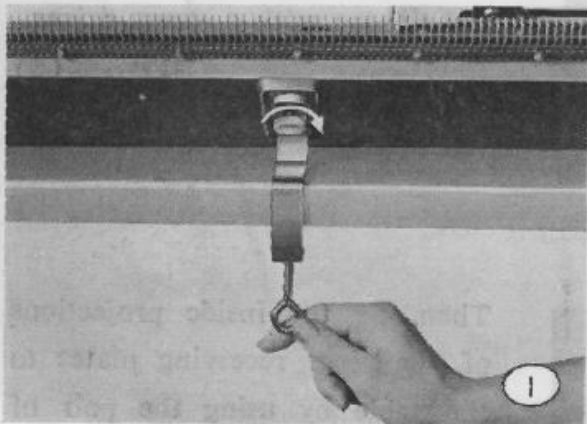
Superior construction

- ★ The swing of the ribber has been extended to as many as 6 pitches.
- ★ Improved sinkers are of polished steel which allow the yarn to flow smoothly.
- ★ Tension spring plate keeps needles from becoming loose.
- ★ Damaged needles can be replaced by simply pulling out the needle retaining band.
- ★ The ribber joiners have stopping claws which allow the correct gap between the main machine and ribber.

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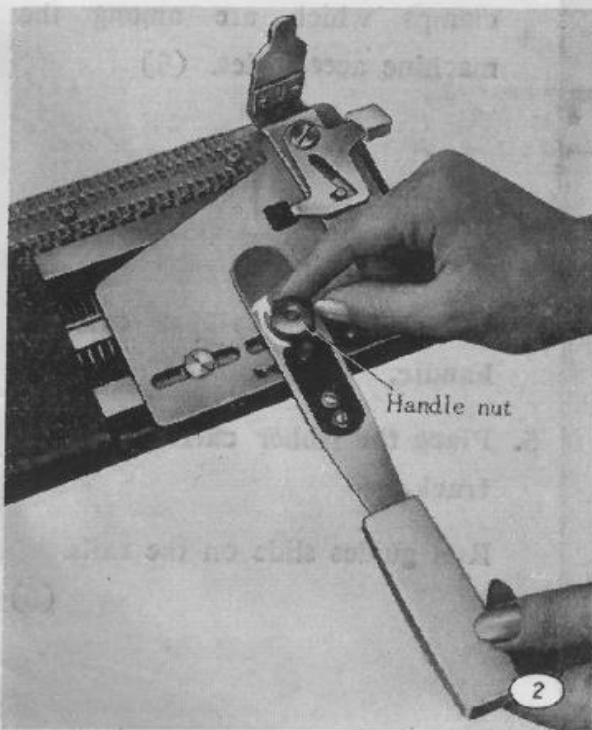
I. Setting Up



1. **Clamp the main machine to a table.**

Use the pair of clamps which are among the ribbers accessories.

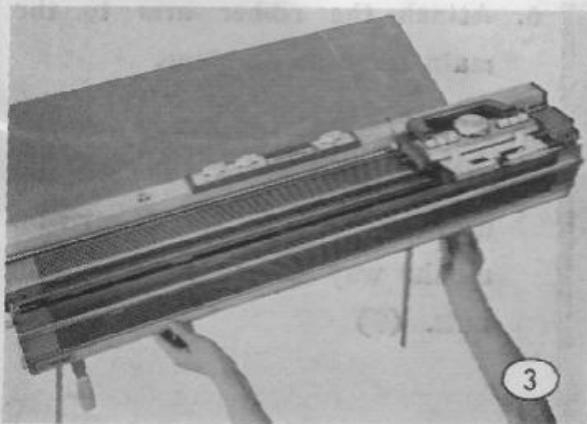
Fix them to the bottom of the machine and clamp firmly to a table. (1)



2. **Set the swing handle to the back of the ribber.**

Remove the swing handle nut, set the handle in place.

Replace the nut and tighten it firmly. (2)

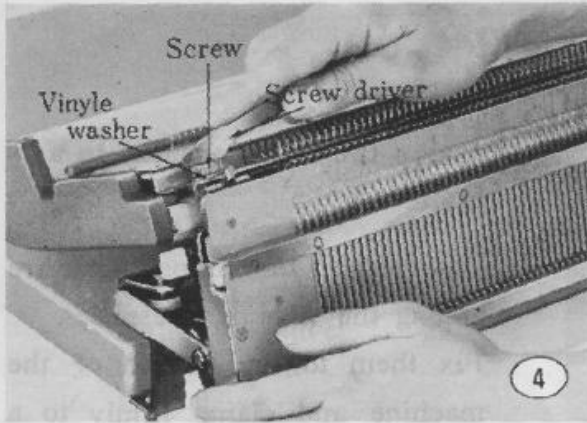


3. **Attach the ribber to the main machine.**

Ensure that the carriage fixer of main machine has been removed.

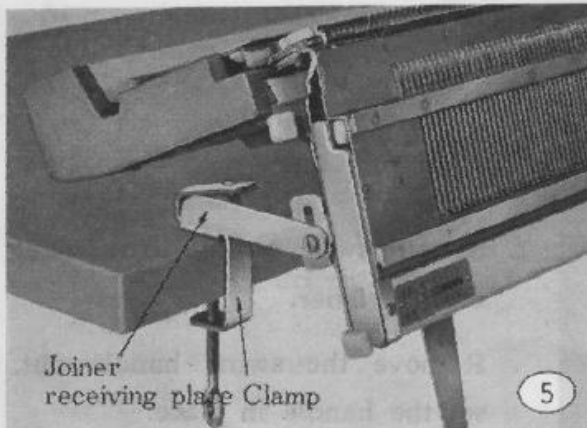
Remove the screws and vinyl washers from both ribber joiners.

Place both joiner receiving plates, attached to the ribber, on the table, and then insert both joiners into the slots under the needle bed of the main machine as far as they will go. (3)

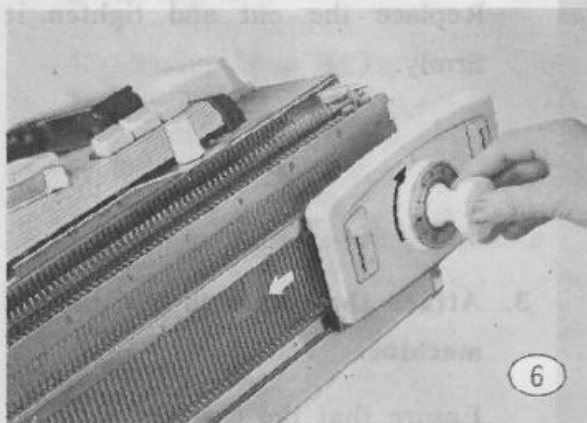


Replace both vinyle washers and screws through the bed of main machine into the ribber joiners and tighten with a screw driver.

(4)



Then, fix the inside projections of the joiner receiving plates to the table by using the pair of clamps which are among the machine accessories. (5)

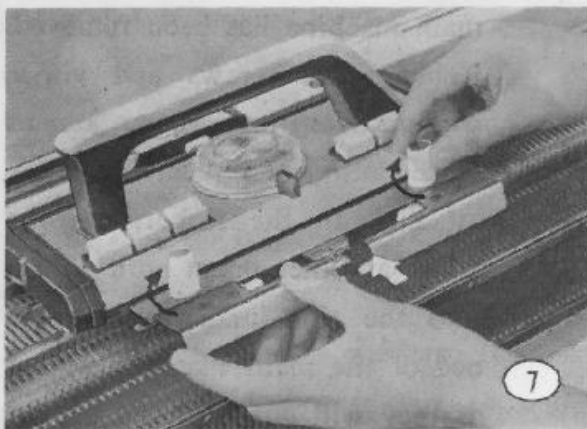


4. Screw into the ribber carriage handle.

5. Place the ribber carriage on its track.

Rail guides slide on the rails.

(6)

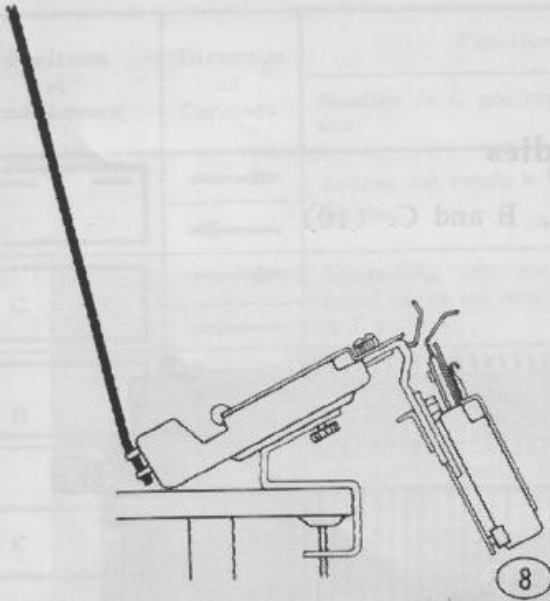


6. Attach the ribber arm to the main machine carriage.

Raise the carriage handle and the row counter lever. Loosen the arm nuts, push in the ribber arm all the way and tighten the arm nuts. (7)

7. Fix the yarn pole, to which auto-tension and guide are attached.

Figure 7 shows the correct angle for the yarn pole. This is the opposite angle to when using main machine only.

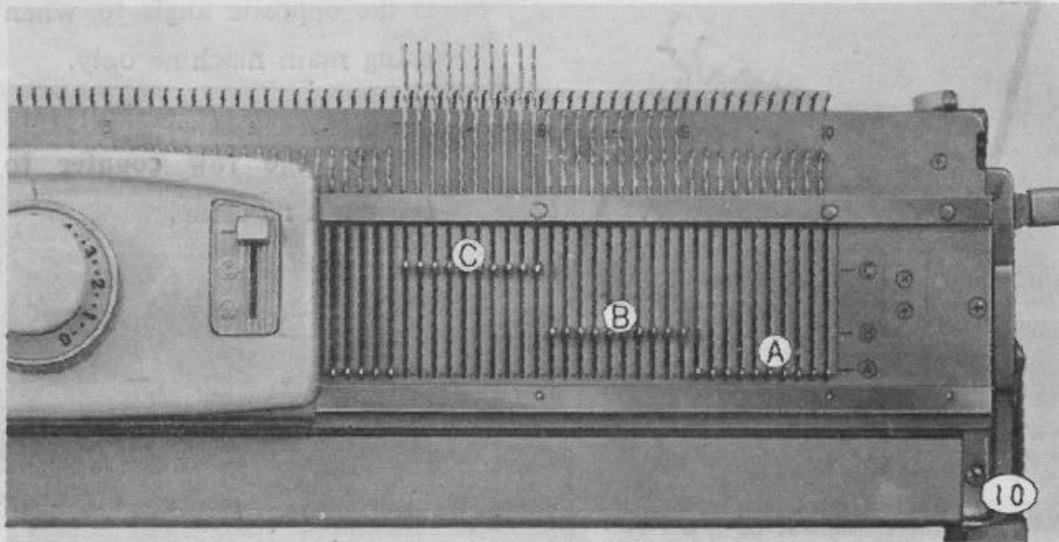


8. Attach the row counter to the main machine.

II. Basic Know-how

(1) Position of the ribber needles

Ribber needles have three positions, A, B and C. (10)



A) Inoperative position

Needles are in their lowest position.

The carriage will not operate the needles in this position.

B) Lowered position

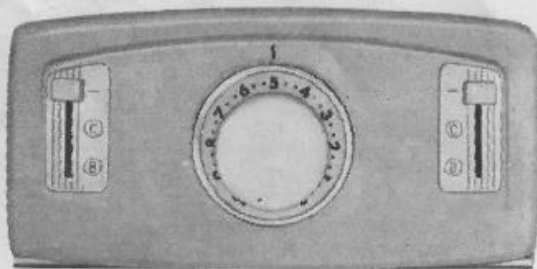
Needle butts are approximately $\frac{3}{4}$ " up from "A" position.

Push up required needles to this position when starting to work.

C) Behind latch position

Needle butts are approximately $1\frac{1}{4}$ " up from "A" position.

Needles in this position have stitches or loose yarn behind their latches.



(2) Cam lever

Both cam levers have three positions, —, C, and B. (11)

Next chart shows how to use the cam levers.

Positions of cam Levers	Direction of Carriage	Function of Needles		Application
		Needles in C position are:	Needles in B position are:	
	→	Knitting and remain in C position.	Non-knitting, yarn behind latches, and moved to C position.	1K1P double rib 2K2P 2K1P
	←			
	→	Non-knitting, yarn goes behind latches, and remain in C position.	Non-knitting, yarn goes behind latches, and moved to C position.	Semi-circular
	←			
	→	"	Non-affecting and remain in B position.	Swing patterns
	←			
	→	Knitting and remain in C position.	Non-knitting, yarn goes behind latches, and needles moved to C position.	Bound off cast on, circular, pop corn, semi-circular, pin tuck, partial, etc.
	←	Non-knitting, yarn goes behind latches, and remain in C position.	"	
	→	Knitting and come to B position.	Non-affecting and remain in B position.	
	←	Non-knitting, yarn goes behind latches, and remain in C position.	Non-knitting, yarn goes behind latches, and moved to C position.	
	→	"	Non-affecting and remain in B position.	
	←	"	Non-knitting, yarn goes behind latches, and moved to C position.	

(3) Stitch dial

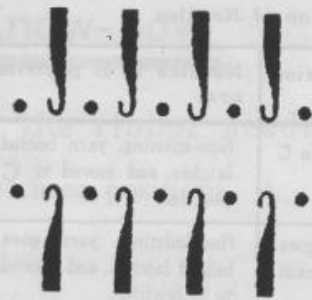
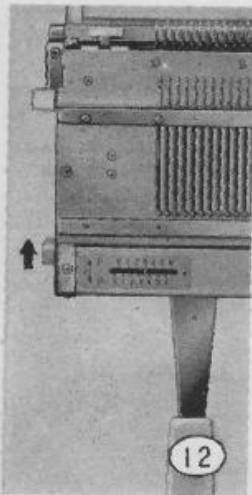
The stitch dial has 30 graduations between 0 to 10, and is to regulate yarn tension according to the stitch gauge desired. Use same tension both on the main machine carriage and ribber carriage unless otherwise required.

(Suggested tensions)

Yarn used	1K1P	Double	2K2P	Circular
Light weight	2	3 - 4	4 - 5	2 - 3
Medium weight	5 - 6	5 - 6	6 - 7	5 - 6
Heavy weight	7 - 8		8	6 - 8

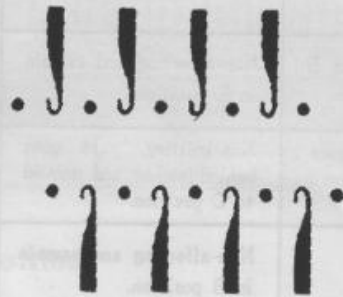
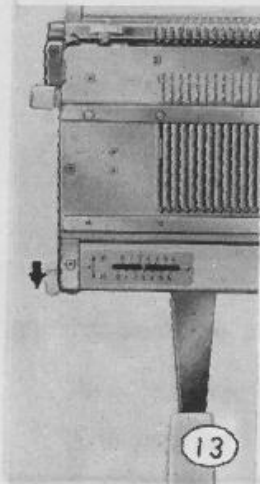
(4) Half pitch lever

This is to set the ribber needles right in front of main needles or to stagger them in between main needles. The former with the lever in P position and the latter with the lever in H position.



P... As in case for 1K 1P ribbing, when setting ribbers needles right in front of main machine needles (12), set the Half Pitch lever to P.

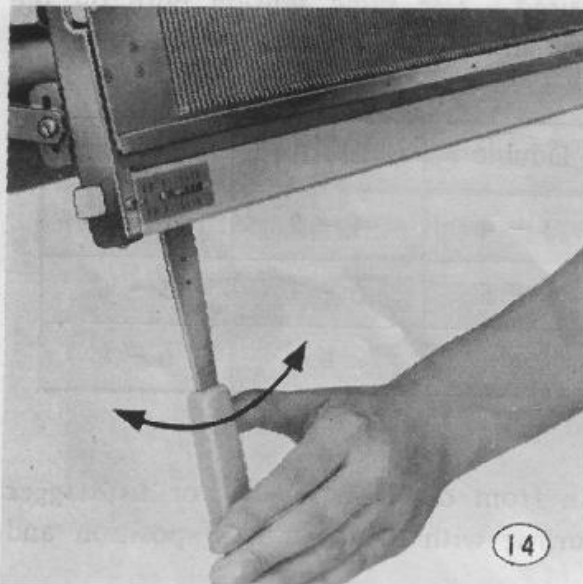
Upper numbers indicate the swing of the ribber in P position.



H... As in case for double rib, when setting ribber needles staggered with main machine needles (13), set the lever to H. (The ribber is swung half pitch to the right) Lower numbers indicate the swing of the ribber in H position.

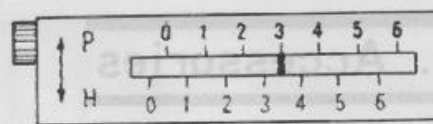
Pitch means a distance between one needle and the next.

(5) Swing handle

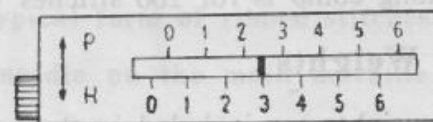


The swing handle is to swing ribber the lengthwise for many "swing patterns", like "herring bone", "web", etc. (14)

With the swing handle you can swing the ribber for 6 pitches as indicated on the scale. It is usually recommended to set the ribber at 3 which is the center. Read upper figures for P scale (15) and lower figures for H scale. (16) The swing indicator shows you where you are with your ribber.

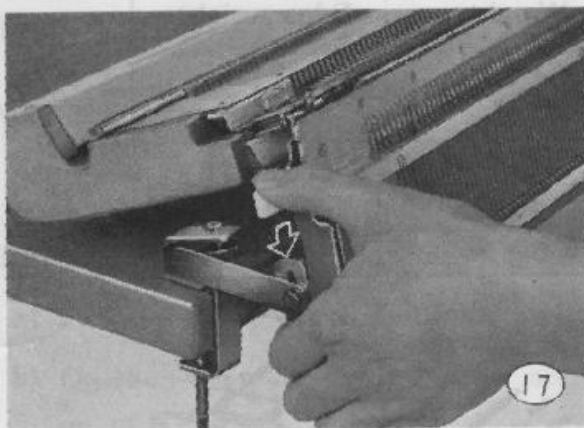


(15)



(16)

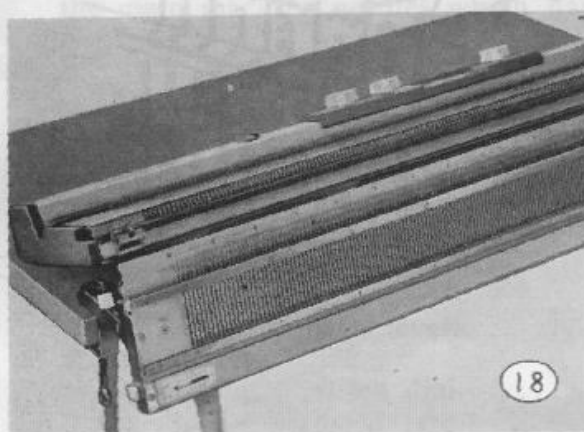
(6) Drop lever



(17)

Push down the drop levers located at both ends of the ribber and the ribber drops about 3/4 of an inch.

(18)



(18)

It is convenient to drop the ribber this way when you work with the main machine only or are picking up dropped stitches. (18)

To return the ribber to its original position, simply push it up and it will automatically click into position.

III. Accessories

(1) Cast on comb

The long comb is for 200 stitches whilst the short comb is for 100 stitches.

(2) Weights

Five weights are included in the accessories.

The more stitches you knit the more weights are necessary. Hang the weights to the holes of the cast-on comb and balance it well so that the cast-on comb remains in a horizontal position.

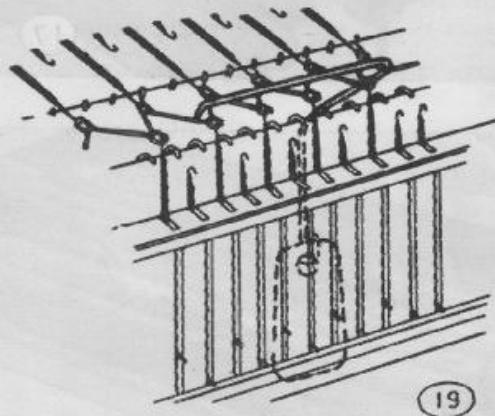
(Suggested number of weights)

Number of stitches	Weights	Edge weights
- 40	1 pcs.	2 pcs.
40 - 80	2 pcs.	„
80 - 120	3 pcs.	„
120 - 160	4 pcs.	„
160 - 200	5 pcs.	„

(3) Edge weights

The two edge weights are for weighing both edges of knitting by putting the hanger on the both edges between main machine needles and ribber needles. (19)

After knitting 20-30 rows, remove both edge weights and replace on top of the stitches.



(4) Ribber transfer tool

Use this tool to transfer stitches between the main machine needles and the ribber needles or from one ribber needle to another.

(5) Hook tool

This is to pick up dropped stitches or to transfer stitches.

IV. Knitting Instructions

(1) 1 Knit 1 Purl rib



This is the typical form of ribbed stitches. Every other needle on the main machine and ribber are used alternatively. This elastic fabric has vertical rows of knit and purl alternatively. Shown here is the ribbing in medium weight yarn.

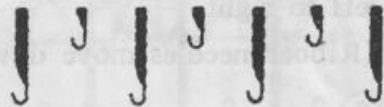
First Step: Bound off cast on

A. Pitch setting

Set the Half Pitch lever to P.

B. Needle arrangement

- a) Pull out every other needle on the main machine to B position.
- b) On the ribber, move every other needle up to B position, staggering these with the main machine needles which have just been pulled out.



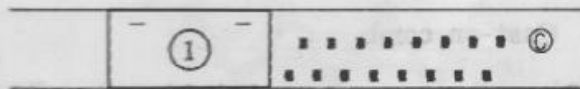
N.B. Both end needles should be on the main machine. (21)



C. Carriage setting

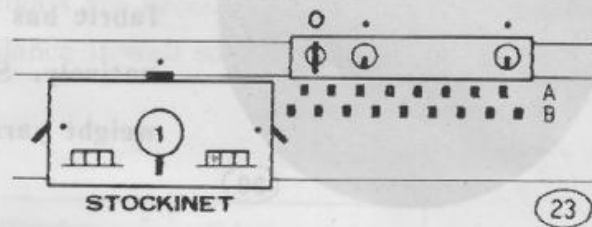
- a) Ribber carriage { cam levers.....both at **■**
stitch dial.....1

Move the carriage backwards and forwards a couple of times and leave it on the left side of the needle bed. Needles are aligned in position C with their latches open. (22)



Pattern panel	{	pattern dial (left)..... ●
		pattern dial (right)..... ●
		shift dial..... 0
Main carriage	{	cam lever..... Stockinet
		push buttons..... both ● buttons down
		pattern lever..... ●
		side levers..... ●
		stitch dial..... 1

Move the carriage backwards and forwards couple of times and leave it on the left side of the needle bed. Needles are aligned in position B with their latches open. (23)



D. Threading

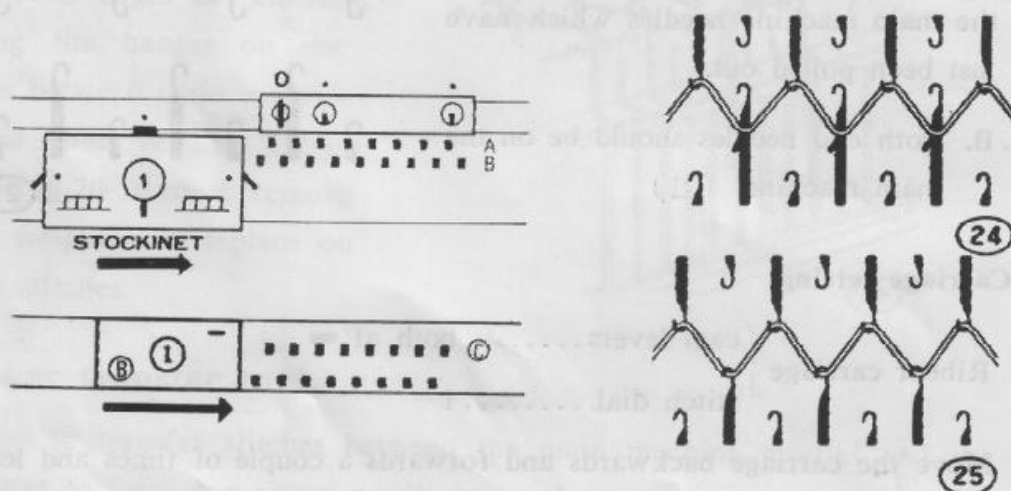
Pass yarn through the Auto-tension and yarn feeder and down to between the main machine and the ribber.

a) Move the main carriage from left to right.

(Yarn is hooked, zigzag, between the main and ribber needles.) (24)

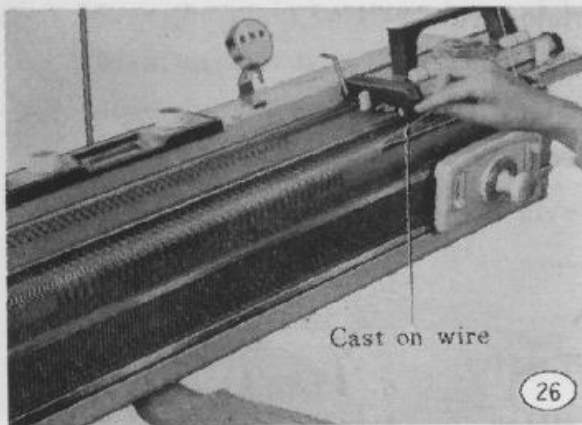
b) Set left cam lever of ribber carriage to B and move the carriage from left to right.

(Ribber needles move down to B position with yarn in hooks.) (25)



E. Cast-on comb

Place the cast-on comb behind the ribber and move it up between the main machine and ribber sinker hooks. Withdraw the cast-on comb wire from the



comb teeth until the teeth are able to go up through the yarn and then replace the wire so that the cast-on comb is hung, by means of the wire, onto the stitches. (26)

Ensure that the cast-on comb remains in a horizontal position when it has been hung on the stitches.

F. Weights

Hang an appropriate number of weights onto the comb, ensuring it remains horizontal.

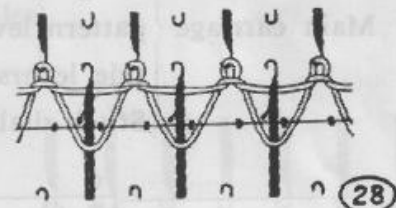
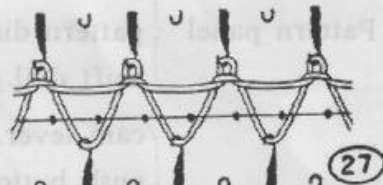
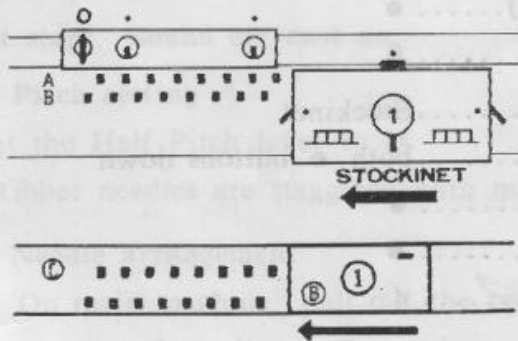
G. Bound off casting on

a) Move the main carriage from right to left.

(knit with main machine only.) (27)

b) Move the ribber carriage from right to left.

(Yarn is behind the latches and needles are in C position.)

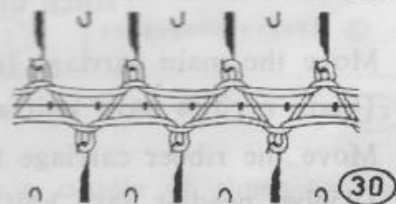
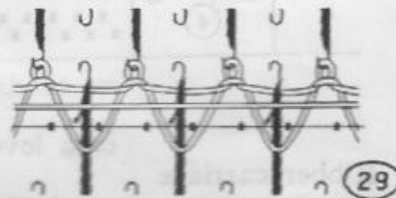
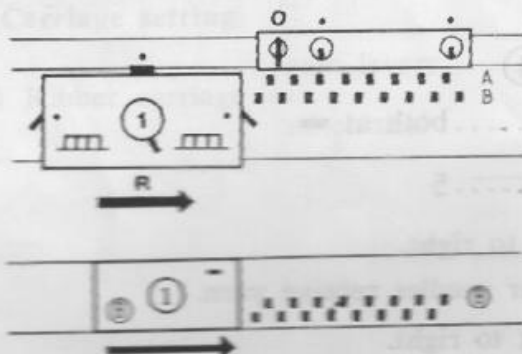


c) Move the main carriage with the cam lever at R from left to right.

(Yarn is spun over ribber needles.) (29)

d) Move the ribber carriage from left to right.

(Ribber needles have knit and come to B position.) (30)

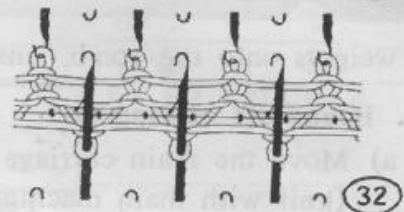
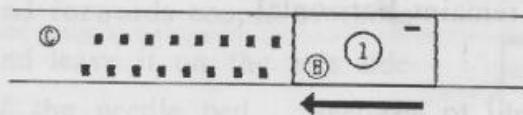
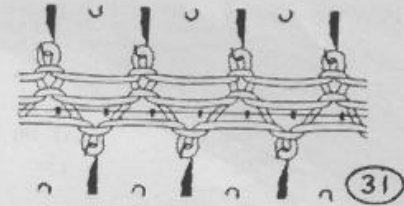
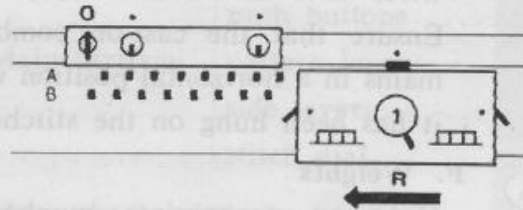


e) Move the main carriage from right to left.

(Knit with main machine only.) (31)

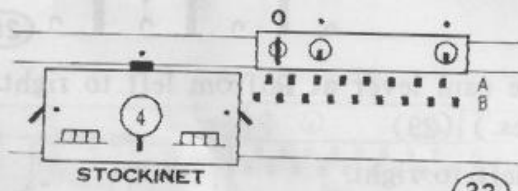
f) Move the ribber carriage from right to left.

(Yarn is behind the latches and needles are in C position.) (32)

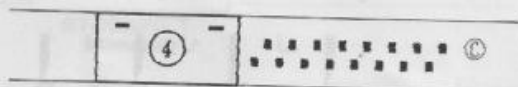


Second step: 1K 1P ribbing

- | | | |
|---------------|---|---------------------------------------|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial. 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons..... both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | Stitch dial..... 4 |



(33)



(34)

- | | | |
|-----------------|---|---------------------------|
| Ribber carriage | { | cam levers..... both at — |
| | | stitch dial..... 5 |

a) Move the main carriage from left to right.

(Main needles have knit and ribber needles receive yarn.)

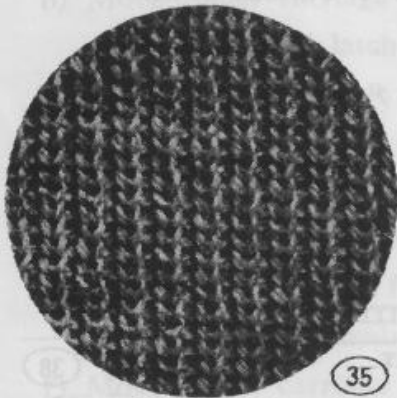
b) Move the ribber carriage from left to right.

(Ribber needles have knit and come to C position.)

- c) Move the main carriage from right to left.
(Main needles have knit and ribber needles receive yarn.)
- d) Move the ribber carriage from right to left.
(Ribber needles have knit and come to C position.)

Repetition of a) through d) will give you 1K 1P ribbing.

(2) Double rib (35)



(35)

This is 1K 1P rib which is worked with every needle of the main machine and the ribber. Shown here is the ribbing in light weight weight yarn.

First step: Bound off cast on

A) Pitch setting

Set the Half Pitch lever to H.
(Ribber needles are staggered with main needles)

B) Needle arrangement

- a) On main machine, pull out the required number of needles to B position.
- b) Also move up ribber needles to B position.

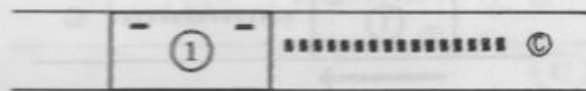


(36)

NOTE: Both end needles should be on the main machine.

C. Carriage setting

- a) Ribber carriage { cam levers.....both at -
stitch dial 1

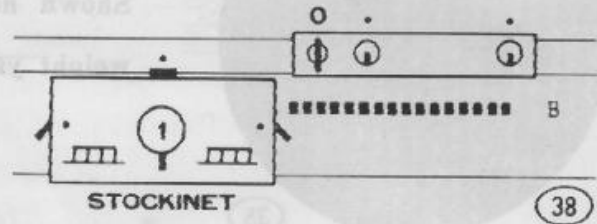


(37)

Move the carriage backwards and forwards a couple of times and leave

it on the left side of the needle bed. Needles are aligned in C position with their latches open.

- | | | |
|---------------|---|---------------------------------------|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial..... 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons..... both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | stitch dial..... 1 |

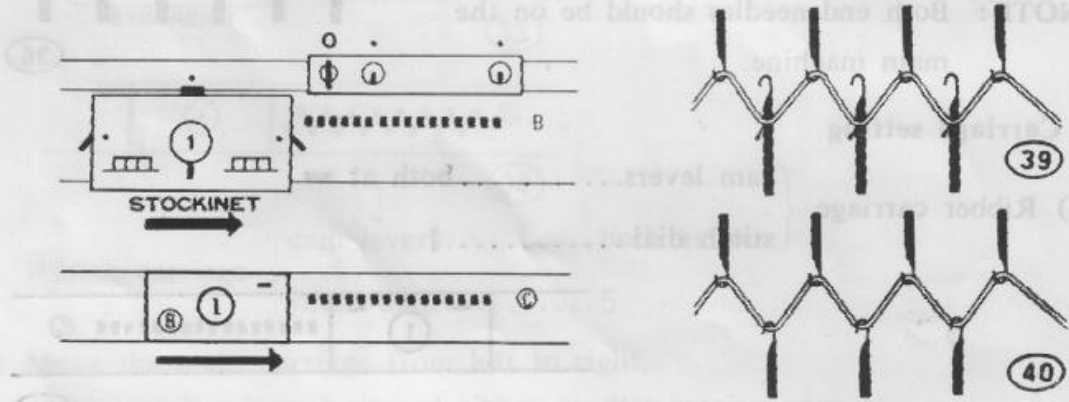


Move the carriage backwards and forwards a couple of times and leave it on the left side of the needle bed. Needles are aligned in B position with their latches open.

D. Threading

Pass yarn through the Auto-tension, yarn feeder and down to between the main machine and the ribber.

- a) Move main carriage from left to right.
(Yarn is hooked.) (39)
- b) With rear cam lever at B, move ribber carriage from left to right.
(Ribber needles are lowered to B position with yarn in their hooks.) (40)



E. Cast on comb

(Refer to page 11)

F. Weights

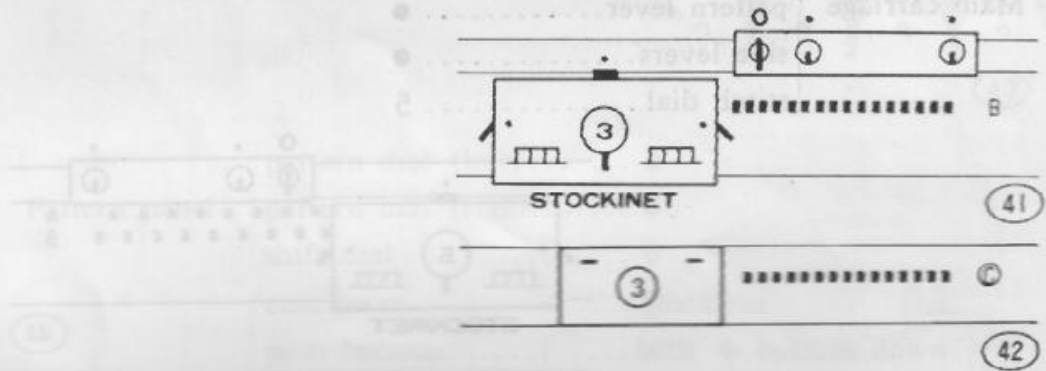
Hang an appropriate number of weights onto the comb, ensuring it remains horizontal.

G. Bound off casting on

- a) Move main carriage from right to left.
(Knit with main machine only.)
- b) Move ribber carriage from right to left.
(Yarn is behind latches and needles are in C position.)
- c) With cam lever at R move the main carriage from left to right.
(Yarn is spun across over the ribber needles.)
- d) Move ribber carriage from left to right.
(Ribber needles have knit and come to B position.)
- e) Move main carriage from right to left.
(Have knit with main machine only.)
- f) Move ribber carriage from right to left.
(Yarn is behind latches and needles are in C position.)

Second step: Double ribbing

- | | | |
|---------------|---|--|
| Pattern panel | { | pattern dial (left) ● |
| | | pattern dial (right) ● |
| | | shift dial 0 |
| Main carriage | { | cam levers Stickinet |
| | | push buttons both ● buttons down |
| | | pattern lever ● |
| | | side levers ● |
| | | stitch dial 3 |

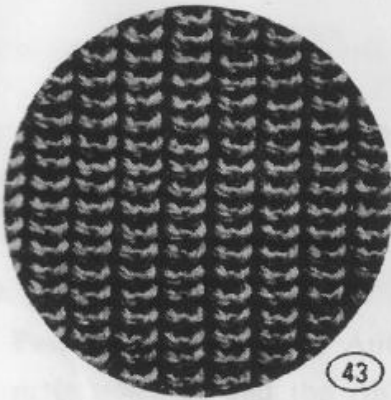


- | | | |
|-----------------|---|--------------------------------|
| Ribber carriage | { | cam levers both at = |
| | | stitch dial 3 |

- a) Move main carriage from left to right.
(Main needles have knit and ribber needles received yarn.)
 - b) Move ribber carriage from left to right.
(Ribber needles have knit and come to C position.)
 - c) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
 - d) Move ribber carriage from right to left.
(Ribber needles have knit and come to C position.)
- Repetition of a) through d) will give you 1K 1P double rid.

V. Variation Patterns

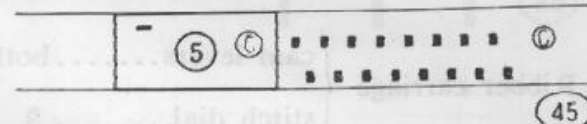
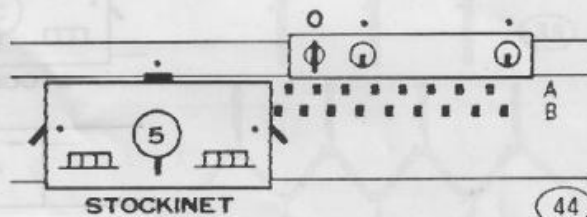
(1) English Rib (43)



This is the 1K 1P or double rib with one side tucked.

Shown here is 1K 1P English rib in medium weight yarn. Bound off cast on for 1K 1P rib is applied. When light weight yarn is used, double rib is preferred and therefore bound off cast on for double rib is applied.

	(43)	
Pattern panel	Pattern dial (left)..... ● pattern dial (right)..... ● shift dial..... 0 cam levers..... Stockinet push buttons..... both ● buttons down	
Main carriage	pattern lever..... ● side levers..... ● stitch dial..... 5	

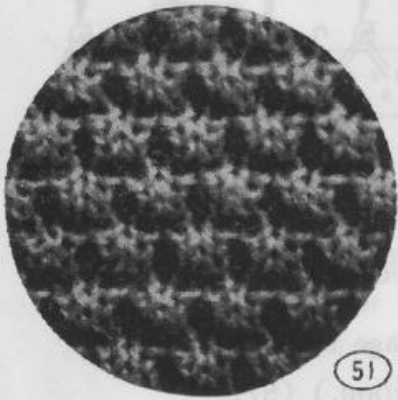


j) Move ribber carriage from right to left.

(Needles have knit and come to C position.)

Repetition of a) through j) will give you Swung English rib.

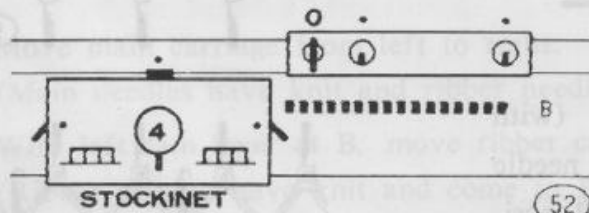
(3) Pop Corn Pattern (51)



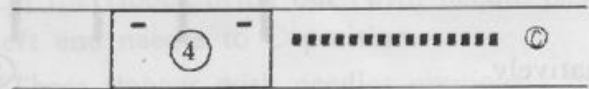
This is a variation of the double rib, which is tucked on the ribber for 3 rows with every other stitch staggered and slip tucked. Shown here is in light weight yarn. Bound off cast on for double rib.

(51)

- | | | |
|---------------|---|--|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | stitch dial..... 4 |



(52)



(53)

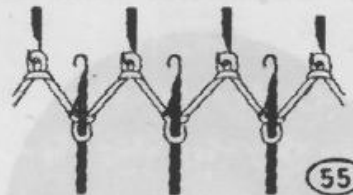
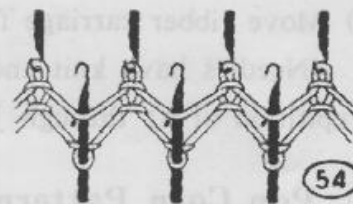
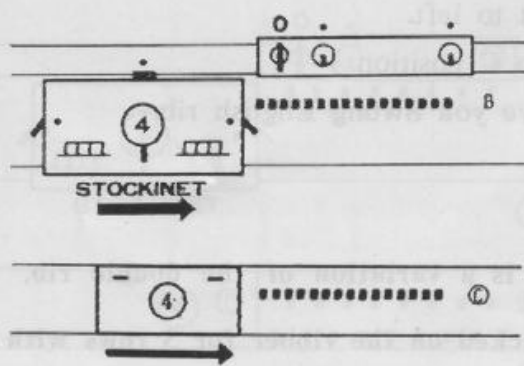
- | | | |
|-----------------|---|---------------------------|
| Ribber carriage | { | cam levers..... both at — |
| | | stitch dial..... 4 |

a) Move main carriage from right to left. (54)

(Main needles have knit and ribber needles received yarn.)

b) Move ribber carriage from left to right.

(Ribber needles have knit and come to C position.) (55)

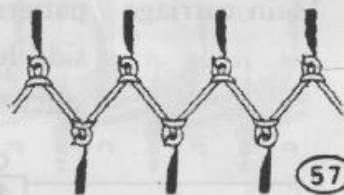
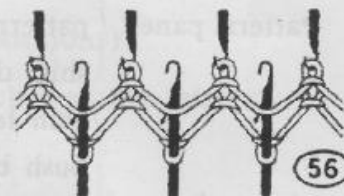
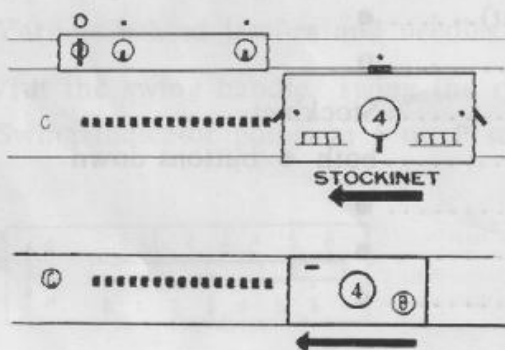


c) Move main carriage from right to left.

(Main needles have knit, ribber needles received yarn.)

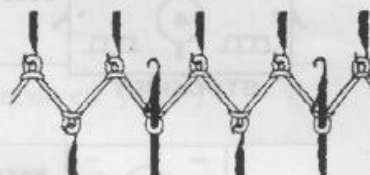
d) With right cam lever at B, move ribber carriage from right to left.

(Ribber needles have knit and come to B position.) (57)



e) On the ribber, bring up (with needle pusher) every other needle leaving left end needle in B position.

(Ribber needles are alternatively in B and C position.) (58)



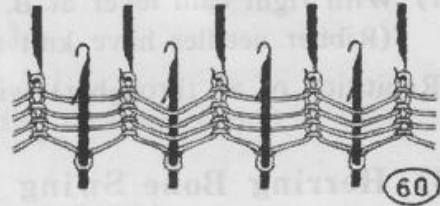
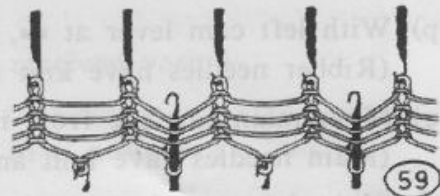
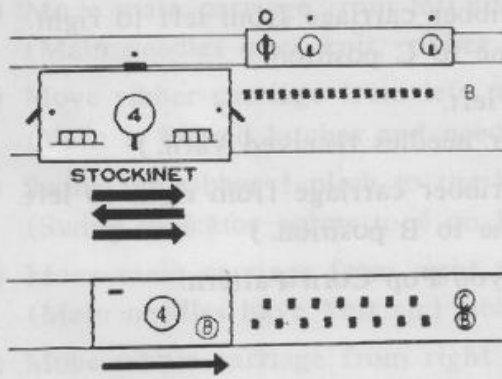
(58)

f) Move the main carriage across the needles 3 times.

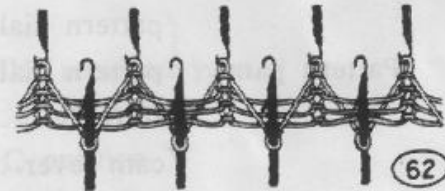
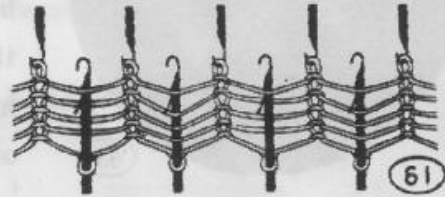
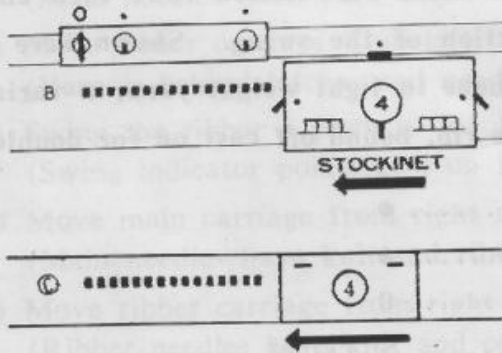
(Main needles have knit 3 rows and ribber needles in C position received 3 strands of yarn.) (59)

g) Move ribber carriage from left to right.

(Ribber needles both in B and C position have come to C position with yarn behind latches.) (60)



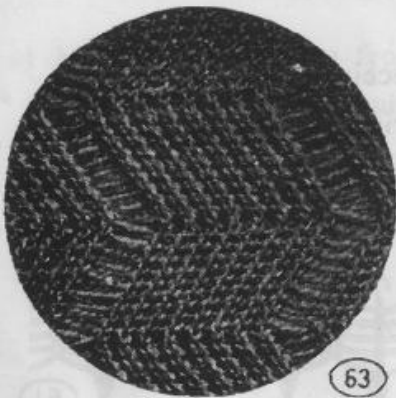
- h) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.) (61)
- i) With right cam lever at —, move ribber carriage from right to left.
(Ribber needles have knit and come to C position.) (62)



- j) Move main carriage from left to right.
(Main needles have knit and ribber needles received yarn.)
- k) With left cam lever at B, move ribber carriage from left to right.
(Ribber needles have knit and come to B position.)
- l) On the ribber, bring out (with needle pusher) every other needle including left end needle to C position.
(These stagger with needles previously brought out.)
- m) Move main carriage from right 3 strokes.
(3 rows knit on main machine and ribber needles in C position received 3 strands of yarn.)
- n) Move ribber carriage from right to left.
(Ribber needles both in B and C position have come to C position with yarn behind latches.)
- o) Move main carriage from left to right.
(Main needles have knit and ribber needles receive yarn.)

- p) With left cam lever at **—**, move ribber carriage from left to right.
(Ribber needles have knit and come to C position.)
 - q) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
 - r) With right cam lever at **B**, move ribber carriage from right to left.
(Ribber needles have knit and come to B position.)
- Repetition of a) through r) will give you Pop Corn Pattern.

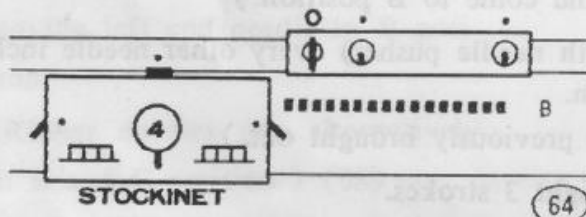
(4) Herring Bone Swing (63)



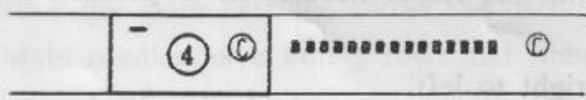
(63)

This is a combination of tucking and swing. Swing the ribber 2 pitches for 1K 1P rib and 1 pitch for double rib and tuck one row on the ribber before you swing it back. Repeat swing back and forth for desired rows then change the direction of the swing. Shown here is a herring bone in light weight yarn, a variation of double rib, bound off cast on for double rib.

- | | | |
|---------------|---|---------------------------------------|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial..... 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons..... both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | stitch dial..... 4 |



(64)



(65)

- | | | |
|-----------------|---|--|
| Ribber carriage | { | cam levers..... {left at —
right at C |
| | | stitch dial..... 4 |

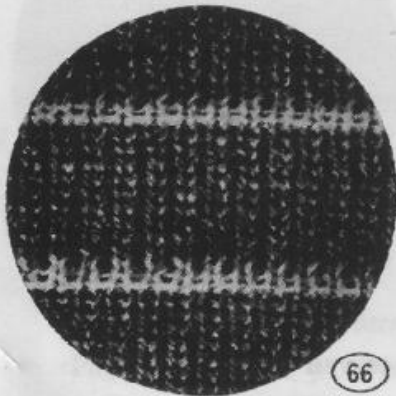
- a) Move main carriage from left to right.
(Main needles have knit, ribber needles received yarn.)
 - b) Move ribber carriage from left to right.
(Yarn is behind latches and needles are in C position.)
 - c) Swing the ribber 1 pitch to the left.
(Swing indicator points to 4 on H scale.)
 - d) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
 - e) Move ribber carriage from right to left.
(Ribber needles have knit and come to C position.)
 - f) Swing the ribber 1 pitch back to right.
(Swing indicator points to 3 on H scale.)
 - g) Repeat from a) to f) 9 times.
 - h) Move main carriage from left to right.
(Main needles have knit, ribber needles received yarn.)
 - i) Move ribber carriage from left to right.
(Yarn is behind latches and needles are in C position.)
 - j) Swing the ribber 1 pitch to the left.
(Swing indicator points at 4 on H scale.)
 - k) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
 - l) Move ribber carriage from right to left.
(Ribber needles have knit and come to C position.)
- NOTE:** From here the direction of the swing is changed.
- m) Move main carriage from left to right.
(Main needles have knit and ribber needles received yarn.)
 - n) Move ribber carriage from left to right.
(Ribber needles come to C position with yarn behind latches.)
 - o) Swing the ribber 1 pitch to the right.
(Swing indicator points at 3 on H scale.)
 - p) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
 - q) Move ribber carriage from right to left.
(Ribber needles have knit and come to C position.)
 - r) Swing back the ribber 1 pitch to the left.
(Swing indicator points at 4 on H scale.)
 - s) Repeat m) through r) 9 times.
 - t) Move main carriage from left to right.
(Main needles have knit and ribber needles received yarn.)

- u) Move ribber carriage from left to right.
(Ribber needles come to C position with yarn behind latches.)
- v) Swing the ribber 1 pitch to the right.
(Swing indicator points at 3 on H scale.)
- w) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)
- x) Move ribber carriage from right to left.
(Ribber needles have knit and come to C position.)

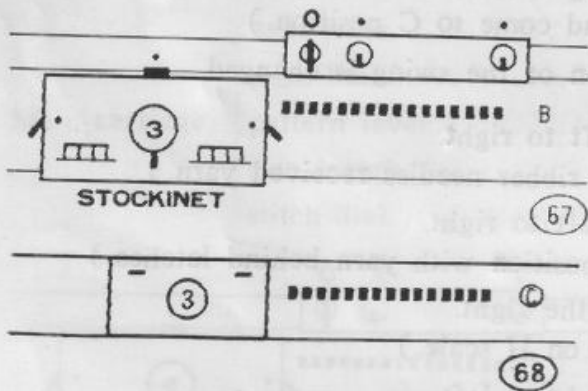
NOTE: Here, the direction of the swing changes again.

Repetition of a) through x) will give you Herring Bone Swing pattern.

(5) Pin Tuck (66)



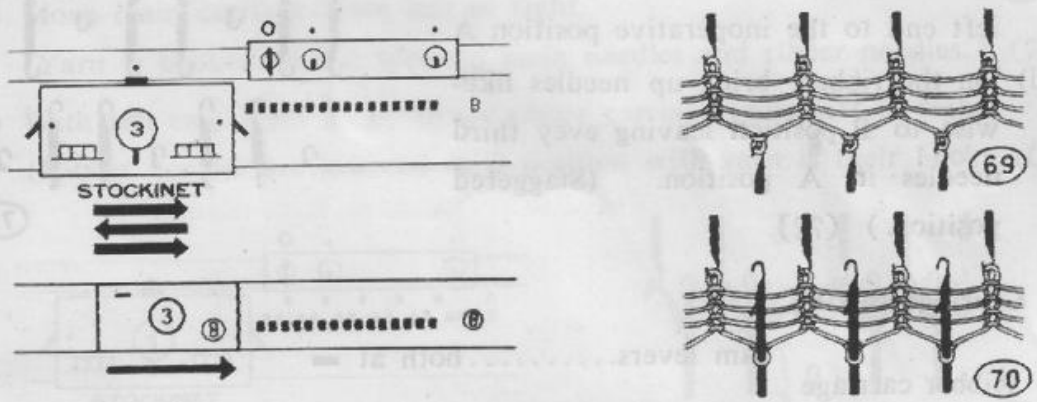
This is a variation of double rib. While doing double rib, knit 3 or 4 rows more on main machine only, this extra knitting 3 or 4 rows on one side gives pin tucked effect. Shown here is pin tuck in light weight yarn. Bound off cast on for double rib.



- | | | |
|---------------|---|---------------------------------------|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial..... 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons..... both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | stitch dial..... 3 |

Ribber carriage { cam levers.....both —
 stitch dial 3

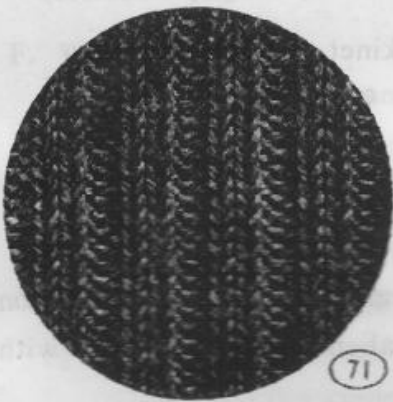
- a) Knit in double rib for desired rows.
 (Terminate your last row with both carriage on the right.)
- b) Move main carriage from right to left.
 (Main needles have knit and ribber needles received yarn.)
- c) With right cam lever at B move ribber carriage from right to left.
 (Ribber needles have knit and come to B position.)
- d) Run the main carriage from left 3 strokes.
 (Main needles have Knit 3 rows.) (69)
- e) Move ribber carriage from left to right.
 (Ribber needles come to C position with yarn behind latches.) (70)



- f) Move main carriage from right to left.
 (Main needles have knit and ribber needles received yarn.)
- g) With right cam lever at —, move ribber carriage from right to left.
 (Ribber needles have knit and come to C position.)

Repetition of a) through g) will give you pin Tuck pattern.

(6) 2 Knit 2 Purl rib



This is a rib with 2 knit and 2 purl alternating stitches.

Shown here is in medium weight yarn.

(71)

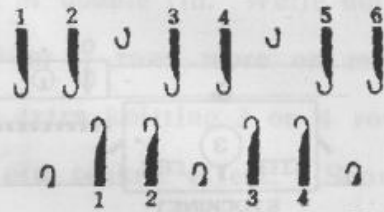
First step: Bound off cast on for 2K 2P

A. pitch setting

Set the Half pitch lever to H.
(Staggered position.)

B. Needle arrangement

- a) The number of stitches to be cast on should be a multiple of 4 plus 2.
- b) On the main machine use flat side of needle pusher and bring out $\frac{3}{4}$ (Rounded up to next number of needles) of the needles to B position. (The remaining needles, that is the other $\frac{1}{4}$ of the needles, will be ribber needles.)
- c) Push back every third needles from left end to the inoperative position A.
- d) On the ribber, bring up needles likewise to B position leaving every third needles in A position. (Staggered position.) (72)



(72)

C. Carriage setting

Ribber carriage { cam levers..... both at
stich dial..... 1

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in C position with their latches open.

Pattern panel { pattern dial (left)..... ●
pattern dial (right)..... ●
shift dial..... 0

Main carriage { cam lever..... Stockinet
push buttons..... both ● buttons down
pattern lever..... ●
side levers..... ●
stich dial..... 1

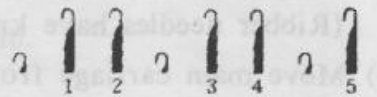
Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in B position with their latches open.

D. Threading

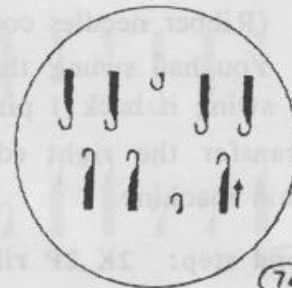
★ Swing the ribber 1 pitch to the left. (73)



★ On the right side of the ribber, bring out to C position an extra needle second from the right end of needles brought out to C position. (74)



★ Pass yarn through the Autotension, yarn feeder and then down to between main machine and ribber.

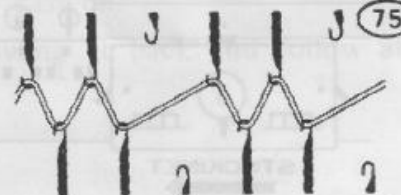
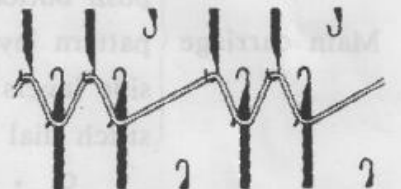
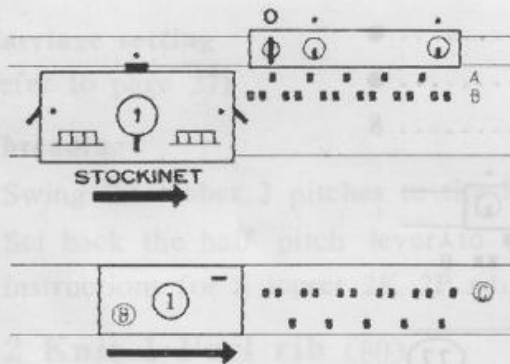


a) Move main carriage from left to right.

(Yarn is hooked zigzag between main needles and ribber needles.) (75)

b) With left cam lever at B, move ribber carriage from left to right.

(Ribber needles are lowered to B position with yarn in their hooks.) (76)



E. Cast on comb

(Refer to page 11)

F. Weights

Hang an appropriate number of weights onto the comb, ensuring it remains horizontal.

G. Bound off casting on

a) Move main carriage from right to left.

(You have knit with main machine only.)

b) Move ribber carriage from right to left.

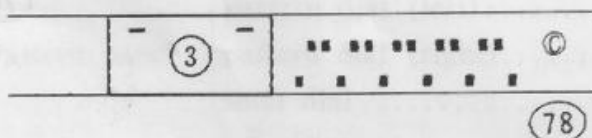
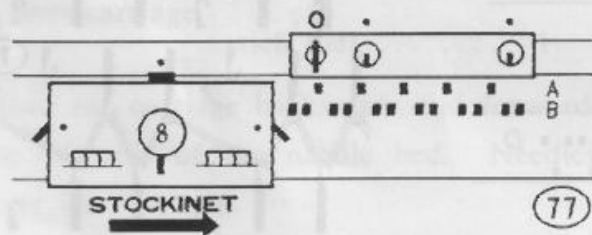
(Ribber needles come to C position with yarn behind latches.)

- c) With cam lever at **R**, move main carriage from left to right.
(Yarn is spun across over ribber needles.)
 - d) Move ribber carriage from left to right.
(Ribber needles have knit and come to **B** position.)
 - e) Move main carriage from right to left.
(Knit with main machine only.)
 - f) Move ribber carriage from right to left.
(Ribber needles come to **C** position with yarn behind latches.)
- You had swung the ribber 1 pitch to the left for casting on and now swing it back 1 pitch to the right.

Transfer the right edge stitch on the ribber to the right end needles of main machine.

Second step: 2K 2P ribbing

- | | | |
|---------------|---|---------------------------------------|
| Pattern panel | { | pattern dial (left)..... ● |
| | | pattern dial (right)..... ● |
| | | shift dial..... 0 |
| Main carriage | { | cam lever..... Stockinet |
| | | push buttons..... both ● buttons down |
| | | pattern lever..... ● |
| | | side levers..... ● |
| | | stitch dial..... 8 |



- | | | |
|-----------------|---|---------------------------|
| Ribber carriage | { | cam levers..... both at — |
| | | stitch dial..... 3 |

- a) Move main carriage from left to right.
(Main needles have knit and ribber needles received yarn.)
- b) Move ribber carriage from left to right.
(Ribber needles have knit and come to **C** position.)
- c) Move main carriage from right to left.
(Main needles have knit and ribber needles received yarn.)

- d) Move ribber carriage from right to left.
 (Ribber needles have knit and come to C position.)
 Repetition of a) through d) will give you 2K 2P rib.

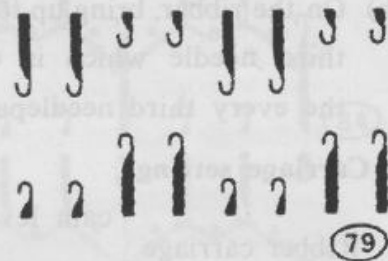
★ The following is another method for 2K 2P rib.

A. pitch setting

Set the half pitch lever at P.

B. Needle arrangement (79)

- a) The number of needles to be cast on should be a multiple of 4 plus 2.
 b) On the main machine, bring out every two needles to position B and leave two needles in position A.



The total needles brought out to position B will be $\frac{1}{2}$ plus 1 of the total needles to be cast on.

- c) On the ribber bring up every two needles B to position. The needles brought up should be those opposite the needles in A position on the main machine.

C. Carriage setting

(Refer to page 27)

D. Threading

- a) Swing the ribber 2 pitches to the left and cast on.
 b) Set back the half pitch lever to P and swing it back and follow above instructions for a looser 2K 2P rib.

(7) 2 Knit 1 Purl rib (80)



This is another variation of ribbing with 2 knit stitches and 1 purl stitch.

Shown here is in medium weight yarn.

First step: Bound off cast on

A. pitch setting

Set the Half pitch lever to P.

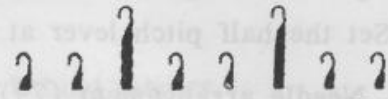
B. Needle arrangement

The number of stitches to be cast on should be a multiple of 3 plus 2.

a) On the main machine, bring out the required number of needles to B position. From left end, push back every third needle to A position.



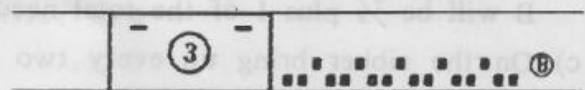
b) On the ribber, bring up to B position every third needle which is directly opposite the every third needle pushed back on the main machine. (81)



(81)

C. Carriage setting

- Ribber carriage { cam levers..... both at —
- { stitch dial..... 3

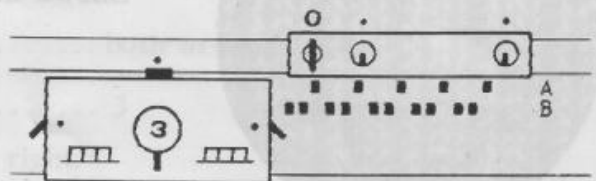


(82)

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed.

Needles are aligned in C position with their latches open.

- pattern panel { pattern dial (left)..... ●
- { pattern dial (right)..... ●
- { shift dial..... 0
- Main carriage { cam lever..... Stockinet
- { push buttons..... both ● buttons down
- { pattern lever..... ●
- { side levers..... ●
- { stitch dial..... 3



(83)

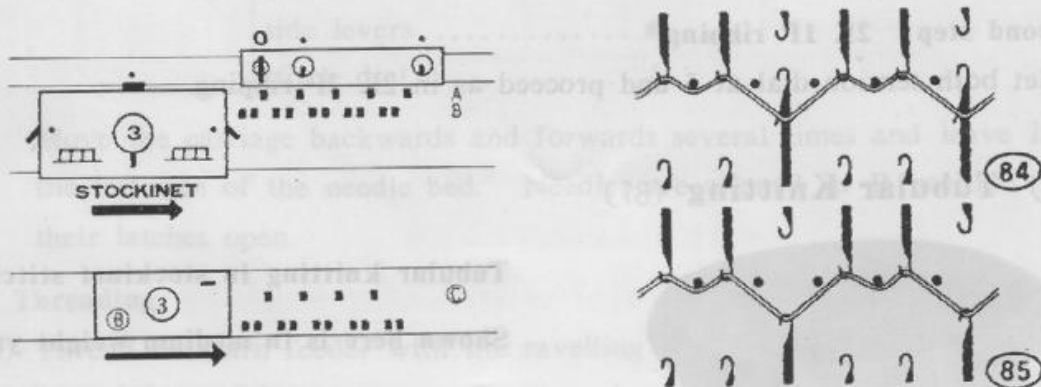
Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in B position with their latches open.

D. Threading

Pass yarn through the Auto-tension, yarn feeder and down to between main machine and ribber.

- a) Move main carriage from left to right.

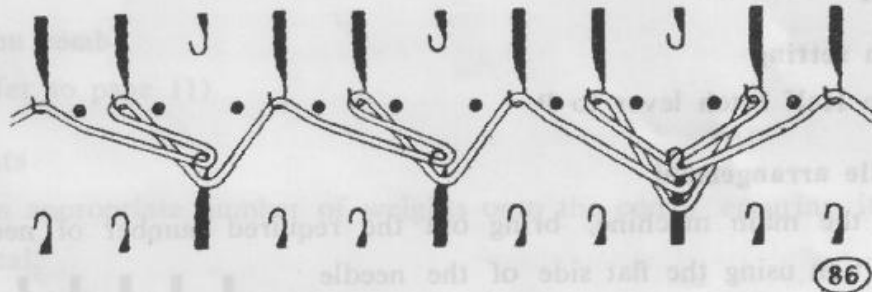
(Yarn is hooked zigzag between main machine and ribber.) (84)



- b) With left cam lever at B, move ribber carriage from left to right.

(Needles are lowered to B position with yarn in their hooks.) (85)

- c) With the hook tool, pick up the yarn between two main needles and put it on the ribber needle in B position. (86)



E. Cast on comb

(Refer to page 11)

F. Weights

Hang an appropriate number of weights onto the ensuring it remains horizontal.

G. Bound off cast on

- a) Move main carriage from right to left, knitting with main machine only.

- b) Move ribber carriage from right to left.

(Ribber needles come to C position with yarn behind latches.)

- c) Move main carriage with cam lever at R from left to right.

(Yarn is spun across ribber needles.)

- d) Move ribber carriage from left to right.
(Ribber needles have knit and come to B position.)
- e) Move main carriage from right to left knitting with main machine only.
- f) Move ribber carriage from right to left.
(Ribber needles come to C position with yarn behind latches.)

Second step: 2K 1P ribbing

Set both tension dial at 5 and proceed as in 2K 2P ribbing.

(8) Tubular Knitting (87)



Tubular knitting in stockinet stitches.
Shown here is in medium weight yarn.

(87)

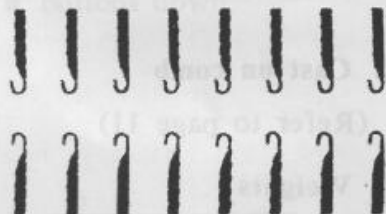
First step: Cast on

A. Pitch setting

Set the Half Pitch lever to P.

B. Needle arrangement

- a) On the main machine, bring out the required number of needles to B position using the flat side of the needle pusher.
- b) Also on the ribber, bring out the same number of needles to B position. (88)



C. Carriage setting

Set the Half Pitch lever to H.

Ribber carriage { cam levers..... both at —
stitch dial..... }

(88)

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in C position with their latches open.

Pattern panel	{	pattern dial (left)..... ●
		pattern dial (right)..... ●
		shift dial 0
Main carriage	{	cam lever..... Stockinet
		push buttons..... both ● buttons down
		pattern lever..... ●
		side levers..... ●
		stitch dial 1

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in B position with their latches open.

D. Threading

- a) Thread the yarn feeder with the ravelling cord and move main carriage from left to right.
(The ravelling cord is hooked zigzag between main and ribber needles.)
- b) With left cam lever at B, move ribber carriage from left to right.
(Ribber needles are lowered to B position with the ravelling cord in their hooks.)

E. Cast on comb

(Refer to page 11)

F. Weights

Hang an appropriate number of weights onto the comb, ensuring it remains horizontal.

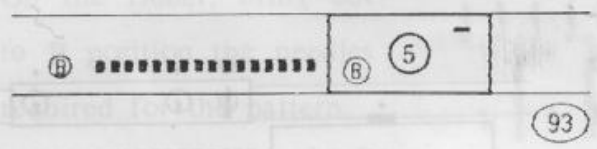
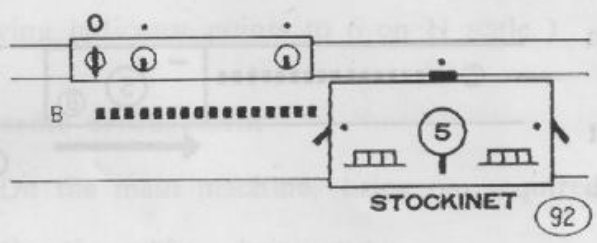
Set the Half Pitch lever to P.

Replace the ravelling cord with medium weight yarn.

Second step: Tubular Knitting

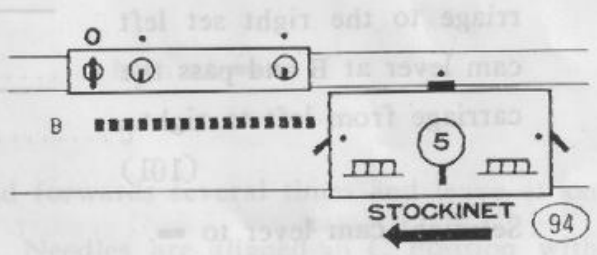
Pattern panel	{	pattern dial (left)..... ●
		pattern dial (right)..... ●
		shift dial 0
Main carriage	{	cam lever..... R
		push buttons..... both ● buttons down
		pattern lever..... ●
		side levers..... ●
		stitch dial 5

- Main carriage
- cam lever..... Stockinet
 - push buttons both ● buttons down
 - pattern lever..... ●
 - side levers..... ●
 - stitch dial 5

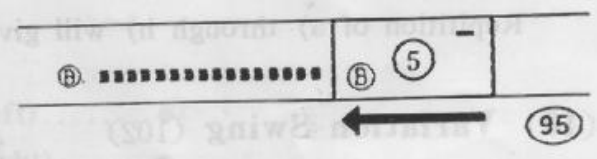


- Ribber carriage
- cam levers..... left at B
right at —
 - stitch dial 5

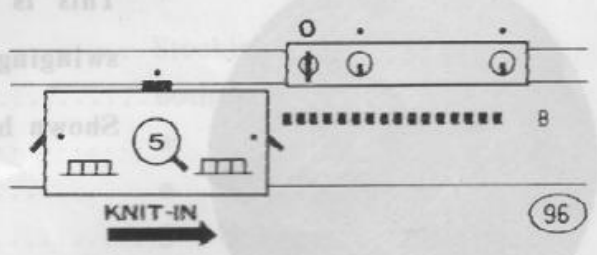
a) Move main carriage from right to left knitting with main machine only. (94)



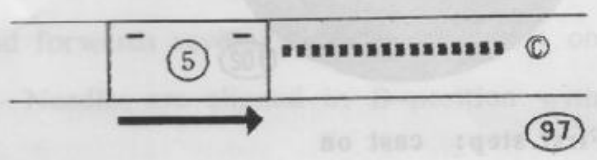
b) Move ribber carriage from right to left. (95)
(Ribber needles come to C position with yarn behind latches.)



c) With cam lever at KNIT-IN move main carriage from left to right. (96)
(Yarn is spun across over ribber needles.)

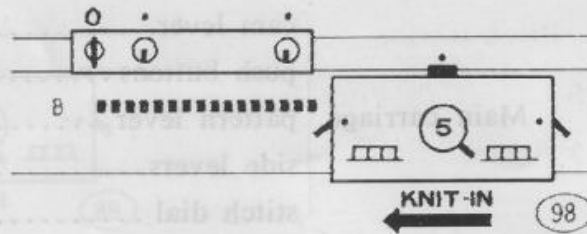


d) With left cam lever at — move ribber carriage from left to right. (97)
(Ribber needles have knit and come to C position.)



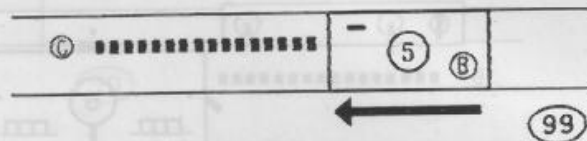
- e) Move main carriage from right to left. (98)

(Yarn is spun across over ribber needles.)

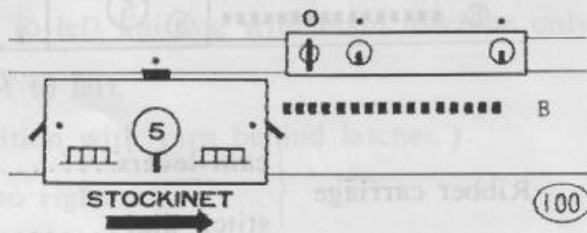


- f) With right cam lever at B move ribber carriage from right to left. (99)

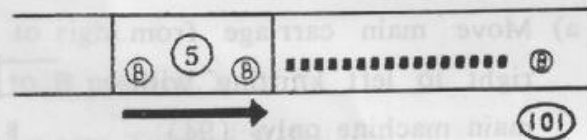
(Ribber needles have knit and come to B position.)



- g) With cam lever at STOCKINET move main carriage from left to right, knitting with main machine only. (100)



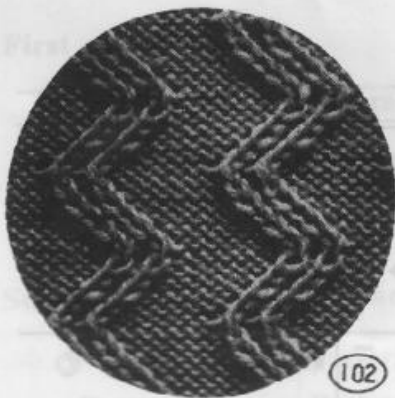
- h) To transfer the ribber carriage to the right set left cam lever at B and pass the carriage from left to right. (101)



Set right cam lever to —.

Repetition of a) through h) will give you Half Tubular Knitting.

(10) Variation Swing (102)



This is one of many possible patterns by swinging the ribber.

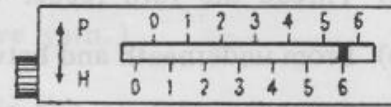
Shown here is in medium weight yarn.

First step: cast on

A. Pitch setting

Set the Half Pitch lever to H.

Swing the ribber all the way to the left.



(103)

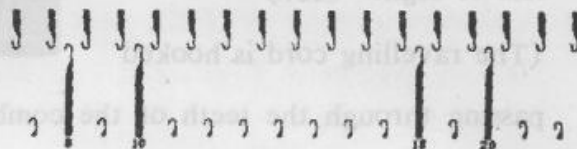
(103)

(Swing indicator points to 6 on H scale.)

B. Needle arrangement

a) On the main machine, bring out required needles to B position.

b) On the ribber, bring out to B position the needles required for the pattern.



(104)

(104)

(Needles numbered 8, 10, 18, 20, 28, 30 etc.)

C. Carriage setting

Ribber carriage { cam levers..... both at
 stitch dial..... 5

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in C position with their latches open.

Pattern panel { Pattern dial (left)..... ●
 pattern dial (right)..... ●
 shift dial..... 0

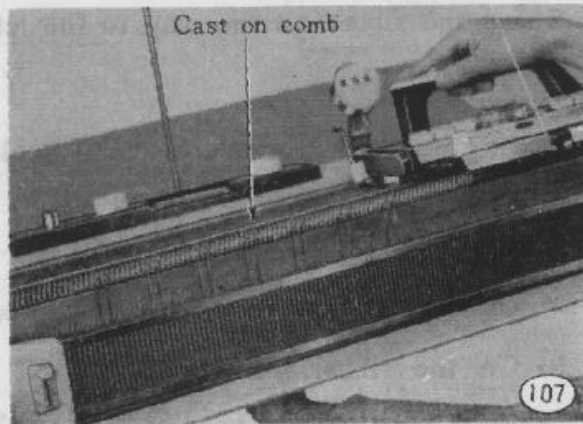
Main carriage { cam lever..... Stockinet
 push buttons..... both ● buttons down
 pattern lever..... ●
 Side levers..... ●
 stitch dial..... 5

Move the carriage backwards and forwards several times and leave it on the left side of the needle bed. Needles are aligned in B position with their latches open.

D. Threading

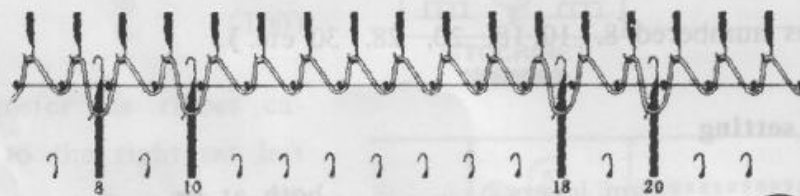
a) Thread the yarn feeder with the ravelling cord.

b) From underneath and between the main machine and ribber hold the cast on comb with one hand to the height of main machine sinkers. Move slowly main carriage from left to right. (107)



(The ravelling cord is hooked

passing through the teeth of the comb.) (108)



c) Move ribber carriage from left to right.

(Ribber needles come to C position with the cord behind latches.)

E. Weights

Hang an appropriate number of weights onto the comb.

(Unthread the ravelling cord from the yarn feeder and thread the medium weight yarn.)

Second step: Pattern knitting

a) Move main carriage from right to left.

(Main needles have knit and ribber needles received yarn.)

b) Move ribber carriage from right to left.

(Ribber needles knit and come to C position.)

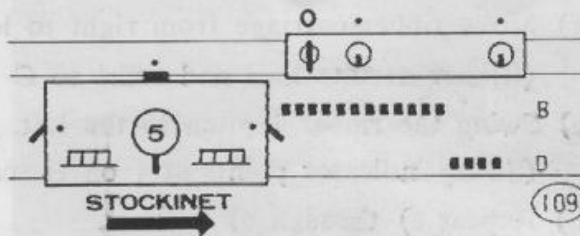
c) Swing the ribber 1 pitch to the right.

(Swing indicator points at 5 on H scale.)

b) Leave at the right side first group of ribber needles in B position and bring out the rest of needles to C position.

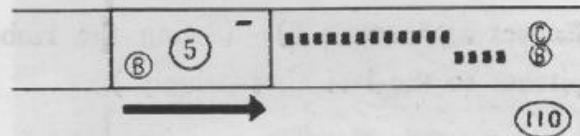
c) Move main carriage from left to right. (109)

(Main needles in B position knit and ribber needles in C position receive yarn.)



d) Move ribber carriage from left to right with right cam lever at — and left at B. (110)

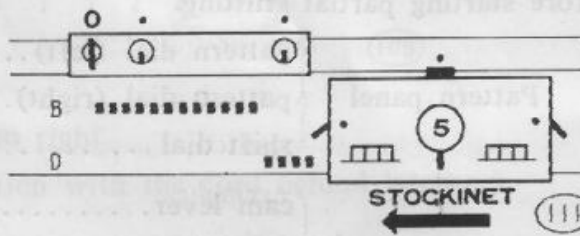
(Ribber needles in C position knit and come to B position.)



e) On the ribber, again, leave resting needles in B position and bring out working needles to C position.

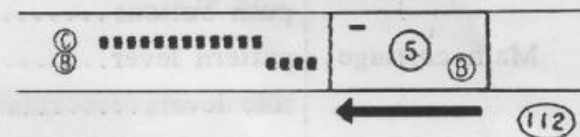
f) On the main machine, pass the yarn around the innermost resting needles and move main carriage from right to left. (111)

(Main needles in B position knit and ribber needles in C position receive yarn.)



g) Move ribber carriage from right to left. with left cam lever at — and right at B. (112)

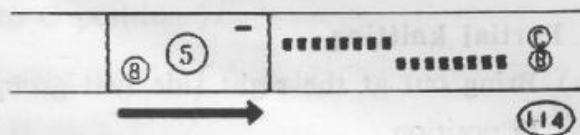
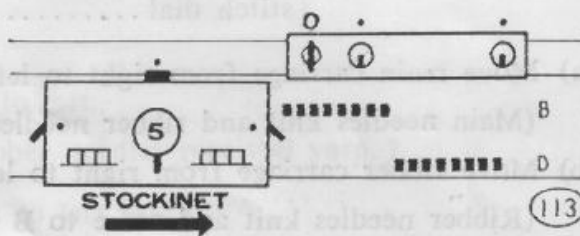
(Ribber needles in C position knit and come to B position.)



One partial knitting (two short rows) is completed.

Repeat the procedures for desired decreasing and rows.

On the main machine, place the resting needles in C position and on the ribber place the working needles in C position and tingres needles in B position. (113) (114)



NOTE: For partial knitting (increasing), first place resting needles of main machine in D position and push back to C position each group of needles as you proceed. On the ribber, repeat placing working needles in C position each time.

B. Partial Knitting Decrearing Applied to English Rib

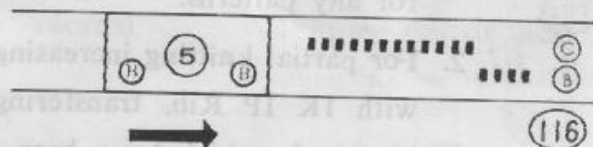
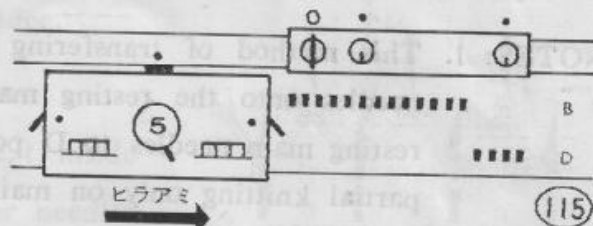
- | | | |
|-----------------|---|---|
| Pattern panel | { | Pattern dial (left)..... ● |
| | | Pattern dial (right)..... ● |
| | | shift dial..... 0 |
| Main carriage | { | cam lever..... STOCKINET |
| | | push buttons..... all buttons up
(pick lever..... ←) |
| | | side levers..... ● |
| | | stitch dial..... 5 |
| Ribber carriage | { | cam lever (right)..... B |
| | | cam lever (left)..... B |
| | | stitch dial..... 5 |

Place the group of main needles to be decreased at D position and the group of ribber needles to be decreased at B position, and operate the carriages as above partial knitting with 1K 1P Rib.

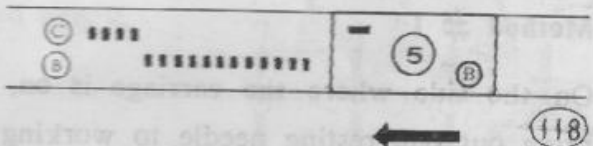
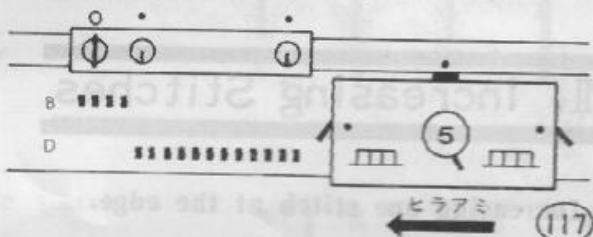
(115, 116, 117 and 118)

For partial knitting with swung English Rib, Herring Bone Swing, etc. apply this method.

NOTE: For partial knitting increasing, apply the method for partial knitting increasing with 1K 1P Rib.



(Ribber needles in C position have loops behind latches and ribber needles in B position remain inactive.)



(Ribber needles in C position knit and come to B position.)

C. Partial knitting Decreasing Applied to Variation Swing

- a) It is unnecessary to reset the main carriage and ribber carriage which have been set for Variation Swing.
- b) Transfer the loops on the ribber needles to be decreased onto the main needles to be decreased. (119)



- c) Bring the resting main needles, each of which has two loops, to D position and knit.
- d) Pass the yarn under the first resting needle in D position on the main needle bed and knit another row.
- e) Repeat b) through d).

NOTES: 1. This method of transferring the loops on the resting ribber needles onto the resting main needles and bringing out those resting main needles to D position is same as the method for partial knitting only on main needle bed, and can be applied for any patterns.

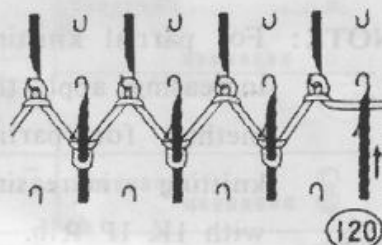
2. For partial knitting increasing, knit as partial knitting increasing with 1K 1P Rib, transferring the group of ribber loops to be increased, which have been resting on the main needles, onto the ribber needles each time.

VII. Increasing Stitches

★ Increasing one stitch at the edge.

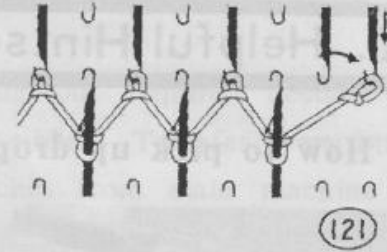
Method # 1

On the side where the carriage is on, bring out one resting needle to working position. (120)

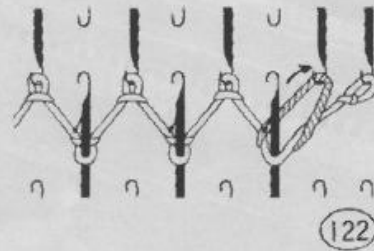


Method # 2

Transfer the edge stitch to next resting needle. (121)



Take the back loop and put it on the vacated needle. (122)

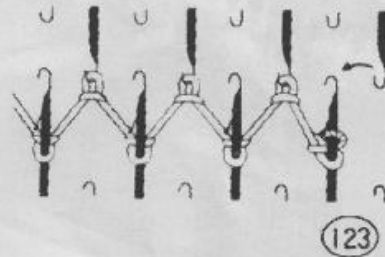


VIII. Decreasing Stitches

★ **Decreasing one stitch at the edge.**

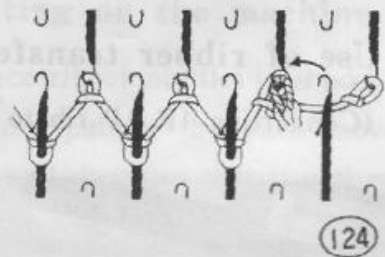
Method # 1

Transfer the edge stitch to next inside needle. (Main needle to ribber needles or visa-versa) push back the vacated needles to A position. (123)

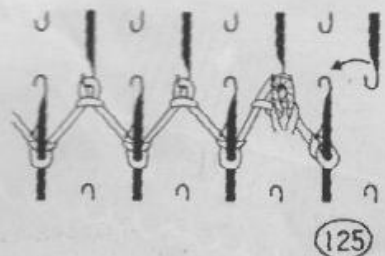


Method # 2

Transfer the second stitch from edge to third needle. (124)

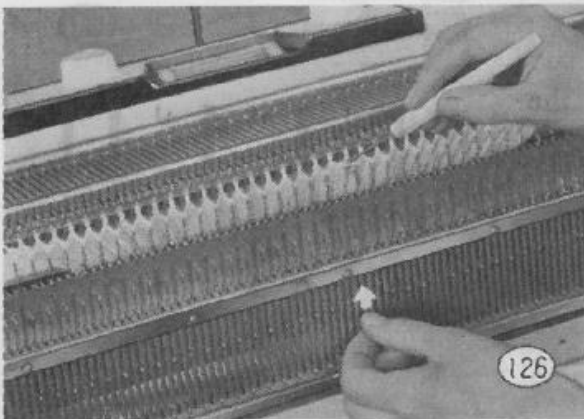


Transfer the edge stitch to the second needle and push back the vacated needle to A position. (125)



IX. Helpful Hints

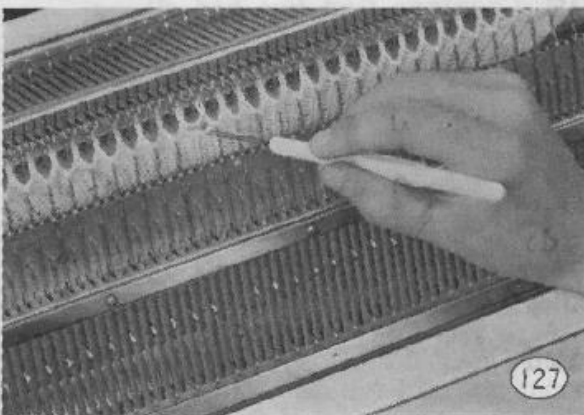
1. How to pick up dropped stitches



Remove the weights from the cast on comb before they cause further stitches to drop.

Press down the drop levers and lower the ribber.

Pick up the dropped stitch with the hook tool and put it back on the needle.



When a stitch is dropped several rows down, pick up the stitch with a tappet and crochet up before putting it on the needle.

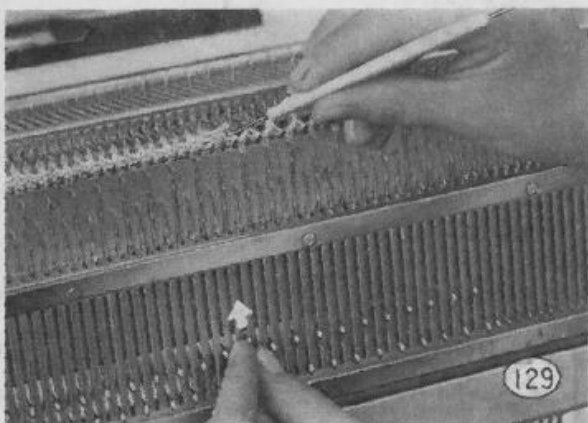
2. Use of ribber transfer tool

(Converting 1K 1P rib to stockinet)



a) Bring out every other resting needle on the main machine to B position and open their latches. (128)

b) Transfer stitches on the ribber to these resting needles on the main machine.



(Converting stockinet to 1K 1P rib)

Bring out required needles on the ribber. Transfer every other stitches from main machine to ribber.

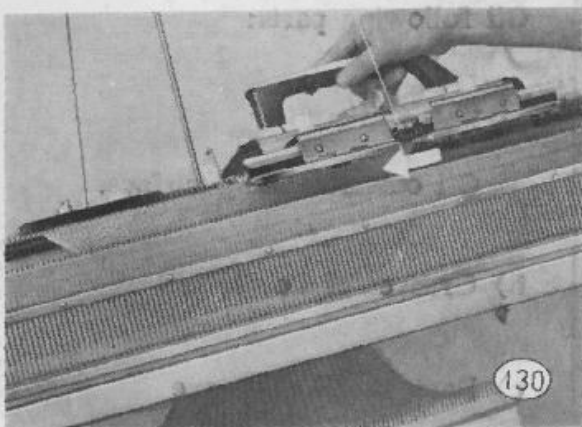
3. How to knit with main machine only

Transfer stitches from ribber to main machine.

Push down the drop levers and lower the ribber.

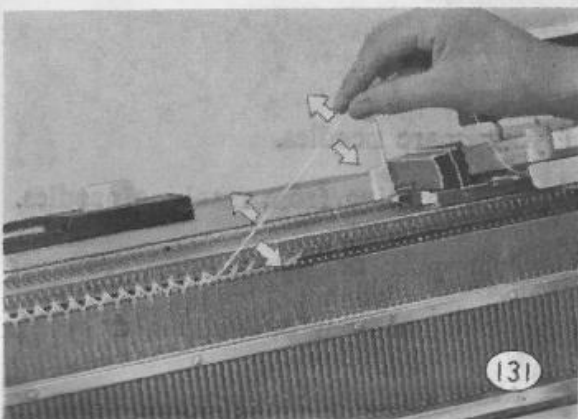
Replace the ribbing arm with the arm for main machine and knit.

(130)



4. When the ribber carriage jams.

Do not force the carriage when it happens to jam but set both cam levers to B position and push back the carriage gently. When it does not move push it forward a little bit and then push back.



5. How to unravel your knitting on the machine.

Place ribber needles in B position. While pulling the yarn move it up and down so that it will come off the hooks and will slide the next stitches into hooks automatically. (131)

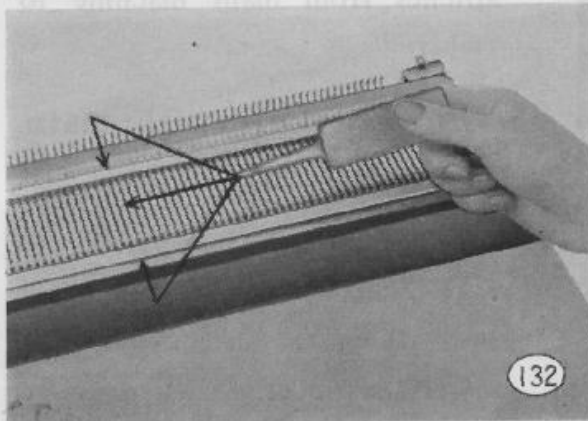
6. How to remove the knitting from machine.

Do 5 or 6 rows waste knitting with a different yarn.

Remove weights, unthread the yarn feeder and move the carriage, across the knitting. Then drop off the machine.

X. Maintenance

1. How to Oil



Always remember that proper oiling ensures pleasant and better knitting.

Oil following parts:

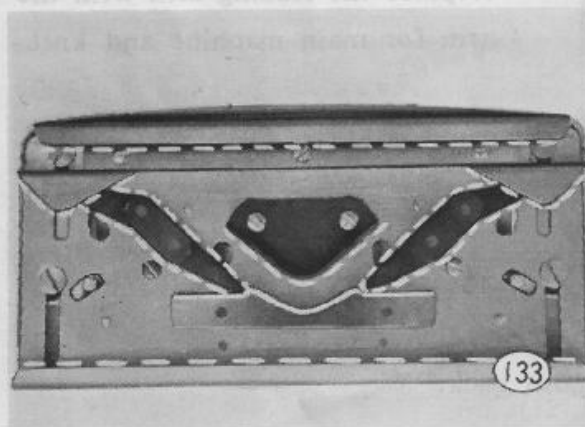
a) Rail

Oil outside sliding surface.

b) Grooves of needle bed

c) Back of the carriage

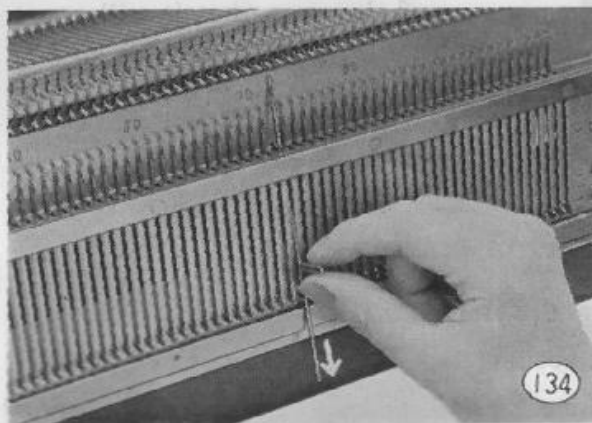
Dotted line shows where to oil.



2. How to replace needles

Replace a damaged needle with one of your spare needles.

You can change needles without removing the knitting from machine needles.



Just pull out the needle retainer band and pull out damaged needle as in case of main machine.

Then put in the new needle, the hook first then the shank holding the butt.