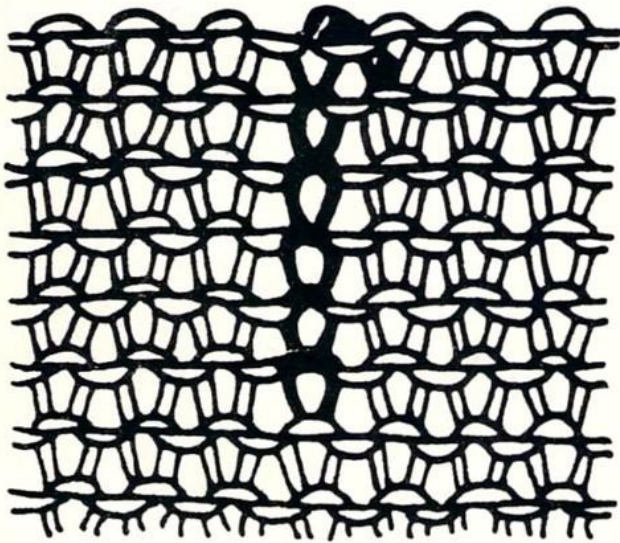
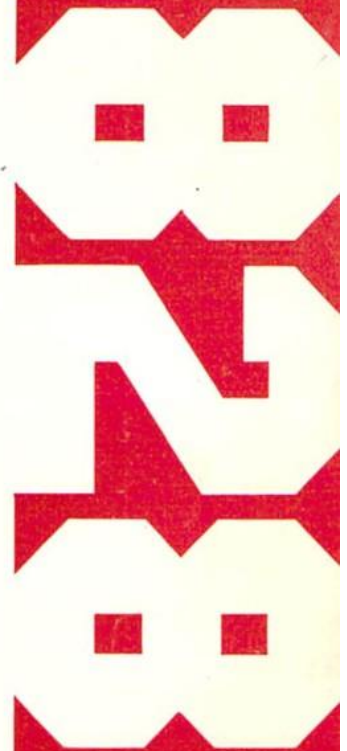


KEYFO®



**KNITTING
MACHINE**

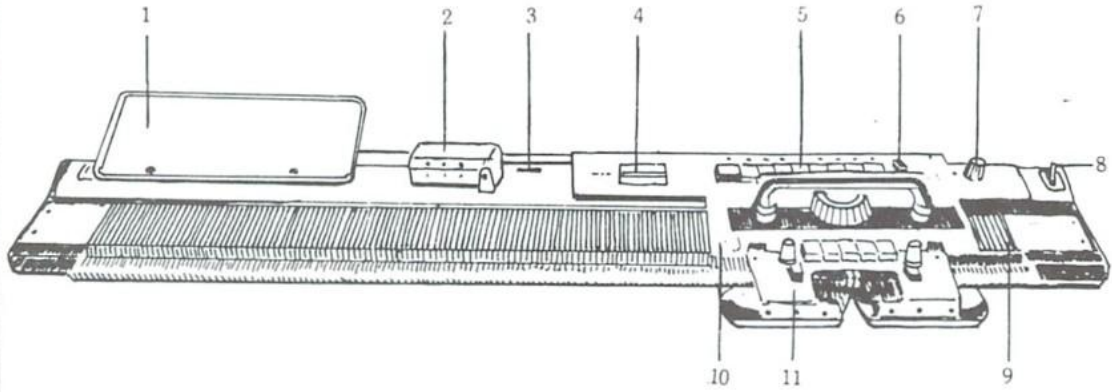
I N S T R U C T I O N M A N U A L



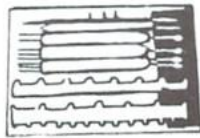
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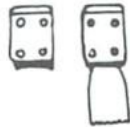
The Machine and its Accessories



- | | | |
|----------------------------------|---------------------------|---------------|
| 1. Accessory Tray | 5. Needle Selector Button | 9. Needle Bed |
| 2. Row Counter | 6. Reverse Lever | 10. Carriage |
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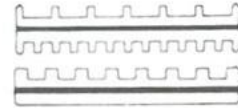
Accessories pouch



Hanging weights



Cast-on thread



Pattern Plates



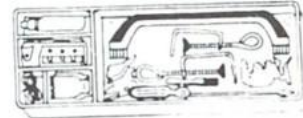
Carriage handle



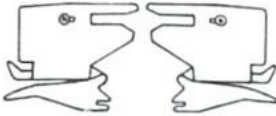
Carriage fastener



Oil bottle



Accessories box



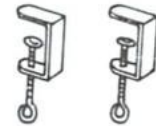
Laying-in Yarn Guide



Cleaning brush



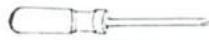
Set lever



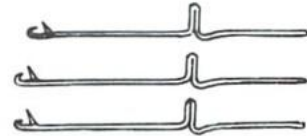
Mounting Clamps



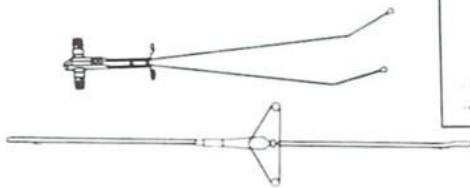
Garment Holder



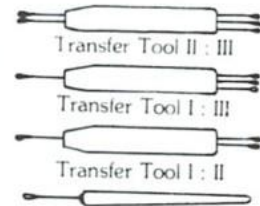
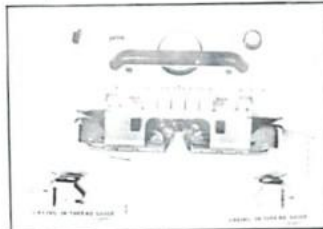
Screw Driver



Needles



Tension Pole Assembly



Tappet Needle

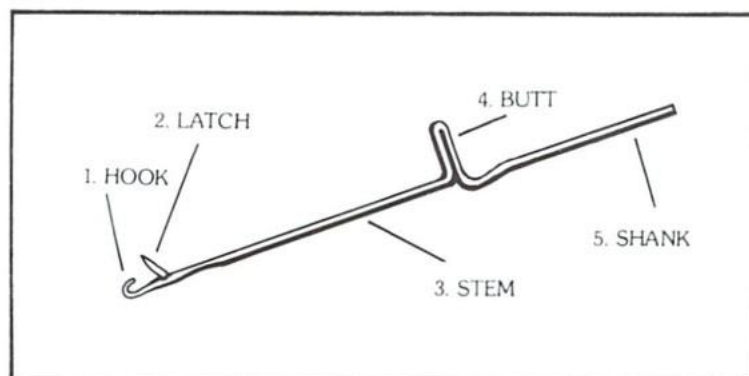
Principle of Machine Knitting

Hand knitting is the art of interlacing a continuous single thread by the use of a pair of needles into a series of connected loops. In machine knitting the same process is achieved by the use of special latch needles actuated by the movement of a knitting carriage.

In machine knitting, the side of the knitted garment which faces you is called the **purl stitch** and the other side is called **knit stitch**. Normally the **knit stitch** side of the garment forms the outer surface.

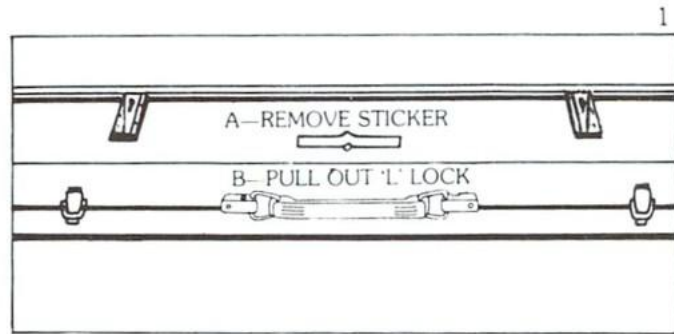
Latch Needle

The nomenclature of the parts of a latch needle is illustrated in the figure.

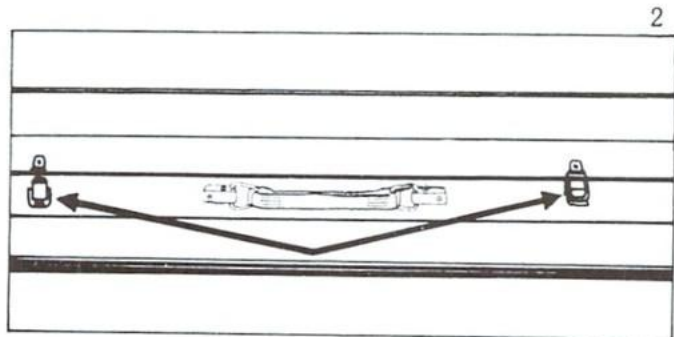


Setting up the Machine

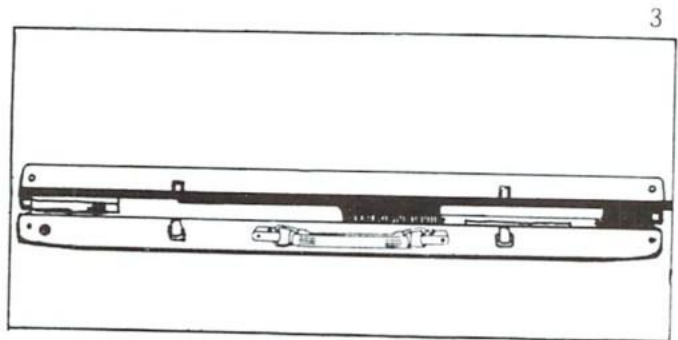
1. Remove the caution sticker and pull out the 'L' lock from the bottom of the machine. (Fig. 1).



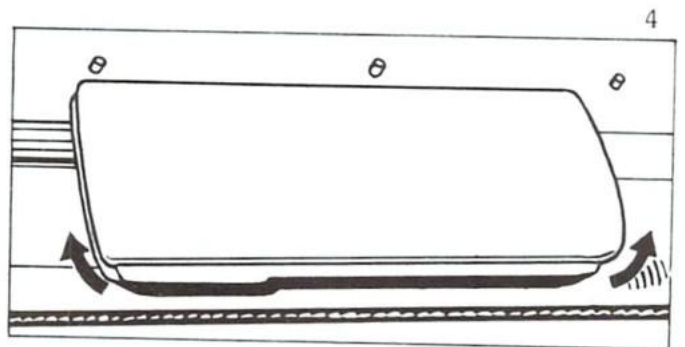
2. Place the machine on a sturdy table with the cabinet handle facing away from you. Unfasten both the cabinet locks. (Fig. 2)



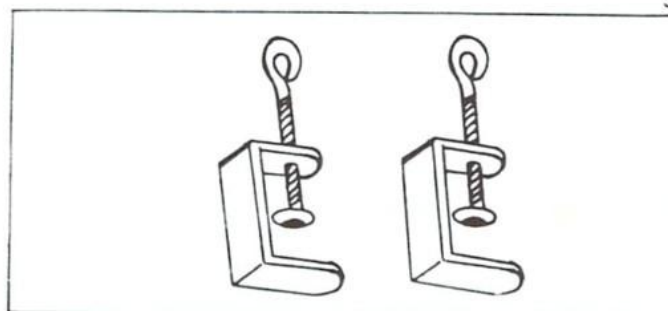
3. Lift the cabinet cover slightly and pull it towards you to free it from the machine. (Fig. 3).



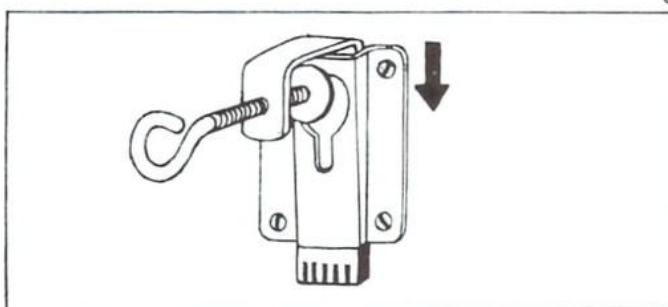
4. Accessory Box is placed on the left hand side of the needle bed. Remove it by lifting from the front side. (Fig. 4).



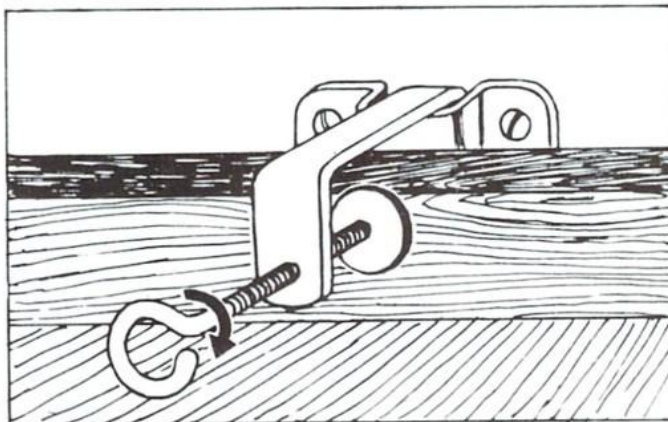
5. Take the two clamps out of the accessory box (See Fig. 5). Raise the front of the knitter.



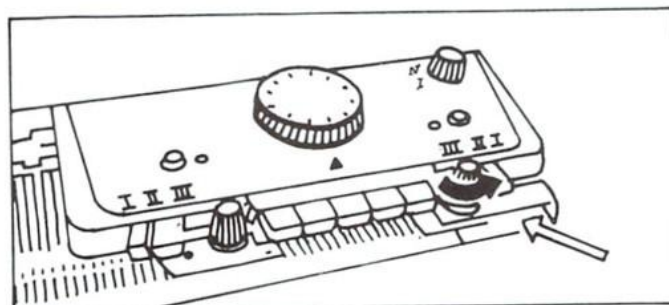
6. Insert the clamps into the slot of the base fastening plate (See Fig. 6).



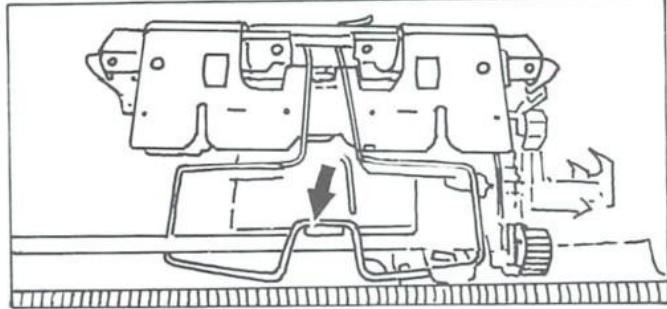
7. Fasten the knitter to the table by tightening the clamp screws. (See Fig. 7).



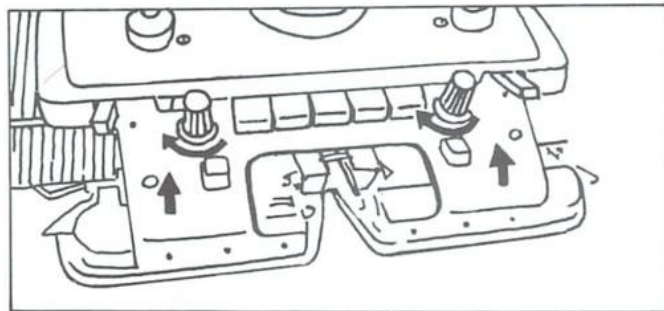
8. Remove the carriage fastener and put it in the accessory box. (See Fig. 8).



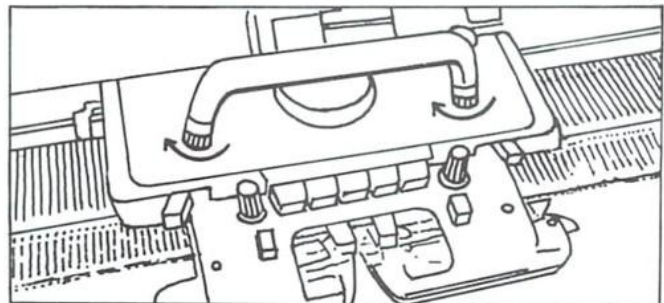
9. Release the wire spring on the inside of the cabinet cover and remove the arm plate. (Fig. 9).



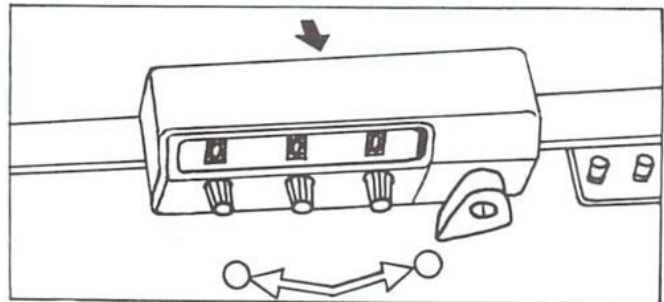
10. Loosen the left thumb knob of the carriage. Slide the arm plate as far as it will go under the thumb knobs. Tighten both the knobs firmly. Ensure that the raised portion of the positioning plate fits properly into the corresponding horizontal slots of the arm plate. (Fig. 10).



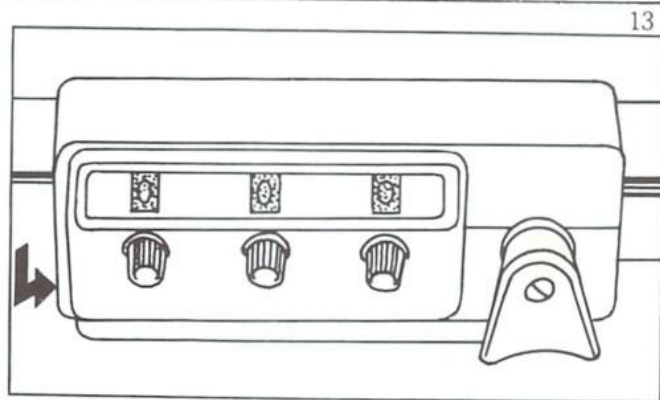
11. Take out the carriage handle from the Accessory Box and fasten it on to the carriage by rotating the screws clockwise. (Fig. 11).



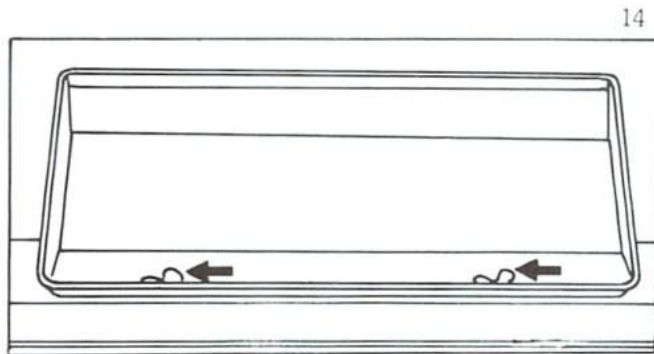
12. Take out the row counter from the accessory box. Position the row counter base plate apertures on the row counter setting studs. (Fig. 12).



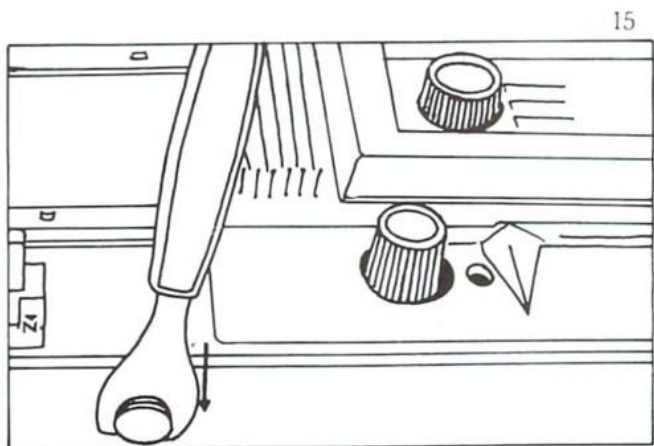
13. Press the row counter slightly and slide it away from you. Ensure that the row counter is properly fitted onto both the studs. (Fig. 13).



14. The inside of the accessory box cover is used as an accessory tray. Insert the accessory tray setting studs into the two corresponding holes of the tray. Slide the tray to the left as far as it will go. (Fig. 14).

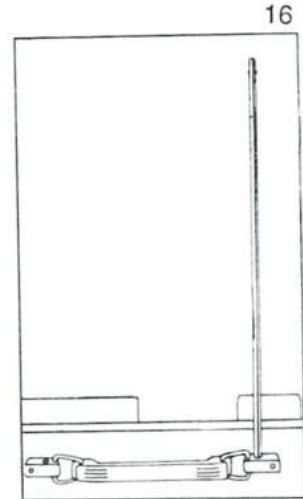


15. Take the set lever out of the accessory box and fit it onto the shaft of the holder at the rear right of the machine. Push it down as far as it will go. (Fig. 15).

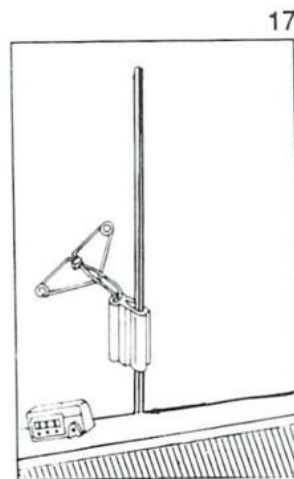


Installing the Tension Pole Assembly

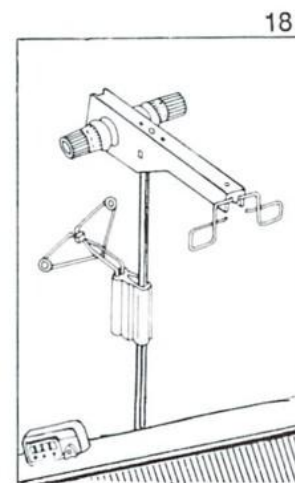
1. Take the automatic yarn tension unit and insert the notched end of the rod into any one of the eyelet of cabinet handle of the knitter. (See Fig. 16).



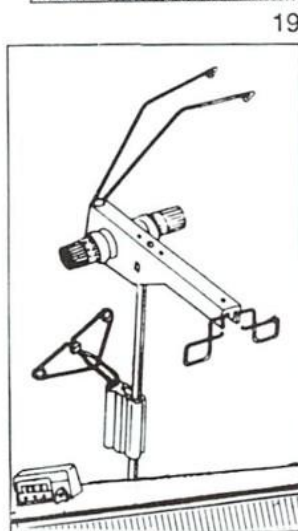
2. Push the rear yarn guide onto the tension rod, with the rear yarn guide away from you (See Fig. 17).



3. Fit the Automatic yarn tension head by inserting the notched end onto the Tension rod. (See Fig. 18).



4. Fix the wire spring by inserting the plastic end into the slot at the rear of the automatic yarn tension head (See Fig. 19).



General Information On The Machine

1. Position of Needles

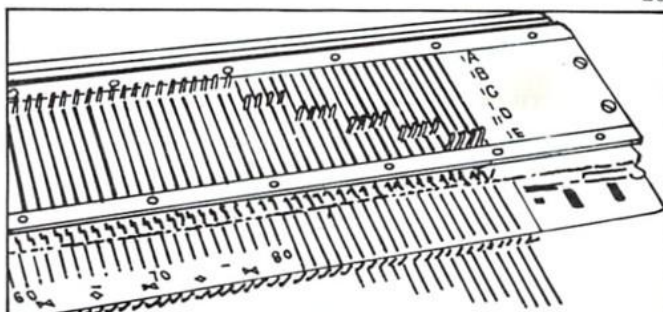
On either side of the needle bed, there are markings, A, B, C, D (I & II) and E. Needles when placed in these positions perform different functions. (Fig. 20).

A—Position : Needles in this position do not operate. Ensure that the needles you do not want to take up the yarn are aligned to this position.

B—Position : Normal working position. Used for Stockinet knitting.

C, DI & DII—Positions : Used for various types of pattern stitches.

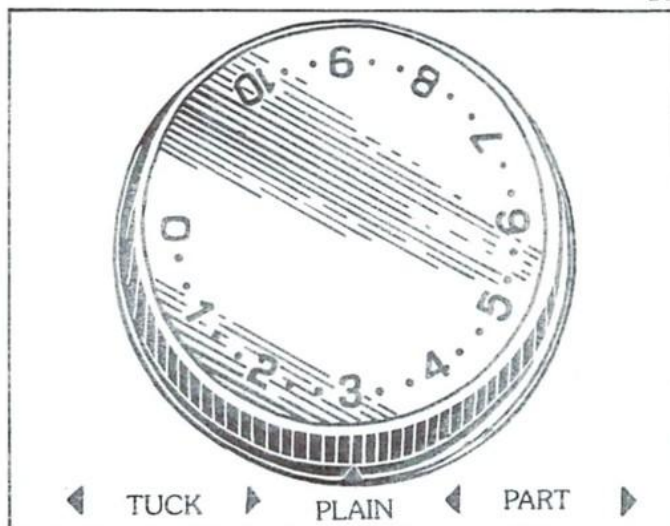
E—Position : Holding position. Needles in this position hold the stitches until released.



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2. Tension Dial

The size of the stitch being knitted depends upon the tension being used. The tension dial (Fig. 21) is graduated from 0 to 10, each space between the numbers being further subdivided into three parts. The figure 0 denotes the tightest tension or the smallest stitch, and the figure 10, the loosest tension or the largest stitch. The tension required for a particular garment depends on the type of the garment required and the thickness of the yarn being used.



21

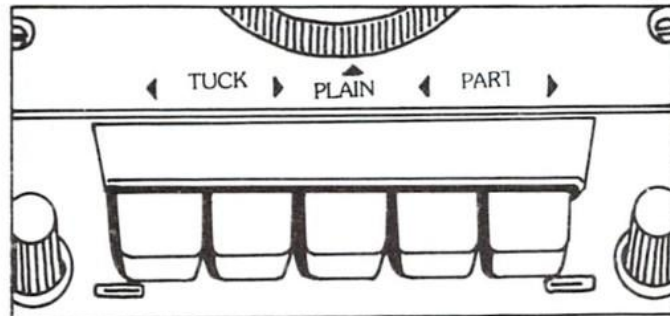
Approximate setting for different yarn thicknesses are as under :

0-3	Very fine yarns	- 1 ply
3-6	Medium yarns	- 2/3 ply
6-9	Heavy yarns	- 3/4 ply
9-10	Very heavy yarns	- 4 ply

3. Pattern Selector Buttons

The front side of the carriage has five push buttons (Fig. 22). The button on the extreme left marked 'TUCK' operates the left hand side tuck and stitch cams. The adjacent button, also marked 'TUCK', operates the right hand side tuck and stitch cams. The two 'PART' buttons on the right hand side of the carriage operate the corresponding right and left stitch cams only. The centre button marked 'PLAIN' when pushed in, releases the engaged buttons. The plain button does not remain in an engaged position.

The tuck buttons are used for tuck stitches and the part buttons for slip stitches, multi-colour and intarsia designs.

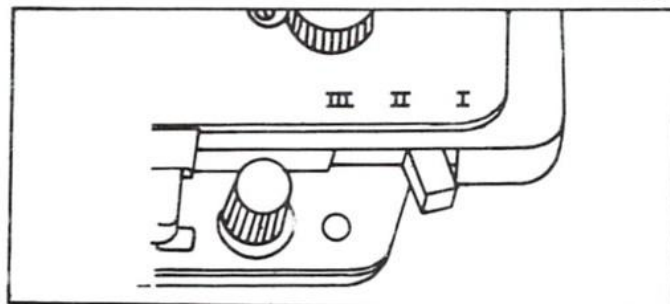


22

4. Holding Cam Levers

The holding cam levers (Fig. 23) operate the holding cams. The three positions are used as under:

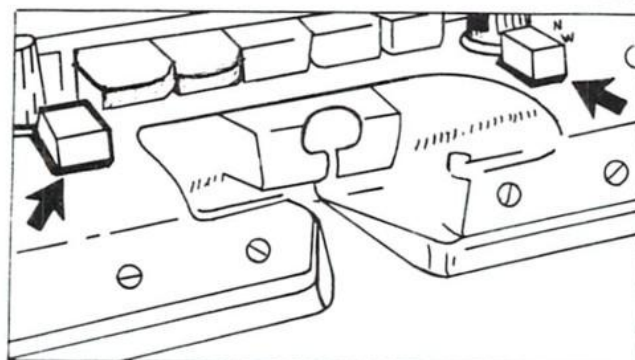
- I - For all knitting other than holding and partial.
- II - For partial knitting.
- III - For holding pattern knitting.



23

Weaving Buttons

These are located on the arm plate. For normal knitting keep them at 'N' position. For weaving patterns press them to position 'W'.

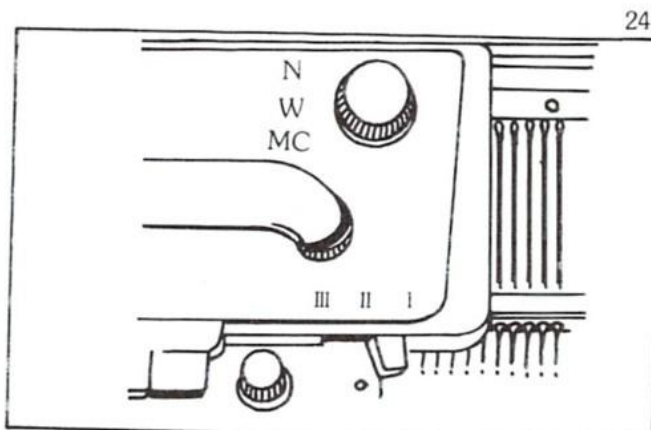


23 A

5. Multicolour Knob

The MC knob (Fig. 24) located at the right rear side of the carriage has three positions. These are used as under :

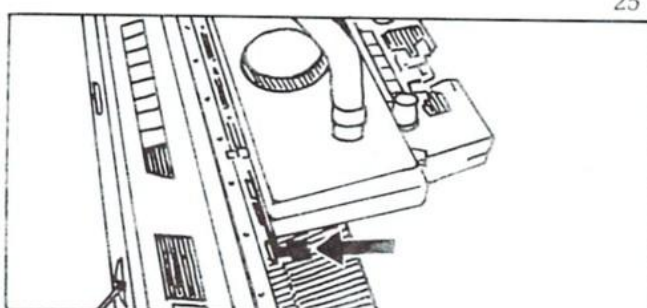
- N - Normal, tuck and slip patterns.
- W - Weaving patterns.
- MC - Multi-colour and intarsia patterns.



6. Carriage Release Mechanism

If the carriage gets jammed while knitting, it can be released with the help of an in-built carriage release mechanism.

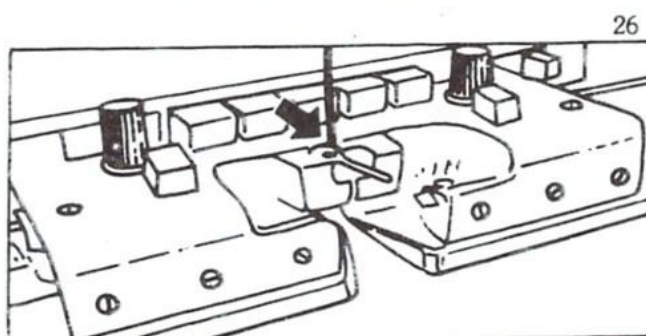
The knob on the left rear side of the carriage, when pressed release the carriage and facilitates in its repositioning. (Fig. 25).



7. Plating Yarn Feeder

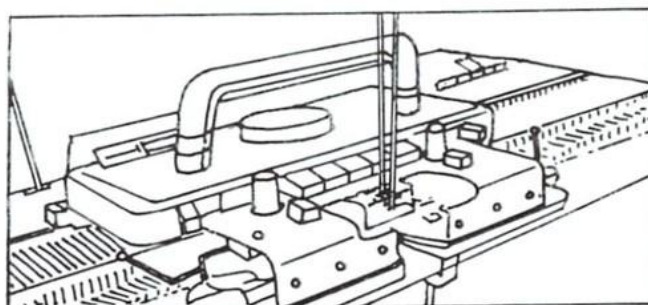
This yarn feeder has a provision for feeding two yarns simultaneously. This is used for plating designs.

To thread, open the shutter of the yarn feeder and thread the yarn into the inner slit (Fig. 26) and close the shutter.



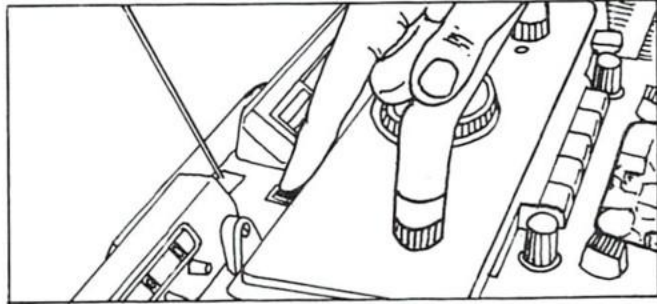
For knitting plating designs, feed the second yarn after the first yarn has been fed and the shutter closed. The second yarn is positioned outside the closed shutter. (Fig. 27).

The total thickness of the yarns fed through the yarn feeder should not exceed 6 ply. You can use either two yarns or one yarn and one thread.

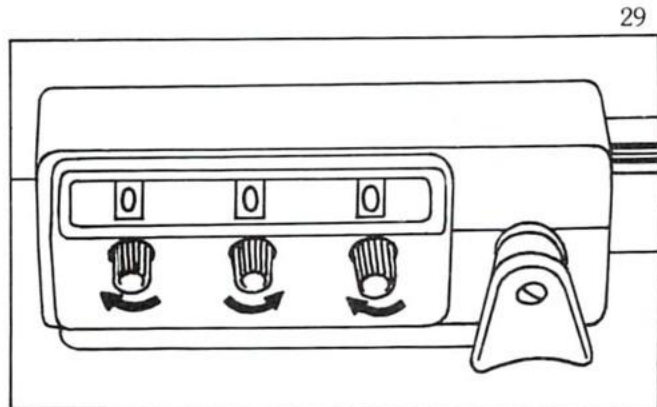


8. Row Counter:

To set the Row counter in operating position, push the Row counter tripper, located on the left rear side of the carriage away from you. (Fig. 28). To disengage, pull the tripper towards you.

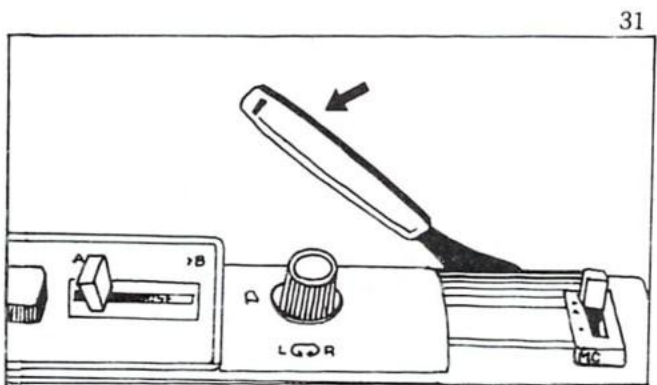
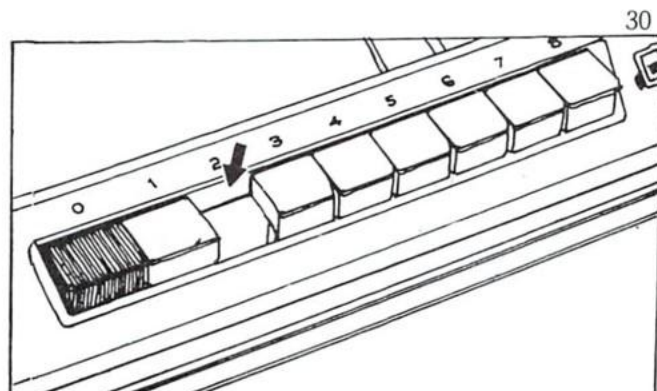


To set the row counter figures to zero, turn the knobs as indicated by the arrows. (Fig. 29). The three knobs must be rotated sequentially from right to left.

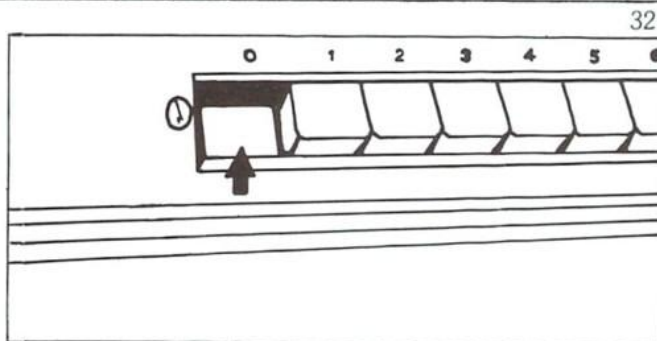


9. Needle Selection

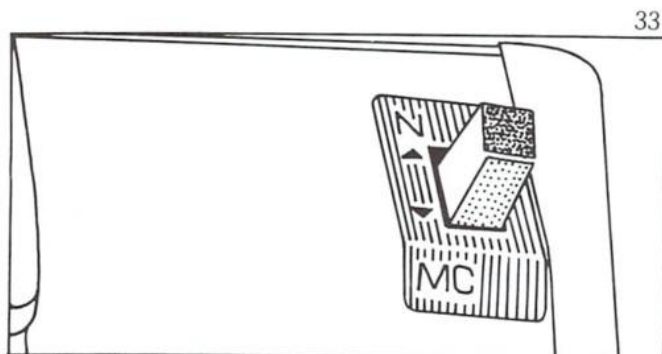
1. The needle selection in this model is semi-automatic.
2. Move the desired number of needles from 'A' position to 'B' position with the help of a plain pattern plate.
3. Press the desired needle selector button (Fig. 30). More than one button can be pressed to get different selections.
4. Keep the change lever at 'N' and reverse lever at 'A'.
5. Turn the set lever to the left as far as it will move (Fig. 31). The corresponding needles will be raised to the 'C'/D' positions.
6. Move the carriage to the left. All the needles will move back to position 'B'.
7. Turn the set lever again. The same group of needles is raised to position 'C'/D'.



8. To disengage the pressed buttons, push down the red release button. (Fig. 32).
9. Change the MC knob to MC position. Move the carriage once, all the operating needles will be pushed to 'DI' position.



10. Shift the change lever towards the MC position (Fig. 33). Press the needle selector buttons, move the set lever. The needles to be selected would move to 'DI' position.
11. The MC position of the change lever is used only for multi-colour knitting.



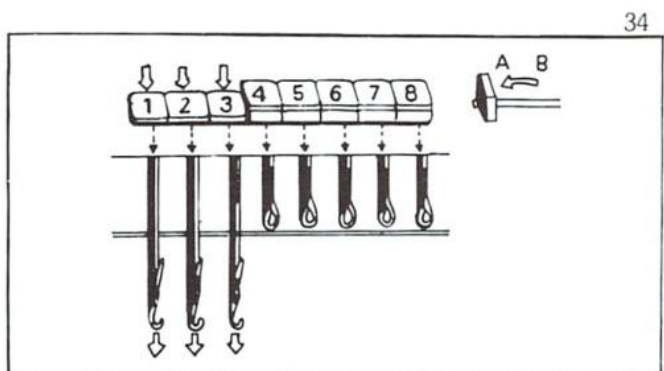
10. Use of Reverse Lever in Needle Selection

There are eight needle selector buttons. Each button controls a particular needle group. A combination of pushed down buttons will control the corresponding combination of selected needles.

The reverse lever, located at the right hand side of the needle selector buttons has two positions 'A' & 'B'.

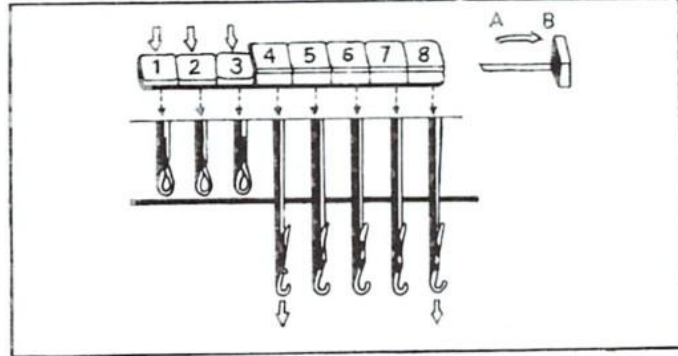
Position 'A'

With the reverse lever at 'A', needles corresponding to the pushed down buttons would be selected when the set lever is turned to the left. (Fig. 34).



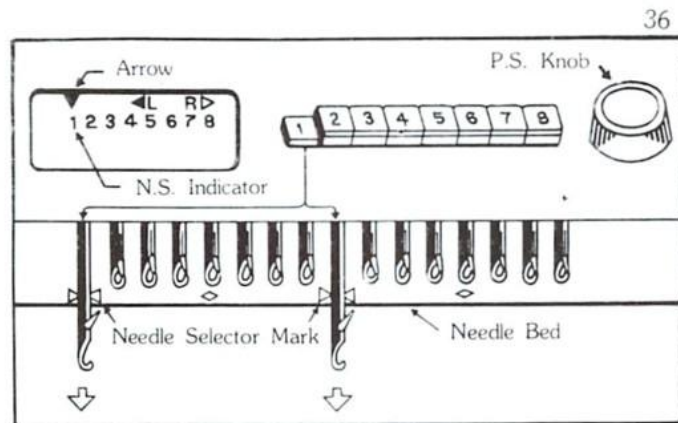
Position 'B'

With the reverse lever at 'B', needles corresponding to un-pushed buttons would be selected when the set lever is turned to the left. (Fig. 35).



11. Use of Pattern Selection (PS) Knob and Needle Slide Indicator

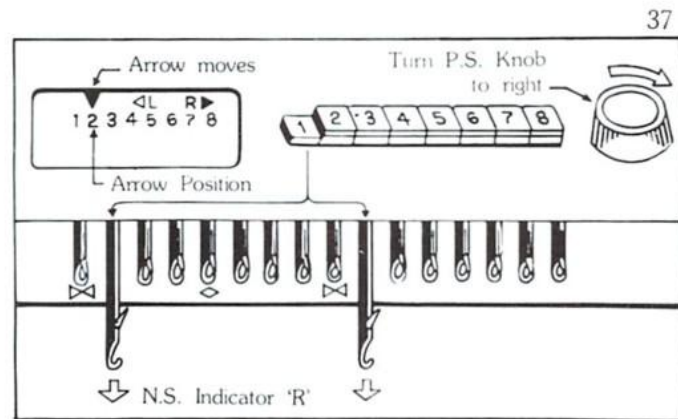
1. Press needle selector button '1' and turn the P.S. Knob, so that the arrow on the needle selector indicator is in line with the '1' position. On moving the set lever to the left, needles corresponding to the \bowtie mark on the number strip will be selected. (Fig. 36). Move the carriage to realign the selected needles to position 'B'.



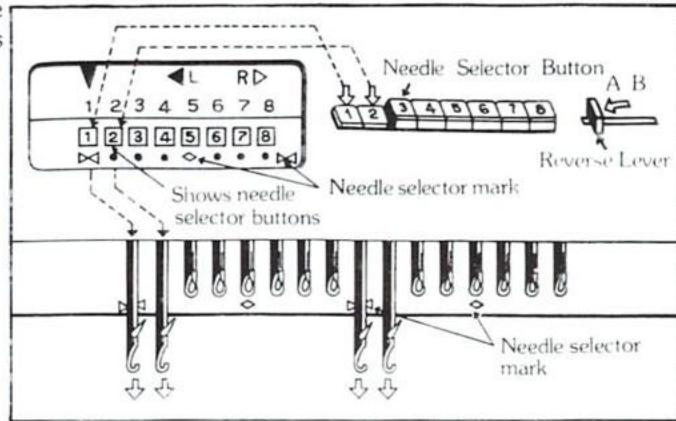
2. Now turn the P.S. Knob clockwise, so that the arrow on the needle selector indicator is at '2'. Turn the set lever. The needles on the right side of the mark \bowtie on the number strip will be selected. (Fig. 37).

The 'L' or 'R' markings indicated with a red arrow on the needle selector indicator plate show the direction in which the P.S. Knob is being rotated.

The P.S. Knob is useful for getting sliding needle selection positions for zigzag patterns.



3. Relationship between the needle selector buttons and the needles is shown in Fig. 38.

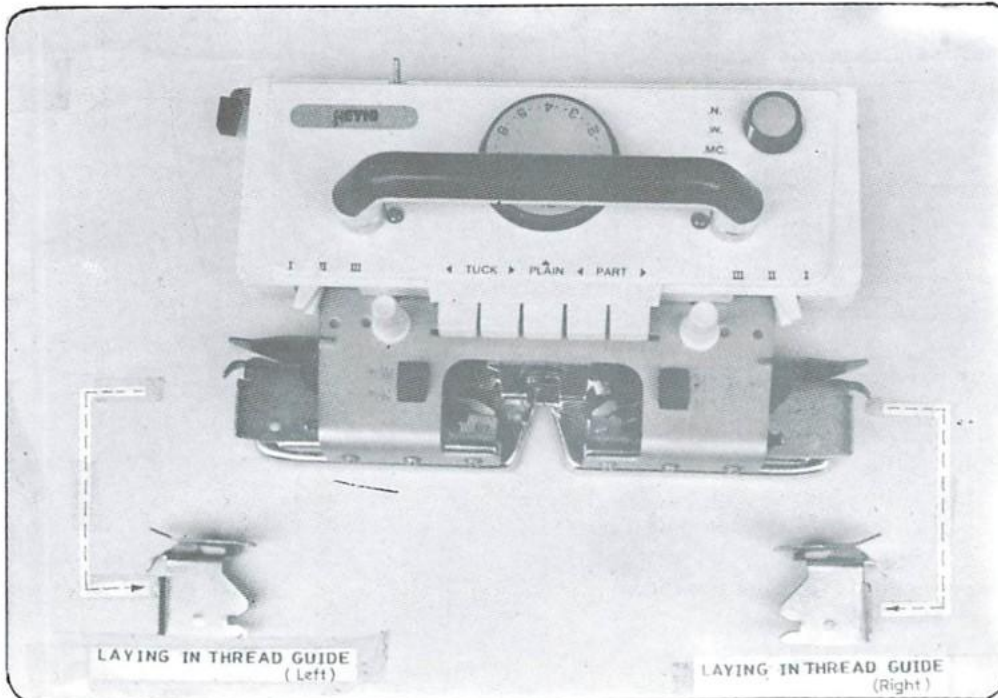


38

12. Laying - in - Yarn Guide

Two laying - in yarn guide (Left & Right) are provided with knitting machine. They are fitted on the Arm Plate as shown in the Fig. 38A. They guide the second yarn during multi colour knitting and weaving knitting. (refer page no. 22)

38 A



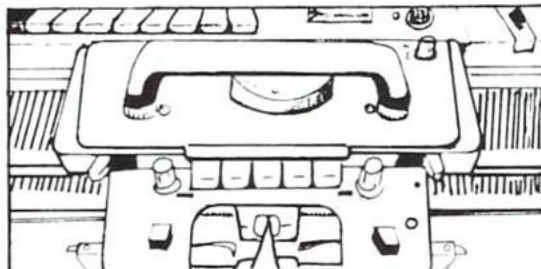
Tips on Trouble-free Knitting

- If you are using a ball, ensure that the yarn flows smoothly from the inside of the ball.
- Yarn should flow freely through the tension pole assembly.
- Look out for the end of the yarn. Connect the fresh ball/cone to the end of the yarn with a small knot.
- Move the carriage at an even speed.
- On completion of every row, ensure that the carriage is moved far enough to clear the last operating needle.
- The tension wires should be half pulled down with the yarn tension. In case of difficulty, adjust tension knobs on the tension head.
- Slippery yarns may be wound once between the tension discs to increase tension.
- Ensure that at the commencement of each row, the yarn is not loosely hanging between the garment and the yarn feeder. Such loose yarn could get entangled on the sinkers, arm plate brushes or the wheel brushes and may result in the jamming of the carriage.
- Hold the yarn above the carriage and slightly pull it upwards at the beginning of each row. Let it loose as soon as first stitch is formed.
- Use the row counter to keep track of the rows knitted. Set it to zero whenever required.
- Hook the hanging weights at the edges of the knitting.
- Remove the hanging weights when you are not knitting and the garment is to be left on the machine.
- Never knit when you are tired.
- **Take care of your knitting machine. The following is recommended:**
 - Clean the needle bed with a dry cloth.
 - Lightly oil the rails on which the carriage moves and also the needle bed and needle latches.
 - Wipe off the moving parts on the underside of the carriage and apply a thin film of oil.
 - Clean and oil your machine each time you have finished knitting.
 - Ensure there is no excess oil on any part especially those which come into contact with knitting.

Preparing To Knit

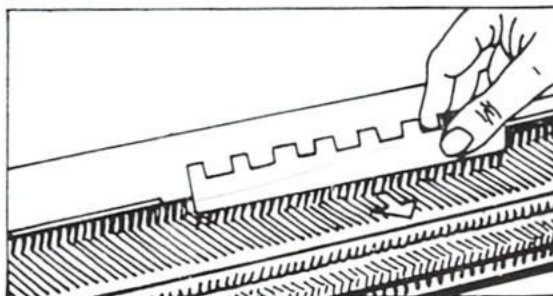
Casting On

1. Set the carriage as follows :
 - Keep the carriage on the right hand side of the needle bed.
 - Set the tension Dial, as required (refer to page 8)
 - Keep the weaving buttons at 'N'.
 - Press the 'PLAIN' P.S. Button.
 - Set both the holding cam levers at position 'I'
 - Set the MC knob at 'N' (See Fig. 39).



39

2. Needle bed
 - Push down the red release button.
 - Keep the reverse lever at 'A'
 - Change lever at 'N'.
 - Turn the P.S. Knob until the red arrow on the N.S. Indicator is opposite '1'.
 - Select needles with plain plate to position 'E' (See Fig. 40)



40

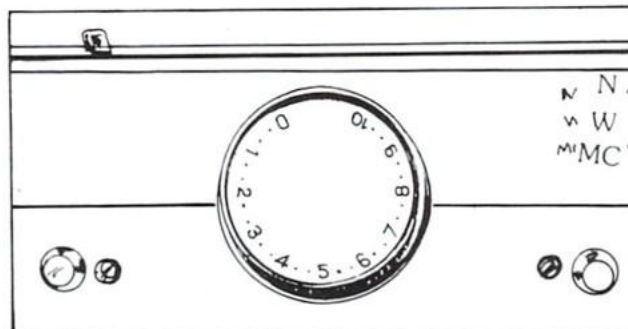
3. Move carriage from right to left. Needles from 'E' position will move back to 'B' position. Move carriage from left to right..

Press alternate needle selection buttons. With the help of set lever take a stroke. Press both the PART buttons.

4. Set the Tension Dial with respect to the yarn thickness. The table below gives approximate setting of the tension Dial numbers with respect to the yarn thickness : (Fig. 41).

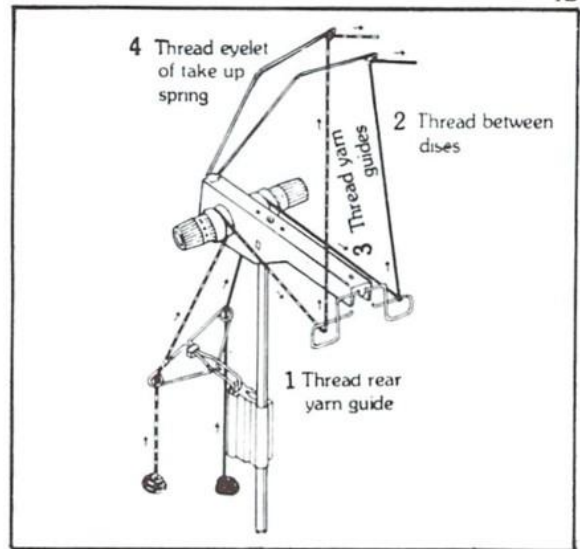
- | | |
|-----|--------------------------|
| 1-2 | Thread yarn |
| 3-4 | 2 ply /3 ply fine yarn |
| 5-6 | 3 ply medium yarn |
| 7-9 | 4 ply medium/Heavy yarn. |

5. Thread the tension pole assembly. The auto-tension unit

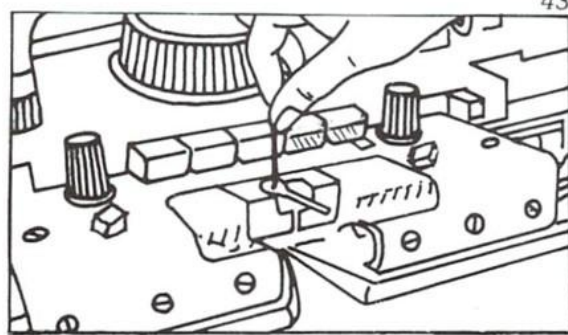


41

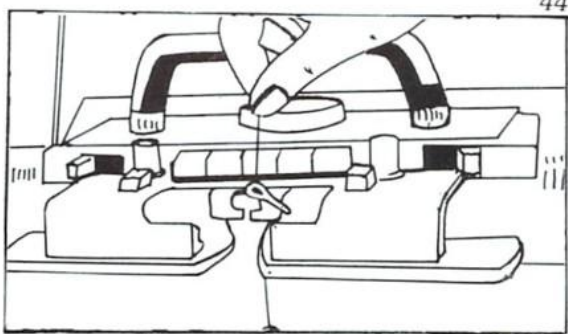
5. Thread the tension pole assembly. The auto-tension unit takes up the slack of the yarn and feeds the yarn to the yarn feeder at an even-tension. In order to knit even stitches, the yarn must be threaded correctly through the auto-tension unit. The unit can take up to two yarns simultaneously. Proceed to thread the unit as shown in figure 42.



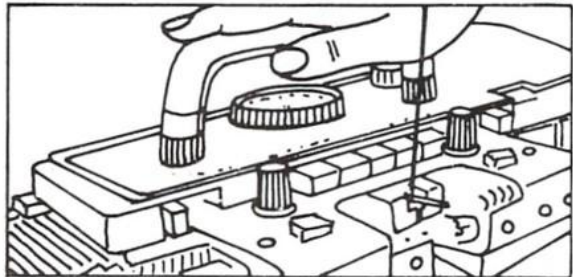
6. To thread yarn open the shutter and insert thread into the inner slit (See Fig. 43)



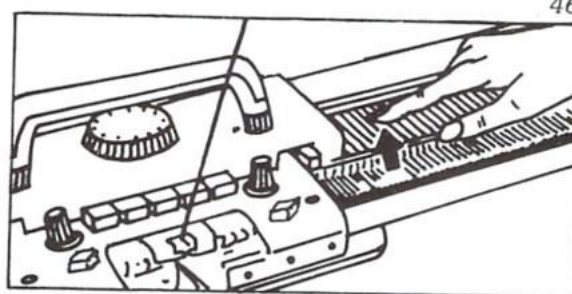
7. Hold the end of the yarn with your left hand. Push the yarn back into the slit of the yarn feeder till you hear the click of the yarn feeder spring. (See Fig. 44) Close Shutter.



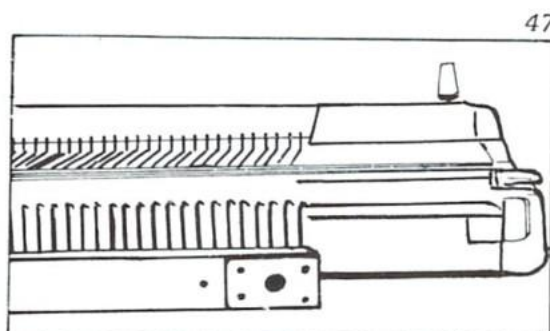
8. Move the carriage once from right to left, so that it operates all the needles drawn into position B. The needles at position B will pick up the yarn. (See Fig. 45).



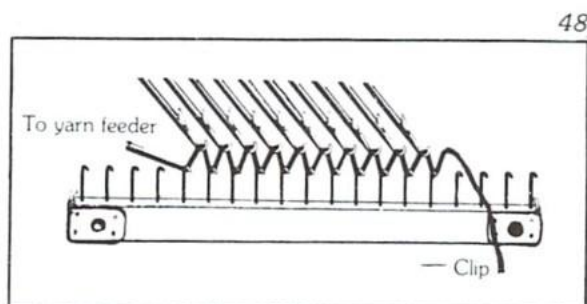
9. If the last few needles come up from the line of other threaded needles, push them back with your finger. (See Fig. 46)



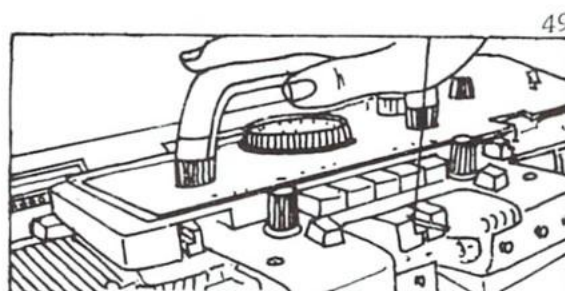
10. Carefully hang the garment holder on the garment (knitted) hooks. (See Fig. 47)



11. Turn the loose end of the yarn round the garment holder clip to keep it out of the way and to secure the first stitch. Bring the unstitched yarn beyond the operating needles above the sinkers of the garment holder. Press plain button to disengage PART buttons (See fig. 48)

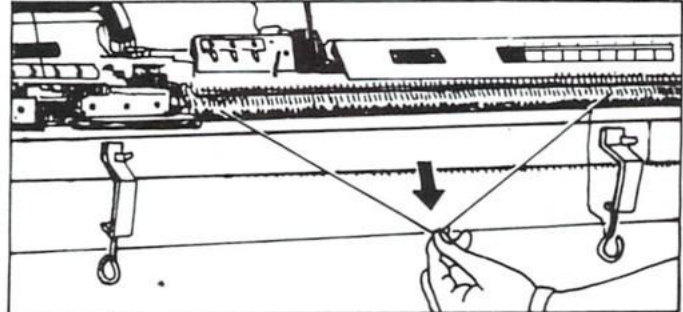


12. Move the carriage from left to right and continue knitting. Move the carriage at an even speed and listen for a click at the end of each row. (See Fig. 49).

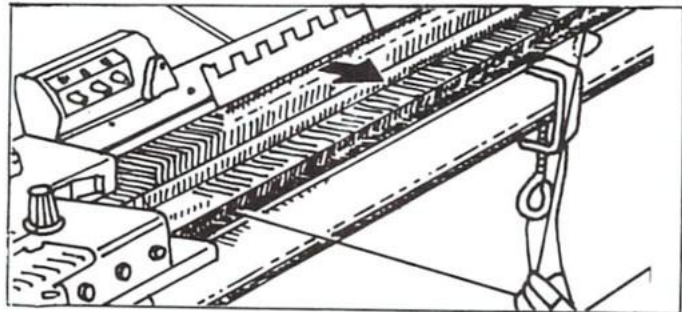


Casting on-Alternate Technique

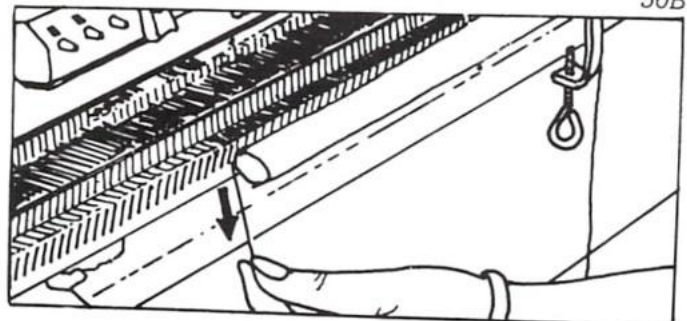
1. Perform operations 1, 2, 4, 5, 6 & 7 as explained earlier.
2. Move the carriage from right to left with the yarn.
3. Lay the cast on thread on the knitted yarn between the needles and the sinkers. With your left hand pull the cast on thread so that it lies straight. (See Fig. 50).



4. Bring out all the needles from B position to E, with the plain pattern plate. (See Fig 50A)
5. Knit a few rows by moving the carriage back and forth across the needle bed.



6. Pull out the cast on thread as shown in Fig 50B. Now the casting on has been completed. Change the setting of the tension dial according to the thickness of the yarn to be knitted for the actual garment.



How to Determine the Gauge

1. Before you can knit a garment it will be necessary to know the numbers of needles required for the desired garment width and the number of rows for its length. For this, you will have to determine the gauge by making a swatch.
2. Knit a small test piece on about 30 needles, knit 30 rows with a suitable tension dial setting (as explained earlier on page 8 & 9). Put the swatch on a flat surface.
3. Count the number of stitches actually knitted per inch across, and the number of rows per inch down the swatch.

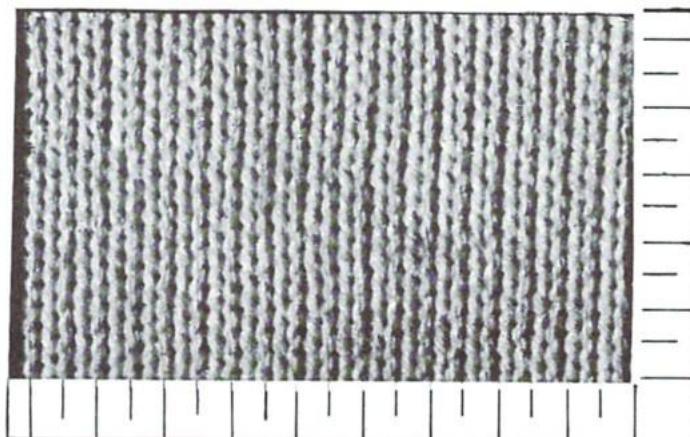
Based on this mathematical approach it soon becomes a simple matter to create your own garments on your knitter with the assurance that the size will be correct. It is recommended that a small test swatch be made before starting each garment to prove correctness of gauge.

Note

In case of some yarns it may be desirable to press the swatch under a damp cloth before measuring it.

When using synthetic yarns, it is advisable to measure the test swatch before and after pressing, in order to see how the material reacts.

It is always better to leave the test swatch for 24 hours before measurement.



How to Knit with Thick Yarns

For thick or six ply yarns use every alternate needle for knitting. For knitting yarns thicker than six ply use every third needle.

Make a tension swatch before commencing knitting with thick yarns.

Procedure

Push up every alternate needle to B position within the range of sixty needles, thirty needles on each side of O. Knit a tension swatch, as in the case when all needles were being used.

After making the tension swatch, knit as per your requirements.

Pattern Knitting

How to read Pattern Knitting Tables

Representative knitting patterns have been included for you to acquaint yourself with pattern knitting. The lower section of the table shows operating parts of the machine. Operate the machine in the sequence as given below:

1. Pattern Steps

Operate the machine in the numerical order of steps. The required operation in each step is shown in the lateral rows of the table.

2. Yarn-in Feeder

This indicates the colour of the yarn in the yarn feeder. Main colour is designated as 'a' and the sub-colours as 'b', 'c' etc.

3. Tension Dial at

Tension Dial number indicates the standard tension of the garment for standard 4 ply. wool to be knitted. This varies with the change in wool quality and personal interest.

4. Left Holding Cam Lever at

The left holding cam lever has three positions, i.e. I, II and III. Position the left holding cam lever to the number designated by means of a '■' in the corresponding column. If the position is required to be changed for the Pattern, the same is indicated against the pattern step

5. Tuck Button to be pressed

The left and right tuck buttons are represented by 'L' & 'R' respectively. Press the tuck button as indicated by means of a '■'.

6. Plain Button

Press the plain button to disengage the tuck or part buttons in the step as indicated by a '■'.

7. Part Button to be pressed

The left and right part buttons are represented by 'L' & 'R' respectively. Press the corresponding part button in the step as indicated by a '■'.

8. Right Holding Cam Lever

The right holding cam lever also has three position i.e. III, II and I. Set the holding cam lever to the required position as indicated by a '■' in the respective column.

9. MC Knob at

The MC Knob has three positions i.e. N, W & MC. Turn the knob to the corresponding position as indicated by a '■'.

10. Weaving Brush Buttons on

For all patterns except weaving, the buttons are to be kept at the 'N' position. For weaving patterns they are to be pressed to the 'W' position. Follow the directions given in the respective column.

11. Needle Selector Button to be pressed

Numbers 1 to 8 shows the corresponding needle selector buttons that should be pressed to obtain the desired selection and the set lever must be turned. For example, $\boxed{5}$ means that number 5 button should be pressed and the set lever should be turned to the left.

■: means that the set lever should be turned left without re-pressing the needle selector button.

12. Reverse Lever at

The reverse lever positions A & B are shown in the two columns. Keep the reverse lever at the position as indicated by a '■'.

13. Needle Slide Indicator at

Turn the PS knob in a clockwise or anti-clockwise direction to get the indicated number against the red arrow on the NS indicator.

14. Change Lever at

Keep the change lever to either 'N' or 'MC' as indicated by '■' in the respective column.

NOTE:

The set lever must be turned to the left only after the needle selector buttons are pressed, the reverse lever has been adjusted, the needle slide indicator is properly adjusted and the change lever is positioned to either 'N' or 'MC' as desired.

15. Laying-in-thread

This indicates the colour of the yarn being used for multi-colour patterns. Laying-in-thread is used by affixing the two laying-in yarn guides by pushing them into the corresponding slots in the arm plate. The direction of the laying-in yarn is to be manually changed into the respective yarn guide at the end of the each row.

16. Direction of Carriage

Move the carriage in the direction of the arrow. All patterns shown are with the carriage on the right hand side at the commencement of the first row.

NOTE :

When you have completed the steps of the pattern, start again from step '1' to repeat the patterns.

How to Knit Multi Colour Patterns

- Take out laying in yarn guides 'L' / 'R' from the accessory box.
- Position 'L' yarn guide on the left side of the Arm plate. Slide it underneath to ensure that open jaw of the yarn guides do not rub against the Sinkers of the machine.
 - Repeat for the right side yarn guide.
 - Move the carriage 2/3 times doing plain knitting and ensure no unusual noise or rubbing action of laying in yarn guide with the sinkers or with needle hooks is observed.
 - Bring your carriage to 'L' side.
 - Turn to set the M.C. Knob on the carriage to position M.C.
 - Move the carriage to the right, see that all needles of the knitting zone are positioned at D1 (Position of the bed).
 - Knit 2 more rows and ensure that every time after completion of row needles remains at D1 position.

NOTE :

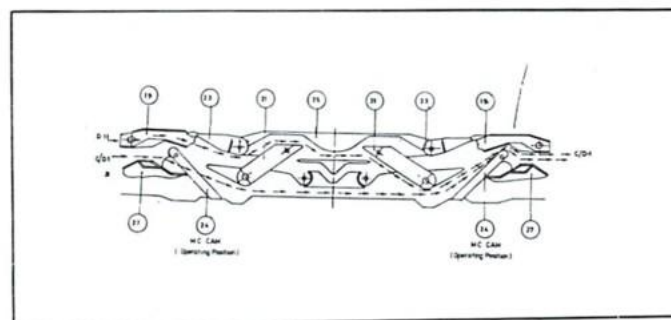
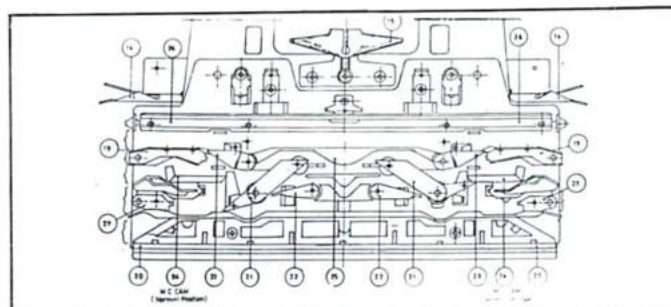
This will ensure that your M.C. Cams are functioning properly. In case, you find the needle goes back to position 'B' follow the steps given below :-

- Remove the thread from the Arm Plate
- Release Carriage Assembly
- On the table put carriage upside down

- Take a piece of cloth and dip it in oil. Use oil-soaked cloth on both the M.C. Cam and move them 2/3 times. To ensure M.C. Cam movement is perfect after leaving it comes back to the operation position.
- For your reference, 2 sketches of the carriage assembly highlighting the M.C. Cams in Different position is shown below.
- Now thread the tension head assembly for the second yarn and position this yarn outside the shutter in the Arm plate assembly.
- Loose end of the yarn which should be tightened with the clamp at the bottom of the table.
- Press the part buttons on the carriage.
- Refer the pattern knitting chart given in the book for M.C. Position on Page No. 28.

NOTE :

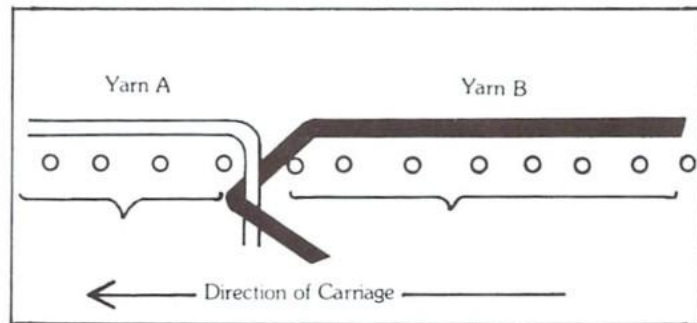
- Remember pattern charts are divided in two halves :
Carriage - Pattern setting
Please follow the steps given in the carriage half for the carriage and ensure that all settings are done as per the carriage settings given in the pattern chart.
Now move to the pattern setting; all these settings are to be done on the main machine.
Please follow all the steps as per the pattern chart and ensure all settings are implemented.
- Please remember when you knit any design on this knitting machine, the black column in the row-indicates the selection of the machine and to get selection you must use set lever handle. Fit it on the back side of the machine as shown on page 1 in the photograph of the knitter.
- Take a stroke by moving the set lever from 'R' to 'L'. You will observe against the pressed button (on the needle selector assembly). Needles will move forward thereby creating to two different positions in the knitting zone.
- Move the second yarn in to the open jaw of yarn guide facing knitting needles.
- Move the carriage; you will observe both the yarns will knit.
- Remember even if there is a one black column in pattern setting, you have to take a stroke by moving set lever handle.
- Every time take a stroke and knit till it is completed.



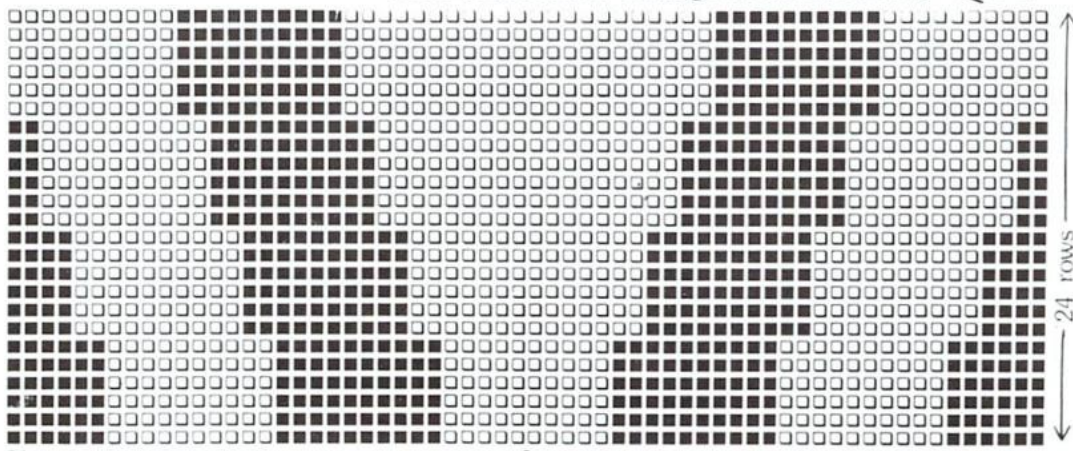
7. Intarsia Patterns

1. With a simple process of manually laying-in thread, you can create your own intarsia patterns and knit a picture, a name or an abstract design.
2. One row before you want to start the intarsia pattern, with the carriage on the left hand side, position the MC Knob to 'MC' and move the carriage to the right. The needles will be aligned to the 'DI' position. Remove the main yarn from the yarn feeder.
3. Press both the part buttons.
4. Select the colours of the yarn to be used as per your design. It is best to use the same thickness and quality of yarn.
5. While laying-in the first row of yarn, have the loose ends towards the carriage side.
6. At the finish of laying-in, lightly hold the yarn ends under the needles and move the carriage across. This will knit the row and return the needles to the 'DI' position. Lay the yarn across the number of needles as per the design and knit the second row. Continue knitting till the end of the design and then feed the main yarn into the yarn feeder. Move the MC Knob to the 'N' position, press plain button and continue to knit.

Place the balls/cones on the floor in front of the knitter in the order in which you require them for design. Start laying-in the yarn from the carriage side. Always bring the following yarn to cross over the preceding yarn as you lay it on the needles. (Fig. 51). This will prevent the formation of holes.



Note : Direction of Carriage for the first row is ←



Knitting Techniques

1. Plain Stitches

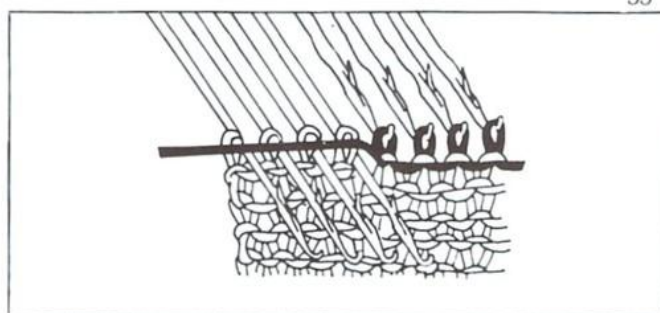
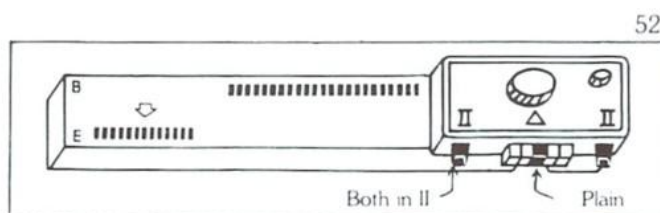
Plain knitting is the simplest form of machine knitting. However, while knitting shoulders, necks, sleeve tops etc., it is necessary to provide a curve. This is achieved by increasing or decreasing stitches or using the partial knitting techniques.

Cast on and knit a few rows of plain stitch.

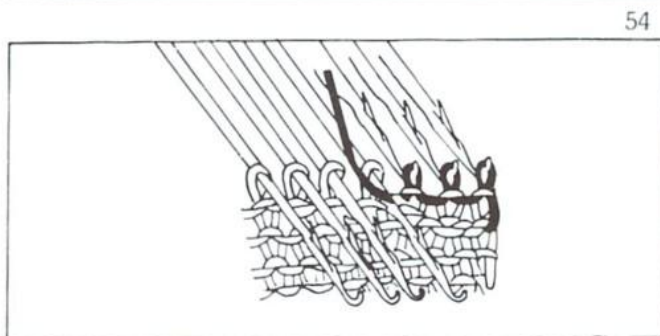
Partial Knitting in Plain Stitch

Decreasing Stitches

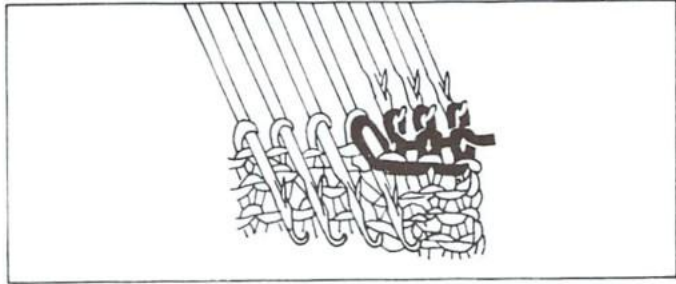
1. With the carriage on the right hand side, position both the holding cam levers to 'II'.
2. On the opposite side of the carriage, bring out the knitted needles which are not to be used to position 'E'. Knit one row. (Fig. 52). The number of needles to be raised to position 'E' depends on the shape of the curve desired. The needles at position 'B' pick up the yarn, whereas the needles at position 'E' are inoperative and the yarn passes over them. (Fig. 53).



3. To prevent a hole being formed, pass the yarn under the first needle at position 'E' and over the other needles. (Fig. 54).



4. Move the carriage back to the right. (Fig. 55).
5. Repeat steps 3 & 4 and continue knitting bringing out the increased number of needles to position 'E' on the opposite side of the carriage till such time that the desired curve is obtained.

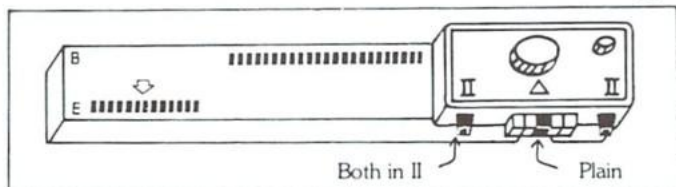


55

Increasing Stitches

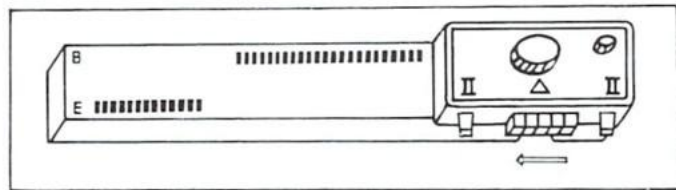
1. After knitting a few rows of plain stitch with the carriage on the right hand side, position both the cam levers to 'II'.

2. Depending on the curve that you want, bring up the desired number of needles without knitting on the opposite side of the carriage to position 'E'. (Fig. 56).



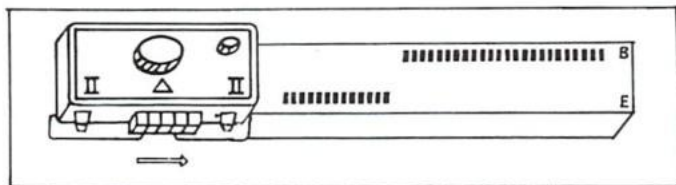
56

3. Move the carriage to the left. (Fig. 57). Stitches are formed on the needles at position 'B' and yarn lies above the stems of the needles at position 'E'.



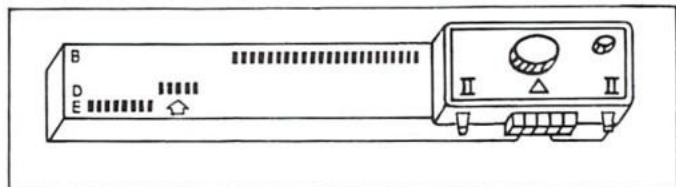
57

4. Pass the yarn under the stem of the first needle at position 'E' and knit back one row. (Fig. 58).



58

5. Manually push back needles from position 'E' to 'D' by number of stitches you want to increase. (Fig. 59).



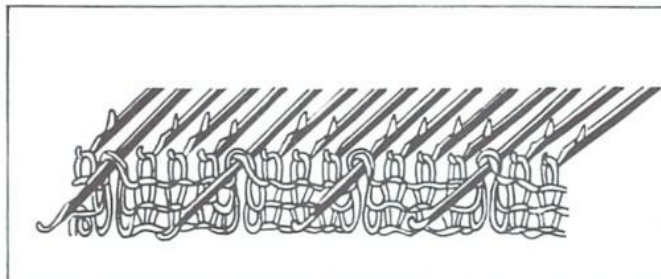
59

6. Repeat steps 3, 4 & 5 till such time that the required curve is obtained.

2. Holding Patterns

Partial Knitting of Holding Stitch

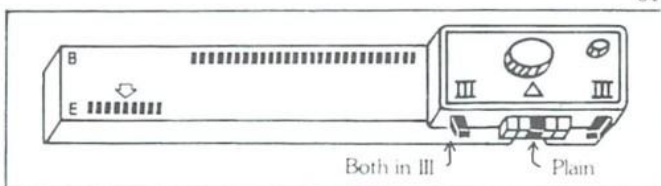
We take one holding pattern stitch for explanation. Every fourth needle has 2 holding stitches and 2 plain stitches alternatively. (Fig. 60).



60

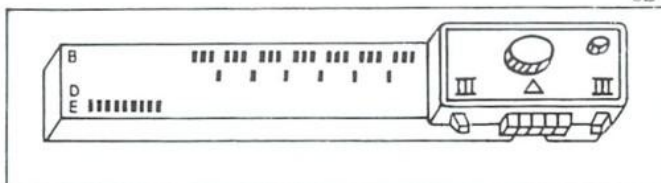
Decreasing Stitches

1. With the carriage on the right hand side, set the holding cam lever to position 'III' and raise the needles you want to rest to position 'E'. (Fig. 61).



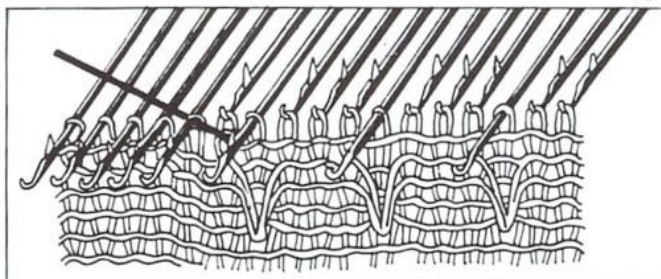
61

2. By using the needle selector buttons, select the needles to hold upto position 'D'. (Fig. 62).



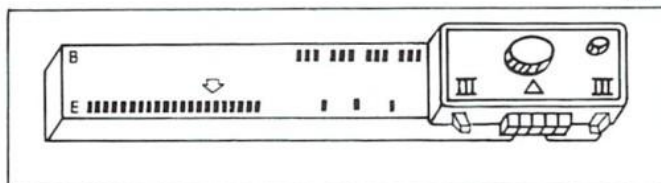
62

3. Knit two rows, but at the end of the first row, pass the yarn under the stem of the first needle in position 'E' towards the left hand side of the machine. (Fig. 63).



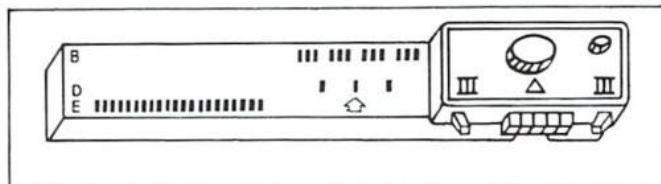
63

4. Raise the several needles you want to rest to position 'E'. (Fig. 64).



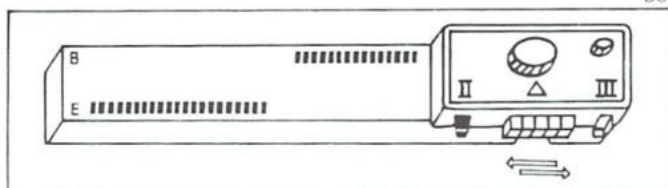
64

5. Move back the needles which have holding stitches from position 'E' to 'D'. (Fig. 65).

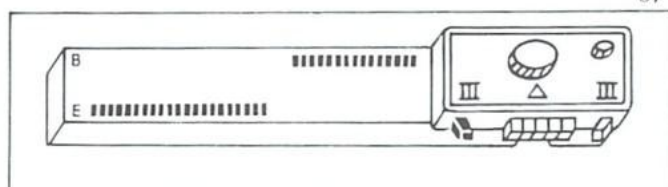


65

6. Move the holding cam lever on the knit side of the carriage from 'III' to 'II'. (Fig. 66). Knit two rows.

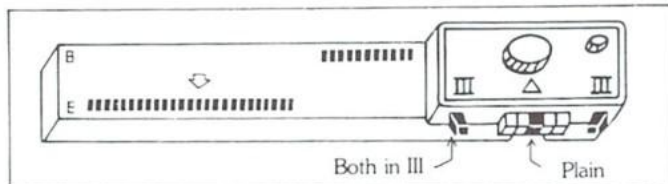


7. Shift the holding cam lever from 'II' to 'III' and repeat the above mentioned steps till such time the necessary curve is obtained. (Fig. 67).

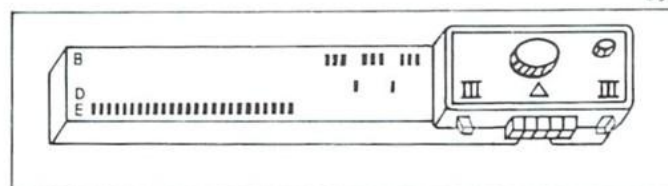


Increasing Stitches

1. With the carriage on the right hand side, raise the needles you want to rest to position 'E' and set both the holding cam levers to position 'III'. (Fig. 68).

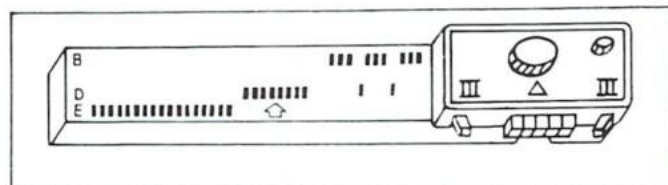


2. By using the needle selector buttons, select the needles to hold up to position 'D'. (Fig. 69).

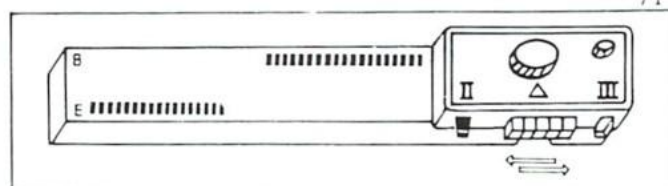


3. Knit two rows, but at the end of the first row, pass the yarn under the stem of the first needle at position 'E'.

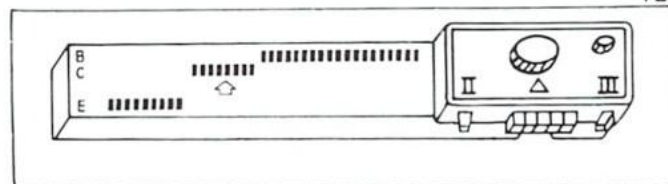
4. Move back the needles which have made holding stitches and those which you want to pick up the yarn from 'E' to 'D'. (Fig. 70).



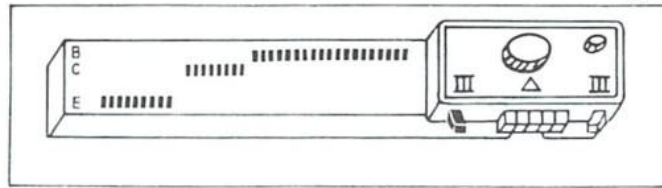
5. Shift the holding cam lever on the knit side to position 'II'. Knit two rows. (Fig. 71).



6. Move back the needles you want to operate from 'E' to 'C'. (Fig. 72).



7. Shift the holding cam lever from 'II' to 'III'. (Fig. 73). Repeat steps 2, 3, 4, 5 & 6.



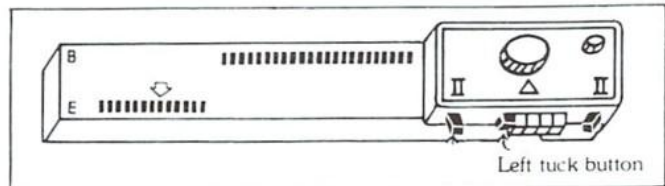
3. Tuck Patterns

Partial Knitting of Tuck Patterns

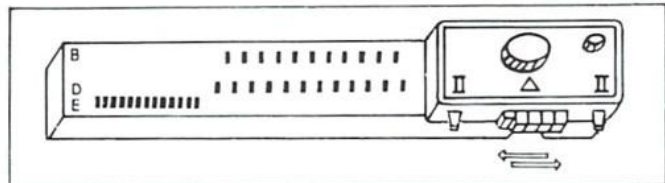
1. As an example, we select a tuck pattern where every other needle has a tuck stitch and a plain stitch alternatively. When the carriage is on the right hand side, push the left 'TUCK' button.
2. When the carriage is on the left hand side, disengage the left 'TUCK' button and push in the right 'TUCK' button.
3. Position both the holding cam levers to 'II'.

Decreasing Stitches

1. Raise the number of needles to position 'E'. (Fig. 74).

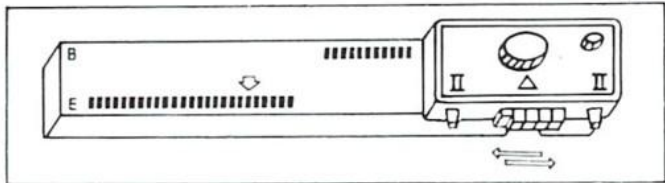


2. Using the needle selector buttons, select every alternate needle to position 'D'. (Fig. 75).



3. Knit two rows. At the end of the first row, pass the yarn under the stem of the first needle in position 'E'.

4. Bring forward the needles you want to rest to position 'E'. (Fig. 76).

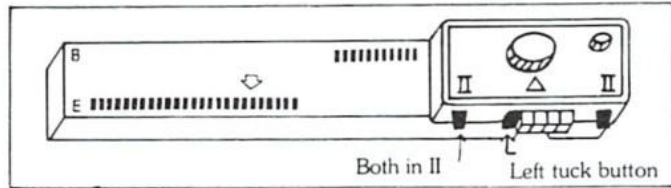


- Using the needle selector buttons, select different needles from step 2. Knit two rows.

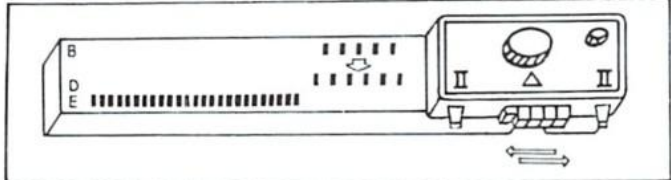
5. Repeat steps 1, 2, 3 & 4 as per your requirement.

Increasing Stitches.

1. With the operating needles at 'B' position, raise the you want to rest to position 'E'. (Fig. 77).

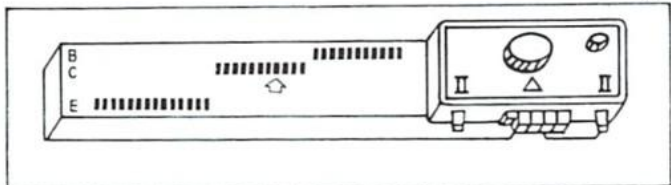


2. With the help of needle selector button, select the needles to position 'D'. (Fig. 78).

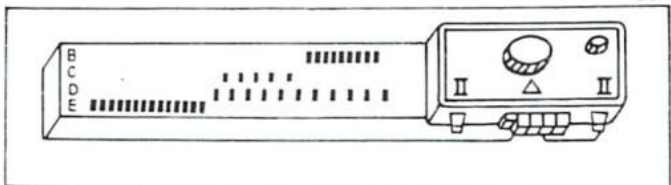


3. Knit two rows, but at the end of the first row, pass the yarn under the stem of the first needle at position 'E'.

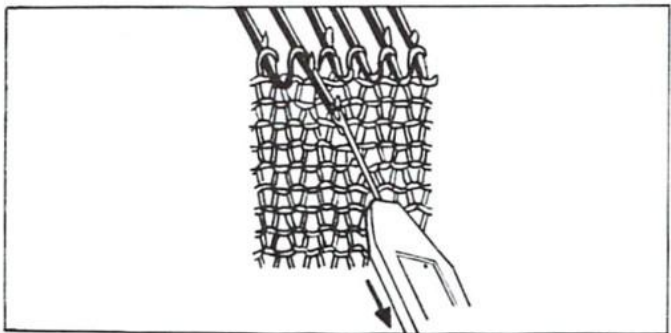
4. Move back the needles that you want to operate from position 'E' to 'C'. (Fig. 79).



5. Using the needle selector buttons, select different needles from step 2. (Fig. 80).



6. Using a transfer tool, transfer the stitch on the back of the latches in position 'C' on to the hooks of the needles and place these needles at position 'B'. (Fig. 81).



7. Repeat steps 2, 3, 4, 5 & 6.

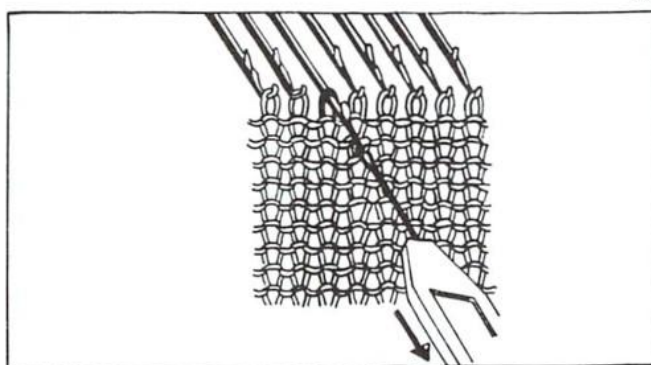
4. Partial Knitting of Multi-colour, Zigzag and Weaving Patterns

1. Set the holding cam levers to position 'II' and bring forward the needles you want to rest to position 'E'.

2. Select the needles according to the design, lay across the laying-in thread and knit one row.
3. Pass the yarn and the laying-in thread under the stem of the first needle at position 'E'.
4. Repeat steps 2 & 3 depending upon the shape of the curve required.

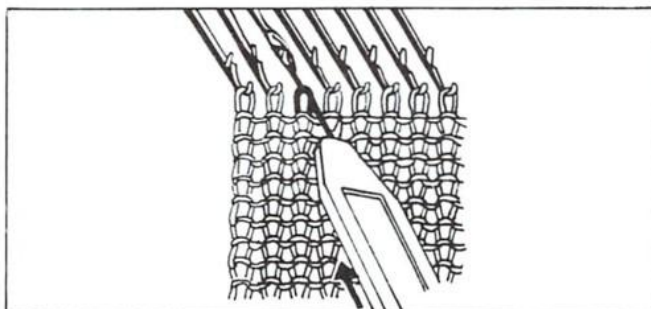
5. Transferring a Stitch

1. Hold the transfer tool parallel to the needle from which you want to transfer the stitch. Place the eye of the transfer tool into the hook of the needle. Pull the transfer tool and needle forward. The stitch on the hook of the needle will slide onto the stem of the needle. (Fig. 82).



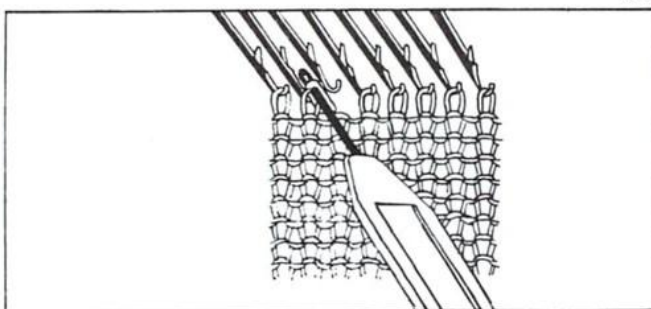
82

2. Push the transfer tool and the needle until the stitch is transferred from the needle on to the stem of the transfer tool. (Fig. 83).



83

3. Raise the transfer tool with the stitch on it and place the eye of the transfer tool onto the hook of the adjacent needle on which the stitch is to be transferred. Raise the transfer tool, so as to slip the stitch from its stem on to the hook of the latch needle. Remove the transfer tool from the needle hook. (Fig. 84).

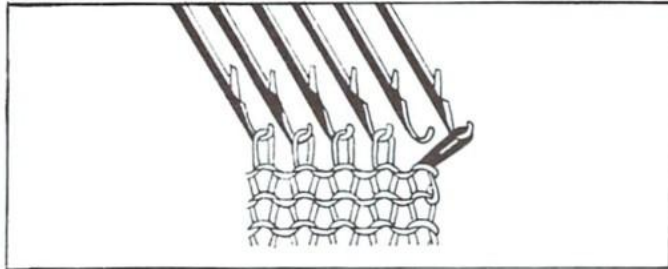


84

6. Increasing a Stitch

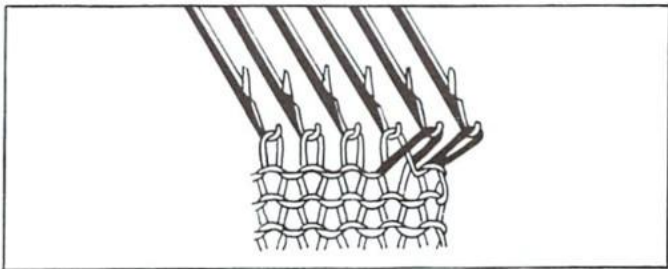
85

1. By using a transfer tool, transfer the stitch from the corner needle on to the adjacent empty needle. (Fig. 85).



2. To fill the empty needle from which the stitch was transferred, pick up the stitch from the lower row of the adjoining needle. (Fig. 86).

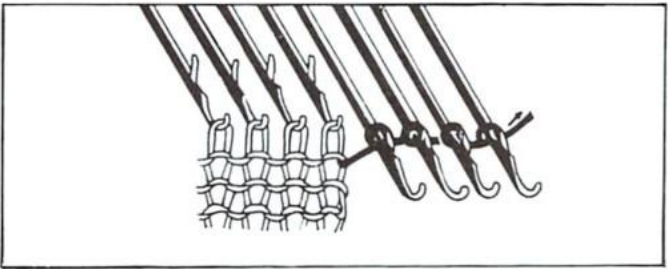
86



7. Increasing Several Stitches

87

1. On the side of the carriage depending upon the number of stitches you want to increase, bring forward the needles to position 'E'. Wind the yarn around the stem of each needle in an anti-clockwise direction for the needles on the right hand side of the machine and in a clockwise direction for the needles on the left hand side of the machine. Set the holding cam levers to position 'I' and knit (Fig. 87).

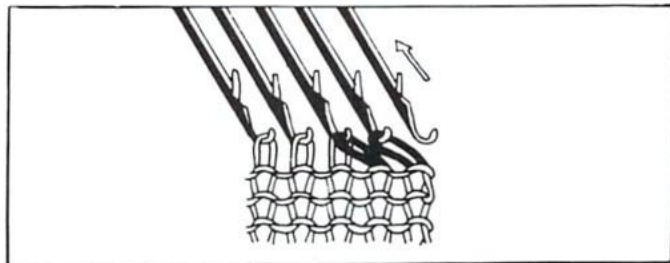


8. Decreasing a Stitch

One stitch at either edge

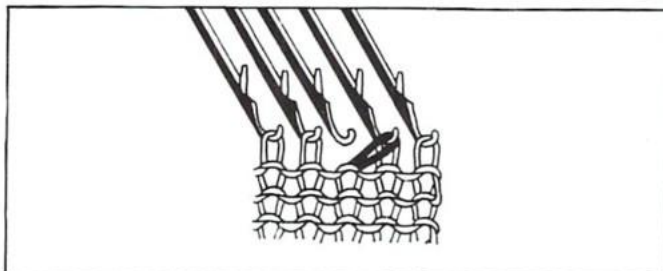
88

1. Using a II:I transfer tool, transfer two stitches at the end of the inside needle and push the empty needle to position 'A'. (Fig. 88).



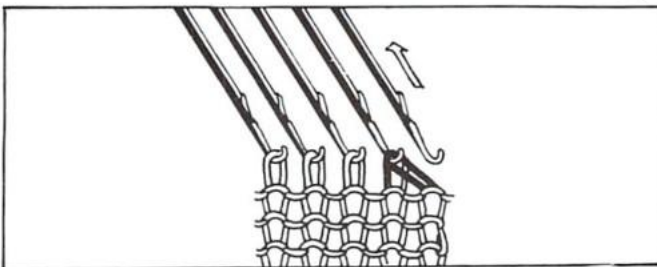
One stitch at the middle of the row

1. With the help of a transfer tool, transfer the stitch that you want to decrease to the adjacent needle. If required, place the empty needle out of action to position 'A'. (Fig. 89).

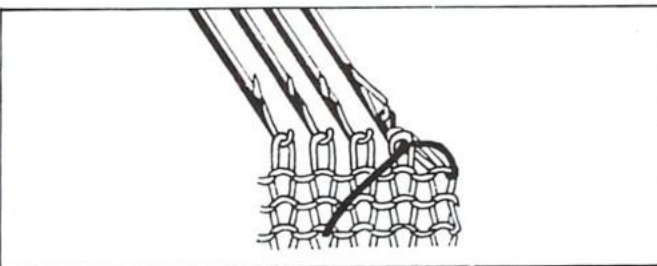
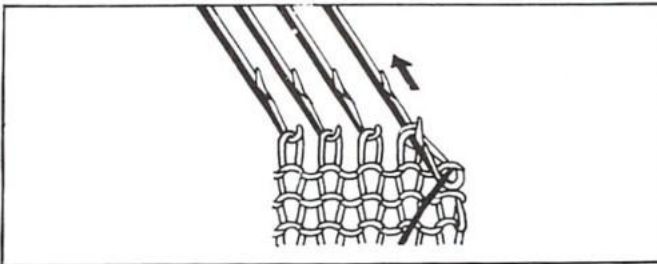


9. Decreasing several stitches

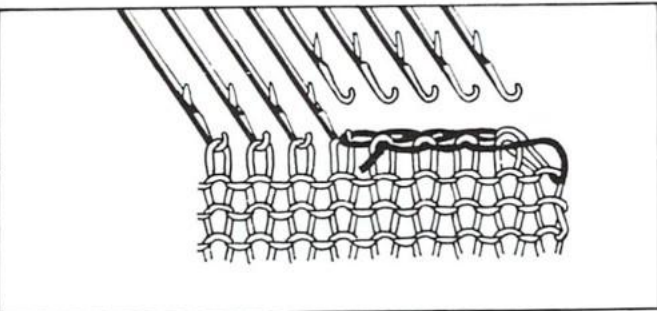
1. Decrease from the side of the carriage. Transfer the first stitch to the adjacent needle and push the empty needle to position 'A'. (Fig. 90).



2. Bring out the needle with the two stitches, so that the stitches slip behind a latch of the needle. Lay yarn in front of the latch and manually push back the needle to align with the other operating needles. A stitch would be formed. (Figs. 91 & 92).



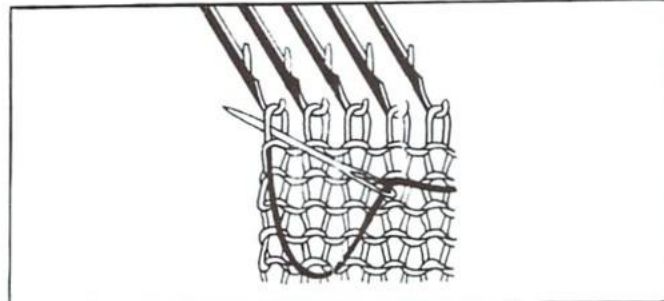
3. Repeat this process till you have decreased the required stitches. Transfer the last stitch on to the adjacent needle. (Fig. 93).



10. Binding Off

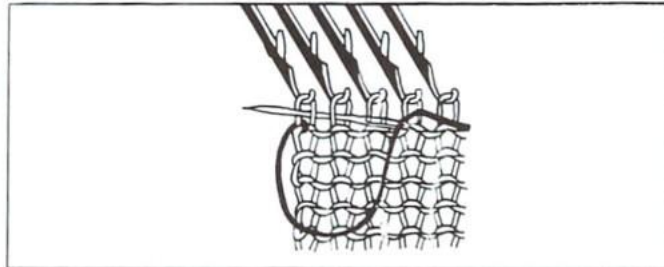
Pass the yarn through the eye of the tapestry needle, and proceed as under :

1. Pass the needle through the first stitch starting from the left hand side. (Fig. 94). Pass the needle through the second and the first stitch. Take it out. (Fig. 95).



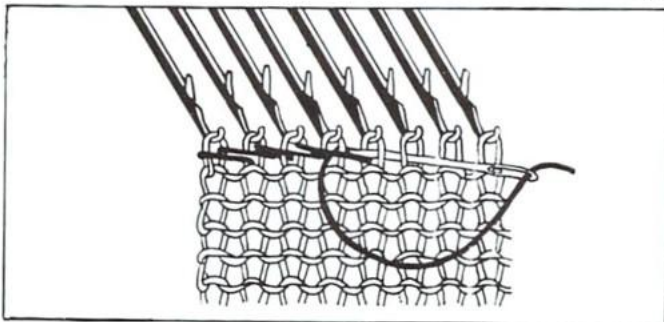
94

2. Pass the needle through the third and the second stitch.



95

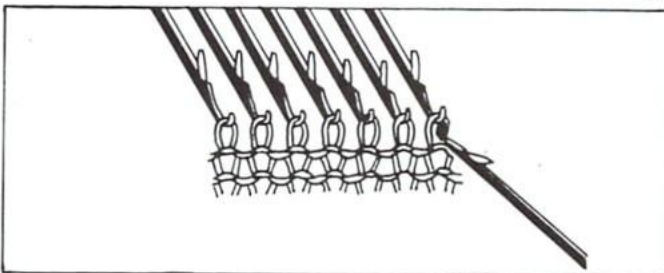
3. Repeat this process till you have reached the last stitch. (Fig. 96).



96

11. Casting Off

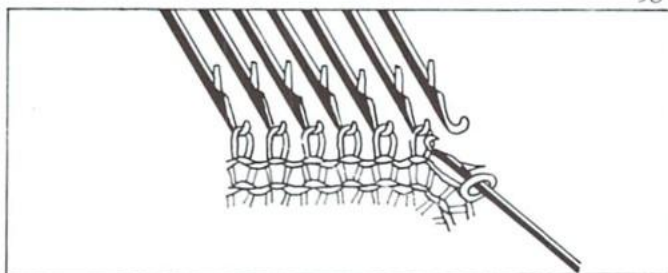
1. Knit the last row with a tension two or three numbers higher than used for the garment.
2. Start casting off from the side opposite the carriage.
3. Pull the garment down with the left hand and insert tappet needle into first needle. (Fig. 97).
4. With a tappet needle hooked on the stitch, pull the needle forward and push it back. The stitch will be transferred on to the hook of the tappet needle.
5. Push the tappet needle, so that the stitch slips behind latch.



97

98

6. Repeat steps 3, 4 & 5 for the next stitch and continue till the last stitch is on the hook of the needle of the tappet needle. (Fig. 98).
7. Insert the yarn on to the hook of the tappet needle and drop the stitch.
8. Break the yarn and pull the end through the last stitch to secure casting off.

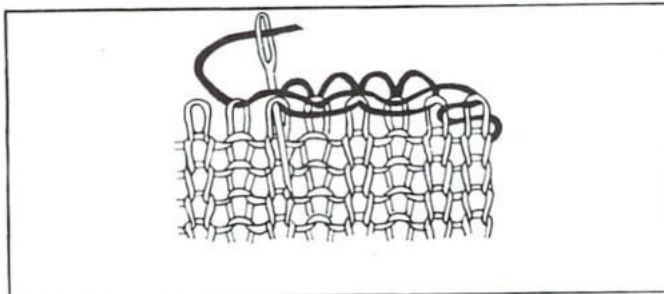


12. Binding Off One Knit One Purl Rib

Proceed as follows :

1. Pass the yarn through tapestry needle. Pass the needle through the second stitch.
2. Insert the needle into the first stitch and pull it out.
3. Insert the needle into the third stitch and take it out passing through the second stitch.
4. Pass the tapestry needle from the fourth stitch and then through the third stitch.
5. Continue till you reach the end of the row. (Fig. 99).

99



13. Waste Knitting

1. Waste knitting is used to obtain a good finish on the edge of the garment.
2. Knit a few rows with a waste yarn. Remove the yarn from the yarn feeder. Feed the cast-on thread into the feeder. Manually controlling the thread above the carriage, knit one row.

3. Feed the main yarn into the yarn feeder and proceed with the garment knitting. (Fig. 100).
4. At the end of the garment knitting you can remove the waste knitting by pulling out the cast-on thread.

14. Cord Knitting

Knitted cords are used for caps, belts etc. To knit proceed as follows:

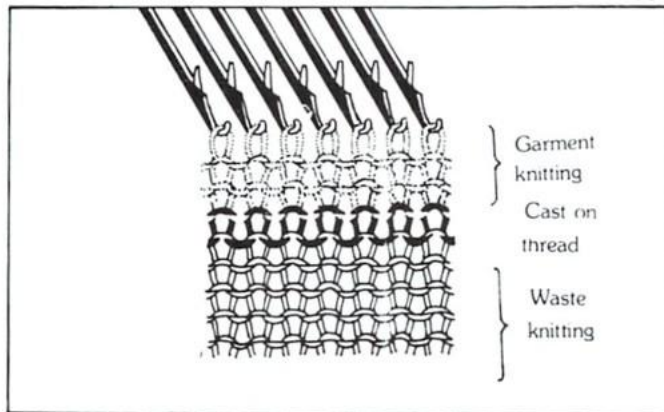
1. Cast on 3 or 4 alternate needles.
2. To get a fine finish, use a slightly tight tension.
3. Press right part button.
4. Continue knitting. For the desired length, pull in the cord down with your left hand. (Fig. 101).

15. Ribbing

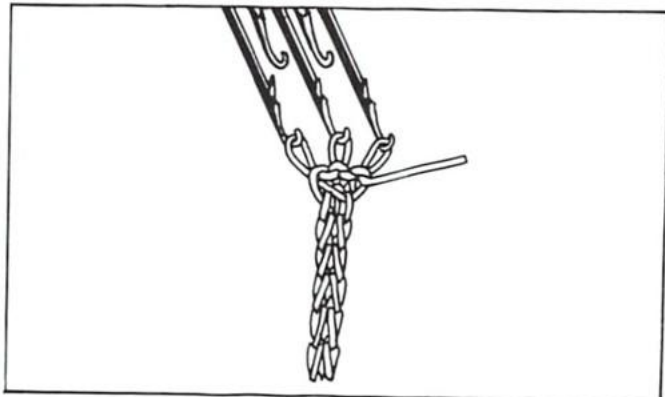
This is achieved by converting purl stitch into knit stitch. Proceed as follows:

1. Drop down the stitches on the needles on which you want to convert purl stitches into knit stitches.
2. Insert the hook of the tappet needle through the last loop of the dropped stitch where ribbing is to start. (Fig. 102).
3. Push forward the tappet needle until the stitch is behind the open latch and the cross thread above it is in the hook of the tappet.

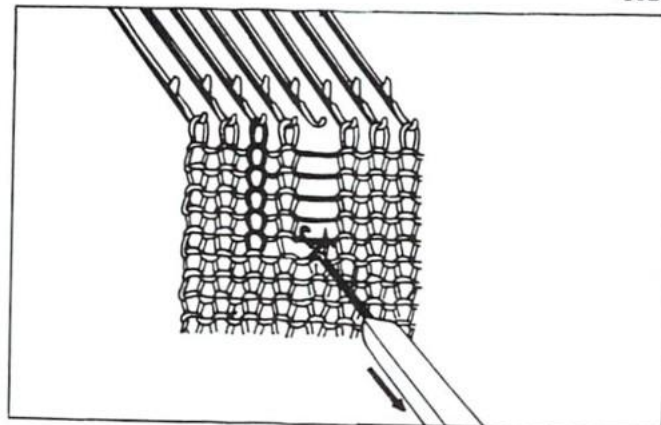
100



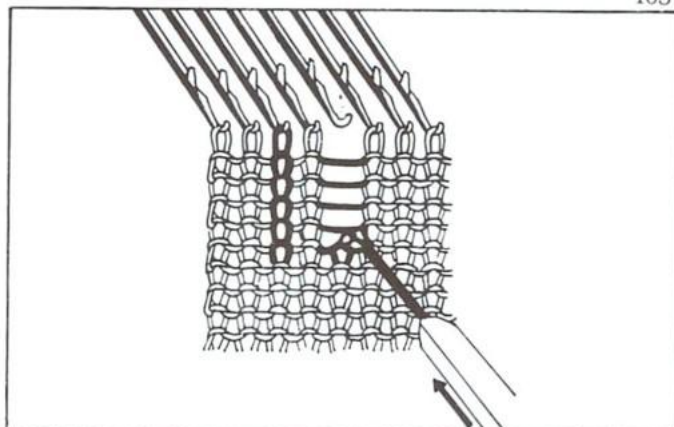
101



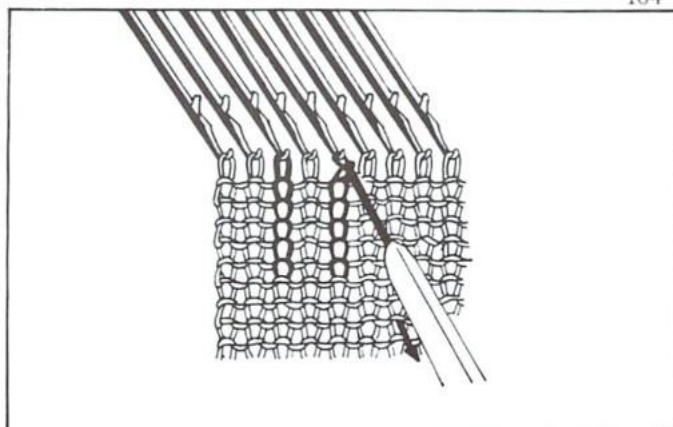
102



4. Pull the tappet needle to close the latch on the trapped cross thread. Continue to pull till the trapped cross thread is pulled through the trap stitch forming a new stitch. (Fig. 103).



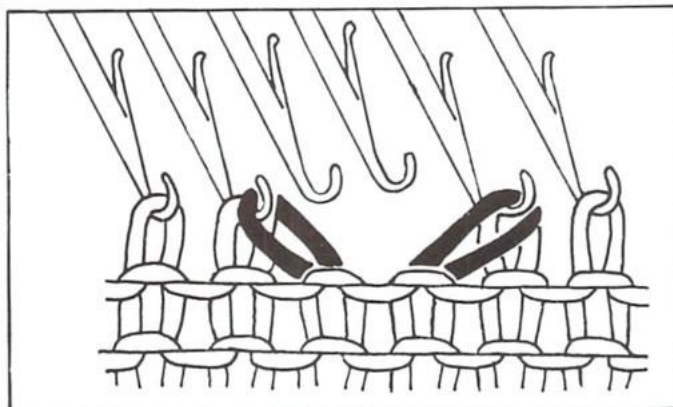
5. Repeat this operation till the last cross thread has been pulled to form a stitch. Place the stitch on its needle. (Fig. 104).



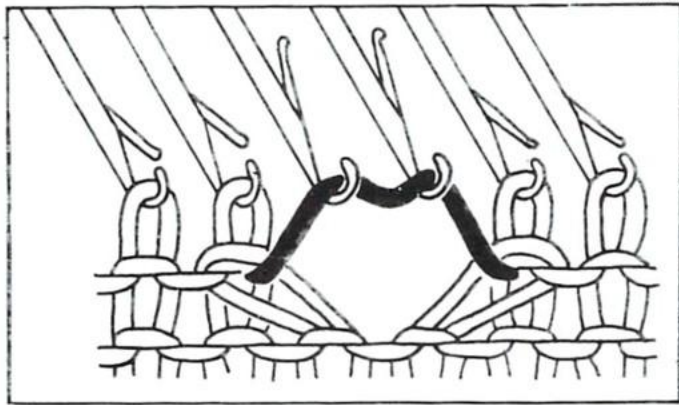
16. Making Button-holes

A small button-hole

1. When you have identified the location of the button-hole, using I:II transfer tool, transfer two adjacent stitches outwards. Push back the empty needles to position 'B' and knit one row. (Fig. 105).



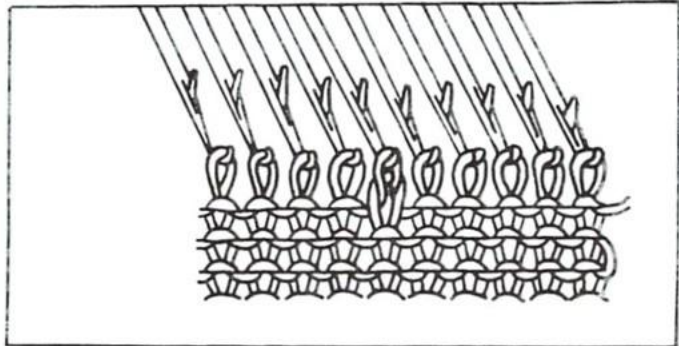
2. The empty needles will only have loops. (Fig. 106).
3. To ensure subsequent knitting, bring these needles out to 'E' position for the next two rows.



106

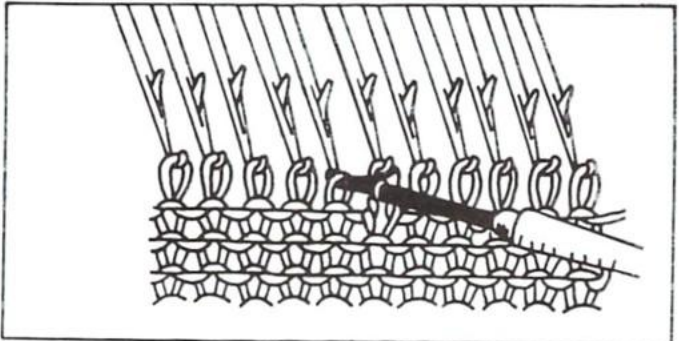
A large button-hole —Horizontal

1. After determining the position of the button-hole, convert Purl stitch into Knit stitch, adjacent to the needle where the button-hole is to start. (Fig. 107).



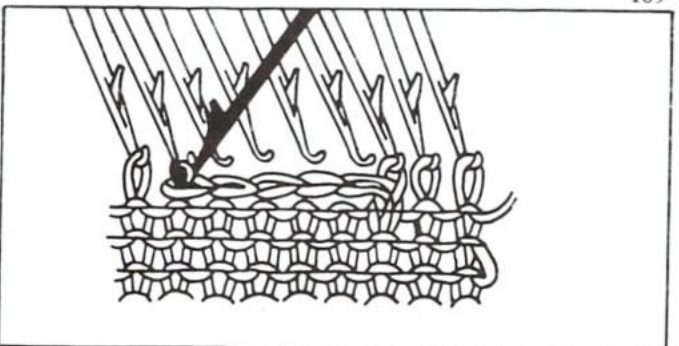
107

2. With this as your first stitch, cast off the required number of stitches depending on the size of the button-hole. (Fig. 108).



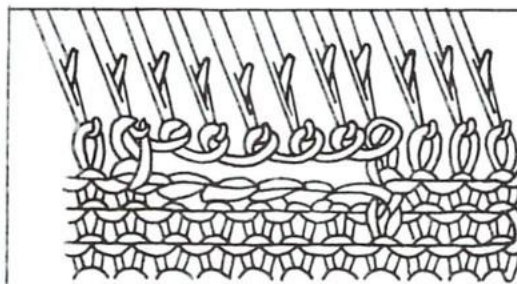
108

3. Transfer the stitch off the tappet onto the next adjacent needle. (Fig. 109).
4. Knit one row, so that the empty needles pick up the yarn.



109

5. Wind the yarn around the needles which have picked up the yarn, starting from the needle where the yarn was sealed off. (Fig. 110).
6. Bring out the needle with the wound loops and a few adjacent needles to position 'E' and continue knitting.



A large button-hole —Vertical

1. Keep the carriage on the right hand side of the needle bed and set both the holding cam levers to 'III' position.
 2. After determining the location of the button-hole, bring out all the needles on the left hand side of the button-hole to position 'E'.
 3. Knit for a few rows (say 6) depending upon the size of the button-hole desired.
 4. Break the yarn and bring the carriage on the left of the needle bed.
 5. Manually push back, taking care that the stitches come into the needle hooks, the needles which were raised to 'E' position (in point 2) to 'C' position. Bring forward the needles on the right hand side of the button-hole to position 'E'.
 6. Knit for the same number of rows as for the right side. Set both the holding cam levers at 'I' and continue to knit.
2. With the carriage on the right hand side, position both the holding cam levers to position 'II'.
Bring forward all the operating needles on the left hand side of the location of the pocket to position 'E'.
 3. Knit one row. Bring forward all the operating needles on the right hand side of the location of the pocket to position 'E'.
 4. Knit the number of rows required for the length of the pocket, pulling the garment down with your left hand.
At the end, keep the carriage on the right hand side of the machine.
 5. Manually push back the needles at the position 'E' on the left hand side to position 'B', taking care that the stitches are secured in the needle hooks.
 6. Knit one row. With the carriage on the left hand side, push back the needles at position 'E' on the right side to position 'B' making sure that the stitches are secured in the hooks. Position both the holding cam levers to 'I' and continue knitting.

17. Pocket Knitting

1. Determine the width and location of pocket.

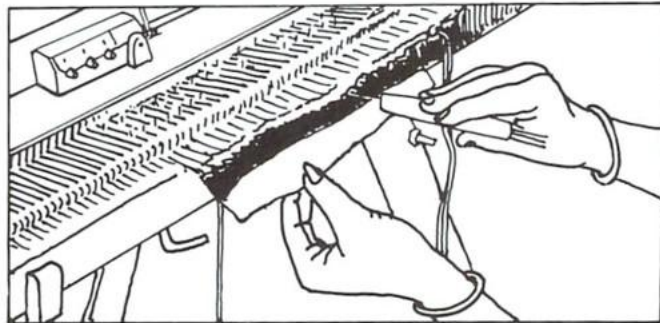
7. Pull the pocket to your side of the garment and sew the stitches at the sides.

18. Knitting Borders

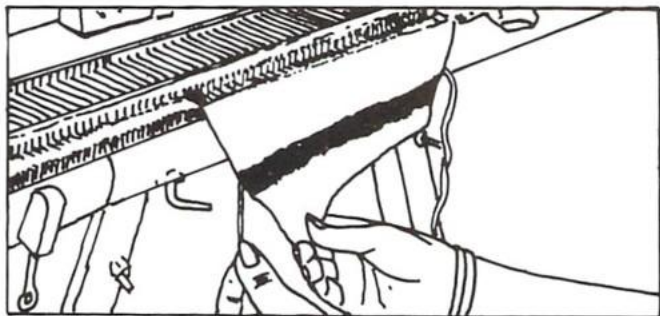
Flat Double Hem

1. Knit about ten rows in plain stitch with a contrasting colour.
2. Remove this yarn from the yarn feeder and replace it with the cast-on-thread.
3. Feed the cast-on-thread by hand. Knit one row.
4. Remove the cast-on-thread from the yarn feeder and replace it with the main yarn.
5. Knit as many rows as required for the Hem.
6. Open the latches of the needles with the help of a crochet needle.
7. Using a transfer tool, pick up the stitch of the first row of the main yarn and place them on the hooks of the respective needles. (Fig. 111).
8. Set the tension dial to a position looser than the one that was being used, i.e. if you are knitting at position '6', then position it to '7' and knit one row.
9. Pull out the cast-on-thread and the knitting done with a contrast colour shall fall off the main knitting. (Fig. 112). Continue to knit.

111



112



19. Mock Rib

This is used for waistband, hems and cuffs.

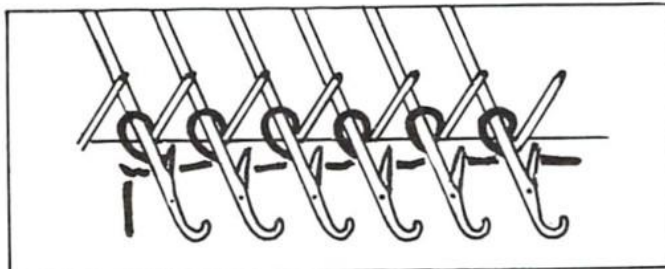
1. Using pattern plate 1:1, bring out every other needle on to position 'B'.

2. Cast on and knit several rows of waste knitting.
 3. Knit one row with the cast-on-thread.
 4. Set the tension dial at 1 or 2 numbers lower than that for ordinary knitting.
 5. Knit the required length of the cuff or band.
 6. Bring out the remaining needles from 'A' to 'B' position.
 7. Pick-up the starting loops of the yarn by the transfer needle and place them into the hooks of the empty needles.
 8. Reset the tension dial to the original number and continue to knit in plain stitch.
 9. Pull out* the cast-on-thread to remove waste knitting.
4. Thread the yarn into the yarn feeder and gently move the carriage to the left to knit the first row.
 5. Again push the needles from position 'B' to 'E' and knit another row. Repeat this once or twice more.
 6. Knit till the depth of border you want is achieved.
 7. Now if you want a 1:1 rib, convert the purl stitches of every alternate needle into knit stitches. If you want a 2:1 or 3:1 rib, do this with every third or fourth needle respectively. Converting purl stitches into knit stitches is explained under "Ribbing".

Note :

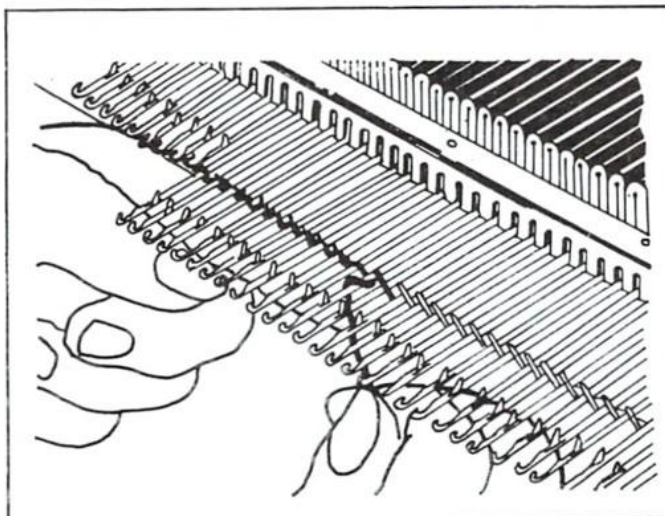
For 2:1 & 3:1 mock rib, same procedure is followed by using 2:1 or 3:1 needles selection.

113

**20. Single Hem**

1. With the carriage on the right hand side, position both the holding cam levers to 'T'.
2. Bring forward the required needles to position 'E'.
3. Wind the yarn anti-clockwise around the stems of the needles. (Fig. 113). As you wind the yarn, control it by holding your thumb under the preceding loop before making the next loop. Do not make the loops too tight. (Fig. 114). The loops must be pushed back as far as possible.

114



Knitting a Pullover

Gents V-neck Full Sleeve pull-over

Let us take an example of knitting a full sleeve V-neck men's pull-over of the following size :

Chest	100 cm/38"
Length	65 cm/25"
Underarm	40 cm/16"
Sleeve	54 cm/21"
Cuff Size	22 cm/ 9"

Material required

Four ply medium thickness wool, 400 gm/6 oz in weight.

Procedure

Note :

Before removing any portion of the garment from the knitter (without binding-off), knit two rows with waste yarn.

Making a tension gauge swatch, as explained under "Determining the Gauge". Before commencing knitting, count the number of stitches per cm/inch across the swatch and the number of rows per cm/inch down the swatch. Thus determine the number of needles and rows required for the garment.

Alternatively, the following approximate gauge can be used.

For width—10 cm equals 28 needles or 1 inch equals 7 needles.

For length—10 cm equals 40 rows or 1 inch equals 10 needles.

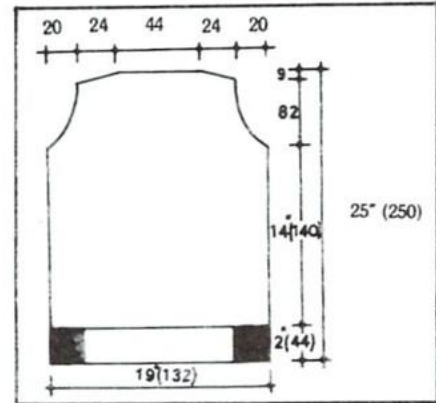
(This is an approximation only for 4 ply wools).

Knitting

A pullover is knitted in two portions, front & back. Sleeves are knitted separately. These portions are then joined together, resulting in a complete pullover. Back portion is generally knitted first.

Back Portion

The width of the back portion shall be half the chest size, in this case 50 cm/19" (See Fig. 115).



This shall require about $19 \times 7 = 133$ or say 132 needles. (We should normally choose even number of needles). Now follow the step-by-step procedure:

1. Bring out 132 needles i.e. 66 on each side of 0 to position B and cast on.
2. Hem is generally knitted with a tighter tension (about 2 numbers less than that used for actual knitting). Knit 44 rows (11 rows per inch for the 5 cms/2" hem and double that for folding the hem). Make the border as explained under 'How to make double hem'.
3. Increase the tension by 2 number (for normal knitting) and set the row counter to zero.
4. Knit plain upto underarm curve for a total of about 140 rows (14" length of 10 rows per inch or 35 cm length at 10 cm equal to 40 rows).
5. Now for making the armhole curve, the number of stitches have to be decreased. For accomplishing this, proceed as follows :

Decrease about 20 stitches on both the sides of the garment as explained under :

Decrease 6 stitches on both the sides in line 1 & 2.

Decrease 5 stitches on both the sides in line 3 & 4.

Decrease 3 stitches on both the sides in line 5 & 6.

Decrease 2 stitches on both the sides in line 7 & 8.

Decrease 2 stitches on both the sides in line 9 & 10.

Decrease 1 stitch on both the sides in line 11 & 12.

6. Now knit plain with the remaining 92 needles, for about 70 more rows, thus making a total of 82 rows from the underarm cutting.
7. If required, or desired, shaping of the shoulder may now be done. Otherwise knit for 8 more rows thus completing the back portion. Shape shouldering is partial knitting and can be achieved by the following procedure :
 - a) Bring both the holding cam levers to position II.
 - b) Bring out 6 needles from the other side of the carriage to Position 'E' and knit one row.
 - c) Bring out 6 needles from opposite side to Position 'E' and knit one row.
 - d) Repeat process (b) and (c) four times each. At the end 24 needles from each side will be at position 'E'.
8. Back portion is now complete. Remove the garment from the machine.

Front Portion

1. Repeat points 1 to 4 for the back portion. This will enable us to knit up to the underarm curve.
2. Bring out half of the needles from the left hand side to 'E' position (i.e. needles from 66 to 0).
3. Decrease 6 stitches from the right hand side.
4. Move both the Holding cam levers to II position & knit one row.
5. Decrease 1 stitch from left to right i.e. transfer the stitch from the extreme left needle onto the adjacent needle. Knit one row.
6. Decrease 5 stitches from the right hand side and knit two rows plain. Decrease 3 stitches on the right hand side and knit one row.
7. Decrease 1 stitch on the left hand side for the neck and knit one more row.
8. Decrease 3 stitches on the right hand side and knit for two rows.
9. Decrease 2 stitches on the right hand side. Knit one row.
10. Decrease 1 stitch on the left hand side for the neck. Knit one row. Decrease 1 stitch on the right hand side and knit for three rows. Decrease 1 stitch on the left hand side for the neck and knit four rows.
11. Repeat point number 10 till you reach a total of 83 rows.
12. Shape shoulder as explained below :
 - i) Bring out 6 needles from the right hand side to position 'E'. Knit two rows.
 - ii) Bring out 6 more needles to position 'E' from the right hand side for the formation of shoulder.
 - iii) Knit two rows & bring out 6 needles to position 'E'. Knit two rows.

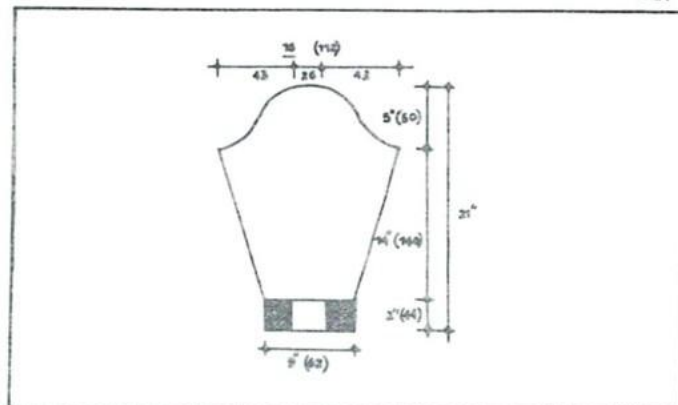
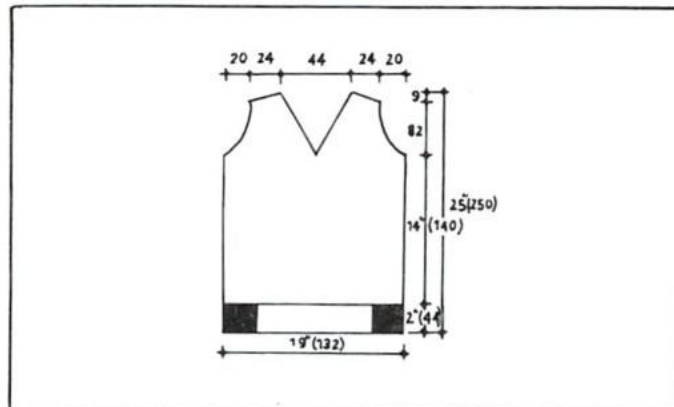
13. Repeat the above procedure from point '2' to '12' for the left hand side portion of the front side of the garment of which the 66 needles were pushed to position 'E' in step '2'. The front portion is now ready (Fig. 116).

Sleeve Knitting

1. Cast on 62 stitches i.e. 31 needles on each side of 0 and knit a 5 cm/2" border as given under 'How to knit double hem borders'.
2. Increase the tension dial knob setting by about 2 numbers for the actual sleeve knitting.
3. Increase 1 stitch on each side of the garment and knit 6 rows.
4. Repeat point No. 3 upto a total of 140 rows.
5. Set the row counter at 000.
6. Decrease 6 stitches on the first and second row on both the sides.
7. Decrease 1 stitch on both sides for the next 36 rows. Remaining stitches will be 62.
8. Decrease 3 stitches on both the sides for the next 12 rows. One sleeve is ready. (Fig. 117).
9. Repeat the same procedure and make another sleeve.

Making the Neck-Band

- A1. Pick the 24 stitches of the front portion with the knit side being in your front, with the transfer needles, and mount it on the machine.
2. On these 24 needles place the 24 stitches of back portion with the purl side being in your front. Cast off any waste knitting.
3. Cast off all the 24 stitches as explained under 'How to bind off'.
4. Take the garment off the machine by moving the carriage once.



- B1. Pick the stitches from the starting point of V-neck marked 'X' upto the shape shoulder point marked 'Y' into approximately 60 needles with the purl side being in your front.
- Pick the 44 stitches of the back neck position with the purl side being in your front and mount them adjacent to the 60 stitches already picked, thus making a total of 104 stitches.
 - Make the tension same as that used for hem knitting. Knit one row. Decrease 1 stitch from the point 'X'.
 - For next twelve rows, decrease 1 stitch per row on the point marked 'X'.
 - Increase 1 stitch on the side 'X' per row, for the next 12 rows.
 - Now bind off as explained under "How to bind off".

C1 Pick up the stitches from 'X' to 'Z' with the purl side being in your front into approximately 60 needles (this figure must be exactly same as with the earlier figure under point B(1).

- Repeat from points 3 to 6 for the 'B' portion.

D1. Pick up the approximate 18 stitches of the V-neck portion and the 24 stitches of the shoulder.

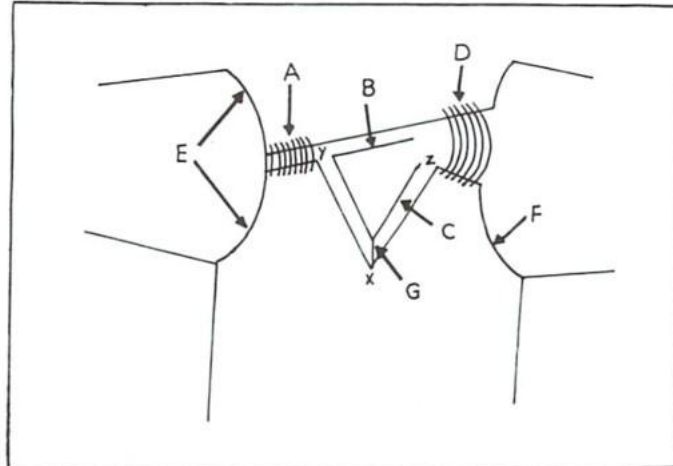
- Seam as explained under portion 'A'.

E&F Seam the sleeves by the procedure as explained under portion 'A'.

- Now seam front V-neck joint by picking up the 18 stitches and mounting them on the machine.

Seam the Neck Band all around with a tapestry needle, or by mounting it in two portions on the machine. (Fig. 118).

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Now fold the front and the back together and seam the two halves from the sleeve cuffs upto the hem borders. This can either be done by a tapestry needle or by mounting the pieces on the machine.

Steam press the garment, it is now complete.

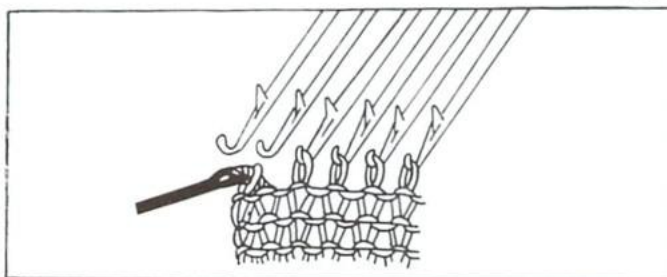
Alternate Neck Shapes

Round Neck

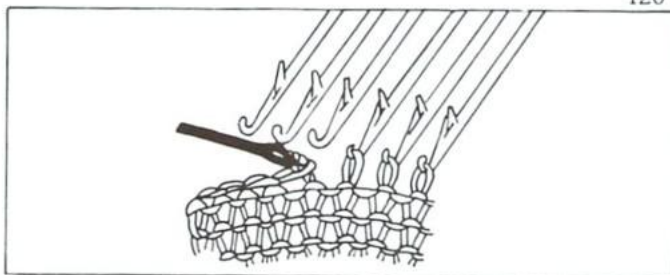
You can start knitting from either side of the bed. However, the procedure given below is on the basis of starting from right hand side of the bed.

1. Place both the holding cam levers at position 'II'.
2. Bring forward to position 'E' all the needles on the left side of the centre '0'.
3. The decreasing of the stitches is done by bringing forward to position 'E' the needles you wish to decrease. Start with the needles at position 'B' on the right of the '0' and knit two rows each time you bring needles forward.
4. Decrease in this manner until you have the required number of stitches left at position 'B' for the shoulder.
5. Bind off these stitches and break the yarn. (Fig. 119 & 120).
6. Return the needles on the left, back to position 'B' and repeat as above, from '3' to '5'. Remember to leave the same number of needles for the shoulder. Bind off these stitches.
7. Place the end stitches of the round neck onto the needles.
8. Place the carriage on the left and thread the yarn feeder. Set the holding cam levers to position 'I'.
9. Knit the first half of the hem (approximately 5 rows) on a normal tension for that yarn.
10. Knit one row on a tension 3 numbers higher. This will ensure that the fold will be flat.
11. Knit the other half of the hem on the same tension as used in Point '9'. (It must be the same amount of rows as the first half).

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12. Using the transfer tool, raise the stitches from the end of the round neck onto the needles. Take care to raise each stitch onto the corresponding needle to obtain a perfect round effect.
13. When all the stitches have been raised, bind off the double stitches in the normal way.

Note :

Seam the stitches by hand very loosely, to allow for the neck to fall back into place after removing the knitting from the machine.

Square Neck

Cast off the needles in the centre, for the width of the neck, using the same wool as that for the garment. Return needles to position 'A'. On the opposite side to the carriage, bring forward all the operating needles to position 'E'. Set both holding cam levers to III. Knit the required number of rows to complete the side nearest the carriage. Cast off and return the needles to position 'A'.

Set holding cam levers to 'I' and knit other half identical to the first.

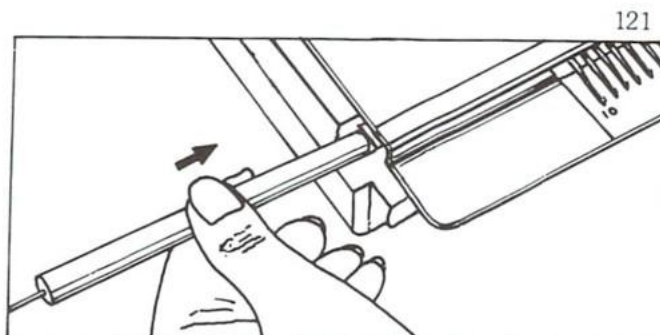
Common Problems & Remedies

Sl. No.	Problem	Cause	Remedy
1.	Carriage jams in single colour knitting.	Yarn too tight.	<ul style="list-style-type: none"> — Check the wool ball for loosely wound. — Check the tensioner and yarn for knots.
2.	Carriage jams in MC knitting/Weaving knitting	Laying-in thread loose. Undesired position of needles	<ul style="list-style-type: none"> — Unwind the stitch after the carriage and re-knit with proper tension. — Push the needles to desired position.
3.	Needles do not knit.	Holding cam at 'III'.	<ul style="list-style-type: none"> — Slide the carriage back and reset the holding cam to 'I' and re-knit.
4.	Knitted garment drops down completely or partially.	Yarn not in the feeder spring or yarn broken or yarn end reached.	<ul style="list-style-type: none"> — Correct the mistake, replace the knitting on the needles to avoid repetition.
5.	Stitches drop at the beginning of row.	Yarn too loose. Yarn take up spring not operating correctly.	<ul style="list-style-type: none"> — Adjust the tensioner and take up the slack at the beginning of the row by hand. — Check that yarn is threaded correctly and that the spring is not caught-up, reset the tensioner and take up the slack by hand at the beginning of the row.
6.	Stitches drop in middle of row in plain knitting.	Improper fitment of arm plate. Yarn tangled in pressure plate brushes/wheels Brushes worn out	<ul style="list-style-type: none"> — Loosen the thumb knobs, reset the the arm plate. — Clean the brushes, wheels and reknit. — Replace the brushes.
7.	Stitches drop in middle of row in MC/Weaving knitting	Besides the cause mentioned in No. 6 needle latches remain closed after selection.	<ul style="list-style-type: none"> — Ensure all the latches of needles in operation are open.
8.	Loops of yarn at edge or yarn tangling on pressure plate wheel/brushes.	Yarn take up spring of tension pole not operating correctly or carriage taken too far and too fast on previous row.	<ul style="list-style-type: none"> — Check the threading of the yarn and ensure that spring is not caught up and use normal speed. Carriage should not be taken beyond fourth needle after the last working needle.
9.	Single stitch repeatedly dropped.	Needle bent, needle latch bent, needle hook distorted.	<ul style="list-style-type: none"> — Replace the needle .
10.	Stitches caught up on sinkers	Loose or irregular yarn tension	<ul style="list-style-type: none"> — For single stitch poke crochet hook down beyond the stitches and lift yarn off sinkers. For several stitches pull knitting away from needles and up over sinkers without dropping stitches.

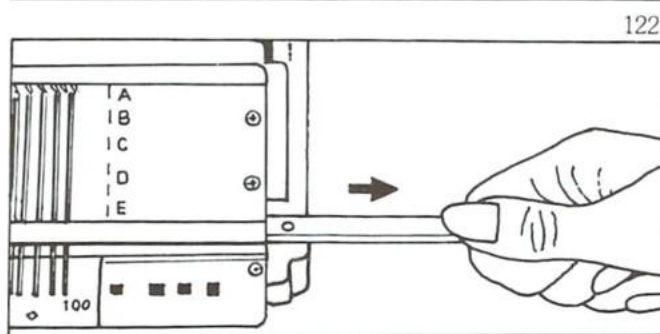
Corrective Actions

When the needle is bent/ broken

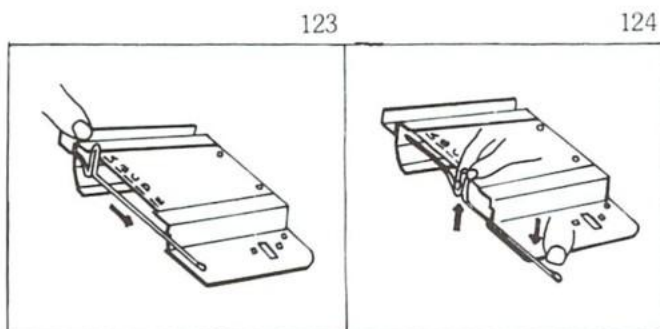
1. With the handle of a tappet needle, push the needle stopper to one side. (Fig. 121).



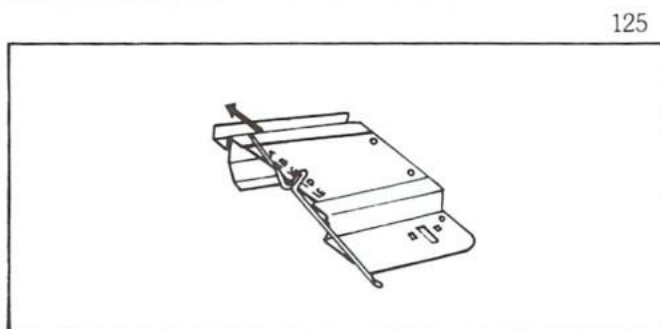
2. Pull it from the machine till the needle you wish to change is free. (Fig. 122).



3. Pull the needle forward as far as it will go. (Fig. 123).
4. Push down the hook of the needle until the shank end of the needle rise above the needle bed. (Fig. 124).



5. Hold the shank end and draw out the needle backwards. (Fig. 125).
6. Replace it with a new needle with a latch open in the reverse order. Push back the needle stopper back into place.



Unravelling

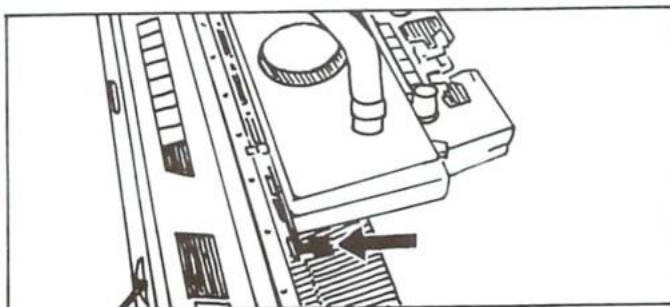
1. Pull the yarn slightly out of the stitches. The stitches of the previous row will slip into the hook automatically.

2. Pull the ripped yarn down through the rear yarn guide until the tension spring is brought back into operation.
3. Adjust the number on the row counter, if necessary. Continue to knit.

When the Carriage is jammed

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1. If the carriage gets jammed in knitting, press the carriage release knob. (Fig. 126).
2. With the knob pressed, move the carriage upwards and towards you.
3. Take the carriage to the extreme end of the machine towards the side from where the row is commenced. Slide it on bed.
4. Remove the yarn from the yarn feeder and unravel the last incomplete row. Feed the yarn into the yarn feeder, align the needles to the operating position. Readjust the row counter number if required, and continue to knit.



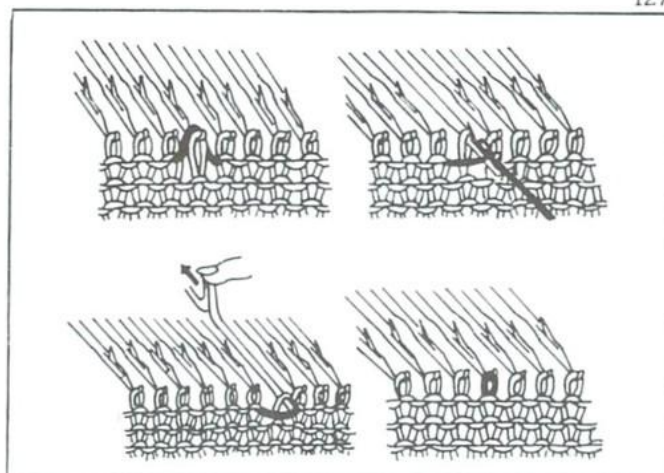
Carriage movement without knitting

- In case of plain knitting you can move the carriage without knitting by pushing down both PART buttons.
- If the needles are in position DI, push back the needles in position DI to position B.
- If the needles are in position DII or E, set the holding cam lever to III.

Correcting a dropped stitch

1. Insert the one eye transfer tool into the stitch below the dropped stitch and replace the stitch into the hook of the needle together with the loose yarn.
2. Slowly pull the needle out until the stitch is behind the open latch, leaving the loose yarn in the hook.

3. Push the needle back so the latch will close and the stitch behind will slide over the hook reforming the stitch. (Fig. 127).

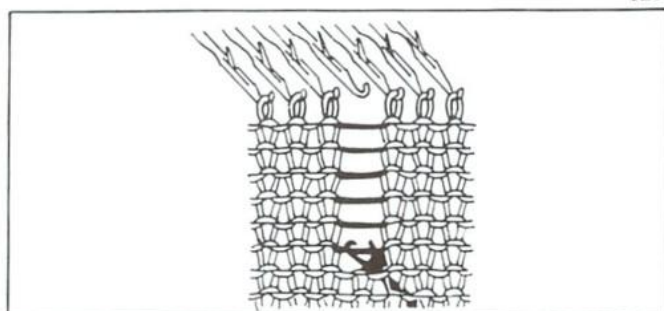
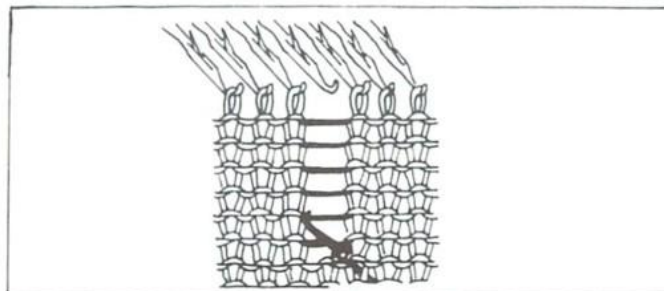


Correcting a Dropped Stitch for several rows

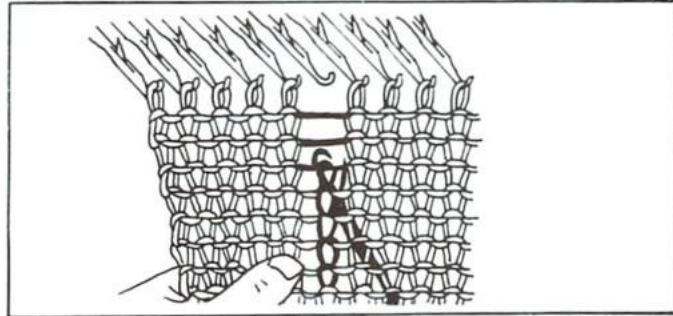
1. Take out the tappet from the accessories pouch and insert it into the stitch a few rows below the dropped stitch from the side away from you. Unravel the stitches down to the tappet (Fig. 128).

Note : With the other hand, pull the garment downwards near the dropped stitch. This separates the yarn crossing and makes the operation easier.

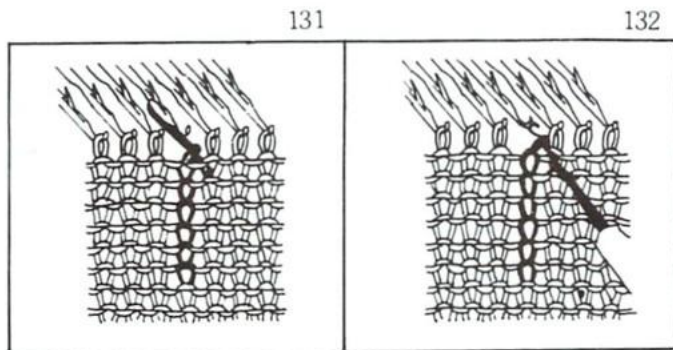
2. Push the tappet towards you so that the stitch will be behind the open latch. Catch the yarn crossing above in the hook. (Fig. 129).



3. By pulling the tappet backward, the latch will close and the loose yarn will be trapped in the hook. Continue pulling and the old stitch will slide down over the close latch forming a new stitch in the hook. Repeat this operation to the top. (Fig. 130).



4. Pull the last loop somewhat tightly and remove the tappet. Insert the tappet into the stitch from your side and put it onto the needle. (Figs. 131 & 132).





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