

81,3874

Empisal

SUPERMATIC

KH880

AN EMPISAL PUBLICATION



LET'S BECOME FRIENDS

There is nothing more exciting than receiving a parcel—however, it becomes more exciting when that parcel contains an EMPISAL KNITTER.

You have no doubt already opened your parcel, taken out the knitter and had a look at the various accessories; in a moment we will sort them out and quickly discover their uses.

CONSULTANTS AND EXPERTS AT YOUR SERVICE

The lessons have been designed by a team of Empisal Knitting advisors, drawing on their years of experience in conducting the Empisal Knitting Correspondence School, and advising people who have never previously operated a knitter.

WE ARE ALWAYS INTERESTED IN YOU

By following the simple, progressive steps they have devised for you, you will find it easy and exciting to teach yourself at home to operate the Empisal Knitter. Many of our prize-winners and finest knitters have done so. We shall be delighted to learn of *your* success with your Empisal Knitter—please write to us—your letters will be most welcome.

LEARN TO WALK FIRST

As the first step, learn the names of all the parts given in the opening chapter, and then

continue step by step, lesson by lesson along this Course of Home Instruction. In this way you will gain speed and confidence so that you will soon master this most willing of servants.

BE THE ENVY OF YOUR FRIENDS

There is nothing more delightful than success and achievement. If you will patiently follow these instructions, in a few short evenings you will make new garments, accomplish that sense of achievement and assuredly become the envy of your friends.

RELAX AND HAVE FUN

Always remain relaxed—you will work quicker and better relaxed, and your Knitter will respond most efficiently to gentle handling.

MORE HASTE — LESS SPEED!

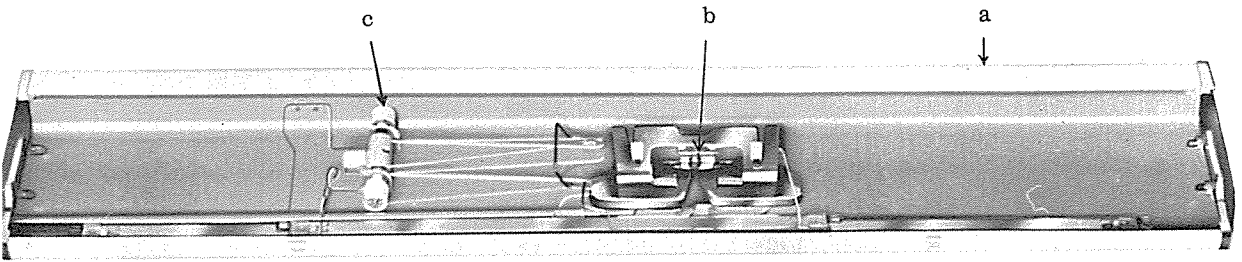
If you have a restless nature, remember that you learned to walk before you could run, so don't be tempted to jump chapters. Work through the manual systematically—it has been designed to be progressive.

A WORD TO THE EXPERIENCED

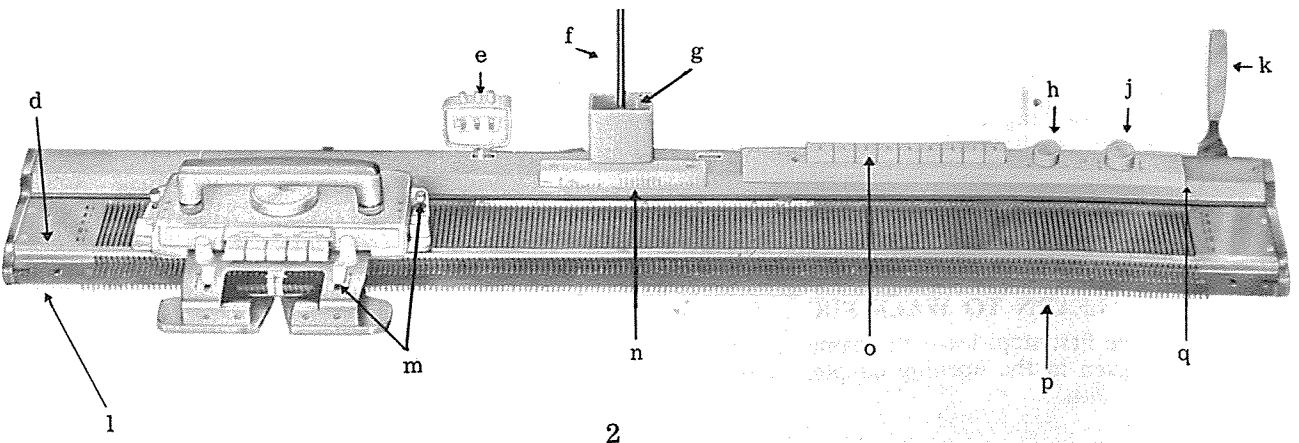
Finally, if you already have some experience with a knitting machine, we advise a quick revision of this manual, to acquaint yourself with the many improvements incorporated into this exciting, new Empisal Knitter.

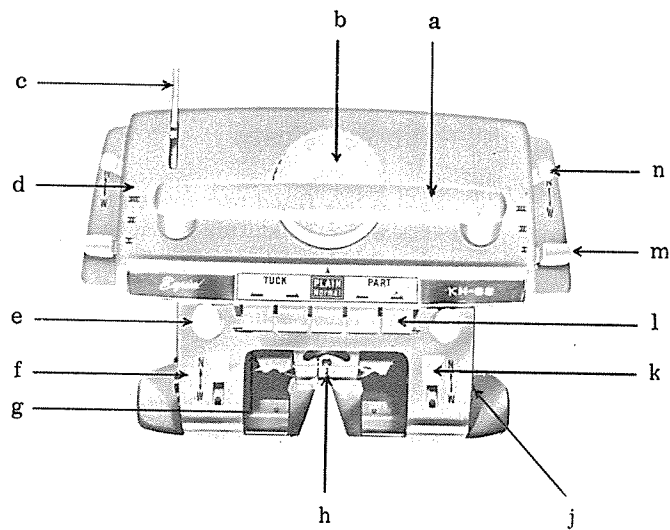
Now, let's get acquainted with our EMPISAL.

YOUR KH880 KNITTER



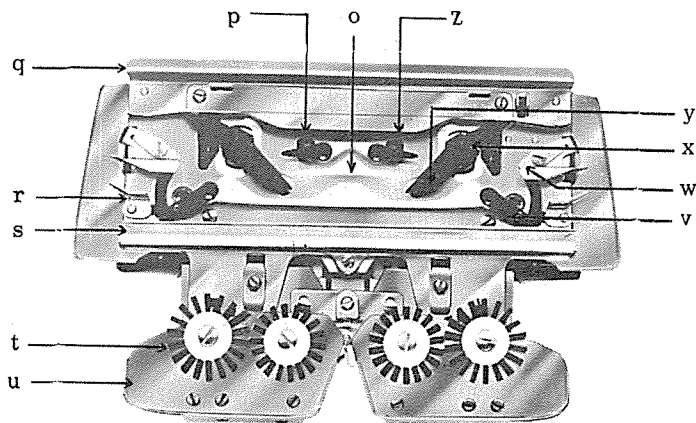
- a. Carrying Case
- b. Sinker Plate
- c. Automatic Yarn Tension Unit
- d. Needle Bed Upper Plate
- e. Row Counter
- f. Setting Hole for Automatic Yarn Tension Unit
- g. Accessory Stand
- h. Reverse Switch
- j. Slide Dial
- k. Set Lever
- l. Setting Hole for Ribbing Attachment
- m. Weaving-in Pattern Apparatus
- n. Slide Indicator
- o. Needle Selector Buttons
- p. Gate Pegs
- q. Slide Rail for Carriage





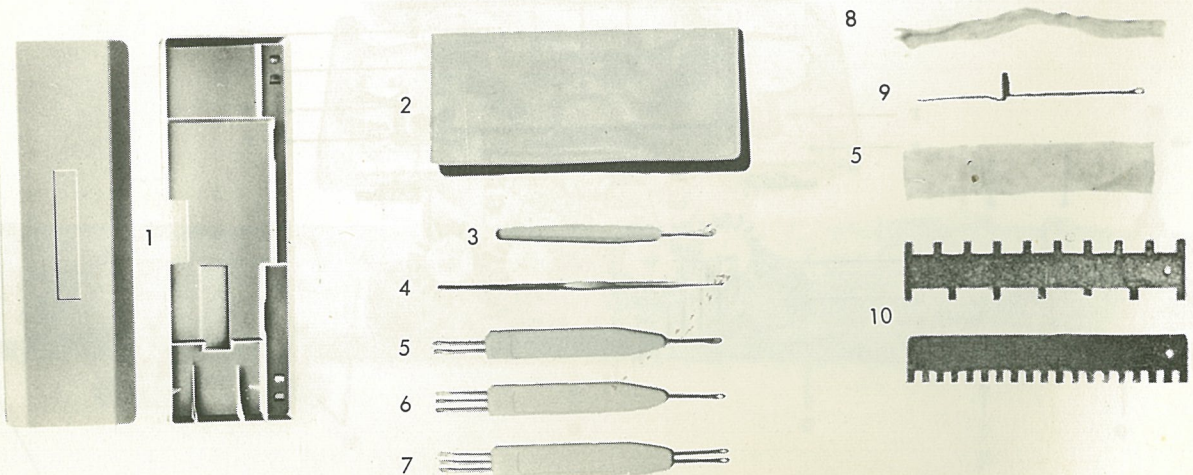
CARRIAGE PARTS

- | | | | |
|----|-----------------------------------|----|---------------------|
| a. | Carriage handle | o. | Guide Cam |
| b. | Tension Dial | p. | Lower Cam Strip |
| c. | Row Counter Tripper | q. | Carriage Rear Rail |
| d. | Carriage Cover | r. | Sub Cam |
| e. | Plastic Thumb Screw | s. | Carriage Front Rail |
| f. | Sinker Plate Arm | t. | Brush Wheel |
| g. | Latch Brush | u. | Sinker Plate |
| h. | Yarn Feeder | v. | Holding Cam |
| j. | Weaving-in Pattern Brush | w. | Weave-in Cam. |
| k. | Knob for Weaving-in Pattern Brush | x. | Raising Cam |
| l. | Pattern Selector Buttons | y. | Stitch Cam |
| m. | Holding Cam Lever | z. | Tucking Cam |
| n. | Weave-in Cam Lever. | | |



THE ACCESSORIES FOR THE KH880 KNITTER AND THEIR USES

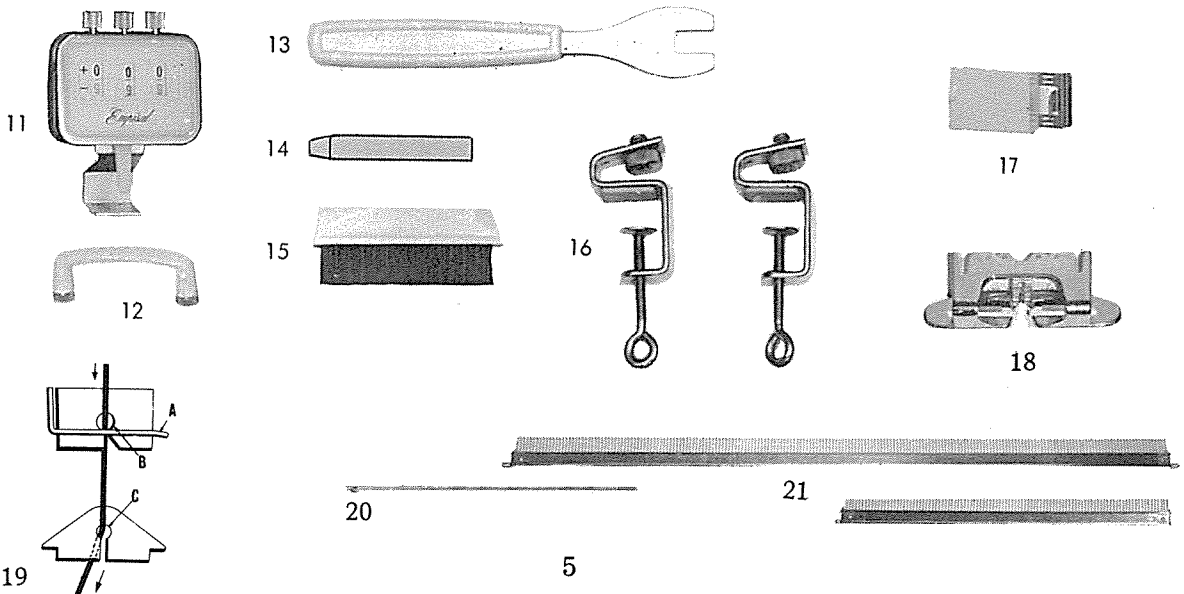
- | | | | |
|-----|-----------------|-----|---|
| 1) | Accessory Box | | A box fitted and spaced to hold the accessories when the knitter is packed away. Items marked B below fit into this box. |
| 2) | Accessory Pouch | (B) | A fitted pouch to hold small accessories (marked P). |
| 3) | Latchet Hook | (P) | Used for certain patterning, to pick up dropped stitches, and for ribbing (single-bed only). |
| 4) | Work Hook | (P) | (sometimes also used for patterning) and to catch dropped stitches. |
| 5) | Transfer Handle | (P) | 3×2 } By these combinations there are two each
3×1 } three needle, two needle and single needle
2×1 } handles; used for transferring stitches, for cross over stitches when cabling, and other patterning. |
| 6) | Transfer Handle | (P) | |
| 7) | Transfer Handle | (P) | |
| 8) | Nylon Thread | (P) | Used to hold together 2 pieces of knitted fabric to enable a continuation of knitting without removing the first panel from the knitter. |
| 9) | Spare Needle | (P) | Replacement part. (A small pouch for extra needles is also provided). |
| 10) | Needle Cutters | (P) | Needle cutters are used to raise or lower manually groups of needles to different positions. Only one is supplied, others in various combinations are available as spares. |
| 11) | Row Counter | (B) | Used to count the rows in a panel or piece of knitting. |
| 12) | Carriage Handle | (B) | Detachable for convenience of packing. |



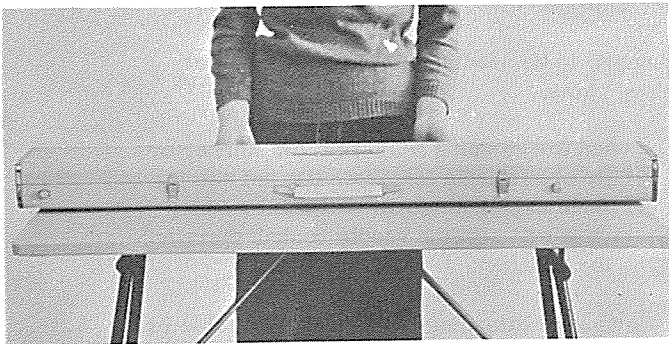
- 13) Needle Selector Lever (B) This is attached to the needle selector lug on the outer case of the Knitter and is used to raise (or set) selected needles.
- 14) Oil Bottle (B) A lubricant to be used sparingly on the knitter carriage cams.
- 15) Brush (B) Can be used for cleaning fluff from the Knitter or kept only to open needle latches. (Do not use for both purposes as cleaning will soil the brush, after which it will soil the needle hooks, thereby marking the knitting).
- 16) Clamps (B) Two clamps for attaching the Knitter to a table or stand. (The clamps supplied with the Single-Bed Knitter differ from those supplied when a double-bed attachment is used in conjunction with the Knitter).
- 17) Accessory Stand (B) Used to hold accessories during work, fits on to the carrying case.

Articles packed in Case Cover are marked (C).

- 18) Sinker Plate Assembly (C) Part of the carriage or saddle, used to hold the work against the Knitter when in operation. Also contains the yarn feeder and lay-in mechanism.
- 19) Branch Tension Arm Assembly (C) } Used to maintain an even tension on the yarn being fed to the Knitter.
- 20) Branch Tension Arm Upright (C) }
- 21) Combs (C) Combs are used to hold the yarn when starting the knitting, also used to support weights and sometimes to hold short lengths of fabric in position.

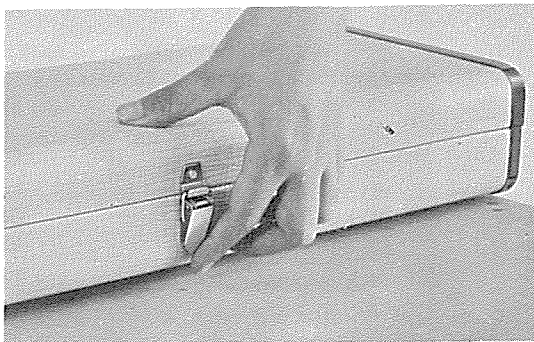


SETTING UP YOUR KNITTER.



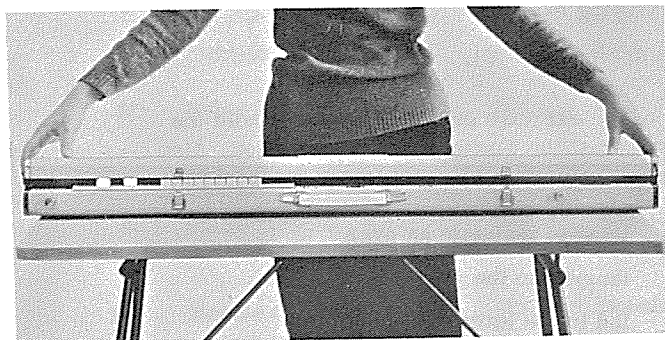
Sk. 1.

- a. Place your knitter on the edge of any firm and flat table, with the handle of the carrying case away from you.



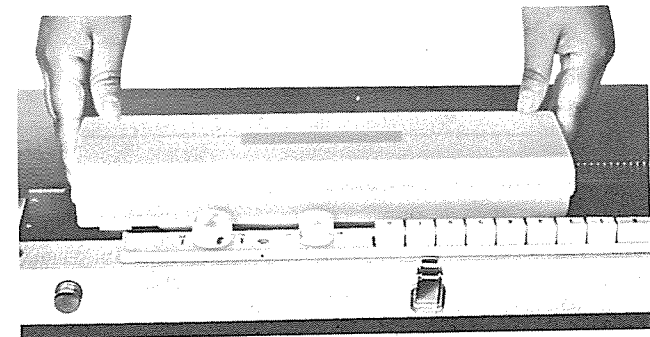
Sk. 2.

- b. Remove the upper case
Release the catches on both sides of the handle (see Sk. 2).



Sk. 3.

- c. Lift the upper case about 1" and pull toward you (Sk. 3). This will release the upper case which should be placed on the table beyond the knitter, inside up.



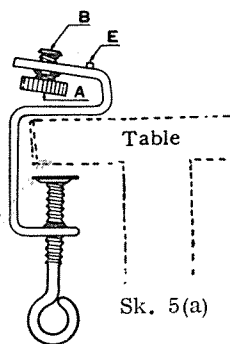
Sk. 4.

Remove the accessory box.

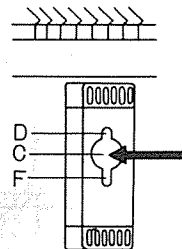
On the needle bed, which is contained in the lower case, the carriage is on the left and the accessory box on the right. Lift the front of the accessory box and slide off towards the right. (Sk. 4)

Fasten the Knitter to the table.

Remove the table clamps from the accessory box. Raise the front of the knitter, insert the head screw (B) into the aperture (C), press upwards so that the head of screw (B) is in position (D), and fasten the knob (A). Fasten the knitter to the table by tightening table clamp screws. It is essential that boss (E) fits snugly into aperture (F). (Sks. 5, 6, 7)



Sk. 5(a)

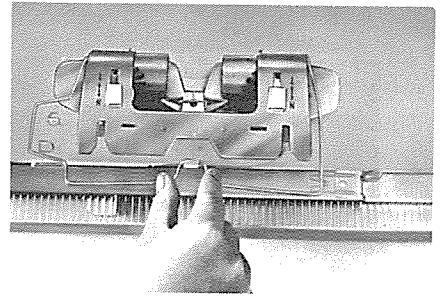
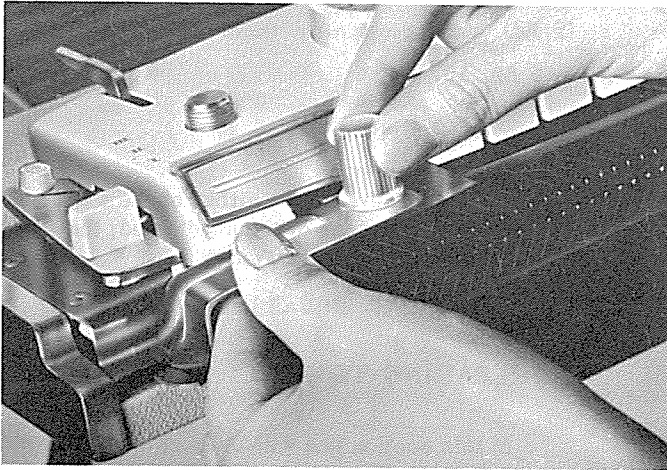


Sk. 5(b)

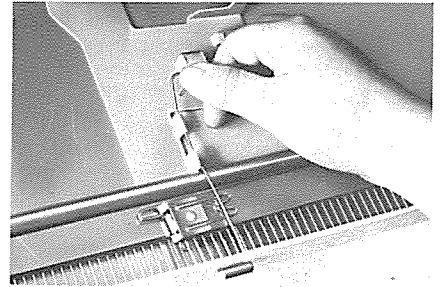
ASSEMBLE THE CARRIAGE.

- a) Loosen the plastic thumb screws of the carriage and remove the carriage lock. This will free the carriage, which can then be made to slide along or off the needle bed (see Sk. 8). As the carriage lock is required when repacking the knitter, keep it in the accessory box while the knitter is in operation.

Sk. 8.



Sk. 9.

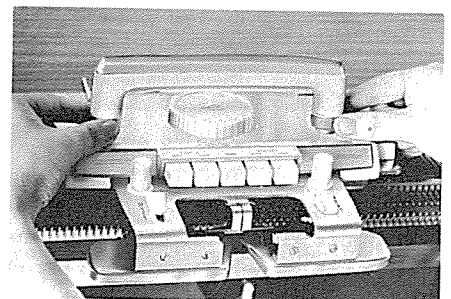
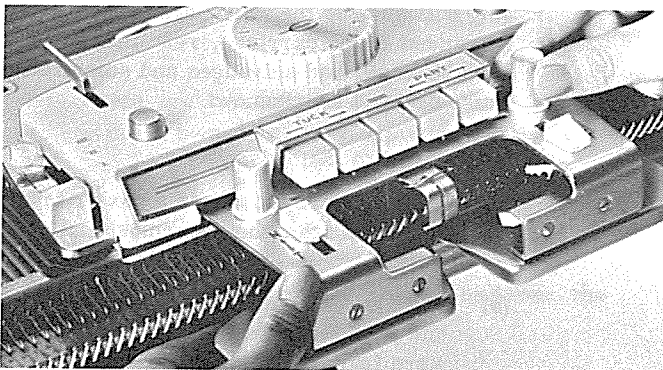


Sk. 10.

- b) Release the springs in the upper carrying case and remove the sinker plate assembly (sk.9 and 10)

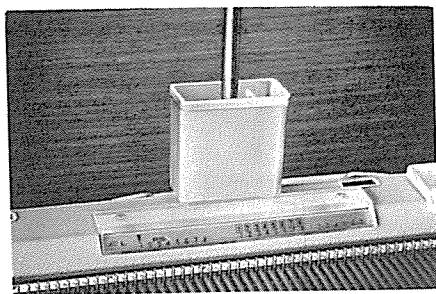
- c) Loosen the plastic thumb screws of carriage, insert the sinker plate assembly as far as it will go and fasten the thumb screws securely. (Sk. 11).

Sk. 11.



Sk. 12.

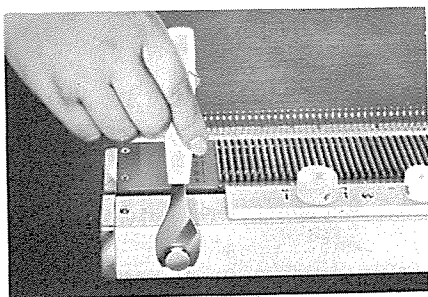
- d) Fasten the handle to the two threaded studs on the carriage (sk.12). Both sides should be screwed down at the same time to avoid stripping the thread.



SET UP THE ACCESSORY STAND.

Sk. 14.

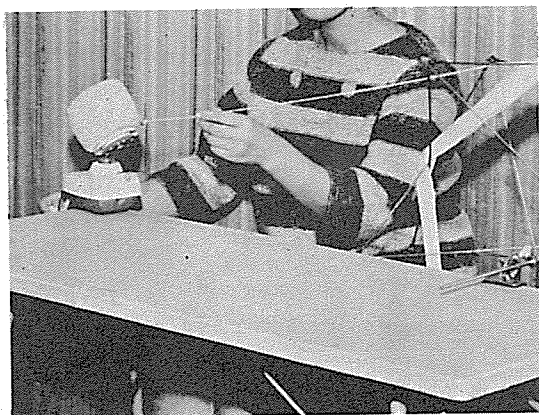
Set up the accessory stand on the tension unit rod behind the slide dial (Sk. 14).



Sk. 15.

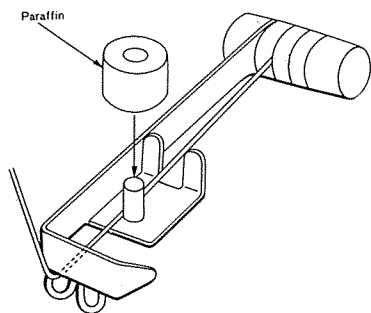
The Set Lever.

Fit the set lever on to either of the setting shafts at the rear of the needle bed; the one on the right is illustrated (Sk. 15).



Winding the yarn using an Empisal Wisk Woolwinder. Sk. 26.

In your accessory box is a small plastic container with a stud of paraffin inside: When using yarns such as cotton, 8 ply etc., the paraffin should be placed as shown in sketch. This will facilitate easier knitting.



PREPARING TO KNIT

In this section you will be led through the elementary steps of threading the knitter, setting the controls, casting-on and plain knitting. The fuller use of all controls on the carriage and the needle bed is explained in the section "Advanced Knitting".

For practice use an average soft 3-ply or light 4-ply wool. This may be unravelled and rewound for use again.

Preparing the Yarn:

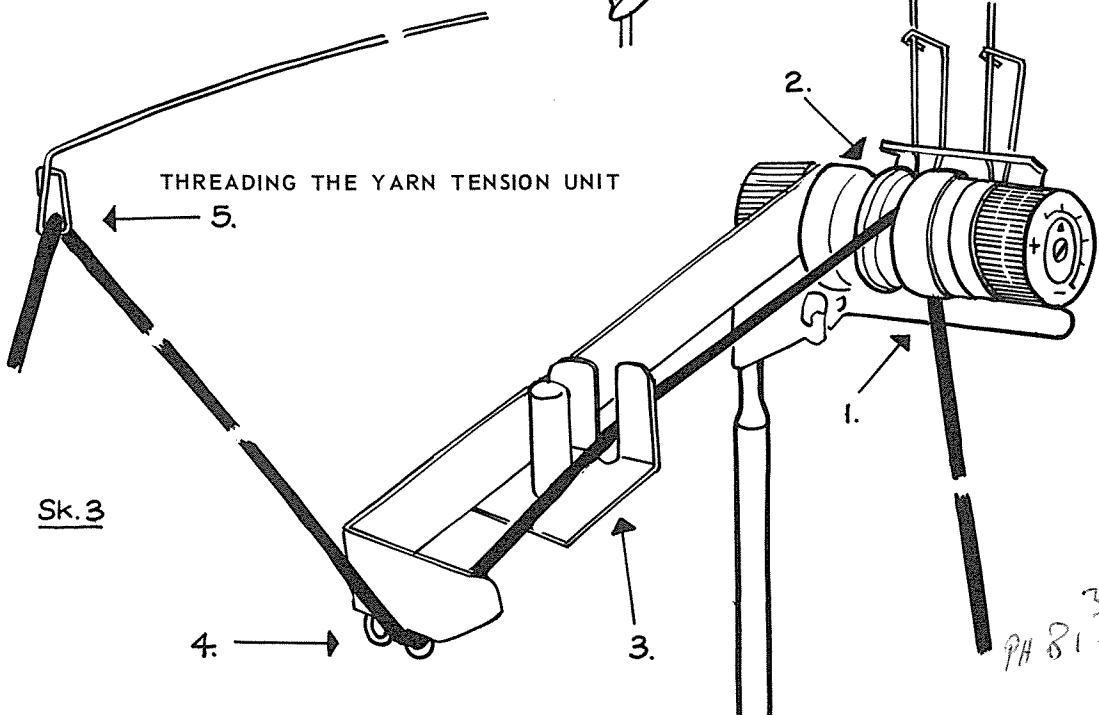
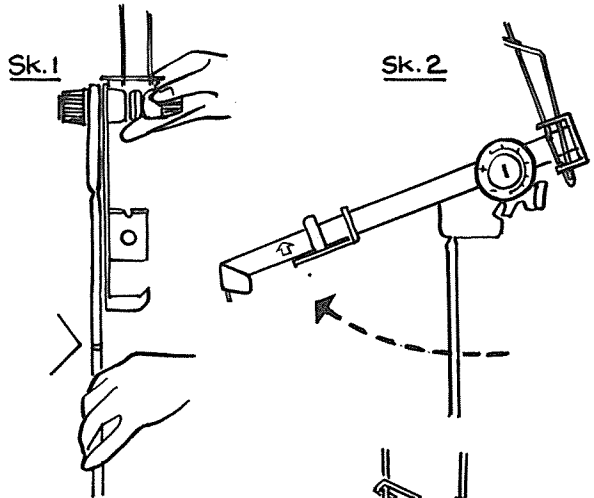
The yarn must at all times feed freely. Any interference with the smooth flow, pull or snagging will slow up the work, affect the even movement of the carriage, resulting in uneven stitches, bad selvages and sometimes cause dropped stitches.

There are two methods:

- (a) Pile the yarn loosely in a box or tray, and work from the uppermost end of the yarn.
- (b) With an Empisal Wisk Woolwinder form the yarn into a ball and draw off the yarn from the centre.

ATTACHING THE YARN TENSION UNIT

- Remove the automatic yarn tension unit from the upper carrying case.
- Fit the base of the upright rod into the hole at the centre back of the knitter.
- Set the yarn tension unit into position on the top of the rod. (SK.1)
- Raise the front yarn guide arm (SK.2)



The Yarn tension unit is devised to guide and ensure an even feed of the yarn to the carriage.

There are two sets of tension guides, each with its own discs, springs and eyelets.

To thread the unit, lead the yarn from the ball through the yarn tension unit as illustrated. (SK.3)

- Be sure that the yarn is between the guide pin (1) and the discs (2)

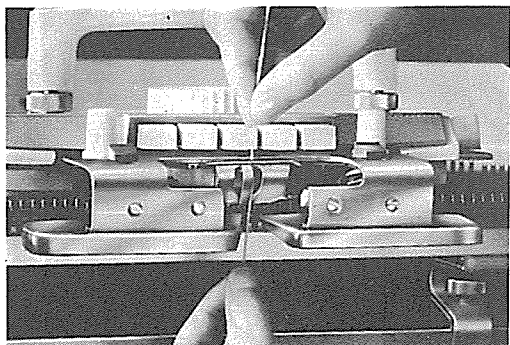
- Follow through to the guide slot (3) then the eye (4) and then to the take-up spring (5)

- Lead the yarn to the carriage.

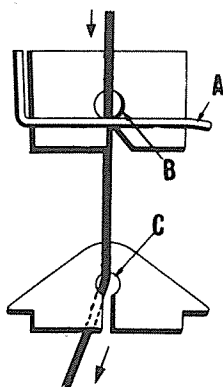
As the take-up spring will draw the yarn upwards, pull sufficient yarn through so that it hangs about 8 inches below the carriage when the take-up spring is in the upright position.

THREADING THE CARRIAGE YARN FEEDER.

The carriage may be at either side of the needle bed clear of the needles to be knitted.



Sk. 28



Sk. 28(a)

- a) Thread the yarn under the top spring A (Sk. 28) into slit B of the yarn feeder; hold it taut with both hands and press it back into the slit until you hear the click of the yarn retaining spring. The yarn should then be in apertures B and C.
- b) Pull enough yarn down from the automatic take-up spring to extend about 8 inches below the carriage.

SETTING THE CARRIAGE CONTROLS FOR PLAIN KNITTING.

The reasons for the various control settings mentioned will be explained later in the section Advanced Knitting. It is first necessary to know how to knit plain stockinette.

The carriage may be at either side of the needle bed, clear of the needles to be knitted.

The Pattern Selector Buttons: Press only the central of the five buttons in the front of the carriage. (This ensures that the other buttons are released from any patterning position they may be in).

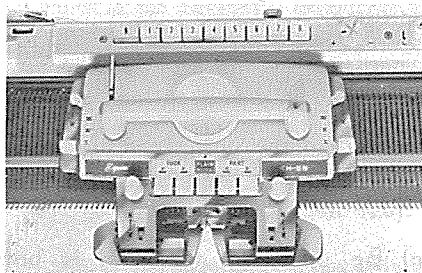
The Holding Cam Levers: At each side of the carriage there is a lever with a plastic knob. Both of these should be set against the mark I on the carriage. (Termed Holding Cam Levers in Position I).

The Weave-in Cam Levers: The flat metal knobs on the sides of the carriage control the Weave-in cams. These should be set on the mark N (neutral).

The Weave-in Brushes: These are in front of the sinker plate and controlled by the plastic knobs which should be set on "N".

The Tension Dial: The tension dial, in the centre of the carriage below the handle, controls the stitch size. Turn it until it is set on 5 for average 3-ply wool, or between 5 and 6 for a 4-ply wool.

The Row Counter Tripper: Set the tripper forward if you wish to use the row counter

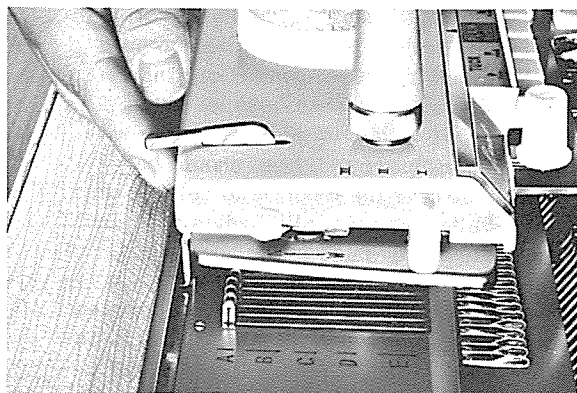


Sk. 30

Carriage controls set for Plain knitting.

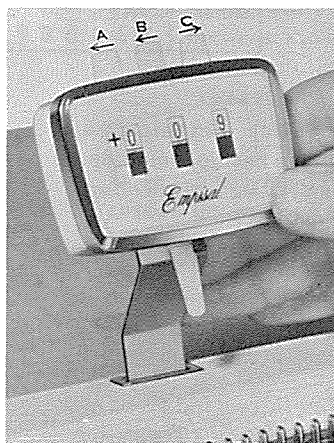
THE ROW COUNTER.

The row counter can be made to register the number of times the carriage passes in front of it by pushing outwards the "tripper" which on opening the knitter will be seen at the left rear of the carriage (Sk. 21). The tripper in contacting the row counter lever causes that lever to register the next number on the row counter face; in most cases this is the automatic manner of counting rows. However, when knitting Fair-isle patterns, certain rows require a double movement of the carriage across the needles and in such cases the tripper should be raised (Sk. 23) and the row counter operated manually at the completion of each row.



Sk. 21

Set the counter into either aperture at the back of the needle bed (Sk. 22).



Sk. 22



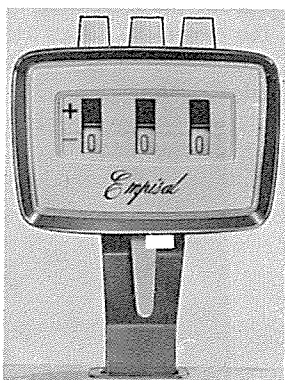
Sk. 23

There are three winders on the top of the row counter which turn in either direction, except when the numeral is at 9 or 0.

To set the figures on the row counter to zero, turn the knobs A, B and C in that order in the direction indicated by the arrows (Sk. 24).



Sk. 24.



Sk. 25.

Beneath the row counter and in front of the tripper there is a small switch. When pressed to the left it reveals black numbers and when on the right the red numbers.

The black numbers count upwards, the red ones downwards.

Thus the figures can be pre-set to count in either direction according to whether it is desired to count upwards towards a certain total, or downwards towards 0 from a certain figure.

With the switch lever concealing the red numerals set the black figures at "0-0-0". It is now ready to count upwards. If counting downwards to 1 or 0, set it with the red figures indicating the numbers.

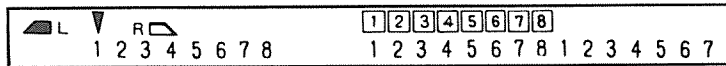
The purpose of counting downwards is to be able to know at any stage how many rows remain to be knitted - useful information when the yarn is coming to an end!

SETTING NEEDLE BED CONTROLS FOR PLAIN KNITTING.

Make a habit before starting your knitting of these few actions:-

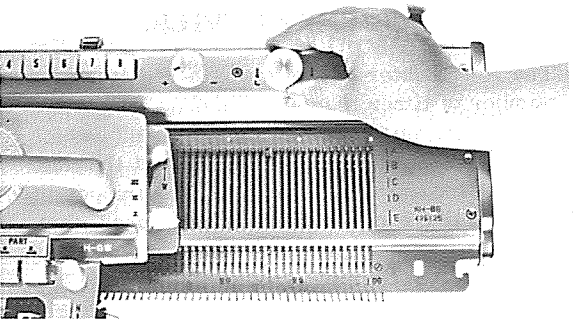
Needle Selector Buttons: These should be neutralized. Press the 0 button to release any buttons (1-8) depressed. All needles will now be easier to move by hand in the needle bed.

Needle Selector Slide Dial: Set this on position 1 (when the arrow between the letters L & R on the indicator plate at the centre back of the knitter is above the number 1 the slide dial is said to be in Position 1.



Sk. 32

Needle Selector Reverse Switch: Set this on + (In the negative position the needle selector key reacts on the needles although all needle selector buttons are released).



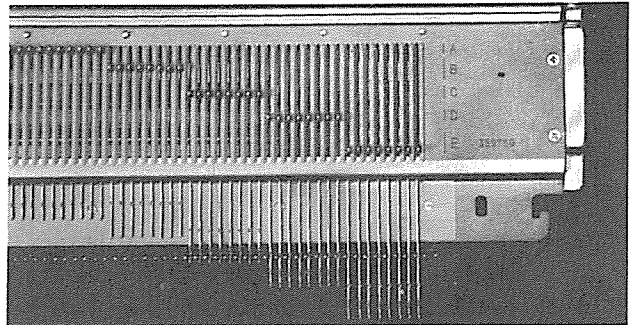
Sk. 31

Having set the three controls mentioned above in the positions indicated all needles are released from the needle bed controls. This makes it easier to move the needles by hand if necessary; it is also the basic position from which to start before patterning.

Selection of Needles

The needles are numbered in red and front of the needle bed, the centre is "0". There are 200 needles from 0 to 100 to the left, similarly numbered to the right. For further convenience the rivets at the back of the needle grooves are spaced 10 needles apart.

The needle positions are shown by the letters A, B, C, D, and E on each side of the needle bed.

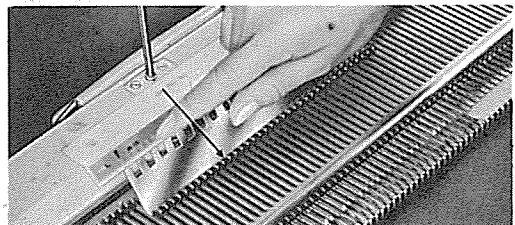


Sk. 33

For plain knitting, we are concerned with Positions A and B; the butt of the needle which projects through the grooves in the needle bed indicating the needle position. Thus, when all butts are as far back against the rear of the needle bed as they can go, the needles are said to be in Position A. Move the butts forward until they are in line with the mark "B" for Position B.

Position A: This is the resting or non-knitting position and no matter what is done to the controls of the carriage or the needle bed, these needles will not move.

Position B: The needles in this position are set for plain knitting and can now be moved by the carriage. Fig. 34 shows how to bring A position needles into B position using a straight edge.



Sk. 34

Details of other needle positions are explained on page 29.

CASTING ON AND KNITTING

You are now ready to knit. As the carriage moves over the needles it will form the basic stockinette stitch, which in hand knitting is achieved by knitting 1 row of knit (or plain) and 1 row of purl. Each time the carriage is pushed across one row is knitted.

There are two methods for casting-on stitches and the cast-on comb should be used for both.

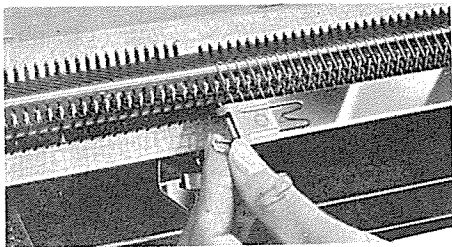
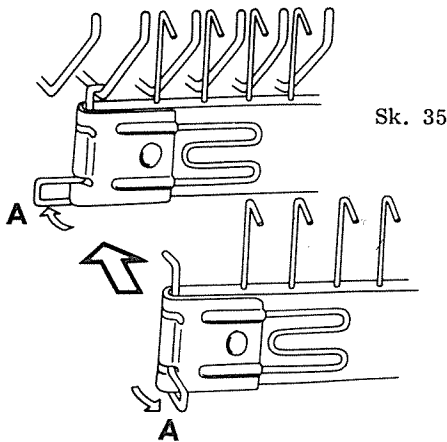
- (1) The open edge cast-on.
- (2) The finished edge cast-on.

The comb should be as wide or wider than the number of needles brought into knitting position.

Open Edge Cast-on.

The open edge cast-on method is often preferred if one wishes to join a border on the sleeves, neck opening, or waist. It is also practical as a time saver when making tension test swatches.

1. Hold comb centred to the edge of the needle bed with the wire hooks of the comb facing you.
2. Turn securing levers A at both ends to face you (Sk 35).
3. Place hooks between pegs of needle bed as far up as possible (see Sks. 35 & 36).



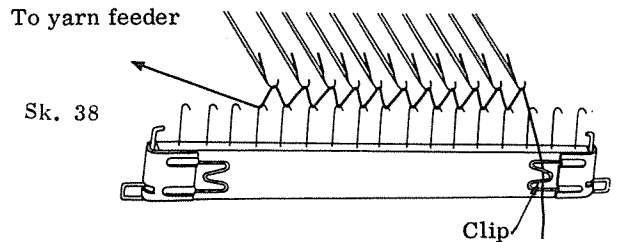
Sk. 36

4. Turn the two securing levers A outwards to the right and left respectively and the cast-on comb will hang correctly on the Knitter. The comb should be hung in front of the needles to be knitted so that the central needle is central to the comb.
5. Using the straight edge of the needle pusher, bring forward to position B, or about $\frac{1}{2}$ " from the resting position A, the required number of needles (Sk. 34,

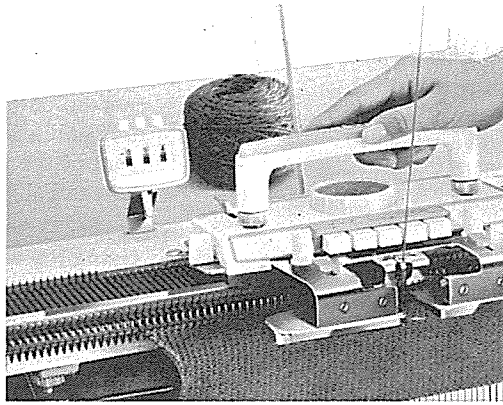
For practice use 40 needles on either side of the central "0".

6. Check to see that the needles pass freely between the cast-on comb teeth (with a finger on the needle butts move them forward, then back to position B).
7. Move the threaded carriage slowly across the needles to be knitted. It will cause loops to be picked up in the needle hooks and to form around the gate pegs and the hooks of the cast-on comb. Continue the carriage movement until the carriage clears the cast-on comb.

If the end needles on the side near the carriage come up out of line push them back, commencing with the inner needle - to make this easier draw the yarn from the yarn feeder (carriage) towards the needles with the other hand.



8. Carefully unhook the comb from the pegs by turning the securing levers A of the cast-on comb and let the comb hang in the loops of wool (Sk 38).
9. Catch the loose end of the wool round the cast-on comb spring to keep it out of the way and to secure the first stitch.
10. Continue knitting.



Sk. 39

Plain Knitting.

At the beginning knit slowly... Speed comes with practice.

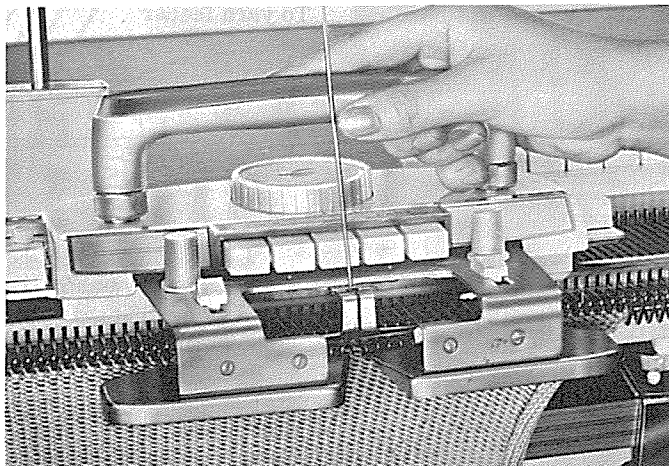
- a) Move the threaded carriage from side to side at an even speed across the B position needles.
- b) Do not reverse the movement of the carriage in the middle of a row as this may cause it to jam, or stitches may be dropped.
- c) Move the carriage at an even speed and listen for a click before changing direction at the end of each row.

For Neat Side Selvedges.

When knitting, care must be taken not to move the carriage too far beyond the last B position needle. If you do there will be insufficient tension in the take-up spring and a loose loop will form in the yarn between the feeder and the first needle when the carriage is on the return movement.

It is, therefore, necessary to keep an eye on the yarn at the end of each stroke, and, if necessary, to clear any loops that may form.

Another possible fault of too long a movement is the tendency of the yarn to catch in the gate pegs of the needle bed, or the brush wheels.

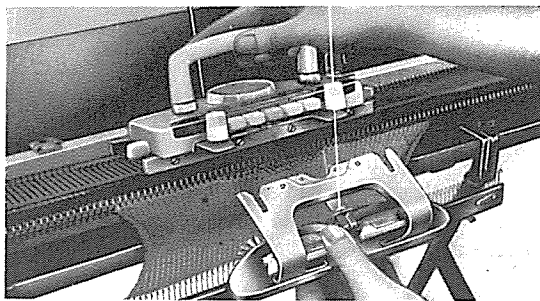


Sk. 40

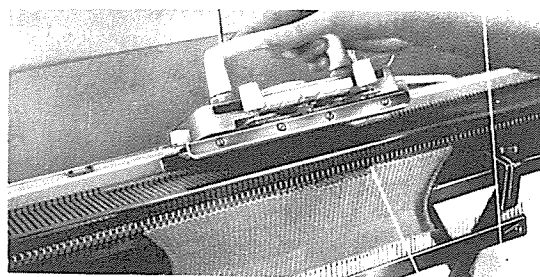
To Unlock the Carriage.

In the event of the carriage jamming in the course of normal knitting, the following steps will quickly free it:

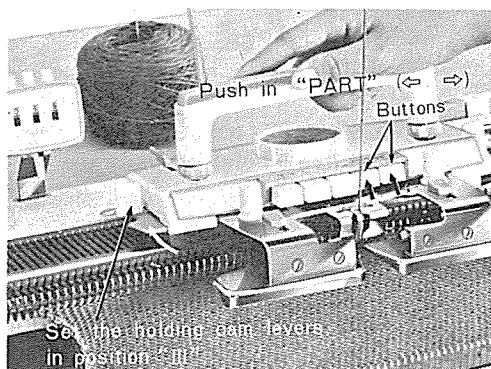
- (a) Loosen the thumb screws of the sinker plate, remove the sinker plate from the carriage (Sk. 41).
- (b) Grip the handle of the carriage and lift up by first raising the front of the carriage (Sk. 42).
- (c) Slide the carriage to the side where the row commenced and when free of the needles lower the front on to the needle bed.
- (d) Attach the sinker plate to the carriage and fasten the thumb screws of the sinker plate securely.
- (e) Unravel last row of knitting and, if necessary, re-thread the carriage feeder.
- (f) Adjust the numbers on the row counter.



Sk. 41.



Sk. 42.



Sk. 43.

To Pass the Carriage across the Needles Without Knitting.

It is sometimes necessary to pass the carriage across the "in action" or B position needles without knitting. For instance, should you change the direction of the carriage before the "click" there will be a long unknitted thread in front of the fabric which will have to be caught up. On other occasions it may be deliberately required in certain patterning, especially when knitting several colours.

Method 1.

Slide the carriage off the needle bed in the direction of travel and reset it onto the needle bed from the other end.

Method 2.

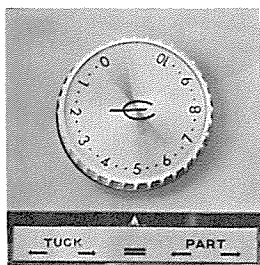
- (a) Press both "PART" pattern selector buttons (Sk. 43).

- (b) Pass the carriage across the knitting. (As both Part buttons are pushed in the cams are neutralised and no knitting action will take place.)
- (c) Depress the central "PLAIN" button. (This resets the cams into action).
- (d) Unravel the unwanted stitches.
- (e) Pull the yarn down from behind the yarn tension unit to remove all slack in the yarn.
- (f) Continue knitting.

STITCH SIZE.

Now that you have knitted a piece of fabric, you may ask yourself how are the stitch sizes changed since all the needles on the Knitter are the same size.

The Tension Dial (Sk. 44): Sometimes called the TENSION GAUGE which is graduated from 0 to 10 and sub-divided into thirds controls the stitch size.



Sk. 44.

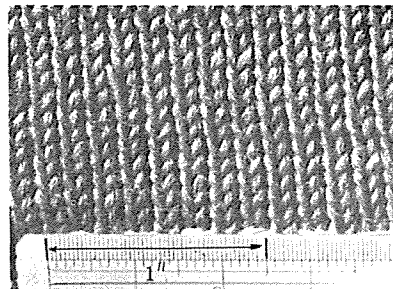
In Sk. 44 the tension gauge is set on 5 (the 5 being opposite the indicator mark).

The figure 0 denotes the tightest tension, i.e. the smallest stitch, and the 10 the loosest or largest stitch.

As the tension at which a garment is knitted depends not only on personal taste but also on the type of garment required and the thickness of the yarn used, no list of recommended tensions is given. Yarns vary in their make-up, so that 3-ply wools from different manufacturers will vary in thickness. For these reasons it is recommended that before any type of wool is used a tension "swatch" be knitted from which to make your choice of size.

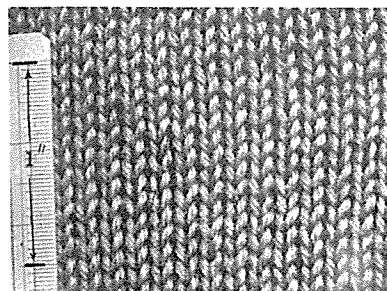
Sk. 45a

stitch
counting



Sk. 45b

row
counting



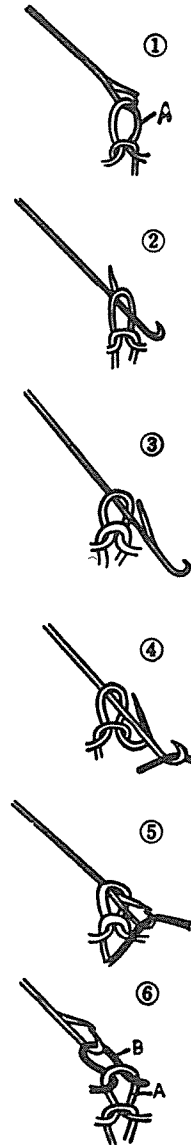
To Determine the Tension (Gauge or Stitch Size).

When knitting either the two-needle or modern knitting machine way, the tension or gauge determines the tightness or looseness of the stitches and thus the actual size of the knitted garment. The finger-tip controlled tension dial on the Knitter permits an amazingly wide range of tension variation. The larger the number set on the dial, the looser will be the resulting tension.

- (a) Determine the proper gauge by making a swatch. Knit a small test piece on about 30 needles, working sets of 30 rows, each set in a different tension. Knit a single row of a different colour between tension changes for easy identification. Block (press) the swatch before measuring for correctness.
- (b) In the test piece which best suits your requirements, count the number of stitches per inch across and the number of rows down per inch (Sk. 45). With this as a basis for a 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.

HOW A STITCH IS FORMED

- (1) The needle is in the knitting position and stitch A is hanging from the needle hook.
- (2) The cams of the carriage raise the needle. Stitch A opens the latch of the needle.
- (3) The cams of the carriage have commenced to raise the needle and now needle is forward. Stitch A is below the needle latch and is hanging from the needle stem.
- (4) The needle has reached its maximum forward position in the needle groove. Stitch A is hanging from the needle stem, while the yarn feeder has placed onto the hook a new thread which will form the next stitch B.
- (5) The needle is returning to the normal knitting position, pulling the new loop B with it, the old stitch A is at the same time closing the latch causing the new stitch B to be locked inside the needle hook.
- (6) The needle has completed its return movement. It has pulled the loop B through the stitch A, thus making a completely new stitch which is now hanging from the needle hook.

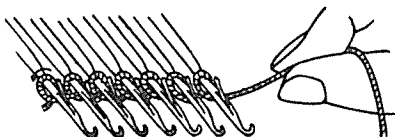


Sk. 46.

USE OF LATCHET AND TRANSFER TOOLS

CLOSED EDGE CAST ON

1. Use a tension suitable for weight of yarn; knitter carriage to the right.
2. Hang cast-on comb on pegs of needle bed.
3. Push needles to be used all the way towards you. (Position E).
4. Fasten end of yarn with slip knot on left of knitter.



Sk. 47.

5. Loop yarn loosely around each needle from left to right, counter-clockwise. Loops must be past the latches on stem of needle.
6. Thread yarn into feeder on carriage and knit one row. The carriage should be eased across gently.
7. Lower comb after this row.
8. Knit garment.

CONTINENTAL RIB (1 x 1)

This rib may be used at the waist and cuffs of any knitted garment where a tight fit is required. This is suggested to the beginner as a simple method when learning to use the knitter.

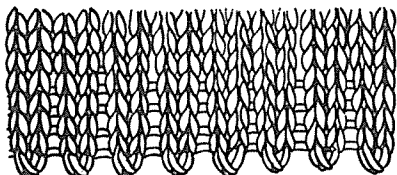
1. Thread yarn into automatic yarn tension unit and carriage feeder. Place carriage at the left of knitter.
2. Hold cast-on comb, centred to the edge of the needle bed, with the hooks of the comb facing you. Secure the comb between pegs of the needle bed using the securing pins at the ends of the comb.

3. Using the even edge of a 1 x 1 needle pusher, bring up the desired number of needles to Position "B", the needles distributed evenly on each side of "0".
4. Turn pusher to cut out edge and push back alternate needles. This sets needles for the 1 K, 1 P border.
5. Place carriage at the left, set tension dial to No. 10 for the first cast-on row. Knit by pushing carriage gently across past the cast-on comb.
6. Release comb by turning pins at the ends of the comb and pull down carefully. Stitches must remain in the hooks. Carefully fasten beginning of yarn of left side of cast-on comb spring.
7. Knit four rows, using contrast colour yarn.
8. Set the tension dial on 3 for smooth yarn.
9. Remove the contrast colour yarn and thread basic colour yarn in feeder. Knit twice as long as desired length of hem (\pm 40 rows for 2" width). Always remember to listen for the "click" at the end of each row.
10. Remove the cast-on-comb and fold the fabric double.
11. Push to B-position all needles which were pushed to A-position in step 4. Open all the latches.
12. Using the transfer tool, transfer all the stitches from the first row of basic colour yarn to the empty needles.
13. Set the tension dial on 6 (or suitable tension) and continue knitting.

HOW TO MAKE HEMS

The hem is a very popular border trim for both the start and finish of smart knitted garments. All hems should be cast on with an open edge on No.10 tension for the first row regardless of the weight of the yarn.

Completed Picot edge hem.



Sk. 48.

Picot edge hem

1. Cast on the necessary number of stitches - open edge method - using contrast colour yarn.
2. Knit 4 rows, using contrast colour yarn. Rethread with basic colour yarn and knit 1 row. (Tension 10).
3. Reset tension one number smaller than tension selected for garment.
4. Knit the depth of the hem, about 15 rows.
5. Using the single transfer tool and starting at the second stitch from the edge, transfer every alternate stitch to the adjacent needle. (See Sk. 50 - 53) When row is completed every second needle is empty, the others hold two stitches.
6. Raise all "In action" needles to E position (including "empty" needles).
7. Ensure that H.C. levers are set in position I ; knit across.

8. Knit the same number of rows as in Step 4.
9. Remove the cast on comb and fold the fabric double.
10. Using the transfer tool, pick up the first row of basic colour stitches and transfer these to the corresponding needles.
11. Raise all "In action" needles to E position. (Holding Cam levers on I). Knit across to close the hem.
12. Reset tension to that selected for garment (see step 3 above), and continue knitting .

* **Note :** When the panel is completed the contrast colour yarn can be unravelled, leaving a clean hem.

Tailored hem

The same as above except that no picot transfers are necessary (omit steps 5, 6 and 7 of above).

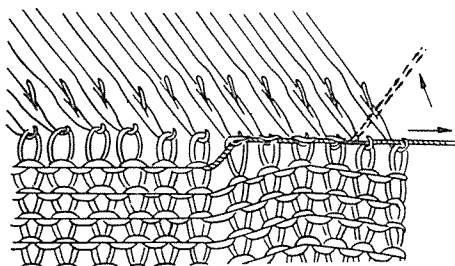
To Remove the Fabric from the Knitter (without casting off):-

- (a) Remove the yarn from the carriage yarn feeder.
- (b) Hold the fabric against the needle bed.
- (c) Pass the carriage across the needles in action, once or twice.

The fabric should be released from the needles, shewing loose loops which will unravel unless bound.

UNDOING ROWS (UNRAVELLING)

If you have knitted more rows than necessary, do not remove work from the knitter. Simply unravel one or several rows, by doing the following: (See Sk. 49).



Sk. 49.

Pull the yarn slightly, drawing it out of the stitches. The stitches of the previous row will slip into the needles automatically as the yarn is raised in an upward movement towards the needle bed.

It is advisable to hang cast-on comb into knitting if several rows are to be unravelled to prevent stitches from being pulled off the needles.

To move the carriage in either direction without knitting, push the 2 Pattern Selector Buttons to "PART". The carriage will then slide over the needles which are in operation without knitting. (This is also useful for multicolour knitting).

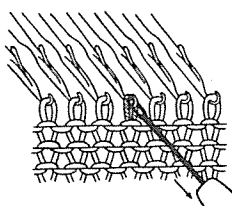
Pull the ripped yarn down through the back of the yarn guide until the yarn tension spring is brought back into operation. Turn the knob at the back of the row counter, to deduct the number of rows unravelled, and push the centre Push Button to knit.

SHAPING

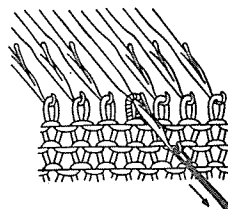
How to use Transfer Tool

This method is used for lacy patterns, increasing, decreasing and repairing dropped stitches.

- a. Hold the transfer tool parallel with the needles in the needle bed. Place the eye of the transfer tool into the hook of the needle. (See Sk. 50).

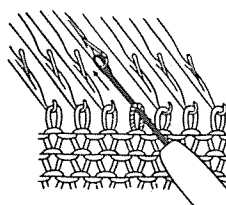


Sk. 50.

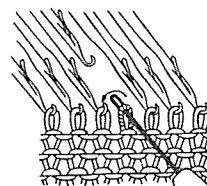


Sk. 51.

- b. With the transfer tool, bring the needle forward. The stitch in the hook of the needle will slide behind the latch and onto the stem of the needle. (See Sk. 51).
- c. Without releasing the transfer tool, push the needle all the way back until the stitch is transferred onto the transfer tool. (See Sk. 52).



Sk. 52.



Sk. 53

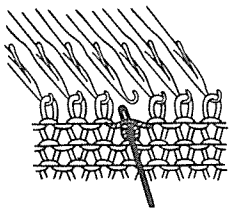
- d. Raise the transfer tool with the stitch on it and transfer it to the adjacent needle, right or left as desired. (See Sk. 53).

Note

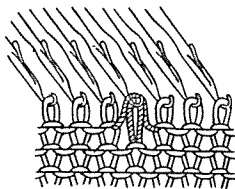
If the latches of the needles are opened before transferring, this will speed the transfer of stitches. (Use hand brush for opening the latches).

How to pick up one dropped stitch

- a. With the single transfer tool, pick up the stitch and the unknitted thread and put them both on the empty needle. (See Sk. 54 and 55).

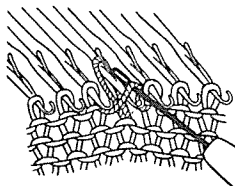


Sk. 54



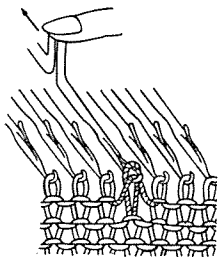
Sk. 55

- b. Push forward the empty needle until the stitch is behind the latch of the needle, catch the thread of the unknitted stitch into the hook of the needle. (See Sk. 56).

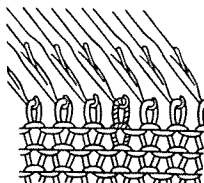


Sk. 56

- c. With your finger on the butt of the needle, push the needle back. The stitch will slide over the closed hook of the needle and be re-knitted. (See Sk. 57 & 58).



Sk. 57.

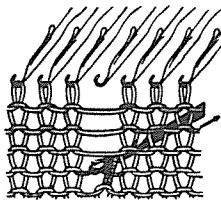


Sk. 58

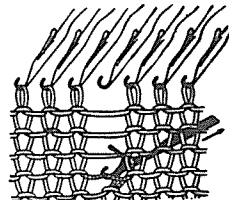
How to pick up a run of stitches (Plain knitting)

- a. Catch the lowest loop of dropped stitch with the latch hook from behind the fabric.
- b. Working from behind the knitting with latch tool crochet upwards to reform the lines of stitches as follows:
With a downward movement place stitch behind latch and next horizontal thread into the hook of the needle. (See Sk. 59 - 63).

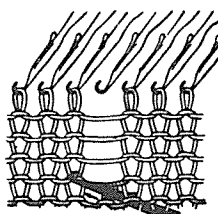
Catch horizontal threads one by one to form new stitches until you have knitted back to the top of your work. The final stitch is placed back on the empty needle. (See Sk. 61, 62, 63).



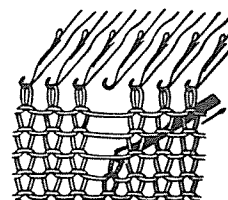
Sk. 59



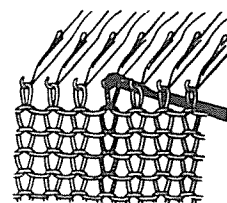
Sk. 60



Sk. 61



Sk. 62



Sk. 63

How to knit purl stitches or ribbing

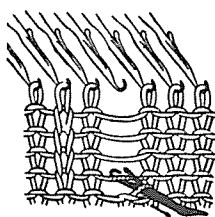
The knit and purl stitch together on one side of the material leaves an uneven texture of a ribbed effect. The ribbing is produced by having knit stitch over knit stitch and purl stitch over purl stitch, in vertical lines. The ribbing narrows and lengthens the knitted fabric and increases its elasticity

It is widely used for waist-bands in sweaters, cuffs, collars, pockets and often for decorative purposes. You can make many variations of ribbing. For example, 1 knit 1 purl, 2 knit 2 purl, 3 knit and 1 purl, etc. Select any number of combinations of knit and purl to suit your particular requirement.

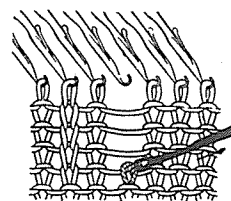
To reverse knit to purl stitches on your knitter:

For one knit one purl do the following:

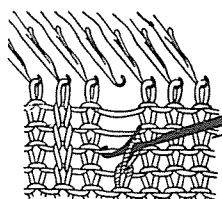
1. Knit as many rows as required for the length of the ribbing on a slightly tighter tension.
2. Drop the third stitch from the end by pushing the needle forward then back until the stitch drops off the needle, then allow the stitch to drop as far down the fabric as you wish.
3. Insert the hook of the latchet handle into the loop of the last dropped stitch from the front of the fabric. Hold the tool parallel, and see that the stitch is behind the latch.
4. Catch the next parallel thread into the hook and pull forward until new stitch is formed. (See Figs. 64-70).



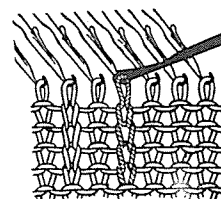
Sk. 66



Sk. 67



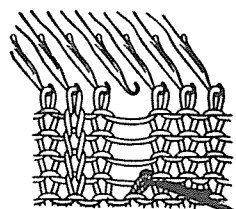
Sk. 68



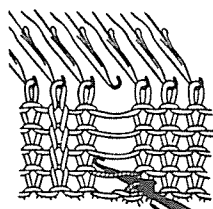
Sk. 69

Watch the latch of tool, always pick up parallel threads one by one. Note that the last stitch falls behind the latch so that the next parallel thread is in front of the latch. The push-pull movement soon becomes mechanical. When all parallel threads are picked up, the last stitch is placed back onto the empty needle. In this manner you are reversing your stitch, converting each stitch from knit to purl.

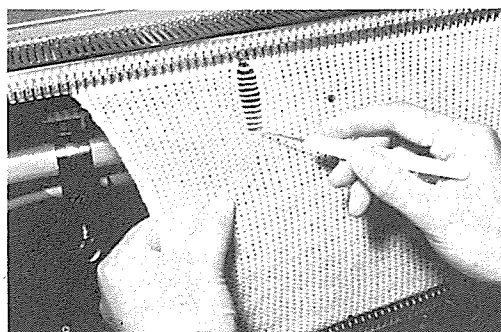
Repeat steps 2, 3 and 4 for each row required to be "ribbed".



Sk. 64



Sk. 65



Sk. 70

HOW TO REMOVE THE KNITTING FROM THE KNITTER

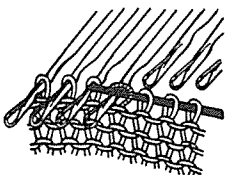
1) Unbound (Unfinished) method

- a. Take the yarn out of the yarn feeder on the carriage.
- b. Press the work against the needle bed and slide the carriage twice across the needles in action.

The work will be released.

2) You may prefer to transfer your finished work to hand knitting needles. Do this as follows:-

- a. Slide a hand knitting needle into the first stitch. With your left hand, hold the knitting close to the knitter. With your finger, bring the needle forward so that the stitch in the hook of the needle slides into the stem of the needle behind the latch.
- b. Bring the needle all the way back. The stitch will fall over the closed hook of the needle onto the knitting needle.
- c. Slide the knitting needle into the next stitch and repeat until all the stitches are off the needles on the needle bed. (See Sk. 71).



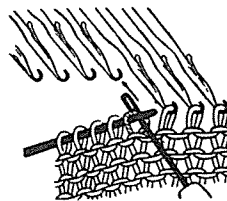
Sk. 71.

Transferring off hand knitting needles to knitter

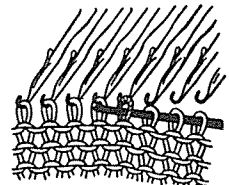
(1) Using Transfer tool

- a. Begin from right side. With left hand, hold the fabric facing in the desired direction with the hand knitting needle in line with machine needles. Pass the transfer needle through the stitch on the knitting needle from the front.
- b. Transfer the stitch from the transfer needle onto the hook of needle in the knitter. (See Sk. 72).

When a large number of stitches is transferred in this manner the stitches on the knitter are likely to come up and out of the hooks. To prevent this push the needles with transferred stitches back as far as they will go.



Sk. 72.



Sk. 73.

2 Alternate method

- a. Place into Position D the needles from which the stitches are to be transferred.
- b. Open the latches of these needles (use hand brush).
- c. Begin from left side.
- d. Transfer the stitches from the hand knitting needle onto the opened hooks of the machine needles. (Sk. 73).

INCREASING

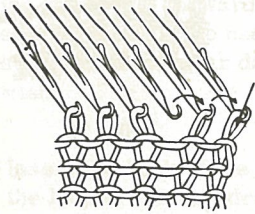
Increasing one stitch at either edge

(i) Simple method.

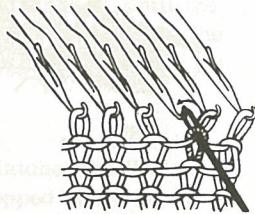
- Push into action one needle from the resting position "A" on the side nearest the carriage.
- The empty needle will pick up the yarn and form a stitch in the next row.
- Repeat wherever pattern requires it.

(ii) Full fashioned method of increasing one stitch on either side.

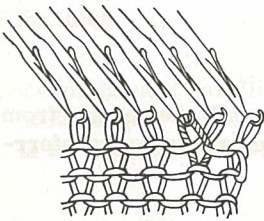
- Use 2 needle transfer tool, move the stitches out to the adjacent empty needles. (See Sk. 74).
- To fill in empty needle pick up stitch from either side of empty needle on lower row. (See Sk. 74 - 77).



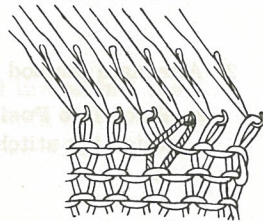
Sks. 74.



Sks. 75.



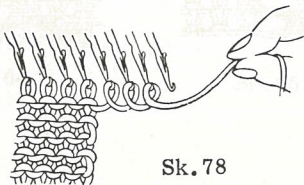
Sks. 76.



Sks. 77.

Increasing Several Stitches at either edge

- Bring into action (Position E), on the same side as the carriage, as many needles as there are stitches to be increased.



Sk. 78

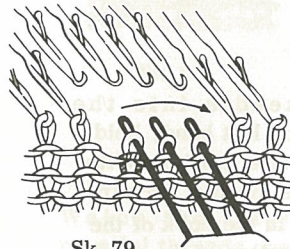
- Loosely wind yarn around stems of each needle. (Winding towards centre. See Sk. 78).
- Loops must be on stem of needle past the latches, therefore after increasing raise the needles to E position. (See note below).
- Raise the Holding Cam Lever to Position 1.
- Knit across.

Note:

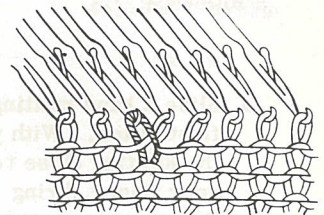
To insure perfect knitting on the increased stitches raise these needles to position E, manually each time before knitting across for the first 4 or 5 rows.

Increasing one stitch in centre of row

- Determine the position where you want to increase one stitch.



Sk. 79



Sk. 80

- Use the 3 needle transfer tool, starting from either end, transfer all the stitches outward in either direction until the required needle is free. (See Sk. 79).
- Pick up the neighbouring lower half stitch onto the empty needle. (See Sk. 80).

Increasing several stitches in the row

The above method can be used or you can transfer the knitting from the knitter to a knitting needle.

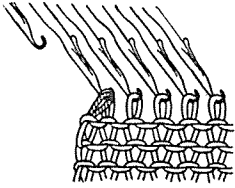
Before the knitting is transferred back from the knitting needle to the knitter, determine the number of stitches to be increased and space the replaced stitches so that there will be an equal number of stitches transferred between each extra needle then transfer the knitting from the knitting needle to the knitter (leaving empty needles where additional stitches are required).

Raise the neighbouring lower half stitches to the empty needles. (As in Sk. 80).

DECREASING

Decreasing one stitch at either edge

- i) 1st method (one stitch at either edge).
 - a. Use single needle transfer tool, transfer the end stitch to the 2nd needle, (See Sk. 81) and place empty needle out of action to Position A.



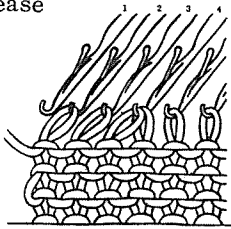
Sk. 81.

ii) Full fashioned decreasing

Use two needle transfer tool, transfer the end stitch to the 2nd needle and the 2nd stitch to the 3rd needle. Place empty needle out of action.

Illustration shows decrease on 3rd stitch

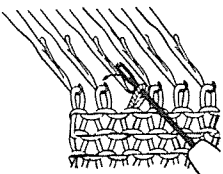
(3-needle work hook was used).



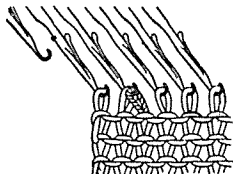
Sk. 82.

iii) Decreasing in mid-row

- a. Use the single needle transfer tool and transfer a centre stitch to adjacent needle. (See Sk. 83).
- b. Using the two or three needle transfer tool, shift all stitches in until all needles "in action" have stitches on them, then place the outer empty needles out of action. (See Sk. 84).



Sk. 83.

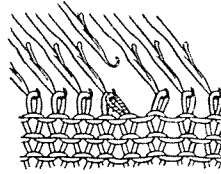


Sk. 84

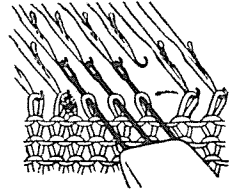
Decreasing in the centre of a row

1. Decreasing one stitch

- a. Using the single transfer needle, transfer the centre stitch onto a neighbouring needle on either side. (See Sk. 85)
- b. Using the 3 needle transfer tool, transfer all stitches inward towards, and onto the empty needle. (see Sk. 86)



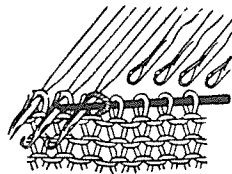
Sk. 85



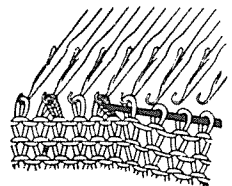
Sk. 86

2. Decreasing many stitches in row

- a. Transfer the knitting to a hand knitting needle. (See Sk. 87).
- b. Before returning the knitting from the knitting needle back to the knitter, calculate the proportional reduction in the number of stitches. For example, to decrease one stitch in every third, hang the 2nd and 3rd stitches onto one needle. (See Sk.88)
- c. The number of needles with double stitches represents the number of stitches decreased.



Sk. 87

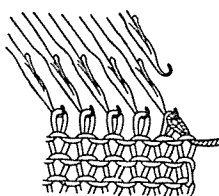


Sk. 88

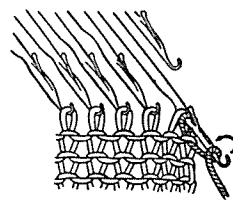
TO BIND OR CAST OFF

- a. On the same side as the carriage, transfer the end stitch to the 2nd needle. (See Sk. 89).
- b. Raise the needle with the two stitches so that the stitches fall behind the latch of the needle. (See Sk. 90).
- c. Place yarn in front of latch and manually pull needle back to form a single stitch. (See Sk. 91 - 92).
- d. Repeat this process. (See Sk. 89 - 92). Do not make stitches too tight.

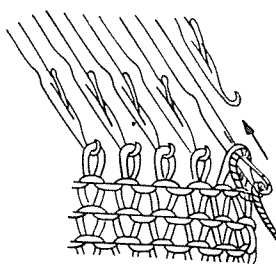
This method can be used for binding off any number or all stitches at neck, armhole, shoulder or pocket edges.



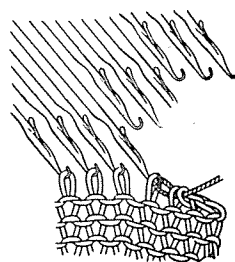
Sk. 89



Sk. 90



Sk. 91

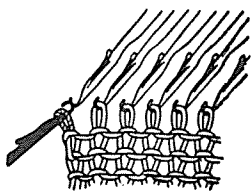


Sk. 92

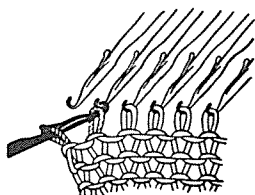
Binding off (casting off with a latchet hook)

1. Knit the last row on a much looser tension than the rest of the garment.
2. Start on the side away from where your yarn ends. (see Sk. 93 & 94)
3. Hold your latch tool upright, so latch remains down.
4. Remove first 2 stitches from the needles onto latch tool and let the first stitch slide past the latch. (See Sk. 95.)

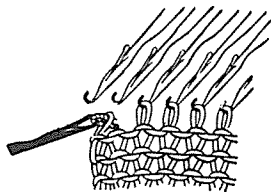
5. Pull the second stitch through the first stitch, this leaves one loop in the hook of your latch tool. (Sk. 95 - 96).
6. Continue to bind off one stitch at a time.



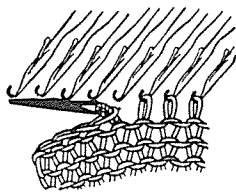
Sk. 93



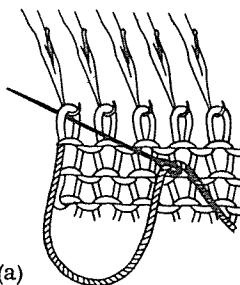
Sk. 94



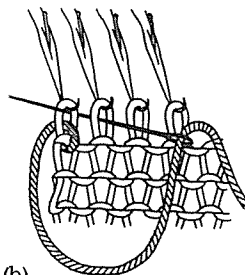
Sk. 95



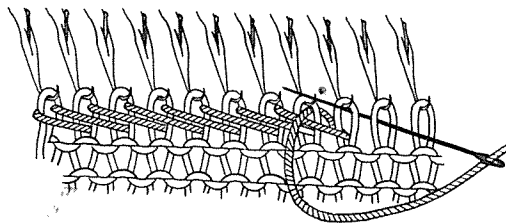
Sk. 96



(a)



(b)



Sk. 97

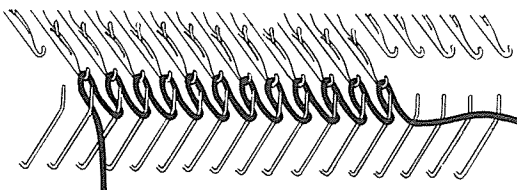
Binding off with a needle.

THE NYLON THREAD

The two main functions of the nylon thread are to assist in certain casting-on, and to hold the fabric on the Knitter.

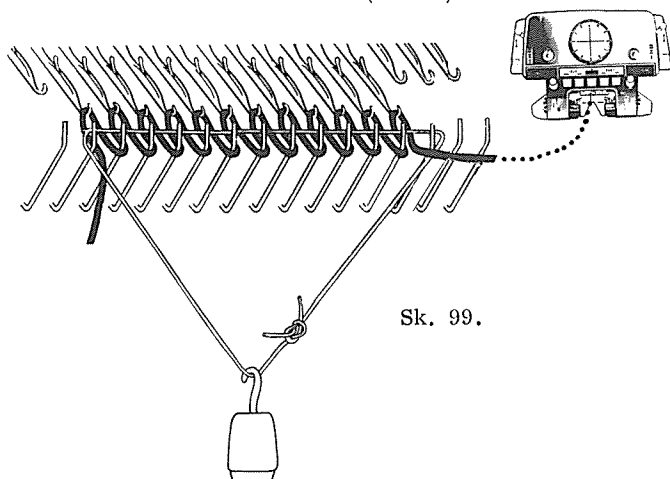
The thread has been specially made of nylon because it is supple and will easily slip through most yarns.

- 1) Casting on - when it is termed a cast-on thread.
 - a) Should it be necessary for any reason to cast on without using the combs, e.g. very fine fabrics:
 - i) Run the carriage threaded with the knitting yarn across the "in action" needles, causing loops to be formed around the needles and the gate-pegs. (Sk. 98)



Sk. 98.

- ii) Stretch the thread over the loops, between the needles and gate-pegs, and hold both ends together below the needle bed. (Sk. 99).



Sk. 99.

- iii) Knit 3 or 4 rows.
- vi) Draw out the thread.

At the commencement of the work there will be a row of unfinished stitches which will require to be closed after the fabric is removed from the Knitter.

- b) To hold together two pieces of fabric without removing the first from the knitter, e.g. when two or more pieces of fabric of a similar width are to be knitted and a closed selvedge is not required, use the nylon thread as a "divider". (Sk. 100).

After the last row of the first piece has been knitted, replace the yarn in the feeder with the nylon thread. Knit one row, then rethread the carriage with the original yarn and continue knitting. By pulling on the nylon thread the two pieces of fabric will separate.

2) Holding the Fabric to the Needle Bed.

Should it be necessary to discontinue the knitting before a panel is completed, to prevent the fabric or odd stitches falling from the needles:

- i) Disengage the row counter.
- ii) Knit one row using waste yarn.
- iii) Lay the nylon thread over the stitches as in 1a(ii) above,
- iv) Knit one row still with waste wool,
- v) Join the two ends of the nylon thread and suspend a weight on the thread.

When ready to continue knitting:

- i) Draw out the nylon thread.
- ii) Unravel the waste yarn.
- iii) Re-engage the row counter,
- iv) Continue knitting.

This may seem a lot of bother, but it will pay in the long run as stitches left on the knitter always tend to mark, and the mark is invariably seen on the garment until it is cleaned. No harm is done if the waste yarn becomes marked.

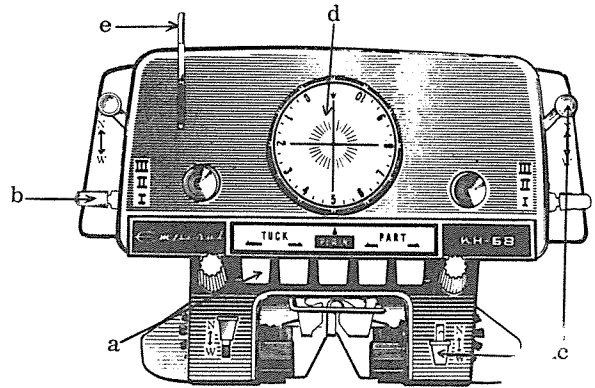
ADVANCED KNITTING.

The previous pages concentrated upon the basic and elementary steps required to cast on and knit. To make a simple garment the following basic knowledge is necessary:

- * Casting on (whether with a selvedge or plain or fancy hem).
- * Increasing and decreasing (for shaping such as armholes).
- * Repairing dropped stitches and making various openings (as for shaped necklines and plackets).
- * Buttonholes and simple stitch patterns (e.g. ribbing).
- * Casting-off.

The next part of this book is designed to show how to put excitement into your work - how to use all the potential of your Knitter, not only to knit multitudes of patterns but also weave the most glorious fabrics seldom if ever seen before,

In the following pages the workings of the various controls which fall into two categories are described.

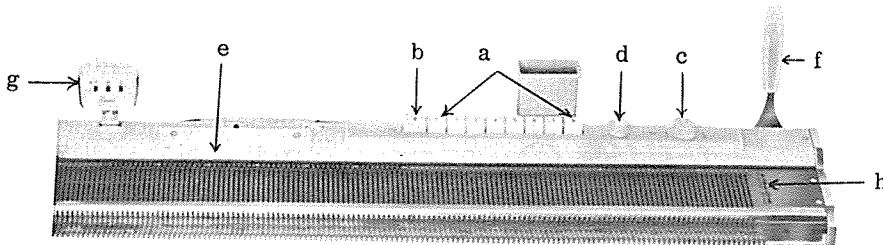


Sk.102

2. Carriage Controls: The main function of these controls is to feed the wool and knit the pre-set pattern of the needles. Some are in pairs, one part on each side of the carriage.

- a) The pattern selector buttons.
- b) The holding cam levers.
- c) The weaving or lay-in pattern controls both marked W and N and found:-
 - i) on each side of the carriage below the holding cam levers, and
 - ii) above the special large brushes on the front of the sinker plates.

k.101



1. The Needle Bed Controls, whose main purpose is to set the needles in the correct patterning position. These are mainly concentrated on the right of the needle bed and consist of:-

- a) The needle selector buttons.
- b) The needle-selector release button.
- c) The needle selector slide.
- d) The needle selector reverse switch.
- e) The needle slide indicator (in front of the branch tension arm).
- f) The selector or raising-key.
- g) The row counter.
- h) The needle position indicator (not actually a "control" but very necessary for patterning).

3. The following are single controls (SK.102)

- d) The tension gauge (at the centre of the carriage).
- e) The row counter tripper (at the left back of the carriage).

To gain the fullest benefit from the ensuing descriptions, set up a few rows of plain knitting over 40 or 50 stitches and whilst reading the various explanations experiment on the fabric, using the controls as described.

Until you are confidently sure you know and understand the controls always be ready to refer back to the book which should be kept close at hand.

NEEDLE POSITIONS.

- A - Needle in E Position.
- B - Needle-position indicator.
- C - Machine Serial number.

The needles may be set in five different positions in the needle bed grooves. The five positions are marked on each side of the needle bed by the letters A, B, C, D and E. (Sk. 103)

A POSITION (Out of Action).

The needles are fully back (in technical language "DOWN") and the carriage, no matter what is done to the controls, will not move them in any way.

B POSITION (In Action)

This is the first of the four positions in which the needles will be actuated by the carriage, and is generally referred to as the "NORMAL KNITTING POSITION".

In this position the needle has been pushed out (or "UP") about half-an-inch. The needle hooks are nearly level with the gate pegs.

C POSITION (Multi-pattern)

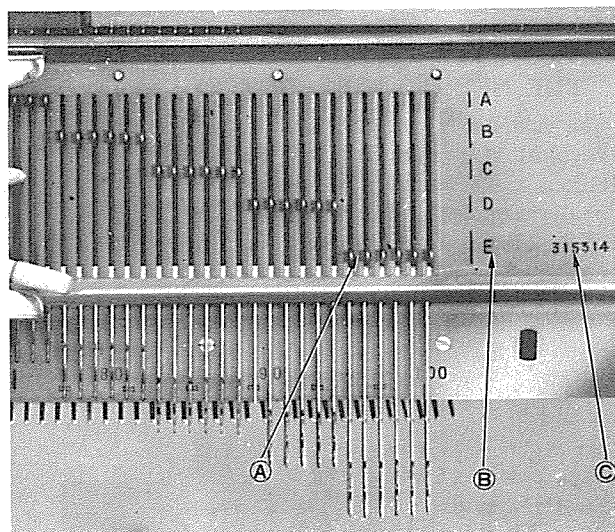
This position used for shaping polo, round, square and V-necks, for berets, skirts, doilies and in certain patterning and multi-colour combinations.

In needle positions C and D the stitch rides on top of the closed latchet.

D POSITION (Pattern-knit)

It is to this position that the needles are set by the needle selector or raising key. The needles functioning from this position will form the knit stitches required while those in B position are forming the pattern stitch according to the way the pattern selector buttons are set.

This position is also used in conjunction with advanced patterning, certain Fair-Isle patterns and weaving or lay-in patterns.



Sk. 103

E POSITION (Holding)

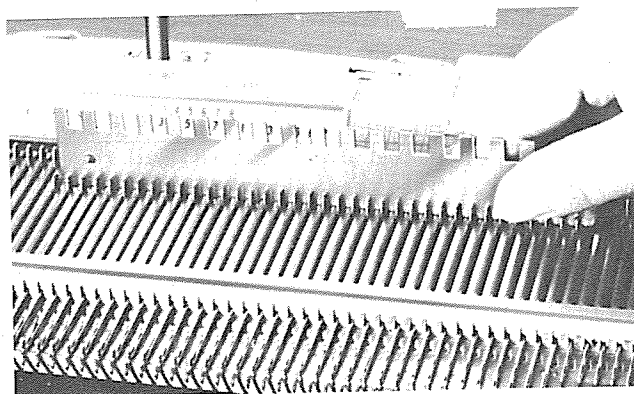
Used for partial knitting in Fair-Isle patterning and other advanced patterning. The needles can be 'held' in this position to pick up yarn from several rows for such patterns.

The various functions performed by the needles in the different needle positions in relation to the carriage controls are clearly set out in the tabulation contained on page 41.

NEEDLE PLACING

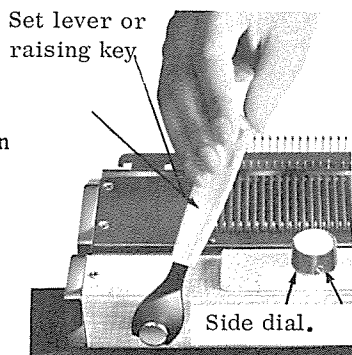
To Raise Needles from Position A.

Use a needle cutter or straight edge against the butts of the needles and push them forward to the position required. (sk. 104).



THE NEEDLE SELECTOR BUTTONS

The push button patterning system is the most revolutionary feature of this knitter. Multi-colour and textured designs now become really automatic, and the push buttons in conjunction with the various carriage controls can produce the most intricate designs effortlessly.

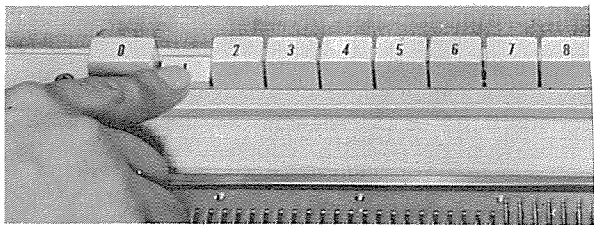


Sk.105

THE PUSH BUTTON MECHANISM.

The push button mechanism is designed to raise needles in action from the B or C position to the D position.

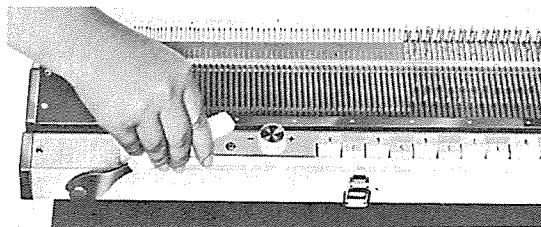
The Push Buttons, numbered from 1 to 8 are connected with the needles. The button marked '0' is the release button which when depressed releases any of the 1 to 8 push buttons previously depressed.



SK.106 Pushing down the "1" Button.

The Push Button Set Lever or Raising Key, when swivelled downwards, will raise to position D the needles corresponding with those set by the push buttons according to the position of the slide dial and the reverse switch.

The Slide Dial will retain the needle pattern set by the push buttons but cause that pattern to operate on different needles.



SK.107 To raise intermediate needles.

The Reverse Switch can be used to reverse the needle setting indicated by the buttons.

The Needle Marks \boxtimes and \diamond are found in front of certain needles: When the slide dial is in the 1st position, i.e. the figures on the upper and lower indicators corresponding in each group of 8 needles the 1st needle will correspond with the mark \boxtimes and the 5th needle with the mark \diamond .

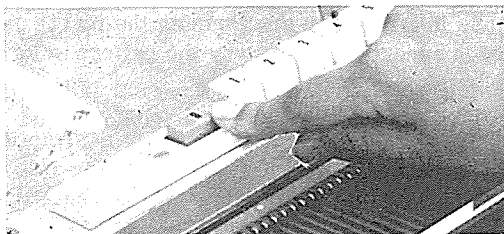
After pressing the buttons, each time the set lever is swivelled over, the same needle combinations will be raised; however, the same combination but different needles will be raised if the slide dial position has been changed.

If it is desired to raise the intermediate needles the reverse switch should be turned to face the opposite indicator.

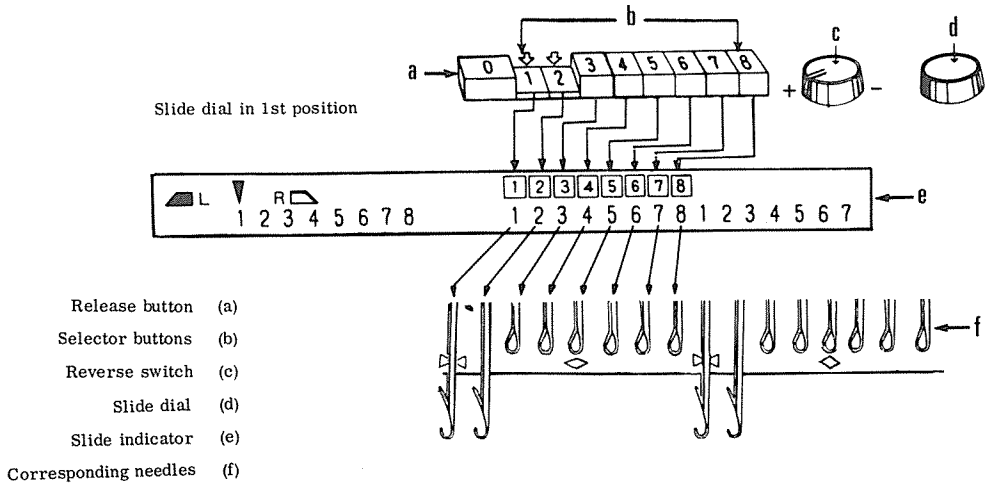
Note:

- i) Never push the needles back to position A while the buttons are down.
- ii) Always release the push-buttons when not in use for patterning.

Remembering these two simple rules will avoid damage to the control spring under the needle bed.



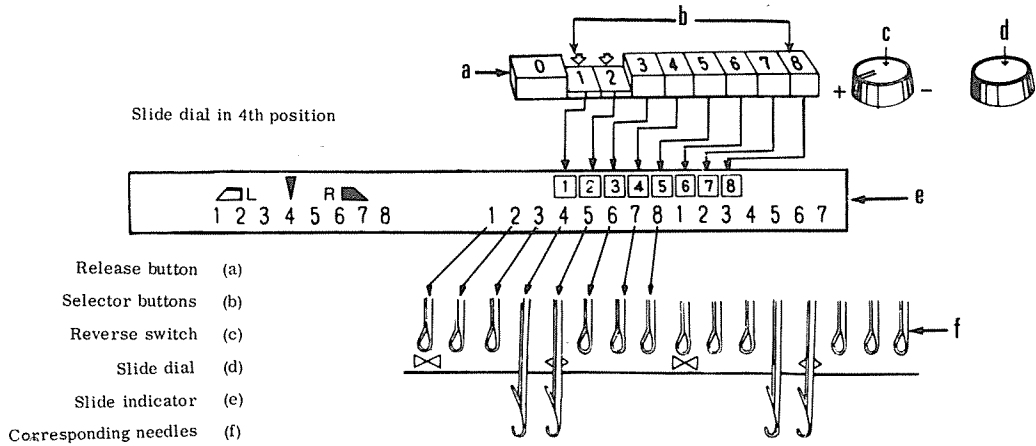
SK.108 Releasing all buttons.



Sk. 109.

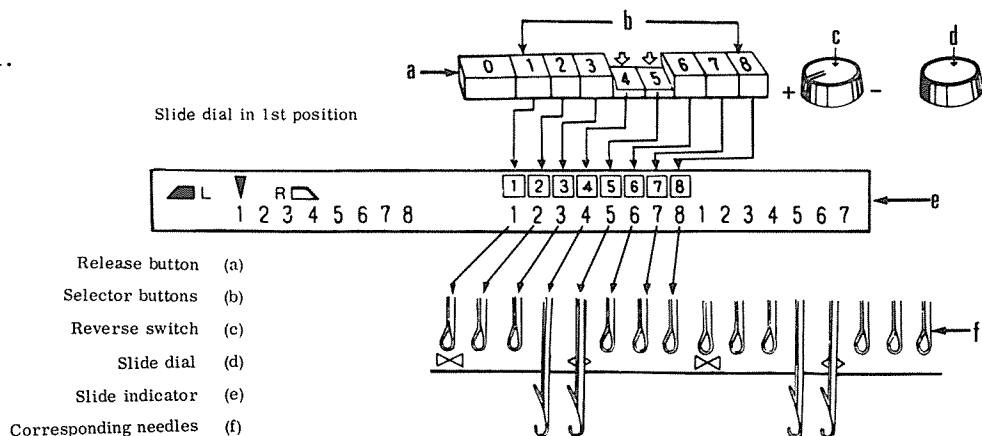
POSITIVE NEEDLE SELECTION

Sks. 109, 110 and 111 show by diagram the connection between the needles, the indicator gauge and the slide dial when the reverse switch is on the Positive (+) position.



Sk. 110

Sk. 111.



Notice that in the first two diagrams the same push buttons have been set, but different needles come forward. In the last two diagrams, different push buttons have been set but the same needles come forward. In each case the difference is caused by the differing positions of the slide dial.

If it is necessary to change the needle combinations:-

- a) Depress the button marked "0"
- b) Reset the new combination.
- c) Swivel the set-lever and the new needle combination will be raised.

If the wrong needles are raised:-

- a) Release the buttons (press button "0")
- b) Manually return the needles to knitting position.
- c) Reset the buttons for correct pattern.
- d) Swivel the set-lever.

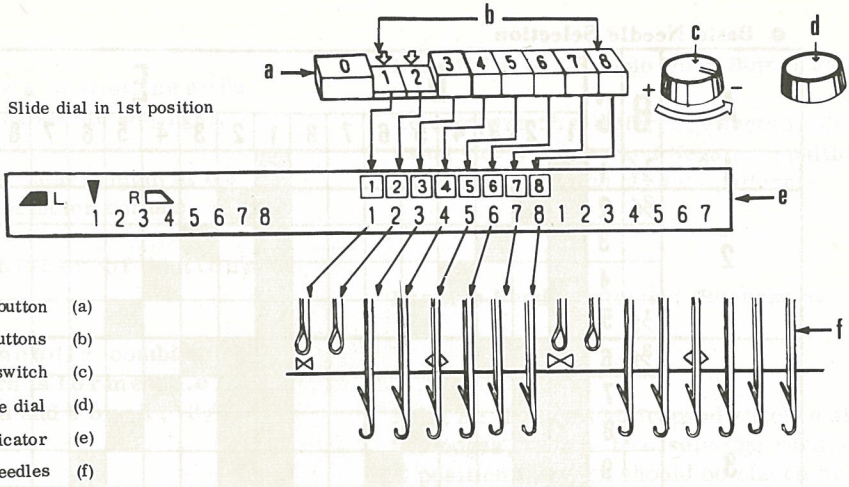
In actual knitting and patterning the selector buttons and holding cam levers will be used in various combinations. Refer to the selector buttons pattern key on page 35 for the relative needle positions of all selector button combinations.

Sks.114 show by diagram the connection between the needles, the indicator gauge and the slide dial when the Reverse Switch is on the Negative (-) position.

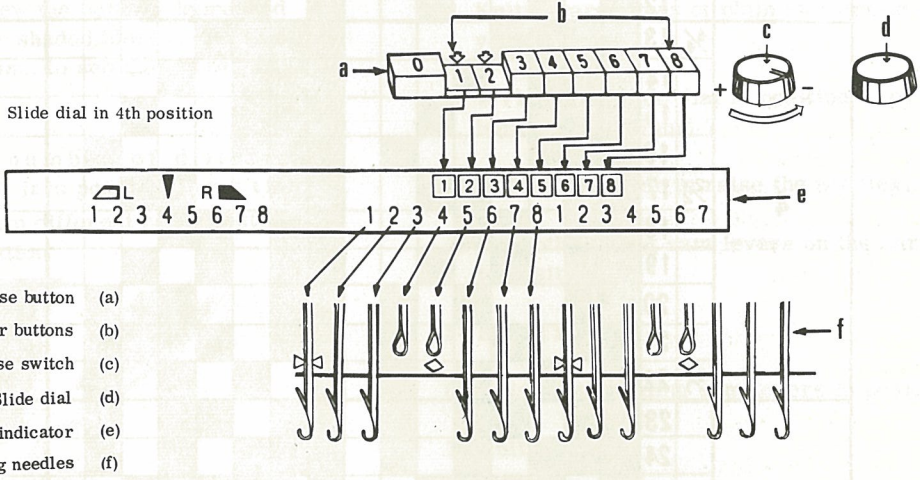
Changing the needle combinations, and correcting wrongly raised needles is done in the same manner as described in the previous column

When not required for specific patterning purposes the Reverse Switch should be neutralized (i.e. positioned at +), otherwise the needles could be inadvertently raised although no buttons are depressed.

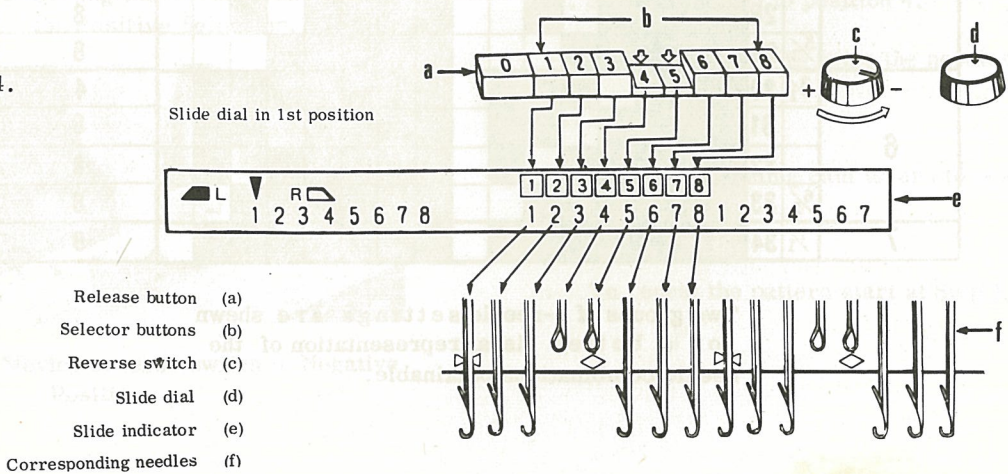
Sk. 112.



Sk. 113.



Sk. 114.



● Basic Needle Selection

A	B	C	D								E								F	
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8		
1	$\frac{1}{7}$	1	■																	8
		2	■	■																
2	$\frac{2}{6}$	3	■		■															8
		4	■			■														8
		5	■				■													4
3	$\frac{3}{5}$	6	■		■															8
		7	■			■														8
		8	■				■													8
		9	■					■												8
		10	■						■											8
		11	■							■										8
4	$\frac{4}{4}$	12	■							■										8
		13	■								■									8
		14	■									■								8
		15	■										■							8
		16	■											■						8
		17	■												■					4
		18	■													■				8
		19	■														■			8
		20	■															■		8
		21	■																■	8
5	$\frac{5}{3}$	22	■																	2
		23	■																	8
		24	■																	8
		25	■																	8
		26	■																	8
		27	■																	8
		28	■																	8
		29	■																	8
6	$\frac{3}{1}$	30	■																	4
		31	■																	8
		32	■																	8
		33	■																	8
7	$\frac{7}{1}$	34	■																8	

Two groups of 8-needle settings are shown for a better visual representation of the needle combinations obtainable.

Basic Needle Selection

The tabulation shows 34 basic needle combinations (valid for 254 needle settings).

The numbers in the horizontal column at the top represent the needle selector buttons.

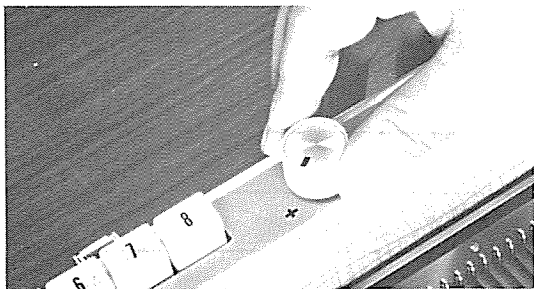
Column A tells the number of buttons depressed.

Column B shows the needle combination where a regular pattern is formed (i.e. 1/3 means 1 needle forward and 3 back, 3/1 means the reverse)

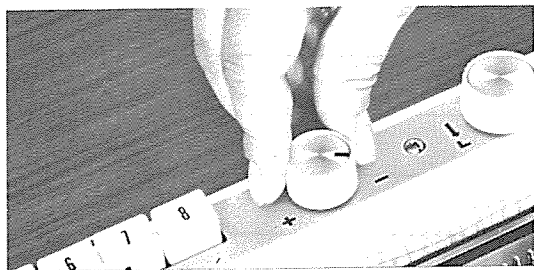
Column C is the numerical sequence of the pattern combination.

Columns D and E show the buttons depressed represented by the shaded blocks. Refer to the top of the column to see the corresponding button number.

Column F shows the number of different positions in which it is possible to set the slide dial to obtain different needle settings of the same combination.



SK.116 Setting the Reverse Switch for Positive Selection.



Sk. 117 - Moving reverse switch to Negative Position.

EXAMPLE of a Simple Push Button Pattern.

To compare the different effects achieved by using the Positive and Negative positions of the Reverse Switch try this pattern:-

Positive Needle Selection (Reverse Switch on +)

NOTE: To prevent dropped stitches at the Selvedges, when the selvedge needle is in E position the yarn should be placed by hand under that needle).

1. Knit several rows of plain stockinette on your knitter.
2. With the slide dial in position I, press buttons 1, 2, 6 and 7
3. Swivel set-lever to raise the needles.
4. Set both holding cam levers on the carriage to position III.
5. Knit 2 rows.
6. Raise both holding cam levers to position I
7. Knit 1 row.
8. Lower both holding cam levers to position III.
9. Move slide dial to position 4.
10. Swivel set-lever to raise the needles.
11. Knit 2 rows.
12. Raise both holding cam levers to position I
13. Knit 1 row.

To repeat the pattern start at Step 1 again

THE CARRIAGE.

Most of the controls in the carriage are in pairs, one set on each side. The one link is the tension gauge which acts upon both sets to ensure correct and even stitch sizes throughout.

The movement of the carriage across the needles is known as its course.

Left Course means carriage movement from right to left.

Right Course means carriage movement from left to right.

Knitting Side: In either course the side which leads is termed the "knitting side", the opposite side being the "trailing side" - therefore the knitting side changes on each course. The reason for this is that only the cams on the knitting side operate according to their setting.

The carriage controls can thus be set to knit only plain in one direction with pattern stitches in the opposite. They can also be set to knit one type of pattern stitch in one direction and a different type of patterning in the opposite direction, at the same time knitting plain between the patterning stitches.

THE PATTERN SELECTOR BUTTONS.

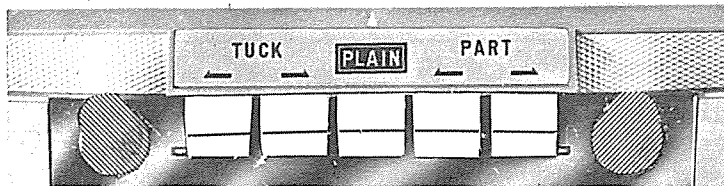
The five buttons on the front of the carriage control stitch formation on the B and C position needles and are called the pattern selector buttons.

If any one button is pressed in it automatically releases previously set buttons, so that if two buttons are to be depressed they should be pressed in together.

Plain: The centre button marked "Plain" when pushed in sets the cams for plain knitting, releases other buttons and returns to normal position. Thus when all buttons are in line the carriage is set for plain knitting.

Tuck: Tuck stitches are not fully formed stitches. The needles will come forward and gather yarn but not knit it through the previous stitch which remains in the hook of the needle. It is possible to tuck over two or three rows before knitting the stitches through, more than that may cause dropped stitches.

Part: The full word is "Partial", and this position is mainly used for Fair-Isle patterns. When both part buttons are depressed the carriage will pass over B position needles in either course without moving them; C position needles will be drawn back to B position, so that unless there is yarn in the hooks of C position needles they will drop stitches. (Check Check needle positions, page 29.)



Sk.118


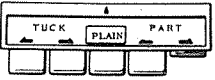
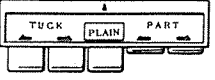
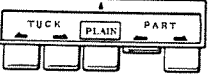
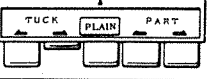
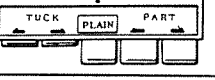
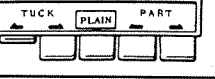
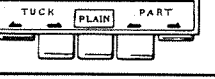
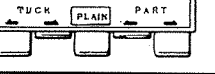
Tuck and partial buttons remain depressed until released.

If in one row there are to be pattern stitches alternating with plain stitches, the needles used for the pattern stitch will be in the B or C positions, and the intermediate needles on which plain stitches are to be formed will be set in the D or E positions where these latter needles will be controlled by the holding cams see page 41

THE PATTERN SELECTOR BUTTONS.

The 5 buttons on the front of the carriage control the stitch formation of the needles in B or C position. The centre button marked "Plain", if pushed in, acts as a release for all others and when all 5 are in a straight line the carriage is set for plain knitting or the stockinette stitch. Part or Partial knit is used principally for Fair-Isle designs. The Tuck stitch is not a fully formed stitch.

There are nine possible settings of the pattern selector buttons (called "Codes" for the sake of convenience). These are shown in diagram form below. It should be noted, particularly in regard to Codes 8 and 9, that in each course only one stitch pattern can be set in each direction. Thus it is not possible to set part and tuck in one course. It is, however, possible to set them at the same time for different courses.

CODE	Setting of Pattern Selector Buttons.	Effect when Carriage is moved over B Position Needles
1	 PLAIN ⇌ ⇌	Plain knitting Left course Plain knitting Right course
2	 PART ⇨	Plain knitting Left course Stationary Right course
3	 PART ⇌ ⇌	Stationary Left course Stationary Right course
4	 PART ⇐	Stationary Left course Plain knitting Right course
5	 TUCK ⇨	Plain knitting Left course Tucking Right course
6	 TUCK ⇌ ⇌	Tucking Left course Tucking Right course
7	 TUCK ⇐	Tucking Left course Plain knitting Right course
8	 TUCK ⇐ PART ⇨	Tucking Left course Stationary Right course
9	 PART ⇐ TUCK ⇨	Stationary Left course Tucking Right course

The COURSE refers to the direction of the carriage across the knitting.

LEFT COURSE means carriage movement from right to LEFT.

RIGHT COURSE means carriage movement from left to RIGHT.

The points of the arrows on the plate indicate the direction of the operation.

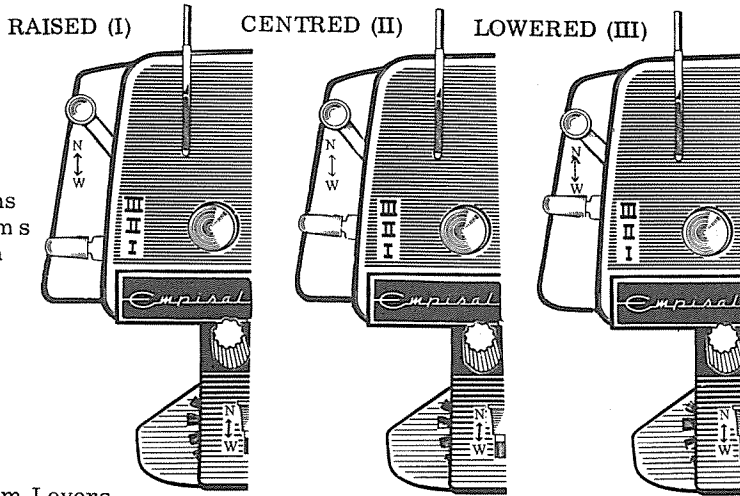
HOLDING CAM KNITTING

The holding cams, operated by the raised plastic levers on each side of the carriage, work independently on the "knitting side" of the carriage (see page 12). This is a most significant development because it more than doubles the patterning possibilities of the knitter as the holding cams react to the various needle positions in different ways.

Holding Cam Knitting.

To gain an insight into the operation of the holding cams, work on a piece of fabric on the Knitter and move the threaded carriage across the "in action" needles with the holding cam levers on the knitting side in the positions indicated on the graph on page 41

The three positions of the holding cams are illustrated in Sk. 119.



Setting of Holding Cam Levers.

For all normal knitting holding cams should be in the raised position.

They should only be centred or lowered when specifically required for patterning purposes.

NOTE that the levers can only be set on III (lowered) when the weave-in pattern cam is set on N.

Function of Holding Cams.

According to the position on which it is set, the holding cam on the knitting side operates on the D and E position needles; on the D position needles to raise them to E position and on D and E position needles to bring them back into the knitting when they have served their purpose in those positions.

Because the pattern selector buttons on the carriage act on the B and C position needles, it follows that in one row various stitch formations can be achieved by placing needles in different positions; furthermore on the trailing side the holding cams have no effect on the needles. Thus it is possible to set the holding cams in different positions to achieve differing stitch formations in consecutive rows.

The graph on page 42 shows the basic action of the holding cams on the needles when all needles are in one position. In particular when the pattern selector buttons are set on PART or TUCK for a pattern stitch to be formed certain needles must be placed in the D or E positions, and others in the B position.

SUMMARY.

The holding cam levers are RAISED (I) for normal knitting and to bring any needles from raised position back into normal knitting position.

The levers are CENTRED (II) to operate on C and D position needles for special patterning, often in conjunction with the tucking cams and especially when patterning whilst knitting on only part of the fabric (e.g. one side of a placket or a V-neck) when the other part of the fabric remains on the Knitter.

The levers are LOWERED (III) to knit only B (normal knitting position) and C position needles thus leaving needles in other positions to perform different functions.

**RELATIVE POSITION OF PATTERN SELECTOR BUTTONS
AND HOLDING CAM LEVERS.**

1. Needle position A (out of action) is not referred to in the tabulation as no movement of the carriage will affect the needles.
2. To obtain needle position C raise the needle to E and then return it to C so that the stitch rides on top of the closed latch. (This position is only used in special patterning, shaping, increasing, decreasing, circular knitting, all "short row" knitting.

N.B. If the wool rides on top of the open latch the needle is in an extended "B" Position and the needle action will then be as for a B Position needle.
3. STATIONARY needles remain in normal knitting position and do not pick up any additional stitches. HOLDING needles remain fully extended and can pick up additional stitches. Neither of these will move until the knitting (or the holding) cams are appropriately adjusted.

For the reason given in Note 2 above, Needle Position C should not be used where stated * as it will cause a stitch to be dropped.

EXAMPLE of a Simple but Effective Pattern:

1. With the needle slide in position 1; the Reverse Switch on +; set every 4th needle to position D.
2. Set both holding cam levers in position III.
3. Knit 4 rows.
4. Raise holding cam lever nearest the knitting to position I.
5. Knit 1 row (notice all needles are back in position B.

Repeat steps 1 to 5, except that in Step 1 set the needle slide on position 3 (a diamond pattern is formed).

**RELATIVE POSITIONS OF PATTERN SELECTOR BUTTONS
AND HOLDING CAM LEVERS.**

Pattern Selector Button	Needle Position	Holding Cam Lever Position					
		1		2		3	
		← Left Course	→ Right Course	← Left Course	→ Right Course	← Left Course	→ Right Course
1	B	Knit	Knit	Knit	Knit	Knit	Knit
	C	"	"	"	"	"	"
	D	"	"	"	"	Holding	Holding
	E	"	"	Holding	Holding	"	"
2	B	Knit	Stationary	Knit	Stationary	Knit	Stationary
	C	"	"	"	*	"	*
	D	"	Knit	"	Knit	Holding	Holding
	E	"	"	Holding	Holding	"	"
3	B	Stationary	Stationary	Stationary	Stationary	Stationary	Stationary
	C	*	*	*	*	*	*
	D	Knit	Knit	Knit	Knit	Holding	Holding
	E	"	"	Holding	Holding	"	"
4	B	Stationary	Knit	Stationary	Knit	Stationary	Knit
	C	*	"	*	"	*	"
	D	Knit	"	Knit	"	Holding	Holding
	E	"	"	Holding	Holding	"	"
5	B	Knit	Tuck	Knit	Tuck	Knit	Tuck
	C	"	*	"	*	"	*
	D	"	Knit	"	Knit	Holding	Holding
	E	"	"	Holding	Holding	"	"
6	B	Tuck	Tuck	Tuck	Tuck	Tuck	Tuck
	C	*	*	*	*	*	*
	D	Knit	Knit	Knit	Knit	Holding	Holding
	E	"	"	Holding	Holding	"	"
7	B	Tuck	Knit	Tuck	Knit	Tuck	Knit
	C	*	"	"	"	*	"
	D	Knit	"	Knit	"	Holding	Holding
	E	"	"	Holding	Holding	"	"

BASIC ACTION OF HOLDING CAM LEVERS ON NEEDLES.

NEEDLE POSITION	H. C. L. POSITION	PATTERN SELECTOR BUTTON POSITION	EFFECT WHEN THE THREADED CARRIAGE IS MOVED ACROSS THE NEEDLES
A	III II I	PART PLAIN TUCK	This is the out of action position of the needles and no matter what is done to the carriage controls the needles will not move.
B	III II I	PART	The needles do not move - an unknitted thread is left in front of these needles.
	III II I	PLAIN	The Holding Cams do not come into contact with B position needles which therefore knit normally.
	III II I	TUCK	An unformed loop is made around the needles and gate pegs.
In this position the row of stitches is above the closed latches, see p. 76. C	III II I	PLAIN	Normal Plain Knitting.
	III II I	PART TUCK	The needles will drop the stitches.
D	III	PART PLAIN TUCK	Needles raised to E (holding position).
	II I	PART TUCK	Needles moved back to B position to knit normally.
E	III II I	PART PLAIN TUCK	Needles remain stationary (holding) and a thread appears across the needles.
	I	PART PLAIN TUCK	Needles moved back to B position to knit normally.

WEAVING OR LAY-IN PATTERNING.

With the KH.67 model, Empisal introduced a new form of knitting to produce firm, inelastic fabrics often indistinguishable from woven fabrics.

The weaving or lay-in patterning controls are in two sets, one on the sides of the carriage, the other in the front of the sinker plates; each set has two positions marked W and N, (on previous models T* and N).

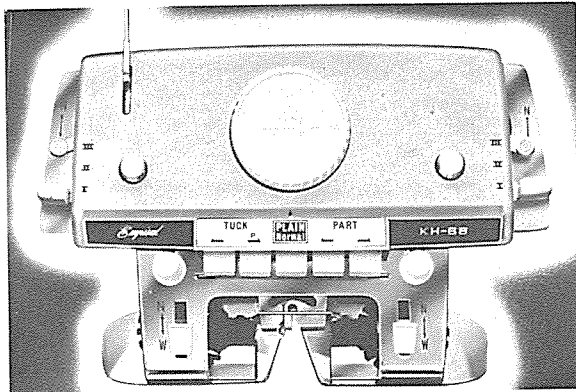
W stands for Weaving and N stands for NEUTRAL. The controls should always be kept on N when not required for weaving patterns.

The warp, i.e. the length of the fabric is knitted. For this the Knitter is threaded with a suitable yarn in the normal manner through the branch tension arm and the carriage feeder. The weft, i.e. the cross threads, are inserted separately by hand. There is practically no limit to the number of types or thicknesses of yarn that can be used for this purpose: raffias, fine silks, rug wools, embroidery threads, ribbon, leather thongs, even elastic has been used, to create countless numbers of articles from table mats to curtains, from baby blankets to high fashion fabrics for costumes and top-coats.

The artistry comes in the choice and blending not only of colours but also of materials. Warp threads may be of one material - weft threads of an absolutely opposite kind such as wool with raffia; fine string and rug wool. The general rule will be thin yarns for background (warp) and thicker yarns for weft (trammings - weave-in).

Remember that the knitted background is frequently scarcely seen: nevertheless the material for this must be chosen with special care because threads do have to come forward over the woven (lay-in) threads to bind them to the background fabric, but only certain needles will catch the lay-in yarn to form the fabric pattern.

The CAMS control the needle movement. For weaving-in set both weave-in cam levers on W (Holding cam levers on I except when knitting part fabric-plackets, etc. - when the holding cam levers will be on II).



Sk. 125 The CAMS set for weaving-in.

The PATTERN SELECTOR BUTTONS: Use only the "knit" or 'partial' buttons when weaving-in. Do not use the tuck buttons, as a tuck stitch not being properly formed will not gather the weave-in thread into the fabric.

The BRUSHES when set on W ensure that the weave-in yarn is kept well down on the supporting needles and against the gate pegs so that it may be caught into the background fabric.

The FABRIC. The background fabric is knitted mainly on the B position needles, although needles in other positions also perform this function.

The WEAVE-IN (PATTERNING) THREADS are caught into the fabric by D position needles.

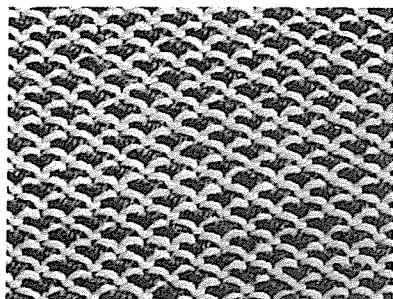
Patterning needles will be set in D position with the assistance of the needle selector buttons.

Patterning threads should always be thicker than the background threads, and when the pattern permits it is preferable to lay the threads in the direction the carriage will operate, i.e. if the carriage is on the right lay-in the threads from right to left.

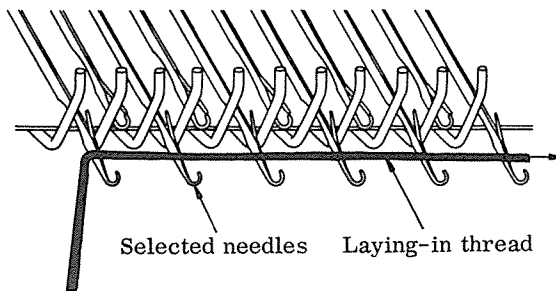
(* T stands for TRAMMING, an English term derived from the Latin to weave. In the silk industry a "tram" is a loose silk yarn woven into the weft of a fabric for decorative purposes, the weft being those threads across the width of a piece of cloth. Trammings threads are frequently thicker and looser than those of the background fabric; this patterning effect can now be achieved on your Knitter to weave multitudes of interesting and fashionable fabrics. From this you will know that for "weaving" all the special controls must be set on "T" on previous models and "W" on current models).

EXAMPLE of a Simple Weave-In Pattern:

For clarity needles shown without background fabric.



Sk.126



"Lay yarn B across the open hooks of needles."

On a piece of fabric in your Knitter:

1. (a) Weave-in controls on W.
 (b) Holding cam levers on I.
 (c) Pattern selector buttons on knit (Code 1).
 (d) Needle selector slide on 1.
 (e) Needle selector buttons: Press down Nos. 1, 3, 5 and 7.
2. Set the needles (press set lever).
3. Lay in a contrasting thread of yarn across the raised (D position) needles. (yarn B).

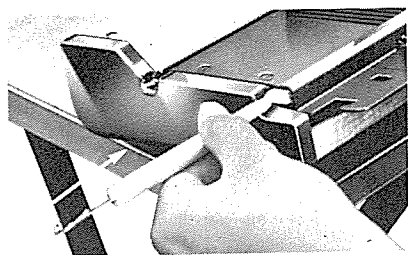
4. Pass the carriage across the needles (knit). (The weave-in thread is caught into the fabric).
5. Needle selector slide on 2.
6. Set the needles.
7. Lay-in the contrasting yarn.
8. Knit.

To continue the pattern repeat steps 5 to 8 except that each time step 5 is repeated move the needle selector slide to the next number or when desired return downwards towards 1.

NOTES:

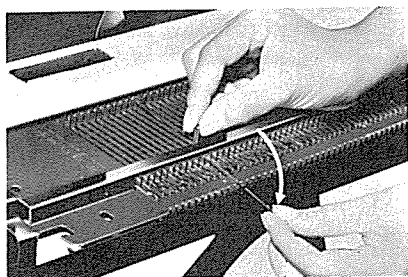
NOTES:

How to replace the needles



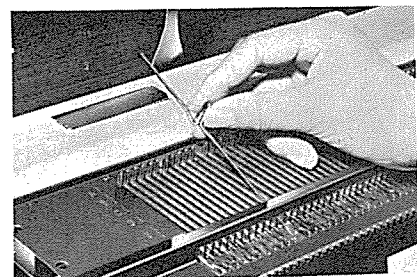
Sk.128

- 1) Push either side of the felt bar-end piece with the end of latch too: The belt bar end then appears on the other side. KSK.128
- 2) Withdraw it from the knitter until the needle you wish to change is freed.



Sk.129

- 3) Bring forward the needle as far as it will go. SK.129
- 4) Push down the hook until shank end rises free of the needle bed.

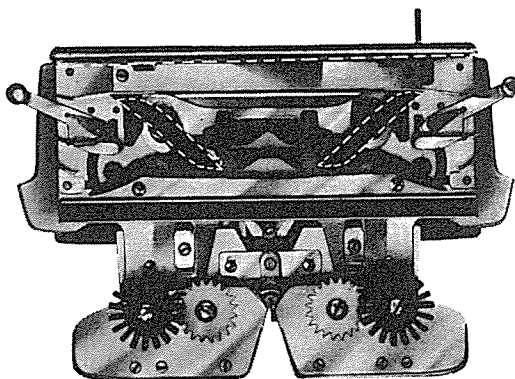


Sk.130

- 5) Grasp shank end and draw it out backwards. SK.130
- 6) Replace with new needle by holding it with the latch opened.
- 7) Push in the foam bar, making sure that foam is face downwards

Cleaning and Oiling

The Carriage



Sk.131

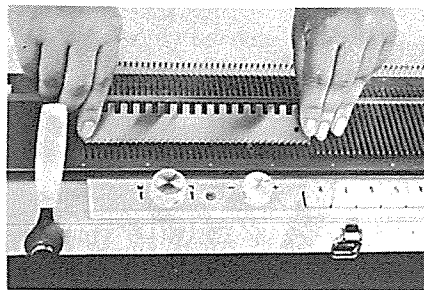
- 1) Remove the carriage from the needle bed.
- 2) Brush all fluff that has gathered on the working parts underneath the carriage.
- 3) With lint free cloth, lightly oil the butts of needles in use.
- 4) Oil runners on back of carriage and leave a fine film of oil over moving parts of carriage.
- 5) Avoid getting oil onto the brushes and brush wheels as this will transmit itself to the knitting.

The Needle Bed

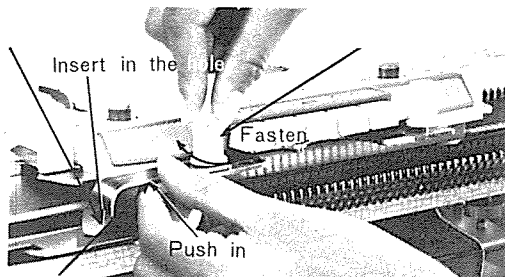
- 1) With a very soft brush clean out the needle bed grooves.
- 2) With a lightly oiled lint free cloth wipe away all fluff that has gathered on needle bed and along carriage slide rails.
- 3) Leave a very fine film of oil over the carriage slide rails, the top of the needle bed and the needle butts.
- 4) Place two or three drops of oil in the groove of the slide rail at the back of the needle bed. This should be repeated after completion of each garment.
- 5) Avoid getting oil onto the needle hooks and latches as this will transmit itself to the knitting.
- 6) Keep your knitter covered in a dry place when not in use.

HOW TO FOLD UP THE KNITTER

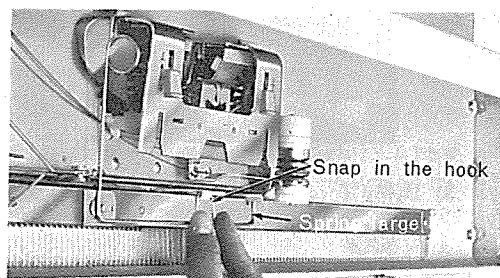
1. Release all needle selector buttons by pushing down the "0" button, and push back all needles to position "A". (resting position)(See Sk. 1.)
2. Remove the sinker plate and handle from the carriage.
3. Lock the carriage on the left end of the needle bed.
(See Sk. 2.)
(Note:) The row counter tripper must be positioned in operation.
4. Replace the automatic yarn tension unit.
5. Replace the cast on comb, automatic yarn tension unit and sinker plate assembly inside the upper carrying case.
 - a. Open the springs and replace the cast on comb in the upper case. (See Sk. 3)
 - b. Replace the automatic yarn tension unit.
 - c. Replace the sinker plate assembly in the upper case.
Close the large spring.
(See Sk. 3).
 - d. Close the small spring.
6. Replace the accessories in the accessory box.
7. Replace the small tools in the accessory kit (See SK.5)



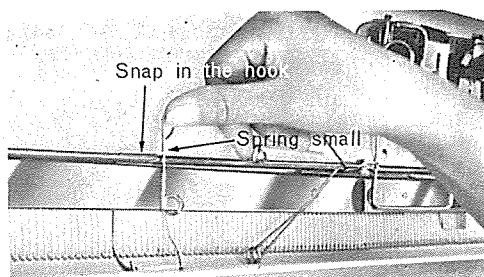
Sk. 1



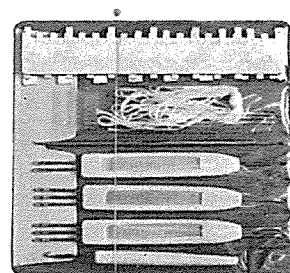
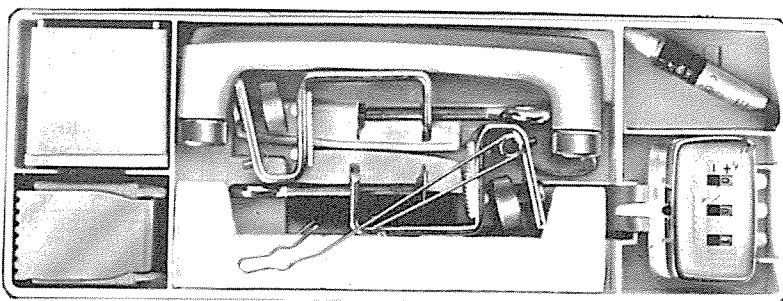
Sk. 2



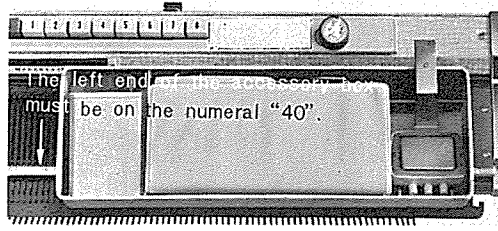
Sk. 3



Sk. 4.

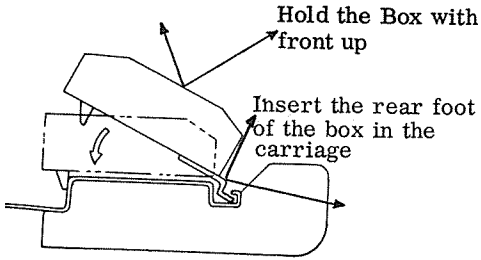


The left end of the accessory box must be on the numeral "40".

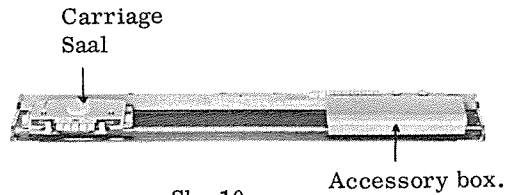


Sk. 7

8. Replace the accessory kit in the accessory box, and place box on the right side of the needle bed.

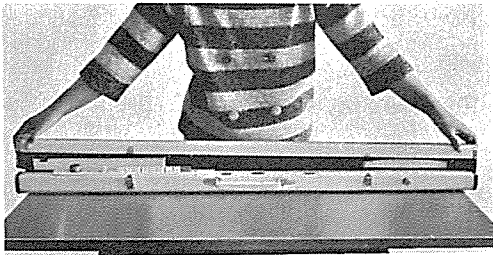


Sk. 8.

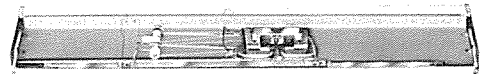


Sk. 10.

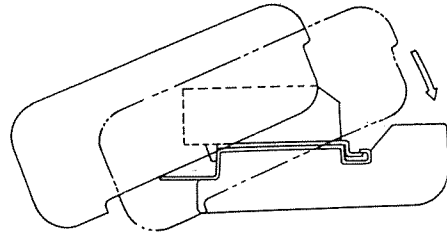
Accessory box.



Sk. 9.



Sk. 11.



Sk. 12.

9. Close the upper carrying case on the knitter.

NOTE

Clean and oil your knitter each time you have finished knitting and clean off all excess oil before use, especially from those parts which will come into contact with the knitting. Always leave a light film of oil under the carriage on all parts between the rails.

INDEX

Accessories — Names and uses	2-5
Accessory Box.....	6
Stand — Setting Up	8
Wisk Wool Winder	8
Advanced Knitting	28
Care of Knitter	45
Carriage.....	37
" Names of Parts.....	3
" Assembling	7
" Controls (Advanced).....	28
" Controls set for plain knitting	10
" Holding cams	10
" Pass across needles without knitting.....	15
" Pattern Selector Buttons	10
" Unlocking when jammed	15
" Yarn Feeder — Threading	10
Casting off	26
Casting on	13
" Closed edge.....	18
" Open edge	26
Cleaning and oiling.....	45
Continental Rib.....	18
Decreasing.....	25
Dropped Stitch — Picking up	42
Folding up Knitter	46
Hems	19
Holding Cam Knitting	39
Holding Cam Levers	10-39
— do — & relative positions of Pattern Selector Buttons.....	40-41
Holding Cam Levers & basic action on needles	42
Increasing.....	24
Introduction.....	1
Knitter — Parts names.....	2
" Care of.....	45
" Fastening to table.....	6
" Folding up.....	47
" Setting up.....	6
Knitting — Advanced	28
" Carriage controls set for plain...10	10
" Casting on	13
" Preparing for.....	8
" Removing from Knitter	23
Knitting Course	37
Knitting side.....	37
Latchet Tool — Use of	18
Needles — Basic action of Holding	
" Cam Levers	42
" Marks.....	30
" Placing.....	29
" Positions.....	12-29
" Selections	12-31
to	35
Needle Selector Buttons	12-30
" " Reverse Switch	12-30
" " Release Button	12
" " Slide Dial	12-30
Needlebed Controls	12-28
Negative Needle Selection	32-33
Pattern Selector Buttons.....	10-37
— do — & relative positions of Holding Cam Levers.....	40-41
Picot Edge Hem.....	19
Positive Needle Selection.....	31-32
Preparing to Knit	8
Purl Stitches.....	22
Push Button Mechanism	30
Reverse Switch	30-32-33
Ribbing	22
Row Counter.....	11
Row Counter tripper	10
Selvages side	14
Set Lever.....	8-30
Setting-up Knitter	6-11
Shaping	20
Slide Dial	30
Slide Indicator.....	31-35
Stitch Sizes	16
Stiches (how formed)	17
Tension.....	33
Tension Dial.....	23-32
Transfer Tool (use of)	18
Transferring stitches	23
Undoing rows — unravelling	20
Weave-in Brushes & Weave-in Cam Levers	10
Weaving-in	43
Yarn — Preparing to Knit	8
Yarn Tension Unit — Setting Up	9
Yarn Tension Unit — Threading	9