

INSTRUCTION BOOK



Empisal-Knitmaster®

MODEL - 310

ENGLISH



You must often have wished you could dress yourself and your family in knitwear that you really like.

In the past you have probably hand-knitted garments fairly quickly using thick yarns, but knitting with thin yarn takes so much time that you may have lost interest before the garment was completed.

THESE PROBLEMS ARE EASY TO OVERCOME.

Your MODEL 310 knitter is strong and fast, knitting 10,000 to 12,000 stitches a minute with any thickness of yarn.

You will have fun learning to knit and this booklet will help you. Should anything go wrong, PLEASE DO NOT WORRY — read the instructions again and soon you will be knitting with confidence and enthusiasm.

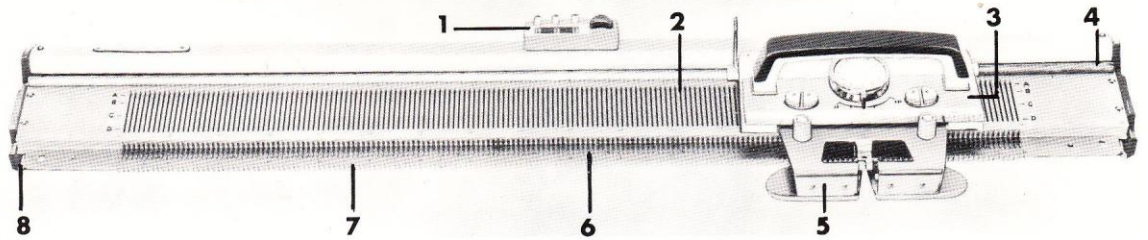
REMEMBER — ONLY PRACTICE MAKES PERFECT.

Your,

Knitting Companion

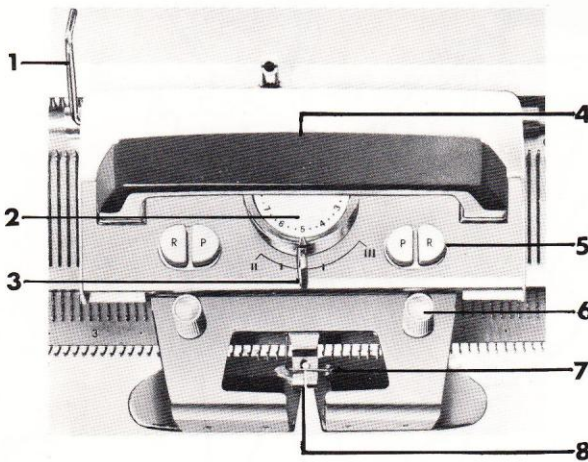
Empire-Knitmaster[®]

MAIN BODY OF KNITTING MACHINE



- 1. Row Counter
- 2. Needle bed
- 3. Carriage
- 4. Rail

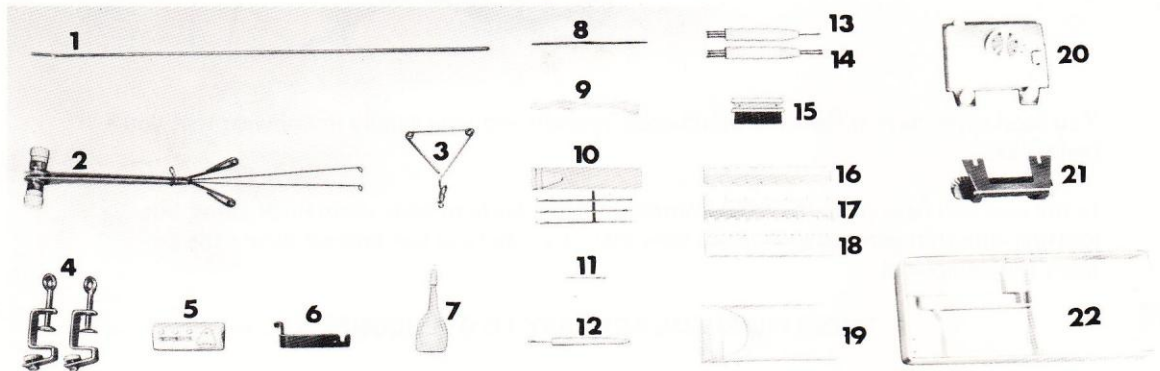
- 5. Carriage arm
- 6. Latch needle
- 7. Sinkers
- 8. Yarn hook



CARRIAGE

- 1. Row counter lever
- 2. Tension dial
- 3. Cam lever
- 4. Handle
- 5. Push button
- 6. Arm nut
- 7. Yarn guide
- 8. Yarn feeder

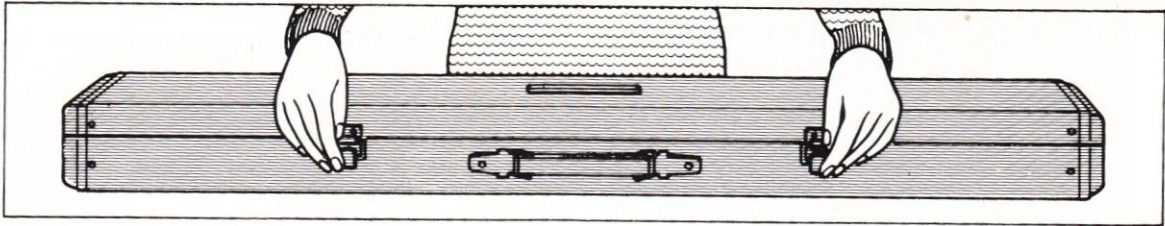
THE ACCESSORIES



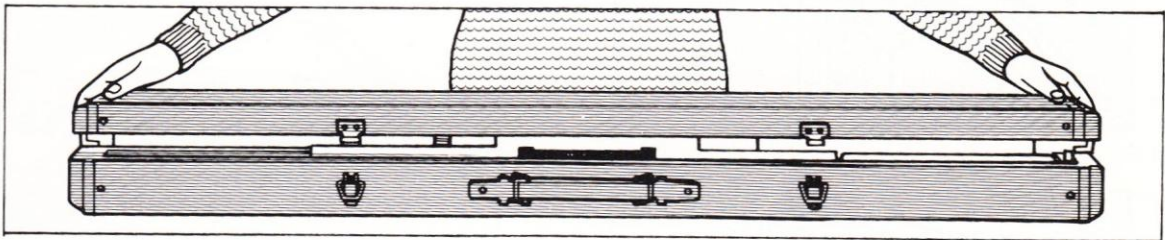
- 1. Yarn Rod
- 2. Auto Tension
- 3. Yarn Guide
- 4. Table clamps
- 5. Row Counter
- 6. Carriage fastener
- 7. Oil container
- 8. Work and Crochet Hook
- 9. Ravelling cord
- 10. Spare Needles
- 11. Tapestry Needle

- 12. Latchet Tool
- 13. Transfer Tool (1 x 3)
- 14. Transfer Tool (2 x 3)
- 15. Cleaning Brush
- 16. Needle Pusher (3x1 and 1x3)
- 17. Needle Pusher (1x5 and 1x2)
- 18. Needle Pusher (1x1 and straight edge)
- 19. Accessory envelope
- 20. Needle Selector
- 21. Needle Selector Sinker Arm
- 22. Accessory box

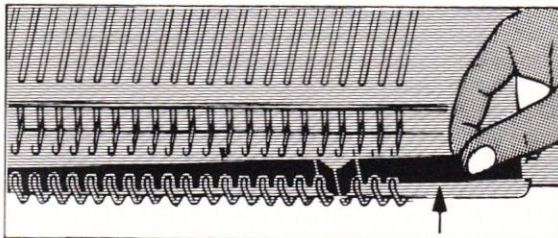
UNPACKING YOUR MACHINE



Place the knitting machine with handle of carrying case away from you.
Unlock the latches on both sides of the handle.

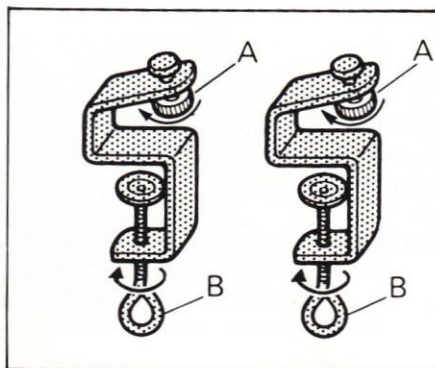


Lift the upper case slightly and pull cover towards you to free it.



Remove the cardboard needle protector from the sinker gate of the knitter.

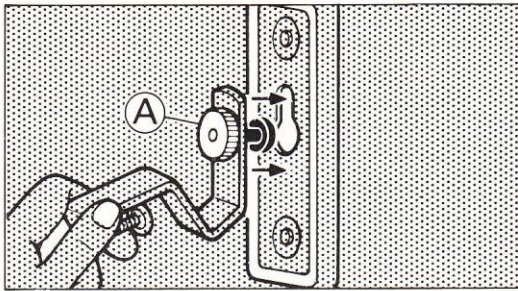
SETTING UP YOUR KNITTER



Take the two table clamps from inside the accessory case.

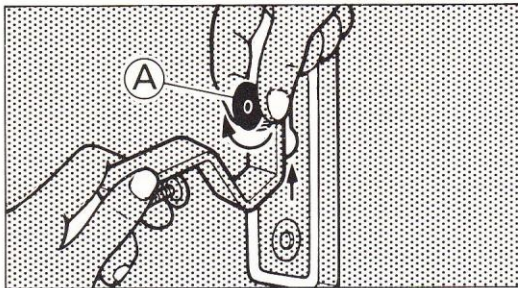
Turn screws 'A' and 'B' until they are wide open.

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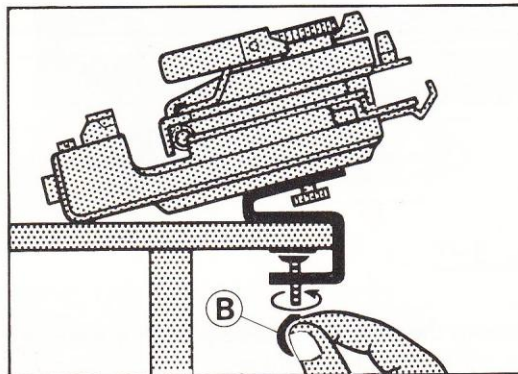


Raise the front of the machine.

Insert the heads of the screws into the keyhole slots.

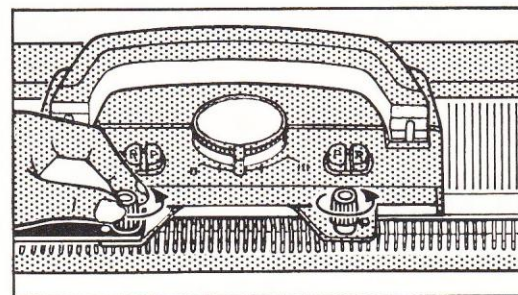


Pull the heads of the screws upwards and fasten tightly.



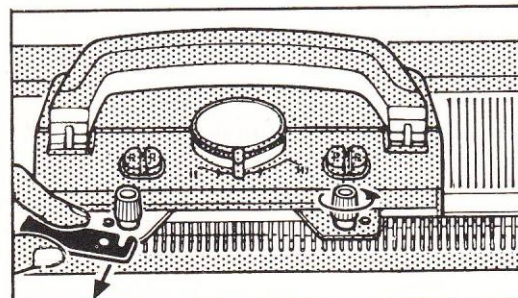
Fasten the machine to the table by tightening the table clamp screws as shown by the arrow.

The position of the machine will be slightly tilted to the rear when properly clamped to the table.



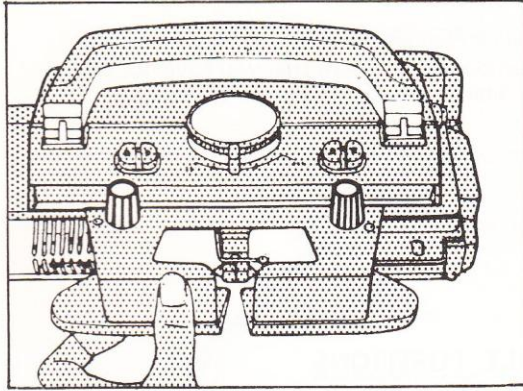
FOR SAFETY DURING TRANSPORTATION, THE CARRIAGE IS SECURED TO THE RIGHT HAND SIDE OF THE MACHINE BY MEANS OF A METAL LOCK PLATE.

To release the carriage, turn both knurled nuts in anti-clockwise direction until they are loose.

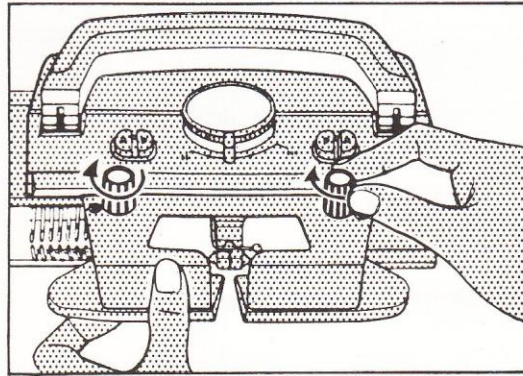


Remove the lock plate by pulling it towards you off the carriage and off the needle bed. Keep it in a safe place.

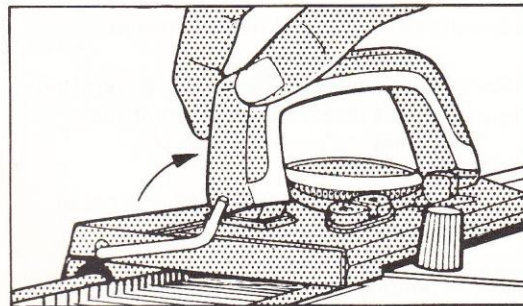
NOTE: Whenever your machine is not in use - always be careful to replace the lock plate to secure the carriage to the needle bed.



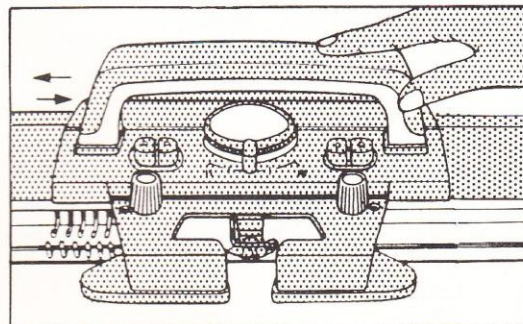
Slide the sinker arm underneath the two knurled nuts as far as it will go, ensuring that the copper studs on the front of the carriage plate FIT INTO THE HOLES ON THE SINKER ARM.



Tighten the knurled nuts in a clockwise direction so that the sinker arm is fixed firmly to the front of the carriage.

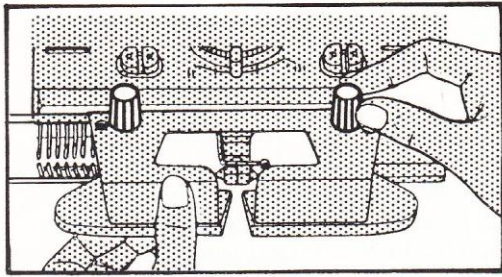


Raise the carriage handle until it snaps into a vertical position.



ENSURE ALL NEEDLES ARE IN 'A' POSITION.

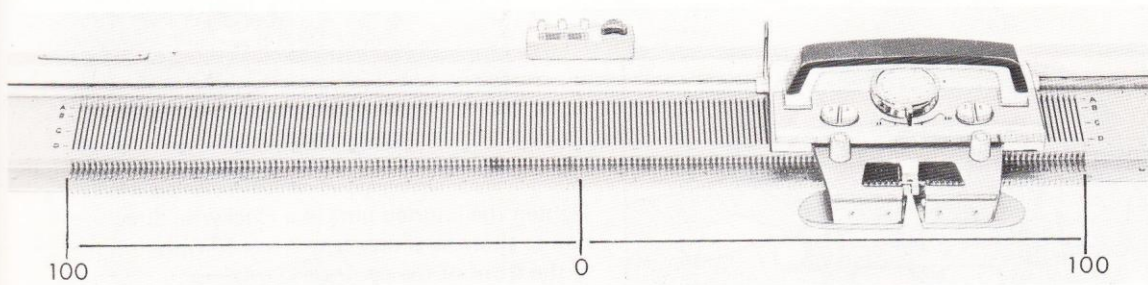
Slide the carriage from the LEFT to the RIGHT side and back again to make sure it passes smoothly and easily right across the needle bed.



If the carriage does not pass across the needle bed smoothly, it means that you have not placed your sinker arm correctly onto the carriage.

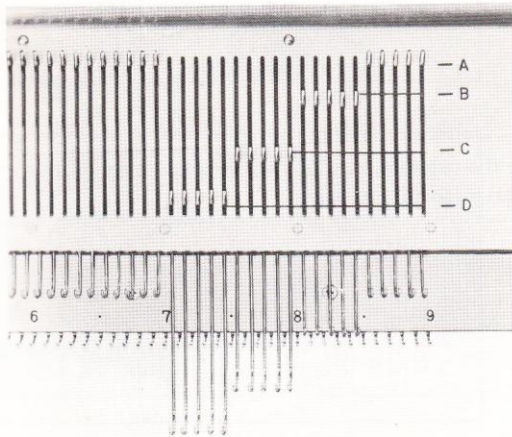
Please check.

THE DIFFERENT NEEDLE POSITIONS



Your knitter has 200 needles, They are numbered from the centre '0' outwards in groups of 10. 100 needles on each side of the centre.

On both the LEFT and RIGHT side of the needle bed you will see markings 'A', 'B', 'C' and 'D'. These various positions are used during knitting.

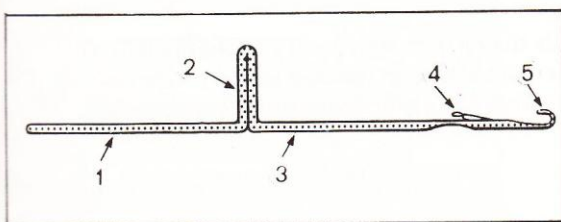


'A' is resting or non-knitting position.

'B' if the needles are pushed to 'B' position, they are in normal position for plain knitting.

'C' is used for Fair Isle and other types of patterning.

'D' is holding or carrying position used for Tuck stitch patterning and also when you do partial knitting which is explained later in the book.



1. Shank
2. Butt
3. Stem
4. Latch
5. Hook

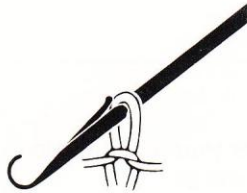
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HOW STITCHES ARE FORMED

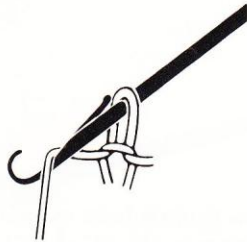
The movement of the latch needle, in and out of the needle bed while knitting, is controlled by the carriage.



1. As the needle moves out, the stitch automatically opens the latch.



2. The needle moves out further and the stitch slides behind the latch.



3. The yarn is automatically fed onto the hook by the yarn feeder - preparing for a new stitch.



4. The needle moves back inside the needle bed, causing the old stitch to close over the yarn inside the hook.

The latch needle will ONLY drop a stitch if there is NO YARN in the needle hook when the needle returns into the needle bed.

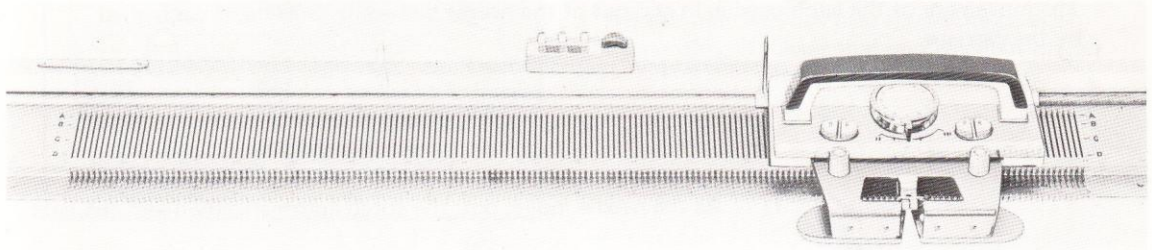


5. The needle is pulled backwards, causing the old stitch to slide to the front and closing the needle latch.

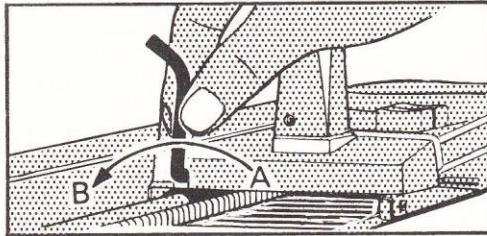


6. When the needle is completely pulled back, the old stitch starts to slide over the closed latch and a new stitch is formed in the needle hook.

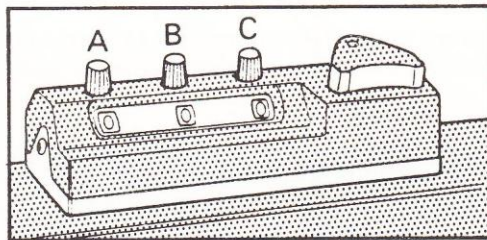
THE AUTOMATIC ROW COUNTER



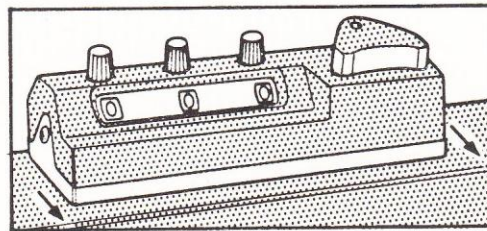
The automatic row counter is ready in position on the centre of the rear cover. It is automatically operated by the row counter tripper on the LEFT side of the carriage coming into contact with the triangle when the carriage moves past the row counter, thus counting every time you move across.



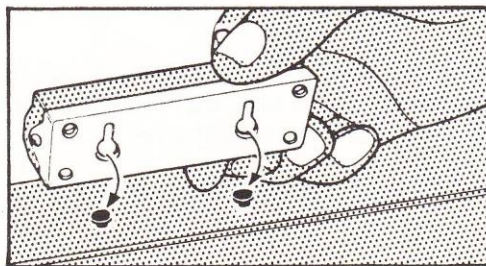
Raise the row counter tripper in direction 'A' to 'B' as far as it will go.



You can reset the row counter back to zero by turning the knurled nuts 'A', 'B' and 'C'.

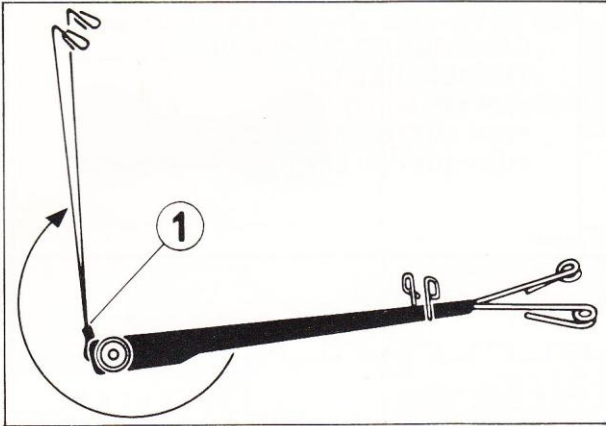


Should you wish to remove the row counter, just slide it firmly towards you and it will lift off easily.

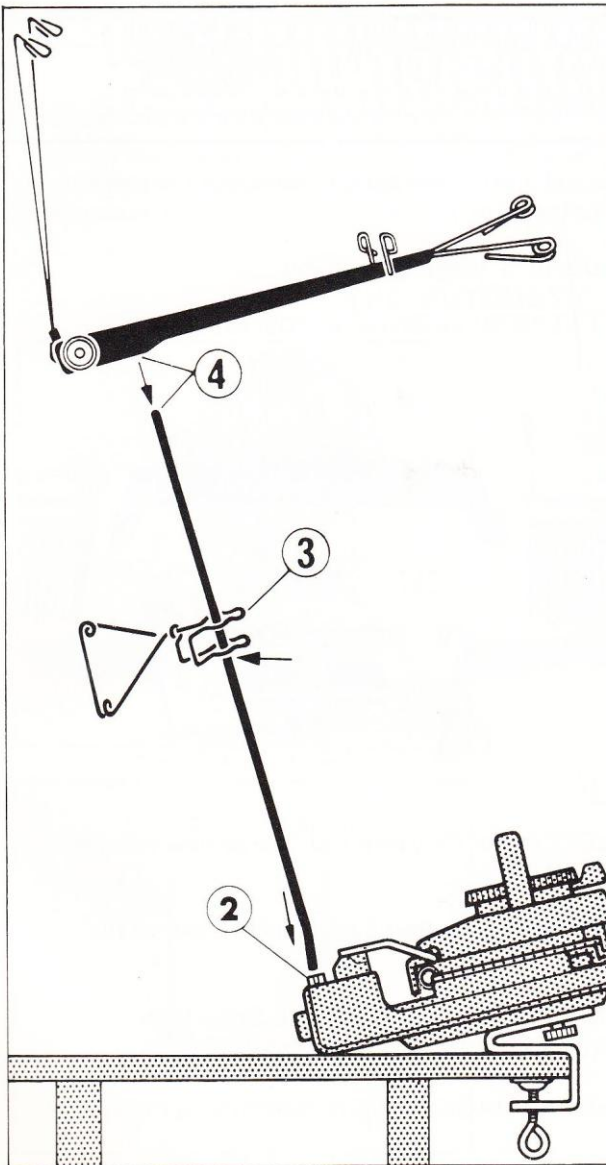


To replace, press it down firmly over the raised studs and slide it backwards until it locks automatically in the correct position.

SETTING UP THE YARN BRAKE

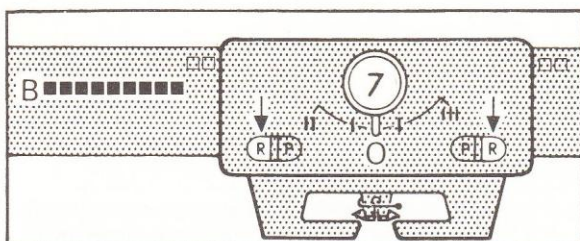


1. Turn the two take-up springs upwards as shown by the arrow, until they snap into position.

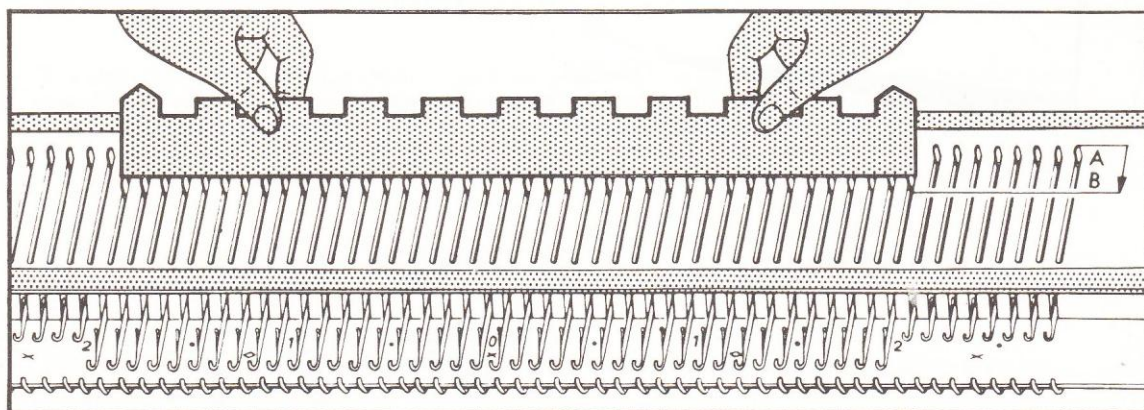


2. Slide the yarn brake rod, with the slightly bent end at the bottom pointing towards the back, into the socket on the back cover of the machine.
3. Take the wool guide from the accessory case and clip it halfway up the yarn brake rod. The wire with the two guides must point towards the back.
4. Set the yarn brake onto the rod by inserting the rod into the round opening beneath the yarn brake.

PREPARATION FOR CAST-ON



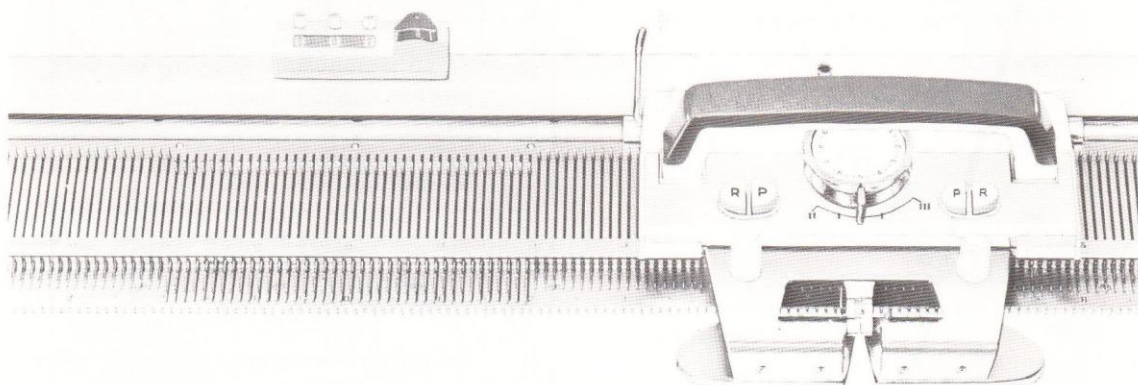
CARRIAGE ON RIGHT SIDE
 TENSION DIAL TO 7
 CAM LEVER TO 0
 PUSH BUTTON RIGHT TO R
 PUSH BUTTON LEFT TO R



Use the straight edge of the 1x1 needle pusher and bring 20 needles on each side of the centre from 'A' (non-knitting) position to 'B' (knitting) position.

You now have 40 needles in 'B' (knitting) position.

ALL OTHER NEEDLES MUST BE IN 'A' (non-knitting) POSITION.



Hold the carriage lightly and move it to the LEFT side of the needle bed. The carriage will now line up all needles into 'B' position - ready for cast on.

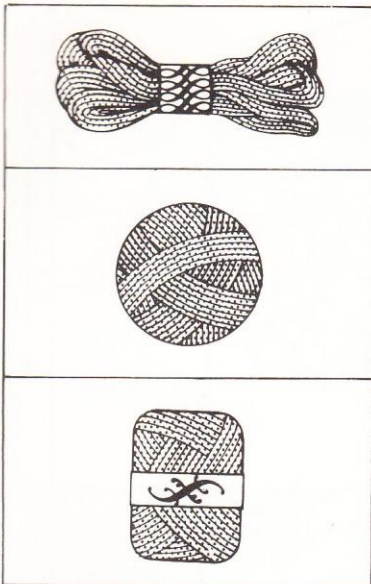
Move the carriage back to the RIGHT side again until it is at least 5 cm (2 inches) past all the needles in 'B' position.

IT IS VERY IMPORTANT THAT YOU DO NOT TRY TO REVERSE THE MOVEMENT OF THE CARRIAGE UNTIL IT HAS PASSED ALL NEEDLES IN 'B' POSITION.

NEVER CHANGE THE DIRECTION OF THE CARRIAGE WHILE IT IS STILL IN CONTACT WITH NEEDLES IN 'B' POSITION.

PREPARATION OF YOUR YARN

Correct preparation of your yarn before starting to knit is very important. This extra care will make knitting much more enjoyable, easier and the quality of your garment much better.



It is quite impossible to knit from a hank like this.

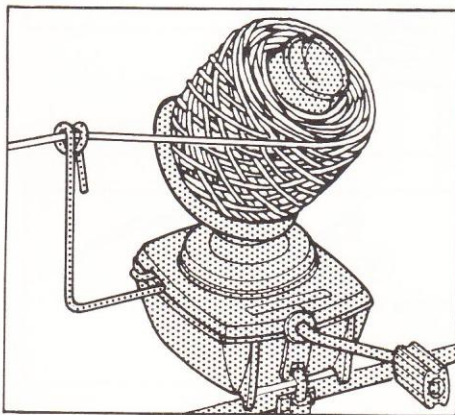
This hand wound ball of yarn looks good but is completely unsuitable for machine knitting. It will roll around and become more and more tangled.

Although it is not recommended, it is possible to knit from this ball if you are able to draw the yarn smoothly from the centre. You cannot knit by drawing the yarn from the outside.

Due to the high speed of machine knitting, it is recommended and most important that the yarn flows **COMPLETELY FREE** and **SMOOTHLY** from the ball, otherwise the carriage will be hard to move and you will have irregular stitches, torn edges or dropped stitches at the edges of your knitting.

Do not use odd balls of yarn, lying around at home, while learning. Use a medium 4 ply yarn only. As you become accustomed to machine knitting, you can try all types of yarn. Meanwhile **ONLY** use the recommended yarn and wind it exactly as explained below.

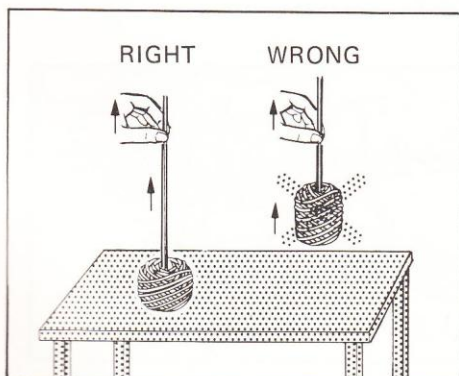
THE AUTOMATIC BALL WINDER



The automatic Ball Winder winds your yarn speedily and perfectly ready for machine knitting.

It saves a great deal of time by winding the yarn completely in a few seconds.

When winding your yarn **NEVER** leave knots in the thread - if you cannot disentangle the knot, break the yarn at the knot and start winding the rest into a new ball.

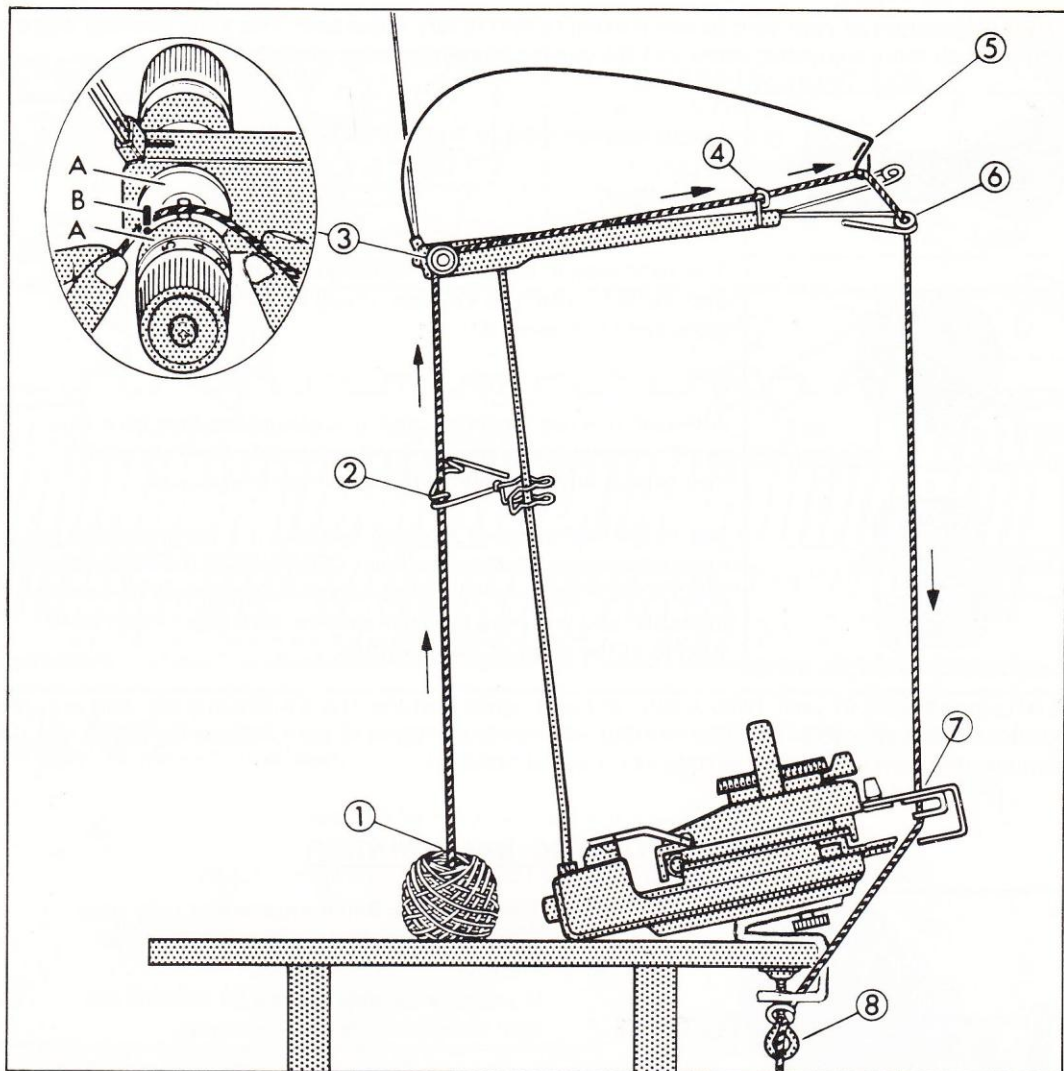


IMPORTANT TEST

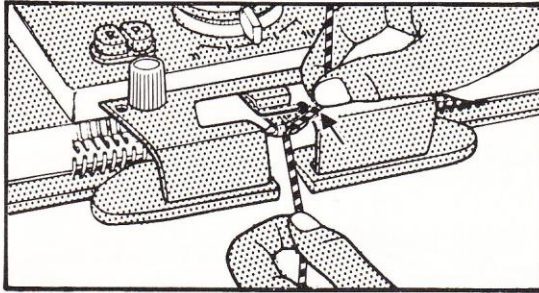
WHEN THE YARN IS PULLED FROM THE CENTRE OF THE BALL, IT MUST COME OUT FREELY WITHOUT LIFTING THE BALL FROM THE TABLE.

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THREADING

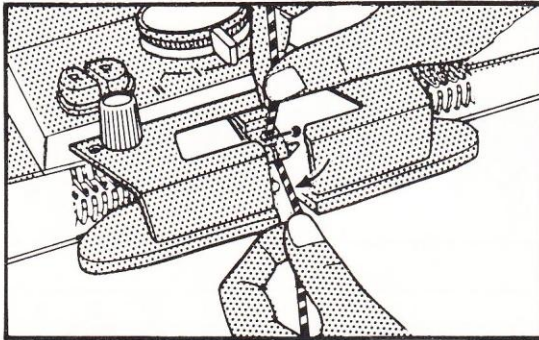


1. Pull the yarn end out of the centre of the ball ensuring that the yarn comes out easily without lifting the ball from the table.
2. Thread yarn through the yarn guide eyelet.
3. Place the yarn between the two tension discs 'A' and ensure that yarn lies underneath of pin 'B'.
4. Thread yarn through yarn guide eyelet.
5. Thread yarn through yarn guide eyelet on take-up spring.
6. Thread yarn through yarn guide eyelet.

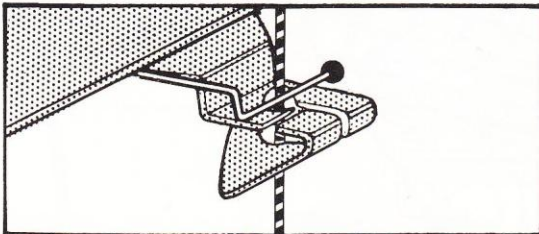


THE YARN FEEDER

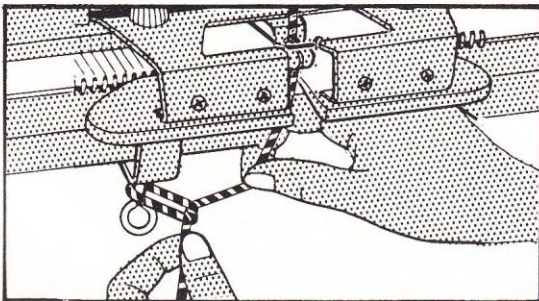
7. Pull a little yarn down from the take-up spring and slide it underneath the guide spring of the yarn feeder.



Pull the yarn down into the feeder slot until it slides easily through the round eye underneath the feeder.

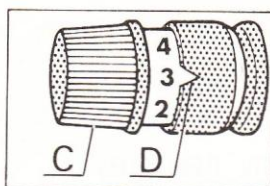


Here you can see the yarn correctly threaded in the yarn feeder.

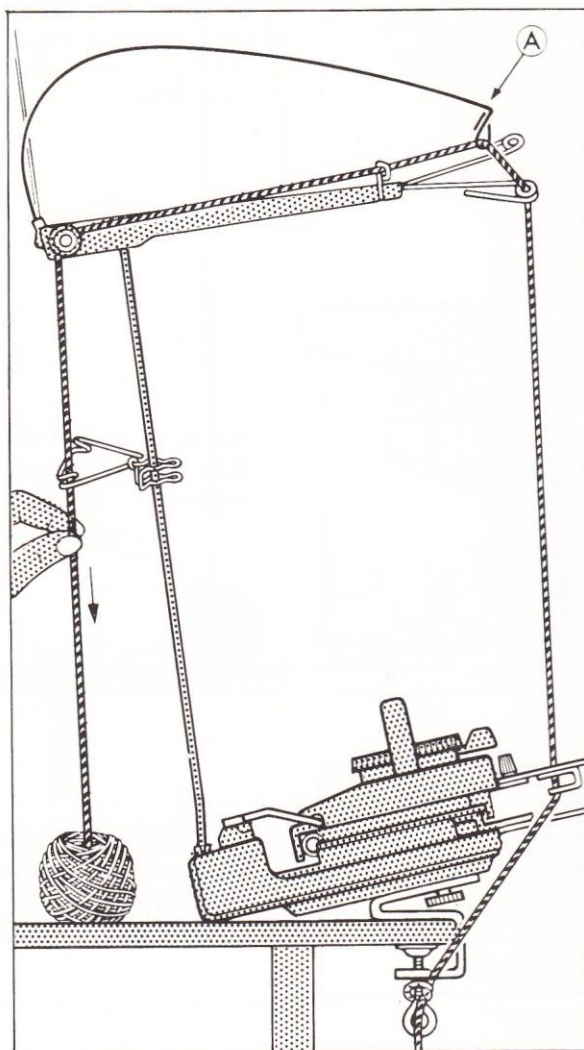


8. Tie the end of the yarn around the RIGHT side table clamp.

THE YARN TENSION



Adjust yarn brake tension by turning plastic dial 'C' until No. 3 corresponds with cut-out 'D' on tension disc.



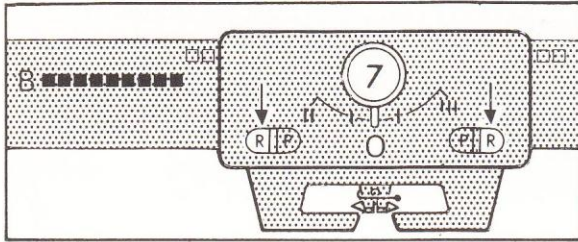
At the back of the yarn brake, pull the yarn down as shown by the arrow, until all slack yarn has been taken up.

This will cause the take-up spring to come into a nearly horizontal position and remain there. There should never be slack yarn between the table clamp and the yarn brake.

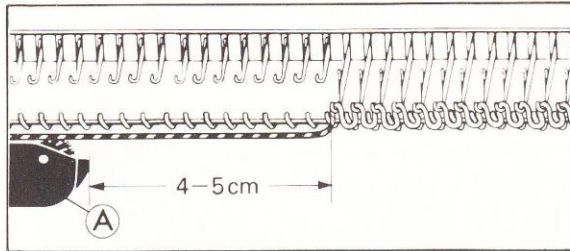
Also, when casting on and during knitting - there should never be any slack yarn between the KNITTING and the YARN FEEDER - take care and you will avoid problems.

NOTE: If you have slack yarn and you start knitting a row, the results are big loops or dropped stitches at the sides of your knitting.

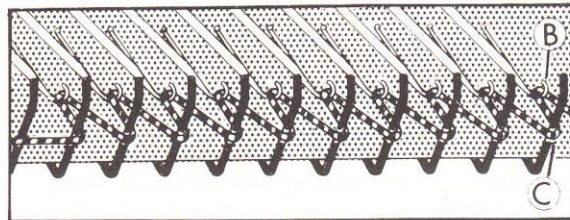
THE OPEN EDGE CAST-ON



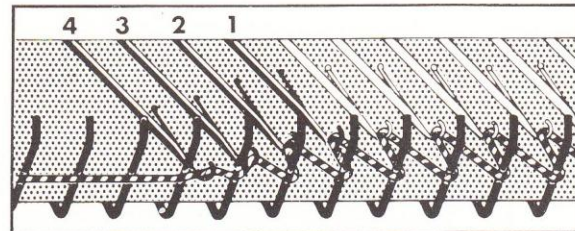
CARRIAGE ON RIGHT SIDE
 TENSION DIAL TO 7
 CAM LEVER TO 0
 PUSH BUTTON RIGHT TO R
 PUSH BUTTON LEFT TO R



Knit one row by moving carriage slowly from right to left until sinker arm plate 'A' has passed the last needle in 'B' position by approx. 4 to 5 cm.

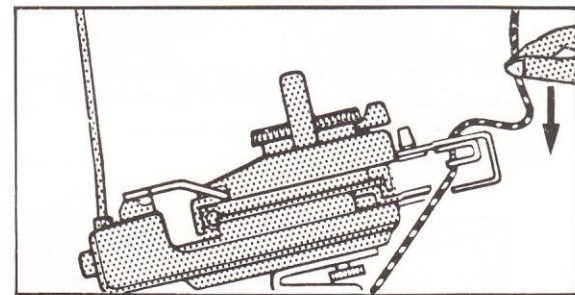


NOTE: An even loop has been formed between needle hook 'B' and sinker gate pin 'C'.

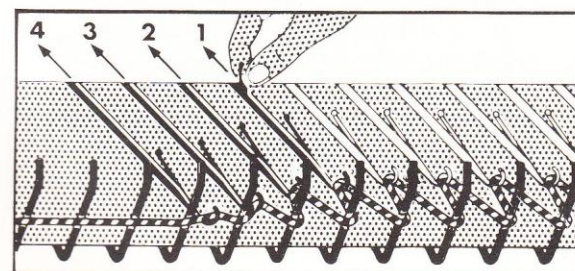


When knitting the first row it might happen that the loops get smaller towards the left side (see illustration, needles, 1, 2, 3 and 4).

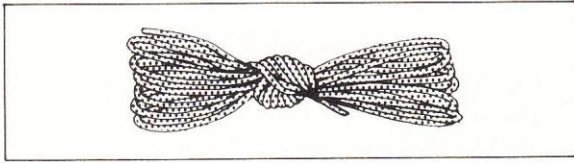
This is incorrect and can be easily corrected.



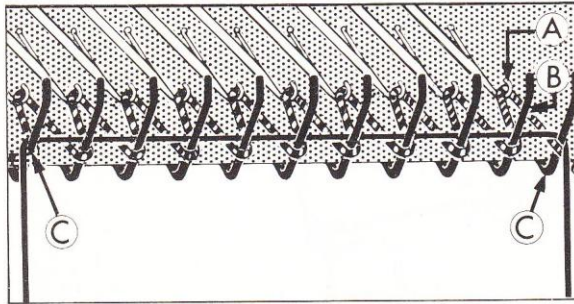
CORRECTION: Hold yarn above yarn feeder and pull it down to form a loop.



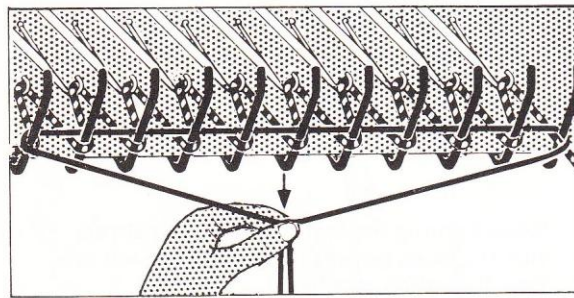
Starting from the smallest loop furthest away from the carriage, in this instance needle No.1, push the needles with small loops back to 'B' position one by one.



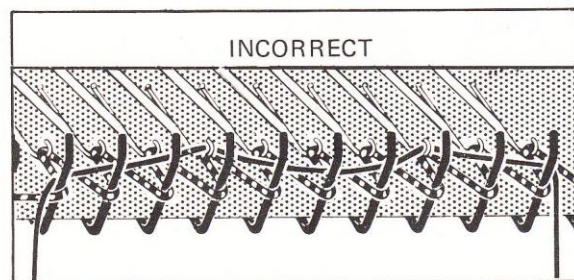
Remove nylon thread from the accessory box, open it and check that there are no knots in the nylon thread before using same. If there are knots in the nylon thread you cannot pull it out of the knitting after casting on.



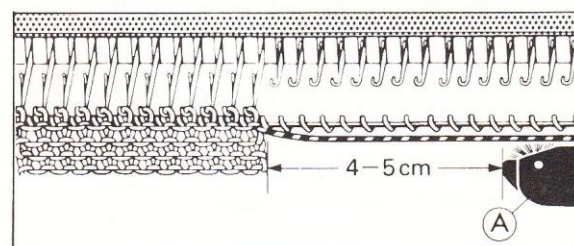
Lay the nylon thread across the yarn loops between needle hooks 'A' and sinker gate pins 'B'. Pass it around and down the last sinker gate pin 'C' on left and right side of needles with loops.



Hold both ends together and pull down firmly so that the nylon thread is below the needle hooks.

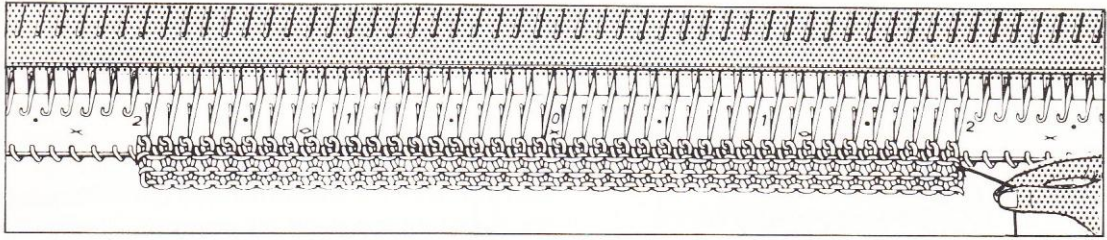


Before knitting, ensure that nylon thread lies correctly across the loops and is pulled down sufficiently as otherwise it will become loose and entangled.



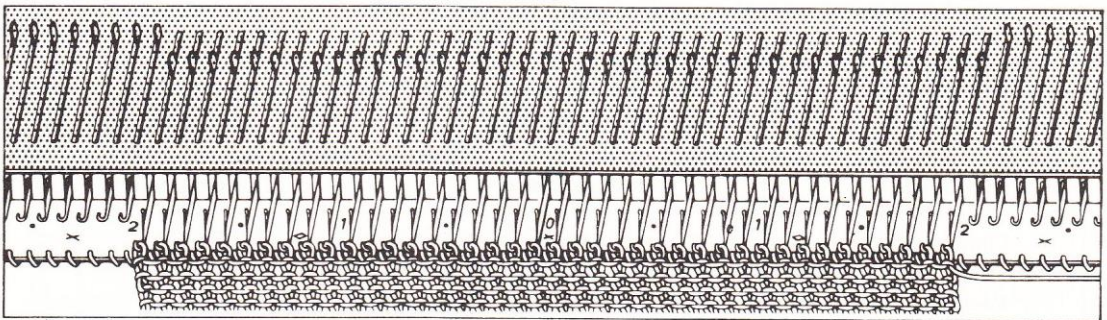
Knit 5 rows stopping with carriage on the RIGHT side. ENSURE AT ALL TIMES THAT SINKER ARM PLATE 'A' HAS PASSED THE LAST KNITTED NEEDLE BY APPROXIMATELY 4 TO 5 CM BEFORE CHANGING DIRECTION.

YOU ARE NOW MACHINE KNITTING

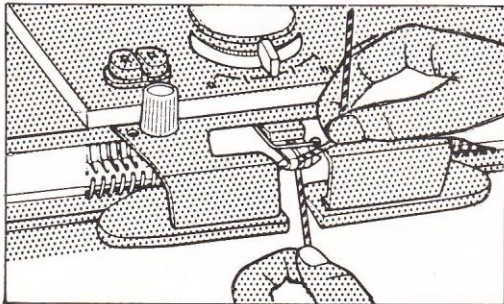


Pull out the nylon thread of the cast-on row towards the RIGHT.

Take care NEVER to have knots in the nylon thread otherwise you will not be able to pull it out of the knitting.

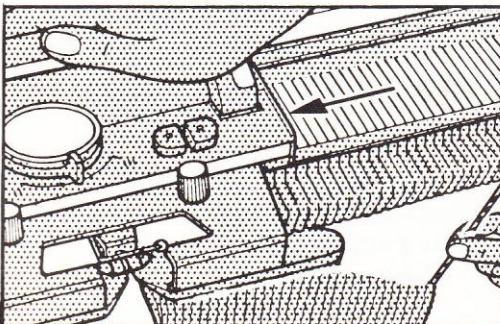


Continue knitting until the first ball of yarn has been knitted — this is the best way to get the right rhythm for machine knitting and to feel confident with your new knitting machine.



HOW TO REMOVE THE KNITTING FROM THE MACHINE WITHOUT CASTING OFF.

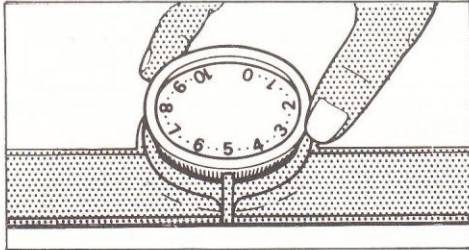
You can now remove the knitting from the machine. It is easy and quick - just remove the yarn from the yarn feeder.



Hold the yarn away from the carriage with your left hand, and with the right hand move the carriage across the needles in knitting position. The knitting comes away automatically from the needles but it will have an open edge.

TENSION AND STITCH SIZES

JUST AS IN HAND KNITTING, IT IS IMPORTANT TO HAVE THE RIGHT STITCH SIZE FOR THE YARN THAT YOU USE. BECAUSE OF THE 30 STITCH SIZES ON YOUR MACHINE, YOU WILL FIND THAT YOU ARE ABLE TO USE ALMOST ALL OF THE POPULAR HAND KNITTING YARNS.



In the centre of the carriage is the stitch tension dial. With the tension dial you can choose the size of stitch suitable for your yarn. Between the numbers you can see two little dots . . - these are also tensions. This means that you can select from 30 different tensions the most suitable for nearly any type of yarn you wish to knit.

You will find that most stitch patterns look far better when knitted with the correct stitch size. It is nearly impossible for me to tell you here which is the best tension for your yarns since there are too many different types. The following is a general guide.

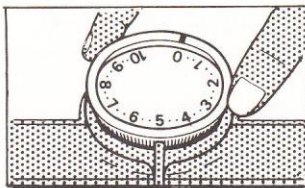
Yarn type	Yarn Brake	Tension Dial
Lightweight	4 – 5	1 – 4
Medium	3	5 – 8
Heavy	1 – 2	9 – 10

It is very easy to find out for yourself which of the 30 settings is the best for you to use.

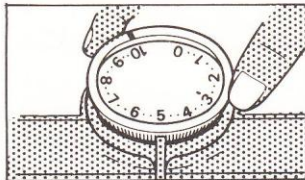
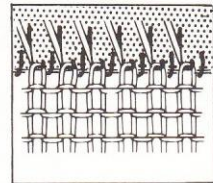
To make a test swatch - make an open edge cast-on over 60 needles and knit a few rows on tension 10. If you are using a lightweight yarn, you will find the stitches are TOO LOOSE.

Set the tension to 9 and knit a few rows. Repeat setting the tension to a smaller size and knitting a few rows until you find a suitable tension for the yarn you are using and for the garment you are knitting.

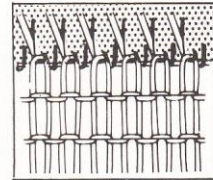
Remember - a sweater is usually knitted at a tension one or even two points LOOSER than you would use for a skirt. The reason is that a sweater is comfortable when it has more stretch but a skirt will stretch out of shape unless the tension is a little TIGHTER.



When the tension dial is set to 0 - the TIGHTEST tension is obtained (smallest stitch).



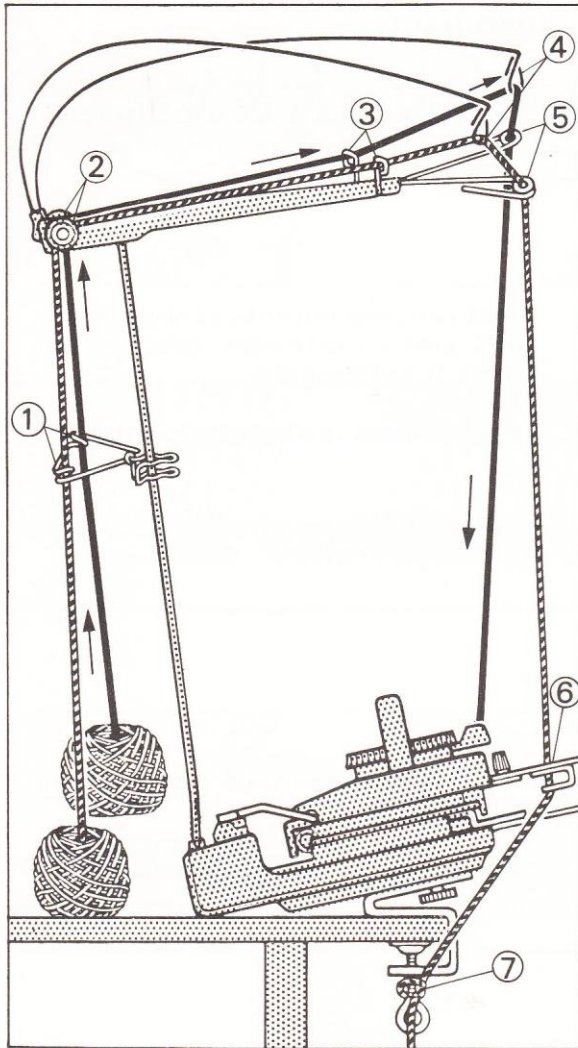
When the tension dial is set to 10 - the LOOSEST tension is obtained (largest stitch).



IF YOUR TENSION IS TOO TIGHT – it will be difficult or even impossible to knit and you will use more yarn thus wasting money and your knitwear will be hard and uncomfortable to wear.

IF YOUR TENSION IS TOO LOOSE – your knitted garment will either have no shape or will very soon lose its shape.

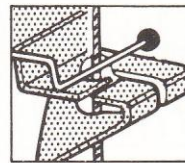
HOW TO KNIT A TENSION SWATCH



A. Place carriage on right side.

Thread machine with the yarn with which you intend to knit the garment (main yarn) as follows:

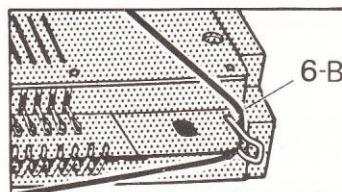
1. Through yarn guide eyelet.
2. Between the two tension discs and underneath stop pin.
3. Through yarn guide eyelet.
4. Through take-up spring eyelet.
5. Through yarn guide eyelet.



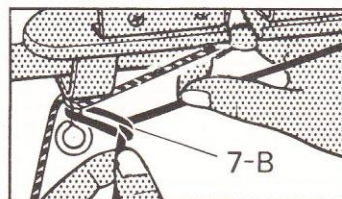
6. Into feeder.

7. Fasten yarn end onto right side table clamp.

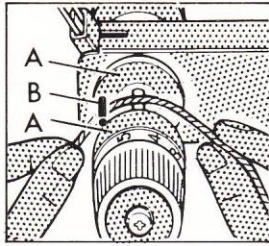
B. Thread a second ball of yarn in contrast colour (waste yarn) in the same way as main yarn up to yarn guide eyelet 5.



6-B Pull yarn downwards and lay it around yarn clip.

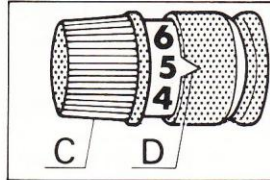


7-B Fasten yarn end onto right side table clamp.



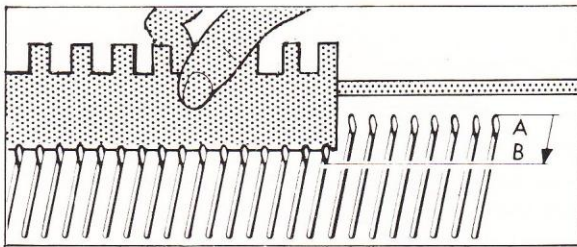
IMPORTANT:

Before continuing check that the yarn is placed BETWEEN the discs 'A' and UNDER the pin 'B'.



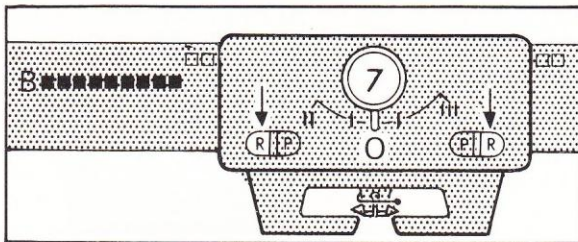
Adjust yarn brake tension by turning plastic dial 'C' until required number corresponds with cut-out 'D' on tension disc.

For reference see yarn brake tension table.

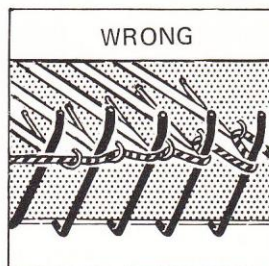
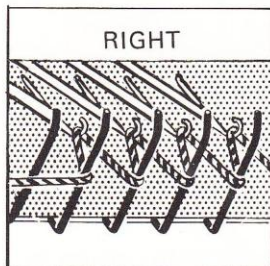


Bring 35 needles on each side of centre '0' from 'A' to 'B' position.

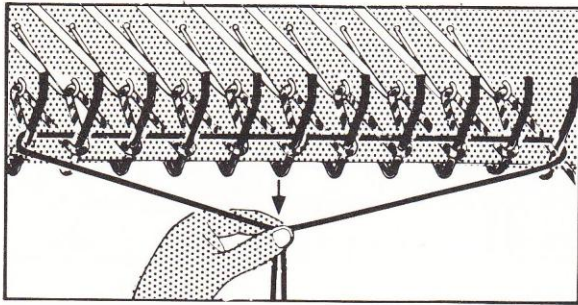
You now have 70 needles in 'B' position.



CARRIAGE ON RIGHT SIDE
 TENSION DIAL TO 7
 CAM LEVER TO 0
 PUSH BUTTON RIGHT TO R
 PUSH BUTTON LEFT TO R

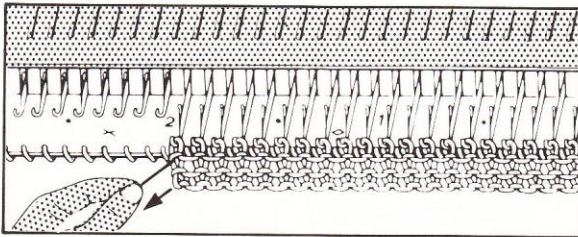


Ensure that the last needles on the left are in 'B' position.



Lay nylon thread over loops; pull down firmly.

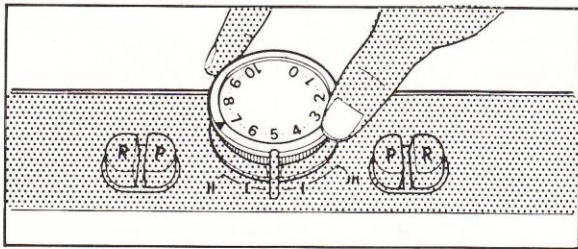
KNIT 5 ROWS.



Remove nylon thread.

KNIT 10 ROWS.

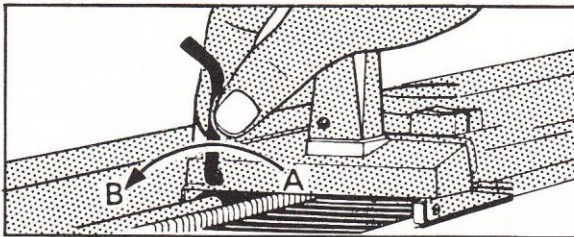
Check if swatch tension is satisfactory.



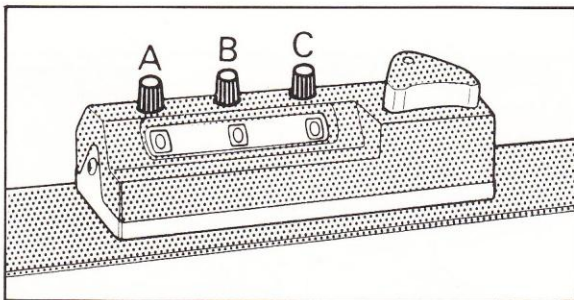
If not satisfied with tension, turn either to a higher number (looser stitch) or lower number (tighter stitch).

KNIT 10 ROWS.

Check tension and proceed as above until satisfied.

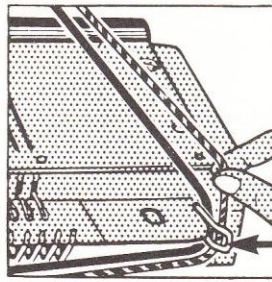
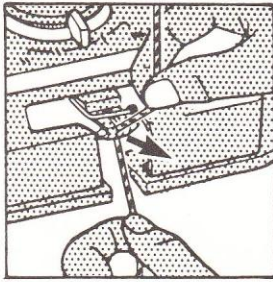


Raise row counter tripper in the direction 'A' to 'B' as far as it will go.

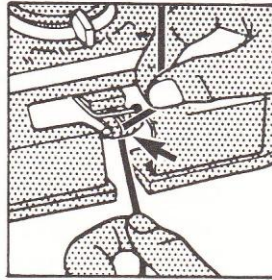
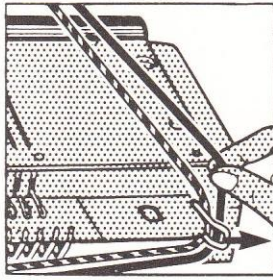


Set row counter to '0' by turning screws 'A', 'B' and 'C'.

KNIT 20 ROWS.



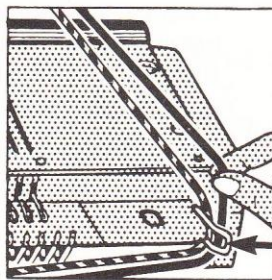
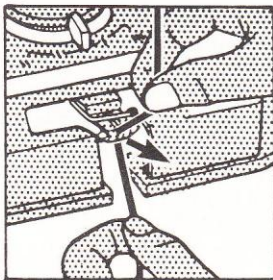
Remove main yarn from feeder and lay it around yarn clip on right side of machine.



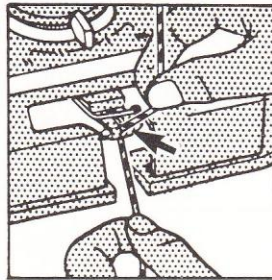
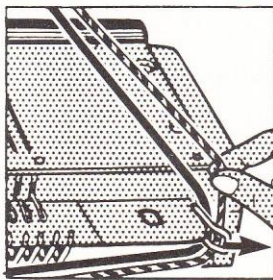
Remove waste yarn from yarn clip and thread into feeder.

KNIT 2 ROWS.

Row counter indicates 22.



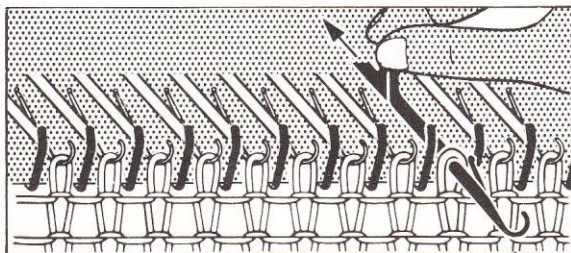
Remove waste yarn from feeder and lay it around yarn clip on right side of machine.



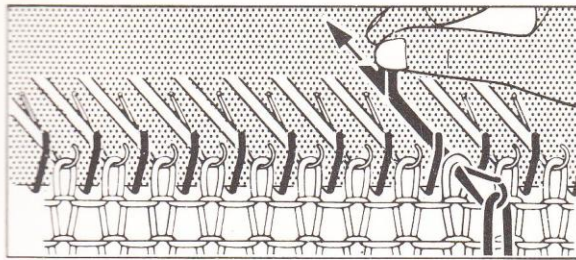
Remove main yarn from yarn clip and thread into feeder.

KNIT 30 ROWS.

Row counter indicates 52.



Move 21st needle on each side of centre '0' from 'B' to 'D' position.

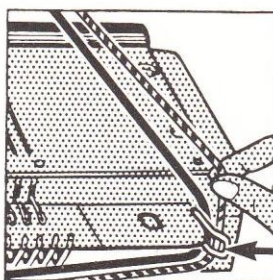
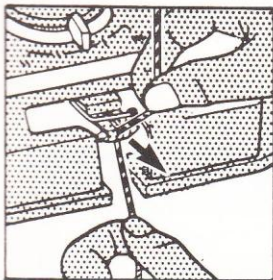


Hang a short piece of contrast yarn across the hooks of the two needles in 'D' position.

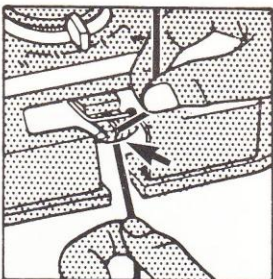
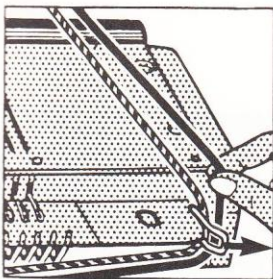
Move the two needles back to 'B' position.

KNIT 30 ROWS.

Row counter indicates 82.



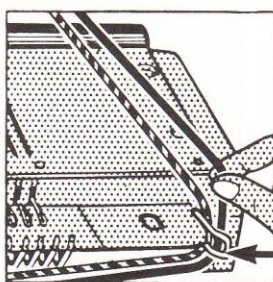
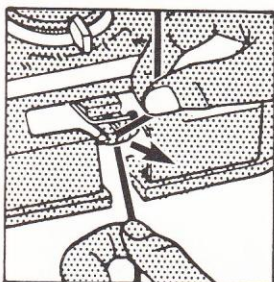
Remove main yarn from feeder and lay it around yarn clip on right side of machine.



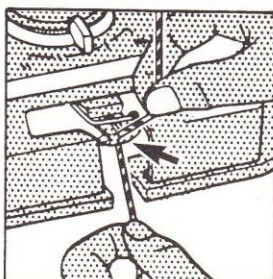
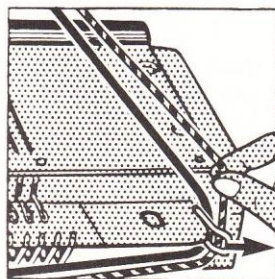
Remove waste yarn from yarn clip and thread into feeder.

KNIT 2 ROWS.

Row counter indicates 84.



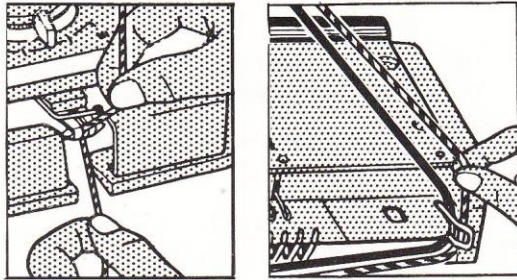
Remove waste yarn from feeder and lay it around yarn clip on right side of machine.



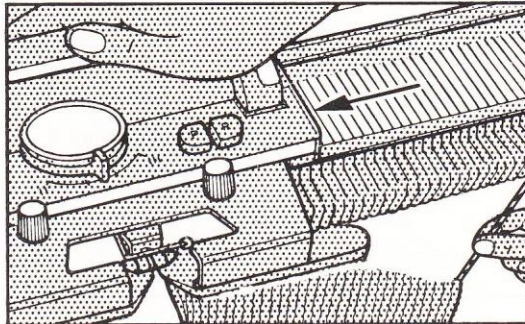
Remove main yarn from yarn clip and thread into feeder.

KNIT 20 ROWS.

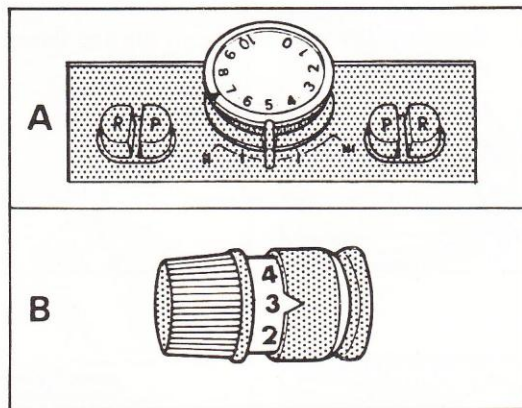
Row counter indicates 104.



Remove main yarn from feeder and lay it around yarn clip on right side of machine.



Remove tension swatch from machine by moving carriage across knitted fabric.



IMPORTANT:

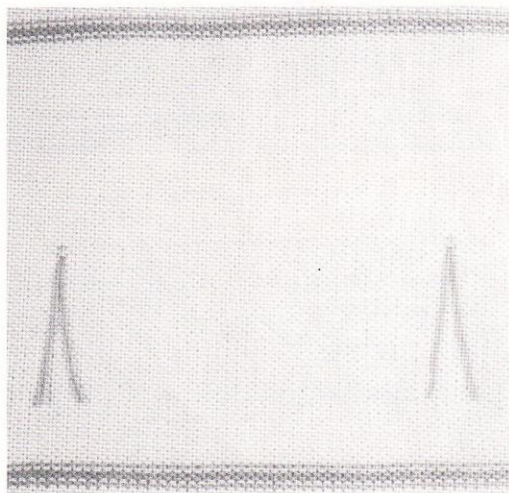
Before continuing, please take note of the following two tension settings:

A. MACHINE TENSION SETTING,

B. YARN BRAKE TENSION SETTING.

This will enable you to reset the tension when knitting actual garment.

STEAMING OF TENSION SWATCH



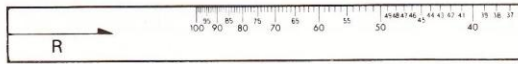
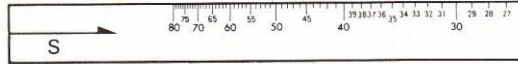
Stretch swatch slightly in a vertical direction so that the stitches close up.

Pin tension swatch, right side down, onto an ironing board.

Press swatch slightly with a steam iron in the same way you would steam your finished garment.

Wait a few minutes before removing pins.

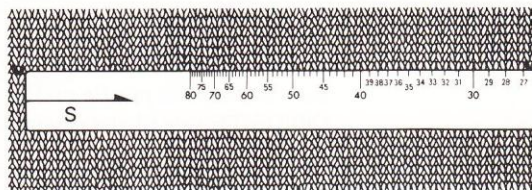
HOW TO MEASURE A TENSION SWATCH



There are two different measurements on the scale.

'S' scale - you measure the number of stitches.

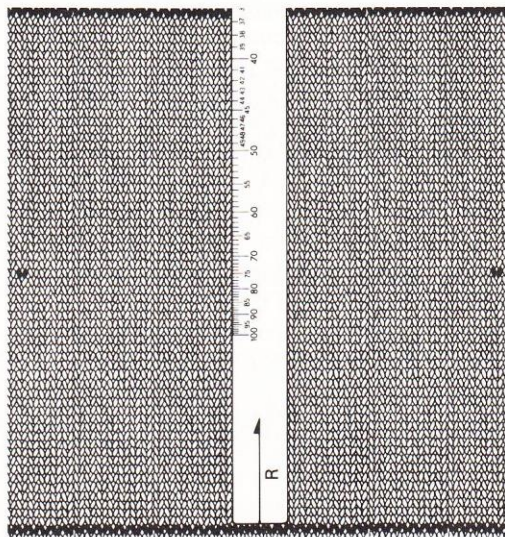
'R' scale - you measure the number of rows.



Tension swatch, right side up.

Lay stitch gauge (with 'S' on top) between the 2 stitches knitted with contrast yarn - see illustration.

The number on the right side, in this instance 30, indicates 30 stitches equals 10 cm.



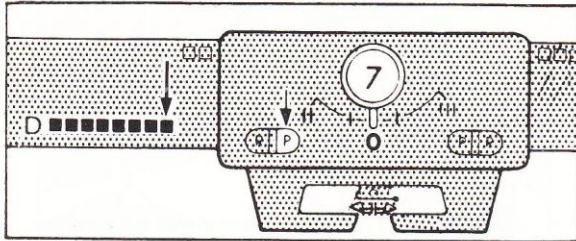
Lay stitch gauge (with 'R' on top) between the 2 rows knitted with contrast yarn.

The number on top, in this instance 42, indicates 42 rows equals 10 cm.

The following four points have to be remembered when writing down details regarding your tension swatch:

1. Yarn brake tension number
2. Carriage tension dial number
3. How many stitches equal 10cm
4. How many rows equal 10 cm

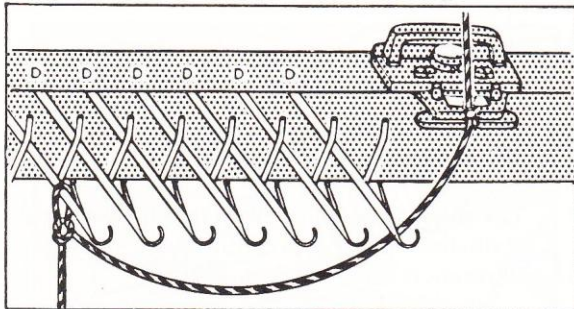
THE CLOSED EDGE CAST-ON BY HAND



CARRIAGE ON RIGHT SIDE

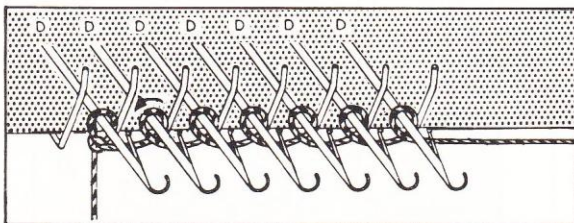
TENSION DIAL TO 7
CAM LEVER TO 0
PUSH BUTTON LEFT TO P

Bring required needles from 'A' to 'D' position.

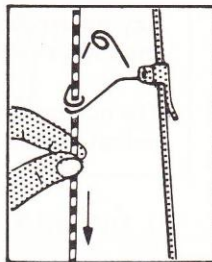


Thread the yarn through the yarn brake and the yarn feeder and pull down sufficient yarn from below the yarn feeder to tie a loose knot around the LAST needle on the LEFT side in 'D' position.

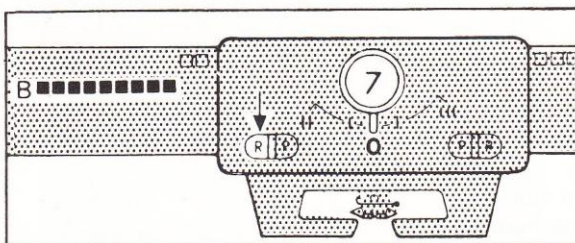
IMPORTANT – ALWAYS start by winding the yarn around the needle on the OPPOSITE side of the carriage.



Wind the yarn LOOSELY in anti-clockwise direction under and over the second needle in 'D' position and continue winding the yarn around the needles towards the RIGHT. As you wind a loop around a needle - push it BACK against the sinker gate BEHIND the needle latch.



When all needles have a loop, pull down any slack yarn from behind the yarn brake until there is no slack yarn between the carriage and the needles in 'D' position.



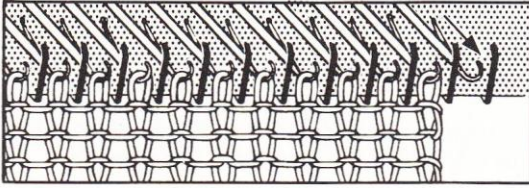
Knit 1 row towards the LEFT.

Press IN the button 'R' on the LEFT to release button 'P'.

Continue to knit the desired number of rows. You will have an attractive closed edge cast-on which cannot unravel.

IF STARTING AT LEFT, WIND THE YARN IN ANTI-CLOCKWISE DIRECTION (as shown)
IF STARTING FROM RIGHT (then carriage is on the LEFT side) WIND YARN IN CLOCKWISE DIRECTION - ALWAYS LOOSELY UNDER then OVER the needles.

INCREASING 1 STITCH AT A TIME



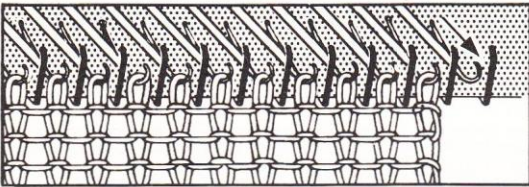
Bring 1 needle nearest to carriage from 'A' to 'B' position.

KNIT 1 ROW.

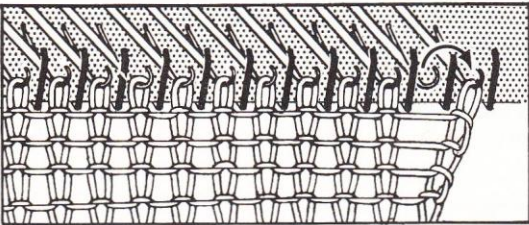
Increase on opposite side in the same way as above.

INCREASING FOR FULLY FASHIONED KNITWEAR

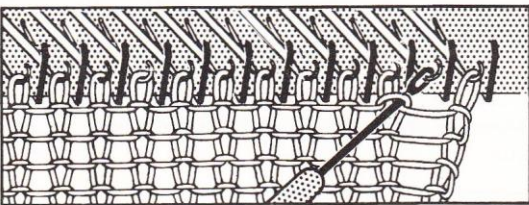
FULLY FASHIONED INCREASING 1 STITCH AT A TIME WITH THE SINGLE TRANSFER TOOL.



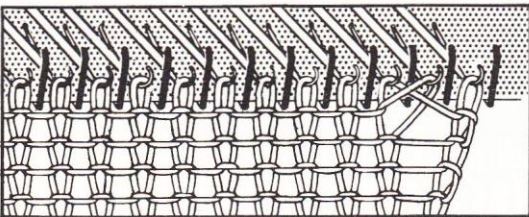
Bring 1 needle from 'A' to 'B' position on the side on which you wish to increase.



Transfer the end stitch outwards onto this needle.



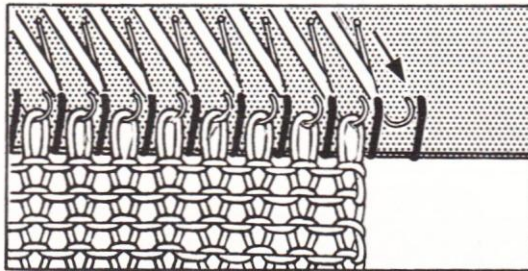
Pick up the bar of the second stitch of the row below and place it onto the empty needle.



One stitch has been increased.

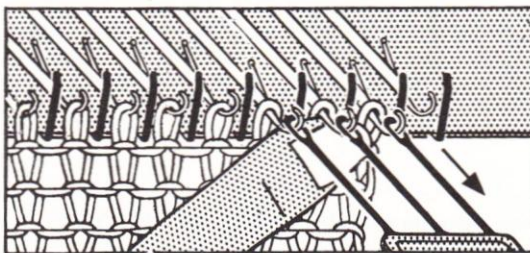
YOU MAY USE THIS METHOD TO INCREASE AT BOTH EDGES OF THE SAME ROW BUT – ONLY ONE STITCH AT A TIME.

INCREASING 1 STITCH FULLY FASHIONED
WITH THE TRIPLE TRANSFER TOOL



Bring 1 extra needle from 'A' to 'B' position on the side on which you wish to increase.

Open the latches of the last 4 needles.

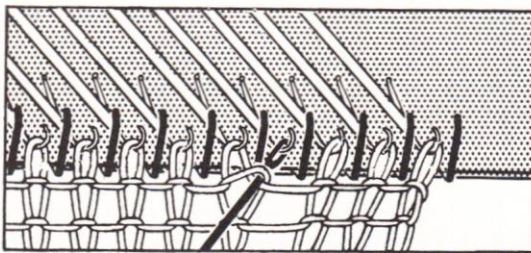


Hang the transfer tool into the hooks of the LAST 3 needles with stitches.
Pull the transfer tool towards you so that the needles come into 'D' position.
Push the needles back to 'A' and then pull them slowly into 'B' position.

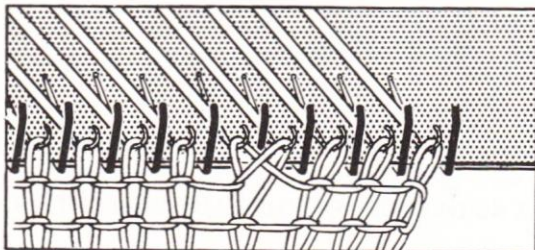


Lift up the transfer tool with the three stitches and transfer the stitches one needle outwards.

The fourth needle inside the knitting is now empty.



Lift the bar of the 4th stitch onto the empty needle.

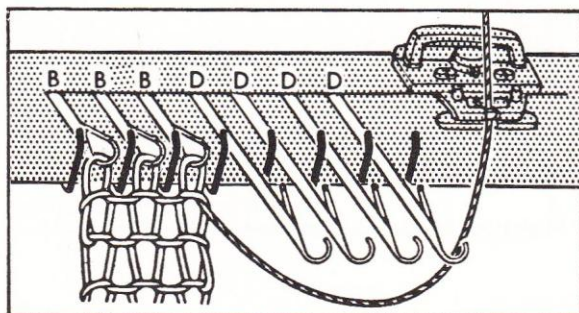


You have now increased 1 stitch.

This method of increasing is used when you wish to make perfect RAGLAN shaping.

YOU CAN INCREASE THIS WAY ON BOTH SIDES OF THE SAME ROW – BUT ONLY 1 STITCH AT A TIME.

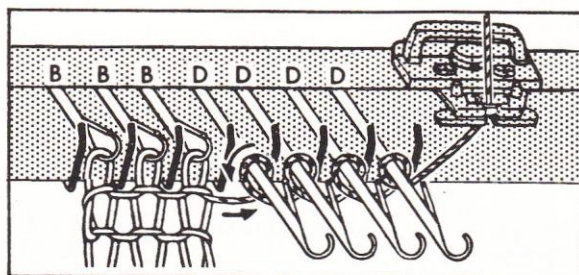
INCREASING MORE THAN ONE STITCH



To increase 4 STITCHES on the RIGHT SIDE, start with the carriage on the RIGHT.

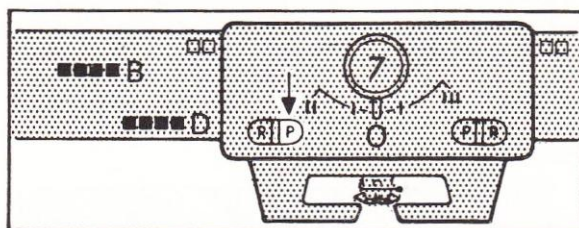
Push 4 extra needles from 'A' to 'D' position.

Pull some yarn through the yarn feeder.



Wind yarn LOOSELY around the 4 needles in the direction shown by arrow.

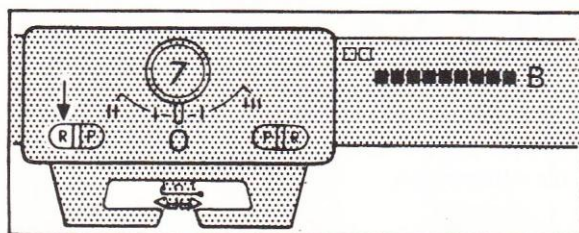
IMPORTANT: As you wind, push each loop behind the needle latch.



Pull down slack yarn behind the yarn brake.

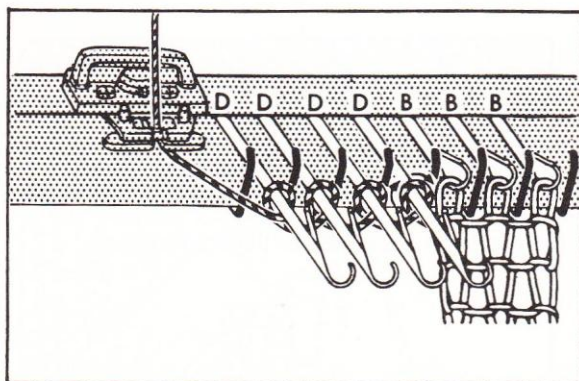
Press left button 'P'.

KNIT 1 ROW.



Press left button 'R'.

Continue knitting.



To increase 4 STITCHES on the LEFT SIDE, start with the carriage on the LEFT.

Push 4 extra needles from 'A' to 'D' position.

Wind yarn LOOSELY around the 4 needles in the direction shown by arrow.

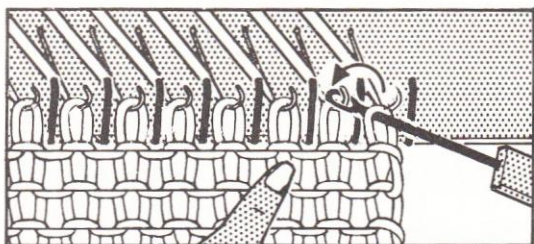
Push each loop behind the needle latch.

Pull down slack yarn behind the yarn brake.

Press right button 'P'. Knit 1 row.

Press right button 'R'. Continue knitting.

DECREASING ONE STITCH



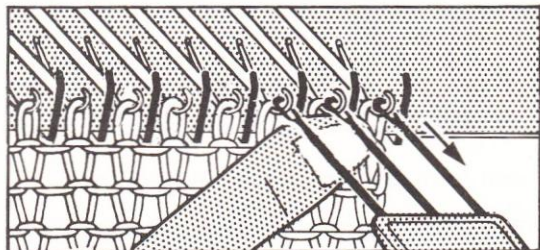
You can decrease 1 stitch on both sides of a row.

Transfer the last stitch on each side to its adjacent needle.

Push back the empty needles to 'A' position.

DECREASING 1 STITCH FULLY FASHIONED WITH

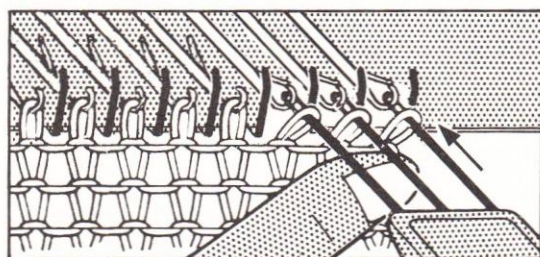
THE TRIPLE TRANSFER TOOL



YOU MAY DECREASE ON BOTH SIDES OF THE SAME ROW.

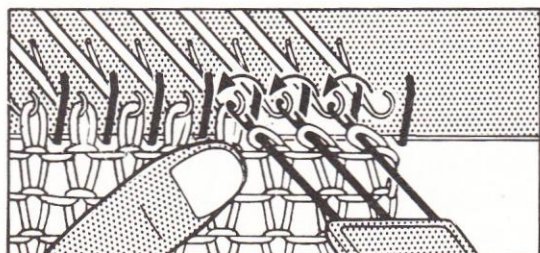
Knit a few rows. Open the latches of the last 4 needles at the RIGHT.

Hang the transfer tool into the last 3 needles on the RIGHT. Pull the needles out to 'D' position.



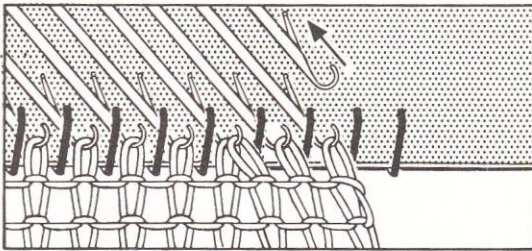
Push them BACK to 'A' position and then pull them slowly to 'B' position.

Lift the transfer tool out of the needles with the stitches on it.



Move the transfer tool 1 more needle towards the LEFT.

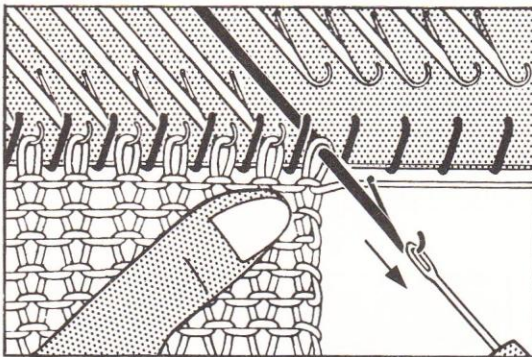
Let the 3 stitches slide into the needle hooks.



The 4th needle inside the knitting has 2 stitches and the first needle on the RIGHT is empty. Push the empty needle back to 'A' position.

When decreasing for a 'V' neck or Raglan shaping, this method of decreasing is very useful and most attractive.

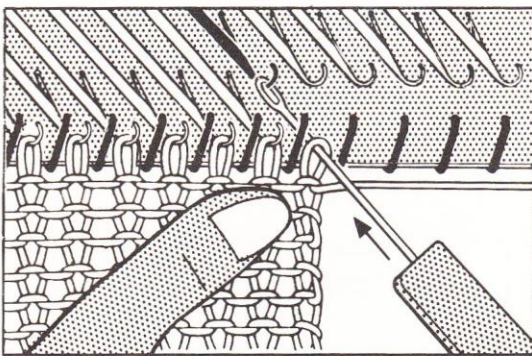
CAST OFF



Start on carriage side.

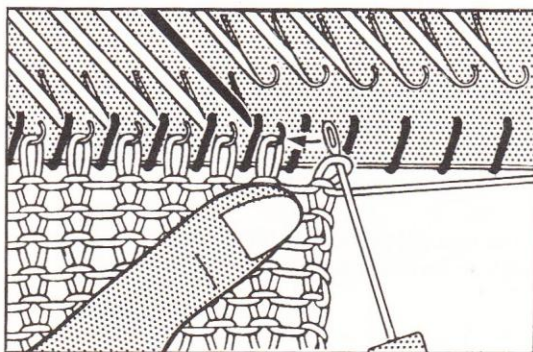
Hold fabric towards machine.

Insert single transfer tool into needle hook of first needle in 'B' position and bring needle to 'D' position.

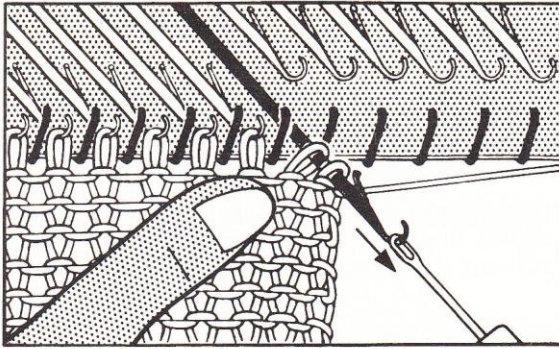


Hold fabric towards machine.

Push needle back to 'A' position.

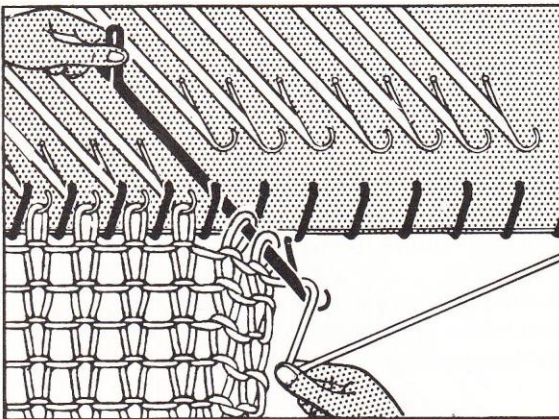


Holding fabric towards machine, transfer stitch from transfer tool onto second needle in 'B' position.



Holding fabric towards machine, bring needle forward until 2 stitches are behind the latch.

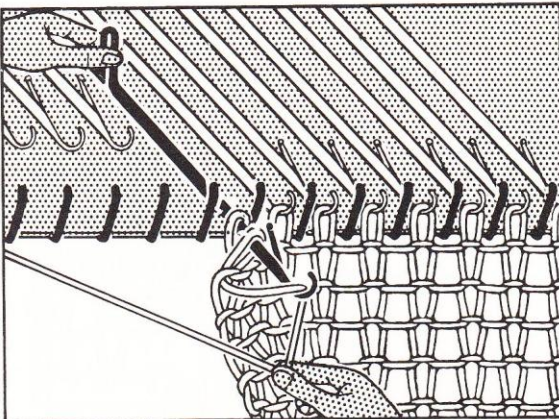
REMOVE TRANSFER TOOL.



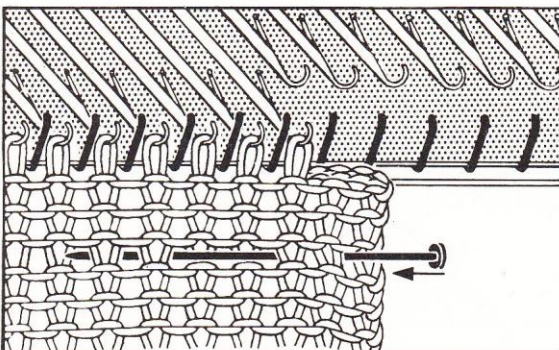
Lay yarn from right to left across the open needle hook in front of the latch.

Hold yarn slightly down and push needle back to 'B' position.

Continue until required number of stitches have been cast off.



NOTE: When you cast off on the left side, yarn is laid into needle hook from left to right.

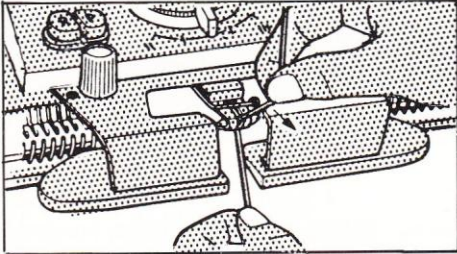


When you have cast off a number of stitches at the side the fabric tends to curl and when knitting the next row it may be caught up and cause the carriage to jam.

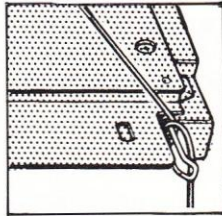
Fold cast off section to the back and pin down with an ordinary knitting needle.

KNITTING A HEM

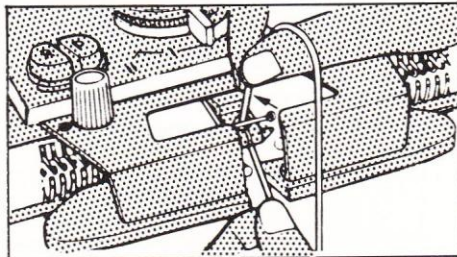
Set tension dial to 7 and press IN button 'P' on the LEFT side of the carriage.
Knit 1 row towards the LEFT. Lay the nylon thread across the loops between the sinker gates and the needle hooks and pull down firmly. Set the tension dial to 5.
Press IN button 'R' on the LEFT side of the carriage. Knit a few more rows finishing with the carriage on the LEFT. Pull out the nylon thread.



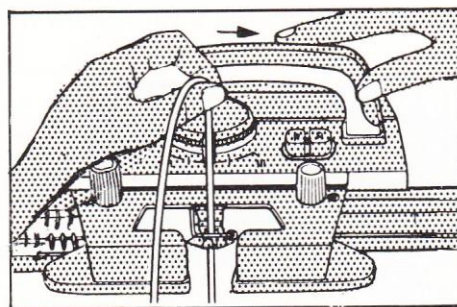
Break the yarn on top of the carriage.
Pull the end downwards out of the feeder and let it hang down on the side of the knitting.



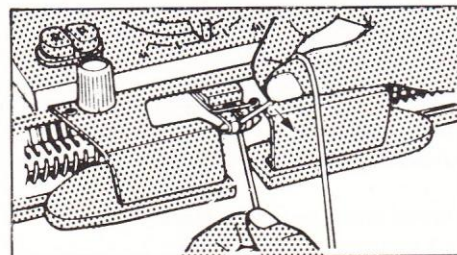
Wind the new yarn end around the yarn clip on the right side of the machine.



Feed the nylon thread into the yarn feeder allowing 2 or 3 inches (8 cm) to hang down below the carriage.



Hang the nylon thread over your thumb as shown and hold it lightly between thumb and forefinger.
Knit 1 row across towards the RIGHT.
While moving the carriage let the nylon thread slide smoothly through your fingers as the carriage needs it to form the stitches.

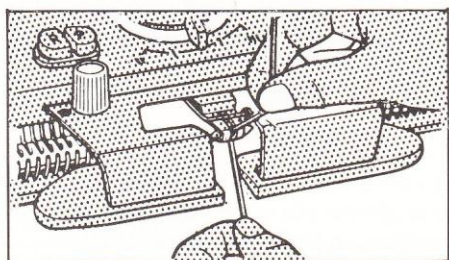


At the RIGHT pull the remaining length of the nylon thread downwards and out of the feeder and let it hang down.

You have knitted IN the nylon thread to separate the knitting from the cast-on which is usually made of waste yarn.

KNITTING A HEM

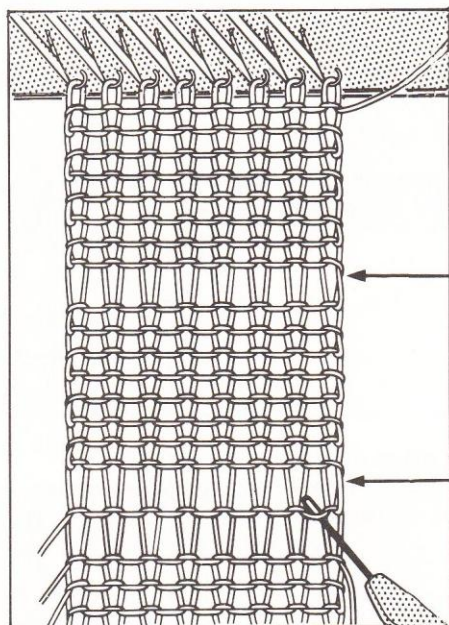
The hem is usually knitted with a smaller stitch size than the rest of the garment. This gives more elasticity so that your hem cannot stretch out of shape.



The carriage is at the RIGHT.

Remove the yarn from the right side yarn clip and place it back inside the yarn feeder. Fasten it to the RIGHT table clamp.

Pull down any slack yarn behind the yarn brake.

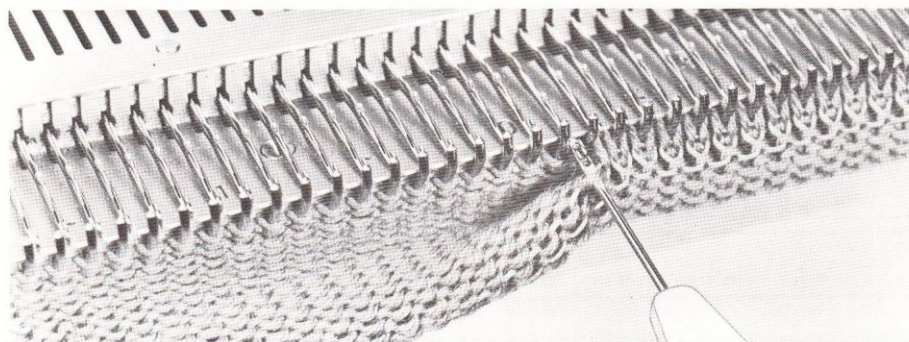


Set the row counter to 000.
Knit 1 row with tension 7.
Change tension to No. 4. Knit 7 rows.
Change tension to No. 7. Knit 1 row.
Change tension to No. 4. Knit 8 rows.
Set tension back to No. 7.
The row counter shows 17.

These large stitches help to make a neat, flat edge when the hem is folded.

These large stitches are very easy to lift up when you hang the first row back into the needle hooks to close the hem.

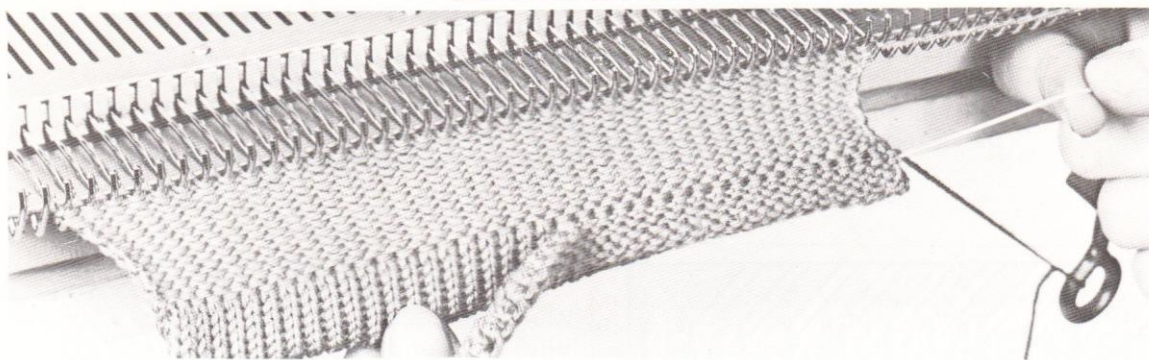
With the little brush, open all needle latches. Slip the transfer tool under the first stitch from the RIGHT of the FIRST row of knitting AFTER the nylon thread.



Fold the knitting and hold the row knitted with nylon thread and the first row of knitting between your thumb and forefinger of your left hand. Hook the transfer tool into the first needle from the right. Raise the transfer tool and let the loop slide down into the needle hook. This needle now has 2 loops.

Lift up all the first row of stitches knitted after the nylon thread onto the needle hooks. When this is completed each needle in 'B' position will have 2 loops.

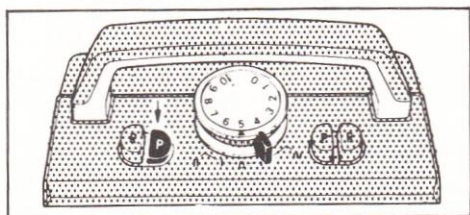
KNITTING A HEM



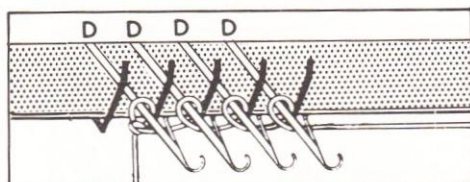
Each needle now has 2 loops. Knit 10 or 12 rows. Hold the knitting down with your left hand and pull out the nylon thread towards the RIGHT. The first rows knitted with waste yarn automatically fall away from the knitting leaving a perfect hem. In future when starting a garment, always start by knitting the first rows with waste yarn.

CIRCULAR CORD KNITTING

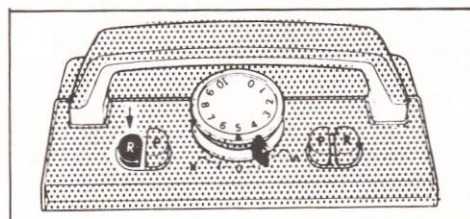
THIS IS A VERY USEFUL TRIMMING FOR ALL NECKLINES



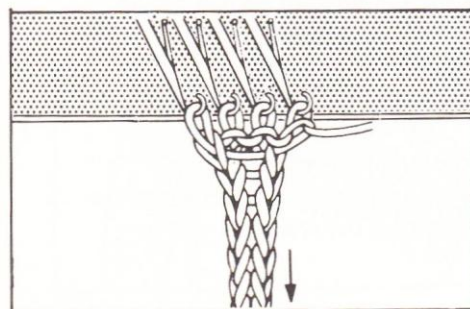
Set the cam lever to I on the RIGHT. This way the needles will not knit from LEFT TO RIGHT and the yarn remains in front of the sinker gate. Push IN button 'P' on the LEFT side of the carriage. Set tension dial to 5.



Bring the 4 centre needles from 'A' to 'D' position. Thread up the yarn and make a knot around the last needle on the left. Wind the yarn around the other needles. Pull down any slack yarn behind the yarn brake.



Knit 1 row towards the LEFT. Push IN the 'R' button on the LEFT side of the carriage.

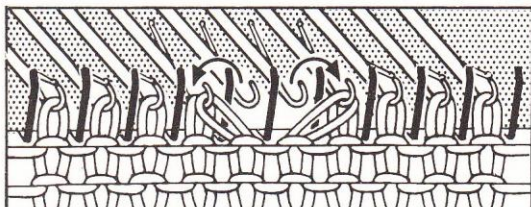


Continue knitting with these 4 needles while pulling a little on the cord at the same time.

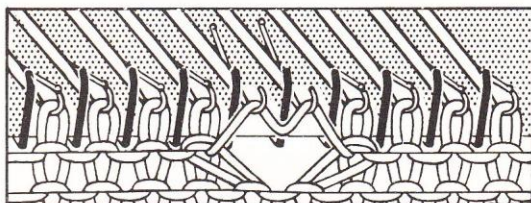
If you wish, you can take 3 or 5 needles to knit a cord, this depends on the yarn you are using and must be tested for each type.

BUTTONHOLES FOR SMALL BUTTONS

If you are using a thin yarn, your buttonhole over 2 needles will be quite small. Yarn knitted on tension 5 will give about 1/4 inch (8 mm) buttonholes. Thick yarn knitted on tension 10 will give a buttonhole of about 1/2 inch (13 mm). Decide the position of the buttonhole.



Where buttonhole is required - transfer 1 stitch to the adjacent needle on the LEFT and 1 stitch to the adjacent needle on the RIGHT, using the single transfer tool.

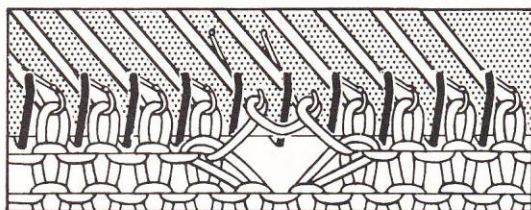


Knit 1 row.

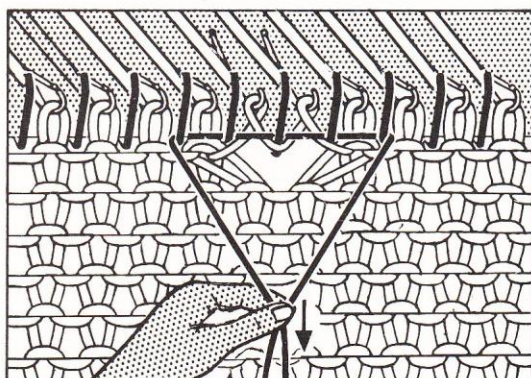
The yarn lies loosely over the 2 empty needle hooks.



Bring both needles to 'D' position and then back to 'B' leaving a loose thread in front of the knitting.



Bring the left needle a little to the front, just out of the sinker gate, open the latch so that you are able to wind the yarn in an anti-clockwise direction around it. Pull the needle back to 'B' position. Repeat the above with the second needle.



Lay the nylon thread across the loops of these 2 needles and the adjacent needles on the right and left side - between the needle hooks and sinker gate.

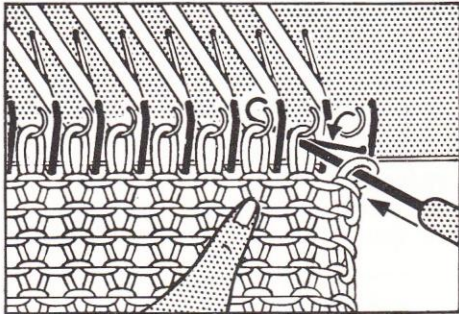
Pull both ends of the nylon thread gently down and knit a few rows.

Pull out the nylon thread.

Continue knitting a few rows and repeat the buttonhole where required.

CASTING OFF OR BINDING OFF WITH BIG LOOPS

This method of binding or casting off is **ONLY** suitable when using a thin to medium yarn, as the last row is knitted at a much looser tension than the rest of the knitting. Only bind or cast off in this way when your main tension setting is 8 or less. Also, you can only bind or cast off in this way when you want to bind off a complete row at one time.

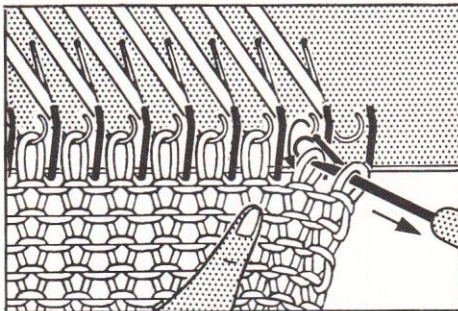


Knit last row with a looser tension (larger stitch).

Start to cast off on opposite side of carriage.

Insert the latchet hook in the **FIRST** stitch from the **RIGHT**.

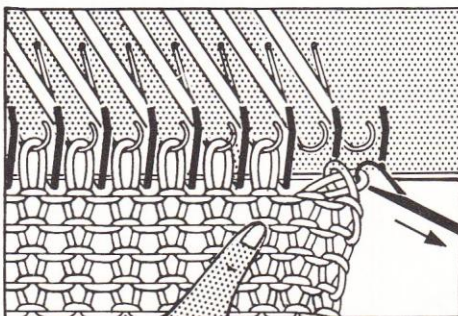
Lift the stitch **OFF** its needle, push the latchet hook forward until the loop slides **BEHIND** the latch.



Remove the **SECOND** stitch off its needle but keep it **IN** the latchet hook.

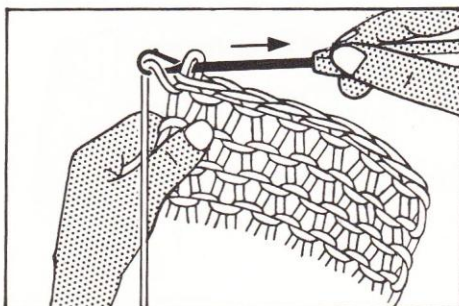
DO NOT let it slide behind the latch.

Pull the latchet hook backwards.



When pulling the latchet hook backwards - you pull the stitch from the hook through the loop which is behind the latch.

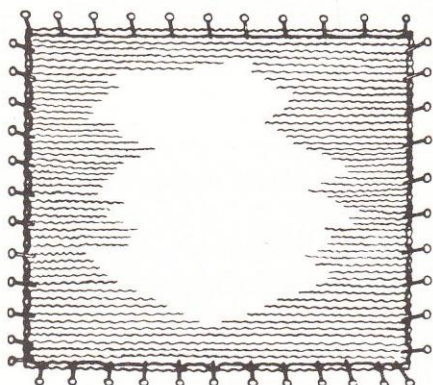
Move the latchet hook forward until the remaining loop slides behind the latch again. Now remove the third stitch off its needle and pull it through the loop which is behind the latch.



Continue in this way until the binding or casting off of the whole row is completed.

When you have the last loop in the latchet hook - pull the yarn through the loop to bind off the knitting completely.

STEAMING A FABRIC



IMPORTANT - Please follow very carefully.

Lay the knitting on the pressing table - wrong side facing you and without stretching pin it out to the correct size using 1 pin per 1/2 inch (1,2 cm).

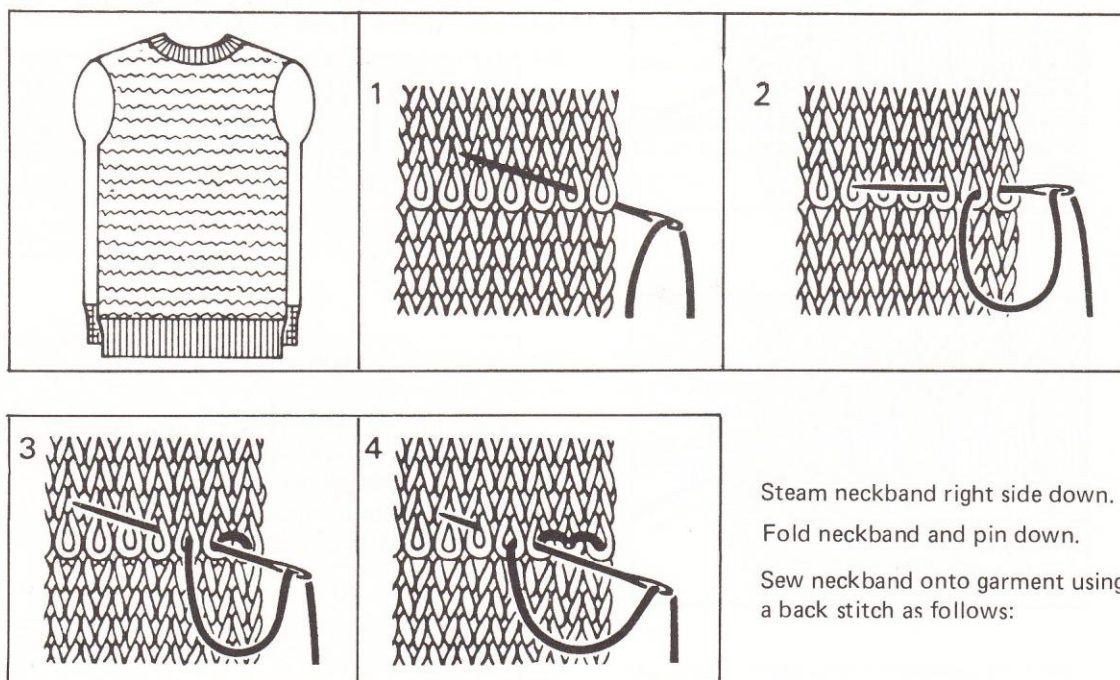
Lay a wet cloth on top of the knitting and move the hot iron across the wet cloth.

DO NOT press the iron onto the cloth, just slide it across and let the steam penetrate into the knitting.

Remove the cloth and let the knitting dry. Remove the pins. Careful steaming helps to give your garment that extra, perfect finished look.

Now that you have steamed your garment, it is important how you sew same together and, therefore, recommend that you read the instructions carefully before sewing the garment together.

SEWING NECKBAND ONTO GARMENT



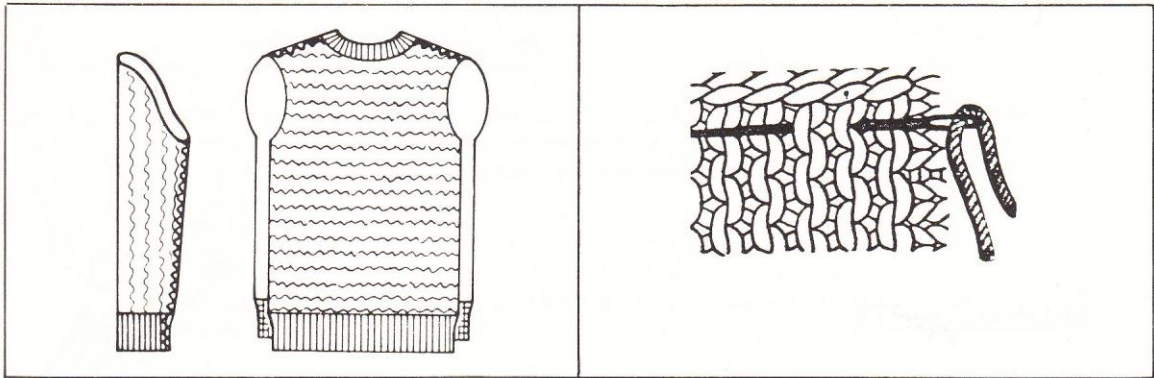
Steam neckband right side down.

Fold neckband and pin down.

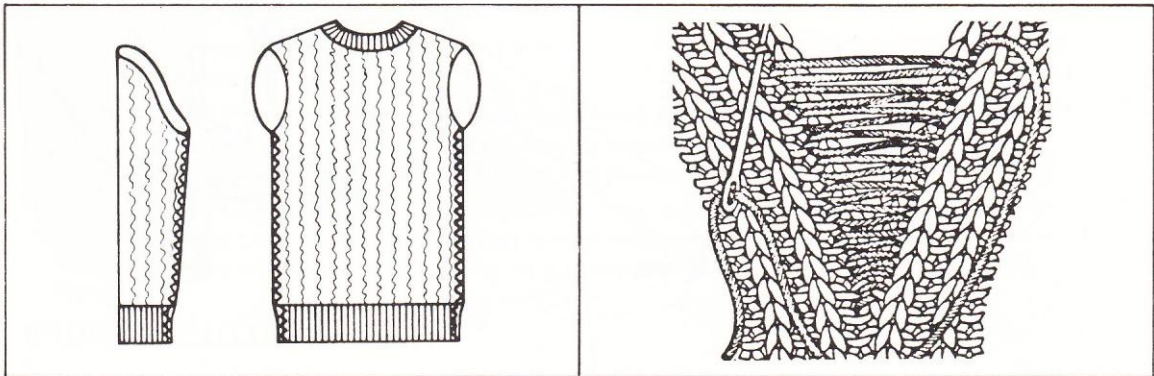
Sew neckband onto garment using a back stitch as follows:

1. Thread tapestry needle with main yarn and starting at seam edge bring the needle upwards through second stitch.
2. Insert needle from the top into first stitch and through knitting and bring it up through the third stitch.
3. Insert needle from the top through second stitch, through knitting and up through fourth stitch.
4. Repeat this backstitch.

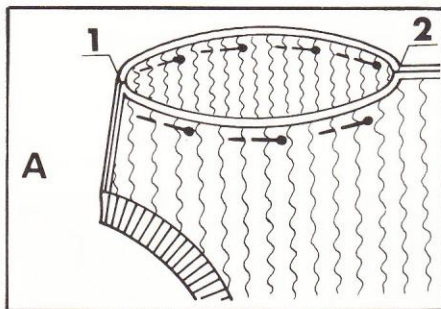
SEWING TOGETHER OF GARMENT



Using a back stitch, on the reverse side, join shoulder seam up to neckband only and sleeve up to welt only.

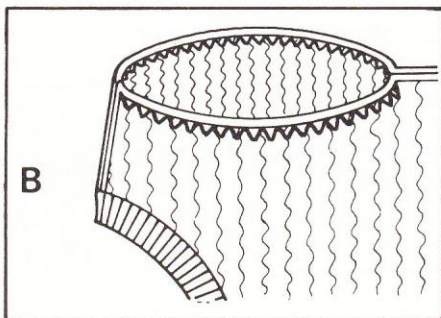


Using a mattress stitch, sew together, on the right side, sleeve welts, neckband and side of garment including welt.



- A. Reverse garment; insert sleeve with right side of sleeve facing right side of garment; pin sleeve into garment by
1. matching side seam of garment with side seam of sleeve,
 2. matching centre of sleeve top with shoulder seam of garment,

You can now pin sleeve onto garment in-between these two points with as many pins as you wish.



- B. Using a back stitch, sew sleeve into garment.

After garment is sewn together, steam all seams slightly.

HELPFUL HINTS



CASTING—ON PROBLEMS:

When you cast-on it is always better to cast-on with a very loose tension, i.e. from 7 upwards.

This gives you a large loop between the gate and the needle hook and when you lay your nylon thread across these loops it is easy for you to pull the thread well down below the needle hooks thus enabling the hooks to pass **OVER THE NYLON THREAD** of your next row.

If the first row of stitches is too tight or if you do not pull the nylon thread well down, then when you knit your next row the needles will incorrectly pass **UNDER THE NYLON THREAD** causing it to be 'knitted in', thereby either jamming your carriage or spoiling the cast-on. In this case you will have to restart the cast-on.

STITCHES ARE NOT KNITTED ON THE SIDE:

If you return the carriage **BEFORE IT HAS PASSED THE LAST NEEDLES IN 'B' POSITION BY SEVERAL INCHES**, it can happen that the first stitches of the row are not knitted and sometimes it may happen that a complete row is not knitted. In the case where stitches are not knitted, unravel the row and start again - also set the row counter back.

If a complete row is not knitted - slide the carriage completely off the needle bed and start from the other side - also set the row counter back.

DROPPED STITCHES ON THE SIDE:

Dropped stitches will occur on the sides of your knitting if your yarn brake is not properly threaded and your take-up spring 'S' is not automatically taking up all slack yarn between the feeder mouth and the needles. Loose loops may also form on the sides.

Dropped stitches or loose loops may occur at the sides of your knitting if you move the carriage too far past the knitting after knitting a row - then too much yarn is pulled from the yarn brake and you have slack yarn between the carriage and the knitting.

This is easily avoided if you just pull back any slack yarn behind the yarn brake.

DROPPED STITCHES IN THE CENTRE:

This can be caused by:-

Too loose or too tight a tension.

A tension not suitable for the pattern.

Yarn not suitable for the pattern.

Inside the sinker arm are two rectangular black brushes. As you move the carriage these brushes brush open and hold open the needle latches so that the yarn feeder can lay yarn into the hooks as the carriage passes the needles.

If these brushes are badly worn, or if the sinker arm has not been placed into the carriage properly, then the brushes cannot serve their function and dropped stitches will result. Dropped stitches are easy to repair.

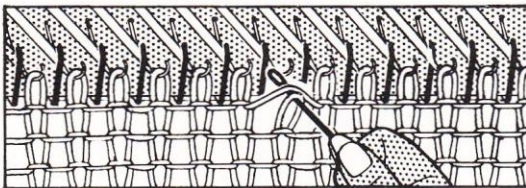
DROPPED STITCHES:

These can be caused by a knot in the yarn or by yarn which has been badly or too tightly wound, thus preventing the smooth flow of yarn from the ball to the knitting.

HOW TO REPAIR A DROPPED STITCH:

Once you are accustomed to machine knitting, you will very seldom drop a stitch.

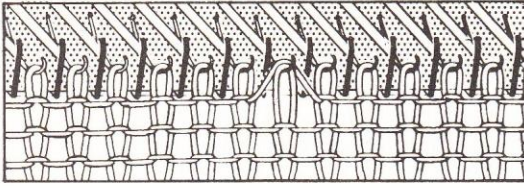
BUT as soon as you notice a dropped stitch, you should repair it at once.



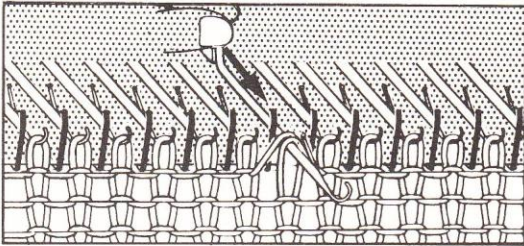
Insert the transfer tool inside the dropped stitch.



Hook the transfer tool into the empty needle.
Lift the loose bar of yarn and the stitch onto the empty needle.



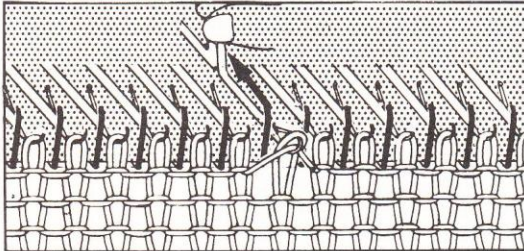
There is now 1 stitch and 1 bar on the empty needle.



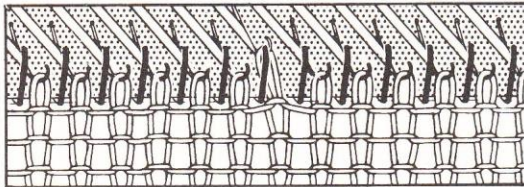
First - push the needle up to 'D' position, then pull the needle slightly back - just until the bar and the stitch are behind the latch - then STOP.



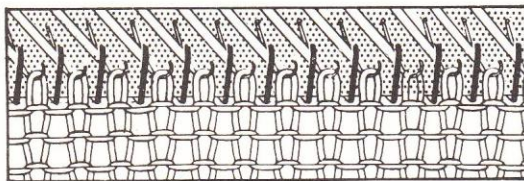
Lift the loose bar of yarn over the latch INTO the hook and leave the stitch BEHIND the latch.



Pull the needle back towards 'B' position thus pulling the bar of yarn through the stitch.

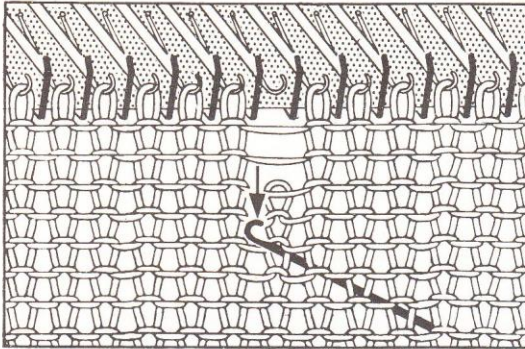


Push the needle further back towards 'A' position enabling it to form a bigger stitch.



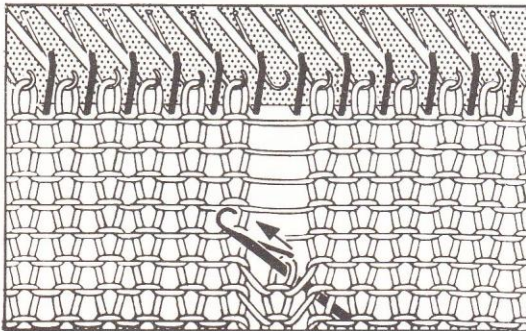
Pull the knitting down and sideways until the newly repaired stitch gradually assumes the same shape as all other stitches.

REPAIRING A LADDER OF DROPPED STITCHES

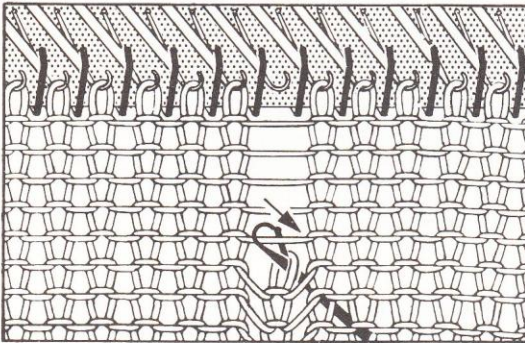


Insert the latchet hook from behind the knitting through a stitch a few rows below the dropped stitch.

Undo stitches down to the latchet hook by pulling down on the latchet hook.

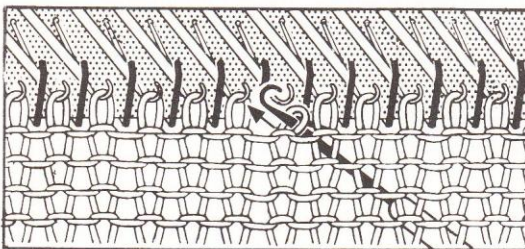


Push the latchet hook towards you so that the stitch comes behind the latch and the hook catches the cross thread.



Draw the latchet hook back. The cross thread is trapped in the closed latch.

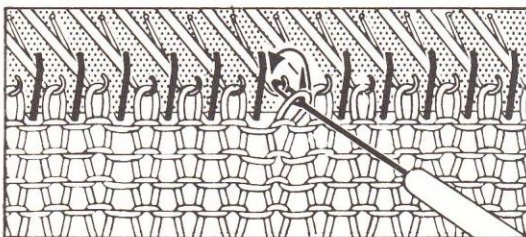
Pull the cross thread through the loop thus forming a knitted stitch.



Push the latchet hook towards you again until the stitch is BEHIND the latch.

Catch the next cross thread in the hook and pull it through the stitch.

Repeat until you reach the top.



Pull the last stitch rather tight to make a bigger loop.

Insert the transfer tool into this loop from the front.

Carefully remove this stitch from the latchet hook and place it on the needle with your transfer tool.

UNDOING ROWS – UNRAVELLING

Unravelling is quick and very simple and may save quite a considerable amount of time.

IT MAY BE NECESSARY TO UNRAVEL –

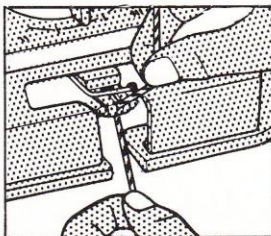
If you have knitted too many rows.

If you have made a mistake in your knitting or pattern.

If your carriage jams and it is necessary to release the carriage and restart the row where the fault occurred.

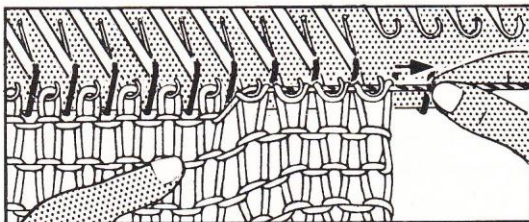
If you have one or more dropped stitches in the middle of a row, it is much easier to unravel 2 or 3 rows and then just lift the dropped stitches back onto their respective needles.

YOU CAN ONLY UNRAVEL WHEN ALL STITCHES ARE INSIDE THE NEEDLE HOOKS.

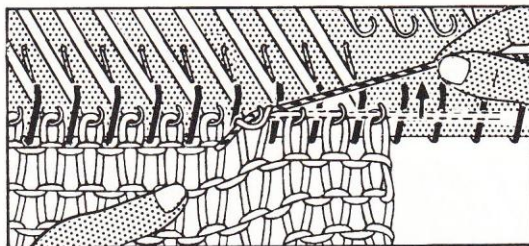


TO UNRAVEL 4 ROWS PROCEED AS FOLLOWS:

Remove the yarn from the yarn feeder.

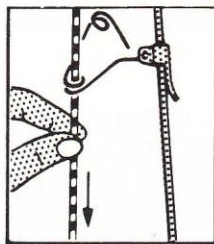
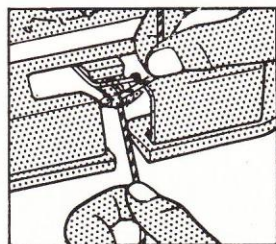


Hold the knitting down with your left hand and with your right hand pull the yarn sideways as illustrated.



Lift the yarn upwards and very slightly backwards and you will notice that the stitches of the previous row automatically slide back into the needle hooks. Repeat pulling the yarn and lifting the stitches of the previous row into the needle hooks until you have unravelled 4 rows.

When unravelling from the LEFT, you must pull the yarn towards the LEFT.



Thread the yarn back into the yarn feeder.

Pull back all loose yarn behind the yarn brake.

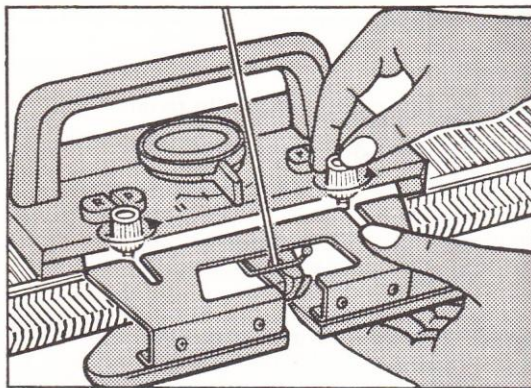
DO NOT FORGET TO SET THE ROW COUNTER BACK FOR THE NUMBER OF ROWS UNRAVELLED.

IF THE CARRIAGE JAMS

SOMETIMES THE CARRIAGE MAY JAM IN THE MIDDLE OF A ROW.

IF THIS HAPPENS – IT IS NOT SERIOUS, AND NO CAUSE FOR WORRY.

DO NOT FORCE OR HIT THE CARRIAGE TO GET IT LOOSE.

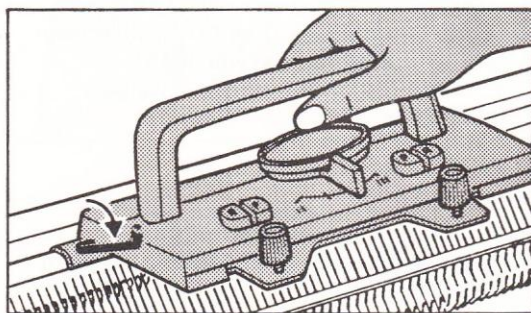


PROCEED AS FOLLOWS:

Set the row counter out of action.

Loosen the two knurled nuts which secure the sinker arm to the carriage. Pull the sinker arm towards you off the carriage. If necessary cut the yarn to separate the sinker arm from the carriage. Take care that there are no needle hooks caught in the yarn feeder.

You can now lift the carriage from the front of the needle bed and it will still be held by the guide rail at the back of the needle bed.



Hold the carriage up in its raised position and move it across the needle bed away from the knitting in the direction from which it came.

Replace the carriage onto the needle bed.

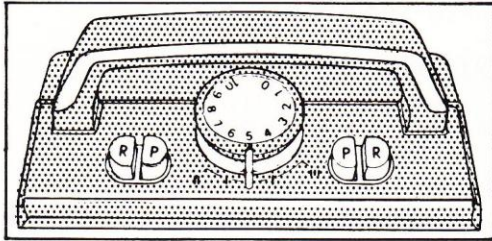
Remove the yarn from the feeder. Check that there is no yarn twisted around the brushes below the sinker arm. If there is, clear it and replace the sinker arm back onto the carriage.

Set the row counter back into action. Unravel the last row. If the last row has been counted, set the row counter back. Rethread the yarn.

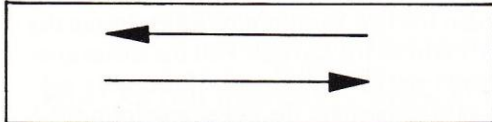
CARRIAGE IS HEAVY TO MOVE IF –

1. The yarn is wound too tightly and does not flow easily into the needles.
The yarn you are using is too hard or too heavy.
The yarn is not suitable for use on your machine.
The yarn is not suitable for the pattern which you are knitting.
2. The tension (stitch size) is either too loose or too tight.
3. Your machine is dirty or needs oiling.
4. The yarn brake has been incorrectly threaded.
5. The yarn became entangled in the yarn brake during knitting.

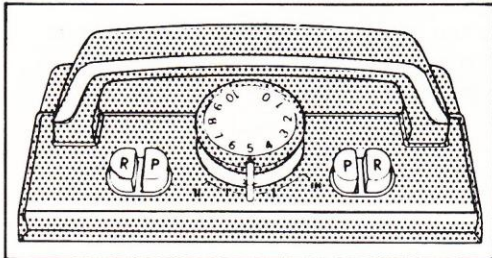
CAM LEVER AND PUSH BUTTONS



In the centre of the carriage is a cam lever with 5 positions - centre and two on either side.
The buttons and cam lever have a large range of different pattern combinations.



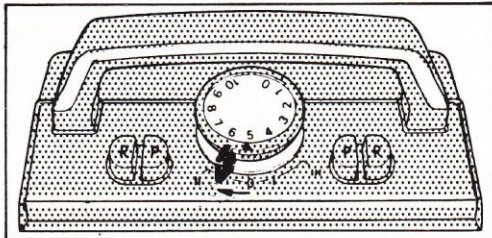
← means carriage moving from right to left.
→ means carriage moving from left to right.



Set cam lever on centre '0'.

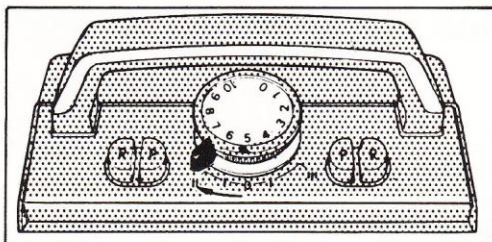
- ← needles in 'B' and 'C' position will knit.
- needles in 'B' and 'C' position will knit.

NOTE: Any needles in 'D' position will remain in 'D' position and will not be affected by the carriage movement.



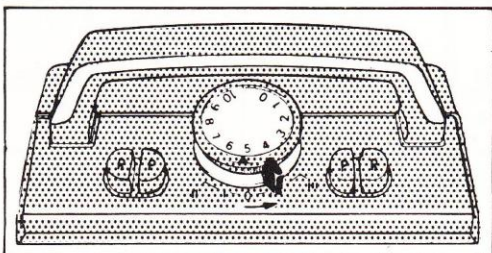
Set cam lever to I on the left side.

- ← needles in 'C' position will knit. Needles in 'B' and 'D' position will not knit.
- needles in 'B' and 'C' position will knit. Needles in 'D' position will not knit but remain in position.



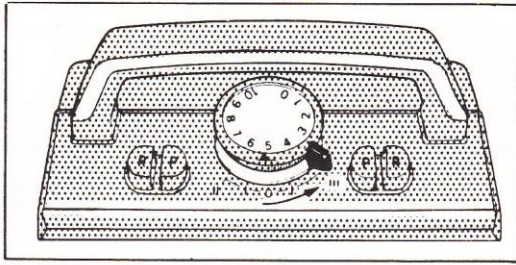
Set cam lever to II on the left side.

- ← needles in 'C' position will knit, all other needles will not knit.
- needles in 'C' position will knit, all other needles will not knit and will remain in position.



Set cam lever to I on the right side.

- ← needles in 'B' and 'C' position will knit. Needles in 'D' position will not knit.
- needles in 'C' position will knit, all other needles will not knit.



Set cam lever to III on the right side.

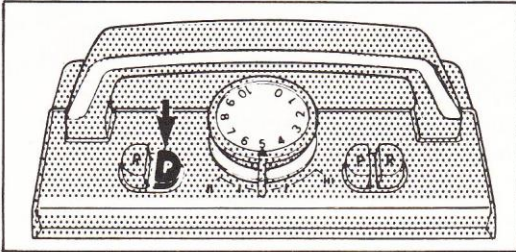
← needles in 'B' and 'D' position will not knit. Needles in 'C' position will return to 'B' position without knitting.

NOTE: Unless separate yarn is laid in the needles in 'C' position, stitches will drop off. This is especially important to remember when doing Fair Isle.

THE FOUR PUSH BUTTONS

Remember when needles knit, they always knit back to 'B' position.

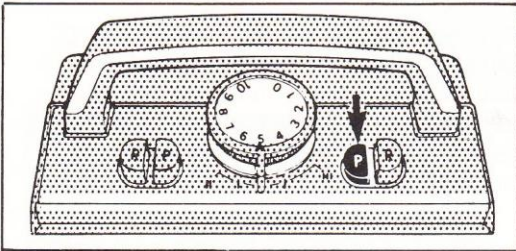
Needles required in 'C' or 'D' position must be brought forward by using the needle pusher or by hand.



Press button 'P' on the left side.

← needles in 'B', 'C' and 'D' position will all knit.

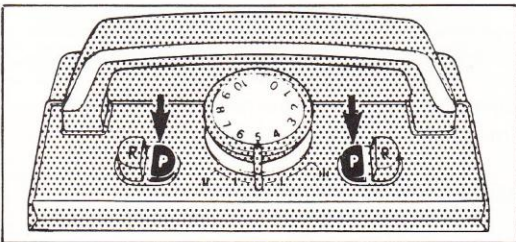
→ needles in 'B' and 'C' position will knit. Needles in 'D' position will move down to 'C' position without knitting.



Press button 'P' on the right side.

← needles in 'B' and 'C' position will knit. Needles in 'D' position will move into 'C' position without knitting.

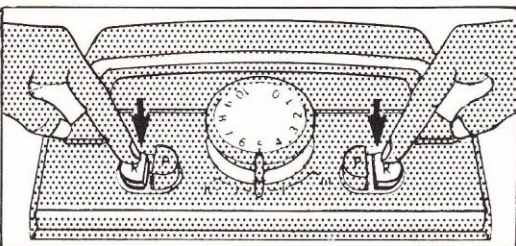
→ needles in 'B', 'C' and 'D' position will all knit.



Press button 'P' on both the left and right side.

← needles in 'B', 'C' and 'D' position will knit.

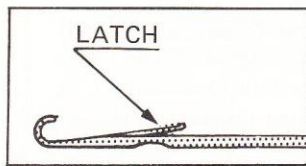
→ needles in 'B', 'C' and 'D' position will knit.



Press button 'R' on left and right side.

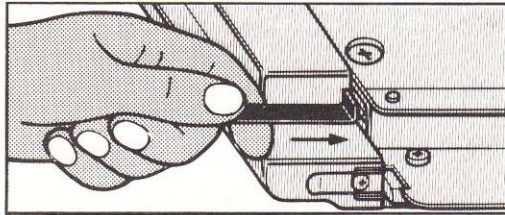
When you press button 'R', button 'P' is released and needles in 'B' and 'C' position in right and left direction will knit but needles in 'D' position in either left or right direction will not knit.

HOW TO CHANGE A NEEDLE



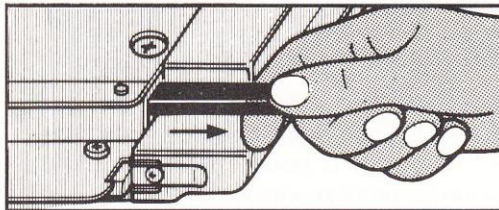
Needles with damaged latches will cause faulty or dropped stitches and must be changed.

The needle latch must move easily and lie flat over the needle hook.

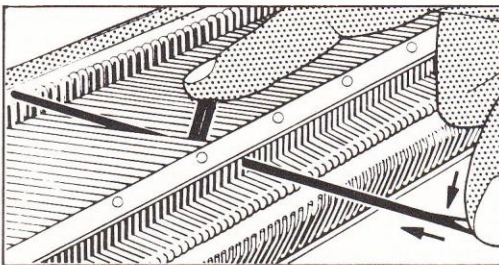


At each side of the needle bed you will find the needle retaining bar. This can be pulled out from the right or left side.

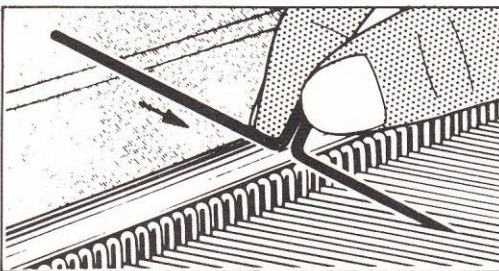
Push in the retaining bar on the side nearest the broken needle.



By hand, pull out this bar from the other side of the machine until the damaged needle lies free.

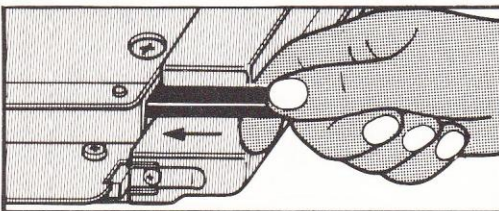


Push the damaged needle by the butt to 'D' position. With your thumb push the needle hook down as shown - unless the needle is badly worn, the heel will lift out of the needle bed. Pull the needle backwards and out of the needle bed by the heel.



Open the latch of a new needle and slide it into the groove in the direction of the arrow.

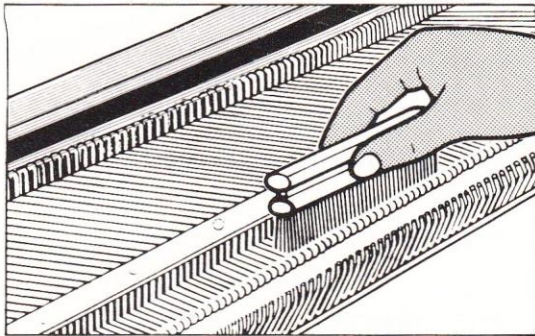
Move the needle butt back to 'B' position.



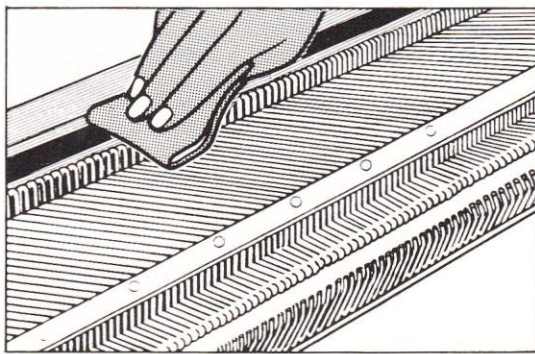
Check that the needle slides smoothly in the needle bed.

Push the needle retaining bar back as shown.

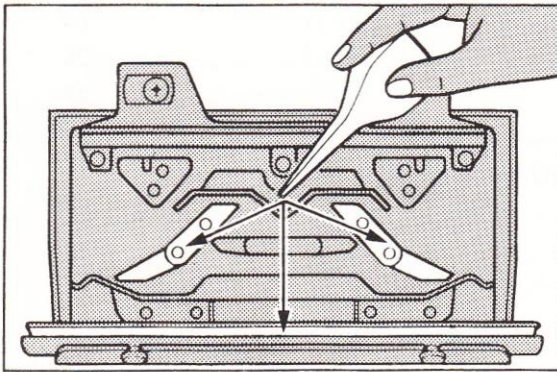
MAINTENANCE OF THE MACHINE



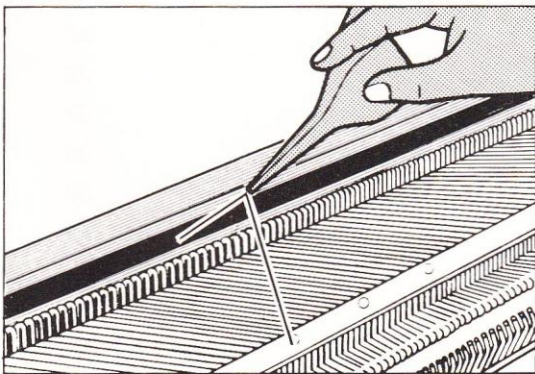
Brush the lint and dust from the needle hooks.



Using a dry cloth, clean carriage rail, needle butts and needle bed.
Put some oil onto a clean cloth and wipe needle butts with same.



Remove lint and dust from underneath the carriage and oil carriage pipe and cam lightly.



Before starting to knit apply a few drops of oil to the carriage rail and front guide of needle bed.
Slide carriage a few times across the needle bed.

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INSTRUCTION BOOK

Empisal-Knitmaster[®]

MODEL - 310
ENGLISH