

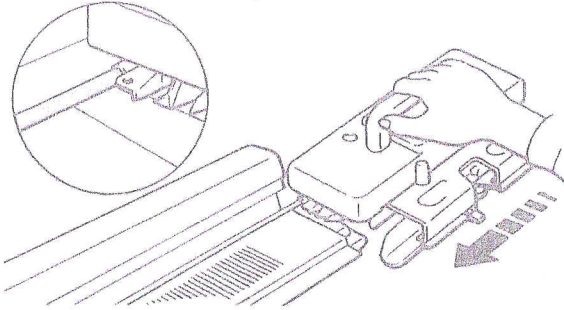
INSTRUCTION BOOK

AG 50

ELECTRONIC INTARSIA CARRIAGE

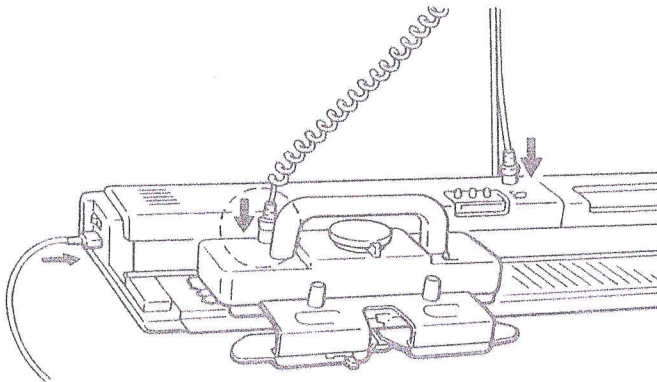
SETTING UP

1. Remove the Standard Carriage from the Needle Bed.
2. Take out the Intarsia Carriage with Intarsia Arm attached from the box, raise the handle and slide the Intarsia Carriage onto the Bed as shown.



3. Plug the Curl Cord, Power Cord, Design Controller PE1 (option) and Pattern Controller EC1 (option) in the usual way.

N.B. Switch off the machine or the Pattern Controller when connecting the plugs.



PREPARING FOR INTARSIA KNITTING

Cam Lever and Needle Position

The Cam Lever has two positions.

- (Stockinet) Set to this position when casting-on or knitting Stockinet. Needles are aligned in B position by moving the Carriage across the needles. Yarn must be placed in the Yarn Feeder.
- I (Intarsia) Set to this position when knitting Intarsia. Needles are aligned in C position by moving the Carriage across the needles. Yarn must be laid inside the hooks of needles in C position.

Needles in D position do not knit. Align needles in this position when working partial knitting or holding stitches. To knit needles in D position again, push the needles back to C position or B position using Transfer Tool.

Yarn and Stitch Dial

Recommended types of yarns for the Intarsia Carriage are almost the same as the yarns for the Standard Carriage. However, the stitch size can be affected by the way to lay and hold down the yarns. Experiment with your yarns at different Stitch Dial numbers to find the suitable stitch size for the yarns.

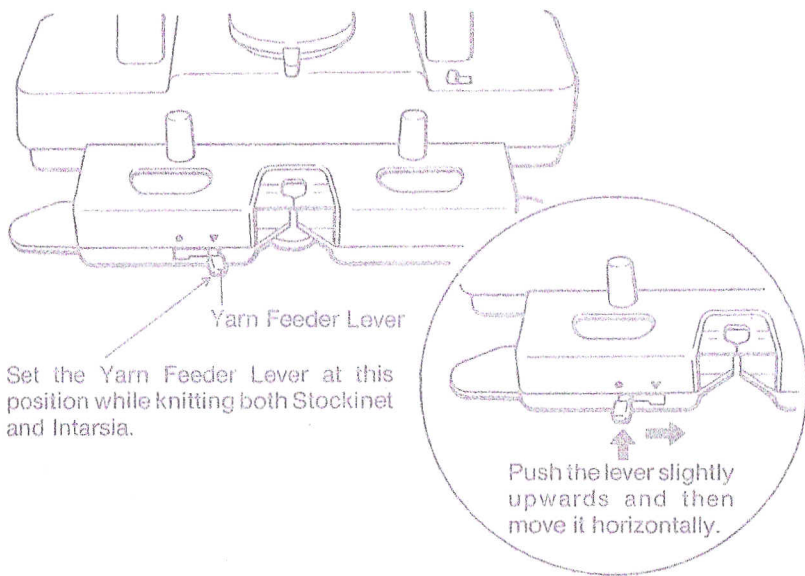
Release Lever

Use the Release Lever in the same way as the Release Lever of the Standard Carriage.

Yarn Feeder and Yarn Feeder Lever

Yarn is threaded into the Yarn Feeder, when casting-on and knitting Stockinet. To open or close the Yarn Feeder, move the Yarn Feeder Lever by pushing the lever up and moving it horizontally.

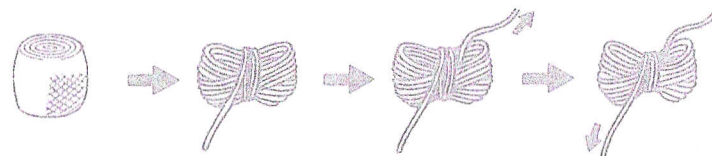
- Set the Yarn Feeder Lever to this position to open the Yarn Feeder.
- ▼..... Set the Yarn Feeder Lever to this position to close the Yarn Feeder. Always set to this position while knitting.



Set the Yarn Feeder Lever at this position while knitting both Stockinet and Intarsia.

Yarn Preparation

Prepare the required number of small yarn balls for each part of the pattern sectioned in colour. Make small balls following instructions below.

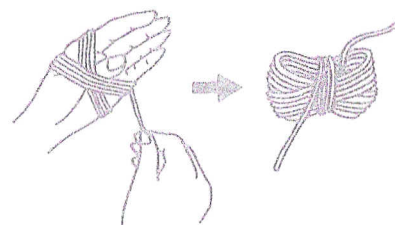


Make a small yarn ball by using an optional Yarn Ball Winder.

Wind outer yarn end five or six times around the small ball.

Pull out the other yarn end from the center of the small ball.

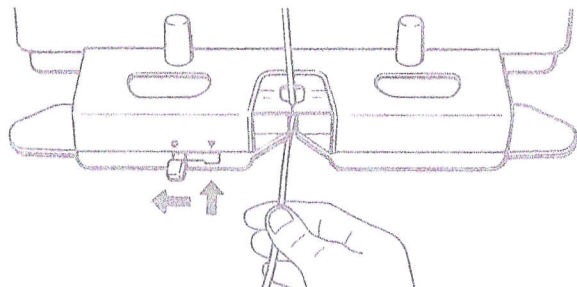
Pull the outer yarn end so that the yarn comes out freely.



If you don't have an optional Yarn Ball Winder, wind yarn around your hand three times and then wind three times crosswise. Repeat the same procedure until adequate amount of yarn is wound. Wind outer yarn end five or six times around the small ball.

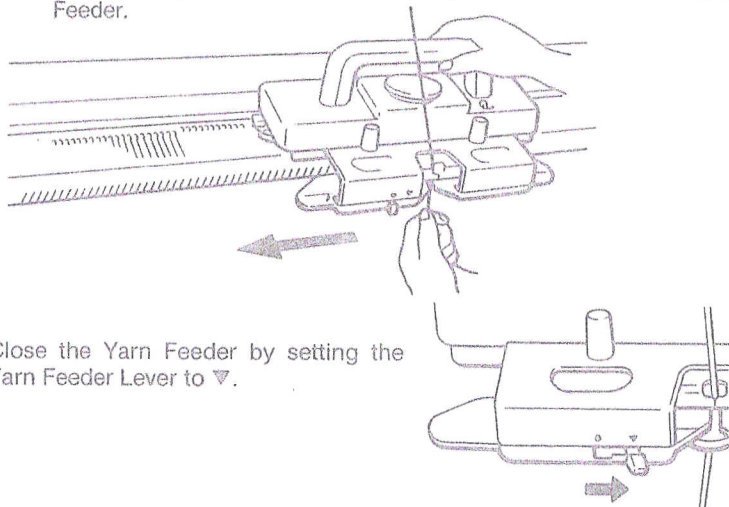
CAST-ON AND KNITTING STOCKINET

1. Push the required number of needles to B position. Set Stitch Dial number a little higher than usual. (e.g. Stitch Dial 7 for medium weight yarn.) Set Cam Lever to ○ (Stockinet).
2. Thread yarn through the Auto Tension. Open Yarn Feeder by pushing up the Yarn Feeder Lever and moving it to ●. Thread yarn into the Yarn Feeder.



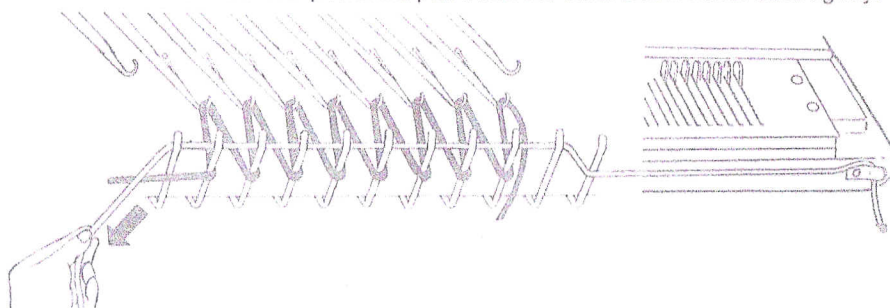
3. Holding the yarn end underneath the Yarn Feeder by hand, move the Carriage slowly across the needles to knit one row without closing the Yarn Feeder.

N.B. If you close the Yarn Feeder right after threading yarn, yarn may be entangled with round rubber underneath the Yarn Feeder. To avoid entanglement, knit 1 row slowly and then close the Yarn Feeder.

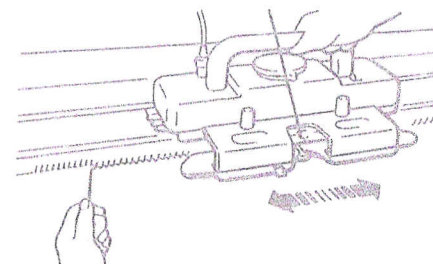


4. Close the Yarn Feeder by setting the Yarn Feeder Lever to ▽.

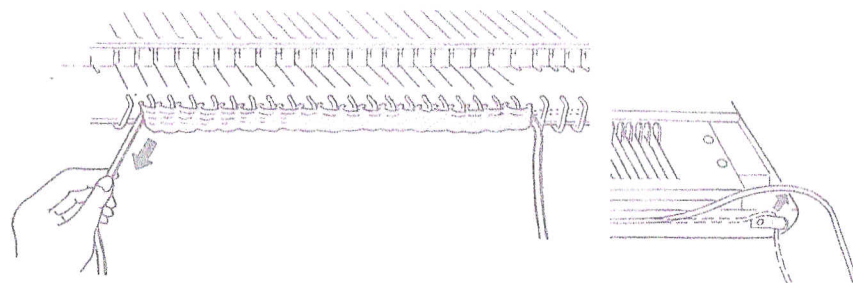
5. Prepare Ravel Cord and place its one end in the yarn clip at the end of the Needle Bed. Lay the Ravel Cord across the yarn loops between needle hooks and sinker posts and pull down the other end of Ravel Cord tightly.



6. Continue to knit 4 ~ 5 rows.



7. Remove the end of the Ravel Cord from the yarn clip, and pull it out from the other end.



8. Reset the Stitch Dial to the suitable number for the yarn and continue to knit.

HOW TO KNIT INTARSIA

HOW TO KNIT TYPE I INTARSIA

There are five ways of knitting Intarsia by using Electronic Intarsia Carriage.

Type I

This type of Intarsia is knitted with the use of Design Controller and the cards prepared in the same way as for Multi-coloured Slip Stitch or Multi-coloured Jacquard, and having no floats on the back of the fabric.

Type II

This type of Intarsia is knitted in combination of Intarsia and Fair Isle, using Design Controller and the cards prepared in the same way as for Multi-coloured Slip Stitch or Multi-coloured Jacquard to prevent long floats on the back of the fabric.

Type III

This type of Intarsia can be knitted without Design Controller. The pattern must be drawn in outline on the Design Card and one pattern row is formed with a single row of knitting.

Type IV

This type of Intarsia can be knitted without Design Controller, but with the use of Pattern Switch No.6 (for Double Jacquard). Any Fair Isle card can be used.

Type V

This is another way of knitting Intarsia without using cards, Design Controller and Pattern Controller. Work patterning manually.

To knit this type of Intarsia with the Design Controller, you have to draw separate parts of the pattern for each colour on the card in the same way as for Multi-coloured Slip Stitch or Multi-coloured Jacquard. As you move the Carriage, the selected needles will be pushed to C position. Lay the yarn corresponds to the colour number shown on the display over the selected needles.

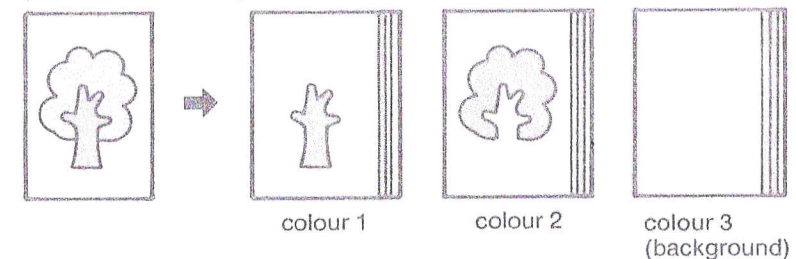
HINTS: If you are using too many colours in a single row, draw 2~3 parts of the pattern on the same card to knit 2~3 colours of the yarn in the same row efficiently.

How to draw a pattern on the Design Card

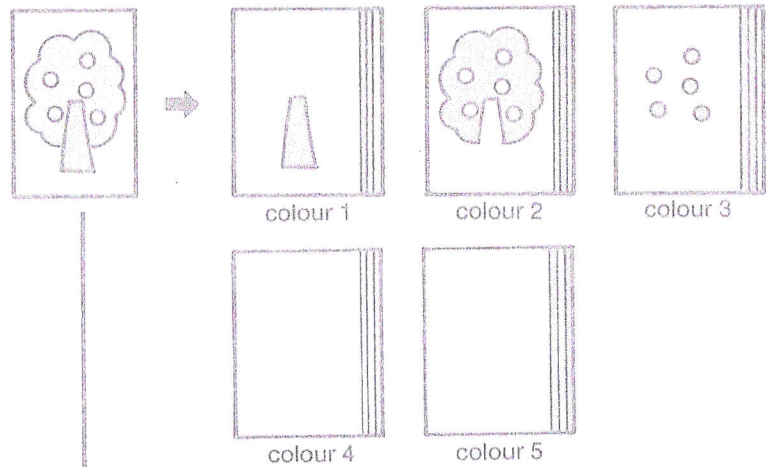
Draw parts of the pattern for each colour on the Design Card as shown below. (Refer to "To Knit Multi-coloured Jacquard" in the Instruction Book of the Design Controller.) Design Controller reads 5 colours in a single row at most though you can code up to 8 different colours by marking the Instruction Columns.

In case of using 4 colours in a single row, read the blank card twice as instructed on the next page, and the yarn will always be exactly where you need it.

(Pattern in 3 colours)

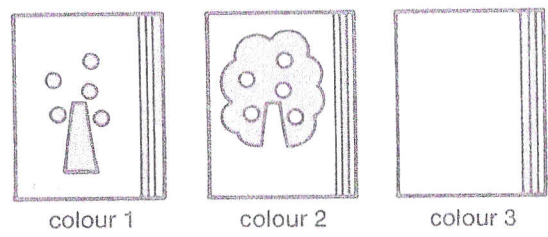


(Pattern in 4 colours)



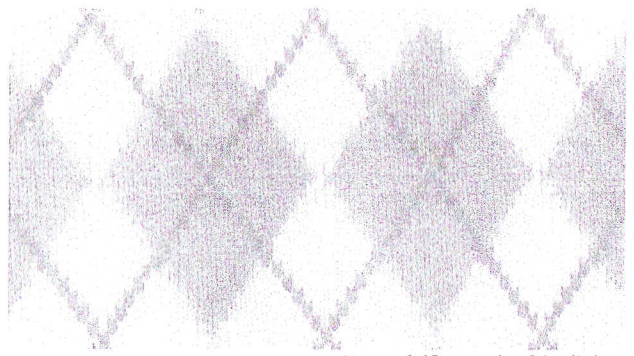
The blank card for colour 4 is the card to make the total number of cards an odd number. When reading the card for colour 4, read a blank card or read without a card. In case of reading without a card, display shows 0 as colour number.

It is a good idea to draw 2 parts of the pattern on the same card to make the total number of cards 3 as shown below.



How to knit

Let us take the Pattern No.1-(1) supplied with the Intarsia Carriage as an example.



a pattern of 48 rows by 24 stitches

1. Read the pattern into the Design Controller.



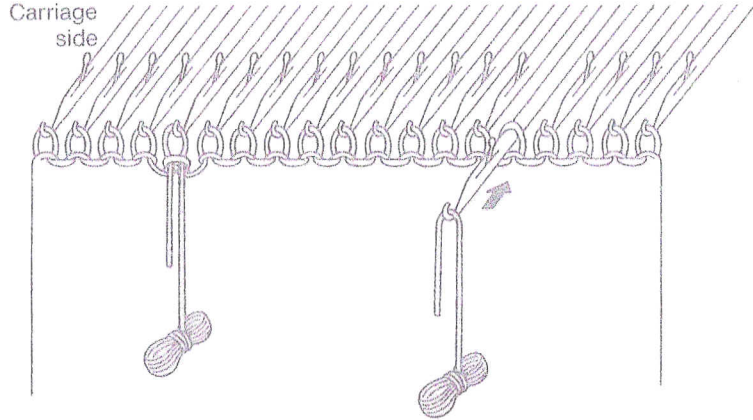
- Set the card at pattern row number 1. → (48 rows are read.)
- Set the card at pattern row number 51. → (48 rows are read.)
- Set the card at pattern row number 101. → (48 rows are read.)
- The display shows "COMPLETED" and then "OK".

After reading the pattern into the Design Controller, press **KNIT** → (When using the pattern stored on the Memory Card, recall the pattern and press **KNIT** → .) The display shows as shown below.

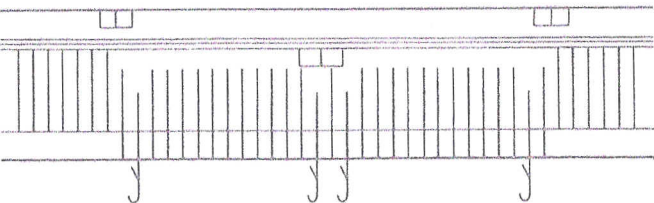


2. Press Inspection Switch to put the light ON.

10. Lay yarns of colour 1 inside the needle hooks in C position from the Carriage side respectively. Push the needles by hand back to B position to knit.



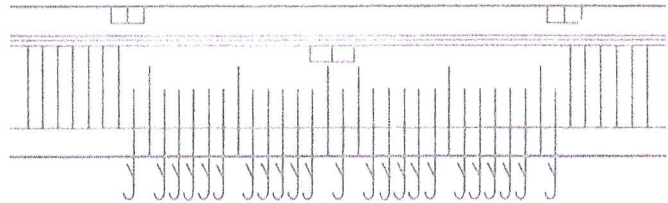
Move the Carriage slowly. The selected needles for colour 2 are aligned in C position.



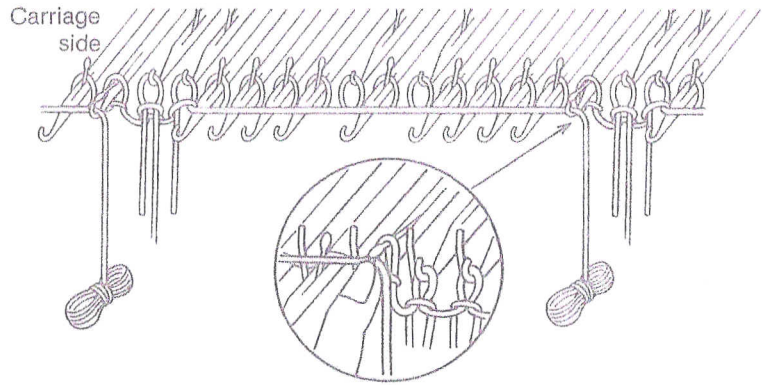
The display shows the colour number and the pattern row number to be knit next.



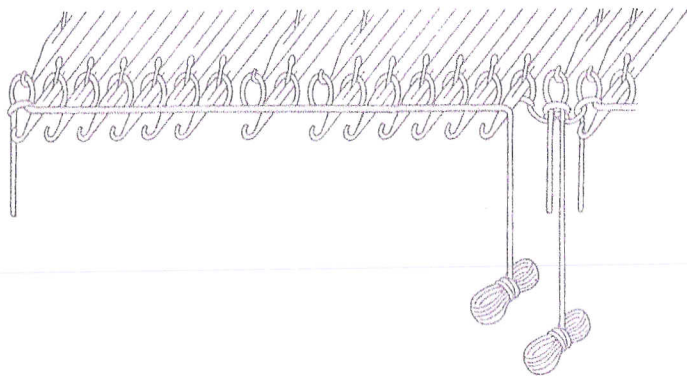
11. Lay yarns of colour 2 inside the needle hooks in C position from the Carriage side respectively. Push the needles back to B position by hand to knit. Move the Carriage once and the selected needles for colour 3 are aligned in C position.



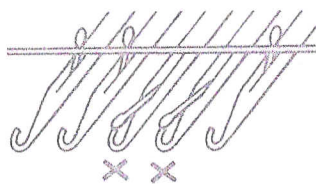
12. Lay yarns of colour 3 (for background) inside the needle hooks in C position starting from the Carriage side and push the 1st needle back to B position and the last needle back to sinker posts by hand as shown below.



N.B. In case of using thick yarn or fancy yarn, leave the last needle in C position to knit smoothly as shown below.



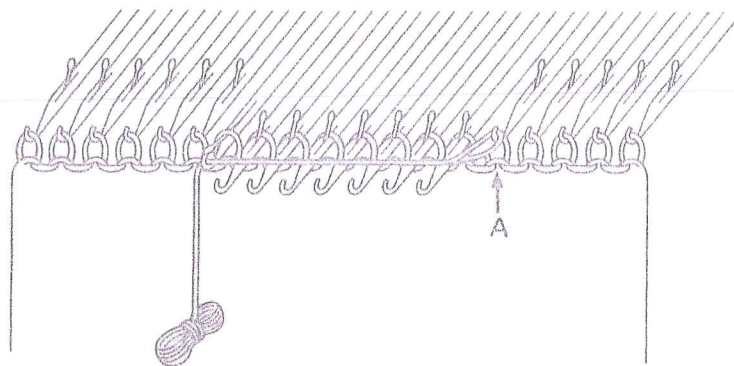
N.B. Make sure the latches of all the needles in C position are open before laying yarn to prevent the stitches from dropping.



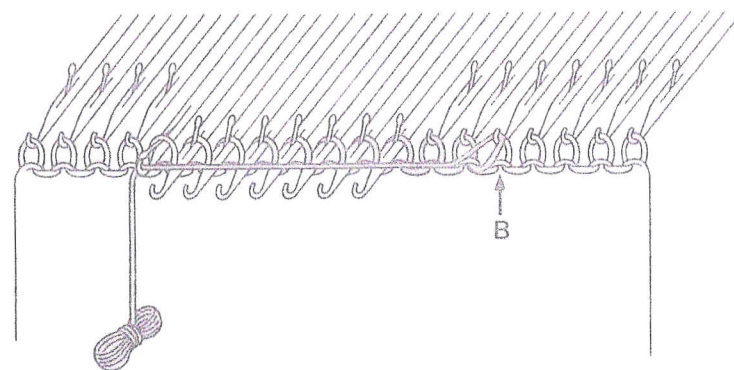
Now 3 pattern rows are knitted with 3 different colours, which completes 1 row of finished knitting. (If you use 5 colours, repeat above procedure 5 times to complete 1 row of finished knitting.)

From the 4th pattern row on, lay yarns over the needles to avoid separation of stitches at the edge of each colour yarn, as instructed below.

If the 1st C position needle nearest to the Carriage is outside of the last stitch in the same colour knitted on the previous row, hook the yarn inside the needle hook "A" immediately adjacent to the C position needle, and lay the yarn inside the needle hooks in C position as shown below. Push the last C position needle back to the sinker post to free your hand from holding yarns.

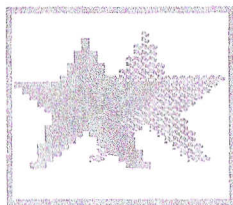


If the 1st C position needle nearest to the Carriage is inside of the last stitch in the same colour knitted on the previous row, hook the yarn inside the needle hook "B" immediately adjacent to the stitch as shown below.

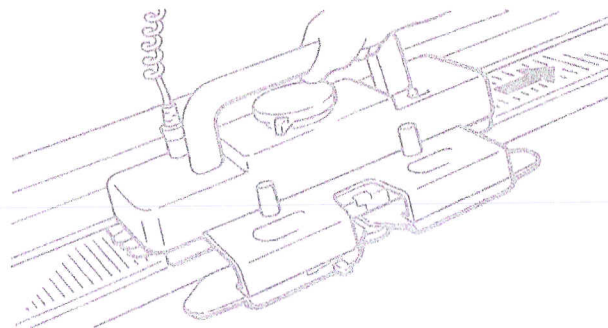


Continue knitting by repeating the procedure on the previous page.

To knit the pattern No.2-(3), read the blank part ③ of the Pattern No.1 for background.

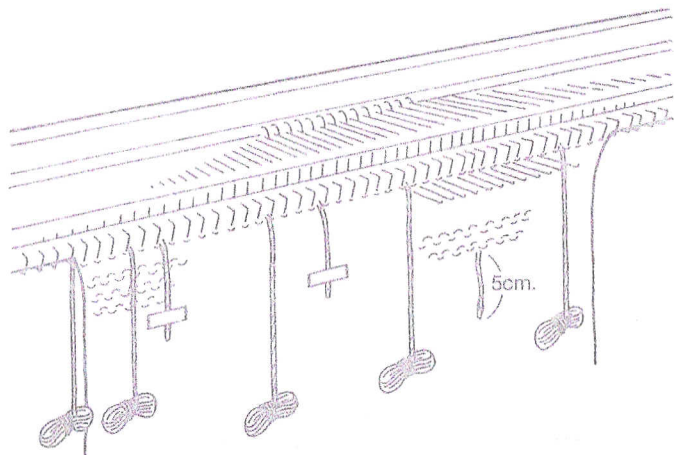


Move the Carriage to the opposite side, even if needles were not pushed to C position after moving the Carriage. This happens when the yarn is not required for the next row. (e.g. In spite of reading the pattern as 3 coloured Intarsia, some part of the pattern requires only 2 colours.)



Notes on knitting Type I Intarsia

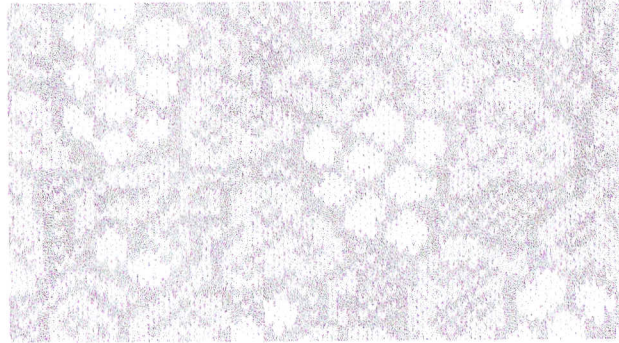
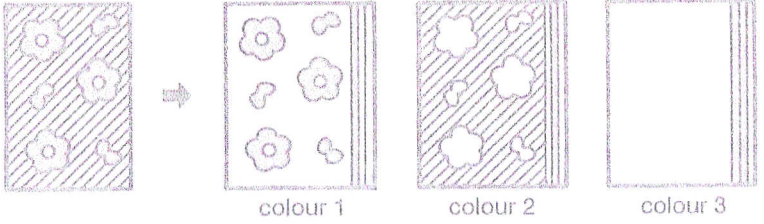
Cut the yarn ends as short (about 5cm.) as possible to prevent yarns from being tangled with each other. Sticking the yarn ends on the knitting with adhesive tape is recommended.



HOW TO KNIT TYPE II INTARSIA

How to draw a pattern

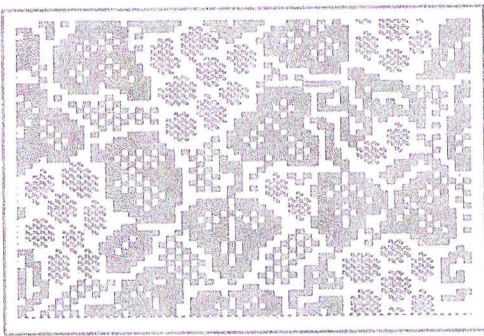
To eliminate the long floats on the back of the fabric, small Fair Isle pattern is added to the isolated pattern. The way of drawing the pattern on the Design Card is the same as for Type I Intarsia as shown below, but the way of knitting is a little different because of the type of pattern.



a pattern of 48 rows by 60 stitches

How to knit

Let us take the Pattern No.2-(2) supplied with the Intarsia Carriage as an example.



1. Read the pattern into the Design Controller.



→ Set the card No.2 at pattern row number 1. → (48 rows are read.)

→ Set the card No.2 at pattern row number 51. → (48 rows are read.)

→ Set the card No.1 at pattern row number 101. → (48 rows are read.)

→ The display shows "COMPLETED" and "OK".

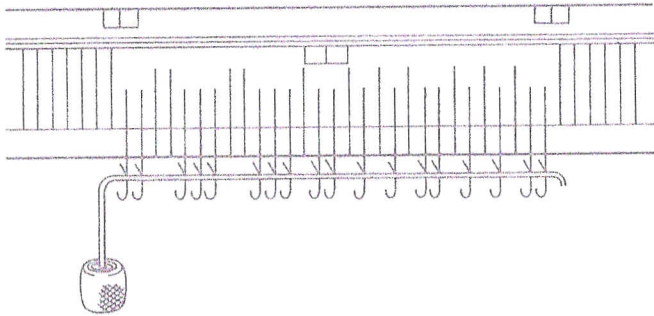
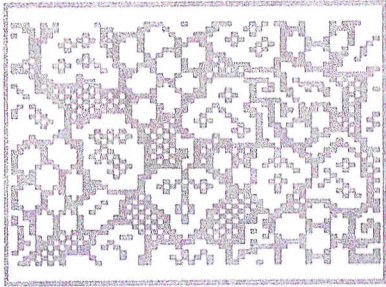
After reading the pattern into the Design Controller, press → . (When using the pattern stored on the Memory Card, recall the pattern and press → .) The display shows as shown below.



2. Press Inspection Switch to put the light ON.

HOW TO KNIT TYPE III INTARSIA

12. Lay the yarn of colour 3 (for background) inside the needle hooks in C position as shown below. Move the Carriage once and the selected needles for the next row are aligned in C position.



Now 1 row of finished knitting is completed. Continue knitting by repeating the above procedure.

The pattern of this type of Intarsia must be drawn in outline on a Design Card and 1 row of finished knitting is formed with a single row of knitting. Therefore, neither preparing Design Cards separately according to colours nor using the Design Controller is necessary.

How to knit

There are two types of knitting Type III INTARSIA.

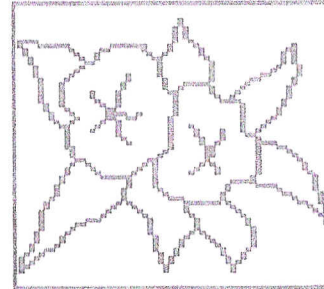
Type A

Knit outline with yarns of different colour, and the pattern will be distinct.

Type B

Knit outline with either adjacent colour yarn.

Let us take the pattern No.3-(4) supplied with the Intarsia Carriage as examples of two types.






Embroider center of the flower afterwards.

Type A



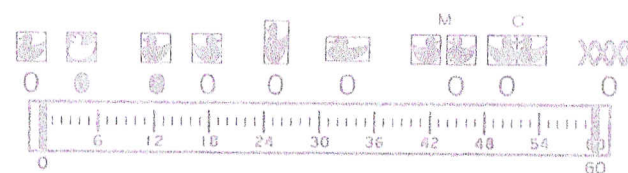
a pattern of 60 rows by 60 stitches



1. Set the Card. (If you use the pattern stored on the Memory Card, recall the pattern and press  →  → .)
2. Press Inspection Switch to put the light ON.
3. Align needles in B position. Set the Point Cams and the N1 Cam.
4. Cast-on and knit several rows. Hang Claw Weights and Wide Claw Weights. (If knitting is already in progress, move the Carriage twice without knitting by using the Release Lever to memorize the positions of Cams.)

In case of using the same yarn as for Stockinet knitting continuously as a background yarn, move the Carriage to the side opposite the yarn by using the Release Lever.
5. Remove the yarn from the Yarn Feeder. (After removing the yarn, close the Yarn Feeder by setting the Yarn Feeder Lever to ▼.)

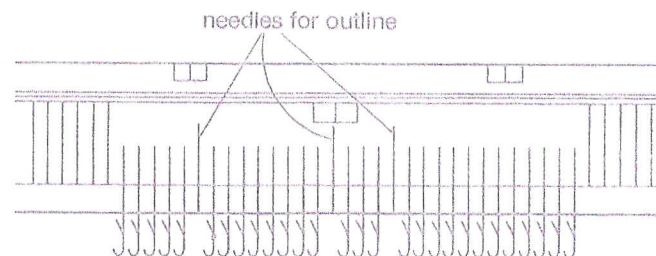
6. Set the Pattern Switches and red pointers of Pattern Width Indicator as shown below.

Pattern Switch No.1 must be pressed to have the RIGHT light ON.



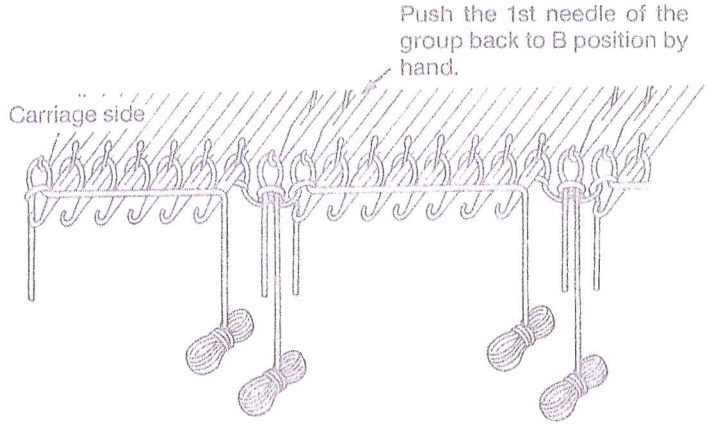
  If you want the knit side to be the same as the Pattern Card, have the right light of the Pattern Switch No.2 ON.

7. Press Inspection Switch to put the light OFF. Set the Cam Lever to I (Intarsia).
8. Move the Carriage once. Needles for the 1st row are aligned in C and B positions. (The needles left in B position are for outline.)

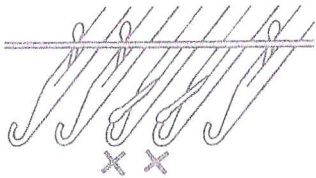


9. Lay the required colour of yarns for each part of the pattern over each group of C position needles respectively in the same way as done for Type I Intarsia.

Push the needles in B position to D position, lay yarns for outline inside their needle hooks, and push them back to B position by hand to knit as shown below.



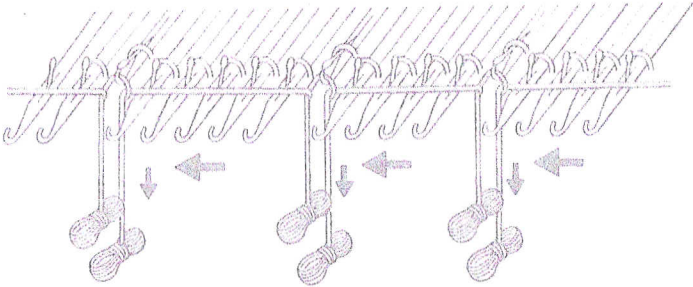
In case more than 2 needles are left in B position continuously, push the needles to D position, align them in C position, and lay yarn inside the needle hooks. Make sure the latches of all the needles are open before laying yarn.



10. Move the Carriage slowly, and needles for the next row are aligned in C position.

11. Continue to knit laying yarns from the Carriage side as shown below.

When laying yarns, cross yarns each other as illustrated to avoid separation of stitches at the edge of each colour yarn.

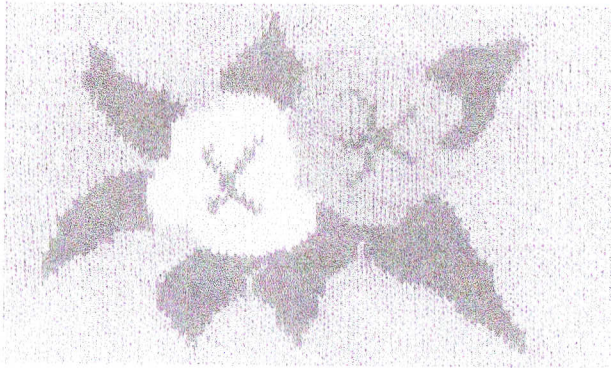


NOTE:

As the right light of the Pattern Switch No. 1 is ON, needles outside the Point Cams are always aligned in C position while knitting Type III Intarsia. Lay background yarns inside the needle hooks.

HOW TO KNIT TYPE IV INTARSIA

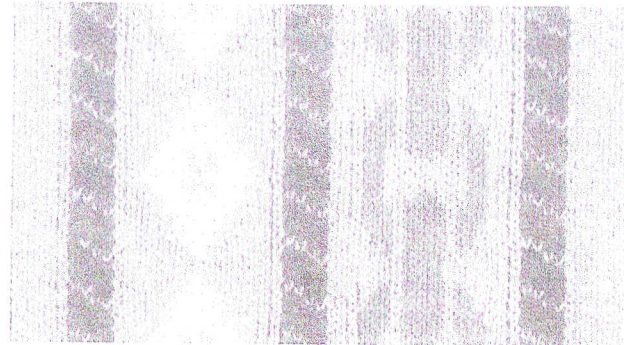
Type B



With Pattern Switch No.6 ON, any Fair Isle pattern can be used. However, to use more than 2 colours in a single row, crossways continued patterns are not recommended. The way of knitting is similar to the one for Double Jacquard although the ribber is not used. Pattern No.3-(5) and (6) supplied with Intarsia Carriage can be used.

How to knit


Let us take the Pattern No.3-(5) as an example.



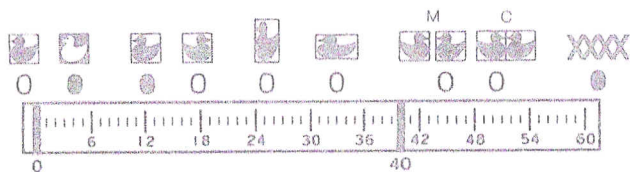
a pattern of 24 rows by 40 stitches

Lay different colour of yarns over each group of C position needles, regarding the needles left in B position as separation. The needles in B position must be knitted with either adjacent colour of yarn. Therefore, you need to decide which yarn is used to knit needles in B position beforehand. Push the needles in B position to C position as you lay the yarn over each group of C position needles.

1. Set the card at pattern row number 1.

When using the pattern stored on the Memory Card, recall the pattern and press .

2. Press Inspection Switch to put the light ON.
3. Align needles in B position. Set the Point Cams and the N1 Cam.
4. Cast-on and knit several rows. Hang Claw Weights and Wide Claw Weights. (If knitting is already in progress, move the Carriage twice without knitting by using the Release Lever to memorize the positions of the Cams.)
5. Remove the yarn from the Yarn Feeder. Set the Yarn Feeder Lever to ▼. In case of using the same yarn as for Stockinet knitting continuously as a background yarn, move the Carriage to the side opposite the yarn by using the Release Lever.
6. Set the Pattern Switches as shown below.



Press No.6 Switch to put the light ON. It must not be pressed beforehand.

If you want the knit side to be the same as the Pattern Card, have the right light of the Pattern Switch No.2 ON.

7. Press Inspection Switch to put the light OFF. Set the Cam Lever to 1 (Intarsia).
8. Move the Carriage once. The selected needles for the 1st pattern row (for the background) are aligned in C position.

9. Lay background yarn inside the needle hooks from the Carriage side. In case too many needles are left in B position continuously between C position needles, lay yarns over each group of C position needles separately to prevent long floats. The way to lay yarns is the same as done for Type I Intarsia.

10. Move the Carriage slowly, and the selected needles for the next row are aligned in C position.

11. As the 2nd and the 3rd pattern rows must be knitted with the contrast yarn, lay the required colour of contrast yarns for each part of the pattern and knit.

12. The 4th and the 5th rows must be knitted with the background yarn.

Repeat the above procedure.

Single Motif in Type IV

Place Point Cams and N1 Cam where you want the patterning. On the rows for the contrast yarns, the selected needles inside the Point Cams are aligned in C position. On the rows for the background yarn, all the needles outside the Point Cams as well as the selected needles inside the Point Cams are aligned in C position and lay the background yarn over all needles in C position to knit.

HINTS

WHAT TO DO IF...

Using Knit Contour (Radar) --- (option)

1. Select the Stitch Scale with number equal to that measured on tension swatch and set it.
2. Multiply the number of row gauge by the number of pattern sheets, and set the number as row gauge. (e.g. When row gauge is 35 and the number of pattern sheets is 3, set at 105 (35 × 3).)

Remember that the highest limit of row number on the Knit Contour (Radar) is 120.

To knit Stockinet continuously after Intarsia...

1. Set Cam Lever to \bigcirc (Stockinet).
2. Thread yarn through Auto Tension and Yarn Feeder.

In case the tension gauge of Stockinet is different from the one for Intarsia, try knitting Stockinet by changing Stitch Dial settings till you obtain the same stitch gauge as for Intarsia and then reset the Stitch Dial to the suitable number for Stockinet to continue knitting.

When using Knit Contour (Radar) and if the row gauge for Stockinet is different from the one for Intarsia, reset the row number.

3. Continue knitting.

To work partial knitting or hold stitches...

It is not practical to work partial knitting while knitting Intarsia. Work partial knitting while knitting Stockinet not to spoil the pattern.

(Partial knitting by decreasing stitches or holding stitches)
Push the needles to be decreased or held to D position.

(Partial knitting by increasing stitches)
Push the needles to be increased back to C position.

If incorrectly knitted...

Return the needles in C position back to B position with a Transfer Tool and unravel the incorrectly knitted rows.

(If an odd number of rows are unravelled)

1. Return the pattern on the display, the Row Counter, and pattern paper (if the Knit Contour (Radar) is in use) by one row more than the rows unravelled.
2. Move the Carriage once, and the selected needles for the next row are aligned in C position.
3. Lay yarns inside the needle hooks and continue knitting.

(If an even number of rows are unravelled)

1. Return the Row Counter and pattern paper (if the Knit Contour (Radar) is in use) by one row more than the rows unravelled. Return the pattern on the display by two rows more than the rows unravelled.
2. Move the Carriage once without knitting by using the Release Lever.
3. Press down the top of the Carriage. Move the Carriage once and the selected needles for the next row are aligned in C position.
4. Lay yarns in the needle hooks and continue knitting.

(In case of Type IV Intarsia)

1. Unravel an odd number of rows so that yarn end comes opposite the Carriage.
2. Return the pattern on the display (if the Design Controller is in use) or Pattern Card by half the number of rows unravelled plus one. (In case of using Pattern Card, press Inspection Switch to put the light ON, return the Pattern Card, and press the Inspection Switch to put the light OFF.)

Since the two lights of Pattern Switch No.1 are alternately ON every two rows of knitting, reset the Switch No.1 as follows.

In case the halved number is an odd number, press the Switch No.1 to put the other side of the lights ON.

(e.g. When unravelling 1 row, return the pattern by 1 row ($(1 + 1) \div 2 = 1$), and then press Pattern Switch No.1 to put the other side of the lights ON.)

In case the halved number is an even number, leave the light of Pattern Switch No.1 as it is.

Return the Row Counter and pattern paper (if the Knit Contour (Radar) is in use) by one row more than the rows unravelled.

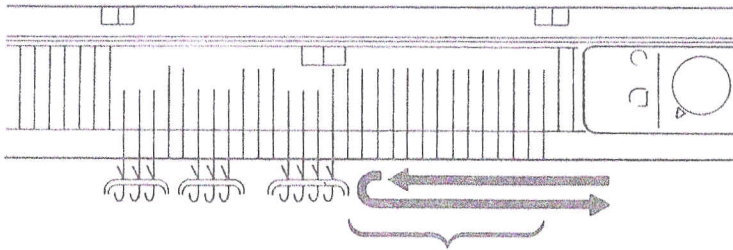
3. Move the Carriage once and continue knitting.

If you notice that you are knitting incorrectly or the Carriage has jammed...

(In case you stop the Carriage before the Carriage encounters or clears the second (the last) Point Cam)

*If yarns have not broken nor stitches have dropped...

1. Return the Carriage to the beginning of the row using the Release Lever.
2. Push the needles which Carriage has moved across, back to B position with a Transfer Tool.
Make sure all the needles in C position are aligned correctly in position, the needle hooks are open and the yarns are laid correctly.



Push the needles back to B position.

3. Press down the top of the Carriage and continue to knit.

*If yarns have broken or stitches have dropped...

1. Return the Carriage to the beginning of the row using the Release Lever.
2. Repair the stitches and unravel the incomplete row. Tie yarns if they are broken. Return all the needles to B position with a Transfer Tool.
3. Return the pattern by 2 rows. Return the Row Counter and pattern paper (if the Knit Contour (Radar) is in use) by 1 row.
(If the Row Counter has fed for the row, return it by 2 rows.)

4. Press down the top of the Carriage. Move the Carriage, and the selected needles for the next row are aligned in C position.
5. Lay yarns in the needle hooks and continue knitting.

(In case you stop the Carriage when the Carriage has encountered or cleared the second (the last) Point Cam)

1. Using the Release Lever, move the Carriage in the direction it was going till it clears the working needles.
2. Unravel the incomplete row. Return the needles to B position with a Transfer Tool.
3. Return the pattern, the Row Counter, and pattern paper (if the Knit Contour (Radar) is in use) by 2 rows.
4. Press down the top of the Carriage. Move the Carriage once, and the selected needles for the next row are aligned in C position.
5. Lay yarns in the needle hooks and continue to knit.

To check the selected needles aligned in C position with the pattern on the display...

Return the pattern on the display (if the Design Controller is in use) by 1 row and check the needles aligned in C position with the pattern on the display.

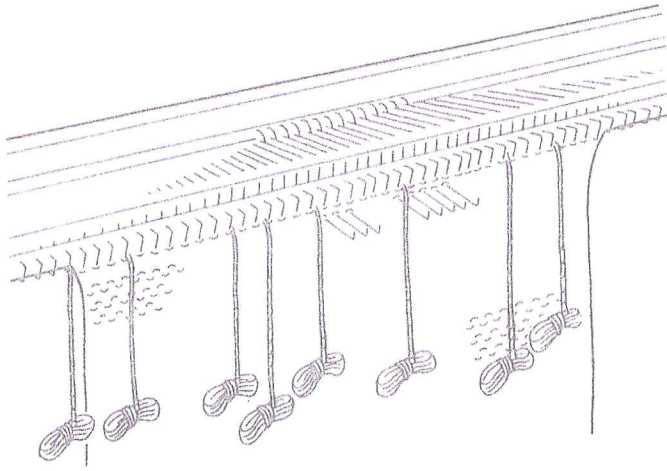
In case knitting Intarsia with Pattern Card, press Inspection Switch to put the light ON, turn the Pattern Card by 1 row and check the needles in C position with pattern on the card.

MAINTENANCE

To prevent yarns from being entangled...

Cut the yarn ends as short (about 5cm.) as possible.

Keep the length of yarns hanging down almost the same.



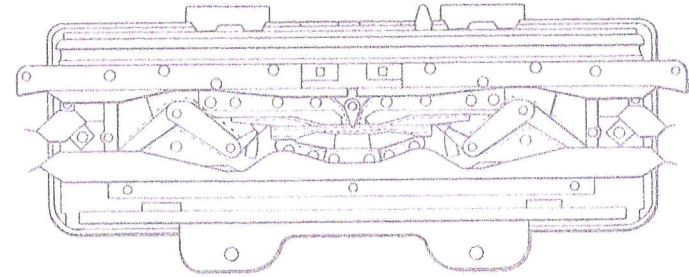
Use almost the same size of yarn balls, as the yarn balls give tension on laid yarns. Cut the yarn balls which won't be used any more.

Lay yarns over each group of C position needles separately.

Turn over the Carriage and clean the pipe at the back and brush all fluff with a dry cloth.

Oil the Carriage pipe and the other marked parts on the diagram.

Use a sensor cleaner to clean gently inside the sensors at the back of the Carriage.



Do not use thinner, petrol, alcohol or white spirit.

To store the Intarsia Carriage, keep it away from

1. Too much moisture.
2. Abnormal change of temperature.
3. Salt or chemicals.

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