

# TIPS & TECHNIQUES

*Studio*  
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MARCH 1995

Issue #31

## "DOUBLE JACQUARD"

### **The Basics. . . .**

Double Jacquard is a double bed technique that produces two color designs with no floats on the back. Because a backing is simultaneously knit on the ribber bed while the main bed produces the design, the resulting fabric is thicker and usually more stable than single bed Fair Isle. So, while many designs are suitable for either Fair Isle or double jacquard, the jacquard fabrics have a totally different look and feel to them.

Double jacquard is most practically knitted with a color changer to alternate two colors every two rows. On mid-gauge and chunky machines, there are fewer rows to be knitted and hand changing is not a problem. However, keep in mind that double jacquard is normally knitted on standard and fine gauge machines and that mid gauge and chunky fabrics tend to be much heavier and have more limited uses.

The machine must be able to read each row of the design twice - once for background stitches and once for pattern stitches. On punch card machines, this means using specially punched cards where the design is separated or expanded to show each color in its own row. It is often difficult to see and understand how a design will knit by looking at the cards and beginners are cautioned to use the pre-punched cards available while learning the technique. Once you understand what is happening, it will be quite easy to create your own designs and punch the cards.

The EC-1, on the other hand, allows you to use any pattern for jacquard knitting with a touch of the #6 button. This button does two things. First of all, it tells the EC-1 to read each row of the card twice. Secondly, it takes control of the #1 button so that it commands two rows of pattern selection alternating with two rows of background selection to coordinate with the color changer. In actual practice, you start at the right end of the bed with the background color threaded in the carriage, knit 1 row of background to the left, change color (#1 light changes too) and knit 2 rows of pattern, change color (#1 light changes), 2 rows of background, etc. The electronic also allows you to knit a design that is twice as tall by using the #3 light. In that case, you begin with the carriage on the left end of the bed.

**Pitch and needle (NDL) arrangements:** Some of the examples that follow are knitted in full NDL rib (FNR) with the beds in half pitch, while others are knitted in 1 x 1 rib with the beds in full pitch. For all of them, begin and end with a NDL on the ribber bed if both edges of the fabric are to be seamed; with a main bed NDL for unseamed fabrics. The bird's eye method must be knitted with an even number of needles (NDLS) on the ribber. While jacquard is most commonly knitted in FNR, it limits you to fairly fine yarns. The 1 x 1 rib NDL arrangement will allow you to knit yarns as heavy as those you normally use for stockinette. Think of 1 x 1 jacquard as the double bed version of knitting on every other

NDL. The resulting fabric will be somewhat narrower than it would be with FNR so you won't be able to knit the largest size garment in this method. In addition to knitting whole garments in 1 x 1 jacquard, you can also produce patterned ribs for cuffs and bands. Punching every other NDL cards for jacquard is possible, but tedious. The method is really best suited for electronic knitting where you can just press the #6 button for jacquard as well as the #4 button to double the width of the design. Because you are only using every other NDL, it will knit normally.

Shaping is best accomplished with increases and decreases or the cut and sew method. Short row methods are not advised. When the end NDLS are on the ribber bed, make single prong incs/decs on the main bed and two prong incs/decs on the ribber bed. When the end NDLS are on the main bed, make two prong incs/decs on the main bed and single prong incs/decs on the ribber bed.

There is almost always a certain amount of "grin through" - background color effect showing through the pattern areas on the face of the fabric. Some of the methods that follow produce more or less grin through, which might affect your choice of methods. You can also help reduce grin through by adjusting stitch size. For several methods, the ribber is set one or two numbers lower than the main bed so it is important to start with the right stitch size on the main bed to begin with. A good way to gauge a new yarn is to knit a perfect stockinette swatch and then set the dial two full numbers lower for jacquard. The difference in main bed and ribber bed stitch formation is caused by the angle of the beds to each other and to the yarn feeder. In some instances, the close knit bar will help reduce the size of the main bed stitches so that the two beds are more closely matched. Grin through is also affected by the method and carriage settings you use, color contrast and the design itself.

In addition to affecting the grin through, each of the jacquard methods affects the drape and stretch of the fabric which are directly affected by the number of rows knitted on each bed. When both beds knit the same number of rows, the fabric is more

balanced and has better drape; when one bed or the other has significantly more rows, the drape will be affected. Remember that every row of your design requires two passes of the carriage - one for background and one for pattern - on the main bed. However, you can change the number of rows knitted on the ribber by setting the Set Levers so that the ribber carriage knits or slips in one or both directions. With the ribber carriage set for plain stockinette knitting, it is the leading Set Lever that determines whether the carriage slips (0) or knits (I), as shown in the charts that accompany each method. When the carriage is set to tuck, the leading Set Lever determines whether the NDLS tuck (o) or knit (I) in that row.

If your sweater has solid, one color areas you must continue to knit in Jacquard or the grin through and texture of the fabric will change. The simplest way to knit solid color areas is to continue knitting all rows with the background color only, retaining all the same machine settings. However, any grin through will be more consistent if you continue to change colors every two rows, knitting two rows of background color on the main bed and two rows of pattern color on the ribber bed only.

FNR is not usually suitable for ribs on jacquard garments and when using 1x1 or 2x2 ribs, they tend to look rather flimsy unless the yarn is doubled. End the rib with the carriage on the right, bring up all empty NDLS, change to half pitch and knit 4 circular rows with a single strand of background color and stitch size as for jacquard. For 2 x 2 rib you must also pick up the purl bar from opposite stitches to fill empty NDLS and prevent holes.

There is no single method that is double jacquard. There are actually lots of different ways to knit jacquard and the following are some of the most common. You should try knitting the same design, using the same yarn in each method so you can evaluate the differences for yourself. Some methods will cause distortion of the design; slip jacquards (knitted with the main carriage set to Slip) tend to be firm and most stable, while tuck jacquards (cam lever to Tuck) have more stretch. No single method is superior - it all

depends on what you plan to use the fabric for. A tailored jacket requires less stretch than a child's sweater. If you work through some of the following methods you will be able to choose the best method for any garment style.

### Slip Jacquard Methods

Slip jacquard is the basic jacquard method described in your manual. Beginning with the carriage on the right and threaded with the background color, the first pass knits the background NDLS and slips the pattern NDLS. After changing color at the left side, the next pass of the carriage knits the pattern NDLS and slips the background NDLS. When the carriage is back on the right the row counter will indicate that two rows have been knitted, although each main bed NDL has only knitted once as either background or pattern, never as both. The ribber NDLS, however, will all have knitted twice, producing the typical "Striper" backing of basic slip jacquard. With this method, the backing always has twice as many rows as the face of the fabric and, unless you use very fine yarns, the fabric tends to have somewhat limited drape.

Slip Method	NDL set up	Cam Lever	Ribber Set Levers
Basic Slip	FNR	Δ S/J Δ	(I) (I)
Modified Slip	FNR	Δ S/J Δ	(0) (I) or (I) (0)
1 x 1 Slip	1 x 1	Δ S/J Δ	(I) (I) or (I) (0) or (0) (I)

The Modified Slip method produces single row/color striper backing. Both beds knit the same number of rows because the ribber is set to slip in one direction or the other. Although the fabric is quite balanced and has good drape, it has limited sideways stretch because there are floats between the two layers.

The method your manual briefly describes as "jacquard for heavier yarns" is one of the most useful slip jacquard methods. All of the NDLS on the main bed, but only occasional NDLS on the ribber bed are working. The wrong side of the fabric has floats similar to those formed in fair isle knitting, but they are regularly bound to the back of the fabric by the working ribber NDLS. The length of the floats is up to you to decide and is controlled by the spacing of the working NDLS on the

ribber. The manual shows a sample set up using every 4th NDL, but much wider spacing is acceptable as long as the floats are no longer than you would tolerate in fairisle. The stitch size on the main bed should be set for stockinet (because it almost is!) and the ribber size should be set as it would for knitting rib (probably about half the size of the MB). As each row is knitted, the yarn zig-zags irregularly from one bed to the other. It looks strange because the floats are not completely knitted by a full complement of ribber NDLS as they are in FNR. Don't worry - its right! You only need enough working ribber NDLS to secure the floats. Eliminating all of the other NDLS is what makes this method suitable for heavier yarns. Incidentally, the face of this fabric looks more like fair isle than any of the other jacquard methods. The only draw back to this method is the fact that it can sometimes tend to "rib out". That is, the isolated ribber stitches tend to show on the front of the fabric. Setting the ribber to knit in one direction and slip in the other minimizes this as does the solid back method.



Needle set up for heavier yarns

	Cam lever	Ribber Set Levers
Basic Method	Δ S/J Δ	(I) (I) or (I) (0) or (0) (I)
Solid Back		2 Rs (I) (I)/ 2 Rs(0) (0)

### Tuck Jacquard Methods

Several interesting fabrics can be knitted by setting the cam lever to Tuck instead of Slip. The design and the method of knitting two rows per color, etc. are exactly the same. In the slip methods a NDL either knits or slips in one row and with the following pass of the carriage, the knitters slip and the slippers knit. Each NDL knits once and slips once every two rows (passes of the carriage). When the cam lever is set to Tuck, NDLS either knit or tuck with each pass of the carriage and at the end of every two rows each NDL has knitted once and tucked once. This method is suitable for somewhat heavier yarns than slip

