

Knitting Technology

Module - 7 : FAQ

Q1 What is the chain plan of a Pillar stitch?

Ans.: 1 0// or 1 0/ 01//

Q2 What kind of knit element would result if the guide bar executes neither an overlap nor an underlap?

Ans.: Inlay along warp direction, also termed mislap.

Q3 What kind of knit element would result if the guide bar does executes overlap but no underlap?

Ans.: Open loop pillar stitch results from 1 0/ 01//

Q4 What would be the resultant color of a warp knitted fabric if the front bar is equipped with red colored threads and back bar with blue colored ones?

Ans.: The fabric would appear to be red in color.

Q5 Would the width way rigidity be reduced if the front bar has larger underlap?

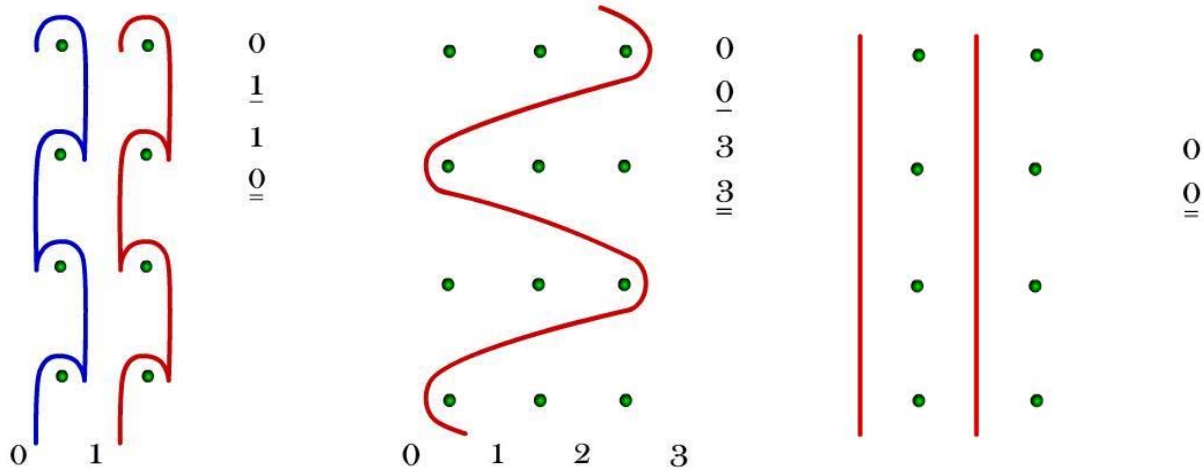
Ans.: A larger underlap on the front bar would make the fabric more extensible.

Q6 Write down the lapping plan and draw the lapping diagram of a guide bar that exhibits

- Only overlap but no underlap
- Only underlap but no overlap
- Neither an overlap nor an underlap

How would the resultant structures differ in terms of load bearing ability along the wale and course directions?

Ans.:



Only overlap but no underlap

Only under lap but no overlap

either an overlap nor an underlap

The lapping plan with only overlap results in a pillar stitch that would increase tensile modulus along wale direction of the resultant fabric produced in association with lapping plans of other guide bars but would not by itself contribute to load bearing ability along course direction. However, if located in a suitable guide bar, it would trap underlaps of other guide bars and provide hindrance to reorientation of threads loaded along course direction. In this sense it would also contribute to modulus along the course direction.

The lapping plan with only underlap but no overlap results in inlay that is primarily oriented along the course direction. Such an element may provide additional frictional resistance to slippage of threads and also take part in load sharing along course direction but would not have any contribution in this respect along the wale direction.

The lapping plan with neither an overlap nor an underlap would result in straight warp threads which can be trapped in resultant fabric. These threads would make the fabric as rigid in the wale direction as the threads themselves.

Q7 What is the length of underlap for a 1 0/ 3 4// lapping plan?

Ans.: 3-needle space would be covered by the underlap

Q8 The lapping plan of a warp knitted construction produced on a 4-bar warp knitting machine is given in the following.

Guide bar 1: 1 0/1 2//

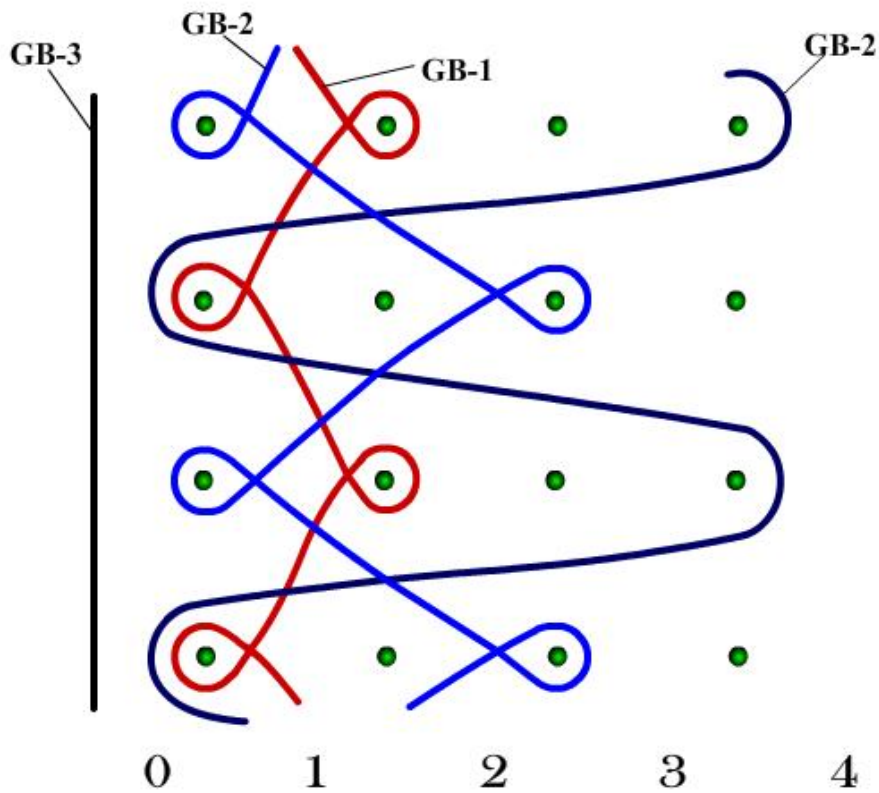
Guide bar 2: 0 0/ 4 4//

Guide bar 3: 0 0//

Guide bar 4: 2 3/1 0//

Draw the lapping diagram of the eventual construction on a point paper. On what kind of machine, namely Raschel or Tricot, would you be able to produce the fabric? Justify your answer.

Ans.:



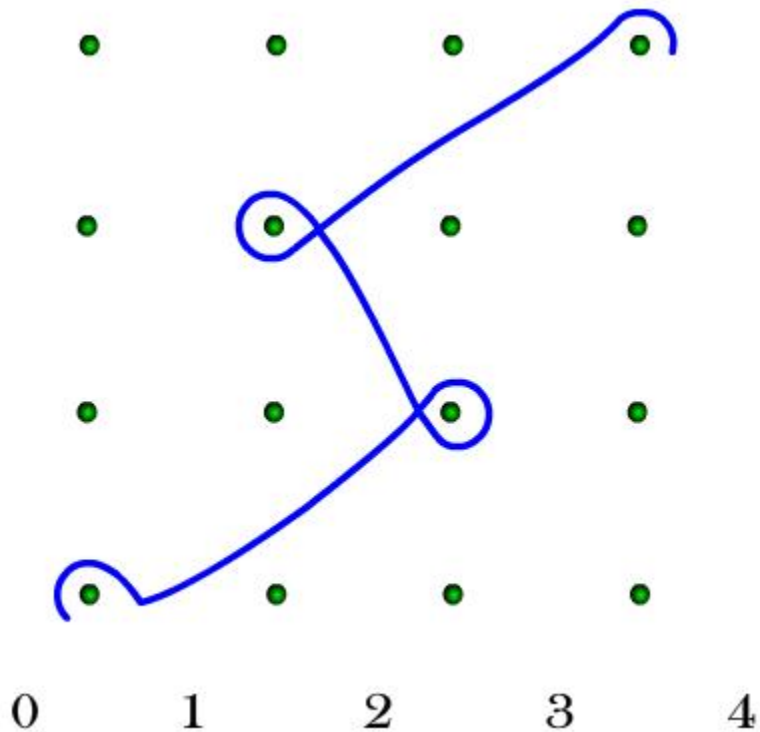
The mislapping guide bar number three would lay the corresponding warp threads in the alleys between needles. On a tricot machine there would be no machine element to support these yarns and hence underlaps of guide bars 1 and 2 would need to bear this additional burden. This may disturb the knitting zone. However the shoulder of trick plate on a Raschel machine would provide support to such threads, easing the loop formation process.

Q9 What would happen to the widthway extensibility of a knitted fabric if the larger underlap is shifted to the front guide bar?

Ans.: The resultant fabric would show a lower resistance to deformation along the course direction.

Q10 Give a point paper representation of a warp knitted fabric with a lapping plan of 0-1/2-3/2-1/ 3-4//

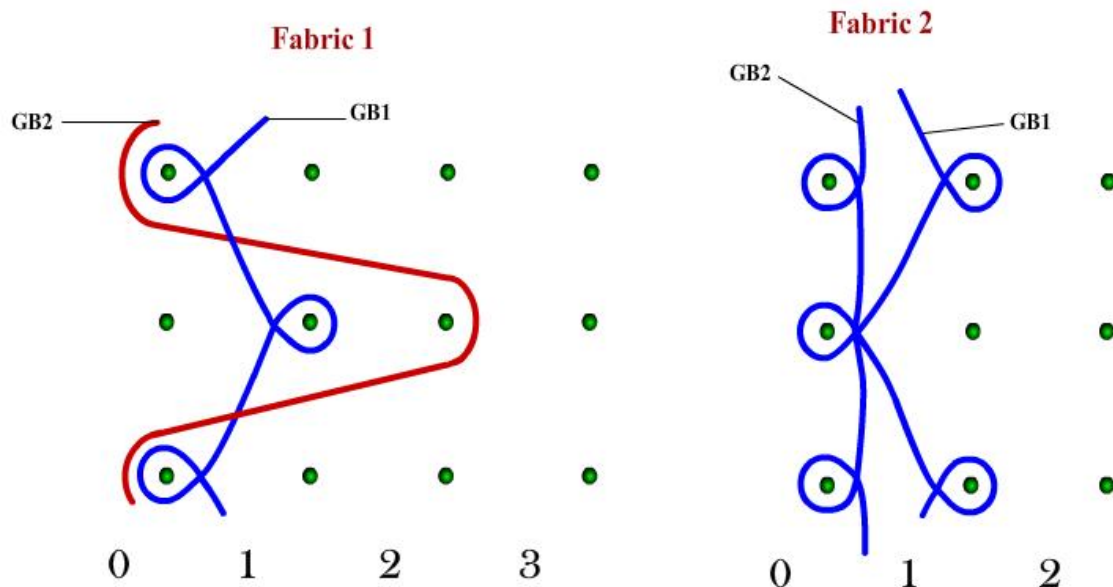
Ans.:



Q11 Draw lapping diagram of the following constructions produced on a tricot machine and compare the fabric modulus in tension along the wale directions.

Fabric 1	Fabric 2
Guide bar 1: 1 0/1 2//	Guide bar 1 : 1 2 / 1 0//
Guide bar 2 : 0 0 / 3 3//	Guide bar 2 : 1 0//

Ans.:



In a tricot system the guide bar number 1 is the back guide bar. Accordingly in the lapping plans for fabric 1, the front guide bar, i.e. the guide bar 2, shows inlays. These inlay threads would not be trapped in the fabric as the threads of front guide bar encase those of the back guide bar. The inlay threads would hence float along the technical back of the resultant single bar 1x1 tricot fabric.

In the lapping plans of fabric 2 a pillar stitch is planned for the front guide bar (no. 2). The resultant fabric would be very stable and rigid.

Q12 Lapping plan of the guide bars of a 2-bar tricot machine is given below for two different structures. Compare with justification tensile modulus of the resultant fabrics, if all other variables are kept constant.

	<u>Structure A</u>	<u>Structure B</u>
Front bar	1 0 /1 2//	2 3/ 1 0//
Back bar	2 3/ 1 0//	1 0 /1 2//

Ans.: In structure A the front guide bar has shorter underlap than that of the back guide bar. In structure B this sequence has been reversed. Hence the fabric of structure A would be more rigid and stable than that of structure B.

Q13 Lapping plan of the guide bars of a 2-bar tricot machine is given below for two different structures. Compare with justification areal density of the resultant fabrics, if all other variables are kept constant.

	<u>Structure A</u>	<u>Structure B</u>
Front bar	1 0 /1 2//	1 0 /1 2//
Back bar	2 3/ 1 0//	4 5/1 0//

Ans.: The structure B exhibits larger underlap than structure B on the back guide bar. Hence the length of yarn consumed in a course would be greater in structure B than in structure A, making the fabric produced with structure B heavier than that with structure A.

Q14 It is desired to produce a single needle bed warp knitted fabric with the following features

- The technical face side is to be made of 165 dtex multifilament polyester yarns
- The fabric should be made up of six layers of yarns with a gradual reduction in the pore size of loop from the technical face side towards the core.
- The fabric should have very high rigidity along length and width.

Suggest with justification suitable yarns and lapping plan for the different guide bars.

Ans.: A very high rigidity along both wale and course directions can be generated by inlaying weft threads with the help of magazine weft insertion system and by mislapping threads of a guide bar. This mislapping guide bar cannot be the front guide bar which evidently carries the 165 denier multifilament polyester yarns. The fabric is expected to be made up of six layers of yarns, two layers being provided by the threads of the magazine weft insertion system and the mislapping guide bar while another two layers are provided by the yarns of the front guide bar. Hence only one more guide bar is required to satisfy the requirement of a six layered fabric. The size of pore of a loop can be reduced by employing a thicker yarn.

Hence a possible set up could be of the following nature:

Type of machine: Raschel

Guide bar 1 = front guide bar with 165 denier yarns executing a 10/12// lap

Guide bar 2 with a suitable yarn of high rigidity executing 00// lap

Guide bar 3 = back guide bar with 220 denier yarns executing a 12/10// lap

Magazine weft insertion system inlays weft threads of suitable material and count having the desired rigidity.