Knitting Technology

Module - 3 : FAQ

Q1 Explain the reasons behind knitting machine running faster with compound needle than with latch needles.

Ans.: The amplitude of motion of a latch needle is more than twice that of the corresponding compound needle; hence its frequency is lower. In case of a latch needle this amplitude is dictated by the distance between the tip of a latch in its open position and the needle crown while for a compound needle this amplitude is nearly half the distance between the tip of the hook and the point on the needle body at which the tip of tongue (jack) emerges.

Q2 Explain the reasons behind knitting machine running faster with latch needle than with bearded needles

Ans.: The bearded needle needs the presser bar to push against its hook so that the tip of beard can sink into eye of the needle. Thus during the time period that the space under needle hook has to remain closed (during the casting-off process), the needle hook remains in contact with presser bar and therefore the needle moves very slowly to prevent any burn out. Hence during its downward journey the bearded needle has to decelerate and slow down appreciably and again accelerate for picking up speed for completion of its downward journey. This additional phase of acceleration and deceleration slows down the machine and also causes an additional amount of power consumption. In addition the power and space consumed by the presser bar and its drive also add to feature.

Q3 List the relative merits and demerits of the bearded, latch and compound needles

Ans.:

Type of Needle	Merits	Demerits
Bearded	• Can be very thin and hence suitable for high machine gauge and very small loop length. • Uncomplicated construction and hence simple production process and long life. • Some special stitch elements can be developed with considerable ease.	• Low machine speed • Needs an additional Presser bar
Latch	• Self acting and comes in one piece. • Higher speed of production than bearded needle	• Complicated construction and prone to damage • Thick and not amenable to loops of small length.
Compound	• Highest speed of production • Very robust and not prone to easy damage	• Needs two cam tracks, one for the needle and another for the tongue (jack) • The groove in needle body is a very sensitive element

Q4 The butts of compound and latch needles face the same direction as their hooks but the shank of a bearded needed is oriented in a direction opposite to that of its hook. What is the reason behind such a difference?

Ans.: The butt-like extension of the bearded needle is termed a Shank. It is pushed in an appropriate hole drilled into the needle bar on which then the needle is clamped. In case of a double bed system, the shank would be oriented as shown in the diagram, so that the resultant fabric is taken away from both sets of needles down into the gap between the two beds and then on to the take up system. In case of a single bed however the shank may be on the same side as the hook.

Q5 Is it possible to have latch and compound needles without butts and still carry out the knitting process?

Ans.: In warp knitting machines both latch and compound needles are mounted on bars and the needle bar (or bed), and not the needles, is given drive, resulting in group motion of all the needles. In such a situation there is no need of needle butts.

Q6 How many sinkers would be needed on a machine equipped with a circular cylindrical bed housing 100 needles?

Ans.: 100 sinkers

Q7 Name the elements of a conventional cam track.

Ans.: Upthrow cam, clearing cam and stitch cam

Q8 Which type of stitch would result if the swing cam is switched off? Similarly if the upthrow cam is switched off, which type of stitch would result?

Ans.: If the swing cam is switched off then a tuck stitch would result. When the upthrow cam is switched off, a float would result.

Q9 How does the thickness of cam elements affect selective action on needles?

Ans.: In presence of high and low butt needles, the cam track generated by thicker cam elements would operate on both types of needles while the cam track generated by thinner cam elements would operate only on the low butt needles.

Q10 Which technical side of loop would one be looking at while standing in front of the flat bed machine shown in Fig. 36? Can such a machine be power driven?

Ans.: Technical back side. Such a set up can be power driven provided the machine runs slowly. Fast moving needles would tend to drag the fabric away from its steady vertical position during their upthrow and clearing motions, which would hinder easy clearing of loops.

Q11 Which technical side of loop would one be looking at while standing in front of the sinker top circular knitting machine?

Ans.: Technical front side.

Q12 What kind of knitting machine would result if Fig. 38 is rotated in anticlockwise direction by $\pi/2$ radians? Can such a machine function properly?

Ans.: Such a system can be conceived of as a horizontal circular cylinder machine or even as a sinker top flat bed machine. In the latter case the presence of sinkers would necessitate that the fabric be withdrawn parallel to and below the needle bed. This may be a source of complications, without offering any great advantage. The horizontal circular machine would occupy much larger floor space and would also call for complicated drive to machine elements.

Q13 What is the advantage of arranging two flat beds in a V-form and not in the same plane?

Ans.: When needles from two beds move to catch yarn from feeder, the crossing needles create a convenient lap in which the fed yarn can securely land for being caught by the appropriate needle hooks.

Q14 Is it conceivable to have a delayed timing in which the dial needles catch the feed yarn before the cylinder needle does?

Ans.: Yes, but the feeding becomes very critical. The yarn feeding line has to be almost parallel to the horizon as a result of which the feeder has to be set very close to the dial needles. This engenders the needles.

Q15 What is a feed plate and why it's setting w.r.t. the needles is critical for loop formation?

Ans.: Feed plate is the final element that guides yarn into needle hooks. It is equipped with a suitable slot in its body through which feed yarn is threaded. The feed yarn comes out a small hole at the tip of the feed plate, very close to the needles that are supposed to catch the yarn. The needle hooks almost graze the feed plate. An incorrect setting of feed plate vis-à-vis the needles may result in needle breakage or/and the needle hook failing to catch the yarn during its downward journey.

Q16 In case of delayed timing with cylinder needle in the lead, can the dial form loops as large as the ones formed by the cylinder?

Ans.: In case of delayed timing with cylinder needle in the lead, dial needle has to get the required yarn length for the loop from the corresponding cylinder needle. During this phase the cylinder needle has to rise up, releasing the yarn length needed by the dial needle, without any resistance. Hence tension in the various yarn segments within the knitting zone as also proper contour of cylinder and dial cams are vital for an equitable distribution of yarn length between the cylinder and dial needles.

Q17 Can an Interlock machine be used to make a 1x1 rib without skipping knitting on any needle?

Ans.: The dial bed can be racked by half-a-pitch to convert an interlock machine to a rib machine of the same gauge. The needles of the two beds need to be changed to one type, either all of them are short or all are long. The cam jackets need to be replaced by rib cams; otherwise alternate feeders would be idle and production would drop considerably.

Q18 Can a tubular fabric be made on a flat bed purl knitting machine? In such an event what would be the resultant construction of the product?

Ans.: The needles should be arranged alternately on the two beds in a rib gating format and needles of the front bed should knit the odd course while those on the back bed knit the even course. The resultant fabric would have a plain single jersey construction.

Q19 For making a tubular purl fabric what should be the configuration of the two beds?

Ans.: Both beds should be cylindrical and placed one atop the other.