

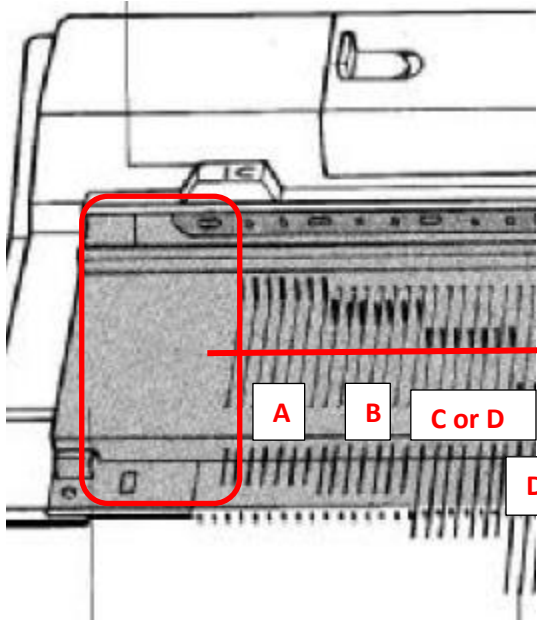
## How to Read a Design Graphic in Machine Knitting

Whether you're looking at a punch card or electronic design, those punched dots and blank spaces or black and white squares mean something. Let's review first the knitting machine needle positions then we'll talk about the designs.

Typically, knitting machines, regardless of type, have needle positions which drive what happens. A needle does one thing – it forms a stitch. Based on the position of the needle it will half form a stitch whereby it catches the yarn but doesn't fully form the stitch – this is tuck; the yarn will pass by the needle – this is slip (part); or the stitch will fully form – stockinette.

No brand has exactly the same identifiers. For example, on a Brother machine you'll see A, B, D, E on Silver Reed you'll see A, B, C, D. Below is a table but this is by no means complete. Check your manual for your particular brand and model of machine.

<i>Type of Machine</i>	<i>Position</i>	<i>Function</i>	<i>Additional Detail</i>
Brother/Jones/KnitKing	A	non-working position	
Brother/Jones/KnitKing	B	working position	
Brother/Jones/KnitKing	D	upper working position	
Brother/Jones/KnitKing	E	hold	
Studio/Knit Master/Empisal/Silver-Reed	A	non-working position	
Studio/Knit Master/Empisal/Silver-Reed	B	working position	
Studio/Knit Master/Empisal/Silver-Reed	C	upper working position	
Studio/Knit Master/Empisal/Silver-Reed	D	hold	
Toyota	A	non-working position	
Toyota	B	working position	
Toyota	D	upper working position	
Toyota	E	hold	
Passap - needle		working position	the feet of the needles are approximately 1.5cm or 5/8 inch away from the needle rail. The needle heads must be level with the top edge of the beds.
Passap - needle		out of working position	the feet of the needles touch the needle rail
Passap - pusher		working position	the feet of the pushers are approximately 1.5cm or 5/8 inch away from the blocking rail
Passap - pusher		out of working position	the feet of the pushers are inside the blocking rail
Passap - pusher		rest position	the feet of the pushers touch the blocking rail

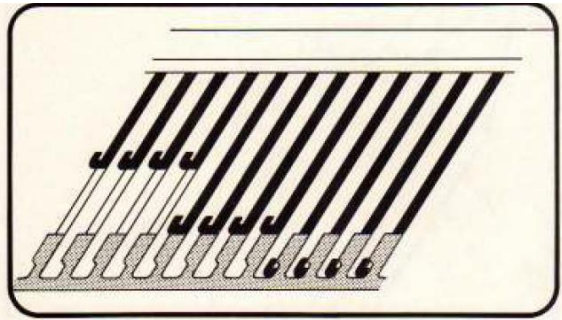
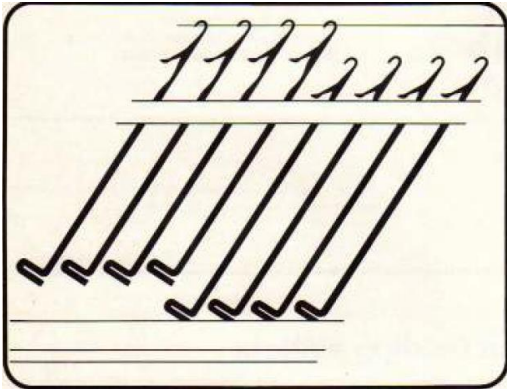
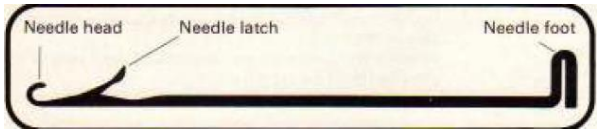


Where you'll find the needle position guide on many knitting machine makes/models

- A – Non-Working Position
- B – Working Position
- C or D – Upper Working Position
- D or E – Hold Position

Always check your machine manual for the needle positions for your particular brand/make of machine

Passap Needle/Pusher Positions

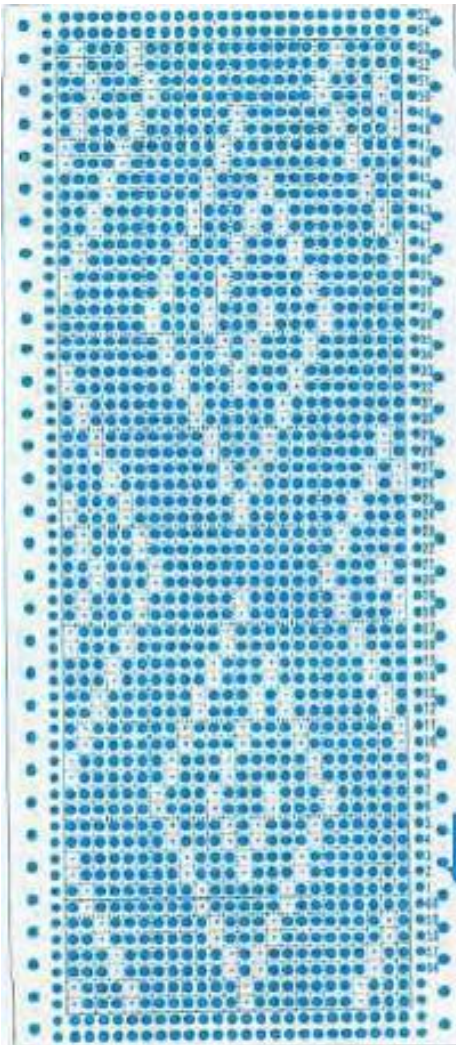


### Some facts about needle positions...

- Needles in non-working position do not knit (all machines)
- Needles in upper working position always knit (all Japanese machines).
- Needles in hold position will knit unless your carriage is set to hold. Some machines such as the HK100 will not have a carriage setting for hold and needles set to hold will automatically be in hold with no further setting required. Always check your user manual for settings.
- Needles in working position will knit unless your carriage is set to part (again, look at your manual for your specific machine needle position and carriage settings).

### Some rules:

- Many designs can be used for more than one purpose – but not always. For example, all designs can be used in Fairisle and g-carriage.
- Selected needles are always in upper working position
- More than 2 adjacent needles cannot tuck at the same time – the loops formed will jump off the needles once the needles move to upper working position and the carriage will jam
- Tuck and slip punch cards will be mostly punched out – Figure 1 and Figure 2

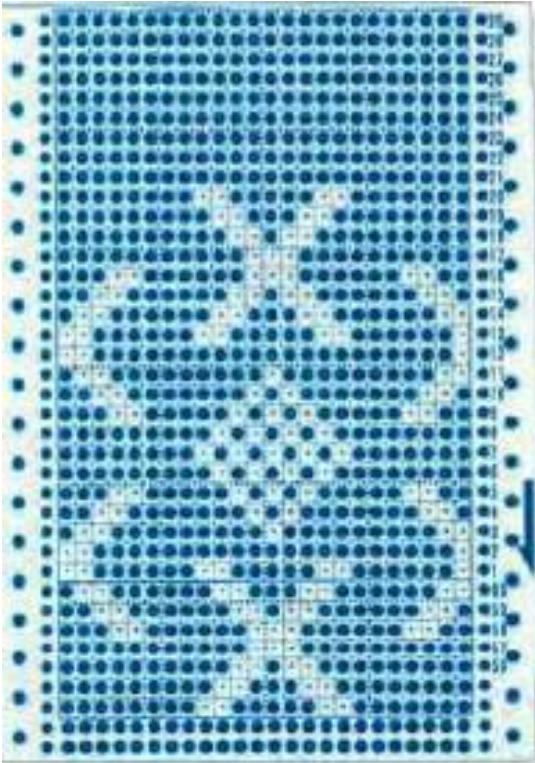


When knitting in tuck or slip/skip, all needles selected will knit. All needles in working position will tuck or slip depending on your carriage settings.

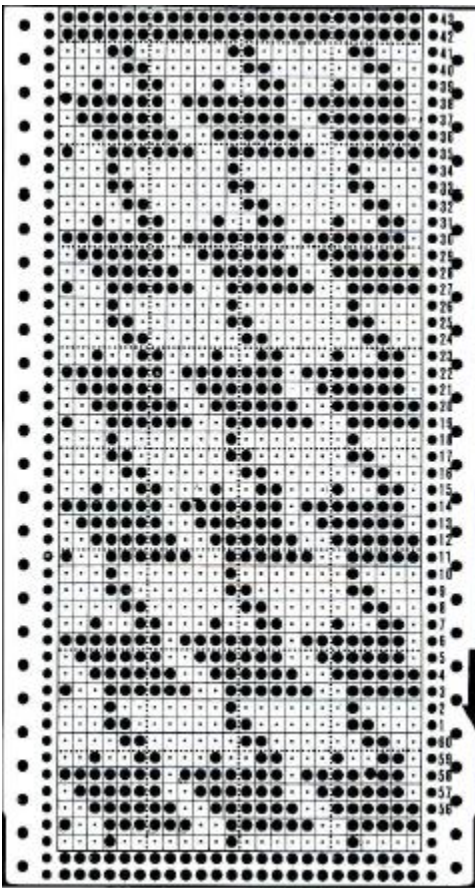
Figure 1 and Figure 2



Skip stitch or slip stitch patterns work much the same way as tuck except the yarn passes in front of the needle instead of catching within the needle hook. These designs are very subtle. The example below would be an interesting tuck design. Again, the punched holes would knit (upper working position) and the un-punched sections would be slipped or skipped (working position).



Now let's look at a punch card and an electronic designs; they work exactly the same way. If a hole is punched or in the case of an electronic design the square is black, it selects the needle and moves it to upper working position. Any non-punched square or blank square on an electronic design is not selected and remains in working position



This punch card is one typically used for Fairisle. The punched out portions of the design represent the needles selected to be in upper working position. The two solid lines of punched holes are where the punch card overlaps for continuous patterning.

In Fairisle, needles selected will be knit in the yarn located in feeder 2 or feeder B. The main color or yarn in feeder 1/feeder A will be knit in those sections not punched.

If you look carefully, this hounds tooth pattern is exactly the same so in this case it would not make a difference which color you have in feeder A or feeder B. But with some designs it matters very much.



In this punch card if you wanted the rose to be pink then the pink yarn would be in Feeder B and the main color yarn or the background would be Feeder A. You could even start with a green color in Feeder B so that your stem and leaves would be green then change to pink for the flower.

Here's an example of an electronic design – this design is 37 stitches wide and 60 rows tall. Many electronic designs are smaller but for those designs larger than the ability of your machine to automatically select – i.e. a 24 stitch repeat punch card machine – you would need to manually pull needles outside what the punch card selects or manually pull the needles of the design.

