IDENTIFYING SEWING MACHINE STITCH TYPES by OBSERVATION

Once you have learned the ASTM stitch types, and understand and can recognize the components of sewing machines in general, you have the tools you need to be effective in recognizing a factory's capabilities ***by stitch type*** during a tour of a sewing factory. All sewing machines can be identified by the characteristics that you have already learned about.

1. **Lockstitch Machines** vs Chainstitch:

Your first observation of any machine may be whether it is a lockstitch machine or chainstitch machine. IF you view **below the needle plate** and see a BOBBIN and BOBBIN CASE, the machine is a lockstitch machine (300 class group of machines).

ALL these machines are two thread machines, one thread goes to the needle, one is inside the bobbin.
301 class stitch:
To narrow down the stitch type further for a lockstitch machine, observe the needle plate. If the needle plate has a single hole for the needle, it is a 301 class stitch machine.
If the hole for the needle is a slot ***parallel to the front*** of the machine, it is a zig zag machine, either 304 class stitch or 315 class stitch (three step zigzag stitch). For a modern zigzag machine, look for a lever or knob on the machine upright, to see if you can switch back and forth between single zigzag and three step zigzag (illustrated on the knob or arm The knob allows this machine to form both stitches.
IF the needle hole in the plate is a slot that is ***parallel to the left side*** of the table, the machine is a 301class stitch but the machine is a ***needle feed*** or ***unison feed*** machine (walking foot).
Note: Some machines may have two needles and two bobbins, these machines, called "Two Needle Lockstitch Machines" and make two rows of 301 lockstitch at the same time.

ALL Bobbin machines (Lockstitch) have a bobbin winder either built into the machine head, or to the right side of the machine built onto the table. The second cone of thread on the thread stand feeds to this bobbin winder.

IF there is ***no*** bobbin to interact with the needle, the machine is a **CHAINSTITCH** Machine.

2. Chainstitch Machines:
Thread Count:
The old adage, "more is better", is true for chainstitches. Generally, the more threads in a stitch formation, the greater the strength and flexibility.
As long as the machine is properly threaded, observe how many thread cones are *feeding thread* into the machine (Don't count extra cones)

One Thread Chainstitch:
Chainstitch machines are more easily identified by the number of threads in the stitch formation. If only one thread feeds to the needle, the machine is either a 101 class, 103 class or 104 class or 501 class machine. Generally, one thread formations unravel easily and have limited use in garment manufacturing.

The 501 class stitch machine is easily recognized as it is the only one of these four that is an overedge machine (small sewing surface and knife to trim the fabric as it goes into the machine with no under-the-arm space).

The 103 class machine (blindstitch) is easy to recognize as it is a single thread machine with a curved needle that oscillates left and right in front of the operator. The looper is on the top of the sewing plate and looks like a two tine fork, and the feeder is located above the fabric unlike most machines. The machine often has a cylinder bed sewing surface with a swing-away flat surface.

The 104 class stitch machine is also a single thread machine that is easy to recognize as this machine has what looks like two needles, ***one in front of the other***. In fact, one is actually a looper (open hook at the point) and interacts with the looper under the plate.

The 101 class stitch machine is a single needle, single thread (to the needle) machine with a blind looper below the needle plate which has a single hole for the needle (and slots for the feeders).

Multi Thread Chainstitch:
These machines are either Overedge chainstitch machines or Flatbed (conventional sewing) machines.
All **Overedge machines** are recognized by a small sewing surface to the left of the needle and a cutting device to trim the edge of the fabric just before the needle. Further, overedge machines do not have space for fabric to the right of the needle.

Two Thread Chainstitch:
Two thread 502 and 503 class chainstitches are formed on **overedge machines** that look alike. Both have a needle with thread and two loopers, one that has thread and the other that does not. Overedge machines form the stitch “over the edge” of the fabric. For the 502 class stitch vs the 503 class stitch, the only difference is the tension on the looper thread and needle thread to balance the stitch as either 502 class formation or 503 class formation. Therefore, it would require viewing a sewn sample of the stitch to determine the difference between the two.

Two thread Chainstitches may also be formed on **flat-bed machines** making the 401 class chainstitch. One needle with thread interacts with a looper (with its own thread) below the sewing plate. The machine appears much like the conventional lockstitch machines. (These flat-bed machines have space to the right of the needle under the arm)
Some 401 class chainstitch machines may be in the feed-off-the-arm configuration. Also, some multiple needles chainstitch machines use the same 401 class stitch for two or more needles, where each needle would have it’s own threaded looper below the

needle plate. *(the sewing surface, ***the bed,*** may vary in this group such as cylinder bed, post bed, raised bed or off-the-arm bed)

Three Thread Chainstitch:
There are three thread chainstitch machines that form several stitch types. Overedge machines (forming the stitch over the edge of the fabric)
The 504 class chainstitch in the Overedge machine configuration has one needle thread and has two loopers, each having it's own thread. One looper is on the right side (top) of the plate interacting with the needle and the bottom looper that moves left to right below the sewing plate.

The 406 class stitch is a flat-bed, three thread chainstitch. This configuration is two needles, each with its own thread, and one looper below the needle plate which has it's own thread. This machine has a flat bed sewing surface, space to the right of the needles and may be a conventional flat bed style of a cylinder bed style with a small sewing surface.

Four Thread Chainstitch:
Four thread chainstitch sewing machines come in several configurations.

Overedge machines offer four thread overedge stitching in four different stitch types.
Both the 512 and 514 class stitch machines appear similar, with four cones of thread and two needles, and two loopers. Examination of the stitch formed is the best way to determine which machine you are observing.

The 512 class stitch is characterized by the face of the stitch having a separation between the two needles, and two overedge threads, one on the top surface (from a top looper) and one on the bottom (from a bottom looper).
The 514 class stitch is characterized by two needle threads and two looper threads where the top looper crosses back and forth between the edge of the fabric and both needles and on the bottom, the looper thread crosses from the edge where it meets the top looper and the two needle threads on the bottom side.
Less popular is the 515 class stitch. This overedge machine has two needles with thread, and three loopers with two threads. In this machine, the left needle and left looper make a completely independent stitch (401 class formation). The right needle and two more loopers form the 503 class two thread overedge stitch. Both are formed at the same time as the fabric is sewn.

The 407 class stitch machine is a flat bed machine with three needles side by side, each with it's own thread and a single looper below the needle plate with it's own thread, therefore four threads total. This stitch is formed where the looper moves left to right interacting with the three needles forming an integrated single stitch formation.

The 602 class stitch is another four thread stitch formation. This is a cover stitch machine which has two needles with thread, a single looper below the plate with a thread and a fourth thread that is passed across the front of the needles by a cover thread finger that oscillates from left to right. This flat-bed machine often in a raised bed configuration.

Five Thread Chainstitch:
The Five thread overedge stitch, the 516 class stitch is a “true safety” stitch formed by two needles with thread, and three loopers with three threads. The left needle and left looper forms the two thread 401 class stitch. The right needle and two loopers form the three thread 504 class stitch. In appearance, the 516 class stitch appears to be two separate stitch lines, but the perfect separation between the needle lines results from the stitch being formed on this machine in a single pass.

The Five thread coverstitch, the 605 class chainstitch, is formed by three needles with threads, a bottom looper with thread, and a top cover finger with thread. The bottom looper thread interacts with all three threads on the bottom side of the formation, and the cover thread passes back and forth across the front of all three needles on the top surface of the stitch.

Six Thread Chainstitch:
The Six thread coverstitch, the 607 class stitch, is formed by four needles with threads, a bottom looper with thread, and a top cover finger with thread. The bottom looper thread interacts with all four threads on the bottom side of the formation, and the cover thread passes back and forth across the front of all four needles on the top surface of the stitch.

Button Hole, Button Sew and Tacking:
Button Sew and Tacking:
For these different cycling machines, identifying the stitch type is to differentiate between 301 lockstitch and 101 chainstitch. Any cycling machine that has a bobbin and bobbin case below the sewing plate is a two thread, 301 lockstitch machine. If NOT, the machine forms the 101 class chainstitch.
All cycling machines move the button or fabric around automatically. For button machines, there will be some kind of clamp to hold the button in place.
If there is no button clamp but only a flat plate with a slot or rectangle to hold the fabric down, this is a tacking machine. Tacking machines come in a wide variety of formats.

Button Hole:
Button Hole machines make button holes in either a straight button hole or keyhole buttonhole configuration. The length of the hole and stitch width are adjustable. The machines may be equipped with a knife to chop the buttonhole open before or after the sewing cycle.

This may all seem complicated, but when you know the stitch types, bed types and general terminology of sewing machines, you can easily recognize what a factory is capable of.