



## Lesson 2.2 Lockstitch Machine: Purpose and Features

The machine above is a standard single needle, high speed lockstitch machine (also known as a flatbed machine) made by 'brother'. There are many variations of the lockstitch machine, including, automatic thread trimming/ cut off, digital adjustment, twin needles, LDC and computerized systems as well as extended and cylinder arms to sew large pieces of material or tubular work. There are also numerous manufacturers of lockstitch machines the most common brands are below:

**TYSEW**

**JUKI**

**SINGER**

**DÜRKOPP  
ADLER AG**

**brother**

**GLOBAL**  
INDUSTRIAL SEWING MACHINES

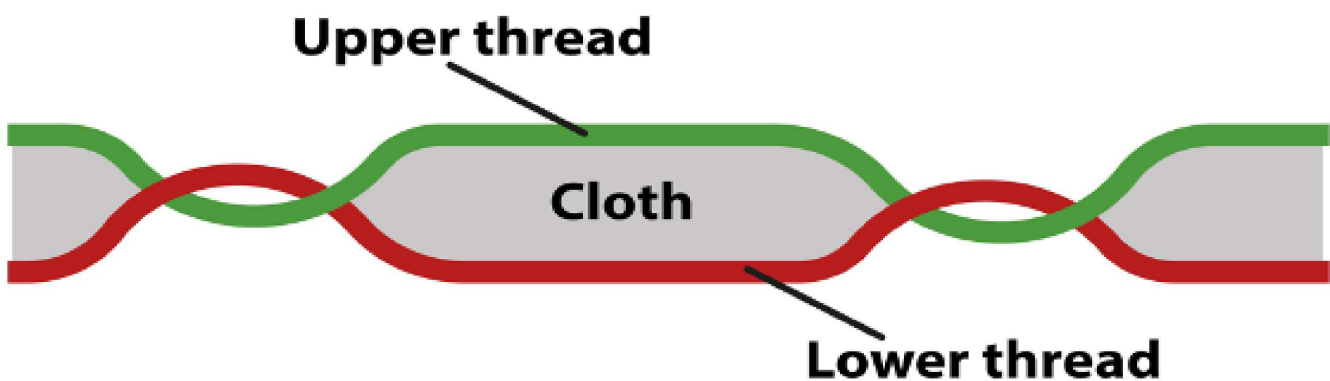
**SEIKO**

**JACK**

**Ijamato**

The purpose of the lockstitch machine is to create a stitch, (classified as stitch type 301) The stitch uses two, threads an upper and a lower. The stitch formed is called a lock because the two threads lock (entwine) together in the hole made by the needle in the fabric, as demonstrated in the diagram below:

"lock"



To make one stitch, the machine lowers the threaded needle (red) through the cloth into the bobbin area, where a rotating hook catches the upper thread at the point just after it goes through the needle. The hook mechanism carries the upper thread entirely around the bobbin case, so that it has made one wrap of the bobbin thread (yellow). Then the take-up arm pulls the excess upper thread (from the bobbin area) back to the top, forming the lockstitch. Then the feed dogs pull the material along one stitch length, and the cycle repeats forming a row of secure, strong stitching.

The lockstitch is one of the most used stitches when making sewn products. The main advantage of the stitch is that it is tight and strong because the two threads lock together and do not unravel easily, the second advantage is that the stitch is reversible, it looks the same on the top as it does on the bottom. The main disadvantages are that the stitch does not stretch well without then thread snapping and the need to frequently change the bottom-thread spool/bobbin.

To see more on stitch variations and how a stitch is formed go to Lesson 3.12.

## Knowledge Challenge 2.4

1. Lockstitch is one of the most used stitches in the sewing industry for two reasons. What are they?
  - Because it unravels easily
  - Because it is one of the strongest stitches
  - Because it is reversible
  - Because it can stretch with the fabric
  - Because uses less thread than most stitches



## Lock Stitch Machine Features

Lockstitch machines have approximately twenty-seven features, all of which are there for a purpose. The red numbers on the machine above and the images below indicate the features, and the list will tell what each feature is and what it does:

- 1. Thread take-up lever and guard:** Thread guide that moves with the needle.
- 2. Tension disc 1:** Controls the amount of pressure applied to the thread for an even feed to the machine needle ensuring an evenly formed stitch.
- 3. Balance wheel:** (fly wheel) Linked directly to machine motor with a belt and turns when sewing. The balance wheel can be turned by hand to raise or lower the needle.

**4. Thread stand:** Holds thread whilst sewing or winding the bobbin/spool.

**5. Thread guides:** Guides thread through to needle and maintains thread stability whilst sewing.

**6. Tension disc 2:** Controls the amount of pressure applied to the thread for an even feed to the machine needle ensuring an evenly formed stitch.

**7. Stitch regulator:** Adjusts the length of stitches.

**8. Reverse lever:** (Back tack) reverses sewing when pressed

**9. Needle Bar:** Holds the needle in place; must be loosened to remove the needle.

**10. Throat Plate:** (needle plate) cover around the feed dogs covering the lower mechanism





---

**11. Machine Bed:** Flat work area on which the machine sits

**12. Bobbin (Spool) winder:** To fill empty bobbins with thread whilst sewing

**13. Presser Foot Take up lever:** Lifts and lowers the presser foot

**14. Machine Needle:** Removable needle that penetrates cloth to form the stitch.

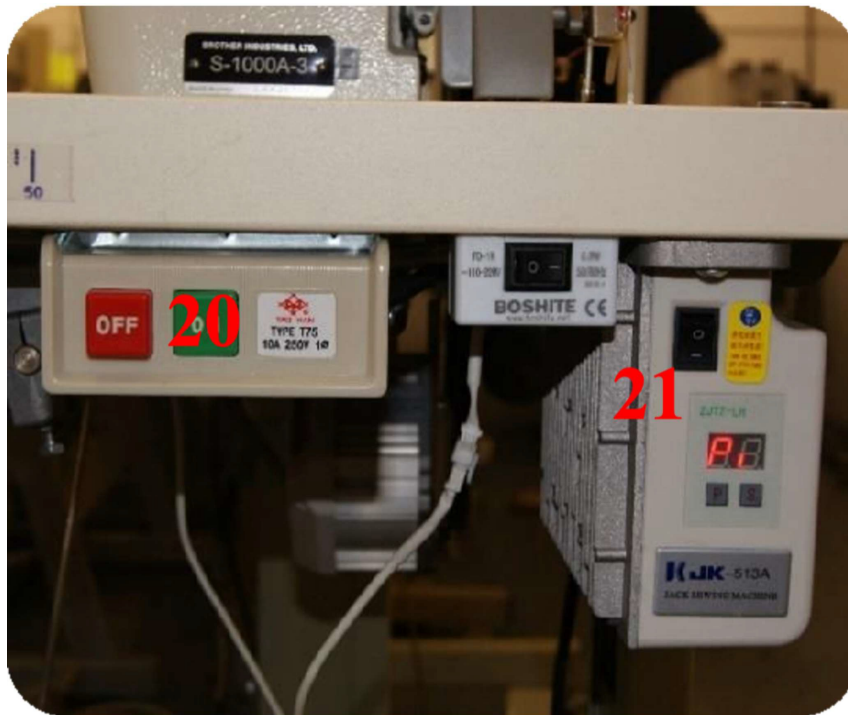
**15. Presser Foot:** holds the fabric in place while sewing. Presser feet can be changed to accommodate different sewing tasks

**16. Needle Guard:** Health and safety measure to prevent accidents whilst sewing

**17. Feed dogs:** Moves the fabric whilst the machine is stitching, feed dogs can be lowered to accommodate certain sewing different fabrics

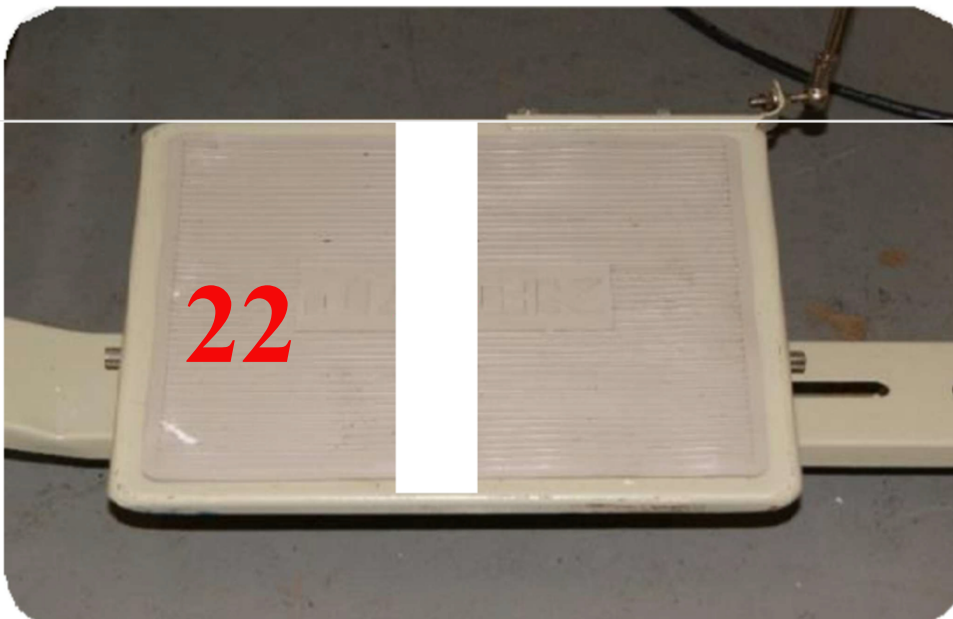
**18. Pressure nub:** This is used to adjust the presser spring regulator and can be turned to increase or decrease the pressure of the presser foot (Positioned behind thread guide)

**19. Thread Guide:** Guides thread through to needle and maintains thread stability whilst sewing.



**20. Power switch:** Press to turn machine off and on

**21. Speed regulator:** Regulates the sewing speed of the machine, this usually is pre- set to factory requirements

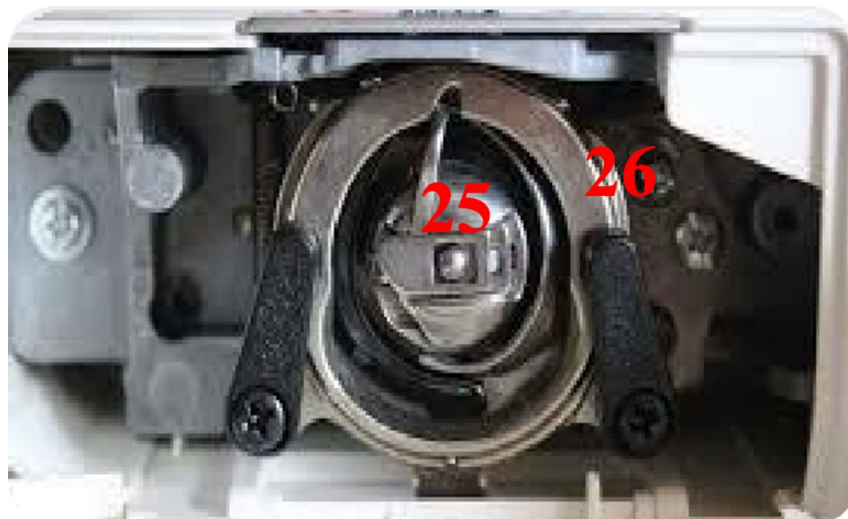


- 22. Foot pedal:** Used to start, stop and control the sewing speed



- 23. Knee lift:** Raised and lowers the presser foot

- 24. Machine motor:** Motors are specified according to the type of work required- higher rpm motors provide more speed while lower rpm motors provide more torque and piercing power





**25. Bobbin (Spool) Case:** Encloses and holds the bobbin on place

**26. The hook and base:** Removable base that holds the bobbin (spool) case in place and provides the hook that forms the stitch



**27. Oil Reservoir:** Area underneath the machine that hold machine oil – machine must not be run if this reservoir is dry

To see more about the functions of the lockstitch machine watch the video below:



## Unit 2.2 Lockstitch Machine Purpose and features

<https://vimeo.com/580208036/a57626c086>

## Knowledge Challenge 2.5

1. Draw a line to match the key features of a lockstitch machine listed below to their function.

Take up lever	Controls the amount of pressure applied to the thread for an even feed through the machine mechanisms
Stitch regulator	Guide thread through to needle and maintains thread stability whilst sewing.
Thread guides	Adjusts the length of stitches
Feed dog	Creates back tack by reversing sewing when pressed
Tension disc	Lifts and lowers the presser foot
Reverse lever	Moves the fabric along whilst the machine is stitching



**GROUNDWORK:** Completing this groundwork is an option, it will help you to gain a better understanding of the machine functions. For those undertaking an apprenticeship these activities will help you gather information relevant to the End Point Assessment.

**Note:** For those learners, who are independent and not yet working as an employed production sewing machinist, alternative recommendations are included.

# Production Sewing Machinist Programme

A training programme designed to support the growing demand for industrial sewing skills

## **The functions of YOUR machine**

As explained in Section 2.1 industrial sewing machines come in various makes and models and though most will all have the same functions, however they may be positioned differently on the machine you work on.

To complete this groundwork, take photographs your machine, print them out in A4 size and label each function. Keep this for reference in your folder.

## **Now let's look at how to thread your machine in Lesson 2.3**