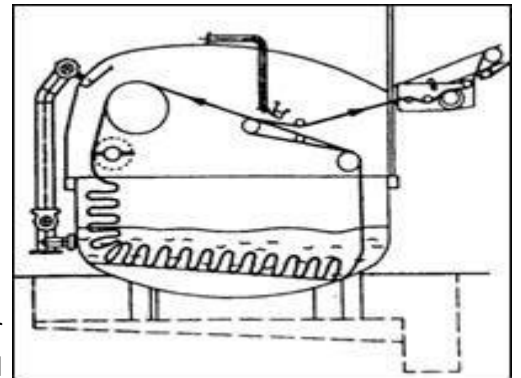




The winch or beck dyeing machine is the oldest form of piece dyeing machine. The construction is comparatively simple and therefore economical to purchase and operate. It is suitable for practically all types of fabric, especially light weights, which can normally withstand creasing when in rope form as woollen and silk fabric, loosely woven cotton and synthetic fabrics, circular and warp knitted fabrics. This is a dyeing machine for fabrics in rope forms with stationary liquor and moving material.

Features and Parameters:

- I. The machine operates at a maximum temperature 95-98°C
- II. The liquor ratio is generally quite high (1:20-1:40)
- III. This is a dyeing machine for fabrics in rope form with stationary liquor and moving material.

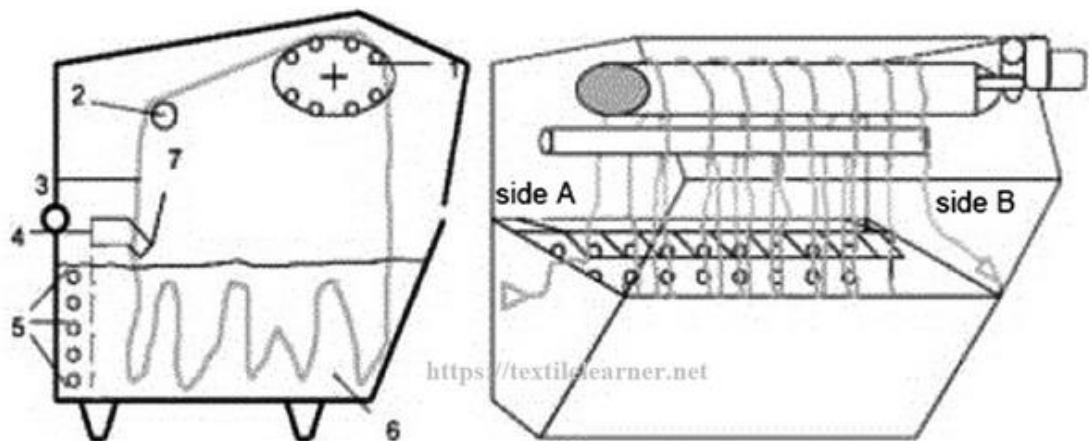


- I. . In winch machines, a number (1-40) of endless ropes or loops of fabrics of equal length (about 50-100m) are loaded with much of their length immersed in folded form inside the dye bath.
- II. As for all forms of rope dyeing, the fabric must be fairly resistant to length ways creasing.
- III. A perforated separating compartment, positioned at a distance of 15-30 cm from its vertical side creates an inter space for heating and for adding reagents.
- IV. Heating can be supplied by means of direct or indirect steam heating.
- V. The rope passes from the dye bath over two elevated reels. The first roller is free-running (jockey or fly roller) and the second is winch reel.
- VI. The winch reel not only controls the rate of movement of the fabric rope, but also the configuration of the rope in the dye bath.

- VII. The winch reel does not grip the fabric positively, but by the weight of the wet fabric and the friction between the reel and fabric.
- VIII. Now-a-days stainless reels with corrugated and broken surface for increase frictional forces are used.
- IX. The maximum motion speed of the fabric must be approximately 40m/min.
- X. The winch dyeing method is suitable for all fabrics, excepts those which tend to originate permanent creases or which could easily distort under the winch stretching action.

Dyeing method with winch dyeing machine:

The basic principle of all winch dyeing machines is to have a number of loops or ropes of the fabric in the dye bath, these ropes are of equal length, which are mostly immersed in the liquor in the bath. The upper part of each rope runs over two reels which are mounted over dye bath. At the front of the machine, above the top of the dye liquor, is a smaller reel, which is called jockey or fly roller



- | | |
|--------------------------|-------------------|
| 1 – Winch | 5 – Heating coils |
| 2 – Guide cylinder | 6 – Liquor |
| 3 – Fabric rope | 7 – Rack |
| 4 – Perforated separator | |

Fig: Parts and Schematic diagram of a winch dyeing machine

The fly roller remain free wheeling along with fabric rope. At the back of winch tank is the winch wheel, which pulls the fabric rope from the dye bath over the jockey reel for dropping in the dye bath for immersion. From the dropped location, the fabric rope travels back to be lifted & fed to winch wheel.

The dyeing process on winch dyeing machines is based on higher M:L as compared with other [dyeing machines](#). The process is conducted with very little tension. The total dyeing time is lengthier as compared to other machines.

Advantages of winch dyeing machine:

1. Construction & operation of winch are very simple.

2. The winch dyeing machines are suitable for types of wet processing operations from [desizing](#) to softening.
3. The winch dyeing machine is suitable for practically all types of fabrics, which can withstand creasing in rope form processing.
4. The tension exerted on winch is less than jigger dyeing machine, the material thus dyed is with fuller hand.
5. The appearance of the dyed goods is clean & smooth on winch dyeing machines.

Limitations / Disadvantages of winch dyeing machine:

1. Batch dyeing operations needs trimming, [sewing](#), opening out the rope, loading and unloading for individual lots separately.
2. Since several lengths of fabric are run over the winch reel into the liquor & sewn end to end, continuous length processing is not possible in a single batch.
3. Fabric is processed in rope form which may lead to crease marks, particularly in heavy, woven, thin & light synthetics.
4. Most of the machine work under atmospheric conditions.

.

...