

# **Ring Spinning Machine**

## **FAQ'S**

### **1. What are the objectives of ring spinning?**

Ans: There are three objectives for ring spinning:

- To draw the roving to the desired degree of fineness.
- To impart sufficient twist to the emerging strand of fibres to form continuous yarn
- To wind up the spun yarn into some convenient package form.

### **2. What is the role of aprons in ring spinning?**

Ans: The object of aprons is to control the short fibres which are also known as floating fibres to the possible extent and help to produce regular and stronger yarns with greater drafts.

### **3. Why spacers are used between the two aprons?**

Ans: The front tips of aprons are not to be too far apart or too close. Wider gap fails to control the floating fibre movement. If the gap is less, the pressure between the aprons will be high. The fibres gripped by the front-rollers will suffer undue strain and the result will lead to high mass variations in the resultant yarns.

### **4. What is the need for the top roller cots?**

Ans: These are needed to avoid the fibres getting crushed or damaged, and also to give a proper grip on the fibres when they are being drafted.

### **5. Why the top rollers are loaded?**

Ans: In any pair of rollers in the roller drafting system, the bottom roller is positively driven while top roller is negatively driven through the friction between fibre fleece and the bottom roller; and the friction between the fibre fleece and the top roller. The self weight of the top rollers themselves is not sufficient and has to be assisted by some suitable external devices. Such devices are known as "roller-weighting devices"

### **6. What is roller setting in ring spinning? What is its importance?**

Ans: The distance between the central axes of two pairs of rollers is called as roller setting. If the pairs of rollers are set too wide apart, there will be plucking of the fibres instead of even attenuation, and the material that comes forward is full of thick and thin portions. On the other hand, if they are set too close, drafting becomes difficult and many of the long fibres get gripped by both the pairs momentarily. The fibres get either damaged or broken.

7. What is the typical range of break draft used in 3/3 drafting system?

Ans: Break draft lies in the range of 1.13-1.38.

8. What type of ring and traveler are used in manmade fibre spinning?

Ans: Anti-wedge rings with spin or clip type of travelers are most suitable for man-made fibre processing. The cross section of the travelers should be half round.

9. Can we use same traveler numbers for polyester, viscose and cotton fibre spinning?

Ans: Travelers for polyester blends have to be about 4-5 numbers heavier and those for viscose, 3-4 numbers heavier as compared to travelers used for 100% cotton yarns.

10. What is the purpose of spindle brake?

Ans: While end breakage of yarn occurs during spinning, respective spindle will be stopped by pressing spindle brake for piecing the yarns and start the spinning again. At high spindle speeds, it is difficult to stop the spindles without the spindle brake.

11. What are winding and binding coils?

Ans: During the process of spinning, twisted yarn is wound over the spindle cop. For winding to occur, ring rail is moving up and down to wind the yarn. Yarn wound during the slow upward movement of ring rail is called winding coil, whereas yarn wound during downward movement is called binding coil.

12. What is the V drafting arrangement in ring spinning?

In a normal 3/3 drafting arrangement, the back top roller is shifted rearward relative to the bottom roller. The larger encircling curve produces an additional fibre guidance zone.

13. How much should be the hardness of top roller covering in ring spinning machine?

Ans: Covering lies in the various ranges:  
Soft - 60° to 70° shore  
Medium - 70° to 90° shore  
Hard – above 90° shore

14. What will happen if drafting roller hardness is very low?

Ans: Covering having hardness less than 60° shore is normally unsuitable because they cannot recover from the deformation caused by squeezing out on each revolution of the roller. Also they wear out at the faster rate.

15. What are all the possible ways of applying top roller pressure?

Ans: Generally three kinds of weighting systems are used:

1. Spring weighting
2. Pneumatic weighting
3. Magnetic weighting

16. What is the maximum speed of spindle in the present day ring frames?

Ans: Mechanically it can go up to 28, 000 rpm but due to traveler speed constraint, it is limited.

17. What is the need to place separators between spindles?

Ans: If a break occurs in the spinning triangle, then the untwisted fibre assembly may combine with yarn from the nearby spindle. In order to prevent this happening, separator plates or aluminum or plastics material are arranged between the individual spindles.

18. What is the task of traveler in ring spinning?

Ans: The traveler imparts twist to the yarn and enables winding of the yarn on the cop.

19. What kind of traveler is used for synthetic and blend materials?

Ans: Travelers with a half round profile allow high speeds as a result of the good seating upon the ring. This profile keeps yarn free from damage.

20. What is the influence of traveler mass?

Ans: Traveler mass determines the magnitude of frictional forces between the traveler and the ring, and these in turn determine the winding and balloon tension.

21. If the traveler mass is too small, what will happen in ring spinning?

Ans: If the traveler mass is too small, the balloon will be too big and the cop too soft. The cop content will be less due to softer packing of the cop.

22. What is the effect of high traveler mass?

Ans: A high traveler mass leads to high yarn tension and this in turn will lead to higher end breakage rate.

23. Why traveler clearer is used?

Ans: Due to deposition and entangling of flying loose fibres and untwisted fibres on traveler, mass of traveler is increased that result in increased yarn tension which finally induce an end break.