

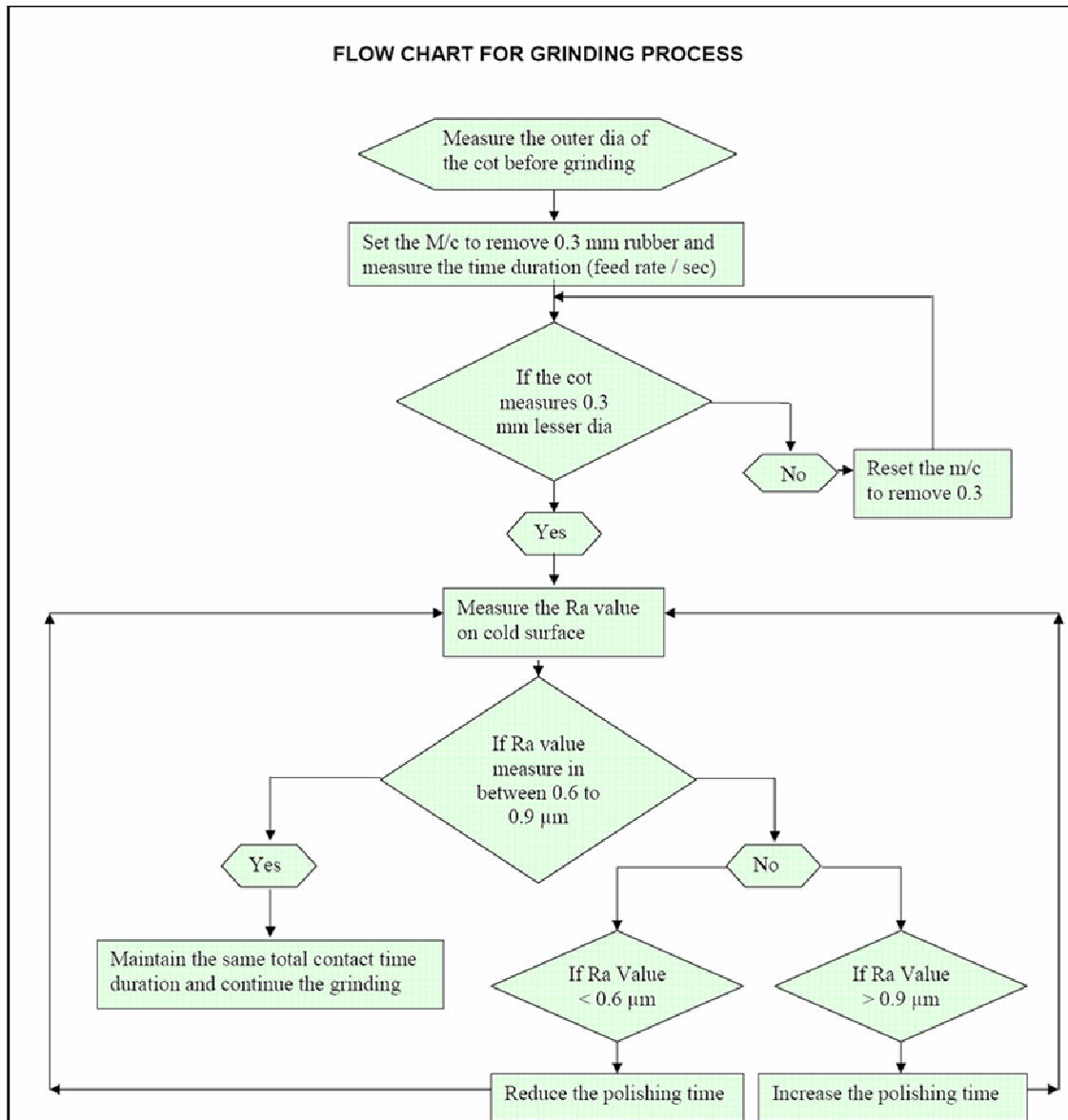
Recommendations for cot grinding

The purpose of cot grinding:

1. To remove at least 0.25 mm rubber in order to get a layer of fresh rubber. At the same time one should ensure not to remove more than 0.3 mm in a single cut, which may lead to excessive heat build-up particularly in softer cots.
2. The Average roughness value (Ra Value) of the spinning cot measured on the cold surface should be between 0.6 μm to 0.9 μm .
3. Grinding intervals should be adjusted according to the cots quality, usage period, quality requirements and manufacturer recommendations.

To achieve the above objectives the following procedures must be adopted:

1. Measure the outer diameter of the cot before grinding.
2. Set the grinding machine to remove 0.25 mm from initial diameter.
3. Grind the cot with a total contact time with stone of approximately 8 sec in case full width stone or in case of Single or Narrow 1 inch stone 2 complete To & fro motion with minimum bed speed is recommended.
4. Measure the outer diameter of the cot after grinding; it should be 0.25 mm smaller now from the initial diameter. If not the machine must be reset to take 0.25 mm.
5. Carefully check the taper & eccentricity of freshly buffed cots with eccentricity tester and the eccentricity within single cot and difference between LHS & RHS cot should be below +/- 0.025 mm with arbours. If not adjust the stone parallelism with arbours



Importance of “Total contact time” between cot and grinding stone

During grinding the “total contact time with grinding stone “ i.e. the time by which the cot is in contact with the stone surface should be Min 5 sec – Max 8 sec (It generally depends upon the depth of cut, Ra value obtained etc. This “Total contact time duration” is the can be split into grinding and polishing time.

$$\text{Total contact time} = \text{Grinding time} + \text{Polishing time}$$

In general “Grinding time” decided the amount of material to be removed and “polishing time” decides the surface finish in terms of “Average roughness value Ra”.

Ra value recommendations

Roughness is a measure of the texture of a surface. It is quantified by the vertical deviations of a real surface from its ideal form. If these deviations are large, the surface is rough; if they are small the surface is smooth.

Roughness plays an important role in determining how a real object will interact with its environment. Especially for a spinning cots or aprons that has to deal with variety of fibres both natural and synthetic that differs greatly in physical and geometrical properties including fibers diameter , length and other surface characteristics. **Rough surfaces usually wear more quickly and have higher friction coefficients than smooth surfaces.** Roughness is often a good predictor of the performance of a mechanical component, since irregularities in the surface may form nucleation sites for cracks.

How to achieve optimum Ra Value for processing different counts

The following are some important parameters that determine the resultant Ra value:

1. Stone grid
2. Stone surface speed
3. Cots shore A Hardness
4. Depth of cut in mm given per buffing
5. Total contact time in sec with stone

By maintaining, 1- 4 parameters constantly just by varying “Total contact time in sec” with grinding stone one can achieve desired surface finish.

Secondly, Stone dressing frequency & quality of dressing has direct control in getting consistency in Ra Value and also to eliminate “Buffing related defects” such as scratch marks or grinding marks that affects both working & yarn quality.

Ra Value recommendations

Spinning Department processing – All fibres

Cots Grade	Depth of cut in mm	Total contact time	Stone Grid	Ra Value μm	Total contact time	Stone Grid	Ra Value μm
E463	0.25 mm	8	60s	0.60 – 0.90	6	80s	0.60 – 0.90
E465	0.25 mm	8			6		
E468+	0.25 mm	8			6		
E468	0.25 mm	6			5		
E472	0.25 mm	6			5		
RD75	0.25 mm	6			5		
RD490	0.25 mm	8			6		
RD85	0.25 mm	8			6		
RD90	0.25 mm	8			6		

Speed frame Department processing – All fibres

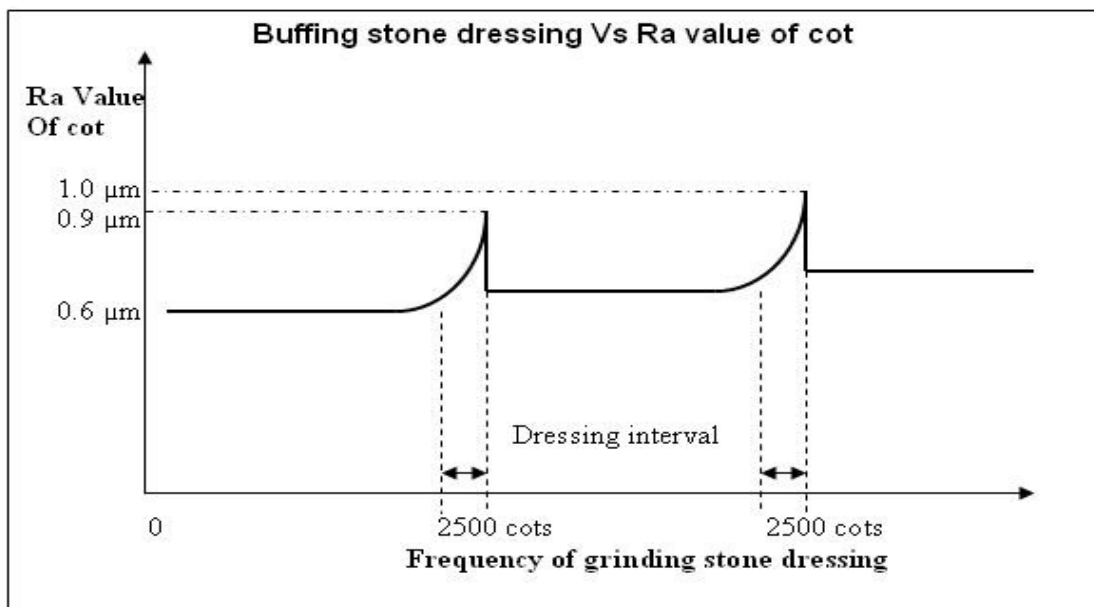
Cots Grade	Depth of cut in mm	Total contact time	Stone Grid	Ra Value μm	Total contact time	Stone Grid	Ra Value μm
RD75	0.25 mm	10	60s	0.40 – 0.70	8	80s	0.40 – 0.70
RD490	0.25 mm	10			8		
RD85	0.25 mm	10			8		
RD90	0.25 mm	10			8		

Long cots Processing – All fibres

Cots Grade	Depth of cut in mm	No. of Strokes	Stone Grid	Ra Value μm	No. of Strokes	Stone Grid	Ra Value μm
E468	0.20 mm	4T	80s	0.30 – 0.60	3T	100s	0.30 – 0.60
E472	0.20 mm	4T			3T		
RD78	0.20 mm	4T			3T		
RD490	0.20 mm	4T			3T		
RD85	0.20 mm	4T			3T		

Importance of stone dressing frequency & its effect on buffed cots

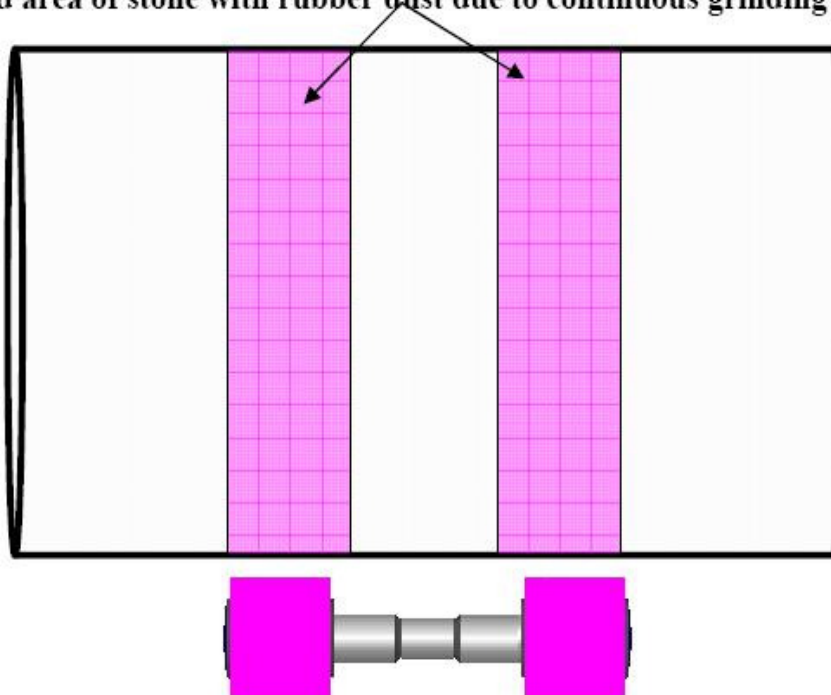
Grinding stone being “porous” in nature gets embedded with fine rubber particles which are being constantly “torn” from cots during buffing. The intensity of rubber dust loading increases WRT no. of cots buffed and depth of cut taken at each buffing. Periodically it must be removed so that “Fresh” surface of stone will always come into contact with rubber cots. Failure of this will lead to “faulty” buffing and optimum surface finish cannot be achieved and leads to working problems.



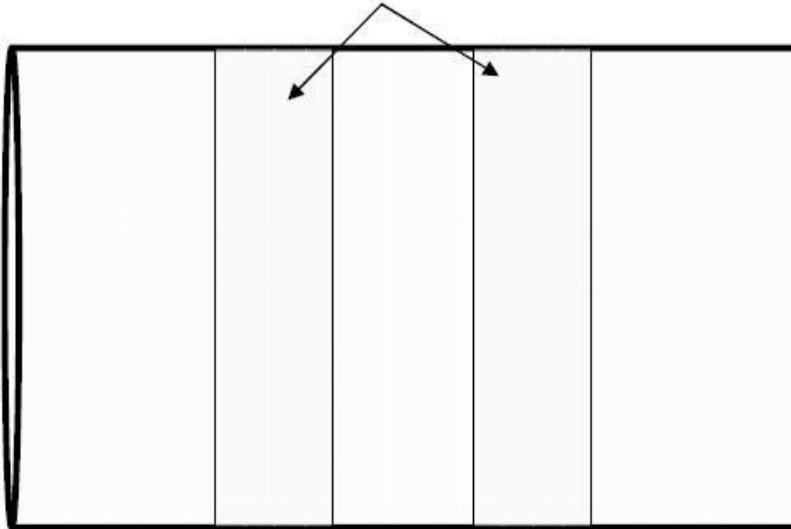
Recommendation for stone dressing and maintenance

- Both 60 grit and 80 grit stones are recommended.
- Regular dressing of buffing stone ideally after processing 1500 – 2000 cots.
- Check the buffing stone surface by touching. The feel should be velvety.
- Use 100no emery paper for 60 grit stone and 120no emery paper for 80 grit stone for final polishing of the stone after dressing.
- Loaded areas of the stone should be cleaned with air pressure and emery paper after grinding every 100 arbours to ensure uniform Ra value of all cots.

Loaded area of stone with rubber dust due to continuous grinding of R/F cots.



Clean area of the grinding stone without rubber dust deposition



Clean area of stone will remove more rubber than loaded area



S/F Arbor
Exposed to clean & loaded
Area of stone, continuously