

# CHAMFERING OF COMMUTATOR BAR EDGES

## MACHINING OF RING HELICAL GROOVES

TECHNICAL NOTE ■ STA BE 16-3 GB

### COMMUTATORS

After truing of commutator the edges of bars should be chamfered. This operation is necessary when the voltage between bars is high (See Technical Notes AE 16-1 and AE 16-16).

The chamfering increases the distance between upper edges of two successive bars: risks of flash are therefore reduced. In addition the bar chamfering eliminates the risks of slivers of flush micas with incorrect undercutting (Fig. 1).

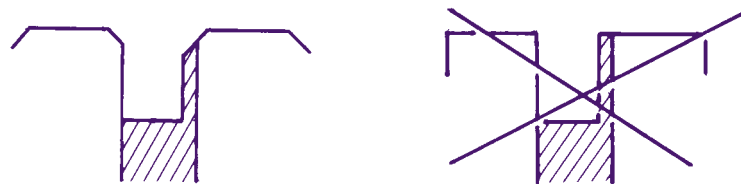


Fig. 1

The chamfer angle is usually  $45^\circ$ , sometimes  $60^\circ$  and chamfer depth is, according to the cases, from  $\ell/20$  to  $\ell/10$ , with  $\ell$  = bar depth (Fig. 2).

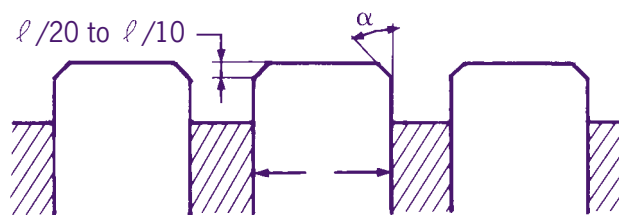


Fig. 2

Note:

The commutators which equip motors of hand tools, home appliances and low power industrial machines (less than 1 kW) are not chamfered by the constructors who make sure to use rectifying equipment and tools which ensure no barb development. Copper chips and eventual barbs can be eliminated by the use of a hard rotating brush.

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## SLIP RINGS

Because of its advantages concerning the brush (current distribution, ventilating action, dissipation of losses, mechanical stability, etc.) helical grooving of rings is being carried out on an increasing scale by constructors especially for high or medium speed machines ( $V \geq 20$  m/sec.).

Helical grooving entails the machining in the slip rings of an helical groove the width of which should be equal to submultiple of the brush width. This rule guarantees a constant current density in the brushes, especially in the case of high density current (synchronous machines).

Generally the groove is about 3 mm wide and about 3 to 4 mm deep at a pitch of 8 to 12 mm.

After machining of grooves, it is absolutely essential to remove by chamfering them (from 0.4 to 0.5 mm x 45° chamfer) any sharp edges injurious to the brushes (Fig. 3).

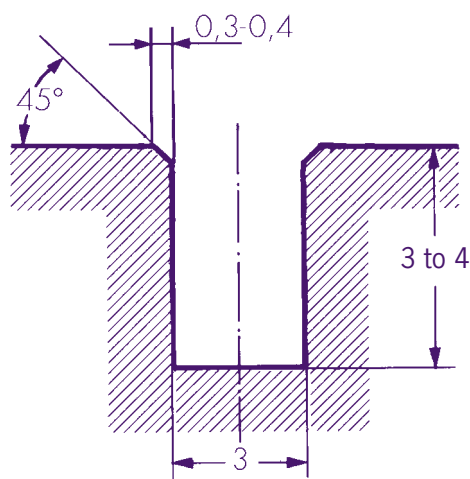


Fig. 3

In addition, it is advantageous to dress the chamfered edges of the helix with a fine stone.

The chamfering must be renewed as soon as the wear of the ring reaches the chamfer base.



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