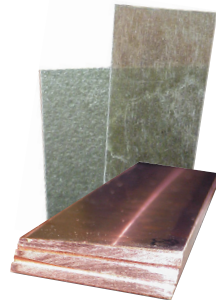


Materials

Tough Pitch Electrolytic Copper - preferably silver bearing such as Alloy 116, which has 709-850g of silver per metric ton for strength and heat resistance.

Segment Mica - alkyd vinyl, with a low resin content, small mica splittings, and very low compressability.

Mica V-Rings - made of uncured molding mica which has a higher resin content and larger mica flakes for moldability.



Glass Tape - used for banding extensions on v-ring commutators and to band grooves on glassbands. For glassbands, tape is applied at 272-318kg-force.

Steel - used in steel hubs and caps, typically re-used in refill commutators but fabricated new in OEM or damaged units.

Initial Process

Copper is sized into trapezoidal bars to 0.025mm tolerance at multiple locations.

On larger commutators, risers fabricated, inserted and silver-soldered into place, and bars are sanded. Silver 38% silver with NO phosphorus is used for best conductivity and least risk of chemical damage.

Copper bars are stacked, alternated with segment mica, and checked for skew and slotter angle.

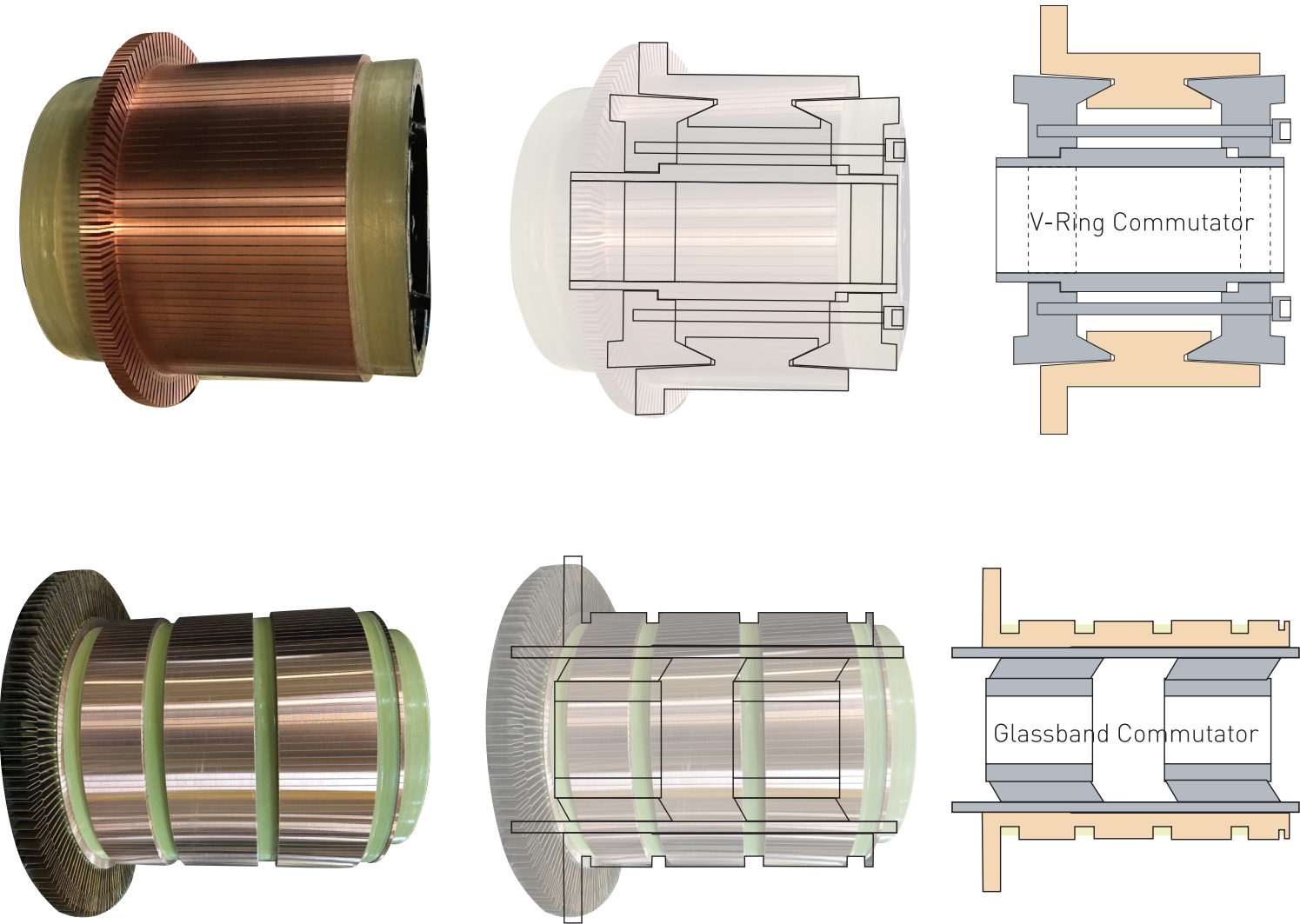


Copper and mica segment pack is then compressed under significant tonnage using a bull ring, machined to the smallest calculated diameter. This ensures maximum stability in operation.

D500-3000_A

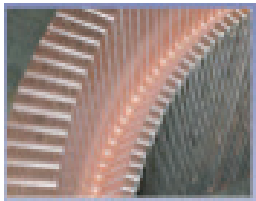
V-RING AND GLASSBAND COMMUTATOR CONSTRUCTION

A General Preview and Reference for Repair.



V-Ring Process

Dovetail angles are machined into assembled segment pack, typically at 3° and 30° angles.



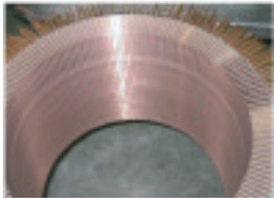
Mica v-rings are fabricated using existing steel caps.

Commutator is assembled to steel and closed in cycles using a combination of heat, torque and tonnage to maximize stability.

Glassband Process

Brush track is banded for ring removal

Steel core is wrapped with mica, cured, and machined to size.



Copper and mica segment pack is bored with a step, and tested prior to assembly.

Segment pack is heated for growth and assembled to mica wrapped core. It's then checked for retained fit.

Grooves are cut into copper and mica segment pack.

Commutator is heated and grooves are banded using tension of at least 272 kg-force.

Final Process

Following closings and curing, commutator is machined to final brush diameter.

Solid riser commutators are slotted.

Inserted riser commutators have risers straightened and are lashed or have buttons inserted if required.

Commutator is hi-pot tested bar to bar and bar to ground and all measurements are verified.

Cortela Carbon Pty Ltd

12-14 Helium Street, Narangba QLD 4504, Australia

t: +61 7 3888 2122 / f: +61 7 3888 1432 / w: www.cortela.com.au / e: sales@cortela.com.au



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