

## Having trouble with banded commutators?

Glassband commutators were first designed by General Electric in 1960 for their redesigned line of 580 and 8000 frame machines, and later for their MD800 Armored Motors. Although performance of these commutators is good, end users and motor repair shops sometimes give them less than favorable reviews because of the difficulty in field repair of the units. With v-ring commutators, bolts can be tightened and v-rings replaced, but glassband commutators are designed to be virtually maintenance-free. In addition, the glassband comms are significantly lighter in weight than their v-ring equivalents, and under normal duty requirements, routinely out-last v-ring units by 50%.

However, how many motors do you see operating under anything but "normal duty requirements?" The problem arises when end-users in high contamination environments end up having to replace bands on a far too regular basis.

The only restraining force on glassband comms are the res-iglass bands. This material is made from high tensile glass yarns laid parallel and bonded with fully catalyzed thermosetting resins. The glassband commutator is set with an interference fit of approximately 0.030" to a mica wrapped and cured steel hub. The retained interference fit, measured by the growth of the segment pack, should be, at minimum, 0.015". The inside of the segment pack is bored smooth, specific to the cured mica-wrapped hub. Glassband grooves are cut after the segment pack is assembled to the core. Finally, the commutator is banded to an OEM specified number of wraps at 500 lbs PSI. It is then baked for several hours at approximately 300 degrees. The bands are applied multi-stage to ensure maximum strength.

Most repair shops will apply a coating of Viton® to the bands prior to the commutator going into operation; this step should not be omitted. If the bands have not been coated, carbon can creep behind the band, causing burning from the inside out. Though this might not be seen in a visual inspection, it can easily result in the failure of the unit.

### ***What you should consider before converting to a v-ring:***

Converting a glassband comm to a v-ring is an alternative to dealing with ongoing problems. But there are several things to consider when presenting this as an option:

#### **Weight**

A v-ring style commutator will be significantly heavier than the glassband it replaces. The v-ring design requires not only the addition of a hefty steel part including a spool and two caps, but also a substantially wider (and therefore heavier) copper bar.

#### **Performance**

As a result, performance may be affected and the weight gain should be measured against the motor as a whole and the application for which it has been designed.

#### **Maintenance**

V-ring comms are more familiar, but they do require maintenance such as checking for tightness. However, if your glassband is being rebanded once a year, v-ring tightening is going to be a welcome change.

#### **Cost**

Converting to a v-ring will mean a substantial cost outlay (typically 3x) compared to the cost of a refill. However, when weighing the cost of constant band replacement, the capital expenditure associated with the conversion will often make sense.

#### **Experience**

Conversion to a v-ring is a major redesign and requires both engineering and production experience from your commutator manufacturer. Ensure that you are being asked to approve conversion drawings, and ask for references.

Your commutator supplier should be able to help you explain this alternative by providing you with support materials and technical references. If this is a topic which applies to you or one of your customers, let us know, we are glad to help.