



## ***Q: “Can Users Machine PolyLube Guide Rod Bushings to Tighter Tolerances? If Yes, How?”***

**A:** First, Polygon recommends that secondary ID or OD fabrication by the user group community only be performed on the PolyLube Glass and Bronze filled liners. Trying to machine the Fiber or MRP liner causes the tool to pull the fibers up leaving a fuzzy mess.

When turning the O.D. of a bearing we recommend placing the part on an expandable mandrel or a snug fitting arbor in a manual or CNC lathe. Depending on the wall thickness of the bearing, it is important to regulate the clamping pressure to a point where the part will be held while machining, yet not excessive to a point where the pressure distorts its natural shape. We recommend using a diamond tipped cutting insert with the part turned at 2000-3000 RPM with a .003" per revolution feed rate. It is important to flood the insert with coolant to dissipate heat generated from the abrasiveness of fiberglass while cutting. The depth of cut is dependant on the length of the diamond tip on the cutting insert. Typical range is from .060 - .100".

When machining the I.D. two methods can be used. The preferred and most accurate is boring. When boring the I.D. we recommend using a collet fixtured in a manual or CNC lathe to hold the O.D. while machining. If a three jaw chuck is to be used, it is important to apply enough pressure to secure the part while machining, but not enough to deform the part in its free standing state. A carbide tipped boring bar can be used with a recommended RPM of 2000-3000 and .003" per revolution feed rate. This operation can be performed wet or dry depending on preference.

The second method of machining the I.D. is to use a expansion reamer if one is available in the size you are trying to machine. The same fixturing to hold the part as boring is recommended along with the same feeds and feed rates. It is recommended to use a carbide expansion reamer cutting either wet or dry. This is the least accurate way of machining because it tends to follow the I.D. of the tube. If the part is non concentric then the reamer will tend to be pulled to one side thus not improving the concentricity when machining.

