

How to Inject Epoxy

SENKO Product Datasheet
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ISO 9001: 2000

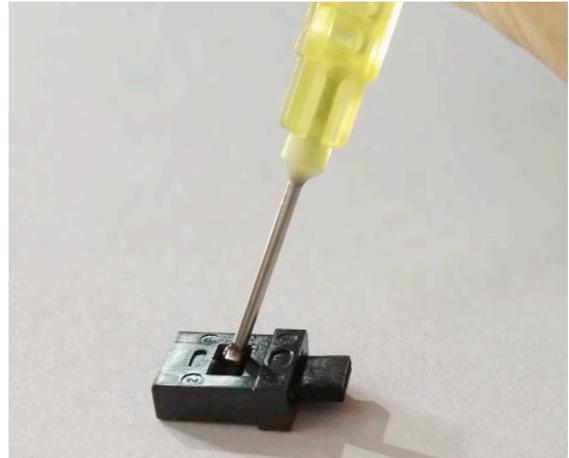
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Purpose

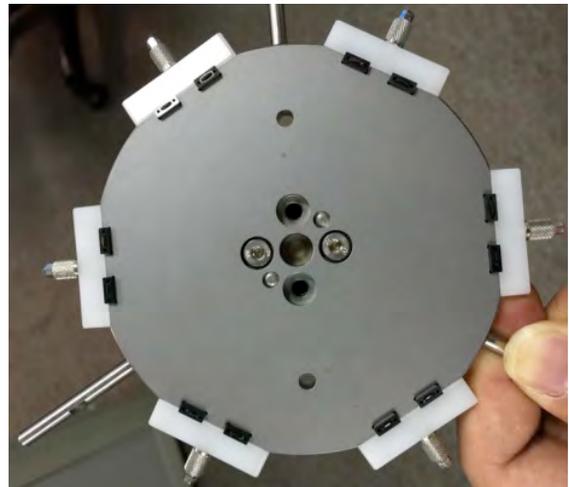
It is common practice when performing angled polishing of SM MPO to first perform a flat polish to remove epoxy. The purpose of this document is to provide guidance on control of MT ferrule epoxy injection to enable angle grinding without the need for flat polishing.

Epoxy Control

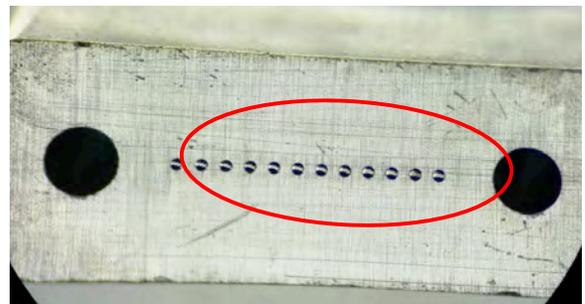
Epoxy is always injected into the window of the ferrule using an appropriate applicator at a slow steady rate, completely filling the window.



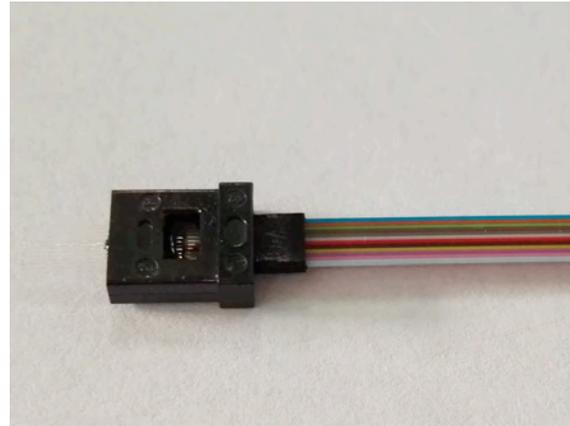
The amount of epoxy injected should be level with the top edge of the window, no more. Over injection of epoxy will form a dome of epoxy above the height of the window when fully cured. This dome of epoxy prevent the polishing fixture from sufficiently clamping the ferrule for polishing, thus, adversely affecting critical geometry.



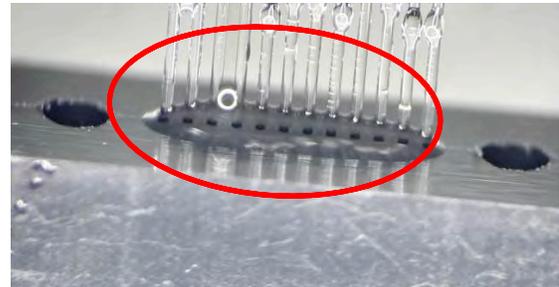
After epoxy injection small beads of epoxy should be visible at each fiber hole. The beads of epoxy should not run when the ferrule is placed horizontally on a flat surface.



Fibers should be inserted slowly and smoothly to prevent fiber damage or breakage.



The ferrule should then be held vertically after fiber insertion to allow epoxy on the fibers to flow down and accumulate on the ferrule surface.



The accumulated epoxy thickness for angle polishing (Single-mode) should be 0.2mm. Angled polishing exerts an angular force, that when applied to a tall, thin ridge of epoxy has a high risk of fiber breakage. Controlling the height of this ridge of epoxy to 0.2mm eliminates fiber breakage, and allows direct angled polishing without the need for a flat polish process to remove fibers and epoxy before angled polishing.

*Multi-mode fibers have a larger core and are more susceptible to damage and breakage during manual fiber cleaving. If the epoxy thickness is 0.2mm, cracks caused by manual cleaving can propagate down below the surface of the ferrule, and cannot be polished away. With 0.5mm thickness of epoxy, cracks will not propagate below or too far below the ferrule surface, which can be polished away. However, if the user has laser cleaving capabilities [laser cleaving does not cause fiber cracks or breakage] an epoxy thickness of 0.2mm is fine.

It is important to remember to check the height of epoxy in the ferrule window before curing. Insertion of fibers into the ferrule will draw some of the epoxy out of the ferrule window. A pronounced dip/concave shape to the epoxy means a lack of epoxy, and must be topped up. Lack of epoxy will affect long term reliability.

Additional Polishing Advisory Note

The higher the number of fibers, the higher the force required to produce and maintain physical fiber contact. So control of ferrule length is critical, therefore it is imperative to not over polish. Doing so will affect the length of the ferrule, thus, affecting the force exerted to ensure physical contact of mated endface fibers.

IEC 61754-7 stipulates that the unpolished (flat) area of an angle polished ferrule (single mode) can be a maximum of 0.8mm. Measuring this area is difficult, and removal of the ferrule to do so is not recommended due to the adverse effect on endface geometry. A simple rule of thumb is to polish until the angle has overlapped the fiber by one fiber diameter, which can be “eyeballed.”



Here is can be clearly seen that the polished angle has reached the single row of fibers.

For polishing, please refer to relevant SENKO polishing procedures.
