Biconic Connector termination instructions

Assembly of Biconic plug on 2mm, and 2.8 - 3.0mm single mode and multi mode fiber

1) PREPARATION OF SINGLE MODE AND MULTI MODE FIBER AND PLUG ASSEMBLY

![Diagram of fiber and connector]

Install the rubber boot on the cable.
Attach special biconic protector tube to the connector.
Prepare the cable end as to the template dimensions shown in diagram at left.
Prepare epoxy to manufacturers instructions.
Inject epoxy into rear of connector, covering the rear back shell hole completely.
Insert the fiber into connector plug. Once it is all the way through, pull back on cable, making sure that protruding fiber is still connected, then push forward until the fiber stops. Make sure that the exposed kevlar members fan back as the cable is inserted in the connector plug.
Crimp the rear back shell with hexagonal die crimp tool (.151” hex crimp).
Cure in oven per manufacturers temperature and time recommendations.
After curing, remove protective tube.
Scribe, or cleave off excess protruding fiber.
Air polish protruding stub with 9 µm Silicon Carbide, or Aluminum Oxide film.
Air polishing will bring the glass stub flush with connector pedestal.

Fiber stripping specifications

Tools / Fixtures required

- Biconic taper length gauge
- Plug assembly protector tube
- Hex crimp .151”
- Epoxy syringe and needle
- Soft velvet or flock pad
- Glass plate
- Curing oven
- Carbide or Sapphire scribe
- Microscope with biconic adapter
- Polishing films (see below)

Angstrom Lap

- p/n SC9T913N100  3 x 6  9 µm Silicon carbide film
- p/n AO3T363N100  3 x 6  3 µm Aluminum Oxide film
- p/n AO05F363N100  3 x 6 .5 µm Aluminum Oxide film

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2) FIBER POLISHING

STEP 1

Taper length test.

Prior to polishing, test for positive taper length with biconic taper length gauge. Make sure that connector has been air polished prior to insertion in biconic taper gauge, otherwise severe damage can occur to the connector.

STEP 2

Rough polishing.

Rough polish in 3 - 5 figure-8 patterns (checking taper length) with either 5 µm or 9 µm Silicon Carbide, or Aluminum Oxide film. Make sure that film is supported by a soft-flock pad. Check connector taper length again, assuring positive length.

Note: DO NOT USE WATER. A dry polish is recommended throughout this process.
Note: Clean or blow-dry polishing fixture between each step.

STEP 3

Intermediate polishing.

Use either a 1 µm or 3 µm Aluminum Oxide film. Polish on glass plate. Check taper length to assure positive length. Polish 5 - 7 figure-8 patterns, checking taper length regularly.

STEP 4

Final polishing.

Use .5 µm or .3 µm Aluminum Oxide film on glass plate. Polish 5 - 7 figure-8 patterns, checking final taper length, making sure that the taper length is between 0 and 3 µm. Any negative taper length will affect connectors insertion loss performance. Inspect with microscope, making sure that the core area of the fiber is clear of scratches, chips, and digs.
3) FINAL TESTING OF BICONIC CONNECTOR

**Insertion loss and return loss measurement**

**Single mode and multi mode**

The test set-up consists of a LED power meter and a reference connector. After taking the power reference, connect the plug under test to the reference connector and measure the relevant insertion loss against reference connector. This value should be less than 1dB.

**Single mode**

For return loss measurement, the test set-up consists of an Optical Return Loss Measuring Unit, a laser source, an optical power meter, and a reference connector. The measurement is made in two steps: In the first one, a reference reflection is taken connecting an optical cord, terminated at the other end with the total reflection element, to the measuring port. In the second step, the connector plug under test is connected to the measuring port and the relevant power reflected, compared to the reference one, directly provides the return loss value. For acceptance, the measured return loss should be more than 30dB.

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**Parts of the biconic connector in order of assembly.**

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**The finished connector assembly.**