Micron Optics, Inc.
os3100 Strain Gage (Epoxy Bonded)
Installation Procedure

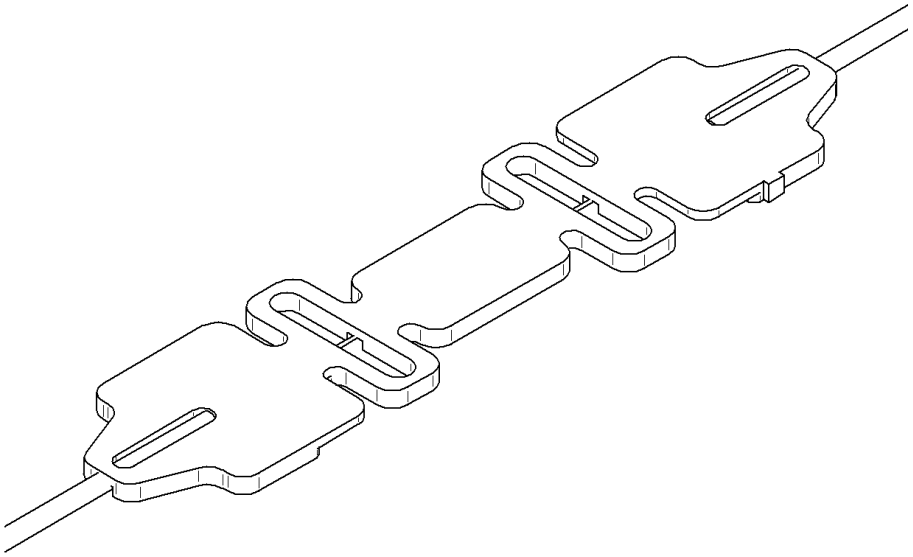

Figure 1 – os3100 Epoxy Bonded Gage

Introduction:

An os3100 gage may be bonded to a variety of surfaces using the procedure outlined below. Successful installation requires careful attention to the details of gage installation. In particular, surface preparation and cleaning is extremely important in obtaining a secure bond.

The recommended adhesive for bonding os3100 gages to a specimen is a 100%-solids epoxy system designed for use with bonded resistance strain gages. These adhesives are generally available in kit form including: degreaser, conditioner, neutralizer, epoxy, and application instructions. These instructions demonstrate the use of M-Bond AE-10 Adhesive System from Vishay Measurements Group.

1. Gage Preparation

1.1. **Degrease**
Lay the gage on a clean surface with the bottom surface facing up. Thoroughly degrease epoxy application area as shown in Fig. 2 using CSM Degreaser. Isopropyl alcohol may be substituted for CSM if desired; however, it may not be as effective in removing all traces of contaminants. CSM Degreaser is preferred whenever possible. Apply a liberal amount of degreaser to clean gauze and wipe the gage. Do not spray the degreaser directly onto the gage.

1.2. **Condition**
Apply a drop of M-Prep Conditioner to clean gauze and wipe the epoxy application area to remove any residue. Apply another drop of conditioner to gauze and wipe gage a second time. Make one additional pass with dry gauze to remove any residue and

conditioner. Change gauze often during the conditioning process to avoid contaminating the surface with previously removed deposits.

1.3. **Neutralize**

Apply a drop of M-Prep Neutralizer to a clean gauze and wipe the epoxy application area to remove any residue. Apply another drop of neutralizer to gauze and wipe gage a second time. Make one additional pass with dry gauze to remove any residue and neutralizer. Change gauze often during the conditioning process to avoid contaminating the surface with previously removed deposits. Do not allow the neutralizer to evaporate and dry on the gage.

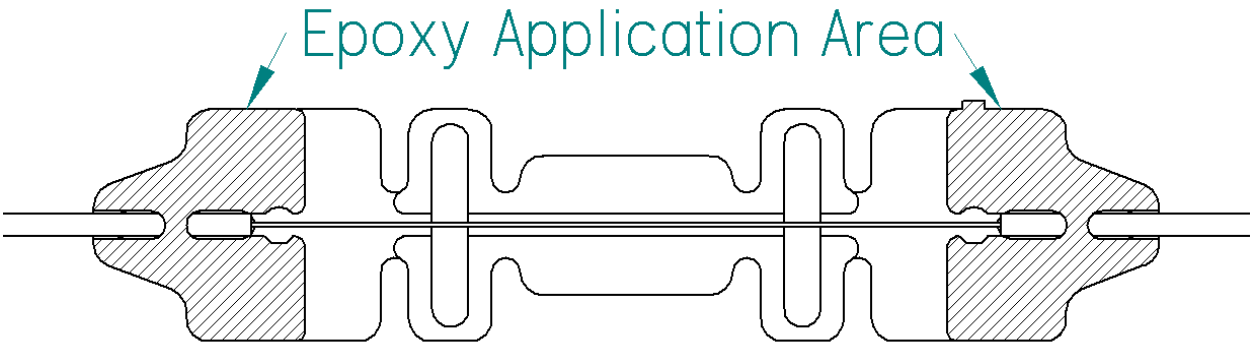

Figure 2 – Gage Bottom View

2. Surface Preparation

2.1. **Prep Surface**

Mounting surface must be reasonably flat and free of surface defects. The surface should be free of rust, scale, oxides, loose paint, or other coatings. Start by degreasing the surface with CSM Degreaser or other degreaser compatible with the specimen. Abrade the surface as necessary to remove surface irregularities and contamination. It may be necessary to start with a coarse paper or grinder if the surface is very rough. Use consecutively finer paper finishing up with 400-grit silicon-carbide paper.

2.2. **Degrease**

Thoroughly degrease mounting surface using CSM Degreaser. Isopropyl alcohol may be substituted for CSM if desired; however, it may not be as effective in removing all traces of contaminants. CSM Degreaser is preferred whenever possible. Apply a liberal amount of degreaser to the specimen surface and wipe dry with clean gauze. Repeat several times to thoroughly degrease surface.

2.3. **Pre-Position Gage**

Use a spare or dummy gage to determine how the gage will be positioned on the specimen. Do not use the gage previously prepared or it will be contaminated with finger oil and contamination from the specimen surface. Note that the gage is sensitive to

strains parallel to the axis of the fiber. Using a drafting pencil, burnish whatever alignment marks are necessary on the specimen for repositioning the gage.

2.4. **Condition**
Apply several drops of M-Prep Conditioner to specimen surface and wet abrade with 400-grit silicon-carbide paper. Wipe the surface with gauze to remove residue. Apply more conditioner to the specimen and scrub with gauze until gauze is no longer discolored. Make one additional pass with dry gauze to remove any residue and conditioner. Change gauze often during the conditioning process to avoid contaminating the surface with previously removed deposits.

2.5. **Neutralize**
Apply several drops of M-Prep Neutralizer to specimen surface and scrub with gauze. Apply more neutralizer to specimen and wipe with gauze to remove all neutralize from the surface. Change gauze often during the neutralizing process to avoid contaminating the surface with previously removed deposits. Make one additional pass with dry gauze to remove any remaining neutralizer. Do not allow the neutralizer to evaporate and dry on the surface.

3. Apply Epoxy

3.1. Mix epoxy with curing agent as specified in instructions included with epoxy. Apply a thin film of epoxy to the epoxy application area as shown in Fig. 2. Be careful not to allow epoxy to come in contact with other areas of the gage. Using the layout lines previously burnished on the specimen, position the gage on the specimen surface. Cellophane tape may be used to hold gage in position until clamp is applied. Place a strip of polyethylene film over the sensor to prevent any epoxy that is squeezed out from under the gage from adhering to the clamp pad.

4. Clamp Gage

4.1. Place a soft pad (Durometer A40-60, 1/4” minimum thickness) over the gage installation. If needed place a backup plate over the pad to evenly spread clamping pressure over the gage area. Apply clamping force to a pressure of approximately 10 psi. Make sure the gage is clamped with uniform pressure over the entire gage.

5. Cure

5.1. In order to minimize residual stresses within the cured epoxy, it is recommended to allow the epoxy to cure at room temperature 70°F to 80°F [20°C to 30°C]. Post-curing the installation at 25°F [15°C] above the maximum anticipated operating temperature will ensure essentially creep free performance.