



## FLAME SPRAY TECHNIQUES FOR STRAIN GAGE INSTALLATION

### 1. Surface preparation

Lightly grit blast the gage bonding area to remove the existing surface oxide, and then clean with solvent.

### 2. Bond Coat Application

Mask the gage bonding area perimeter using flame spray masking tape. Tape must be well bonded to the surface to prevent heat from the flame spraying process from lifting the tape. Apply a 50 to 76  $\mu\text{m}$  (2 to 3 mil) thick coating to the substrate as the bond coat. If the substrate is less than 3.2 mm (1/8 in.) thick, cooling air should be used during the coating process to prevent the parts from becoming hot and causing undesirable distortion. The cooling air must be desiccant-filtered to remove all oil; otherwise, an oil-less air compressor should be used. Remove masking tape and gently run an industrial razor over the coating to remove any loose particles. A clean wire brush may also be used to gently remove any loose particles.

### 3. Pre-coat application

Re-mask using flame spray masking tape. Place the tape exactly at the edge of the bond coat. Apply a 50 to 76  $\mu\text{m}$  (2 to 3 mil) alumina pre-coat over the bond coat. Examine the coating under a microscope to be sure it is continuous.

### 4. Gage mounting

While holding the gage in position with tweezers, press the gage down onto the pre-coat with the tape carrier.

### 5. Tack Coat

Apply a coating mixture of alumina to the open area between the strips of carrier tape. Hold the spraying gun perpendicular to the gage surface at about 25 cm (10") distance and apply a tack coat with rapid passes. The gage grid temperature should not exceed 200°C (390°F) and should return to room temperature before the next pass is made. Coat until exposed gage wires are 90-95% covered.

### 6. Tape Removal

Remove all perimeter tape with sharp tweezers. Examine the gage carefully and remove any debris using an artist's brush.

### 7. Re-mask and final overcoat

Re-mask with a single layer of the tape. A final alumina mixture overcoat is then applied. Remove all the tape and dress any sharp corners using an aluminum oxide stone.