

PRIMARY INSTALLATIONS - Bonding strain gauges

When bonding the strain gauges, the most suitable adhesive should be selected for each application. A typical installation procedure is described below using the fast-curing adhesive CN.

1. Preparation

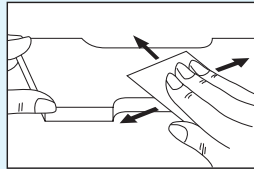
The following items are required for bonding and leadwire connection: Strain gauges, bonding adhesive, connecting terminals, test specimen, solvent, cleaning tissue for industrial use, soldering iron, solder, abrasive paper (120 -320 grit), marking pencil, scale, tweezers, extension leadwire, polyethylene sheet, nippers.

2. Positioning

Roughly determine the location on the test specimen where the strain gauge is to be bonded.

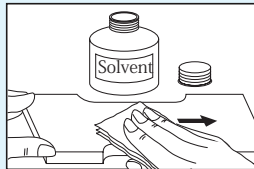
3. Surface preparation

Before bonding, remove all grease, rust, paint, etc., from the bonding area. Sand an area somewhat larger than the bonding area uniformly and finely with abrasive paper. Finish the surface with #120 to 180 abrasive paper for steel, or #240 to 320 for aluminium.



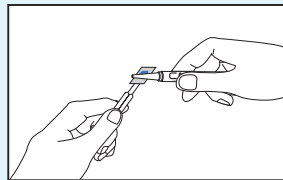
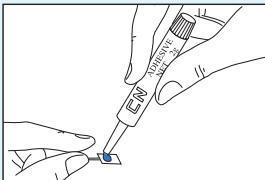
4. Fine cleaning

Clean the bonding area with industrial tissue paper or cloth soaked in a small quantity of chemical solvent such as acetone. Continue cleaning until a new tissue or cloth comes away completely free of contamination. Following the surface preparation, be sure to attach the gauge before the surface becomes covered with an oxidizing membrane or becomes newly contaminated.



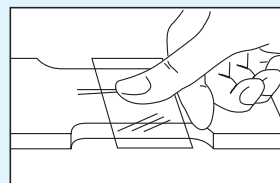
5. Applying bonding adhesive

Drop the proper amount of adhesive onto the back of the gauge base. Usually one drop of adhesive will suffice, but you may increase the number of drops according to the size of the gauge. Use the adhesive nozzle to spread the adhesive over the back surface thinly and uniformly.



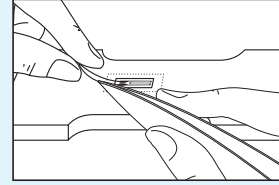
6. Curing and pressing

Place the gauge on the position, place a polyethylene sheet onto it and press down on the gauge constantly using your thumb or a gauge clamp. This should be done quickly as the curing process is completed very fast. The curing time varies depending on the gauge, test specimen, temperature, humidity and pressing force. The curing time under normal conditions is 20-60 seconds.



7. Raising the gauge leads

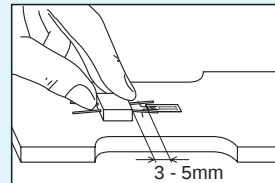
After completely curing the adhesive, remove the polyethylene sheet, and raise the gauge leads with a pair of tweezers. Raise the gauge leads as far as and a little way onto the gauge base. Hold down the gauge leads anchor points on the gauge base with a pair of tweezers to ensure that you do not break the gauge leads.



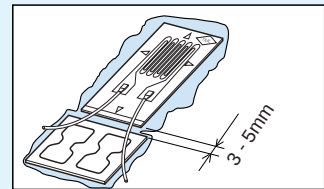
8. Bonding connecting terminals

Bond the connecting terminal in the same manner as bonding the strain gauge, closely apart from the strain gauge by 3 to 5mm.

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Cubic type connecting terminals

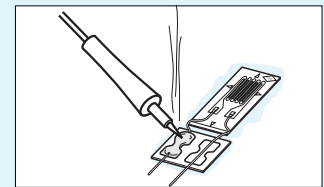
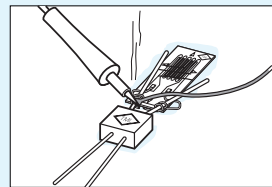


Foil type connecting terminals

9. Soldering the gauge leads

Wrap the gauge leads 2 or 3 times around the connecting terminal wires allowing a little slack in the gauge leads, and apply solder.

Lay the gauge leads over the connecting terminal allowing a little slack in the gauge leads, and apply solder. Twist the excess gauge leads off with a pair of tweezers.

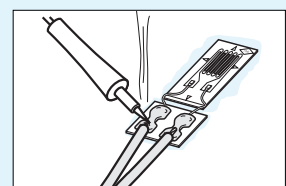
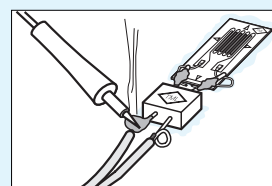


10. Soldering extension leadwires

It is recommended to plate the exposed core wires of the extension leadwire with solder preliminarily.

Solder the extension leadwire to the terminal leadwires on the opposite side of the connecting terminal. Then clip off excess gauge leads and leadwires with a pair of nippers.

Solder the extension leadwire to the connecting terminal. Take care not to apply too much heat as this can cause the metal foils of the connecting terminal to peel off.



PRIMARY INSTALLATIONS - Overcoating strain gauges

Water- and Moisture-proofing with SB tape and VM tape

Requirement in strain gauge coatings

- Excellent resistance to moisture and water and good electrical insulation
- Good adhesion to the strain gauge, leadwires and test specimen surface
- No constriction of the test specimen

Both of the SB and VM tapes are butyl rubber tape generally referred to as pressure-sensitive adhesive. These coating tapes are applied by being pressed onto the test specimen, and they provide excellent resistance to moisture and water.

SB tape

Buthyl rubber
Temperature : -30 to +80°C
Contents : 10mm×3mm
5m long/roll



VM tape

Buthyl rubber
Temperature : -20 to +80°C
Contents : 38mm×1mm
6m long/roll



Example for leadwire integrated strain gauge

First coating with SB tape

Trimming the SB tape

With scissors, cut off one piece of tape large enough to cover the coating area and another piece 5mm to 10mm in length to fit under the leadwires.



Finish coating with VM tape

Cut a piece of VM tape slightly larger than the layer of SB tape coating and press it down onto the place so that the first coating is fully covered by the VM tape.



Under-laying

Lift up the leadwires and press the smaller piece of tape onto the test specimen surface under the leadwires.



Overall coating

Press the leadwires back down onto the piece of SB tape and then press the larger piece of coating tape down onto the strain gauge.

