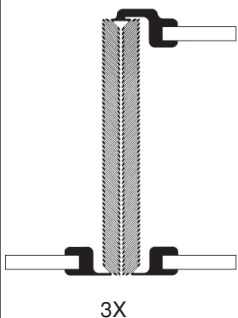
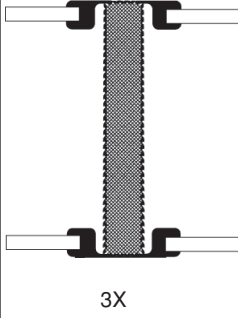


Special Purpose Sensors - Shear Modulus Testing

Shear Modulus Sensors are specifically designed to accommodate the unique specimen geometries and strain-field distributions encountered when testing composite materials for shear properties. Two popular specimens for in-plane shear modulus testing of composites are the losipescu and compact designs. The test section for both types is described as the area between two opposing notches. The losipescu specimen has a distance between the notch roots of 0.45 in (11.4 mm); for the compact design this distance is 0.75 in (19 mm). Both of these specimens have an inherently nonuniform shear-strain distribution in their test zone. Determining shear modulus requires extracting an average shear-strain value from this nonuniform strain field. Since strain gages have the unique characteristic of integrating the surface strain field under their grids, average specimen strain is automatically obtained by spanning the entire length of either specimen's test section.

Two $500\Omega \pm 0.4\%$, $\pm 45^\circ$ shear-gage configurations are available for both the losipescu and compact specimen designs.

The planar configuration, with side-by-side grids, is constructed with a standard N2 backing and Option SP61 (beryllium-copper lead ribbons and polyimide film encapsulation). The stacked configuration is produced with a special backing, A2. This backing is similar to N2 but is fully encapsulated with a polyimide film and includes integral beryllium-copper lead ribbons (like those provided by Option SP61). The stacked configuration is offered to best simulate strain measurement at a point. The stacked gages are supplied in a quarter-bridge arrangement so that independent gage measurements can be made if necessary. When connected in a half-bridge circuit, the stacked construction inherently provides temperature compensation and insensitivity to normal strains. Due to the increased stiffness of a stacked sensor, compared to one having only a single layer, an evaluation of the test conditions and requirements should be made to ensure that the gage will not compromise accuracy by significantly reinforcing low-modulus and/or thin specimens.

GAGE PATTERN AND DESIGNATION Insert Desired S-T-C No. in Spaces Marked XX.		DIMENSIONS					
		GAGE LENGTH	OVERALL LENGTH	GRID WIDTH	OVERALL WIDTH	MATRIX	
						Length	Width
 3X	N2A-XX-C032A-500/SP61 N2P-08-C032A-500/SP61	0.032	0.462	0.031	0.197	0.500	0.257
		0.81 each section	11.73	0.79 each section	5.00	12.7	6.5
	For use with losipescu specimens.						
	N2A-XX-C032B-500/SP61 N2P-08-C032B-500/SP61	0.032	0.762	0.031	0.197	0.800	0.257
		0.81 each section	19.35	0.79 each section	5.00	20.3	6.5
	For use with compact specimens.						
 3X	A2A-XX-C085C-500 A2P-08-C085C-500	0.085	0.445	0.070	0.200	0.500	0.260
		2.16 each section	11.30	1.78	5.08	12.7	6.6
	For use with losipescu specimens.						
	A2A-XX-C085D-500 A2P-08-C085D-500	0.085	0.745	0.070	0.200	0.805	0.260
		2.16 each section	18.92	1.78	5.08	20.4	6.6
	For use with compact specimens.						