

**Designed specifically for performing tests in accordance with ASTM**

**D5656, Standard Test Method for Thick-Adherend Metal Lap-Shear**

**Joints for Determination of the Stress-Strain Behavior of Adhesives in**

**Shear by Tension Loading. The deformation is measured on opposite**

**sides of the test specimen and the output is an average of the two**

**readings.**

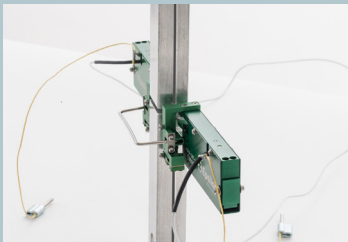


*Model 4013 lap shear extensometer*

The Model 4013 extensometer meets the requirements of ASTM D5656 for measuring the strain properties of an adhesive in shear. It uses different contact point spacing compared to the extensometer shown in D5656. This makes it much easier to mount and eliminates the slippage problems associated with the design shown in the ASTM standard. The Model 4013 is available with all of Epsilon's temperature configurations. It has a 3.0 mm (0.12 inches) full scale measuring range. The conical point contacts included with the extensometer are made from tungsten carbide.

The Model 4013 extensometers are strain gaged devices, making them compatible with any electronics designed for strain gaged transducers. Most often they are connected to a test machine controller. The signal conditioning electronics for the extensometer is typically included with the test machine controller or may often be added. In this case the extensometer is shipped with the proper connector and wiring to plug directly into the electronics. For systems lacking the required electronics, Epsilon can provide a variety of solutions, allowing the extensometer output to be connected to data acquisition boards, chart recorders or other equipment.

*See the electronics section of this catalog for available signal conditioners and strain meters.*



*Side view of the Model 4013 lap shear extensometer with zero pins removed*



*Close-up of the 3 conical contact points used by the Model 4013 extensometer*

## Features

- Full bridge, 350 ohm strain gaged design for compatibility with nearly any test system.
- High accuracy, averaging output (optional dual independent outputs).
- All standard units have linearity readings of 0.20% or better.
- Rugged, dual flexure design for improved performance.
- Includes high quality foam lined case.
- Easy mounting, attaches with an integral spring.

## SPECIFICATIONS

*Excitation:* 5 to 10 VDC recommended, 12 VDC or VAC max.

*Output:* 2 to 4 mV/V nominal, depending on model

*Linearity:*  $\leq 0.20\%$  of full scale measuring range, depending on model

*Temperature Range:* Standard (-ST) is  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $210^{\circ}\text{F}$ )

*Cable:* Integral, ultra-flexible cable, 2.5 m (8 ft) standard

## OPTIONS

Connectors to interface to nearly any brand test equipment

Shunt calibration module (see page 120)



## ORDERING INFORMATION

Model 4013 Available Versions: ANY combination of measuring range and temperature range listed below is available, except as noted.

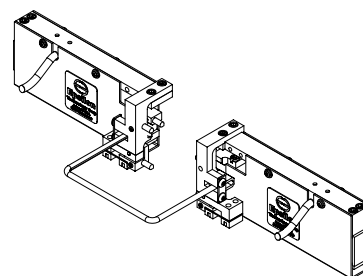
Measuring Range	
U.S.A.	
-025T	0.025"
-050T	0.050"
-125T	0.125"
METRIC	
-005M	0.5 mm
-010M	1.0 mm
-030M	3.0 mm

Model Number 4013- \_\_\_\_\_ - \_\_\_\_\_

Temperature Range	
-LT	$-265^{\circ}\text{C}$ to $100^{\circ}\text{C}$ ( $-450^{\circ}\text{F}$ to $210^{\circ}\text{F}$ )
-ST	$-40^{\circ}\text{C}$ to $100^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ to $210^{\circ}\text{F}$ )
-HT1	$-40^{\circ}\text{C}$ to $150^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ to $300^{\circ}\text{F}$ )
-HT2	$-40^{\circ}\text{C}$ to $200^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ to $400^{\circ}\text{F}$ )
-LHT	$-265^{\circ}\text{C}$ to $200^{\circ}\text{C}$ ( $-450^{\circ}\text{F}$ to $400^{\circ}\text{F}$ )

Example: 4013-005M-ST: 0.5 mm measuring range, standard temperature range ( $-40^{\circ}\text{C}$  to  $100^{\circ}\text{C}$ )

Visit our website at [www.epsilontech.com](http://www.epsilontech.com)  
Contact us for your special testing requirements.



MODEL 4013 EXAMPLE