

Shear Pin Load Sensor

Answer to uncommon force measurement.



Why Shear Pin Load Cell?

The Shear Pin Load Cell is another uniquely developed strain gauge based transducer, to solve the force measurement problems, which have not been therefore feasible.

In automotive application, the same sensor can be used at various locations, where fitment / placing standard load cell is virtually impossible or alters the geometry / force path.

Features

- High overload Capacity i.e. 300%
- Rugged.

Applications:

- Fifth Wheel force measurement.
- Leaf eye / spring Bracket pin force evaluation in bi -direction.
- Axle, cranes, mining vehicles, hoists, aircraft, lift trucks & moving lines etc.

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Technology

The strain gauge is bonded inside the hole at neutral axis to measure the absolute shear strains.

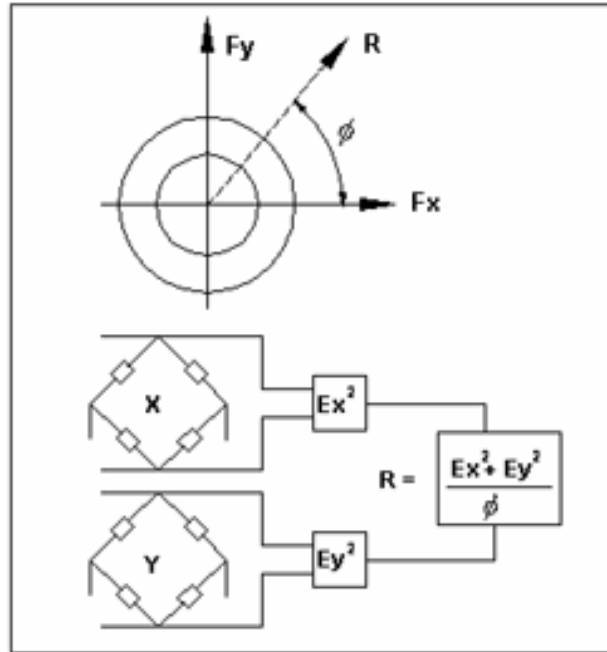
It can be designed to sense forces either (1) along only one axis or (2) along two orthogonal axis, thus enabling measurement of resultant force.

Essentially need to be oriented considering the direction of force.

The pin is generally simply supported at both ends to shear the reaction and middle portion supports the total load required to be measured.

When subjected to a force along to any direction, it will sense only component of force along the axis of max. sensitivity and this regard the component along the perpendicular axis.

Bi – directional Shear Pin



When both magnitude & directional force are unknown these can be measured with Bi – directional shear pin.

The resultant force (R) can be derived from following.

$$R = K \sqrt{(\epsilon_x^2 + \epsilon_y^2)}$$

K = Calibration Constant

Mechanica Systems offer customised design of shear pin load sensors considering end force measurement application.

Mechanica Systems

Plot No. 46, Lane No. 13, Sahakarvrinda Scty., Paramhans Nagar,
Off Paud Road, Kothrud, Pune – 411 038
Telefax: 91 020 2538 6905 Email: mechanicas@vsnl.net