

## Pushout Test with Linear Variable Differential Transformer (LVDT)

By The Instron Applications Team

### Summary

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The purpose of this test was to accurately measure the force required to break a crimp joint between a 32 mm long metal pin and the surrounding metal body in compression.

### Description of Tests

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The part was placed between 6 in compression platens. The pin was loaded to 10 lb automatically. Deflection measurement was automatically set to zero and data acquisition started using an 2.5 mm LVDT. The test speed was 1 in/min. The test was stopped manually when the load dropped by about 200 lb. Deflections at 200 lb, 400 lb and 600 lb were reported as well as maximum load and deflection to failure. Failure was defined as the point where the load initially decreased.

### Conclusions

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The 2.5 mm LVDT will measure deflection to an accuracy of  $\pm 12.5 \mu\text{m}$  (0.5% of full-scale). This LVDT was chosen because the deflection to break was about 1.25 mm. Much of the deflection is probably the result of compression of the pin rather than compression of the crimped joint because the pin bent in several of the tests. A fixture is recommended to minimize affects of pin deflection. With a special fixture, a standard 0.5 mm LVDT could be used which would improve the accuracy to  $\pm 2.5 \mu\text{m}$ .

### Apparatus

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- Model 5569 50 kN test instrument with 5 kN load cell
- Compression application software
- 2601-092 2.5 mm LVDT
- 2 in diameter upper platen
- 6 in diameter lower platen