

Application Handbook

Measuring & Testing

Harmonic Drive LLC Universal Testing Machine Torsion Axis

- Precision output bearing

In many industrial sectors the testing of materials and piece parts is an indispensable part of product development and quality assurance. Universal testing machines are used to test specimens in tension, compression, bending, and hysteresis under various conditions. The material's behavior is measured and documented at every stage of the testing process.

This design example shows how a CSF component set has been applied in the torsion axis of a universal-testing machine. This axis is used to measure the torsional stiffness of material specimens. In this application, particular importance is given to high stiffness, high reduction ratio, and, above all, zero backlash. The latter feature is essential to ensure that the measured data is completely reliable.

The high reduction-ratio and excellent angular transmission characteristics of the Harmonic Drive® gear ensure a slow and smooth rotation of the specimen, even under heavy torque loads. Mounted in a housing, the component set is driven by a Brushless DC Servo motor. The output shaft is mounted in stiff pre-loaded taper roller bearings.

