

Instron 8874 Biaxial (axial-torsion) servohydraulic material testing system



Features:

Force capacity:	25 kN
Load capacity:	100 mm
Maximum torque:	100 Nm
Maximum rotation:	+/-135 °
Work area:	430x430 mm
Position of the actuator:	upper
Other features:	amplitude control, adaptive control, security test

Specifications:

The equipment can carry out static and tiring tests. Its console software provides full system control from a PC. The equipment has two actuators (an axial and a torsion), that we can control together and independently also. The actuator is in the upper crosshead. The T-slot table in the bottom of the equipment allows you to test even larger structures. The equipment can measure the following quantities: force, torque, displacement, rotation, axial and torsial strain, and transversal strain deformation.

In case of fatigue tests, the available maximum of frequency is approximately 30 Hz in the axial direction, and approx. 10 Hz by rotation. The actual maximum of the frequency depends on the amount of the displacements or rotations.

The equipment can use three load cells with different measuring ranges, thereby we are able to measure between a very low load (from some Newton) to high loads (up to 300kN), ensuring the available maximum of accuracy.

These cells are the following:

- 25 kN/100 Nm cell
- 5 kN cell

All of the tests can be controlled and evaluated by the software. The measured values (time, force, torque, displacement, rotation, strain) can be stored, so we are able to use them later, for further evaluations.

Options for tests:

Static tests:

- Tensile tests
- Compression tests
- Shear tests
- Tests under load

Fatigue tests:

- Large cycle fatigue tests (HCF) for pull/press
- Low cycle fatigue tests (LCF)
- Random fatigue
- Determination of fatigue limit for pull/press

Fracture mechanics tests:

- Determination of fracture toughness (K_{IC})
- Determination of J-integral (J_{IC})
- Determination of R-curve
- Determination of crack growth rate (da/dN)
- Determination of the critical voltage intensity factors (DK_{th})

Technological tests:

- Bending tests
- Upsetting tests
- Tests of welded joints
- Fracture tests