

Educational Testing Machine – 25 kN



Load Frame Specifications

Frame

Robust two-column frame mounted on castors, with storage cabinet.

- Dimensions: H 1,800 × W 913 × D 590 mm
- Power supply: 230 V + earth, 800 W
- Weight: 245 kg
- Distance between columns: 310 mm
- Test-space height below the load cell: 400 mm
- Pinned interface for rapid fixture replacement

Actuators

- Rigid drive system comprising motor, geared motor and ball screw
- Speed range: from 0.5 mm/s to 170 mm/min
- Upper and lower safety limit switches

Instrumentation

- Load cell capacity: 25 kN
- Displacement sensor: 350 mm travel, measured by potentiometric scale

Safety

- The machine is fitted with a protective enclosure incorporating a door-opening detection system.

Control Unit and Software

Control System

Standalone closed-loop controller with control modes for force, stress, crosshead position and crosshead deformation channels.

- Absolute position management
- Force and displacement channel resolution: 10,000,000 points
- Adjustable load holding in force and stress modes
- Target control based on force, stress and position

- Pre-configuration of multi-channel control sequences, including ramps controlled through a selected channel, targeting through a different channel, time delays, etc.
- Intuitive real-time control interface
- Configurable interface
- Force tare management
- Multi-graph display: four graphs with up to ten curves each
- Simultaneous management of several acquisition modules
- Input for an extensometer
- Configurable acquisition frequency up to 1 kHz
- Signal conditioning available on three additional free inputs for analogue LVDT signals and strain-gauge bridges
- Provision for USB connection of R'BOX and B'BOX modules, tensile extensometers for data acquisition, potentiometric displacement measuring devices, and analogue input/output modules
- Standalone executable software requiring no installation on the PC
- Operation based on test methods, with a user-selectable level of parameterisation
- Tests can be started in as few as four clicks
- Includes standard methods for each test fixture, with display settings configurable according to the selected method
- Real-time monitoring of all channels
- User-profile management
- User-selectable dark or light mode

Proposed Control Computer

- Intel Core i5-based computer
- 8 GB RAM
- 500 GB SSD
- Windows and Excel licences included
- Keyboard and optical mouse
- TFT monitor, minimum 22 inches
- SyntX software

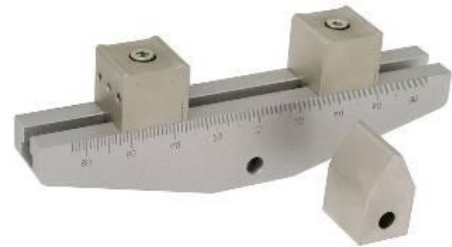
Options – Test Fixtures – (Not Included in our Offer)

Three-Point Bending Fixture – 10 kN

- Adjustable support span: 10 to 170 mm
- Lower rollers: Ø10 mm and Ø4 mm, machined from solid material
- Loading nose: Ø10 mm, width 30 mm
- Maximum capacity: 10 kN

Supplied Specimen Set :

- Steel: 30 × 15 × 250 mm
- Aluminium: 30 × 15 × 250 mm
- Brass: 30 × 15 × 250 mm
- Nylon: 30 × 20 × 250 mm



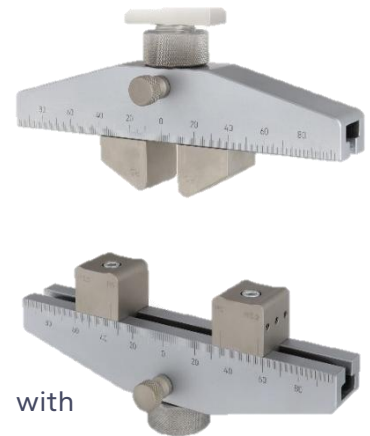
Four-Point Bending Fixture – 10 kN



- Adjustable support span: 10 to 170 mm
- Lower rollers: Ø10 mm and Ø4 mm, machined from solid material
- Loading noses: Ø10 mm, width 30 mm
- Maximum capacity: 10 kN

Options :

- Instrumented specimen fitted with strain gauges, with acquisition via R'BOX or B'BOX – engineering study available upon request
- Extended lower support: +100 mm



Self-Tightening Grips – 20 kN



- Self-locking tensile grips with manual locking
- Maximum capacity: 20 kN
- Supplied with flat jaws for prismatic specimens from 0 to 13 mm

Options :

V-shaped jaws for cylindrical specimens:

- Ø3 to 13 mm
- Ø4 to 16 mm
- Ø10 to 20 mm



Parallel-Action Grips

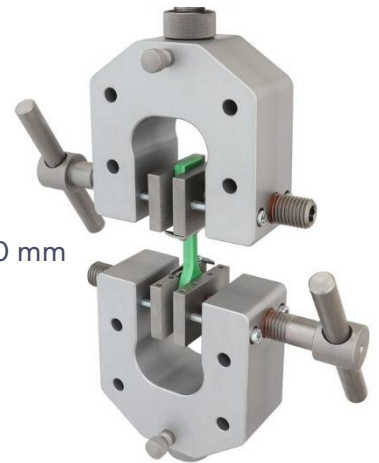
- Manual screw locking
- Parallel clamping mechanism
- Supplied with flat jaws for prismatic specimens from 0 to 30 mm

Available versions :

- Aluminium version: 10 kN
- Nickel-plated steel version: 20 kN

Option :

- V-shaped jaws for cylindrical specimens from Ø4 to 32 mm



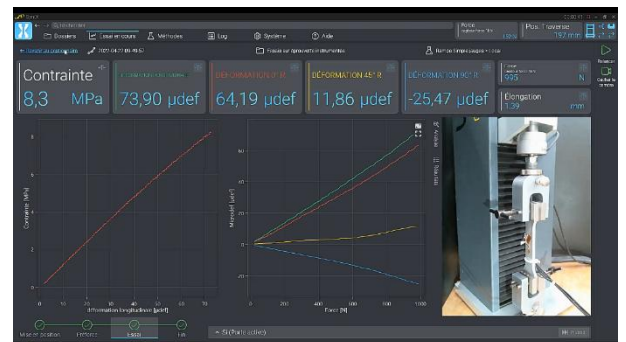
Tensile Specimen Set

- Round steel: Ø5 mm
- Flat steel: 2 × 10 mm
- Round aluminium: Ø4 mm
- Flat aluminium: 2 × 10 mm
- Round brass: Ø4 mm and Ø5 mm
- Flat brass: 2 × 10 mm
- Round nylon: Ø4 mm and Ø6 mm
- Flat nylon: 3 × 30 mm

Instrumented Specimen



- Specimen fitted with strain gauges
- Acquisition via R'BOX or B'BOX
- Engineering study available upon request



Compression Platens



- Diameter: 96 mm
- Hardness: 58 HRC

Supplied Specimens :

- Polystyrene cube, 50 × 50 × 50 mm, density 10 to 13 kg/m³
- Polystyrene cube, 50 × 50 × 50 mm, density 26 to 30 kg/m³
- Nylon cube
- Polyurethane, 60 Shore
- Polyurethane, 90 Shore



Option :

- Instrumented specimen fitted with strain gauges, for use with R'BOX or B'BOX

Single- or Double-Shear Test Fixture

Compression option required.

- Used with the compression supports
- Suitable for cylindrical specimens of Ø4 mm and Ø6 mm

Supplied Specimens :

- Steel: Ø4 mm and Ø6 mm
- Aluminium: Ø4 mm and Ø6 mm
- Brass: Ø4 mm and Ø6 mm
- Nylon: Ø4 mm and Ø6 mm



Deep-Drawing Fixture

Compression option required.

- Punch: Ø10 mm
- Specimen clamping jaw
- Additional punch for punching operations

Supplied Specimens :

- Steel: Ø10 mm, thickness 1 mm
- Aluminium: Ø10 mm, thickness 1 mm
- Brass: Ø10 mm, thickness 1 mm
- Nylon: Ø10 mm, thickness 1 mm



Brinell Hardness Testing Fixture

Compression option required.

- Brinell HBS 5/750 testing
- Ball diameter: Ø5 mm
- Used with the compression platen
- Indentation measured using a magnifying glass with a graduated reticle, ×20 magnification
- Microscope supplied

Supplied Specimens :

- Steel: 50 × 50 × 5 mm





- Aluminium: 50 × 50 × 5 mm
- Brass: 50 × 50 × 5 mm
- Nylon: 50 × 50 × 5 mm

R'BOX Acquisition Unit

Applications :

- Strain-gauge data acquisition
- Use with 3R instrumented models
- Use with a tensile extensometer

Specifications :

- Four simultaneous measurement channels
- USB connection to the control unit
- Sub-D connectors with integrated bridge balancing
- Optimised solution for 3R instrumented specimens



B'BOX Acquisition Unit

Applications :

- Universal strain-gauge acquisition
- Compatible with user-supplied or 3R specimens

Specifications :

- Four simultaneous measurement channels
- Quarter-, half- or full-bridge configuration
- Wheatstone bridge completion on the front panel
- Resistance compensation through internal wiring
- Compatible with QuantX and SyntX software



SYNT I/O Analogue Input/Output Unit

Applications

- Synchronisation with external equipment
- Digital image correlation
- Acquisition using third-party software
- Processing of raw signals

Specifications

- Two ±10 V analogue outputs



- 16-bit resolution
- Four differential analogue inputs
- BNC connectors
- USB connection

Displacement Sensor on Magnetic Stand

- Attachment using a switchable magnet
- Displacement and deflection measurement
- USB connection
- Travel: 25 mm
- Resolution: 2 μm



Strain-Gauge Tensile Extensometer

- Direct measurement of longitudinal strain
- Essential for calculating the modulus of elasticity

Specifications

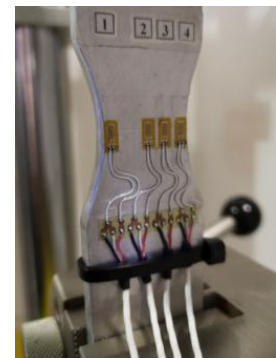
- Gauge length: 25 mm
- Travel: 2 mm, corresponding to 10%
- Resolution: 0.01 μm



Instrumented Notched Specimen

Applications

- Analytical, numerical and experimental study of stress concentrations



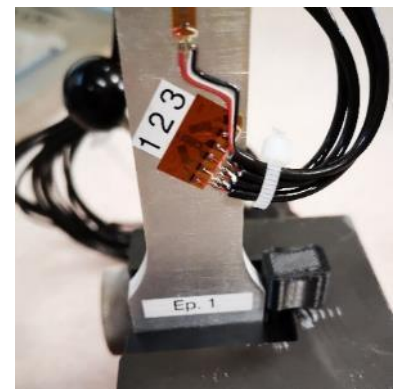
Instrumented Specimen with 45° Strain-Gauge Rosette

Applications :

- Determination of the strain tensor
- Calculation of principal stresses
- Determination of principal directions
- Construction of Mohr's circles
- Study of strain-gauge orientation errors

Educational Applications :

- Analytical, numerical and experimental comparisons
- Analysis of strain-gauge bonding defects



Note :

Other instrumented specimen geometries can be developed upon request, together with the corresponding practical laboratory exercises.

BananaBox – Strain-Gauge Acquisition with SyntX



Technical Specifications :

- Four strain-gauge channels
- Connection via gold-plated brass terminals
- Dual USB power supply
- Acquisition, recording and processing using SyntX
- Quarter-, half- or full-bridge configuration
- Bridge completion resistors: 120 Ω or 350 Ω
- Excitation voltage: 2.5 V
- Analogue-to-digital converter: 24-bit
- Sampling frequency: 50 Hz
- Measurement range: ± 3.9 mV/V
- Resolution: 0.1 μ V/V, corresponding to 0.2 $\mu\epsilon$ in quarter-bridge configuration
- Portable, robust and easy-to-use enclosure

