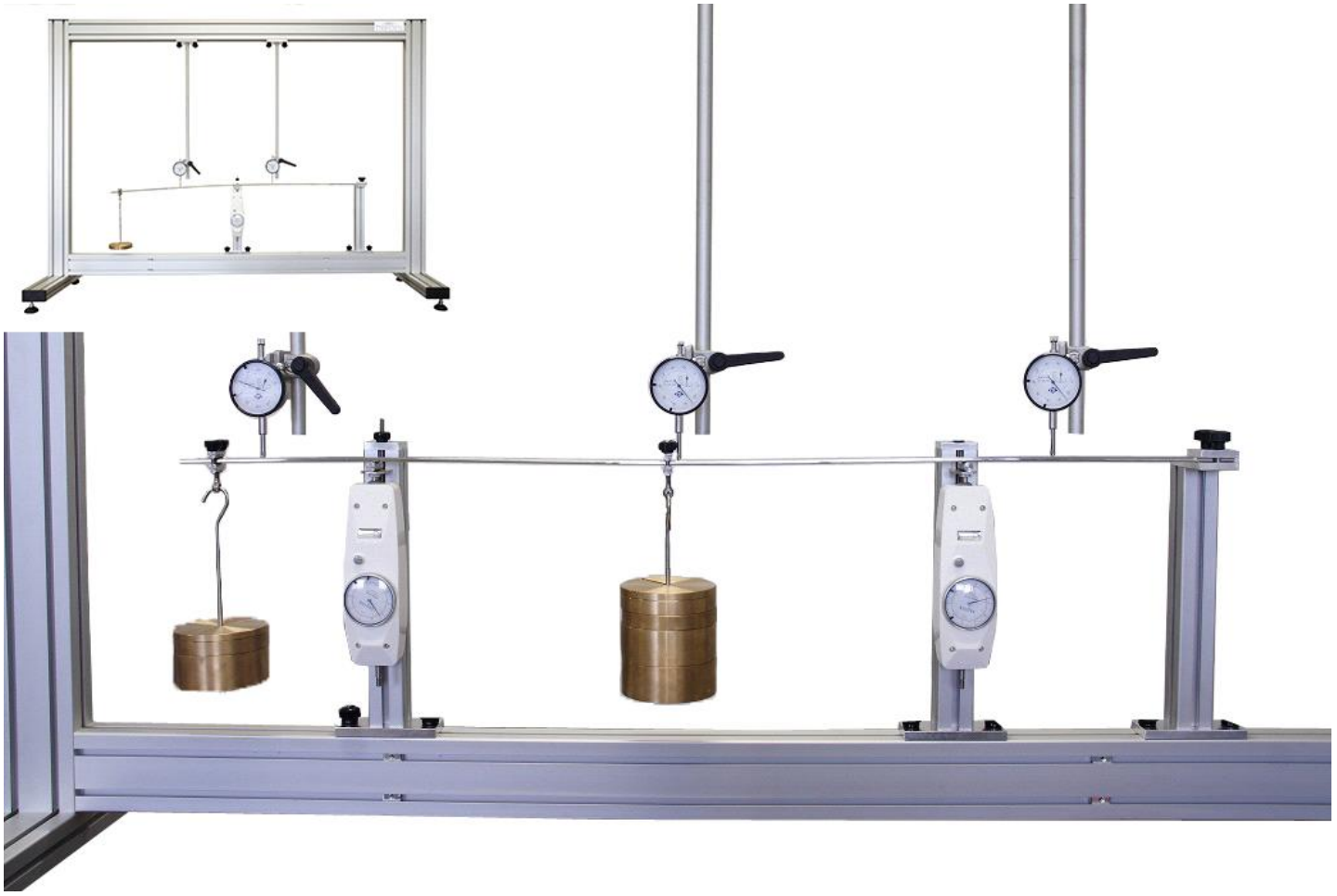
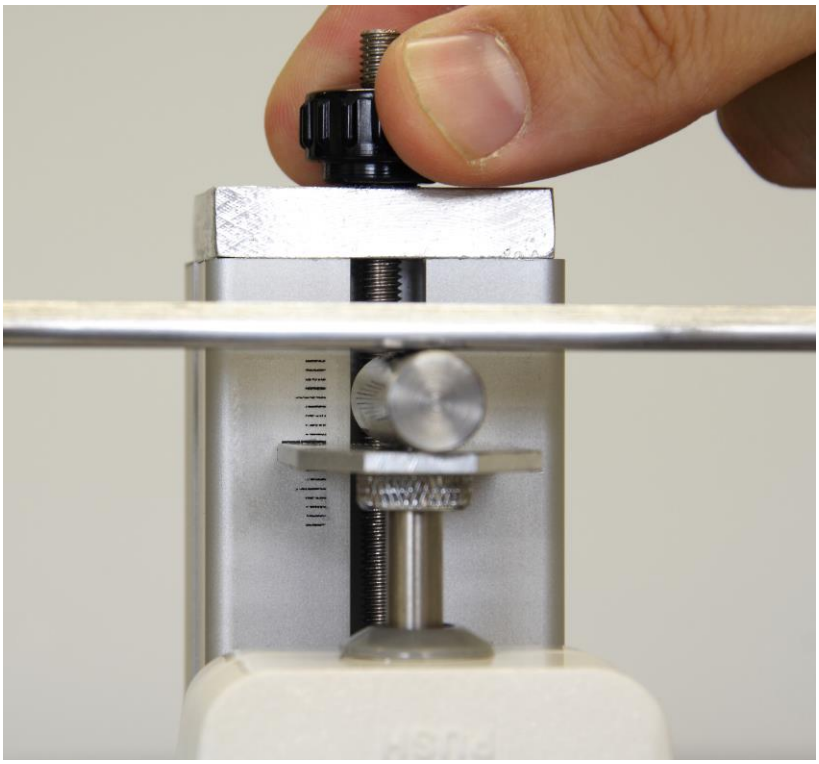
ST 03.1 - CONTINUOUS BEAMS



This equipment is designed for analyzing in-plane deformation of continuous beams subjected to various loads. It includes a characteristic system with fixed-end and sliding articulated supports, as well as a dynamometer for accurate force measurement.

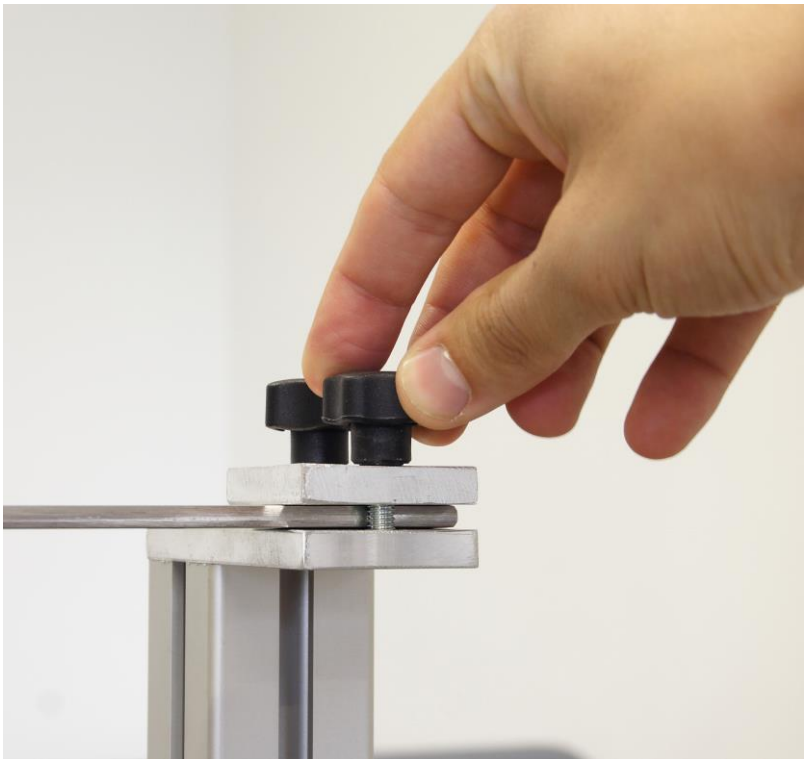
To measure deformation at various points along the beam, the use of an ST.Z.02 displacement measurement system is recommended, with at least three units advised. Additionally, an ST.Z.01 loading system is required for applying loads at different points on the structure.

The equipment is supplied with two beams of different cross-sections: 20x5 mm and 20x3 mm

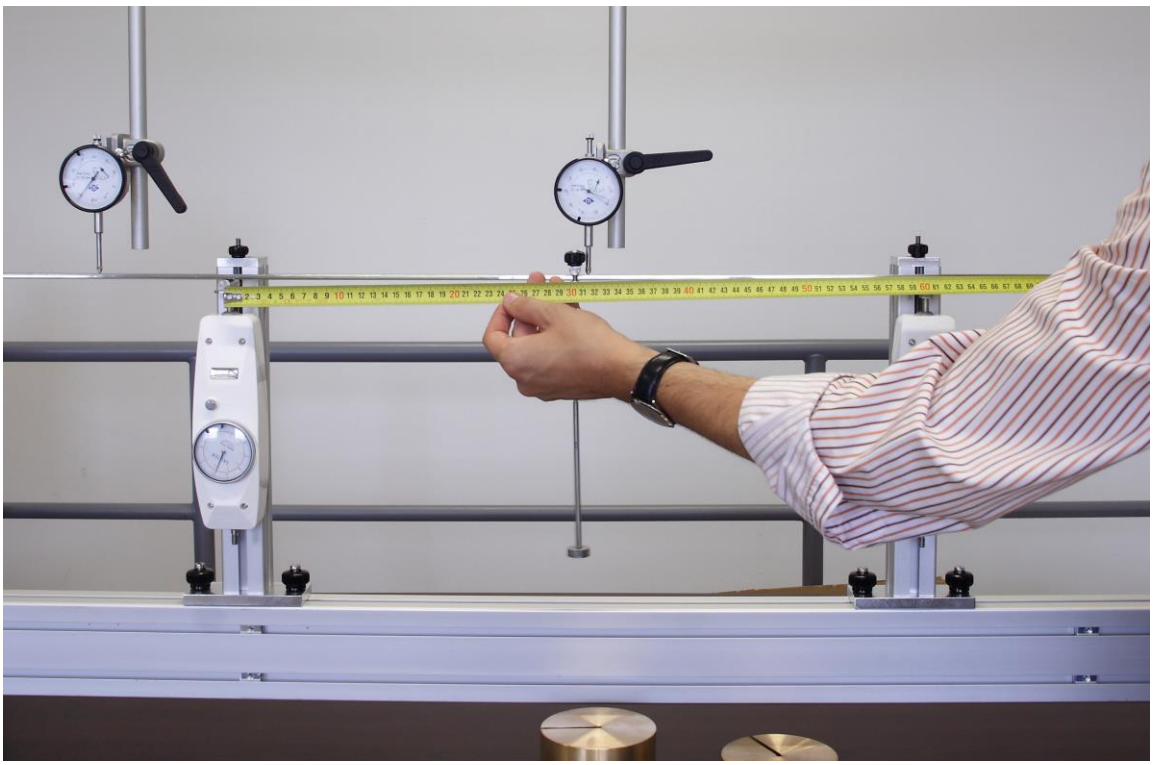


At the support point with the dynamometer, the zero can be easily calibrated to ensure that there are no deviations in the readings.

All components are easily secured to the structure using knurled nuts.



Detail of the fixed-end support system.



Simple distance measurement between points, requiring only a tape measure or a long ruler.

ST 03.1 - CONTINUOUS BEAMS

Required Accessory: ST.Z.01 - WEIGHT SYSTEM FOR ST SERIES
Weights system, with maximum load of 12 kg. Includes weights with different masses from 0,5 to 2,5 kg.

This item is used with the ST range, with the frame for flat structures.

The system has 2 flanges for 20 mm profile, 2 hooks and 8 weights. The hook doesn`t need to be unassembled to change the weight.

TECHNICAL DATA

- Material: Bronze
- Minimum precision of the weight: ± 2%
- Units and mass:
  - 3x 2.5 kg
  - 3x 1 kg
  - 2x 0.5 kg
- 2x Stainless steel hooks for weight placement.

ST 03.1 - CONTINUOUS BEAMS

Required Accessory: ST.Z.02 - DISPLACEMENT MEASUREMENT SYSTEM FOR ST SERIES
This is a displacement measurement system designed to be used with the ST series and to be mounted on a flat-structure frame. This accessory is composed by a pole (see top half of the image with 2 samples) that gets easily inserted into the frame of the ST 01.1 (not included), equipped with a gauge whose hand shows the range of displacement that has occurred from the starting point.

The gauge can be easily moved up and down all along the pole and it is adjusted with a hand-operated lever.

TECHNICAL DATA

- Displacement measurement system with a gauge.
- Reading scale range: 0 - 25 mm
- Scale intervals: 0,01mm

ST 03.1 - CONTINUOUS BEAMS

LEARNING OBJECTIVES

- Study of the deformation of a continuous beam.
- Study of supports:
  - Clamping
  - Articulated sliding support
- Comparison between calculated and measured displacements.
- Application of the superposition principle.

TECHNICAL DATA

Beams

- Material: Polished AISI 304 Stainless Steel
- Available Profiles:
  - 1x 20x5 mm
  - 1x 20x3 mm
- Yield Strength: 310 MPa (45 KSI)
- Tensile Strength: 620 MPa (90 KSI)
- Modulus of Elasticity: 200 GPa (29000 KSI)
- Density: 7.8 g/cm³ (0.28 lb/in³)

Load Placement Clamps

- Quantity: 2 clamps
- Material: Stainless Steel

Articulated Sliding Support with Dynamometer

- Quantity: 2 articulated sliding supports with integrated dynamometer
- Maximum Load: 100 N
- Additional Features: Zero-point recovery system under applied load

Fixed Support

- Quantity: 1 fixed support
- Fastening: Screws with knurled nuts, no additional tools required

REQUIREMENTS

- Required Frame: The ST 01.1 frame is essential for the proper operation of this equipment.
- Displacement Measurement System: At least one ST.Z.02 system is required, though it is recommended to use three.
- Weight System: The ST.Z.01 weight system is necessary for applying loads to the structure.
- Measuring Tool: A meter or ruler is required to measure distances between the studied points.