

## BUCKLING STUDY UNIT WITH DATA ACQUISITION



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### Experimental capabilities

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- **Buckling mode articulated / articulated**
- **Buckling mode Articulated / embedded**
- **Buckling mode Embedded / embedded**
- **Buckling mode embedded / free**
- **Influence of transverse loadings on the critical force**
- **Measurement of the deflection**
- **Data acquisition and plot of computerized curves**

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# SFB250



## Operating principle

The SFB250 bench allows the study of different cases of Euler buckling, highlighting the effect of articulated, embedded or free connections of the beams, the effects of lateral loads, measure of the deflections.

The bench has 3 chains of measurement :

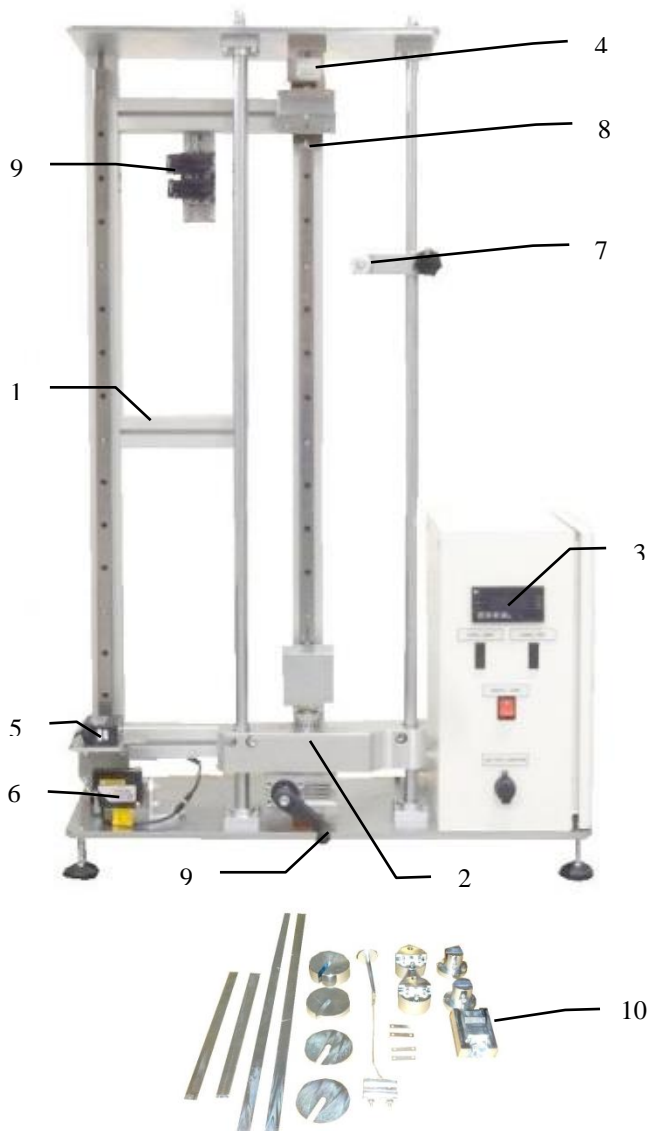
- 1 force sensor located in the upper part of the unit, connected to the display of the machine panel, designed to evaluate the critical force of buckling. This measure is transmitted to data acquisition device.
- 2 laser sensors measure the deflections of the beam ; Their display transmit both measurements to the data acquisition device. The fixed sensor located in the bottom of the machine (called sensor X), is intended to give information of the Y position of the sensor itself intended to give an image of the deflection (Y sensor). The data couples X and Y displayed on the 2 displays of position, allows to draw the deflection curve  $Y=f(X)$

The robust design of this equipment makes it perfectly suited for use in schools.

Its structure in anodized aluminum on anti slip wheels gives it great strength as well as great flexibility of integration into your premises. The manufacturing of this equipment meets European machine directive.

## Illustrations

## Technical details



1. **Frame** made of anodised aluminum , 4 rubber feet, / guiding rods made of steel.
2. **Loading device** : Position of this crosspiece vertically adjustable in order to be adapted to specimens length. Once the adjustment is achieved, locking in position is done with 2 screws. The load is applied by the crank that drives a 1/5 ratio reducer and a 16mm diameter screw .
3. **Electrical box** : integrates the on/off button, 24Vdc supply of various components of the machine, the force display, as well as the data acquisition device (forces and x-y positions).
4. **Force gauge** (500kg capacity)
5. **Y Laser measuring device**: fitted on a carriage – vertical bearing guidance – for distortion of the beam measurement.
6. **X laser measuring device** : fitted on the bottom part of the unit - measures the position of the carriage supporting the Y laser measuring device. The combination of the data delivered by both sensors makes it possible to draw the X / Y graph (image of the beam distortion)
7. **Pulley** : associated with cable and weights, create a transverse loading of the beam
8. **Adapters**: create the desired connections at the ends of the beam in order to create the different cases of Euler's buckling (see detail in the category "accessories" below).
9. **Displays** with x and y dimensions
10. **Accessories**
  - Weights (1\*100g, 1\*200g, 1\*500g, 1\*1000g
  - cable unit for transverse loadings (\*1)
  - 2 adapters for « articulated » connection
  - 2 adapters for « embedded » connection
  - 1 adapter for « free » connection
  - 1 steel specimen 3\*20\*600mm - 60°
  - 1 steel specimen 5\*20\*600mm - 60°
  - 1 steel specimen 5\*20\*300mm - 60°
  - 1 steel specimen 3\*20\*310mm - 60°

## Services required

## Documentation

- Power supply : 230Vac – 50 Hz
- Dimensions: (LxlxH mm): 700 x 300 x 1200
- Weight (Kg): 60

Nota : Dans le cadre d'une installation de l'équipement par nos services, tous les raccordements aux réseaux doivent se situer à moins de 2m de la machine

- User's manual
- Pedagogical manual
- Technical documentation
- Certificate of conformity CE

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version : FT-SFB250-STD-B

# SFB250



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