SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Column Buckling | FortiTestX - 17

Category: Strength of Materials · **Country of Origin:** India

Product Overview

Column Buckling is a benchtop strength of materials lab equipment unit designed for the investigation of buckling behaviour in struts and bars under compressive loading across varied end conditions, bar lengths, and materials. Made by Scientico India, ISO 9001:2015 certified, and supplied with a calibration certificate and operation manual.

View this product online: https://scienticoindia.com/product/column-buckling-fortitestx-17/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Column Buckling FortiTestX 17, Technical Specifications

Field	Details
Product Name	Column Buckling FortiTestX 17
Model Reference	FortiTestX 17
Product Category	Strength of Materials Lab Equipment
Apparatus Type	Benchtop column buckling investigation unit
Force Range	0 to 2000 N
Force Graduations	0.1 N
Maximum Spindle Stroke	10 mm
Bar Length Range	350 mm to 700 mm (maximum)
Bar Materials	Aluminium, copper, brass, steel
Specimen Holder Bore	d = 20 mm
Lateral Deflection Range	0 to 20 mm
Dial Gauge Graduation	0.01 mm
Transverse Load Maximum	20 N
Support Types	Built-in support (cylinder in socket), pivot support (wedge on V-notch)

Field	Details
Operating Orientation	Vertical and horizontal
Load Gauge Rotation	90 degrees for orientation changeover
Weights Supplied	1 x 0.5 N hanger, 4 x 5 N
Optional Software	FX - 17 (LabVIEW-based DAQ, Windows compatible)
Manufacturer	SCIENTICO, Ambala Cantt, India
Certifications	ISO 9001:2015, CE Marked

Technical Data, Measuring Ranges

Parameter	Value
Force Range	0 to 2000 N
Force Graduations	0.1 N
Spindle Stroke	Maximum 10 mm
Lateral Deflection	0 to 20 mm
Dial Gauge Graduation	0.01 mm
Transverse Load	Maximum 20 N
Specimen Holder Bore	d = 20 mm

Technical Data, Test Bars

Parameter	Value
Bar Length Range	350 mm to 700 mm (maximum)
Bar Materials	Aluminium, copper, brass, steel

Technical Data, Weights

Weight	Quantity
0.5 N (hanger)	1
5 N	4

Key Features

Key Features

- Complete column buckling strength of materials lab equipment unit: two-column frame, spindle loading, load cell, dial gauge, test bars, weight set, and storage system all supplied
- Force range 0 to 2000 N with 0.1 N graduations; maximum spindle stroke 10 mm for precise compressive load application
- Adjustable cross-arm height accommodates bar lengths from 350 mm to 700 mm across aluminium, copper, brass, and steel materials
- Two support conditions: built-in support (cylinder in socket) and pivot support (wedge on V-notch) for all relevant column buckling end condition combinations
- Axial bearing between spindle and bar support: protects the test bar from torsional loading during compressive force application
- Dial gauge lateral deflection measurement: 0 to 20 mm range, 0.01 mm graduation for precise bar deflection tracking
- Transverse load application mechanism: generates additional shear forces up to 20 N on the test bar using supplied weight hanger and weights
- Dual operating orientation: vertical and horizontal, with load gauge rotatable 90 degrees to suit the selected setup
- Supplementary set available to extend column buckling experiments to varied cross-sectional shapes, eccentric loading, and additional transverse loading

- All components stored in a dedicated storage system for organised and safe keeping between sessions
- Optional DAQ software (SM-1412SW): LabVIEW-based data logging and results processing on Windows
- ISO 9001:2015 certified manufacture; CE marked product

Experiments

Standard Experiments

- Investigation of buckling behaviour under the influence of various methods of support
- Investigation of buckling behaviour under the influence of various bar lengths
- Investigation of buckling behaviour under the influence of various materials
- Verification of the Euler Theory: buckling on elastic bars
- Determination of the modulus of elasticity for an unknown material (GRP)
- Measurement of force and deflection, calculation of the expected buckling force by the Euler formula
- Graphical evaluation of deflection and force

With Supplementary Set

- Investigation of buckling behaviour under the influence of various cross-sectional shapes
- Investigation of buckling behaviour under the influence of eccentric application of force
- Investigation of buckling behaviour under the influence of additional transverse loading

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Construction and Design

Column Buckling FortiTestX 17 is constructed as a rigid, benchtop column buckling strength of materials lab equipment unit built around two vertical columns that support the height-adjustable load-carrying cross-arm and all force application and measurement components. Compressive force is applied through a hand-operated spindle acting via a sliding guide in a ball bushing, with an axial bearing interposed between the spindle and the bar support to eliminate torsional loading on the test bar. The bar is held in a specimen holder with a 20 mm bore diameter and supported at one or both ends using either the built-in cylinder-in-socket support or the pivot wedge-on-V-notch support, covering the full range of standard column buckling end conditions. The hydraulic load cell measures applied compressive force up to 2000 N at 0.1 N resolution and displays the reading on a pressure gauge, while a dial gauge with 0.01 mm graduation captures lateral bar deflection across a 0 to 20 mm range. A transverse load application mechanism with the supplied weight hanger and 5 N weights generates controlled shear forces on the test bar for eccentric and transverse loading experiments. The unit operates in both vertical and horizontal orientations, with the load gauge rotatable 90 degrees to maintain correct display alignment in each configuration. The storage system houses and organises all components of the column buckling apparatus for safe keeping and rapid setup. All construction and materials conform to ISO 9001:2015 quality standards and meet CE marking requirements.

Software, FX 17 (Optional)

Customised software designed in the National Instruments LabVIEW environment for data logging and results processing. Compatible with any Windows-based operating system. The software is optional and selected independently of the base unit.

Scope of Delivery

- 1 x Experimental unit (Column Buckling FortiTestX 17)
- 1 x Set of test bars (aluminium, copper, brass, steel)
- 1 x Set of weights (1 x 0.5 N hanger, 4 x 5 N)
- 1 x Dial gauge
- 1 x Thread
- 1 x Instructional manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1: Which bar materials and lengths are supported by the Column Buckling FortiTestX 17?
The FortiTestX 17 column buckling apparatus supports test bars in aluminium, copper, brass, and steel across lengths from 350 mm to 700 mm maximum. The height-adjustable cross-arm accommodates the full range of supplied bar lengths.

Q2: What end support conditions are available for the column buckling experiments?
Two support types are provided: a built-in support using a cylinder in a socket, and a pivot support using a wedge on a V-notch. These can be combined at each end of the bar to replicate all standard Euler column buckling end conditions.

Q3: How is the test bar protected from torsional loading during force application?
An axial bearing is positioned between the hand-operated spindle and the bar support. This bearing isolates the bar from any torsional component in the applied load, ensuring that the bar experiences pure compressive axial force during the column buckling test.

Q4: Can the FortiTestX 17 be used in both vertical and horizontal orientations?
Yes. The column buckling unit operates in both vertical and horizontal configurations. The load gauge is rotatable by 90 degrees to maintain correct alignment and accurate readings in whichever orientation is selected.

Q5: What additional experiments are possible with the supplementary set?
The supplementary set extends the column buckling experiment range to include the influence of various cross-sectional shapes, eccentric application of compressive force, and additional transverse loading on buckling behaviour, significantly broadening the experimental scope beyond the standard bar length, material, and support condition investigations.