



H3A

CALIBRATION OF A BOURDON PRESSURE GAUGE

Shows students how a Bourdon tube pressure gauge works, and how to calibrate it



- Shows 'dead weight' calibration of a Bourdon gauge
- Bourdon gauge has transparent dial so students can see how it works
- Suitable for group demonstrations and student experiments
- Simple to operate
- Compact, bench-mounting unit
- Self-contained – needs no extra services

CALIBRATION OF A BOURDON PRESSURE GAUGE

DESCRIPTION

Many engineering applications use the Bourdon gauge. TecEquipment's Calibration of a Pressure Gauge experiment allows students to study Bourdon Tube theory. They see the working mechanism, calibrate the gauge and compare theoretical results to experiment results.

The apparatus is a Bourdon gauge connected to a dead weight tester. The Bourdon gauge has a transparent dial that allows students to see the working mechanism. The mechanism is a thin walled tube with an oval cross-section, bent into an arc. One end of the tube is held rigidly. This end admits pressure. The other end of the tube, connected to a dial and pointer mechanism, is free to move. When the pressure in the tube increases, it tries to straighten and so moves the pointer by an amount proportional to the pressure increase.

To calibrate the gauge, students add weights to a platform on a dead weight tester. The weights put a known force on to a piston. The piston has a known area, so students can calculate the pressure. A flexible tube containing water transfers the pressure on the piston to the Bourdon tube. Students add the weights in increments, recording pressure readings from the gauge at each increment. They then remove the weights and record gauge readings. By working out theoretical results they can work out gauge error and discuss possible causes.

STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives

LEARNING OUTCOMES

Function, operation and calibration of a Bourdon tube pressure gauge.

ESSENTIAL SERVICES

BENCH SPACE NEEDED:

400 mm x 500 mm

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SPECIFICATION

NETT DIMENSIONS:

320 mm long x 160 mm front to back x 250 mm high

Main assembly with piston: 4 kg + 2 kg

Set of weights 5.2 kg

Total 11.2 kg

PACKED DIMENSIONS:

0.11 m³ and 12 kg

WEIGHTS:

Four 1 kg weights, two 0.5 kg weights, one 0.2 kg weight

BOURDON GAUGE SCALE:

Graduated in 0 to 200 kN.m⁻² in 10 kN.m⁻² intervals.

BOURDON TUBE ARC:

Approximately 270°

MAXIMUM DEAD WEIGHT TESTER LOAD:

5.2 kg

TYPICAL GAUGE ERROR:

1 kN.m⁻² over the entire range

NOTE: TecEquipment individually machines the cylinder and piston of each product to a high tolerance. Therefore they are not interchangeable between units.