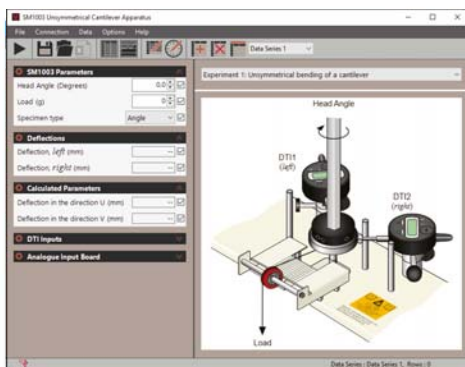




## UNSYMMETRICAL CANTILEVER APPARATUS

**VDAS®** SM1003

A benchtop test frame for examining and displaying bending of an unsymmetrical cantilever. Demonstrates the use of Mohr's circle.



SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE



### KEY FEATURES

- Ideal for student use and classroom demonstrations
- Benchtop apparatus
- Self-contained, needs no other parts
- Explains 'shear centre' and the use and construction of Mohr's circle
- Supplied with set of different specimens
- Connects to TecQuipment's Versatile Data Acquisition System (VDAS®)



# ≡ UNSYMMETRICAL CANTILEVER APPARATUS

**VDAS**® SM1003

## DESCRIPTION

The Unsymmetrical Cantilever Apparatus allows students to load a cantilever and accurately measure its deflection in any coplanar direction.

Students mount a test beam vertically in a frame. The top of the test beam fixes to a holding ring that can rotate through 360 degrees.

Students apply a horizontal load in set increments (weights included) to the bottom (free end) of the test beam. Digital indicators measure the test beam deflections in two directions, at right-angles to each other. Each indicator has a socket and additional cable for connection to TecQuipment's optional Versatile Data Acquisition System (VDAS®).

Students apply loads to the beam in set increments and record its displacement. Students can then rotate the beam to another position and repeat the experiment. This allows students to use the Mohr's circle method to find the principal second moments of area of each section.

To find the shear centre of a test beam, students attach a cross-piece to the free end. The cross-piece allows students to apply loads at different positions across and outside the section of the cantilever.

The equipment includes a user guide which describes how to assemble and use the equipment, with practical theory, experiment procedures and typical results.

For quick and reliable tests, TecQuipment's optional VDAS® gives accurate real-time data capture, monitoring and display, calculation and charting of all important readings on a computer (computer not included).

## STANDARD FEATURES

- Supplied with comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer

## RECOMMENDED ANCILLARIES

- Bench-mounted version of the Versatile Data Acquisition System (VDAS-B)

## ESSENTIAL SERVICES

### BENCH SPACE NEEDED:

1 m x 0.6 m

## LEARNING OUTCOMES

Investigations into bending of unsymmetrical cantilevers, including:

- Vertical and horizontal displacement measurement for varying angles of applied load
- Demonstration that maximum and minimum vertical deflection occurs when horizontal deflection is zero
- Use of Mohr's circle
- Experimental and theoretical determination of the principal moments of area of test sections
- Location of shear centre of each section

## 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

## SOUND LEVELS

Less than 70 dB(A)

## SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

### NETT DIMENSIONS:

620 mm high x 420 mm wide x 225 mm front to back

### NETT WEIGHT:

7 kg

### APPROXIMATE PACKED WEIGHT AND VOLUME:

8 kg and 0.176 m<sup>3</sup>

### DIGITAL INDICATORS:

Two, each with a digital display and sockets for connection to VDAS®

### TEST BEAMS:

- U-shape cross-section
- L-shape cross-section
- Solid rectangular cross-section

### TEST WEIGHTS:

- 5 weight hangers
- 150 weights, each of 10 g