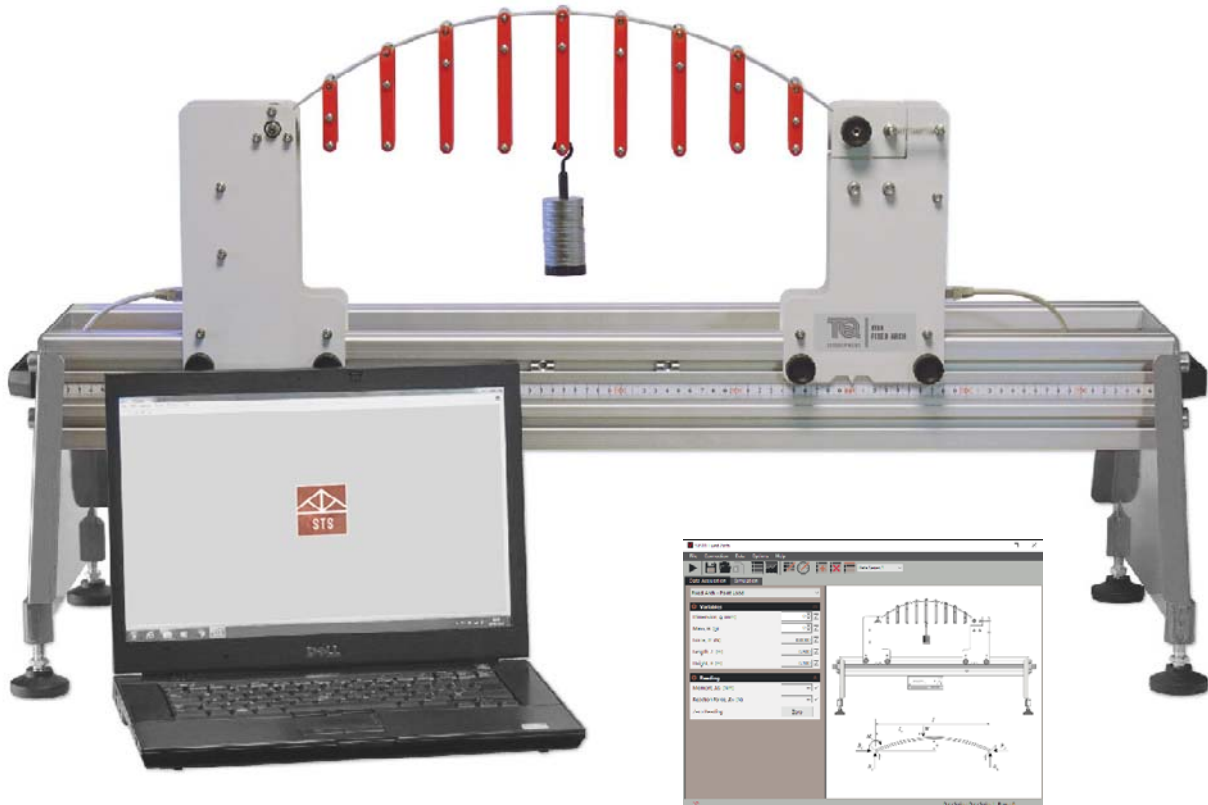




FIXED ARCH



Experiment for the study of the characteristics of a fixed arch under various load conditions. Mounts on the Structures platform and connects to the Structures automatic data acquisition unit and software (VDAS® Onboard).



SHOWN FITTED TO THE STRUCTURES PLATFORM (STS1, AVAILABLE SEPARATELY)

SCREENSHOT OF THE VDAS® SOFTWARE

LAPTOP NOT INCLUDED

KEY FEATURES

- One of a range of experiment modules that teach structures principles
- Fits to the Structures platform for ergonomic use and space-saving storage
- A simplified version of a realistic structure to give students an understanding of real-life structures
- Includes multiple loads for many combinations of loads including uniformly distributed loads (UDLs)
- Supplied with a storage tray to keep smaller items safe
- Direct reading of horizontal reaction and fixing moment for quick and simple experiments
- Complementary experiments available: Three-Pinned Arch (STS9) and Two-Pinned Arch (STS10)
- Works with user-friendly software (VDAS®)



FIXED ARCH



DESCRIPTION

One of a range of experiment modules that fit to the Structures platform (STS1, available separately), this product helps students to understand how loads affect the horizontal reaction forces in a fixed arch.

Students apply loads to hangers suspended from the arch, held between two 'fixed' supports. A load cell on one support works with a special mechanism to measure the horizontal reaction due to the load. A second load cell on the other support works with a moment arm to measure the fixing moment. Both load cells measure the forces and moments with minimal movement, approximating to fixed (Encastre) supports.

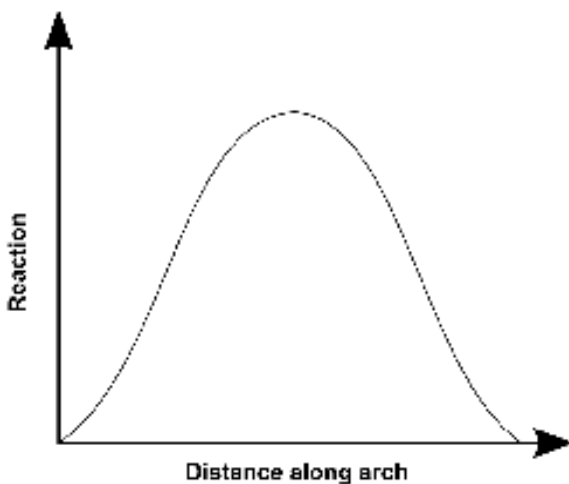
Each support includes pointers that work with the scale on the platform for accurate positioning. Students use textbook equations to predict the reaction forces and fixing moments due to the load, comparing them with measured results. They also learn how to create the influence line and bending moment diagrams. This helps confirm the reliability of the textbook equations and the accuracy of the experiment results.

This product includes additional masses so students may apply a uniformly distributed load (UDL) across the span of the arch for comparison of results with a single point load.

The load cell connects to the USB interface hub of the Structures platform for computer display and data acquisition (VDAS® Onboard).

STANDARD FEATURES

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



TYPICAL EXPERIMENT RESULTS SHOWING HOW A MOVING LOAD AFFECTS THE HORIZONTAL REACTION

LEARNING OUTCOMES

- Horizontal reaction and fixing moment due to a varying single point load on a statically indeterminate structure
- Horizontal reaction and fixing moment due to a moving single point load on a statically indeterminate structure
- Horizontal reactions and fixing moment due to a uniformly distributed load on a statically indeterminate structure
- Influence lines and superposition
- Lines of thrust in an arch
- The Secant assumption
- Graphical construction of a bending moment diagram for point loads
- Maximum bending moments due to a load on an arch

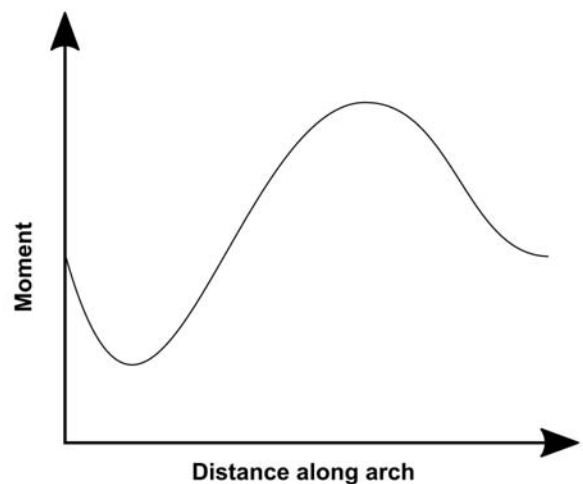
ESSENTIAL ANCILLARY

- Structures Platform (STS1)

SOFTWARE

TecEquipment has created data acquisition applications (VDAS® Onboard) for each experiment module, with additional simulated experiments.

The simulated experiments allow students to simulate the hands-on laboratory experiments, verifying their results. They also allow simulation of alternative set-ups, such as arches of larger span, extending the learning experience beyond the practical laboratory session.



TYPICAL EXPERIMENT RESULTS SHOWING HOW A MOVING LOAD AFFECTS THE FIXING MOMENT

FIXED ARCH



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

DETAILED SPECIFICATIONS

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

DIMENSIONS AND WEIGHT:

- Nett (assembled): 660 mm long x 100 mm front to back and 320 mm high and 6 kg
- Approximate primary packed (with storage tray): 0.07 m³ and 8 kg

SPACE NEEDED:

- 1500 mm x 600 mm, level bench or desk

ITEMS INCLUDED:

- Two arch supports, holding an arch of 0.5 m span x 0.1 m height
- Two cables
- Nine mass hangers
- 50 x 20 g masses
- Storage tray
- Comprehensive user guide