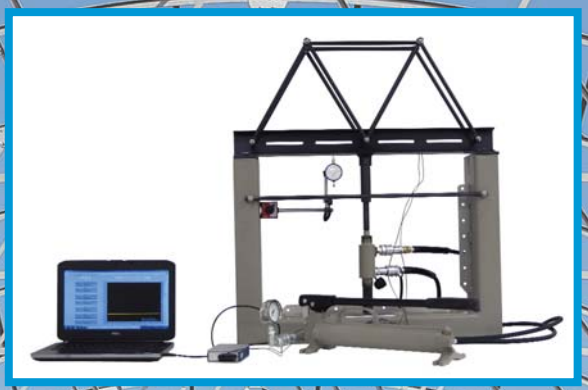
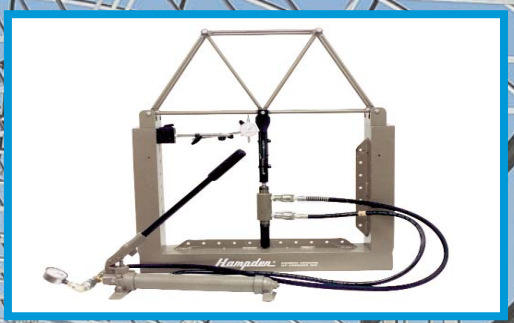
MECHANICAL ENGINEERING

STRUCTURES TEST SYSTEM





Hampden® ENGINEERING CORPORATION

MADE IN U.S.A.

Conduct thousands of Investigations into Effects of Statically or Dynamically Loading Mechanical Structures

H-6320
Structures Test System

Hampden's **Model H-6320** Structures Test System is a bench-top sized "learning laboratory" system designed to test and indicate the effects of static and dynamic mechanical loading on models of various engineering components and structures such as beams ("I"-beams, "T"-beams, rectangular and round beams, etc.), simple and complex bridge trusses, cantilever beams and trusses, crane trusses and the like.

The system is designed to introduce beginning engineering or physics student to the effects of statically or dynamically loading mechanical structures. Models for testing may be student or instructor devised. The **Model H-6320** Structures Test System is designed to induce maximum individual student involvement in the learning process. The low costs of the tests provide more students with direct access to the experimental equipment and encourages individual study by each student.

The **Model H-6320** Structures Test System consists of the following:

Test Fixture Assembly - Sufficient strength to support structural models under 3700 pounds stress

Hydraulic Hand Pump - capable of generating hydraulic pressures of up to 10,000 psi.

Fittings - including clevises, male and female; and pins for assembling test models and attaching them to test fixture

Hydraulic Pressure Gauges - capable of measuring hydraulic pressures of up to 2000 psi full-scale and 10,000 psi full-scale respectively

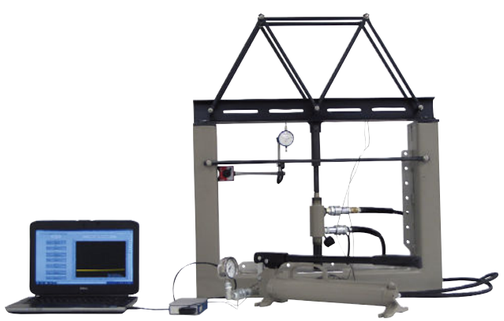
Double-acting Hydraulic Ram w/1-in Stroke - capable of applying up to 7850+ lbs compression loading, 3440+ lbs tension loading, at maximum hydraulic pressure of 10,000 psi.

Precision micrometer and rigid micrometer mounting bar and adapter for measurement of structural deflections of models under varying load conditions.

Experimental Capabilities

Following are just a sampling of the many experiments that may be conducted with the **Model H-6320** Structures Test System:

- Tension loading to 2200+ lbs
- Compression loading to 3700+ lbs
- Combined tension and compression beam
- Vector-loading, symmetrical and non-symmetrical
- Force analysis from observed deformations
- Static and/or dynamic loading
- Bridge-Truss design load limits
- Cantilever and crane truss and beam design load limits
- Metal fatigue
- Beam-loading comparisons (i.e. "I"- vs. "T"-beam, solid vs. hollow, etc.)
- Metal and plastic stress-loading comparisons using beams of similar cross-sections
- Structural design and analysis
- Failure-point determinations for various truss designs
- Failure-point determinations for various materials of similar configuration
- Moment determination and analysis
- Reinforced concrete beam load determinations



Hampden Engineering Corporation
STRUCTURES TEST SYSTEM

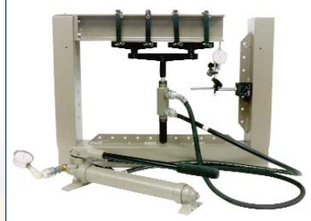
Optional Experiment Packages

The Hampden **Model H-6320** Structures Test System requires a test structure in addition to the basic test fixture, ram, pump, and measurement devices. Hampden has designed the following stock test structures to work with the **Model H-6320**. Custom test structures can also be provided. Contact Hampden Engineering Corporation for more information.

MODEL H-6320-10 Plastic Truss

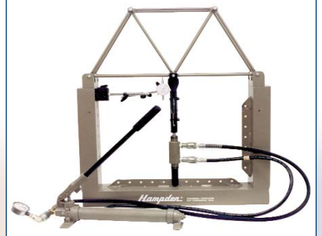
Determination of deflections with center and off center, normal and vector loading; photoelastic observation of stress patterns and values with a polariscope.

MODEL H-6320-20 Wing-Beam with Whiffle Tree



Determination of deflections and stresses of point or distributed loads in cantilevered beam.

MODEL H-6320-30 Determinate Bridge Truss



Determination of deflections at all critical points in model, failure predictions based on materials properties. Includes clevis and attachments arranged for center loading of bottom middle spacer.

MODEL H-6320-40 Indeterminate Bridge Truss

Determination of effects of loading statically indeterminate structure designs. Includes clevis and attachments arranged for center loading of bottom middle spacer.

MODEL H-6320-50 Horizontal Truss

Determination of structural characteristics, derivation of theory, observation of stress patterns, evaluation of stresses. For use with 4 photoelastic diagonals - arranged with 2 short and 2 long photoelastic diagonals to demonstrate redundancy and stress patterns with polariscope.

MODEL H-6320-60 Crane Beam

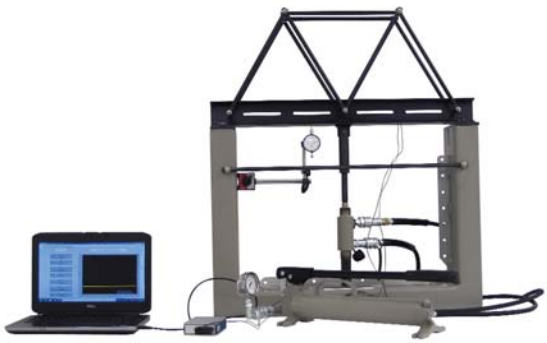
Determination of vector effects, stress distribution, deflections, composite force effects. Includes clevis and attachments arranged with anchored end, and with capability for applying load near center of truss.

Standard Products…Designed to Meet Your Growing Needs!

Hampden Engineering Corporation

STRUCTURES TEST SYSTEM

Computer Data Logging

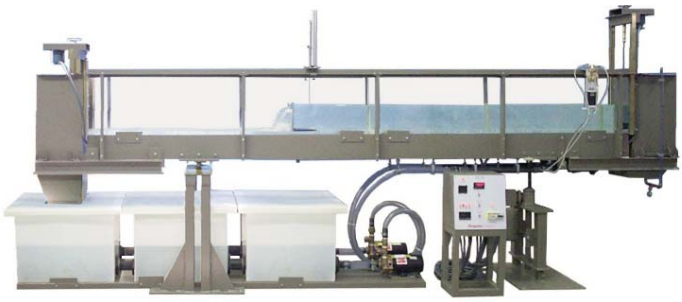


The **H-6320-CDL** option is a self-contained signal-conditioning package that allows measurement of strain gauges and linear displacement measurements and interfaces with a P.C. for analysis. The Computer Data Logging package is designed for use with the **H-6320** Structure Test System and is comprised of a signal conditioning board that allows precision Wheatstone bridge circuits to be assembled and measured. The **H-6320-CDL** includes the following equipment: ten strain gauges, two precision linear potentiometers with cable, Data Translations data acquisition board and signal conditioning unit for IBM compatible computer (computer not included). Capabilities include recording and simultaneous display of eight channels.

Related Products from Hampden Engineering

Model H-6310
Hydraulic Tension Testing Machine

Model H-6311
Torsion Test Demonstrator



Model H-6531
Hydraulic Demonstration Channel

Hampden is committed to providing industry-leading technology.
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