YERZLEY

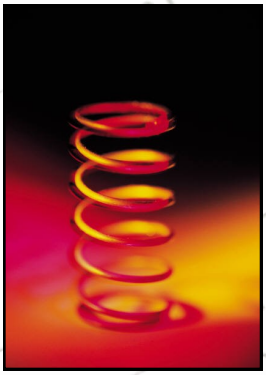
AYO-IV Testing Machine for Rubber Properties in Compression and Shear

ADVANCED YERZLEY OSCILLOGRAPH (AYO-IV)

OVERVIEW

Advanced Yerzley Oscillograph (AYO-IV) predicts the mechanical propserties of rubber, plastics and other polymers in small range of deformations. ASTM D 945-16 test method calls for the use of AYO-IV to characterize the mechanical properties such as initial creep, initial set, impact energy, frequency, effective dynamic modulus, point modulus, static (tangent) modulus, Yerzley Resilience and Yerzley hysteresis. These properties are evaluated at deformations of 20% or less for those materials, which may have the maximum static moduli of 280 psi (2 MPa) under compression or 140 psi (1 MPa) under shear stresses.

The principle of operation of AYO-IV is that of simple harmonic motion: properties of the material under test are derived from the analysis of the vibrational frequency and the damping rate of the free oscillations, which follow the initial known potential energy applied to the test sample.



TEST

- O-Rings
- Elastic Materials
- Rubber Seals
- Vibration Absorbers
- Shear-Dampening Elements
- Engine Mounts
- Viscoelastic Materials
- Metal Springs
- Creep-Prone Putties
- Polymeric Tubes and Hoses

APPLICATIONS

AYO-IV is readily adaptable to extensive mechanical testing of rubber, plastics, coil and other springs, shock absorbers, and damping devices in relation to quality assurance and R&D investigations. It may also determine creep and set of materials under dead load and measure consistency or flow of viscous and putty-like materials.

FEATURES

Analytical

- "Tantung G" knife edges
- Polished "V-block bearings"
- Micrometer screw sample retention
- Tests material at its natural frequency
- Weight support cross-rods at 5" and 10" centers from main knife edge
- Aluminum construction with rigidized frame and balance beam
- Durable parallelogram stabilizer system; exact parallelism between test platens maintained
- Supplied with (14) full weights, (2) half, and (2) quarter weights
- Precisely dimensioned for accurate standard moments of inertia
- Lever Arm (Beam center to sample): 1.600"; 4:000" or 6.400"
- Digital signal pick-up during oscillation
- Deformation Range: 0.300" at 1.600"; 0.750" at 4.000" and 1.200" at 6.400"
- Lever ratio: 10:1 (16" to 1.6")
- Load Ranges:
  - 0-30.925 lbs (14 weights on 10" rods; 6.400" lever arm)
  - 0-49.480 lbs (14 weights on 10" rods; 4.000" lever arm)
  - 0-123.70 lbs (14 weights on 10" rods; 1.600" lever arm)
- Load Capacity: More than 198 lbs. (450 psi w; 0.75" diameter sample)
- Sample Capacity: 0.5 to 2.0" in height, max. clearance between vertical rods 6.5"

Physical

- Dimensions: 34" (86.5 cm) x 9" (22.9 cm) x 21" (53.4 cm) (W x D x H)
- Weight: AYO-IV (50 lbs); weights (22 lbs); nominal shipping weight: 100 lbs.
- Bench-top operation
- Operating Temperatures: 32-104°F
- Electrical: 90-230 VAC; 50/60 Hz. single phase

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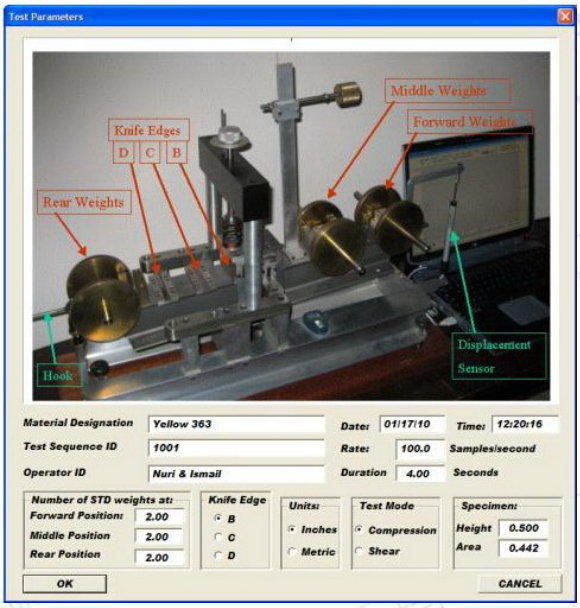
OVERVIEW

Test set-up and management is performed through the Yerzley Oscillograph management software.

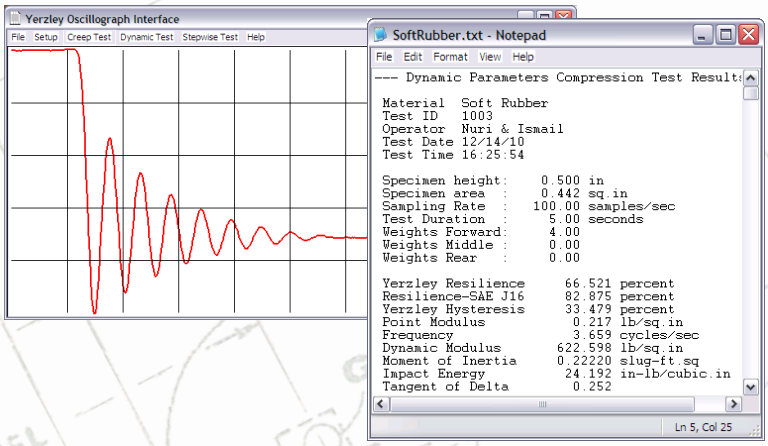


Test Setup Dialog Box

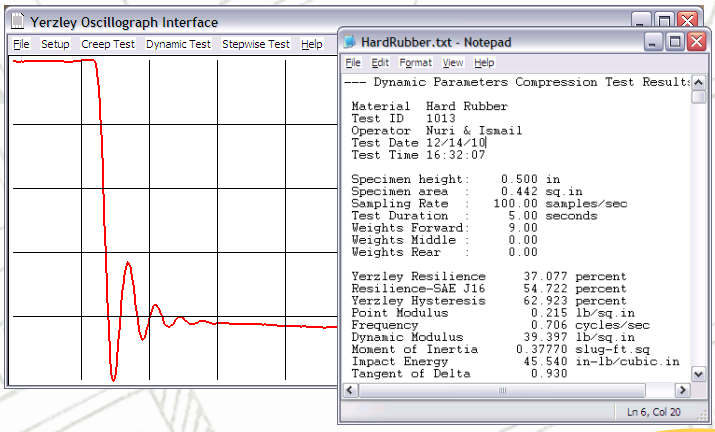
TEST INPUT/OUTPUT

You can specify the test material, positions of the weights, rates and duration, and specimen height and diameter.

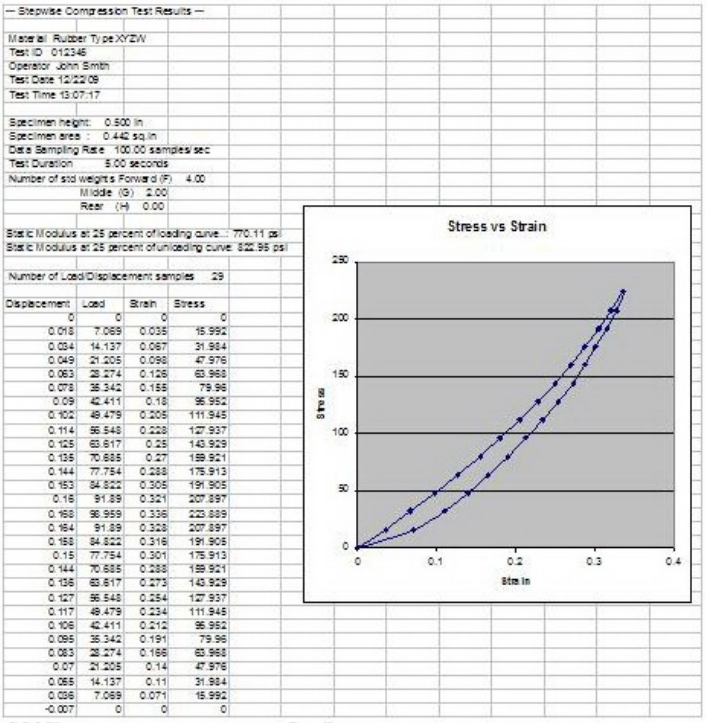
The system will output the displacement of the specimen, a graph of the test results (shown here), as well as the data listed in the "Test Results" list below.



Soft Rubber Test Result



Hard Rubber Test Result



Stepwise Results

TEST RESULTS

as per ASTM D-945-16

YERZLEY RESILIENCE

RESILIENCE-SAE J16

YERZLEY HYSTERESIS

POINT MODULUS

NATURAL FREQUENCY

DYNAMIC MODULUS

MOMENT OF INERTIA

IMPACT ENERGY

TAN DELTA