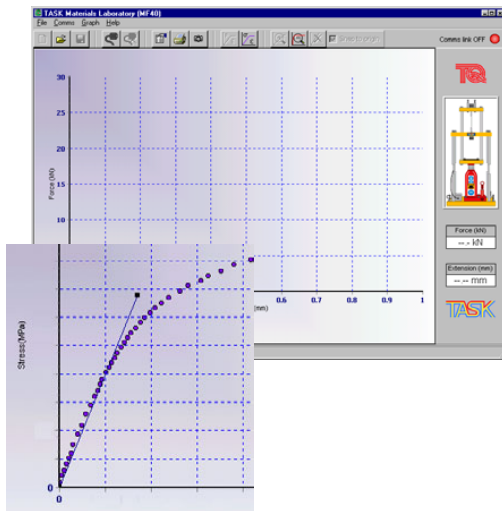


A hydraulic machine with electronic instruments and software. It tests the hardness and tensile properties of materials.



Screenshots of the software supplied with the MF40



- Ideal for classroom demonstrations and for use by small groups of students
- For Brinell Hardness tests and tensile tests of materials
- Includes an Extensometer for accurate tensile test results
- Electronic instruments with digital displays for easy use - includes a 'peak hold' function to store the maximum force (load) during a test
- Supplied with a set of tensile test specimens - additional test specimens available separately
- Supports all teaching levels up to and including first year university courses
- Includes software to automatically record results and produce charts (you need a suitable computer - not supplied)

- **TecQuipment** products are designed and manufactured by TQ Education and Training Ltd
- TQ Education and Training Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
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- TQ is an ISO 9001 certified company

Description

A hydraulic tensile and Brinell hardness testing machine. The machine tests any suitably shaped specimens of various materials. The material must not exceed the maximum strength or hardness limits (see 'specifications'). TQ also supply additional low-cost test specimens (available separately).

The main parts of the equipment are:

- A Load Frame.
- A Display Unit with a digital display of force (load).
- A ball indenter for Brinell Hardness Tests.
- An Extensometer with a digital display for tensile tests.

The Load Frame bolts to a bench (template included). To apply loads, students pump a handle connected to a hydraulic ram.

The Display Unit shows force and works as an interface to send data to a suitable computer. The Extensometer has a digital display of extension and connects to the Display Unit for data capture.

Included is TQ's MF40 software to allow students to use the equipment with a computer (computer not included). The software records the data and produces detailed graphs of force against elongation and stress against strain.

Typically students will work in small groups, with one student working the hydraulic ram, while others note readings or use the software.

To do a hardness test, students put a hardness specimen on a platen and lock a guard in position. They apply a suitable load with the ball indenter and measure the impression in the specimen. They then use an equation to calculate Brinell hardness.

To do a tensile test, students fit a specimen to the machine, attach the Extensometer to the specimen, and zero the Display Unit and Extensometer. They then lock a guard and apply loads, taking various readings, until the specimen breaks. Students use the results to find the ultimate tensile strength, the proof stress and Young's Modulus of the material.

The Materials Laboratory comes with a Teacher Guide that shows experiment methods, information, references and tips. A Student Guide shows students how to do the experiments.

Standard Features

- Supplied with comprehensive User Guides (Student Guide and Teacher Guide)
- Two-year warranty
- Manufactured in accordance with the latest European Union directives

Experiments

- Tensile testing to destruction and Brinell hardness testing various specimens
- Modulus of elasticity
- Yield stress
- Ultimate tensile stress
- Percentage elongation
- Brinell Hardness Test and hardness number derivation

Recommended Ancillaries

- Computer (not supplied by TQ - see 'specifications' for details)

Additional sets of Tensile Test Specimens:

- Mild steel specimens (ML1)
- High carbon steel specimens (ML2)
- Stainless steel specimens (ML3)
- Aluminium specimens (ML4)
- Brass specimens (ML5)

Essential Ancillaries

Hardness Testing Specimens (HTP):

Pack of five low carbon steel, five aluminium, five brass and five nylon hardness testing specimens

Essential Services

Electrical Supply

110 VAC to 240 VAC 50 Hz to 60 Hz at 1 A

Operating Conditions

Operating environment:

Laboratory environment

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

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Specifications

Packed Dimensions and Weight: 0.073 m³ and 35 kg

- Minimum bench thickness to mount the machine: 19 mm
- Maximum Machine Capacity: 40 kN (4 tonne)
- Extensometer: Gauge length 50 mm, maximum indicator travel 8 mm

Tensile Specimens (five supplied):

- Dimensions: total specimen length 210 mm, test length 77 mm and 6 mm outside diameter. Secured by threaded ends. Material: Mild Steel.
- Maximum allowable Ultimate Tensile Strength: 850 MPa

Hardness Specimens (not supplied):

- Nominal dimensions: 25 mm diameter, 15 mm thick
- Maximum allowable hardness: 450 BHN

Computer Specifications needed for the MF40 software:

- Intel® Pentium® or equivalent processor
- Microsoft® Windows® 95, 98, NT(SP6), 2000, ME or XP operating systems
- SVGA Monitor that works with 16-bit 800 x 600 colour resolution (1024 x 768 is best)
- CD-ROM Drive
- 9 Pin Serial Port
- 20 MB of Hard Disc Space
- Standard Two-Button Mouse

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