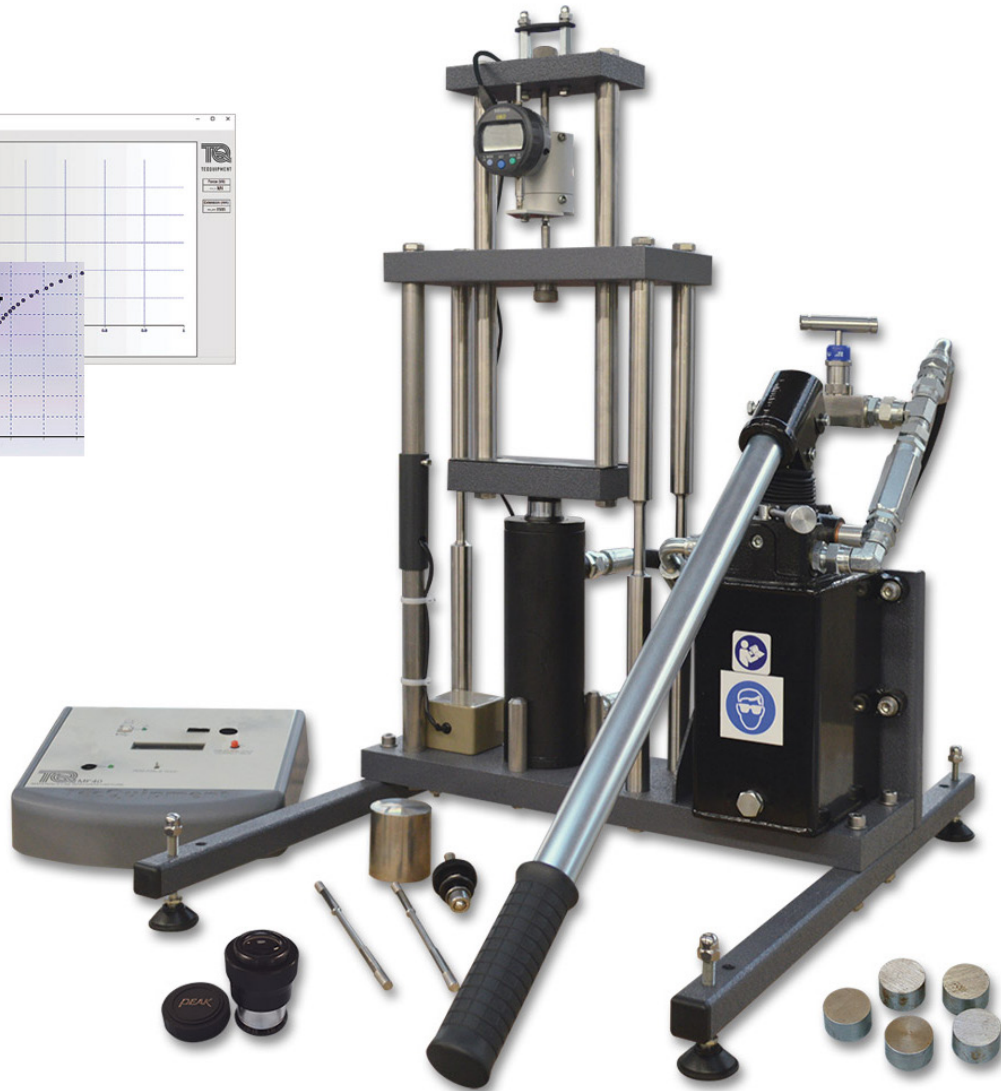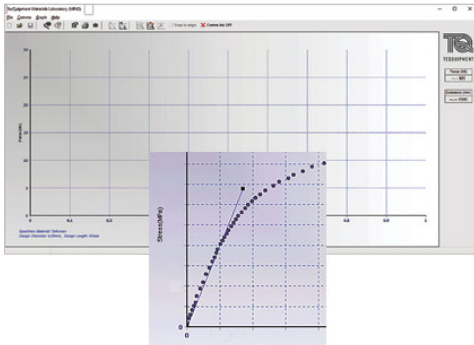FIVE YEAR
QUALITY
TECQUIPMENT
SINCE 1958
WARRANTY

MATERIALS LABORATORY WITH DATA CAPTURE

MF40 MKII

A versatile benchtop machine for compressive and tensile tests on different materials and structures.

KEY FEATURES

- 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 test specimens (additional test specimens available separately)

- Supports all teaching levels including university courses

- Includes software to automatically record results and produce charts (a suitable computer is required)

TECQUIPMENT

MATERIALS LABORATORY WITH DATA CAPTURE

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'). TecQuipment 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 is mounted on adjustable legs and can be fixed to a bench for stability. To apply loads, students pump a handle connected to a hydraulic pump.

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 TecQuipment's MF40 software to allow students to use the equipment with a 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 fit the indentor. They apply a suitable load with the ball indentor 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 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 user guide that includes experiment methods, information, references and tips.

STANDARD FEATURES

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

LEARNING OUTCOMES

- Tensile testing to destruction and Brinell hardness testing of 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 TecQuipment – see 'specifications' for details)
- Additional tensile test specimens of different materials:

  Mild steel (ML1MS)

  Carbon steel (ML2CS)

  Stainless steel (ML3SS)

  Aluminium (ML4AL)

  Brass (ML5BR)

  See separate specimens datasheets for full details.
- Hardness test specimens of different materials:

  Aluminium (HTPAL)

  Brass (HTPBR)

  Mild steel (HTPMS)

  Nylon (HTPNY)

  See separate specimens datasheets for full details.

DEFLEX®

DefleX® is a complimentary tool designed to introduce students to the concept and technique of Digital Image Correlation (DIC). This product is compatible with our DefleX®-2D product that uses one video camera and our DefleX®-3D product that uses two video cameras to track the movement of materials during a dynamic event. They are complete and compact systems for measuring full-field displacements and strains over a material's surface in two and three dimensions, offering students a digital blended learning experience as part of their engineering courses.

To find out more, click here

☰ MATERIALS LABORATORY WITH DATA CAPTURE

MF40 MKII

ESSENTIAL SERVICES

ELECTRICAL SUPPLY:

Single Phase, 90–250 VAC, 50/60 Hz, 1A

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

- A spare USB port

SPECIFICATIONS

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

NETT DIMENSIONS AND WEIGHT:

Load frame: 790 mm high, 455 mm wide, 770 mm front to back (ram dully down, handle down), and 44 kg with extensometer and Brinell spacer.

Display unit: 50 mm high, 230 mm wide and 210 mm front to back, and 1 kg with power supply.

Total net weight of all parts: 45 kg

BENCH SPACE REQUIRED:

550 mm by 800 mm with space nearby for a computer (not supplied) if data capture is to be used.

APPROXIMATE TOTAL PACKED DIMENSIONS AND WEIGHT:

0.22 m^3 and 50 kg

LOAD FRAME AND EXTENSOMETER:

- Maximum machine capacity: 40 kN (4 tonne)
- Maximum allowable tensile strength test: 850 MPa
- Maximum allowable hardness test: 450 BHN
- Extensometer: Gauge length 50 mm, maximum indicator travel 8 mm

TENSILE SPECIMENS (FIVE MILD STEEL SUPPLIED):

Total length 210 mm, test length 77 mm and 6 mm outside diameter. Secured by threaded ends.

Hardness specimens (five mild steel supplied): 25 mm diameter, 15 mm thick

COMPUTER SPECIFICATIONS NEEDED FOR THE MF40 SOFTWARE:

(The software is free to download from the Tecquipment Website).

- Microsoft® Windows® 10 or Windows® 7 operating systems