

ESATEST® MTR

APPLICATIONS



ESATEST MTR Hardness tester is most suitable to test the hardness of parts, that could not be measured previously using traditional instruments. There is also no need to cut and destroy the parts prior to measurement. The extensive range of optional extensions, allow measurement of internal surfaces up to 7.5 inch (200 mm). The operation of this unique instrument is the same as a normal hardness tester resulting accurate hardness values, and in addition **it allows measurement of the case depth (up to 1/10 mm).**

ESATEST's load ranges from 0,2 Kp up to 10 Kp.

THE MAIN APPLICATIONS OF THIS INSTRUMENT ARE AS FOLLOWS:

a) Internal surfaces (i.e. Engine Cylinders, Pipes):

ESATEST MTR allows non destructive control of the raw and treated internal surface of cylinders, providing a precise value of the even hardness of the piece examined.



Measuring of a Motor Cylinder Measuring the inside surface of a Rotor

b) Gear teeth

It is very important to know the hardness value of gear teeth in order to estimate how long a gear will last.

®Esatest MTR/C in this case allows to measure up to a **min module of 1,5.**

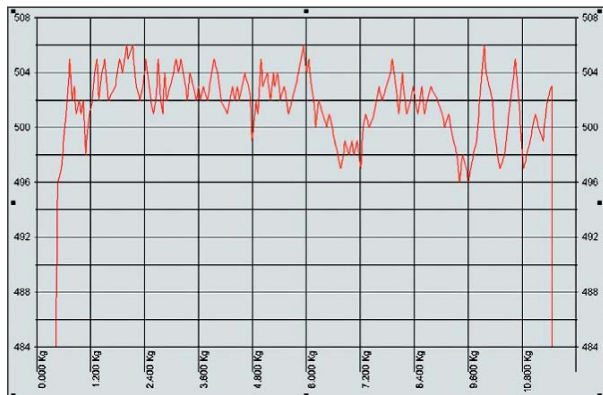


c) Uneven shaped pieces – Bearing – Pinions®

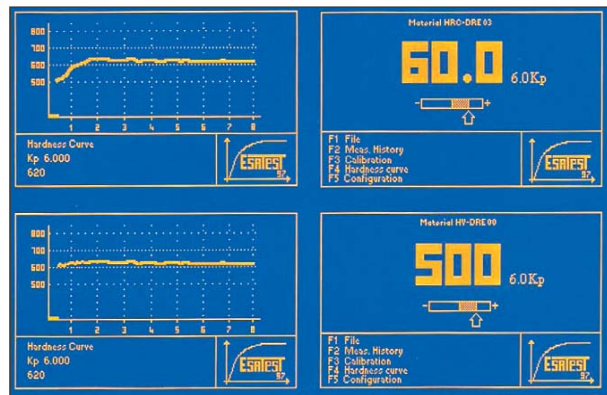
Esatest MTR allows analysis of parts of different shapes and dimensions.



It is also possible to interface Esatest MTR with a very powerful software, named WINDRE. This software allows drawing and further analysis of the Hardness CURVE on an external PC for each performed test. The curve represents the continuous obtained values during indentation (Case Depth Analysis). It is possible to predict the hardness at various loads (X axis) on the Y-axis



Example of hardness curve showed directly on MTR screen



Example of hardness curve displayed on PC with software WIN DRE

FREQUENTLY ASKED QUESTIONS

Q: Why MTR can measure internal surfaces and diamond indenter can be positioned at the end of an arm (extension)?

A: Because MTR is based on ESATEST®PatErnst principle (resistivity) and is not influenced by specimen bending during the load application.

Q: Why is it possible to create graphics which show the hardness values at different loads?

A: Because MTR is based on ESATEST®PatErnst principle (see relevant explanation) and during indentation the instrument continuously apprehends the load/hardness values.

Q: What are the dimensions of the diamond indenter assembly of MTR ESATEST®PatErnst?

A: 6 mm width x 3 mm thickness

Q: Why with MTR starting to test? ESATEST®PatErnst it is important to do a calibration with reference test block before

A: Because MTR ESATEST®PatErnst can work with any hardness. With this instrument, being a very precise COMPARATOR, it is possible to make a calibration (therefore create a reference curve) with any reference block of any hardness. The distinctiveness of this instrument is that it allows calibration on the same material to be measured. The ease of use and simplicity of calibration makes this instrument MTR ESATEST®PatErnst the

most versatile hardness tester available on the market.

MAIN APPLICATIONS:

- 1) Engines (Internal surfaces/Cylinders)
- 2) Gears (Gear Teeth and difficult surfaces)
- 3) Watches (Watch Case and components)
- 4) Automotive industry (Gear box–Pinions–Joints)
- 5) Heat Treatment (Galvanic and other applications with possibility to verify case depth up to 1/10 mm)
- 6) Aeronautic (Motors–various components)
- 7) Aerospace (Motors–various components)
- 8) Machine producers (For markets: Mechanic–Plastic–Textile)
- 9) Coatings (Cylinders–Hard Chrome–Anodizing)

