

Ultrasonic Hardness Tester

MET-UD & MET-U1A



Non-Destructive Hardness Testing!

The PHASE II ultrasonic hardness testers are capable of measuring the surface hardness of a broad variety of metals on flat, round, thin or large surfaces. Accurate measurements of steel, cast steel, alloy steel, gray cast iron, cast iron, cast aluminum alloy, brass, bronze and copper are easily attained with this compact instrument. The MET gauges meet **ASTM A1038-05** specifications.

MEASURING METHOD: MET-U1A and MET-UD

There are two basic methods of portable hardness testing that is accepted in the field today. “**Dynamic Impact**” is based on the Leeb principle of hardness, developed by Dietmar Leeb in the 1970’s. A spring loaded impact body is thrust to the test surface, effecting rebound. The speed of both the initial thrust and the rebound is measured in a non-contact mode. This is calculated as a Leeb hardness value and then automatically converted to Rockwell C, B, Brinell, Vickers and Shore Values. It has effectually brought easy, fast and accurate results to portable hardness testing.

“**Ultrasonic Contact Impedance**” is based on a 136-degree diamond at the end of a vibrating rod being depressed into the test surface at a fixed load. The difference in Ultrasonic vibration frequency is then calculated into a hardness value. The UCI test procedure is slower than the Dynamic Impact style, however the “UCI” method of hardness testing is portable, easy and accurate. It also has its own advantages when utilized for certain testing applications. UCI testers are not restricted to large mass items like dynamic type testers. These units can test metals as thin as 1mm and at a hardness value as low as 20HRC (75HB). They also excel at performing hardness tests on larger, harder metals as well. Another reason for the rise in popularity is due to the fact that the UCI method is categorized as “Non-Destructive”. That translates into less scrap parts/ lower mfg costs due to necessary inspections.

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Ultrasonic Hardness Tester MET-UD & MET-U1A



| <i>Scales</i> | <i>Measurement Range</i> | <i>Tolerance</i> |
|---------------|--------------------------|------------------|
| Rockwell C | 20-67 HRC | +/- 1.5 HRC |
| Rockwell B | 59-99 HRB | |
| Brinell | 75-650 HB | +/- 10 HB |
| Vickers | 75-1000 HV | +/- 12 HV |
| Leeb | 200-900HL | +/- 8HL |

MET-U1 Hardness Tester (MET-U1A and UD)

Standard Accessories:

- Base Instrument
- 10N (1kgf) Hand-Held Probe
- Calibrated Test Blocks
- Custom Carry Case
- Battery Charger
- Operation Manual

Functions:

- Easy To Read Menu Operation
- Large LCD Display w/ Back Light
- USB Interface
- Automatic Conversions to: Brinell, Rockwell, Vickers and Leeb
- Automatic Mean Value
- Data Archive Capacity

Specifications:

- **Tolerance** +/- 3.6% deviation of average from the reference value of the test block with a minimum of 5 tests
- **Minimum Thickness of sample:** .004" (100µm)
- **Materials:** steel & cast steel, alloy tool steel, stainless steel, grey cast iron, spheroidal iron, cast aluminum, brass, bronze, wrought copper alloy.
- **Battery type:** NiMH Re-Chargeable (size C)
- **Operating Temperature:** 5-104 degrees F
- **Dimensions:** 145 x 80 x 40mm (H x W x D)
- **Weight:** 2.2 lbs (UD)

Technical data for MET U1A/UD

| Test Device | U1A (UCI) | D1 (dynamic) |
|--|-----------|--------------|
| Length | 160mm | 140mm |
| Diameter | 25mm | 25mm |
| Indentation Depth | 30µm | 300µm |
| Pressure Force | 14.7N | 11Nm |
| Transducer Test Life (<i>approx</i>) | 200,000 | 50,000 |
| Min. Thickness for test | 1mm | 12mm |
| Min. Radius for Test | 5mm | 10mm |
| Max Roughness of surface | Ra 2.5µm | Ra 3.2µm |
| Max Archive | 100 Tests | 100 Tests |
| Time of Test | 4 sec. | 2 sec. |

