

# Hardmatic HH-V400

## SERIES 810 — Impact Type Hardness Testing Unit

### Standard Accessories

|            |                             |
|------------|-----------------------------|
| 11AAE901:  | Display unit                |
| 12BAS450:  | AC adapter                  |
| 12BAS451:  | USB 2.0 cable (Type A-C)    |
| 11BAB687:  | Handle                      |
| 11AAA857:  | Small support ring (ø14 mm) |
| 05CAA952:  | Phillips screwdriver        |
| 11PAA429:  | Storage box                 |
| 99MBG538B: | Quick start guide           |
| 99MBG537A: | Instruction manual          |

### Optional Accessories

|           |                                                              |
|-----------|--------------------------------------------------------------|
| 11AAE902: | Detector D                                                   |
| 11AAE903: | Detector DC                                                  |
| 11AAE904: | Detector D +15                                               |
| 11AAE905: | Detector DL                                                  |
| 11AAD240: | Hardness test block                                          |
| 19BAA248: | Support ring for convex cylindrical surfaces (R10 to 20 mm)  |
| 19BAA249: | Support ring for concave cylindrical surfaces (R14 to 20 mm) |
| 19BAA250: | Support ring for convex spherical surfaces (R10 to 27.5 mm)  |
| 19BAA251: | Support ring for concave spherical surfaces (R13.5 to 20 mm) |
| 19BAA457: | Carbide ball for Detectors D, DC, and D +15                  |
| 19BAA458: | Replacement ball shaft for Detector DL                       |

### Calibration Blocks

|           |                                      |
|-----------|--------------------------------------|
| 64HAA467: | 520 HLD range leeb hardness standard |
| 64HAA468: | 630 HLD range leeb hardness standard |
| 64HAA469: | 730 HLD range leeb hardness standard |
| 64HAA470: | 800 HLD range leeb hardness standard |



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HH-V400 is Mitutoyo's newly designed rebound-type portable tester for metals with a compact body & high operability.

- LCD Interface
- Ability to store 1800 measurements
- Maintain up to 100 control groups
- Perform statistical analysis on measured data
- Rechargeable - No Batteries Required



**810-306:** HH-V400 ASTM compliant rebound tester  
Includes Display unit - **11AAE901** & D Type Detector **11AAE902**

### SPECIFICATIONS

|                                                                                        |                                                                                                                                                                                                      |                                                                         |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Model                                                                                  | <b>HH-V400</b>                                                                                                                                                                                       |                                                                         |
| Order No.                                                                              | <b>810-306</b>                                                                                                                                                                                       |                                                                         |
| Testing hardness and range                                                             | Leeb hardness: 100.0 to 999.9 HLD                                                                                                                                                                    |                                                                         |
| Testing direction                                                                      | Omnidirectional (with automatic angle-correcting function)                                                                                                                                           |                                                                         |
| Hardness scale conversion function*<br>(Conversion range varies depending on material) | Vickers hardness:                                                                                                                                                                                    | 43 to 950 HV                                                            |
|                                                                                        | Brinell hardness:                                                                                                                                                                                    | 20 to 655 HB                                                            |
|                                                                                        | Rockwell hardness (C-scale):                                                                                                                                                                         | 19.3 to 68.2 HRC                                                        |
|                                                                                        | Rockwell hardness (B-scale):                                                                                                                                                                         | 13.5 to 101.7 HRB                                                       |
|                                                                                        | Shore hardness:                                                                                                                                                                                      | 30.1 to 99.5 HS (ASTM) 13.2 to 98.6 HS (JIS)                            |
| Sample conditions                                                                      | Tensile strength: 390 to 1999 MPa                                                                                                                                                                    |                                                                         |
|                                                                                        | Minimum thickness: 5 mm                                                                                                                                                                              |                                                                         |
|                                                                                        | Minimum mass: 5 kg                                                                                                                                                                                   |                                                                         |
|                                                                                        | Testing position: At least 5 mm from the edge of the sample and at least 3 mm between test points                                                                                                    |                                                                         |
| Functions                                                                              | Surface roughness: Ra 2.0 or less                                                                                                                                                                    |                                                                         |
|                                                                                        | Automatic angle correction, offset setting, acceptance judgment, hardness scale conversion, data memory storage (1800 points), statistical calculation function, eco mode, auto power-off, backlight |                                                                         |
| Detector                                                                               | Type                                                                                                                                                                                                 | Detector D (standard type), impact hammer, with carbide ball at the tip |
|                                                                                        | Dimensions                                                                                                                                                                                           | ø28 x 175 mm (excluding cable)                                          |
|                                                                                        | Mass                                                                                                                                                                                                 | Approx. 150 g                                                           |
| Display unit                                                                           | Screen                                                                                                                                                                                               | 2.83" (240 x 320 pixels), RGB color LCD                                 |
|                                                                                        | Dimensions                                                                                                                                                                                           | 174 x 68 x 32 mm                                                        |
|                                                                                        | Mass                                                                                                                                                                                                 | Approx. 250 g                                                           |
| Power supply                                                                           | C adapter, built-in battery (Ni-MH)<br>(Up to 8 hours of operation after 100 minutes of charging)                                                                                                    |                                                                         |

\* HH-V400 guarantees the indicated values based on Leeb hardness. Converted values are for reference only.

### Detector Conversion Ranges

#### Detector D, DC

| Material                      | HV/Vickers | HB/Brinell | HRC/Rockwell C | HRB/Rockwell B | HS (ASTM)/Shore | VHS (JIS)/Shore | MPa/Tensile strength |
|-------------------------------|------------|------------|----------------|----------------|-----------------|-----------------|----------------------|
| Iron and steel                | 80 to 940  | 80 to 647  | 20.0 to 68.0   | 38.4 to 99.5   | 30.1 to 99.5    | 13.2 to 98.0    | 390 to 1999          |
| Alloyed tool-steel            | 80 to 898  | —          | 20.4 to 67.1   | —              | —               | —               | —                    |
| Gray iron                     | —          | 93 to 334  | —              | —              | —               | —               | —                    |
| Spherical graphite cast iron  | —          | 131 to 387 | —              | —              | —               | —               | —                    |
| Stainless steel               | 85 to 802  | 85 to 655  | 19.6 to 62.4   | 46.5 to 101.7  | —               | —               | —                    |
| Brass                         | 43 to 196  | 40 to 173  | —              | 13.5 to 95.3   | —               | —               | 499 to 701           |
| Casting copper-based alloys   | —          | 45 to 315  | —              | —              | —               | —               | —                    |
| Casting aluminum-based alloys | —          | 20 to 159  | —              | —              | —               | —               | —                    |
| Copper-tin-based alloys       | —          | 60 to 290  | —              | —              | —               | —               | —                    |

#### Detector D +15

| Material                  | HV/Vickers | HB/Brinell | HRC/Rockwell C | HRB/Rockwell B | HS (ASTM)/Shore | VHS (JIS)/Shore | MPa/Tensile strength |
|---------------------------|------------|------------|----------------|----------------|-----------------|-----------------|----------------------|
| Iron and steel            | 80 to 937  | 80 to 638  | 19.3 to 67.9   | —              | 33.3 to 99.3    | 35.3 to 97.8    | 394 to 1991          |
| Tool steels for cold-work | 80 to 935  | —          | 19.8 to 68.2   | —              | —               | —               | —                    |

#### Detector DL

| Material       | HV/Vickers | HB/Brinell | HRC/Rockwell C | HRB/Rockwell B | HS (ASTM)/Shore | VHS (JIS)/Shore | MPa/Tensile strength |
|----------------|------------|------------|----------------|----------------|-----------------|-----------------|----------------------|
| Iron and steel | 80 to 950  | 81 to 638  | 20.6 to 68.2   | 37.0 to 99.9   | 30.6 to 96.8    | 32.3 to 98.6    | 390 to 1976          |