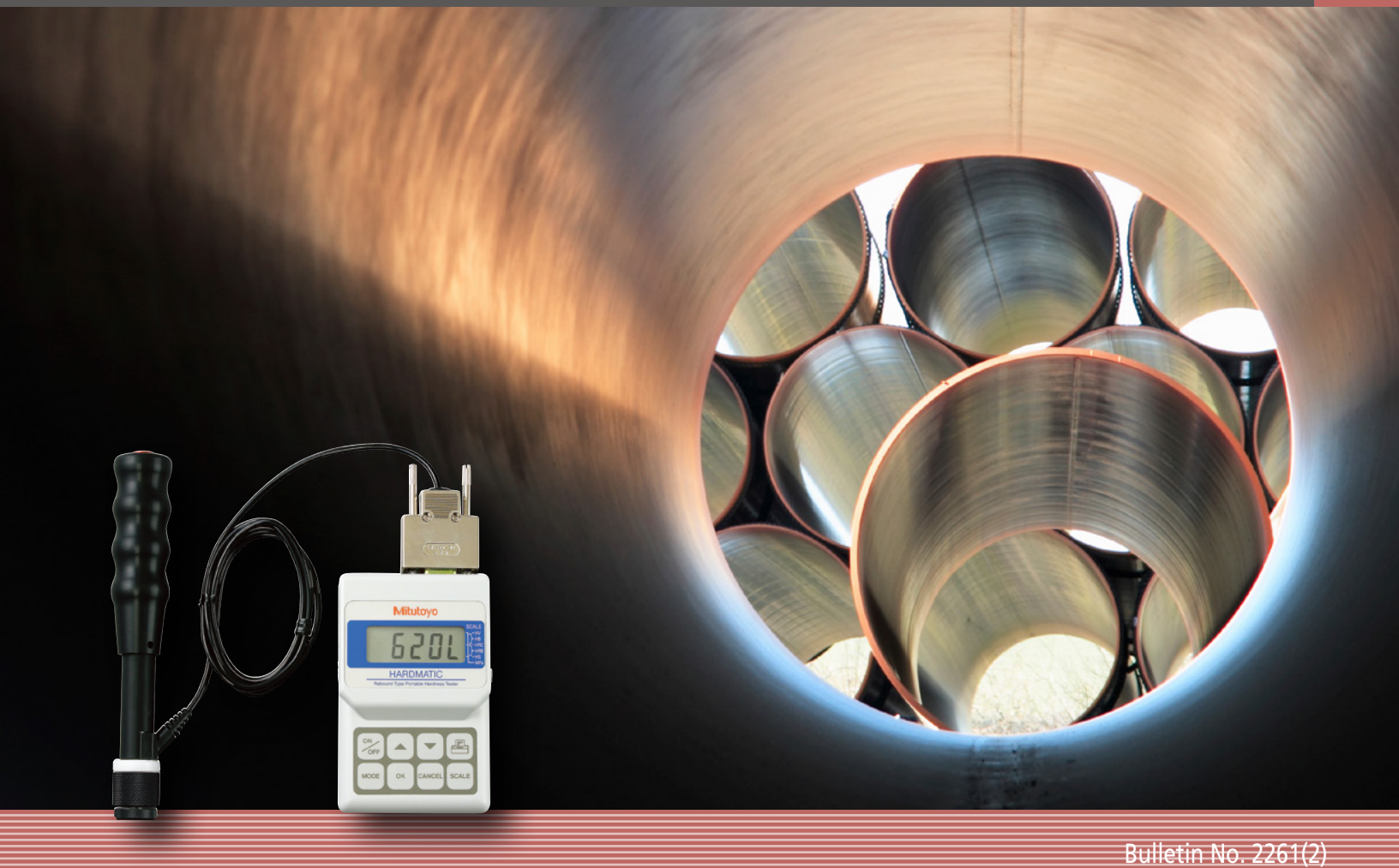
Mitutoyo

Mitutoyo Quality

HH-411 IMPACT TYPE PORTABLE HARDNESS TESTING UNIT

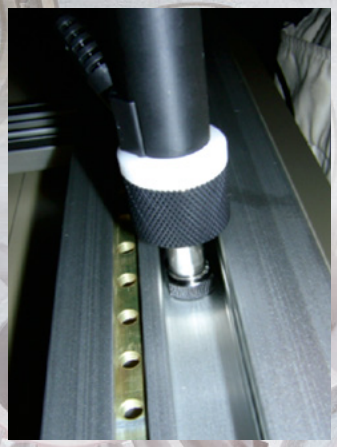
Test Equipment



Bulletin No. 2261(2)

Mitutoyo

HH-411 is a compact portable hardness tester that is user-friendly. A single touch of a button performs the non-destructive impact hardness test so it's extremely easy to test workpieces on site.



User-friendly

To make a hardness test, just press the button on the impactor while holding it against the workpiece surface. It is easy and user-friendly.

Hardness testing on narrow surfaces is possible

Only a small surface area is needed for testing hardness with the HH-411. (A small ø22mm for the standard type D impactor, and a minute ø4mm for the optional type DL impactor.) This feature makes the HH-411 extremely useful for testing the hardness of surfaces such as structural elements, gear teeth, etc.

A choice of impactor

D type: Standard, general purpose type.
DC type: For inner walls of pipes.
D+15 type: For bearings and gears.
DL type: For narrow features such as small gear teeth and welded corners.

Equipped with data storage function

A maximum 1800 data entries of hardness test results can be stored. This function is very useful for routine tests at work sites.

Unit of hardness is selectable for various purposes

The HH-411 produces HL hardness scale results (L hardness: conforming to ASTM A 956), automatically converting to Vickers, Brinell, Rockwell C, Rockwell B, Shore and tensile strength, as required during testing.

Equipped with auto angle compensation function

Impact-type hardness measurements are normally affected by gravity, depending on the angle at which the impactor is held, but the HH-411 is equipped with the latest measuring technology that automatically recognizes impactor orientation and compensates for this effect so maximum accuracy is realized in every measurement.

Specifications

Order No.	**810-298-10** (ASTM Type)
Model	**HH-411**
Impactor	Impact hammer with integrated detector and carbide-ball tip (D type: conforming to ASTM A 956)
Display unit	7-segment LCD
Display range	Leeb: 1-999HL Resolution 1HL Vickers: 43-950HV Resolution 1HV Brinell: 20-894HB Resolution 1HB Rockwell C: 19.3-68.2HRC Resolution 0.1HRC Rockwell B: 13.5-101.7HRB Resolution 0.1HRB Shore: 13.2-99.3HS Resolution 0.1 HS Tensile strength: 499-1996MPa Resolution 1MPa (Display range depends on conversion table.)
Functions	Auto Angle Compensation Function, Offset function OK/NG judgment function, Conversion function Data storage function: 1800 data entries Statistical analysis (Average, Maximum, Minimum, Dispersion) Auto sleep function, Impact counter display function
Testable workpiece limits	Minimum 5mm or more in thickness and 5kg or more in mass (When the sample mass is 0.1kg or more and less than 5kg, fix it against a larger mass to make it testable.) Test points: 5mm or more from the edge of the sample, 3mm or more to each of the tested points. Surface roughness of samples: Ra 2µm or less
Output	RS-232C, SPC (each 1 output, simultaneous output is possible)
Power supply	Alkaline AA battery 2pcs (battery life: approx. 70 hours) AC adapter (optional accessory)
Operating environment	Temperature: 0°C to 50°C Humidity: less than 95% without condensation
Size / Mass	Display unit: approx.70 x 110 x 35 mm, 200g Impactor: approx. ø28 x 175 mm, 120g

Optional accessories

Order No.	Description	Remarks	Qty
264-504-5A	Digimatic Mini-Processor	DP-1VR	1
937387	Connecting cable	For DP-1VR and display unit	1
09EAA082	Printer paper	For DP-1VR 10 rolls / set	1
810-622	Thermal printer	With a connecting cable for DPU-414	1
19BAA157	Printer paper	For DPU-414 (TP411-28CL)	1
19BAA238	Connecting cable	For PC and the display unit RS-232C (for DOS / V PC)	1
06AEG302JA	AC adapter	For the display unit (AD908N)	1
11AAD241*	Hardness test block	880HLD (ø115mm, t33mm, 3.7kg)	1
11AAD242*	Hardness test block	830HLD (ø115mm, t33mm, 3.7kg)	1
11AAD243*	Hardness test block	730HLD (ø115mm, t33mm, 3.7kg)	1
11AAD244*	Hardness test block	620HLD (ø115mm, t33mm, 3.7kg)	1
11AAD245*	Hardness test block	520HLD (ø115mm, t33mm, 3.7kg)	1
19BAA248	Support ring	For convex surface of cylinder (R10-R20)	1
19BAA249	Support ring	For concave surface of cylinder (R14-R20)	1
19BAA250	Support ring	For convex surface of sphere (R10-R27.5)	1
19BAA251	Support ring	For concave surface of sphere (R13.5-R20)	1
19BAA457	Carbide ball	For D, DC, D+15 type impactors	1
19BAA458	Ball shaft	For DL type impactor	1
810-287-10	Impactor UD-411	D : approx.ø28 x 175mm, 120g (tip:ø22mm)	1
810-288-10	Impactor UD-412	DC : approx.ø22 x 85mm, 50g (tip:ø22mm)	1
810-289-10	Impactor UD-413	D+15 : approx.ø28 x 190mm, 130g (tip width 11mm)	1
810-290-10	Impactor UD-414	DL: approx.ø28 x 230mm, 140g (tip:ø4 mm)	1
11AAD240*	Hardness test block	800HLD (115mm, t33mm, 3.7kg)	

*JIS Cert

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this pamphlet, as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs, dimensions and weights. The stated standards, similar technical regulations, descriptions and illustrations of the products were valid at the time of printing. In addition, the latest applicable version of our General Trading Conditions will apply. Only quotations submitted by ourselves may be regarded as definitive.

Standard configuration

Order No.	Description	Remarks	Qty
810-291-10	Display unit UD-410	HS conversion : HSD (ASTM)	1
—	LR6 battery	Lithuim Battery	2
99MBG600B	User's manual		1
810-287-10	Impacctor UD-411	D type, approx.ø28 x 175mm, 120g (tip: ø22mm)	1
—	Impact hammer		1
19BAA457	Carbide ball	Built-in to the impact hammer	1
19BAA459	Wrench		1
19BAA460	Cable for detector		1
19BAA451	Support ring	ø22mm	1
19BAA452	Support ring (small)	ø14mm	1
19BAA258	Brush		1
—	Case	For the display unit and impactor	1
11AAD240	Hardness test block		1
—	Case	For hardness test block	1
—	Inspection Certificate		
11BAB687	Handle		
11BAC437	Strap		

Note:
1. This hardness tester cannot test elastic materials such as rubber.
2. The inertia of the workpiece tested may affect the measurement results. Please keep this fact in mind, especially when measuring thin objects. In some cases it may be necessary to use a more massive object backing the workpiece to provide sufficient inertia at the point of test for an accurate result to be obtained.

Order No. **810-288-10**
Model : UD-412 DC type
Use for inner walls of cylinders.
The grip is short to allow easy positioning within a cylinder.

Order No. **810-289-10**
Model : UD-414 D+15 type
Use for concave workpieces such as gear teeth, ball bearing races, etc.

Order No. **810-290-10**
Model : UD-413 DL type
Use for gear teeth, welded corners, etc.

© 2018 Mitutoyo America Corporation

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring

Sensor Systems

Test Equipment and Seismometers

Digital Scale and DRO Systems

Small Tool Instruments and Data Management

Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top-quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

Find additional product literature and our product catalog

www.mitutoyo.com

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this printed matter as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs. The stated standards, similar technical regulations, descriptions and illustrations of the products were valid at the time of printing. In addition, the latest applicable version of our General Trading Conditions will apply. Only quotations submitted by ourselves may be regarded as definitive. Specifications are subject to change without notice.

Mitutoyo products are subject to US Export Administration Regulations (EAR). Re-export or relocation of our products may require prior approval by an appropriate governing authority.

Trademarks and Registrations
Designations used by companies to distinguish their products are often claimed as trademarks. In all instances where Mitutoyo America Corporation is aware of a claim, the product names appear in initial capital or all capital letters. The appropriate companies should be contacted for more complete trademark and registration information.

Mitutoyo

Mitutoyo America Corporation
www.mitutoyo.com
One Number to Serve You Better
1-888-MITUTOYO (1-888-648-8869)

M³ Solution Centers:
Aurora, Illinois (Headquarters)
Boston, Massachusetts
Charlotte, North Carolina
Cincinnati, Ohio
Detroit, Michigan
Los Angeles, California
Birmingham, Alabama
Seattle, Washington
Houston, Texas

0418-01 • Printed in USA • Rev. Nov. 2018