

# **HARDNESS**

# **REFERENCE BLOCKS**

# **& INDENTERS**

ISO/IEC 17025 CERTIFIED REFERENCE TOOLS FOR HARDNESS TESTERS



**CATALOGUE 2024**

# INTRODUCTION

UPI Laboratories Europe BV, ISO/IEC 17025 RvA accredited laboratory providing DIN EN ISO / ASTM dual certified test blocks and indenters.

The RvA, like UKAS, Dakks, COFRAC, NVLAP, A2LA are ILAC (International Laboratory Accreditation Cooperation) members. Certificates issued by INNOVATEST Europe for test blocks and indenters meet or exceed the relevant ISO/ASTM requirements for hardness testing and comply with the requirements for NADCAP accredited/certified organizations.

Hardness test blocks or hardness reference plates are comparison plates most commonly made of Steel or Aluminum but could also be made of Brass or custom materials. They are used for the day to day Indirect Verification and Calibration of hardness testing machines and instruments. There are hardness test blocks for almost all hardness testing methods and scales.

Calibrating the display reading of a hardness tester against ISO/ASTM certified hardness test block values part of a normal quality assurance process. Adjusting your hardness tester according to the value engraved in a hardness test block, as long as the adjustments are minor, can be done after assurance that a correct and undamaged indenter/penetrator is installed and the tester operates normally. Indenters are available for almost all scales with viability of micro and macro diamond indenters and carbide or available in the different sizes by the different methods.

## ISO & ASTM HARDNESS TEST BLOCKS and INDENTERS (RvA)

Hardness test blocks INNOVATEST Europe BV branded are manufactured according to standards ISO (International) and ASTM (American).

Such standards apply to the physical requirements as well to the method & the way the final value is found and confirmed." INNOVATEST Europe BV hardness test blocks and indenters are of excellent finish and have very low variation, excellent repeatability.

## RAW MATERIALS USED

In order to manufacture good hardness test blocks, strict control over the quality of raw materials (Steel, Brass, Aluminum) is required. The entire block material needs to be homogenous, to assure low spread of readings and excellent repeatability. INNOVATEST Europe BV performs supplier audits to assure this.

## HEAT TREATMENT

Distribution of the blocks in the hardening furnaces is of utmost importance, time, temperature and quench are all carefully controlled processes, to assure a top class product. INNOVATEST Europe BV performs supplier audits to assure this.

## FINISHING

The next step in the process to ensure high quality 'blanks' is the grinding, polishing and lapping of the block surfaces. Any concerns on the surface quality are eliminated due to thorough selection after inspection. INNOVATEST performs supplier audits to assure this.

## QUALITY CONTROL

Before proceeding with the ultimate calibration and engraving of the block hardness, blocks are undergoing a full inspection to ensure that they meet the physical requirements of ISO and ASTM (thickness, flatness, parallelism, surface roughness, magnetism and uniformity).

## © INNOVATEST Europe BV

Changes in products and/or product specifications can emerge due to new technologies and/or continuous development.

We reserve the right to change or modify specifications of products without prior notice.

We recommend you to contact our sales office for up-to-date information.

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C24CAT/02/EN

## TRACEABILITY

INNOVATEST hardness calibration blocks and indenters are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/ International standards according to ISO 6506, ISO 6507, ISO 6508, ISO 4545, ASTM E18, ASTM E92 and ASTM E10.



# TEST BLOCKS

## ROCKWELL REFERENCE BLOCKS

### ROCKWELL DIAMOND SCALES

INNOVATEST Rockwell cone hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6508/3 & ASTM-E18 A4.



### ROCKWELL CARBIDE BALL SCALES

INNOVATEST Rockwell ball hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6508/3 & ASTM-E18 A4.

#### ROUND (dia. 60mm X 10mm thickness)

All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION											
<b>HRC</b>	20	25	30	35	40	45	50	55	60	63	65	
<b>HRA</b>	40	55	60	62	65	67	70	73	75	78	81	83
<b>HRD</b>	40	44	48	51	55	59	63	67	71	75		
<b>HR15N</b>	68	71	74	76	79	82	85	88	90	92		
<b>HR30N</b>	41	46	50	55	59	64	68	72	77	81		
<b>HR45N</b>	19	25	31	37	43	49	55	60	66	72		

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

#### ROUND (dia. 60mm X 10mm thickness)

All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION											
<b>HRB</b>	40	60	70	85	90	95						
<b>HRE</b>	75	95										
<b>HRF</b>	75	90										
<b>HR15T</b>	73	81	83	88	91	92						
<b>HR30T</b>	43	58	63	73	79	81						
<b>HR45T</b>	12	35	43	58	67	70						
<b>HRM*</b>	110											
<b>HRR*</b>	105	125										

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

\*Only ASTM

### TEST BLOCKS RANGE

25 MM BLOCK



60 MM BLOCK



65 MM BLOCK



90 MM BLOCK





## VICKERS REFERENCE BLOCKS

## VICKERS REFERENCE BLOCKS

### MACRO VICKERS SCALES

INNOVATEST Macro Vickers hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6507/3 & ASTM-E92 A4.



### MICRO VICKERS SCALES

INNOVATEST Micro Vickers hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6507/3 & ASTM-E92 A4.



#### ROUND (dia. 60mm X 10mm thickness)

All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION													
<b>HV2</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV3</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV5</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV10</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV20</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV30</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV50</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV60*</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV100</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV120*</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HV150*</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800

Deviating scales or hardness can be ordered by custom request.

Blocks can be supplied with NADCAP compliant grid.

\*Scales are outside the scope of accreditation.

#### ROUND (dia. 25mm X 6mm thickness)

All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION													
<b>HMV2</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HMV1</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HMV0.5</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HMV0.3</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HMV0.2</b>	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>HMV0.1</b>	150	200	250	300	350	400	450	500*	550*	600*	650*	700*	750*	800*
<b>HMV0.05</b>	150	200	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
<b>HMV0.03</b>	150*	200*	250*	300*	350*	400*	450*							
<b>HMV0.025</b>	150*	200*	250*	300*	350*	400*								
<b>HMV0.02</b>	150*	200*	250*	300*										
<b>HMV0.015</b>	150*	200*												
<b>HMV0.010</b>	150*													

\*Hardness value is outside the scope of the ISO/ASTM standards due to indentations smaller than 0,020mm and outside the scope of accreditation. Deviating scales or hardness can be ordered by custom request.



## KNOOP REFERENCE BLOCKS

## BRINELL REFERENCE BLOCKS

### KNOOP SCALES

INNOVATEST Knoop hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 4545/3 & ASTM-E92 A4.



### BRINELL SCALES

INNOVATEST Brinell hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6506/3 & ASTM-E10 A4.



**ROUND (dia. 25mm X 6mm thickness)**  
All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION													
HK0.01*	150	200	250	300	350									
HK0.015*	150	200	250	300	350	400	450	500						
HK0.02*	150	200	250	300	350	400	450	500	550	600	650	700		
HK0.025*	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.05*	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.1	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.2	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.3	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.5	150*	200	250	300	350	400	450	500	550	600	650	700	750	800
HK1	150*	200*	250*	300*	350*	400	450	500	550	600	650	700	750	800
HK2	150*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750	800

Deviating scales or hardness can be ordered by custom request.  
\*Scales and hardness value are outside the scope of accreditation.



**ROUND (dia. 90mm X 16mm thickness)**  
All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION												
HBW 10/3000	150	200	250	300	350	400	450	500	550	600	650		
HBW 10/1500	60	80	100	150	200	250	300						
HBW 10/1000	60	80	100	150	200								
HBW 10/500	60	80	100										
HBW 5/750	150	200	250	300	350	400	450	500	550	600	650		

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

**ROUND (dia. 65mm X 12mm thickness)**  
All mentioned hardness values are nominal, the actual calibrated values may vary.

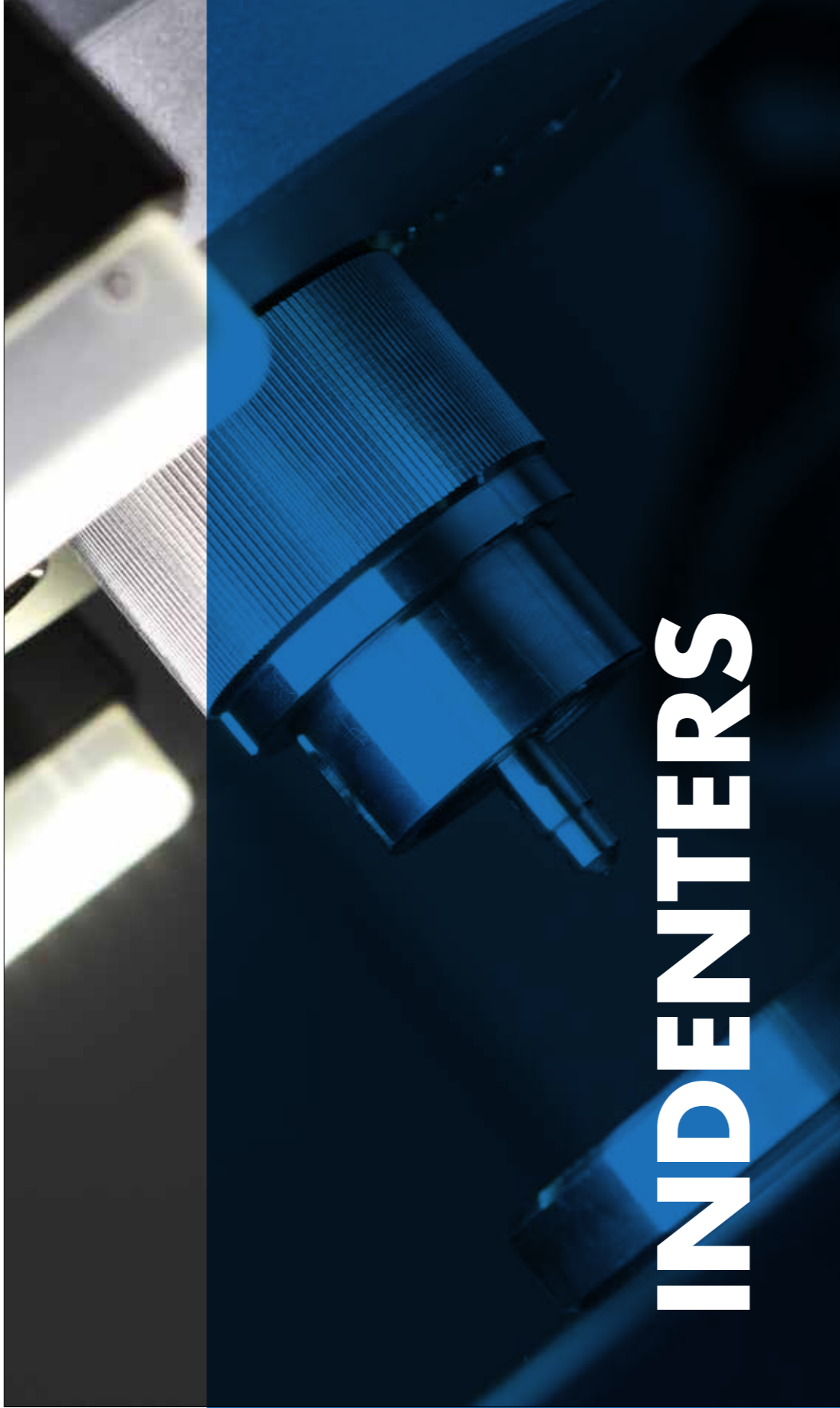
NAV ID	DESCRIPTION												
HBW 5/250	60	80	150	200									
HBW 5/125	60	80	100										
HBW 2.5/187.5	150	200	250	300	350	400	450	500	550	600	650		
HBW 2.5/62.5	60	80	100	150	200								
HBW 2.5/31.25	60	80	100										

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

**ROUND (dia. 60mm X 10mm thickness)**  
All mentioned hardness values are nominal, the actual calibrated values may vary.

NAV ID	DESCRIPTION												
HBW 1/30	150	200	250	300	350	400	450	500	550	600	650		
HBW 1/10	60	80	100	150	200								
HBW 1/5	60	80	100										

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.



# INDENTERS

## ROCKWELL INDENTERS

### ROCKWELL DIAMOND & BALL INDENTERS

INNOVATEST Rockwell Indenters are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6508/2 & ASTM-E18 A3.



ITEM NO.		DESCRIPTION
UPI/6003		Rockwell diamond indenter $\varnothing 3\text{mm}$ , acc. to ISO 6508/2 & ASTM-E18 A3
UPI/6004		Rockwell diamond indenter $\varnothing 3\text{mm}$ , L=12mm, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/6005		Rockwell diamond indenter $\varnothing 6.35\text{mm}$ , acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7503		1/16" Embedded carbide ball indenter $\varnothing 3\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7603		1/8" Embedded carbide ball indenter $\varnothing 3\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7703		1/4" Embedded carbide ball indenter $\varnothing 3\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7808		1/2" Embedded carbide ball indenter $\varnothing 3\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7506		1/16" Carbide ball indenter $\varnothing 6.35\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7606		1/8" Carbide ball indenter $\varnothing 6.35\text{mm}$ , with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7706		1/4" Carbide ball indenter $\varnothing 6.35\text{mm}$ , acc. to ASTM-E18 A3
UPI/7806		1/2" Carbide ball indenter $\varnothing 6.35\text{mm}$ , acc. to ASTM-E18 A3
UPI/2507		1/16" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/2509		1/8" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/2514		1/4" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/2519		1/2" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3



## VICKERS & KNOOP INDENTERS

## BRINELL INDENTERS



### MACRO & MICRO VICKERS INDENTERS




INNOVATEST (Micro) Vickers Indenters are calibrated & DUAL-certified by UPI Laboratories Europe traceable to National/International standards according to ISO 6507/2 & ASTM-E92 A3.

### KNOOP INDENTERS

INNOVATEST Knoop Indenters are calibrated & DUAL-certified by UPI Laboratories Europe traceable to National/International standards according to ISO 4545/2 & ASTM-E92 A3.



ITEM NO.		DESCRIPTION
UPI/8010		Vickers indenter $\phi 6.35\text{mm}$ , acc. to ISO 6507/2 & ASTM-E92 A3
UPI/8105		Vickers indenter $\phi 3\text{mm}$ , acc. to ISO 6507/2 & ASTM-E92 A3











ITEM NO.		DESCRIPTION
UPI/8205		Knoop indenter $\phi 3\text{mm}$ , acc. to ISO 4545/2 & ASTM-E92 A3
UPI/8220		Knoop indenter $\phi 6.35\text{mm}$ , acc. to ISO 4545/2 & ASTM-E92 A3
UPI/8221		Knoop indenter $\phi 6.35\text{mm}$ , acc. to ISO 4545/2 & ASTM-E92 A3 Indenter is rotated $90^\circ$

$\phi$  = shaft diameter for machine mounting.



### BRINELL BALL INDENTERS

INNOVATEST Brinell Indenters are calibrated & DUAL-certified by UPI Laboratories Europe BV traceable to National/International standards according to ISO 6506/2 & ASTM-E10 A3.

ITEM NO.		DESCRIPTION
UPI/7001		1mm Embedded carbide ball indenter $\phi 3\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7006		2.5mm Embedded carbide ball indenter $\phi 3\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7011		5mm Embedded carbide ball indenter $\phi 3\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7000		1mm Carbide ball indenter $\phi 6.35\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7005		2.5mm Carbide ball indenter $\phi 6.35\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7010		5mm Carbide ball indenter $\phi 6.35\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7015		10mm Carbide ball indenter $\phi 6.35\text{mm}$ , acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2005		1.0mm Carbide ball, for $\phi 6.35\text{mm}$ indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2010		2.5mm Carbide ball, for $\phi 6.35\text{mm}$ indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2015		5.0mm Carbide ball, for $\phi 6.35\text{mm}$ indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2020		10.0mm Carbide ball, for $\phi 6.35\text{mm}$ indenters, acc. to ISO 6506/2 & ASTM-E10 A3

### RE-CALIBRATION COST (Examination and calibration of used indenters)

ITEM NO.		DESCRIPTION
UPI/9090		Rockwell C indenter
UPI/9190		Vickers indenter
UPI/9092		Micro Vickers indenter

# CALIBRATION SETS

## CALIBRATION SETS

### INNOVATEST CALIBRATION SETS

INNOVATEST Calibration sets are DUAL-certified by UPI Laboraties Europe BV traceable to National/International standards according to ISO & ASTM.



#### ROCKWELL CALIBRATION SETS

All mentioned hardness values are nominal, the actual calibrated values may vary.

ITEM NO.	DESCRIPTION
<b>SET-HRA</b>	Set of 3 blocks 40HRA   65HRA   81HRA packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HRB</b>	Set of 3 blocks 40HRB   70HRB   90HRB packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HRC</b>	Set of 3 blocks 25HRC   45HRC   60HRC packed in foam box, dual certified, by ISO 17025 accredited lab.

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

#### MACRO VICKERS CALIBRATION SETS

All mentioned hardness values are nominal, the actual calibrated values may vary.

ITEM NO.	DESCRIPTION
<b>SET-HV2</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HV5</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HV10</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HV50</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

#### MICRO VICKERS CALIBRATION SETS

All mentioned hardness values are nominal, the actual calibrated values may vary.

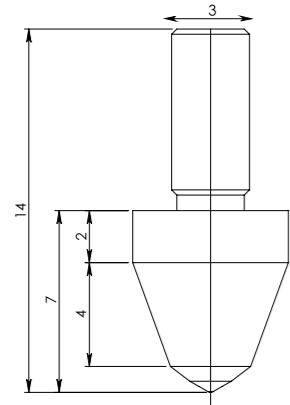
ITEM NO.	DESCRIPTION
<b>SET-HMV0.1</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HMV0.2</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HMV0.3</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HMV0.5</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HMV1</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.
<b>SET-HMV2</b>	Set of 3 blocks 200HV   450HV   700HV packed in foam box, dual certified, by ISO 17025 accredited lab.

Deviating scales or hardness can be ordered by custom request.  
Blocks can be supplied with NADCAP compliant grid.

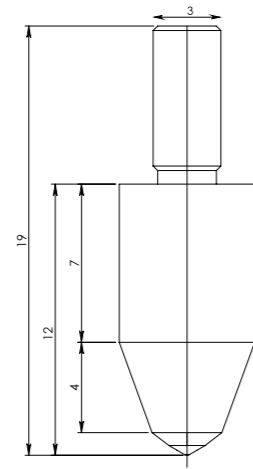




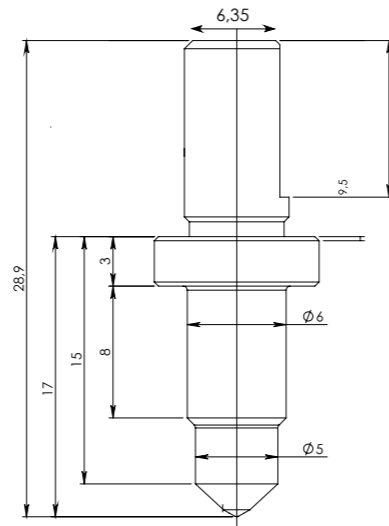
All dimensions are in mm.



UPI/6003

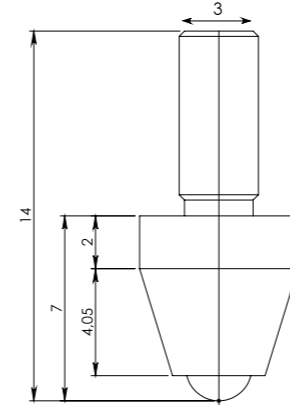


UPI/6004



UPI/6005

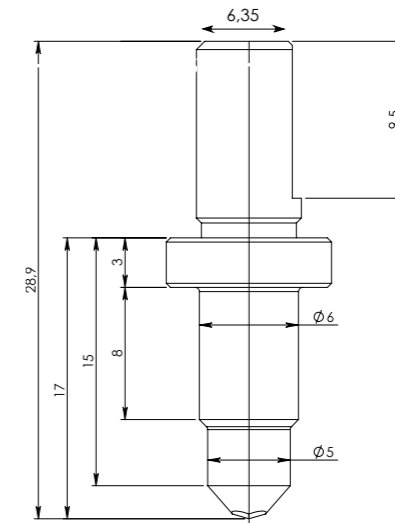
All dimensions are in mm.



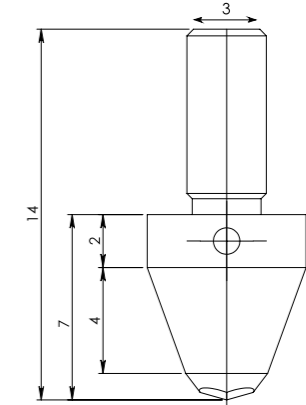
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UPI/7006

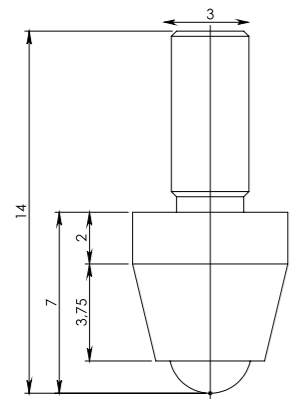
UPI/7011



UPI/8010



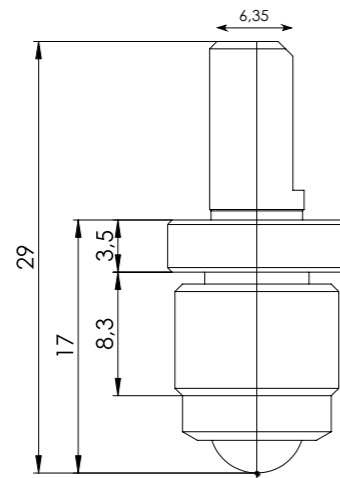
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UPI/7603

UPI/7703

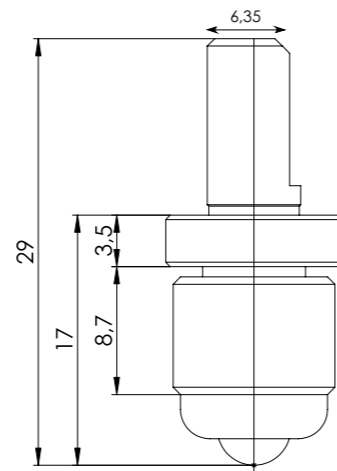


UPI/7506

UPI/7606

UPI/7706

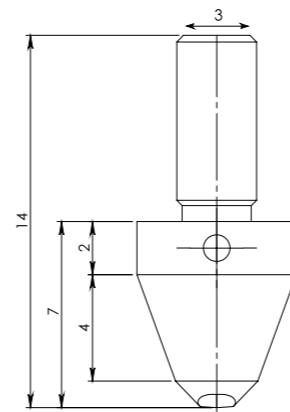
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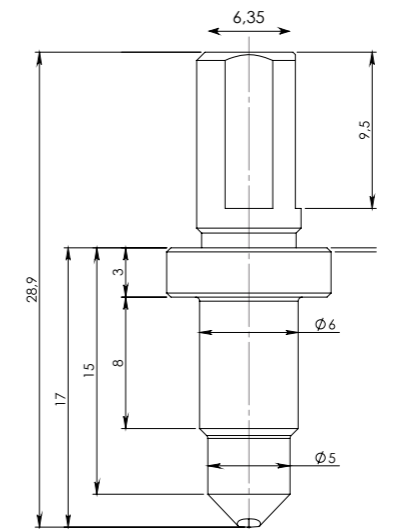
UPI/7005

UPI/7010

UPI/7015



UPI/8205



UPI/8221







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