TRUEMET®

MATERIAL TESTING MACHINES & METALLURGICAL EQUIPMENT

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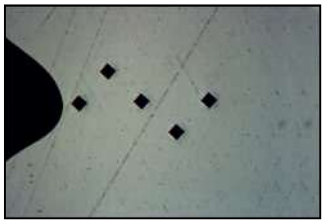
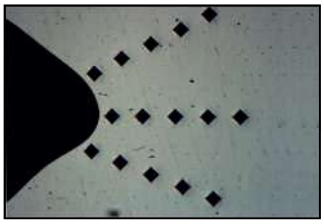
FULLY AUTOMATIC MICRO VICKERS HARDNESS TESTER

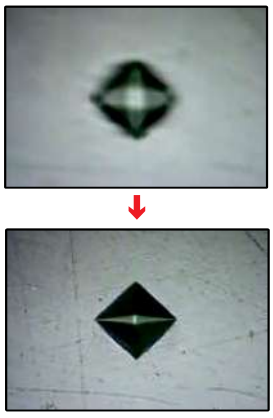
Auto Focus, Motorized XY Table, Indentation Pattern Setup, Touch Screen



Zig Zag from edge



Three traverses perpendicular to edge



Auto Focus

HT-1000AT-V6

Features

- **Wide Test Forces**

  8 steps test force (10, 25, 50, 100, 200, 300, 500, 1000gmf) are available.

- **Fully Automatic**

  Fully automatic test cycle (taking Indentation →Auto Focus→Measuring Indentation→Recording Data→Report Generation) by selecting measuring pattern.

- **Various Measuring Pattern**

  System provide more than 18 different pattern to meet customer requirements. Line, line set, free click, Horizontal line, vertical line, Curved line set, curve matrices, arc, gear fillet, gear top etc.

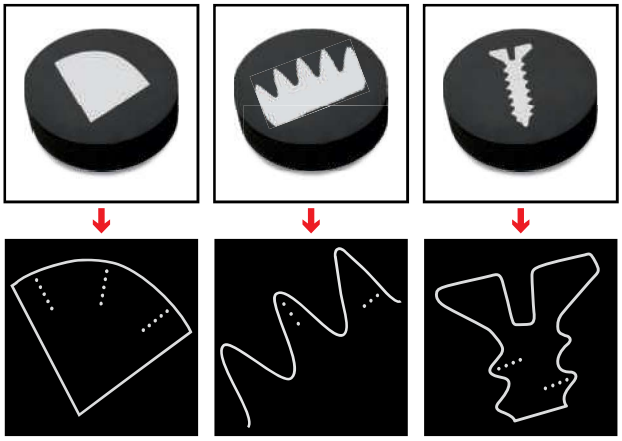
- **High Resolution Camera**

  Equipped with a 5 Mega Pixel high resolution USB type camera.

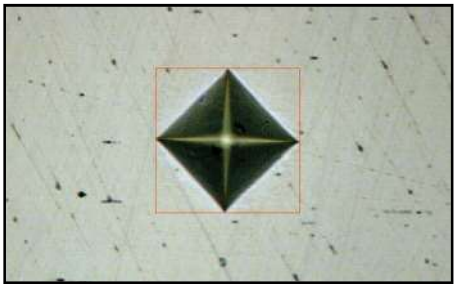
- **Various Data Output**

  - **Hardness measurement:** With a single click, system automatically measures the indentation and gives the vickers hardness value.
  - **Hardness Curve Graph:** System automatically plots the hardness value vs. test point depth graph and calculates the effective case depth.
  - **Hardness conversion:** The measured Vickers Hardness value can be converted to other hardness scales such as HBW, HRC, HRB etc.
  - **Statistical Calculation:** Statistical values such as average, min, max, standard deviation, Cp, Cpk, etc. are automatically generated.

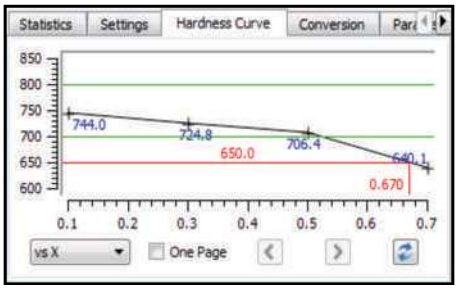
- **Automatic sample contour scan and indentation pattern setup :** System can automatically scan the sample contour and generate test point by defined pattern.



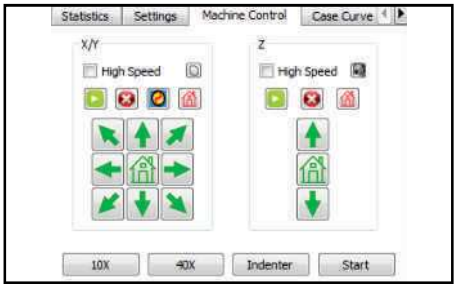
- **Working Data Saving & Retrieval:** Software can save and retrieve the hardness measurement data and images in data files.
- **Hardness Report:** With a mouse click, the system automatically generates a Microsoft Word, Excel Document or PDF file which contains the measurement data, statistical information, the measurement image and the hardness curve graph.



- Less time needed for auto measurement (less than 1 second)



- Effective case depth shall be displayed and recorded on the chart once the multiple measuring is completed.



- User can auto focus a component with a single click and move xy stage left-right by single click on arrows key or by dragging.

SEMI AUTOMATIC MICRO VICKERS HARDNESS TESTER

Motorized XY Table, Indentation Pattern Setup, Auto Turret, High Resolution Camera

Features

- Motorized XY-stage controlled by built-in stepping motor has various control modes through mouse click control, high positioning accuracy, good repeatability, fast moving speed and high work efficiency.
- Automatically scan along the edge of the sample and generate test point by defined pattern.
- System provide more than 18 different pattern to meet customer requirements. Line, line set, free click, Horizontal line, vertical line, Curved line set, curve matrices, arc, gear fillet, gear top etc.
- Various Data Output : Automatic hardness measurement, hardness curve graph, hardness conversion, statistical calculation, working data saving & retrieval, hardness report.

HT-1000ADT-V5

COMPUTER CONTROLLED MICRO VICKERS HARDNESS TESTER

Computer Controlled, Digital XY Table with SPC Cable, Auto Turret, High Resolution Camera

Features

- Software controlled hardness tester to switch between objective lens and indenter without manual control of hardness tester.
- Software sense the change in the test force and displays it in system in real time.
- Auto measurement of the four vertices of the indentation.
- System automatically generates a Microsoft Word or Excel Document or PDF file which contains the measurement data, statistical information, measurement image and the hardness curve graph.

HT-1000AT-V4

COMPUTERIZED MICRO VICKERS HARDNESS TESTER

Computerized, Manual XY Table, Manual Turret, High Resolution Camera

Features

- Auto measurement of the four vertices of the indentation.
- System automatically plots the hardness value vs. test point depth graph and calculates the effective case depth.
- The measured Vickers Hardness value can be converted to other hardness scales such as Rockwell, Knoop, Brinell etc.
- Statistical values such as average, min, max, standard deviation, Cp, Cpk, etc. are automatically generated.
- System automatically generates a Microsoft Word or Excel, Document or PDF file which contains the measurement data, statistical information, the measurement image and the hardness curve graph.

HT-1000-V2

Micro Vickers Hardness Tester (Weight Type)

HT-1000ADT/ HT-1000DT

- Digital Eyepiece
- Touch Screen
- Auto / Manual Turret

HT-1000AT/ HT-1000T

- Manual Eyepiece
- Touch Screen
- Auto / Manual Turret

HT-1000AD/ HT-1000D

- Digital Eyepiece
- Large LCD Screen
- Auto / Manual Turret

HT-1000A/ HT-1000

- Manual Eyepiece
- Small LCD Screen
- Auto / Manual Turret

Specification	HT-1000ADT	HT-1000DT	HT-1000AT	HT-1000T	HT-1000AD	HT-1000D	HT-1000A	HT-1000
Turret Control	Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual
10X Eyepiece	Digital	Digital	Manual	Manual	Digital	Digital	Manual	Manual
Display	Touch	Touch	Touch	Touch	LCD	LCD	LCD	LCD
Adjustable Illumination System	○	○	○	○	○	○	○	○
Built in Printer	○	○	○	○	○	○	×	×
RS-232 Port	○	○	○	○	○	○	×	×
USB Port	○	○	○	○	×	×	×	×

Technical Specification (All above models)

- Load range : 10, 25, 50, 100, 200, 300, 500, 1000 gm
- Loading control : Automatic (Loading, Dwell, Unloading)
- Magnification : 400X (for measurement) & 100X (for observation)
- Dual optical channel : Eyepiece & camera port.
- XY Table : Size : 100x100mm, Travel Range : 25x25mm, Resolution : 0.01mm
- Max Test Height : 85mm
- Depth of Throat : 110mm
- Emergency Switch : Yes
- Hardness Conversion Scale : Rockwell, Rockwell Superficial, Brinell & Knoop.

Load Cell Based Vickers Hardness Tester

Model	Test Force (kgf)	Magnification
THT-2AD/THT-2D	0.025, 0.05, 0.1, 0.2, 0.3, 0.5, 1, 2	400X (for measurement) & 100X (for observation)
THT-10AD/THT-10D/THT-10A/THT-10	0.1, 0.2, 0.3, 0.5,1, 2, 2.5, 3, 5, 10	400X (for measurement) & 100X (for observation)
THT-30AD/THT-30D/THT-30A/THT-30	0.2, 0.3, 0.5,1, 2, 2.5, 3, 5, 10, 20, 30	200X (for measurement) & 100X (for observation)
THT-50AD/THT-50D/THT-50A/THT-50	0.3, 0.5,1, 2, 2.5, 3, 5, 10, 20, 30, 50	200X (for measurement) & 100X (for observation)
THT-100AD/THT-100D/THT-100A/THT-100	1, 2, 2.5, 3, 5, 10, 20, 30, 50, 100	200X (for measurement) & 50X (for observation)

THT-AD Series / THT-D Series

Features

- **Digital Eyepiece**
  Equipped with 10X Digital Eyepiece to directly measure the length of the diagonal. The hardness value can be displayed directly and there is no need to enter the length of the diagonal.
- **Data Output**
  Equipped with built is thermal printer to take the printout of the hardness result.
- **Large LCD Screen Panel**
  75X100 mm LCD screen can visually display the hardness value, conversion hardness, test force, dwell time, upper & lower limit, max-min, and average value.

THT-AD Series / THT-D Series

THT-A Series / THT-Series

Features

- **Manual Eyepiece**
  Equipped with 10x Manual Eyepiece to measure the length of diagonal. The hardness value can be displayed directly on LCD screen by entering the indentation diagonal length.
- **LCD Screen Panel**
  80X25mm LCD Screen can visually display the hardness value, conversion hardness, test force and dwell time.

THT-A Series / THT-Series

Specification	THT-AD Series	THT-D Series	THT-A Series	THT-Series
Turret Control	Auto	Manual	Auto	Manual
10X Eyepiece	Digital	Digital	Manual	Manual
Display	Large LCD	Large LCD	Small LCD	Small LCD
Adjustable Illumination System	○	○	○	○
RS-232 Port	○	○	○	○
Built in Printer	○	○	×	×

Technical Specification (All above models)

- Loading control : Automatic (Loading, Dwell, Unloading)
- Dual optical channel : Eyepiece & camera port.
- Hardness Conversion Scale : Rockwell, Rockwell Superficial, Brinell & Knoop.
- Max Test Height : 165mm
- Depth of Throat : 130mm
- Emergency Switch : Yes

Note :- All above models can be upgraded into computer controlled/computerized model.

Computer Controlled Vickers Hardness Tester

THT-AD Series + V4
Load Cell Based Series

VHT-ADT Series + V4
Weight Type Series

Features

- Software controlled hardness tester to switch between objective lens and indenter without manual control of hardness tester.
- Software sense the change in the test force and displays it in system in real time.
- Auto measurement of the four vertices of the indentation.
- Double optical channel (eyepiece & camera port).
- Automatically generate Word or Excel Document or PDF report which include each individual curve graph & statistical value.

Computerized Vickers Hardness Tester

THT-Series + V2
Load Cell Based Series

VHT-Series + V2
Weight Type Series

Features

- Auto measurement of the four vertices of the indentation.
- Double optical channel (eyepiece & camera port).
- Automatically generate Word or Excel Document or PDF report which include each individual curve graph & statistical value.
- Test force is automatically display on LCD screen.

Vickers Hardness Tester (Weight type)

VHT-ADT Series / VHT-DT Series

- Digital Eyepiece
- Touch Screen
- Auto / Manual Turret

VHT-AT Series / VHT-T Series

- Manual Eyepiece
- Touch Screen
- Auto / Manual Turret

VHT-AD Series / VHT-D Series

- Digital Eyepiece
- Large LCD Screen
- Auto / Manual Turret

VHT-A Series / VHT-Series

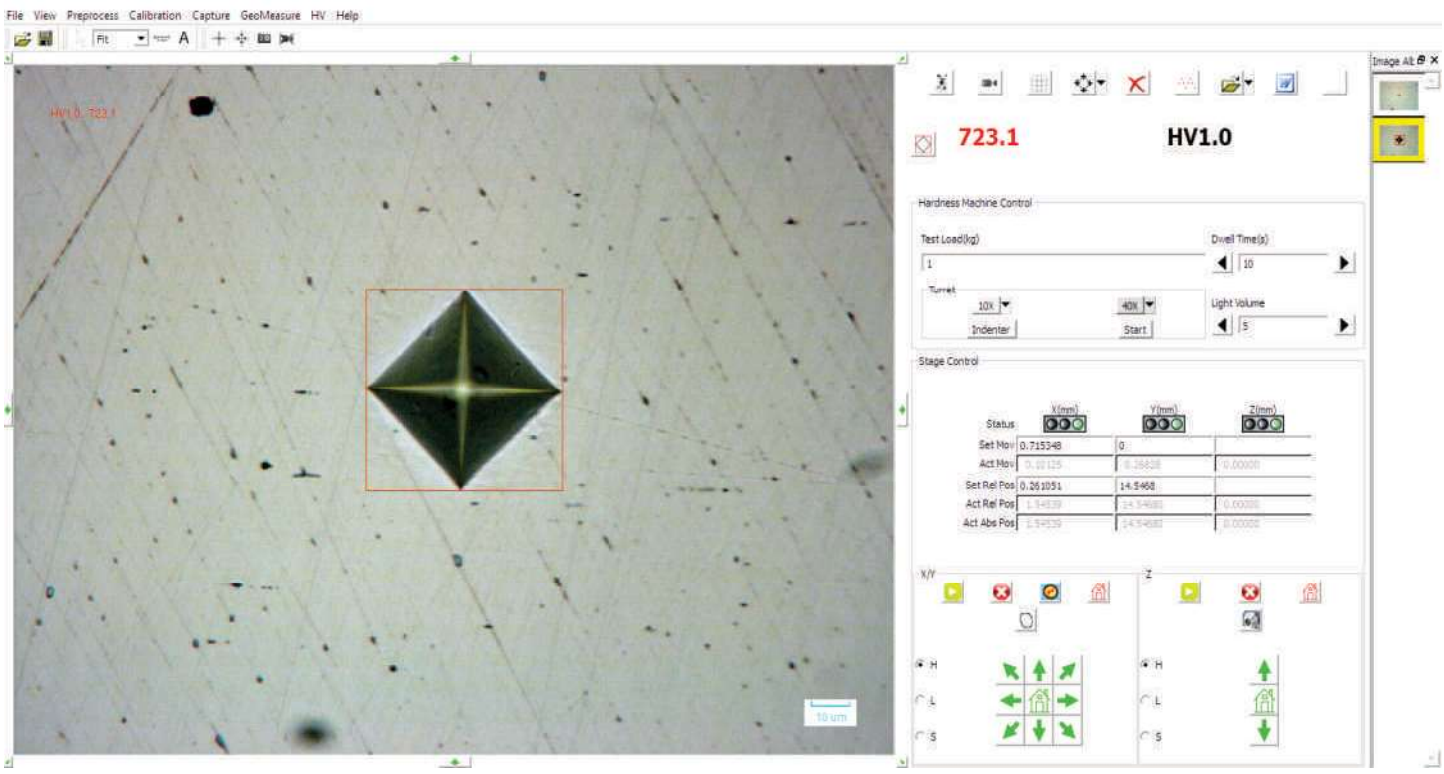
- Manual Eyepiece
- Small LCD Screen
- Auto / Manual Turret

Model	Test Force (kgf)	Magnification
VHT-10ADT / 10DT / 10AT / 10T / 10AD / 10D / 10A / 10	0.3, 0.5, 1, 3, 5, 10	400X (for measurement) & 100X (for observation)
VHT-50ADT / 50DT / 50AT / 50T / 50AD / 50D / 50A / 50	1, 5, 10, 20, 30, 50	200X (for measurement) & 100X (for observation)

Specification (Series)	VHT- ADT	VHT- DT	VHT- AT	VHT-T	VHT-AD	VHT-D	VHT-A	VHT
Turret Control	Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual
10X Eyepiece	Digital	Digital	Manual	Manual	Digital	Digital	Manual	Manual
Display	Touch	Touch	Touch	Touch	LCD	LCD	LCD	LCD
Adjustable Illumination	O	O	O	O	O	O	O	O
Built in Printer	O	O	O	O	O	O	×	×
RS-232 Port	O	O	O	O	O	O	×	×
USB Port	O	O	O	O	×	×	×	×

Technical Specification (All above models)

- Loading control : Automatic (Loading, Dwell, Unloading)
- Dual optical channel : Eyepiece & camera port.
- Hardness Conversion Scale : Rockwell, Rockwell Superficial, Brinell & Knoop.
- Max Test Height : 165mm
- Depth of Throat : 130mm
- Emergency Switch : Yes

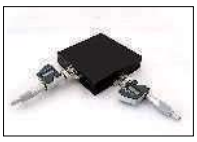


TRUEMET VIDAS-Vickers Impression Diagonal Analysis Software

Version	VIDAS 1.0 (V1)	VIDAS 2.0 (V2)	VIDAS 3.0 (V3)	VIDAS 4.0 (V4)	VIDAS 5.0 (V5)	VIDAS 6.0 (V6)
Auto Focus	×	×	×	×	×	✓
Automatic sample edge scan	×	×	×	×	✓	✓
Indentation Pattern setup	×	×	×	×	✓	✓
Motorized XY Table	×	×	×	×	✓	✓
Digital XY Table with SPC Cable	×	×	✓	✓	×	×
Computer Controlled	×	×	×	✓	✓	✓
Auto Measurement	×	✓	✓	✓	✓	✓
Manual Measurement	✓	✓	✓	✓	✓	✓
Hardness Curve Graph	✓	✓	✓	✓	✓	✓
Cylindrical Correction	✓	✓	✓	✓	✓	✓
Working Data Saving & Retrieval	✓	✓	✓	✓	✓	✓
Geometrical Measurement	✓	✓	✓	✓	✓	✓
Hardness Report in Word or Excel or PDF	✓	✓	✓	✓	✓	✓


USB Camera

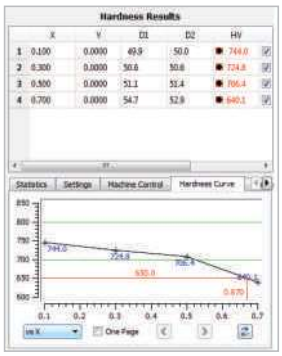

Auto Measurement


Digital XY Table

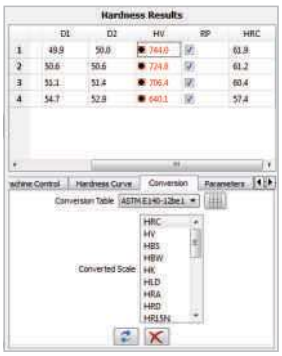

Motorized XY Table

Main Features of VIDAS

- **Auto measurement:** With a single click, system automatically measures the indentation and gives the vickers hardness value on screen.
- **Hardness curve graph:** System automatically plots the hardness value vs test point depth graph and calculates the effective case depth.
- **Hardness conversion, Cylindrical correction, and Validation:** The measured Vickers Hardness value can be converted to other hardness scales such as HBW, HK, HRC, HRB, etc . HV can be corrected for non-planar surfaces. System calculates the minimum sample thickness, minimum test point to sample edge distance, etc for validation.
- **Statistical Calculation:** Statistical values such as average, min, max, standard deviation, Cp, Cpk, etc are automatically generated.
- **Automatic sample contour scan and indentation pattern set up:** This feature is limited to VIDAS 5.0 and VIDAS 6.0 versions only, system can automatically scan the sample contour and generate test points by defined patterns.
- **Working Data saving and retrieval:** Software can save and retrieve the hardness measurement data and images in data files.
- **Hardness Report:** With a mouse click, the system automatically generates a Microsoft Word or Excel Document or PDF reports which contains the measurement data, statistical information, measurement images and the hardness Curve graph. User may enter own additional information for reporting.



Hardness Curve Graph View



Hardness Conversion, Cylindrical Correction, and Validation View

Statistical Calculation View

Report Entry

TRUEMET

Delhi

Micro Vickers Hardness (HV) Test Results

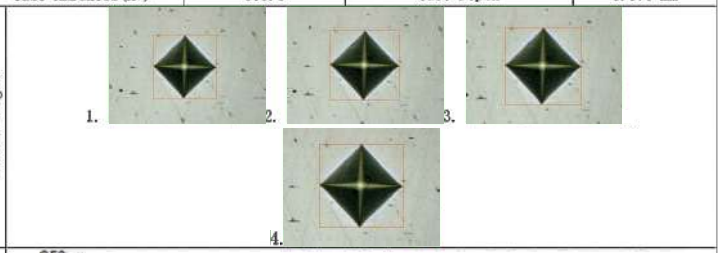
Customers		Date	
Part Name		Part No.	
Heat No.		Lot No.	
Upper Limit	800.0	Lower Limit	700.0
Sample Cyl./Sph. Diam.	0.00 mm	Test Load	1000g

Test Results

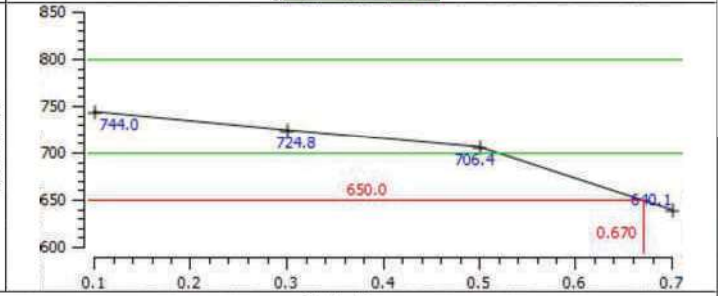
Sr	X	Y	D1	D2	Hardness	Sr	X	Y	D1	D2	Hardness
	mm	mm	um	um	HV		mm	mm	um	um	HV
1	0.100		49.9	50.0	744.0						
2	0.300		50.6	50.6	724.8						
3	0.500		51.1	51.4	706.4						
4	0.700		54.7	52.9	640.1						

Case Hardness (HV)	650.0	Case Depth	0.670 mm

Indent Images



Hard. Curve



Statistics

Maximum	744.0	Minimum	640.1
Average	703.8	Std. Dev.	45.2
Cp	0.37	Cpk	0.03

Test Report View

Standard Features

- **Image/Video capturing:** Software can capture and save images/videos on Direct Show compatible USB cameras.
- **Geometry measurement:** System provides the tools to draw and measure common geometric shapes such as lines, angles, rectangles, arcs/circles, ellipses, polygons, point-to-line, and point-to-arc, etc. With a mouse click, system generates a Word document for the geometry measurements.
- **Calibration:** For measurement applications, the camera can be calibrated with a stage micrometer ruler or grid.
- **Calibration management:** Software allows user to save/manage multiple calibrations as per machine's magnification.
- **Image processing:** Software provides a rich set of image processing tools for advanced applications, which include adjusting Brightness, Contrast, Gamma, Histogram Level, Sharp, Smooth, Invert, and Convert to Grey functions. On grey scale images, system provides various advanced tools in filtering and finding edges, as well as some standard tools in morphological operations such as open, close, dilation, erosion, and flood fill, etc.

Computer Controlled Load Cell Based Brinell Hardness Tester

Features

- Computer Controlled Load Cell Based Touch Screen Brinell Hardness Tester.
- Software controlled hardness tester to switch between objective lens and indenter without manual control of hardness tester.
- Automatically measure the Indentation with a single click and give the Brinell Hardness Value.
- Load/Scale selection through touch panel.
- Wide load range from 62.5 to 3000kgf.
- Automatic testing (Loading, Dwell, Unloading), no need to apply initial test force.
- System automatically generates a Microsoft Word or Excel Document or PDF file which contains the measurement data, statistical information, measurement image and the hardness curve graph.
- Equipped with emergency stop switch.

THB-3000AT-PC

Computerized Brinell Hardness Tester

Features

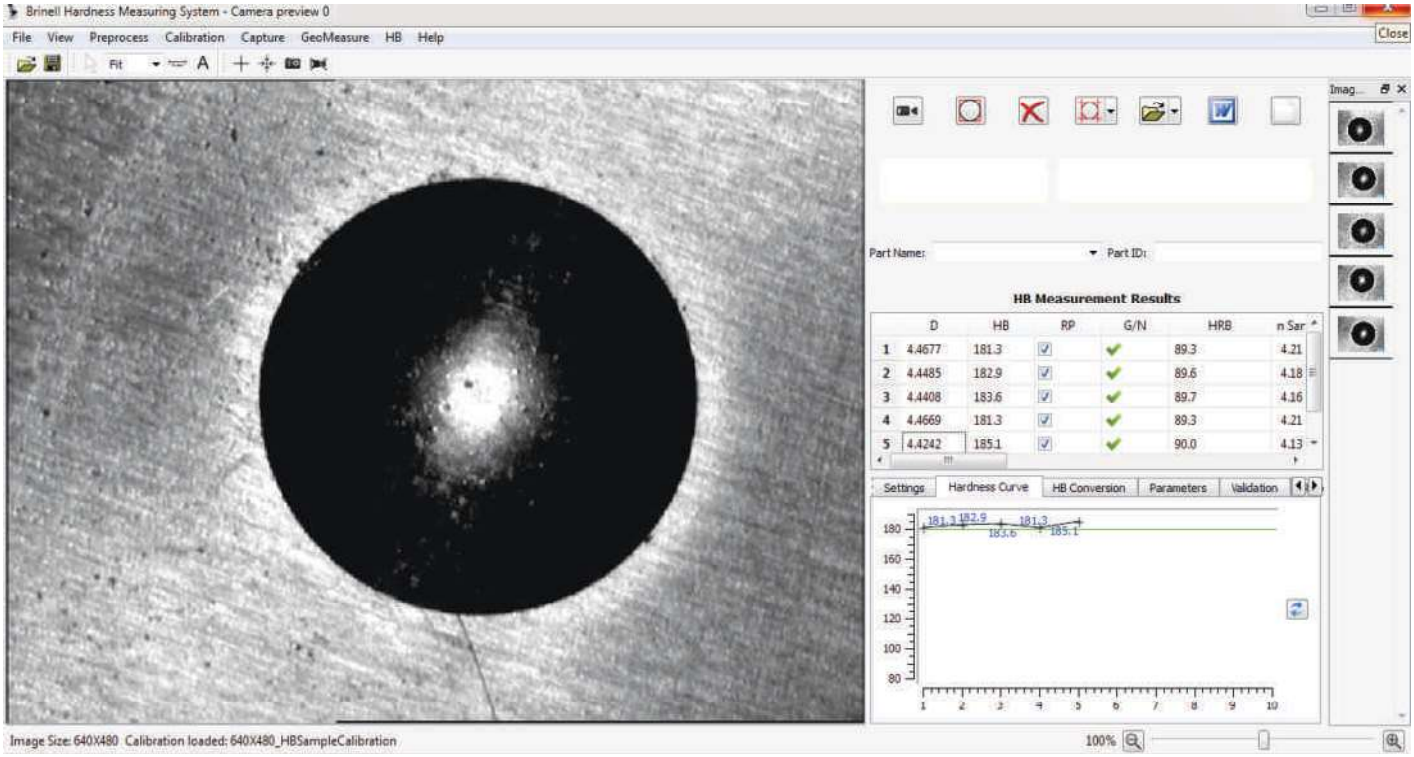
- Fully computerized Brinell Hardness Tester.
- Hydraulic Load and Unload cycle.
- Test force ranging from 250 to 3000 in stages of 250 kgf.
- Manual turret control.
- Automatically measure the Indentation with a single click and given the Brinell Hardness Value.
- System automatically generates a Microsoft Word or Excel Document or PDF file which contains the measurement data, statistical information, measurement image and the hardness curve graph.

HB-3000 PC

Technical Specification

Model	THB-3000AT-PC	HB-3000 PC
Type	Computer Controlled Brinell Hardness Tester	Computerized Brinell Hardness Tester
Load Type	Load Cell Based	Weight Type
Turret Control	Automatic	Manual
Test Loads (kgf)	62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500 & 3000	250 to 3000 in stages of 250kgf
Dwell Time (sec.)	0-60	—
Maximum Test Height (mm)	220	380
Scale Least Count (mm)	0.001	0.001
Throat Depth (mm)	135	200
Power Supply	Single Phase (220V ±5, 50Hz)	Three Phase (415V ±3, 50Hz)
Weight (Approx) (kg)	125	450

TRUEMET BIDAS (Brinell Impression Diameter Analysis Software)

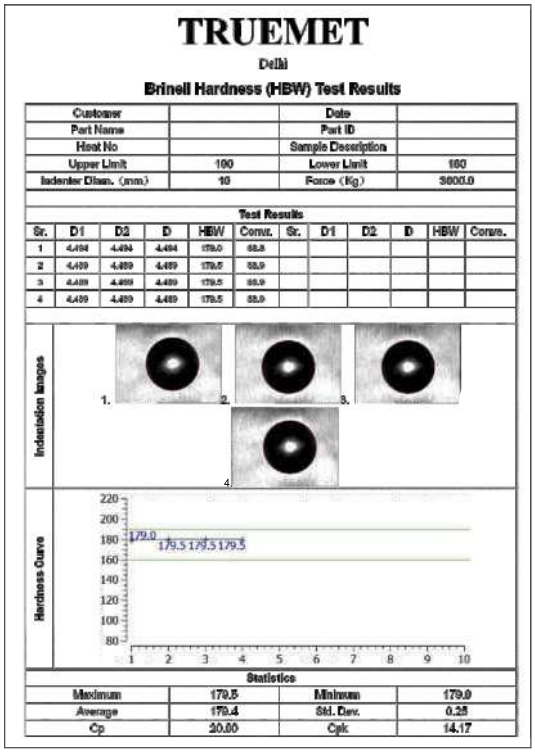


Features

- **Auto measurement:** With a single click, system automatically measures the indentation and gives the vickers hardness value on screen.
- **Hardness curve graph:** System automatically plots the hardness value vs test point depth graph and calculates the effective case depth.
- **Hardness conversion, Cylindrical correction, and Validation:** The measured Vickers Hardness value can be converted to other hardness scales such as HBW, HK, HRC, HRB, etc . HV can be corrected for non-planar surfaces. System calculates the minimum sample thickness, minimum test point to sample edge distance, etc for validation.
- **Statistical Calculation:** Statistical values such as average, min, max, standard deviation, Cp, Cpk, etc are automatically generated.
- **Working Data saving and retrieval:** Software can save and retrieve the hardness measurement data and images in data files.
- **Hardness Report:** With a mouse click, the system automatically generates a Microsoft Word or Excel Document or PDF reports which contains the measurement data, statistical information, measurement images and the hardness Curve graph. User may enter own additional information for reporting.
- **Geometry measurement:** System provides the tools to draw and measure common geometric shapes such as lines, angles, rectangles, arcs/circles, ellipses, polygons, point-to-line, and point-to-arc, etc. With a mouse click, system generates a Word document for the geometry measurements.
- **Calibration:** For measurement applications, the camera can be calibrated with a stage micrometer ruler or grid.

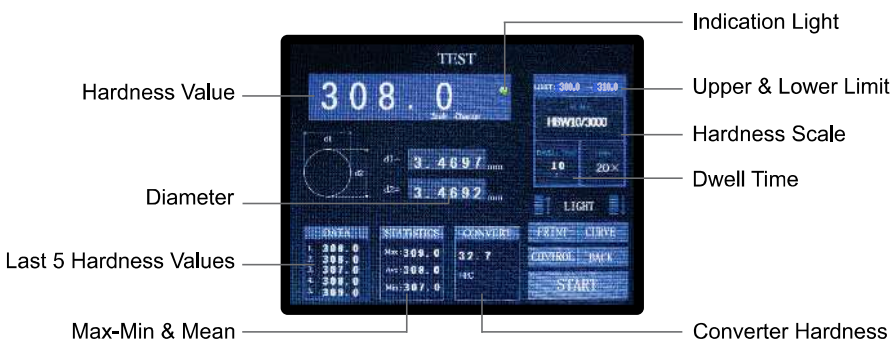
TRUEMET BIDAS Kit

- BIDAS in a hand held instrument. It can connect with any kind of Brinell Hardness Tester and automatically give the Brinell Hardness value, Hence replace traditional mechanical reading microscope. and retrieve the hardness measurement data and images in data files.


TRUEMET
Delhi
Brinell Hardness (HBW) Test Results
Customer | | Date | |
Part Name | | Part ID | |
Heat No | | Sample Description | |
Upper Limit | 100 | Lower Limit | 160
Indenter Diam. (mm) | 10 | Force (Kg) | 3000.0
Test Results
Sr. D1 D2 D HBW Conv. Sr. D1 D2 D HBW Conv.
1 4.494 4.494 4.494 179.0 88.8
2 4.489 4.489 4.489 179.5 88.9
3 4.489 4.489 4.489 179.5 88.9
4 4.489 4.489 4.489 179.5 88.9
Indentation Images
Hardness Curve
179.0 179.5 179.5 179.5
Statistics
Maximum 179.5 Minimum 179.0
Average 179.4 Std. Dev. 0.25
Cp 20.00 Cpk 14.17

Load Cell Based Brinell Hardness Tester (62.5 - 3000 kgf)

THB-3000ADT



THB-3000ADT

Features

- Load Cell Based Touch Screen Digital Brinell Hardness Tester.
- The hardness value can be displayed directly and no need to enter the length of the diagonal.
- Automatic switching of indenter and objective lenses.
- Load/Scale selection through touch panel.
- Wide test force from 62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500 & 3000 kgf.
- Automatic testing (Loading, Dwell, Unloading), no need to apply initial test force.
- User can measure the diameter of impression by 10X Digital Eyepiece.

HBE-3000L

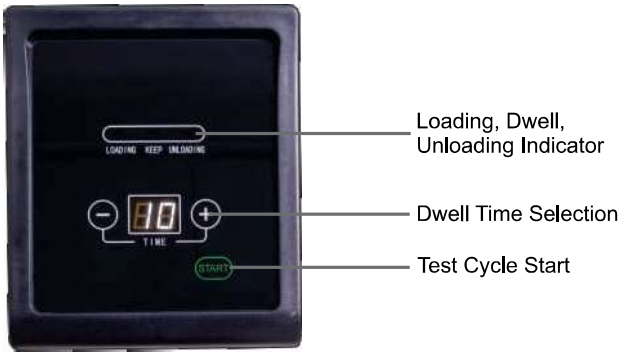
HBE-3000L

Features

- Load cell based digital Brinell hardness tester.
- Hardness value displayed directly on LCD screen after entering the diameter of impression.
- Load/Scale selection through keypad.
- Wide test force from 62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500 & 3000 kgf.
- Automatic testing (Loading, Dwell, Unloading) after applying the preliminary test force by hand.
- User can measure the diameter of impression by Handheld Brinell Microscope.

Specification	THB-3000ADT	HBE-3000L
Display	Touch	LCD
Turret Control	Auto	×
10X Eyepiece	Digital	×
Dwell time (sec.)	1-60	1-99
Max Test Height (mm)	220	220
Depth of Throat (mm)	160	130
Hardness Conversion	o	×
Statistical Calculation	o	×
Built in Printer	o	o
Emergency Stop Switch	o	o

Touch Screen Brinell Hardness Tester (Weight Type)



HB-3000

Features

- Touch Screen panel for Dwell time selection, and test cycle start.
- Wide test force from 187.5, 250, 500, 750, 1000, 1500 & 3000 kgf.
- Automatic testing (Loading, Dwell, Unloading), no need to apply preliminary test force.
- Precision testing, stable structure and no deformation.
- Ability to work in harsh environment.

Specification	HB-3000
Display	Touch
Dwell time (sec.)	1-60
Max Test Height (mm)	220
Depth of Throat (mm)	125

Portable Hydraulic Brinell Hardness Tester

Portable brinell hardness tester adopts hydraulic principle and applies 3000kgf test force manually. It is a unique portable hardness tester which applies test condition with 3000kgf test force on a 10mm carbide ball indenter. The testing result of this instrument is true, accurate with good repeatability and it has a good correspondence with tensile strength. The test condition and accuracy meet the requirements of ISO 6506 and ASTM E10 and can test rough castings, non ferrous metals and semi finished products after tempering heat treatment.

Features

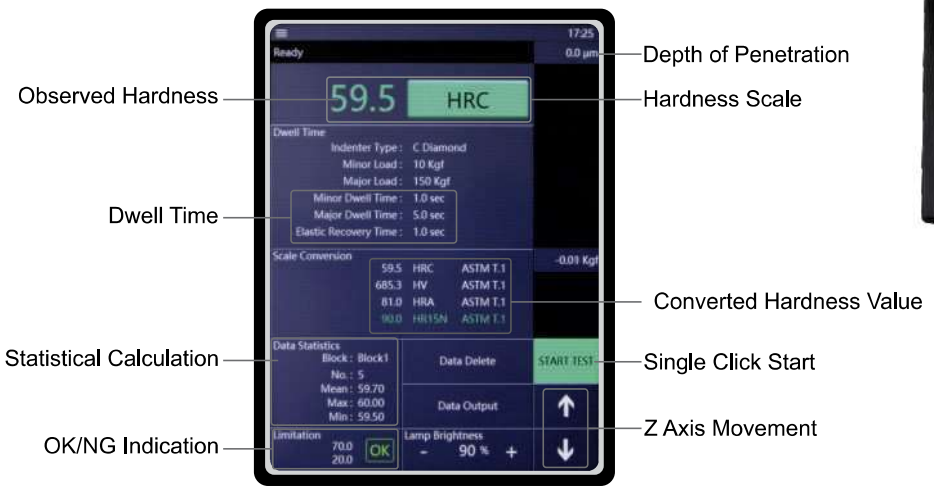
- On-site Testing
- Accurate Testing
- Permanent Indentation
- Wide Application Range
- Wide Testing Range

Specification	THB-3000
Test Force	3000kgf (1000kgf, 750kgf, 500kgf optional)
Accuracy of Test Force	0.5 %
Indentor	10mm Carbide test ball (5mm optional)
Test Range	16-650 HBW
Max. Specimen Height	350 mm
Max. Depth of Throat	100 mm
Repeatability & Error	Complies with ISO 6506 & ASTM E10
Net Weight	14 kg

THB-3000A

THB-3000

Fully Automatic Touch Screen Load Cell Based Rockwell Hardness Tester



TLRH-Z / TLRSH-Z

Features

Automatic Z Axis

Just press START, entire process will be done automatically. The sample will be auto lifted to approach the indentor, and finish hardness testing automatically.

Load Cell, Closed Loop, Force Control

TLRH-Z/TLRSH-Z is a new generation load cell Rockwell Hardness Tester with electronically controlled, closed loop system and advanced force technology to achieve absolute accuracy, reliability and repeatality.

Adjustable Illumination System

Built-in adjustable illumination light source is fitted in machine to see the test area clearly.

Large Touch Screen Panel

Multi function 8 inch touch screen panel is fitted on machine which display various data output. Such as observed hardness, permanent depth of penetration, max depth of penetration, indentor type, Minor & Major Load, multiple conversion value, Data Statistics, OK&NG.

Hardness Conversion

4 conversion scales (hardness value) can be displayed at the same time as per ASTM & ISO standard.

Data Output

Equipped with built-in thermal printer to take the print out hardness result. USB port is also available to get the data in pendrive.

Specification	TLRH-Z	TLRSH-Z
Z Axis Movement	Auto	Auto
Display	8 inch Touch Screen	8 inch Touch Screen
Initial Test Force (N)	98.07N (10kgf) for Rockwell	29.42 N (3kgf) for Superficial 98.07N (10kgf) for Rockwell
Main test force (N)	588.4N, 980.7N, 1471N (60kgf) (100kgf) (150kgf)	147.1N, 294.2N, 441.3N, 588.4N, 980.7N, 1471N (15kgf) (30kgf) (45kgf) (60kgf) (100kgf) (150kgf)
Loading Control	Automatic (Loading, Dwell, Unloading)	Automatic (Loading, Dwell, Unloading)
Conversion Scale	HR (Rockwell), HB (Brinell), HV (Vickers)	HR (Rockwell), HB (Brinell), HV (Vickers)
Max Test Height	270mm	270mm
Depth of Throat	165mm	165mm
Dwell Time	1~60s	1~60s
Data Output	Built-in printer & USB port	Built-in printer & USB port

Fully Automatic Touch Screen Load Cell Based Rockwell Hardness Tester (Heavy Duty)

Introduction

The Fully automatic Rockwell hardness tester adopts the advanced closed-loop sensor control technology to realize the automatic control and hardness testing process. The loading system uses a high precision force sensor and a controller to form a closed loop to track and control the whole microsecond loading process.

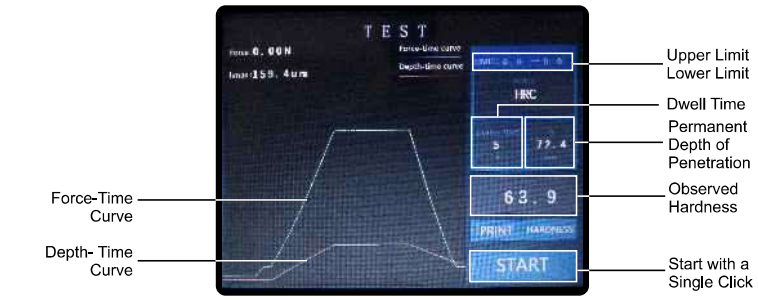
TLRH-Z Curve / TLRSH-Z Curve

Features

- Fully automatic high-speed response closed-loop sensor loading system, moving the platform as a whole, realizing high-precision and fast testing to improve the control accuracy of the actuator.
- Real time display for Force-Time & Depth-Time curve.
- Testing Cycle starts just after touching the specimen with indenter (no need to apply initial test force).
- GO/NG tolerance judgement.
- Hardness scale conversion HR, HB, HV.
- Built-in thermal printer.
- Built-in flexible illumination light source to focus light on test area.
- Permanent depth of penetration displayed on screen.

Load Cell Based Touch Screen Rockwell / Rockwell Cum Superficial Hardness Tester

TLRH-mCurve/TLRSH-mCurve



Curve View

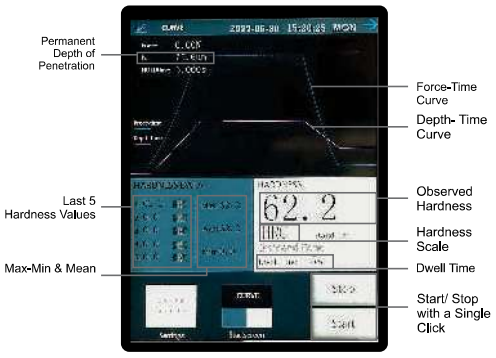
Standard View

Technical Parameters	TLRH - Z Curve	TLRSH - Z Curve	TLRH - mCurve	TLRSH - mCurve
Display	8 inch Touch Screen	8 inch Touch Screen	5 inch Touch Screen	5 inch Touch Screen
Initial Test Force (N)	98.07N (10kgf) for Rockwell	29.42 N (3kgf) for Superficial 98.07N (10kgf) for Rockwell	98.07N (10kgf) for Rockwell	29.42 N (3kgf) for Superficial 98.07N (10kgf) for Rockwell
Main Test Force (N)	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf), 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf), 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)
Max Test Height	190mm	190mm	160mm	160mm
Depth of Throat	165mm	165mm	165mm	165mm
Dwell Time	1~99s	1~99s	1~99s	1~99s

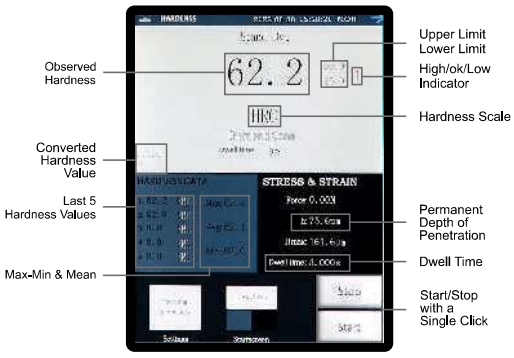
Load Cell Based Touch Screen Rockwell / Rockwell Cum Superficial Hardness Tester

Features

- Load cell based.
- Touch screen operation.
- Real time display for Force-Time & Depth-Time curve.
- Resolution : 0.1 HR.
- Testing Cycle starts just after touching the specimen with indenter (no need to apply initial test force).
- GO/NG tolerance judgement.
- Hardness scale conversion HR, HB, HV.
- Built-in thermal printer.
- Load/Scale selection through touch panel.
- Built-in flexible illumination light source to focus light on test area.
- Permanent depth of penetration displayed on screen.



Curve View



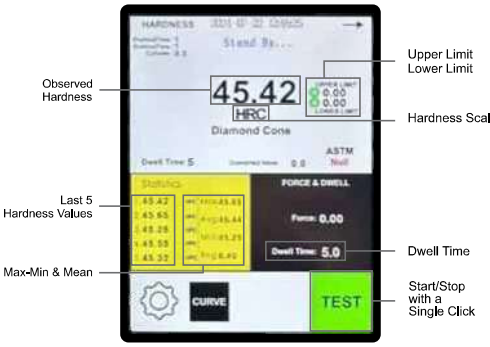
Standard View

TLRH-Curve/TLRSH-Curve

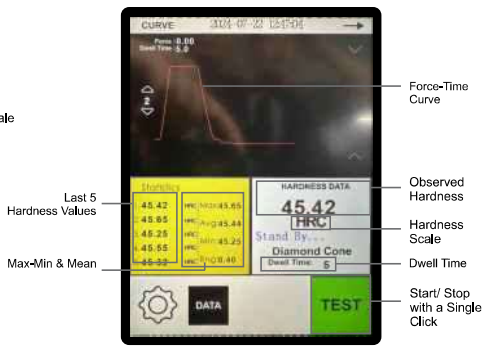
TLRH-sCurve/TLRSH-sCurve

Features

- Load cell based.
- Touch screen operation.
- Real time display of Force-Time Curve.
- Resolution : 0.01 HR.
- Testing Cycle starts just after touching the specimen with indenter (no need to apply initial test force).
- GO/NG tolerance judgement.
- Hardness scale conversion HR, HB, HV.
- Built-in thermal printer.
- Load/Scale selection through touch panel.
- Built-in flexible illumination light source to focus light on test area.



Standard View



Curve View

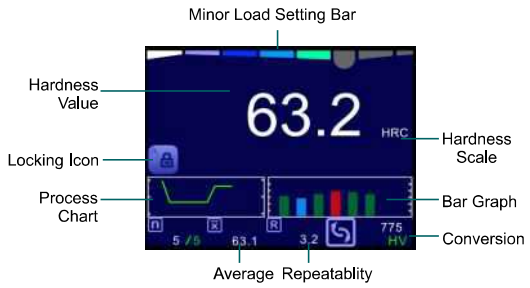
Technical Parameters	TLRH - Curve	TLRSH - Curve	TLRH - sCurve	TLRSH - sCurve
Display	8 inch Touch Screen	8 inch Touch Screen	8 inch Touch Screen	8 inch Touch Screen
Initial Test Force (N)	98.07N (10kgf) for Rockwell	29.42 N (3kgf) for Superficial 98.07N (10kgf) for Rockwell	98.07N (10kgf) for Rockwell	29.42 N (3kgf) for Superficial 98.07N (10kgf) for Rockwell
Main Test Force (N)	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf), 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf), 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)
Max Test Height	165mm	165mm	165mm	165mm
Depth of Throat	170mm	170mm	170mm	170mm
Dwell Time	1~99s	1~99s	1~99s	1~99s

Rockwell Hardness Tester (Weight Type)

Features

- Motorized Digital Rockwell Hardness Tester.
- Touch Screen panel for Dwell time selection and test cycle start.
- Automatic testing (Loading, Dwell, Unloading) after applying the preliminary test force by hand.
- Minor load setting by LCD bar graph.
- Tolerance measurement with alarm indication.
- Easy to read, Large 320 x 240 TFT LCD display.
- Memory of 500 measurement values for browsing and output.
- Hardness conversion facility available as per ISO-18265 and ASTM-E140 in different scales such as Brinell, Vickers, Knoop, Leeb, Rockwell & Rockwell Superficial.

TRH-150DM



TRH-150D

Features

- Economical Digital Rockwell Hardness Tester.
- Minor load setting by LCD bar graph.
- Tolerance measurement with alarm indication.
- Easy to read, Large 320 x 240 TFT LCD display.
- Memory of 500 measurement values for browsing and output.
- Hardness conversion facility available as per ISO-18265 and ASTM-E140 in different scales such as Brinell, Vickers, Knoop, Leeb, Rockwell & Rockwell Superficial.

TRH-150A

Features

- Analogue Rockwell Hardness Tester.
- Decent design, high testing precision and simple operation.
- Adopted car painting technology. The paint shade do not fade and machine looks like new over year.
- The Elevating screw is guided in a hardened & ground bush, not allowing movement of elevating screw more than 0.05mm when raised to full height.
- An non-friction linear movement with almost no clearance is provided for a perfect movement of diamond holder. This enable testing of small diameter pin or ball upto 3mm diameter.
- The machine provided with manual zero setting dial indicator having least count of 0.5 HR and automatic load selection by knob.

Technical Parameters	TRH-150DM	TRH-150D	TRH-150A
Display	LCD Display	LCD Display	Analogue dial guage
Least Count	0.1 HR	0.1 HR	0.5 HR
Loading Control	Automatic	Manual	Manual
Dwell Time	1-60 sec	×	×

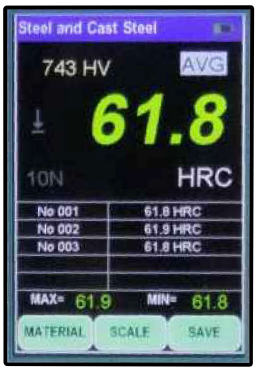
Technical Specification (All above models)

- Initial Test Force (N) : 98.07N (10kgf)
- Main Test Force (N) : 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)
- Max Test Height : 180mm
- Depth of Throat : 125mm

Ultrasonic Hardness Tester (Model: T-UCI-1

Introduction

- Ultrasonic Hardness Tester works on ultrasonic contact impedance (UCI) method to measure the hardness of metals and alloys as per ASTM A1038. It involves the propagation of high-frequency sound waves through the material being tested and analyzing the resulting wave patterns to determine the material's hardness. Its a non destructive test method as it creates a microscopic indentation only visible when using a high-powered microscope.



T-UCI-I

Features

- **Non-Destructive Testing:** One of the standout features of Ultrasonic Hardness Testers is their non-destructive nature. They allow for hardness assessment without causing any damage to the tested material.
- **Rapid Measurement:** It offers fast and efficient measurement capabilities, providing real-time results. This feature allows for quick decision-making and reduces downtime, enhancing productivity and efficiency in quality control processes.
- **Complex Shape Accessibility:** With the ability to measure complex shapes and access hard-to-reach areas, Ultrasonic Hardness Testers overcome the limitations of traditional hardness testing methods. This feature allows for comprehensive hardness assessments, even in challenging geometries.
- **Material Function:** It include 3 new material settings to facilitate hardness testing of special materials
- **User-Friendly Interface:** this machine comes with a user-friendly interfaces and intuitive controls, making them accessible to professionals with varying levels of technical expertise. This feature simplifies the testing process and enhances user experience.
- **Multipoint Calibration:** For materials with different elastic modulus, provide multi-point calibration function for any hardness standard based on your standard hardness samples.
- **USB Interface:** USB communication interface allows for data exchange and parameter setting with PC. (optional)
- **Limits:** The upper and lower limits of the hardness value can be pre-set, and an automatic alarm will be issued if the range is exceeded, which is convenient for users to meet the needs of batch testing.
- **Memory:** 600 sets of hardness measurement data each includes measurement date, sensor type, material, number of times, single measurement value, average value, maximum value, minimum value, hardness scale and other information.

Technical Specification

Measurement direction	Perpendicular to Testing Surface
Measuring Materials	Steel & Cast Steel, Cast Aluminum Alloy, Pure Copper & 3 othermeterial
Display	3.5-inch IPS full digital color LCD display, resolution 480×320
Probe Recognition	Automatic recognition + manual setting, supports hot swapping
Hardness Scale & Test Range	HV 50~1599, HB 85~550, HRB 41-100, HRA 61~85.6, HRC 20~76
Accuracy	±3%HV, ±3%HB, ±1.5 HR (Using test stand)
Power Source	3.6V mAh Re-Chargeable Lithium Battery (Endurance – 10 hrs)
Standard Delivery	Main Unit 1pc, Probe - 1 pc, Test Block - 1pc, Battery charger -1 pc, Mannual - 1 pc, Carry case

Probe Parameters :

Probe (Test Force)	1kgf (10N)	2kgf (20N)	5kgf (50N)	10kgf (98N)
Accessory	Optional	Optional	Optional	Optional
Diameter	22mm	22mm	22mm	22mm
Length	150mm	150mm	150mm	150mm
Resonant rod diameter	3.1mm	3.1mm	3.1mm	3.1mm
Maximum roughness of test surface	Ra<3.2um	Ra<5um	Ra<10um	Ra<15um
Minimum workpiece weight	0.3kg	0.3kg	0.3kg	0.3kg
Minimum workpiece thickness	2mm	2mm	2mm	2mm

Portable Leeb Hardness Tester

PHT-IM

Features

- Durable metal case body
- LCD Display of 128X64 matrix
- Test at any angle (360°)
- Battery indicator
- Automatic power off to save energy
- User calibration functions
- User Friendly Keypad

Features

- Built-in printer & can print testing results any time
- OLED display of 128X64 matrix
- Lithium cell rechargeable battery
- Test at any angle (360°)
- Battery indicator
- Automatic power off to save energy
- User calibration functions

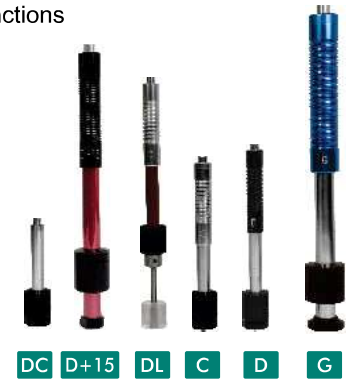
PHT-II

PHT-I

Features

- Economical portable leeb hardness tester
- LCD Display of 128X64 matrix
- Test at any angle (360°)
- Battery indicator
- Automatic power off to save energy
- User calibration functions

Different types of impact devices:	
Impact Device D :	Universal Standard Impact device used for testing majority of metallic components.
Impact device DL:	Testing of slender, narrow groove and extermely confirmed spaces.
Impact Device DC:	Extermely short impact device for very confined space such as holes, cylinders, etc.
Impact Device DL+15 :	Slim front section with coil set back used in grooves, recessed surface like T-Slot.
Impact Device C :	low impact energy device used for testing case hardened, coating and thin walled components.
Impact Device G :	Suitable on heavy components such as rough casting and forgings in brinell scale only.
Impact Device E :	Suitable for testing super high hardness material.



Model	PHT-IM	PHT-II	PHT-I
Measuring Materials	Steel and cast steel, alloy tool steel, stainless steel, gray cast iron, nodular cast iron, cast aluminum alloy, copper zinc alloys (brass), copper and tin alloy, copper (bronze), forged steel		
Accuracy	±6HLD (D impact device)	±6HLD (D impact device)	±6HLD (D impact device)
Measuring Direction	360°	360°	360°
Hardness Scale	HL, HB, HRB, HRC, HRA, HV, HS	HL, HB, HRB, HRC, HRA, HV, HS	HL, HB, HRB, HRC, HRA, HV, HS
Display	128*64 digital matrix LCD	OLED display of 128*64 matrix	128*64 digital matrix LCD
Date Memory	Max 600 groups (relative to impact times 1~32 adjustable)	Max 600 groups (relative to impact times 1~32 adjustable)	Max 600 groups (relative to impact times 1~32 adjustable)
Power	2*1.5V AA Battery	Rechargeable li-Battery	2*1.5V AA Battery
Size	152*76*33mm	209*85*45mm	152*76*33mm
Weight	0.4kg	0.6kg	0.3kg

Analogue Shore A & D Hardness Testers

Special Features

- Indentors are made of high speed steel (HSS).
- Plungers are fitted with linear Bearings, contact base surface is ground and hard chrome plated.
- A solid and rigid outer body.
- Standard Carried : ASTM D-2240

Type		Range	Recommended Testing Range	Accuracy
Shore A	Basic Model	0-100 HA	10-90 HA	± 1.05 HA
	Export Model	0-100 HA	10-90 HA	± 1 HA
Shore D	Basic Model	0-100 HD	10-90 HD	± 1.05 HD
	Export Model	0-100 HD	10-90 HD	± 1 HD

Shore Basic Model is also available with pointer

Basic Model

Export Model

Digital Shore Hardness Testers

Technical Parameters

- Display : 4 digits LCD Display
- Range : 0~100H(Shore Model)
- Accuracy : ±1% or ±5 µm, (Shore Model)
- Resolution : 1 µm (0.1 mils)
- Measurement speed : >30 (readings per minute)
- Case : High impact ABS
- Batteries : 2x1.5v AAA (UM-4) battery
- Operating temperature : 0°C~50°C (32°F~120°F)
- Size : 170x62x22mm
- Weight : 280g
- Power off : 2 modes (Manual off at any time by pressing the power key till OFF shows on the display or Auto power off after 5 minutes from last key operation).

Special Features

- Digital Display
- Automatic Hardness Measurement
- Portable & Handheld Design
- Quick Testing User can Interface
- Data Output & Connectively
- Battery Power

Shore Hardness Gauge Series:

Type (Scale)	Indenter	Typical Examples of Materials	Hardness
Shore A	0.79 Truncated (frustum) cone	Soft vulcanized rubber, natural rubber, nitriles, thermoplastic elastomers, flexible polyacrylics and thermosets, wax, felt, and leathers.	20~90A
Shore B	R0.1 Cone	Moderately hard rubber, thermoplastic elastomers, paper products, and fibrous materials.	Above 90 A Below 20 D
Shore C	0.79 Truncated (frustum) cone	Medium-hard rubber, thermoplastic elastomers, medium-hard plastics and thermoplastics.	Above 90 B Below 20 D
Shore D	R0.1 Cone	Hard Rubber, thermoplastic elastomers, harder plastics, and rigid thermoplastics.	Above 90 A
Shore DO	R1.2 Spherical radius	Moderately hard rubber, thermoplastic elastomers, and very dense textile windings.	Above 90 C Below 20 D
Shore O	R1.2 Spherical radius	Soft rubber, thermoplastic elastomers, very soft plastics and thermoplastics, medium-density.	Below 20 DO
Shore E	R2.5 Spherical radius	Hard sponge, EVA.	Above 90 DO Below 20 A
Shore OO	R1.2 Spherical radius	Extremely soft rubber, thermoplastic elastomers.	Below 20 O

Model :-

BS-392A
BS-392B
BS-392C
BS-392D
BS-392E
BS-392O
BS-392DO
BS-392OO

Webster Hardness Tester

W-20

Technical Parameters

Testing Range:	0 ~ 20 HW (equivalent to 20 ~ 110 HRE, Model W-20)
Indicator Error:	0.5 HW (5 ~ 17 HW)
Repeatability:	0.5 HW (5 ~17 HW)
Package Dimension	33/25/150 mm
Gross Weight	1.55 KG
Weight:	0.5 kg

Standard Accessories

Item Name	Quality
Webster Hardness Tester	1 Nos.
Standard Hardness Block	1 Nos.
Extra Indenter	1 Nos.
Wranch / Small Screw Drivers / Instruction Manual	1 Nos.

Features

- A portable instrument which can perform onsite hardness test on aluminum alloys. The test result can be taken with only a simple clamp. It is convenient, efficient and reliable. Webster hardness tester is the preferred instrument for testing aluminum alloys mechanical performance in accordance with ASTM B647. Used for quick test the hardness of aluminum profiles, tubings, sheets, accessories and other soft metal. Especially suitable for quick, non destructive on-site 100% final products qualification test. Webster hardness tester can be also used for testing hardness of cooper, brass and soft steel.

Model	Scope	Suitable Material	Opening Size (mm)	Indenter	Spring
W-20	25~110 HRE 58~131 HV	Aluminum	6, φ10		
W-20a		Aluminum	13, φ10		
W-20B		Aluminum	8, φ6		

Profile Projector

Features :

- Screen 200mm Dia with Cross Line
- Clips to hold Drawing or films
- 360 degree rotatable graduated ring
- Surface Light Lamp
- Objective (Projection Lens)
- Micrometer Head with least count of 0.005mm
- X-Y Stage travel upto 25 X 25mm
- Focusing knob for Up & Down motion.

Technical Parameters :

- Work Stage : 150 mm X 150 mm
- Magnification : 10X, 20X & 50X
- Travel X & Y : 25 X 25 mm
- Micrometer Head : 0 to 25 mm with accuracy 0.01mm
- Screen Dia : 200 mm, 360 degree rotatable Frosted glass Screen graduated scale.
- Illumination : 12 volt-100 Watt (Counter), 6 Volt-2o Watt (Surface)
- Power Required : 220-230V AC, 50 Hz

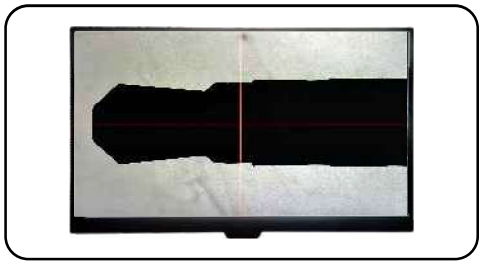
PP-200

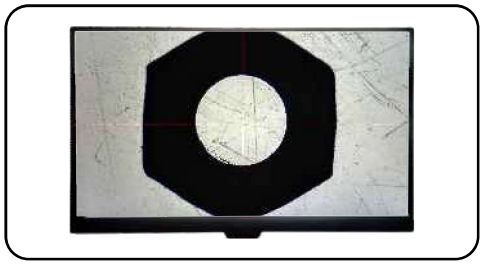
Video Measuring Machine

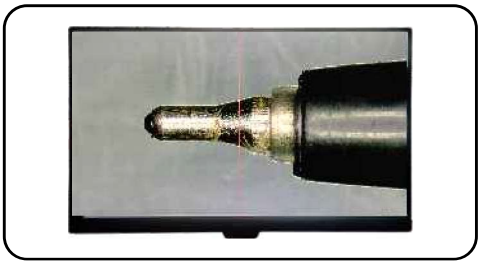
VMM-2010
(LCD Type Video Measuring Machine)

VMM-3020-T
(Computerized Video Measuring Machine)

Screen







Specifications:

Model	VMM-2010	VMM-3020-T
Measuring Size X Y Z（mm）	200×100×75	300×200×150
Glass Plate Size（mm）	260×160	360×260
Stage Size（mm）	332×232	456×366
Product Size L×W×H（mm）	550×300×650	780×580×1000
Weight (KG)	30	150
CCD Camera/Lens	COMST High resolution Color CCD (1/3' ,700T VL) 0 .7-4 .5X Zoom Lens	COMST CCD(1/3' ,700TVL) / Optional for Renishaw touch probe 0 .7-4 .5X Zoom Lens
Optical Parameters	Working Distance: 90mm Magnification :26~ 172X ; View Field :8 . 1~ 1 .3mm	Working Distance :90mm; Magnification :26~ 172X; View Field :8 . 1~ 1 .3mm
Light	LED Ring Light	LED Ring Light
Control	Manual	Manual/ CNC fro Z-axis/ CNC Fro Z-axis with 3 Values
linear Encoder	0.001mm	0 .001mm
Accuracy(um)	X-Y≤ (3+L/200) μm	X-Y≤ (3+L/200) μm
Power supply	220v± 10% / 1 10v± 10% (AC) 50Hz	220v± 10% / 1 10v± 10% (AC) 50Hz

Salt Spray Chamber

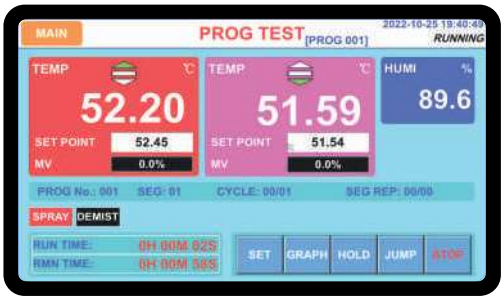
TSST-108

TSST-270

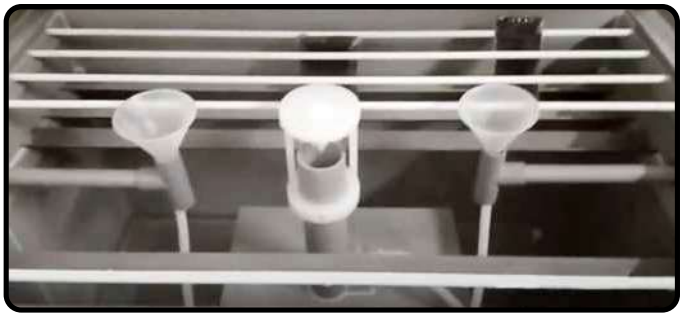
PID Digital Controller

TSST-600T

TSST-1200T

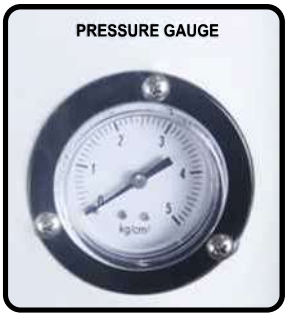


Touch Screen Controller



Saturation Tower & Fog Collector

Measuring Tube



Pressure Gauge

Specifications:

Model	TSST-108/108T	TSST-270/270T	TSST-600/600T	TSST-800/800T	TSST-1200/1200T
Chamber Volume	108 liters	270 liters	600 liters	800 liters	1200 liters
Internal Size WDH	600 ×450 ×400mm	900×600×500mm	1200×1000×500mm	1600×1000×500mm	2000×1000×600mm
External Size WDH	1070 ×600 ×1180mm	1410×880×1280mm	1900×1300×1400mm	2300×1300×1400mm	2700×1300×1500mm
Controller	TSST: PID digital controller TSST-T: Program touch screen controller				

Technical Specification (All above models)

- Temperature test : Brine test method (NSS ACSS) 35°C±1°C, Corrosion resistance test method (CASS) 50°C±1°C
- Temp Range : RT+5°C ~ +40°C
- Saturation Barrel
- Temp Range : RT+5°C ~ +65°C
- Temp Fluctuation : ± 0.5°C
- Temp Uniformity : ± 2.0°C
- Salt Spray Deposition /Fog Collection : 0.5 ~ 2.0ml/80cm2/h on an average run of at least 16h by horizontal.
- Compressed air pressure : 1.00±0.01kgf/cm^2
- Chamber Material : PVC (Polyvinyl Chloride)
- Timer : Yes
- Defog : Yes
- Alarm : NaCl Water shortage alarm
- Temperature Sensor : Platinum Resistance Pt100
- Power Supply : AC220 ~ 240V, 50Hz, 1-phase
- Standard Accessories : Nozzle×2, Round Stick, V-type stick, User manual×1 (Soft Copy)
- Optional : PH Meter, Compressor

Electro Mechanical Servo Control Universal Testing Machine (ED / CED Series)

Features

- 4 Column 2 ball screw driven & double spaces.
- Testing speed available from 0.01mm/min to 500mm/min (CED Series) and 0.05mm/min to 500mm/mm (ED Series).
- AC servo motor and AC drive.
- Three test speed control module (Displacement control, Load control and Extension control module) (CED Series).
- Machine can be configured with four different load cells. Users can switch between these load cells as per requirements. (CED Series).
- Machine can be configured with eight different extensometer sensors. Users can switch between these sensors as per requirements. (CED Series).

ED Series
(Digital)

CED Series
(Computer Controlled)

Technical Specification

	Models	CED-10 ED-10	CED-20 ED-20	CED-50 ED-50	CED-100 ED-100	CED-200
Force Measurement	Max Load Capacity	10KN	20KN	50KN	100KN	200KN
	Resolution (KN)	0.0005	0.001	0.0025	0.005	0.01
	Accuracy	within ± 1% of the reading from 2% to 100%				
	Calibration	Pre calibrated loadcell (max 4 nos) can be interchanged without further calibration (only in CED series)				
Structure	Type	4 Column 2 ball screw driven & double spaces				
	Max. tensile test space(approx)	800mm	800mm	700mm	700mm	650mm
	Max. compression test space (approx)	1040mm	1040mm	950mm	950mm	1120mm
	Effective test width(approx)	400mm	400mm	500mm	550mm	600mm
Crosshead	Resolution	0.01mm	0.01mm	0.01mm	0.01mm	0.01mm
	Speed Range (stepless in mm/min)	0.01 - 500 (CED series) & 0.05 - 500 (ED series)				
	Return Speed (stepless in mm/min)	0.01 - 500 (CED series) & 0.05 - 500 (ED series)				
	Crosshead speed Accuracy	± 1%				
	Crosshead position adjustment	Both from software and handy remote controller				
Safety Protection	Over travel protection	Over travel safety by fixed and adjustable limit switches at both ends				
	Overload Protection	By system setting				
	Emergency Stop	By emergency push button				
	Standard Accessories	Load Cell 1 No. Hand Remote Controller 1 No. Controller Card 1 No. Compression Plate 2 No. Control Connecting Cable 1 No. Power Cable 1 No. Instruction Manual 1 No.				
	Dimension (LxWxH) in mm approx	740x420x1720	740x420x1720	850x480x1865	1000x550x2076	1108x798x2450
	Weight approx	160kg	160kg	460kg	800kg	1800kg
	Power Requirement	AC220V ±10%, 50Hz				
	Optional Accessories	Computer, Extensometers, Long travel extensometers, Bending fixtures, Vice and Flat type grips, Safety door, Computer system special attachments and Fixtures				

Electro Mechanical Servo Control Universal Testing Machine (CEDN Series)

Features

- 4 Column 2 ball screw driven & double spaces.
- Testing speed available from 0.01mm/min to 500mm/min.
- Panasonic AC servo motor and AC drive.
- Three test speed control module (Displacement control, Load control and Extension control module).
- Machine can be configured with four different load cells. Users can switch between these load cells as per requirements.
- Machine can be configured with eight different extensometer sensors. Users can switch between these sensors as per requirements.

Long travel extensometer

CEDN Series

Technical Specification

	Models	CEDN-10	CEDN-20	CEDN-50	CEDN-100
Force Measurement	Max Load Capacity	10KN	20KN	50KN	100KN
	Resolution (KN)	0.0001	0.0002	0.0005	0.001
	Accuracy	± 0.5% of the reading from 0.2% to 100%			
	Calibration	Pre calibrated loadcell (max 4 nos) can be interchanged without further calibration			
Structure	Type	4 Column 2 ball screw driven & double spaces			
	Max. tensile test space(approx)	670mm	670mm	770mm	650mm
	Max. compression test space (approx)	900mm	900mm	1000mm	1000mm
	Effective test width (approx)	450mm	450mm	450mm	550mm
Crosshead	Resolution	0.01mm	0.01mm	0.01mm	0.01mm
	Speed Range (stepless in mm/min)	0.01 - 1000	0.01 - 1000	0.01 - 1000	0.01 - 500
	Return Speed (stepless in mm/min)	0.01 - 1000	0.01 - 1000	0.01 - 1000	0.01 - 500
	Crosshead speed Accuracy	± 1%			
	Crosshead position adjustment	Both from software and digital remote controller			
Safety Protection	Over travel protection	Over travel safety by fixed and adjustable limit switches at both ends			
	Overload Protection	By system setting			
	Emergency Stop	By emergency push button			
	Standard Accessories	Load Cell 1 No. Digital Hand Remote Controller 1 No. Controller Card 1 No. Compression Plate 2 No. Safety Guard 1 No. Control Connecting Cable 1 No. Power Cable 1 No. Instruction Manual 1 No.			
	Dimension (LxWxH) in mm approx	850x590x1750	840x570x1850	840x570x1850	950x660x2000
	Weight approx	370kg	370kg	420kg	680kg
	Power Requirement	AC220V ± 10%, 50Hz			
	Optional Accessories	Computer, Extensometers, Long travel extensometers, Bending fixtures, Vice and Flat type grips, Computer system special attachments and Fixtures			

Electro Mechanical Universal Testing Machine (ES / CES Series)

Features:

- Single column single ball screw driven & double space.
- Testing speed available from 0.05mm/min to 500mm/mm (CES Series) and 1 mm/min to 500mm/min (ES Series).
- Three test speed control module (Displacement control, Load control and Extension control module) (CES Series).
- Machine can be configured with four different load cells. Users can switch between these load cells as per requirements (CES Series).
- Machine can be configured with eight different extensometer sensors. Users can switch between these sensors as per requirements (CES Series).

ES Series
(Digital)

CES Series
(Computer Controlled)

Technical Specification

	Models	CES-1 ES-1	CES-2 ES-2	CES-3 ES-3	CES-5 ES-5
Force Measurement	Max Load Capacity	1KN	2KN	3KN	5KN
	Resolution (N)	0.05	0.02	0.03	0.05
	Accuracy	within ± 1% of the reading from 2% to 100%			
	Calibration	Pre calibrated loadcell (max 4 nos) can be interchanged without further calibration (only in CES series)			
Structure	Type	Single Column, double spaces, table top			
	Max. tensile test space(approx)	600mm	600mm	600mm	600mm
	Max. compression test space (approx)	600mm	600mm	600mm	600mm
Crosshead	Resolution	0.01mm	0.01mm	0.01mm	0.01mm
	Speed Range (stepless in mm/min)	0.05 - 500 (CES Series) & 1 - 500 (ES Series)			
	Return Speed (stepless in mm/min)	0.05 - 500 (CES Series) & 1 - 500 (ES Series)			
	Crosshead speed Accuracy	± 1%			
	Crosshead position adjustment	Both from software and handremote controller			
Safety Protection	Over travel protection	Over travel safety by fixed and adjustable limit switches at both ends.			
	Overload Protection	By system setting			
	Emergency Stop	By emergency push button			
	Standard Accessories	Load Cell 1 No. Hand Remote Controller 1 No. Controller Card 1 No. Compression Plate 2 No. Control Connecting Cable 1 No. Power Cable 1 No. Instruction Manual 1 No.			
	Dimension (LxWxH) in mm approx	425x400x1315			
	Weight approx	90kg			
	Power Requirement	AC220V± 10%, 50Hz			
	Optional Accessories	Computer, Extensometers, Long Travel Extensometers, Bending fixtures, Vice and Flat type grips, Computer system special attachments and Fixtures			

Computer Control Servo Hydraulic Universal Testing Machine (SCH Series)

Features

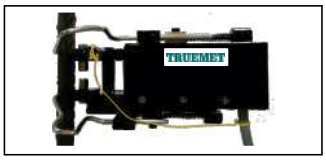
- Fully computer control testing process.
- Front open hydraulic automatic clamping.
- Stable and reliable high intensity 4 columns and 2 reeling screw column structure load frame.
- Auto detection of over load, over travel & specimen break. On detection of any of these conditions, the hydraulic motor is automatically switched off.
- Wide range of testing speed allow testing of various metals as per ASTM, ISO and IS standard.

Front Open Hydraulic Grip

Safety Door

Servo Control Valve

SCH Series



Electronic Extensometer

Technical Specification

	Models	SCH-300D	SCH-600D	SCH-1000D
Force Measurement	Max Load Capacity	300KN	600KN	1000KN
	Resolution (KN)	0.015	0.03	0.05
	Accuracy	within ± 1% of the reading from 2% to 100%		
Structure	Type	4 Column and 2 reeling screw		
	Max. tensile test space (approx)	780mm	900mm	900mm
	Max. compression test space (approx)	550mm	650mm	700mm
	Effective test width (approx)	485mm	500mm	560mm
	Max. Piston Stroke	200mm	200mm	200mm
Crosshead	Resolution	0.01mm	0.01mm	0.01mm
	Speed Range (stepless in mm/min)	0.1 - 123	0.1 - 123	0.1 - 70
	Clamping method	Hydraulic automatic clamping		
	Crosshead speed Accuracy	± 1%		
	Crosshead position adjustment	By hand remote controller		
Safety Protection	Overload Protection	By system setting		
	Emergency Stop	By emergency push button		
	Standard Accessories	Round jaws 1 Set Flat jaws 1 Set Controller Card 1 No. Compression plate 2 Nos. Hand remote control 1 No. Servo control panel 1 No. Safety door 1 No.		
	Weight approx	1800kg	1800kg	1950kg
	Power Requirement	3-Phase, AC 380V, 50Hz		
	Optional Accessories	Computer, Extensometers, Long Travel Extensometers, Bending Fixtures, Vice and Flat Type Grips, Special Attachments & Fixtures		

RIM-14 - An ideal Inverted Metallurgical Microscope

RIM-14 with new designed infinity optical system, can be applied for industry research as forging, smelting, heat treatment, and inspection of raw material. Low position operating knobs 360 degree rotatable viewing head, according with ergonomical design, reduce the fatigue from long-time use.

RIM-14

Intelligent Eco System

RIM-14 with ECO infrared sensing system, is preset to be shutdown when there is no operator within limited time. It is effective to save energy and extend the service life.

Front Magnification Display

With backward nosepiece, the objectives of inverted microscope are invisible. As a convenience to the user, the objective magnification on using is to be showed on the front plate by built-in sensor.

Rackless Mechanical Stage

240mmX250mm three-layer mechanical stage has strong load-carrying capacity, moving range 50mmX50mm. X,Y line rail is adopted for easy and comfortable operation.

Supporting for bright field, dark field, polarizing and differential interference contrast, RIM-14 is applied for different researches.

High contrast dark field

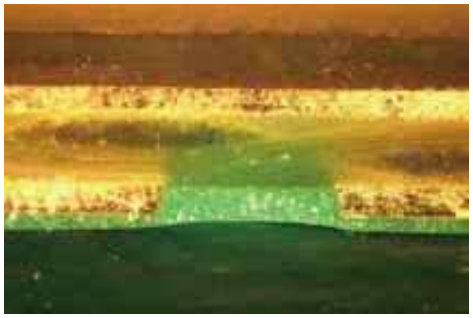
- Taking full advantage of aperture angle, dark field is applied to observe the impurity and flaw in the metallographic microstructure.
- Operating rod on the left of frame, is designed for switch bright and dark field.

Simple polarization

- Without moving the sample, RIM-14 is able to provide the images from different polarizing light by using the 360 degree rotatable analyzer.

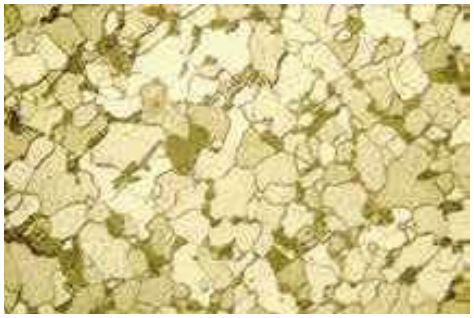
Differential interference contrast system

- DIC attachment combined with polarizing kit, is able to present a sense of relief by increasing the image contrast. It is applied to detect tiny height difference on the sample surface, such as metallurgical materials, mineral, wafer etc.



PCD (dark field)

Metallurgical structure (polarizing)



Metallurgical structure (DIC)

Metallurgical Microscope

RIM-10

- FOV : 22mm
- Magnification : 50X - 1000X
- Illumination System : Halogen & LED

RIM-8

- FOV : 20mm
- Magnification : 50X - 800X (Optional: 1000X)
- Illumination System : Halogen & LED

RIM-5

- FOV : 18mm
- Magnification : 50X - 1000X
- Illumination System : LED

RIM-500U

- FOV : 22mm
- Magnification : 50X - 500X
- Illumination System : Halogen

Technical Parameters

	Model	RIM-14	RIM-10	RIM-8	RIM-5	RIM-500U
Metallurgical Microscope	Type	Inverted	Inverted	Inverted	Inverted	Upright
	Objective Lens	5X, 10X, 20X, 50X, 100X	5X, 10X, 20X, 50X, 100X	5X, 10X, 20X, 50X, 80X (100X Optional)	5X, 10X, 20X, 50X, 100X	5X, 10X, 20X, 50X
Eyepiece	Field of View	22mm	22mm	20mm	18mm	22mm
	Diopter Adjustable	±5	±5	±5	±5	±5
Viewing Head	Trinocular Head Inclination	45°	30°	30°	45°	30°
	Interpupillary Distance	50-75mm	48-76mm	52-75mm	54-75mm	48-76mm
Nose Piece	Nosepiece type	Quintuple	Quintuple	Quintuple	Quintuple	Quadruple
	Reverse Type with Positive Click Stops	O	O	O	O	O
Stage	Size	240X250mm	210X180mm	180X150mm	180X155mm	200X150mm
	Moving Range	50X50mm	50X50mm	80X50mm	75X40mm	77X52mm
Dark & Bright Field	Bright Field	O	O	O	O	O
	Dark Field	O	×	×	×	×
Polarizer & Analyzer	Polarizer	O	O	O	×	×
	Analyzer	O	O	O	×	×
Special Features	Built-in Magnification Sensor	O	×	×	×	×
	Front Magnification Display	O	×	×	×	×
	Intelligent ECO System	O	×	×	×	×

Digital Microscopes

RIM-12LCD 3D

Type	Digital Microscope
Zoom Range	0.7X - 4.5X
Field of View (FOV)	23mm - 3mm
Function	3D Image Inspection, Camera Drawing, Graphic Measurement, Video Recording
Working Distance	100mm
Interface	HDMI / VGA Port
Display Resolution	1080P HD LCD Screen

RIM-12 LCD

Type	Digital Microscope
Zoom Range	0.7X - 4.5X
Field of View (FOV)	23mm - 3mm
Function	Camera Drawing- Video Display Graphic Measurement, Video Recording
Working Distance	100mm
Interface	HDMI / VGA Port
Display Resolution	1080P HD LCD Screen

TLB50-T7 LCD

Type	Digital Microscope
Zoom Range	0.7X - 5X
Field of View (FOV)	23mm - 2mm
Function	Camera Drawing- Video Display Graphic Measurement, Video Recording
Working Distance	100mm
Interface	HDMI / VGA Port
Display Resolution	1080P HD LCD Screen

Stereozoom Microscopes

TZM6565T-T6

Type	Stereozoom Microscope
Zoom Range	0.65X - 6.5X
Eyepiece	10X (Paired), FOV 22mm, Diopter adjustable ±5
Viewing Head	Trinocular Head inclined at 45°, Interpupillary distance 54 - 76mm
Working Distance	110mm

TZM7045T-R3L

Type	Stereozoom Microscope
Zoom Range	0.7X - 4.5X
Eyepiece	10X (Paired), FOV 22mm, Diopter adjustable ±5
Viewing Head	Trinocular Head inclined at 45°, Interpupillary distance 54 - 75mm
Working Distance	100mm

T7050T-T8LS

Type	Stereozoom Microscope
Zoom Range	0.7X - 5X
Eyepiece	10X (Paired), FOV 22mm, Diopter adjustable ±5
Viewing Head	Trinocular Head inclined at 40°, Interpupillary distance 54 - 76mm
Working Distance	100mm

Monocular Microscopes

TLB45-T3 (10A)

Type	Monocular Stereozoom
Zoom Range	0.7X - 4.5X
FOV	9 - 1.6mm
Working Distance	100mm
Output Interface	Can be connected to the USB camera and LCD

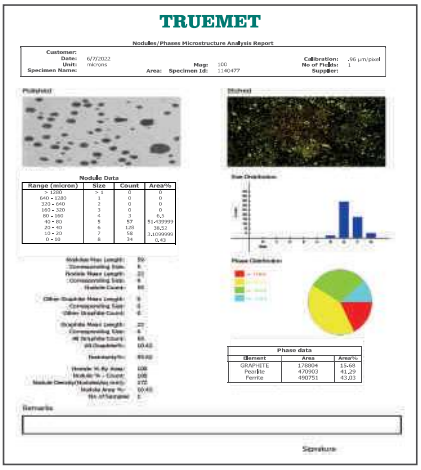
TLB50-T7

Type	Monocular Stereozoom
Zoom Range	0.7X - 5X
FOV	9 - 1.1mm
Working Distance	100mm
Output Interface	Can be connected to the USB camera and LCD

TLB50-T7 AT

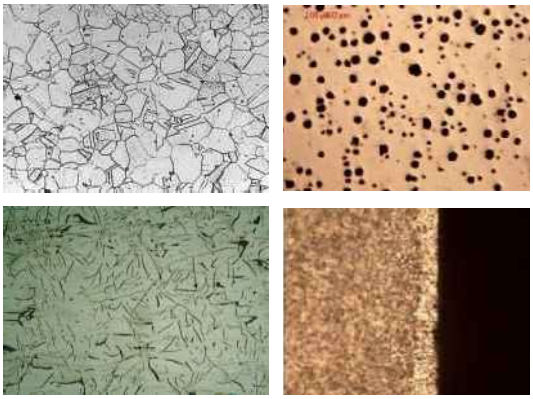
Type	Monocular Stereozoom
Zoom Range	0.7X - 5X
FOV	9 - 1.1mm
Working Distance	100mm
Function	Camera Drawing, Graphic Measurement, Video Recording
Display	Android Tablet (1080P HD)

Metallographic Image Analysis Software

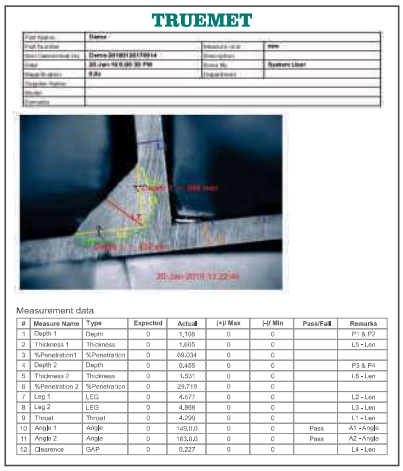


Features

- Phase analysis (as per E-562)
- Porosity (as per ASTM B276)
- Grain size-Planemetric (as per E-1382)
- Grain size-Intercept (as per E-112)
- S G Cast Iron (Nodularity analysis) (as per A-247)
- Gray Cast Iron (Flake analysis) (as per A-247)
- Inclusion Rating (as per E-45)
- Coating | Decarb measurement (as per ASTM E1077)
- SDAS
- Report-PDF & MS Excel

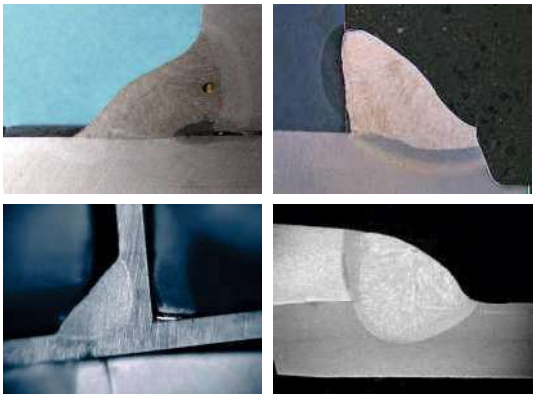


Weld Penetration Measurement Software



Features

- User-friendly Software
- User defined rules for data validation
- User defined parameters
- Template for components with parameters & image
- Automatic Measurement
- Reports generated in PDF & EXCEL
- Component level and joint level reporting



Surface Roughness Tester

Model	TR-110
Parameters (µm)	Ra, Rz, Rq, Rt
Measuring Range	Ra, Rq: 0.05-15.0 Rz, Rt: 0.1-50.0
Sampling Length (mm)	0.25, 0.80, 2.50
Resolution (µm)	0.01
Radius and angle of the stylus tip	Diamond. Radius:10±1µm Angle: 90°(+ 5° or - 10°)
Stylus Static Force	≤ 0.016N
Power	3.7v Li-battery
Host Size (mm)	106 x 70 x 24
Weight: g	200g

TR-110

TR-220

Model	TR220
Parameters (µm)	Ra Rz Rq Rt Rp Rv R3z R3y Rz (JIS) Rs Rsk Rsm Rku Rmr Ry Rmax Rpc Rk Rpk Rvk Mr1 Mr2
Measuring Range	Ra Rq : 0.005µm ~ 16µm Rz R3z Ry Rt Rp Rv : 0.02µm ~ 160µm Rsk : 0 ~ 100% RS Rsm : 0.02-1000µm R mr : 0 ~ 100%
Sampling Length (mm)	0.25, 0.80, 2.50(mm)
Resolution (µm)	0.001
Radius and angle of the stylus tip	Diamond, 90°/ cone angle/5mR
Stylus Static Force	<4mN
Power	Rechargeable lithium ion battery: 3.7v, 850mAH
Host Size (mm)	158 x 63.5 x 46
Weight: g	300g

Model	TR-310
Parameters (µm)	Ra Rz Rq Rt Rp Rv R3z R3y Rz (JIS) Ry Rs Rsm Rsk Rku Rmax Rc Rpc Rk Rpk Rvk Mr1 Mr2
Measuring range	The Z axis (vertical) : 320µm (-160µm~160µm), 12600µin (-6300µin~+6300µin) The X axis (Transverse) : 17.5mm (0.69 inch)
Sampling Length (mm)	0.25, 0.8, 2.5mm
Resolution (µm)	0.001
Radius and angle of the stylus tip	Diamond, 90°/ cone angle/5mR
Stylus Static Force	<4mN
Power	Built-in Lithium ion battery 3000mAh, Charger :DC5V
Host Size (mm)	Main unit: 158 x 55 x 52, drive unit: 23 x 27 x 115
Weight: g	500g

TR-310

Metallographic Specimen Mounting Machine

TMP-50S

Touch Screen Automatic Mounting Machine

Model	TMP-50S
Mould Diameter	30 mm, 45 mm, (50 mm optional)
Heating Temperature Range	90-190°C
Holding Time Range	0-999 sec
Cooling Method	Water Cooling
Pressure	Automatically
Mould Preparation Capacity	Double Mould
Electric Power	1600W, 220AC Volt, 50Hz
Dimension/Net Weight	660 X 580 X 500mm, 92 Kg

Automatic Mounting Machine

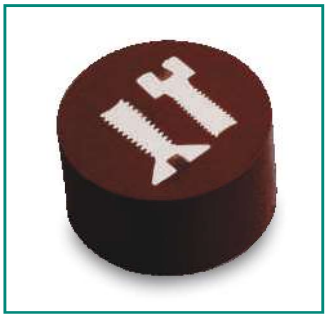
Model	TMP-30A
Mould Diameter	30 mm
Heating Temperature Range	100-200°C
Holding Time Range	0-999 sec
Cooling Method	Water Cooling
Pressure	Automatically
Mould Preparation Capacity	Single Mould
Electric Power	650W, 220AC Volt, 50Hz
Dimension/Net Weight	380 X 350 X 420 mm, 50 Kg

TMP-30A

TMP-30/TMP-45

Touch Panel Manual Control Mounting Machine

Model	TMP-30	TMP-45
Mould Diameter	30 mm	45 mm
Temperature Adjusting Range	100-200ºC	
Cooling Method	Air Cooling	
Pressure	Manually by hand wheel	
Mould Preparation Capacity	Single Mould	
Electric Power	650W, 220AC Volt, 50Hz	
Dimension/Net Weight	320 X 300 X 400mm, 35 Kg	



Metallographic Specimen Cutting Machine

Automatic Cutting Machine

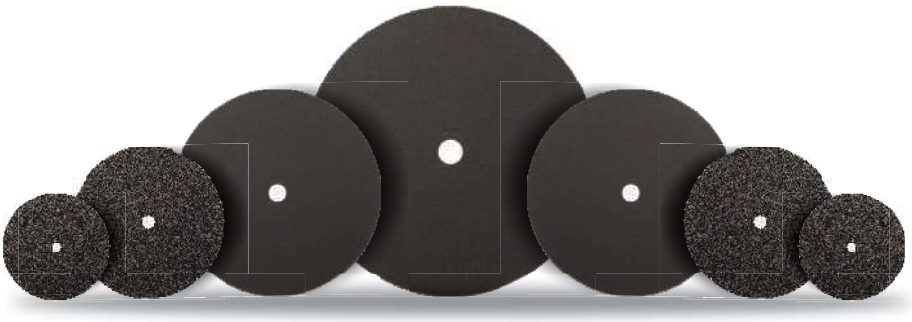
Model	TRUECUT-100B
Display	LCD display with high resolution backlight
Cutting Capacity	100 mm
Cutting Method	Manual and automatic
Way of Infeed	Arbitrary adjustment
Infeed Distance	Arbitrary set, adjustment and fixture position
Reset Mode	Automatic
Cooling System	Water cooling with 3 ways
Effective Workpiece Length	200mm
Spindle Speed	2800 RPM
Coolant Tank Capacity	65 liters
Cutting Wheel Dimension	350mm X 200 X 3200
Motor	4HP (3 kw), 380V, 50Hz
Dimension/Net Weight	1650 X 680 X 740mm, 150kg

Model	TRUECUT-60	TRUECUT-80
Cutting Capacity	60 mm	80mm
Front Cover	Fully enclosed	
Cutting Method	Manual	
Cooling System	Water Cooling	
Spindle Speed	2800 RPM	
Coolant Tank Capacity	50 Liters	
Cutting Wheel Dimension	250mm X 2mm X 32mm	
Motor	2.9 HP (2.2 kw), 380V, 50HZ	
Dimension/Net Weight	700 X 650 X 560 mm, 117 kg	

Abrasive Cutting Machine

Manual Control Cutting Machine

Model	TTC-35	TTC-50
Cutting Capacity	35 mm	50 mm
Cutting Method	Manual	
Cooling System	Water Cooling	
Spindle Speed	2800 RPM	
Coolant Tank Capacity	50 Liters	
Cutting Wheel Dimension	250mm X 2mm X 32mm	
Motor	1.4 HP (1.1 kw), 380V, 50Hz	2.9 HP (2.2 kw), 380V, 50Hz
Net Weight	60kg	80kg



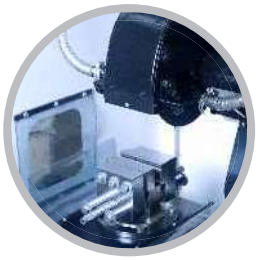
Abrasive Cutting Wheels

Metallographic Specimen Cutting Machine (Floor Type)

TCM-4 / TCM-4A / TCM-6

TCM-8M

Large and Effective coolant delivery with adjustable focused vains fitted on wheel guard.



Small opening in the side wall for long jobs.

Coolant circulation System is provided with suitable filtering arrangement.

Features

- Sturdy Floor model for Metallographic sectioning Metals, Ceramics and mineral samples.
- Machine adopts closed structure and covered with powder coated sheets.
- Specially designed Steel Vice to hold any kind of piece.
- Absolute minimal deformation, cool & burn-free sample production.
- Large and Effective coolant delivery with adjustable focused vains fitted on wheel guard.
- Special coolant tank Coolant circulation System is provided with suitable filtering arrangement.
- Light attachments system is provided for clean and accurate cutting of samples.
- Large Viewing window to monitor the cutting operation.
- Heavy Duty motor is provided 3/5/7.5/15 HP 3 Phase as per your cutting needs.
- Cutting Operation By manual cut-off wheel in chop type procedure.
- Small opening in the side wall for long jobs.

Models	TCM-4	TCM-4A	TCM-6	TCM-8M
Cutting Action	By manual Cut-Off wheel arcs down	By manual Cut-Off wheel arcs down	By manual Cut-Off wheel arcs down	By manual Cut-Off wheel arcs down
Cutting Wheel	2000 RPM	2000 RPM	2000 RPM	1500 RPM
Cutting Capacity (Max.)	50mm Solid / 100mm Hollow	75mm Solid / 100mm Hollow	100mm Solid / 150mm Hollow	150mm Solid / 200mm Hollow
Cutting Motor Power	3 H.P. 3 Phase, 415 Volts, 50 Hz	5 H.P. 3 Phase, 415 lts, 50 Hz	7.5 H.P. 3 Phase, 415 Volts, 50Hz	15 H.P. 3 Phase, 415 Volts, 50Hz
Coolant Motor	1/10 H.P.	1/10 H.P.	1/10 H.P.	
Clamping Vice	Heavy Duty Vice with jaws opening 4" & width 4"	Heavy Duty Vice with jaws opening 4" & width 4"	Heavy Duty Vice with jaws opening 6" & width 4"	Heavy Duty Vice with jaws opening 7" & width 4"
Vice Movement	X-Y Sliding Movement	X-Y Sliding Movement	X-Y Sliding Movement	X-Y Sliding Movement
Dimensions (Approx)	650 mm W x 800 mm D x 1450 mm H	650 mm W x 800 mm D x 1450 mm H	650 mm W x 800 mm D x 1450 mm H	
Weight	200 kg. (approx)	225 kg. (approx)	225 kg. (approx)	

Metallographic Specimen Polishing Machine

TTPM-PH-2VD

Automatic Double Disc Polishing Machine

Model	TTPM-PH-2VD
Disc Diameter	203 mm
Grinding/Polishing Speed	50-1000 RPM
Disk Rotation Direction	Clockwise and anti-clockwise
Motor	0.75KW
Electric power	220AC Volt, 50Hz
Head Rotating Speed	50 RPM
Sample Force	0 - 40N
Sample Capacity	1 - 3 Nos

Touch Screen Double Disc Polishing Machine

Model	TPM-2VD-T
Disc Diameter	203 mm
Grinding/Polishing Speed	50-1000 RPM
Disk Rotation Direction	Clockwise and anti-clockwise
Motor	0.55KW
Electric power	220AC Volt, 50Hz

TPM-2VD-T

TPM-2VD

Double Disc Polishing Machine

Model	TPM-2VD
Disc Diameter	203mm
Grinding/Polishing Speed	50-1000 RPM
Disc Rotation Direction	Clockwise and anti-clockwise
Motor	0.55KW
Electric power	220AC Volt, 50Hz

Sample Grinding and Polishing Machine

Model	TPM-1VD
Disc Diameter	203 mm
Grinding/Polishing Speed	50 - 1000 RPM
Disc Rotation Direction	Clockwise and anti-clockwise
Motor	0.25KW
Electric power	220AC Volt, 50Hz

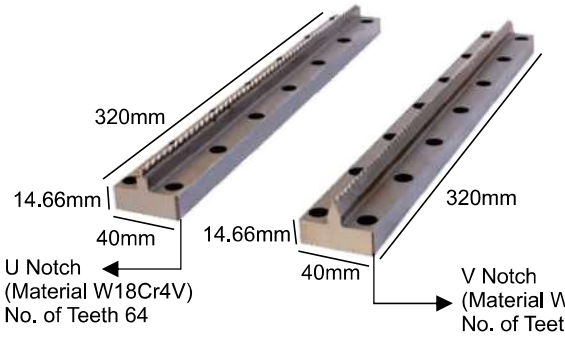
TPM-1VD

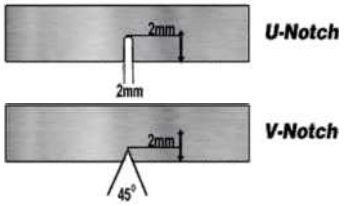
Impact Specimen Notch Broaching Machine

TRUENOTCH-MVU

Features:

- Hydraulic Control Impact Specimen Notch Broaching Machine
- The broach is made of special material and made with special technology, and it has high hardness, good abrasion resistance ability and long serving life.
- This machine has hydraulic drive with provision to accommodate two broaches at one time.
- Flexible lubrication hose pipe for both broaches.





TRUENOTCH-VU1

Model	TRUENOTCH-MVU	TRUENOTCH-VU1
No. of Broach accommodate	2 broaches at one time	1 broaches at one time
Cutting Mode	Motorized Hydraulic Automatic	Manual
Broaching Speed	2.50 m/min	×
Lubrication System	Lubricating Oil Circulation	×
Power Supply	3 Phase, 415V, 50Hz	×
Shape of Sample Notch	V Shape 2 mm – 1 No. Optional :U Shape 2mm	
Sample Size	10*10*55mm, 10*10*7.5mm, 10*10*2.5mm	
Broach Material	W18Cr4V	

Low Temperature Cooling Chamber for V U Notch Impact Specimen

DWC-60

Features:

- Controlled by intelligent instrument, digital presentation temperature value, automatic control temperature, automatic time and alarm.
- High security, refrigerate fast, large volume.

Model	DWC-60
Temperature Range	Ambient to (-60°C)
Temperature Control Accuracy	<±1°C
Digital Display Thermometer	Resolution 0.1°C
Digital Display Timer	1-99 min
Loading the Number of Samples	60 PCS Standard Sample (10X10X55mm)
Cooling Medium	Ethanol or other Unfrozen Liquid
Mode of Refrigeration	Compressor Refrigeration
Mixing Motor Power	16W
Compressor Power	1.5KW
Power Supply	220AC Volt, 50Hz