

# JUST MACHINE TOOLS

(House of Testing Machines)



HARDNESS TESTERS



An ISO 9001:2000 Certified Company



## HARDNESS TESTERS FOR

STANDARD ROCKWELL METHOD

STANDARD ROCKWELL/BRINELL METHOD

SUPERFICIAL ROCKWELL METHOD

STANDARD ROCKWELL/SUPERFICIAL ROCKWELL METHOD

STANDARD BRINELL METHOD

STANDARD ROCKWELL/SUPERFICIAL ROCKWELL/BRINELL/VICKERS METHOD

VICKERS/BRINELL METHOD

VICKERS METHOD

'JUSTY' Hardness Testers have been designed and manufactured strictly conforming to IS, BS, ASTM, ISO and DIN Standards, "SINCE 1965" for most exact test requirements in the Laboratories and Workshops etc. These testers are designed and manufactured for measuring hardness of metals and alloys of all types, hard or soft, flat, round, tubular or irregular in shape. The testers are simple in design, easy to operate, yet very reliable and accurate.

## STANDARD ROCKWELL METHOD MANUAL OPERATION

**Model NMR-3 :** With automatic zero setting dial gauge and automatic load selection. (Standard Model)

**Model MR-3 :** With automatic zero setting dial gauge device and automatic load selection. (Dx Model)

## STANDARD ROCKWELL/BRINELL METHOD MANUAL OPERATION

**Model NMRB-4 :** With automatic zero setting dial gauge device and automatic load selection. Brinell Hardness Testing facility according to 30 F/D<sup>2</sup> ratio with 187.5 kgf load and 2.5 mm dia ball indenter. (Standard Model)

**Model MRB-4 :** With automatic zero setting dial gauge device and automatic load selection. Brinell Hardness Testing facility according to 30 F/D<sup>2</sup> ratio with 187.5 kgf load and 2.5 mm dia ball indenter. (Dx Model)

**Model NMRB-S :** Similar to NMRB-4, but with Manual load selection and additional test load of 250 kgf and 5 mm dia ball indenter, for testing Brinell hardness of non ferrous metals according to 10F/D<sup>2</sup> ratio. (Standard Model)

**Model MRB-S :** Similar to MRB-4, but with additional test load of 250 kgf and 5 mm dia ball indenter, for testing Brinell hardness of non ferrous metals according to 10F/D<sup>2</sup> ratio. (Dx Model)

**Model MRB-5 :** Similar to MRB-S but with additional test load of 125 kgf and 10 mm dia ball indenter, for testing Brinell hardness of softer non-ferrous metals according to 5F/D<sup>2</sup> and 1F/D<sup>2</sup> ratio. (Dx Model)

**Note :** All the above models can also be supplied incorporating a special device, in which the plunger is guided in a set of ball bearings on special request.

## SUPERFICIAL ROCKWELL METHOD MANUAL OPERATION

**Model NMRS-7 :** With automatic zero setting dial gauge device and manual load selection. The plunger is guided in a set of ball bearings. (Standard Model)

**Model MRS-7 :** With automatic zero setting dial gauge device and manual load selection. The plunger is guided in a set of ball bearings. (Dx Model)

**Model NMRS-8 :** With automatic zero setting dial gauge device and automatic load selection. The plunger is guided in a set of ball bearings. (Standard Model)

**Model MRS-8 :** With automatic zero setting dial gauge device and automatic load selection. The plunger is guided in a set of ball bearings. (Dx Model)

## STANDARD ROCKWELL/SUPERFICIAL ROCKWELL METHOD MANUAL OPERATION

**Model NMRT-9 :** Standard Rockwell/Superficial Rockwell Twin Hardness Tester with automatic zero setting dial gauge device and manual load selection, for minor and major loads. The plunger is guided in a set of ball bearings. For easy readability on the dial, the 'B' scale letters are coloured red, 'C' scale in black and superficial Rockwell scale in green. (Standard Model)





**B-3000(HM)**

125, 150, 187.5 and 250 kgf for conducting Vickers, Brinell, Standard Rockwell and Superficial Rockwell method tests. The standard accessories includes all the required indentors and two microscopes separately one for the measurement of ball indentation dia for Brinell method test, and the other for the Vickers indentation diagonal measurement for Vickers method test. The least count of 25 x Brinell microscope supplied with illumination device is 0.1 mm directly on the scale and 0.01 mm with the attached micrometer. The least count of 100 x Vickers microscope also supplied with illumination device is 0.01 mm directly on the scale and 0.001 mm with estimation.



**VB-250**

**Model MRT-9 :** Standard Rockwell/Superficial Rockwell Twin Hardness Tester with automatic zero setting dial gauge device and automatic load selection, for minor and major loads. The plunger is guided in a set of ball bearings. For easy readability on the dial, the 'B', scale letters are coloured red, 'C' scale in black and superficial Rockwell scale in green. (Dx Model)

#### STANDARD BRINELL METHOD

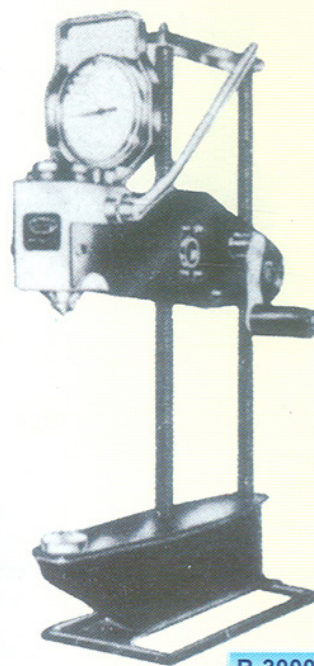
**Model B-3000 (HM) :** The machine is designed with electrically operated hydraulic power pack, for effort-less loading and unloading operation. The dial gauge is provided in front of the machine which measures the depth of the ball indentation. This facilitates production testing within tolerance limits by comparison method. A Brinell microscope is provided to measure the indentation of the Ball Indentor.

**Model B-3000 (HM) O :** Similar to B-3000 (HM) But without Dial gauge. A built in optical screen is provided to measure the Diameter of indentation of Ball indentor directly on the machine.

**Model B-3000 (HP) :** Hydraulic loading by hand cranking, suitable for Brinell tests. A positive acting relief valve prevents load, over 3000 Kgf. Other loads can also be applied accurately with 10 mm or 5 mm dia ball.

#### STANDARD ROCKWELL / ROCKWELL SUPERFICIAL / BRINELL / VICKERS METHOD - MANUAL OPERATION

**Model MRTBV :** Universal Hardness Tester, equipped with a set of six ball bearings guide device, for the plunger/spindle, automatic load selection for 15, 20, 30, 40, 45, 50, 60, 100,



**B-3000(HP)**

#### VICKERS METHOD

**Model JV-50 :** Provides facility of built in optical system with graduated read out for measurement of diagonal/diameter of indentation upto 0.001 mm accuracy on the focusing screen; With 70 x magnification and manual system for selection of required load. The swivelling unit in which the required indentor and objective lens are mounted, is attached to the loading spindle guided in a set of six ball bearings. A push button electric switch system is provided for starting the loading cycle. Unloading is accomplished through a hand lever.

**Model JV-50 : (1Kgf) :** Similar to JV-50 but the additional test load of 1 Kgf and Magnification of 70x and 140x

#### VICKERS / BRINELL METHOD

**Model VB-250 :** Provides facility of built in optical system with graduated read out for measurement of diagonal/diameter of indentation upto 0.001 mm accuracy on the focusing screen; With 35x and 70x magnification and mechanical Push button control for selection of required load. The swivelling unit in which the required indentor and objective lens are mounted, is attached to the loading spindle guided in a set of six ball bearings. A push button electric switch system is provided for starting the loading cycle. Unloading is accomplished through a hand lever.

All the hardness testing machines can be supplied with equivalent loads in SI (N) Units, if required. Because of continuous R & D activities manufacturers reserve the right to ammend design without Notice. Diamention given in the table are approximate.

## STANDARD ACCESSORIES

Description	MR-3	MRB-4	MRB-S	MRB-5	MRS-7&8	MRT-9
Calibrated weight set Kgf.	60,100,150	60,100,150,187.5	60,100,150,187.5,250	60,100,125,150,187.5,250	15,30,45	15,30,45,60,100,150
Suitable Dial gauge	1pc.	1pc.	1pc.	1 pc.	1 pc.	1 pc.
Flat testing table 50 mm. dia.	1pc.	1pc.	1pc.	1pc.	1 pc.	1pc.
Testing table 40 mm.dia. with Vee groove	1pc.	1 pc.	1pc.	1pc.	1 pc.	1 pc.
Spot Anvil	nil	nil	nil	nil	1 pc.	1 pc.
Sphero-conical diamond cone penetrator 120°	1pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
1/16" dia. steel ball indenter with extra 5 balls	1 pc.	1 pc.	1pc.	1 pc.	1 pc.	1 pc.
2.5 mm. dia. steel ball indenter	nil	1 pc.	1 pc.	1pc.	nil	nil
5 mm. dia. steel ball indenter	nil	1 pc.	1 pc.	1pc.	nil	nil
10 mm. dia. steel ball indenter	nil	nil	nil	1 pc.	nil	nil
Test Block Rockwell C	1pc.	1pc.	1 pc.	1 pc.	nil	1 pc.
Test Block Rockwell B	1pc.	1pc.	1 pc.	1 pc.	nil	1 pc.
Test Block Rockwell Superficial 30 N	nil	nil	nil	nil	1 pc.	1 pc.
Test Block Rockwell Superficial 30 T	nil	nil	nil	nil	1 pc.	1 pc.
Test Block HB 2.5/187.5	nil	1 pc.	1 pc.	1pc.	nil	nil
Test Block HB 5/250	nil	nil	1pc.	1pc.	nil	nil
25x Brinell Microscope with achromatic objective & light	nil	1 pc.	1 pc.	1 pc.	nil	nil
Allen Spanner	2 pcs.	2 pcs.	2 pcs.	2 pcs.	2 pcs.	2 pcs.
Clamping device	1 pc.	1 pc.	1pc.	1pc.	1pc.	1 pc.
Dashpot Oil	1 bottle	1 bottle	1 bottle	1 bottle	1 bottle	1 bottle
Instruction Manual	1 book	1 book	1 book	1 book	1 book	1 book
Collapsible cover for main screw protection	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Storage case for accessories	1pc.	1pc.	1pc.	1pc.	1pc.	1 pc.

## TECHNICAL DATA

Maximum load kgf.	150	187.5	250	250	45	150
Minor load Kgf.	10	10	10	10	3	3 & 10
Maximum test height(mm) with 50mm. dia flat anvil	305	305	305	305	305	305
Depth of throat (mm)	180	180	180	180	180	180
Maxim. depth of elevating screw below base(mm)	310	310	310	310	310	310
Elevating screw dia. (mm)	44	44	44	44	44	44
Size of base (mm)	225x515	225x515	225x515	225x515	225x515	225x515
Machine height (mm)	795	795	795	795	795	795
Weight (approx)	120 Kg.	130 Kg.	135 Kg.	140kg.	120kg.	140 Kg.

## STANDARD ACCESSORIES

Description	B-3000 (HM)	B-3000 (HM) O	B-3000 (HP)
A loading pan and eleven loose weights	1 set	1 set	Nil
Testing table 200 mm dia.	1 pc.	1 pc.	Nil
Testing table 50 mm. dia.	Nil	Nil	1 Pc.
Testing table 70 mm. dia. with Vee groove	1 pc.	1 pc.	1 Pc.
Steel ball penetrator 5 mm. dia with 5 spare balls.	1 set	1 set	Nil
Steel ball penetrator 10 mm. dia with 5 spare balls.	1 set	1 set	Nil
5 mm. dia ball adaptor with 5 spare balls	Nil	Nil	1 set
10 mm dia ball adaptor with 5 spare balls	Nil	Nil	1 set
25 x Brinell & Microscope with achromatic objective & light	1 pc.	Nil	1 pc.
Optical Screen	Nil	1 set	Nil
Allen spanners	2 pcs.	2 pcs.	2 pcs.
Automatic zero setting dial gauge	1 pc.	Nil	Nil
Load/Kgf indicating dial gauge	Nil	Nil	1pc.
Telescopic cover for main screw protection	1 pc.	1 pc.	Nil
Standardised test block HB 5/750	1 pc.	1 pc.	1 pc.
Standardised test block HB 10/3000	1 pc.	1 pc.	1pc.
Storage box for standard accessories	1pc.	1pc.	Nil
Storage box for complete unit	Nil	Nil	1pc.
Base/adaptor with adjustable test height	Nil	Nil	1 pc.
Load releasing spanner & H. Pump operating handle	Nil	Nil	1 set
Instruction Manual	1 book	1 book	1book

## TECHNICAL DATA

Load range	250 Kgf, upto 3000 kgf in the stages of 250 kgf.	250 Kgf, upto 3000 kgf in the stages of 250 kgf.	500,750, 1000, 1500& 3000 kgf.
Drive	0.25/0.33 HP flange mounted electric motor	0.25/0.33 HP flange mounted electric motor	Manual.
Max. test height	410 mm.	410 mm.	341 mm, with std. base
Depth of throat	200 mm.	200 mm.	100 mm, with Std. base
Size of base	670 x 380 mm.	670 x 380 mm.	200 x 185mm.
Machine weight	Approx. 475 Kgs.	Approx. 475 Kgs.	Approx. 17 Kgs.
Machine height	Approx. 1250 mm.	Approx. 1250 mm.	Approx. 662 mm, with std. base
Main supply	400/440V, 3 Phase, 50 Hz.	400/440V, 3 Phase, 50 Hz.	Nil

## STANDARD ACCESSORIES

Description	Models				
	NMR 3	NMRB-4	NMRB-S	NMRS-7&8	NMRT-9
Calibrated weight set Kgf.	60,100,50	60,100,150,187.5	60,100,150,187.5,250	15,30,45	15,30,45,60,100,150
Suitable Dial Gauge	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Flat testing table 50mm. dia	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Testing table 40mm. dia. with vee groove	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Spot Anvil	nil	nil	nil	1 pc.	1 pc.
Sphero-conical diamond cone penetrator 120°	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
1/16" dia. steel ball indenter with extra 5 balls	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
2.5 mm. dia steel ball indenter	nil	1 pc.	1 pc.	nil	nil
5 mm. dia steel ball indenter	nil	nil	1 pc.	nil	nil
10 mm. dia steel ball indenter	nil	nil	nil	nil	nil
Test Block Rockwell C	1 pc.	1 pc.	1 pc.	nil.	1 pc.
Test Block Rockwell B	1 pc.	1 pc.	1 pc.	nil.	1 pc.
Test Block Rockwell Superficial 30 N	nil	nil	nil	1 pc.	1 pc.
Test Block Rockwell Superficial 30 T	nil	nil	nil	1 pc.	1 pc.
Test Block HB 2.5/187.5	nil	1 pc.	1 pc.	nil	nil
Test Block HB 5/250	nil	nil	1 pc.	nil	nil
25x Brinell Microscope with achromatic objective light	nil	1 pc.	1 pc.	nil	nil
Allen Spanner	2 pc.	2 pc.	2 pc.	2 pc.	2 pc.
Clamping device	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Dashpot Oil	1 bottle	1 bottle	1 bottle	1 bottle	1 bottle
Instruction Manual	1 book	1 book	1 book	1 book	1 book
Collapsible cover for main screw protection	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.
Storage case for accessories	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.

## TECHNICAL DATA

Maximum load kgf.	150	187.5	250	45	150
Minor load Kgf.	10	10	10	3	3 & 10
Maximum test height(mm) with 50mm. dia flat anvil	230	230	230	230	230
Depth of throat (mm)	155	155	155	155	155
Maxim. depth of elevating screw below base(mm)	240	240	240	240	240
Elevating screw dia. (mm)	44	44	44	44	44
Size of base (mm)	170x475	170x475	170x475	170x475	170x475
Machine height (mm)	655	655	655	655	655
Weight (approx)	71 Kg.	78 Kg.	84 kg.	65kg.	71 Kg.

## DIFFERENT OPTIONAL ACCESSORIES AND SPARES ARE AVAILABLE FOR 'JUSTY' HARDNESS TESTERS SOME OF THEM ARE :

- Quick lifting and release lever for production/batch testing, without resetting accommodates 1 mm. (0.040") tolerance on size.
- Vari-rest support.
- Jack-rest support.
- Gooseneck adopters.
- Gooseneck anvils.
- Cylindron anvil.
- Eye ball anvil.
- Testing table 200 mm dia.
- Diamond spot anvil.
- Cast iron testing table 240 mm dia with 'T' slots.
- Shallow "Vee" anvil".
- Steel ball indentors of different sizes and their spare balls.
- Testing table 70 mm dia with 'V' Groove.
- Oil Reservoir for lower part and automatic supplies of lubricant for the Elevating screw.
- Durable dust cover.
- Master checking set, consisting of master penetrator and two test blocks, each for higher and lower range of a particular scale, in a special wooden-box.
  - a) for Rockwell HRB scale.
  - b) for Rockwell HRC scale.
  - c) for HB 10/3000 Kg
  - d) for HB 5/750 Kg

## STANDARD ACCESSORIES

Description	MRTBV	JV-50	VB-250
Calibrated weight set	1 set	1 set	1 set
Suitable dial gauge approx. 100 mm. dia	1 pc.	Nil	Nil
Fiat testing table	1pc. 50mm	1pc. 100mm	1 pc. 100 mm.
Vee groove testing table	1pc. 40mm	1pc. 70mm	1 pc. 70 mm.
Spot anvil	1 pc.	Nil	Nil
Rockwell Diamond indenter	1 pc.	Nil	Nil
Vickers Diamond indenter	1 pc.	1pc.	1pc.
1/16" dia ball Indenter with 5 balls	1 set	Nil	Nil
2.5 mm dia ball indenter with 5 balls	1 set	Nil	1 set
5 mm dia ball indenter with 5 balls	1 set	Nil	1 set
10 mm dia ball indenter	1 pc.	Nil	Nil
Test block Rockwell 'B'	1 pc.	Nil	Nil
Test block Rockwell 'C'	1 pc.	Nil	Nil
Test block superficial Rockwell 'N' Scale	1 pc.	Nil	Nil
Test block superficial Rockwell 'T' scale	1pc.	Nil	Nil
Text block HB 2.5/187.5	1 pc.	Nil	1 pc.
Text block HV	1 pc.	1 pc.	1 pc.
Text block HB 5/250	1 pc.	Nil	Nil
25 x Brinell microscope with light	1 pc.	Nil	Nil
100 x Vickers microscope with light	1 pc.	Nil	Nil
Allen spanner	2pc.	Nil	Nil
Clamping device/cone	1 pc.	Nil	1 pc.
Dash pot oil	1 bottle	1 bottle	1 bottle
Operating manual	1 pc.	1 pc.	1 pc.
Telescopic cover for main screw	1pc.	Nil	Nil
Storage case for accessories	1pc.	1 pc.	1 pc.

## TECHNICAL DATA

Minor Load Kgf	3 & 10	NA	NA
Loads kgf for superficial Rockwell	15, 30 & 45	NA	NA
Loads kgf for standard Rockwell	60, 100 & 150	NA	NA
Loads kgf for Vickers	20, 30, 40, 50 60 & 100	5, 10, 15, 20 30, 40, 50	5, 10, 15, 20, 30, 40 50, 60 100 & 120
Loads Kgf for Brinell	100, 125, 187.5 & 250	NA	15, 625, 31.25, 62.5 187.5 & 250
Maximum Test height (mm)	305	200	200
Depth of throat (mm)	180	150	150
Max. depth of main screw below base (mm)	310	210	210
Main/elevating screw dia. (mm.)	44	50	50
Size of base (mm)	225 X 615	300 X 670	300 X 670
Machine height (mm)	795	1050	1050
Machine weight approx. kg.	150	160	190
Optical measuring (mm)	N.A.	1.6 on 70x 0 to 0.8 on 140x	0 to 3.2 on 35 x 0 to 1.6 on 70 x
Required load	NA	0.1 kv single phase A.C. 220V., 50 Hz. alternative to special require- ments can be Supplied.	0.1 kv single phase, A.C. 220V., 50 Hz. alternative to special requirements can be Supplied.

**Note :** An additional load of 1kgf is provided in Model : JV50(1kgf) along with the loads provided in Model : JV-50

Manufactured "SINCE 1965", as equipments of Superior Technology and lasting value, the 'JUSTY' Hardness Testers have been chosen by many reputed Indian/Foreign Industries, Engineering Colleges, Laboratories, Test Houses and Government Establishments.

## A PARTIAL LIST OF SOME INDIAN USERS INCLUDES :-

- ☛ National Physical Laboratory.
- ☛ Indian Space Research Centre.
- ☛ Bhabha Atomic Research Centre.
- ☛ National Test Houses.
- ☛ Mechanical Engineering Research/ & Development Organisation.
- ☛ Research Designs & Standards Organisation (Ministry of Rly.)
- ☛ Metallurgical Laboratory (N.E. Rly).
- ☛ Solid State Physics Laboratory, (Ministry of Defence).
- ☛ Indian Institute of Technology.
- ☛ Defence Electronic Applications Laboratory (Ministry of Defence)
- ☛ Inspectorate of Small Arms (Ministry of Defence)
- ☛ Oil & Natural Gas Commission.
- ☛ Various Plants of Steel Authority of India Ltd.
- ☛ Hindustan Aeronautics Ltd. (HAL)
- ☛ Hindustan Machine Tools Ltd. (HMT).
- ☛ Tata Iron & Steel Co. Ltd.
- ☛ Small Arms Factory (Ministry of Defence)
- ☛ Gun Carriage Factory (Ministry of Defence)
- ☛ Heavy Vehicle (Tanks) Factory, (Ministry of Defence)
- ☛ Various Plants of Bharat Heavy Electricals Ltd. (BHEL)
- ☛ Artificial Limbs Manufacturing Corporation of India Ltd.
- ☛ Dewrance Macneill & Co. Ltd.
- ☛ Bharat Pumps & Compressors Ltd.
- ☛ Kirloskar Electric Co. Ltd.
- ☛ International Tractor Co. of India Ltd.
- ☛ Various Ordnance Factories (Ministry of Defence)
- ☛ Banaras Hindu University
- ☛ Anchor Engg. Inds. Pvt. Ltd.
- ☛ Gas Authority of India Ltd.
- ☛ Clutch Auto Ltd.
- ☛ Uncle Chips
- ☛ Indo Asian Switch Gear Ltd.
- ☛ Pooja Forge Ltd.
- ☛ Ghaziabad Precision Products Pvt. Ltd.
- ☛ Atma Steels Ltd.
- ☛ Jindal Strips Ltd.

Manufacturers :

**Justy**® **JUST MACHINE TOOLS**  
(House of Testing Machines)

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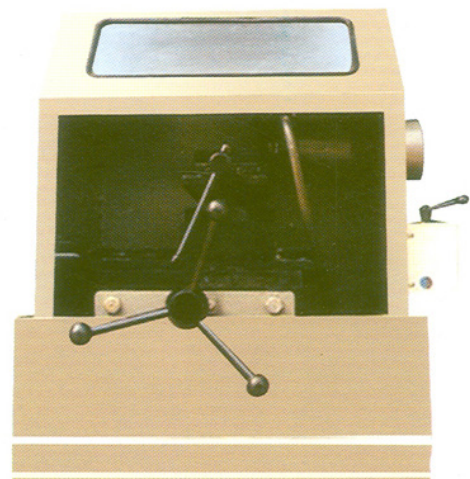
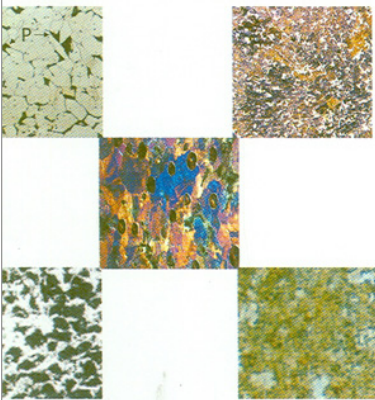
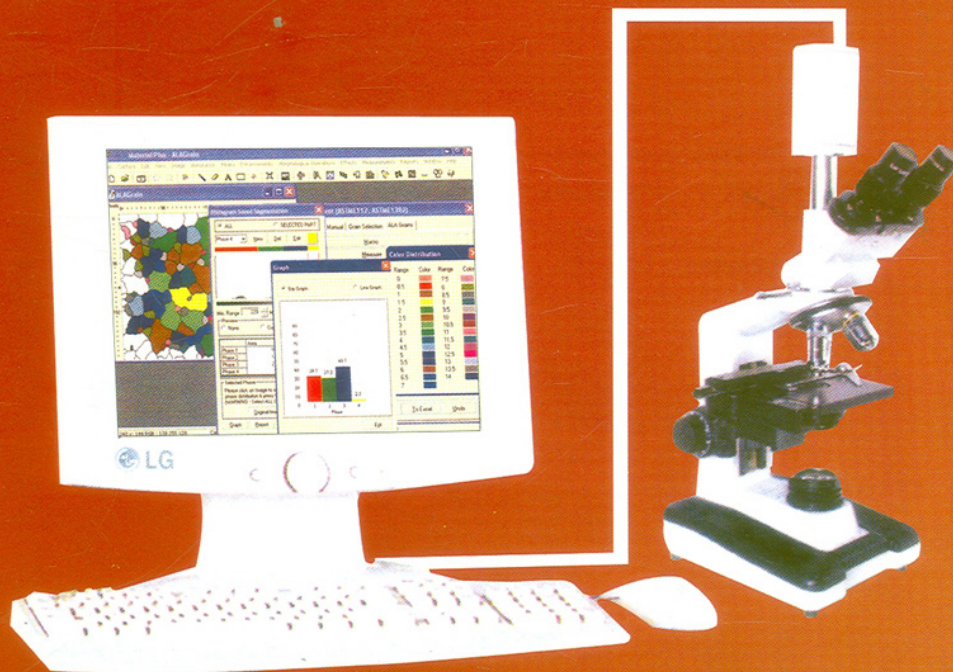
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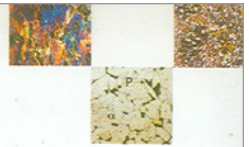
# JUST MACHINE TOOLS

Presents

## METALLURGICAL SOLUTIONS



Fast Accurate Easy to Use



## VISION APPLICATION :

Consider for a moment when visual processes are important in the work for which you are responsible. If your need to count object and particles, compare size and shapes, measure area and boundaries or if you could more easily manipulate data by transfer of images into computer, then a JUSTY Vision System will be a powerful tool for your organization for its image monitoring, processing and analysis needs. Video capture methods can give significant advantages, in particular no direct contact is required with the sample under observation and speed, accuracy and consistency of results are all improved over manual methods.

## AREAS OF APPLICATION

JUSTY Vision system can be applied imaginatively and creatively to solve the problems in all these areas and more.

Automotive Parts Inspection  
Aerial Surveillance  
Semiconductor Manufacture  
Object recognition  
Morphometry  
Satellite picture processing  
Pictorial database  
Graphics design  
Cartography  
Cosmetics  
Object tracking & control  
Telemedicine

Forensics  
Medical Imaging  
Particle sizing and counting  
Pharmaceutical research  
Quality control & inspection  
Petroleum research  
Gems and precious stones  
Engraving & Textile & Rayon Industry  
Endoscopy  
Photogrammetry & 3D reconstruction  
Nuclear Medicine  
Metallurgy and Materials science

## APPLICATION IN RESEARCH LABOURATORY

MICROSCOPES : Biological, Metallurgical, Stereo Zoom, Industrial Tool Makers Microscopes, Video Inspection & Projection Systems, Frame Grabber Cards, CCD Cameras, Image Analysis Work Station, Motorised X-Y stages, High Speed Cameras & Image Analysis Software.

## PRODUCTION/ ASSEMBLY/ INSPECTION APPLICATION

PC based Pass/Fail systems, Video Inspection system for quality control in online counting sizing and sorting, Industrial PC's, Data Acquisition systems for production line control.

## INDUSTRIAL/DEFENCE/SPECIALISED APPLICATION

PC based Monitoring & Sureillance systems, Digital Video Recorders, Remote Monitoring System, Day & Night Cameras, Infra Red Illuminators, Closed Circuit Television, Zoom Lens, Infra Red/Thermal Imaging, Aerial Imaging, High speed motion detection, Tracking, Image capture and analysis, Laptop based mobile workstation for remote and field applications.

## MEDIA CYBERNETICS-IMAGE-PRO PLUS AND MATERIALS-PRO ANALYZER

### THE COMPLETE IMAGING SOFTWARE SOLUTION FOR MATERIALS ANALYSIS

**MEDIA  
CYBERNETICS**

### THE IMAGING EXPERTS

Material-Pro Analyzer is designed for industrial materials scientists, metallurgists, laboratory technicians and R & D engineers who need improved solutions for quality control and product development. Working in conjunction with Image Pro Plus, it is the leading image analysis system for the automation of widely used standard materials tests. Unlike manuals or existing systems which are either too expensive or difficult to use, Material-Pro Analyzer is a user friendly product that delivers reliable, repeatable results at a price/performance breakthrough.

Materials-Pro is state-of-art software package for the analysis of metals, ceramics, coating, powders, and other materials. Its Window based software runs on standard Pc's and supports a wide variety of image hardware for easy system Integration.

### SOFTWARE FEATURES :

#### Measurement tools

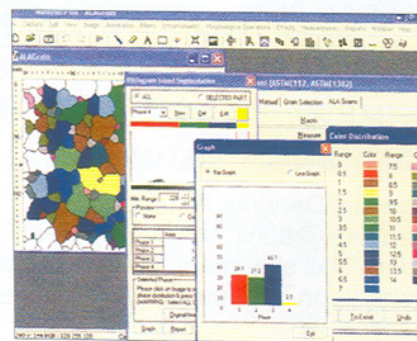
- (a) Calibration
- (b) Length
- (c) Angle
- (d) Perimeter
- (e) Width
- (f) Radius
- (g) Area
- (h) Color
- (i) Counting
- (j) Amalgamation

#### Metallography Tools

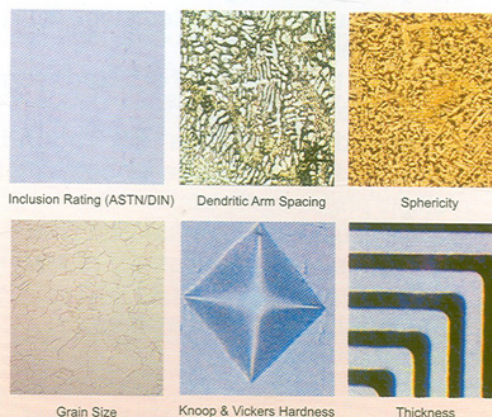
- (a) Grain Size
- (b) Phase
- (c) Decarbazation
- (d) Coating Thickness
- (e) Nodularity
- (f) Porosity
- (g) Inclusion
- (h) Particle Measurement
- (i) Density

#### Image Processing Tools

- (a) Filters
- (b) Invert
- (c) Annotation
- (d) BackGround Removal



Section of Steel showing Grain Structure



Inclusion Rating (ASTN/DIN)

Dendritic Arm Spacing

Sphericity

Grain Size

Knoop & Vickers Hardness

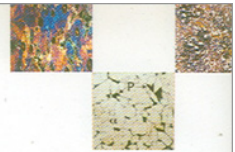
Thickness

Also available Capture Kits (Including most advance CCD Camera and Sophisticated Image Capture Cards) to Integrate with any Microscope, PC Compatible and Printers also available.

### JUSTY - MATERIALS - PRO ANALYSER

#### THE IMAGE ANALYSIS SOLUTION FOR METALLOGRAPHIC AND MATERIALS.

An excellent product of great development efforts - This software is very useful for the QC Laboratories of Steel Plants, Metal forging industry, Oil & gas industry, Material Science Research and Studies, Manufacturing and where ever Metallurgical microscope are used in laboratories. For any metallurgist it's a very useful software that shall increase his productivity.



## ASTM ANALYSIS FUNCTION CONFORM TO MATERIALS STANDARDS

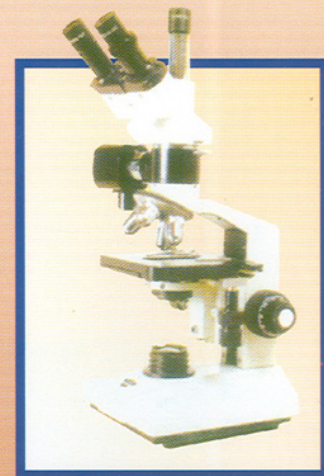
- |  |   |
|--|---|
| 1. ASTM E 1382 Semiautomatic & Automatic Image Analysis.                           | observed in a metallographic section (ALA Grain Size) |
| 2. ASTM E 112 Average Grain Size using Semiautomatic and Automatic Image Analysis. | 4. ASTM E 384 Test method for microhardness.          |
| 3. ASTM E 930 Estimating the Largest Grain   | 5. ASTM B 276 Apparent Porosity in cemented carbides. |

## ADDITIONAL FEATURES :

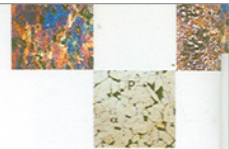
- |  |  |
|--|--|
| 1. Measure Dendritic Arm Spacing.  | martensite, ferrite, retained austenite, pearlite (upto 8 phases)  |
| 2. Measure Graphic Nodules by area and %.  | 12. Determine porosity, cellular structure, and hardness rating of metals.                                 |
| 3. Count and size many shapes factors and distribution of particles. Particle size analysis.               | 13. Complete and accurate statistical reporting is provided in a variety of industry standard data tables. |
| 4. Easily acquire images from your sample using manual or automated stage with pre-defined stage patterns. | 14. Image, data, and text can be sized and formatted to your specifications.                               |
| 5. Automatic the analysis of digitized image of specific materials products.                               | 15. Determine coating thickness, micro-hardness (E-384), decarbazation depth.                              |
| 6. Expanded algorithms for boundary reconstructions, available for both single & multiple phase materials. | 16. Caliper tools for Measurements of length, area, perimeter, radius, angles.                             |
| 7. The Measure uniformity function accurately determines relative uniformity of materials samples.         | 17. Industrial measurement tool kit for powerful metrology inspection.                                     |
| 8. Measure shape and orientation.  | 18. Built in support for INTERNET CHAT, FILE TRANSFER  |
| 9. Gauge porosity.   | 19. 3D image intensity surface plots feature.  |
| 10. Nodularity.  | 20. Support for motion capture format.   |
| 11. Perform phase analysis percent   | 21. Support for 36 and 48 bd color images.   |

## JUSTY - CO-AXIAL TRINOCULAR RESEARCH METALLURGICAL MICROSCOPE VISION PLUS-5000.

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large graduated mechanical stage with low drive co-axial controls for X-Y movements on the ball slides.
- Nosepiece : Quadruple revolving nosepiece for quick magnification change with positive click stops for proper centering.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M40x & M100x (oil).
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 1000x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Filters : Green & Blue.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.



**JMM - 03**



## MONOCULAR METALLURGICAL MICROSCOPE



**JMM - 01**

- Magnification : 25x-450x.
- Observation : Monocular inclined 45° and rotatable 360° Inter-changeable with straight tube for Micro-photography / Imaging.
- Stand : A rigid and stable stand.
- Stage : Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
- Focussing : Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
- Illumination : Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continuously variable Luminosity.
- Nose Piece : Quadruple revolving Nose Piece with Positive click stop.
- Objectives : Achromatic - M5x, M10x & M45x (S.L.).
- Eyeieces : Huygenian 5x & Wide field 10x.

## BINOCULAR METALLURGICAL MICROSCOPE

- Magnification : 25x-450x.
- Observation : Binocular inclined 45° and rotatable 360°. Inter-changeable with straight tube for Micro-photography / Imaging.
- Stand : A rigid and stable stand.
- Stage : Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
- Focussing : Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
- Illumination : Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continuously variable Luminosity.
- Nose Piece : Quadruple revolving Nose Piece with Positive click stop.
- Objectives : Achromatic - M5x, M10x & M45x (S.L.).
- Eyeieces : Huygenian 5x & Wide field 10x.



**JMM - 02**

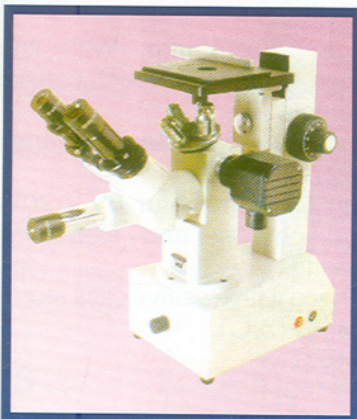
## TRINOCULAR METALLURGICAL MICROSCOPE



**JMM - 03**

- Magnification : 25x-1000x.
- Observation : Binocular-interchangeable with Trinocular head for Micro-photography/Vedio Projection.
- Stand : A rigid and stable stand.
- Stage : Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
- Focussing : Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
- Illumination : Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continuously variable Luminosity.
- Nose Piece : Quadruple revolving Nose Piece with Positive click stop.
- Objectives : Achromatic M5x, M10x, M45x & M100x oil. (S.L.)
- Eyeieces : Huygenian 5x & Wide field 10x.

## JUSTY - CO-AXIAL INVERTED TRINOCULAR METALLURGICAL MICROSCOPE VISION PLUS-5000



**JIMM - 02**

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large graduated mechanical stage with low drive co-axial controls for X-Y movements on the ball slides.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M20x & M40x.
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 400x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Filters : Green & Blue.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.

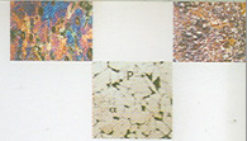
## JUSTY - CO-AXIAL TRINOCULAR RESEARCH METALLURGICAL MICROSCOPE WITH BRIGHT FIELD & POLARISED LIGHT ILLUMINATION VISION PLUS - 5000

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large size stage with low drive co-axial for controls for X-Y movements on the ball slides.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M20x & M40x.
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 400x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Polarising Filters : Built in rotatable analyzer & lamp polariser to work in polarized Light.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.



**JIMM - 03**

**Metallographic Equipments:** Single Disc Polishing Machine, Double Disc Polishing Machine, Hand Grinder (Polishing Stand), Specimen Leveller, Dry Belt Surfacers, Specimen Mounting Press, Cut Off Wheel Machine.



## VISION PLUS VERTICAL TYPE PROFILE PROJECTOR



JPP - 01

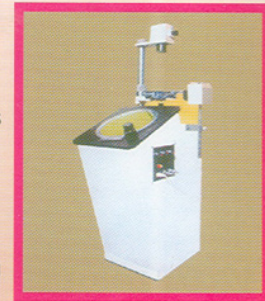
Screen Dia.	:	300mm. Fine ground screen with cross line, Rotatable 0° to 360° vernier reading 3 minutes.
Magnification	:	10x and 20x.
Magnification	:	± 0.1% for contour and ± 0.15% for surface.
Accuracy		
Work Stage	:	Table 200x200mm. Y-axis Traverse 25mm. X-axis Traverse 25mm.
		Least Count 0.01mm. Loading Cap. 10Kg.
Contour	:	24V - 250W Halogen lamp. Telecentric system
Illumination		and sharp twin lens condenser for each magnification Bright adjustment.
Surface	:	12V - 100W Halogen Lamp.
Illumination		
Cooling System	:	Built in noiseless and vibration free blower for powerful cooling system.

JPP - 02 with 450mm. Screen  
JPP - 03 with 600mm. Screen

Power Supply : 220/240V AC., 50/60Hz., Fuse 5A.

## VISION PLUS FLOOR TYPE PROFILE PROJECTOR

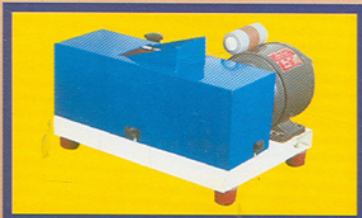
Screen Dia.	:	300mm. Fine ground screen with cross line, Rotatable 0° to 360° vernier reading 3 minutes.
Magnification	:	10x and 20x.
Magnification	:	± 0.1% for contour and ± 0.15% for surface.
Accuracy		
Work Stage	:	Table 200x200mm. Y-axis Traverse 25mm. X-axis Traverse 25mm.
		Least Count 0.01mm. Loading Cap. 10Kg.
Contour	:	24V - 150W Halogen lamp. Telecentric system
Illumination		and sharp twin lens condenser for each magnification Bright adjustment.
Surface	:	12V - 100W Halogen Lamp.
Illumination		
Power Supply	:	220/240V AC., 50/60Hz., Fuse 5A.



JPP - 06

JPP - 07 with 450mm. Screen  
JPP - 08 with 600mm. Screen

## BELT GRINDER:



Belt Grinder is a continuous emery belt sander of 100 mm x 915 mm, used for removing sharp edges, pregrinding & rough polishing of samples in dry condition for subsequent final metallographic or petrographic polishing. This is the basic stage of preparing specimen for microscopic, hardness & macro-etching work. Belt Surfacers driven by fractional H.P., is designed for quick changing of worn-out belts by tommy bar provided.

## INVERTED METALLURGICAL MICROSCOPE

Magnification	: 25x-450x.
Observation	: Binocular Observation Head.
Stand	: Extra large size rectangular base heavy and stable with transformer and electrical fitted inside.
Stage	: Fixed large size stage for inspection of large specimen with detachable graduated Mechanical stage for X & Y movement of specimen.
Focussing	: Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
Illumination	: Incident bright light through Epi-illuminator 12V - 50W Halogen lamp with Iris diaphragm and filter slot. Continuously variable Luminosity.
Nose Piece	: Quadruple revolving Nose Piece with Positive click stop.
Objectives	: Achromatic M5x, M10x, M20x & M45x (S.L.)
Eyepieces	: Huygenian 5x & Wide field 10x.



**JIMM - 01**

**JIMM - 02**

Same specification of JIMM - 01 with Trinocular observation Head.

## STEREOSCOPIC ZOOM BINOCULAR MICROSCOPE



**JSZ - 01**

OPTIONAL ACCESSORIES  
for higher Magnification upto 180x  
Auxiliary objective lens 2x widefield  
Eye Piece 15x or 20x (Paired)

Magnification	: 10x to 60x (standard).
Observation	: Zoom binocular inclined 45° and rotatable 360°, providing erect unreversed images with interpupillary / diopter adjustment.
Stand	: A rigid and well balanced stand to ensure lasting optical alignment.
Focussing	: Highly sensitive focussing arrangement with rack and pinion control by big knobs.
Working Distance	: Standard 86mm. Without auxiliary objective.
Illumination	: Built in base illumination system of incident and transmitted light with variable light control. Built in solid-state transformer 6v-20W.
Objectives	: Parafoal Zoom objective 1x - 6x providing continuous variable magnification.
Eyepieces	: Extra wide-field 10x (paired) eye-piece for large field of view, sharp and strain-free image.

## VISION PLUS TOOL MAKER MICROSCOPE

Magnification	: 30x (standard).
Objective	: 2x.
Eye Piece	: W.F. 15x with cross reticle.
Field of View	: 8mm. Diameter.
Working Distance	: 60mm. (Approx.)
Image	: Erect Image.
Observation Tube	: Monocular inclined at 30°.
Stand	: Large and Heavy base provide extra overall rigidity to the instrument.
Measuring Stage	: 150x150mm. Travel upto 25mm. In each direction having least count 0.01mm.
Eyepiece	: Graduated 0° to 360° with adjustable vernier of least count 6 minutes.
Protector	
Illumination	: Built in base transmitted from 6v-20W Halogen Lamp and incident from two lamps with variable separate control on front panel.



**JTMM - 01**

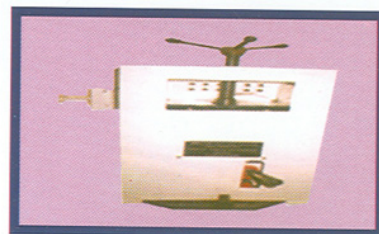
**JTMM - 02**

Same specification as above model but supplied with higher magnification 30x, 75x & 150x.

## METALLURGICAL MOUNTING PRESS

For permanent mounting off metallorgraphic or rock specimen in thermostatic plastic, we offer bakelite mounting press, the unit is of a rugged construction and is activated by an hydraulic press, capacity 6-8 ton. The press is supplied complete with mould assembly is supplied along with the machine.

Digital temp. indicator and controller are also available  
Alarm system with buzzer.



## ABRASIVE DISC CUT OFF MACHINE



Working on 220 volts, AC main supply with coolant tank of sufficient capacity. The chop type cut off wheel machine is suitable for quick and clean cutting of metallographic specimen form rods & tubes etc  
Cutting Samples upto 0-30mm  
Cutting Samples upto 0-80mm

## TABLE MOUNTED ABRASIVE DISC CUT OFF MACHINE

Working on 220 volts, AC main supply with coolant tank of sufficient capacity. The chop type cut off wheel machine is suitable for quick and clean cutting of metallographic specimen form rods & tubes etc

Cutting Samples upto 0-30mm  
Cutting Samples upto 0-80mm



## POLISHING MACHINE



### POLISHING MACHINE:

Polishing machines are used for preparing metallographic specimens & petrographic from pregrinding to smooth surface finish, for microstruc- examination. The machine is basically of motor driven disc type to provide basically of motor driven disc type to provide stepless variable speed from 400 to 1100 R.P.M. approx. The drive is provided by suitable H.P. single phase 220v. A.C. motor. The Brass topped steel disc of 8" or 10" dia. (easily replaceable) rotate in Stainless Steel basins. The disc is provided with splash guard while running and protective cover when not in operation. The top of disc is in flush with SUNMICA Laminated board to provide sufficient space for keeping polishing paper, cloth, alumina & samples handy. Nickle Chrome plated top provided, can be supplied as an accessory for easy clamping of polishing paper. The whole unit rests on anti-vibration mounts at 4 pts. Painted in hammertone finish oven dried for durability.

**DOUBLE DISC POLISHING MACHINE Standard Model**

Both the disc are driven by single motor of suitable H.P.

**DOUBLE DISC POLISHING MACHINE Deluxe Model**

The two discs are driven by two independent motors of suitable H.P.

**TRIPLE DISC POLISHING MACHINE Illustrated on Front Cover**

All the three discs are driven by three independent motors of suitable H.P. having independent control.

**SAMPLE SPECIMEN HOLDER**

Simple but useful device for holding samples during polishing, thereby saving valuable time of metallurgist. Can be raised when not desired. Also can be fitted with 'MPE' Bombay make as well.



## OPTIONAL ACCESSORIES

### For METALLURGICAL MICROSCOPES

- Vedio Projection System (Coloured)
- Micro-photographic Equipment
- Computer Imaging System
- Image Analysis Software for Metallurgy
- Higher Magnification Objective & Eye
- Measuring/Grain Size Eye Pieces

### For PROFILE PROJECTORS

- Rotary Stage
- Center Holding Device
- Collect Holding Device
- Precision vice
- Pair of Vee Blocks with Adjustable Centers
- Vee Support
- Overlay Charts
- Halogen Bulb 12V - 100W (with reflector)
- Halogen Bulb 24V - 250W/ 12V - 150W
- Projection Lens 50x/100x Magnification
- Green Filter

### For TOOL MAKER MICROSCOPES

- Depth Measuring Attachment
- Center Holding Device
- Rotary Stage
- V-Block
- Vee Support
- Precision vice
- Measuring Eye Pieces with Reticles

### For STEREOSCOPIC ZOOM MICROSCOPE

- Fibre Optice Illuminator
- Micro-photography Equipment.
- Higher Magnification Objective/Eye Pieces.
- Working Stage 150mm x 150 mm with
- Micrometer Heads, Least Count : 0.01mm.

### MEASURING OPTIONS

- Digital Micrometer Heads 0.001mm.
- Digital Read Out System 5 micron.

Due to continuous R & D activites manufacturers reserve the right to amend design without notice.

## LIST OF SOME OF OUR INDIAN USERS INCLUDES :-

- |  |  |
|--|--|
| • National Physical Laboratory.                                    | • Gun Carriage Factory (Ministry of Defence)               |
| • Indian Space Research Centre.                                    | • Heavy Vehicle (Tanks) Factory, (Ministry of Defence)     |
| • Bhabha Atomic Research Centre.                                   | • Various Plants of Bharat Heavy Electricals Ltd. (BHEL)   |
| • National Test Houses.  | • Artificial Limbs Manufacturing Corporation of India Ltd. |
| • Mechanical Engineering Research/ & Development Organisation.     | • Dewrance Macneill & Co. Ltd.                             |
| • Research Designs & Standards Organisation (Ministry of Rly.)     | • Bharat Pumps & Compressors Ltd.                          |
| • Metallurgical Laboratory (N.E. Rly).                             | • Kirloskar Electric Co. Ltd.                              |
| • Solid State Physics Laboratory, (Ministry of Defence).           | • International Tractor Co. of India Ltd.                  |
| • Indian Institute of Technology.                                  | • Various Ordnance Factories (Ministry of Defence)         |
| • Defence Electronic Applications Laboratory (Ministry of Defence) | • Banaras Hindu University                                 |
| • Inspectorate of Small Arms (Ministry of Defence)                 | • Anchor Engg. Inds. Pvt. Ltd.                             |
| • Oil & Natural Gas Commission.                                    | • Gas Authority of India Ltd.                              |
| • Various Plants of Steel Authority of India Ltd.                  | • Clutch Auto Ltd.   |
| • Hindustan Aeronautics Ltd. (HAL)                                 | • Uncle Chips  |
| • Hindustan Machine Tools Ltd. (HMT).                              | • Indo Asian Switch Gear Ltd.                              |
| • Tata Iron & Steel Co. Ltd.                                       | • Pooja Forge Ltd.   |
| • Small Arms Factory (Ministry of Defence)                         | • Ghaziabad Precission Products Pvt. Ltd.                  |
|  | • Atma Steels Ltd.   |
|  | • Jindal Strips Ltd.                                       |

Manufacturers :

## JUST MACHINE TOOLS

(House of Testing Machines)

Office : 806A, Kirti Shikhar Tower, District Centre, Janakpuri, New Delhi-58  
Tel. : 41589060, 41589070, Fax : + 91-11-41589070

Works : 8/34, Kirti Nagar, Industrial Area, New Delhi-110015 (INDIA)  
Tel. : 25939435, 25927001, 64704227, Fax : +91-11-25100732

E-mail : [sales@justytest.com](mailto:sales@justytest.com), [justytest@hotmail.com](mailto:justytest@hotmail.com)

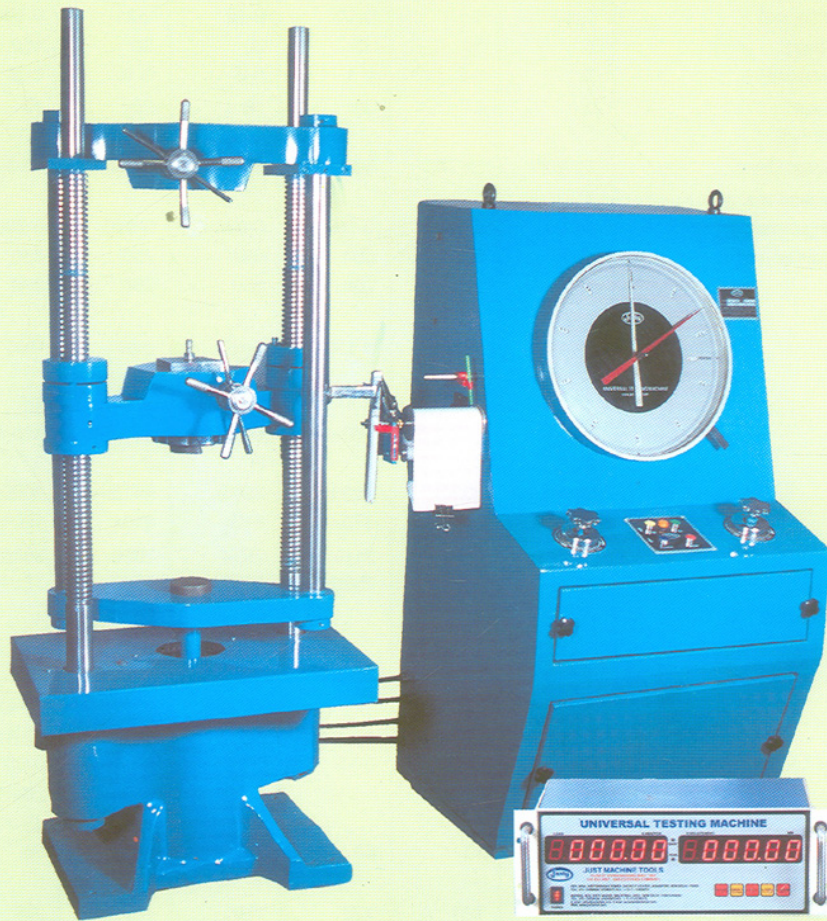
Visit us at : [www.justytest.com](http://www.justytest.com)



# JUST MACHINE TOOLS

(HOUSE OF TESTING MACHINES)

## UNIVERSAL TESTING MACHINE



**An ISO 9001 : 2000 Certified Company**

- ☛ Loading accuracy As high as  $\pm 1\%$
- ☛ Facilities for tests:  
Motor-driven threaded columns for quick and convenient adjustment or lower cross-head to facilitate rapid fixing of test specimen.
- ☛ Speeds:  
Straining at variable speeds to suit wide range of materials
- ☛ Large columns:  
Large effective clearance between columns enables testing of standard specimens as well as structures.
- ☛ Simple to operate
- ☛ Robust Construction
- ☛ Wide range of standard and special attachments/accessories available.

**DIGITAL, COMPUTERSIED & SERVO BASED MACHINES AVAILABLE ON REQUEST**

# SPECIFICATIONS

MODEL	JUTM-10	JUTM -20	JUTM -40	JUTM -60	JUTM -100	JUTM -200	JUTM -300
<b>CAPACITIES</b>	10-MT	20-MT	40-MT	60-MT	100-MT	200-MT	300-MT
Maximum capacity (tonne)	10	20	40	60	100	200	300
1 st Measuring Range (tome)	0-10	0-20	0-40	0-60	0-100	0-200	0-300
Minimum Graduation (kgf)	20	40	100	100	200	400	500
2nd Measuring Range (tonne)	0-5	0-10	0-20	0-30	0-50	0-100	0-150
Minimum Graduation (kgf)	10	20	50	50	100	200	250
3rd Measuring Range (lonne)	0-2.5	0-5	0-10	0-12	0-25	0-50	0-60
Minimum Graduation (kgf)	5	10	25	20	50	100	100
4th Measuring Range (lonne) ,	0-1	0-2	0-4	0-6	0-10	0-20	0-30
Minimum Graduation (kgf)	2	4	10	10	20	40	50
Clearance for tensile at fully descended working piston (mm)	50-200	50-700	50-700	50-800	50-850	50-900	50-900
Clearance for compression test at fully descended working piston (mm)	0-700	0-700	0-700	0-800	0-850	0-900	0-900
Clarence between columns (mm)	500	500	500	600	750	850	850
Ram stroke (mm)	150	200	200	250	250	300	300
Straining/piston speeds (mm/min) (at no load)	0-300	0-150	0-150	0-100	0-80	0-45	0-50
<b>CONNECTED LOAD</b>							
HP	1.3	1.3	2.3	2.5	3.5	6.5	8.5
V	400-440	400-440	400-440	400-440	400-440	400-440	400-440
O	3	3	3	3	3	3	3
<b>DIMENSIONS</b>	2000x	2000x	2000x	2265x	2415x	3000x	3500x
LxWxH app.mm	670x	670x	670x	670x	815x	1200x	1900x
	2110	2110	2110	2534	2900	3600	4550
<b>WEIGHT (approx. (kg)</b>	1500	1500	2500	3500	5500	12500	22000
<b>STANDARD ACCESSORIES FOR TENSION TEST</b>							
Clamping jaws for round specimens diameter (mm)	10-20	10-20	10-25	10-25	10-25	20-40	25-50
	20-30	20-30	25-40	25-40	25-45	40-60	50-70
Clampings jaws for flat specimens thickness (mm)	0-10	0-10	0-15	0-15	0-22	0-20	0-25
	10-20	10-20	15-30	15-30	22-44	20-45	25-50
					44-65	45-70	50-75
Width	50	50	65	70	70	90	100
<b>FOR COMPRESSION TEST</b>							
Pair of compression plates of diameter (mm)	120	120	120	120	160	220	220
<b>FOR TRANSVERSE TEST .</b>							
Table with adjustable rollers:							
Width of rollers (mm)	160	160	160	160	160	200	200
Diameter of rolers (mm)	30	30	30	50	50	70	70
Max. clearance between supports	500	500	500	600	800	900	1000
Radius of punch tops (mm)	6,12	6,12	12,16	16,22	16,22	30,40	50,75

**OPTIONAL ACCESSORIES :** Load stabilizer, Brinell Test Attachment, Bend Test Attachment, Shear Test Attachment and a wide range of the other accessories.

Due to constant R & D, specifications and features are subject to change without notice. The dimensions given above are approximate

Manufacturers :



**JUST MACHINE TOOLS**  
(House of Testing Machine)

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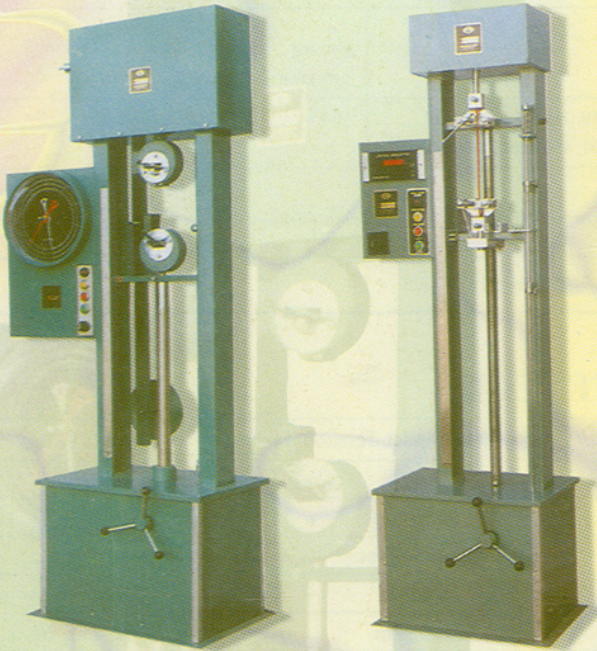
Tel.: 25939435, 25927001, 64704227 Fax : +91-11-25100732

E-mail : sales@justytest.com, justytest@hotmail.com

Visit us at : [www.justytest.com](http://www.justytest.com)



## TENSILE TESTERS



**IMPACT TESTER Model JIT - 30** is designed for conducting CHARPY, 1Z0D and IMPACT TENSION Tests. The test methods confirm to IS 1757-1961, IS : 1499-1959 and BS : 131 : Part 2 & 3, IS : 1598-1960, BS : 131part I and ASTM E 32-47T.

The impact energy absorbed by the specimen during rupture is measured as the difference between the height of drop before rupture and the height of rise after rupture of the test specimen and is read on the dial scale.

### SALIENT FEATURES

- Release of Pendulum by 'Two Hand Operation'
- Safety Guards for Protection
- Breaking Arrangement is provided for stopping the pendulum

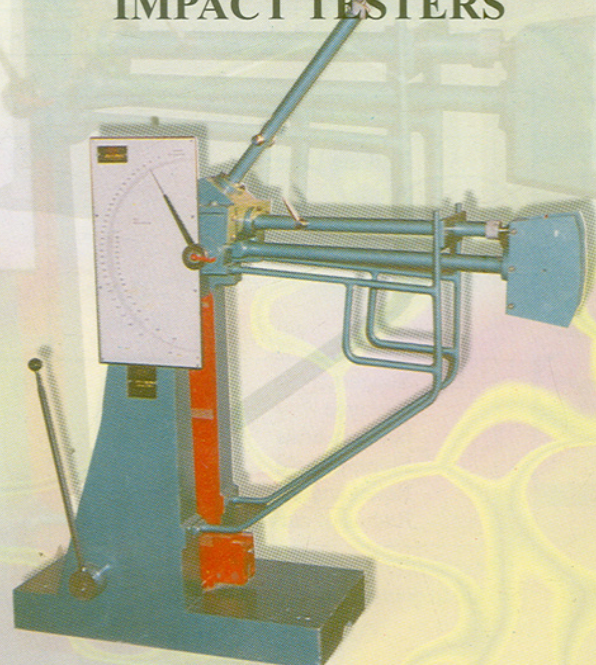
Coupled with experience and expertise gained by manufacturing testing machines since 1966, the new "JUSTY" testers offers a unique standard of accuracy, easy operations, reliability and consistency.

**TENSILE TESTING MACHINE** for determining the tensile strength and elongation of materials like wires, cables conductors, plywood, ferrous & non-ferrous material.

### SALIENT FEATURES

- High accuracy of  $\pm 1\%$  as per IS 1828.
- Three measuring ranges for accurate testing.
- Simple in construction and control for easy operation and maintenance.
- Load and Elongation Recorders are provided where ever necessary.
- A number of straining speeds are available for selection.
- Attachments for conducting compression, bending shear tests.
- **DIGITAL DISPLAY** of load and elongation can be provided with Data recording printer.
- Wide range of grips to suit variety of materials and shapes.
- Provision of adequate safety devices.

## IMPACT TESTERS



Model JIT - 30



## TENSILE TESTERS

Model		JTM-20	JTM-50	JTM-100	JTM-250	JTM-500	JTM-1000	JTM-2500	JTM-5000	JTM-10000
Capacity Kgf.		20	50	100	250	500	1000	2500	5000	10000
Measuring Range Kgf.	I	0-5	0-10	0-20	0-50	0-100	0-200	0-500	0-1000	0-2500
	II	0-10	0-25	0-50	0-100	0-250	0-500	0-1000	0-2500	0-5000
	III	0-20	0-50	0-100	0-250	0-500	0-1000	0-2500	0-5000	0-100000
Least Count Range Kgf.	I	0.01	0.02	0.05	0.1	0.2	0.5	1.0	2.0	5.0
	II	0.02	0.05	0.1	0.2	0.5	1.0	2.0	5.0	10.0
	III	0.05	0.1	0.2	0.5	1.0	2.0	5.0	10.0	20.0
Elongation Scale Least Count		1 MM				1 MM		1 MM		
Grip separation										
Minimum		25 MM				25 MM		25 MM		
Maximum		1000 MM				750 MM		600 MM		
Traverse Speeds		10 Speeds, 50, 100, 150, 200, 225				100 MM/Min.		25 MM/Min		
Standard Speeds		250, 300, 400, 450 & 500 MM/MIN								
Optional Variable Speed drive stepless variation		50 to 500 MM/Min.				10 to 100 MM/ Min.		2.5 to 25 MM/Min		
Power Supply		3 Phase, 400/440 Volts, 50 C/S A.C.								

## IMPACT TESTERS

	Charpy and Impact Tension Test	Izod Test
Pendulum drop angle	140°	85°21'
Pendulum effective weight	20.59 kgs.	21.79 kgs.
Pendulum speed	5.3465m/sec.	3.857m/sec.
Pendulum impact energy	30kg-m	16.52 kg-m
Min. graduation	0.2kg-m	0.14 kg-m
Distance of axis of hammer rotation and centre of test piece/point of test piece hit by hammer.	825 mm	825 mm
Max. permissible loss by friction & windage, etc.	0.5% of max. impact energy	

Charpy Test	Izod Test	Impact Tension Test
A) Striking Edge: Angle : 30°±1  Radius of curvature : 2.25 mm Width : 18 mm	A) Striking edge : Angle : 75°  Radius of curvature : 0.75 mm Horizontal : 10° Vertical relief : 5°	A) Striking fork Distance between forks : 36 mm Radius of curvature : 1 mm
B) Support : Distance between arms : 40 mm Sloping angle : 0° Relief angle : 10° Radius of curvature : 1.25 mm	B) Support :  For gripping specimen with dimension of 10 x 10 mm	B) Support : For clamping specimen with dimensions as following Diameter : 6.4 mm Length (Total) : 68 mm Length (Measuring) : 25.4 mm Thread of supporting : M10 x 1.5

Machine Dimension 935 (L) X 430 (W) X 2070 (H) mm (approx.)

Weight 550kg. (approx.)

Due to continuous R&D activities manufacturers reserve the right to amend design without notice.

Manufacturers :

**JUST MACHINE TOOLS**

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