TORONTECH™

Metallography, Spectroscopy & Petroscopy

TORONTECH.COM

About Us

About Torontech

Torontech is a leading North American based international manufacturer and supplier of materials testing & analysis equipment focused on both NDT (Non-destructive Testing) and destructive testing methods. The Torontech group is proud to be a North American corporation headquartered in Toronto; the commercial, technical, and economic hub of Canada. With offices and an extensive network in the USA as well as other international markets, we are uniquely prepared to provide turn-key solutions for our customers and clients around the globe.

Creating comprehensive solutions for our clients has always been a core value of our company. From sales, to order execution, and post-sales support; every staff member is here to help you choose and implement the solution that best suits your unique requirements.

Since inception, we have succeeded in only offering quality manufactured products that are trusted worldwide. We offer the best value for your investment and provide world-class support. In the past few years, Torontech has grown remarkably in numerous industries, but especially in Optical and Laboratory Instruments. The growth has given us the opportunity to serve many well-known global and North American corporations including Sikorsky Aircraft Corporation. Our growing client base participates in a breadth of industries from aerospace, to manufacturing, to mineral processing, and we serve many colleges, universities, and government organizations.

Metallography

Metallography is the study of the physical structure and components of metals, typically using microscopy.

The surface of a metallographic specimen is prepared by various methods of cutting, grinding, polishing, and etching. After preparation, it is often analyzed using optical or electron microscopy. Using only metallographic techniques, a skilled technician can identify alloys and predict material properties.
Mechanical preparation is the most common preparation method. Successively finer abrasive particles are used to remove material from the sample surface until the desired surface quality is achieved. Torontech offers a complete line of machines for mechanical sample preparation for metallography analysis to meet different demands for quality, capacity, and reproducibility.
Metallographic specimens are typically "mounted" using a hot compression thermosetting resin. When specimens are very sensitive to temperature, "cold mounts" may be made with a two-part epoxy resin. Mounting a specimen provides a safe, standardized, and ergonomic way by which to hold a sample during the grinding and polishing operations.

After mounting, the specimen is wet ground to reveal the surface of the metal. The specimen is successively ground with finer and finer abrasive media. After grinding the specimen, polishing is performed. After polishing, certain microstructural constituents can be seen with the microscope, otherwise, the microstructural constituents of the specimen are revealed by using a suitable chemical or electrolytic etchant.

Spectroscopy

Spectroscopy and spectrography is the measurement of radiation intensity as a function of wavelength. Spectral measurement devices are referred to as spectrometers, spectrophotometers, spectrographs or spectral analyzers. Optical emission spectrometry (OES) and X-Ray fluorescence are most commonly used techniques for the analysis of metals and solid samples. It is crucial to have the sample properly prepared. The sample needs to be both representative, homogeneous and with an even surface in order to eliminate factors that can influence the results.

The surface spectroscopy sample is prepared by various methods of cutting, grinding and polishing, Successively finer abrasive particles are used to remove material from the sample surface until the desired surface quality is achieved. Torontech offers a complete line of machines for mechanical sample preparation for spectroscopy analysis to meet different demands for quality, capacity, and reproducibility

Petroscopy

Petrography is the study of origin, composition, distribution and structure of rocks. The mineral content and the textural relationships within the rock are described in detail. The classification of rocks is based on the information acquired during the petrographic analysis with petrographic microscope. The detailed analysis of minerals by optical mineralogy in thin section and the micro-texture and structure are critical to understanding the origin of the rock. Electron microprobe analysis of individual grains as well as whole rock chemical analysis by instruments such as atomic absorption analyzers and X-ray fluorescence analyzers.

The surface of a rock specimen is prepared by various methods of cutting, grinding and polishing, Successively finer abrasive particles are used to remove material from the sample surface until the desired surface quality is achieved. Torontech offers a complete line of machines for mechanical sample preparation for petroscopy analysis to meet different demands for quality, capacity, and reproducibility.

General Applications

Advanced materials such as high tech metal alloys, ceramics, composites and polymers have appeared which made metallography become an increasingly vital part of modern industry.

Through a process of cutting, mounting, grinding and polishing, a smooth surface is obtained to reach the materials true structure. In order to achieve high preparation quality and reproducible results; a combination of “Right equipment, Correct preparation method and Right consumables” which we call “Total Preparation Solution”, is required.

Our systems are used in research laboratories, in quality control, on production lines and in education, in large government installations, automotive companies and sub suppliers, small independent laboratories and other industries. The automobile industry demands the highest standards of quality for OEMs as wells as component suppliers. As the automobile industry focuses on parts testing that includes body, chassis and power train applications. The aerospace industry relies on innovative materials to improve performance with ever lighter and stronger materials being used for new engine designs and airframe construction. Reliability is of critical importance, and in metallography this relies on high quality equipment, consumables and methodology. Electronics require testing to identify substandard materials and verify that specifications are met during manufacturing. The ability to quickly and easily verify composition of primary metals and alloys makes the difference in the metals industry. Torontech’s equipment and consumables assures manufacturers and metal fabricators that products are safe, meet customer specs and ensure traceability. The energy industry pushes materials to their limits whether through gas fired turbines, oil & gas operations, or renewable technologies such as wind and solar. Torontech’s equipment and consumables are used to analyze these materials through all stages of development and deployment. Universities, government agencies and research facilities rely on Torontech’s testing equipment and consumables as they develop new materials and manufacturing processes for cutting edge challenges. By analyzing the microstructure of a material, they can improve material properties.

Materials scientists, petrographer, designers, engineers and QC managers use Torontech products to evaluate the mechanical properties of materials, components and structures.

Available Products

- ToronCut Series of Metallography Abrasive & Precision Cutter
- ToronPol Series of Metallography Polisher
- ToronGrind Series of Metallurgical & Spectro Grinders
- ToronMount Series of Mounting Presses
- ToronProscope Series of Microscopes & Profile Projectors
- ToronGeo Series of Petroscopy Sample Preparation Machines
- ToronHard Series of Hardness Testers
- ToronCutspe Series of Metallography Special Purpose Cutting Machines

Metallography Abrasive & Precision Cutter – ToronCut Series

TTMABR6M	Manual - 60mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMABR15M	Manual – 150mm Chop Cutting Capacity Abrasive Cutting Machine.
TTMABR6/15/18AZ	Automatic Z direction – 60/150/180mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMABR15AZY	Automatic Z & Y direction – 150mm Chop Cutting Capacity Abrasive Cutting Machine.
TTMABR8M	Manual - 80mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMABR18M	Manual – 180mm Chop Cutting Capacity Abrasive Cutting Machine.
TTMABR8AY	Automatic Y direction – 80mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMABR18AZ	Automatic Z direction – 180mm Chop Cutting Capacity Abrasive Cutting Machine.
TTMABR11M	Automatic Y direction – 80mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMABR20AZY	Heavy Duty Belt Grinder for Metallurgical Sample Preparation
TTMABR11AZY	Automatic Z & Y direction – 110 mm Chop Cutting Capacity Abrasive Cutting Machine.	TTMPRE2	Manual Low Speed – 20mm Chop Cutting Capacity Precision Cutting Machine.
TTMABR13M	Manual – 130 mm Chop Cutting Capacity Abrasive Cutting Machine.	TTMPRE4AY	Automatic Y direction, High Speed – 40mm Chop Cutting Capacity Precision Cutting Machine.
TTMABR13AZY	Automatic Z & Y direction – 130 mm Chop Cutting Capacity Abrasive Cutting Machine.	TTMPRE6AYZ	Automatic Y & Z direction, High Speed – 50mm Chop Cutting Capacity Precision Cutting Machine.

TTMABR6M

Manual - 60mm Chop Cutting Capacity Abrasive Cutting Machines for Metallurgical Sample Preparation.

Motor	3HP (2.2 kw), 3 phase
Spindle Speed	2800rpm
Cut-off Wheel Dia.	10inch (250mm)
Coolant Pump	1/3HP
Cutting Capacity	Up to 60mm (standard size for standard steels)
T Slot Bed	240 × 200mm with 10mm T-slot
Coolant Tank	50L
Machine Size	850 × 750 × 1550mm (L × D × H)

Features:

- Ergonomic cutting handle
- Large drain for coolant recirculation
- Start button with key for safety
- Rust proof steel construction
- Easy flow cutting chamber

TTMABR6AZ

Automatic Z direction – 60/150/180mm Chop Cutting Capacity Abrasive Cutting Machines for Metallurgical Sample Preparation

Motor	3HP (2.2kw), 3 phase
Spindle Speed	2800rpm
Cut-off Wheel Dia.	10inch (250mm)
Coolant Pump	1/3HP
Cutting Capacity	Up to 60mm (standard size for standard steels)
T Slot Bed	240 × 200mm with 10mm T-slot
Coolant Tank	50L
Auto Movement	Z axis movement automatic with servo system
Machine Size	1100 × 750 × 1550mm (L × D × H)

Features:

- Ergonomic cutting Handle
- Large drain for coolant recirculation
- PLC with advance graphical touch screen display
- Advanced touch screen panel – cycle Start, LED Light, Emergency Stop, Start Button with door safety limit switch and preset programme

TTMABR8M

Manual - 80mm Chop Cutting Capacity Abrasive Cutting Machines for Metallurgical Sample Preparation.

Motor	5HP (3.7kw), 3 phase
Spindle Speed	2800rpm
Cut-off Wheel Dia.	12inch (300mm)
Coolant Pump	1/3HP
Cutting Capacity	80mm (standard size for standard steels)
T Slot Bed	260 × 260mm with 8mm T-slot
Coolant Tank	100L
Machine Size	1100 × 1000 × 1650 mm

Features:

- Ergonomic cutting handle
- Easy flow cutting chamber
- Metals, ceramic and mineral samples
- Sturdy floor model cutter for metallographic sectioning
- Simple control panel with 4 switches - cutting, coolant, tube light and emergency Stop button with key and safety switch

TTMABR8AY

Automatic Y direction – 80mm Chop Cutting Capacity Abrasive Cutting Machines for Metallurgical Sample Preparation

Motor	5HP (3.7kw), 3 phase
Spindle Speed	2800rpm
Cut-off Wheel Dia.	12inch (300mm)
Coolant Pump	1/3HP
Cutting Capacity	80mm (Standard size for standard steels)
T Slot Bed	260 × 260mm with 8mm T-slot
Coolant Tank	100L
Auto Movement	Y axis movement automatic with servo system
Machine Size	1100 × 1000 × 1650 mm

Features:

- Sturdy floor model cutter for metallographic sectioning
- Metals, ceramic and mineral samples
- Splash proof, Corrosion Resistant see through hood
- Four high flow coolant jets to provide optimum cooling
- Opening in the side wall for sectioning extra-long samples

TTMABR11M

Manual – 110mm Chop Cutting Capacity Abrasive Cutting Machines for Metallurgical Sample Preparation

Motor	7.5HP (5.6 kw), 3 phase
Spindle Speed	2880rpm
Cut-off Wheel Dia.	14inch (350mm)
Coolant Pump	1/2HP
Cutting Capacity	110mm dia. or 100 x 150mm (standard size for standard steels)
T Slot Bed	400 × 260mm with 8mm T-slot
Coolant Tank	120L
Machine Size	1040 × 1600 × 1800 mm

Features:

- Ergonomic cutting handle
- Easy flow cutting chamber
- Start button with key for safety
- Sturdy floor model cutter for metallographic sectioning
- Cooling by three high flow coolant jets to provide optimum cooling

TTMABR11AZY

Automatic Z & Y direction – 110 mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	7.5HP (5.6kw), 3 phase
Spindle Speed	2880rpm
Cut-off Wheel Dia.	14inch (350mm)
Coolant Pump	1/2HP
Cutting Capacity	110mm dia. or 100 x 150mm (standard size for standard steels)
T Slot Bed	400 × 260mm with 8mm T-slot
Coolant Tank	120L
Auto Movement	Z and Y axis movement automatic with servo system
Machine Size	1040 × 1600 × 1800mm

Features:

- Sturdy floor model cutter for metallographic sectioning
- Metals, ceramic and mineral samples
- Splash proof, corrosion resistant see through hood
- Four high flow coolant jets to provide optimum cooling
- Opening in the side wall for sectioning extra-long samples

TTMABR13M

Manual – 130 mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	10HP (7.5kw), 3 phase
Spindle Speed	2200rpm
Cut-off Wheel Dia.	16inch (400mm)
Coolant Pump	1/2 HP
Cutting Capacity	130mm dia. (standard size for standard steels)
T Slot Bed	400 × 260mm with 8mm T-slot
Coolant Tank	120L
Machine Size	1040 × 1600 × 1800 mm

Features:

- Ergonomic cutting handle
- Easy flow cutting chamber
- Start button with key for safety
- Sturdy floor model cutter for metallographic sectioning
- Cooling by three high flow coolant jets to provide optimum cooling

TTMABR13AZY

Automatic Z & Y direction – 130 mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	10HP (7.5kw), 3 phase
Spindle Speed	2200rpm
Cut-off Wheel Dia.	16inch (400mm)
Coolant Pump	1/2 HP
Cutting Capacity	130mm dia. (standard size for standard steels)
T Slot Bed	400 × 260mm with 8mm T-Slot
Coolant Tank	120L
Auto Movement	Z and Y axis movement automatic with servo system
Machine Size	1040 × 1600 × 1800mm

Features:

- Sturdy floor model cutter for metallographic sectioning
- Metals, ceramic and mineral samples
- Splash proof, corrosion resistant see through hood
- Four high flow coolant jets to provide optimum cooling
- Opening in the side wall for sectioning extra-long samples

TTMABR15M

Manual – 150mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	15HP (11kw), 3 phase
Spindle Speed	2880pm
Cut-off Wheel Dia.	20inch (500mm)
Coolant Pump	1/2HP
Cutting Capacity	150mm dia. (standard size for standard steels)
T Slot Bed	500 × 500mm with 12mm T-Slot
Coolant Tank	130L
Machine Size	1700 × 1700 × 1900mm

Features:

- Ergonomic cutting handle
- Heavy duty steel construction
- Simple control panel with 4 switches - cutting, coolant, LED light, emergency stop button with Door Safety Limit switch
- Sturdy floor model cutter for Metallographic sectioning
- Cooling by three high flow coolant jets to provide optimum cooling

TTMABR15AZY

Automatic Z & Y direction – 150mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation.

Motor	15HP (11kw), 3 phase
Spindle Speed	2880pm
Cut-off Wheel Dia.	20inch (500mm)
Coolant Pump	1/2 HP
Cutting Capacity	150mm dia. (standard size for standard steels)
T Slot Bed	500 × 500mm with 12mm T-Slot
Coolant Tank	130L
Auto Movement	Z and Y axis movement automatic with servo system
Machine Size	1700 × 1700 × 1900mm

Features:

- Rust proof steel construction
- Heavy duty steel construction
- Advanced touch screen panel –start, stop, reset, cutting, coolant, LED and Emergency stop button door safety limit switch
- Variable feed rates with cutting length
- Flash cleaning attachment with hook for mounting

TTMABR18M

Manual – 180mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation.

Motor	30HP (18kw), 3 phase
Spindle Speed	1000 - 3000rpm variable speed
Cut-off Wheel Dia.	20inch (500mm)
Coolant Pump	1/2HP x 2
Cutting Capacity	180mm dia. (standard size for standard steels)
T Slot Bed	600 × 600mm with 12mm T-Slot
Coolant Tank	130L
Machine Size	2100 × 2150 × 2400mm

Features:

- Ergonomic cutting handle
- Heavy duty steel construction
- Simple control panel with 4 switches - cutting, coolant, LED light, emergency stop button with door safety limit switch
- Sturdy floor model cutter for Metallographic sectioning
- Cooling by four high flow coolant jets to provide optimum cooling

TTMABR18AZ

Automatic Z direction – 180mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	30HP (18kw), 3 phase
Spindle Speed	1000 - 3000rpm variable speed
Cut-off Wheel Dia.	20inch (500mm)
Coolant Pump	1/2HP x 2
Cutting Capacity	180mm dia. (standard size for standard steels)
T Slot Bed	600 × 600mm with 12mm T-Slot
Coolant Tank	130L
Auto Movement	Z and Y axis movement automatic with servo system
Machine Size	2100 × 2150 × 2400mm

Features:

- PLC with advance graphical touch screen display
- Heavy duty steel construction
- Splash proof, corrosion resistant doors with see-through system
- Variable feed rates with cutting length and pre-set programme
- Flash cleaning attachment with hook for mounting

TTMABR20AZY

Automatic Z & Y direction – 200mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation.

Motor	40HP (30kw), 3 phase
Spindle Speed Range	1000 - 3000rpm
Cut-off Wheel Dia.	24inch (600mm)
Coolant Pump	1/2HP
Cutting Capacity	200mm dia. (standard size for standard steels)
T Slot Bed	600 × 600mm with 12mm T-Slot
Coolant Tank	130L
Auto Movement	Z and Y axis movement automatic with servo system
Machine Size	2225 × 1860 × 2025mm

Features:

- PLC with advance graphical touch screen display
- Heavy duty steel construction
- Splash proof, corrosion resistant Doors with see-through system
- Variable feed rates with cutting length and pre-set programme
- Flash cleaning attachment with hook for mounting

TTMPRE2

Manual Low Speed – 20mm Chop Cutting Capacity Precision Cutting Machines for Metallurgical & Spectroscopy Sample Preparation.

Spindle Speed Range	0 - 600 rpm variable speed
Diamond Blade Size	Up to 5inch
Micrometer for Cross-feed Adjust	Up to 25mm
Cutting Capacity	20mm
Down-feed Facility With Different Weight	Up to 250g

Features:

- Built-in stainless steel coolant tray
- Advanced touch screen system with pre-set programs
- Transparent splash guard
- Down-feed facility with variable weights

TTMPRE4AY

Automatic Y direction, High Speed – 40mm Chop Cutting Capacity Precision Cutting Machines for Metallurgical & Spectroscopy Sample Preparation.

Motor	1HP (0.75kw), single phase
Spindle Speed Range	100 - 3000rpm variable speed
Cut-off Wheel Dia.	8inch (200mm) diamond/abrasive wheel
Cutting Capacity	40mm dia. (standard size for standard steels)
Auto Movement	Y axis movement automatic with servo system
Machine Size	600 × 600 × 500mm

Features:

- Door interlock limit switch
- Re-circulating coolant system
- Variable feed rates and cutting length

TTMPRE6AYZ

Automatic Y & Z direction, High Speed – 50mm Chop Cutting Capacity Precision Cutting Machines for Metallurgical & Spectroscopy Sample Preparation.

Motor	2HP (1.5kw), single phase
Spindle Speed Range	100 - 5000rpm variable speed
Cut-off Wheel Dia.	Diamond wheel/Abrasive wheel up to 8inch (200mm)
Cutting Capacity	60mm dia. (Standard size for standard steels)
T Slot Bed	250 × 200mm moveable
Movement	Z movement permit height adjustment of cut off wheel up to 40mm
Machine Size	845 × 784 × 525mm

Features:

- Door safety interlock system
- X movement scale reading system
- Power LED lamp
- Easy to clean cutting chamber
- Fume exhaust port

TTMPOLVS8/10/12	Single Disc, Variable Speed – Desktop Polishing Machines.	TTMPOLVT8/10/12I	Triple Disc, Variable Speed Individual Drive – Desktop Polishing Machines.
TTMPOLS10A/12A	ToronPol - Single Disc, Variable Speed Automatic – Desktop Polishing Machines.	TTMPOLVD8/10/12IF	Double Disc, Variable Speed Individual Drive – Floor Standing Metallurgical Polishing Machines.
TTMVPOLD8/10/12C	Double Disc, Variable Speed – Desktop Polishing Machines.	TTMABR18AZ	Automatic Z direction – 180mm Chop Cutting Capacity Abrasive Cutting Machine.
TTMPOLVD10/12SA	Double Disc, Variable Speed – Semi Automatic Polishing Disc – Desktop Polishing Machines.	TTMPOLVF8/10/12IF	Four Disc, Variable Speed Individual Drive – Floor Standing Metallurgical Sample Preparation Polishing Machines.
TTMPOLVD10/12IA	Double Disc, Variable Speed Individual Drive Automatic Desktop Polishing Machines.		

TTMPOLVS8/10/12

Single Disc, Variable Speed, Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 to 1000rpm or 50 to 600rpm continuously variable
Dimensions	360 × 660 × 310mm

Features:

- LCD display
- Feather touch control
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Flexible water jet with control valve
- Corrosion proof bowl, free flow design

TTMPOLS10A/12A

ToronPol - Single Disc, Variable Speed – Automatic Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	1HP high torque 3 phase motor
Independent Polishing Head Motor	1/4HP
Size of Polisher Disc	10/12inch
Polisher Disc Speed Range	50 to 600rpm continuously variable
Polisher Head Speed Range	30 to 150rpm
Mould Holding Capacity	Up to 6 moulds
Interchangeable Mould Size	1¼ , 1½ and 2inch
Force on Specimens	1 to 4bar variable
Metric Mould Option	30, 40, 50mm
Dimensions	850 × 500 × 600mm

Features:

- Full-automatic
- Electronic control with LC – display with digital timer
- Single pressure specimen loading, pneumatically applied

TTMVPOLD8/10/12C

Double Disc, Variable Speed – Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 to 1000rpm or 50 to 600rpm continuously variable
Dimensions	710 × 660 × 310mm

Features:

- LCD display
- Feather touch control
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Detachable coolant jet
- Corrosion proof bowl, free flow design

TTMPOLVD10/12SA

Double Disc, Variable Speed – Semi Automatic Polishing Disc, Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque single phase motor
Size of Polisher Disc	10/12inch
Polisher Disc Speed Range	50 to 600rpm continuously variable
Polisher Head Speed Range	100rpm
Mould Holding Capacity	Up to 3 moulds
Interchangeable Mould Size	1¼ , 1½ and 2inch
Metric Mould Option	30, 40, 50mm
Dimensions	710 × 660 × 600mm

Features:

- Double Disc, semi-automatic
- Electronic control with LC – display with digital timer
- Single pressure specimen loading, pneumatically applied

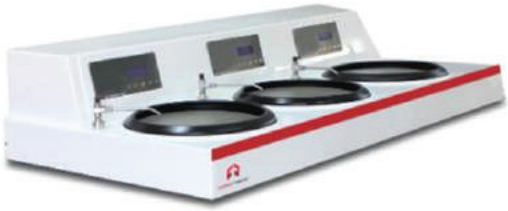
TTMPOLVD10/12IA

Double Disc, Variable Speed Individual Drive – Automatic Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	1HP high torque single phase motor
Independent Polishing Head Motor	1/4HP
Size of Polisher Disc	10/12inch
Polisher Disc Speed Range	50 to 600rpm continuously variable
Polisher Head Speed Range	30 to 150rpm
Mould Holding Capacity	Up to 6 moulds
Interchangeable Mould Size	1¼ , 1½ and 2inch
Force on Specimens	1 to 4bar variable
Metric Mould Option	30, 40, 50mm
Dimensions	950 × 850 × 750mm

Features:

- Double Disc, full-automatic
- Electronic control with LC – display with digital timer
- Single pressure specimen loading, pneumatically applied



TTMPOLVT8/10/12I

Triple Disc, Variable Speed Individual Drive – Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 to 1000rpm or 50 to 600rpm continuously variable
Dimensions	1060 × 660 × 310mm

Features:

- Triple Disc, individual drive
- LCD display, feather touch control
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Detachable coolant jet
- Corrosion proof bowl, free flow design

TTMPOLVD8/10/12IF

Double Disc, Variable Speed Individual Drive – Floor Standing Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 to 600rpm continuously variable
Dimensions	870 × 750 × 1020mm

Features:

- Double Disc , individual drive
- LCD display , feather touch control
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Flow drain design
- Detachable coolant jet
- Corrosion proof bowl, free flow design

TTMABR18AZ

Automatic Z direction – 180mm Chop Cutting Capacity Abrasive Cutting Machine for Metallurgical Sample Preparation

Motor	0.5HP high torque single phase m otor
Size of Polisher Disc	10/12inch
Polisher Disc Speed Range	50 to 600rpm continuously variable
Polisher Head Speed Range	100rpm
Mould Holding Capacity	Up to 3 moulds
Interchangeable Mould Size	1¼ , 1½ and 2inch
Metric Mould Option	30, 40, 50mm
Dimensions	710 × 660 × 600mm

Features:

- Double Disc , semi-automatic, floor standing
- Electronic control with LC – display with digital timer
- Compartments for storing consumables
- Corrosion resistant wash bowl with free flow drain design
- Disc interchangeable design
- Independent powered polish head

TTMPOLVF8/10/12IF

Four Disc, Variable Speed Individual Drive – Floor Standing Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 to 600rpm continuously variable
Dimensions	1740 × 750 × 1020mm

Features:

- 4 Disc, individual drive , floor standing
- LCD display, feather touch control
- Compartments for storing consumables
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Flow drain design
- Detachable coolant jet
- Disc Interchangeable Design
- Corrosion proof bowl, free flow design

TTMBGS	Single Belt General Purpose Grinder	TTMPHAT	Automatic Hydraulic Twin Space Mounting Press
TTMBGT	Dual-Wet Belt Grinder	TTMPPA	Automatic Pneumatic Mounting Press
TTMBGSH	Heavy Duty Belt Grinder	TTMPPM	Pneumatic Mounting Press
TTSpectroG14	Single Disc, Single Speed Grinder	TTMMSB	Table-top Reversed Metallurgical Microscope
TTSpectroVG14	Automatic Y direction – 80mm Chop Cutting Capacity Abrasive Cutting Machines.	TTMBGSH	Heavy Duty Belt Grinder for Metallurgical Sample Preparation
TTMPHM	Hydraulic Mounting Press	TTMMSH	Portable Metallurgical Microscope
TTMPHA	Automatic Hydraulic Mounting Press	TTMMSD	Advanced Portable Digital Microscope

TTMBGS

Single Belt General Purpose Grinder

Motor	0.5HP single phase motor
Belt Size	100 × 915mm endless belt
Dimensions	560 × 350 × 250mm

Features:

- Sturdy table top model for pre-grinding of metallurgical specimen
- Aluminium Idler Pulley Mechanism
- Simplified belt release and adjustment mechanism

TTMBGT

Dual-Wet Belt Grinder for Metallurgical Sample Preparation

Motor	1HP 3 phase motor
Grinding Speed	1440rpm
Belt Size	100 × 915mm endless belt
Dimensions	630 × 250 × 520mm

Features:

- Water cooling
- Easy belt change mechanism
- Anticorrosion M.S Base with powder coated SS cover
- Electrical interlock system, water connection 1x R ½"recirculation

TTMBGSH

Heavy Duty Belt Grinder for Metallurgical Sample Preparation

Motor	1HP 3 phase motor
Belt Size	150 × 1220mm endless belt
Dimensions	700 × 600 × 1120mm

Features:

- Mechanical double speed design
- Simplified belt relea se and alignment mechanism
- Spring loaded idler pulley for smooth drive

TTSpectroG14

Single Disc, Single Speed Grinder for Spectroscopy Sample Preparation

Motor	1HP 3 phase motor
Vacuum Disc Size	14inch
Grinding Speed	2880rpm
Dimensions	10500 × 650 × 1000mm

Features:

- Single speed, floor model
- Vacuum suction system
- Magnetic holder

TTSpectroVG14

Variable Speed Vacuum Disc Grinder for Spectroscopy Sample Preparation

Motor	1HP 3 phase motor
Vacuum Disc Size	14inch
Grinding Spee d	100 to 2880rpm variable
Dimensions	10500 × 650 × 1000mm

Features:

- Variable speed, floor model
- Vacuum suction system
- Magnetic holder

TTMPHM

Hydraulic Mounting Press

Mould Size	1 1/4inch dia. Standard, 1 1/2inch and 2inch dia. optional
Heater	1600w
Dimensions	490 × 620 × 590mm

Features:

- High speed mould heater with built -in water cooling coils
- Built in hydraulic system
- Digital temperature indicator and digital timer
- Quick ram return to speed up reloading

TTMPHA

Automatic Hydraulic Mounting Press

Mould Size	1 1/4inch dia. Standard, 1 1/2inch and 2inch dia. optional
Heater	1600w
Dimensions	490 × 620 × 590mm

Features:

- Hydraulic Fully Automatic system
- Automatic Water Coolin g System
- Pre-set programs and data storage of mounting parameters up to 25 programs
- Timer -Buzzer indication for heating and cooling cycles
- Wide range of sample sizes can be accommodated

TTMPHAT

Automatic Hydraulic Twin Space Mounting Press

Mould Size	1 1/4inch dia. Standard, 1 1/2inch and 2inch dia. optional
Heater	1600w each
Dimensions	630 × 620 × 520mm

Features:

- Double Hydraulic Fully Automatic system
- Automatic Water Cooling System
- Pre-set programs and data storage of mounting parameters up to 25 programs
- Timer-Buzzer indication for heating and cooling cycles
- Wide range of sample sizes can be accommodated

TTMPPM

Pneumatic Mounting Press

Mould Size	1 1/4inch dia. Standard, 1 1/2inch and 2inch dia. optional
Heater	1600w
Dimensions	480 × 620 × 590mm

Features:

- Pneumatic operation System
- High speed mould heater with built -in water cooling coils
- Interchangeable mould is suitable for high volume applications
- Quick Ram return to speed up reloading
- Buzzer on completion of cycle

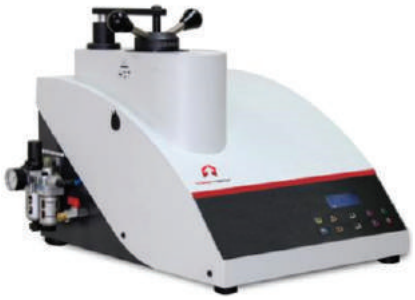
TTMPPA

Automatic Pneumatic Mounting Press

Mould Size	1 1/4inch dia. Standard, 1 1/2inch and 2inch dia. optional
Heater	1200w
Dimensions	490 × 620 × 520mm

Features:

- Pneumatic fully automatic system
- Automatic water cooling system
- Steel cabinet with built in Pneumatic system
- Digital temperature indicator and digital timer with LCD display
- Quick ram return to speed up reloading



TTMBC
Bar Cutting Machine

Motor	4HP (3kw), 3 phase
Cut-off Wheel Dia.	8/10inch (203/254mm)
Cutting Capacity	60mm dia.

Features:
- Inbuilt movable re-circulation coolant tank
- User friendly touch screen operation panel
- Pneumatic clamping
- Safety emergency stop with door limit switch
- Paper band filter system and automatic bar feeding (optional)

TTMCR
Carbide Rod Cutting Machine

Motor	4HP (3kw), 3 phase
Cut-off Wheel Dia.	8/10inch (203/254mm)
Cutting Capacity	40mm dia.

Features:
- Inbuilt movable re-circulation coolant tank
- User friendly touch screen operation panel
- Safety emergency stop with door limit switch
- Paper band filter system and automatic bar feeding (optional)

TTMRBD
Automatic Refractory Brick Diamond Cutting Machine

Motor	10HP (7.5kw), 3 phase
Cut-off Wheel Dia.	14/16inch dia. diamond wheel
T Slot Bed	500 × 500mm with 8mm T-slot
Cutting Capacity	1000 × 150 × 100mm
Dimensions	2100 × 2150 × 2400mm

Features:
- Used to slice refractory bricks, rocks, minerals, concrete, ceramics and other geological samples
- Inbuilt movable re-circulation coolant tank
- Pulse cutting/Step cutting/continuous cutting

TTCutGeo	Abrasive Cutting Machine for Petroscopy Sample Preparation	TTMPOLGeoSA10/12	Single Disc, Variable Speed – Automatic Desktop Petroscopy Sample Preparation Polishing Machines.
TTTSGeo	Thin Sectioning Machine for Petroscopy Sample Preparation	TTPOLGeoVFF8/10/12	Four Disc, Variable Speed Individual Drive – Floor Standing Petroscopy Sample Preparation Polishing Machines.
TTCGeo2	Manual Low Speed – 20mm Chop Cutting Capacity		
TTMPGeoHA	Automatic Hydraulic Mounting Press for Metallurgical & Petroscopy Sample Preparation		
TTMPGeoDHA	Automatic Hydraulic Twin Space Mounting Press for Petroscopy Sample Preparation		
TTPOLGeoVDC	Double Disc, Variable Speed – Desktop Metallurgical Sample Preparation Polishing Machines.		
TTPOLGeoVSA8/10/12	Single Disc, Variable Speed – Semi Automatic, Desktop Metallurgical Sample Preparation Polishing Machines.		

TTCutGeo

Abrasive Cutting Machine for Petroscopy Sample Preparation

Motor	5HP (3.7kw), 3 phase
Cut-off Wheel Dia.	8/10/12inch, different wheel size can be accommodated
Cutting Capacity	Up to 90mm dia.
T Slot Bed	8mm T slot ,stainless steel platform
Movement	X: 50mm X-movement for cross sectioning Y: 150mm Y-movement for longitudinal sectioning

Features:

- Ergonomic Z Movement Handle
- Dry & Wet type system for different app lication
- Vice to hold normal diametric samples
- Vertical Clamp for holding of Irregular shaped specimens
- Double Saddle Clamp
- LED Lamp in the working area for clear illumination

TTTSGeo

Thin Sectioning Machine for Petroscopy Sample Preparation

Motor	2HP (1.5kw), 3 phase
Cut-off Wheel Dia.	8/10inch, diamond cutting wheel
Grinding Wheel Dia.	6/8inch, diamond cup grinding wheel
Cutting Capacity	Up to 30mm
Coolant Tank	50L

Features:

- Vacuum chuck is provided (with a vacuum pump)
- Specimen Holder with Vacuum Chuck for different sizes of Glass Slides
- Built in Micrometer with Digital Readout

TTCGeo2

Manual Low Speed – 20mm Chop Cutting Capacity

Spindle Speed Range	0 - 600 rpm variable speed
Diamond Blade Size	102 × 12.7 × 0.3mm
Micrometer for Cross-feed Adjust	Up to 25mm
Cutting Capacity	20mm
Down-feed Facility With Different Weight	Up to 250g

Features:

- A must for sectioning surface engineered components
- Used for cutting of hard materials, especially to high -value fragile artificial crystal
- Transparent coolant splash guard facility

TTMPGeoHA

Automatic Hydraulic Mounting Press for Metallurgical & Petroscopy Sample Preparation

Heater	1600w, single phase
Dimensions	490 × 620 × 590mm

Features:

- User Friendly, advanced LCD to uch screen
- Ideal for transparent, EPO and Bakelite moulds preparation
- Pre-set programs and data storage of mounting parameters up to 25 programs
- Timer-Buzzer for heating and cooling cycles
- Automatic water cooling system

TTMPGeoDHA

Automatic Hydraulic Twin Space Mounting Press for Petroscopy Sample Preparation

Mould Size	1 ¼, 1 ½ and 2inch Mould Sizes
Heater	1600w each
Heating/ Cooling Time	0 - 20 minutes
Heating Temperature	0 - 200℃
Pressure	0 - 350bar
Dimensions	610 × 630 × 470mm

Features :

- User Friendly advanced LCD Touch Screen System
- Setting of Heating Time, Cooling Time, Mount Temperature, Mounting Pressure, Ram up and down, Cycle Start can be done and controlled through the Touch Screen Pad
- Wide range of sample sizes can be accommodat ed
- Alarm indication to the operator on completion of Cooling Cycle to take out the mould

TTPOLGeoVDC

Double Disc, Variable Speed – Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 - 1000rpm or 50 to 600rpm continuously variable
Dimensions	710 × 660 × 310mm

Features:
- LCD display
- Feather touch control
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Detachable coolan t jet
- Corrosion proof bowl, free flow design

TTPOLGeoVSA8/10/12

Single Disc, Variable Speed – Semi Automatic, Desktop Metallurgical Sample Preparation Polishing Machines.

Motor	0.5HP high torque single phase motor
Size of Polisher Disc	10/12inch
Polisher Disc Speed Range	50 - 600rpm continuously variable
Polisher Head Speed Range	100rpm
Mould Holding Capacity	Up to 3 moulds
Interchangeable Mould Size	1¼ , 1½ and 2inch
Metric Mould Option	30, 40, 50mm

Features:
- Semi -automatic
- Electroni c control with LC – display with digital timer
- Single pressure specimen loading, pneumatically applied

TTMPOLGeoSA10/12

Single Disc, Variable Speed – Automatic Desktop Petroscopy Sample Preparation Polishing Machines.

Motor	1HP high torque 3 ph ase motor
Polisher Disc Speed Range	50 - 600rpm continuously variable
Specimen Holder Speed Range	50 - 200rpm
Dimensions	850 × 500 × 600mm

Features:
- Full -automatic
- Smooth pneumatically applied force
- Individual Pressure Specimen Loading System
- Specimen Holders to hold Glass slide Specimens
- User defined Pre - set Programming and Data Storage System

TTPOLGeoVFF8/10/12

Four Disc, Variable Speed Individual Drive – Floor Standing Petroscopy Sample Preparation Polishing Machines.

Motor	0.5HP high torque motor
Size of Polisher Disc	8/10/12inch
Speed Range	50 - 600rpm continuously variable
Dimensions	1740 × 750 × 1020mm

Features:
- 4 Disc, individual drive, floor standing
- LCD display, feather touch control
- Compartments for storing consumables
- Fully moulded FRP body with easy disc change design
- Drive for smooth speed change
- Flow drain design
- Detachable coolant jet
- Disc Interchangeable Design
- Corrosion proof bowl, free flow design

Special Purpose Cutting Machines

TTMBC
Bar Cutting Machine

Motor	4HP (3kw), 3 phase
Cut-off Wheel Dia.	8/10inch (203/254mm)
Cutting Capacity	60mm dia.

Features:
- Inbuilt mov able re -circulation coolant tank
- User friendly touch screen operation panel
- Pneumatic clamping
- Safety emergency stop with door limit switch
- Paper band filter system and automatic bar feeding (optional)

TTMCR
Carbide Rod Cutting Machine

Motor	4HP (3kw), 3 phase
Cut-off Wheel Dia.	8/10inch (203/254mm)
Cutting Capacity	40mm dia.

Features:
- Inbuilt movable re -circulation coolant tank
- User friendly touch screen operation panel
- Safety emergency stop with door limit switch
- Paper band filter system and automatic bar feeding (optional)

Microscopes & Profile Projectors - ToronProscope

TTMMSD
Advanced Portable Digital Microscope

Image Capture Element	1/1.75 inch interlace scanning CCD
Pixels	Total pixels approx. 2.3MP (1901 (H) × 1212 (V)) Effective pixels approx. 2.19MP (1818 (H) ×1208 (V))
Monitor	3.5inch 230,000 pixel TFT LCD (980 × 240 dots)
Remote Terminal	2.5mm stereo jack (doubles as external flash synch)
DC in Terminal	EIAJ standard type = 2 DC jack (center plus)
Light Switch	Light A, light B interchangeable
Output Voltage	5V, maximum output current 250mA
Input Voltage	6V DC ±5%, 1A; battery operation: 6.0 to 7.2 V DC ± 5%
Power Consumption	Approx. 6W

Features:
- Light and Easy to Carry
- CF Card for Data Recording
- 2× Zoom and Focus Bar for Easy Focusing
- Scale and Magnificat ion Displays

TTMMSB

Table-top Reversed Metallurgical Microscope

Specification of fuse	1A Φ5 × 20
Stage movable range	75 × 50mm
Photo frame	6 × 8cm
Film pack	57 × 74mm
135 roll film	24 × 36mm
Power Input	110V/60Hz
Power Output	6V, 30W
Dimensions	665 × 475 × 310mm
Weight	14 kg

Features:

- Binocular head with separate photo tube for photog raphy and video
- Rotatable precision engineered quadruple (4) nosepiece
- Plan LWD objective set 10×/0.25, 20×/0.40, 40×/0.65, 100×/1.25
- Large mechanical stage (7 × 6 inch) with co -axial controls for X and Y
- Co-axial coarse and fine focus control
- Polari zing filters included

TTMSPP

Profile Projector

Projection Capacity (mm)	10×/20×/50×/100×
View Field Diameter	30/15/6/3
Working Distance	Wide: 77.7/ 44.3/ 24.5/ 25.3mm
Max. Workpiece Height	Height: 80/80/80/80mm
Max. Workpiece Diameter	160/130/55/60mm
Stage XY Travel Range	150 × 50mm (X × Y)
Stage Resolution	0.001mm
Screen Rotary Range	312mm diameter, effective diameter 300mm
Digital Angle Display	0 - 360°
Angle Resolution	0.01°

Features:

- Top quality profile projector highly versatile and easy to operate
- Fine ground glass screen for clear image with cross hairs
- Screen complete with cross hair lines and chart clips

TTMMSH

Portable Metallurgical Microscope

Microscope	100 to 500× (extendable 1500×)
Eyepiece	10×, 12.5× (extendable15×)
Objective	10×, 40×, (extendable 100×)
Photo Objective	15×
Slide-way	X-direction 15mm, Y-direction12mm
Camera	35mm
Illuminator	6V, 15w
Stand	On-off magnetic stand
Dimensions	210×160×95mm

Features:

- Handheld design makes metallurgical inspection very easy, in-situ.
- Magnetic stand can be mounted against ferrous metals at any angle.
- X,Y slide -way move makes inspection very convenient
- More convenience for photography
- Non-destructive examination

TTRock	Rockwell Hardness Testers
TTBrinell	Brinell Hardness Tester
TTVick	Vickers Hardness Testers
TTUniver	Universal Hardness Testers

TTRock

Rockwell Hardness Testers

Hardness Scales	Rockwell A, B, C, D, E, F, G, H, K, L, M, P, R, S, V 15 scales in total
Resolution	0.1 Rockwell Unit
Pre-Load	98.07N / 10kgf
Test Load	588.4N/60kgf, 980.7N/100kgf, 1470.1N/150kgf, 147N/15kgf, 294.2N/30kgf, 441.3N/45kgf
Applicable Standard	ASTM E-18, ISO 6508-1999
Dimensions	715 × 225 × 790mm
Weight	120kg

Features:

- Automatic test procedure
- High definition backlight LCD screen
- User friendly operating menu
- RS-232 data output

TTBrinell

Brinell Hardness Tester

Indentation Accuracy	±0.5%
Load Dwell Duration	2 - 99s, can be set and stored
Measuring Range	3.18HBW to 658HBW
Test Load	29400N/3000kgf, 14700N/1500Kgf, 9800N/1000Kgf, 7355N/750Kgf, 4900N/500Kgf, 2452N/250Kgf, 1839N/187.5Kgf, 1226N/125Kgf, 980N/100Kgf, 612.9N/62.5Kgf
Applicable Standard	ASTM E -10, ISO 6506
Dimensions	750 × 260 × 530mm
Weight	120kg

Features:

- Latest load cell technology
- Built-in TTScope Brinell Measurem ent System
- Fully automatic test cycles
- Selectable dwell time

TTVick

Vickers Hardness Testers

Scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1
Resolution	0.01mm
Measuring Range	200μm
Test Load	10, 25, 50, 100, 200, 300, 500, 1000gf
Applicable Standard	ASTM E384, EN ISO 6507
Dimensions	715 × 225 × 790mm
Weight	120kg

Features:

- Motorized turret
- High quality microscope
- Fully automatic load control
- Easy operating system
- Two optical paths
- Built-in high speed thermal printe r

TTUniver

Universal Hardness Testers

Resolution	0.001mm
Test Load	1 to 250kgf
Rockwell Test Scales	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, Bm, Fm, Ralpha, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Brinell Test Range	29400N/3000kgf, 14700N/1500Kgf, 9800N/1000Kgf, 7355N/750Kgf, 4900N/500Kgf, 2452N/250Kgf, 1839N/187.5Kgf, 1226N/125Kgf, 980N/100Kgf, 612.9N/62.5Kgf
Vickers Test Range	10, 25, 50, 100, 200, 300, 500, 1000gf
Dimensions	Type A: 250mm × 567mm × 1030mm Type B: 250mm × 567mm × 1180mm
Weight	Type A: 201Kg, Type B: 212 kg

Features:

- Load cell, force feedback, closed loop system
- Wide test load range up to 250Kgf
- Complies to all applicable EN/ISO and ASTM standards
- Shape correction values for curved su rfaces
- High-quality depth measuring system (Rockwell, HBT, HVT)

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