

Metallography Sample Preparation Machines and Consumables



For more than 10 years, Metallography is at the heart of Conation Technologies. We offer end to end solutions for complete metallography analysis for automotive, educational and research needs, with the right kind of products as the application requires.

Our Solutions Includes

- Sample Preparation Machines
- Metallurgical Microscopes &
- Image Analyzers



ABRASIVE CUTTING MACHINES



SPECIMEN MOUNTING PRESS



PRECISION DIAMOND SAWS



CONSUMABLES



METALLOGRAPHY GRINDING / POLISHING MACHINES



HIGH SPEED PRECISION DIAMOND SAWS

ABRASIVE CUTTING MACHINES

BASIC SERIES - MODEL: CCM-3



FEATURES:

- Table top model
- cross sections of typical geometry components like rods, bars and small gears having cross sectional diameter of 30 mm.
- Completely enclosed structure, robust and user-friendly design
- Ample coolant flow
- Well illuminated chamber
- Heavy torque **3 HP** motor to sustain the load during cutting
- Updated Control panel with individual start and stop keys for motor and illumination, phase reversal identification, emergency stop.
- Door limit switch provided for safety of user which prevents cutting blade rotation unless door is closed.
- Provision for cutting extra-long job

SPARES AND ACCESSORIES

Mounting Stand for machine - Aesthetic stand with different storage compartments to store the consumables and spares

MANUAL FEED SERIES - MODELS: CCM-5 / CCM-10 / CCM-10 PLUS

These heavy duty workhorse models are perfectly suitable for metallography sectioning of complex geometry components, bigger cross-sections (upto 100 mm depending upon model)

FEATURES:

- Stand mounted model with aesthetically designed, compartmented stand
- Cutting capacities **60 mm/ 80 mm/ 100 mm dia** solid sections
- Heavy torque motors **5 HP/ 10 HP** to sustain the load during cutting of bigger cross sections, hardened jobs
- Robust and heavy structural design to perform heavy duty operation and long service life
- Link-lever mechanism for cutting with minimum efforts
- Completely enclosed structure having large see through toughened glass window.
- Specially designed shaft and bearing assembly to withstand cutting vibrations and perform for longer tenure
- Excellent coolant flow through additional veins, large capacity coolant tanks with sump arrangement and sieve filter mesh; Special coolant gun for cleaning of the chamber
- Advanced control panel has Selector switch to start motor with pump or only pump, illumination ON/OFF switch, phase reversal identification, pump and motor overload indication, emergency stop etc
- Door limit switch provided for safety of user which prevents cutting blade rotation unless door is closed.
- Provision for cutting extra-long job
- Adaptability to attach T-slotted table, fixtures, vices etc

SPARES AND ACCESSORIES

- T-slotted table 250X200 mm, 8/10/12 mm slots
- X-Y cross slide • Clamping vices • Magnetic separator



AUTO FEED SERIES - MODELS: CCM-5A / CCM-10A / CCM-10 PLUS A

This series of Metallurgical abrasive cutting machines are automated versions which has been built strong and powerful for consistent performance.

- Fatigueless and minimized operator dependency
- Consistency of the results and cutting finish
- High throughput, low cycle time
- Enhanced Capacity



FEATURES:

- User-friendly and reliable automated operation • Automation of cutting action
- PLC based Control panel with large touch screen
- Stand mounted model with aesthetically designed, compartmented stand
- Cutting capacities 60 mm/ 80 mm/ 100 mm dia solid sections
- Heavy torque motors 5 HP/ 10 HP to sustain the load during cutting of bigger cross sections
- Robust and heavy structural design to perform heavy duty operation and long service life
- Completely enclosed structure with door having large see through toughened glass window
- Excellent coolant flow through additional veins, large capacity coolant tanks with sump arrangement and sieve filter mesh; Special coolant gun for cleaning of the chamber
- Provision for cutting extra-long job
- Adaptability to attach T-slotted table, fixtures, vices etc

SPARES AND ACCESSORIES

- T-slotted table 250X200 mm / 300X250 / 350X300 mm with 8/10/12 mm slots
- X-Y cross slide • Clamping vices • Magnetic separator

LOW SPEED SERIES - MODEL: CDS-500

A versatile compact diamond precision saw for research in material science and industrial applications involving non-metallic components

CDS-500 is ideally suitable for precision sectioning of variety of materials such as composites, ceramics, glass, laminates, metals, extremely hard, brittle material, electronic components etc at low speed.

FEATURES:

- Table top model with very small footprint • Enclosed cutting chamber, with complete see through cover
- **0.25 HP** High Torque geared motor
- Variable speed from **50 RPM to 500 RPM** or can be modified as per requirement
- Gravity feed cutting with provision for adding the weights for faster or slower (counterbalancing)
- Adaptability to attach 3" to 7" Cutting blade
- Precise job positioning with the help of micrometer, positioning accuracy +/- 0.01 mm
- Provision for adjusting cutting depth and auto shut off after completion of cutting;
- Control panel - Speed setting knob with Digital RPM indicator, ON/OFF, Auto-cut off with Audio-visual buzzer,
- Coolant re-circulation • Provision for cutting long job
- Different holders and fixtures for different geometry parts & for angular cutting

SPARES AND ACCESSORIES

- Sample Holder for irregular shape samples upto 25 mm and 38 mm
- Sample Holder for fragile samples with soft jaws
- Sample Holder for longitudinal shape samples upto 40 mm long
- Sic dressing stick • Angular cutting fixture

PRECISION DIAMOND SAWS



HIGH SPEED, HEAVY DUTY, STAND MOUNTED SERIES - MODEL: CDS-4000 / CDS-4000A

CDS-4000 series machines are designed extremely sturdy for industrial and research applications involved in ceramics, refractories, composites, cements, metals & automotive components

- Heavy Duty to work in most adverse and demanding conditions
- High precision operation
- Automation with PLC and HMI touch screen operation
- Dependability
- User-friendliness and adaptability for different blades, holders, fixtures

FEATURES:

- Stand mounted model
- **3HP AC spindle motor** to offer continuously variable speed range 100-4000 RPM
- Automated linear cutting with motorized job feed (Y movement)
- Automation options for precise sample positioning with motorized X and motorized blade height adjustment
- Automation through PLC, 7" HMI touch screen, and exhaustive programming
- **Safety** - Complete enclosed structure, Door limit switch, Overload protection, Emergency stop
- Adaptability to attach 4" to 10" Cutting blade
- Coolant re-circulation – coolant throw system of veins and gun, re-circulation through external tank and pump
- Large T-slotted table and different holder, fixtures for different geometry parts



SPARES AND ACCESSORIES

- For irregular shape samples upto 25 and 38 mm sizes
- For fragile samples with soft jaws
- Single saddle and double saddle chuck
- Holder with Goniometer for angular cutting
- Sic dressing stick

HIGH SPEED, ULTRA-PRECISION, MULTIPLE AUTOMATIONS, COMPACT SERIES - MODEL: CDS-5000 / CDS-5000A

A comprehensive solution to wide range of applications in characterization of Materials.

CDS-5000 series offers precision, speed, automation, flexibility, and user-friendliness; all rolled in one machine.

- Variable Feed and Speed
- Greater Precision for slicing and dicing
- Automation of different rotational and linear movements, programming facility, PLC and HMI touch screen operation
- Flexibility, User-friendliness and adaptability for bulk as well as highly precise cuts

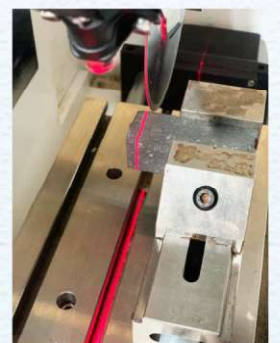
FEATURES:

- Tabletop model with very concise footprints
- Aesthetic yet robust design to handle wide range of applications
- Access to cutting chamber from 2 sides; transparent polycarbonate shield to view the progress of cutting
- **1 kW servo spindle motor** to offer continuously variable speed of 50-5000 RPM
- Automated linear cutting with motorized job feed (Y movement); Auto adjustment of feed speed
- Automation options for precise sample positioning with motorized X and motorized blade height adjustment
- Automation of servo/stepper motors through PLC, 7" HMI touch screen, and exhaustive programming
- Adaptability to attach 3" to 10" Cutting blade
- Mode selection – Manual, motorized, jog, pulse cutting etc.
- Advanced Control Panel - PLC based; 7" color touch screen panel, Mains On/Off overload protection, Emergency stop, Indicator for door open and with extensive programming of all the automations, program storage facility
- Coolant re-circulation – options for internal and external tank; fitted with filtering mechanism
- Large T-slotted table and different holders, fixtures for different geometry parts



SPARES AND ACCESSORIES

- Laser Line – For precise positioning of cutting axis on the job
- Wheel Dressing – Fixture for holding the dressing stick
- Fixture for irregular shape samples upto 25 and 38 mm sizes
- Fixture for fragile samples with soft jaws
- Single saddle and double saddle chuck
- Holder with Goniometer for angular cutting
- Sic dressing stick



METALLOGRAPHY BELT GRINDER

MODEL: CBG-I

The belt grinder is typically used to

- Initial grinding/polishing • Sample leveling
- Burr removal • Smoothing of sharp edges • Corrosion layer removal

FEATURES:

- High torque 1 HP motor, constant speed
- Power transmission through Al drum pulley
- Belt alignment and intermediate sample cooling arrangement.

SAMPLE GRINDERS



SPECTRO SAMPLE GRINDING MACHINE - MODEL: CPM-S

This machine is designed for preparing (grinding) of sample intended for Spectro-Analysis. Grinding disc is driven by high torque 2HP motor to give quick grinding of large samples as well. In-built suction system will take care of heavy burr generated during grinding and holding the paper.

FEATURES:

- Heavy duty operation, Compact in size • 2 HP Grinding disc motor, 1 HP suction motor
- Constant speed of 3000 RPM; Variable speed model option available • 350 mm grinding disc
- Vacuum holding of grinding disc • Horse shoe braking system • In-built storage
- Operation Panel - Starter and the isolation Switch with 3 Phase indicators

SPARES AND ACCESSORIES

- Suction motor, Starter • Sample holder



SPECIMEN MOUNTING PRESS

PNEUMATIC SERIES - MODEL: CMP-P

Hot compression mounting of the samples has distinct advantages over unmounted samples in superior metallography analysis. A highly compact, smooth surface finished and both face parallel mount makes all successive sample preparation and analysis stages easier and accurate.

FEATURES:

- Table top model • Completely enclosed structure
- Settable pneumatic pressure, Pneumatic components and controls from Festo
- Mould cylinder options – 1", 1.1/4" and 1.1/2"
- Coolant recirculation through water jacket, operated through solenoid valve
- Fast and high compaction, reproducible results
- Rapid heating and cooling operation, short cycle time
- Electronic Control panel with display of temperature, time; Temp. Controller to feed exact required current
- Avoiding the temperature overshooting leading to heat treating of the sample. Setting of Temp. (Heating, cooling), hold time. Auto cycle for heating, holding, cooling with buzzer indications for both cycles.

SPARES AND ACCESSORIES

- Mould cylinder 1", 1.1/4", 1.1/2" • Band heater element

Note : Air line with 6 bar pressure or compressor to be arranged by you within the vicinity of 2 to 3 meters.



ELECTRO-HYDRAULIC SERIES - MODEL: CMP-EH

When one need highly consolidated mould with relatively high hardness, or multiple moulds simultaneously in one cycle, large size mounts, mounting press with hydraulic pressure application is the solution.

FEATURES:

- Integrated hydraulic power pack
- Capability for multiple moulds in single cycle
- Pressure activation by hydraulic power pack (5 Ton) through pressure setting knob
- Fast and high compaction, reproducible results
- Other specifications similar to CMP-P

SPARES AND ACCESSORIES

- Mould cylinder 1", 1.1/4", 1.1/2", 2", 3" • Band heater element

Note: 2" and 3" dia mould needs special heating element and cooling arrangement.

Models for 1" to 1.1/2" and for 2" to 3" are different.



METALLOGRAPHY GRINDING / POLISHING MACHINES

MANUAL SERIES - MODELS: CPM I/CPM II/CPM IIC

CPM series grinding / polishing machines include single disc and double disc variants which are manual type machines. These machines are designed very user friendly and robust enough to function in heavy usage conditions.

FEATURES:

- Tabletop models • User-friendly and easy operation • Minimalist design with high reliability and performance
- **Customization for number of discs (1 or 2), disc diameter (200mm/250mm/300mm), motor (DC or AC) and speed**
- Heavy torque **0.5 / 1 HP motors** to give constant speed during high load operation
- Continuous speed variation **100-1200 RPM** with DC drive, speed setting knob and LED RPM indicator
- Power transmission by V-belt and pulley • Anti-corrosive fibre top
- Washing bowl for intermediate washing and water faucets for all discs

SPARES AND ACCESSORIES

- DC drive, RPM indicator, Speed setting knob • Paper holding ring, Cloth clamping band • Al Polishing Disc



AUTOMATIC SERIES - MODELS: CPM-A/CPM-A II

Manual grinding polishing operation is typically an arduous and highly skill oriented job. Automation of metallography grinding / polishing machines saves users their time, hardship and also make it operator independent which delivers consistency of results.

FEATURES:

- Tabletop models • User-friendly and easy operation
- Single or double polishing disc, made of Aluminum, Disc dia – 200 mm
- High torque 1 HP DC motor to give constant speed during high load operation
- Continuous speed variation 50-800 RPM with DC drive and RPM indicator
- Pneumatically operated and motorized polishing heads; settable centralized force
- Sample holders to hold 4/5/6 nos of mounted samples; Clockwise and anti-clockwise rotation
- Timer and buzzer facility
- Anti-corrosive fibre top, washing bowl for intermediate washing and water faucets
- Operation Panel - Knobs for setting time and pressure, LED display for RPM, Emergency Stop button, water tap arrangement with solenoid valve, buzzer indication for completion of cycle.
- Customization for disc diameter (200mm/250mm/300mm), motor capacity (0.5/1 HP) and speed

SPARES AND ACCESSORIES

- DC drive, RPM indicator, Speed setting knob • Paper holding ring, Cloth clamping band • Al Polishing Disc
- Sample holders for 1", 1.1/4" and 1.1/2" mounted samples



Metallography analysis involves multiple stages of sample preparation. Consumables used at each stage heavily impact the preparation process and final observations under microscope. It is always wise to choose correct and quality consumables which will help in correct sample preparations to achieve truthful interpretation of microstructures.

Conation offers world class consumables for all the stages of metallographic sample preparations

SECTIONING

➤ Abrasive Cutting Wheels – Pack of 25 Nos.

Different grades of Abrasive wheels are available for following options

- For ferrous - with soft to medium hardness
- For ferrous - with medium to high Hardness
- For Non-ferrous materials
- Wheel Sizes - Dia X Thickness X Bore in mm
 - 150x0.8x25.4mm • 300x2x25.4mm
 - 200x1.0x25.4mm • 350x2.5x25.4mm
 - 250x1.5x25.4mm • 400x3.0x25.4mm
 - 250x2x25.4mm



➤ Precision Blades

- Diamond Sectioning Blades with Low or High Concentration
- CBN Blades
 - All diamond sectioning blades are also available with Resin Bond
 - All Diamond and CBN blades can be offered with 0.625' or 1' bore size as well.
- Blade Sizes - Dia X Thickness X Bore in Inches
 - 3'X0.006'X0.50' • 6'X0.020'X0.50'
 - 4'X0.012'X0.50' • 7'X0.025'X0.50'
 - 5'X0.015'X0.50' • 8'X0.035'X0.50'
- Special Diamond blades for bulk sectioning
 - Low OR High Concentration
- Blade Sizes - Dia X Thickness X Bore in Inches
 - 10'X0.043'X1.25' • 14'X0.059'X1.25' • 12'X0.059'X1.25'



○ Special CBN blades for bulk sectioning

- Blade Sizes - Dia X Thickness X Bore in Inches
 - 10'X0.051'X1.25' • 16'X0.070'X1.25'
 - 12'X0.070'X1.25' • 18'X0.078'X1.25'
 - 14'X0.070'X1.25'



○ Abrasive blades

- Thin, to be used in precision sectioning machines at high speed
- Pack of 25 Nos.
- Blade Sizes - Dia X Thickness X Bore mm
 - 150x0.8x25.4mm
 - 200x1.0x25.4mm



➤ Dressing Sticks-Pack of 5 Nos.

- For cleaning the rim of blade exposing the fresh cutting particles
- Material - SiC or Al₂O₃



➤ Cutting fluids

○ For Abrasive machines

- Used in coolant re-circulation systems of abrasive cutting machines
- Water soluble; with special additives for rust prevention
- Ratio 1:10



○ For Diamond Precision Saws

- Oil based cutting fluid; Low or High Speed



MOUNTING / MOULDING

➤ Consumables for Hot Mounting

- Phenolic Powders – Bakelite (Pack of 1 Kg)
 - Grade – I and II for Black
 - Colors – Red and Green (Grade I)
- Transparent Thermoplastics - Clear (Pack of 1 Kg)
- Mould Release spray for easy removal of mould from cavity – Pack of 1 Litre



➤ Consumables for Cold Mounting

○ Cold Mounting Die

- A die made of steel, duly electroplated
- 1", 1 1/4", 1 1/2" size holes for mounting the samples



○ Thermoplastic resins

- Pack of 400 gm Powder & 400 ml Liquid
- Resin and hardener are mixed in specific proportion;
- curing time 30 min at room temperature
- Colors – Off white, Black or Blue
- Transparent Acrylic - Clear – Curing time 1 Hr



GRINDING AND POLISHING

➤ Silicon Carbide Abrasive Papers

- **Waterproof (Sheet 9"x11") - Pack of 25 Nos.**
 - Imported Make / Economy Series
 - **Grit Size** – 120, 180, 220, 400, 600, 800, 1000, 1200, 2000, 4000
 - Grit 2000 and 4000 is not available in Economy series



○ **Waterproof; self-adhesive, Round - Pack of 25 Nos.**

- Round 8" or 10" or 12" dia Imported Make
- Round 8" dia Economy Series
- **Grit Size** – 120, 180, 220, 400, 600, 800, 1000, 1200, 2000, 4000



➤ **Diamond Piano Discs**

- Diamond discs reduce the preparation cycle time drastically
- **Size** - 8"/10"/12" Dia
- **Grit size** – 80, 120, 220, 500, 1200, 2000, 4000



➤ **Polishing Cloths - Pack of 10 Nos**

- Round 10"/12"/14"
- Round PSA Backed, Self - Adhesive 8"/10"/12"-



➤ **Diamond Paste**

- Pack of 5 syringe of 5 gm each
- Grit – 1/4, 1, 3, 6, 8, 14, 25 Micron



➤ **Aerosol spray**

- Carrier and to be used with Diamond paste
- Bottle of 200 ml



➤ **Alumina Powder - Pack of 1 Kg**



ROUGH GRINDING

➤ **Grinding Belts- Pack of 10 Nos.**

- **Size** - 915mmX100 mm
- **Grades** – Fine grit / Medium grit / Coarse grit



➤ **Spectro-grinding discs- Pack of 10 Nos.**

- For grinding machines used for spectroscopy analysis
- Size - 350 Dia Paper
- Grit - 60 or 80 Grit



CONSUMABLES FOR IN-SITU METALLOGRAPHY

➤ **Abrasive Papers**

- Waterproof
- Self-adhesive, round 32 mm dia
- **Grit Sizes** – 80, 120, 220, 400, 600, 800, 1000, 1200, 2000, 4000
- 50 Nos/pack

➤ **Polishing Cloths**

- PSA Backed, Self-Adhesive, round 32 mm dia

➤ **Diamond Paste**

- 1/4, 1, 3, 6, 8, 14, 25 Micron
- 5 Gms/Syringe

➤ **Aerosol Spray Bottle**

- 200 ML

➤ **Polishing Alumina Powder**

- 200 gm



CONATION TECHNOLOGIES PVT. LTD.

No. 3, CTS 1295, Dinkar Smriti, Off J. M. Road, Shivaji Nagar, Pune -411005 India.
Contact Nos.: (+91) 940500 5555; (+91) 940500 0222 (+91) (20) 2553 0244
info@conationindia.com | www.conationindia.com; www.conationcleanliness.com