



**metkon**<sup>®</sup>  
Technology behind Specimen



# PETROGRAPHY GEOLINE

Advanced Geological Cutting Machine  
that is ideal for sectioning of rocks,  
ceramics, minerals, glass, concrete  
and geological specimens.



# ADVANCED

## GEOLOGICAL CUTTING MACHINE

### DESIGN

GEOCUT 302-S is specially designed for cutting large and irregular shaped petrographic specimens. It offers the advantage of combining different cutting techniques and methods into the same machine to obtain superior cut surfaces for a broad range of heavy duty cutting applications.

GEOCUT 302-S has a robust and reliable design with low noise and emission levels. The modern and sturdy design with powerful 4 kW cutting motor ensures fast and efficient cutting through the hardest and complex materials with precise axis controls.

GEOCUT 302-S has X-Y-Z triple axes cutting capability:

#### Z-axis Chop cutting

The specimen is clamped and the cut-off wheel approaches the specimen.

#### Y-axis Table-feed Cutting

Feeding the clamped specimen into a rotating cut-off wheel using a T-slotted feed table.

#### X-axis Parallel Cutting

Parallel serial sectioning in the x-axis with movable x-table.

Two Hand Control For Safety Operation





## GEOCUT

# 302-S

GEOCUT 302-S is an Advanced Geological Cutting Machine that is ideal for sectioning of rocks, ceramics, minerals, glass, concrete and geological specimens.

- Modern and sturdy design
- Extraordinary access for easy handling
- Ability to use Ø250/300 mm diamond blade.
- Cutting capacity up to 110 mm in diameter.
- X-Y Cross table is available as standard for parallel and serial cutting.
- Linear Table Feed and Chop Cutting methods
- Various Clamping systems available for small to large size or irregular sample shapes.



GEOCUT 302-S is a robust manual cutter with X-Y bed designed for cutting minerals, rocks, concrete, glass, ceramics, refractory and other geological samples

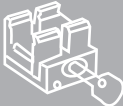


GEOCUT 302-S consists of a cast aluminium base on which the motor and the working space are provided in the form of two separate housings. A large, T-slotted feed table located in the cutter's generous work area can accommodate a variety of different clamping devices which need to be selected. The feed table provides a long travel depth making the GEOCUT 302-S ideal for cutting long or deep samples in a single pass. Stainless small parts tray to catch small specimens is supplied with the cutting table as standard.

The front sliding door and side cover can be completely opened for easy access and handling to all sides. Side access ports make it possible to make transverse sections on long specimens. A large window of Lexan and a sealed LED lamp in the cutting chamber allow precise observation of the cutting process at an optimum degree of safety.

## SAFETY

GEOCUT 302-S petrographic cutting machines has the highest safety standards. The interlocking safety device does not allow the motor to be started unless the sliding door is closed. The sliding door cannot be opened before the cutting motor is stopped. The electronic brake system, which is a standard feature, brings the cutter to a quick full stop in seconds after it has been switched off. Easily accessed and operated E-stop button ensures immediate shut down.

# CLAMPING DEVICES

<p>Quick Clamping Device for round petrographic specimens</p>  <p>GR 1811</p>	<p>Universal vise for large specimens, rocks, etc.</p>  <p>GR 1812</p>	<p>Vertical Clamping Device with clamping shoe</p>  <p>15 05</p>
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Many petrographic cutting applications require the sectioning of a specimen from an irregular shaped sample. The small size or irregular sample shape can create positioning and clamping difficulties for the operator.

To overcome these difficulties, METKON offers a number of special clamping devices for use with GEOCUT 302-S petrographic cutter.



# ACCESSORIES

## FUMEFILTER

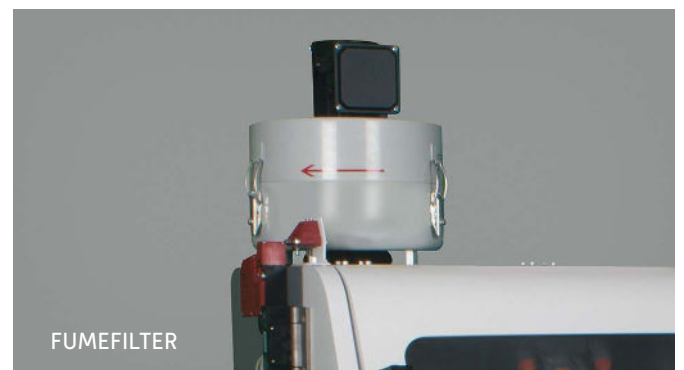
An advanced fume and mist removing unit that is optionally available for GEOCUT 302-S. Removes coolant mist for better illumination and viewing with centrifugal separator.

## Laser Alignment Unit

For rapid and accurate positioning of the cut-off wheel and helps to define the exact cutting line.

## Cooling System

A stainless steel recirculating cooling unit is an optional part of the machine. The cutting surface is cooled by spray nozzles whose water jets hit both the cutting wheel and the specimen. This provides an efficient cooling of the sample and prevents the overheating of the surface structure. It is also possible to connect GEOCUT 302-S directly to city water.



FUMEFILTER



Laser Alignment Unit



Recirculating Cooling Unit



## DESIGN

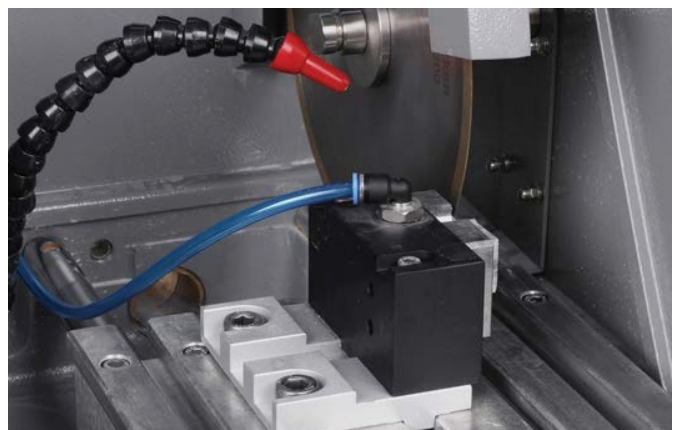
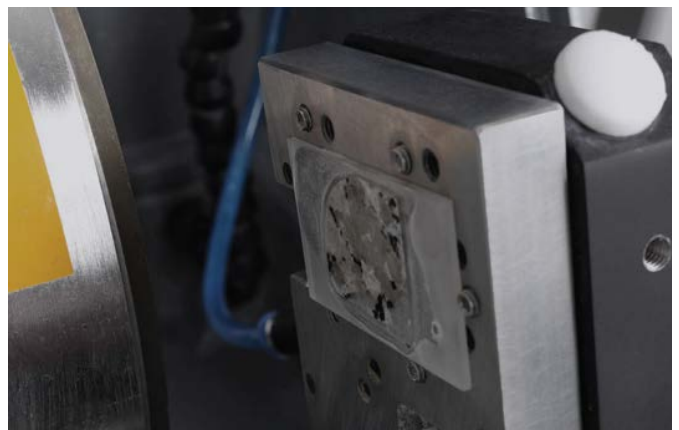
GEOFORM 102 is specially designed for cutting and thin sectioning of petrographic specimens. It combines both "Cutting" and "Thin Sectioning" machines in the same body.

### Cutting Module

GEOFORM 102 has a large cutting compartment like a benchtop cutting machine. There is a T-table inside the cutting chamber, which is movable on Y-axis direction from the front and back. Possibility to mount different type of clamping devices on the T-table for cutting large and irregular shaped rocks, minerals, concrete, glass, ceramics, refractory and other geological samples.

It can accommodate diamond and CBN cut-off discs up to 250 mm diameter. Cutting capacity is up to 90 mm in diameter. Equipped with powerful and precise dual shaft motor to overcome most difficult specimens. Integrated speed regulating unit is available to adjust the cut-off disc speed between 500-2000 rpm.

Various vacuum chucks for different size of glass slides can be mounted on the T-table with the help of a vacuum stand or a movable x-axis vacuum stand. The thin section is fixed on the vacuum holder and re-sectioned up to a thickness of approximately 0.5 mm or any thickness that needs to be obtained.



GEOFORM 102 is a universal product that can be used for precision sectioning, re-sectioning and grinding operations

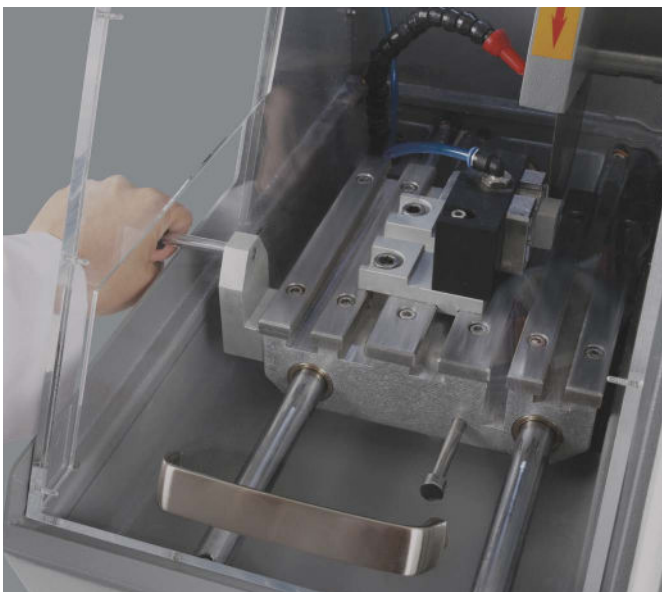


## GEOFORM

# 102

GEOFORM 102 is a bench-top thin sectioning instrument that will cut and grind down to 30 microns or less depending on the hardness of the material because; mineralogical specimens usually contain hard and soft phases.

- Two machines are combined in the same body: Cutting and Thin Sectioning.
- Large cutting compartment with movable T-table
- Ability to mount clamping devices
- Variable wheel speed, 500–2000 RPM
- Completely closed cutting and grinding compartment with transparent cover and magnetic safety switch
- Ability to fix glass slides with several different dimensions



### Grinding Module

The grinding module is designed for precision grinding. A universal vacuum holder accepts different sizes of glass slides by changing the location pins. Up to three samples can be grinded at the same time. An optional vacuum pump holds the glass slide fixed on the holder during grinding process. A built-in digital micrometer ensures high precision and the specimen is ground with an accuracy of 2 microns.





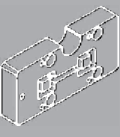

Diamond cutting disc and grinding wheels are both on the same spindle which is precisely aligned for high accuracy.

A dual in-line filtering unit removes the moisture from the vacuum line and drains into the cutting chamber when the vacuum pump is turned off. An electronic vacuum control unit allows precise and constant vacuum during grinding.

Both cutting area and grinding area are completely enclosed with an impact resistant transparent cover with magnetic safety switch. Powerful LED illumination inside the cutting and grinding chamber provides excellent observability of the sample.

The soft start and stop function protects your sensitive glass slide and sample from damage during cutting and grinding operation.

# CLAMPING DEVICES & VACUUM CHUCKS

<p>Quick Clamping Device</p>  <p>GR 0549</p>	<p>Fixed Vacuum Stand for Mounting Vacuum Chucks</p>  <p>GR 1868</p>	<p>Movable X-Axis Vacuum Stand for Mounting Vacuum Chucks</p>  <p>GR 1867</p>	<p>Vertical Clamping Device with clamping shoe</p>  <p>15 05</p>
<p>Vacuum Chucks for Cutting Glass Slides</p>  <p>1870/1871</p>	<p>Vacuum Chucks for Grinding Glass Slides</p>  <p>1880/1881</p>		

## Touch Screen Controls

GEOFORM 102 is equipped with 7" HMI touch screen with advanced software that allows extremely simple and professional operation with repeatable results. It increases the productivity, sample consistency and minimize operator intervention.

## Variable Wheel Speed

Integrated speed regulating unit allows variable wheel speed, soft start/stop function and smooth operation for maximum precision. Possible to adjust the wheel speed between 500-2000 rpm, which makes it suitable for the wide range of materials.



# ACCESSORIES

Fast cutting with efficient cooling

## Vacuum Pump

Vacuum pump is an optional accessory of GEOFORM 102 for holding glass slides on the vacuum chucks. It provides very efficient vacuum generation up to 2000 m altitude from the sea level.

## Closed Loop Cooling System

A stainless steel recirculating cooling unit is an optional part of the machine. The specimen surface is cooled by spray nozzles whose water jets hit both the wheel and the specimen. This provides an efficient cooling of the sample and prevents the overheating of the surface structure. It is also possible to connect GEOFORM 102 directly to city water.



Vacuum Pump



Auto Clean Function

## SAFETY

GEOFORM 102 has the highest safety standards. The magnetic safety switch does not allow the motor to be started unless transparent hood is closed. If transparent hood is opened during cutting, the motor immediately stops automatically. Easily accessed and operated emergency stop button ensures immediate shut down. Soft closing feature of transparent hood protects fingers from risk of injury.



Many petrographic cutting applications require the sectioning of a specimen from an irregular shaped sample. The small size or irregular sample shape can create positioning and clamping difficulties for the operator. To overcome these difficulties, METKON offers a number of special clamping devices for use with GEOFORM 102.

The petrographic sample is stuck on a standard glass slide for thin sectioning operation. There are many different glass slide sizes from small to large. To hold these glass slides safely requires special vacuum chucks. METKON offers a number of special vacuum chucks for many different glass slide sizes.





## FORCIPOL-TS with FORCIMAT-TS

FORCIPOL-TS, when coupled with FORCIMAT-TS, becomes an automatic thin section preparation system. FORCIPOL-TS is a versatile & durable & reliable grinding/polishing machine. FORCIMAT-TS is a low speed automatic head and it mounted on a rigid hardened post which is fixed to the base of the FORCIPOL-TS grinder/polisher.

- Automatic Operation
- Single Force Application
- Special Holders for Thin Section
- Lapping & Polishing



FORCIPOL-TS can accommodate 300 mm diameter wheels with variable speed between 50-600 RPM. The modern electronics provide a smooth speed variation with soft start and soft stop. By using appropriate working discs, it can carry grinding, lapping and polishing process very smoothly.

FORCIPOL-TS, when coupled with FORCIMAT-TS, becomes an automatic thin section preparation system. The FORCIMAT-TS is a low speed automatic head and it is mounted on a rigid hardened post which is fixed to the base of the FORCIPOL-TS grinder/polisher. It can be adapted easily and rapidly positioned by means of a quick-locking clamping mechanism.

FORCIMAT-TS is driven by a 100 Watt DC motor and adjustable from 25 to 50 RPM speed which provides high torque for big specimens and allows long operation time. Speed of head is specially adjusted for thin section and petrographic sample preparation.

The pneumatically applied individual force is adjustable between 5 N (1.1 lb.) and 60 N (13.5 lb.) from the front panel and is displayed on a gauge. The housing is made of ABS with a touchpad front panel.

Modern touch pad controls with ergonomic turn knob allows fast and easy setting of parameters and increases productivity. When the start button is depressed, both the FORCIMAT-TS and FORCIPOL-TS start operating simultaneously. The actual wheel/head speed and operation time are digitally displayed. All parameters can be changed during operation. The last parameter settings are always retained in the memory. Upon completion of the cycle, both instrument stop and an audio signal notifies the operator.

When needed, FORCIMAT-TS can work in manual mode to allow prepare specimens by hand.

**Specially Designed Thin Section Holders**  
Specially designed thin sections holders which called LAP-TS and POL-TS are used for lapping and polishing of thin sections. LAP-TS has special Boron Carbide stops which function is to precisely determine final thickness of specimen on the glass slide. The final thickness of specimens becomes between 25 and 35  $\mu\text{m}$ . POL-TS is used for polishing proces to provides smooth surface for microscopic examination.

## DOSIMAT

DOSIMAT Peristaltic Dispenser is an optional accessory for the FORCIMAT-TS. It is an automatic fluid dispensing instrument used in combination to obtain consistent specimens and to save time and consumables. DOSIMAT can feed both diamond suspensions/lubricants and aluminium oxide suspensions. Automatic dosing of consumables is applied precisely for perfect sample surfaces. Modern touch pad controls with ergonomic turn knob allows fast and easy setting of dispensing parameters like; frequency, dosing time, etc. parameters and increases productivity. The last parameter settings are always retained in the memory.

Combination of FORCIPOL-TS, FORCIMAT-TS and DOSIMAT provides operator free, fast, precise and repeatable petrographic sample preparation.

Two different DOSIMAT Peristaltic Fluid Dispensers are available for FORCIMAT-TS:

- DOSIMAT 12 (With 1 Peristaltic Pump)
- DOSIMAT 52 (With 6 Peristaltic Pumps)
- Compact and simple
- Built-in vacuum system with Gauge
- Efficient impregnation
- Multi-specimen application.

## VACUMET 52

VACUMET 52 is designed for embedding and impregnation of porous materials. It removes the trapped air from the mounting material and eliminates the gaps between the specimen and the resin.

Most mineralogical specimens have porosities, cavities and cracks and therefore need to be under vacuum. VACUMET 52 fulfills this requirement easily and efficiently. In addition, VACUMET 52 can also be used for glueing the specimens on the glass slides for further processing in thin section preparation.

Only air connection is necessary to operate VACUMET 52. No electric or water connection is needed.

Embedding mineralogical specimens is very easy with VACUMET 52. Just place your specimen inside the embedding form, fill it with cold mounting resin, place it inside the VACUMET 52, close cover and turn on vacuum. That's all!

Two different operation is possible with VACUMET 52; embedding with sucking function or without sucking function. It is also possible to mount specimens with VACUMET 52, If the specimen has very low density and floating inside the resin material. VACUMET 52 has feature for fixing low density materials.





## HOT PLATE

Hot Plate is used for fast curing of adhesive resin bonding material between glass slide and specimen.

The digital LED display provides degree-by-degree temperature setting and control, with refined hotplate sensitivity. Temperature setting is retained in memory, even after power off. The base is solid aluminum with excellent thermal properties and uniform heat distribution over the working area. Heat can be set up to 300 C . Actual temperature is displayed for complete assurance. Metkon Hot Plate has the highest safety standards. The heater is automatically switches off as soon as the set temperature is reached.

Hot plate can accommodate two Geofix and total of 16 specimen can be bonded simultaneously. The total curing time significantly decreases with using Metkon Hot Plate.



## GEOFIX

GEOFIX is a fixture for mounting specimens to glass slides for thin-sectioning. It provides a uniform thickness of bonding material between specimen and glass slide. The spring activated loading system applies optimum force on each specimen and glass slide. 8 specimens can be cured at the same time.

The base of GEOFIX is made by high thermal conductivity material. GEOFIX can easily be placed on HOT PLATE. This provides fast curing time of bonding material.

### Specially Designed Thin Section Holders

Specially designed thin sections holders which called LAP-TS and POL-TS are used for lapping and polishing of thin sections. LAP-TS has special Boron Carbide stops which function is to precisely determine final thickness of specimen on the glass slide. The final thickness of specimens becomes between 25 and 35  $\mu\text{m}$ . POL-TS is used for polishing proces to provides smooth surface for microscopic examination.



# IPP 902

IPP 902 is a Polarization Microscope and it specially designed for petrography. It has robust dye-cast frame to provide high stability and ergonomoy. It has three different observation modes: Brightfield, Transmitted polarized light, Incident polarized light. High quality optical system provides extremely clear images for petrographic examinations.

## Illumination

The light source for transmitted illumination is 3.6 Watt white LED system, which is comparable to an halogen bulb 50 Watt. The light source for incident illumination is 8 Watt white LED system, which is comparable to an halogen bulb 100 Watt.

High quality LED system has very long life time, approximately 50.000 hours. Light intensity can be adjusted easily by a knob on the left side of frame. The color temperature is 6300 K. The light exit can be used as a filter holder for additional filters (blue, yellow, frosted).

## Focusing

Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

## Stage

Rotatable stage with locking system and Vernier scale with accuracy 0.1 mm. Diameter 160 mm. Specimen clamps.

## Nosepiece

Quadruple revolving nosepiece with centering system, rotation on ball bearings. Centering system on each objectives.

## Head

Trinocular observation head, inclined 30° and rotatable 360°. Diopter adjustment on left eyepiece sleeve. Interpupillary adjustment 55-75 mm.

## Eyepieces

Wide field eyepieces WF10X/22 with field number 22. One eyepiece has a built-in crosshair reticle for the centering of the optical path.



## Objectives

Infinity corrected optical system IOS (Infinity Optical System). Long working distance, planachromatic "strain-free" objectives:

- Planachromatic IOS 5X LWD, N.A. 0,15, W.D. 10,8 mm
  - Planachromatic IOS 10X LWD, N.A. 0,3, W.D. 10 mm
  - Planachromatic IOS 20X LWD, N.A. 0,45, W.D. 4 mm
  - Planachromatic IOS 50X LWD, N.A. 0,55, W.D. 7,9 mm
- All objectives are treated with an anti-fungus treatment.

## Condenser

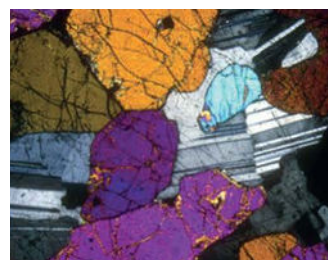
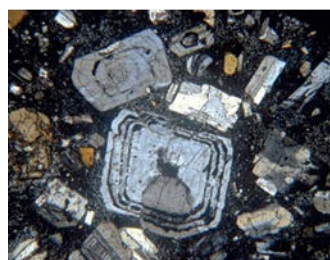
Swing-out condenser, N.A. 0.9 with centering system. Rotatable polarizer with graduated scale (it can be excluded from optical path through rotation).

## Bertrand Lens

Swing-out type with centering and focusing mechanism for observation in conoscopy/orthoscopy. Rotatable analyzer from 0° to 90° with graduated scale.

Tint plates included:

- 1° order red (1 lambda)
- ¼ lambda
- Quartz wedge



# AT A GLANCE

## 1 Sectioning

The rock is cut from area of interest for analysis.



GEOCUT 302-S

GEOFORM 102

## 2 Sticking Specimen

The specimen is bonded to glass slide with adhesive resin.



GEOFIX

## 3 Resectioning

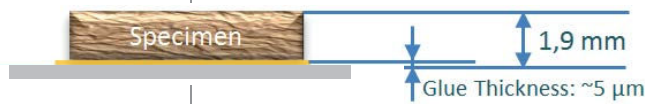
Re-sectioning of the specimen to a thickness of 0,5 - 2 mm to shorten the grinding process



GEOFORM 102

## 4 Precision Grinding

The specimen is pre-polished to a thickness of 80µ [specimen + resin]

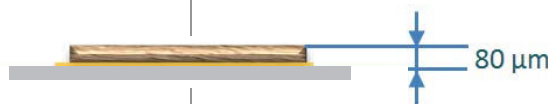


FORCIPOL TS with FORCIMAT-TS

## 5 Lapping & Polishing

Automatic lapping & polishing of thin section with LAP-TS and POL-TS.

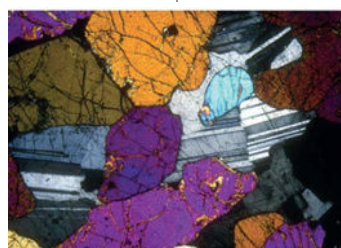
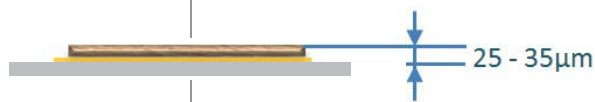
Final thickness 25 - 30µ [specimen + resin]



FORCIPOL TS with FORCIMAT-TS

## 6 Microscopy

The thin section is ready to be observed under polarized light microscope IPP 902.



IPP 902

# SPECIFICATIONS

ORDER NO	14 05
MODEL NO	GEOCUT 302-S
Max. Wheel Diameter	Ø300 mm
Max. Cutting Capacity, Ø	Ø110 mm
Max. Cutting Capacity, HxD	#70x200 mm
Z-Axis Travel, [mm]	125
Y-Axis Travel, [mm]	220
X-Axis Travel, [mm]	95
T-Table Dimension, [mm]	(395+95)x275
T-Slot Dimension, [mm]	12 mm
Cutting Motor Power [S1]	4 kW
Wheel Speed, RPM	2800
Chop Cutting, Z- Axis	Manual
Table Feed Cutting, Y-Axis	Automatic
Parallel Cutting, X-Axis	Automatic
Size WxDxH, [cm]	90x94x66.5
Weight	250 kgs
Recirculating Tank (Optional), [lt]	40 lt

ORDER NO	36 21-TS
MODEL NO	FORCIPOL-TS
Number of Wheels	1
Wheel Diameter	Ø300 mm
Base Motor Power	1 HP
Wheel Speed	50-600 RPM
Wheel Rotation Direction	CW/CCW
Dimensions, WxDxH, mm	45x74x34
Weight, kgs	50 kgs

ORDER NO	18 02
MODEL NO	GEOFORM 102
Cutting Wheel Speed, [rpm]	500-2000
Grinding Stone Speed, [rpm]	500-2000
Max. Cutting Wheel Dia., [mm]	250
Cutting Capacity, [mm]	90
Grinding Wheel Dia., [mm]	175
Control Panel	7" HMI Touch Screen
Recirculating Tank (Optional), [lt]	40 lt
Digital Micrometer	Yes
Motor Power, [HP]	550 W
Size WxDxH, [cm]	84x78x45
Weight	100 kgs

ORDER NO	30 11
MODEL NO	FORCIPOL Control Unit
Operation	Manual
Control Panel	Touch Pad Controls
Program Memory	Last Parameters Retained in Memory
Manual Operation Mode	Yes
Disc Cleaning & Drying Feature	Yes
Smart Water Saving Feature	Yes
Compatible Instruments	FORCIPOL 102/202
Compressed Air Requirement	No
Dimensions, WxDxH, mm	"20 x 20x 39 (above FORCIPOL working disc)"
Weight, kgs	5 kgs

# SPECIFICATIONS

ORDER NO	30 13
MODEL NO	FORCIMAT-TS
Operation	Semi Automatic
Application of Force	Individual
Control Panel	Touch Pad Controls
Program Memory	Last Parameters Retained in Memory
Manual Operation Mode	Yes
Head Motor Power	100 W
Sample Holder Rotation Direction	CW
Sample Holder Speed	25-50 RPM
Individual Force	5-60 N
Disc Cleaning & Drying Feature	Yes
Smart Water Saving Feature	Yes
Compressed Air Requirement	6 Bars
Dimensions, WxDxH, mm	"26 x 46 x 54 (above FORCIPOL working disc)"
Weight, kgs	16 kgs

ORDER NO	40 06	40 07
MODEL NO	DOSIMAT 12	DOSIMAT 52
Number of Pumps (Bott.)	1 Bottle	6 Bottles
Control Panel	Touch Pad Controls	Touch Pad Controls
Program Memory	Last Parameters Retained in Memory	Last Parameters Retained in Memory
Retract Function	Yes	Yes
Dimensions, WxDxH, mm	14x21x16	20x74x30
Weight, kgs	5 kgs	15 kgs

ORDER NO	60 06
MODEL NO	IPP 902
Head	Trinocular, 30° inclined, 360° rotating
Eyepiece	WF10x/22mm
Bertrand lens	Swing-out type; centrable (for Conoscopy/Orthoscopy)
Polarizing attachment	Blue filter, 0°-90° rotating analyzing filter, 1 slip (first class red), 1/4 1 slip, quartz wedge
Nosepiece	4-positions with centering mechanism for all objectives
Objectives	For transmitted and incident polarized light 5x/0.15, 10x/0.25, 20x/0.40, 50x/0.70
Magnifications	50x, 100x, 200x, 500x
Focusing system	Coaxial coarse and fine
Stage	160mm diameter; 360° rotating with stop knob and 0.1° Vernier
Condenser	0,9 N.A., with iris diaphragm, focusable and centrable. With rotating polarizing filter (swing-out type)
Illumination	Transmitted light: XLED system.
Incident light	XLED system polarizing attachment with built-in polarizer filter, aperture diaphragm and field diaphragm.
Dust Cover	Yes

# SPECIFICATIONS

## **14 05 - GEOCUT 302-S**

Geological Automatic Cutting Machine for sectioning of rock, ceramics, minerals, glass, concrete etc., Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with hand wheel driven chop cutting and automatic driven table-feed cutting systems, with various cutting methods, programmable with colored LCD display of cutting parameters, accurate and motorized positioning of the specimen in X and Y axis and including an automatically driven X-axis table with 95mm travel for programmable serial plane parallel cutting. ergonomic joystick with adjustable speed control, integrated feed path control, power dependent adjustable feed rate, variable cutting force, pulse cutting mode, bar graph overload display, powerful 4 kW cutting motor, with variable cutting speed 600-4000 rpm, with electronic brake system, cutting capacity up to 110/90 mm solid stock, with cut-off wheels up to  $\varnothing$ 300/250mm, twin T-slotted table(Y-direction only) made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings, ability to connect directly city water or recirculating coolant tank. with extra advanced cutting methods: "Rapid Pulse Cutting, Instafeed Cutting, Serial Parallel Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculating cooling unit.

400 V, 3 phase, 50/60 Hz.

## **Accessories for GEOCUT 302-S**

**GR 1945** - Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc.

**YM 8815** - Fine filter sheets for recirculation cooling tank [GR 0018/0019/1675/1945/1988], 10 pcs

**GR 1681** - Cabinet for floor model - SRC 302/GEOCUT 302-S

**GR 1682** - FUMEFILTER Centrifugal Separator for SRC 302/402/GEOCUT 302-S Removes coolant mist for better illumination and viewing [To be ordered simultaneously together with the machine order]

**YM 8833** - Spare Filter Kit for FUMEFILTER [GR 1682]

**GR 0105** - Laser alignment unit for SERVOCUT 302/GEOCUT 302-S [To be ordered simultaneously together with the machine order]

**GR 0991-01** - Flange Set with larger diameter,  $\varnothing$ 100 mm

**GR 0998** - Extension Box for cutting long specimens from the left hand side opening, 50 cm length, for SERVOCUT 302/GEOCUT 302-S

**GR 1397-00** - Water Filtering and Pressure Regulator System for city water inlet. Keeps the water pressure at the appropriate level and protects from sudden pressure spikes. Filtering out impurities in the water and prevents calcification.

**YM 3824-00** - Spare Siliphos Cartridge Filter [for Water Filtering and Pressure Regulator System [GR 1397-00]]

## **Clamping Devices for GEOCUT 302-S**

**GR 1811** - Quick Clamping Device for round petrographic specimens

**GR 112** - Universal vise for large specimens, rocks, etc.

**15 08** - KKP 040 Vertical Clamping Device, with clamp. shoe, GEOCUT 302/GEOFORM 102

## **Spare Part Kit for GEOCUT 302-S**

**GR 1963** - Recommended Set of Spare Parts, SERVOCUT 302/GEOCUT 963302-S

## **18 02 - GEOFORM 102**

Precision Thin Section Cutting and Grinding Machine

For fast and precise material removal of petrographic thin sections, Programmable with 7" HMI touch screen control with PLC control unit, electronic micrometer for precise grinding off material from the sample on the slide, for diamond cutting wheels up to 250 mm in diameter, with variable wheel speed 500-2000 rpm, vacuum chuck to hold a variety of slide dimensions, separate cutting and grinding compartments, Plexiglas protection cover for both grinding and cutting compartments, movable T-slotted clamping table made of stainless steel in the cutting compartment, ability to fix several clamping tools on the T-slotted table, powerful LED illumination for both cutting and grinding compartment, corrosion-free aluminum cast base, ability to connect directly city water or recirculating coolant tank. Complete and ready for operation. Without diamond cutting wheel and grinding wheel. 230 V, 50/60 Hz, AC.

## **Accessories for GEOFORM 102**

**GR 1866** - Vacuum Pump for up to 2000 m Altitude from Sea Level, 230 V, 50/60 Hz, AC.

**GR 1895** - Vacuum Pump for up to 2000 m Altitude from Sea Level, 115 V, 50/60 Hz, AC.

**GR 1766** - Vacuum Pump for above 2000 m Altitude from Sea Level, 230 V, 50/60 Hz, AC.

**GR 1765** - Vacuum Pump for above 2000 m Altitude from Sea Level, 115 V, 50/60 Hz, AC.

**GR 1383-00** - Recirculating Coolant Tank, composed of 40 liters stainless steel cooling tank, double 24V recirculating pump & connection hoses, etc.

**GR 0413** - Dressing Unit for GEOFORM 102, for Grinding Compartment

**YM 1590-00** - Dressing Stone

**YM 1590-00** - Water Filtering and Pressure Regulator System for city water inlet. Keeps the water pressure at the appropriate level and protects from sudden pressure spikes. Filtering out impurities in the water and prevents calcification

**YM 3824-00** - Spare Siliphos Cartridge Filter [for Water Filtering and Pressure Regulator System [GR 1397-00]]



# SPECIFICATIONS

## Accessories for Cutting Chamber of GEOFORM 102

**GR 0549** - Quick acting clamping vise assembly, for GEOFORM 102

**15 08** - KKP 040 Vertical Clamping Device, with clamp. shoe, GEOCUT 302-S/GEOFORM 102

**GR 1868** - Fixed Vacuum Stand for Mounting Vacuum Chucks

**GR 1867** - Movable X-Axis Vacuum Stand for Mounting Vacuum Chucks

**GR 1870** - Vacuum Chuck for Cutting Section;

[To be mounted on GR 1868 or GR 1867]

Suitable Glass Slides:

- 1 pc of 27x46 mm,
- 1 pc of 28x48 mm,
- 1 pc of 1"x2"

**GR 1871** - Vacuum Chuck for Cutting Section;

[To be mounted on GR 1868 or GR 1867]

Suitable Glass Slides:

- 1 pc of 30x45 mm,
- 1 pc of 2"x2",
- 1 pc of 1"x3",
- 1 pc of 1 1/2"x3",
- 1 pc of 2"x3",

## Accessories for Grinding Chamber of GEOFORM 102

**GR 1880** - Vacuum Chuck for Grinding Section;

Suitable Glass Slides:

- 3 pcs of 27x46 mm,
- 3 pcs of 28x48 mm,
- 3 pcs of 30x45 mm,

**GR 1881** - Vacuum Chuck for Grinding Section;

Suitable Glass Slides:

- 1 pc of 1 1/2"x3",
- 1 pc of 2"x3",
- 1 pc of 1"x2"
- 1 pc of 2"x2",
- 1 pc of 1"x3",

## Spare Part Kit for GEOFORM 102

**GR 1998** - Recommended Set of Spare Parts, GEOFORM 102

### 45 61 - GEOFIX

Fixture for mounting specimens to glass slides for thin-sectioning, provides a uniform thickness of bonding material between the specimen and the glass slide, spring activated loading system with capacity up to 8 specimens, easily placeable on hot plate.

**45 65** - Hot Plate for Geofix, 30x30 cm

### 25 06 - VACUMET 52

Self-contained vacuum impregnation unit, with built-in pneumatic vacuum system of -0.65 bar, vacuum gage and one set of supplies for casting epoxy resins.

Includes a standard set of mounting consumables composed of

- 10 cups, 10 silicon tubes, 10 wooden mixing spoon 2 scale tubes.

## 36 21-TS -FORCIPOL-TS

Grinding and Polishing Machine, Single wheel, 0.75 kW motor with overload protection, variable speed between 50-600 rpm, clockwise or counterclockwise rotation,

soft start and stop function, vibration-free and robust construction, ergonomic design, quiet operation, standard interface for all head units (FORCIPOL Control Unit and FORCIMAT 52/102/TS), retractable water hose,

including water supply and drain tubes. [One of the Head Units is required to operate the equipment]

230 V, 1-phase, 50/60 Hz. Includes a standard set of grinding & polishing consumables;

- Silicon Carbide Powder, 500 gr of each 120, 320, 400, 600 and 1000 grit
- 10 pcs of PETRI Polishing Cloth, 300 mm dia.
- Diamond pastes, one of each of 3 mic. and 0.25 mic., plus lubricant

## Operational Accessories for FORCIPOL-TS Grinder/Polishers

**33 12** - Lapping Disc, 300 mm

**31 31** - PVC wheel, 300 mm

**31 75** - Splash guard, 300 mm

**31 34** - Paper ring, 300 mm

**31 05** - Cover

**31 13** - Special Plexiglas Protection Unit, to be used with FORCIPOL 102/TS [To be ordered simultaneously together with the machine order]

## 30 11 - FORCIPOL Control Unit

For controlling of disc speed, operation time, water on/off and start/stop operation of FORCIPOL 102/202/TS. With touch pad front panel controls and digital display, with ergonomic turn knob for fast and easy setting of parameters, last parameter settings retained in the memory, automatic disc cleaning & drying function with single button, Smart Water Saving feature. Communication capability with FORCIPOL 102 and FORCIPOL 202 machines. Complete and ready for operation.

## 30 13 - FORCIMAT-TS

Automatic Specimen Mover, Microprocessor controlled, pneumatically adjustable individual force loading system, up to 6 specimens, quick specimen holder replacement system, 100 Watt DC motor, low rotational speed between 25-50 rpm, with robust steel mounting column, front panel with touch-pad controls and digital display, with ergonomic turn knob for fast and easy setting of parameters, last parameter settings retained in the memory, automatic disc cleaning & drying function with single button, Smart Water Saving feature, audible warning signal. Communication capability with FORCIPOL 102/202/TS machines. With air supply tubes, complete and ready for operation.

**GR 0440** - Air filtering and lubricating unit

# SPECIFICATIONS

**33 40** - Individual force specimen holder, Ø155mm, for 3 x Ø60 mm specimens. (For LAP-TS and POL-TS holders)

**33 01** - Individual force specimen holder, Ø145mm, for 6 x Ø40 mm specimens.

**33 02** - Set of insert rings for Ø30 mm (to be used with 33 33 and 33 01)

**33 03** - Set of insert rings for Ø25 mm or Ø1" (to be used with 33 33 and 33 01)

**33 04** - Set of insert rings for Ø1 1/4" (to be used with 33 33 and 33 01)

**33 05** - Set of insert rings for Ø1 1/2" (to be used with 33 33 and 33 01)

**33 10** - LAP-TS special specimen holder with Boron Carbide stops for lapping of thin sections with 27x46 mm glass slide dimensions, Ø60 mm

**33 11** - POL-TS special specimen holder for polishing of thin sections with 27x46 mm glass slide dimensions, Ø60 mm

**33 16** - LAP-TS special specimen holder with Boron Carbide stops for lapping of thin sections with 28x48 mm glass slide dimensions, Ø60 mm

**33 17** - POL-TS special specimen holder for polishing of thin sections with 28x48 mm glass slide dimensions, Ø60 mm

## **40 06 - DOSIMAT 12 Peristaltic Fluid Dispenser**

Microprocessor controlled, with peristaltic and non-misting pump for diamond suspensions, alumina suspensions, lubricant or 2 in 1 suspensions, front panel with touch-pad controls and digital display, with ergonomic turn knob for fast and easy setting of parameters, programmable dosing time and dosing period, purge and retract function, last parameter settings

retained in the memory, with interface to be connected to FORCIMAT 52, FORCIMAT-TS and FORCIMAT 102 Automatic Heads. Complete and ready for operation.

## **40 07 - DOSIMAT 52 Peristaltic Fluid Dispenser**

Microprocessor controlled, with 6 peristaltic and non-misting pumps (5 for diamond suspensions/lubricant and 1 for alumina suspensions), front panel with touch-pad controls and digital display, with ergonomic turn knob for fast and easy setting of parameters, programmable dosing time and dosing period, purge and retract function, last parameter settings retained in the memory, with interface to be connected to FORCIMAT 52 and FORCIMAT-TS Automatic Heads, complete and ready for operation.

## **60 06 - IPP 902**

Polarizing Laboratory Microscope

Head: Trinocular, 30° inclined, 360° rotating

Eyepiece: WF10x/22mm

Bertrand lens: Swing-out type; centrable (for Conoscopy/Orthoscopy)

Polarizing attachment: 360° rotating analyzing filter,

1 slip (first class red)  $\lambda$  tint plate,  $\lambda/4$  tint plate, quartz wedge tint plate

Nosepiece: 4-positions with centering mechanism for all objectives

Objectives: For transmitted and incident polarized light

5x/0.12, 10x/0.25, 20x/0.40, 50x/0.75, with anti-fungus treatment

Magnifications: 50x, 100x, 200x, 500x

Focusing system: Coaxial coarse and fine

Stage: 145 mm diameter; 360° rotating with stop knob and 0.1° Vernier

Condenser: 0.2/0.9 N.A., with iris diaphragm, focusable and centrable.

With rotating polarizing filter (swing-out type)

Illumination: XLED system. 65.000 hours life time.

6300K temperature. 3.6W low energy consumption,

light intensity equivalent to a 50W halogen bulb. Brightness is adjustable.

Incident light: XLED system polarizing attachment with built-in polarizer filter, aperture diaphragm and field diaphragm.

Complete with dust cover

Automatic voltage sensing, 100/240 Vac, 50/60 Hz.

## **Optional Accessories for IPP 902**

**62 42** - Eyepiece WF15x/16mm

**62 43** - Eyepiece micrometer EWF10x/22mm

**62 41** - 26x76mm micrometric slide. R:1mm, div:0,01mm

**62 58** - 60x/0.80 achromatic objective

**62 81** - Blue filter, 45mm diameter

**62 82** - Green filter, 45mm diameter

**62 83** - Yellow filter, 45mm diameter

**62 84** - Frosted glass filter, 45mm diameter

**62 60** - Eyecup (pair)

**60 74** - Photo adapter for IMAGINE HARDWARE SET, 0.5x focusable

**60 66** - Cleaning kit

## **Spare Part Kit for FORCIPOL/FORCIMAT/DOSIMAT**

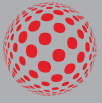
**GR 1991** - Recommended Set of Spare Parts, FORCIPOL 102/202/TS

**GR 1992** - Recommended Set of Spare Parts, FORCIMAT 52/TS

**GR 1993** - Recommended Set of Spare Parts, DOSIMAT 12/52/102

\* Other voltages and frequencies available upon request.

Please state when ordering. All specifications are subject to change without notice.



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