



**metkon**  
Technology behind Specimen



**METALLOGRAPHY**

# **SAMPLE PREPARATION**

[metkon.com](http://metkon.com)



QUARTER CENTURY OF  
EXPERIENCE



**metkon**  
Technology behind Specimen



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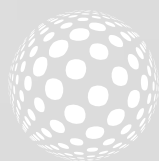
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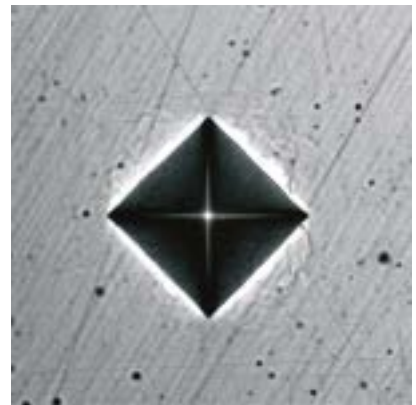
# ABOUT METKON





# METALLOGRAPHY

## About Metkon



Metallography is the science of revealing and evaluating the internal structures of materials. It is one of the most important methods of materials research today, indispensable to the scientist as well as to the engineer.

More recently, 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.

METKON brings total preparation solutions in metallography. We cover the complete range of instruments and consumables for Metallographic Sample Preparation, from manual machines to sophisticated microprocessor controlled preparation systems.

Our systems are used in research laboratories and on production lines, in quality control and in education, in large government installations, automotive companies and small independent laboratories. Materials scientists, designers, engineers and QC managers use METKON products to evaluate the mechanical properties of materials, components and structures.



**CUSTOMERS**



## About Metkon



Since 1993, METKON as a young and dynamic company, had delivered more than 20,000 instruments globally. Our customer list covers the spectrum from small to large international companies and laboratories in many different industries, including: Automotive, Aerospace, Bearing industry, Electronics, Universities and other industries.

Together with our distributors in more than 30 countries, dedicated aftersales support includes trained service and support personnel, application laboratories, customer training courses, and mobile laboratories featuring a hands-on experience with METKON products and specialists.

METKON is proud to be a partner in providing quality products to a variety of customers including; Agusta, Bosch, Eaton, Faurecia, Fiat, GKN, Hyundai, Honda, INA, Lufthansa, Mercedes Benz, Motorola, Pirelli Schneider, Seagate, SKF, Sony, Toyota, TRW, Yamaha and others.

Our primary goal and the greatest motivation for us is to have you as a satisfied METKON customer.



# PRODUCTION



Founded in 1993 as a 3-man-enterprise, METKON today employs over 120 people. Customers around the world have trusted METKON to deliver technologically advanced solutions. Our state-of-the-art Engineering and Product Development center includes teams of engineers working together to create and test ideas that will be incorporated into instruments designed to meet customer needs.

At our in-house manufacturing facility, quality drives production. From sheet metal parts to complex mechanical assemblies, METKON produces most of the components needed in our products, allowing strict control over the entire manufacturing process in accordance with the quality standards of ISO-9001. As a final check before shipping, instruments are thoroughly tested to assure quality and functionality.





# QUALITY POLICY



Being an ISO 9001-2000 certified firm, our Quality Policy is that all products and services meet the requirements of our customers.

Our objective is to justify your trust in our firm by providing quality products and services that are comprehensive and available to you when and wherever you need it.

**METKON's Quality Policy is based on three fundamental principles:**

- Quality is defined as conformance to requirements.
- Total Quality Management is our business philosophy.
- The benchmark for quality comprises our performance goals which are continuously measured.





# EQUIPMENT



FF

1/250

## SERVO CUT Series

## Abrasive Cutting

**SERVO CUT is the perfect choice for a broad range of heavy duty cutting applications. It is available in three main sizes and in automatic and/or manual version.**

SERVO CUT 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 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. 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.

SERVO CUT automatic models have advanced techniques and software with programmable HMI touch screen controls increasing the productivity, sample consistency and operator comfort.

### SERVO CUT 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 (optional)** Parallel serial sectioning in the x-axis with optional movable x-bed.

### SERVO CUT 302



Medium Size

Cutting capacity 85/110 mm with cut-off wheel dia. of 250/300 mm

### SERVO CUT 402



Large Size

Cutting capacity 130/150 mm with cut-off wheel dia. of 350/400 mm

### SERVO CUT 502



Very Large Size

Cutting capacity 146/180 mm with cut-off wheel dia. of 432/500 mm

### SERVO CUT 602



Extremely Large Size

Cutting capacity 225 mm with cut-off wheel dia. of 500/600 mm



## METACUT Series

## Abrasive Cutting

METKON chop cutting machine METACUT 302 is designed for wet cutting of large and small, regularly or irregularly shaped workpieces of metallic, ceramic or composite materials. METACUT 302 has the capacity to cut solid sections up to 115 mm in diameter. The side access port permits the sectioning of extra - long workpieces, as well. The machine is equipped with a powerful motor, driving the cut-off wheel towards the workpiece. The bottom part of the machine is a large robust alloy base casting. The cutting table is provided with T-Slots increasing the versatility so that different clamping sets can be mounted. The complete system is enclosed in a protective hood with a large shatter proof window to observe the cutting process.

METACUT 302 has the highest safety standards. The interlocking safety device does not allow the motor to be started unless the hood is closed. The hood can not be opened before the 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.

A closed loop recirculating cooling unit is a standard 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.

### METACUT 302



Manual Chop Cutting

Cutting capacity 90/115mm with cut-off wheel dia. of 250/300 mm

## MICRACUT Series

## Precision Cutting

MICRACUT precision cutters are used for precise and deformation-free cutting of "Metals, Ceramics, Electronic Components, Crystals, Composites, Biomaterials, Sintered Carbides, Minerals, etc." MICRACUT has its place in virtually any metallurgical, geological, electronics, research, biomedical or industrial laboratory. The applications are endless.

Manual/Motorized drive mechanism positions the specimen head in X-direction with high accuracy. Automatically adjusted feed rate and cutting force allows even the most delicate samples to be cut without deformation. Powerful cutting motor has variable cut-off wheel speeds in different ranges allowing both high speed and low speed cutting.

MICRACUT family of precision cutters are available in 2 different versions:

### MICRACUT 152



Low Speed Precision Cutting

Max. disc size 175 mm, Speed Range 50-1500 rpm.

### MICRACUT 202



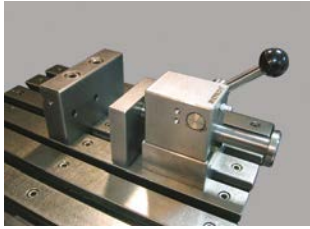
Automatic High Speed Precision Cutter

Max. disc size 200 mm, Speed Range 100-5000 rpm.

# ACCESSORIES

# CUTTING

Quick Acting Clamping Vise Assembly Left (Stainless Steel)



GR 0030 for SERVOCUT 402  
GR 0013 for METACUT 302  
GR 0122 for SERVOCUT 502  
GR 0170 for SERVOCUT 302  
GR 0548 for MICRACUT 202

Quick Acting Clamping Vise Assembly Right (Stainless Steel)



GR 0029 for METACUT 302 & SERVOCUT 402  
GR 0012 for METACUT 302  
GR 0121 for SERVOCUT 502  
GR 0172 for SERVOCUT 302

Compact Vise Assembly, Spring Loaded (Stainless Steel)



GR 0154 for METACUT 302 & SERVOCUT 402  
GR 0151 for METACUT 302 & SERVOCUT 302

Vertical Clamping Device with clamping shoe



15 02 for METACUT 302 & SRC 402/502  
15 01 for METACUT 302 & SERVOCUT 302  
15 05 for MICRACUT 202 & GEOCUT 302  
15 06 for SERVOCUT 602

Height Block



15 03 for MTC 302/SRC 302  
15 04 for MTC 302/SRC 402/502  
15 07 for SERVOCUT 602

Fastener vise for longitudinal sectioning of screws, ball joint, tubes



GR 0310 for MTC 302/SRC 302/402  
GR 0312 for MTC 302/SRC 402

Fastener vise for longitudinal sectioning of screws, fasteners tubes



GR 0453 for MIC 152/202/SRC 302/MTC 302

Cabinet for floor model



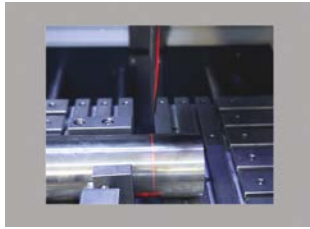
GR 0939 for METACUT 302  
GR 1681 for SRC 302/GEOCUT 302

FUMEFILTER Centrifugal Separator



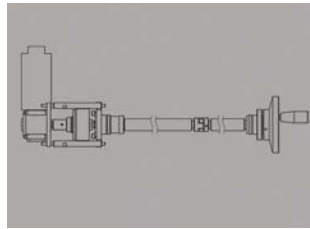
GR 1682 for SRC 302/GEOCUT 302  
GR 1554 for SRC 402/502  
GR 0134 for SRC 602

Laser alignment unit (for MA & AA models) (To be ordered simultaneously together with the machine order)



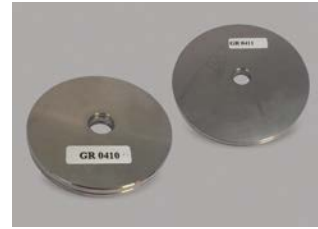
GR 0125 for MIC 202/SRC 302/402/502  
GR 0135 for SERVOCUT 602

Manual/Auto Table drive system with electromagnetic clutch (y-axis) (for MA and AA models)



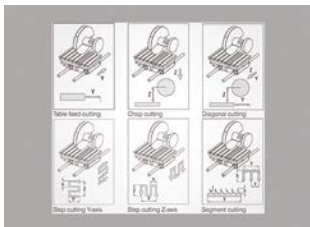
GR 1680 for SERVOCUT 302  
GR 1707 for SERVOCUT 402  
GR 1542 for SERVOCUT 502

Flange Set with larger diameter



GR 0993-01 for SERVOCUT 502, Ø166 mm  
GR 0992-01 for SERVOCUT 402, Ø133 mm  
GR 0991-01 for SERVOCUT 302, Ø100 mm  
GR 0410 for MICRACUT 202/152, Ø75 mm  
GR 0411 for MICRACUT 202, Ø100 mm

Software package for optional cutting methods; Diagonal Cut, Step Cut, Segment Cut (for AA models)



GR 0925 for SERVOCUT 302/402/502/602

BANDCOOL Band Filter Unit



GR 1561 for SERVOCUT 302  
GR 1560 for SERVOCUT 402  
GR 1553 for SERVOCUT 502  
GR 0591 for SERVOCUT 602

## ACCESSORIES

Manual X-axis positioning unit for specimen vises with dovetail plates.



GR 0825 for MICRACUT 202

Stand with rotation for specimen vises with dovetail plates



GR 0826 for MICRACUT 202

Stand for specimen vises with dovetail plates.



GR 0547 for MICRACUT 202

## Precision Cutting

Clamping Tools



GR 0548 for MICRACUT 202  
GR 0551 for MICRACUT 202  
15 05 for MICRACUT 202 & GEOCUT 302

Cutting Table Attachment for manual cutting of extra flat specimens & PCB's



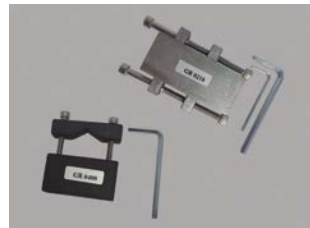
GR 0213 for MICRACUT 152

Dressing Unit



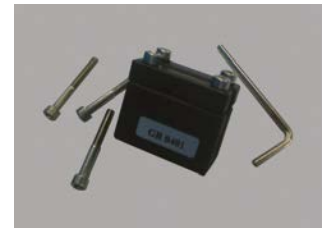
GR 0409 for MICRACUT 152  
GR 0412 for MICRACUT 202

Universal Specimen Vise



GR 0210 for MICRACUT 202  
GR 0400 for MICRACUT 202/152

Specimen vise with double parallel vice for long specimens.



GR 0401 for MICRACUT 202/152

Specimen vise (teardrop shape)



GR 0430 for MICRACUT 202/152  
GR 0431 for MICRACUT 202/152

Fastener vise for longitudinal sectioning of screws, fasteners, tubes, etc. from 12 to 45 mm. in length



GR 0453 for MICRACUT 152/202

Specimen vise for round, cylindrical and mounted specimens.



GR 0402 for MICRACUT 202/152  
GR 0434 for MICRACUT 202/152

Specimen vise for irregular shaped specimens.



GR 0403 for MICRACUT 202 /152

Specimen vise for adhering specimens.



GR 0404 for MICRACUT 202/152

Specimen vise for biomedical samples.



GR 0405 for MICRACUT 202/152

## ECOPRESS Series

## Hot Mounting

**ECOPRESS 52**



Automatic Mounting Press Fully automatic operation with microprocessor controls, electro hydraulic pressure (requires no air), with touch pad front panel controls and digital display of; heating time, moulding temperature, cooling temperature, ram up/down, auto/manual cooling, cycle start/stop. Last parameter settings retained in the memory, with ergonomic turn knob for fast and easy setting of parameters, with direct reading pressure gauge, moulding pressure up to 300 bar, temperature up to 200°C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 1650W, automatic cooling cycle, programmable slow cooling feature, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation.  
230 V, 1-phase, 50/60 Hz.

**ECOPRESS 102**



Programmable Automatic Mounting Press 7" HMI touch screen control, with Siemens PLC control unit, programmable with colored LCD display, program based mounting sequences, electro hydraulic pressure (requires no air), pressure up to 300 bar, temperature up to 200°C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 1650W, automatic cooling cycle with three modes of cooling rates (standard cooling, slow cooling and based on time), programmable preheating and preloading, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation.  
230 V, 1-phase, 50/60 Hz.

**ECOPRESS 202**



Programmable Automatic Mounting Press with dual cylinders 7" HMI touch screen control, with Siemens PLC control unit, programmable with colored LCD display, program based mounting sequences, electro hydraulic pressure (requires no air), pressure up to 300 bar, temperature up to 200°C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 2X1650W, automatic cooling cycle with three modes of cooling rates (standard cooling, slow cooling and based on time), programmable preheating and preloading, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation.  
230 V, 1-phase, 50/60 Hz.

## VACUMET

## Cold Mounting

**VACUMET 52**

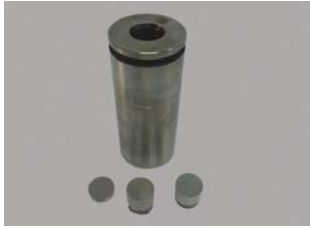


Vacuum Impregnation Unit for cold mounting. Especially designed for embedding and impregnation of porous materials under vacuum. In addition, glueing of specimens to glass slides for thin section analysis is possible. Vacumet is very simple to operate and ensures efficient impregnation.

## ACCESSORIES

## Hot Mounting

Mould assembly, with intermediate ram



26 01-03 for ECOPRESS 52/102/202  
 26 02-03 for ECOPRESS 52/102/202  
 26 03-03 for ECOPRESS 52/102/202  
 26 07-03 for ECOPRESS 52/102/202  
 26 04-03 for ECOPRESS 52/102/202  
 26 05-03 for ECOPRESS 52/102/202  
 26 06-03 for ECOPRESS 52/102/202  
 26 08-03 for ECOPRESS 52/102/202

Mould assembly, with chamfered bottom ram and intermediate ram



26 11-03 for ECOPRESS 52/102/202  
 26 12-03 for ECOPRESS 52/102/202  
 26 13-03 for ECOPRESS 52/102/202  
 26 17-03 for ECOPRESS 52/102/202  
 26 14-03 for ECOPRESS 52/102/202  
 26 15-03 for ECOPRESS 52/102/202  
 26 16-03 for ECOPRESS 52/102/202  
 26 18-03 for ECOPRESS 52/102/202

Recirculating Coolant System



GR 1363 for ECOPRESS 52/102/202

Water Filtering and Pressure Regulator System



GR 1397-00 for ECOPRESS 52/102/202,  
 FORCIPOL 102/202/TS,  
 ACCURA 102, ELOPREP 102,  
 GEOCUT 302, GEOFORM 302,  
 SPECTRAL AG 102/PG 52

Spare Siliphos Cartridge Filter



YM 3824-00 for ECOPRESS 52/102/202,  
 FORCIPOL 102/202/TS,  
 ACCURA 102, ELOPREP 102,  
 GEOCUT 302, GEOFORM 302,  
 SPECTRAL AG 102/PG 52



## MODULAR GRINDING & POLISHING

## Grinding & Polishing

FORCIPOL 102



FORCIPOL 202



**FORCIPOL Series of grinding and polishing machines offer practical and economical solutions to your metallographic sample preparation needs.**

All materials testing laboratories in the industry, research or educational field have a demand for sample preparation. Whether your requirements call for individual components or basic sample preparation, FORCIPOL family of instruments will meet your needs. FORCIPOL Series of instruments are available as Single wheel [FORCIPOL 102] and Dual wheel [FORCIPOL 202] Units.

Both single and double wheel versions are suitable with  $\varnothing 200$ ,  $\varnothing 250$  and  $\varnothing 300$  mm wheels. The working wheel is powered by a high torque 1.0 HP electric motor with both clockwise and counterclockwise wheel rotation possibility. The state of the art frequency converter allows smooth speed variation (50-600 rpm) of the grinding wheel with soft start and soft stop. This allows the setting of the optimum speed for each individual preparation process. It is perfect choice for laboratories preparing a wide range of different materials from very small to very large.

The stylish and functional housing is corrosion free and easy to clean. Molded wheel bowls and drains eliminate leaks and the build-up of residue is prevented by constant flushing of the bowl. The drive elements are fixed on heavy duty aluminium alloy casting. The wheels are mounted on ball bearings allowing the application of high pressures to prepare even large specimens. Ball bearings used provide quiet and vibration free operation. Water inlet and flexible water outlets with control valves for wet grinding are standard features. FORCIPOL instruments can be used for grinding, lapping and polishing with magnetic backed discs and cloths or by quick and simple exchange of wheels.

FORCIPOL instruments are designed to modular configuration for manual, semi-automatic and programmable automatic equipment. When only manual preparation is required, FORCIPOL Control Unit can be fitted on the FORCIPOL grinder / polisher. If automatic operation is required in the future, one of the FORCIMAT automatic heads can be installed at any time.



## FORCIMAT Series

## Head Units

Forcipol Control Unit



FORCIMAT 52



FORCIMAT 102



The FORCIPOL Control Unit is ergonomically placed on the equipment. Modern touch pad controls with ergonomic turn knob allows fast and easy setting of parameters and increases productivity. Wheel speed, operation time, motor on/off and water on/off functions can be set in seconds. Cooling water is automatically activated and deactivated at the beginning and end of operation. The actual wheel speed and operation time are digitally displayed. All parameters can be changed during operation. The last parameter settings are always retained in the memory. An audible signal notifies the operator when the process is completed.

The FORCIMAT 52 Automatic Head is mounted on a rigid hardened post which is fixed to the base of the FORCIPOL grinder/polisher. It can be adapted to all FORCIPOL series grinder/polishers and is easily and rapidly positioned by means of a quick-locking clamping mechanism. The sample holder can prepare 6 samples simultaneously and it is driven by a 100 Watt DC motor at 50-150 RPM. 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.

FORCIMAT 102 Programmable Automatic Head is coloured HMI touch screen controlled and with the Base Unit, thus creating automatic preparation system. It is used to prepare high volumes of metallographic, ceramic and mineralogical specimens with consistent reproducible quality. The Automatic Head can apply both "Central" and/or "Individual" forces. It can accommodate single samples as well as multi - sample holders thus offering a perfect solution for all levels of sample throughput requirements. The Automatic Head is mounted to a hardened steel post which is affixed to the cast base of the FORCIPOL grinder/polisher. It can be adapted to all FORCIPOL series grinder/polishers and is easily and rapidly positioned by means of a quick-locking clamping mechanism.

## DOSIMAT Series

## Peristaltic Fluid Dispensers

DOSIMAT 12



DOSIMAT 52



DOSIMAT 102



DOSIMAT Peristaltic Dispenser is an optional accessory for the FORCIMAT 52 and FORCIMAT 102 systems. 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. Efficiency is further increased with high quality peristaltic pumps that guarantee exactly the same dosing every time for automation and control of consumable consumption. The liquid is dosed exactly to where the operator wants it on the polishing cloth. No vaporization or spray mist occurs.

It is possible to clean all the tubes with a single button at the end of preparation steps to eliminate the risk of clogged tubes.

Three different DOSIMAT Peristaltic Fluid Dispensers are available for FORCIMAT 52 and FORCIMAT 102:

DOSIMAT 12 has one peristaltic and non-misting pump for diamond suspensions, alumina suspensions, lubricant or 2 in 1 suspensions and can be matched with Forcimat 52 and Forcimat 102 Automatic Heads.

DOSIMAT 52 has 5 peristaltic pumps for diamond suspensions / lubricant and 1 pump for aluminium oxide suspension or 2 in 1 suspensions and can be matched with Forcimat 52 Automatic Head.

DOSIMAT 102 has 5 peristaltic pumps for diamond suspensions / lubricant and 1 pump for aluminium oxide suspension or 2 in 1 suspensions and can be matched with Forcimat 102 Automatic Head.

## ADVANCED GRINDING & POLISHING

### Grinding & Polishing

#### ACCURA 102



ACCURA 102 Advanced high end grinding and polishing system, robust construction on dual columns for applications requiring extremely flat specimen surfaces. Suitable for both 250 mm and 300 mm applications. Motorized positioning of the Head in vertical [Z] and horizontal [X] axes with memory function. Precise control of the force applied. Combined Z-axis material removal control system. Ability to store and recall preparation programs on the LCD screen. Efficient control of consumable consumption by integrated Peristaltic Dispensing Unit. Transparent cover for improved safety and working area.



ACCURA 102 can accommodate 250 mm diameter wheel as well as 300 mm diameter wheels. The robust construction on dual columns ensures extremely flat surfaces. The working wheel is powered by a high torque 1,5 HP electric motor. The state of the art frequency converter allows smooth speed variation [50-750 rpm] of the grinding wheel with soft start and soft stop. Powerful enough to planar grinding of large and multiple specimens. Suitable for a very wide range of applications from very coarse grinding to very fine grinding and polishing. Automatic disc cleaning & drying function can be activated with a single button to obtain perfectly cleaned disc surfaces in seconds. The specimen holder is equipped with variable speed 50-150 rpm as well.

## PLANAR GRINDING

#### FORCIPLAN 102



FORCIPLAN 102 Automatic Planar Grinder is designed for first step initial planar grinding of very large specimens or a high volume of specimens in specimen holders. It is fast and efficient in providing high quality flat specimen surface thus saving time on the subsequent fine grinding and polishing steps. FORCIPLAN 102 can accommodate sample holders up to Ø220 mm. 8 pieces of Ø50 mm samples or 10 pcs of Ø40 mm samples can be prepared at the same time. As well as irregular shaped or larger size samples can also be prepared. Special sample holders can be designed by Metkon according to application requirements.



FORCIPLAN 102 has Ø350 mm flat grinding stone. Comparing with traditional SiC papers, the flat grinding stone offers faster preparation times and higher removal rates.

With extremely high material removal performance and reducing several grinding steps without changing paper, the FORCIPLAN 102 increases the productivity and total sample preparation time reduces significantly.



# ACCESSORIES

## Planar Grinding

Recirculation Cooling Tank, 60 lt



GR 0019 for FORCIPLAN 102 / METACUT 302

Fine filter sheets for recirculation cooling tank



YM 8813 for GR 0019/GR 1675/GR 1945

Coolant level sensor for recirculation cooling tank Informs operator when coolant level is insufficient.



GR 1559 for Recirculation Coolant Tanks

Magnetic collector rod for recirculation cooling tank



GR 1540 for Recirculation Coolant Tanks

3-lights warning beacon with audible signal



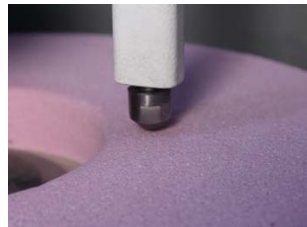
GR 0140 for FORCIPLAN 102  
SERVOCUT 402/502/602

Barcode Scanner for easy loading correct programs for different samples



GR 0665 for FORCIPLAN 102 / ACCURA 102

Diamond Tip for Dressing Unit



YM 10781-00 for FORCIPLAN 102

## Grinding & Polishing

# ACCESSORIES

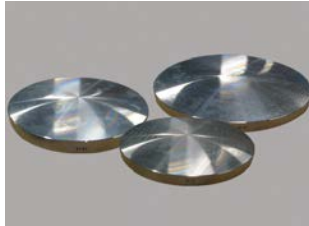
# Grinding & Polishing

PVC wheel for Grinder/Polishers



31 01 for FORCIPOL 102 & FORCIPOL 202  
31 21 for FORCIPOL 102 & FORCIPOL 202  
31 31 for FORCIPOL TS

Aluminium wheel for Grinder/Polishers



ACCURA 102  
31 02 for FORCIPOL 102 & FORCIPOL 202  
31 22 for FRC 102/202  
31 42 for ACCURA 102/VELOX 402  
31 52 for ACCURA 102/VELOX 402  
31 32 for FRC TS

Splash guard for Grinder/Polishers



31 53 for FORCIPOL 102 & FORCIPOL 202  
31 63 for FORCIPOL 102/202  
31 64 for ACCURA 102  
31 73 for FRC TS, ACCURA 102  
31 82/83/93 for FORCIMAT

Paper ring for Grinder/Polishers



31 04 for FORCIPOL 102 & FORCIPOL 202  
31 24 for FORCIPOL 102 & FORCIPOL 202  
31 34 for FORCIPOL TS

Cover for Grinder/Polishers



31 06 for FORCIPOL 102 & FORCIPOL 202  
31 36 for FORCIPOL TS

Special Plexyglass Protection Cover



31 13 for FORCIPOL 102/TS  
31 14 for ACCURA 102

Air filtering and lubricating unit



GR 0440 for FORCIMAT, FORCIMAT-TS  
ACCURA 102

Dosing Modules for ACCURA 102



GR 0875 with 4 micro peristaltic pumps  
GR 0876 with 6 micro peristaltic pumps

Z-axis material removal with depth control



GR 0872 for FORCIMAT 102/ACCURA 102

Cabinet for floor model



GR 0770 for ACCURA 102  
GR 0830 for FRC 102/TS

Recirculating Cooling Tank



GR 1394-00 for GEOCUT 302, SPECTRAL PG  
SPECTRAL AG  
GR 1383-00 for GEOFORM 102

ENVIRO Recirculating Filtering System



GR 0865 for FORCIPOL 102/202/TS  
ACCURA 102

## ACCESSORIES

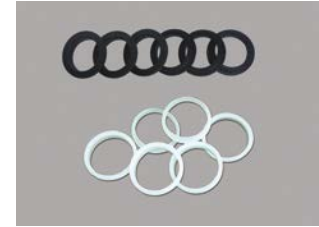
Individual Force Specimen Holders  
(for FORCIMAT 52/102/TS, ACCURA 102)



- 33 31 Individual force specimen holder, Ø145mm, for 6 x Ø25 mm specimens.
- 33 32 Individual force specimen holder, Ø145mm, for 6 x Ø30 mm specimens.
- 33 33 Individual force specimen holder, Ø145mm, for 6 x Ø40 mm specimens.
- 33 34 Individual force specimen holder, Ø145mm, for 3 x Ø50 mm specimens.
- 33 35 Individual force specimen holder, Ø145mm, for 6 x Ø1" specimens.
- 33 36 Individual force specimen holder, Ø145mm, for 6 x Ø1 1/4" specimens.
- 33 37 Individual force specimen holder, Ø145mm, for 6 x Ø1 1/2" specimens.
- 33 38 Individual force specimen holder, Ø145mm, for 3 x Ø2" specimens.
- 33 39 Individual force specimen holder, Ø145mm, Blank.

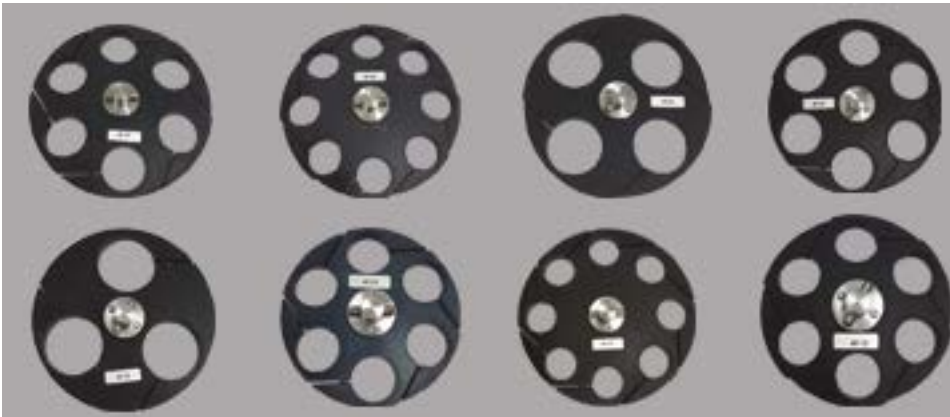
## Grinding & Polishing

Set of insert rings



- 33 02 for 30 mm
- 33 03 for 25 mm or 1"
- 33 04 for 1 1/4"
- 33 05 for 1 1/2"

Specimen Holders for Central Force Application  
(for FORCIMAT 102, ACCURA 102)



- |       |                       |       |                      |
|-------|-----------------------|-------|----------------------|
| 46 81 | 6 x Ø25 mm., Ø130mm.  | 46 92 | 8 x Ø30 mm., Ø160mm. |
| 46 82 | 6 x Ø30 mm., Ø130mm.  | 46 93 | 6 x Ø40 mm., Ø160mm. |
| 46 83 | 4 x Ø40 mm., Ø130mm.  | 46 94 | 4 x Ø50 mm., Ø160mm. |
| 46 84 | 6 x Ø1", Ø130mm.      | 46 95 | 10 x Ø1", Ø160mm.    |
| 46 85 | 6 x Ø1 1/4", Ø130mm.  | 46 96 | 8 x Ø1 1/4", Ø160mm. |
| 46 86 | 4 x Ø1 1/2", Ø130mm.  | 46 97 | 6 x Ø1 1/2", Ø160mm. |
| 45 91 | 10 x Ø25 mm., Ø160mm. | 46 98 | 4 x Ø2", Ø160mm.     |

Specimen Loading Fixture For  
Central Force Application



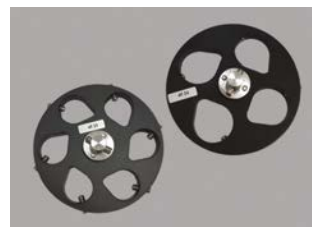
45 60 for FORCIPLAN 102, FORCIMAT 102,  
ACCURA 102 (LEVOMAT)

Central Force Specimen  
Holders(Rectangular) for FORCIPLAN  
102 Accura 102



- 46 44 4 x [25 X 32 mm.], Ø 130 mm.
- 46 45 3 x [40 X 70 mm.], Ø 130 mm.

Central Force Specimen  
Holders(Teardrop) for FORCIPLAN 102  
Accura 102



- 46 88 6 x 10 - 32 mm., Ø130 mm.
- 46 73 10 x 40-25 mm., Ø210 mm.
- 46 74 8 x 50-25 mm., Ø210 mm.

Specimen Loading Plate



- 45 10 for Ø130 mm Specimen Holders
- 45 50 for Ø160 mm Specimen Holders
- 45 40 for Ø210 mm Specimen Holders

Universal specimen holder for large and  
irregular shaped specimens



- 46 77 for FORCIPLAN 102 / ACCURA 102 /  
FORCIMAT 102
- 46 78 for FORCIPLAN 102

## PORTABLE METALLOGRAPHY

### Grinding & Polishing

#### MOBIPREP



Portable grinding/polishing & Electrolytic etching  
Contains maintenance-free batteries to work without stationary mains, consists of a control unit and a precision hand-guided grinding-polishing device with high performance micro motor.  
Output 36 V, adjustable in 5 steps

**Hand-guided device:** High Torque Brushless DC Motor  
Reduction Gear – Angle Piece 90° – Disk 30 mm diameter  
Automatic Charger 12 V / 2,5 A  
Optional Etching Pen

**Dimensions:** 104 x 54 x 160 mm, Weight 1 kg.

#### MOBISCOPE



Portable Metallurgical Microscope  
**Basic Magnification:** 100x - 800x  
**Eyepieces:** WF10X/FN18, Dia 23.2  
**Objectives:** 10x/0.25 (W.D. 7,3 mm), 50x/0.65 (W.D. 0.5mm)  
C-mount adapter (for connecting C-mount cameras)  
Mechanical tube length 160 mm  
**Coaxial coarse/fine focus system, range:** 36mm  
**Polarizing Kits:** Polarizer and Analyzer  
Coaxial illumination, build-in LED rechargeable, brightness adjustable  
Including portable aluminium case.

## ELECTROLYTICAL PREPARATION

### Grinding & Polishing

#### ELOPREP 102



Electrolytic Polishing & Etching System  
Automatic and programmable electrolytic polishing and etching of metallographic specimens, with Siemens PLC control unit, user friendly colored 7" LCD touch screen controls, short polishing times and maximum reproducibility, separate polishing unit equipped with drain pipe and integrated cooling system, dual Polishing & Etching units operatable by the same control unit, optional external etching unit, 0-100 V output voltage for polishing, 0-25 V for etching and 0-25 V for external etching. Variable polishing time and current, with current limitation, built in safety features with continuous control of electrolyte, scanning function for easy determination of parameters, variable speed controlled pump with magnetic stirrer for electrolyte flow. Suitable for both normal and low temperature electrolytic polishing. Ready for operation. 230 V, 1-phase, 50/60 Hz. Includes 1 pc. of stainless steel cathode.

## ACCESSORIES

Etching-Pen for electrolytic etching



90 10 for MOBIPREP

Angle Piece



90 11 (90°) for MOBIPREP  
90 12 (45°) for MOBIPREP

Straight quick release piece of,  
with 3-mm collet on



90 13 for MOBIPREP

## Portable Metallography

Grinding and polishing carriers



90 14 for MOBIPREP

Shoulder bag, synthetic leather



90 15 for MOBIPREP

Magnet Stage



90 30 for MOBISCOPE

Objectives



90 31 (20x) for MOBISCOPE  
90 32 (80x) for MOBISCOPE

## ACCESSORIES

Cathodes



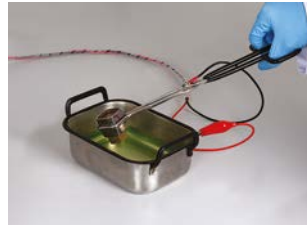
YM 6904-00 Stainless steel  
YM 6937-00 Copper  
YM 6936-00 Titanium

Electrolyte container with lid



46 11 for ELOPREP

External etching unit



46 10 for ELOPREP

Masks



46 12 0,5 cm<sup>2</sup>  
46 13 1 cm<sup>2</sup>  
46 14 2cm<sup>2</sup>  
46 15 5cm<sup>2</sup>  
46 16 without aperture  
46 17 set of masks

Water Filtering and Pressure Regulator  
System



GR 1397-00 for ECOPRESS 52/102/202,  
FORCIPOL 102/202/TS,  
ACCURA 102, ELOPREP 102,  
GEOCUT 302, GEOFORM 302,  
SPECTRAL AG 102/PG 52

Spare Siliphos Cartridge Filter



YM 3824-00 for ECOPRESS 52/102/202,  
FORCIPOL 102/202/TS,  
ACCURA 102, ELOPREP 102,  
GEOCUT 302, GEOFORM 302,  
SPECTRAL AG 102/PG 52

## Electrolytical Preparation

## MICROSCOPY

### IMM 901



#### Inverted Metallurgical Microscope

**Basic Magnifications:** 100x - 1000x  
**Eyeieces:** WF 10x eyepieces paired (field of view Ø16mm)  
**Objectives:** 10x/0.25, 20x/0.40, 40x/0.65, 100x/0.25 (oil)  
**Stage:** Mechanical stage 200 x 152mm travel with right hand, Coaxial dropdown controls, movable range 15 x 15mm  
**Focusing:** Coaxial low position coarse & fine focus controls graduated to 2 microns per division.  
**Illumination:** 6V 20W adjustable light sources with halogen lamp

### PST 901



#### Trinocular Stereo Zoom Microscopy

**Basic Magnifications:** 6.5x - 45x  
**Eyeieces:** WF 10x, paired  
**Objectives:** 6.5x - 45x  
**Stage:** Trinocular zoom head and Post Stand Fluorescence ring illuminator  
**Focusing:** Rack and pinion system, with antistatic PVC dust cover

## Microscopy & Image Analysis

### UPM 902



#### Upright Metallurgical Microscope

**Head:** Trinocular, 30° inclined, 360° rotating.  
**Eyeieces:** WF10x/22mm.  
**Nosepiece:** 5-positions, reversed.  
**Objectives:** 5x/0.15, 10x/0.3, 20x/0.45, 50x/0.55, 100x/0.9 (dry).  
**Magnifications:** 50x, 100x, 200x, 500x, 1000x.  
**Focusing system:** Coaxial coarse and fine.  
**Stage:** Double layer with mechanical sliding stage, 175x145 mm, moving range 76x52 mm.  
**Condenser:** 0,7 N.A. swing-out type, with iris diaphragm, centrabale and focusable.  
**Illumination:** LED system. 50.000 hours life time. 6300K temperature. 3.6W low energy consumption, light intensity equivalent to a 50W halogen bulb. Brightness is adjustable.  
**Metallurgical Attachment:** High-power white system with brightness control; field and aperture diaphragms (centrabale). Simple sliding darkfield system.  
**Filters:** Blue, polarizer & analyzer.

### IMM 902



#### Inverted Metallurgical Microscope

**Head:** Trinocular, 45° inclined.  
**Eyeieces:** WF10x/22mm.  
**Nosepiece:** 5-positions.  
**Objectives:** 5x/0.15, 10x/0.3, 20x/0.45, 50x/0.55.  
**Magnifications:** 50x, 100x, 200x, 500x.  
**Focusing system:** Coaxial coarse and fine.  
**Stage:** 250x230mm; mechanical stage with lowered ergonomic coaxial controls.  
**X-Y range:** 120x80mm.  
**Diaphragms:** Field and aperture diaphragms (centrabale)  
**Illumination:** 12V/50W halogen bulb in external case. Centrabale bulb and brightness control.  
**Filters:** Blue, polarizer & analyzer

### PST 902



#### Trinocular Stereo Zoom Microscope

**Optical System:** Parallel Optics  
**Head:** Binocular 30° inclined, 360° rotatable  
**Stand:** Large stand, fixed arm type, with Led illumination, coaxial macro & micro focusing knobs  
**Eyeieces:** WF10x/22mm, high-point  
**Objective:** Zoom 0,8x ...6,4x  
**Working Distance:** 80 mm.  
**Photo/Video Beam Splitter:** 1 port  
**Illumination:** Ring light led illuminator, with continuous and external brightness control.

### IPP 902

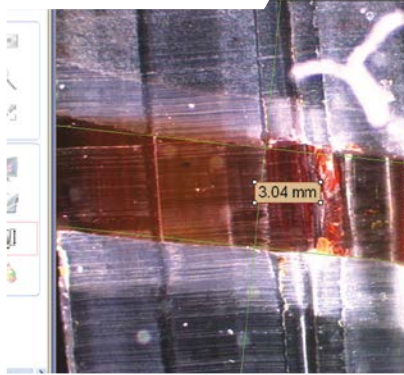


#### Polarization Laboratory Microscope

**Head:** Trinocular, 30° inclined, 360° rotating  
**Eyeiece:** WF10x/22mm  
**Bertrand lens:** Swing-out type; centrabale (for Conoscopy/Orthoscopy)  
**Polarizing attachment:** Blue filter, 0°-90° rotating analysing filter, 1 slip (first class red), 1/4 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  
**Coaxial coarse and fine** 160mm diameter; 360° rotating with stop knob and 0.1° vernier  
**Condenser:** 0,9 N.A., with iris diaphragm, focusable and centrabale. With rotating polarizing filter (swing-out type)  
**Illumination:** Transmitted light: LED system.  
**Incident light:** LED system polarizing attachment with built-in polarizer filter, aperture diaphragm and field diaphragm.

## IMAGE ANALYSIS

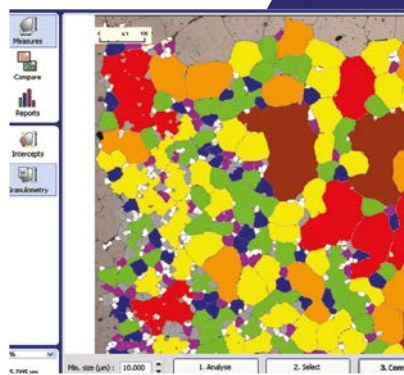
### IMAGIN MESURA 200



IMAGIN MESURA 200 allows you to view the live microscope image, compare it with stored images and if necessary save it to the system. Several databases can be created according to the customers, projects, materials or specimens.

IMAGIN MESURA 200 has several measurement tools for performing manual measurements of lines, curves, angles, areas etc. after which they can be saved and archived. Many application areas exist like "Weld Assessments, Macro analysis, PCB component measurements etc.

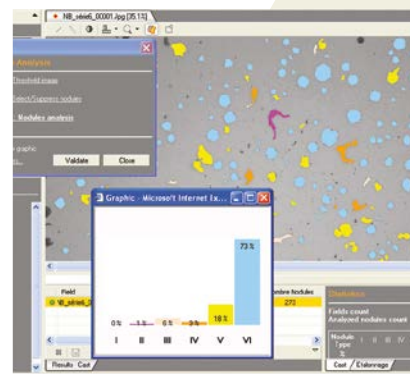
### IMAGIN GRANO 200



IMAGIN GRANO 200 module has been designed for automatic measurement of grain size according to ASTM E112 and EN ISO 643. Firstly, the grain boundaries are detected after which the grain size can be calculated in different ways; "Intercept Method" counts the number of intersection in each field and the grain size is calculated by Abrams 3 - circle or Linear Equations. "Area Method" determines the size of each individual grain by area after which the grains are categorized for the calculation of fractions.

## Microscopy & Image Analysis

### IMAGIN NODULA 200



IMAGIN NODULA 200 module is designed for the analysis of graphite in cast irons especially in Ductile and Gray Iron Foundries and Quality Control Labs. Nodularity assessment is made by percent count and nodules proportion. It is also possible to measure "Area percent ferrite, Area percent graphite and Area percent Pearlite". Archiving of all images with calibration and generating Reports creates an additional advantage to increase productivity and repeatability.

## HARNESS TESTING

### Duroline

#### DUROLINE M



#### DUROLINE V



#### N-Sure



#### Metkon Hardness Testers

DUROLINE Hardness Testers are ideal instruments for quality assurance, quality control, research and metallurgical departments to monitor the hardness during fabrication and after heat treatment or welding as well as for the performance analysis on metal parts and new alloys. Typical applications are determining the Vickers micro- and macro-hardness of steel alloys and metal components, small precision parts, thin material or wire, coatings and performing case depth determinations (CHD, EHT, NHT) on cross sections.

Recently developed by an international multi-disciplinary team with a wide hardness testing experience, the DUROLINE Hardness Testers are based on the latest technology available, focused on fast cycle time with high reproduceable accuracy within international standards. The system features a smart and very service-friendly synergy of a robust and proven mechanical construction with load cell force control and integrated electronics system control featured by a fast CANBUS technology and a high-quality Windows based mini-pc.

#### Automatic Test & Measurement

The METKON N-Sure software program features a flexible Windows based user interface that increases productivity and operator efficiency by automating the test & measurement process. Since the application and removal of the test loads and measurement are fully automatic, repeatability is excellent, testing time is reduced, and throughput is increased. As a result, costly and time-consuming rework is eliminated.

# ACCESSORIES

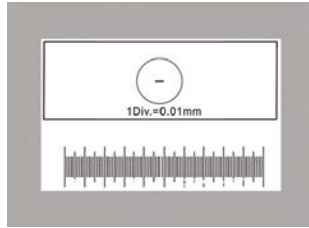
## Microscopy

Eyeiece



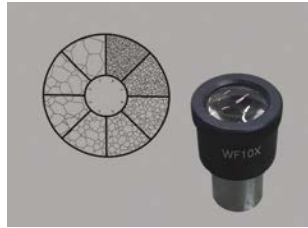
60 11 for IMM 901  
62 42 for IMM 902/UPM 902/IPP 902  
62 41 for UPM 902  
62 71 for PST 902  
62 72 for PST 902

Micrometric slide



60 22 for IMM 901  
60 23 for PST 901  
60 41 for IMM 902/UPM 902/IPP 902

Eyeiece , WF 10x ,  
with ASTM Grain Size E112



GR 0415 for IMM 901

Objective



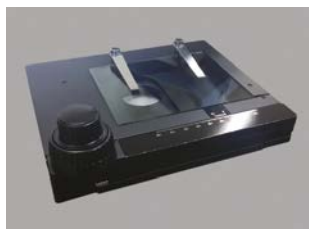
60 53 for PST 901  
60 55 for IMM 902  
61 71 for PST 902  
61 72 for PST 902  
61 73 for PST 902  
60 58 for IPP 902

Eyeiece micrometer



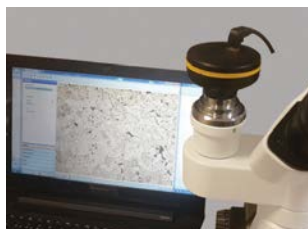
60 12 for IMM 901  
60 13 for PST 901  
62 53 for IMM 902  
62 43 for UPM 902/IPP 902  
62 73 for PST 902

Mechanical Stage



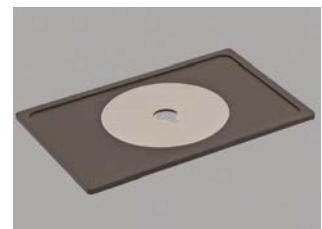
60 43 for PST 901  
60 45 for IMM 902

IMAGIN HARDWARE SET



66 10 for IMM 901, DUROLINE, PST

Holder for metallurgical samples(15 mm  
hole)



60 25 for IMM 902

Photo Adapter for IMAGIN HARDWARE  
SET



60 75 for IMM 902  
60 74 for UPM 902  
60 76 for PST 902/IPP 902

Halogen bulb, 12V/50W



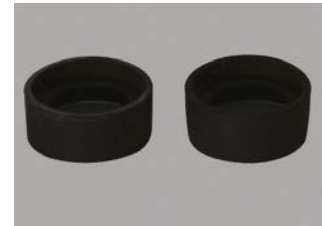
60 65 for IMM 902

Ergonomic binocular head 30°-60°



62 40 for UPM 902/IPP 902

Eyeicup



62 60 for IPP 902

Special protective dust cover



60 67 for IMM 902  
60 69 for PST 902  
60 68 for IPP 902

Cleaning kit



60 66 for PST 902/IPP 902

Immersion oil



60 64 for IPP 902

Polarized filter



61 81 for IPP 902  
61 82 for IPP 902  
61 83 for IPP 902  
61 84 for IPP 902



# ACCESSORIES

## Hardness Testing

Fine specimen holders



GR 2026 for Hardness Testing  
GR 2027 for Hardness Testing  
GR 2028 for Hardness Testing

Object Lenses,  
5X/10X/20X/40X



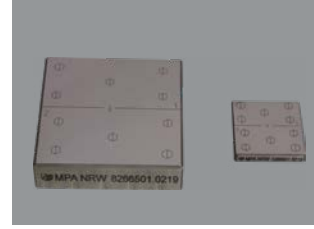
GR 2041 for Hardness Testing  
GR 2042 for Hardness Testing  
GR 2043 for Hardness Testing  
GR 2044 for Hardness Testing

Vickers/Knoop  
Indenters



GR 2047 for Hardness Testing  
GR 2048 for Hardness Testing

Certificated Standard  
Test Blocks



GR 2061 for Hardness Testing  
...  
GR 2069 for Hardness Testing

Precision vise  
(opening 43mm)



GR 2025 for Hardness Testing

Manual XY-Stages



GR 2023 for Hardness Testing  
GR 2024 for Hardness Testing

Flat and V-Anvils



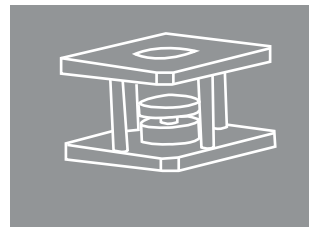
GR 2021 for Hardness Testing  
GR 2022 for Hardness Testing

Certificated calibration  
scale glass.



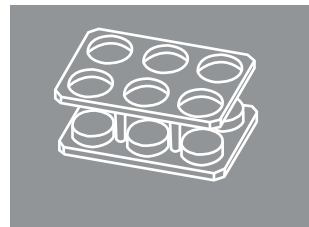
GR 2071 for Hardness Testing

Specimen Holder for Mounted Samples  
Ø25/30/40/50 mm



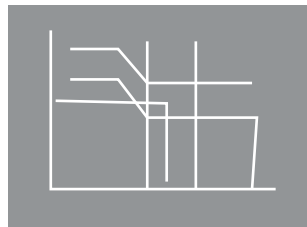
GR 2031 for Hardness Testing  
GR 2032 for Hardness Testing  
GR 2033 for Hardness Testing  
GR 2034 for Hardness Testing

Multiple Specimen Holder for Multiple  
Mounted Samples Ø25/30/40 mm



GR 2035 for Hardness Testing  
GR 2036 for Hardness Testing  
GR 2037 for Hardness Testing

Softre Module for  
EHD, CHD Testing



GR 2081 for Hardness Testing

## GEO LINE FOR PETROGRAPHY

## Petrography

### GEOCUT 302



GEOCUT 302 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 window of Lexan and a sealed 12V lamp in the cutting chamber allow precise observation of the cutting process at an optimum degree of safety. A large 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 ideal for cutting long or deep samples in a single pass. Cross-feed table with digital read-out is available for parallel cutting.

### GEOFORM 102



Preparing thin sections requires highly precise instruments and knowhow. GEOFORM 102 has two parts: Cutting and Grinding. On the cutting module, the specimen is fixed on a holder with vacuum and re-sectioned up to a thickness of approx. 0,5mm.

The grinding module is designed for precision grinding. A universal vacuum holder accepts different sizes of glass slides by changing the location pins. A built-in digital micrometer ensures high precision and the specimen is ground with an accuracy of 2 microns.

### FORCIPOL-TS FORCIMAT-TS



FORCIPOL-TS is a strong grinding and polishing instrument with variable speed between 50-600 rpm and for 300 mm diameter wheels. By using appropriate working discs, it can carry the grinding, lapping and polishing processes very smoothly.

FORCIPOL, when coupled with FORCIMAT-TS becomes an automatic thin section preparation system. FORCIMAT-TS is an automatic head with low speed for thin section and petrographic sample preparation. The force is individually applied and adjustable from the front panel.



A complete range of instruments for petrographic sample preparation, starting with a piece of rock and finishing at 20 microns...

This exciting product range offers you the latest in technology and functional design to provide high levels of performance in preparation of mineralogical samples and thin section specimens.

For mineralogical specimens, the surface is prepared for examination with a reflected light microscope and the preparation procedure is basically similar to the preparation of metallographic specimens.

Preparing thin sections, on the other hand, requires highly specialized equipment and skills because the specimen is extremely thin, generally around 20 microns for observations with transmitted light microscope.

## ACCESSORIES

## Petrography

Quick Clamping Device for round petrographic specimens



GR 1811 for GEOCUT

Universal vise for large specimens, rocks, etc.



GR 1812 for GEOCUT

KKP 040 Vertical Clamping Device, with clamp.shoe



15 05 for GEOCUT

Recirculating coolant tank, stainless steel, 40 lt. capacity, with pump, level indicator, hoses etc.



GR 1394-00 for GEOCUT

Recirculating Coolant System



GR 1383-00 for GEOFORM

Accessories set for cutting large specimens, GEOFORM



GR 1815 for 1"x3"  
GR 1817 for 2"x3"

Fixture for mounting specimens to glass slides for thin-sectioning



45 61 for GEOFIX

Hot Plate for Geofix



45 65

LAP-TS with Boron Carbide stops for lapping of thin sections, 60 mm. Dia.



33 10 for FRC 300-1V/ Forcimat TS

POL-TS special specimen holder for polishing of thin sections, 60 mm. Dia.



33 11 for FRC 300-1V/ Forcimat TS

Cabinet for floor model



GR 0760 for GEOCUT

Water Filtering and Pressure Regulator System



GR 1397-00 for ECOPRESS 52/102/202, FORCIPOL 102/202/TS, ACCURA 102, ELOPREP 102, GEOCUT 302, GEOFORM 302, SPECTRAL AG 102/PG 52

Spare Siliphos Cartridge Filter



YM 3824-00 for ECOPRESS 52/102/202, FORCIPOL 102/202/TS, ACCURA 102, ELOPREP 102, GEOCUT 302, GEOFORM 302, SPECTRAL AG 102/PG 52

## SPECTRAL Series

## Sample Preparation for Spectroscopy

**SPECTRAL 250**



SPECTRAL 250 is a table-top portable surface grinder for the preparation of steel samples for spectroscopy. Its compact design with vibration free operation makes it a practical instrument to work with. Low noise and dust generation levels as well as standard outlet for dust exhauster are additional advantages.

**SPECTRAL 350**



SPECTRAL 350 Grinders is used to achieve excellent precision flat surfaces of iron and steel samples for spectroscopic analysis. The robust and vibration-free construction has been designed for continuous operation at high sample throughput.

**SPECTRAL 350** Series of instruments are available as Single Disc and Dual Disc Units with 350 mm wheel size which is dynamically balanced for smooth running. Due to its special design, grinding paper is sucked to the grinding disc which does not require any glue.

**SPECTRAL 350-1** Single Disc Grinder with 2800 rpm fixed speed is the most basic unit of Spectral 350 series.

**SPECTRAL 350-2** Dual Disc Grinder has two discs with fixed speed of 2800 rpm.

**SPECTRAL 350-2S** has two grinding discs with dual speed as 1400 and 2800 rpm. It's the most unique grinder, especially for foundries or steel plants having variety of materials.

**SPECTRAL PG 52**



SPECTRAL PG 52 is a compact bench-top pendulum grinder for fast grinding of iron and steel samples for spectroscopic analysis. It has a simple and reliable design with low noise and dust generation levels. It is completely enclosed and dustproof with LED light.

SPECTRAL PG 52 is suitable for wet and dry grinding with minimum maintenance required which is mainly cleaning. It is possible to attach an external dust exhauster to the standard outlet at the rear side. The grinding arm is placed just in front of the machine making it ergonomic and easy to handle.

SPECTRAL PG 52 is especially suitable to grind hard materials like white cast irons.

**SPECTRAL AG 102**



SPECTRAL AG 102 is an automatic cup grinder for spectroscopic sample preparation of iron and steel samples.

Heavy duty cast aluminum base with motorized vertical drive provides accurate control. High-torque grinding motor rotating at 2800 rpm guarantees high material removal rate. SPECTRAL AG 102 is equipped with automatic sample feed with fine speed control. Fast advance and reverse are available. Automatic cup wheel positioning is done with a laser measurement station. This ensures extremely precise positioning with shorter times. All important parameters of the grinding process like feedrate and grinding depth are preset with digital display.

**SPECTRAL MM 102**

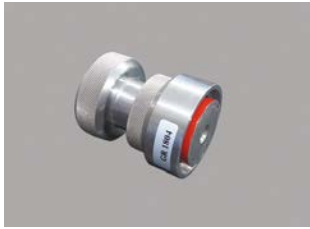


SPECTRAL MM 102 is an automatic milling machine for fast milling of non-ferrous samples for OES and X-ray spectrometer analysis. Automatic fine surface milling guarantees the highest level of reproducibility through automatic processing of the specimen. SPECTRAL MM 102 has a robust and reliable design with low noise and emission levels. It is completely enclosed and sound-insulated with LED-light. The front cover can completely opened for easy access to all sides. SPECTRAL MM 102 is equipped with automatic sample feed with fine speed control. All important parameters of the milling process like feedrate, milling depth, spindle speed are programmable with HMI touch screen controls.

## ACCESSORIES

## Sample Preparation for Spectroscopy

Sample Holder for round specimens, Magnetic type.



GR 1804 for SPECTRAL 250  
SPECTRAL 350-1  
SPECTRAL 350-2  
SPECTRAL 350-2S

Sample Holder for round specimens, Mechanical type.



GR 1805 for SPECTRAL 250  
SPECTRAL 350-1  
SPECTRAL 350-2  
SPECTRAL 350-2S

Mechanical clamping device for samples upto 60 mm.



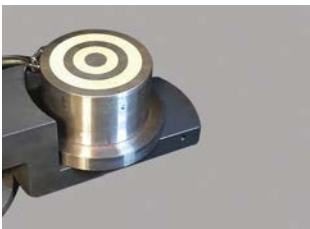
GR 1801 for SPECTRAL MM 102  
SPECTRAL PG 52

Permanent Magnetic Clamping Device, 100x150 mm.



GR 1942 for SPECTRAL PG 52

Electromagnetic clamping device



GR 1929 for SPECTRAL PG 52  
GR 1958 for SPECTRAL AG 102

Pneumatic Clamping Device with 3-Jaws



GR 1819 for SPECTRAL AG 102

Milling Head



GR 1835 63 mm for SPECTRAL MM 102  
GR 1836 80 mm for SPECTRAL MM 102

Manual measuring tool for cutter positioning



GR 1810 for SPECTRAL MM

GR 1810 for SPECTRAL MM



T-Slotted Table



GR 1816 for SPECTRAL MM  
SPECTRAL AG

Air cooling system



GR 1909 for SPECTRAL MM 102

SPECTRAL Floor Cabinet



GR 1907 for SPECTRAL MM 102  
SPECTRAL AG 102  
SPECTRAL PG 52

Recirculating coolant Tank



GR 1945 for SPECTRAL PG 52  
SPECTRAL AG 102  
SPECTRAL MM 102

Automatic Sample Height Measurement System for full cyclic operation



GR 1922 for SPECTRAL AG 102  
GR 1911 for SPECTRAL MM 102

Pneumatic Clamping Device with 3-Jaws



GR 1913 for SPECTRAL MM 102



# CONSUMABLES FOR CUTTING

Sample preparation starts with cutting and good cutting means a good start

Selecting the right cut-off wheel ensures freedom from burn and distortion and is the best way to save time and consumables. Correct cutting produce specimens which are in perfect condition for the next preparation steps.



## CUTTING

# ABRASIVE CUT-OFF WHEELS

The most commonly used abrasives for the cutting of different materials are SiC and Al<sub>2</sub>O<sub>3</sub>

Silicon carbide is suitable for non-ferrous metals whereas aluminum oxide is preferred for ferrous metals. Hard wheels are used for cutting soft materials while soft wheels are recommended for cutting harder materials.

Metkon TRENO type wheels are used to obtain superior cut surfaces. Metkon CUTO series wheels are suitable for routine laboratory applications requiring a balance between wheel life and performance.





# TRENO<sup>+</sup> Plus

Series Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Abrasive Type	Recommended for Cutting	Quantities Per Pack
19-019/S	TRENO-Ti	250	32	1.5	SiC	Titanium and Very Ductile Materials	10
19-020/S	TRENO-NF	250	32	1.5	SiC	Non-ferrous materials	10
19-021/S	TRENO-H	250	32	1.5	Al <sub>2</sub> O <sub>3</sub>	Soft Steels and ferrous materials <23 HRC	10
19-022/S	TRENO-M	250	32	1.5	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-023/S	TRENO-S	250	32	1.5	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-024/S	TRENO-SS	250	32	1.5	Al <sub>2</sub> O <sub>3</sub>	Very Hard Steels and ferrous materials >55-70 HRC	10
19-040/S	TRENO-NF	300	32	2	SiC	Non-ferrous materials	10
19-041/S	TRENO-H	300	32	2	Al <sub>2</sub> O <sub>3</sub>	Soft Steels and ferrous materials <23 HRC	10
19-042/S	TRENO-M	300	32	2	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-043/S	TRENO-S	300	32	2	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-044/S	TRENO-SS	300	32	2	Al <sub>2</sub> O <sub>3</sub>	Very Hard Steels and ferrous materials >55-70 HRC	10
19-060/S	TRENO-NF	350	32	2.4	SiC	Non-ferrous materials	10
19-062/S	TRENO-M	350	32	2.4	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-063/S	TRENO-S	350	32	2.4	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-064/S	TRENO-SS	350	32	2.4	Al <sub>2</sub> O <sub>3</sub>	Very Hard Steels and ferrous materials >55-70 HRC	10
19-070/S	TRENO-NF	400	32	3	SiC	Non-ferrous materials	10
19-072/S	TRENO-M	400	32	3	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35HRC<	10
19-073/S	TRENO-S	400	32	3	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-074/S	TRENO-SS	400	32	3	Al <sub>2</sub> O <sub>3</sub>	Very Hard Steels and ferrous materials >55-70 HRC	10
19-082/S	TRENO-M	432	32	3	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-083/S	TRENO-S	432	32	3	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-090/S	TRENO-NF	500	32	3.8	SiC	Non-ferrous materials	10
19-092/S	TRENO-M	500	32	3.8	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-093/S	TRENO-S	500	32	3.8	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	10
19-097/S	TRENO-M	600	32	5	Al <sub>2</sub> O <sub>3</sub>	Medium Hard Steels and ferrous materials > 20-35 HRC <	5
19-098/S	TRENO-S	600	32	5	Al <sub>2</sub> O <sub>3</sub>	Hard Steels and ferrous materials >35-55 HRC	5

## TRENO-DUR

Extremely Long Life Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-026	TRENO-DUR	250	32	1.5	Extremely Low Consumption Rate with Optimum Surface Quality for High Volume Cutting Operations, Cut-Check Applications, etc...	10

## TRENO-T

Ultra Thin Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-031	TRENO-HT	250	32	1.0	Soft Steel and ferrous materials >20-35 HRC<	10
19-032	TRENO-MT	250	32	1.0	Medium Hard Steels and ferrous materials >38-58HRC<	10

## CUTO

Series Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-022/A	CUTO-M	250	32	1.5	Medium Hard Steels and ferrous materials >23-50 HRC<	10
19-023/A	CUTO-S	250	32	1.5	Hard Steels and ferrous materials>50-60 HRC	10
19-042/A	CUTO-M	300	32	2	Medium Hard Steels and ferrous materials >23-50 HRC<	10
19-043/A	CUTO-S	300	32	2	Hard Steels and ferrous materials>50-60 HRC	10

## TRENO-P

Abrasive Cutting Discs for use with MICRACUT Precision Cutters

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
18-150/S	TRENO-HP	150	12.7	0.8	Non-ferrous materials & stainless steels	10
18-151/S	TRENO-MP	150	12.7	0.8	Medium Hard & hardened Steels & ferrous materials>35-55 HRC<	10
18-200/S	TRENO-HP	200	12.7	1	Non-ferrous materials & stainless steels	10
18-201/S	TRENO-MP	200	12.7	1	Medium Hard & hardened Steels & ferrous materials>35-55 HRC<	10

\*All cut-off wheels are resin bonded.

## CUTTING

# DIAMOND CUT-OFF WHEELS

Metal bonded wheels are used for cutting brittle materials, such as ceramics or minerals, while resin bonded wheels are used for more ductile materials, such as sintered carbides or composites containing predominantly hard phases.

Several factors are important for choosing the appropriate wafering blade. These include: diamond concentration (low and high), diamond bond (metal plate), diamond size (fine or medium), blade diameter and blade thickness. The diamond concentration is important because it directly affects the load which is applied during cutting. For example, brittle materials such as ceramics require higher effective loads to section, whereas ductile materials such as metals require more cutting points. The result is that low concentration blades are recommended for sectioning hard brittle materials such as ceramics and high concentration blades are recommended for ductile materials containing a large fraction of metal or plastic.



## DIMOS

Diamond Cutting Discs for use with SERVOCUT &amp; METACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer's Dep. (X)mm.	Diamond Size/ Concentration	Grain Size: [Mesh]	Recommended for Cutting
19-250	254	Metal bonded	32	1.52	10	Coarse/High	60/80	For general usage
19-251	254	Resin bonded	32	1.52	6.35	Medium/High	100	For hard, delicate or brittle materials
19-300	305	Metal bonded	32	2.08	10	Coarse/High	60/80	For general usage
19-301	305	Resin bonded	32	1.65	6.35	Medium/High	100	For hard, delicate or brittle materials
19-400	406	Metal bonded	32	2.00	10	Coarse/High	60/80	For general usage
19-401	406	Resin bonded	32	2.41	6.35	Medium/High	100	For hard, delicate or brittle materials

## DIMOS

Diamond Cutting Wheels for use with MICRACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer's Dep. (X)mm.	Diamond Size/ Concentration	Grain Size: [Mesh]	Recommended for Cutting
19-100	101.1	Metal bonded	12.7	0.35	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-125	127	Metal bonded	12.7	0.4	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-130	127	Metal bonded	12.7	0.4	4	Fine/Low	220	• For use with hard brittle materials structural ceramics, boron carbide, boron nitride and silicon carbide.
19-126	127	Resin bonded	12.7	0.5	5	Medium/High	150	• Hard, delicate materials or brittle materials (cannot be used at low speeds. High speed only 950 RPM's or higher.)
19-150	152	Metal bonded	12.7	0.5	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-157	152	Metal bonded	12.7	0.5	4	Fine/Low	220	• For use with hard brittle materials structural ceramics, carbide, boron nitride and silicon carbide.
19-151	152	Resin bonded	12.7	0.5	5	Medium/High	150	• For hard, delicate materials or brittle materials (cannot be used at low speeds. High speed only 950 RPM's or higher.)
19-200	203	Metal bonded	12.7	0.81	5	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-205	203	Metal bonded	12.7	0.81	5	Fine/High	220	• For use with hard brittle materials structural ceramics, carbide, boron nitride and silicon carbide
19-201	203	Resin bonded	12.7	0.88	5	Medium/High	150	• For hard, delicate materials or brittle materials (cannot be used at low speeds. High speed only 950 RPM's or higher.)

## CBN

CBN Cutting Discs for use with MICRACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer's Dep. (X)mm.	Diamond Size/ Concentration	Grain Size: [Mesh]	Recommended for Cutting
19-127	125	Metal bonded	12.7	0.4	5	Medium/high	150	Hard metals, iron, steel, lead and titanium, ferrous materials
19-152	150	Metal bonded	12.7	0.5	5	Medium/high	150	Hard metals, iron, steel, lead and titanium, ferrous materials
19-202	200	Metal bonded	12.7	0.9	5	Medium/high	120	Hard metals, iron, steel, lead and titanium, ferrous materials

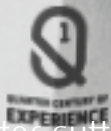
## COOLING FLUIDS

Order No	Code	Description	Type	Quantity	For use with
19-902	METCOOL	Nature Friendly Soluble Oil	Water-based	5 lt.	METACUT & SERVOCUT
19-905	METCOOL II	Nature Friendly Soluble Oil	Water-based	1 lt.	MICRACUT 152/202
19-906	METCOOL NF	Nature Friendly Soluble Oil Perfect corrosion protection for reactive metals like copper, brass, cobalt, aluminum, tungsten carbide, etc...	Water-based	5 lt.	METACUT & SERVOCUT

\*Recommended mix ratio is 3% Metcool to 97% water.



# CONSUMABLES FOR MOUNTING



After cutting the specimen the next step is mounting. The aim of mounting is to handle small or odd shaped specimens and to protect fragile materials, thin layers or coating during preparation as well as to provide good edge retention.

Mounting produces specimens with uniform size so that it is easier to handle in automatic holders for further preparation steps.



## MOUNTING

# HOT MOUNTING

The most important properties of a hot mounting compound are; Hardness, Shrinkage and Viscosity.

The Hardness of the compound should match the hardness of the specimen in order to avoid uneven abrasion during grinding.  
If the shrinkage during curing is large, a gap between the specimen and the mount will occur and edge will not be adequately protected.  
Viscosity is important to reach to all areas.





## HOT MOUNTING RESINS

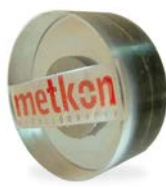
Order No	Code	Hot Mounting Resins	Quantity	Color	Comments
29-001	BAK-B	Black Phenolic Powder	1 kg		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-001/10	BAK-B	Black Phenolic Powder	10 kgs		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-001/20	BAK-B	Black Phenolic Powder	20 kgs		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-002	BAK-R	Red Phenolic Powder	1 kg		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-002/10	BAK-R	Red Phenolic Powder	10 kgs		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-002/20	BAK-R	Red Phenolic Powder	20 kgs		Standart examination of all materials Low shrinkage Heating: upto 180 C
29-010	NET	Transparent Acrylic Powder	1 kg		Standart examination of all materials. Perfectly transparent
29-010/10	NET	Transparent Acrylic Powder	10 kgs		Standart examination of all materials. Perfectly transparent
29-011	EPO	Epoxy, Hard	1 kg		Examination of edges surface. Hard with very low shrinkage
29-011/10	EPO	Epoxy, Hard	10 kgs		Examination of edges surface. Hard with very low shrinkage
29-012	DAP	Diallyphtalat	1 kg		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-012/10	DAP	Diallyphtalat	10 kgs		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-013	CON	Conductive Bakelite powder	0.5 kg		SEM examination of all materials
29-099	SMOOTH	Mould Release Spray Can	400 ml		-



29-001 BAK-B



29-002 BAK-R



29-010 NET



29-011 EPO



29-012 DAP



29-013 CON

## MOUNTING

# COLD MOUNTING

Cold mounting is preferred for samples which are sensitive to damage from heat and pressure (like coatings, PCB, etc.) Cold mounting resins are easy to use.

### DMT Acrylic cold mounting resins

- Very fast cure time
- It requires mixing in the ratio 2:1, powder to liquid. The mix is then poured into a mould and allowed to set.

### EPOCOLD Epoxy cold mounting resins

- Better results in good edge protection.
- Low shrinkage and moderate hardness.



# COLD MOUNTING

Mounting Materials	Curing Time	Compounds	Mixing Ratio Volume	Mixing Time	Peak Temperature	Color
EPOCOLD	8 Hour	Two Liquids	Resin: 5 Part; Hardener: 1 Part	3 Min.	40-60°C	Clear, Transparent
DMT 20	10 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	4-5 Min.	80-87°C	Semi Transparent
DMT 35	5 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	2-3 Min.	75-80°C	Light Green, Black
DMT CON	18 Min.	Powder/Liquid	Resin: 1 Part; Hardener: 1 Part	5 Min.	100-106°C	Black
DMT ACE	6 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	6 Min.	82-88°C	Green, Transparent

## DMT

### Acrylic Cold Mounting Resins

Order No	Code	Cold Mounting Resins	Type	Quantity
29-501	DMT 35	Powder	Acrylic	1000 gr
29-502	DMT 35	Fluid	Acrylic	500 ml
29-511	DMT 20	Powder (Transparent)	Acrylic	1000 gr
29-512	DMT 20	Fluid (Transparent)	Acrylic	500 ml
29-513	DMT CON	Powder	Acrylic	500 gr
29-514	DMT CON	Fluid	Acrylic	500 ml
29-515	DMT ACE	Powder	Acrylic	1000 gr
29-516	DMT ACE	Fluid	Acrylic	500 ml

## EPOCOLD

### Epoxy Cold Mounting Resins

Order No	Code	Cold Mounting Resins
29-506	EPOCOLD -H	Epoxy Hardener (230 ml)
29-505	EPOCOLD -R	Epoxy Resin (2x500 ml)



EPOCOLD



DMT 20

## ACCESSORIES

Order No	Descriptions Fluid
29-551	Spatulas, (100 pcs)
29-552	Mixing Beakers, (10 pcs)
29-553	Embedding Form, ø 25 mm (5 pcs)
29-554	Embedding Form, ø 30 mm (5 pcs)
29-555	Embedding Form, ø 40 mm (5 pcs)
29-556	Embedding Form, ø 50 mm (5 pcs)
29-601	Stainless steel clips (100 pcs)
29-602	Plastic clips (100 pcs)
29-603	Plastic multi-clips for 5 specimens (50 pcs)



DMT 35



DMT ACE



DMT CON



# CONSUMABLES FOR GRINDING & POLISHING

In order to obtain scratch free surfaces without deformation, successive material removal by abrasives is necessary. Grinding is the next stage after sectioning. Grinding is divided into two processes: Planar grinding and Fine grinding. The purpose of planar grinding is to obtain a level surface and to remove scale, burrs or surface irregularation from the specimen.

To remove deformation from fine grinding and obtain a surface that is highly reflective, the specimens must be polished before they can be examined under the microscope. Polishing is a complex activity in which factors such as quality and suitability for the cloth, abrasive, polishing pressure, polishing speed and duration need to be taken into account. The quality of the surface obtained after the final polishing depends on all these factors and the finish of the surface on completion of each of the previous stages.



**mettler**  
Technology behind Specimen

600

## GRINDING

# PAPER GRINDING DISCS

## PLAIN BACK

Coarse paper discs (up to 120 grit) are used for planar grinding. Fine grinding removes the deformations resulting from coarse grinding to make the surface ready for polishing which is the final stage. Metkon paper grinding discs are available as "Plain back" and "Foil Back" for CATCHY System.



## SiC PAPER GRINDING DISCS

Plain Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
38-020-60	DEMPAX	Plain Back	200	60	2x50
38-020-120	DEMPAX	Plain Back	200	120	100
38-020-180	DEMPAX	Plain Back	200	180	100
38-020-240	DEMPAX	Plain Back	200	240	100
38-020-320	DEMPAX	Plain Back	200	320	100
38-020-400	DEMPAX	Plain Back	200	400	100
38-020-600	DEMPAX	Plain Back	200	600	100
38-020-800	DEMPAX	Plain Back	200	800	100
38-020-1000	DEMPAX	Plain Back	200	1000	100
38-020-1200	DEMPAX	Plain Back	200	1200	100
38-020-2500	DEMPAX	Plain Back	200	2500	100
38-020-4000	DEMPAX	Plain Back	200	4000	100
38-020-S	DEMPAX	Plain Back	200	Mix[120-2500]	100
38-040-60	DEMPAX	Plain Back	250	60	2x50
38-040-120	DEMPAX	Plain Back	250	120	100
38-040-180	DEMPAX	Plain Back	250	180	100
38-040-240	DEMPAX	Plain Back	250	240	100
38-040-320	DEMPAX	Plain Back	250	320	100
38-040-400	DEMPAX	Plain Back	250	400	100
38-040-600	DEMPAX	Plain Back	250	600	100
38-040-800	DEMPAX	Plain Back	250	800	100
38-040-1000	DEMPAX	Plain Back	250	1000	100
38-040-1200	DEMPAX	Plain Back	250	1200	100
38-040-2500	DEMPAX	Plain Back	250	2500	100
38-040-4000	DEMPAX	Plain Back	250	4000	100
38-040-S	DEMPAX	Plain Back	250	Mix[120-2500]	100
38-050-060	DEMPAX	Plain Back	300	60	2x50
38-050-120	DEMPAX	Plain Back	300	120	100
38-050-180	DEMPAX	Plain Back	300	180	100
38-050-240	DEMPAX	Plain Back	300	240	100
38-050-320	DEMPAX	Plain Back	300	320	100
38-050-400	DEMPAX	Plain Back	300	400	100
38-050-600	DEMPAX	Plain Back	300	600	100
38-050-800	DEMPAX	Plain Back	300	800	100
38-050-1000	DEMPAX	Plain Back	300	1000	100
38-050-1200	DEMPAX	Plain Back	300	1200	100
38-050-2500	DEMPAX	Plain Back	300	2500	100
38-050-4000	DEMPAX	Plain Back	300	4000	100
38-050-S	DEMPAX	Plain Back	300	Mix[120-2500]	100

## GRINDING

# METKON CATCHY SYSTEM

CATCHY system has a high friction foil which makes the new SiC Foil back grinding papers stick very well and at the same time very easy to remove again.

Traditional PSA back and self adhesive grinding papers are difficult to apply, difficult to remove. The Foil back papers are removed easily, without leaving any trace of adhesive.

Water does not affect the shape of the foil at all. So it does not curl as traditional SiC Paper and stays flat and ready for immediate or later re-use





## SiC PAPER GRINDING DISCS

Foil Back, CATCHY SYSTEM

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
38-020-60F	DEMPAX-F	Foil Back	200	60	2x50
38-020-120F	DEMPAX-F	Foil Back	200	120	100
38-020-180F	DEMPAX-F	Foil Back	200	180	100
38-020-240F	DEMPAX-F	Foil Back	200	240	100
38-020-320F	DEMPAX-F	Foil Back	200	320	100
38-020-400F	DEMPAX-F	Foil Back	200	400	100
38-020-600F	DEMPAX-F	Foil Back	200	600	100
38-020-800F	DEMPAX-F	Foil Back	200	800	100
38-020-1000F	DEMPAX-F	Foil Back	200	1000	100
38-020-1200F	DEMPAX-F	Foil Back	200	1200	100
38-020-2500F	DEMPAX-F	Foil Back	200	2500	100
38-020-4000F	DEMPAX-F	Foil Back	200	4000	100
38-020-SF	DEMPAX-F	Foil Back	200	Mix[120-2500]	100
38-040-60F	DEMPAX-F	Foil Back	250	60	2x50
38-040-120F	DEMPAX-F	Foil Back	250	120	100
38-040-180F	DEMPAX-F	Foil Back	250	180	100
38-040-240F	DEMPAX-F	Foil Back	250	240	100
38-040-320F	DEMPAX-F	Foil Back	250	320	100
38-040-400F	DEMPAX-F	Foil Back	250	400	100
38-040-600F	DEMPAX-F	Foil Back	250	600	100
38-040-800F	DEMPAX-F	Foil Back	250	800	100
38-040-1000F	DEMPAX-F	Foil Back	250	1000	100
38-040-1200F	DEMPAX-F	Foil Back	250	1200	100
38-040-2500F	DEMPAX-F	Foil Back	250	2500	100
38-040-4000F	DEMPAX-F	Foil Back	250	4000	100
38-040-SF	DEMPAX-F	Foil Back	250	Mix[120-2500]	100
38-050-060F	DEMPAX-F	Foil Back	300	60	2x50
38-050-120F	DEMPAX-F	Foil Back	300	120	100
38-050-180F	DEMPAX-F	Foil Back	300	180	100
38-050-240F	DEMPAX-F	Foil Back	300	240	100
38-050-320F	DEMPAX-F	Foil Back	300	320	100
38-050-400F	DEMPAX-F	Foil Back	300	400	100
38-050-600F	DEMPAX-F	Foil Back	300	600	100
38-050-800F	DEMPAX-F	Foil Back	300	800	100
38-050-1000F	DEMPAX-F	Foil Back	300	1000	100
38-050-1200F	DEMPAX-F	Foil Back	300	1200	100
38-050-2500F	DEMPAX-F	Foil Back	300	2500	100
38-050-4000F	DEMPAX-F	Foil Back	300	4000	100
38-050-SF	DEMPAX-F	Foil Bac	300	Mix[120-2500]	100

## CATCHY FIX PLATE

Order No	Code	Description
CFP	39-083-200	Ø 200 mm, Catchy Fix Plate [1 pc]
CFP	39-083-250	Ø 250 mm, Catchy Fix Plate [1 pc]
CFP	39-083-300	Ø 300 mm, Catchy Fix Plate [1 pc]

## Planar Grinding Stones for FORCIPLAN 102 [1 Pc]

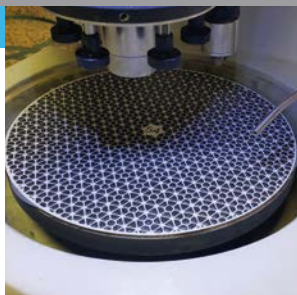
Order No	Code	Description
PGS-NF	80-350	Ø350 mm, Planar Grinding Stone, 120 grit, for non-ferrous materials
PGS-M	80-351	Ø350 mm, Planar Grinding Stone, 120 grit, for medium hard steels & cast irons
PGS-H	80-352	Ø350 mm, Planar Grinding Stone, 120 grit, for hard steels & cast irons

## GRINDING

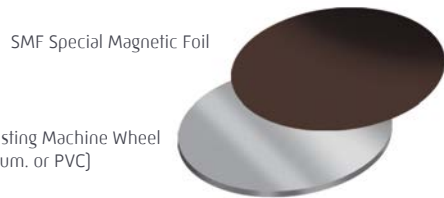
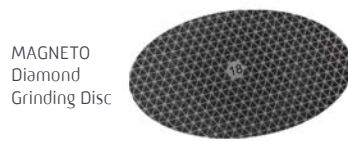
# METKON MAGNETIC SYSTEM

Magnetic Preparation with METKON Magnetic System is simply and advanced way to grind and polish specimens. It reduces your operating costs and increases specimen quality. Place your SMF Special Magnetic Foil, which is self-adhesive for once and permanently on your existing working wheel (Aluminum or PVC).

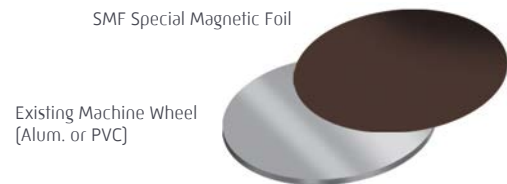
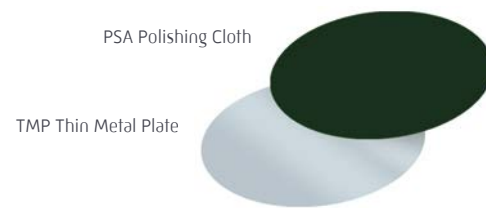
Place the Cloth (or MAGNETO) on the TMP Thin Metal Plate which you can then use as a magnetic unit to put on and remove from your disc. After the grinding or polishing operation you may remove it (non-destructively) and then place it again whenever you need. Without any material destruction!



## QUICK MAGNETIC SYSTEM for MAGNETO



## QUICK MAGNETIC SYSTEM for PSA POLISHING CLOTH



## ABRASIVE GRADE SYSTEM

FEPA P (Europe)	P60	P120	P180	P240	P320	P400	P600	P800	P1000	P1200	P2000	P4000
ANSI/CAMI (US)	60	120	180	240	280	320	360	400	500	600	1000	1200
Gain size (Average)	250 $\mu$	125 $\mu$	82 $\mu$	60 $\mu$	46 $\mu$	35 $\mu$	26 $\mu$	22 $\mu$	18 $\mu$	15 $\mu$	10 $\mu$	5 $\mu$

\*All Metkon grinding papers are classified according to FEPA Standards.

\*The above Abrasive Grading Chart is a general overview only.

## MAGNETIC SYSTEM

Order No	Code	Magnetic System Accessories
39-003-200	SMF	Special Magnetic Foil, $\varnothing$ 200
39-003-250	SMF	Special Magnetic Foil, $\varnothing$ 250
39-003-300	SMF	Special Magnetic Foil, $\varnothing$ 300
39-093-200	TMP	Thin Metal Plate, $\varnothing$ 200 [5 pcs]
39-093-250	TMP	Thin Metal Plate, $\varnothing$ 250 [5 pcs]
39-093-300	TMP	Thin Metal Plate, $\varnothing$ 300 [5 pcs]

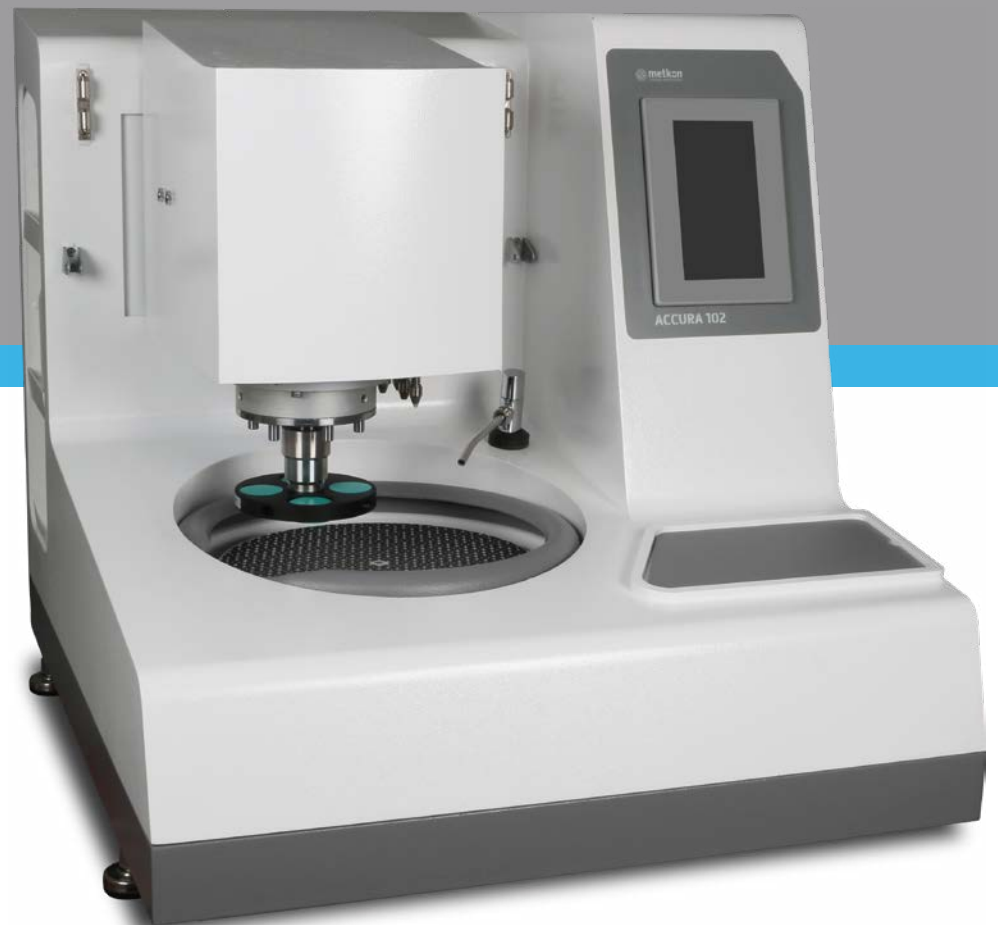
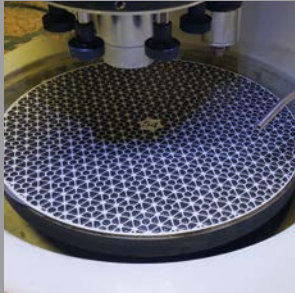
## GRINDING

# MAGNETO DIAMOND GRINDING DISCS

[Total Grinding Time 2 Minutes!]

MAGNETO Diamond Grinding Discs for planar grinding, fine grinding and extra fine grinding offer wonderful advantages:

- Only water is needed (No additional diamond suspensions or lubricant).
- The same disc can be used for grinding hard as well as soft materials.
- Very clean working environment.
- Very high edge sharpness and scratch free surface.
- Excellent planarity and flatness.
- Very short preparation time.



## MAGNETO

## MAGNETO Diamond Fine Grinding Disc

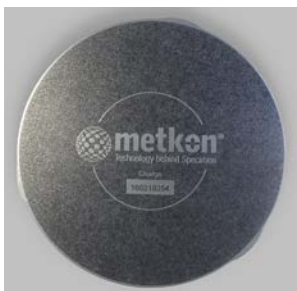
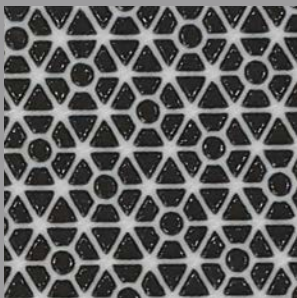
Order No	Code	Diameter	Grit Size	Recommended for
38-020-125	MAGNETO 125	200	125	Planar Grinding
38-040-125	MAGNETO 125	250	125	Planar Grinding
38-050-125	MAGNETO 125	300	125	Planar Grinding
38-020-075	MAGNETO 75	200	75	Planar Grinding
38-040-075	MAGNETO 75	250	75	Planar Grinding
38-050-075	MAGNETO 75	300	75	Planar Grinding
38-020-054	MAGNETO 54	200	54	Planar Grinding
38-040-054	MAGNETO 54	250	54	Planar Grinding
38-050-054	MAGNETO 54	300	54	Planar Grinding
38-020-018	MAGNETO 18	200	18	Fine Grinding
38-040-018	MAGNETO 18	250	18	Fine Grinding
38-050-018	MAGNETO 18	300	18	Fine Grinding
38-020-006	MAGNETO 6	200	6	Extra Fine Grinding
38-040-006	MAGNETO 6	250	6	Extra Fine Grinding
38-050-006	MAGNETO 6	300	6	Extra Fine Grinding
38-020-003	MAGNETO 3	200	3	Extra Fine Grinding
38-040-003	MAGNETO 3	250	3	Extra Fine Grinding
38-050-003	MAGNETO 3	300	3	Extra Fine Grinding

## GRINDING

# MAGNETO-S SILICON CARBIDE GRINDING DISCS

MAGNETO-S Silicon Carbide Grinding Discs are developed to provide excellent specimen surfaces. It can be used for any material that SiC papers are used. It is the most modern and the best alternative of SiC papers with many advantages:

- Very cost effective. One MAGNETO-S is equal to 100 pcs of SiC grinding papers. [depending on the sample hardness and size]
- Only water is needed [No additional diamond suspensions or lubricant].
- Suitable for both ferrous and non-ferrous materials
- Very clean working environment.
- Very high edge sharpness and scratch free surface.
- Excellent planarity and flatness.
- Superior specimen surfaces.



## MAGNETO-S

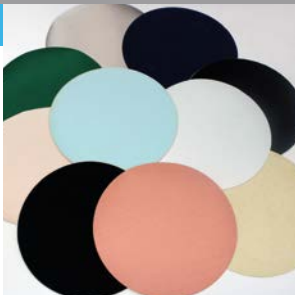
MAGNETO-S Silicon Carbide Grinding Disc

Order No	Code	Diameter	Grit Size	Recommended for
38-021-120	MAGNETO-S-120	200	120	Planar Grinding
38-041-120	MAGNETO-S-120	250	120	Planar Grinding
38-051-120	MAGNETO-S-120	300	120	Planar Grinding
38-021-220	MAGNETO-S-220	200	220	Planar Grinding
38-041-220	MAGNETO-S-220	250	220	Planar Grinding
38-051-220	MAGNETO-S-220	300	220	Planar Grinding
38-021-500	MAGNETO-S-500	200	500	Fine Grinding
38-041-500	MAGNETO-S-500	250	500	Fine Grinding
38-051-500	MAGNETO-S-500	300	500	Fine Grinding
38-021-800	MAGNETO-S-800	200	800	Fine Grinding
38-041-800	MAGNETO-S-800	250	800	Fine Grinding
38-051-800	MAGNETO-S-800	300	800	Fine Grinding
38-021-1200	MAGNETO-S-1200	200	1200	Extra Fine Grinding
38-041-1200	MAGNETO-S-1200	250	1200	Extra Fine Grinding
38-051-1200	MAGNETO-S-1200	300	1200	Extra Fine Grinding

# POLISHING CLOTHS

There are three types of polishing cloths; Woven, Non-Woven and Flocked.













- Woven cloths offer 'hard surface' polishing properties and guarantee flat pre-polishing, without deterioration of the edges.
- Non-woven cloths, are used on very hard materials for high precision surface finishing such as glass, quartz, sapphire and semi-conductors.
- The Flocked cloths, guarantee a super-polished finish. The polishing duration must be as short as possible, to avoid inclusions from being extracted.





## POLISHING CLOTHS

Self Adhesive Back

Order No	Code	Type	Composition	Grain Size [Mesh]	Recommended for Cutting	Color
39-005-	NOWO	NonWoven	Semihard, PSA nonwoven impregnated and water-proof	Diamond 9-1 µm	Fine polishing of singlecrystal; glass corindon, quartz; ceramic, rocks; etc.	
39-013-	METAPO-P	Woven	Fine Woven Cloth mounted on a Composite (metal/plastic) semi rigid PSA backing. High wear resistance.	Diamond 9-6 µm	Coarse polishing of hard and semihard metallographic sections and different materials. Good flatness.	
39-033-	METAPO-B	Woven	Fine woven synthetic satin cloth munted on a composite (metal/plastic)semi rigid PSA backing.	Diamond 3-1 µm	Final polishing of hard and semi-hard metallographic sections and different materials. Good edge retention on surface treated materials.	
39-043-	METAPO-V	Woven	Fine Woven Cloth mounted on a Composite (metal/plastic) semi rigid PSA backing. High wear resistance.	Diamond 1-0,1 µm Fine Alum	Final Polishing with extra smooth abrasion; good flatness optioal finish of hard materials.	
39-015-	FEDO-6J	Flocked	Synthetic fibre flock to a PVC backing.	Diamond 6 µm	Rough polishing of most materials.	
39-025-	FEDO-3	Flocked	Soft syhnetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 3 µm	Intermediate polishing of most materials.	
39-066-	FEDO-1S	Flocked	Soft synthetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 1 µm	Fine polishing of most materials.	
39-067-	FEDO-1M	Flocked	Soft synthetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 1 µm	Fine polishing of most materials.	
39-055-	FEDO-1N	Flocked	Very soft low nap felt bound to a PSA backing. To be used with water-based suspensioe and lubricants only.	Diamond 0,25 µm	Fine polishing of most materials.	
39-075-	ALSO	Flocked	Extra soft and supple cloth, PSA backed excellent chemical resistance.	Diamond 0,25 µm Fine Alum	Optical polishing of glass, single crystals, semi-conductors and soft metals.	
39-095-	WOOL	Woven	%100 wool cloth, PSA backed.	Diamond 6-3 µm	For polishing optics and metals.	
39-085-	COLLO	Chemo-Textile	Recomended cloth for Chemo-mechanical polishing operations. PSA backed.	Colloidal silica	For use with a chemical mechanical polishing precess with colloidal silica suspension. Espacially for non ferrous materials as well as Aluminium, Brass; etc.	
39-090-	PETRI	Chemo-Textile	The medium chemo-textile cloth for smoothing and polishing operation.	Diamond 6-1 µm Fine Alum.	For petrography: Rocks, minerals, ceramics; etc.	

## POLISHING CLOTHS

Order No	Code	Diameter	Color	Type	Quantity / Pack
39-005-200	NOWO	200		Self Adhesive Back	10
39-013-200	METAPO-P	200		Self Adhesive Back	10
39-033-200	METAPO-B	200		Self Adhesive Back	10
39-043-200	METAPO-V	200		Self Adhesive Back	10
39-015-200	FEDO-6J	200		Self Adhesive Back	10
39-025-200	FEDO-3	200		Self Adhesive Back	10
39-066-200	FEDO-1S	200		Self Adhesive Back	10
39-067-200	FEDO-1M	200		Self Adhesive Back	10
39-055-200	FEDO-1N	200		Self Adhesive Back	10
39-075-200	ALSO	200		Self Adhesive Back	10
39-095-200	WOOL	200		Self Adhesive Back	10
39-085-200	COLLO	200		Self Adhesive Back	10
39-090-200	PETRI	200		Self Adhesive Back	10
39-200-SPC	MIX	200		Self Adhesive Back	5
39-005-250	NOWO	250		Self Adhesive Back	10
39-013-250	METAPO-P	250		Self Adhesive Back	10
39-033-250	METAPO-B	250		Self Adhesive Back	10
39-043-250	METAPO-V	250		Self Adhesive Back	10
39-015-250	FEDO-6J	250		Self Adhesive Back	10
39-025-250	FEDO-3	250		Self Adhesive Back	10
39-066-250	FEDO-1S	250		Self Adhesive Back	10
39-067-250	FEDO-1M	250		Self Adhesive Back	10
39-055-250	FEDO-1N	250		Self Adhesive Back	10
39-075-250	ALSO	250		Self Adhesive Back	10
39-095-250	WOOL	250		Self Adhesive Back	10
39-085-250	COLLO	250		Self Adhesive Back	10
39-090-250	PETRI	250		Self Adhesive Back	10
39-200-SPC	MIX	250		Self Adhesive Back	5
39-005-300	NOWO	300		Self Adhesive Back	10
39-013-300	METAPO-P	300		Self Adhesive Back	10
39-033-300	METAPO-B	300		Self Adhesive Back	10
39-043-300	METAPO-V	300		Self Adhesive Back	10
39-015-300	FEDO-6J	300		Self Adhesive Back	10
39-025-300	FEDO-3	300		Self Adhesive Back	10
39-066-300	FEDO-1S	300		Self Adhesive Back	10
39-067-300	FEDO-1M	300		Self Adhesive Back	10
39-055-300	FEDO-1N	300		Self Adhesive Back	10
39-075-300	ALSO	300		Self Adhesive Back	10
39-095-300	WOOL	300		Self Adhesive Back	10
39-085-300	COLLO	300		Self Adhesive Back	10
39-090-300	PETRI	300		Self Adhesive Back	10
39-200-SPC	MIX	300		Self Adhesive Back	5

# DIAMOND PRODUCTS

Diamond, due to its exceptional hardness and cutting capacity, has become the first choice abrasive in metallographic polishing.

Diamonds for metallographic grinding and polishing are available in two different crystalline shapes:

Polycrystalline (P) and Monocrystalline (M). Polycrystalline diamonds provide vast numbers of small cutting edges. In the metallographic preparation process these edges result in high material removal, while producing only a shallow scratch depth.

Monocrystalline diamonds are more block-shaped and provide few cutting edges. These diamonds give high material removal with a more variable scratch pattern. For high requirements, the (P)-type diamonds are chosen. The (M) type diamonds are best suited for all-purpose polishing.

METKON offers diamond products in three forms; diamond paste, diamond suspension and two in one products; a perfect mixture of diamond suspension & lubricant.

## DIAMOND PASTES

Monocrystalline

Order No	Code	Type	Diamond Mic.	Quantity
39-301-M	DIAPAT-M	Water-Based	0,25 Micron	10 gr. syringe
39-311-M	DIAPAT-M	Water-Based	1 Micron	10 gr. syringe
39-321-M	DIAPAT-M	Water-Based	3 Micron	10 gr. syringe
39-331-M	DIAPAT-M	Water-Based	6 Micron	10 gr. syringe
39-341-M	DIAPAT-M	Water-Based	9 Micron	10 gr. syringe

## DIAMOND PASTES

Polycrystalline

Order No	Code	Type	Diamond Mic.	Quantity
39-301-P	DIAPAT-P	Water-Based	0,25 Micron	10 gr. syringe
39-311-P	DIAPAT-P	Water-Based	1 Micron	10 gr. syringe
39-321-P	DIAPAT-P	Water-Based	3 Micron	10 gr. syringe
39-331-P	DIAPAT-P	Water-Based	6 Micron	10 gr. syringe
39-341-P	DIAPAT-P	Water-Based	9 Micron	10 gr. syringe

## POLISHING

# DIAMOND SUSPENSIONS

Monocrystalline

	Code	Type	Diamond Mic.	Quantity	
	39-400-M	DIAPAT-M	Water-Based	0,25 Micron	250 ml. pump bottle
	39-410-M	DIAPAT-M	Water-Based	1 Micron	250 ml. pump bottle
	39-420-M	DIAPAT-M	Water-Based	3 Micron	250 ml. pump bottle
	39-430-M	DIAPAT-M	Water-Based	6 Micron	250 ml. pump bottle
	39-440-M	DIAPAT-M	Water-Based	9 Micron	250 ml. pump bottle
	39-411-M	DIAPAT-M	Water-Based	1 Micron	1 lt. bottle
	39-421-M	DIAPAT-M	Water-Based	3 Micron	1 lt. bottle
	39-431-M	DIAPAT-M	Water-Based	6 Micron	1 lt. bottle
	39-415-M	DIAPAT-M	Water-Based	1 Micron	5 lt. bottle
	39-425-M	DIAPAT-M	Water-Based	3 Micron	5 lt. bottle
	39-435-M	DIAPAT-M	Water-Based	6 Micron	5 lt. bottle

# DIAMOND SUSPENSIONS

Polycrystalline

	Code	Type	Diamond Mic.	Quantity	
	39-400-P	DIAPAT-P	Water-Based	0,25 Micron	250 ml. pump bottle
	39-410-P	DIAPAT-P	Water-Based	1 Micron	250 ml. pump bottle
	39-420-P	DIAPAT-P	Water-Based	3 Micron	250 ml. pump bottle
	39-430-P	DIAPAT-P	Water-Based	6 Micron	250 ml. pump bottle
	39-440-P	DIAPAT-P	Water-Based	9 Micron	250 ml. pump bottle

# DIAMOND 2 IN 1 PRODUCT

Monocrystalline

	Code	Type	Diamond Mic.	Quantity	
	39-510-M	DUOPAT-M	Water-Based	1 Micron	500 ml. bottle with sprayer
	39-520-M	DUOPAT-M	Water-Based	3 Micron	500 ml. bottle with sprayer
	39-530-M	DUOPAT-M	Water-Based	6 Micron	500 ml. bottle with sprayer
	39-540-M	DUOPAT-M	Water-Based	9 Micron	500 ml. bottle with sprayer

# DIAMOND LUBRICANT

	Code	Type	Quantity	
	39-502	DIAPAT	Water-Based	1.0 lt. bottle

# ALUMINA & COLLOIDAL SILICA

ALU-MIK is a deagglomerated alumina polishing powder and it produces a fine surface quickly due to the lack of aggregates. ALU-MIK alumina suspensions have been developed to give the operator easy to use pre-prepared polishing media. It requires no dilution with water and can be dispensed with COL-K[NC]

Colloidal silica suspension is able to produce the ultimate in high quality mirror polishes on polishing machine. A part abrasive, part chemical polishing action makes colloidal silica well suited to polishing difficult materials such as Aluminium, Stellite and Cobalt Chrome. automating dispensing units, like DOSIMAT.

## ALUMINA & COLLOIDAL SILICA

Suspensions &amp; Powders

Order No	Code	Alumina Product
39-200	ALU-MIK	Alumina Suspension 0.05 Mic. 1.0 lt. bottle
39-210	ALU-MIK	Alumina Suspension 0.3 Mic. 1.0 lt. bottle
39-220	ALU-MIK	Alumina Suspension 1.0 Mic. 1.0 lt. bottle
39-100	ALU-MIK	Alumina Powder 0.05 Mic. 500 gr.
39-110	ALU-MIK	Alumina Powder 0.3 Mic. 500 gr.
39-120	ALU-MIK	Alumina Powder 1.0 Mic. 500 gr.
39-600	COL-K[NC]	Colloidal Silica [1 lt.] Bottle

## GRINDING

# PORTABLE METALLOGRAPHY

In-situ/Field metallography is widely used for microstructure analysis on large parts (samples) that cannot be easily carried or where destructive preparation is permissible such as storage tanks, piping system, power plants, etc. In-situ Metallography allows for quick on-site evaluation of a component. There are numerous advantages in using in-situ/field metallography.



## PAPER GRINDING DISCS

Self-Adhesive Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
90 20	DEMPAX-P	Self-Adhesive Back	30	80	250
90 21	DEMPAX-P	Self-Adhesive Back	30	120	250
90 22	DEMPAX-P	Self-Adhesive Back	30	320	250
90 23	DEMPAX-P	Self-Adhesive Back	30	500	250
90 24	DEMPAX-P	Self-Adhesive Back	30	800	250
90 25	DEMPAX-P	Self-Adhesive Back	30	1200	250

## POLISHING CLOTHS

Self-Adhesive Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
90 36	PORTO	Self-Adhesive Back	30	0.25-1-3	50
90 27	RADO	Self-Adhesive Back	30	6-9	50

## DIAMOND PASTES

Monocrystalline

Order No	Code	Type	Diameter	Quantity / Pack
39-301-M	DIAPAT-M	Water-Based	0.25 $\mu$	10 gr. Syringe
39-311-M	DIAPAT-M	Water-Based	1 $\mu$	10 gr. Syringe
39-321-M	DIAPAT-M	Water-Based	3 $\mu$	10 gr. Syringe
39-331-M	DIAPAT-M	Water-Based	6 $\mu$	10 gr. Syringe
39-341-M	DIAPAT-M	Water-Based	9 $\mu$	10 gr. Syringe

## DIAMOND LUBRICANT

Order No	Code	Type	Quantity
39-502	DIAPAT	Water-Based	1.0 lt. bottle

## REPLICA SET & ETCHING

Order No	Description
90 28	Cotton rolls (100 pcs) for electrolytic etching
90 40	Replica foil 35 microns thick, to be used with acetone
90 41	Microscope slide glasses



# CONSUMABLES FOR PETROGRAPHY

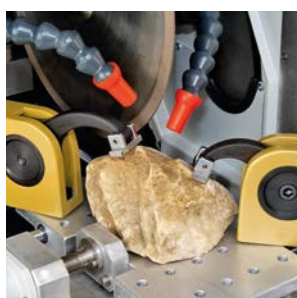
For mineralogical specimens, the surface is prepared for examination with a reflected light microscope and the preparation procedure is basically similar to the preparation of metallographic specimens.

Preparing thin sections, on the other hand, requires highly specialized equipment and skills because the specimen is extremely thin, generally around 30 microns for observations with transmitted light microscope.





# THIN SECTIONING



## SILCA

Silicon Carbide Powder for Lapping

Order No	Code	Grit Size	Quantity
40-0120	SILCA	120	500 gr.
40-0320	SILCA	320	500 gr.
40-0400	SILCA	400	500 gr.
40-0600	SILCA	600	500 gr.
40-1000	SILCA	1000	500 gr.

## DIMOS

Diamond Cut-off Wheels for GEOFORM 102 & GEOCUT 302

Order No	Code	Type	Dia. mm	Arbor mm	Description	Quantity	App.
19-203	DIMOS	Continuous Blade	200	12.7	Rock, minerals, ceramics, glass, etc.	1	GEOFORM 102
19-252	DIMOS	Continuous Blade	250	32	For Hard Petrographic Applications	1	GEOFORM 102 / GEOCUT 302
19-302	DIMOS	Continuous Blade	300	32	For Hard Petrographic Applications	1	GEOCUT 302

## CUPO


Diamond Cup Grinding Wheels for Thin Sectioning (GEOFORM 102)

Order No	Code	Description	Quantity
19-155	CUPO	Ø175 Diamond cup grinding wheel, 65 mic	1
19-156	CUPO	Ø175 Diamond cup grinding wheel, 35 mic	1

## ACCESSORIES

For Thin Sectioning

Order No	Description
40 40	Special Box for Slides
40 41	Standart Slides 27x46x1.27, 144 pcs.



# CONSUMABLES FOR SPECTROSCOPIC SAMPLE PREPARATION

Sample preparation of metals and materials have become more and more important because of the rapid development and improvement of both software as well as OES and XRF-devices during the past few years that shifts the detection limit for trace analyses

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.



# SPECTROSCOPIC SAMPLE PREPARATION



## DEMPAX

Paper Grinding Disc for SPECTRAL 250 &amp; 350

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
37-040-060-22	DEMPAX-S	Corundum	250	60	20
37-065-060-40	DEMPAX-S	Corundum	350	60	20
36-040-060-22	DEMPAX-SZ	Zirconium oxide	250	60	20
36-065-060-40	DEMPAX-SZ	Zirconium oxide	350	60	20

## GRINDING STONES

for SPECTRAL PG 52/AG 102

Order No	Code	Description	Grit Size	Quantity / Pack
80-150	GSW 60	AL <sub>2</sub> O <sub>3</sub> Grinding Stone for medium hard steels	60	1
80-151	GSR 60	AL <sub>2</sub> O <sub>3</sub> Grinding Stone for cast iron and hard steels	60	1
80-155	GSW 36	AL <sub>2</sub> O <sub>3</sub> Grinding Stone for medium hard steels	36	1
80-156	GSR 36	AL <sub>2</sub> O <sub>3</sub> Grinding Stone for cast iron and hard steels	36	1

## TIPO

Milling Tips for SPECTRAL MM 102

Order No	Code	Description	Quantity / Pack
80-204	TIPO	Milling tips for non-ferrous materials	[1 set = 10 pcs.]
80-205	TIPO	Milling tips for cast irons	[1 set = 10 pcs.]
80-206	TIPO	Milling tips for medium hard and hard steels materials	[1 set = 10 pcs.]



**LIST OF PRODUCTS**





## METACUT 302

10 05

### METACUT 302

Abrasive Cutting Machine Microprocessor controlled, front panel with touch-pad controls, compact powerful 3 kW motor, electronic brake system, cutting capacity up to 115/90 mm solid stock, for cut-off wheels up to Ø300/250 mm, twin T-slotted clamping table 255x250 mm made of stainless steel, bottom part as rugged alloy base casting, ABS protective hood, Ready for operation. Without clamping devices, without recirculation cooling tank. 400 V, 3 phase, 50 Hz.  
Includes a standard set of cutting consumables composed of;  
\*1 pack of medium type 10 cut-off wheels 250 mm dia.  
\*1 pack of medium type 10 cut-off wheels 300 mm dia.  
\*5 lt of METCOOL cooling fluid.

## Cooling System for METACUT 302

GR 0019	Recirculation Cooling Tank, 60 lt, for METACUT 302/FORCIPLAN 102
YM 8813	Fine filter sheets for recirculation cooling tank (GR 0019/GR 1675/GR 1945), 10 pcs
GR 1540	Magnetic collector rod for recirculation cooling tank

## Clamping Devices for METACUT 302

GR 0012	Quick Acting Clamping Vise Assembly, Right, for MTC 302 (Stainless Steel)
GR 0013	Quick Acting Clamping Vise Assembly, Left, for MTC 302 (Stainless Steel)
GR 0151	Compact Vise Assembly, Spring Loaded, for MTC 302/SRC 302 (Stainless Steel)
15 01	MBU 1011 Vertical Clamping Device with clamping shoe, clamping height up to 90 mm.
15 03	MK 10 21 Height Block, 60 mm
GR 0453	Fastener vise for longitudinal sectioning of screws, fasteners tubes, etc. from 12 to 45 mm. in length

## Accessories for METACUT 302

GR 0939	Cabinet for floor model, MTC 302
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## Spare Part Kit for METACUT 302

GR 1962	Recommended Set of Spare Parts, METACUT 302
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## SERVOCUT 302-AA

15 57

### SERVOCUT 302-AA

Automatic Abrasive Cutting Machine, Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with automatic chop cutting and automatic 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 - Y and Z axis (X-axis for plane parallel cutting is optional), 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 Ø300/250mm, 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, with extra advanced cutting methods: "Rapid Pulse Cutting, Table Oscillation Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculation cooling tank.  
Includes a standard set of cutting consumables composed of;  
\*An assortment of 20 cut-off wheels with 300 mm dia.  
\*5 lt of Metcool cooling fluid.  
400 V, 3 phase, 50/60 Hz.

15 57-AX

### SERVOCUT 302-AA-AX

as above[15 57] and including an automatically driven X-axis table with 95 mm travel for programmable serial plane parallel cutting.

GR 0925

Software package for optional cutting methods;  
\*Diagonal Cut  
\*Step Cut  
\*Segment Cut  
\*Combined Cut

## CUTTING



### SERVOCUT 302-MA

15 56

#### SERVOCUT 302-MA

Automatic Abrasive Cutting Machine 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 [X-axis for plane parallel cutting is optional], 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  $\varnothing 300/250$ mm, 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, with extra advanced cutting methods: "Rapid Pulse Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculation cooling tank.

Includes a standard set of cutting consumables composed of;

\*An assortment of 20 cut-off wheels with 300 mm dia.

\*5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 56-MX

#### SERVOCUT 302-MA-MX

as above [15 56] and including a manually driven X-axis table with 95 mm travel for plane parallel cutting.

15 56-AX

#### SERVOCUT 302-MA-AX

as above [15 56] and including an automatically driven X-axis table with 95 mm travel for programmable serial plane parallel cutting.



### SERVOCUT 302-MM

15 55

#### SERVOCUT 302-MM

Abrasive Cutting Machine, With hand wheel driven chop cutting and table-feed cutting systems, manual positioning of the specimen in X and Y axis [X-axis for plane parallel cutting is optional], manual positioning of the cutting wheel in Z-axis, powerful 4 kW cutting motor, 2850 rpm cutting speed, with electronic brake system, cutting capacity up to 110/90 mm solid stock, with cut-off wheels up to  $\varnothing 300/250$ mm, twin T-slotted clamping table made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings, Ready for operation. Without clamping devices, without recirculation cooling tank.

Includes a standard set of cutting consumables composed of;

\*An assortment of 20 cut-off wheels with 300 mm dia.

\*5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 55-MX

#### SERVOCUT 302-MM

as above [15 55] and including a manually driven X-axis table with 95 mm travel for plane parallel cutting.

### Cooling System for SERVOCUT 302

GR 1675 Recirculation Cooling Tank, 80 lt, for SERVOCUT 302

YM 8813 Fine filter sheets for recirculation cooling tank [GR 0019/GR 1675/GR 1945], 10 pcs

GR 1559 Coolant level sensor for recirculation cooling tank  
Informs operator when coolant level is insufficient. [for MA and AA models]

GR 1540 Magnetic collector rod for recirculation cooling tank

GR 1561 BANDCOOL Band Filter Unit for SERVOCUT 502/402/302  
Band filter conveyor for the automatic collection and disposal of swarfs, with capacity of 115 lt, with fluid level indicator, complete system on wheels, with connection kit.  
400V, 3-phase, 50 Hz

YM 8878 Filter roll for BANDCOOL, 50 m, SRC 302/402/502

### Accessories for SERVOCUT 302

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

GR 1682 FUMEFILTER Centrifugal Separator for SRC 302/GEOCUT 302  
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 0125 Laser alignment unit  
[To be ordered simultaneously together with the machine order]

GR 1680 Manual/Auto Table drive system with electromagnetic clutch [y-axis]  
[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

## Clamping Devices for SERVOCUT 302

GR 0170	Quick Acting Clamping Vise Assembly, Left, for SRC 302 (Stainless Steel)
GR 0172	Quick Acting Clamping Vise Assembly, Right, for SRC 302 (Stainless Steel)
GR 0151	Compact Vise Assembly, Spring Loaded, for MTC 302/SRC 302 (Stainless Steel)
15 01	MBU 1011 Vertical Clamping Device with clamping shoe, clamping height up to 90 mm.
15 03	MK 10 21 Height Block, 60 mm
GR 0453	Fastener vise for longitudinal sectioning of screws, fasteners tubes, etc. from 12 to 45 mm. in length
GR 0310	Fastener vise for longitudinal sectioning of screws, ball joint, tubes, etc. from 60 to 100 mm. in length
GR 0612	Angular Precision Clamping Device in 3-Axis Direction
15 00	V-Block for holding parts above table slots
GR 0615	Adjustable V-Support, Small (Height Range: 57-67 mm)
GR 0616	Adjustable V-Support, Medium (Height Range: 65-85 mm)

## Spare Part Kit for SERVOCUT 302

GR 1963	Recommended Set of Spare Parts, SERVOCUT 302
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## SERVOCUT 402-AA

15 67	<p><b>SERVOCUT 402-AA</b> Automatic Abrasive Cutting Machine, Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with automatic chop cutting and automatic 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-Y and Z axis (X-axis for plane parallel cutting is optional), 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 7.5 kW cutting motor, with unique belt protection system, with variable cutting speed 600-3200 rpm, with electronic brake system, cutting capacity up to 150/130 mm solid stock, with cut-off wheels up to Ø400/350mm, 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, with extra advanced cutting methods: "Rapid Pulse Cutting, Table Oscillation Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculation cooling tank. Includes a standard set of cutting consumables composed of; *An assortment of 20 cut-off wheels with 400 mm dia. *5 lt of Metcool cooling fluid. 400 V, 3 phase, 50/60 Hz.</p>
15 67-AX	<p><b>SERVOCUT 402-AX</b> as above(15 67) and including an automatically driven X-axis table with 150mm travel for programmable serial plane parallel cutting.</p>
GR 0925	<p>Software package for optional cutting methods; *Diagonal Cut *Step Cut *Segment Cut *Combined Cut</p>



## SERVOCUT 402-MA

15 66	<p><b>SERVOCUT 402-MA</b> Automatic Abrasive Cutting Machine, 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 (X-axis for plane parallel cutting is optional), 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 7.5 kW cutting motor, with unique belt protection system, with variable cutting speed 600-3200 rpm, with electronic brake system, cutting capacity up to 150/130 mm solid stock, with cut-off wheels up to Ø400/350mm, 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, with extra advanced cutting methods: "Rapid Pulse Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculation cooling tank. Includes a standard set of cutting consumables composed of; *An assortment of 20 cut-off wheels with 400 mm dia. *5 lt of Metcool cooling fluid. 400 V, 3 phase, 50/60 Hz.</p>
15 66-MX	<p><b>SERVOCUT 402-MA-MX</b> as above(15 66) and including a manually driven X-axis table with 150mm travel for plane parallel cutting.</p>
15 66-AX	<p><b>SERVOCUT 402-MA-AX</b> as above(15 66) and including an automatically driven X-axis table with 150mm travel for programmable serial plane parallel cutting.</p>

## CUTTING



### SERVOCUT 402-MM

15 65	<p><b>SERVOCUT 402-MM</b>  Abrasive Cutting Machine With hand wheel driven chop cutting and table-feed cutting systems, manual positioning of the specimen in X and Y axis (X-axis for plane parallel cutting is optional), manual positioning of the cutting wheel in Z-axis, powerful 7.5 kW cutting motor, 2200 rpm cutting speed, with electronic brake system, cutting capacity up to 150/130 mm solid stock, with cut-off wheels up to Ø400/350mm, twin T-slotted clamping table made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings,  Ready for operation. Without clamping devices, without recirculation cooling tank.  Includes a standard set of cutting consumables composed of;  *An assortment of 20 cut-off wheels with 400 mm dia.  *5 lt of Metcool cooling fluid.  400 V, 3 phase, 50/60 Hz.</p>
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15 65-MX	<p><b>SERVOCUT 402-MM-MX</b>  as above [15 65] and including a manually driven X-axis table with 150mm travel for plane parallel cutting.</p>
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### Power Supply for SERVOCUT 402

GR 1224	Transformer kit for 200-240 VAC, 3 phase, 50/60 Hz mains voltage
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### Cooling System for SERVOCUT 402

GR 1544	Recirculation Cooling Tank, 135 lt, for SERVOCUT 502/402
YM 8815	Fine filter sheets for recirculation cooling tank [GR 1544], 10 pcs
GR 1559	Coolant level sensor for recirculation cooling tank Informs operator when coolant level is insufficient. [for MA and AA models]
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1560	BANDCOOL Band Filter Unit for SERVOCUT 502/402/302 Band filter conveyor for the automatic collection and disposal of swarfs, with capacity of 115 lt, with fluid level indicator, complete system on wheels, with connection kit. 400V, 3-phase, 50 Hz
YM 8878	Filter roll for BANDCOOL, 50 m, SRC 302/402/502

### Accessories for SERVOCUT 402

GR 1554	FUMEFILTER Centrifugal Separator 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 1554]
GR 0139	AUTOCLEAN Automatic Cleaning System for cutting chamber [To be ordered simultaneously together with the machine order]
GR 0140	3-lights warning beacon with audible signal [To be ordered simultaneously together with the machine order]
GR 0125	Laser alignment unit [To be ordered simultaneously together with the machine order]
GR 1707	Manual/Auto Table drive system with electromagnetic clutch (y-axis) [To be ordered simultaneously together with the machine order]
GR 0992-01	Flange Set with larger diameter, Ø133 mm
GR 0997	Extension Box for cutting long specimens from the left hand side opening, 50 cm length, for SERVOCUT 402

### Spare Part Kit for SERVOCUT 402

GR 1964	Recommended Set of Spare Parts, SERVOCUT 402
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## Clamping Devices for SERVOCUT 402

GR 0029	Quick Acting Clamping Vise Assembly, Right, for SRC 402 (Stainless Steel)
GR 0030	Quick Acting Clamping Vise Assembly, Left, for SRC 402 (Stainless Steel)
GR 0154	Compact Vise Assembly, Spring Loaded, for SRC 402 (Stainless Steel)
15 02	MBU 1031 Vertical Clamping Device with clamping shoe, clamping height up to 115mm.
15 04	MK 10 22 Height Block, 70 mm
GR 0310	Fastener vise for longitudinal sectioning of screws, ball joint, tubes, etc. from 60 to 100 mm. in length
GR 0312	Fastener vise for longitudinal sectioning of screws, ball joint, tubes, etc. from 90 to 150 mm. in length
GR 0609	Serial Clamping Device for clamping multiple specimens from 1 to 3
GR 0612	Angular Precision Clamping Device in 3-Axis Direction
GR 0033	Chain spanner set with anchor block
15 00	V-Block for holding parts above table slots
GR 0615	Adjustable V-Support, Small (Height Range: 57-67 mm)
GR 0616	Adjustable V-Support, Medium (Height Range: 65-85 mm)
GR 0617	Adjustable V-Support, Large (Height Range: 85-115 mm)
GR 0618	Adjustable V-Support, Extra Large (Height Range: 115-155 mm)



## SERVOCUT 502

15 77	<p><b>SERVOCUT 502</b> Automatic Abrasive Cutting Machine, Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with automatic chop cutting and automatic 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 - Y and Z axis [X-axis for plane parallel cutting is optional], ergonomic joystick with adjustable speed control, integrated feed path control, power dependent adjustable feedrate, variable cutting force, rapid pulse cutting mode, bar graph overload display, powerful 11 kW cutting motor, with unique belt protection system, with variable cutting speed 600-2400 rpm, with electronic brake system, cutting capacity up to 180/146 mm solid stock, with cut-off wheels up to Ø500/432 mm, 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, with extra advanced cutting methods: "Rapid Pulse Cutting, Table Oscillation Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Ready for operation. Without clamping devices, without recirculation cooling tank. Includes a standard set of cutting consumables composed of; *An assortment of 20 cut-off wheels with 432 mm dia. *5 lt of METCOOL cooling fluid. 400 V, 3 phase, 50/60 Hz.</p>
15 77-AX	<p><b>SERVOCUT 502-AX</b> as above(15 77) and including an automatically driven X-axis table with 200 mm travel for programmable serial plane parallel cutting.</p>
GR 0925	<p>Software package for optional cutting methods; *Diagonal Cut *Step Cut *Segment Cut *Combined Cut</p>

## Power Supply for SERVOCUT 502

GR 1225	Transformer kit for 200-240 VAC, 3 phase, 50/60 Hz mains voltage
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## Cooling System for SERVOCUT 502

GR 1544	Recirculation Cooling Tank, 135 lt, for SERVOCUT 502/402
YM 8815	Fine filter sheets for recirculation cooling tank [GR 1544], 10 pcs
GR 1559	Coolant level sensor for recirculation cooling tank Informs operator when coolant level is insufficient. (for MA and AA models)
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1553	BANDCOOL Band Filter Unit for SERVOCUT 502 Band filter conveyor for the automatic collection and disposal of swarfs, with capacity of 115 lt, with fluid level indicator, complete system on wheels, with connection kit. 400V, 3-phase, 50 Hz
YM 8878	Filter roll for BANDCOOL, 50 m, SRC 302/402/502

## Accessories for SERVOCUT 502

GR 1554	FUMEFILTER Centrifugal Separator Removes coolant mist for better illumination and viewing (To be ordered simultaneously together with the machine order)
YM 8834	Spare Filter Kit for FUMEFILTER (GR 1554)
GR 0139	AUTOCLEAN Automatic Cleaning System for cutting chamber (To be ordered simultaneously together with the machine order)
GR 0140	3-lights warning beacon with audible signal (To be ordered simultaneously together with the machine order)
GR 0125	Laser alignment unit (To be ordered simultaneously together with the machine order)
GR 1542	Manual/Auto Table drive system with electromagnetic clutch(y-axis) (To be ordered simultaneously together with the machine order)
GR 0993-01	Flange Set with larger diameter, Ø133 mm
GR 0996	Extension Box for cutting long specimens from the left hand side opening, 50 cm length, for SERVOCUT 502

## Clamping Devices for SERVOCUT 502

GR 0121	Quick Acting Clamping Vise Assembly, Right, for SRC 502 (Stainless Steel)
GR 0122	Quick Acting Clamping Vise Assembly, Left, for SRC 502 (Stainless Steel)
15 02	MBU 1031 Vertical Clamping Device with clamping shoe, clamping height up to 115mm.
15 04	MK 10 22 Height Block, 70 mm
GR 0609	Serial Clamping Device for clamping multiple specimens from 1 to 3
GR 0612	Angular Precision Clamping Device in 3-Axis Direction
GR 0033	Chain spanner set with anchor block
15 00	V-Block for holding parts above table slots
GR 0615	Adjustable V-Support, Small (Height Range: 57-67 mm)
GR 0616	Adjustable V-Support, Medium (Height Range: 65-85 mm)
GR 0617	Adjustable V-Support, Large (Height Range: 85-115 mm)
GR 0618	Adjustable V-Support, Extra Large (Height Range: 115-155 mm)

## Spare Part Kit for SERVOCUT 502

GR 1965	Recommended Set of Spare Parts, SERVOCUT 502
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## SERVOCUT 602

14 87-AX	<p><b>SERVOCUT 602-AX</b> Multi-Target Automatic Cutting Machine For cutting large and multiple specimens, ability to work with cut-off wheels up to Ø600 mm, cutting capacity up to Ø225 mm solid stock, 100Hx500D mm for rectangular specimens (cutting capacity can be increased up to 200Hx550D mm with optional Combined Cut feature), powerful 15 kW cutting motor with unique belt protection system, with electronic brake system, with variable cut-off wheel speed 600-2400 RPM, ability to set fixed peripheral speed of cut-off wheel from 20 to 60 m/s, overload display and protection system, accurate Servo motor driven table and wheel movement for precise and fast positioning, joystick with adjustable speed control, stainless steel table (772x710mm) with 560 mm Y-axis movement range, Servo motor driven cut-off wheel positioning system on X-axis, 540 mm positioning range on X-axis, including advanced cutting methods: "Serial Parallel Cutting" for slicing multiple pieces from a specimen automatically in one cycle. "Multi Target Cutting" for cutting up to 20 different clamped specimens on the table to be cut automatically in one cycle. Programmable with 10" HMI touch screen control, Siemens PLC control unit, automatic cut-off wheel diameter measurement and automatic starting position adjustment according to cut-off wheel wear, Positioning System allows clamping several components simultaneously, with automatic chop cutting and automatic table feed cutting systems, with automatic cutting feedrate control, with extra advanced cutting methods: "Multi-Target Cutting, Serial Parallel Cutting, Rapid Pulse Cutting, Table Oscillation Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Joystick Cutting" Powerful LED illumination, robust construction. Ready for operation. Without clamping devices, without recirculation cooling tank. Includes a standard set of cutting consumables composed of; *An assortment of 10 cut-off wheels with 600 mm dia. *5 lt of METCOOL cooling fluid. 400 V, 3 phase, 50/60 Hz.</p>
14 87-AX-R	<p><b>SERVOCUT 602-AX-R</b> 4-Axis Multi-Target Automatic Cutting Machine as above (14 87-AX) and including 360° automated rotary table with servo motor drive. Possibility to cut complex shaped specimens in any angle. Consecutive cuts without re-clamping. "Multi Target Cutting" for cutting specimens up to 20 different cutting lines in different angles. Program memory for cutting lines and parameters of "Multi Target Cutting".</p>
GR 0928	<p>Software package for optional cutting methods; *Diagonal Cut *Step Cut *Segment Cut *Combined Cut</p>

## Power Supply for SERVOCUT 602

GR 1226	Transformer kit for 200–240 VAC, 3 phase, 50/60 Hz mains voltage
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## Cooling System for SERVOCUT 602

GR 1530	Recirculation Cooling Tank, 200 lt, for SERVOCUT 602
YM 8816	Fine filter sheets for recirculation cooling tank (GR 1530), 10 pcs
GR 1559	Coolant level sensor for recirculation cooling tank Informs operator when coolant level is insufficient. (for MA and AA models)
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1591	BANDCOOL Band Filter Unit for SERVOCUT 602 Band filter conveyor for the automatic collection and disposal of swarfs, with capacity of 150 lt., with fluid level indicator, complete system on wheels, with connection kit. 400V, 3-phase, 50 Hz
YM 8877	Filter roll for BANDCOOL, 50 m, SRC 602

## Accessories for SERVOCUT 602

GR 0134	FUMEFILTER Centrifugal Separator Removes coolant mist for better illumination and viewing (To be ordered simultaneously together with the machine order)
YM 8836	Spare Filter Kit for FUMEFILTER (GR 0134)
GR 0135	Laser alignment unit (To be ordered simultaneously together with the machine order)
GR 0136	Central Lubricating System with programmable maintenance cycle (To be ordered simultaneously together with the machine order)
GR 0137	AUTOCLEAN Automatic Cleaning System for cutting chamber (To be ordered simultaneously together with the machine order)
GR 0140	3-lights warning beacon with audible signal (To be ordered simultaneously together with the machine order)

## Clamping Devices for SERVOCUT 602

GR 0610	Mechanical Clamping Device
GR 0611	Serial Clamping Device for clamping multiple specimens from 1 to 4
GR 0612	Angular Precision Clamping Device in 3-Axis Direction
15 06	MBU 1031 Vertical Clamping Device with clamping shoe, clamping height up to 115mm.
15 07	MK 10 22 Height Block, 70 mm
GR 0037	Chain spanner set with anchor block
15 00	V-Block for holding parts above table slots
GR 0615	Adjustable V-Support, Small (Height Range: 57–67 mm)
GR 0616	Adjustable V-Support, Medium (Height Range: 65–85 mm)
GR 0617	Adjustable V-Support, Large (Height Range: 85–115 mm)
GR 0618	Adjustable V-Support, Extra Large (Height Range: 115–155 mm)

## Spare Part Kit for METACUT 602

GR 1966	Recommended Set of Spare Parts, METACUT 602
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## MICRACUT 152

16 05	<p><b>MICRACUT 152</b></p> <p>Modern touch-pad controls with digital display, ergonomic turn knob for fast and easy setting of parameters, 100 W powerful DC cutting motor, variable speed 50–1500 rpm, with digital micrometer cross feed for specimen positioning, counterbalanced sliding weight system, removable cooling unit, automatic cut-off switch, transparent protection hood with magnetic safety switch, for cutting discs of up to 175 mm diameter. Ready for operation. Without specimen vises. 230 V, 50 Hz, AC.</p> <p>Includes a standard set of cutting consumables composed of:</p> <ul style="list-style-type: none"> <li>*1 pc. Diamond cutting Disc 150 mm dia.</li> <li>*1 lt of METCOOL II cooling fluid.</li> </ul>
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## CUTTING

### Accessories for MICRACUT 152

GR 0213	Cutting Table Attachment for manual cutting of extra flat specimens and PCB 's on MICRACUT 152
GR 0409	Dressing Unit for MICRACUT 152
YM 1590-00	Dressing Stone

### Specimen Vises for MICRACUT 152

GR 0400	Universal Specimen Vise for MICRACUT 152
GR 0401	Specimen vise with double parallel vice for long specimens.
GR 0402	Specimen vise for round and mounted specimens, $\varnothing 32$ mm.
GR 0403	Specimen vise for irregular shaped specimens.
GR 0404	Specimen vise for adhering specimens.
GR 0405	Specimen vise for biomedical samples.
GR 0430	Specimen vise [teardrop shape] for specimens $\varnothing 18-40$ mm.
GR 0431	Specimen vise [teardrop shape] for specimens $\varnothing 5-20$ mm.
GR 0434	Specimen vise for round cylindrical specimens [max. up to 40 mm dia.]
GR 0406	Swivel arm unit for angular cutting.
GR 0453	Fastener vise for longitudinal sectioning of screws, fasteners tubes, etc. from 12 to 45 mm. in length

#### Optional Flange Sets for MICRACUT 152

GR 0410	Set of Flanges, $\varnothing 75$ mm suitable for 12,7 mm. Arbor dia.
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### Spare Part Kit for MICRACUT 152

GR 1960	Recommended Set of Spare Parts, MICRACUT 152
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### MICRACUT 202

17 07	<p><b>MICRACUT 202</b> Automatic High Speed Precision Cutter, Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with automatic table feed cutting system, programmable with colored LCD display of cutting parameters, accurate and motorized positioning of the specimen in X - Y and Z axis with digital readout on the LCD [X-axis for plane parallel cutting is optional], ergonomic joystick with adjustable speed control, integrated feed path control, power dependent adjustable feedrate, variable cutting force, rapid pulse cutting mode, bar graph overload display, powerful 1.1 kW cutting motor, with variable cutting speed 100-5000 rpm, with electronic brake system, cutting capacity up to 75 mm solid stock, with cut-off wheels up to <math>\varnothing 200</math> mm, 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 mount diamond cup grinding wheel for thin section, with built-in recirculation cooling unit, with extra advanced cutting methods: "Rapid Pulse Cutting, Instafeed Cutting, Automatic Table Feed Cutting" Ready for operation. Includes a standard set of cutting consumables composed of; *1 pc. Diamond cutting Disc 200 mm dia. *10 abrasive thin cut-off wheels 200 mm dia. *1 lf of Metcool II cooling fluid. 230 V, 50/60 Hz, AC.</p>
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17 07-AX	<p><b>MICRACUT 202-AX</b> as above(17 07) and including an automatically driven X-axis table with 60 mm travel for programmable serial plane parallel cutting.</p>
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### Accessories for MICRACUT 202

GR 0115	Laser alignment unit, MIC 202 (To be ordered simultaneously together with the machine order)
GR 0412	Dressing Unit for MICRACUT 202
YM 1590-00	Dressing Stone



## Clamping Tools for MICRACUT 202

GR 0825	Manual X-axis positioning unit for specimen vises with dovetail plates (0-20 mm).
GR 0547	Stand for specimen vises with dovetail plates.
GR 0826	Stand with rotation for specimen vises with dovetail plates (To be ordered simultaneously together with the machine order)
GR 0548	Quick acting clamping vise assembly
GR 0667	Compact Vise Assembly, Spring Loaded, for MCR 202 (Stainless Steel)
15 05	KKP 040 Vertical Clamping Device, with clamp. shoe, MCR 202/GEOCUT 302/GEOFORM 102
GR 0551	Quick Clamping Vise for longitudinal sectioning of bolts and fasteners
GR 0579	Vacuum Sample holder for thin sectioning (To be ordered simultaneously together with the machine order)

## Specimen Vises for MICRACUT 202

GR 0210	Universal Specimen Vise for MICRACUT 202
GR 0400	Universal Specimen Vise
GR 0401	Specimen vise with double parallel vice for long specimens.
GR 0402	Specimen vise for round and mounted specimens, $\varnothing 32\text{mm}$ .
GR 0403	Specimen vise for irregular shaped specimens.
GR 0404	Specimen vise for adhering specimens.
GR 0405	Specimen vise for biomedical samples.
GR 0430	Specimen vise (teardrop shape) for specimens $\varnothing 18-40\text{mm}$ .
GR 0431	Specimen vise (teardrop shape) for specimens $\varnothing 5-20\text{mm}$ .
GR 0434	Specimen vise for round cylindrical specimens (max. up to 40 mm dia.)
GR 0453	Fastener vise for longitudinal sectioning of screws, fasteners tubes, etc. from 12 to 45 mm in length

### Optional Flange Sets for MICRACUT 202

GR 0410	Set of Flanges, $\varnothing 75\text{ mm}$ , suitable for 12,7 and 25,4 mm arbor dias.
GR 0411	Set of Flanges, $\varnothing 100\text{ mm}$ , suitable for 12,7 and 25,4 mm arbor dias.

## Spare Part Kit for MICRACUT 202

GR 1961	Recommended Set of Spare Parts, MICRACUT 202
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## ECOPRESS 52

25 10	<p><b>ECOPRESS 52</b> Automatic Mounting Press Fully automatic operation with microprocessor controls, electro hydraulic pressure (requires no air), with touch pad front panel controls and digital display of; heating time, moulding temperature, cooling temperature, ram up/down, auto/manual cooling, cycle start/stop. Last parameter settings retained in the memory, with ergonomic turn knob for fast and easy setting of parameters, with direct reading pressure gauge, moulding pressure up to 300 bar, temperature up to 200°C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 1650W, automatic cooling cycle, programmable slow cooling feature, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation. 230 V, 1-phase, 50/60 Hz. Mould assemblies are ordered separately. Includes a standard set of mounting consumables composed of 3 different hot mounting compounds; 1 kg of each and a total of 3 kg.</p>
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## ECOPRESS 102

25 11	<p><b>ECOPRESS 102</b> Programmable Automatic Mounting Press 7" HMI touch screen control, with Siemens PLC control unit, programmable with colored LCD display, program based mounting sequences, electro hydraulic pressure (requires no air), pressure up to 300 bar, temperature up to 200 °C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 1650W, automatic cooling cycle with three modes of cooling rates (standard cooling, slow cooling and based on time), programmable preheating and preloading, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation. 230 V, 1-phase, 50/60 Hz. Mould assemblies are ordered separately. Includes a standard set of mounting consumables composed of 3 different hot mounting compounds; 1 kg of each and a total of 3 kg.</p>
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## MOUNTING



### ECOPRESS 202

25 12

#### ECOPRESS 202

Programmable Automatic Mounting Press with dual cylinders 7" HMI touch screen control, with Siemens PLC control unit, programmable with colored LCD display, program based mounting sequences, electro hydraulic pressure (requires no air), pressure up to 300 bar, temperature up to 200 0C, operation time up to 35:00 minutes, short cycle time, thermostatically controlled heating power of 2X1650W, automatic cooling cycle with three modes of cooling rates[ standard cooling, slow cooling and based on time], programmable preheating and preloading, stand-by temperature, selectable mould sizes from 25 mm to 50 mm, easy to close bayonet closure, audible warning signal, ready for operation. 230 V, 1-phase, 50/60 Hz. Mould assemblies are ordered separately. Includes a standard set of mounting consumables composed of 3 different hot mounting compounds; 1 kg of each and a total of 3 kg.

### Mould Assemblies

26 01-03	Mould assembly, Ø1" with intermediate ram
26 02-03	Mould assembly, Ø1 1/4" with intermediate ram
26 03-03	Mould assembly, Ø1 1/2" with intermediate ram
26 07-03	Mould assembly, Ø2" with intermediate ram
26 04-03	Mould assembly, Ø25 mm with intermediate ram
26 05-03	Mould assembly, Ø30 mm with intermediate ram
26 06-03	Mould assembly, Ø40 mm with intermediate ram
26 08-03	Mould assembly, Ø50 mm with intermediate ram
26 11-03	Mould assembly, Ø1" with chamfered bottom ram and intermediate ram
26 12-03	Mould assembly, Ø1 1/4" with chamfered bottom ram and intermediate ram
26 13-03	Mould assembly, Ø1 1/2" with chamfered bottom ram and intermediate ram
26 17-03	Mould assembly, Ø2" with chamfered bottom ram and intermediate ram
26 14-03	Mould assembly, Ø25 mm with chamfered bottom ram and intermediate ram
26 15-03	Mould assembly, Ø30 mm with chamfered bottom ram and intermediate ram
26 16-03	Mould assembly, Ø40 mm with chamfered bottom ram and intermediate ram
26 18-03	Mould assembly, Ø50 mm with chamfered bottom ram and intermediate ram

### Accessories for ECOPRESS

GR 1363	Recirculating Coolant System composed of 40 liters stainless steel cooling tank, 24V recirculating pump and connection hoses, etc.
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])

### Spare Part Kit for ECOPRESS

GR 1967	Recommended Set of Spare Parts, ECOPRESS 52/102/202 *HANDLE, 1 pc. *THERMOCOUPLE, 1 pc. *SOLENOID VALVE, 24 DC, 1 pc. *HEATING ROD, 3 pcs.
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### VACUMET 52

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.



## FORCIPLAN 102

44 00	<p><b>FORCIPLAN 102</b> Automatic Planar Grinding Machine For initial planar grinding of large size irregular shaped specimens or mounted specimens in specimen holders up to 220 mm diameter, reduces total preparation time and saves consumables, fully automatic operation, Siemens PLC control unit, programmable with colored 7" HMI touch screen control, robust construction, safe operation in closed housing, easy handling with sliding door, maximum safety provided with interlocking switch, large working space with powerful LED illumination, high torque 4 kW grinding motor, 500-2000 rpm variable speed for grinding stone to obtain optimum surfaces on different materials, powerful 350 Watt DC head motor, 50-200 rpm variable specimen holder speed with clockwise and counterclockwise rotation direction, controlled material removal with digital setting of grinding depth up to 5 mm, high precision automatic dressing unit with diamond tip, with adjustable depth and time period for dressing, automatically informs operator when grinding stone needs to be replaced, Sample cooling available with cooling fluid, ready for operation. Without specimen holders. Without cooling tank. 400V, 3-phase, 50Hz.</p>
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### Accessories for FORCIPLAN 102

GR 0019	Recirculation Cooling Tank, 60 lt, for METACUT 302/FORCIPLAN 102
YM 8813	Fine filter sheets for recirculation cooling tank (GR 0019/GR 1675/GR 1945), 10 pcs
GR 1559	Coolant level sensor for recirculation cooling tank Informs operator when coolant level is insufficient. [for MA and AA models]
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 0140	3-lights warning beacon with audible signal (To be ordered simultaneously together with the machine order)
GR 0665	Barcode Scanner for easy loading correct programs for different samples
YM 10781-00	Diamond Tip for Dressing Unit, FORCIPLAN 102
GR 0440	Air filtering and lubricating unit

### Mould Assemblies

46 45	Clamp type specimen holder, Ø 160 mm, 3 rectangular specimens with 40 x 70 mm.
46 91	Clamp type specimen holder, Ø160 mm, 10 specimens with Ø25 mm.
46 92	Clamp type specimen holder, Ø160 mm, 8 specimens with Ø30 mm.
46 93	Clamp type specimen holder, Ø160 mm, 6 specimens with Ø40 mm.
46 94	Clamp type specimen holder, Ø160 mm, 4 specimens with Ø50 mm.
46 95	Clamp type specimen holder, Ø160 mm, 10 specimens with Ø1"
46 96	Clamp type specimen holder, Ø160 mm, 8 specimens with Ø1 1/4"
46 97	Clamp type specimen holder, Ø160 mm, 6 specimens with Ø1 1/2"
46 98	Clamp type specimen holder, Ø160 mm, 4 specimens with Ø2"
46 77	Universal specimen holder for large and irregular shaped specimens, Ø160 mm with 6 clamping fixture
46 78	Universal specimen holder for large and irregular shaped specimens, Ø210 mm with 10 clamping fixtures
46 73	Teardrop specimen holder, Ø210 mm, 10 specimens with 40 - 25 mm diameter
46 74	Teardrop specimen holder, Ø210 mm, 8 specimens with 50 - 25 mm diameter
46 39	Clamp type specimen holder, Ø220 mm, 3 specimens for irregular shaped samples (Including loading plate)



### Accessories for Specimen Loading

45 60	<p><b>LEVOMAT</b> Specimen Loading Fixture, to level the specimens within the central force specimen holders, without specimen loading plate.</p> <p><u>Specimen Loading Plates</u></p>
45 50	Specimen Loading Plate Ø160 mm
45 40	Specimen Loading Plate Ø210 mm

## GRINDING & POLISHING



### FORCIPOL 102

36 21-200

#### FORCIPOL 102

Grinding and Polishing Machine, Single wheel, suitable for 200, 250 and 300 mm wheel size, 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;

\*An assortment of 100 grinding papers (various grits), 200 mm dia.

\*An assortment of 5 polishing cloths with 200 mm dia.

\*Diamond suspensions, one of each of 6 mic. and 1 mic., plus lubricant

36 21-250

#### FORCIPOL 102

'As above, but consumables kit for 250 mm dia. application.

36 21-300

#### FORCIPOL 102

'As above, but consumables kit for 300 mm dia. application.



### FORCIPOL 202

36 22-200

#### FORCIPOL 202

Grinding and Polishing Machine, Double wheel, suitable for 200, 250 and 300 mm wheel size, 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;

\*An assortment of 100 grinding papers (various grits), 200 mm dia.

\*An assortment of 5 polishing cloths with 200 mm dia.

\*Diamond suspensions, one of each of 6 mic. and 1 mic., plus lubricant

36 22-250

#### FORCIPOL 202

'As above, but consumables kit for 250 mm dia. application.

36 22-300

#### FORCIPOL 202

'As above, but consumables kit for 300 mm dia. application.



### FORCIPOL Control Unit

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 102/202/TS machines. Complete and ready for operation.



### FORCIMAT 52 (Individual Force)

30 12

#### FORCIMAT 52

Automatic Specimen Mover, Microprocessor controlled, pneumatically adjustable individual force loading system, up to 6 specimens, quick specimen holder replacement system, 100 Watt DC motor, variable rotational speed between 50-150 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 and FORCIPOL 202 machines. With air supply tubes, complete and ready for operation.



### FORCIMAT 102 (Individual Force+Central Force+Programmable)

30 14

#### FORCIMAT 52

Automatic Specimen Mover, Microprocessor controlled, pneumatically adjustable individual force loading system, up to 6 specimens, quick specimen holder replacement system, 100 Watt DC motor, variable rotational speed between 50-150 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 and FORCIPOL 202 machines. With air supply tubes, complete and ready for operation.



### DOSIMAT 12 Peristaltic Fluid Dispenser (with 1 bottle for FORCIMAT 52/102/TS)

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 all FORCIMAT 52/102/TS Automatic Heads. Complete and ready for operation.



### DOSIMAT 52 Peristaltic Fluid Dispenser (with 6 bottles for FORCIMAT 52)

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.



### DOSIMAT 102 Peristaltic Fluid Dispenser (with 6 bottles for FORCIMAT 102)

40 08

#### DOSIMAT 102 Programmable Peristaltic Fluid Dispenser

Programmable and controllable from touch screen of FORCIMAT 102, with pre-dosing function, with 6 peristaltic and non-misting pumps (5 for diamond suspensions/lubricant and 1 for alumina suspensions), with interface to be connected to FORCIMAT 102 Automatic Head, complete and ready for operation.

## Operational Accessories for FORCIPOL Grinder/Polishers

31 01	PVC wheel, 200 mm
31 02	Aluminum wheel, 200 mm
31 55	Splash guard, 200 mm
31 04	Paper ring, 200 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)
31 21	PVC wheel, 250 mm
31 42	Aluminum wheel, 250 mm
31 65	Splash guard, 250 mm
31 24	Paper ring, 250 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)
31 31	PVC wheel, 300 mm
31 52	Aluminum 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)

## Accessories for for FORCIPOL Grinder/Polishers

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))

## Accessories for FORCIMAT 52/102 Automatic Heads

GR 0872	Z-axis material removal with depth control, for FORCIMAT 102 (To be ordered simultaneously together with the machine order)
GR 0440	Air filtering and lubricating unit



## 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, FORCIMAT 102
GR 1994	Recommended Set of Spare Parts, DOSIMAT 12/52/102

## ACCURA 102

45 00-250	<p><b>ACCURA 102</b> Powerful Preparation System with solid frame design on two columns, for superior surfaces, for a very wide range of applications from very coarse grinding to very fine grinding and polishing, suitable for 250 mm as well as 300 mm dia. applications, programmable sample preparation with colored 7" HMI touch screen control, with Siemens PLC control unit. Base Unit with large 1.5 HP motor, with overload protection, variable wheel speed from 50 to 750 rpm, quiet belt drive, vibration-free and robust construction, Soft Start/Stop, planar grinding feature, Complementary or Contra rotational direction, retractable water hose, water supply and drain tubes. Motorized positioning of the Head Unit in Z and X axis, pneumatically adjustable central and/or individual force loading system, quick replacement system for both central and individual specimen holders, half-round rotation feature for easy insertion and removal of single specimens, with variable specimen holder speed 50-150 rpm, 100 Watt DC motor, automatic disc cleaning &amp; drying function with single button, LED lighting, audible warning signal, air supply tubes. Complete and ready for operation. Without Specimen Holders. 230 V, 1-phase, 50/60 Hz. Includes the following standard set of consumables; *Special Magnetic Foil, Ø 250 mm. *Thin Metal Plate(1 pcs), Ø 250 mm *Magneto grinding disc 18 mic., 250 mm dia. *An assortment of 5 polishing cloths 250 mm dia. *Diamond suspensions one of each of 6 mic. and 1 mic., plus lubricant</p>
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45 00-300	<p><b>ACCURA 102</b> As above, but consumable kits for 300 mm dia. application.</p>
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## Dosing Modules for ACCURA 102

GR 1014	Automatic Fluid Dispenser, programmable and controllable from the touch screen of ACCURA 102, with pre-dosing function, with 4 micro peristaltic pumps (3 for diamond suspensions/lubricant and 1 for alumina suspensions) with automatic liquid level calculation, with automatic retract function at the end of every step to prevent contamination (To be ordered simultaneously together with the machine order)
GR 1016	Automatic Fluid Dispenser, programmable and controllable from the touch screen of ACCURA 102, with pre-dosing function, with 6 micro peristaltic pumps (5 for diamond suspensions/lubricant and 1 for alumina suspensions) with automatic liquid level calculation, with automatic retract function at the end of every step to prevent contamination (To be ordered simultaneously together with the machine order)

## Operational Accessories for ACCURA 102

31 21	PVC wheel, 250 mm
31 42	Aluminum wheel, 250 mm
31 65	Splash guard, 250 mm
31 31	PVC wheel, 300 mm
31 52	Aluminum wheel, 300 mm
31 75	Splash guard, 300 mm

## Accessories for FORCIPOL Grinder/Polishers

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))

## Accessories for ACCURA 102

GR 0871	Z-axis material removal with depth control, for ACCURA 102 (To be ordered simultaneously together with the machine order)
GR 0665	Barcode Scanner for easy loading correct programs for different samples
31 14	Special Protection Cover, to be used with ACCURA 102 (To be ordered simultaneously together with the machine order)
GR 1693	Cabinet for ACCURA 102
GR 0440	Air filtering and lubricating unit

## Spare Part Kit for ACCURA 102

GR 1995	Recommended Set of Spare Parts, ACCURA 102
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### Specimen Holders for Individual Force Application (for FORCIMAT 102, ACCURA 102)

33 31	Individual force specimen holder, Ø145mm, for 6 x Ø25 mm specimens.
33 32	Individual force specimen holder, Ø145mm, for 6 x Ø30 mm specimens.
33 33	Individual force specimen holder, Ø145mm, for 6 x Ø40 mm specimens.
33 34	Individual force specimen holder, Ø145mm, for 3 x Ø50 mm specimens.
33 35	Individual force specimen holder, Ø145mm, for 6 x Ø1" specimens.
33 36	Individual force specimen holder, Ø145mm, for 6 x Ø1 1/4" specimens.
33 37	Individual force specimen holder, Ø145mm, for 6 x Ø1 1/2" specimens.
33 38	Individual force specimen holder, Ø145mm, for 3 x Ø2" specimens.
33 39	Individual force specimen holder, Ø145mm, Blank.
33 02	Set of insert rings for Ø30 mm (to be used with 33 33)
33 03	Set of insert rings for Ø25 mm or Ø1" (to be used with 33 33)
33 04	Set of insert rings for Ø1 1/4" (to be used with 33 33)
33 05	Set of insert rings for Ø1 1/2" (to be used with 33 33)

### Specimen Holders for Central Force Application (for FORCIMAT 102, ACCURA 102)

46 81	Clamp type specimen holder, Ø130 mm, 6 specimens with Ø25 mm.
46 82	Clamp type specimen holder, Ø130 mm, 6 specimens with Ø30 mm.
46 83	Clamp type specimen holder, Ø130 mm, 4 specimens with Ø40 mm.
46 84	Clamp type specimen holder, Ø130 mm, 6 specimens with Ø1"
46 85	Clamp type specimen holder, Ø130 mm, 6 specimens with Ø1 1/4"
46 86	Clamp type specimen holder, Ø130 mm, 4 specimens with Ø1 1/2"
46 88	Teardrop specimen holder, Ø130 mm, 6 specimens with 10 - 32 mm.
46 89	Teardrop specimen holder, Ø130 mm, 4 specimens with 10 - 42 mm.
46 44	Clamp type specimen holder, Ø 130 mm, 4 rectangular specimens with 25 X 32 mm.
46 45	Clamp type specimen holder, Ø 160 mm, 3 rectangular specimens with 40 x 70 mm.
46 91	Clamp type specimen holder, Ø160 mm, 10 specimens with Ø25 mm.
46 92	Clamp type specimen holder, Ø160 mm, 8 specimens with Ø30 mm.
46 93	Clamp type specimen holder, Ø160 mm, 6 specimens with Ø40 mm.
46 94	Clamp type specimen holder, Ø160 mm, 4 specimens with Ø50 mm.
46 95	Clamp type specimen holder, Ø160 mm, 10 specimens with Ø1"
46 96	Clamp type specimen holder, Ø160 mm, 8 specimens with Ø1 1/4"
46 97	Clamp type specimen holder, Ø160 mm, 6 specimens with Ø1 1/2"
46 98	Clamp type specimen holder, Ø160 mm, 4 specimens with Ø2"
46 77	Universal specimen holder for large and irregular shaped specimens, Ø160 mm with 6 clamping fixture
46 39	Clamp type specimen holder, Ø220 mm, 3 specimens for irregular shaped samples (Specimen holders with Ø160mm can only be used with 300 mm wheels)



### Accessories for Specimen Loading

45 60	<b>LEVOMAT</b> Specimen Loading Fixture, to level the specimens within the central force specimen holders, without specimen loading plate.
	<b>Specimen Loading Plates</b>
45 10	Specimen Loading Plate Ø130 mm
45 50	Specimen Loading Plate Ø130 mm



### ENVIRO Recirculating Filtering System for FORCIPOL's & ACCURA

GR 0865	<b>ENVIRO Recirculating Filtering System,</b> Closed loop 1 micron filtering system with 20 lt. recirculating water tank, suitable to operate with line water on 80 micron filter as well. Requires 4 bar compressed air. Ready for operation with all Metkon Grinder/Polishers
YM 6214-00	Filter, 10 inches 1 Micron
GR 1996	Recommended Set of Spare Parts, ENVIRO

### Spare Part Kit for ENVIRO

## ELECTROLYTIC POLISHING & ETCHING



### ELOPREP 102

46 02	<b>ELOPREP 102</b> Electrolytic Polishing & Etching System. Automatic and programmable electrolytic polishing and etching of metallographic specimens, with Siemens PLC control unit, user friendly colored 7" LCD touch screen controls, short polishing times and maximum reproducibility, separate polishing unit equipped with drain pipe and integrated cooling system, dual Polishing & Etching units operatable by the same control unit, optional external etching unit, 0-100 V output voltage for polishing, 0-25 V for etching and 0-15 V for external etching. Variable polishing time and current, with current limitation, built in safety features with continuous control of electrolyte, scanning function for easy determination of parameters, variable speed controlled pump with magnetic stirrer for electrolyte flow. Suitable for both normal and low temperature electrolytic polishing. Ready for operation. 230 V, 1-phase, 50/60 Hz. Includes 1 pc. of stainless steel cathode.
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### Optional Accessories for ELOPREP 102

46 09	Additional Polishing & Etching Unit (Suitable for both normal and low temperature electrolytic polishing) (Dual Polishing & Etching units operatable by the same control unit) (To be ordered simultaneously together with the ELOPREP 102 order)
46 10	External Etching unit
46 08	Electrolyte container with lid
46 12	1 set of 5 masks 0.5 cm <sup>2</sup>
46 13	1 set of 5 masks 1 cm <sup>2</sup>
46 14	1 set of 5 masks 2 cm <sup>2</sup>
46 15	1 set of 5 masks 5 cm <sup>2</sup>
46 16	1 set of 5 masks without aperture
46 17	1 set of masks (0.5, 1, 2, 5 cm <sup>2</sup> and 1 without aperture.)
YM 6904-00	Stainless Steel cathode
YM 6937-00	Copper cathode
YM 6936-00	Titanium cathode
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))



### MOBIPREP

90 01	<b>MOBIPREP</b> Portable grinding/polishing & Electrolytic Etching. Contains maintenance-free batteries to work without stationary mains, consists of a control unit and a precision hand-guided grinding-polishing device with high performance micro motor. Output 36 V, adjustable in 5 steps Hand-guided device: High Torque Brushless DC Motor Included accessories: Reduction Gear - Angle Piece 90° - Grinding and polishing carriers (5 pieces) Automatic Charger 12 V / 2,5 A Optional Etching Pen Dimensions: 104 x 54 x 160 mm, Weight 1 kg.
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### Accessories for MOBIPREP

90 10	Etching-Pen for electrolytic etching
90 11	Angle piece 90°, with 3-mm collet on
90 12	Angle piece 45°, with 3-mm collet on
90 13	Straight quick release piece of, with 3-mm collet on
90 14	Grinding and polishing carriers (5 pieces)
90 15	Shoulder bag for Mobiprep, synthetic leather



### MOBISCOPE

90 02	<b>MOBISCOPE</b> Portable Metallurgical Microscope Basic Magnification : 100x - 500x Eyepieces : WF10X/FN18, Dia. 23.2 Objectives : 10x/0.25 (W.D. 7,3 mm), 50x/0.65 (W.D. 0.5mm) C-mount adapter (for connecting C-mount cameras) Mechanical tube length 160 mm Coaxial coarse/fine focus system, range:36mm Polarizing Kits : Polarizer and Analyzer Coaxial illumination, build-in LED rechargeable, brightness adjustable Including portable aluminum case.
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### Accessories for MOBISCOPE

90 30	Magnet Stage
90 31	Objective 20X
90 32	Objective 80X



## MICROSCOPES



### IMM 901

60 01	<p><b>IMM 901</b> Trinocular Inverted Metallurgical Microscope Basic Magnification : 100x - 1000x Eyepieces : WF10x eyepieces paired (field of view <math>\varnothing</math>16 mm.) Objectives : 10x/0.25 (W.D. 6.7mm), 25x/0.40 (W.D. 0.76mm) 40x/0.65 (W.D. 0.67mm), 100x/1.25(W.D. 0.3 mm) Stage : Mechanical stage 200x 152mm travel with right hand Coaxial drop-down controls, movable range 15 x 15 mm. Focusing : Coaxial low position coarse &amp; fine focus controls graduated to 2 microns per division. Illumination : 6V 20W adjustable light sources with halogen lamp. Size &amp; weight : 540L x 195W x 320H mm &amp; 9kg Complete with dust cover</p>
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### Optional Accessories for IMM 901

60 11	Ocular WF 12,5 X for IMM
60 12	WF 10x with reticles ( 1 mm with 100 divisions )for IMM
60 22	Stage micrometer for IMM, Reticle, 1 mm with 100 divisions
GR 0415	Eyeiece , WF 10x , with ASTM Grain Size E112



### IMM 902

60 05	<p><b>IMM 902</b> Inverted metallurgical microscope Head: Trinocular, 45° inclined. Eyepieces: WF10x/22mm. Nosepiece: 5-positions. Objectives: 5x/0.15, 10x/0.3, 20x/0.45, 50x/0.55. Magnifications: 50x, 100x, 200x, 500x. Focusing system: Coaxial coarse and fine. Stage: 250x160mm; mechanical stage with lowered ergonomic coaxial controls. X-Y range: 120x78mm. Diaphragms: Field and aperture diaphragms (centrable). Illumination: 12V/50W halogen bulb in external case. Centrable bulb and brightness control. Filters: Blue, polarizer &amp; analyzer Complete with dust cover. Automatic voltage sensing, 100/240 Vac, 50/60 Hz.</p>
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### Optional Accessories for IMM 902

60 25	Holder for metallurgical samples
60 45	Mechanical stage, IMM 902
62 42	Eyeiece WF15x/16mm
62 53	Eyeiece micrometer PL 10x/22mm
60 41	26x76mm micrometric slide. R:1mm, div:0,01mm
60 55	Objective 100x/0,80 (dry)
60 74	Photo adapter for IMAGINE HARDWARE SET, 0.5x focusable
60 65	12V/50W halogen bulb



### UPM 902

60 04	<p><b>UPM 902</b> Upright Metallurgical Microscope Head: Trinocular, 30° inclined, 360° rotating. Eyepieces: WF10x/22mm. Nosepiece: 5-positions, reversed. Objectives: 5x/0.12, 10x/0.25, 20x/0.40, 50x/0.75, with anti-fungus treatment Magnifications: 50x, 100x, 200x, 500x, 1000x. Focusing system: Coaxial coarse and fine. Stage: Double layer with mechanical sliding stage, 233x147 mm, moving range 78x54 mm. with specimen holder Condenser: 0,2/0,7 N.A. swing-out type, with iris diaphragm, centrable and focusable. 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. Metallurgical Attachment: High-power white XLED system with brightness control; field and aperture diaphragms (centrable). Filters: Blue, polarizer &amp; analyzer. (360° rotatable) Complete with dust cover Automatic voltage sensing, 100/240 Vac, 50/60 Hz.</p>
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## MICROSCOPES

### Optional Accessories for UPM 902

62 41	Eyepiece EWF10x/22mm
62 42	Eyepiece WF15x/16mm
62 43	Eyepiece micrometer EWF10X/22mm
60 41	26x76mm micrometric slide. R:1mm, div:0,01mm
60 74	Photo adapter for IMAGINE HARDWARE SET, 0,5x focusable



### PST 901

60 02	<b>PST 901</b> Trinocular Stereo Zoom Microscope Basic Magnification : 6.5x - 45x Eyepieces : WF10x, paired Objectives : 0.65x - 4.5x Trinocular zoom head and Post Stand, Fluorescence ring illuminator, Focusing : Rack and pinion system, with anti-static PVC dust cover Dimension & Net weight : 170Wx250Dx555H mm & 6.0 kg
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### Optional Accessories for PST 901

60 13	WF 10x with reticles, 100 divisions, for PST
60 23	Stage micrometer for PST, Reticle, 5 mm with 100 divisions
60 43	Mechanical Stage for PST 901
60 53	Objective, 0,5x



### PST 902

60 07	<b>PST 902</b> Stereomicroscope Optical System: Parallel Optics Head: Binocular 30° inclined, 360° rotatable Stand: Large stand, fixed arm type, with Led illumination, coaxial macro & micro focusing knobs Eyepieces: WF10x/22mm, high-point Objective: Zoom 0,8x ...6,4x Working Distance: 80 mm. Photo/Video Beam Splitter: 1 port Illumination: Ring light led illuminator, with continuous and external brightness control. Complete with dust cover. Automatic voltage sensing, 100/240 Vac, 50/60 Hz.
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### Optional Accessories for PST 902

62 71	Eyepiece (pair) WF15x/16 mm, with dioptic adjustment & rubber cup
62 72	Eyepiece (pair) WF20x/12 mm, with dioptic adjustment & rubber cup
62 73	Micrometric eyepiece WF10x/24 mm, with dioptic adjustment & rubber cup
61 71	Objective 0,3x(w.d. 280mm)
61 72	Objective 0,5x(w.d. 118mm)
61 73	Objective 2x(w.d. 32,5mm)
60 76	Photo adapter for IMAGINE HARDWARE SET, 0,5x focusable
60 69	Special protective glass, PST 902
60 66	Cleaning kit



## IPP 902

60 06	<p><b>IPP 902</b>                  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, λ tint plate, λ/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: 145mm 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.</p>
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## Optional Accessories for IPP 902

62 42	Eyepiece WF15x/16mm
62 43	Eyepiece micrometer EWF10x/22mm
60 41	26x76mm micrometric slide. R:1mm, div:0,01mm
60 58	60x/0.80 achromatic objective
61 81	Blue filter, 45mm diameter
61 82	Green filter, 45mm diameter
61 83	Yellow filter, 45mm diameter
61 84	Frosted glass filter, 45mm diameter
62 60	Eyepiece (pair)
60 74	Photo adapter for IMAGINE HARDWARE SET, 0.5x focusable
60 66	Cleaning kit

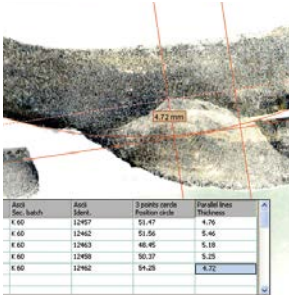
## MICROSCOPES

### IMAGIN HARDWARE SET

66 10

#### IMAGIN HARDWARE SET

CMOS Color Camera, Resolution 5.0 M. Pixels with Interpole Mod  
USB2 - PC Interface, C Mount - Microscope Interface.  
Including DUROLINE, IMM or PST adapter according to application



### IMAGIN MESURA 200

66 02

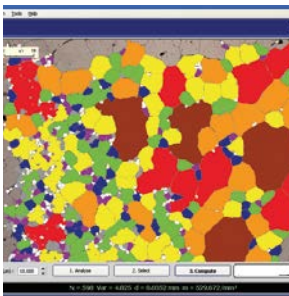
#### IMAGIN MESURA 200

Image capture, Image archiving, Image enhancement,  
Calibration, measure Length, thickness, width, angle, radius, curve  
perimeter, area. Multi Image Alignment, Multi Focus Function.  
Phase content analysis, Add Text & Marker Arrow and Calibration Scale,  
Image annotation, Image report generator,  
Automatically measurements and threshold function,  
Direct transfer to Excel.

### IMAGIN GRANO 200

66 04

Image capture, save and calibration, Grain sizing  
software in compliance with ASTM E1382 / E112 and  
EN ISO 643, Horizontal, vertical, diagonal or circles interception methods.  
Instant detection of Grain Boundaries, Powerful report  
generator, Direct transfer to Excel.

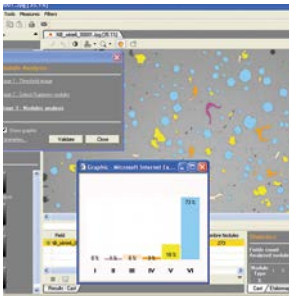


### IMAGIN NODULA 200

66 05

#### IMAGIN NODULA 200

Image capture, save and calibration, Graphite nodules  
automatically detected and colored with regards to  
shape and size, Cast iron analysis in compliance with  
ASTM A247 including nodularity, Ferrite / Perlite fraction.  
Automatically count Sphericity %, gray iron flakes,  
calculates percent, graphite and classifies the flakes by size.  
Powerful report generator, Direct transfer to Excel.



### IMAGIN TRIO

66 07

#### IMAGIN TRIO

Including Imagin Hardware Set, Imagin Mesura 200, Imagin Grano 200 and  
Imagin Nodula 200

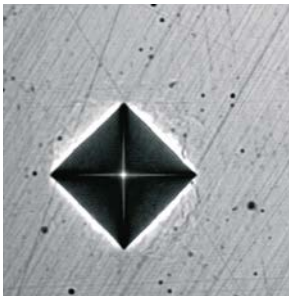
### IMAGIN VMS 2000

71 01

#### IMAGIN VMS 2000

Automatic Hardness Test and Documentation System  
VMS 2000 Software Package Vickers/Knoop, Brinell measuring system

- \* Generate case depth
- \* Direct transfer to Excel
- \* Imprint on the Monitor,
- \* Digital calculation of Hardness Value,
- \* Measurement, Documentation and Archiving





## DUROLINE M1

72 01

### DUROLINE M1

Vickers/Knoop Micro-Hardness Tester with Test & Measurement software Windows 10 "N-Sure" including Auto-Measurement module

Test Loads: 10, 25, 50, 100, 200, 300, 500, 1000 gf suitable for testing  
 HV0,01 - HV0,025 - HV0,05 - HV0,1- HV0,2 - HV0,3 - HV0,5 - HV1  
 HK0,01 - HK0,025 - HK0,05 - HK0,1- HK0,2 - HK0,3 - HK0,5 - HK1

in compliance with standard ISO 6507 and ASTM E-384.

User Interface by 22" full HD 10-point multi-touch desktop monitor, integrated high resolution 5.0 MP, USB 3.0 CCD camera, automatic measurement with zoom capability and automatic light brightness, with automatic test sequence by motorised turret and load motor, adjustable internal LED illumination, large sample accommodation area, emergency stop. Automatic voltage setting 100-240 V, 1-phase, 50/60 Hz.

Standard delivery includes:

Hardness Tester, Desktop Monitor on solid stand, METKON N-Sure software incl. Auto-Measurement module, ISO/DaKKS Certified Vickers diamond indenter, Objective 10x, Objective 40x, 4 adjustable tester feet, Water level indicator, Indenter protection nose, Dust Cover, Power Cable, Monitor Interface Cable, Factory Test Certificate with ISO/ASTM verifications, solid accessories box.

Note: Select below the additional XY-stage, anvils, sample fixtures and test blocks



## DUROLINE M2

72 02

### DUROLINE M2

Vickers/Knoop Micro-Hardness Tester with Test & Measurement software Windows 10 "N-Sure" including Auto-Measurement module Motorized spindle Z-Axis up/down movement and Auto-Focus module

Test Loads: 10, 25, 50, 100, 200, 300, 500, 1000 gf suitable for testing  
 HV0,01 - HV0,025 - HV0,05 - HV0,1- HV0,2 - HV0,3 - HV0,5 - HV1  
 HK0,01 - HK0,025 - HK0,05 - HK0,1- HK0,2 - HK0,3 - HK0,5 - HK1

in compliance with standard ISO 6507 and ASTM E-384.

User Interface by 22" full HD 10-point multi-touch desktop monitor, integrated high resolution 5.0 MP, USB 3.0 CCD camera, automatic motorized Z-axis and autofocus of indentations, auto-measurement with zoom capability and indent image brightness, automated test sequence by motorised turret and load motor, adjustable internal LED illumination, large sample accommodation area, emergency stop. Automatic voltage setting 100-240 V, 1-phase, 50/60 Hz.

Standard delivery includes:

Hardness Tester, Desktop Monitor on solid stand, METKON N-Sure software incl. Auto-Measurement module, Auto-Focus module with motorised Z-axis, ISO/DaKKS Certified Vickers diamond indenter, Objective 10x, Objective 40x, 4 adjustable tester feet, Water level indicator, Indenter protection nose, Dust Cover, Power Cable, Monitor Interface Cable, Factory Test Certificate with ISO/ASTM verifications, solid accessories box.

Note: Select below the additional XY-stage, anvils, sample fixtures and test blocks



## DUROLINE M3

72 03

### DUROLINE M3

Vickers/Knoop Micro-Hardness Tester with Test & Measurement software Windows 10 "N-Sure" including Auto-Measurement module and large motorised XY-stage 100x150mm

Test Loads: 10, 25, 50, 100, 200, 300, 500, 1000 gf suitable for testing  
 HV0,01 - HV0,025 - HV0,05 - HV0,1- HV0,2 - HV0,3 - HV0,5 - HV1  
 HK0,01 - HK0,025 - HK0,05 - HK0,1- HK0,2 - HK0,3 - HK0,5 - HK1

in compliance with standard ISO 6507 and ASTM E-384.

User Interface by 22" full HD 10-point multi-touch desktop monitor, integrated high resolution 5.0 MP, USB 3.0 CCD camera, motorized large XY-stage with travel 100x150 mm, auto-measurement with zoom capability and indent image brightness, automated test sequence by motorised turret and load motor, adjustable internal LED illumination, large sample accommodation area, emergency stop. Automatic voltage setting 100-240 V, 1-phase, 50/60 Hz.

Standard delivery includes:

Hardness Tester, Desktop Monitor on solid stand, METKON N-Sure software incl. Auto-Measurement module, large motorized XY-stage, ISO/DaKKS Certified Vickers diamond indenter, Objective 10x, Objective 40x, 4 adjustable tester feet, Water level indicator, Indenter protection nose, Dust Cover, Power Cable, Monitor Interface Cable, Factory Test Certificate with ISO/ASTM verifications, solid accessories box.

Note: Select below for sample fixtures and test blocks

## HARDNESS TESTING



### DUROLINE M4

72 04

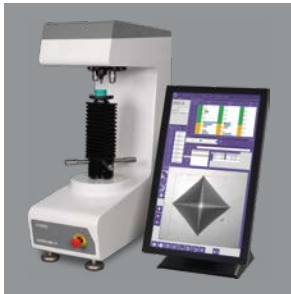
#### DUROLINE M4

Vickers/Knoop Micro-Hardness Tester with Test & Measurement software Windows 10 "N-Sure" including Auto-Measurement module, large motorised XY-stage 100x150mm, motorized Z-axis and Auto-focus  
 Test Loads: 10, 25, 50, 100, 200, 300, 500, 1000 gf suitable for testing  
 HV0,01 - HV0,025 - HV0,05 - HV0,1- HV0,2 - HV0,3 - HV0,5 - HV1  
 HK0,01 - HK0,025 - HK0,05 - HK0,1- HK0,2 - HK0,3 - HK0,5 - HK1  
 in compliance with standard ISO 6507 and ASTM E-384. User Interface by 22" full HD 10-point multi-touch desktop monitor, integrated high resolution 5.0 MP, USB 3.0 CCD camera, motorized large XY-stage with travel 100x150 mm, automatic motorized Z-axis and autofocus of indentations, auto-measurement with zoom capability and indent image brightness, automated test sequence by motorised turret and load motor, adjustable internal LED illumination, large sample accommodation area, emergency stop. Automatic voltage setting 100-240 V, 1-phase, 50/60 Hz.

Standard delivery includes:

Hardness Tester, Desktop Monitor on solid stand, METKON N-Sure software incl. Auto-Measurement module, large motorized XY-stage, ISO/DaKKS Certified Vickers diamond indenter, Objective 10x, Objective 40x, 4 adjustable tester feet, Water level indicator, Indenter protection nose, Dust Cover, Power Cable, Monitor Interface Cable, Factory Test Certificate with ISO/ASTM verifications, solid accessories box.

Note: Select below for sample fixtures and test blocks



### DUROLINE V1

72 11

#### DUROLINE V1

Vickers/Knoop Micro/Macro-Hardness Tester with Test & Measurement software Windows 10 "N-Sure" including Auto-Measurement module, closed loop load cell controlled force application

Test Loads: 300gf, 500gf, 1kgf, 2kgf, 3kgf, 5kgf, 10kgf, 20kgf, 30kgf

HV0,3 - HV0,5 - HV1 - HV2 - HV3 - HV5 - HV10 - HV20 - HV30

HK0,3 - HK0,5 - HK1 - HK3

in compliance with standard ISO 6507, ASTM E-384, ASTM E92-17 User Interface by 22" full HD 10-point multi-touch desktop monitor, integrated high resolution 5.0 MP, USB 3.0 CCD camera, automatic measurement with zoom capability and automatic light brightness, with automatic test sequence by motorised turret and load motor force control by closed loop load cell system, adjustable internal LED illumination, large sample accommodation area, emergency stop. Automatic voltage setting 100-240 V, 1-phase, 50/60 Hz.

Standard delivery includes:

Hardness Tester equipped with macro-spindle, Desktop Monitor on solid stand, METKON N-Sure software incl. Auto-Measurement module, ISO/DaKKS Certified Vickers diamond indenter, Objective 10x, Objective 20x, flat anvil dia. 80mm, 4 adjustable tester feet, Water level indicator, Indenter protection nose, Dust Cover, Power Cable, Monitor Interface Cable, Factory Test Certificate with ISO/ASTM verifications, solid accessories box.

Note: Select below the additional XY-stage, anvils, sample fixtures and test blocks.

## Operational Accessories for Hardness Testing

Anvils and XY-Stages Hardness Testing	
GR 2021	Flat anvil diameter 80mm
GR 2022	V-anvil, diameter 80mm, for cylindrical parts above 5 mm diameter
GR 2023	Digital Manual XY-stage 100x100mm, travel 25x25mm, with two analogue micrometers
GR 2024	Manual XY-stage 120x120mm, travel 25x25mm, with one digital Silyvac micrometer incl. cable and one analogue micrometer (GR 2081 Software Module is required for CHD/EHT testing) (To be ordered simultaneously with the machine order)

## Software Modules for Hardness Testing

GR 2081	Software Module for CHD Testing (EHT) (Digital XY-Stage (GR2024) or Motorized stage is required) (To be ordered simultaneously with the machine order)
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## Object Lenses for Hardness Testing

GR 2041	Object lens 5x
GR 2042	Object lens 10x
GR 2043	Object lens 20x
GR 2044	Object lens 40x

## Indenters for Hardness Testing

GR 2047	ISO/ASTM Certificated Vickers diamond indenter
GR 2048	ISO/ASTM Certificated Knoop diamond indenter

## Specimen Holders for Hardness Testing

GR 2025	Precision vise (opening 43mm)
GR 2026	Thin specimen holder
GR 2027	Fine specimen holder (Horizontal type)
GR 2028	Fine specimen holder (Vertical type)
GR 2031	Specimen holder for $\varnothing 25$ mm specimens
GR 2032	Specimen holder for $\varnothing 30$ mm specimens
GR 2033	Specimen holder for $\varnothing 40$ mm specimens
GR 2034	Specimen holder for $\varnothing 50$ mm specimens
GR 2035	Multiple specimen holder for 6x $\varnothing 25$ mm specimens
GR 2036	Multiple specimen holder for 6x $\varnothing 30$ mm specimens
GR 2037	Multiple specimen holder for 6x $\varnothing 40$ mm specimens

## Verification Tools for Hardness Testing

GR 2061	ISO Dkks Germany Certified standard block 200HV0.3 (30x30x6mm)
GR 2062	ISO Dkks Germany Certified standard block 450HV0.3 (30x30x6mm)
GR 2063	ISO Dkks Germany Certified standard block 700HV0.3 (30x30x6mm)
GR 2064	ISO Dkks Germany Certified standard block 200HV1 (30x30x6mm)
GR 2065	ISO Dkks Germany Certified standard block 450HV1 (30x30x6mm)
GR 2066	ISO Dkks Germany Certified standard block 700HV1 (30x30x6mm)
GR 2067	ISO Dkks Germany Certified standard block 200HV5 (60x60x6mm)
GR 2068	ISO Dkks Germany Certified standard block 450HV5 (60x60x6mm)
GR 2069	ISO Dkks Germany Certified standard block 700HV5 (60x60x6mm)
GR 2071	ISO Certificated calibration scale glass.

## PETROGRAPHY



### GEOCUT 302

14 04	<p><b>GEOCUT 302</b> Geological Cutting Machine for sectioning of rock, ceramics, minerals, glass, concrete etc., with Z-axis cutting wheel positioning and table-feed cutting system, manual positioning of the specimen in X and Y axis, X-Y table bed and cross feed table for cutting of plane parallel sections, mechanical display of cutting thickness, twin T-slotted clamping table made of stainless steel, bottom part as rugged alloy base casting, cutting capacity up to 110/90 mm solid stock, for diamond wheels up to Ø300/250mm, 6.4 HP compact cutting motor, electronic brake system, extraordinary access for easy handling with sliding door and side openings, interlocking safety switch for sliding door, ability to connect directly city water or recirculating coolant tank. Ready for operation. Without clamping devices, without recirculating cooling unit. 400 V, 3 phase, 50/60 Hz.</p>
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### Accessories for GEOCUT 302

GR 1945	Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc
YM 8813	Fine filter sheets for recirculation cooling tank (GR 0019/GR 1675/GR 1945), 10 pcs.
GR 1681	Cabinet for floor model - SRC 302/GEOCUT 302
GR 1682	FUMEFILTER Centrifugal Separator for SRC 302/GEOCUT 302 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 0125	Laser alignment unit (To be ordered simultaneously together with the machine order)
GR 0991-01	Flange Set with larger diameter, Ø100 mm
GR 1397-00	Water Filtering & 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 & prevents calcification.
YM 3824-00	Spare Siliphos Cartridge Filter (for Water Filtering and Pressure Regulator System (GR 1397-00))

### Clamping Devices for GEOCUT 302

GR 1811	Quick Clamping Device for round petrographic specimens
GR 1812	Universal vise for large specimens, rocks, etc.
15 05	KKP 040 Vertical Clamping Device, with clamp. shoe, MCR 202/GEOCUT 302/GEOFORM 102

### Spare Part Kit for GEOCUT 302

GR 1997	Recommended Set of Spare Parts, GEOCUT 302
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### GEOFORM 102

18 02	<p><b>GEOFORM 102</b> 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.</p>
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### Accessories for GEOFORM 102

GR 1866	Vacuum Pump for up to 2000 m Altitude from Sea Level
GR 1895-00	Vacuum Pump for up to 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 and connection hoses, etc.
GR 0413	Dressing Unit for GEOFORM 102, for Grinding Compartment
YM 1590-00	Dressing Stone



### Accessories for Cutting Chamber of GEOFORM 102

GR 0548	Quick acting clamping vise assembly
15 05	KKP 040 Vertical Clamping Device, with clamp. shoe, MCR 202/GEOCUT 302/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
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### GEOFIX

45 61	<b>GEOFIX</b> 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 placable on hot plate.
45 65	Hot Plate for Geofix, 30x30 cm



### FORCIPOL-TS

36 21-TS	<b>FORCIPOL-TS</b> 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
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### Operational Accessories for FORCIPOL-TS Grinder/Polishers

33 12	Cast Iron 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)

### Accessories for FORCIPOL-TS Grinder/Polisher

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))



### FORCIPOL Control Unit

30 11	<p><b>FORCIPOL Control Unit</b></p> <p>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 &amp; drying function with single button, Smart Water Saving feature. Communication capability with FORCIPOL 102 and FORCIPOL 202 machines. Complete and ready for operation.</p>
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### FORCIMAT-TS

30 13	<p><b>FORCIMAT-TS</b></p> <p>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 &amp; 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.</p>
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GR 0440	Air filtering and lubricating unit
33 40	Individual force specimen holder, Ø145mm, for 3 x Ø60 mm specimens. (For LAP-TS and POL-TS holders)
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



## DOSIMAT 12 Peristaltic Fluid Dispenser (with 1 bottle)

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.



## DOSIMAT 52 Peristaltic Fluid Dispenser (with 6 bottles)

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.

## SPECTROSCOPY



### SPECTRAL 250

80 00

#### SPECTRAL 250

Table-top Surface Grinder for spectroscopic sample preparation of steels and irons, vibration-free construction, robust steel housing, strong 1.1 kW motor, working disc of 250 mm dia., with rotation speed of 2800 rpm, a rapid stop of the turning disc, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), disc covered halfway by lid allowing grinding only on a segment, spark trap, dust box and standard outlet for exhauster, easy to clean and ready for operation. 230 V, 1-phase, 50 Hz.



### SPECTRAL 350-1

80 02-1

#### SPECTRAL 350-1

Single Disc Surface Grinder for spectroscopic sample preparation of steels and irons, single disc of 350 mm dia., dynamically balanced, with 2.2 kW driving motor, with rotation speed of 2800 rpm, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), discs covered halfway by lids allowing grinding only on a segment, dedusting system with spark trap and easily replaceable filters, with interlocking safety switch not allowing the top cover being opened before the motors are stopped, ergonomically designed and ready for operation. [wooden packing included] 400V, 3-phase, 50 Hz.



### SPECTRAL 350-2

80 02

#### SPECTRAL 350-2

Dual Disc Surface Grinder for spectroscopic sample preparation of steels and irons, coarse and fine grinding possible on two separate independent discs of 350 mm dia. which are dynamically balanced, two individual driving motors(2.2 kW each) with 2800 rpm, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), discs covered halfway by lids allowing grinding only on a segment, dedusting system with spark trap and easily replaceable filters, with interlocking safety switch not allowing the top cover being opened before the motors are stopped, ergonomically designed and ready for operation. [wooden packing included] 400V, 3-phase, 50 Hz.



### SPECTRAL 350-2S

80 02-2S

#### SPECTRAL 350-2S

Dual Disc Surface Grinder as above, but with two speeds 1400/2800 rpm.

### Sample Holders for SPECTRAL 250/350

GR 1804

Sample Holder for round specimens, Magnetic type.

GR 1805

Sample Holder for round specimens, Mechanical type.

### Spare Part Kit for SPECTRAL 350

GR 1850

Recommended Set of Spare Parts, SPC 350



### SPECTRAL PG 52

81 03

#### SPECTRAL PG 52

Swing Grinding Machine for fast spectroscopic sample preparation of iron and steel samples, bench top compact design, closed housing, max. safety provided with interlocking switch, robust column mounted in taper roller bearings, low noise with motor of 3 kW and 2800 rpm, with electronic brake system and overload protection, extraordinary access with sliding door, easy handling with sample swing movement from the front side of the machine, vertical precision positioning of the grinding head with an accuracy of 0.01 mm, large working space with LED lamp, standard outlet for dust exhauster, sample cooling available with water cooling and/or compressed air, complete and ready for operation. Standard packing included.

Without clamping devices.

Without cooling tank.

400V, 3-phase, 50 Hz.

## Accessories for SPECTRAL PG 52

GR 1943	Mechanical 3-jaw chuck
GR 1801	Mechanical clamping device for samples up to 60 mm.
GR 1948	Universal Jaws for Mechanical Clamping Device [GR 1801]
GR 1949	Jaws for Thin Specimens for Mechanical Clamping Device [GR 1801]
GR 1942	Permanent Magnetic Clamping Device, 100x150 mm.
GR 1929	Electromagnetic clamping plate
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1945	Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc.
YM 8813	Fine filter sheets for recirculation cooling tank [GR 1945], 10 pcs
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1397-00	Magnetic collector rod for recirculation cooling tank 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]]

## Spare Part Kit for SPECTRAL PG 52

GR 1944	Recommended Set of Spare Parts, SPC PG 52
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## SPECTRAL AG 102

81 05	<p><b>SPECTRAL AG 102</b> Automatic Grinding Machine for fast spectroscopic sample preparation of iron and steel samples, bench top compact design, Programmable with colored 7" HMI touch screen control, with Siemens PLC control unit, accurate and motorized positioning in Y and Z axis, closed housing, max. safety provided with interlocking switch, large working space with LED lighting, extraordinary access for easy handling with sliding door, automatic sample feeding with adjustable fine speed, controlled material removal from the specimen with accuracy of 0.01 mm grinding depth, high torque 3 kW grinding motor, with electronic brake system and overload protection, with 2800 rpm speed to obtain optimum surfaces on different materials, all parameters on colored LCD display, sample cooling available with water cooling and/or compressed air, ready for operation. Without clamping devices. Without cooling tank. 400V, 3-phase, 50Hz.</p>
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## Accessories for SPECTRAL AG 102

GR 1819	Pneumatic Clamping Device with 3-Jaws [To be ordered simultaneously together with the machine order]
GR 1958	Electromagnetic clamping plate [To be ordered simultaneously together with the machine order]
GR 1922	Automatic Sample Height Measurement System for full cyclic operation, with automatic dressing of cup grinding stone. [To be ordered simultaneously together with the machine order]
GR 1842	Automation Software for full cyclic operation. [To be ordered simultaneously together with GR 1828]
GR 1816	T-slotted table
GR 1945	Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc.
YM 8813	Fine filter sheets for recirculation cooling tank [GR 1945], 10 pcs
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1397-00	Magnetic collector rod for recirculation cooling tank 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]]

## Spare Part Kit for SPECTRAL AG 102

GR 1927	Recommended Set of Spare Parts, SPC AG 102
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## SPECTROSCOPY



### SPECTRAL MM 102

81 04

#### SPECTRAL MM 102

Automatic fine surface milling machine for preparation of non-ferrous metal samples for OES and XRF analysis, bench top compact design, Siemens PLC control unit, Programmable with colored 7" HMI touch screen control, closed housing, max. safety provided with interlocking switch, large working space with LED lighting, chip container, extraordinary access for easy handling with sliding door, for samples up to 70 mm dia. automatic sample feeding with adjustable fine speed control, controlled material removal from the specimen with accuracy of 0.01 mm, cutting motor 3 kW, with electronic brake system and overload protection, with variable rotational motor speed 500-4000 rpm to obtain optimum surfaces for different materials, ready for operation.  
Without milling head.  
Without clamping devices.  
Without cooling system.  
400 V, 3-phase, 50 Hz.

### Accessories for SPECTRAL MM 102

GR 1835	Milling head 63 mm for 5 cutting tips, SPC MM 102
GR 1836	Milling head 80 mm for 6 cutting tips, SPC MM 102
GR 1810	Manual measuring tool for cutter positioning
GR 1911	Automatic Sample Height Measurement System for full cyclic operation. (To be ordered simultaneously together with the machine order)
GR 1841	Automation Software for full cyclic operation. (To be ordered simultaneously together with GR 1840)
GR 1801	Mechanical clamping device for samples up to 60 mm.
GR 1948	Universal Jaws for Mechanical Clamping Device (GR 1801)
GR 1949	Jaws for Thin Specimens for Mechanical Clamping Device (GR 1801)
GR 1943	Mechanical 3-jaw chuck
GR 1913	Pneumatic Clamping Device (To be ordered simultaneously together with the machine order)
GR 1946	Universal Jaws for Pneumatic Clamping Device (GR 1913)
GR 1947	Jaws for Thin Specimens for Pneumatic Clamping Device (GR 1913)
GR 1816	T-slotted table
GR 1909	Air cooling system for Spectral MM 102 (To be ordered simultaneously together with the machine order)
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1908	Mobile Chip Container for SPECTRAL MM 102 (Only used with GR 1907 Floor Cabinet)



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