



## **Fully automatic, PC-controlled preparation system with a unique graphical user interface**

MAPS-2 is the ultimate solution for automatic preparation of metallographic specimens. A modular system which is tailored exactly to the user's specific requirements. MAPS-2 takes care of the entire preparation process - from plane grinding to final polishing – including cleaning and drying. The preparation quality is excellent, and due to the precise control of all preparation parameters and consumption of abrasives and lubricants, the reproducibility is second to none. Another consequence of controlled preparation is considerable savings in preparation costs.

Modularity means flexibility. MAPS-2 is an obvious choice for high capacity preparation. Whatever the requirements are, a MAPS-2 system can be designed to meet your needs.

- **Tailor-made solution**
- **High volume preparation**
- **Excellent preparation quality**
- **Outstanding reproducibility**
- **Considerable savings in manpower and consumables**
- **Very easy and intuitive operation**

# Modular Automatic Preparation Systems = MAPS-2

MAPS-2 consists of modules, each with two work stations, one cleaning station and a specimen holder arm. Accessories such as dosing units, an additional recirculation cooling unit, level indicators for consumables, etc. differ according to the configuration of each MAPS-2 system. Conveyors transport the specimen holders from unit to unit. Suspensions and lubricants are stored in easily accessible modules.

## Almost endless combination possibilities

The MAPS-2 modules can be configured in numerous different ways, depending on the requirements. This is the consequence of modularity taken to its logical extreme: each MAPS-2 system is configured on the basis of a thorough analysis of the user's specific needs.

## Very high efficiency

A steady flow of specimen holders can pass through MAPS-2. While the second module takes care of polishing, the first module is already busy plane grinding the next batch of specimens. A special queue function makes it possible to prepare different materials using different preparation methods. The queue function ensures an extremely fast throughput and eliminates all bottleneck problems, even at high volume preparation.

## Remote diagnostics and software updates

Maps-2 can be connected to a Local Area Network and can thus be accessed via the Internet. This enables Struers service engineers to remotely check the condition of Maps-2 and detect any errors. Possible software updates can also be carried out remotely, reducing machine downtime to an absolute minimum.

## Reduce preparation costs More time for demanding work

MAPS-2 takes care of the entire preparation process, even when it comes to the most complex specimens, leaving the operator time for other chores. In many cases, materialographic preparation has been a bottleneck. MAPS-2 eliminates this problem and leaves plenty of time for the one task which has not yet been satisfactorily automated: microscopic examination and evaluation of a materialographic structure.



1. Six specimen holders queue up in the conveyor leading into MAPS-2



2. Specimen holders are fed into the first position - plane grinding - by conveyor



5. When the grinding is completed, the specimen holder is carried to the cleaning chamber



3. The specimen holders are collected from the conveyor, using a special lifting device



6. After fine grinding the specimen holder moves on to polishing



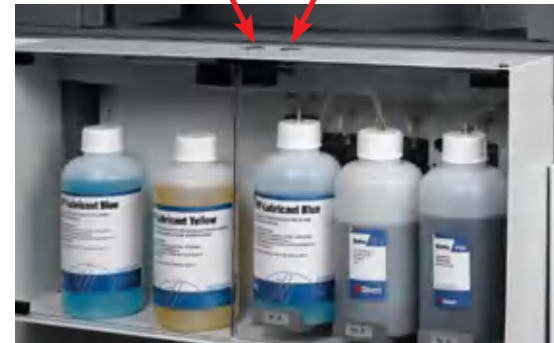
4. Grinding is now in operation. The next specimen holders are ready for collection



7. The finished specimen holder is moved to the conveyor, where it can be collected by the metallographer for microscopic examination



Peristaltic pumps guarantee precise dosing of suspension and lubricant, and built in weighing cells continuously monitor the liquid level in the bottles. If necessary, the manual dosing buttons can be used to apply additional lubricant or suspension during the process.



### Reduce preparation costs with MAPS-2

Automation not only means unique reproducibility and high quality – it also implies large cost savings. Within the world of materialography it is gradually realized that the initial cost of automatic equipment is more than counterbalanced by savings in time, labour and consumables. Materialographic preparation employs costly diamond products. Due to precise, automatic control of consumables consumption, MAPS-2 takes care that exactly the right amount is used – no more, no less.

### Touch-screen controlled operation

MAPS-2 is programmed and operated from a large touch-screen. A single tap on the screen inserts a new specimen holder. No further action is necessary when the method is the same as the previous one. To select a different method another tap opens the methods window from where all existing methods can be recalled immediately. New methods can be programmed instantly and also the configuration of the machine can be changed on the fly. The touch screen can be mounted either on the right (default) or left hand side of Module 1.

Additionally it is also possible to have a separate power supply so that the built-in PC and the touch screen can be operated even if one of the modules is dysfunctional.

### High capacity specimen production

Quality control is more and more integrated into the production area. This makes new demands to the preparation equipment within the fields of reliability and safety. MAPS-2 is prepared for a rough life – working around the clock in an industrial environment. Sensors constantly monitor the process, ensuring a

smooth and uninterrupted preparation process. In case of shutdown the operator is specifically advised which consumables to refill, etc. While MAPS-2 is working in the production area, the operator may monitor the process from the office via the LAN. With MAPS-2 as the foundation of current quality control, adjustments in the production can be carried out with minimal delay.

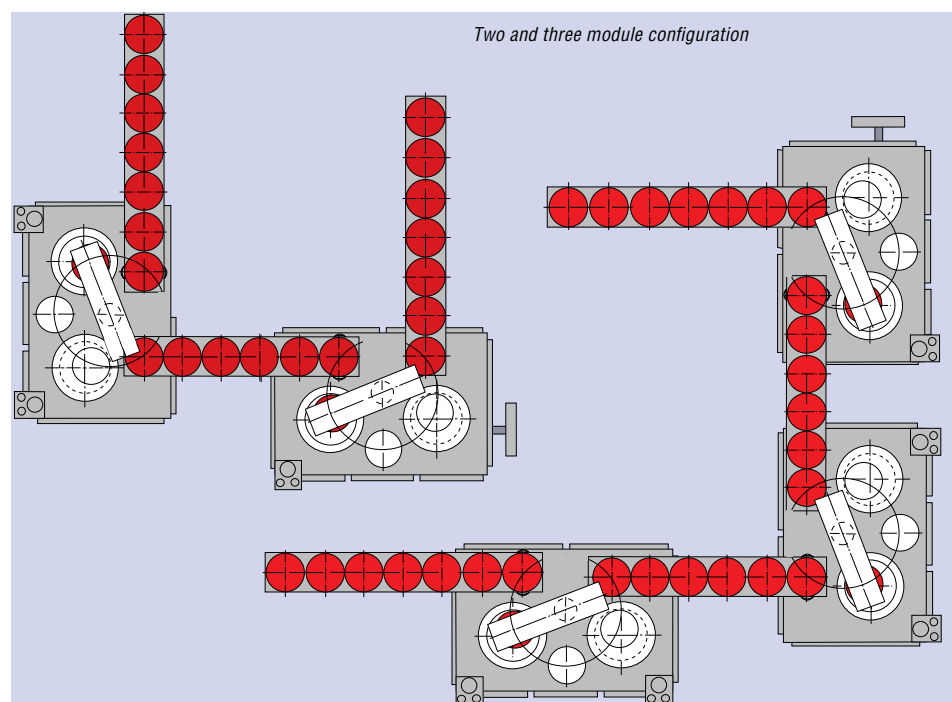
### Safety

MAPS-2 sets new standards for safety. With a totally automatic system every aspect of personal and machine safety has to be included. MAPS-2 complies with the strictest international safety standards. The conveyors are equipped with safety covers and the entire machine is closed with transparent windows and doors. The process can be monitored easily, but access to moving or rotating parts is prohibited and if it should happen that a

specimen was not clamped properly it cannot fly out of the machine.

### A typical MAPS-2 configuration

A two-module configuration for fully automated, high-volume preparation. The two modules are controlled by a PC and linked by a connection conveyor. The two work stations in Module 1 perform plane grinding, fine grinding and specimen cleaning. Module 2 carries out the two polishing steps, plus cleaning and drying. A queue function makes it possible to line up different specimen holders. It also eliminates stoppages: the transport system is non-synchronous, so the conveyors serve as accumulators of specimen holders. If 4 preparation steps are not sufficient, an extra module can easily be added to expand the number of preparation steps.



Technical data	
<b>Connections</b> Power: Compressed-air supply: Water supply:	Three-phase 6 bar (90 psi) – consumption approx. 200 l/min Mains water input, output to normal drain
<b>Main dimensions</b> Height: Width: Depth: Weight:	MAPS-2 Preparation Module 1900 mm 1470 mm 1080 mm 850 kg
<b>Specimen holders</b> Size:	160 mm dia. and 200 mm dia. Abra specimen holders with conveyor ring
<b>Specimen holder arm</b> Specimen holder motor: Operating force:	150 rpm, 0.37 kW (0.5 HP) 50-700 N in steps of 10 N
<b>Plane grinding work station</b> Main motor: Rotation speed: Grinding stone: Dressing: Recirculation cooling unit:	4 kW (5.4 HP) 1450 rpm Diameter 356 mm, grinding width 115 mm Automatic dressing of grinding stone 60 l/min. Container capacity 65 l
<b>Fine grinding and polishing work station</b> Main motor: Rotation speed: Grinding/polishing disc:	550 W (0.7 HP) / 1110 W (1.5 HP) 150/300 rpm Diameter 300-350 mm
<b>Cleaning station</b>	Programmable automatic cleaning: - Cleaning time - High-pressure water rinsing - Cleaning with detergent - Cleaning with alcohol - Air-drying
<b>Conveyor</b> Capacity:	For 160 and 200 mm dia. specimen holders with conveyor ring. 6 specimen holders
<b>Dosing system</b> Bottle for DP-Suspension or DiaPro: Bottle for DP-Lubricant: Bottle for OP-Suspension:	1000 ml 1000 ml 1000 ml

Specifications	Cat. no:
<b>MAPS-2 Preparation Module</b> With 1 plane grinding station and 1 fine grinding/polishing station (150/300 rpm). With recirculation cooling unit (06108120/30), 1 Bottle Unit, 1 Dosing System with 3 DP-pumps (06107600), removal rate sensor (06103000) and disc cooling. With built-in PC and touch-screen operation.	061010xx
With 2 fine grinding/polishing stations (150/300 rpm), 2 Bottle Units and 1 Dosing System with 3 DP-pumps (06107600), 1 Dosing System with 2 DP-pumps and 1 OP-pump (06107610), and disc cooling.	061020xx
<b>Conveyor Feed Module</b> For mounting on MAPS-2 preparation module, with safety lid.	061090xx
<b>Conveyor Connection Module</b> For mounting on MAPS-2 preparation module, with safety lid.	061091xx
<b>Conveyor Delivery Module</b> For mounting on MAPS-2 preparation module, with safety lid and built-in drying fan.	061092xx
<b>Recirculation Cooling Unit</b> To use recirculated water for grinding on a MAPS-2 preparation module with 2 fine grinding/polishing stations. For MAPS-2	06108120/30
<b>Recirculation Connection Kit</b> For connection of 2 work stations to one recirculation cooling unit. For MAPS-2	06108100/10
<b>Dosing Module 3 x DP</b> 1 Dosing module with 3 DP-pumps. For MAPS-2	06107600
<b>Dosing Module 2 x DP + 1 OP</b> 1 Dosing module with 2 DP-pumps and 1 OP-pump. For MAPS-2	06107610
<b>Level Indication Unit</b> For continuously monitoring the contents of suspensions and lubricants in 1 Dosing System (for 3 bottles). For MAPS-2	06107700
<b>Alcohol Separation Kit</b> For collection of the waste-alcohol from the cleaning station. For MAPS-2	06108200
<b>Signal Tower</b> To display the actual working condition of MAPS-2	06104500

*Struers' equipment is in conformity with the provisions of the applicable International Directives and their' appurtenant Standards (please contact you local supplier for details).*

*Struers' products are subject to constant product development. Therefore, we reserve the right to introduce changes in our products without notice.*