



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

MAPS-2 is the ultimate solution for automatic preparation of materialographic 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

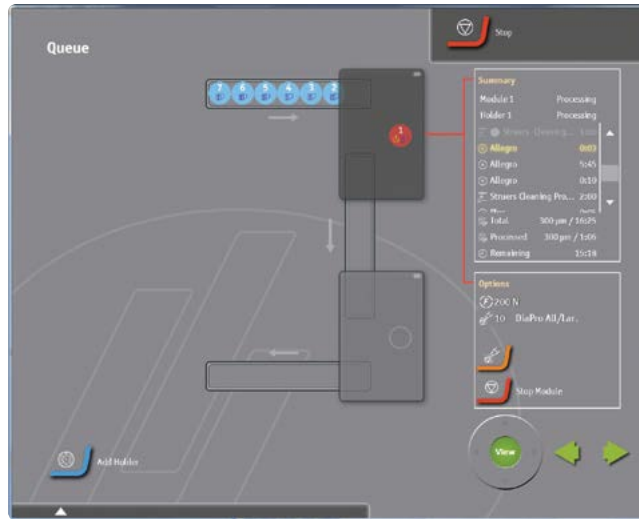
A steady flow of specimen holders can pass through MAPS-2. While the second module takes care of polishing, the first module is already busy plane grinding the next batch of specimens. A special queue function makes it possible to prepare different materials using different preparation methods. The queue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

Remote diagnostics and software updates

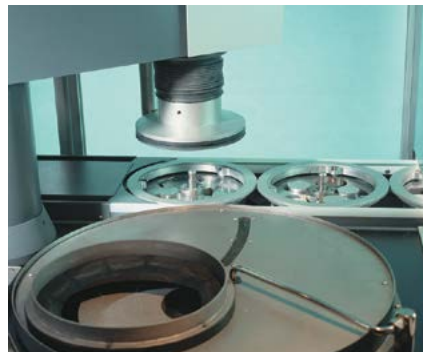
Maps-2 can be connected to a Local Area Network and can thus be accessed via the Internet. This enables Struers service engineers to remotely check the condition of Maps-2 and detect any errors. Possible software updates can also be carried out remotely, reducing machine downtime to an absolute minimum.

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.



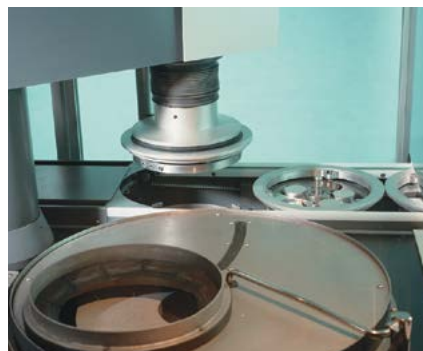
1. Six specimen holders queue up in the conveyor leading into MAPS-2



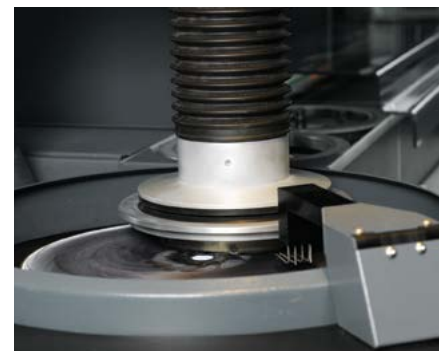
2. Specimen holders are fed into the first position - plane grinding - by conveyor



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



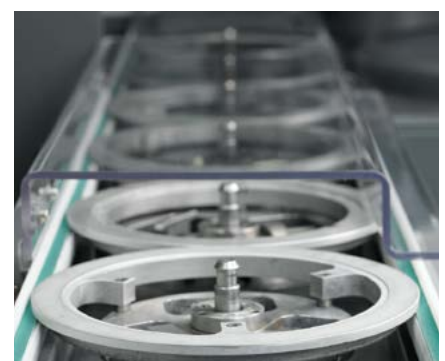
3. The specimen holders are collected from the conveyor, using a special lifting device



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



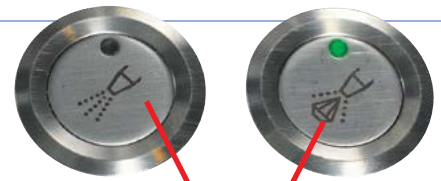
4. Grinding is now in operation. The next specimen holders are ready for collection



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.

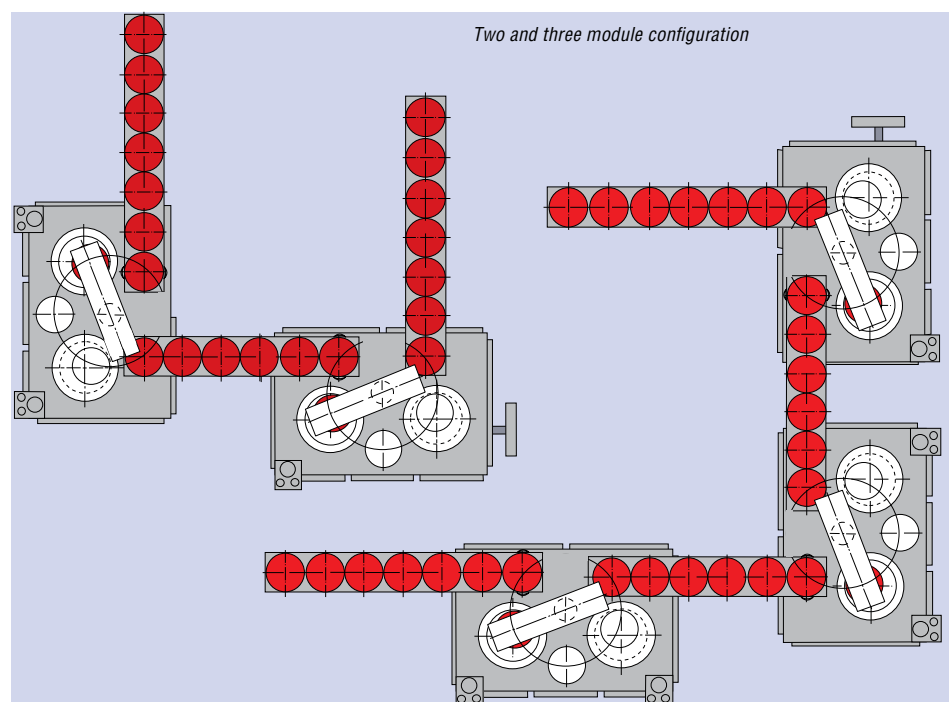
Safety

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

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

Specifications
Cat. no:

MAPS-2 Preparation Module 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
Conveyor Feed Module For mounting on MAPS-2 preparation module, with safety lid.	061090xx
Conveyor Connection Module For mounting on MAPS-2 preparation module, with safety lid.	061091xx
Conveyor Delivery Module For mounting on MAPS-2 preparation module, with safety lid and built-in drying fan.	061092xx
Recirculation Cooling Unit To use recirculated water for grinding on a MAPS-2 preparation module with 2 fine grinding/polishing stations. For MAPS-2	06108120/30
Recirculation Connection Kit For connection of 2 work stations to one recirculation cooling unit. For MAPS-2	06108100/10
Dosing Module 3 x DP 1 Dosing module with 3 DP-pumps. For MAPS-2	06107600
Dosing Module 2 x DP + 1 OP 1 Dosing module with 2 DP-pumps and 1 OP-pump. For MAPS-2	06107610
Level Indication Unit For continuously monitoring the contents of suspensions and lubricants in 1 Dosing System (for 3 bottles). For MAPS-2	06107700
Alcohol Separation Kit For collection of the waste-alcohol from the cleaning station. For MAPS-2	06108200
Signal Tower 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.

Struers ApS
 Pederstrupvej 84
 DK-2750 Ballerup, Denmark
 Phone +45 44 600 800
 Fax +45 44 600 801
 struers@struers.dk
 www.struers.com

AUSTRALIA & NEW ZEALAND

Struers Australia
 27 Mayneview Street
 Milton QLD 4064
 Australia
 Phone +61 7 3512 9600
 Fax +61 7 3369 8200
 info.au@struers.dk

BELGIQUE (Wallonie)

Struers S.A.S.
 370, rue du Marché Rollay
 F- 94507 Champigny
 sur Marne Cedex
 Téléphone +33 1 5509 1430
 Télécopie +33 1 5509 1449
 struers@struers.fr

BELGIUM (Flanders)

Struers GmbH Nederland
 Zomerdijk 34 A
 3143 CT Maassluis
 Telefoon +31 (10) 599 7209
 Fax +31 (10) 5997201
 netherlands@struers.de

CANADA

Struers Ltd.
 7275 West Credit Avenue
 Mississauga, Ontario L5N 5M9
 Phone +1 905-814-8855
 Fax +1 905-814-1440
 info@struers.com

CHINA

Struers Ltd.
 No. 1696 Zhang Heng Road
 Zhang Jiang Hi-Tech Park
 Shanghai 201203, P.R. China
 Phone +86 (21) 6035 3900
 Fax +86 (21) 6035 3999
 struers@struers.cn

CZECH REPUBLIC & SLOVAKIA

Struers GmbH Organizační složka
 vědeckotechnický park
 Pilepšská 1920,
 CZ-252 63 Roztoky u Prahy
 Phone +420 233 312 625
 Fax +420 233 312 640
 czechrepublic@struers.de
 slovakia@struers.de

DEUTSCHLAND

Struers GmbH
 Carl-Friedrich-Benz-Straße 5
 D- 47877 Willich
 Telefon +49 (0) 2154 486-0
 Fax +49 (0) 2154 486-222
 verkauf@struers.de

FRANCE

Struers S.A.S.
 370, rue du Marché Rollay
 F-94507 Champigny
 sur Marne Cedex
 Téléphone +33 1 5509 1430
 Télécopie +33 1 5509 1449
 struers@struers.fr

HUNGARY

Struers GmbH
 Magyarországi Fióktelep
 Tatai ut 53
 2821 Gyermely
 Phone +36 (34) 880546
 Fax +36 (34) 880547
 hungary@struers.de

IRELAND

Struers Ltd.
 Unit 11 Evolution @ AMP
 Whittle Way, Catcliffe
 Rotherham S60 5BL
 Tel. +44 0845 604 6664
 Fax +44 0845 604 6651
 info@struers.co.uk

ITALY

Struers Italia
 Via Monte Grappa 80/4
 20020 Arese (MI)
 Tel. +39-02/38236281
 Fax +39-02/38236274
 struers.it@struers.it

JAPAN

Marumoto Struers K.K.
 Takara 3rd Building
 18-6, Higashi Ueno 1-chome
 Taito-ku, Tokyo 110-0015
 Phone +81 3 5688 2914
 Fax +81 3 5688 2927
 struers@struers.co.jp

NETHERLANDS

Struers GmbH Nederland
 Zomerdijk 34 A
 3143 CT Maassluis
 Telefoon +31 (10) 599 7209
 Fax +31 (10) 5997201
 netherlands@struers.de

NORWAY

Struers ApS, Norge
 Sjøskogveien 44C
 1407 Vinterbro
 Telefon +47 970 94 285
 info@struers.no

ÖSTERREICH

Struers GmbH
 Zweigniederlassung Österreich
 Betriebsgebiet Puch Nord 8
 5412 Puch
 Telefon +43 6245 70567
 Fax +43 6245 70567-78
 austria@struers.de

POLAND

Struers Sp. z o.o.
 Oddział w Polsce
 ul. Jasnogórska 44
 31-358 Kraków
 Phone +48 12 661 20 60
 Fax +48 12 626 01 46
 poland@struers.de

ROMANIA

Struers GmbH, Sucursala Bucuresti
 Str. Preciziei nr. 6R
 062203 sector 6, Bucuresti
 Phone +40 (31) 101 9548
 Fax +40 (31) 101 9549
 romania@struers.de

SCHWEIZ

Struers GmbH
 Zweigniederlassung Schweiz
 Weissenbrunnstraße 41
 CH-8903 Birmensdorf
 Telefon +41 44 777 63 07
 Fax +41 44 777 63 09
 switzerland@struers.de

SINGAPORE

Struers Singapore
 627A Aljunied Road,
 #07-08 BizTech Centre
 Singapore 389842
 Phone +65 6299 2268
 Fax +65 6299 2661
 struers.sg@struers.dk

SPAIN

Struers España
 Camino Cerro de los Gamos 1
 Building 1 - Pozuelo de Alarcón
 CP 28224 Madrid
 Teléfono +34 917 901 204
 Fax +34 917 901 112
 struers.es@struers.es

SUOMI

Struers ApS, Suomi
 Hietalahdenranta 13
 00180 Helsinki
 Puhelin +358 (0)207 919 430
 Faksi +358 (0)207 919 431
 finland@struers.fi

SWEDEN

Struers Sverige
 Box 20038
 161 02 Bromma
 Telefon +46 (0)8 447 53 90
 Telefax +46 (0)8 447 53 99
 info@struers.se

UNITED KINGDOM

Struers Ltd.
 Unit 11 Evolution @ AMP
 Whittle Way, Catcliffe
 Rotherham S60 5BL
 Tel. +44 0845 604 6664
 Fax +44 0845 604 6651
 info@struers.co.uk

USA

Struers Inc.
 24766 Detroit Road
 Westlake, OH 44145-1598
 Phone +1 440 871 0071
 Fax +1 440 871 8188
 info@struers.com