

Xmatic

Instruction Manual

Original Instructions



CE

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1 About this manual

**CAUTION**

Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.

**Note**

Read the Instruction Manual carefully before use.

**Note**

If you want to view specific information in detail, see the online version of this manual.

1.1 Accessories and consumables

Accessories

For information about the available range, see [the Xmatic accessories overview on the Struers website](http://www.struers.com) (<http://www.struers.com>).

Consumables

The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

Other products may contain aggressive solvents, which dissolve e.g. rubber seals. The warranty may not cover damaged machine parts (e.g. seals and tubes), where the damage can be directly related to the use of consumables not supplied by Struers.

For information about the available range, see: [The Struers Website](http://www.struers.com) (<http://www.struers.com>).

2 Safety

2.1 Intended use

Xmatic is intended for professional automatic materialographic grinding, polishing and cleaning of materials for further materialographic preparation. The machine is only to be operated by skilled/trained personnel. The machine is designed to be used with Struers consumables specially designed for this purpose and this type of machine.

The machine is for use in a professional working environment (e.g. a materialographic laboratory).

Do not use the machine for the following Preparation of materials other than materials suitable for materialographic studies. The machine must not be used for any type of explosive and/or flammable material, or materials which are not stable during machining, heating or pressure.

Models

Xmatic with high pressure cleaning and vertical conveyor

Xmatic with high pressure cleaning, ultra-sonic cleaning and vertical conveyor

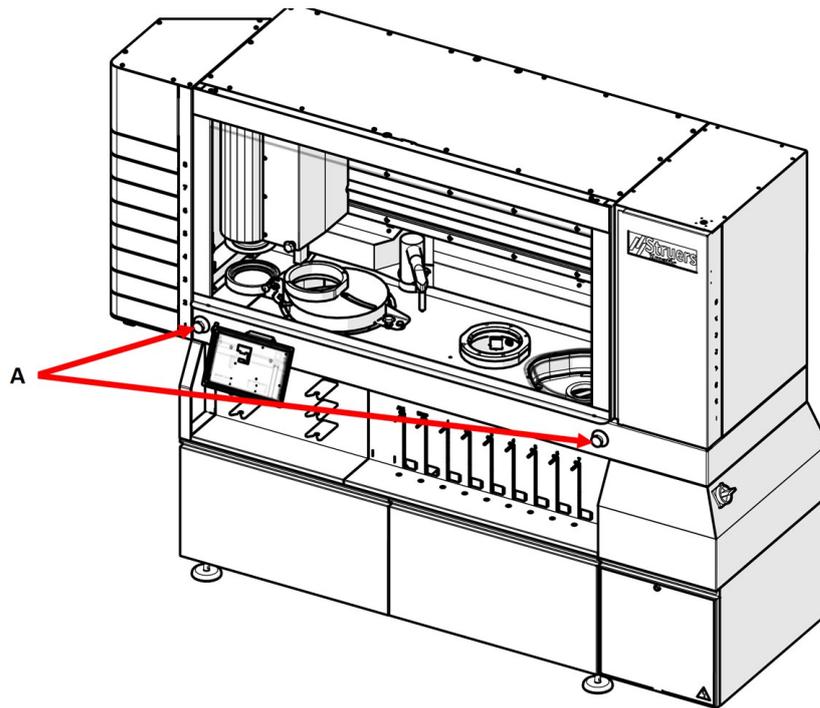
Optional: Recirculation unit for MD grinding/polishing station.

2.2 Safety functions - (SF)

The machine is equipped with the following safety devices:

- Emergency stops - SF-1
Stops all hazardous movements
- Abrasive guard interlock - SF-2
Prevents the stone/disc from turning when the lid is open
- Limited speed function, stone - SF-3
Stops the motor if the rotational speed is exceeded
- Limited speed function, mover head - SF-4
Stops the motor if the rotational speed is exceeded
- Main safety cover interlock, hazardous movements - SF-5
Prevents any movement in the work zone when the main safety cover is open
- Main safety cover interlock, water and ethanol - SF-5A
Prevents water and ethanol from being dosed when the main safety cover is open
- Main safety cover interlock with locking device - SF-6
Prevents access to any moving part in case of after-run or loss of power
- MD elevator door locking device - SF-7
Prevents the elevator from moving when the door is open
- MD elevator door locking device - SF-8
Prevents access to the MD elevator in case of after-run or loss of power
- Vertical conveyor doors interlock - SF-9
Prevents movements in the vertical conveyor when the door is open
- Recirculation unit doors interlock, MD station - SF-10
Prevents the pumps from operating when the door is open
- Recirculation unit doors interlock, grinding stone station - SF-11
Prevents the pumps from operating when the door is open
- Alcohol exhaust timer - SF-12
Evacuates alcohol fumes from work zone area

Emergency stops



A Emergency stops

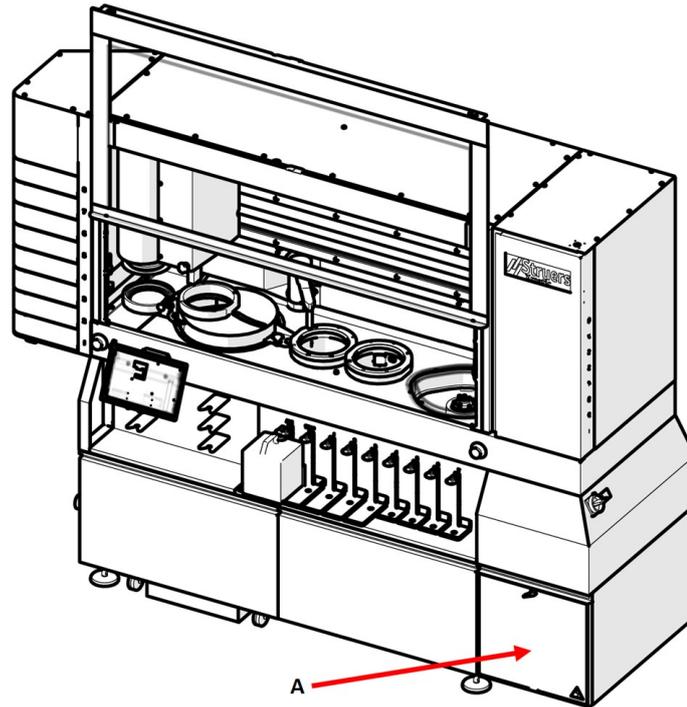
Access the preparation area during preparation

Once the machine has completed the preparation, it can take up to 3 minutes before you can open the main safety cover.

If you use alcohol, fumes must be removed from the main chamber via the exhaust function.

Electrical compartment - residual voltage

| | | |
|---|---|--|
|  | WARNING | |
| |  |  WARNING Shock hazard. Residual voltage exists when power is removed. Do not open cabinet for 15 minutes after removing power. |



A Electrical compartment

2.3 Xmatic safety precautions



2.3.1 Read carefully before use

Specific safety precautions - residual risks

1. Ignoring this information and mishandling of the equipment can lead to severe bodily injuries and material damage.
2. Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the type plate of the machine. The machine must be earthed (grounded).
3. Switch off the machine, disconnect the electrical power cable before you dismantle the machine or install additional components.
4. Connect the machine to a cold water tap. Make sure that the water connections are leak-proof and that the water outlet is working. Cut off the water supply if the machine is not going to be used for a long period of time.
5. Make sure that the emergency stop is in working order.
6. When using specimen holders, make sure that all specimens are securely clamped and properly balanced before you start the preparation process.
7. Wear suitable gloves to protect fingers from abrasives and warm/sharp specimens.

8. The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.
9. You must connect the machine to an exhaust system. We recommend the use of a system with monitoring.
10. Shock hazard. Residual voltage exists when power is removed. Do not open cabinet for 15 minutes after removing power.

General safety precautions

1. The machine must be installed in compliance with local safety regulations. All functions on the machine and any connected equipment must be in working order.
2. The operator must read the safety precautions and Instruction Manual, as well as relevant sections of the manuals for any connected equipment and accessories. The operator must read the Instruction Manual and, where applicable, the Safety Data Sheets for the applied consumables.
3. Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.
4. Dismantling of any part of the equipment, during service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).
5. If you observe malfunctions or hear unusual noises, switch off the machine and call technical service.
6. If the equipment is subjected to misuse, incorrect installation, alteration, neglect, accident or incorrect repair, Struers will accept no responsibility for damage to the user or the equipment.

2.4 Safety messages

Struers uses the following signs to indicate potential hazards.



ELECTRICAL HAZARD

This sign indicates an electrical hazard which, if not avoided, will result in death or serious injury.



DANGER

This sign indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



WARNING

This sign indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



CAUTION

This sign indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



CRUSHING HAZARD

This sign indicates a crushing hazard which, if not avoided, could result in minor, moderate or serious injury.



HEAT HAZARD

This sign indicates a heat hazard which, if not avoided, can result in minor, moderate or serious injury.



Emergency stop

Emergency stop

General messages



Note

This sign indicates that there is a risk of damage to property, or a need to proceed with special care.



Hint

This sign indicates that additional information and hints are available.

2.5 Safety messages in this manual



WARNING

If there are visible signs of deterioration or damage to the main safety cover, it must be replaced immediately. Contact Struers Service.



WARNING

Safety critical components must be replaced after a maximum lifetime of 20 years. Contact Struers Service.



WARNING

Do not use the machine with defective safety devices. Contact Struers Service.



WARNING

In case of fire, alert bystanders, the fire brigade and cut power. Use a powder fire extinguisher. Do not use water.



WARNING

| | | |
|--|--|----------------|
| | | WARNING |
| | Shock hazard. Residual voltage exists when power is removed. Do not open cabinet for 15 minutes after removing power. | |

**WARNING**

Always wear protective gloves and safety goggles while you empty the alcohol bottle.

**WARNING**

The machine and its parts have been designed to operate 16 hours daily/220 days annually. If used as indicated, the safety critical components must be replaced after a maximum lifetime of 20 years.

If you use the machine for longer periods of time than indicated, the safety critical components must be replaced sooner.

Contact Struers Service.

**ELECTRICAL HAZARD**

Disconnect the electrical power supply before installing electrical equipment.

**ELECTRICAL HAZARD**

The machine must be earthed (grounded).

**ELECTRICAL HAZARD**

Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the type plate of the machine.

Incorrect voltage can damage the electrical circuit.

**ELECTRICAL HAZARD**

The equipment is protected by a safety insulation transformer.

Make sure that the adequate Ik min level is present.

Contact a qualified electrician to verify the solution.

Always follow local regulations.

**ELECTRICAL HAZARD**

The pump of the recirculation cooling unit must be earthed (grounded).

Make sure that the electrical power supply voltage corresponds to the voltage stated on the type plate of the pump.

Incorrect voltage can damage the electrical circuit.

**ELECTRICAL HAZARD**

Disconnecting the unit from the electrical power supply must only be done by a qualified technician.

**CRUSHING HAZARD**

Take care of your fingers when handling the machine.

Wear safety shoes when handling heavy machinery.

**CRUSHING HAZARD**

Always wear safety shoes when handling specimen holders, as they can be heavy.



CAUTION

Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.



CAUTION

Do not use Xmatic if it is damaged.



CAUTION

If power is interrupted during operation, the main safety cover and the MD elevator door will remain locked until power returns.



CAUTION

The safety devices must be tested at least once a year.



CAUTION

Testing should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).



CAUTION

Prolonged exposure to loud noises may cause permanent damage to a person's hearing.
Use hearing protection if the exposure to noise exceeds the levels set by local regulations.



CAUTION

Do not use the machine with non-compatible accessories or consumables.



CAUTION

Wear suitable gloves to protect fingers from abrasives and warm/sharp specimens.



CAUTION

Make sure that the machine is level.



CAUTION

The machine must not operate when it is resting on its wheels.



CAUTION

Avoid skin contact with the coolant additive.

**CAUTION**

The recirculation tank is very heavy when it is full.

**CAUTION**

Place the recirculation unit in its final position, or make sure that you can easily push it into position before filling the tank.

**CAUTION**

The pressure of the cooling fluid supplied to the machine must be max. 2 bar.

**CAUTION**

You must connect the machine to an exhaust system. We recommend the use of a system with monitoring.

**CAUTION**

In case of power failure, do not use excessive force when you turn the triangular key to access the work zone. The lock could be damaged.

3 Get started - introduction

3.1 Device description

Xmatic is an automatic machine for materialographic grinding, polishing and cleaning.

The operator selects the preparation parameters, the grinding/polishing surfaces, and suspension/lubricant to be used for the method. There are standard preparation and cleaning methods on Xmatic, and customized methods can be added.

The operator starts the process by placing a specimen holder in a drawer on the vertical conveyor. Up to 8 specimen holders can be placed in the vertical conveyor.

When a specimen holder is placed in the vertical conveyor, the machine automatically detects the specimen holder and indicates it on the graphical user interface (GUI). The number of specimens in the specimen holder can automatically be identified by the machine to determine the total force needed for the method.

The operator selects between different preparation methods for each individual specimen holder. The method contains all information needed for the preparation (grinding/polishing steps, dosing levels, cleaning steps).

The operator presses “start” to initiate the process based on the methods selected for each specimen holder. The vertical conveyor delivers the specimen holder to the pick-up point from where the mover head picks it up. Depending on the selected method, the mover head brings the specimen holder through each of the process steps.

A typical method includes a high removal plane grinding step, followed by a cleaning step in the ultrasonic chamber, or the high-pressure cleaning chamber. Afterwards, a series of grinding and or polishing steps are carried out on the MD grinding/polishing station. In the MD station, the machine can automatically exchange the MD surfaces and position the doser arm over the MD surface.

During a step on the MD station the machine automatically doses the selected consumables or water. Between each step on the MD station the specimen holder is typically cleaned and dried.

After the last process step, the mover head delivers the specimen holder back to the pick-up station from where the vertical conveyor brings it back to the drawer. The drawer opens automatically to indicate that the specimens in the specimen holder are ready for inspection.

The Xmatic is able to automatically process all the specimen holders in the vertical conveyor without operator intervention.

The Xmatic recognizes all Struers consumables present in the machine. This allows the machine to prompt the operator about missing or low consumable levels for the selected methods.

The main safety cover of Xmatic locks when the operator starts the machine, and it remains locked. The operator can manually unlock the main safety cover when all hazardous movements has come to a stop.

It is not possible for the machine to run a process while the main safety cover is open.

Cleaning

Cleaning is done via high-pressure cleaning and/or ultrasonic cleaning depending on the selected cleaning method. These types of cleaning are carried out in two separates chambers. Alcohol can be applied during cleaning and drying of water-sensitive materials, and it is a part of the high-pressure cleaning process. Concentrated soap can also be applied during the high-pressure cleaning process.

MD elevator

MD surfaces will automatically be exchanged depending on the selected method. Up to 8 different grinding/polishing surfaces can be placed in the MD elevator.

The operator can access the MD elevator whenever the machine is idle. If a process is running, it should be paused in order to access the MD elevator.

Bottle rack

Several suspensions and lubricant including oxide polishing suspension can be chosen depending on the method. The bottle rack can fit up to 7 bottles of consumables and 1 for alcohol and 1 for concentrated soap. The consumable bottles are connected to the machine via a connector dedicated for each individual bottle position.

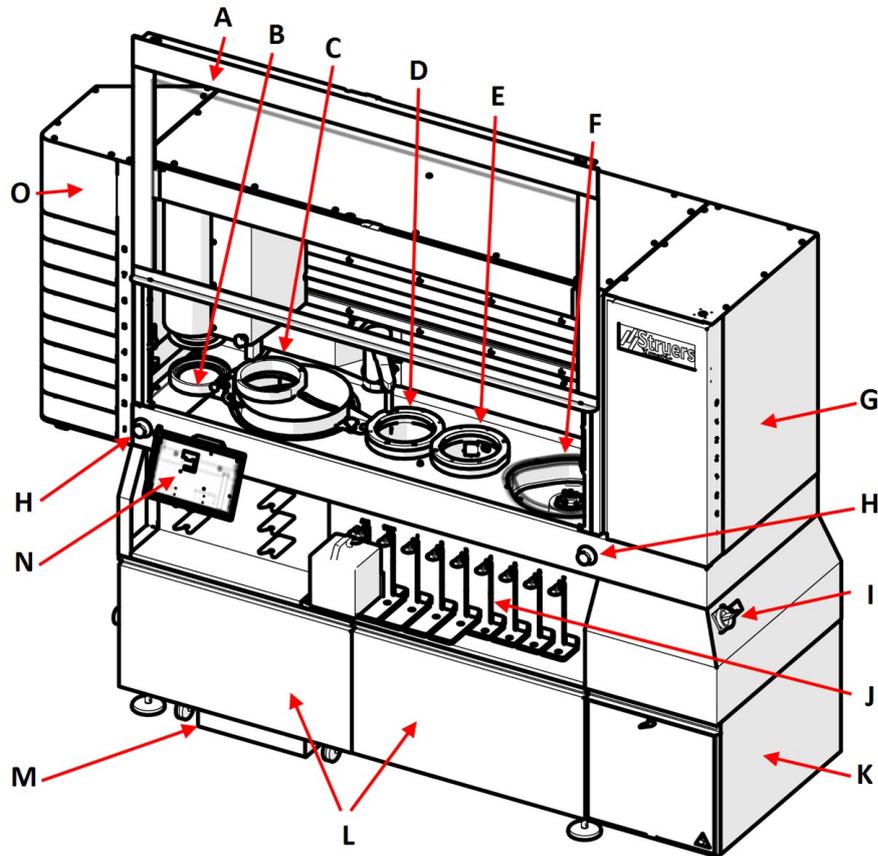
The operator can change a suspension/lubricant bottle while the machine is preparing a specimen holder. However, this is not the case if the machine is using the suspension/lubricant in question.

If a bottle is removed and a new is inserted, the GUI will ask if it is necessary to automatically flush, and the tube can be inserted in the flush function before it is attached to the new bottle.

The machine is equipped with 2 emergency stops. If one of the emergency stops is activated, all hazardous moving parts are stopped.

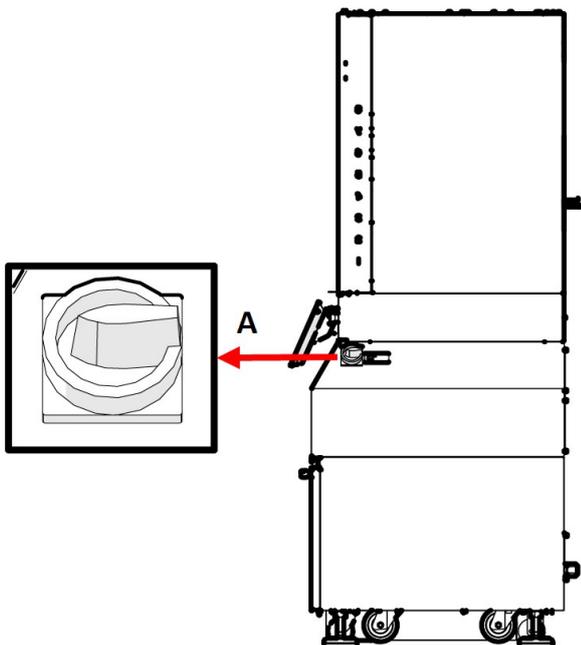
3.2 Overview of the machine

Front view



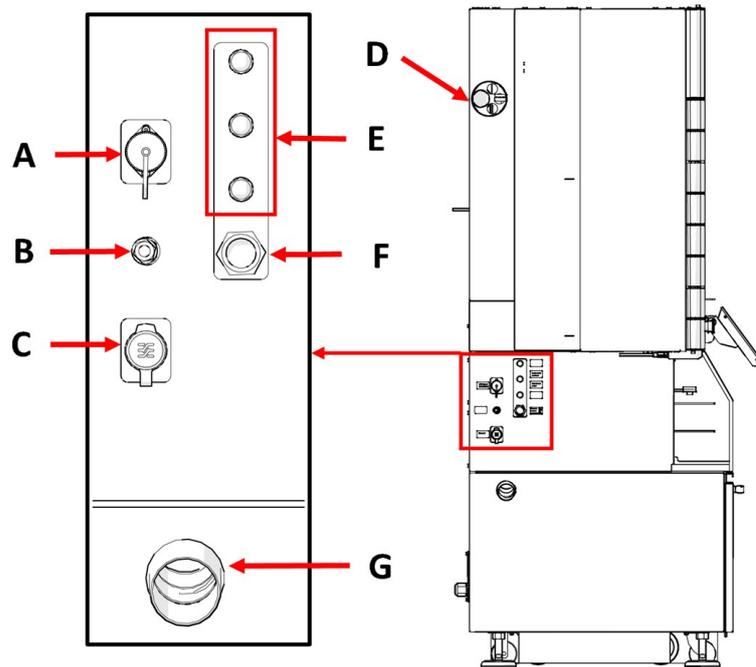
- | | |
|--|---|
| A Main safety cover | I Main switch |
| B Pick-up point | J Bottle rack |
| C Grinding station | K Electrical compartment |
| D Ultrasonic cleaning station (Optional) | L Recirculation unit compartment |
| E High pressure cleaning station | M Recirculation unit |
| F MD grinding and polishing | N Display |
| G MD-elevator | O Vertical conveyor |
| H Emergency stop | |

Side view, right side



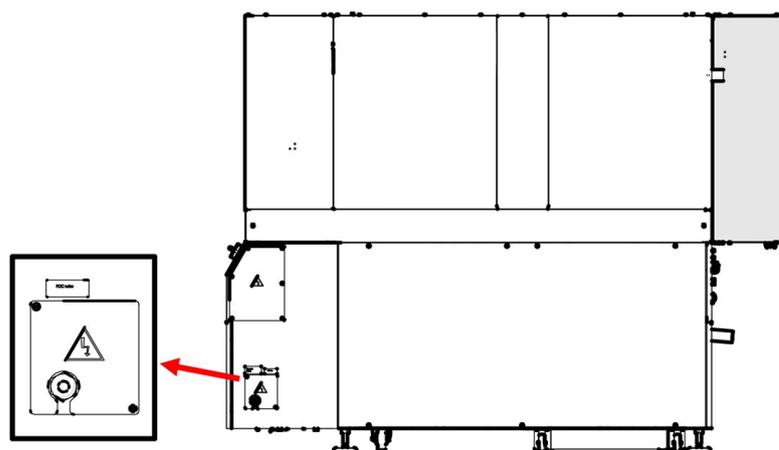
A Main switch

Side view, left side



- | | |
|----------------------------------|---|
| A External control signal | E Water flow regulators and water supply |
| B Compressed air | F Water inlet |
| C Ethernet connection | G Water outlet |
| D Exhaust | |

Rear view - Power supply



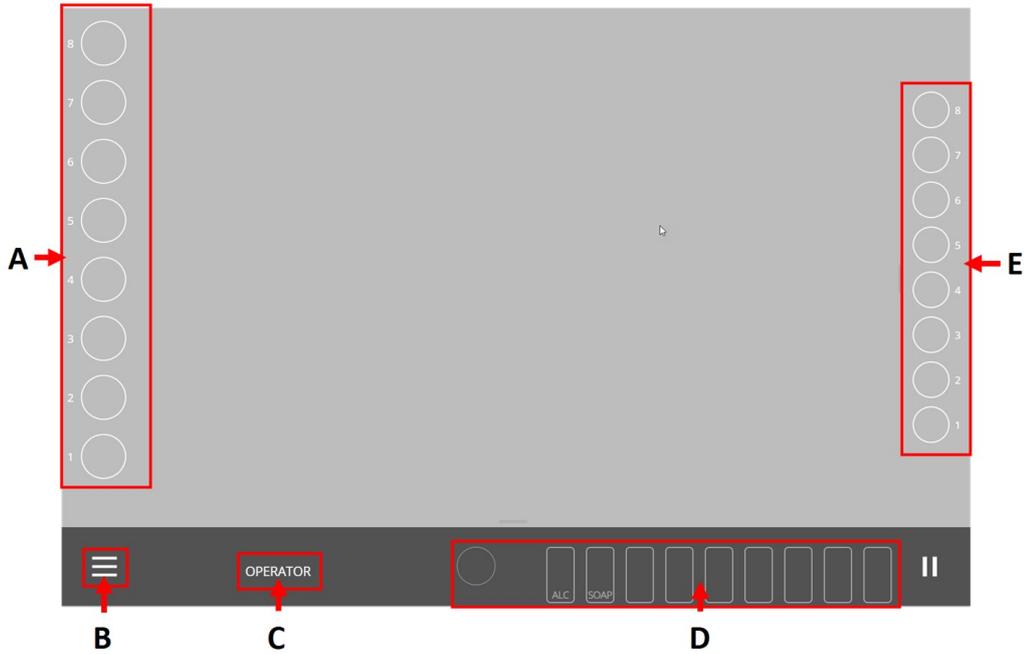
3.3 Overview of the display

The display is a touch screen, where you tap on buttons and specific areas to access a screen or activate a function.

All programming and operation is carried out on the touch screen.

The software is launched when you switch on the machine.

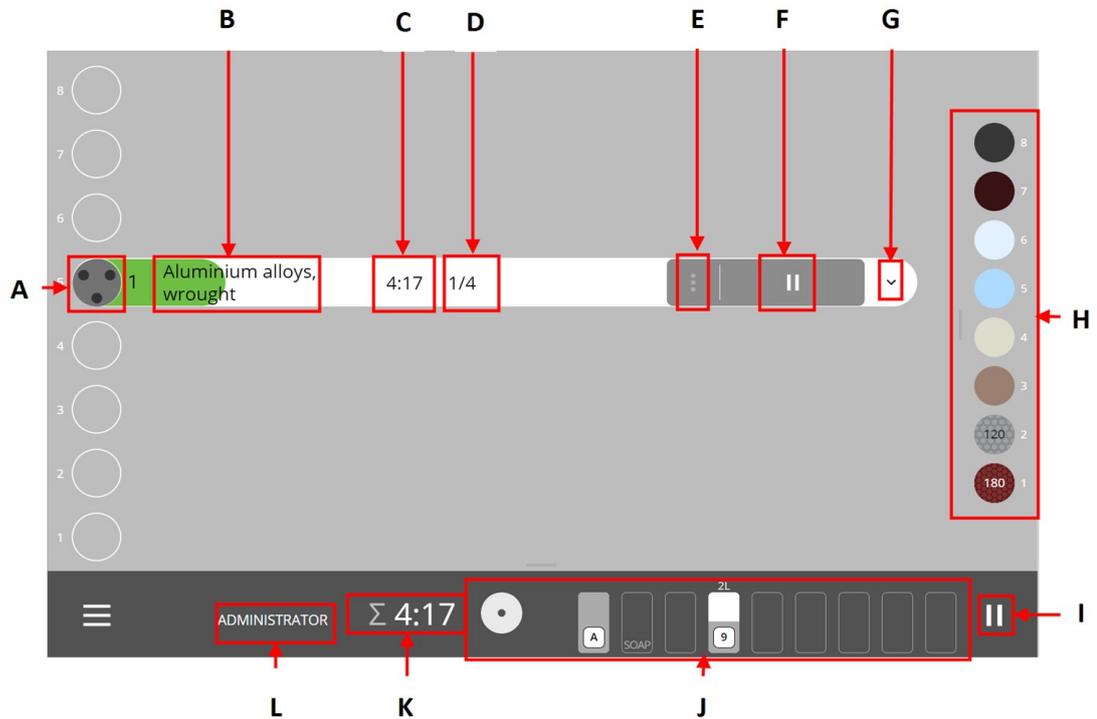
Overall overview



- A Specimen holders ribbon
- B Main menu
- C User mode

- D Consumables ribbon
- E MD surface ribbon

Detailed overview



- A Specimen holder
- B Method name
- C Step time (the remaining time it takes to run the step)
- D Number of steps (in the method)
- E 3 dots (to enter **Step selection** and **Edit method**)
- F **Run** (start or pause the method/process)
- G Drop-down (to see the steps for the selected method)
- H MD surface ribbon
- I **Pause** (put the ongoing process on hold)
- J Consumables ribbon
- K Total process time
- L User mode (the type of user logged into the machine)

**Note**

A green **Run** button indicates that all the consumables needed for the selected method are in place.

A red **Run** button indicates that some of the consumables you need to run the method are not in place. Add the necessary consumables before proceeding.

| | | | | | | | |
|---|------------------------|---------|---------|---|---|---|---|
| 2 | Aluminium alloys, cast | ~ 8:48 | 4 steps | ⋮ | 📄 | ▶ | ▼ |
| 1 | Ferrous 180 - 350 HV | ~ 19:59 | 8 steps | ⋮ | 📄 | ⚠ | ▼ |

4 Installation

4.1 Unpack the machine

**Note**

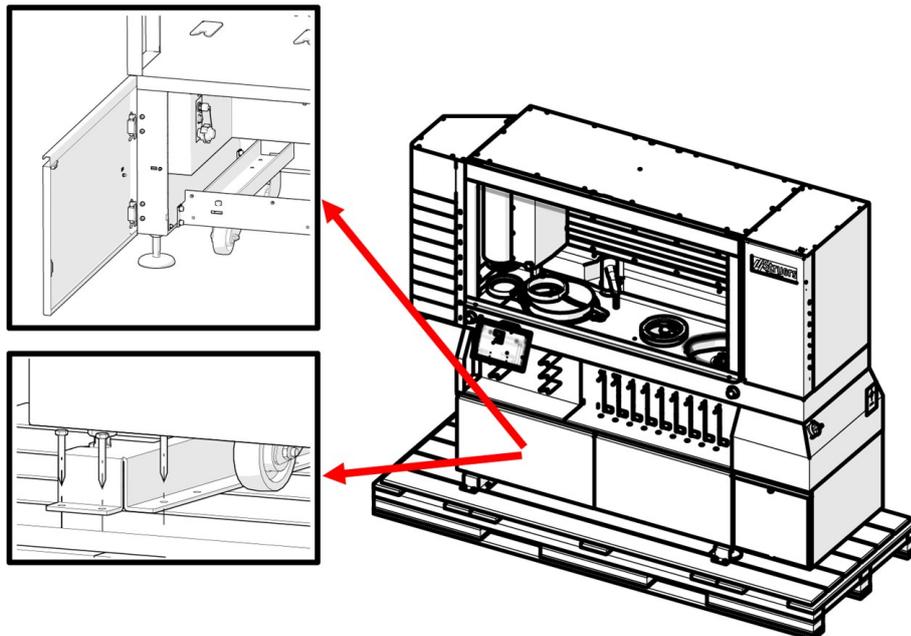
We recommend that you keep all original packaging and fittings for future use.

Remove the packing box

- Open and remove the sides and the top of the packing box.

Remove the transport brackets

- Unscrew the transport brackets that secure the machine to the pallet.



4.2 Lift the machine



CRUSHING HAZARD

Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

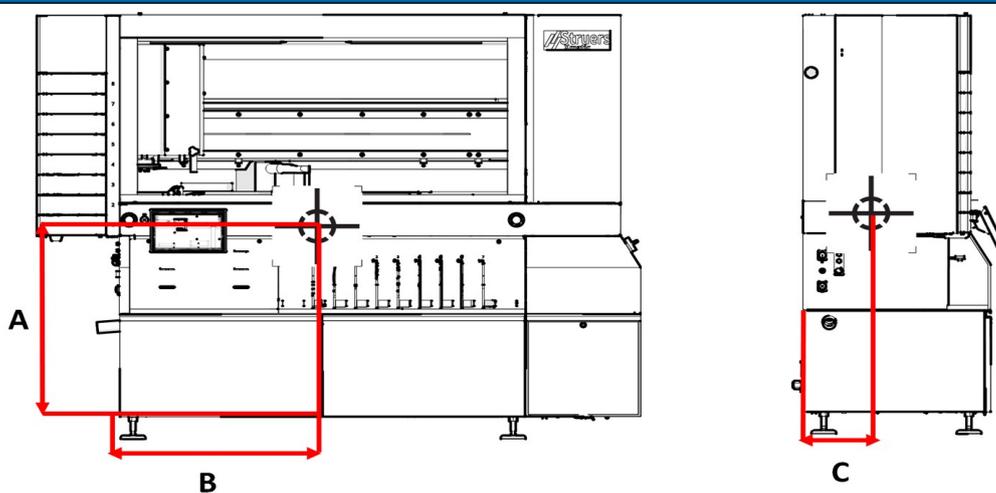
Weight

| | |
|-----------------------------|--------------------|
| Machine | 960 kg (2116 lbs) |
| Machine including packaging | 1193 kg (2630 lbs) |

Center of gravity

Front view

Side view



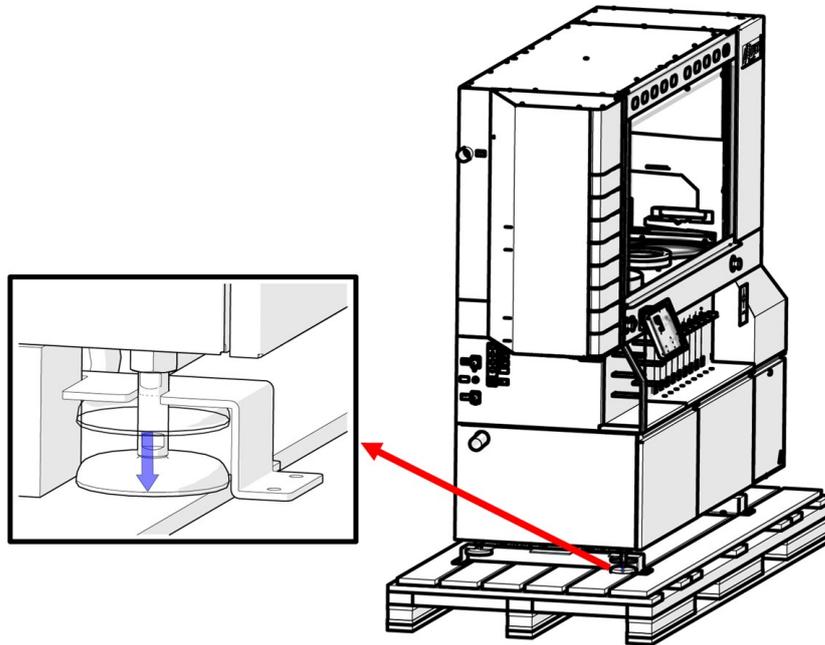
A: 1000 mm (40")

C: 300 mm (12")

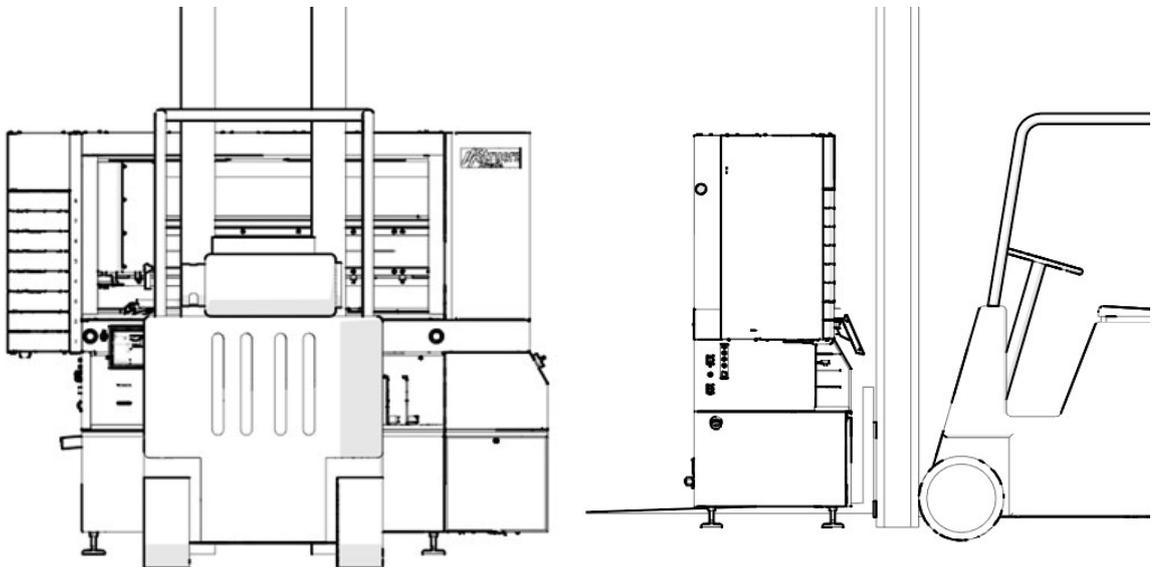
B: 845 mm (34")

Lift the machine from the pallet with a forklift

1. Loosen the adjustable feet. Make sure that the feet are positioned higher than the wheels.
2. Loosen and remove the transport brackets.



3. Place the forks so that the center of gravity is placed between the forks. Lift the machine from the front.
4. Lift the machine off the pallet.



Note
Place the machine on a plane and horizontal floor.

4.3 Check the packing list

Optional parts can be included in the packing box.

The packing box contains the following items:

| Pcs. | Description |
|------|--|
| 1 | Xmatic |
| 1 | Bottle, square with QR-label, 4 l |
| 4 | Bottle placement guides, 1 l |
| 4 | Bottle placement guides, 2 l |
| 2 | Bottle placement guides, 4 l |
| 1 | Triangular key M5, L-200 mm |
| 1 | Nozzle cleaning set |
| 1 | Recirculation unit, 75 l tank |
| 1 | 1 filter bag |
| 1 | Tube with sleeve, diameter 50 mm, 320 mm |
| 2 | Worm hose clamp, 40-60/9.0-C7W2 |
| 1 | Tube with sleeve, diameter 50 mm, 140 mm |
| 1 | DBI-DUT100 NA0870A PELD |
| 1 | Key Southco E3-26-819-15 |
| 1 | Water inlet hose, 3/4" connection |
| 2 | Hose Danflex K-126, diameter 51 mm |
| 1 | Elbow, 87" 186113 050 |
| 1 | GEKA blind coupling for tap water inlet |
| 1 | Cylinder for Uniforce (levelling device) |

4.4 At the final location

Push the machine into position



CAUTION

The machine must not operate when it is resting on its wheels.



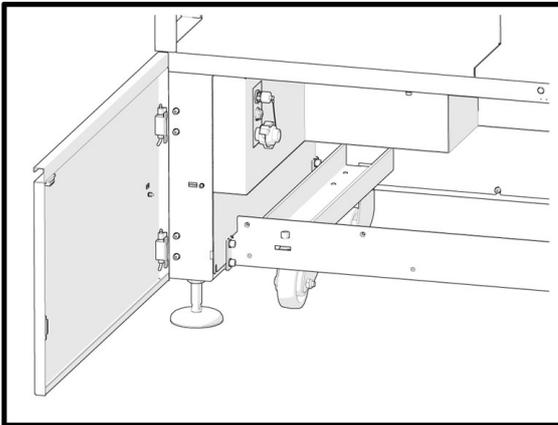
CAUTION

Make sure that the machine is level.

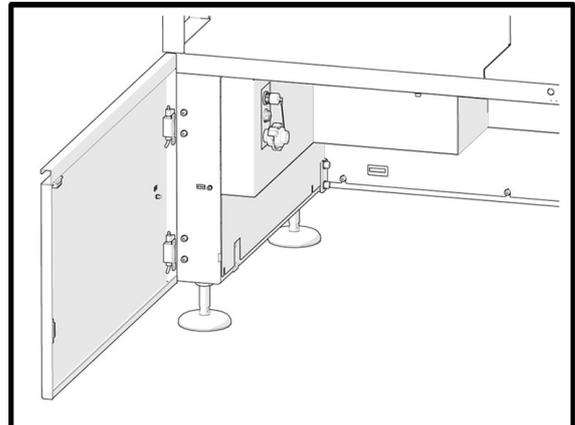
1. If you cannot place the machine directly in its location, turn the adjustable feet upwards to stand the machine on its wheels.
2. Move the machine to its final position.
3. Lower the machine so that the feet touch the floor.
4. Turn the adjustable feet until the machine rests on the feet, and make sure that the machine is level.
5. Remove the transportation crossbar and store it for future use. See also: [Remove the transportation crossbar ▶ 26](#). The wheels of the machine cannot swivel when the crossbar is mounted.
6. Remove the transport screws on the counter weight and store for future use. See also: [Remove the counterweight screws on the rear side of the machine ▶ 27](#).

Remove the transportation crossbar

1. Remove the wheels and the transportation crossbar supplied with the machine.
2. Store the crossbar for future use.



Machine with crossbar

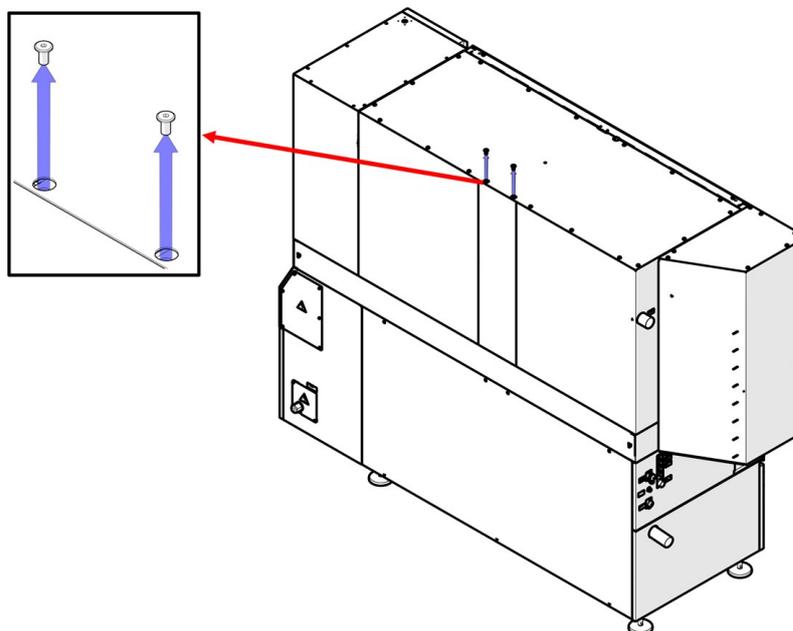


Machine without crossbar

Remove the counterweight screws on the rear side of the machine

Once the machine is placed in its final location:

- Use a 5 mm Allen key to remove the counterweight screws on the rear side of the machine.



4.5 Power supply



ELECTRICAL HAZARD

The machine must be earthed (grounded).
Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the type plate of the machine.
Incorrect voltage can damage the electrical circuit.



ELECTRICAL HAZARD

The equipment is protected by a safety insulation transformer.
Make sure that the adequate Ik min level is present.
Contact a qualified electrician to verify the solution.
Always follow local regulations.



ELECTRICAL HAZARD

Disconnect the electrical power supply before installing electrical equipment.
Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the type plate of the machine.
Incorrect voltage can damage the electrical circuit.



WARNING

In case of fire, alert bystanders, the fire brigade and cut power. Use a powder fire extinguisher. Do not use water.

Always contact a qualified electrician to verify which option is suitable for the local installation setup.

The machine is delivered without a power supply cable.

Internal fuse

The machine is internally fused with **CC15A** in the input stage. The fuse is for short circuit protection only.

Electrical data

See [Technical data sheet](#) ► 130.

Install the electrical power supply

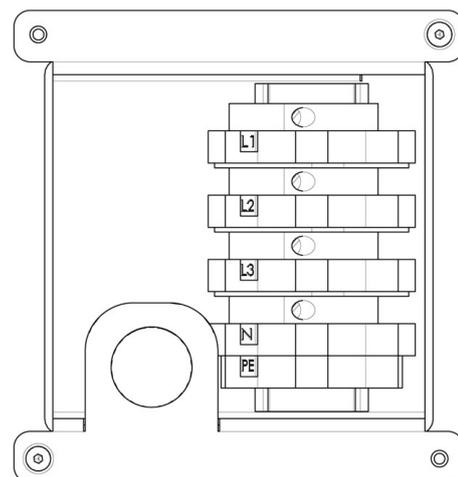
To install the electrical power supply, the following is needed:

- Electrical power supply cable according to local regulations

Connect the cable to the electrical connection box:

1. Open the the connection box.
2. Connect as shown in the table and the illustration below.

| | |
|----|--------------------------|
| L1 | Phase |
| L2 | Phase |
| L3 | Phase |
| N | Not internally connected |
| PE | Earth (ground) |



Note

The connection terminals allow for a maximum cable size of 10 mm²/AWG 6.

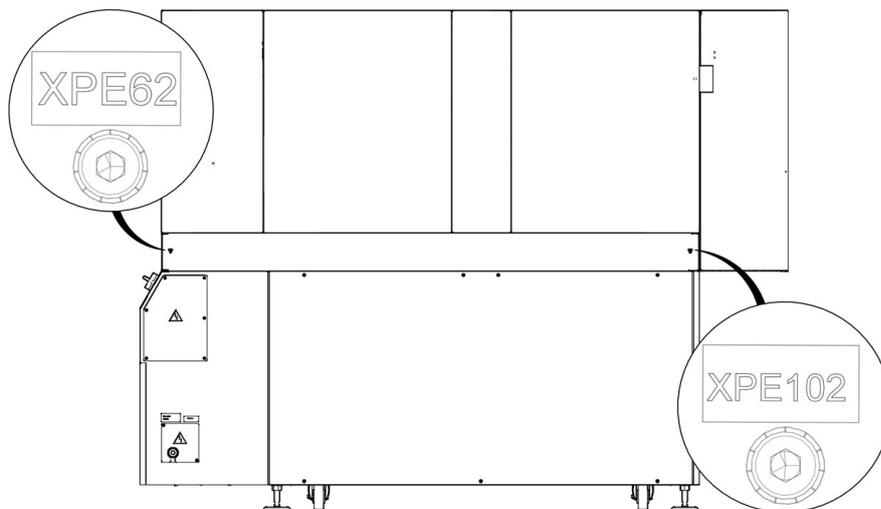


Note

Always contact a qualified electrician to verify which option is suitable for the local installation setup.

Equipotential bonding

Two connection points are provided for equipotential bonding of connected equipment.



Note
XPE62, and XPE102: Equipotential bonding according to EN60204, paragraph 8.1.

External short circuit protection

The machine must always be protected by external fuses.

The machine is equipped with an isolation transformer in the power input.

See [Technical data sheet](#) ► 130.

Residual Current Circuit Breaker (RCCB)

The machine has no more than 6mA residual current.

RCCB type A can be used.

4.6 Noise

For information on the sound pressure level value, see this section: [Technical data](#) ► 130



CAUTION
 Prolonged exposure to loud noises may cause permanent damage to a person's hearing.
 Use hearing protection if the exposure to noise exceeds the levels set by local regulations.

4.7 The recirculation unit

The machine is equipped with a recirculation unit for the plane grinding station.



ELECTRICAL HAZARD

The pump of the recirculation cooling unit must be earthed (grounded).
Make sure that the electrical power supply voltage corresponds to the voltage stated on the type plate of the pump.
Incorrect voltage can damage the electrical circuit.



CAUTION

The pressure of the cooling fluid supplied to the machine must be max. 2 bar.



Note

See also the Instruction Manual for the recirculation unit.

The Struers recirculation unit includes:

- a recirculation pump
- a recirculation tank
- a level sensor
- a filter bag for plane grinding
- a GEKA coupling for connection to the machine hose
- a shift valve (already mounted on the plane grinding unit)

Recirculation unit for MD station (option)

If necessary, the machine can be equipped with a recirculation unit for the MD grinding/polishing station.

- a recirculation pump
- a recirculation tank
- a level sensor
- a filter bag for MD-grinding/polishing station
- a GEKA coupling for connection to the machine hose
- a shift valve

Consumables

- Add a Struers anti-corrosion additive to the coolant.
- The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

Other products may contain aggressive solvents, which dissolve e.g. rubber seals. The warranty may not cover damaged machine parts (e.g. seals and tubes), where the damage can be directly related to the use of consumables not supplied by Struers.

4.7.1 Fill the recirculation tank

**CAUTION**

The recirculation unit is very heavy when it is full.
Place the recirculation unit in its final position, or make sure that you can easily push it into position before filling the tank.

1. Place a clean plastic liner in the tank.
2. Make sure that the liner lies flat on the base of the tank so that it does not block the pump.
3. The wheels of the unit must be in line with the sides of the compartment so that you can move the unit into position without having to wiggle it from side to side.

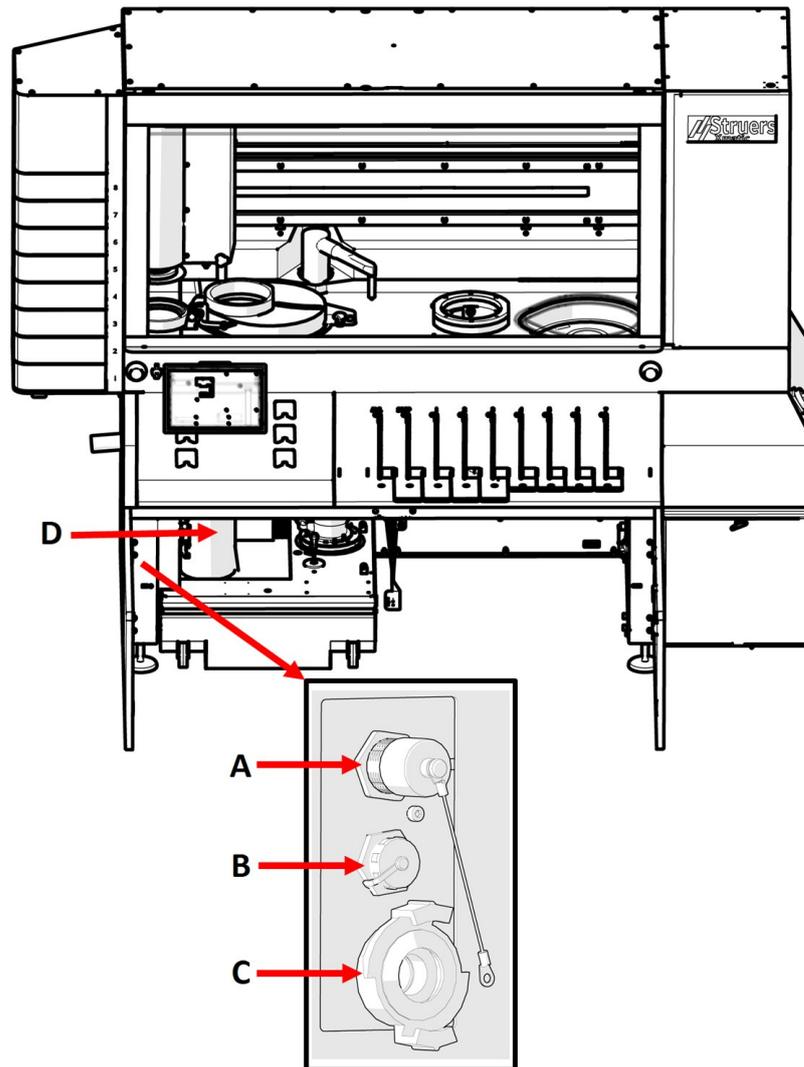
**Note**

To prevent corrosion, you must use a Struers additive in the coolant. For more information, see the additive container.
Remember to top up with Struers additive each time you fill up the tank with water.

**Note**

Do not overfill the tank.
Avoid spilling when you move the tank.

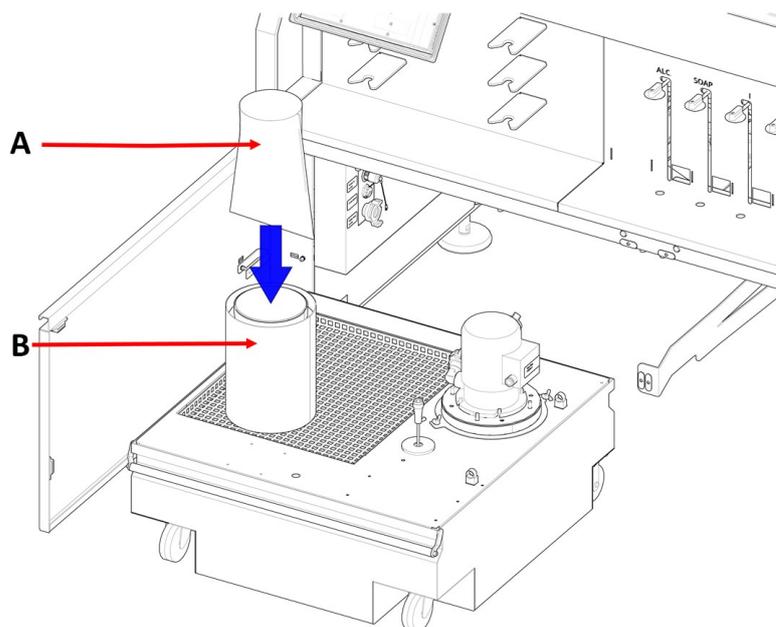
4.7.2 Connect the recirculation unit to the machine



| | |
|---|--|
| A Power connector for recirculation unit | C Quick coupling for water connection |
| B Power connector for level sensor | D Filter bag system |

1. Insert the water outlet hose from the machine into the large hole of the filter bag system (D). If needed, shorten the hose.
2. Connect the water inlet hose to the quick coupling on the recirculation pump (C).
3. Connect the cable from the recirculation pump to the electrical power socket of the recirculation unit inside the compartment (A).
4. Connect the level sensor (B).
5. Push the unit into place in the compartment under the machine.

4.7.3 Place the filter bag in the recirculation unit



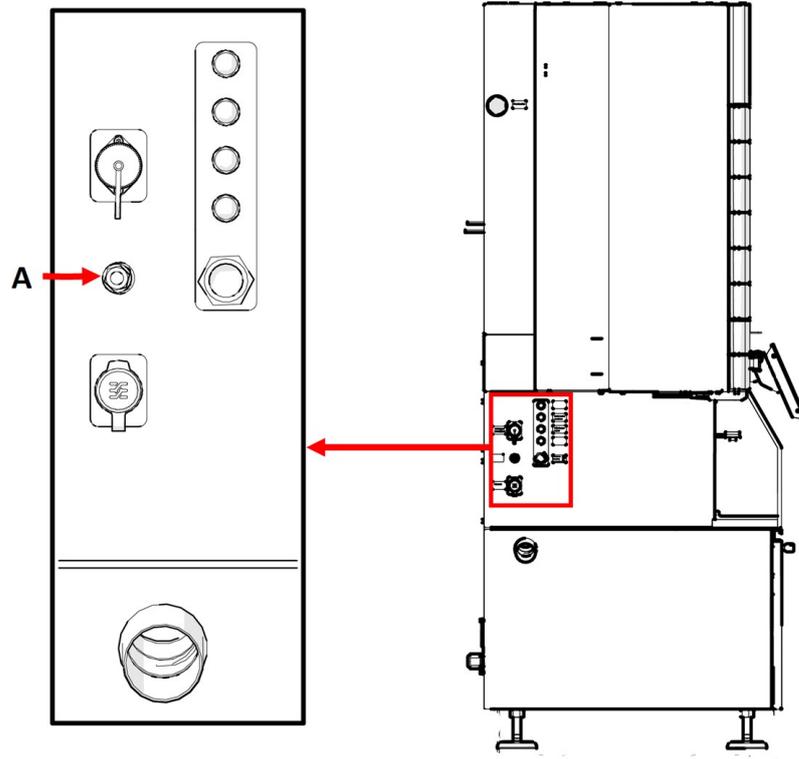
A Filter bag

B Filter bag system

- Use a **Type 60** filter bag for the grinding stone station (supplied with the machine).
- If you purchase an additional recirculation unit for the MD station, use a filter bag for the MD station supplied with the recirculation unit in question. See the Instruction Manual for the recirculation unit.
- On the MD grinding/polishing station, use a filter bag which is applicable for your recirculation unit. See [the Xmatic accessories overview on the Struers website](http://www.struers.com) (<http://www.struers.com>).

4.8 Compressed air supply

For specifications on pressure and air consumption, see the section [Technical data sheet ▶ 130](#).



A Compressed air supply

Procedure

1. Connect the 8 mm (5/16") air hose to the compressed air inlet on the machine.
2. Connect the air hose to the compressed air supply.

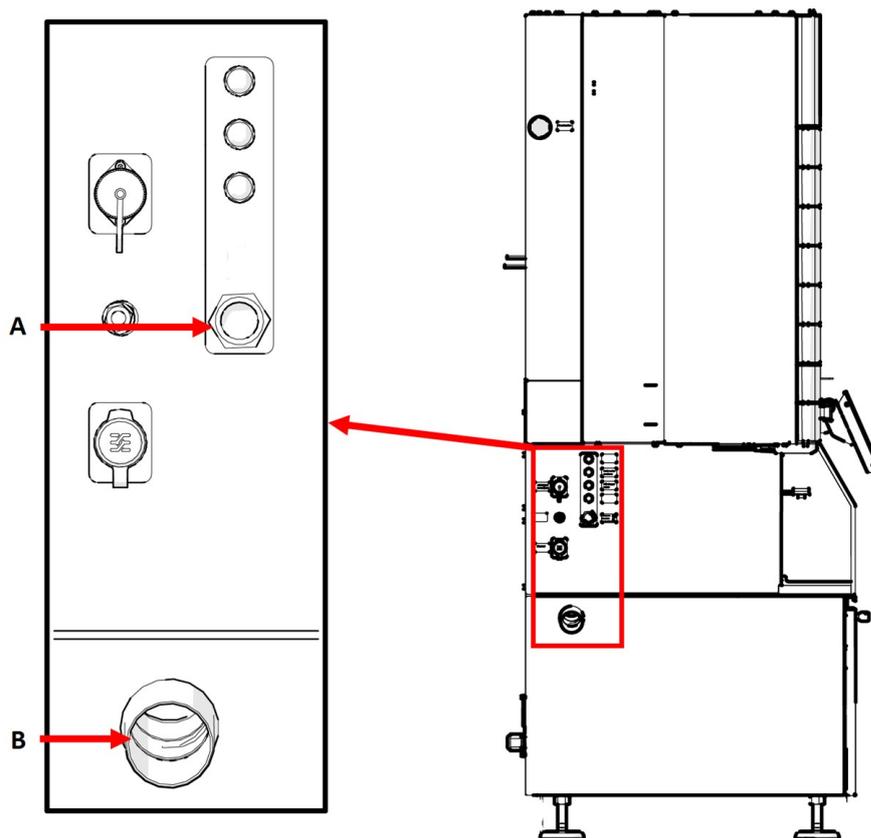
4.9 Connect to the water inlet and outlet

Water inlet



Note

New water pipe installations:
Let the water run for a few minutes to flush any debris from the pipe before you connect the machine to the water supply.



- A** Water inlet
B Water outlet

Procedure

1. Connect one end of the hose to the machine. Make sure that the inlet filter is placed correctly.
2. Connect the opposite end of the hose to the water supply.

The machine is supplied with a standard hose to connect the machine to the water supply.

| Water supply - Specifications | |
|-------------------------------|--|
| Water pressure | 2-4 bar (29-58 psi) |
| Water flow | Min. 10 l/min. (2.6 gpm) |
| Connections | Diameter: 3/4" GEKA coupling to recirculation unit. |
| Tube connection | Reinforced PVC hose |

Waste-water outlet

Procedure

- Connect a standard HT water outlet pipe or hose (diameter: 50 mm (2")) to the water outlet on the left side of the machine.

**Note**

The distance to the drain must not exceed 6 m (0.236"), and there must be at least 8% slope.

**Note**

If you are not using a recirculation unit on the grinding stone station, place the GEKA blind coupling on the quick coupling for water connection. See: [Connect the recirculation unit to the machine](#) ▶ 32.

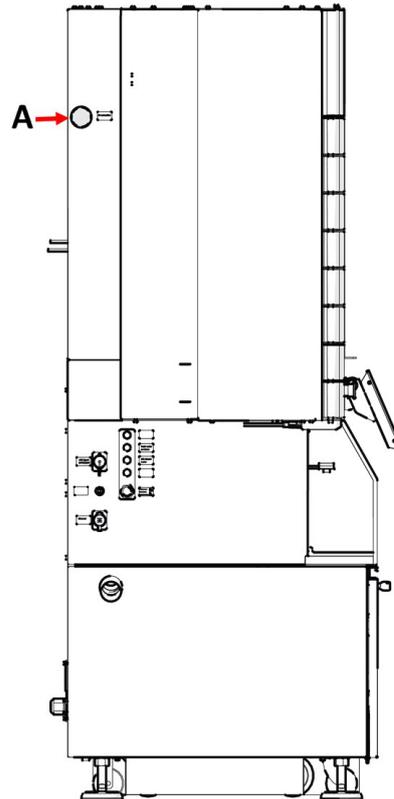
4.10 Connect to an exhaust system

**CAUTION**

You must connect the machine to an exhaust system. We recommend the use of a system with monitoring.

Specifications

Minimum capacity: 250 m³/h (8829 ft³/h) at 100 mm (4") diameter.



A Exhaust

Procedure

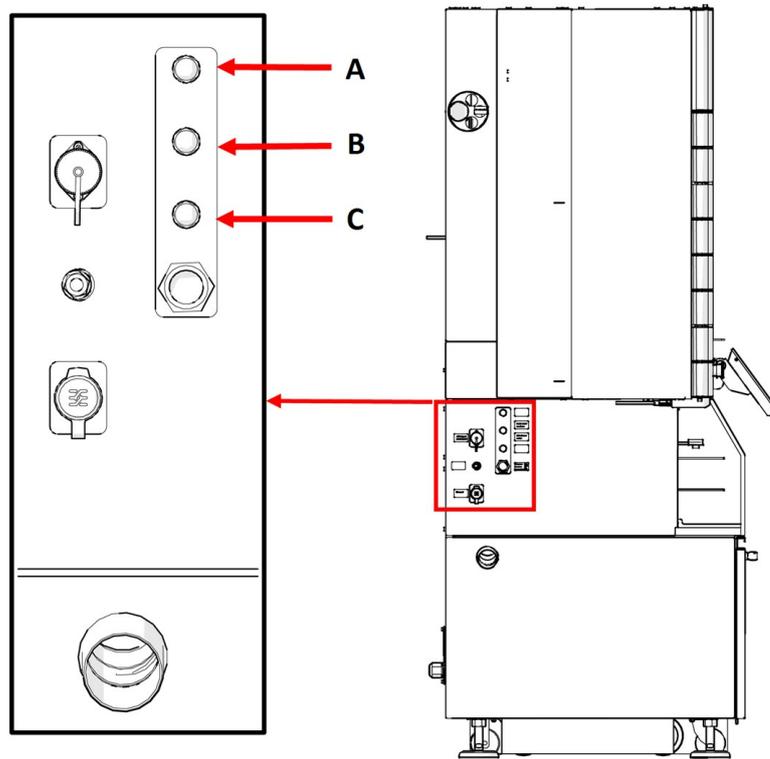
1. Connect a 100 mm (4") pipe to the exhaust outlet on the machine.
2. Connect the other end of the pipe to the exhaust system.

4.11 Adjust the water flow rate

You can enable or disable the disc cooling and flushing in the software.

If needed, adjust the flow rate of disc cooling.

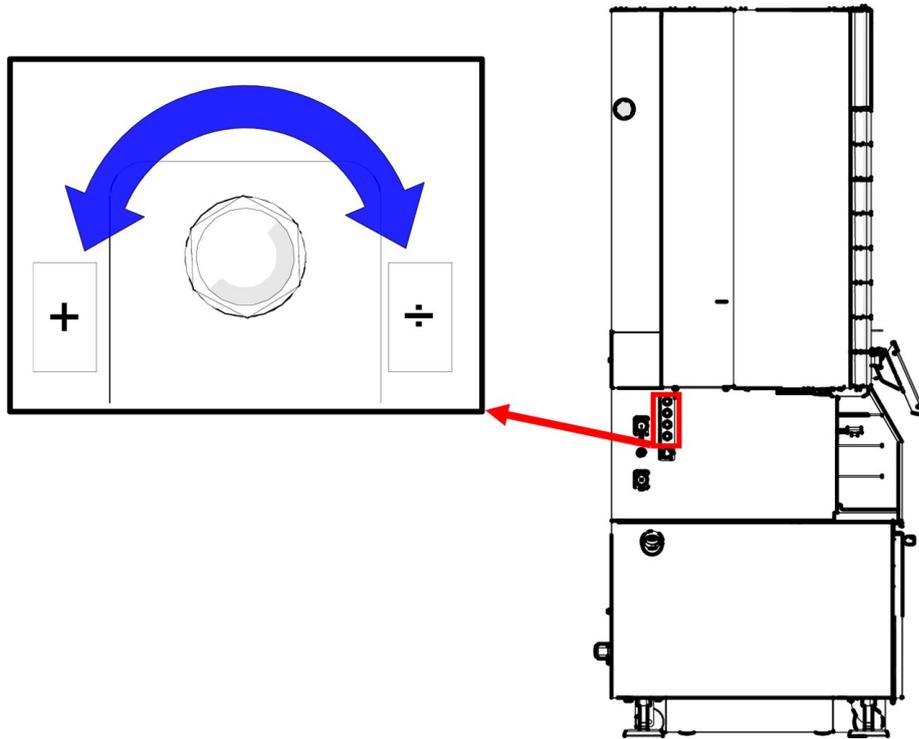
Water flow regulators



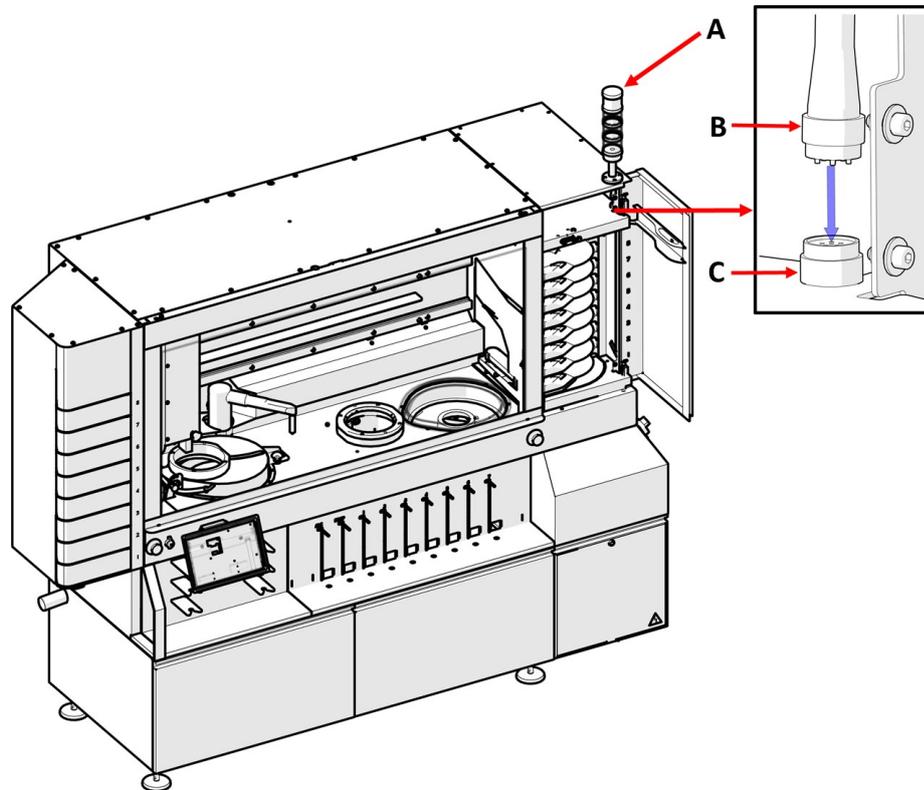
- A** OP flush water
- B** Tap water on stone
- C** MD disc cooling water

Procedure

- Turn the regulator to adjust the amount of water applied directly onto the grinding stone.



4.12 Install a beacon (option)



- A Beacon
- B 6-pin connector
- C Socket

Procedure

1. Open the MD-elevator door.
2. Mount the beacon using the socket screws supplied with the beacon.
3. Connect the 6-pin connector to the socket.

The light signals are described in [Beacon \(option\)](#) ►72.



Hint

For more information about this unit, see the specific Instruction Manual or User Guide.

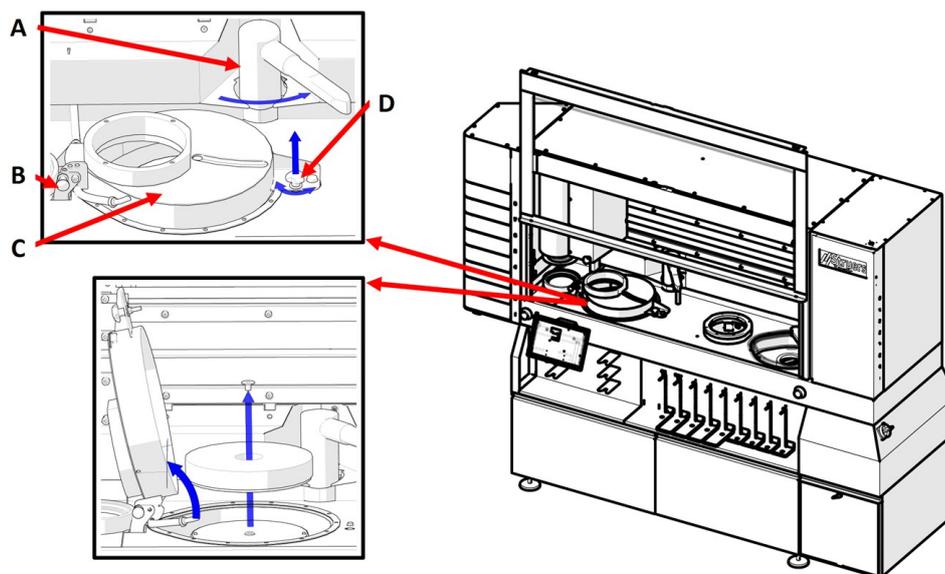
4.13 Mount the grinding stone or diamond grinding disc



CAUTION

Do not use the machine with non-compatible accessories or consumables.

Overview

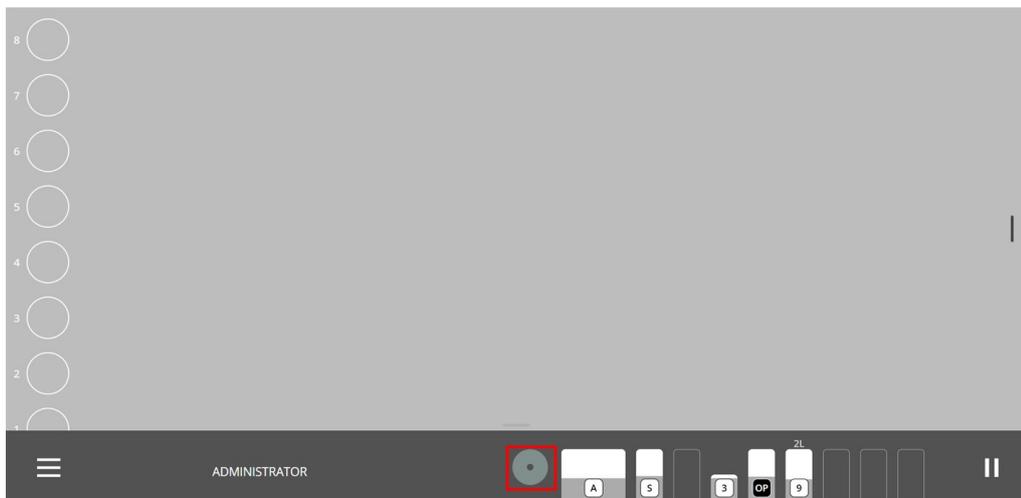


- A Grinding stone dresser
- B Index plunger
- C Grinding stone cover
- D Three-lobe knob

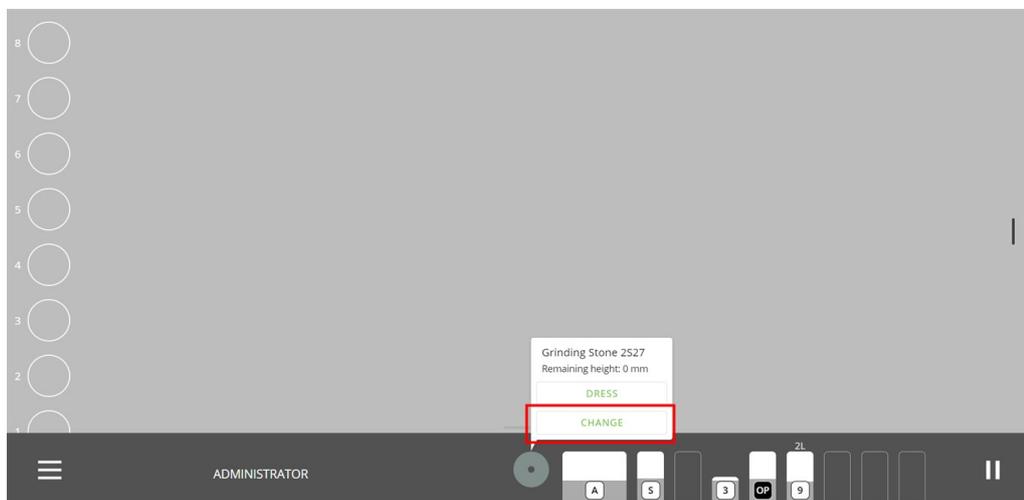
Procedure

1. Log in to the machine as an **Administrator**.

2. In the consumables ribbon, tap the stone icon.

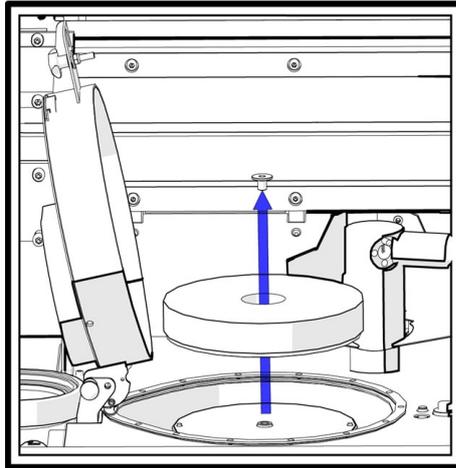


3. Tap **Change**.

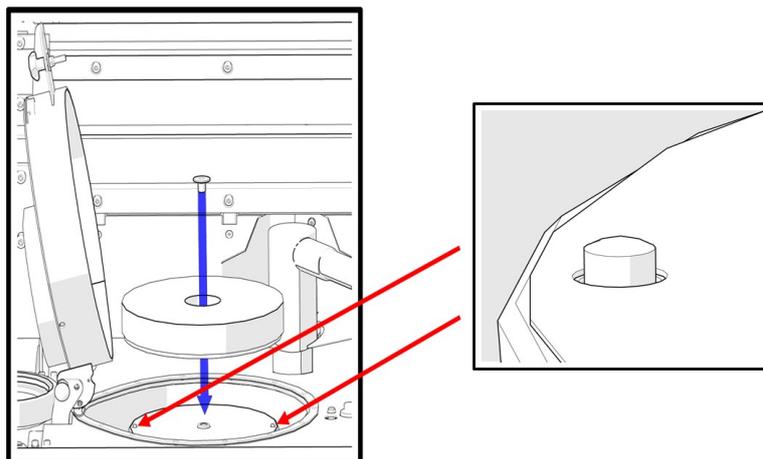


You can now follow the directions on the display supported by the below:

1. Open the main safety cover.
2. (D) in the above [Overview ►41](#).
3. Pull the index plunger (B), and lift the grinding stone cover (C).
4. Use an 8 mm Allen key to remove the screw and washer.
5. If there is a grinding stone in the stone module, remove it.



6. Place the grinding stone or diamond grinding disc on the driving plate.
7. Make sure that the two pins from the driving plate engage in the two holes at the bottom of the grinding stone or diamond grinding disc.



8. Remount the washer and the screw and securely tighten the screw with the 8 mm Allen key.
9. Release the index plunger and lower the cover over the grinding stone.
10. Tighten the three-lobe knob.
11. Close the main hood.

**Note**

Consumables used for grinding/polishing on the MD station can be automatically detected; but you must select the type of the grinding stone or diamond grinding disc on the screen menu when setting up or changing it.

When you have selected a grinding stone or diamond grinding disc on the screen, the dresser automatically moves to detect the top of the stone. When the top of the stone has been detected the dresser moves into its parking position.

**Hint**

If you select a diamond grinding disc, the dresser remains at the side of the grinding chamber because it is not used.

**Hint**

Struers recommends that you dress a new stone a couple of times before using it for grinding. This will ensure that it is plane and ready for use.

4.14 Network connection

Xmatic cannot use wireless networks (Wi-Fi/Bluetooth).

The machine is equipped with an RJ45 connector which should only be used for remote service.

Inside the machine, the RJ45 connector is connected to a Teltonika RUTX08 router (Linux operating system) which manages the firewall and a VPN client.

All ingoing connections through LAN on any ports will be rejected by the firewall.

The following ports are recommended to keep open for outgoing connections:

| Port | Type | Description |
|---------------|---------|---|
| 53 | TCP/UDP | DNS lookup |
| 123 | TCP/UDP | NTP (time server) |
| 15009 | TCP | Teltonika RMS |
| 15010 | TCP | Teltonika RMS |
| 20022 | TCP | Remote SSH through RMS |
| 20100 | TCP | Remote SFTP through RMS |
| 30000 - 39999 | UDP | Teltonika VPN server (single random port is used) |

Remote service through VPN

To get remote service through a VPN server, the machine must have access to the Internet.

The router is pre-configured, and a certificate is pre-installed by Struers. With an Internet connection, the machine has access to the Teltonika VPN server (OpenVPN-based).

Remote service should be used for software updates and troubleshooting.

Struers can provide you with a MAC address for the specific router installed in the machine.

The encrypted VPN connection can give the technician from Struers Service remote access to the user interface and the database on the machine.

5 Transport and storage

If, at any time after the installation, you have to move the unit or place it in storage, there is a number of guidelines we recommend that you follow.

- Package the unit securely before transportation. Insufficient packaging could cause damage to the unit and will void the warranty. Contact Struers Service.
- We recommend that you use the original packaging and fittings.

5.1 Storage

- Disconnect the unit from the electrical power supply.
- Disconnect the unit from the water supply.
- Disconnect the unit from the compressed air supply.
- Disconnect the unit from the drain.
- Remove any accessories.
- Clean and dry the unit before storage.
- Place the machine and accessories in their original packaging.

5.2 Transport

To transport the machine safely, follow these instructions.

1. Make sure that the following items are available:
 - Transport brackets (x 2)
 - Transport crossbar (x 1)
 - Bar with wheels (x 2)
 - The original pallet

**Note**

We recommend that you keep all original packaging and fittings for future use.

2. If needed, disconnect the following:
 - Power supply
 - Compressed air supply
 - Water supply
 - Recirculation unit. See the manual supplied with the specific equipment.
 - Disconnect the monitor. This must be done by StruersService.
 - Accessories



ELECTRICAL HAZARD

Disconnecting the unit from the electrical power supply must only be done by a qualified technician.

- 3. Clean and dry the unit.

Requirements

- Make sure that the floor of the working area and the transportation corridor are designed to carry the following weight:

| Weight | |
|---------|-------------------|
| Machine | 960 kg (2116 lbs) |

- Make sure that the following facilities are available:
 - Power supply
 - Water supply
 - Compressed air supply
 - Water drain

Moving the machine

To move the machine, use a fork-lift truck and a crossbar.



Note

The machine must be installed by Struers technicians or by an authorized service technician trained by Struers for this specific task.

Procedure

1. Open the recirculation module doors .
2. Make sure that the transportation crossbar and wheels supplied with the machine are secured in position before you start lifting.
3. Loosen the brackets on the transportation crossbar to allow movement.
4. Adjust the brackets.
5. On the front of the machine, press and hold the crossbar against the bottom of the wheels.
6. Slide the brackets of the transport crossbar over the edges of the wheels and tighten the bolts.
7. Position the forklift as close to the center line of gravity as possible. See also: [Lift the machine](#)
▶ 23

6 Start-up - the first time



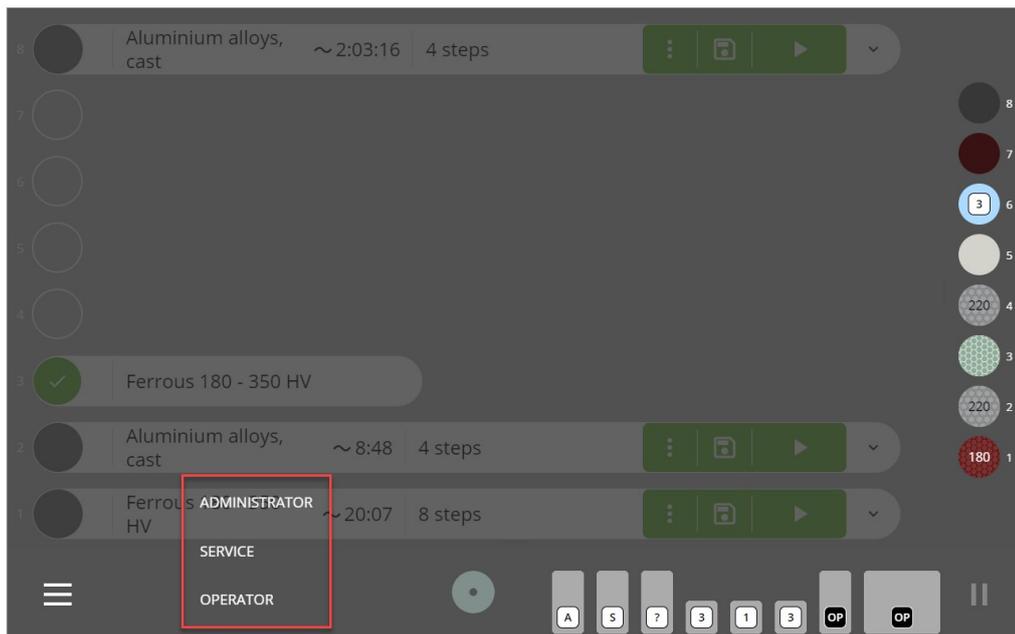
CAUTION

Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.

6.1 Log in as an Administrator

If you have administrator rights, you can log in as an administrator and configure a variety of settings defined in [Configuration ▶ 75](#).

1. Next to the **Main menu** button, tap **Operator** to unfold the menu and reveal the **Administrator** option.



2. Tap **Administrator** and log in with the administrator password.



Note

The administrator password is '1234' per default. See how to change the password in section [User settings ▶ 94](#).

6.2 Select language and measurement system

To change the default language from English to another language, or the default setting from the metric to the imperial system, see the section [System settings ▶ 97](#).

6.3 Place the MD surfaces in the MD elevator



CAUTION

Do not use the machine with non-compatible accessories or consumables.



Note

The machine is configured to be used with either 250 mm or 300 mm MD surfaces. You cannot use a mix of the 2 diameters.

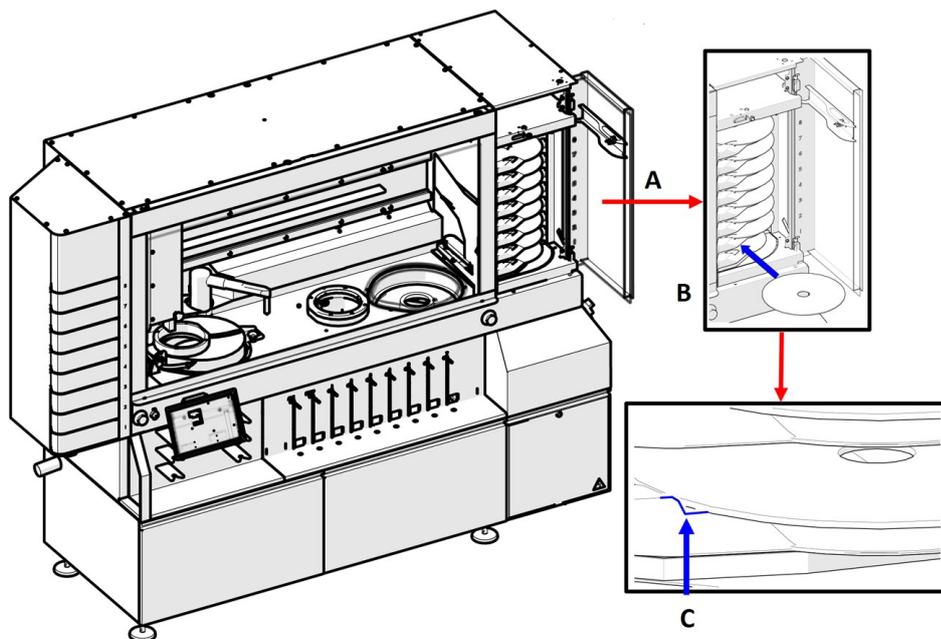
The MD surfaces are placed on shelves in the MD elevator. This has several shelves that contain individual MD grinding or polishing surfaces to be used for the different steps in a method.

If you are using Struers surfaces, the machine automatically detects the type of surface placed on each shelf.

After using an MD polishing surface once, the machine will indicate the size of the abrasive used with the specific MD polishing surface.

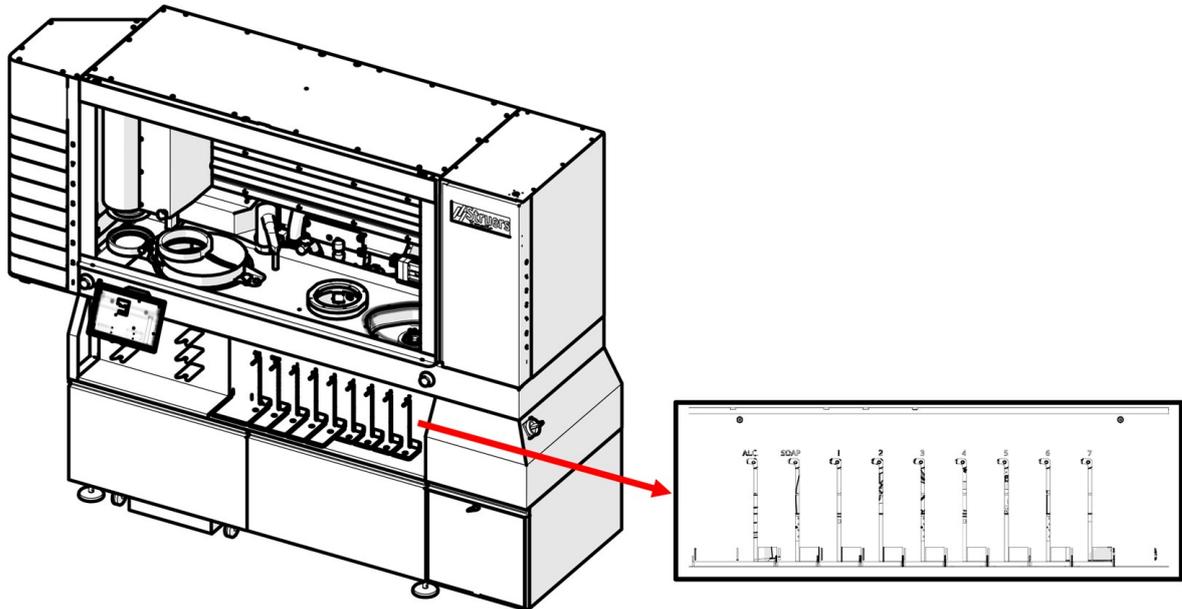
Insert the MD surface

1. Open the MD elevator door (A).
2. Place the surface on the desired shelf as shown in the illustration (B).
3. Make sure that the surface is placed inside the small indentations on the shelf (C).
4. Close the MD elevator door to start the surface detection.



6.4 Place the bottles in the bottle rack module

The machine has 9 positions in the bottle rack:



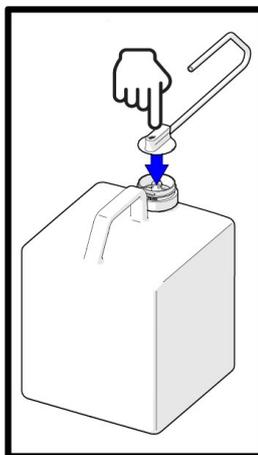
| Bottle position | Contents |
|-----------------|--|
| 1-2 | Alcohol/Soap only |
| 3-9 | Suspension, lubricant or oxide polishing |

Use only Struers consumables. The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

The machine will automatically detect the type of Struers consumable and liquid levels of the bottles.

Procedure

1. Place the bottle guides on the bottle rack.
2. Place the bottles in the bottle guides with the Data Matrix code facing the machine.
3. Connect the Easy Connectors to the bottles. Make sure they are pushed into place.



4. Check the consumables ribbon to make sure that the machine has detected the installed consumables.

6.4.1 Alcohol and soap



CAUTION

You must connect the machine to an exhaust system. We recommend the use of a system with monitoring.



CAUTION

Do not use the machine with non-compatible accessories or consumables.



Note

Positions 1 and 2 are for Alcohol/Soap only.

Monitor the soap and alcohol levels

The machine automatically monitors the soap and alcohol levels.

Place the alcohol bottle

- Fill the empty 4 l bottle supplied with the machine with alcohol, and place it on the bottle rack.

Place the soap bottle

- Place a concentrated soap bottle on the bottle rack.

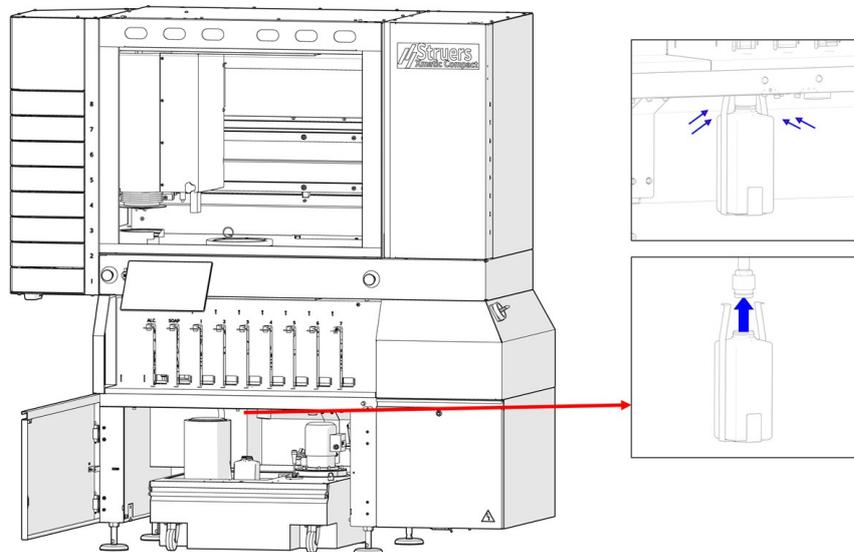
6.4.2 Alcohol separator bottle (option)

If you wish to collect alcohol used during the cleaning methods, connect an alcohol separator bottle to your cleaning station.

Procedure

1. Place the bottle in the bottle bracket.

- Slide the bottle bracket up, over the nozzle, and into the designated hole in the ceiling of the recirculation unit compartment.



- Push the hooked ends inwards to enable the hooks to enter the hole.
- Let go of the bottle bracket, and let it hang on the hooks.

7 Operate the device



CAUTION

If power is interrupted during operation, the main safety cover and the MD elevator door will remain locked until power returns. See: [Access the work zone in case of power failure ▶ 128](#).



CAUTION

Do not use the machine with non-compatible accessories or consumables.

7.1 Clamp and level the specimens

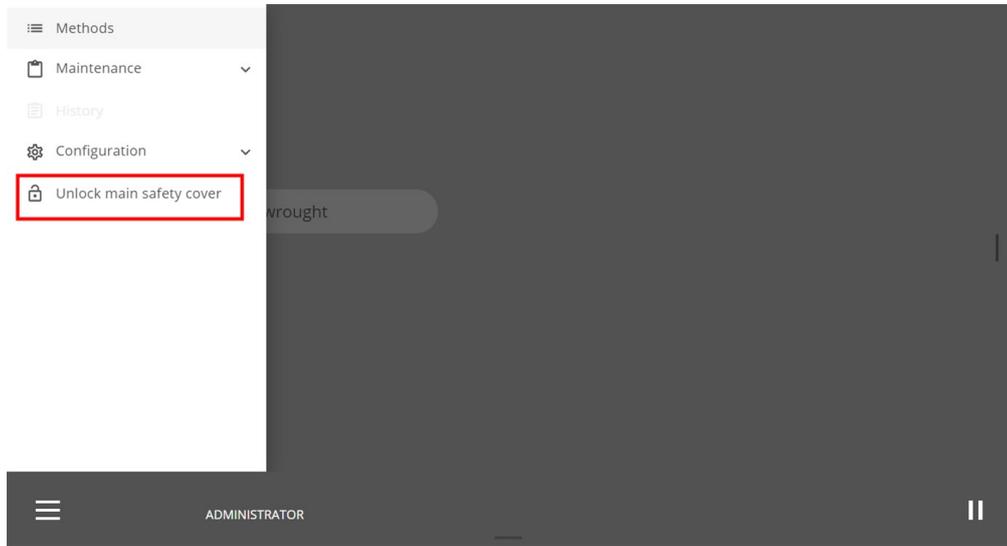
Make sure that the specimens are firmly clamped in the specimen holder, and that they are level. To do this, we recommend that you use Struers Uniforce. See the Instruction Manual for this unit.

7.2 Access the work zone

To access the work zone, you must unlock the main safety cover.

Procedure

1. Tap the **Main menu**.
2. Select **Unlock main safety cover** to access the work zone.



7.3 The specimen holder

7.3.1 Place and remove the specimen holder



CRUSHING HAZARD

Take care of your fingers when handling the machine.
Always wear safety shoes when handling specimen holders, as they can be heavy.



CAUTION

Wear suitable gloves to protect fingers from abrasives and warm/sharp specimens.



Note

With a 300 mm (11.8") MD-Disc size, you can use the 160 mm (6.3") specimen holders.
With a 250 mm (9.8") MD-Disc size, you can use the 140 mm (5.5") specimen holders.

The vertical conveyor drawers have three different positions. Each position indicates a certain state on the machine:

- **Open:** The drawer is ready to be used.
- **Partially open:** The specimen holder is ready for inspection, or the drawer is empty.
- **Closed:** The machine is processing the specimen holder you placed in this position or the holder is in queue.

**Note**

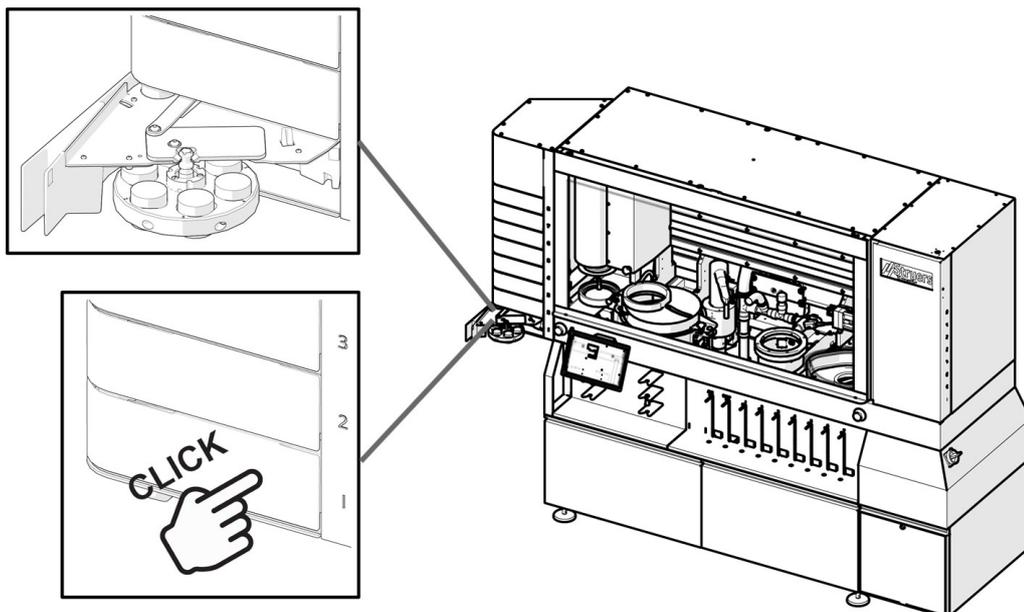
If you have placed several specimen holders in the conveyor, the specimen holders are queued based on the order in which you have pressed **Run** for each of the specimen holders. To modify the queue, tap **Eject**, and press **Run** for each specimen holder in the order you want them to be processed.

Place the specimen holder in the vertical conveyor

1. If a specimen holder is in a closed drawer, tap its icon/button on the main screen, and tap the **Eject** button.



2. If the drawer is open or partially open, pull it open.
3. Place the specimen holder as shown in the illustration, and close the drawer.



4. The machine automatically detects the specimen holder.

Remove the specimen holder from the vertical conveyor

When a specimen holder has been processed, the machine automatically opens the drawer to the partially open position.

Open the drawer and remove the specimen holder.

If the specimen holder has not been processed yet, the drawer remains closed. To open it, tap the specimen holder button, and select the **Eject** button.



Open the drawer and remove the specimen holder.

7.3.2 Detect the number of specimens

In **Configuration**, you can choose if you want the number of specimens in the specimen holder to be automatically or manually detected ([Machine settings ▶95](#)).

Automatic option (operation)

1. Choose a method.
2. Tap the **Run** button. The camera takes a picture of the specimen holder and counts how many specimens are in the specimen holder.
3. The force is adjusted automatically dependent on the number of specimens.

The button displaying the specimen will be all gray with no dots, and you do not see how many specimens are in the specimen holder.

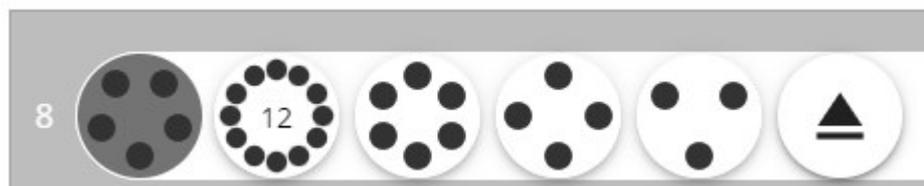


Manual option (operation)

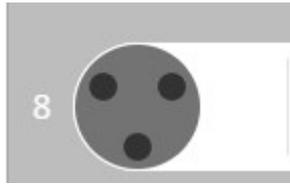
1. Click on the specific specimen holder button.



2. Find the button that displays the number of specimens you have in the holder.



3. Select the button with the correct number of specimens.



- The force is being calculated according to the number of specimens.

7.4 Methods

7.4.1 Struers methods

When there is a specimen holder in the machine, you can access the Struers methods in the **Method library** (see how to access in [Overview of the display ▶ 20](#) under "Detailed view").

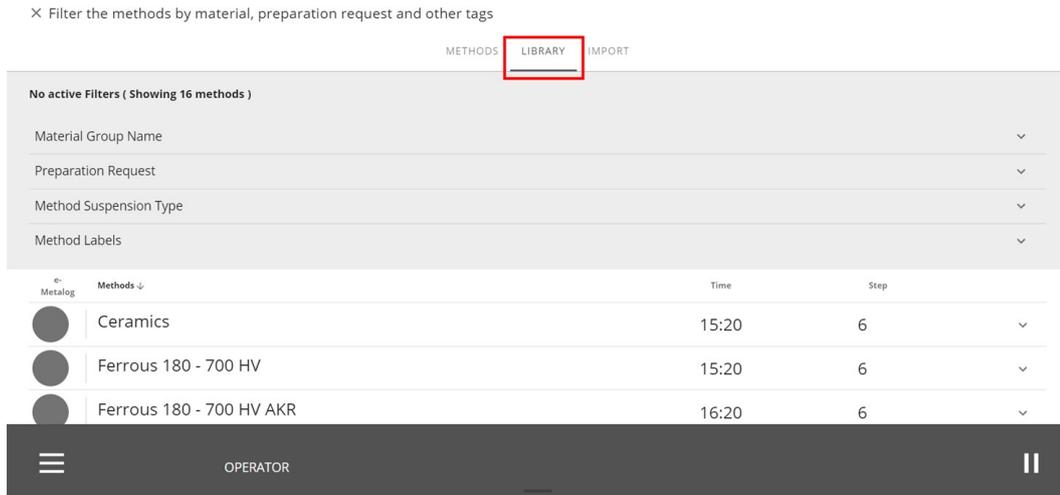
Select a Struers method

- Place a specimen holder in the desired position.
As default, the machine shows the last-used method.
- Tap the method name on the screen.

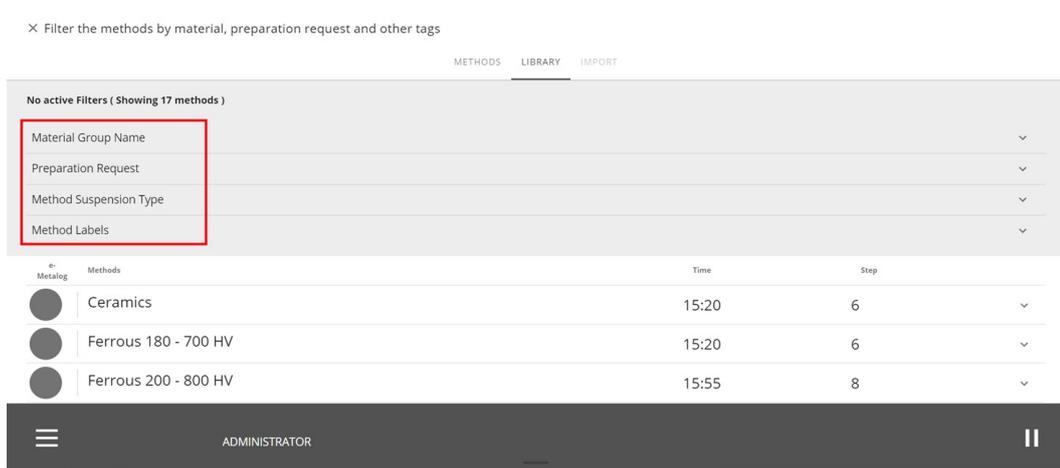


The **Methods** screen opens.

- Tap the **Library** tab



4. Select the desired method, or use the filter tools to locate the desired method.

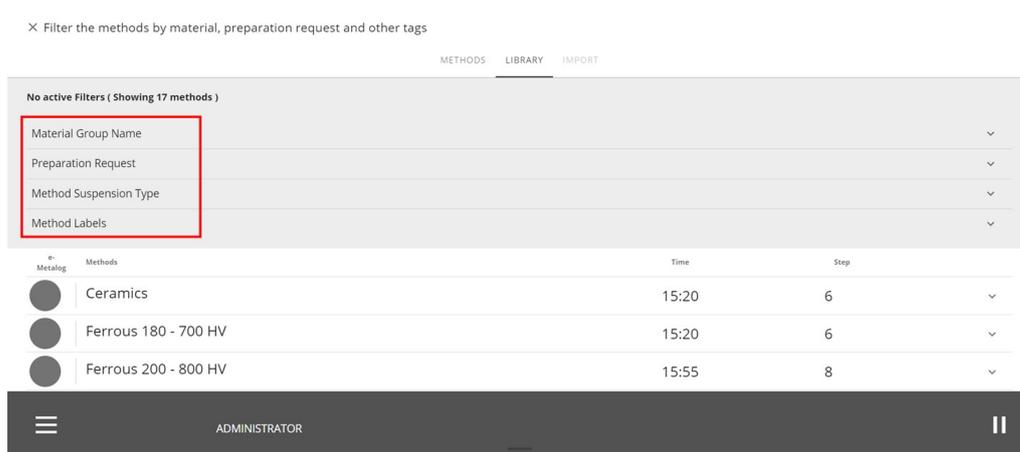


Apply filters

You can apply filters to the Struers **Method library** to find the best method for the task you need to perform.

You can apply filters using the following criteria:

- **Material Group Name**
- **Preparation Request**
- **Method Suspension Type**
- **Method Labels**



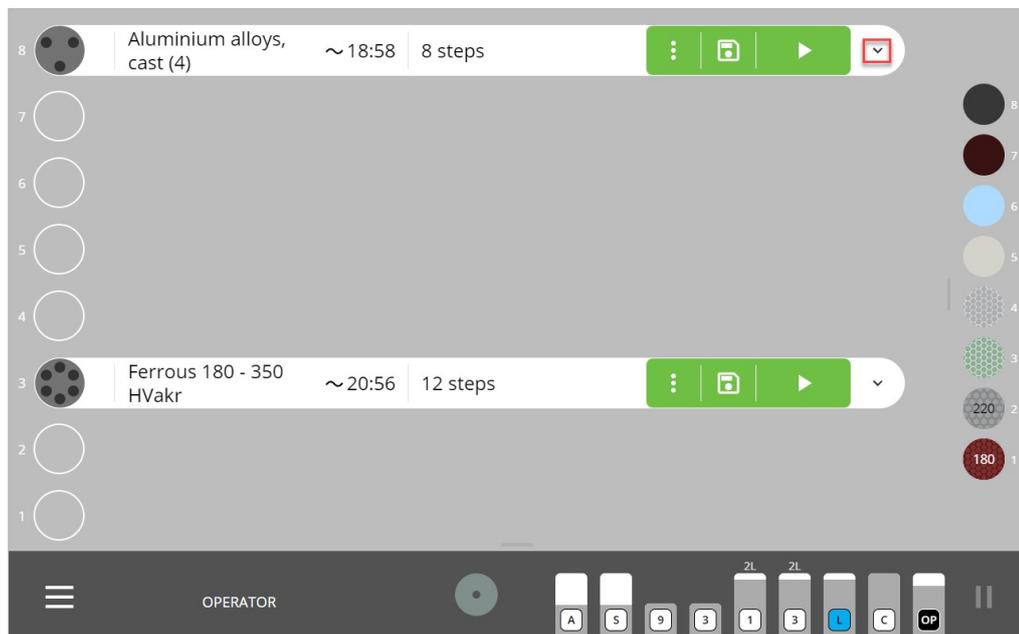
Method parameters

When you use a Struers method, you have default parameters. You can adjust these in each step but you cannot save them.

To be able to reuse a step with changed parameters, you must create a custom method in a different name (see [Custom methods](#) ▶ 61).

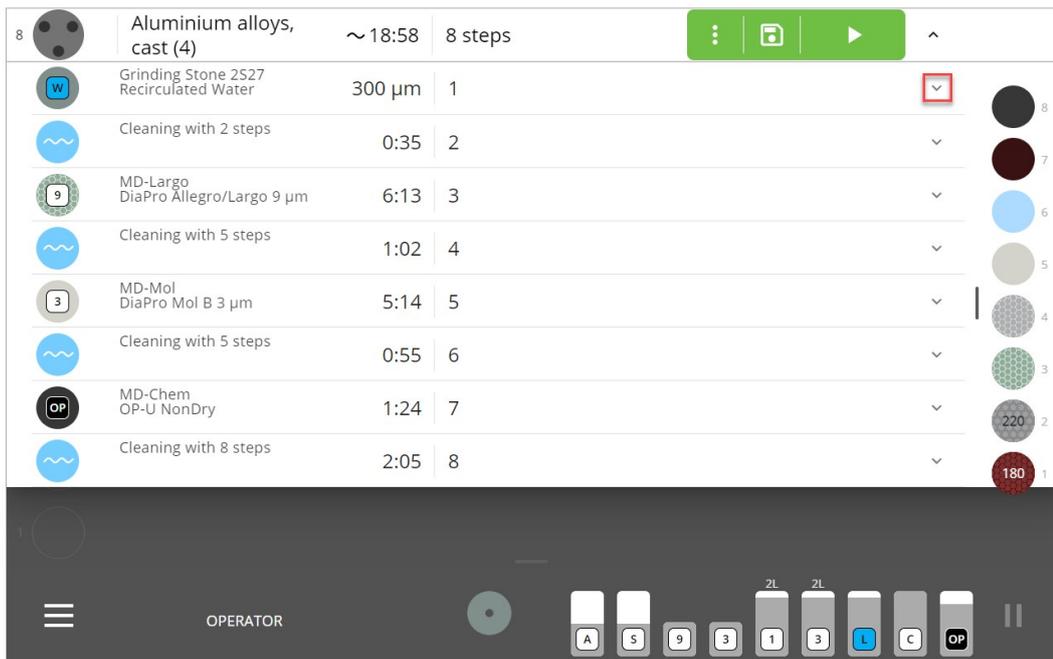
Adjust the method parameters

1. Tap the drop-down arrow for the method to open the step list.

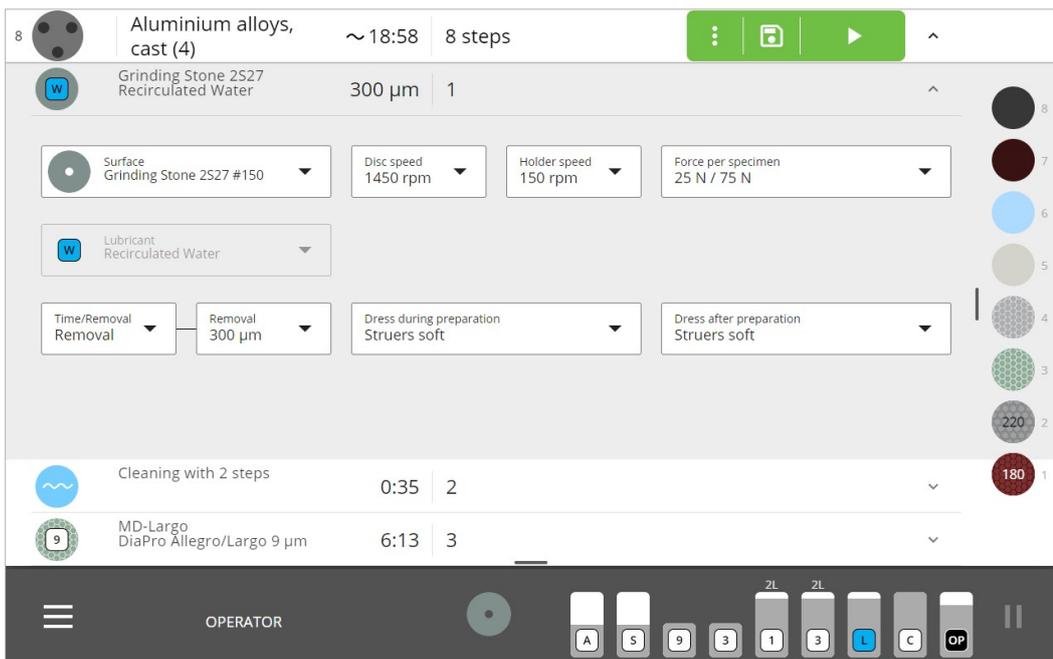


7 Operate the device

2. Tap the drop-down arrow for the step to open the parameters.



3. Choose the parameters you wish to change.



Parameters vary from step to step but may include:

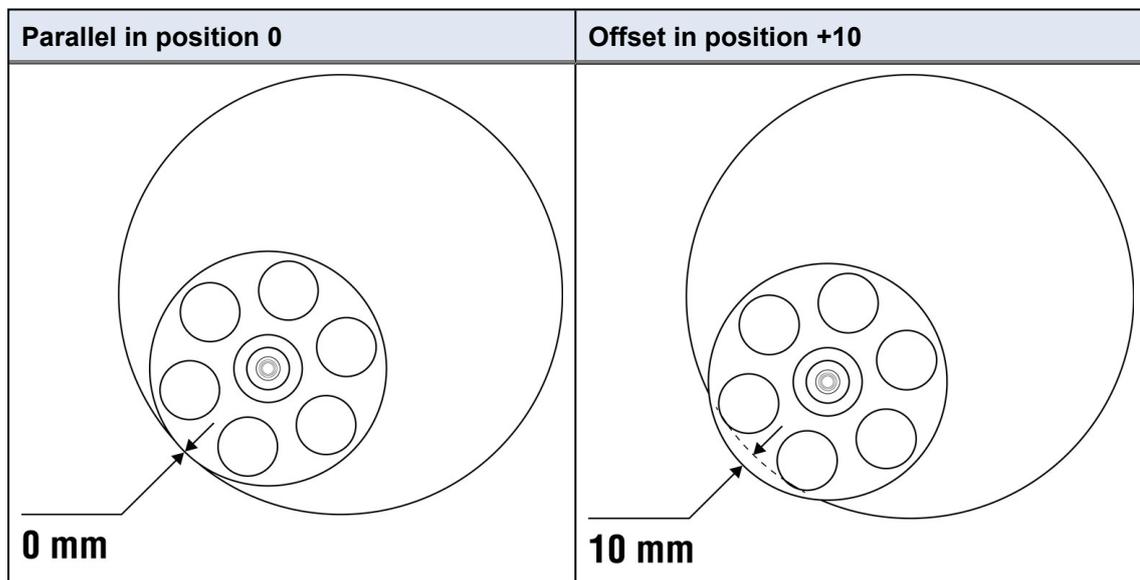
| Parameters for preparation steps | Definition |
|----------------------------------|---------------------------------------|
| Disc speed | How fast the disc rotates. |
| Holder speed | How fast the specimen holder rotates. |

| Parameters for preparation steps | Definition |
|----------------------------------|--|
| Force | Force per specimen is the force applied on each specimen during the process. |
| Predosing time | The dosing time prior to the preparation process. |
| Dosing level | The dose during the process (see recommended dosing levels in Dosing level ▶ 59). |
| Time/removal | Defines if the step is based on time or the amount of material to be removed |
| Holder position | Defines the position of the specimen holder on the MD-Disc. See more in Specimen holder position ▶ 59 below. |
| Holder direction | Defines if the specimen holder should run in the same or opposite direction as the MD-Disc. |
| Disc cooling | Defines if water should cool the MD-Disc during the process. See more in Disc cooling ▶ 60 . |

Specimen holder position

The specimen holder can be positioned on the MD-Disc at a position from -7 to +25.

At position 0, the holder is parallel with the MD-Disc. At position +10, the holder is 10 mm offset from the edge of the MD-Disc.



Dosing level

All Struers methods automatically adjust the dosing level according to the disc size used on the machine. This means that the dosing level on a 250 mm MD-Disc is lower for the same method than it is on a 300 mm MD-Disc.

Dosing level for a 300-mm MD-Disc

| Dosing level | ml/min |
|--------------|--------|
| 1 | 0.09 |
| 2 | 0.11 |
| 3 | 0.13 |
| 4 | 0.15 |
| 5 | 0.18 |
| 6 | 0.21 |
| 7 | 0.25 |
| 8 | 0.29 |
| 9 | 0.34 |
| 10 | 0.40 |
| 11 | 0.46 |
| 12 | 0.55 |
| 13 | 0.64 |
| 14 | 0.75 |
| 15 | 0.88 |
| 16 | 1.03 |
| 17 | 1.21 |
| 18 | 1.43 |
| 19 | 1.67 |
| 20 | 1.96 |
| 21 | 2.30 |
| 22 | 2.70 |

| Dosing level | ml/min |
|--------------|--------|
| 23 | 3.17 |
| 24 | 3.72 |
| 25 | 4.37 |
| 26 | 5.13 |
| 27 | 6.02 |
| 28 | 7.06 |
| 29 | 8.28 |
| 30 | 9.72 |
| 31 | 11.41 |
| 32 | 13.39 |
| 33 | 15.71 |
| 34 | 18.44 |
| 35 | 21.63 |
| 36 | 25.39 |
| 37 | 29.79 |
| 38 | 34.96 |
| 39 | 41.03 |
| 40 | 48.15 |
| 41 | 56.50 |
| 42 | 66.31 |
| 43 | 77.81 |
| | |

Disc cooling

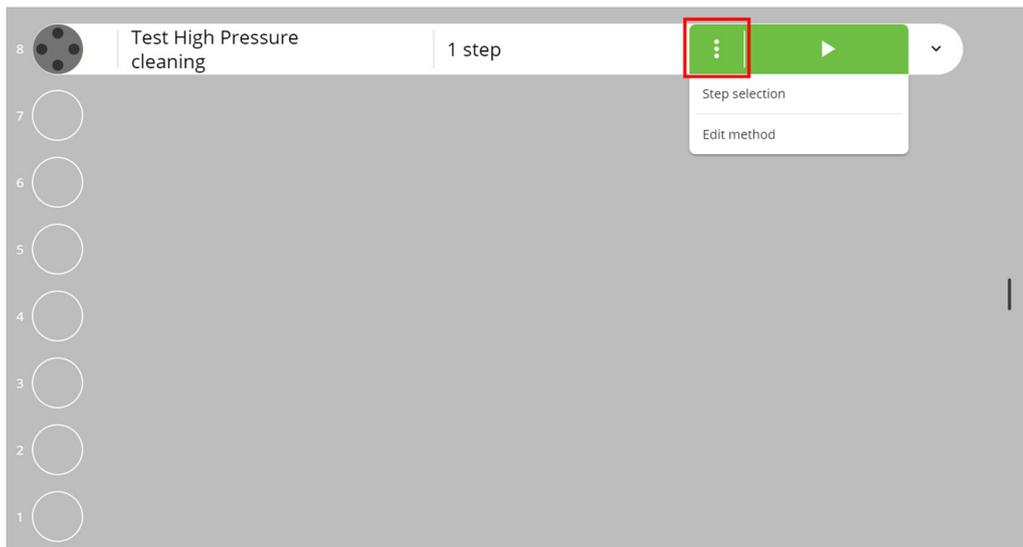
You can activate the optional cooling of the MD-Disc during a specific step.

**Hint**

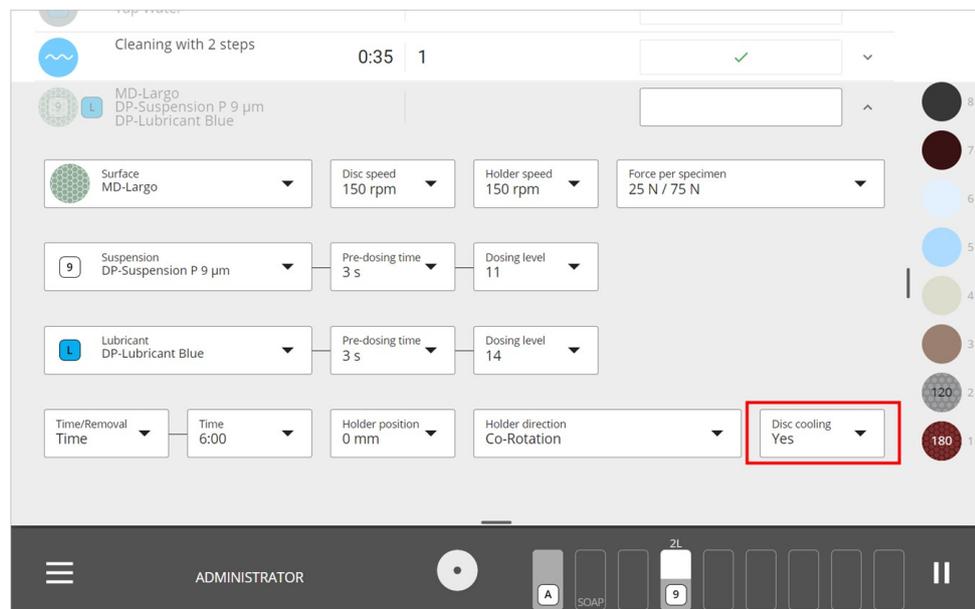
When you use the discs cooling function, the MD bowl is also flushed and easier to keep clean.

Procedure

1. Tap the 3 dots to the left of the **Run** button.



2. Tap **Edit method**.
3. Tap the step for which you want to change the **Disc cooling** setting.



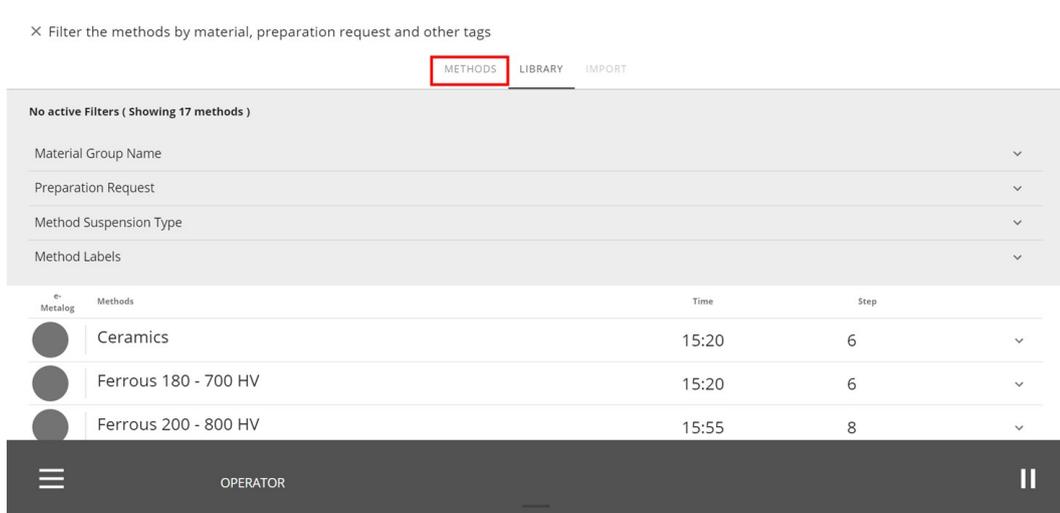
4. Select the desired setting.

7.4.2 Custom methods

Create custom methods

You can create your own custom method if you copy a Struers method, add or modify steps, and then save in a different name. All methods that you change are saved in the **Method library** (see how to access in [Overview of the display ▶ 20](#) under "Detailed view").

You also find custom methods in the **Methods** tab:

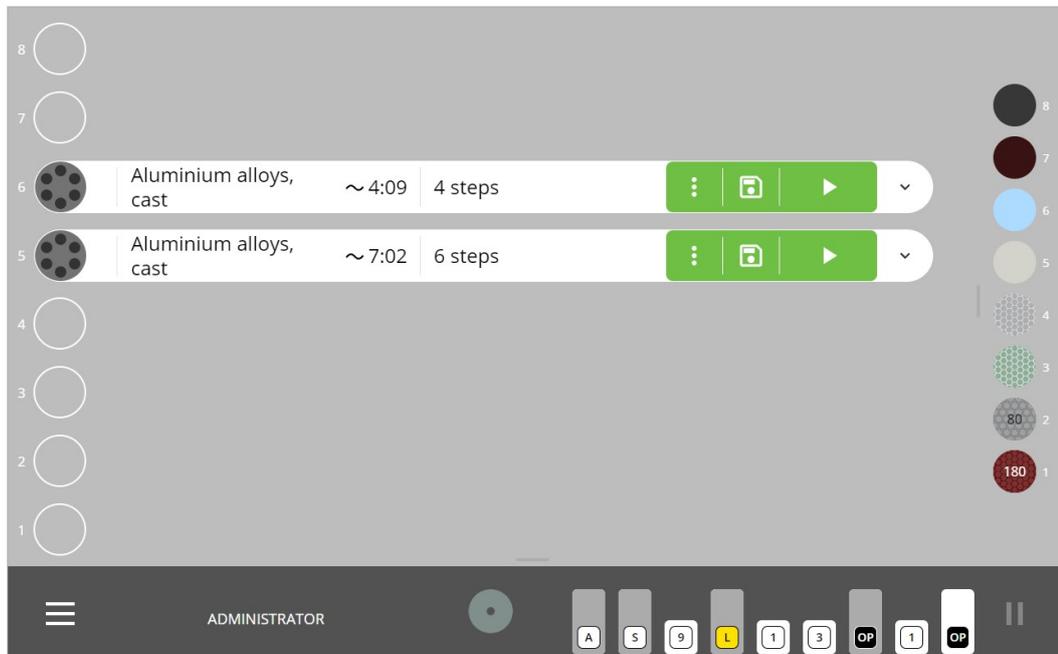


Edit a custom method

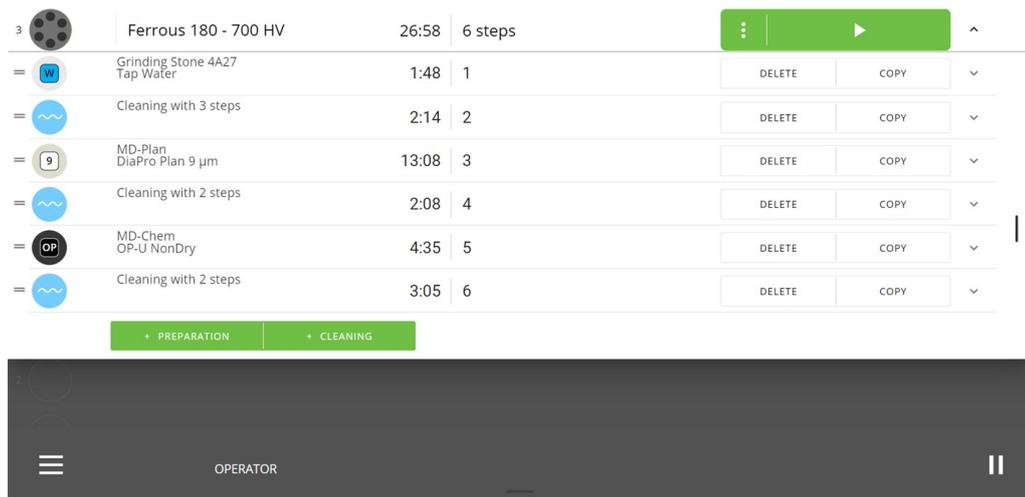
You can edit a custom method before starting the preparation process, and while the preparation process is running. You can either do this via the **Method library** when there is a specimen holder in the machine, or via the **Main menu**.

Edit a method via the Method library

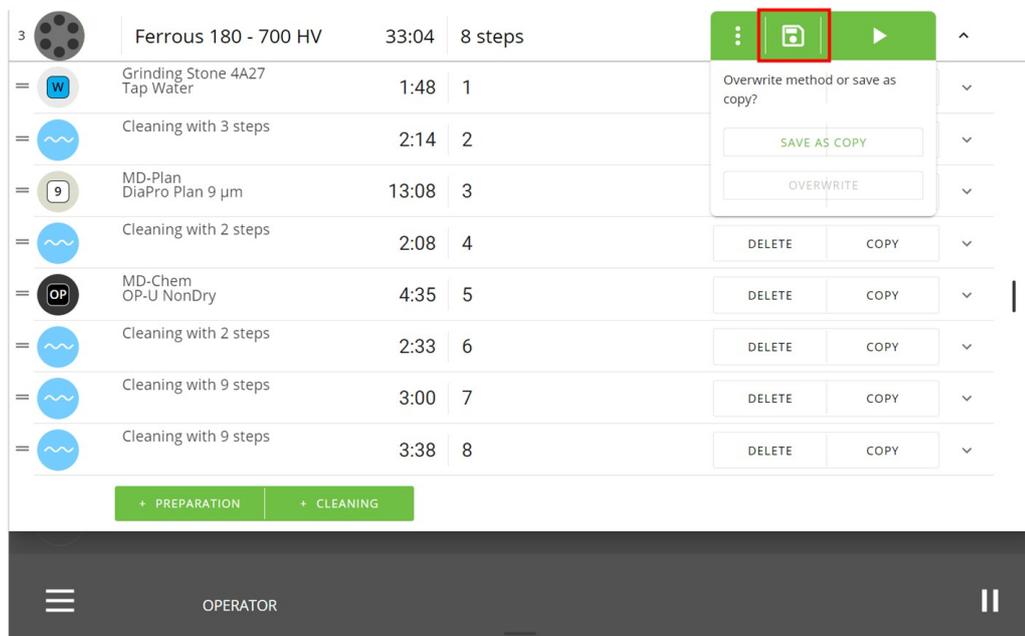
1. Log in to the machine as an **Administrator**.
2. Place a specimen holder in the desired position.
The machine shows the latest applied method as default.
3. Tap the 3 dots to access the **Edit method** menu.



4. Select the step you want to edit.



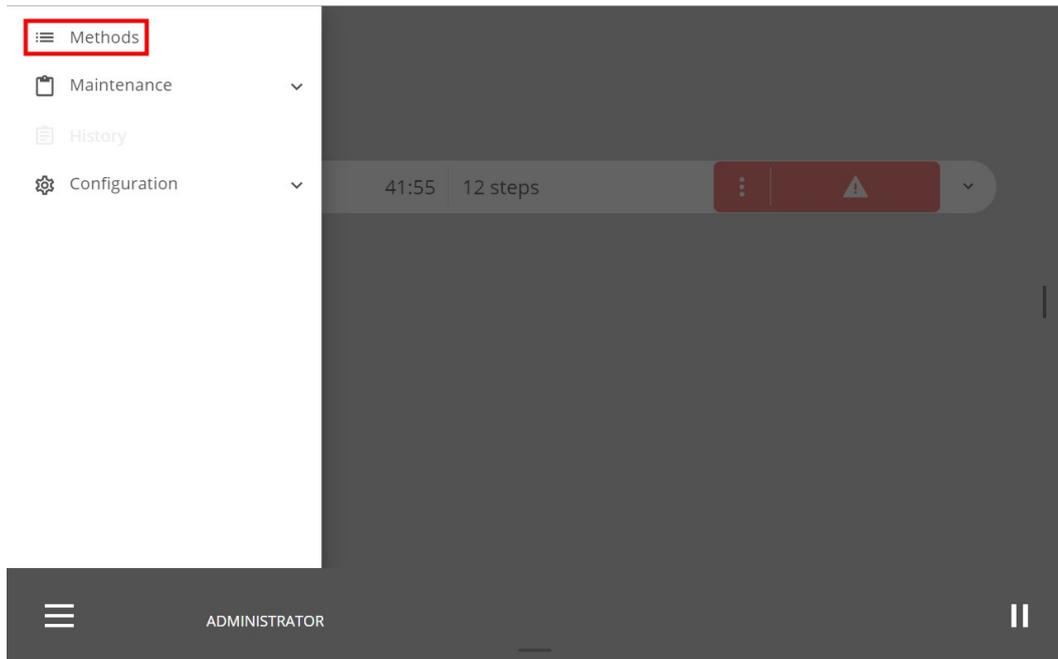
5. You can **Delete** or **Copy** steps, and you can add **Preparation** and **Cleaning** steps as desired.
6. When you finish editing, you can save your changes.



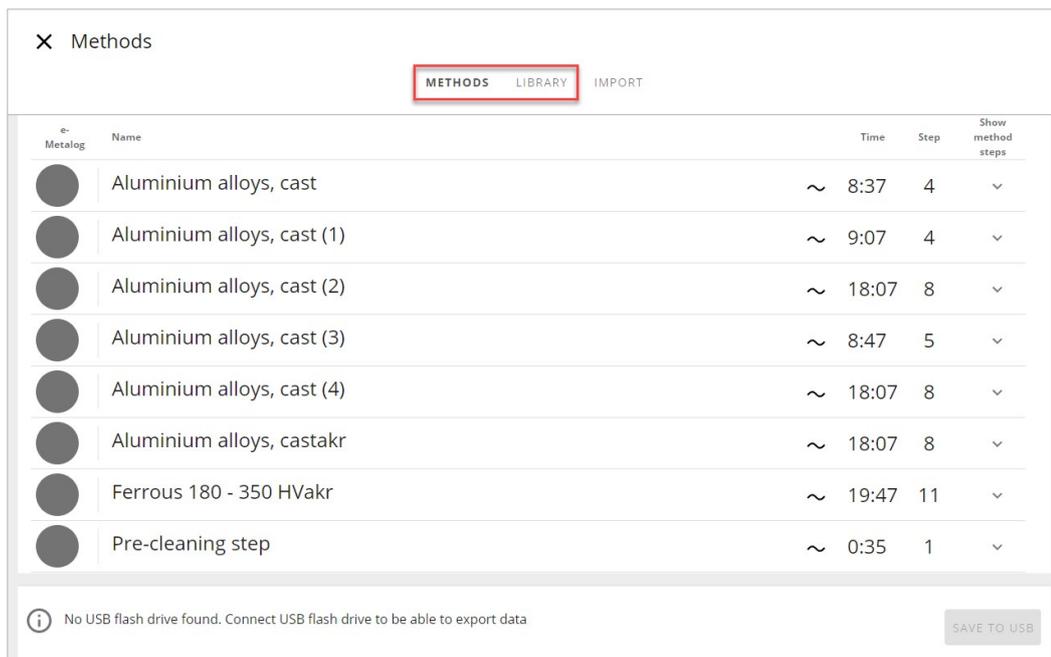
Edit a method via the Main menu

1. Log in to the machine as an **Administrator**.
2. Tap the **Main menu**.
3. Tap **Methods**.

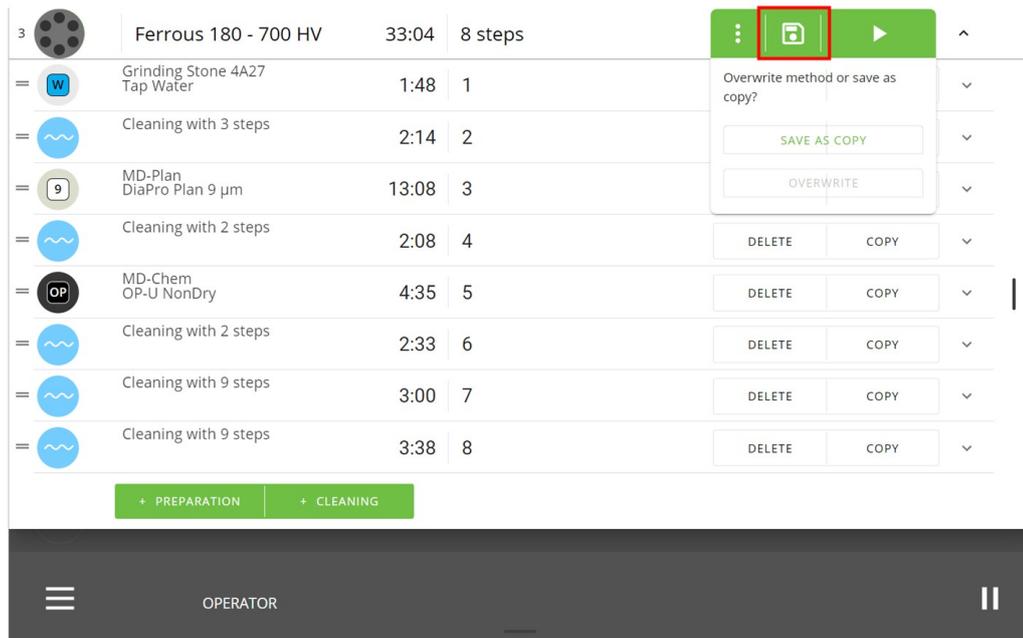
7 Operate the device



4. Tap **Methods** to open the user-defined **Method library**, or tap **Library** if you want to open the Struers **Method library**.



5. Select the method you want to edit.
6. You can **Delete** or **Copy** steps, and you can add **Preparation** and **Cleaning** steps as desired.
7. When you finish editing, you can save your changes.



7.5 The preparation process

7.5.1 Prepare the specimen holder for the Xmatic

1. Place your specimens in the specimen holder.
2. Place your specimen holder in the conveyor. See [Place and remove the specimen holder ▶52](#).
3. Manually select the number of specimens you have in the holder, or tap the **Run** button to start automatic detection, dependent on your settings in [Machine settings ▶95](#).
4. Select a method for each specimen holder you have inserted. See [Methods ▶55](#)
5. The force is adjusted either automatically or manually at your option. See [Machine settings ▶95](#).



Note

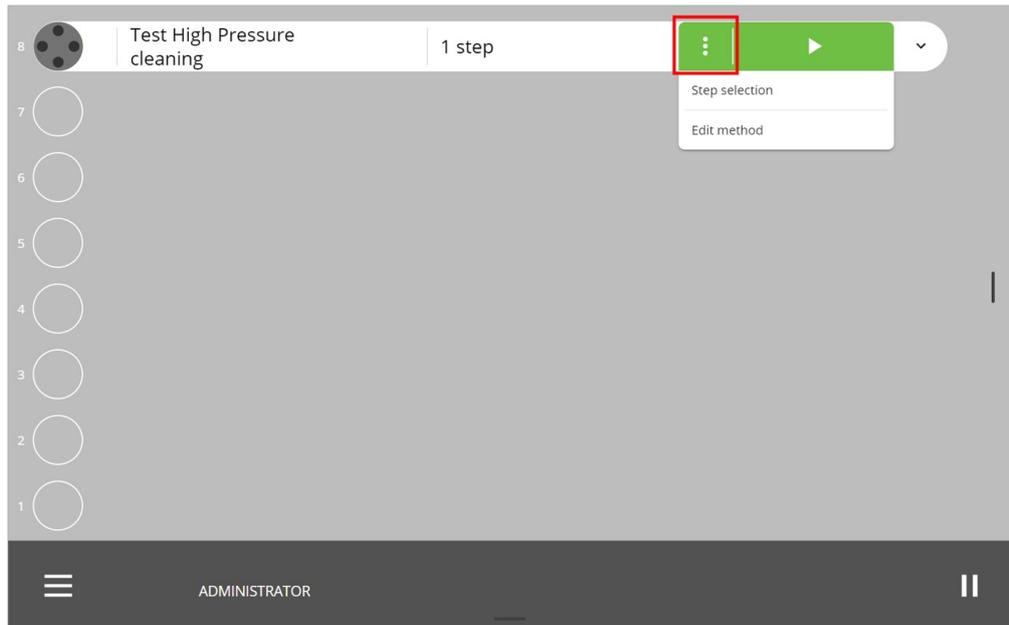
If you have placed several specimen holders in the conveyor, the specimen holders are queued based on the order in which you have pressed **Run** for each of the specimen holders. To modify the queue, tap **Eject**, and press **Run** for each specimen holder in the order you want them to be processed.

7.5.2 Step selection

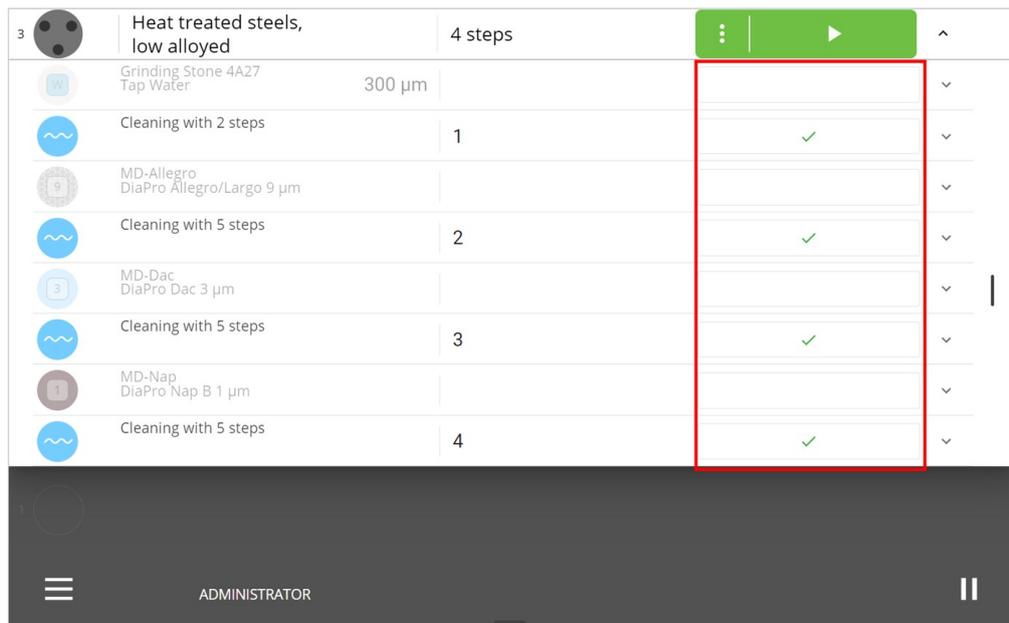
If necessary, you can select steps in your standard or custom methods in a preparation process.

Procedure

1. Tap the 3 dots on the method line to access the **Step selection** menu.



2. Tap **Step selection**.
3. Tap the fields to the right of the step name to add or skip a step. A green check mark indicates that the step is included in the preparation process.



4. Tap the **Run** button, and the method will run with the selected steps.

7.5.3 Indication of missing consumables

If the necessary consumables are not present in the machine, a yellow triangle is shown to prompt you to place the missing consumables in the bottle rack.

The **Run** button is also red to indicate that you cannot run the process.

| 6 | | Aluminium alloys, cast | 8 steps | | ^ |
|---|---|---------------------------|---------|--|---|
| | Grinding Stone 2S27 ▲ Tap Water | 300 µm | 1 | | ▼ |
| | Cleaning with 2 steps | | 2 | | ▼ |
| | MD-Largo ▲ DP-Suspension P 9 µm ▲ DP-Lubricant Blue ▲ | | 3 | | ▼ |
| | Cleaning with 5 steps | | 4 | | ▼ |
| | MD-Mol ▲ DP-Suspension P 3 µm ▲ DP-Lubricant Blue ▲ | | 5 | | ▼ |
| | Cleaning with 5 steps | | 6 | | ▼ |
| | MD-Chem ▲ OP-U NonDry ▲ | | 7 | | ▼ |
| | Cleaning with 8 steps | | 8 | | ▼ |

ADMINISTRATOR

Procedure

1. Place the missing consumables, and the **Run** tap will turn green.
2. Tab **Run**.

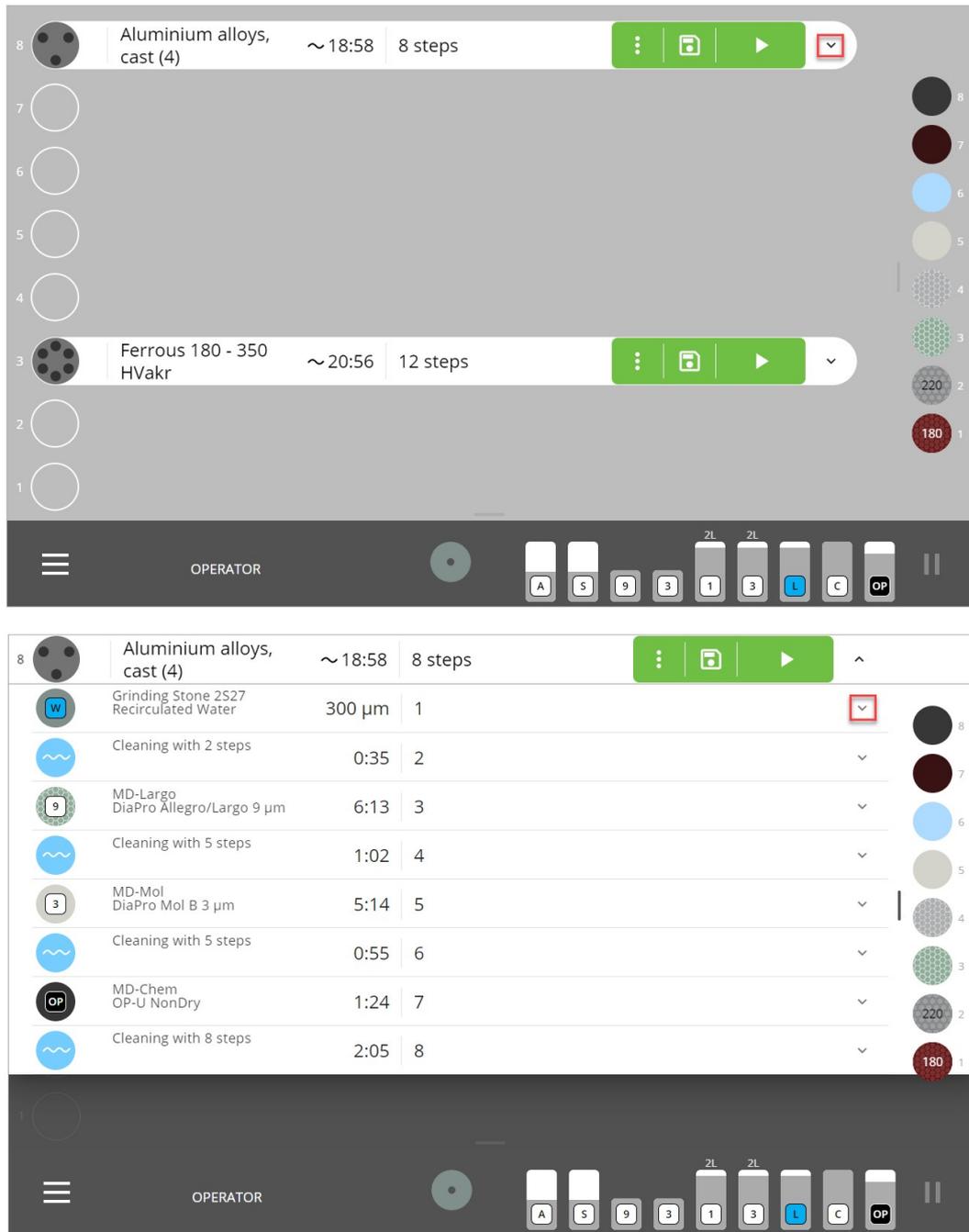
7.5.4 Start the preparation process



CAUTION

Wear suitable gloves to protect fingers from abrasives and warm/sharp specimens.

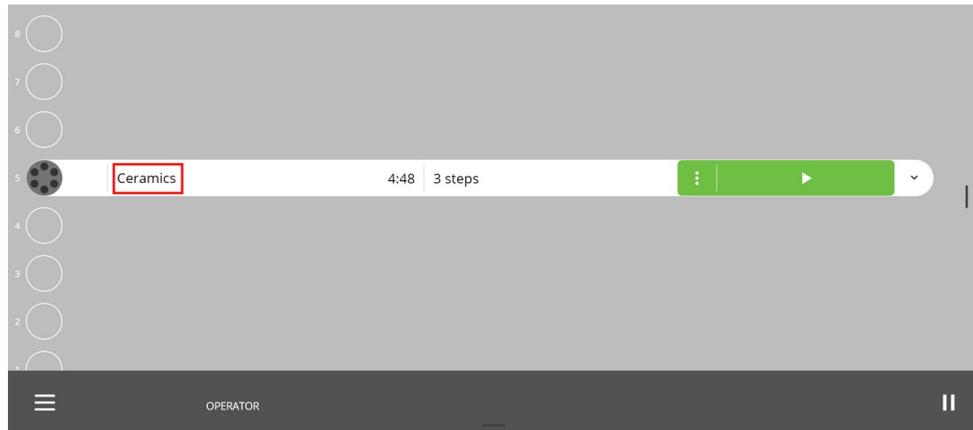
Before you start the preparation process, you can see a list of the different preparation steps in the selected method by tapping the drop-down button.



While the method runs, you can see the progress of the preparation as the time counts down to 00:00 next to the method name.

Procedure

1. Log in to the machine as an **Administrator** or **Operator**.
2. In the **Methods**, select the desired method.
3. Make sure that all the necessary consumables and MD surfaces are available on the machine. The **Run** button must be green.



4. Tap **Run**.

The machine stops automatically when the process is completed.



Note

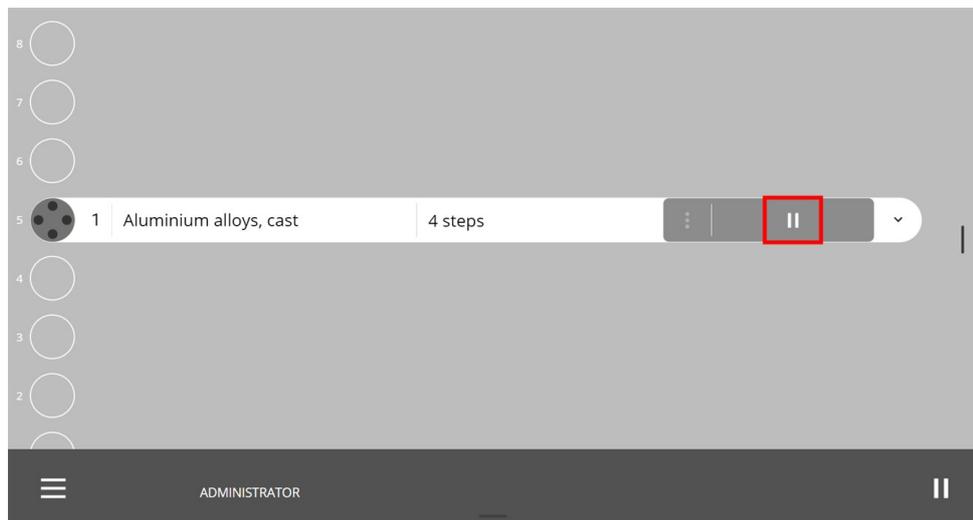
If you have placed several specimen holders in the conveyor, the specimen holders are queued based on the order in which you have pressed **Run** for each of the specimen holders. To modify the queue, tap **Eject**, and press **Run** for each specimen holder in the order you want them to be processed.

7.5.5 Inspect the specimens

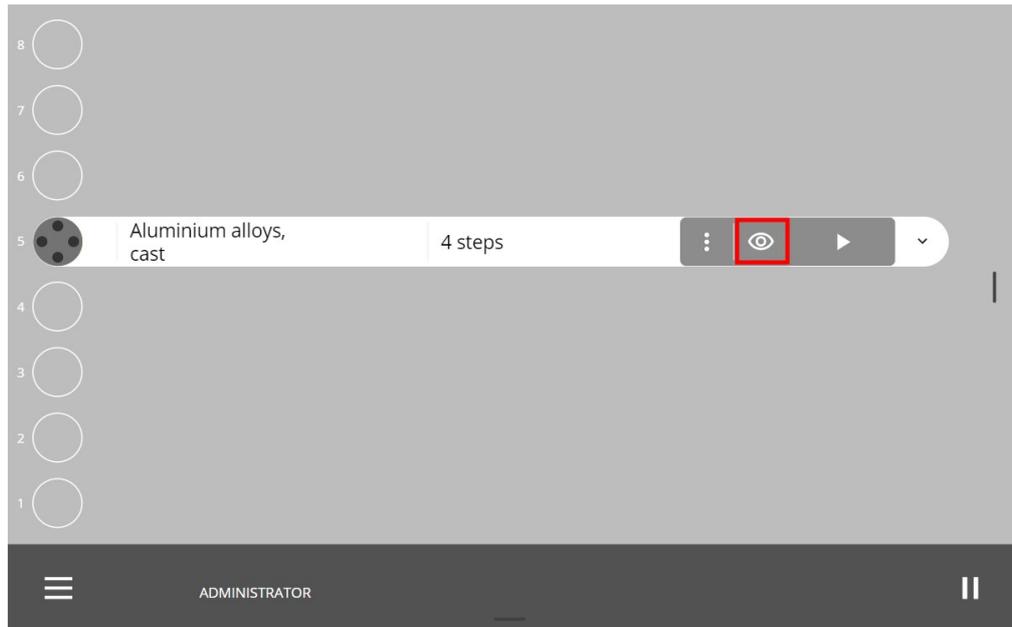
You can at any time inspect a specimens holder and the specimens while the preparation process is running.

Procedure

1. On the preparation process bar, tap the **Pause** button.



2. Tap the **Eye** button on the process bar.



3. The machine returns the specimen holder to its drawer in the vertical conveyor, and you can now inspect it.

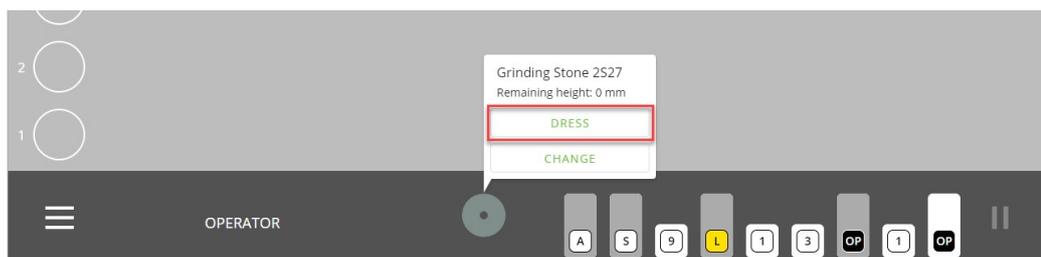
After inspection

1. Insert the specimen holder again.
2. Tap **Run**, and the machine will continue from where you paused it.
Alternatively, tap the 3 dots and select **Start over**.

7.5.6 Manual dressing of the grinding stone

We recommend that you dress a new stone a couple of times before using it for grinding. This ensures that it is plane and ready for use.

1. In the consumables ribbon, select **Dress** to start the dressing process.



On how to configure **Dresser programs** and Manual dressing, see from [Configure Dresser programs for the grinding stone ▶ 76](#)

7.5.7 Open the MD-elevator

You can change or refill MD surfaces while the machine is running.

Open the MD-elevator door during the process

1. Tap the **Main menu**.

2. Select **Unlock MD safety cover**.



Exceptions

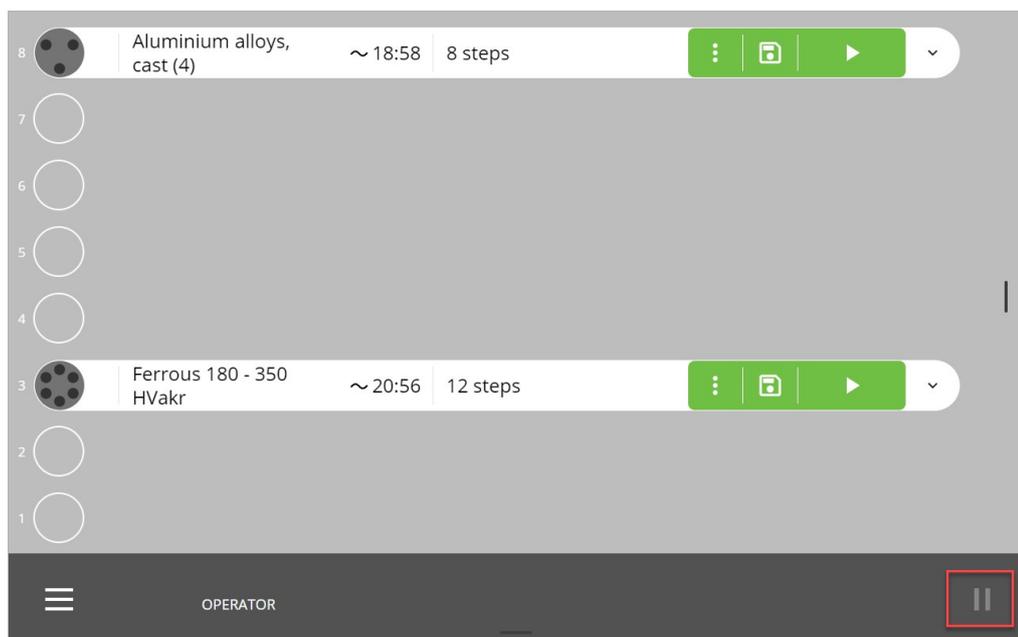
You cannot open the MD elevator door:

- while the machine is reading the MD surfaces
- when the machine is either delivering or retrieving an MD surface
- when the machine is in fact processing on the MD station.

7.5.8 Pause the ongoing process

During the preparation, you may discover that you need to pause the process. You can then pause the ongoing process on the display.

1. Tab on the **Pause** icon.

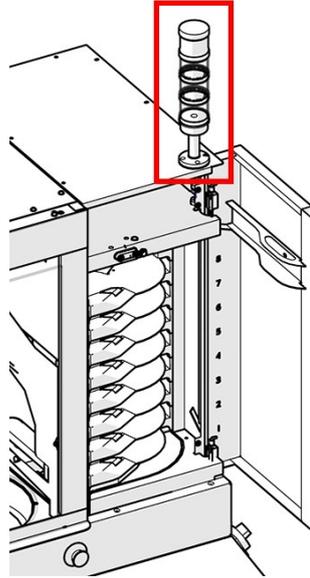


2. Complete the action you wish to perform.

3. Tab the **Pause** icon again to resume the preparation.

7.6 Beacon (option)

The machine can be equipped with a beacon that indicates the operational state of the machine.



Per default, there are 3 light positions:

| | | |
|------------------------|---------------------|------------------------|
| Top position | Red light | Machine error |
| | Constant light | Active error |
| | No light | No error |
| Middle position | Yellow light | Warning |
| | Constant light | Active warning |
| | No light | No warning |
| Bottom position | Green light | State |
| | Flashing light | The machine is paused |
| | Constant light | The machine is in work |
| | No light | The machine is idle |



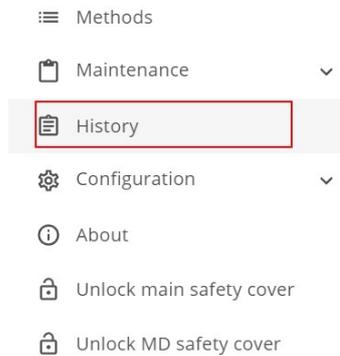
Hint

For more information about this unit, see the specific Instruction Manual or User Guide.

7.7 History - log file reporting

Procedure

1. Log in as an **Administrator** (described in [Log in as an Administrator ▶47](#)).
2. In the **Main menu**, select **History**.



3. Click in the **Date range** area.

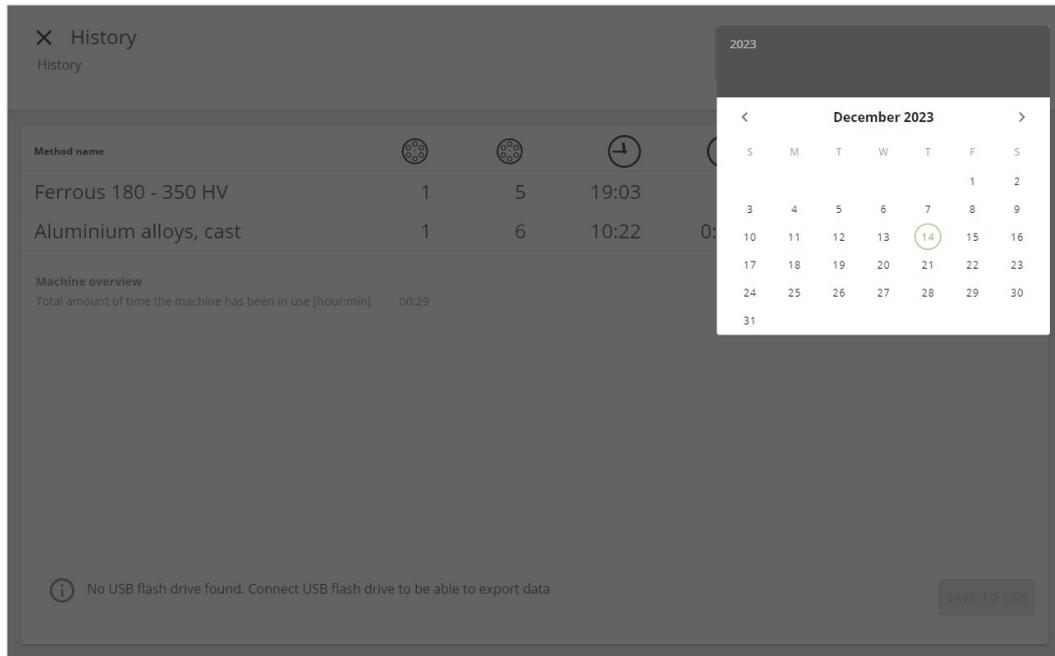
A screenshot of the History screen. At the top right, there is a 'Date range' input field highlighted with a red box. Below it is a table with the following data:

| Method name | | | | | | | |
|------------------------|---|---|-------|------|------|------|----|
| Ferrous 180 - 350 HV | 1 | 5 | 19:03 | | 9:10 | 0 | 22 |
| Aluminium alloys, cast | 1 | 6 | 10:22 | 0:30 | 6:00 | 11.5 | 9 |

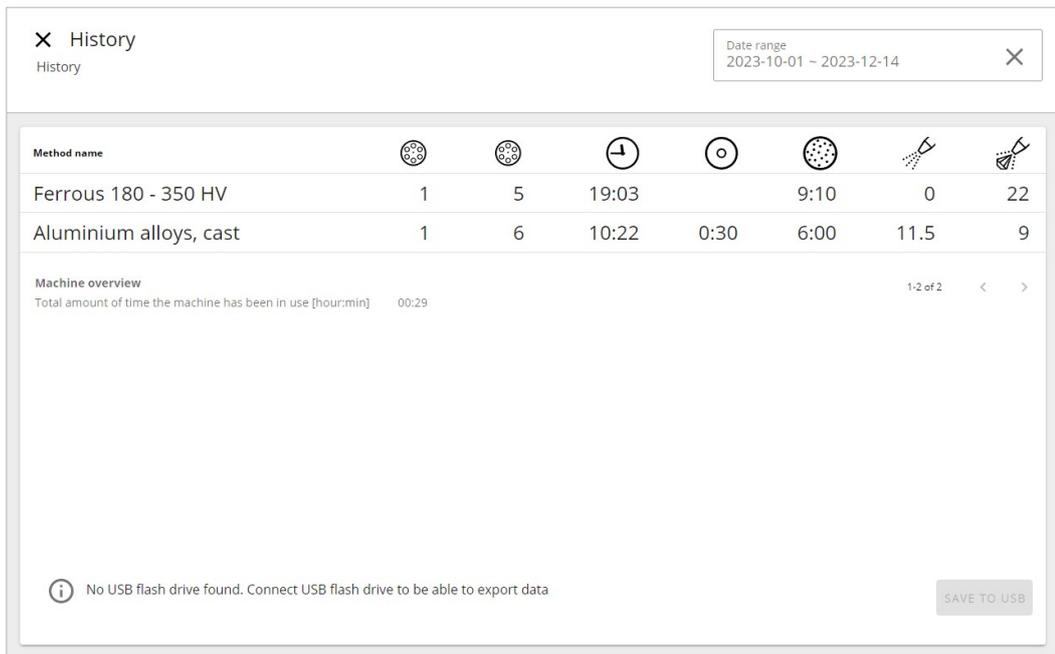
Below the table is a 'Machine overview' section showing 'Total amount of time the machine has been in use [hour:min] 00:29' and '1-2 of 2' with navigation arrows. At the bottom, there is a message: 'No USB flash drive found. Connect USB flash drive to be able to export data' and a 'SAVE TO USB' button.

4. Select the time range you are interested in.

7 Operate the device



5. See the data for the selected period on the display.



6. To export the data, connect a USB flash drive, and tab **Save to USB**.

8 Configuration

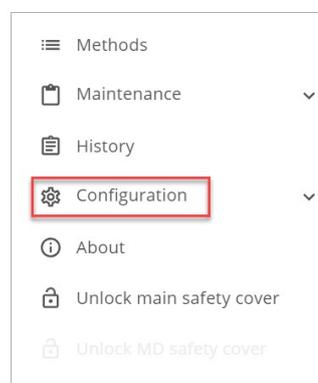
**Note**

Only users with administrator rights can configure the machine.

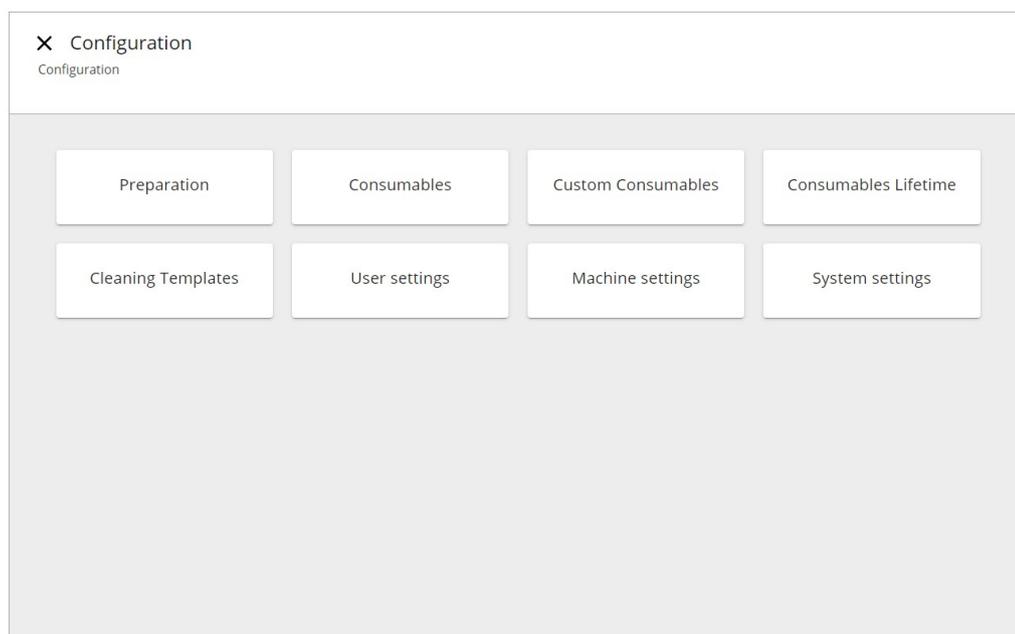
With administrator rights, you can adjust various machine settings on the display.

Procedure

1. Select and log in as an **Administrator**. ([Log in as an Administrator ▶ 47](#)).
2. Tap the **Main menu** button ([Overview of the display ▶ 20](#)).
3. Select **Configuration**.



4. You can now access the following sub menus that will be described in this chapter:



8.1 Preparation

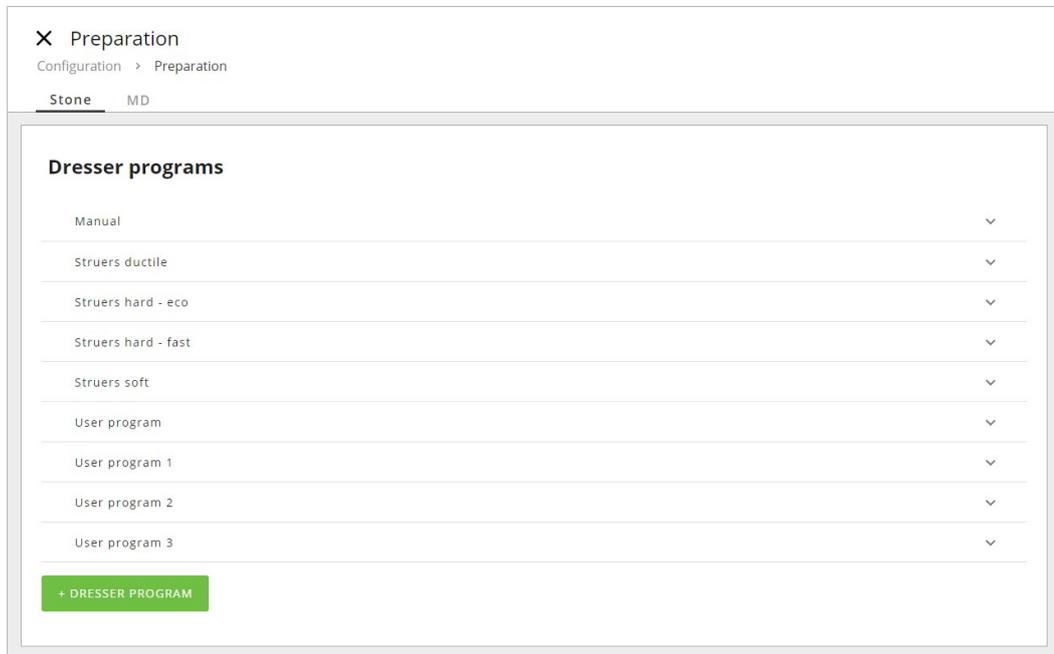
8.1.1 Configure Dresser programs for the grinding stone



Note
You need Administrator access to adjust the settings for dressing of the grinding stone.

Procedure

1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration**.
3. Then select **Preparation > Stone** to open the dresser program list.



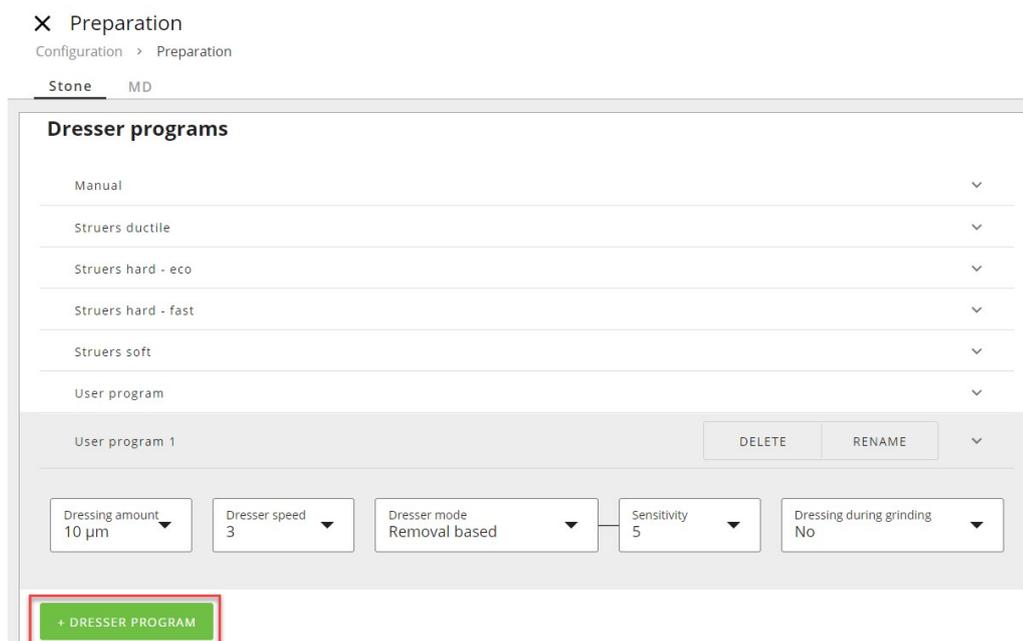
The list shows a number of default dresser programs that cannot be changed. The only exception is the **Manual** dressing program (see [Configure manual dressing of the grinding stone ▶ 78](#) on configuration and [Manual dressing of the grinding stone ▶ 70](#) on operation).

| Dresser programs | |
|---|---------------------------------|
| You can select among one of the following dresser programs: | |
| <div style="display: flex; align-items: center;">  <p>Note Dressing after process is selected independently in the preparation method.</p> </div> | |
| Manual | Adjust the settings as desired. |

| Dresser programs | |
|------------------------|---|
| Struers ductile | Use this dresser program for grinding with a consumable suited for ductile materials as nickel-based alloys and stainless steel. |
| Struers hard | <p>Struers hard - eco</p> <p>Use this dresser program for grinding with a consumable suited for hard and very hard metals.</p> <p>When you use this dresser program, a smaller amount of dresser is applied, and the speed and sensitivity are also lower, thus prolonging the lifespan of the grinding stone.</p> <p>Struers hard - fast</p> <p>Use this dresser program for grinding with a consumable suited for very hard metals.</p> |
| Struers soft | Use this dresser program for grinding with a consumable suited for soft, non-ferrous metals. |

Create a new Dresser programs

1. Tap the **+ Dresser Program** icon. This adds a new dresser program to the list.



2. Adjust the settings as desired. All changes are automatically saved.

| Dressing amount |
|---|
| <ul style="list-style-type: none"> • Set a value in microns from 10-300 for how much you want to remove. |

| | |
|--|--|
| Dresser speed | |
| <ul style="list-style-type: none"> Set the speed of dressing from 1-10. | |
| Dresser mode | |
| Select between Removal based , or Time based . | |
| Removal based | Select the desired sensitivity from 1-20. The higher the sensitivity, the more often the stone is dressed. |
| Time based | Select the desired dressing interval from 10 seconds to 5 minutes. The stone is dressed after the selected dressing interval. This process is cyclic. |
| Sensitivity | |
| Select the desired sensitivity setting. | |
| Dressing during grinding | |
| Select Yes to have the stone dressed while the material removal is running. Select No to lift the specimen holder when dressing the stone | |

8.1.2 Configure manual dressing of the grinding stone

Struers recommends that you dress a new stone a couple of times before using it for grinding. This ensures that it is plane and ready for use.

Procedure

1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration**.
3. Select **Preparation > Stone** to open the dresser program list.

4. Select **Manual**.

X Preparation
 Configuration > Preparation
 Stone MD

Dresser programs

Manual

Dressing amount: 0 µm
 Dresser speed: 3500
 Dresser mode: Time based
 Time: 2:00
 Dressing during grinding: Yes

Struers ductile
 Struers hard - eco
 Struers hard - fast
 Struers soft
 User program
 User program 1
 User program 2

Settings**Dressing amount**

To obtain an active and plane grinding stone surface, make sure that the dresser steps are large enough to adequately dress the grinding stone.

To obtain the longest possible lifetime of the grinding stone, make sure that the dresser steps are as small as possible.

- Set the dresser step from 20 to 100 µm, in intervals of 10 µm.

Dresser mode

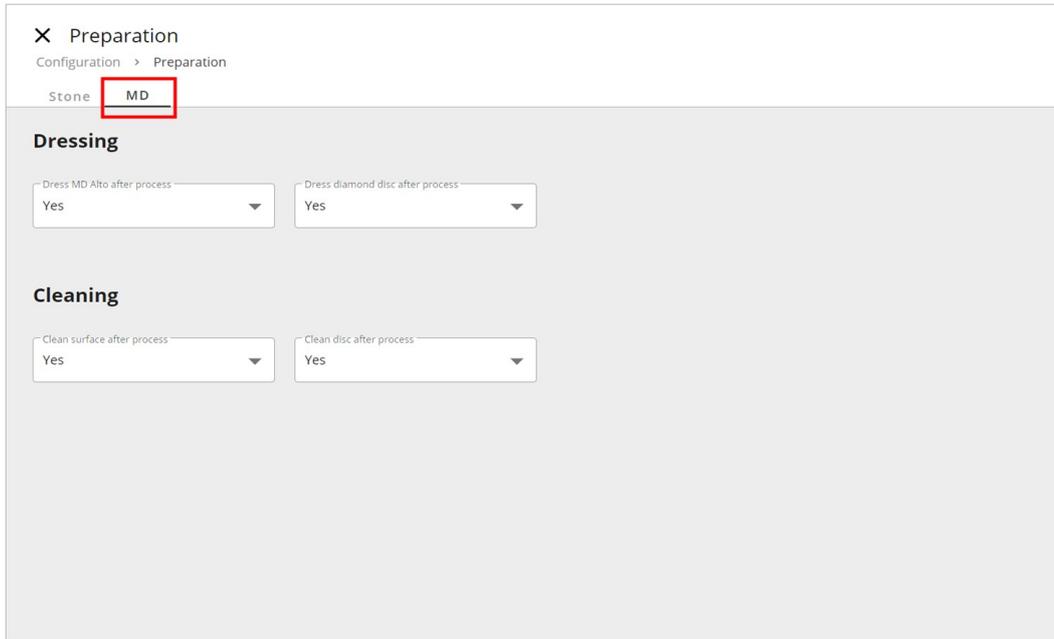
- Set the rotation time from 1 to 9 minutes, in steps of 1 min.

For operation, see [Manual dressing of the grinding stone ▶ 70](#).

8.1.3 Configure the MD grinding surface

1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration**.

3. Then select **Preparation** and the **MD tab**.
4. Now choose the desired settings.



Dressing

To ensure the removal rate of the surface, you can dress the MD-Alto and the diamond-grinding surfaces, e.g. the MD-Piano.

Cleaning

You can set the machine to automatically clean the surface (MD-Alto, MD-Allegro and MD-Largo and MD diamond grinding surface) after the process.

We recommend that you also clean the MD-Disc before you apply a new surface.

It is not possible to clean the MD polishing surfaces.

8.2 Consumables



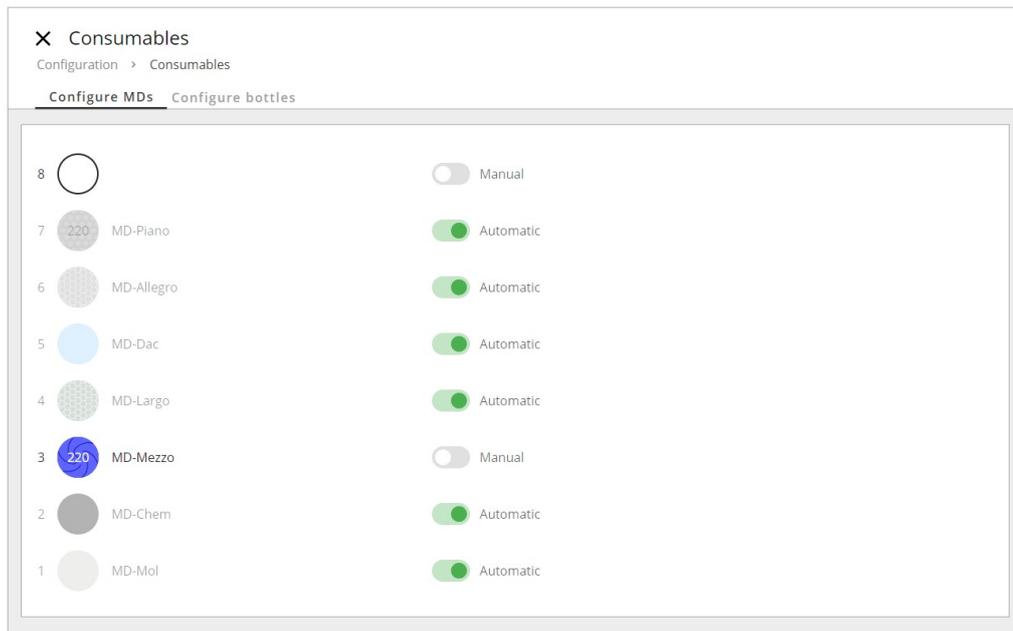
Note

The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine. The machine automatically detects the contents of the Struers consumables bottles and the MD surfaces when you place them in the machine.

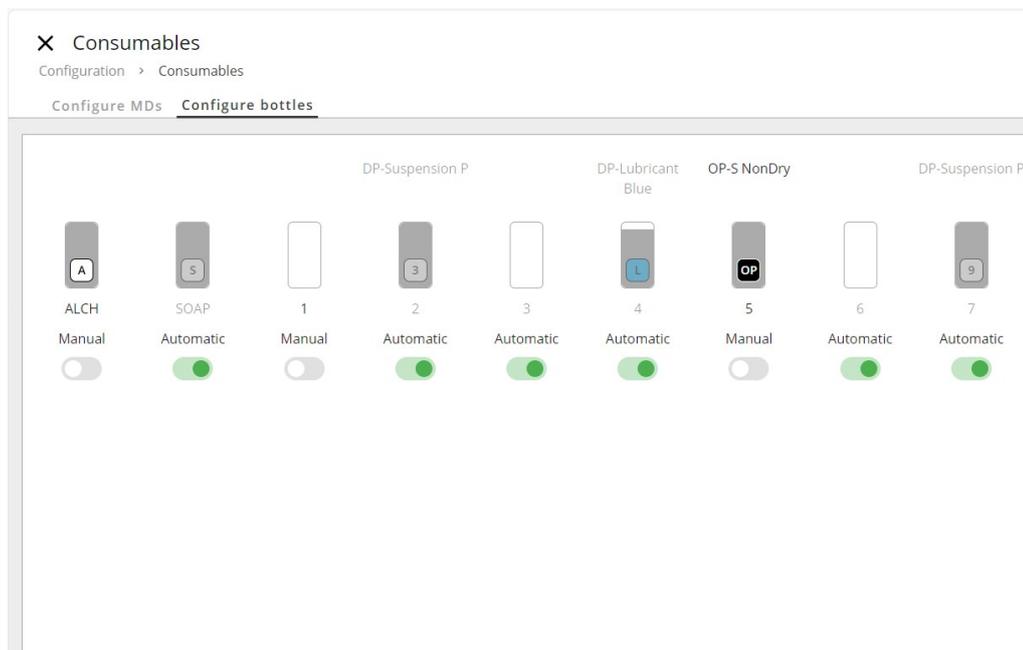
Configure consumables

1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration** and **Consumables**.
3. Select the type of consumable you want to configure, that is MDs (MD surfaces) in the MD elevator or bottles in the Bottle rack.

Configure MDs



Configure bottles



- Select **Automatic** or **Manual**.

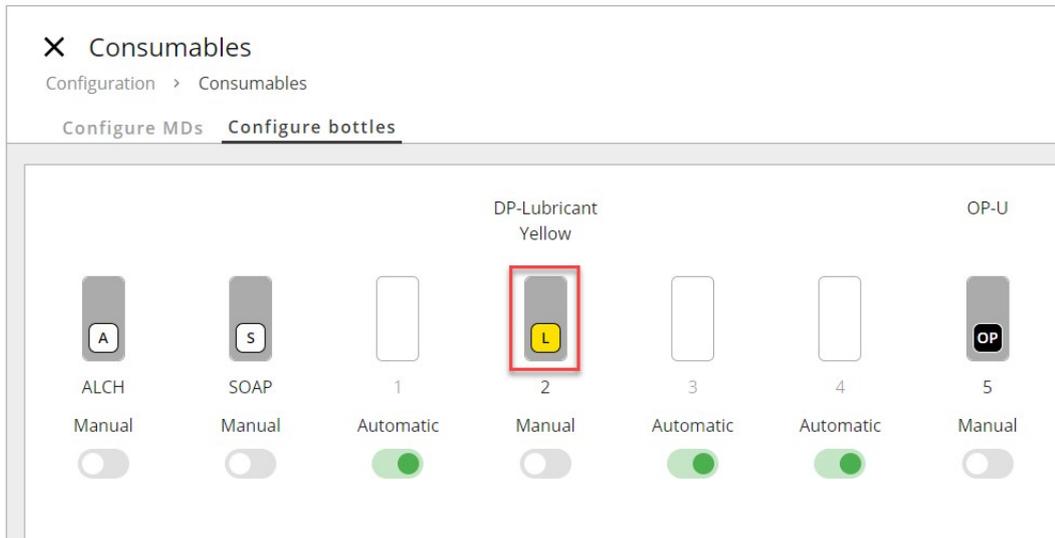
Automatic

The machine reads the data matrix code that is on all consumables.

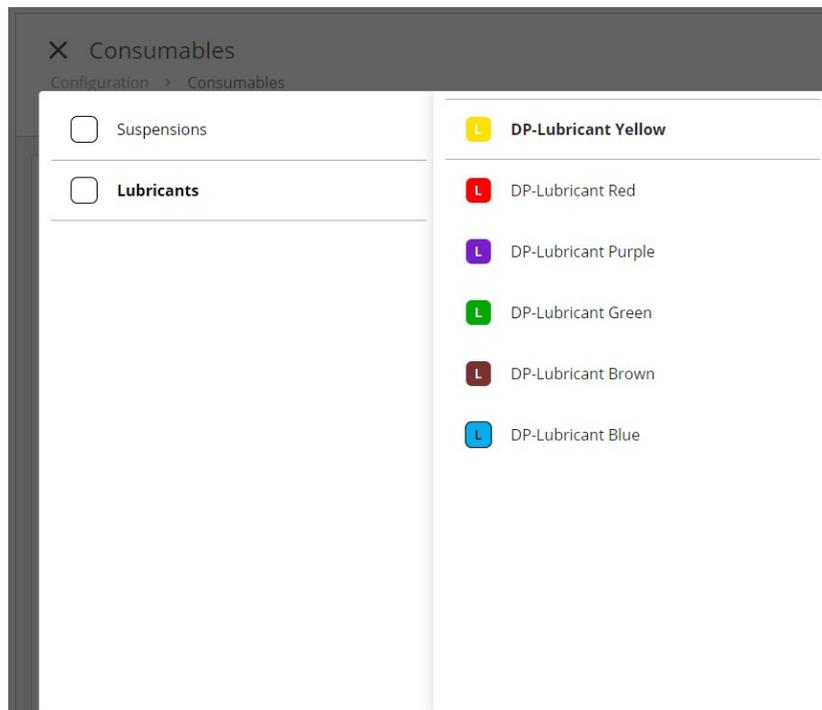
Manual

The machine does not look for a code to read.

1. Select the surface, suspension or lubricant on the position in question.



2. When you click on the button for a bottle set manually, you get a list of Struers consumables and your custom consumables:



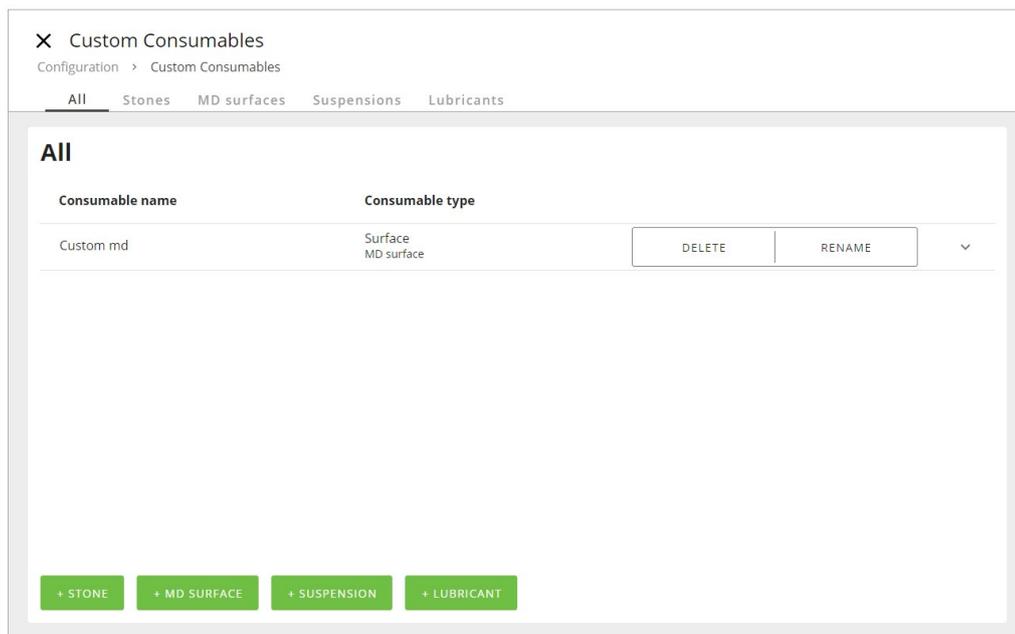
3. Select a consumable from the list, and this will have this position until you change this or select automatic, and the data matrix code is read.

See [Custom consumables ▶ 83](#) on how to add consumables.

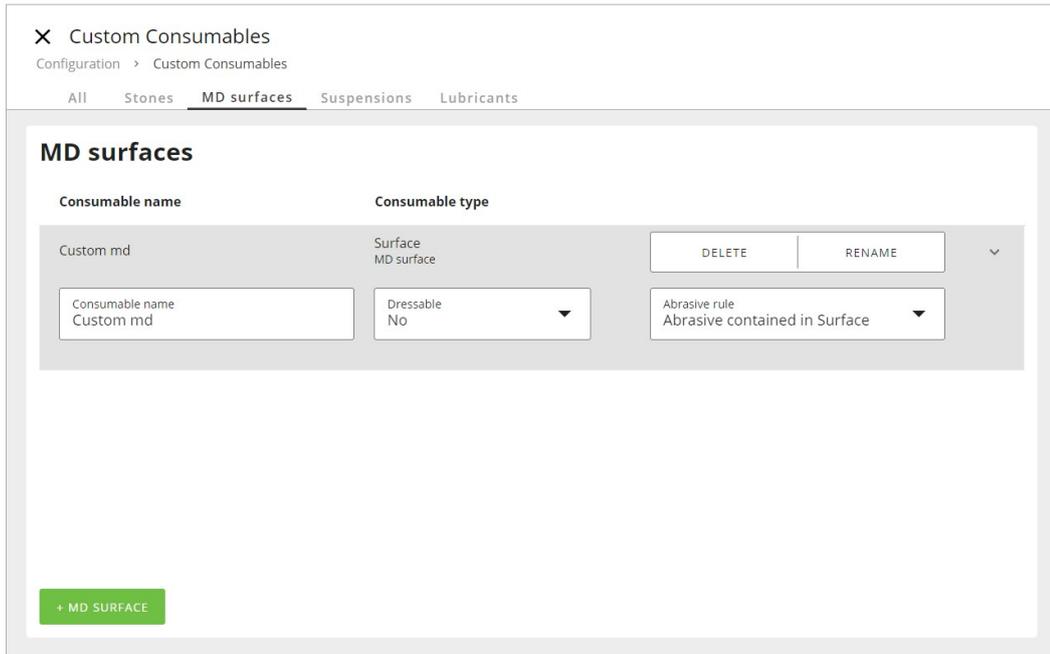
8.3 Custom consumables

Configure custom consumables

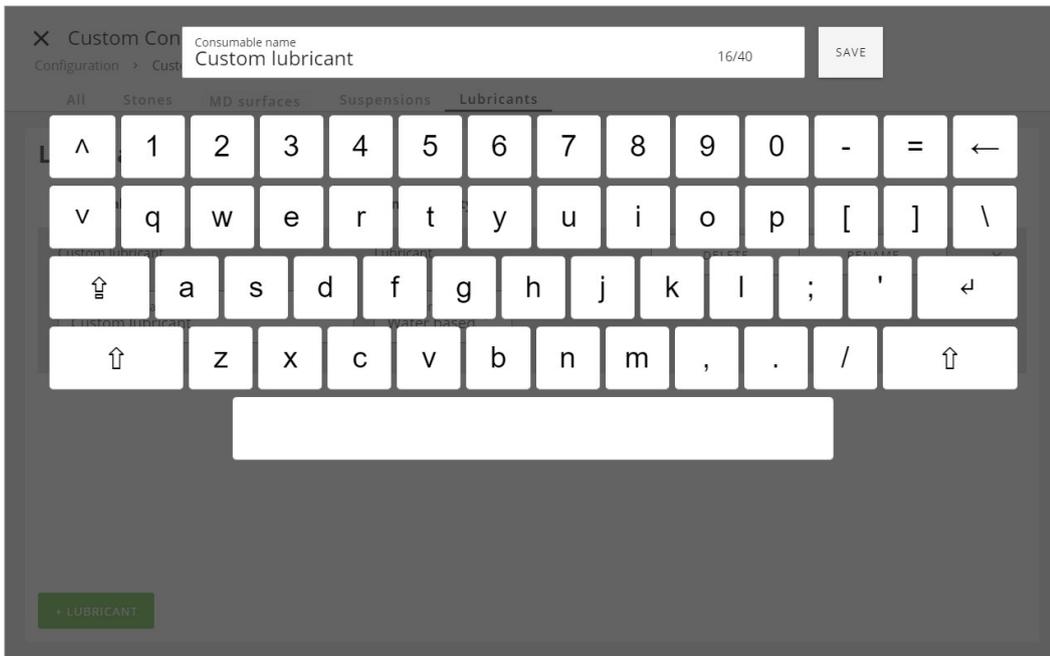
1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration** and **Custom consumables**.
3. In the view, select the type of consumable you want to rename, delete or add, such as **Stone**, **MD surface**, **Suspension** or **Lubricant** , either in the menu or on the green buttons.



4. To add a new custom consumable, click on the green button for the consumable in question, e.g. MD surface.



5. Give the custom consumable a name. When you click on the **Consumable name** text field, a keyboard pops up.
6. Type the new name and save.



7. Choose dressing, abrasive rule, abrasive or lubricant type, dependent on the custom consumable in question.

Dressing of stones and MD surfaces

1. Click on the **Dressable** field in the middle.

✕ Custom Consumables
Configuration > Custom Consumables

All Stones **MD surfaces** Suspensions Lubricants

MD surfaces

| Consumable name | Consumable type | |
|------------------------------|-----------------------|--|
| Custom md | Surface MD surface | DELETE RENAME |
| Consumable name Custom md | Dressable No | Abrasive rule Abrasive contained in Surface |

+ MD SURFACE

- Select dressing.

Suspensions Lubricants

No

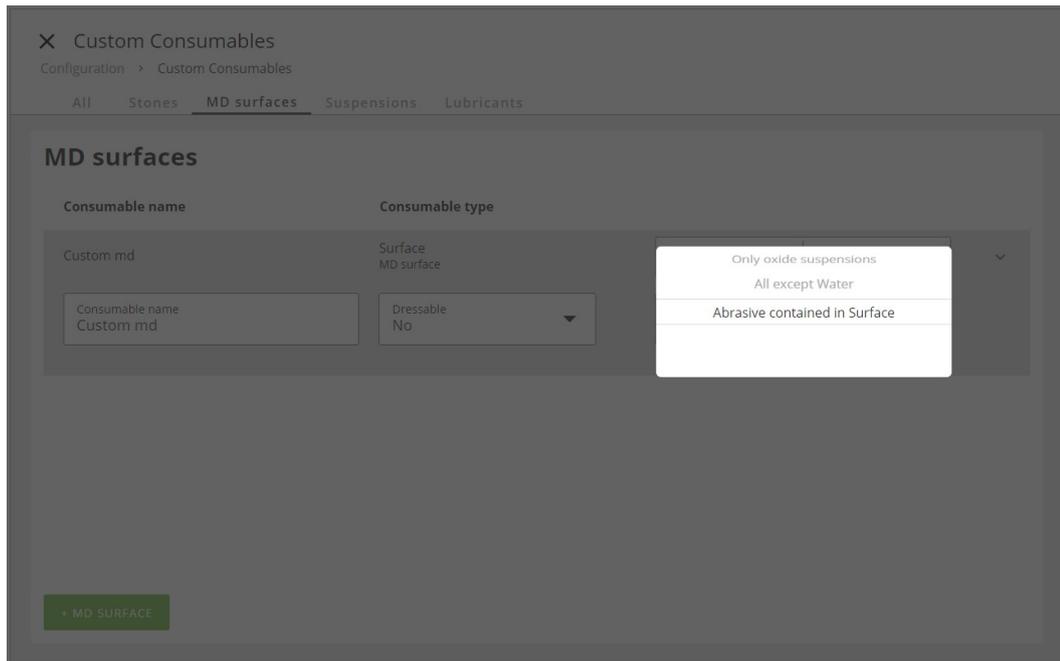
Aluminium Oxide Stick

Diamond tip

Dressable
No

| Dressing | |
|-----------------------|--|
| No: | If the custom consumable should not be dressed after process as a polishing cloth |
| Aluminum oxide stick: | If the custom grinding surface is a diamond grinding surface such as the MD-Piano, MD-Mezzo, and MD-Molto. |
| Diamond tip: | If the custom grinding surface is a resin-bonded aluminum oxide surface such as the MD-Alto. |

- Choose an abrasive rule for the MD surface.



| Abrasive rule | |
|----------------------------------|---|
| Only diamond suspension: | If the surface is used with only diamond suspension. |
| Only oxide suspension: | If the surface is used only with oxide polishing products. A process step set up with an oxide polishing product will have the surface cleaned with water as the last part of the process step. |
| All except water: | All types of coolant or suspension can be used except water. |
| Abrasive contained in a surface: | The consumable has abrasives in the surface and water is used as a coolant. |

Abrasive type for the suspensions

1. Click on the **Abrasive type** field in the middle.

Configuration > Custom Consumables

All Stones MD surfaces **Suspensions** Lubricants

Suspensions

| Consumable name | Consumable type | |
|--------------------------------------|------------------------|---------------|
| Custom suspension | Suspension | DELETE RENAME |
| Consumable name Custom suspension | Abrasive type Oxide | |

+ SUSPENSION

2. Choose the abrasive type.

Configuration > Custom Consumables

All Stones MD surfaces **Suspensions** Lubricants

Suspensions

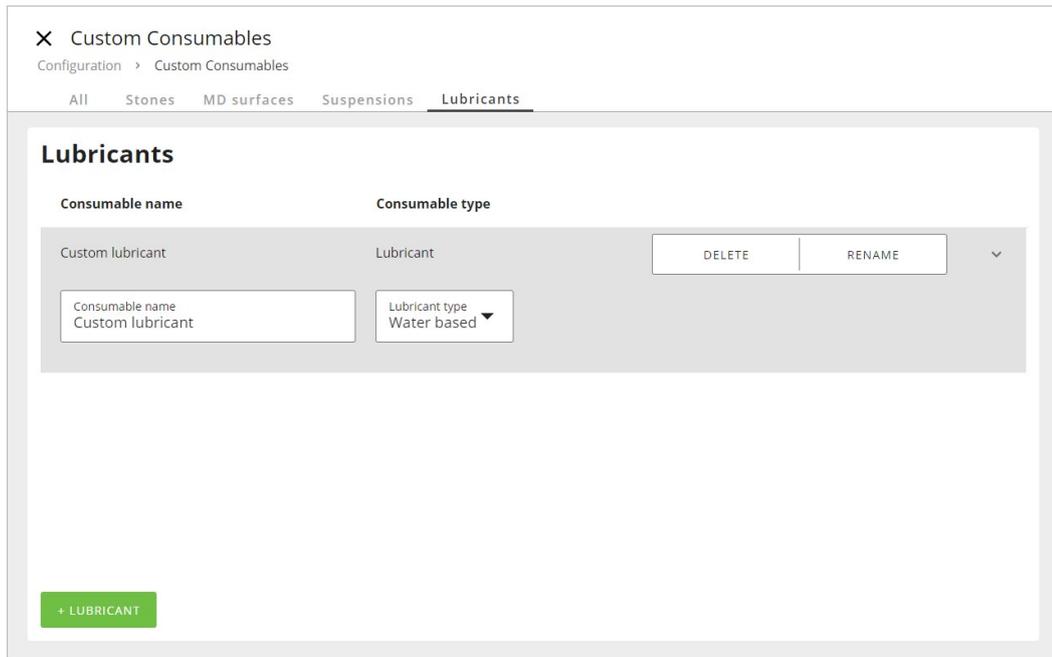
| Consumable name | Consumable type | |
|--------------------------------------|------------------|---------------|
| Custom suspension | Suspension | DELETE RENAME |
| Consumable name Custom suspension | Oxide Diamond | |

+ SUSPENSION

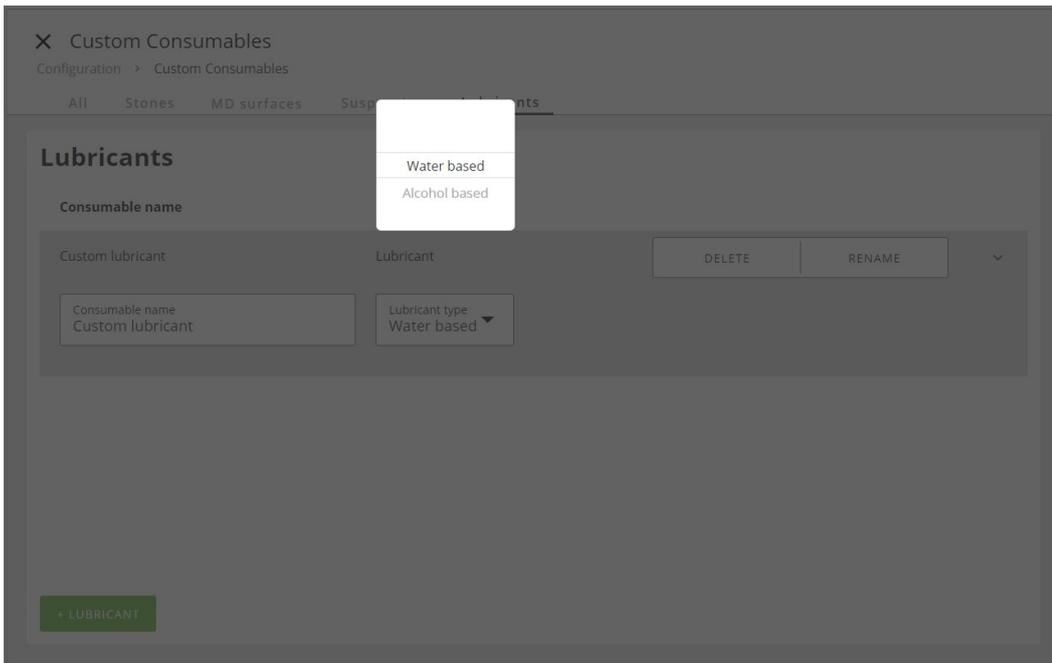
| Abrasive type | |
|---------------|---|
| Oxide | If the custom consumable is an Oxide Polishing type of suspension |
| Diamond | If the custom consumable is a Diamond Suspension |

Lubricant types for the lubricants

1. Click on the **Lubricant type** field in the middle.



2. Choose the lubricant type.



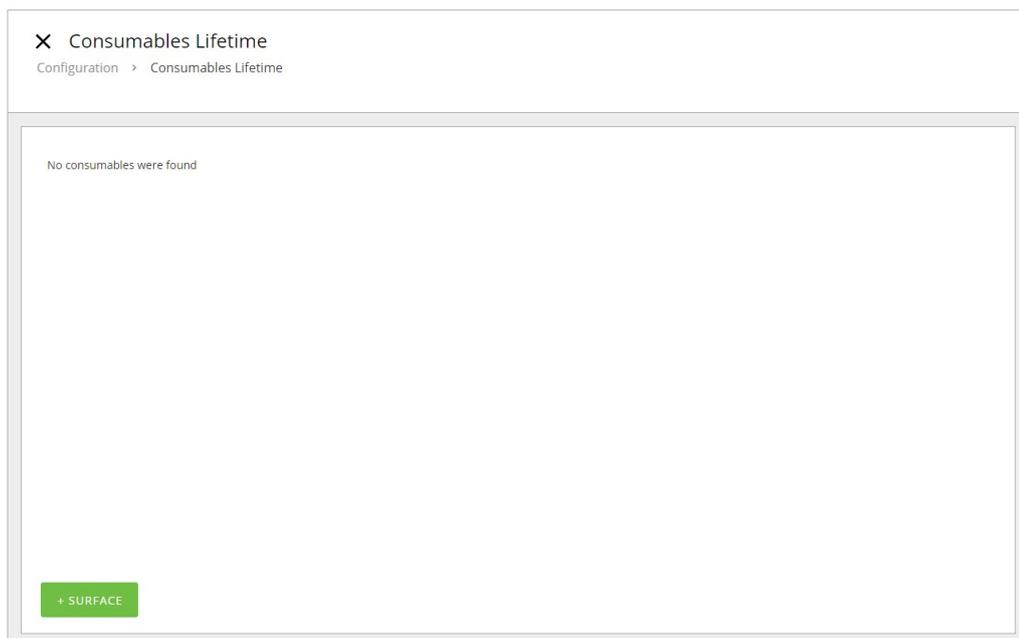
| Lubricant type | |
|----------------|--|
| Water | If the custom lubricant is water-based |
| Alcohol | If the custom lubricant is alcohol-based |

8.4 Consumables Lifetime

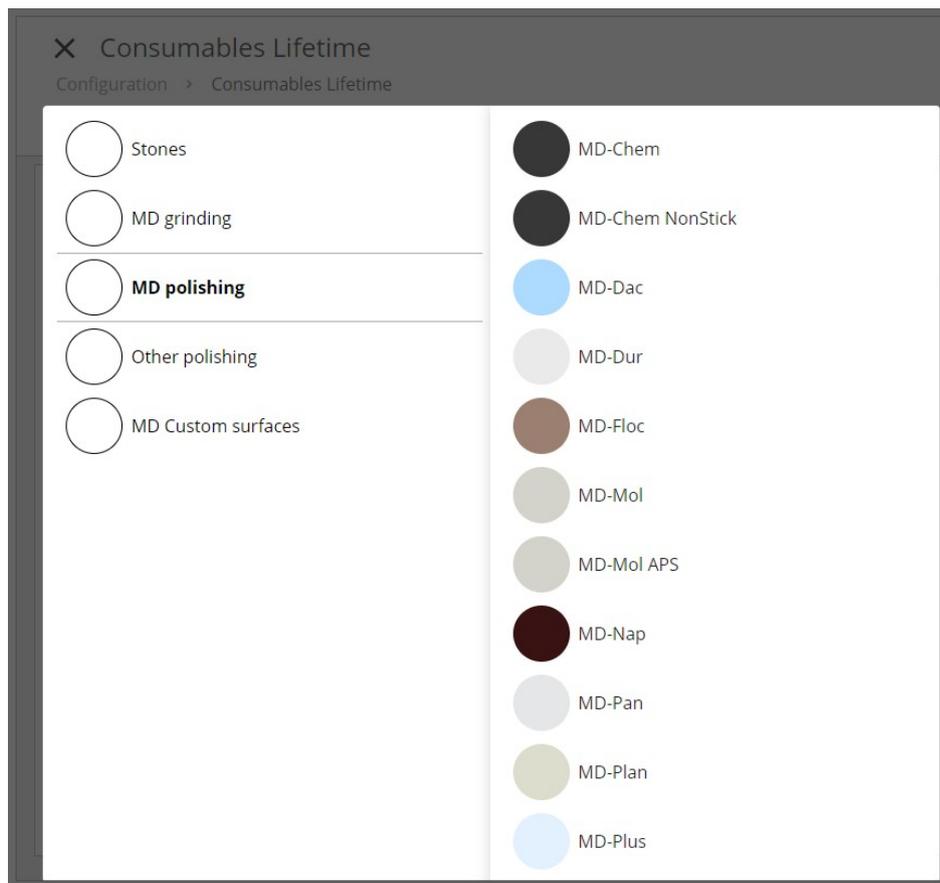
Configure the custom lifetime of the MD surface

All Struers MD surfaces have a defined lifetime which depends on for instance the material that is prepared. If a different lifetime is relevant, you can configure this.

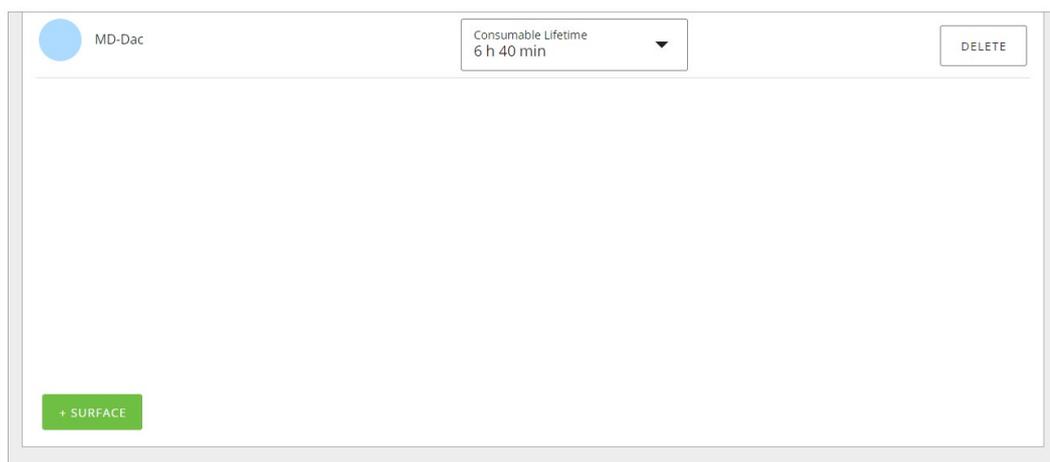
1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration** and then **Consumables Lifetime**.
3. To select consumables, click on **+ Surface**.



4. Click on the specific consumable you wish to change the lifetime of, for example MD-Dac.



5. Now change the lifetime of the chosen consumable.



8.5 Cleaning Templates

The Struers methods that are already predefined and available in the **Method library** (see [Struers methods ▶ 55](#)), have built-in cleaning templates, that you cannot change.

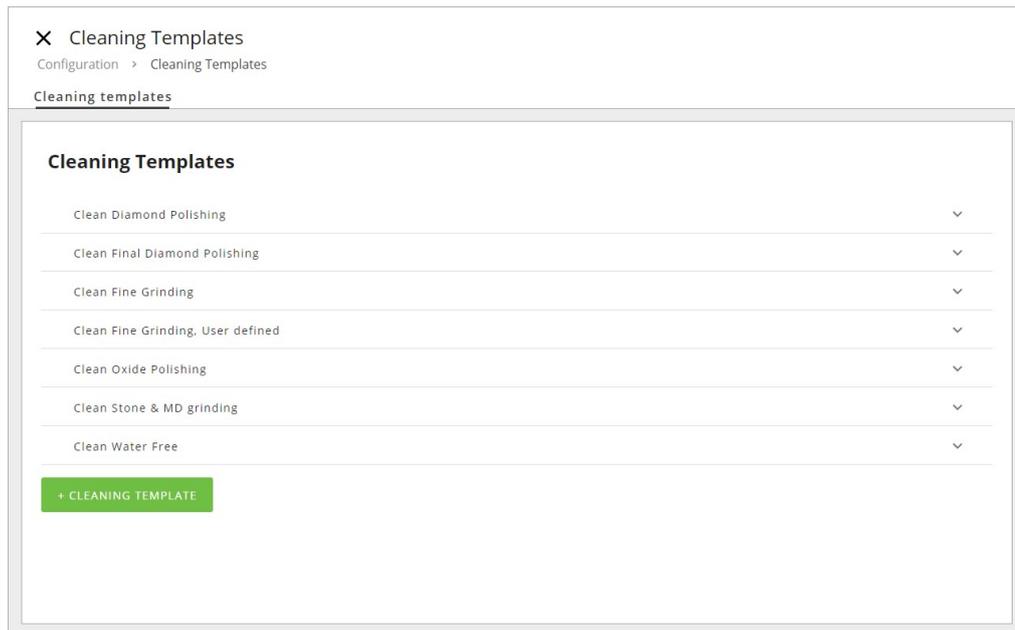
You can; however, add a new template, or copy an existing template and configure the parameters under a different name.

8.5.1 Configure a new cleaning template from a copy

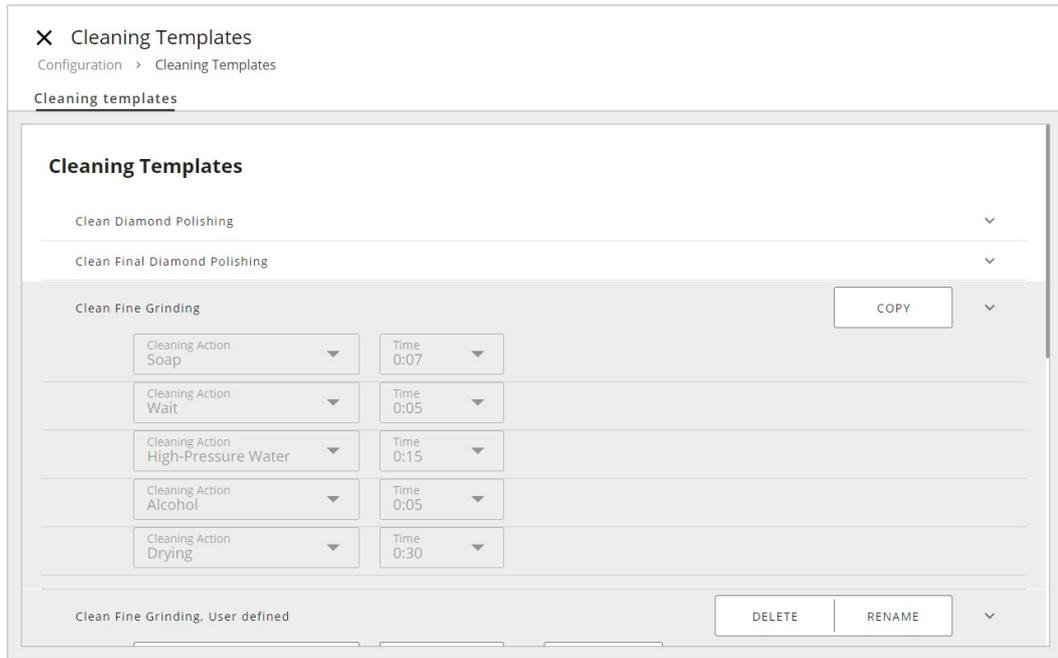
You can copy a cleaning template and use it to create your own cleaning template.

1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration** and **Cleaning Templates**.

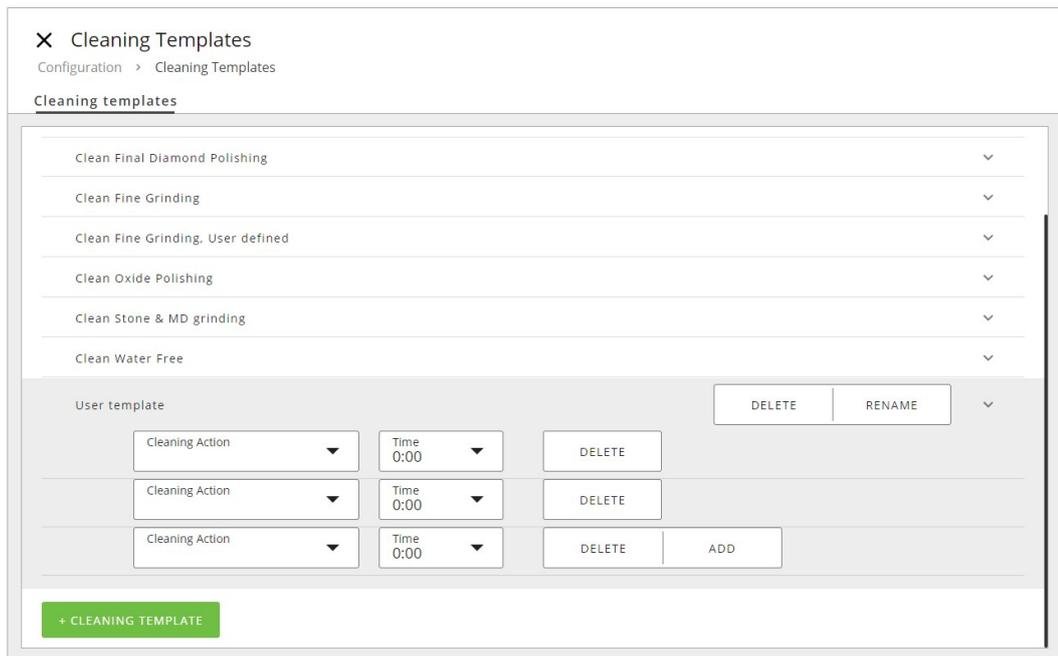
The **Cleaning Templates** menu is shown.



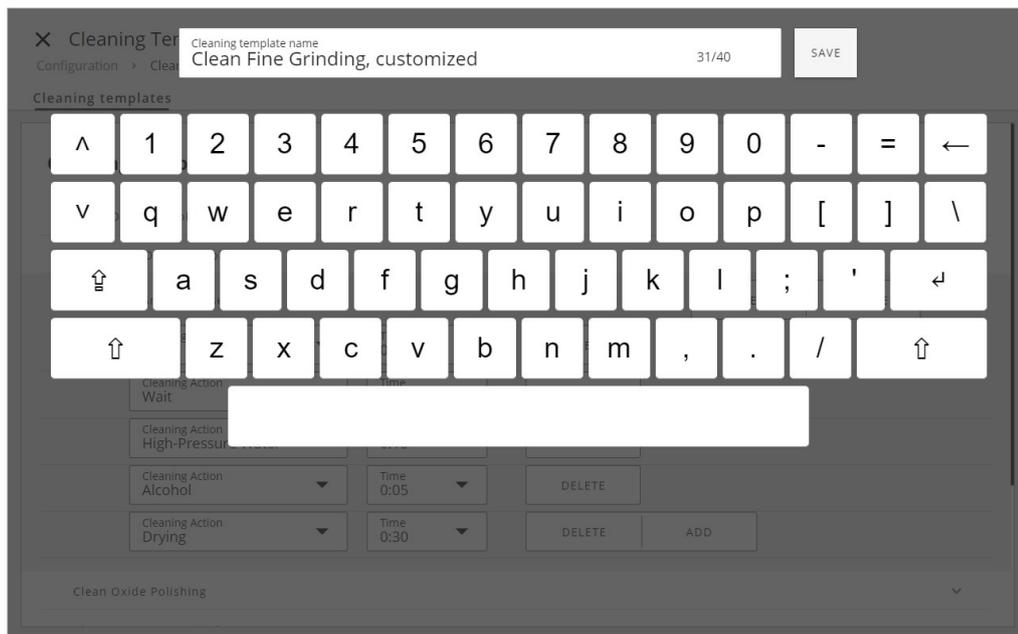
3. Select the desired cleaning template you wish to copy, and tab **Copy**.



4. Now a new **User template** appears.

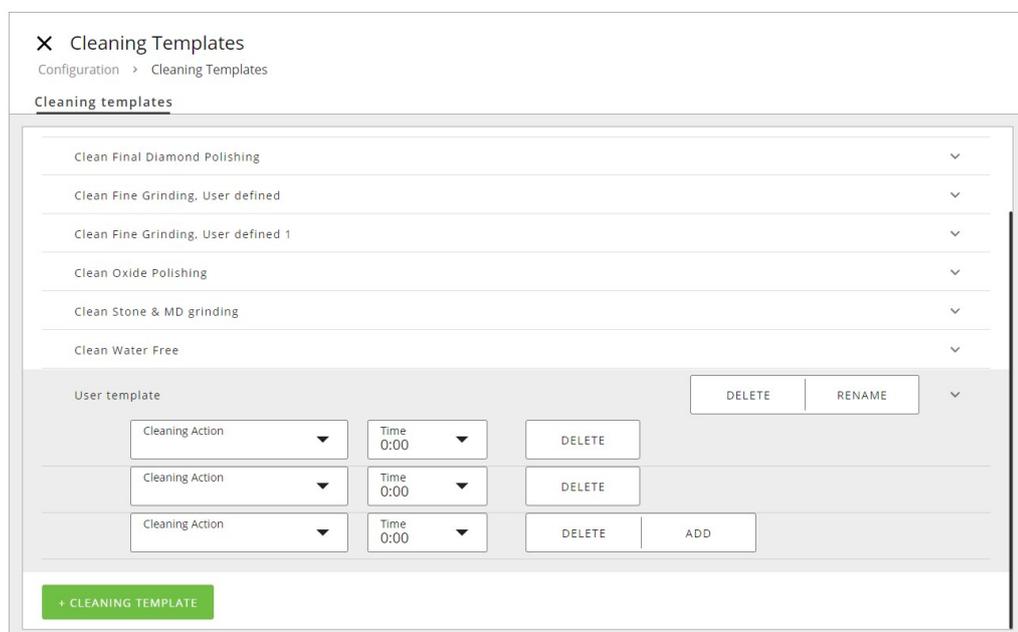


5. Adjust the different parameters as desired, and save as a different template by renaming it.



8.5.2 Add a new cleaning template

1. Tab the green button **+ Cleaning Template**.
2. Fill in the parameters for the new template.
3. Tab on **Rename** and write a name for the template before you save this.



8.5.3 Pre-cleaning steps

A pre-cleaning step can be added for specimens prepared with e.g. oil-based suspension/lubricants using a dedicated MD-Nap cloth adding soap and water.

The standard setting includes the following parameters:

Pre-cleaning step ~0:10 1 step

MD-Clean Soap Tap Water 0:10 DELETE COPY

Surface MD-Clean Disc speed 150 rpm Holder speed 150 rpm Force per specimen 20 N

Suspension Soap Pre-dosing time 1 s Dosing level Off

Lubricant Tap Water Pre-dosing time 5 s Dosing level 25

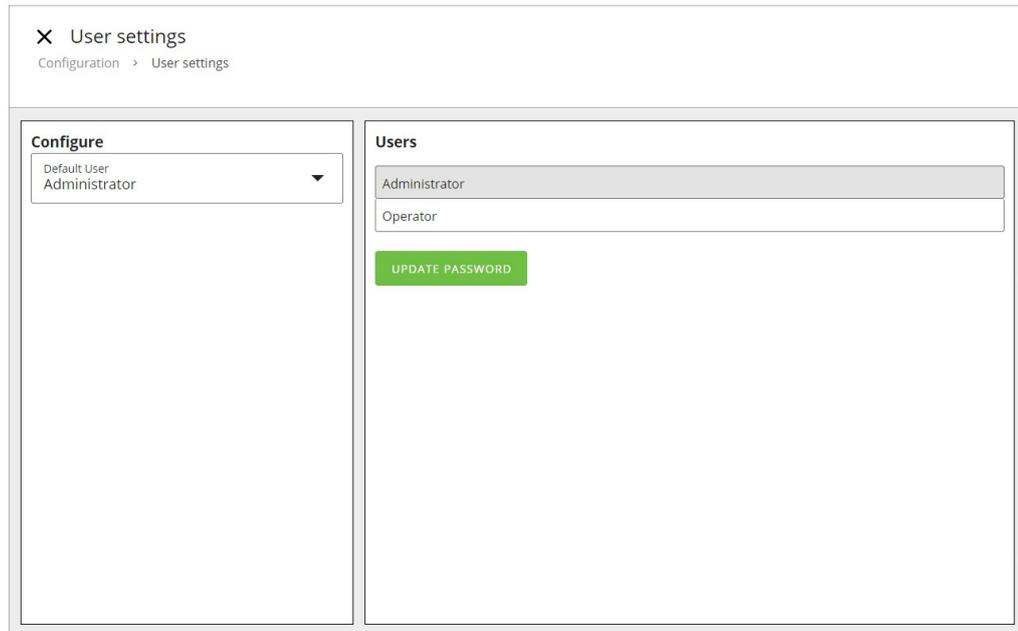
Time/Removal Time Time 0:10 Holder position 10 mm Holder direction Co-rotation Disc cooling No

+ PREPARATION + CLEANING

8.6 User settings

Default user settings and administrator password

1. Log in as an **Administrator** ([Log in as an Administrator ▶47](#)).
2. Select **Configuration** and **User settings**.
3. In **Configure**, select your default user setting to be either **Operator** or **Administrator**.

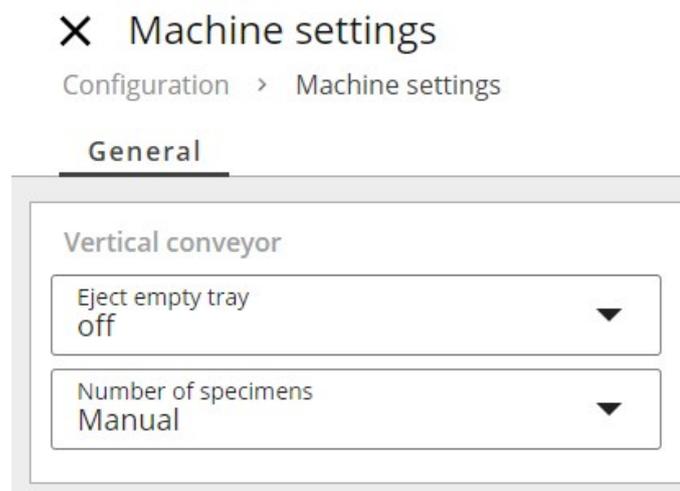


4. In **Users**, you can set a new password for the administrator setting. Per default this is '1234'.

8.7 Machine settings

Configure Machine settings

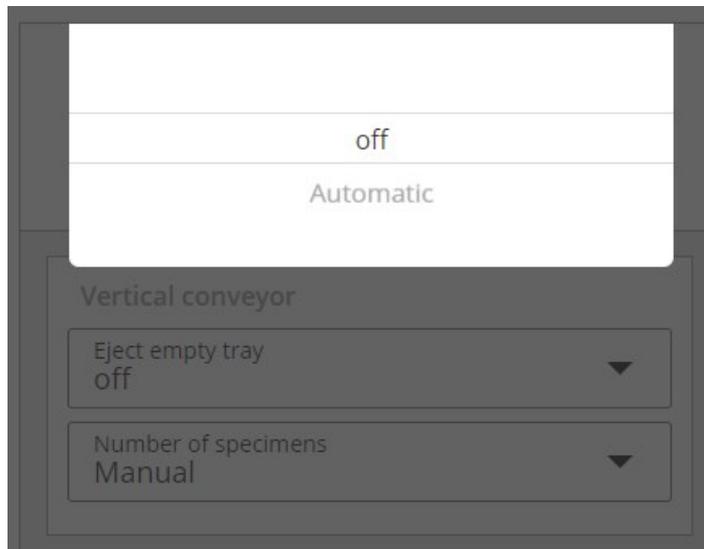
1. Log in to the machine as an **Administrator**.
2. From the **Main menu**, select **Configuration** and **Machine settings**.



3. Adjust the settings as desired in either **Eject empty tray** or **Number of specimens**. All changes are automatically saved.

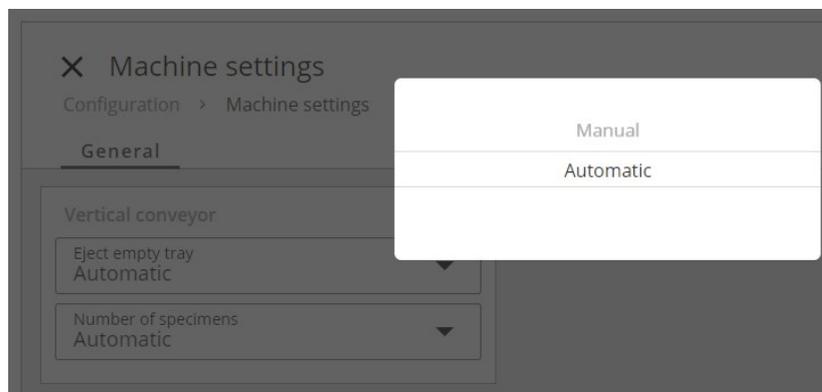
8.7.1 Eject empty tray

- Select whether the drawer should be ejected automatically if you close it without any specimen holder present in the drawer.



8.7.2 Number of specimens

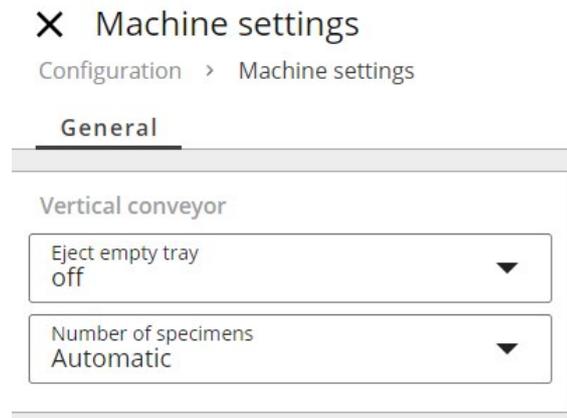
- Select if you would like the machine to automatically detect the number of specimens in each holder, or if you wish to manually select the correct number of specimens.



In both cases, the force is adjusted accordingly by the machine itself.

Automatic option (configuration)

1. Choose automatic detecting of the number of specimens in **Machine settings**.

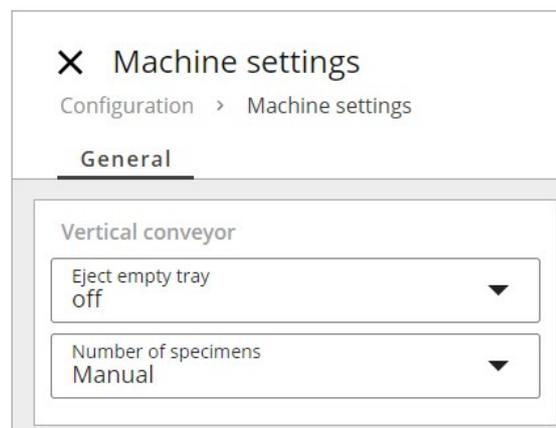


2. Tap on the "x" to close the window.

On operation, see [Detect the number of specimens ▶ 54](#).

Manual option (configuration)

1. Choose manual detecting in **Machine settings**.



2. Tap on the "x" to close the window.

On operation, see [Detect the number of specimens ▶ 54](#).

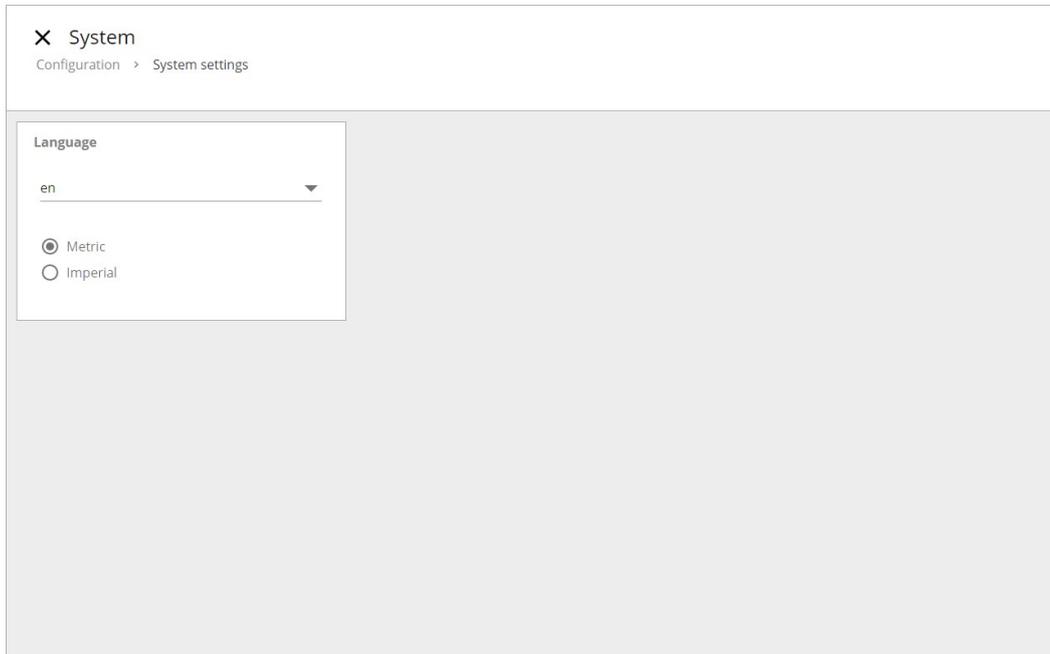
| Stone |
|--|
| <ul style="list-style-type: none"> • Select whether the machine should .automatically measure the dresser tip and stone height. |

8.8 System settings

In this menu, you can change the default language from English to another language, or the default setting from the metric to the imperial system.

Procedure

1. Tap the **Main menu** button, and select **Configuration** and **System settings**.
2. Tap the drop-down arrow to select the language you want to use.
3. Tap the circle before the preferred choice to select whether you want to use Metric or Imperial units when you work with the machine.



9 Maintenance and service - Xmatic

Proper maintenance is required to achieve the maximum up-time and operating lifetime of the machine. Maintenance is important in ensuring continued safe operation of your machine.

The maintenance procedures described in this section must be carried out by skilled or trained personnel.

Safety Related Parts of the Control System (SRP/CS)

For specific safety related parts, see the section "Safety Related Parts of the Control System (SRP/CS)" in the section "Technical data" in this manual.

Technical questions and spare parts

If you have technical questions or when you order spare parts, state serial number and voltage/frequency. The serial number and the voltage are stated on the type plate of the machine.

9.1 General cleaning

To ensure a longer lifetime for your machine, we strongly recommend regular cleaning.

**Note**

Do not use a dry cloth as the surfaces are not scratch resistant.

**Note**

Do not use acetone, benzol or similar solvents.

Do not use any abrasive agents when cleaning the machine.

If the machine is not to be used for a longer period of time

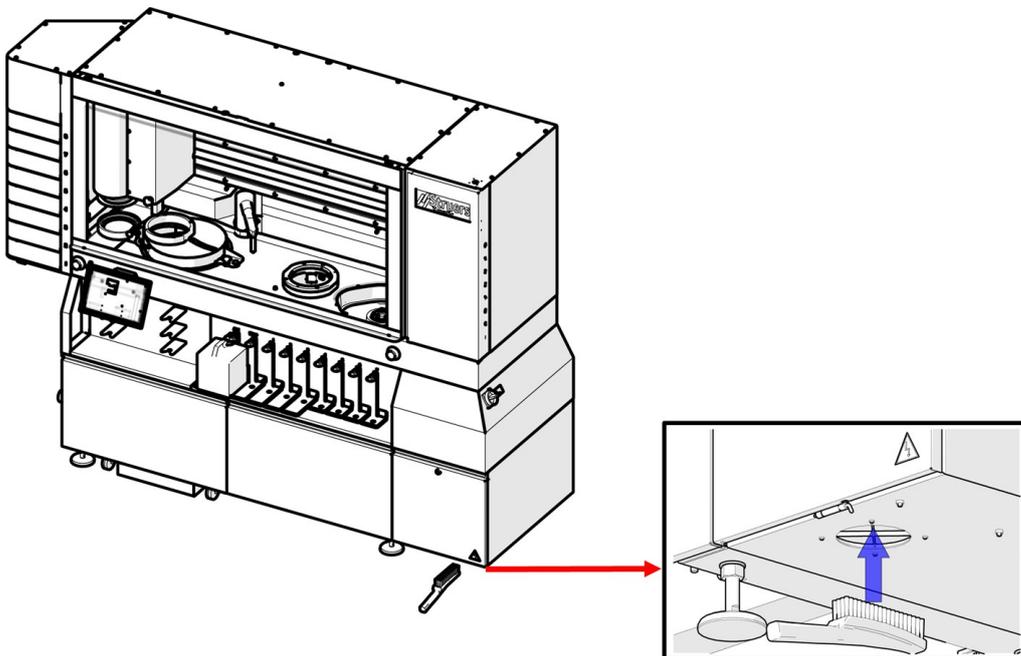
- Clean the machine and all accessories thoroughly.

9.2 When necessary

The frequency with which some maintenance and cleaning procedures should be carried out depend on how often and how you use the machine.

9.2.1 Air filter

Clean the air filter carefully using a soft brush.



9.2.2 Clean the touch screen

Note
Do not use a dry cloth as the surfaces are not scratch resistant.
Do not use acetone, benzol or similar solvents.

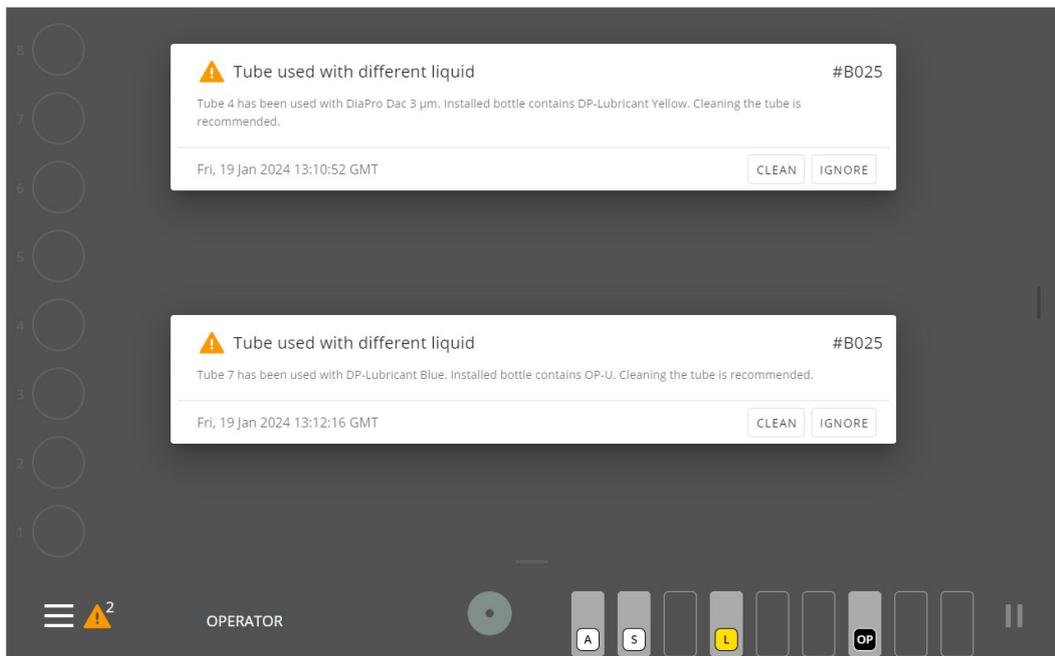
- Clean the touch screen with an LCD cleaning agent.

9.2.3 The bottles and bottle rack

When you replace a bottle, make sure that the bottle and the bottle rack are clean. Some consumables can damage the painting on the machine if they are not cleaned regularly.

9.2.4 Clean the tubes

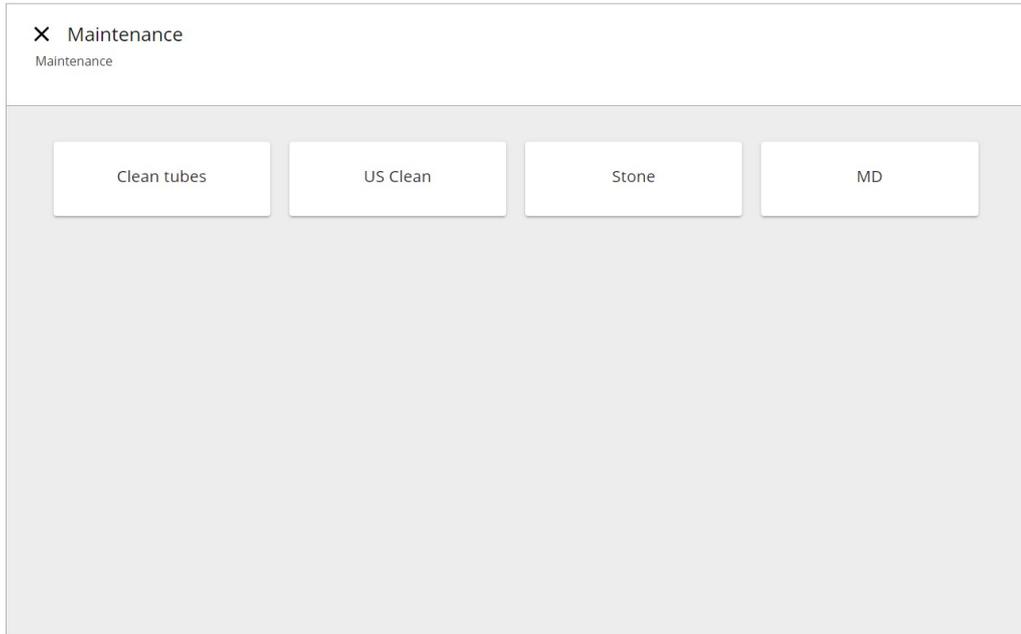
If you change the type of liquid, the machine will tell you to clean the tube.



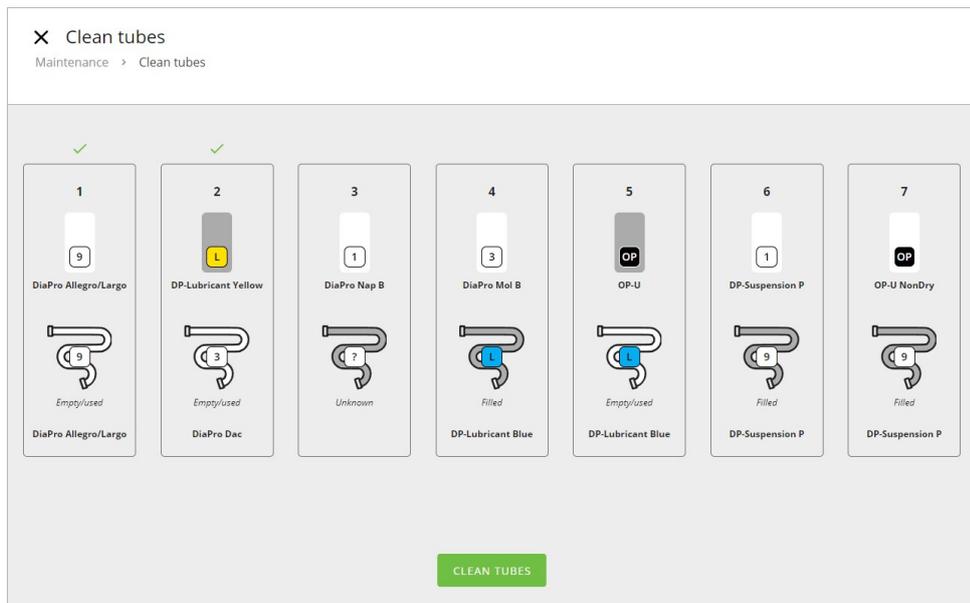
You can also initiate cleaning yourself when you find this necessary, or if the machine is not going to be used for a period of time. You can select functions to clean one or all tubes from the bottles to the dosing nozzles, either from the main menu or during the process.

Clean the tubes - from the main menu

1. Log in to the machine as an **Operator**, or **Administrator**.
2. Tap the **Main menu**, and select **Maintenance** and **Clean tubes**.

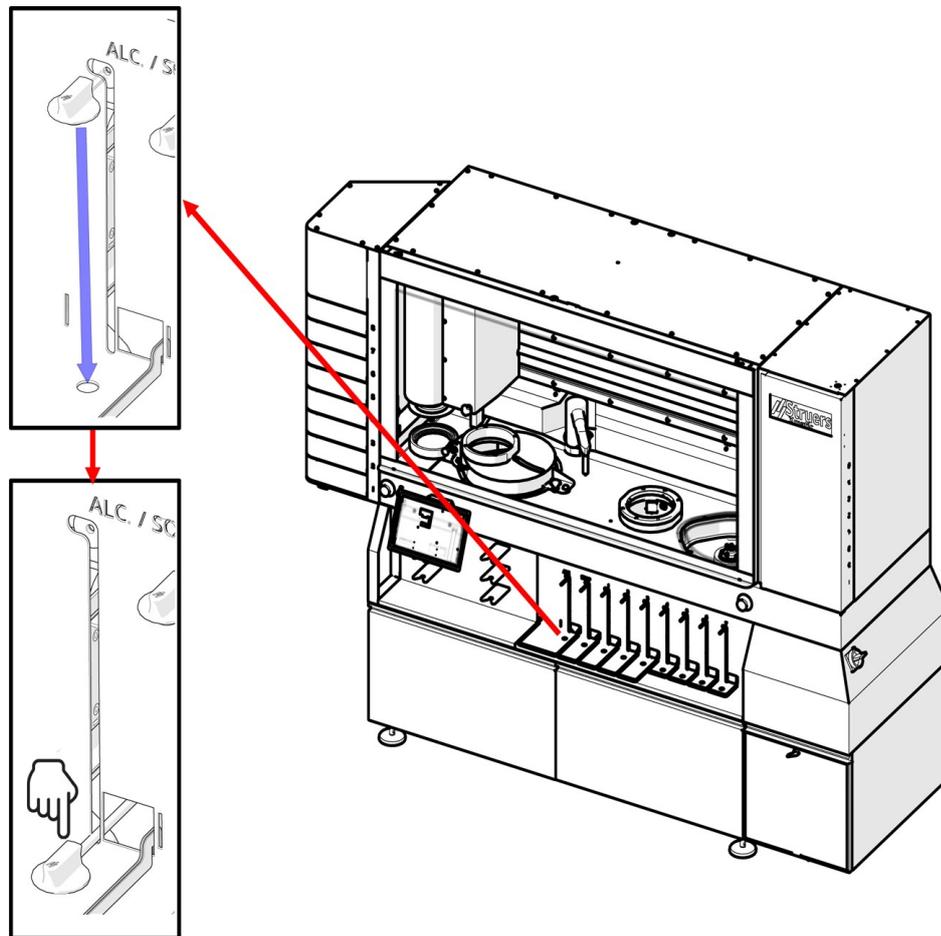


3. Select the tubes you want to clean. A green check mark above the frames indicates the tubes to be cleaned.



4. Tap **Clean tubes**, and follow the directions on the screen:

5. Wait while the liquid is pumped back to the bottle.
6. Remove the bottle and place the Easy Connector in the inlet on the bottle rack.

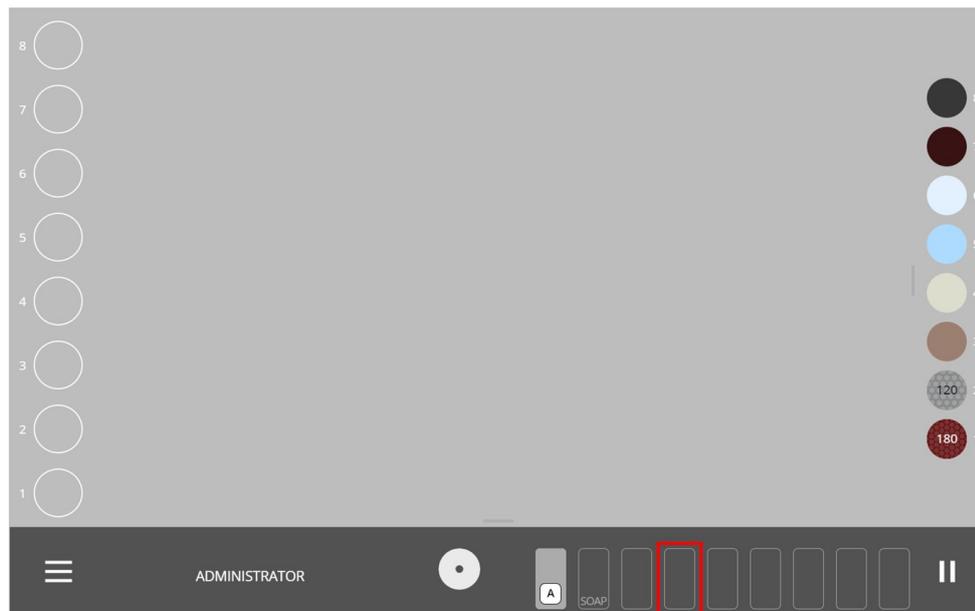
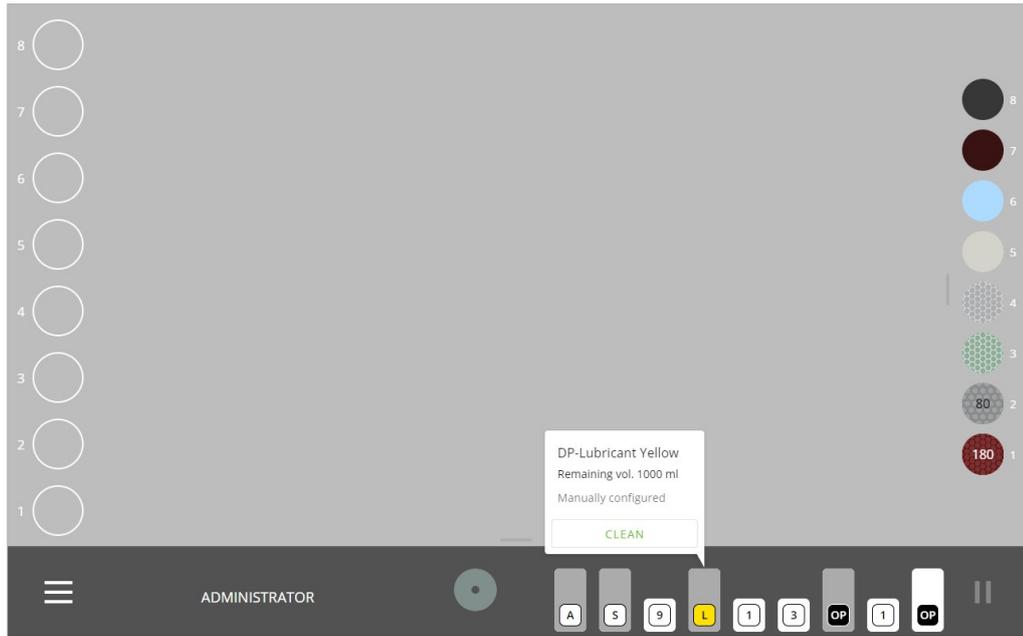


7. The tubes are flushed.
8. Place the Easy Connector on the consumable bottle again when the cleaning process is finished. Make sure that it is pushed into place.

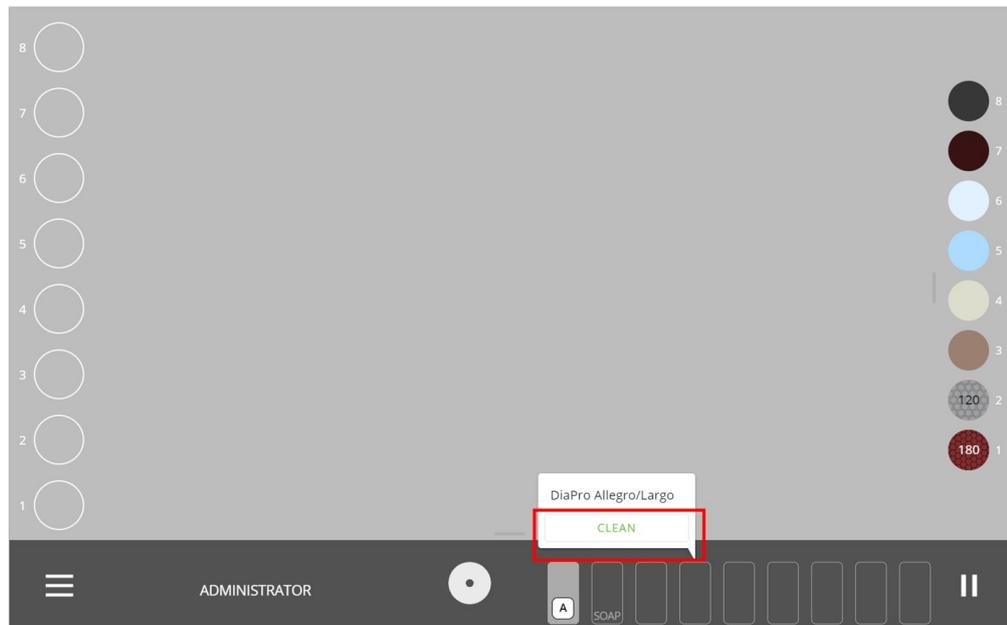
Repeat this procedure for other tubes if necessary.

Clean the tubes - during preparation

1. On the display, tap the bottle position for which you want to clean the tube.



2. In the pop-up message, select **Clean**.



3. Follow the instruction on the display to remove the current consumable from the machine, and place the Easy Connector on the drain.
4. The tube is flushed.
5. When the cleaning process is finished, tap **Continue**.

9.2.5 Clean the grinding stone station



CAUTION

Avoid skin contact with the coolant additive.



Note

Do not use a dry cloth as the surfaces are not scratch resistant.



Note

Do not use acetone, benzol or similar solvents.

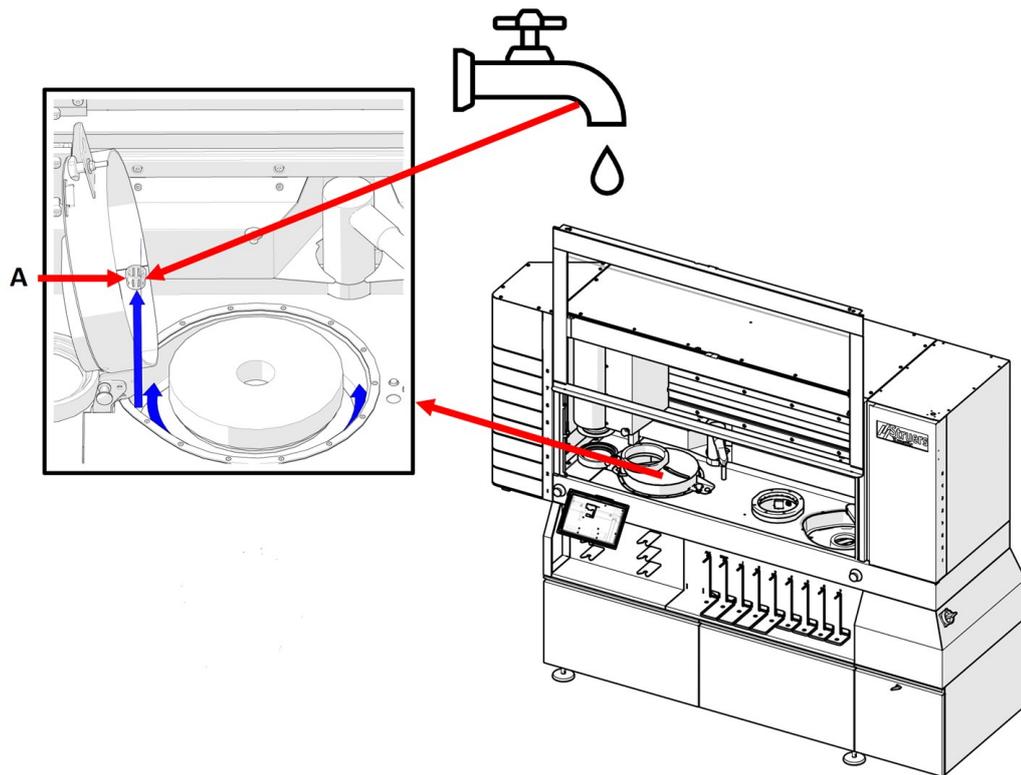


Hint

If needed, use ethanol or isopropanol to remove grease and oil.

For more information on how to open the grinding stone cover, and how to remove the stone before cleaning, see: [Mount the grinding stone or diamond grinding disc ▶ 41](#).

Clean the grinding stone/diamond grinding disc



A Overflow tube

Procedure

1. Wipe the bowl using a brush.
2. Remove the overflow tube and rinse using running water.
3. Reinsert the overflow tube.

If necessary, you can remove the stone before cleaning. See also: [Mount the grinding stone or diamond grinding disc ▶ 41](#).

Change the bowl liner

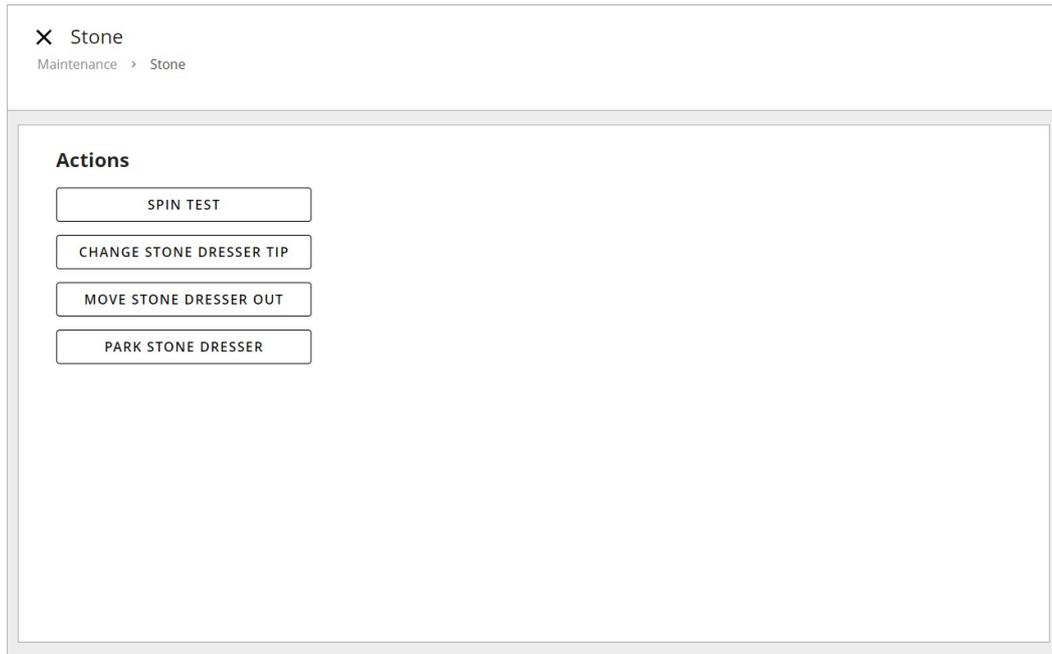


Note

You cannot change the bowl liner yourself - this must be done by a service technician.

9.2.6 Clean the stone

1. In **Maintenance**, select **Stone**.
2. Select the action you need, and follow the instructions on the display.



Action: Spin test

Allows you to test the stone. During the spin test, the stone will rotate at full speed for 60 seconds.

Action: Change stone dresser tip

Enables you to move the grinding stone dresser out of the slot in the grinding station to a position that allows you to change the tip.

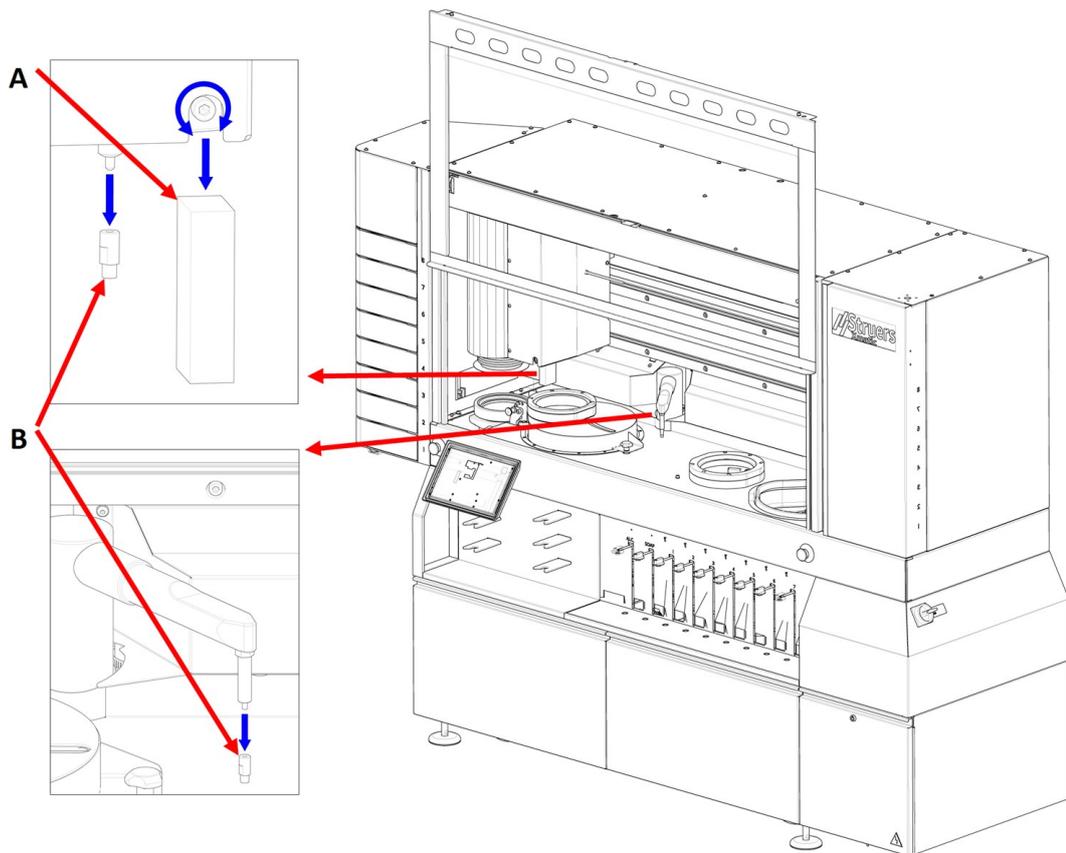
Action: Move stone dresser out

Moves the grinding stone dresser out, allowing you to open the grinding stone cover and clean around the stone.

Action: Park stone dresser

Allows you to move the grinding stone dresser back into the slot in the grinding station.

9.2.7 Replace and clean the aluminum oxide stick and the dresser tip



Aluminum oxide stick (A)

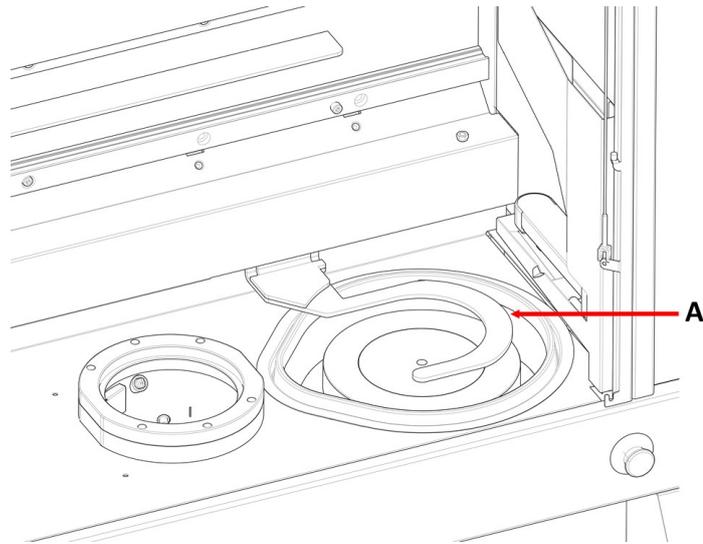
1. Untighten the fixation screw with a 6-mm Allen key by rotating it counterclockwise.
2. Dismount the aluminum oxide stick.
3. Wipe all surfaces carefully and make sure that there is no debris or dirt left.
4. Mount a new aluminum oxide stick in the holder.
5. Tighten the fixation screw again.

Dresser tip (B)

Use a 9-mm spanner.

1. Unscrew the old dresser tip.
2. Wipe all surfaces carefully, and make sure that there is no debris or dirt left.
3. Mount the new dresser tip in the dresser.

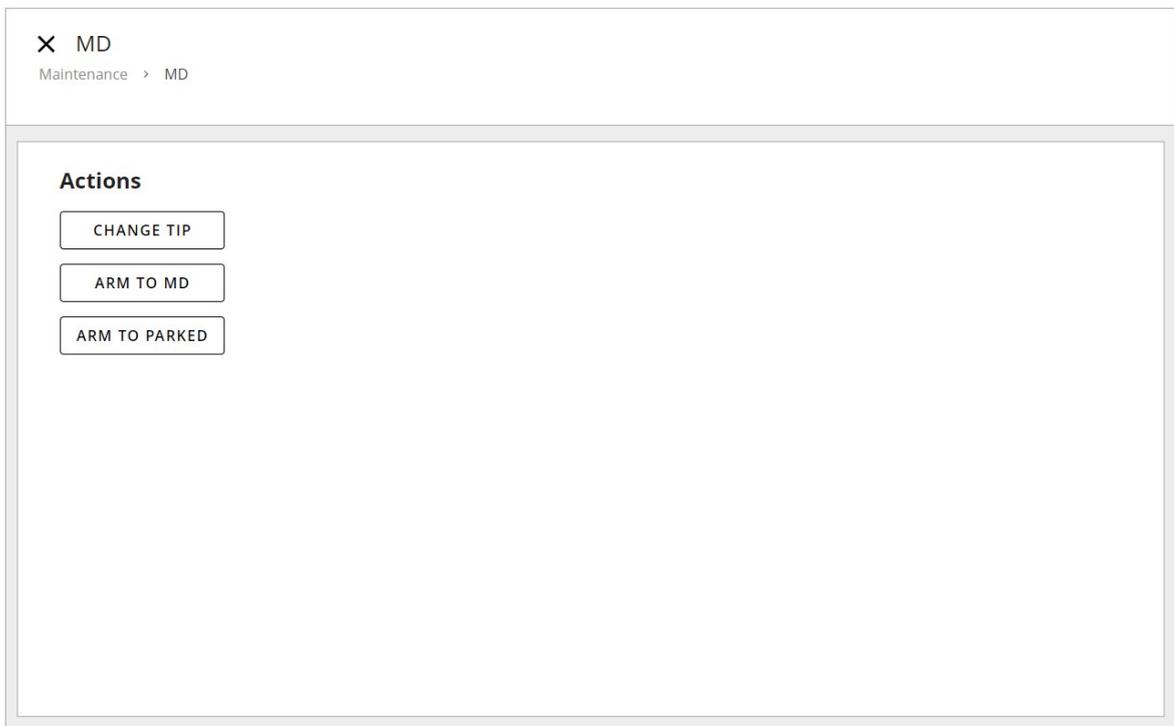
9.2.8 Clean the MD arm



A MD arm

Procedure

1. In **Maintenance**, select **MD**.
2. Select the action you need, and follow the instructions on the display.



Action: Change tip

Use this function when you change the MD dresser tip.

Action: Arm to MD

The MD arm moves from the MD elevator to the MD station. You can now wipe and clean the MD arm.

Action: Arm to parked

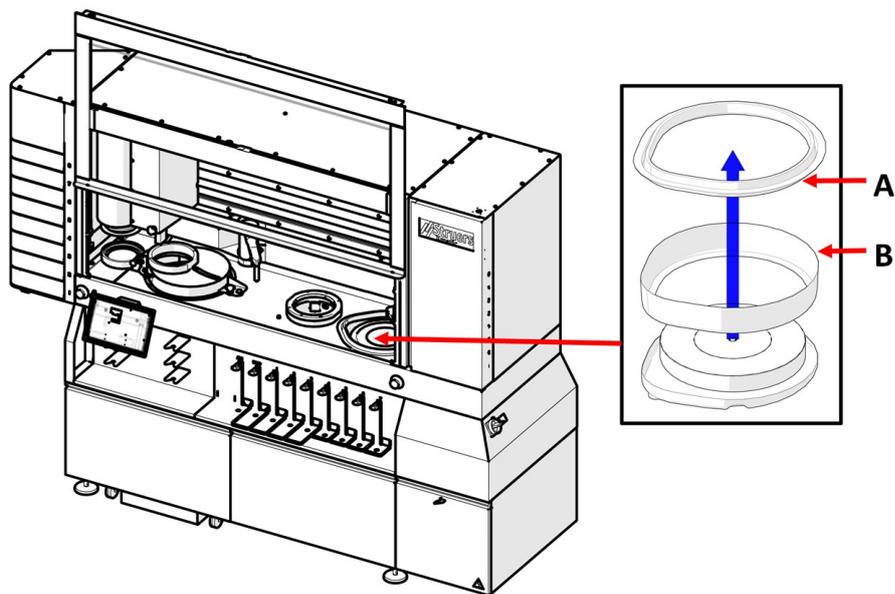
The MD arm returns to the parking slot in the MD elevator.

Diamond tip dresser

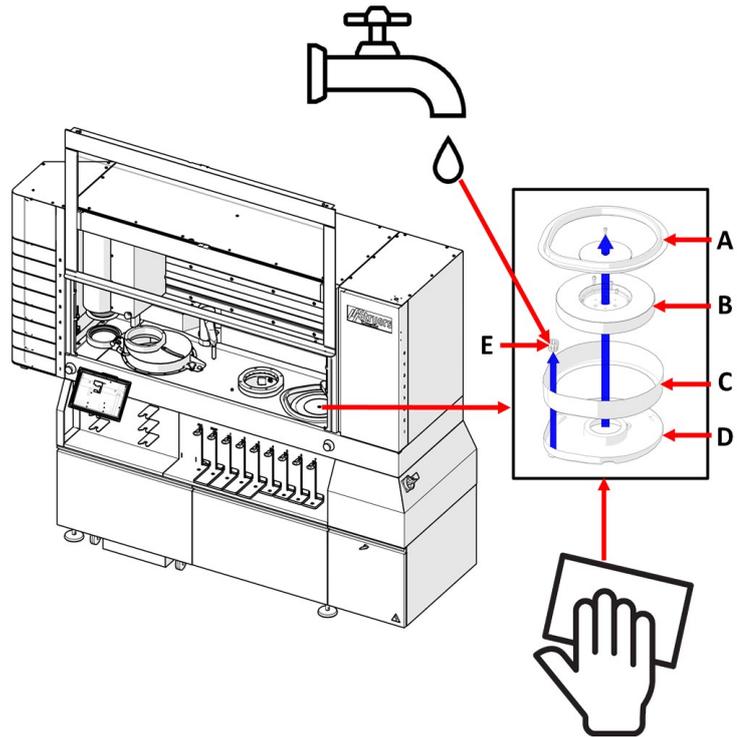
The diamond tip dresser must be checked regularly by a Struers service technician.

Procedure

1. Dismount the diamond tip dresser. (B)
2. Wipe all surfaces carefully and make sure that there is no debris or dirt left.
3. Mount the diamond tip in the dresser.

9.2.9 The bowl liner**Clean the upper part of the bowl liner**

- A Splash guard
- B Upper part of the bowl liner

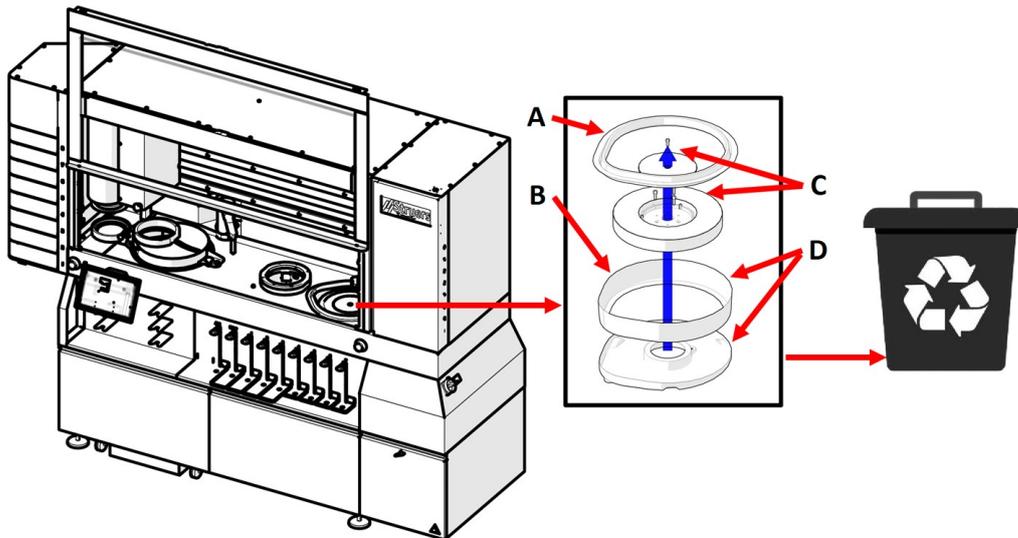


Procedure

1. Remove the splash guard (A) from the MD grinding and polishing station.
2. Remove the upper part of the bowl liner (B) and wash it.
3. Remount the upper part of the bowl liner.
4. Remount the splash guard.

Replace the bowl liner

If the bowl liner is damaged, replace it with a new one.



Procedure

1. Remove the splash guard (A).
2. Remove the upper part of the bowl liner (B).
3. Remove the MD-Disc (C) (see [Maintenance of the MD-Disc ▶ 111](#)).
4. Remove the used bowl liner (D), and mount the new one.
5. Remount the MD-Disc, the upper part of the bowl liner and the splash guard.
6. Dispose of the used bowl liner according to local regulations.

9.2.10 Maintenance of the MD-Disc

Remove the MD-Disc

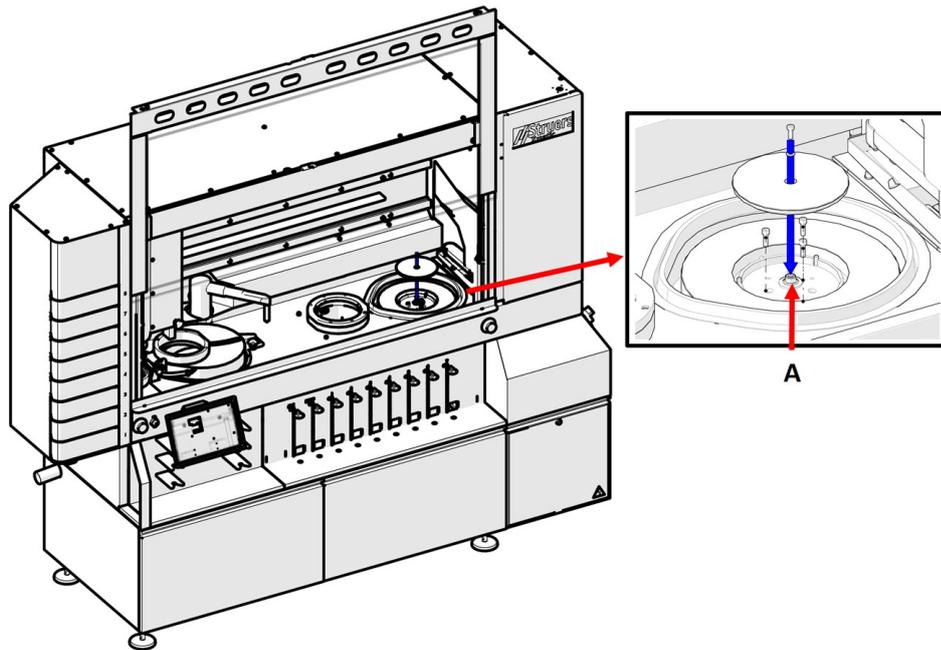
1. Remove the protective cap.
2. Unscrew the bolt and washer from the upper part of the MD-Disc and remove this.
3. Unscrew the three screws from the lower part of the MD-Disc and lift this from the bowl.

Replace the MD-Disc



Note

We recommend that the MD-Disc is mounted by a service technician.



Procedure

1. Unscrew the three screws on the rear side of the MD-Disc
2. Remove the bolt and washer from the shaft (A).
3. Place the lower part of the MD-Disc in the bowl, and fasten it using the three screws you removed from the rear side of the MD-Disc
4. Place the upper part of the MD-Disc on top of the lower part, and fasten it using the bolt and washer you removed from the shaft
5. Mount the protective cap.

 **Hint**
For more information about this unit, see the specific Instruction Manual or User Guide.

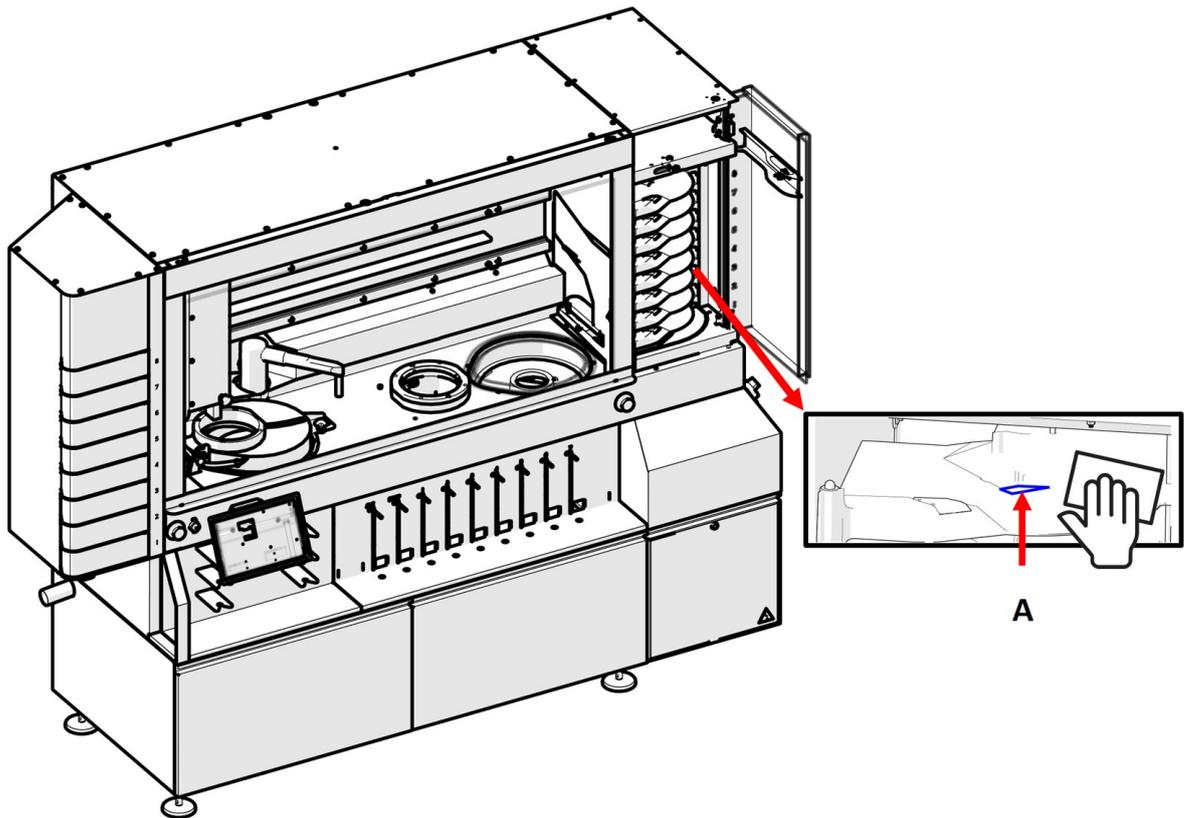
Clean the MD-Disc

 **Note**
Do not use a dry cloth as the surfaces are not scratch resistant.

 **Note**
Do not use acetone, benzol or similar solvents.

- Wipe the MD-Disc clean using a damp cloth.

9.2.11 Clean the MD elevator mirrors



- Clean the mirrors (A) inside the 8 drawers in the MD surface elevator with a damp cloth.



Note

Do not use a dry cloth when cleaning the mirrors, as the surface is not scratch-resistant.

9.2.12 MD surface

Check the MD grinding and polishing surfaces every day to make sure that they are clean and undamaged.

Procedure

1. Open the MD elevator door and check each MD surface.
2. Replace damaged MD surfaces.
3. Clean the MD surfaces.
4. Close the MD elevator door. The elevator moves into its parked position.

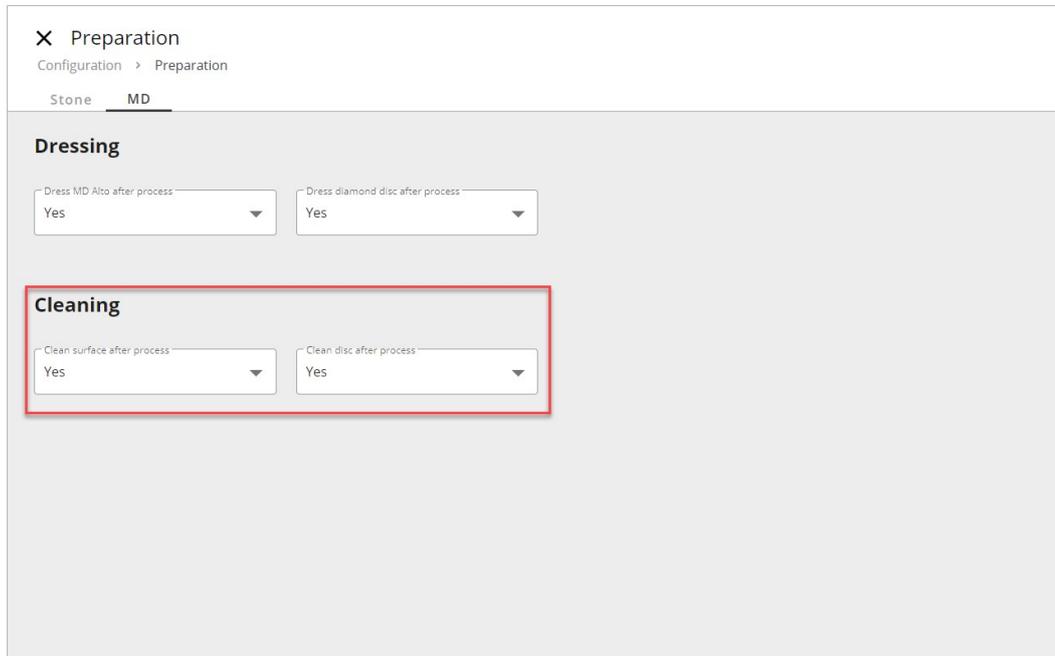


Hint

See also the user guide for the MD surface you are using.

Automatic cleaning

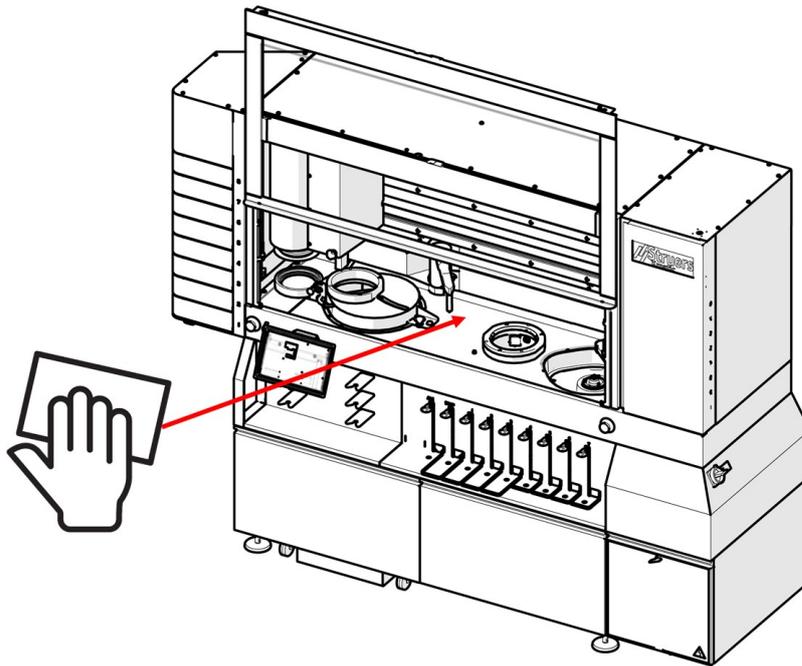
In the main menu you can also choose to have the MD surfaces cleaned automatically after preparation.



9.3 Weekly

 **Note**
Do not use a dry cloth as the surfaces are not scratch resistant.
Do not use acetone, benzol or similar solvents.
If needed, use ethanol or isopropanol to remove grease and oil.

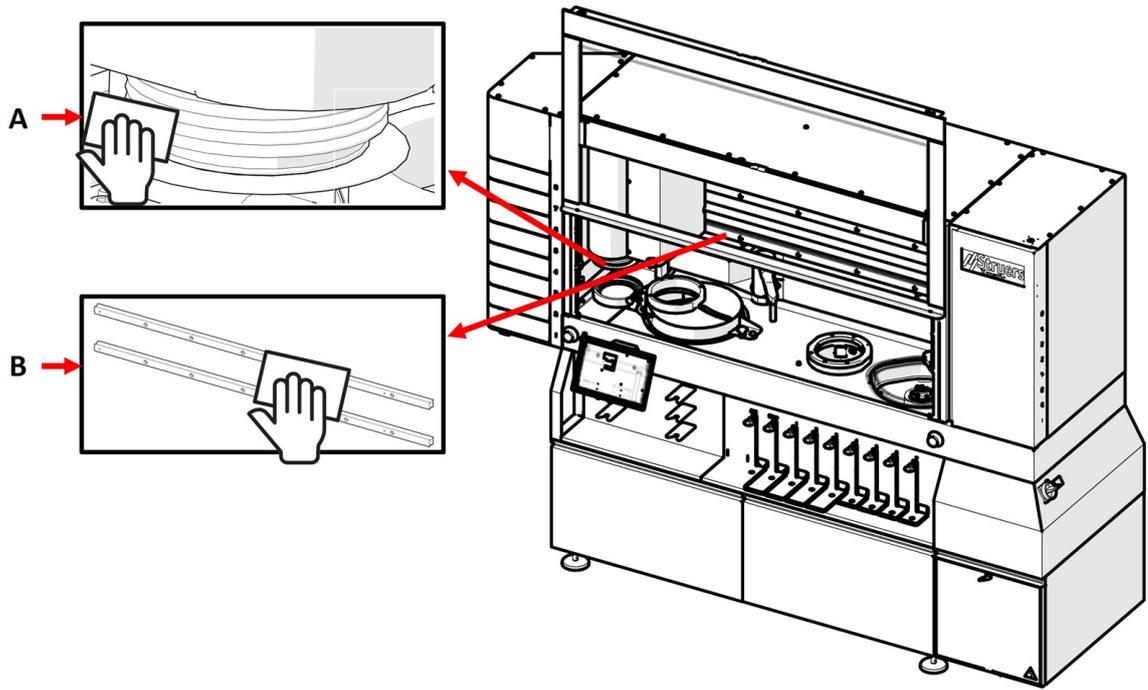
9.3.1 The work zone



- Clean all painted surfaces inside the machine with a soft damp cloth and common household detergents.

9.3.2 The specimen mover head and rails

Clean the specimen mover head and rails regularly using a damp cloth. See also: [Overview of the machine](#) ► 17.



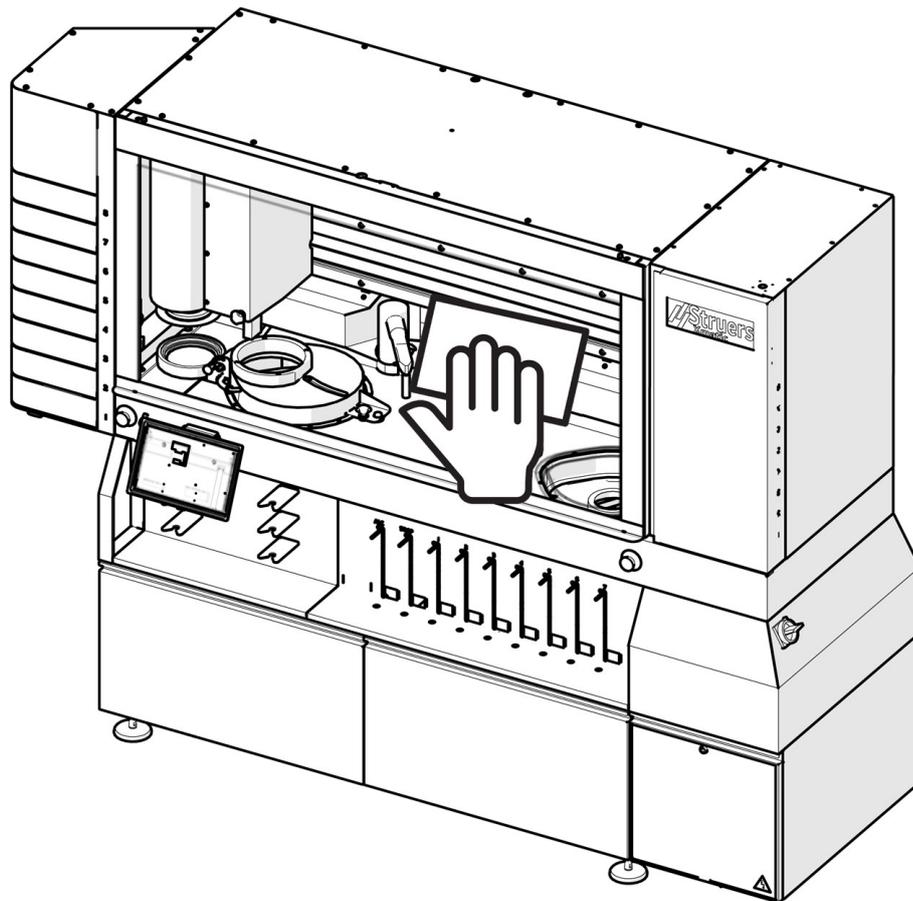
Procedure

1. Clean the upper and lower part of the specimen mover head (A) thoroughly using a damp cloth.
2. Clean any buildup of contaminants on the rails (B) inside the work zone using a dry cloth.

Note
It is important that you keep the upper and lower surfaces of the specimen mover head clean, otherwise you risk contaminating the specimens.

Note
You can use a dry cloth when cleaning the rails inside the work zone, as these are coated with an oil film.

9.3.3 The main safety cover



Procedure

1. Clean the main safety cover regularly with a damp cloth or a regular household window cleaning solution.
2. Let the window cleaning solution work for a few seconds before wiping it away with a cloth.



Note

Be careful not to apply pressure when cleaning the surface of the main safety cover, as you risk scratching it.

9.3.4 Ultrasonic cleaning station - (option)

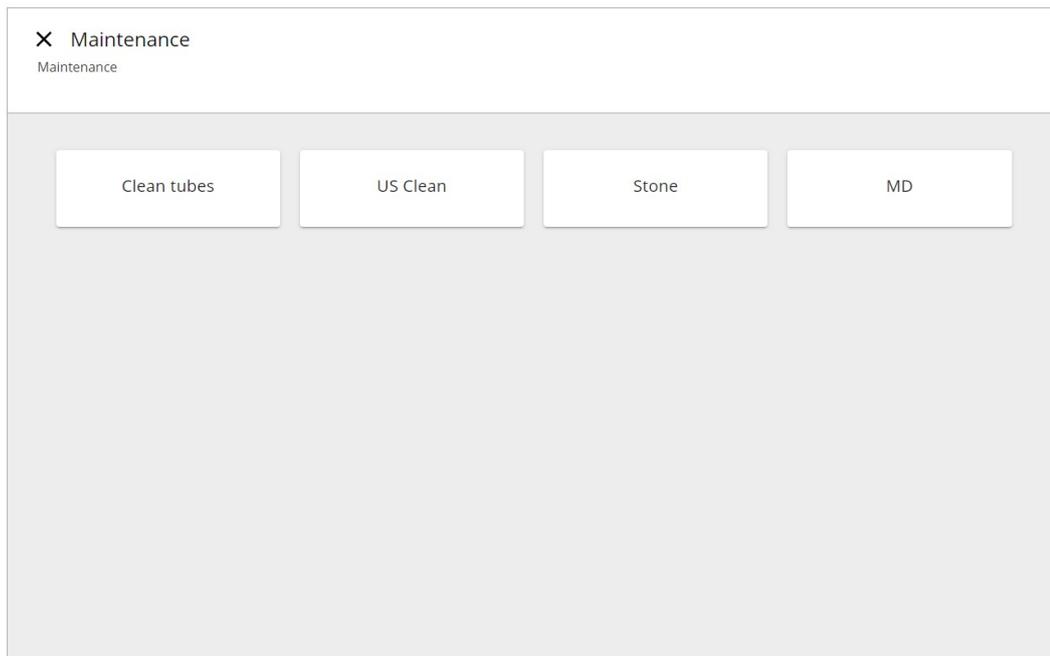


Note

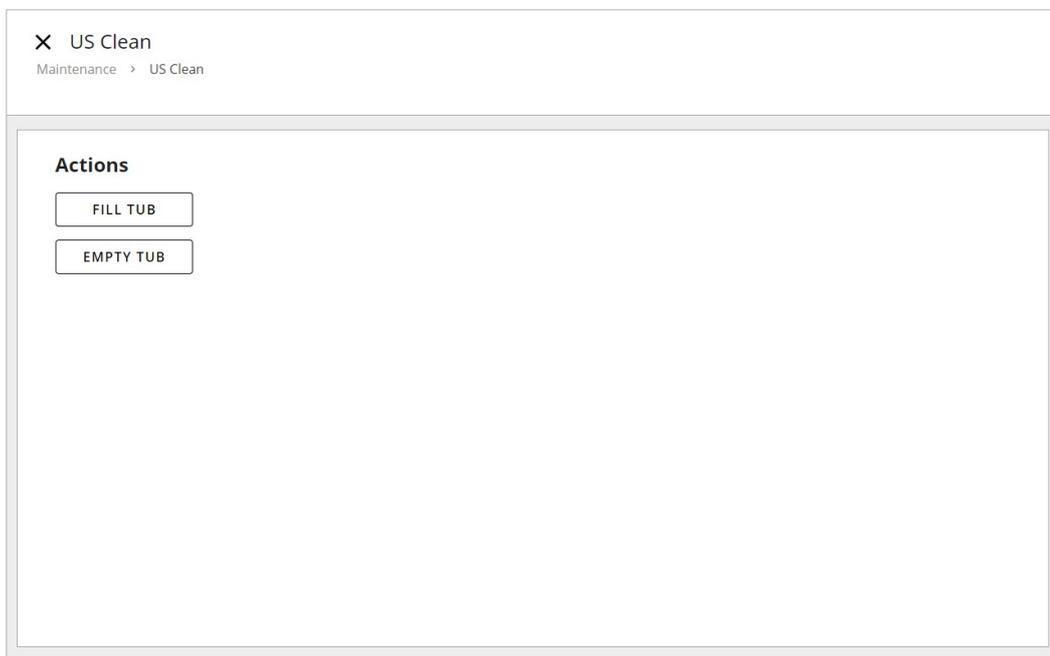
Do not use a dry cloth as the surfaces are not scratch resistant.
Do not use acetone, benzol or similar solvents.
If needed, use ethanol or isopropanol to remove grease and oil.

Procedure

1. In **Maintenance**, select **US Clean** for **Ultrasonic Cleaning**.



2. Empty the ultrasonic tub on **Empty tub**.
3. Use a brush and soap to clean the inner wall of the ultrasonic tub.
4. Fill the tub on **Fill tub**, and empty again on **Empty tub** to rinse.



9.3.5 High pressure cleaning station

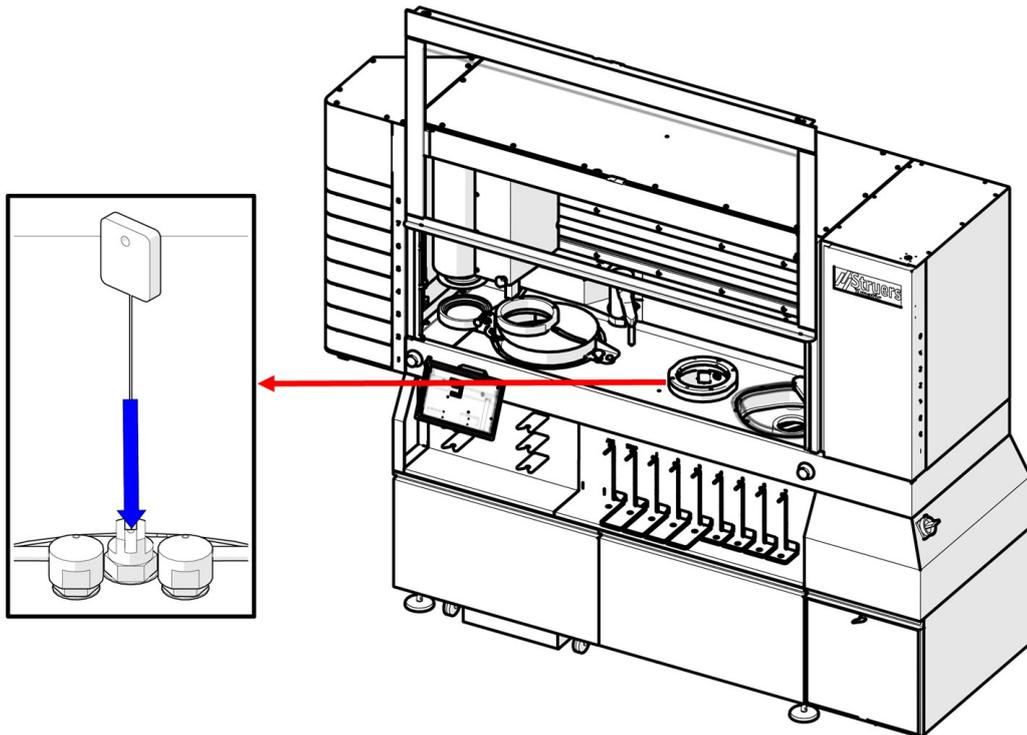


Note

Do not use a dry cloth as the surfaces are not scratch resistant.
Do not use acetone, benzol or similar solvents.
If needed, use ethanol or isopropanol to remove grease and oil.

- Use a damp cloth to clean the rubber seals.

Clean the nozzles



- Use the nozzle cleaner to clean the nozzles in the high pressure cleaning station.

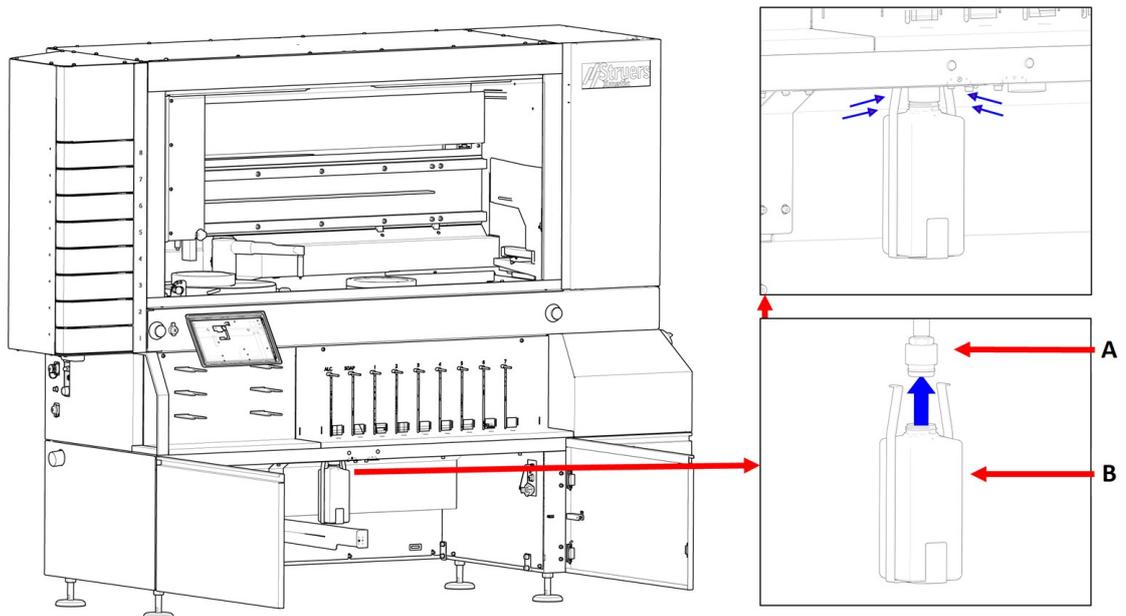
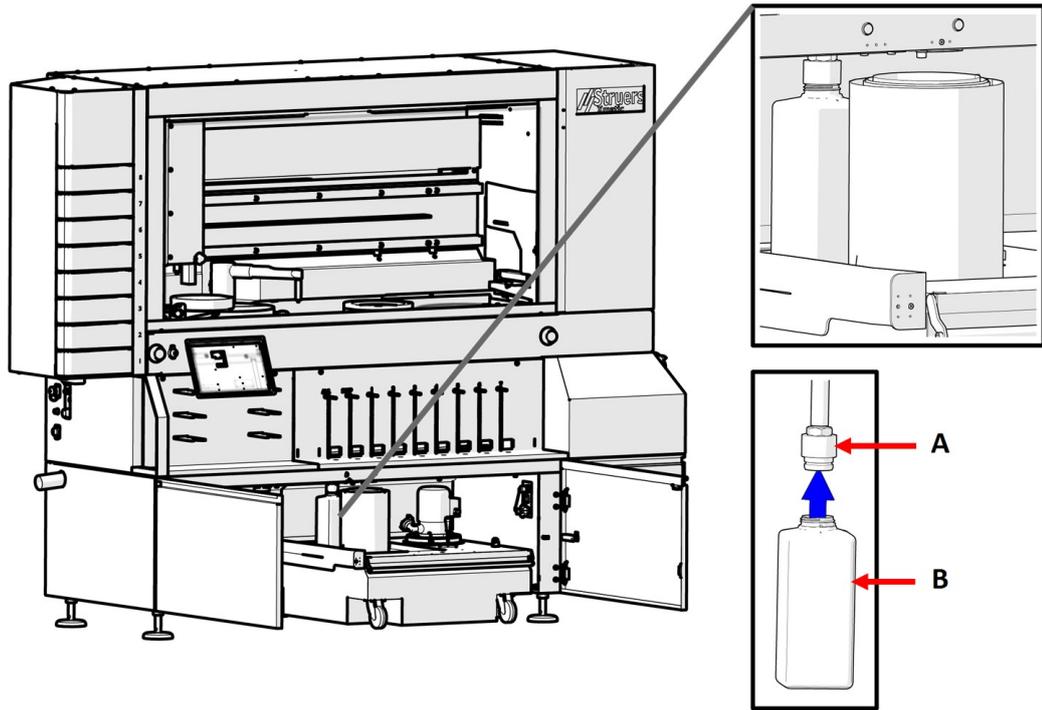
9.3.6 Empty the alcohol separator bottle (option)



WARNING

Always wear protective gloves and safety goggles while you empty the alcohol bottle.

If you connect an alcohol separator bottle to your cleaning station, you must monitor and empty the bottle weekly or when necessary.



A Connector for alcohol separator bottle

B Alcohol separator bottle

Procedure

1. Pull the recirculation unit out so you can reach the alcohol bottle.
2. Remove the bottle from the connector for the alcohol bottle.
3. Empty the contents of the bottle.

4. Remount the bottle.

**Hint**

For more information about this unit, see the specific Instruction Manual or User Guide.

9.4 Monthly

**Note**

Do not use a dry cloth as the surfaces are not scratch resistant.

**Note**

Do not use acetone, benzol or similar solvents.

**Hint**

If needed, use ethanol or isopropanol to remove grease and oil.

9.4.1 Recirculation unit

**CAUTION**

Avoid skin contact with the coolant additive.

**CAUTION**

The recirculation tank is very heavy when it is full.

Clean and refill the recirculation tank

Procedure

1. Disconnect the water hose from the machine.
2. Pull out the recirculation unit.
3. Use an external pump or manually empty the tank.
4. Remove the plastic liner and clean out all water and debris from the tank.
5. Clean the recirculation tank and the connected tubes thoroughly.
6. If the cooling water has been infected with bacteria or algae, clean the tank and tubes with a suitable antibacterial disinfectant.
7. Fill up with water. To prevent corrosion, use a Struers additive in the coolant. For more information, see the additive container.



Note
If the coolant is contaminated by algae or bacteria, replace the coolant immediately.



Note
The recirculation water contains additive and grinding residue and you must not dispose of it into the waste water drain.
Recirculation water must be disposed of in compliance with local safety regulations.

9.5 Annually



WARNING
Do not use the machine with defective safety devices.
Contact Struers Service.



WARNING
Safety critical components must be replaced after a maximum lifetime of 20 years.
Contact Struers Service.



CAUTION
The safety devices must be tested at least once a year.



CAUTION
Testing should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).



CAUTION
Do not use Xmatic if it is damaged.



Note
Replacement of safety critical components must only be performed by a Struers engineer or a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).
Safety critical components must only be replaced by components with at least the same safety level.
Contact Struers Service.

9.5.1 Main safety cover

Inspect the main safety cover



Hint
If the machine is used for more than one 7-hour shift per day, carry out inspection more often.

- Visually inspect the main safety cover for signs of wear or damage such as cracks, dents, or damage.

Replace the main safety cover



WARNING

If there are visible signs of deterioration or damage to the main safety cover, it must be replaced immediately. Contact Struers Service.

9.5.2 Test the safety devices

The safety devices must be tested at least once a year.



WARNING

Do not use the machine with defective safety devices. Contact Struers Service.



CAUTION

Testing should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).

Emergency stop

1. Start a polishing process. Wait until the specimen is being grinded/polished.
2. Press one of the Emergency stops. See also: [Overview of the machine ▶ 17](#).
3. All movements should stop and a pop-up message should be shown in the display.
4. If the machine does not stop moving, select **Pause** on the display.



5. Contact Struers Service.

Vertical conveyor

1. Make sure that at least one of the drawers on the vertical conveyor is empty.
2. Start a preparation process
3. Try to open the empty drawer completely while the machine is picking up and moving the specimen holder.
4. If the machine does not stop moving, select Stop on the display.
5. Contact Struers Service.

Main safety cover

Test the main safety cover interlock

1. Open the main safety cover.
2. Start a preparation process.

3. If the machine starts the preparation process, press one of the Emergency stops. See also: [Overview of the machine ► 17](#).
4. Contact Struers Service.

Test the main safety cover locking function

1. Start a preparation process.
2. Try to open the main safety cover.
3. If you can open the main safety cover, press one of the Emergency stops. See also: [Overview of the machine ► 17](#).
4. Contact Struers Service.

MD elevator

1. Open the MD elevator door.
2. Close the door and listen to the movements that occur inside the MD elevator.
3. Try to open the MD elevator door.
4. If you can open the MD elevator door, press one of the Emergency stops. See also: [Overview of the machine ► 17](#).
5. Contact Struers Service.

Grinding stone cover

1. Open the main safety cover.
2. Loosen the three-lobe knob for the grinding stone cover until you can lift the cover. See also: [Mount the grinding stone or diamond grinding disc ► 41](#).
3. Close the cover again, but do not tighten the three-lobe knob.
4. Close the main safety cover.
5. Try to start a grinding process.
6. If the pick-up arm starts picking up a specimen holder, press one of the Emergency stops. See also: [Overview of the machine ► 17](#).
7. Contact Struers Service.

Recirculation unit compartment

1. Start a grinding process.
2. Open the recirculation unit compartment.
3. The recirculation unit pump should stop immediately. If this is not the case, press one of the Emergency stops. See also: [Overview of the machine ► 17](#).
4. Contact Struers Service.

9.6 Service and repair

We recommend that a regular service check be carried out yearly or after every 1500 hours of use.

When the machine is started up, the display shows information about total operation time and the machines service information.

After 1000 hours of operation time, the display will show a message reminding the user that a service check should be scheduled.



Note

Service must only be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).
Contact Struers Service.

Service check

We offer a range of comprehensive maintenance plans to suit the requirements of our customers. This range of services is called ServiceGuard.

The maintenance plans include equipment inspection, replacement of wear parts, adjustments/calibration for optimal operation, and a final functional test.

9.7 Disposal



Equipment marked with a WEEE symbol contains electrical and electronic components and must not be disposed of as general waste.

Contact your local authorities for information on the correct method of disposal in accordance with national legislation.

For disposal of consumables and recirculation fluid, follow local regulations.

9.7.1 Environmental considerations



WARNING

In case of fire, alert bystanders, the fire brigade and cut power. Use a powder fire extinguisher. Do not use water.



Note

Swarf must be disposed of according to the current safety regulations for handling and disposal of swarf/ additive in the recirculation water.



Note

The recirculation water contains additive and swarf and may NOT be disposed of into a main drain.
Cooling fluid must be disposed of in compliance with local safety regulations.

10 Spare parts

Technical questions and spare parts

If you have technical questions or when you order spare parts, state the year of production. The year of production is engraved on the cylinder frame.

For further information, or to check the availability of spare parts, contact Struers Service. Contact information is available on [Struers.com](https://www.struers.com).

11 Troubleshooting

| Error | Cause | Action |
|---|---|---|
| Continuous, irregular wear on a grinding/polishing surface. | Coupling on the specimen holder or the specimen mover head is worn. | Replace the coupling. Contact Struers Service. |
| The MD surface is not read correctly. | The QR code is damaged or missing. | Either replace the MD surface or disable the automatic consumable detection by selecting Configuration > Consumables > Configure MDs . Then change the affected consumable position from Automatic to Manual . |
| | The MD surface is misplaced. | Try to reposition the MD surface. The MD surface should be placed flat against the MD changer with the QR facing downwards. |
| | The MD elevator mirror is dirty | If the mirror is dirty, it will affect the reading of the QR code. Clean the mirror according to the instructions in the maintenance section (Clean the MD elevator mirrors ▶ 113). |

| Error | Cause | Action |
|--|---|--|
| The suspension or lubricant level is not read correctly. | The QR code is damaged or missing. | Replace the bottle or disable the automatic consumable detection by selecting Configuration > Consumables > Configure bottles . Then change the affected consumable position from Automatic to Manual . |
| | The bottle is misplaced. | Reposition the bottle. The bottle should be placed flat against the doser compartment with the QR facing the machine. Use the bottle placement guides for easier positioning. |
| | The Easy Connector is not correctly connected. | If the Easy Connector is not correctly pushed into place on the bottle, the hose might be interfering with the level reading. |
| Warning on low water pressure | The water supply is insufficient or disconnected/disabled. | Check that the external water supply is connected/enabled. |
| Warning on low air pressure | The air supply is insufficient or disconnected/disabled. | Check that the external air supply is connected/enabled. |
| The specimen holder is not detected. | The specimen holder is missing RFID. | If the RFID is missing, contact Struers Service. |
| | The RFID is damaged. | If the RFID is damaged, contact Struers Service. |
| | The drawer is not closed correctly. | Try to open and close the drawer again. If the door is closed, it can be opened by tapping the empty specimen holder icon. |
| An error mentions STO or safe torque off . | The safety system is not ready to run; a cover or door is open. | Check for open doors, drawers etc., and start the process again. |

11.1 Access the work zone in case of power failure



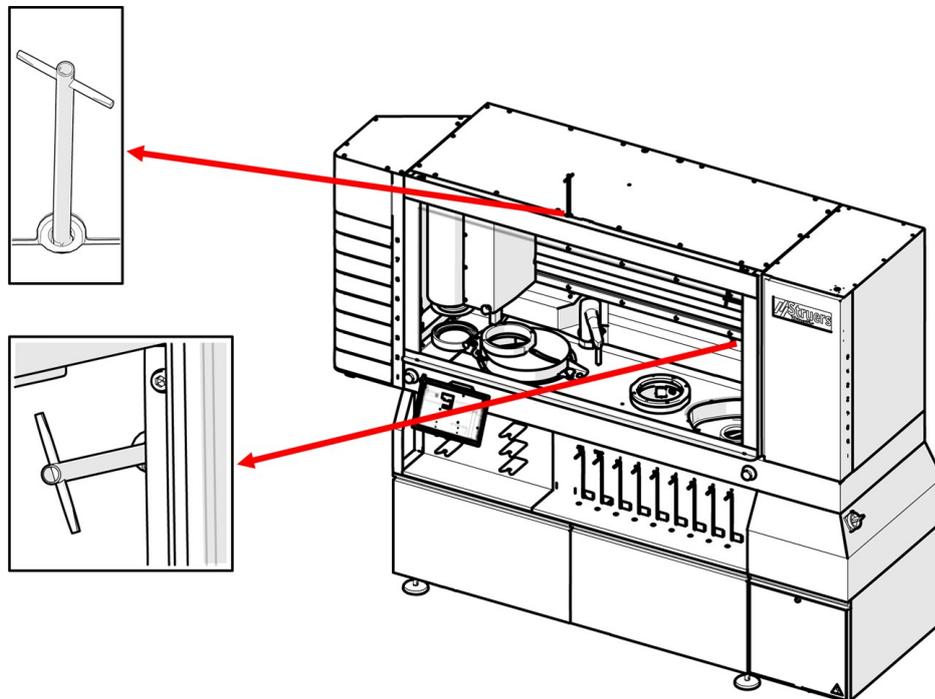
Note

Only follow this procedure if you experience power failure.

If a holder is stuck in the machine due to power failure, the main safety cover and the MD-elevator cover can be manually unlocked.

Procedure

1. Make sure that the main switch is in the off position. See: [Overview of the machine ▶ 17](#)
2. Use the triangular key supplied with the machine to unblock the main safety cover and the MD elevator. See: [Check the packing list ▶ 25](#).

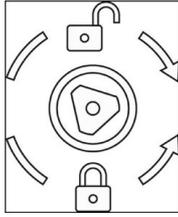


3. Turn the key clockwise to open the main safety cover and the MD elevator.



CAUTION

In case of power failure, do not use excessive force when you turn the triangular key to access the work zone. The lock could be damaged.



4. Before processing again, close the main safety cover and MD elevator and turn the key counter-clockwise.

12 Technical data

12.1 Technical data sheet

| | | |
|--|----------------------|--|
| Capacity | Individual specimens | No |
| | Specimen holder | Diameter: 140 mm for 250 mm MD disc Diameter: 160 mm for 300 mm MD disc |
| High speed plane grinding station | Diameter | 270 mm |
| | Speed | 1450 rpm |
| | Material removal | 0.05 mm - 6 mm, variable in steps of 0,05 mm |
| | Rotational direction | Clockwise |
| | Recirculation system | Yes |
| | Motor power | |
| | Continuous (s1) | 2.2 kW |
| MD grinding and polishing station | Diameter | 250 mm or 300 mm |
| | Rotational speed | 50 - 600 rpm (1000 rpm when spin-drying the disc) |
| | Rotational direction | Clockwise |
| | Motor power | |
| | Continuous (s1) | 1.5 kW |

| | | |
|--------------------------|---------------------------------------|--|
| Specimen mover | Specimen holder | Only applicable with RFID-tag holders |
| | Max. weight | 4 kg (8.8 lbs) incl. specimens |
| | Max. specimen height | 40 mm (1.6") |
| | Max. specimen protrusion under holder | 6 mm (0.2") |
| | Force | 50 - 500 N in steps of 10 N |
| | Force accuracy | +/-10% up to 100N, +/-10N on higher values |
| | Rotational speed | |
| | in process | 50 - 300 rpm, variable in steps of 10 |
| | when drying | 1200 rpm |
| | Rotational direction | Counter-clockwise, Clockwise |
| | Motor | 1.1 kW |
| | Torque | 7.3 Nm @ 150 rpm |
| Vertical conveyor | Number of specimen holders | 8 |
| MD elevator | Number of MD surfaces | 8 |
| Cleaning station | High pressure water | 40 bar |
| | High pressure Pump power | 1350 VA |
| | High pressure Pump Current | 6.5 A single phase |
| | Alcohol and soap | Yes |

| | | |
|--|---|---|
| Features | Material removal | 0.05 mm - 6 mm on MD grinding and polishing station |
| | Dressing of high removal grinding stone | Automatic diamond tip |
| | Dressing of MD surfaces | Automatic (diamond tip/aluminum oxide stick) |
| | Automatic dosing | 7 pumps for OP or DP suspension |
| | | 1 alcohol ejector for cleaning station |
| | | 1 soap ejector for cleaning station |
| | Automatic clean of dosing tubes | |
| | High speed plane grinding station | Yes |
| Options | Ultrasonic cleaning | Yes |
| | Recirculation for MD grinding/polishing station | Yes |
| Software and electronics | Touchscreen | Capacitive |
| | Display | LCD, 12.1" (1280 x 800) |
| Safety standards/directives/legislation | See the Declaration of Conformity/Instruction manual. | |
| REACH | For information about REACH, contact your local Struers office. | |
| Operating environment | Surrounding temperature | |
| | During operation | 5 - 40°C (41 - 104°F) |
| | During transport | -25°C - 55°C (transport) |
| | | -25°C - 70°C (max. 24 hours during transport) |
| Humidity | 35 - 85 % RH non-condensing | |
| Water supply (tap water) | Flow | Min. 10 l/m (2.6 gmp) |
| | Water inlet, connection | 3/4" |
| | Pressure | 2-4 bar (29-58 psi) |

| | | |
|------------------------------|--|---|
| Waste water outlet | Diameter | 50 mm (1.97") |
| | Outlet height | 50 cm (19.7") above the floor |
| | Max. distance to drain | 600 cm |
| | Slope | Min. 8% |
| Compressed air supply | Pressure | 6 - 9.9 bar (87 - 143 psi) |
| | Flow | Min. 200 l/m (53 gpm) |
| | Recommended quality | Class-3, as specified in ISO 8573-1 |
| Power supply | Voltage/frequency | 220 V/430 V +/-10% (50/60 Hz) |
| | Power inlet min. | 15 A |
| | Power | |
| | Max load | 3.6 kW |
| | Nominal load | 1.5 kW |
| | Idle | 250 W |
| | Current | |
| | Nominal 220 V | 6 A |
| | Nominal 430 V | 4 A |
| | Max. 220 V | 15 A |
| | Max. 430 V | 8 A |
| | Current, largest load | 4.6 A (3 hp.) |
| | SCCR | 25 kA |
| | Ik min | 180 A |
| | Residual Current Circuit Breaker (RCCB) | The machine has no more than 6mA residual current. RCCB type A can be used. |
| | Power supply connection terminals | Max. conductor size 10 mm ² /AWG 6 |
| | Exhaust | Diameter |
| Minimum capacity | | 250 m ³ /h (8830 ft ³ /h) |

| | | |
|--|--|-------------------------------------|
| Dimensions and weight | Width | 242.5 cm (95.5") |
| | Depth | 75.0 cm (29.5") |
| | Height | 189.0 cm (74.4") |
| | Height (with open cover) | 244.0 cm (96.0") |
| | Weight | 960 kg (2116.4 lbs) |
| Safety Circuit Categories/Performance Level | SF-1 Emergency stop | PL c, Category 1 Stop category 0 |
| | SF-2 Abrasive guard interlock | PL d, Category 3 Stop category 0 |
| | SF-3 Limited speed function, stone | PL d, Category 3 Stop category 0 |
| | SF-4 Limited speed function, specimen holder mover | PL d, Category 3 Stop category 0 |
| | SF-5 Main safety cover interlock, hazardous movements | PL d, Category 3 Stop category 0 |
| | SF-5A Main safety cover interlock, water and ethanol | PL c, Category 1 Stop category 0 |
| | SF-6 Main safety cover interlock with locking device | PL a, Category b Stop category 0 |
| | SF-7 MD-elevator door locking device | PL d, Category 3 Stop category 0 |
| | SF-8 MD-elevator door locking device | PL c, Category 1 Stop category 0 |
| SF-9 Vertical conveyor doors interlock | PL d, Category 3 Stop category 0 | |

| | | |
|-------------------------------|--|--|
| | SF-10 Recirculation unit doors interlock, MD station | PL b, Category 1 Stop category 0 |
| | SF-11 Recirculation unit doors interlock, grinding stone station | PL b, Category 1 Stop category 0 |
| | SF-12 Alcohol exhaust timer | PL b, Category 1 Stop category 0 |
| Noise level | A-weighted sound emission pressure level at workstations | LpA = 64.4 dB(A) (measured value). Uncertainty K = 4 dB |
| Ultrasonic noise level | Equivalent ultrasound sound pressure level (equivalent level of ultrasound) | Lteq, T=95.2 dB (measured value). Uncertainty K = 2 dB |
| Noise emission level | <p>The figures quoted are emission levels and are not necessarily safe working levels. While there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the workforce include characteristics of the work room, the other sources of noise, etc., i.e. the number of machines and other adjacent processes.</p> <p>Also, the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk.</p> | |

12.2 Volatile memory

| Volatile memory | | | | | | |
|--|------|--------|----------------|-----------------|-------------------|--------------------|
| Target data | Type | Size | Battery backup | User accessible | System accessible | Clearing procedure |
| Sytem on module Compulab SOM-AM57x | RAM | 2 GB | No | No | Yes | Cycle power |
| GUI computer UDOO BOLT V3 | RAM | 8 GB | No | No | Yes | Cycle power |
| RFID controller FEIG ISC.LRM1002-E | RAM | 128 GB | No | No | No | Cycle power |
| Safety system Beckhoff EP1957-0022 | N/A | N/A | No | No | No | Cycle power |
| Ext. IO system Beckhoff CX8190 | RAM | 512 GB | No | No | No | Cycle power |

| Non-volatile memory | | | | | | |
|--|-----------------|-------|----------------|-----------------|-------------------|---------------------|
| Target data | Type | Size | Battery backup | User accessible | System accessible | Clearing procedure |
| System on Module Compulab SOM-AM57x | Flash | 32 GB | No | | | |
| Methods | Default User | | | No Yes | Yes Yes | No Factory reset |
| Consumables | User Default | | | No Yes | No No | No Factory reset |

| Non-volatile memory | | | | | | |
|---|-------|-----------|----|-----|-----|---------------|
| Statistics | | | | Yes | No | Factory reset |
| Authentication | | | | Yes | No | Factory reset |
| Configuration data | | | | No | No | No |
| Calibration data | | | | No | No | No |
| Cryptographic controller Maxim MAXQ1065 | Flash | 8 KB | No | No | Yes | No |
| GUI computer UDOO BOLT V3 | Flash | 32 GB | No | No | Yes | No |
| RFID controller FEIG ISC.LRM1002-E | Flash | 512 GB | No | No | No | No |
| Safety system Beckhoff EP1957-0022 | N/A | N/A | No | No | No | No |
| Ext. IO system Beckhoff CX8190 | Flash | 512 GB | No | No | No | No |

12.3 Terms and definitions - volatility

Cycle power

The process of interrupting the power supply to the machine and its components and allowing for adequate discharge. This process includes a complete shutdown of any built-in computer.

Volatile memory

Volatile memory requires power to keep the stored information. When power is interrupted, the contents of the volatile memory are lost.

This type of type of memory usually contains application-specific data, such as working parameters for processes, measured values, and temporary SW runtime data.

Non-volatile memory

Non-volatile memory does not require power to keep the stored information. When power is interrupted, the contents of the non-volatile memory are preserved.

This type of memory usually contains information necessary to boot the machine, machine-specific application configuration and methods data.

User-accessible memory

The user can access the memory of a component and store random information using the user interface on the machine.

System-accessible memory

The memory can be accessed from the host and information can be stored without having to physically alter the machine.

Clearing

Clearing is a logical approach used to sanitize data in all user-accessible storage locations to protect data against simple non-invasive data recovery methods that use the user interface on the machine.

Factory reset

A factory reset clears all data stored in the user-accessible storage locations. The machine is set to default values.

12.4 Safety Related Parts of the Control System (SRP/CS)



WARNING

The machine and its parts have been designed to operate 16 hours daily/220 days annually. If used as indicated, the safety critical components must be replaced after a maximum lifetime of 20 years. If you use the machine for longer periods of time than indicated, the safety critical components must be replaced sooner. Contact Struers Service.



Note

SRP/CS (safety-related parts of a control system) are parts that have an influence on safe operation of the machine.



Note

Replacement of safety critical components must only be performed by a Struers engineer or a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.). Safety critical components must only be replaced by components with at least the same safety level. Contact Struers Service.

Parts

| Safety related part | Manufacturer | Manufacturer catalog no. | Electrical ref. | Struers catalog no. |
|------------------------------------|--------------|--------------------------|-----------------|---------------------|
| PLC output | Beckhoff | EL2904 | F15, F16, F17 | 2KS02904 |
| PLC input | Beckhoff | EL1904 | F18, F19 | 2KS01904 |
| PLC input | Beckhoff | EP1918-0002 | F20 | 2KS01918 |
| PLC safety controller input/output | Beckhoff | EP1957-0022 | F21 | 2KS01957 |

| Safety related part | Manufacturer | Manufacturer catalog no. | Electrical ref. | Struers catalog no. |
|---------------------------------|---------------------------------|--------------------------|--|---------------------|
| Emergency stop | Omron | A22NE-M-N | S01, S02 | 2SA10500 |
| | Latching mushroom head | | | |
| Emergency stop | Omron | A22NZ-H-02 | S01, S02 | 2SA41700 |
| | Mounting Latching mushroom head | | | |
| Emergency stop | Omron | A22NZ-S-P1BN | S01, S02 | 2SB10111 |
| | Switch block 1NC | | | |
| Magnetic safety sensor | SICK | IME2S12-04B4DW2 | B37, B38, B39, B42, B43, B44 | 2SS00812 |
| Motor inverter w. STO and SLS | Schneider Eletric | ATV320U22N4B | Q01 | PU23422 |
| Motor inverter w. STO and SLS | Schneider Eletric | ATV320U15N4B | Q02, Q03 | PU23415 |
| Motor inverter w. STO | Schneider Eletric | ATV320U04N4B | Q04, Q05 | PU23404 |
| Stepper motor w. STO | JVL | MIS232S1P6H4S6 | M06, M07, M08, M09, M10, M11, M12, M13 | 2MI10231 |
| Door lock | Schmersal | AZM 161SK-1212RKED024 | F30, F31 | 2SS00124 |
| Safety contactor light emitter | SICK | L41S-11MA1A | B40 | 2HQ00110 |
| Safety contactor light receiver | SICK | L41E-11MA1A | B41 | 2HQ00120 |
| Water valve | SMC | V114A | K06, K07 | 2YM10126 |
| Water valve | Sirai | D132V23Z130A13 24V DC | K30 | 2YM10132 |
| Safety Air Valve | SMC | EVT307-5D-01F-Q | K01 | 2YM10030 |
| High pressure pump contactor | Omron | J7KNA-09-01R 24D | K43 | 2KM70909 |

12.5 Diagrams

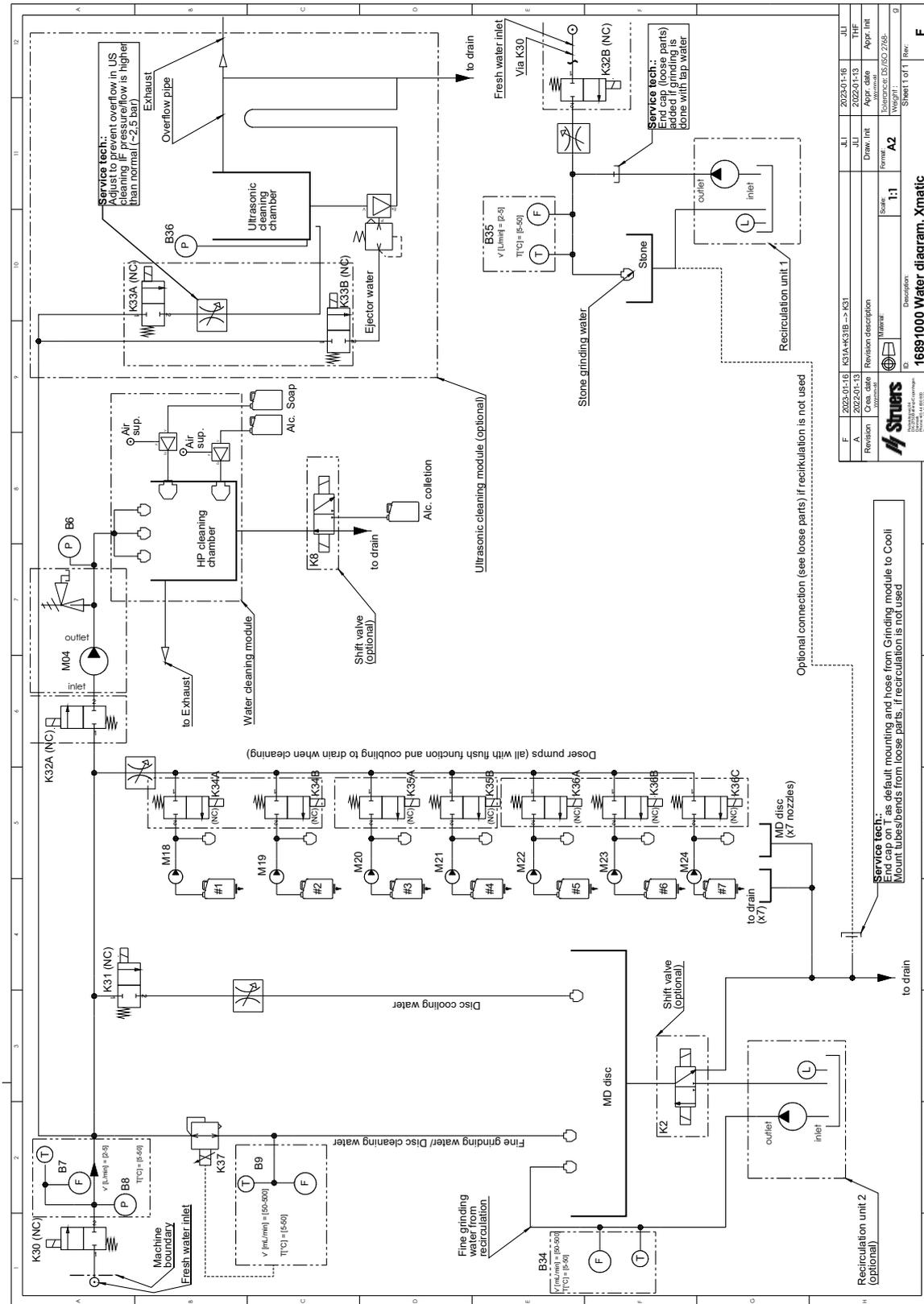


Note

If you want to view specific information in detail, see the online version of this manual.

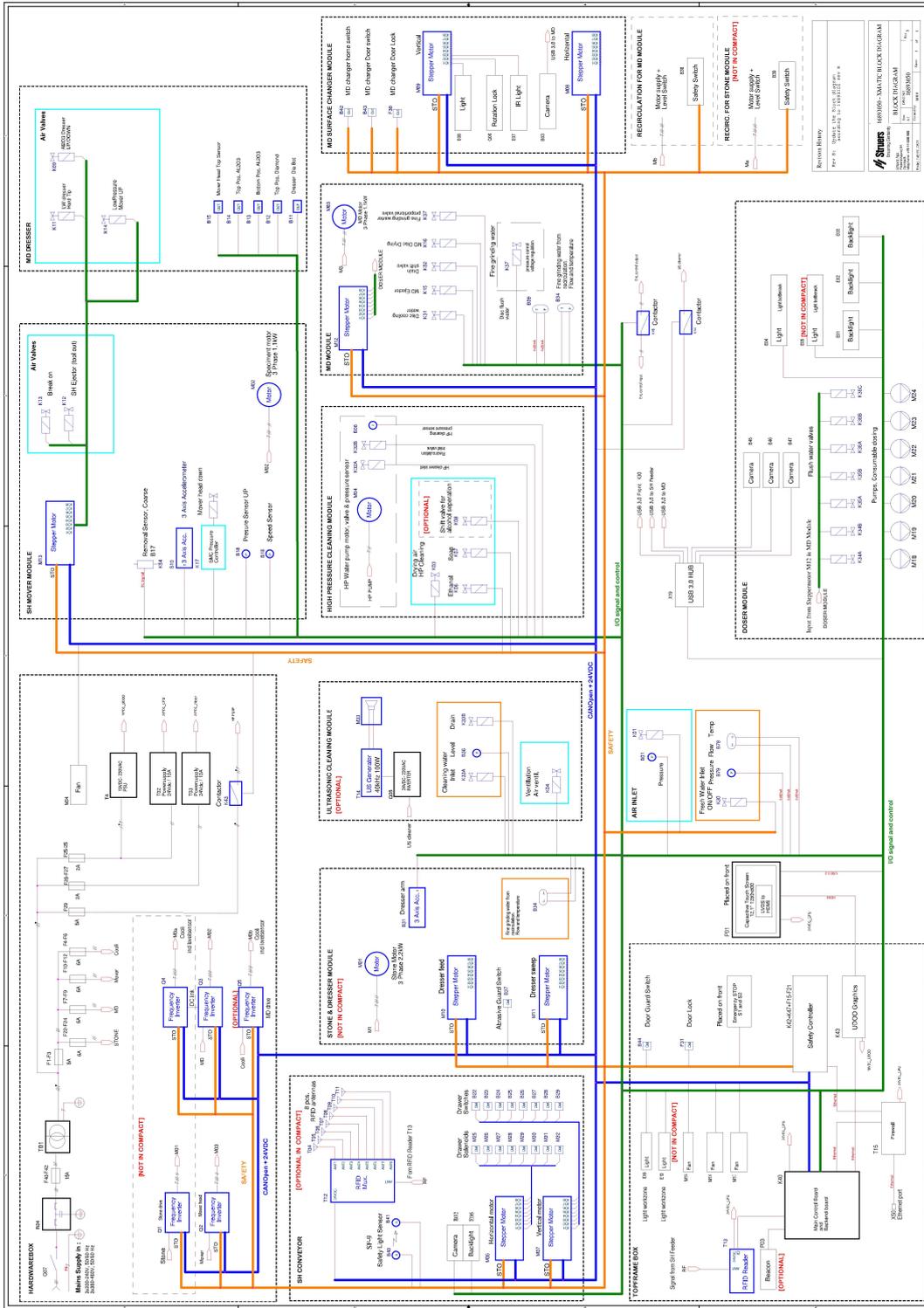
| Title | No. |
|---------------------------|--|
| Pneumatic circuit diagram | 16891001 ► 140 |
| Water diagram | 16891000 ► 141 |
| Block diagram | 16893050 ► 142 |
| Circuit diagram | See the diagram number on the type plate of the equipment, and contact Struers Service via Struers.com . |

16891000



| | | | | | | | |
|----|------------|------------------|----------------------|------------|------|------------|------|
| F | 2023-01-16 | K31A-K31B -> K31 | Revision description | 2023-01-16 | JULI | 2023-01-16 | JULI |
| A | 2022-01-13 | | Revision description | 2022-01-13 | JULI | 2022-01-13 | JULI |
| | | | Drawn | | | | |
| | | | Checked | | | | |
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| | | | Formal | | | | |
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12.6 Legal and regulatory information

FCC notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

13 Manufacturer

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

Responsibility of the manufacturer

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations.

The manufacturer assumes no responsibility for errors in the text and/or illustrations in this manual. The information in this manual is subject to change without notice. The manual may mention accessories or parts not included in the supplied version of the equipment.

The manufacturer is to be considered responsible for effects on safety, reliability, and performance of the equipment only if the equipment is used, serviced, and maintained in accordance with the instructions for use.

Declaration of Conformity

| | | | |
|--------------|---|---|--|
| Manufacturer | Struers ApS • Pederstrupvej 84 • DK-2750 Ballerup • Denmark | | |
| Name | Xmatic | | |
| Function | Grinding/polishing equipment | | |
| Type | Grinding stone with MD surfaces with or without ultrasonic cleaning | | |
| Cat. no. | 3 x 200-240 V, 50-60 Hz | 06896129, Xmatic | |
| | | 06896229, Xmatic with ultrasonic cleaning | |
| | 3 x 380-480 V, 50-60 Hz | 06896146, Xmatic | |
| | | 06896246, Xmatic with ultrasonic cleaning | |
| Serial no. | | | |



Module H, according to global approach



We declare that the product mentioned is in conformity with the following legislation, directives and standards:

| | |
|-------------------------------------|---|
| 2006/42/EC | EN ISO 12100:2010, EN ISO 13849-1:2015, EN ISO 13849-2:2012, EN ISO 13850:2015, EN 14118:2018, EN ISO 16089:2015, EN 60204-1:2018 |
| 2009/125/EC | |
| 2011/65/EU + 2015/863/EU | EN 63000:2018 |
| 2014/30/EU | EN 61000-3-2:2014, EN 61000-3-3:2013, EN 61000-6-2:2005, EN 61000-6-3:2007, EN 61000-3-11:2001, EN 61000-3-12:2012 |
| 2014/53/EU | EN 300330:2017 |
| Additional standards | NFPA 70, NFPA 79, FCC 47 CFR Part 15 Subpart B |

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www.struers.com/Library