WINTERSTEIGER
Thinking about tomorrow.

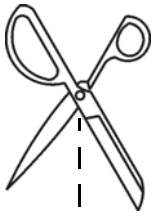
Discovery
Operating manual

EN

78-521-522

19.11.2012

Important note



This section shall be removed and kept in a safe place by the person responsible for the machine.
The following passwords are required for:

Professional Mode

The password for Professional Mode is the time displayed at the top right of the screen.

- The entry is always 4-digit, e.g. 9:30 am = 0930
- see chapt. 10 Professional Mode, page 42

Program information

Password: 4900

- see chapt. 10.4 Loading grinding parameter, page 43

Add diamond

Password: 7752

- see chapt. Adding diamond, page 54

Edit components list

Password: 7752

- see chapt. 11.4 Components list, page 79

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1 Preface

This operating manual must be read by operating personnel and those responsible for machine maintenance before initial use and serves as a supplement to the training documentation.

Damage caused by failure to follow the instructions herein will not be covered by the warranty. The user of this machine is legally bound to observe the accident prevention regulations of the country in question.

Furthermore, this operating manual shall be treated confidentially. Only authorized persons shall be allowed access to it. It shall only be entrusted to third parties on written permission from WINTERSTEIGER.

1.1 Proper use

This machine is exclusively designed for edge and surface tuning of alpine skis, cross-country skis and snowboards with a minimum length of 90 cm (intended use). Any other use is considered inappropriate. The manufacturer is not liable for any damage resulting from inappropriate use. The user takes full responsibility in such cases.

Appropriate usage also includes following the operating, maintenance and service stipulations set out by the manufacturer. The applicable accident prevention regulations and other generally accepted safety and occupational health regulations shall also be adhered to.

In case of unauthorized changes to the machine, the manufacturer will not be liable for any resulting damage.

We constantly try to improve our products and therefore reserve the right to make any changes or improvements we feel are appropriate. We are, however, not obligated to extend these changes or improvements to already delivered machines or devices.

All images, dimensions and weight specifications in the operating instructions are non-binding.

Original operating manual

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2 General information

2.1 Explanation of the symbols used in the manual

DANGER indicates a hazard with a high degree of risk, which, if not prevented, will cause death or serious injury.

WARNING indicates a hazard with a medium degree of risk, which, if not prevented, could cause death or serious injury.

CAUTION describes a hazard with a low degree of risk, which, if not prevented, could result in a slight or moderate injury.

This exclamation mark indicates possible damage to / destruction of the product, the process and/or its surrounding area.

This symbol indicates special information on practical work or a general recommendation.

2.1.1 Explanation of abbreviations

The following abbreviations are used in these operating instructions:

- SE = side edge
- BE = base edge

2.2 Safety information

2.2.1 Safety basics

- This machine is constructed using state-of-the-art technology according to accepted safety regulations.
  However, dangers for the user or third parties as well as damage to the machine and other objects can occur if:
  - the device is used by untrained or unauthorized personnel.
  - is used inappropriately.
  - the device is not properly maintained or repaired.

2.2.2 General safety information

- When hooking up the equipment to power, please assign an expert electrician, who knows the regulations of the domestic electricity utilities well and who applies them carefully.
- Ensure that the supply voltage is correct. The supply values can be found on the rating plate below the main switch. Check whether these specifications match the power supply voltage.
- The machine may only be operated with original WINTERSTEIGER spare parts / consumables. Any use of foreign material shall be at the risk of the operator and will invalidate the machine warranty. This applies especially to the grinding emulsions and machine cleaners.
- Good ventilation and exhaust must be provided due to the high humidity, which is generated by the grinding process!

2.2.3 Safety information for operator

- In addition to the accident prevention and occupational protection regulations applicable in the country of use and operating location, please also be aware of the applicable professional rules for safety and technically appropriate operation.
- The operator shall oblige operating personnel to wear personal protection equipment.
- First-aid equipment (first-aid kit, etc.) should always be within reach! Make information about the location and the operation of fire extinguishing equipment available. Fire alarms and fire fighting options must be available.
- The operator/user of the machine may not make any changes or modifications to the machine that may affect safety without the authorization of WINTERSTEIGER.
- Only use trained or authorized personnel. The persons responsible for operating, setting up, maintaining and servicing the machine shall be clearly specified. Appoint a machine manager who has responsibility for the machine and the staff. Persons who are being trained or instructed in any way or who are undergoing a general apprenticeship may only work on the machine under constant supervision from experienced, trained personnel.
- Up to 600 m³ air with high air humidity (300 m³ without Finish Module) can result per hour in the presence of ski drying. This air volume must be considered in the design of the workshop ventilation in order to comply with the limited values specified by the authorities.
- WINTERSTEIGER also recommends the use of vapor filters for this machine.

2.2.4 Safety information for operating personnel

- The operating manual must always be within reach at the machine's installation site.
- Any applicable accident prevention specifications and other generally accepted safety and medical regulations are to be obeyed.
- The machine shall only be used if it is in a technically sound condition and is used appropriately and safely, under consideration of the dangers and under observance of this operating manual. Faults that may affect safety must be immediately repaired!
- The operator is obligated to wear personal protective equipment!
- Follow the activation and deactivation processes and observe the emergency-off procedure in accordance with the operating manual for all work related to operating, refitting and setting the machine and its safety equipment.
- Please observe the mandatory safety measures for inspection, maintenance and repair of the machine!

2.2.5 Transport safety information

- During transportation work, a safety helmet, safety shoes and protective gloves must be worn.
- Never step beneath suspended loads.
- Use only suitable and inspected lifting devices!
- For transportation to the installation location, only appropriate, standardized and checked lifting devices (fork-lift truck, mobile crane, gantry crane) and load-securing devices (round slings, sling bands, slinging rope, chains) shall be used.
- Always observe the maximum lifting loads when selecting the lifting equipment and the lifting accessories!
- Please consult the technical data for dimensions and weights (see chapt. 3 Technical data, page 18).
- Always ensure that the machine is transported without hitting or bumping into anything.
- Follow the pictograms on the packaging.
- Report any transit damage and/or missing parts to the supplier without delay.
- Always transport switch cabinets upright.
- Only attach transportation crates and transport cradles at the attachment points marked.
- Always secure transport loads against drops and overturns!
- Remove the transport safeguards only after installation!

2.2.6 Operating safety

- The machine may only be operated by trained personnel.
- The machine may be put into operation only when assembled and ready for operation.
- The machine may be operated only if all protection devices (see chapt. 2.4 Safety devices, page 16) and safety-related equipment, such as detachable safeguards and covers, are available and are functioning!
- Setup operation may be carried out only by qualified specialist personnel because working on limit switches and machine parts may trigger unintentional movements that can lead to serious injuries.
- Check the machine for visible damage and defects at least once per shift! Report any changes (including changes to operational behavior) to the responsible person/office immediately! Stop the machine immediately!
- Never leave the machine unattended during operation!
- Observe switch on/off procedures and control displays as detailed in the operating manual!
- On leaving the machine, the operating personnel must always switch it off and secure it against being turned on by unauthorized persons.
- Always unplug the power plug before each location change or machine intervention!
- Do not operate the machine near flammable materials!
- Please wear appropriate work clothes:
  - long sleeved outerwear
  - long trousers
  - possibly hairnet

- protective gloves made from suitable material
- Do not touch rotating parts during operation!
- Do not reach with your hands into the charging unit and do not place or store any objects in this area during operation.
- An emergency stop button is available for switching off in case of emergency. The button is located on the machine's operator station. A second emergency stop button is located on the last module in the case of machines with 4 or more modules.
- The emergency stop button must be pressed first if skis or boards are jammed. The ski or board can only afterwards be removed.

2.2.7 Safety information for maintenance, servicing and troubleshooting

- Please adhere to the mandatory periods or periods listed in the operating instructions for recurring tests/inspections.
- All maintenance and servicing activities are only permitted if the main switch is switched off. Manual contacts with the running machines are banned! This can result in serious accidents. The machine must only be switched on while these activities take place during permissible operating modes and by adhering to special safety measures.
- Ensure safe and environmentally sound disposal of operating and auxiliary materials as well as spare parts.

2.2.8 Safety when working with electricity

- Switch the machine immediately off with the main switch if the electrical system of the machine malfunctions!
- Work on the machine's electrical system must be carried out by a qualified electrician in line with accepted practices! Only qualified electricians are permitted access to the machine's electrical systems and may perform work on them. Always keep the switch cabinets locked when they are unattended.
- Never work on live components. System parts that are subject to inspection, maintenance and repair work must be powered off. Disconnected equipment must be secured against unintentional or automatic reactivation (lock fuses away, lock disconnection switches etc.). The disconnected components must first of all be checked to ensure that they are de-energized, then earthed and short circuited. Neighboring live components must be isolated!
- Only original fuses with the prescribed amperage may be used. Never repair or hard wire defect fuses. Only replace fuses with fuses of the same type.
- Changes to the control system program can adversely affect safe operation. Changes can be made to the program only if approved by the manufacturer.
- Proper earthing of the electrical system must be ensured by means of a protective earth conductor.

2.2.9 Safety when working with pneumatics

- Work on pneumatic equipment may only be carried out by qualified, skilled personnel with special knowledge and experience in this field.
- Regularly check all lines, hoses and connections for leakage and visible external damage! Damaged parts must be replaced immediately.
- Sections of the system and pressure lines which are to be opened must be depressurized before repair work is begun.
- Hands must be kept away from the machine components after the compressor has been switched on. The generated service pressure can cause the pneumatic cylinders to shift in the basic position when air flows into the pneumatic cylinder.

2.3 Warnings

WARNING **Risk of injury!**

Regular checks must be made to ensure that the warning labels are still attached to the machine. Illegible or missing warning labels must be replaced immediately.

Wear gloves!

Order number: 78-150-678

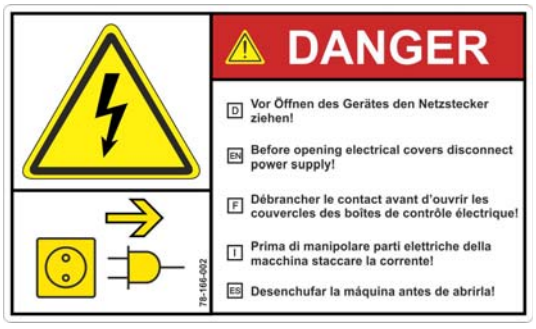
Caution! Hot surface!

Order number: 78-150-121

Only provided for the Finish module!

The operating manual and the safety information must be read and observed before commissioning the machine.

Order number: 78-166-001



Disconnect the power before opening the device.

Order number: 78-166-002

Note the permitted speed of the grinding tool before replacing the grinding disc.

Order number: 78-166-005

Risk of imbalance! Stationary grinding stone must not be sprayed with water!

Order number: 78-166-021

Do not reach in while magazine is running!

Order number: 78-166-003

Do not reach in while feed is running!

Order number: 78-166-009

2.4 Safety devices

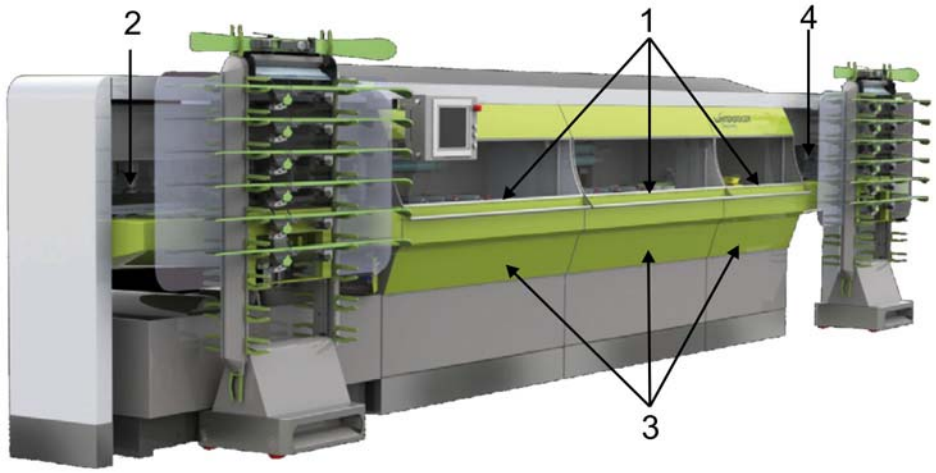
The following safety devices must not be removed or opened during operation:

- [1] grinding area door
- [2] safety door - charging
- [3] lower safety door
- [4] outlet safety door

as well as all other guards and covers, which guarantee a safe and injury free operation!

Opening the grinding area door [1]:

- The main switch must be activated.
- Press the Stop button.
- The grinding area door can be opened after about 15 seconds and/or after a message on the screen.



2.5 Intended use

Solely for the following work steps on alpine and cross country skis as well as snowboards:

- Belt pre-sanding for base
- Stone pre-grinding and fine grinding
- Side and base edge tuning; the grinding angle is variable
- Polishing of the base edge in the ski tip and tail end area
- Hot waxing
- Pre-polishing and fine-polishing gliding surfaces

2.6 Function

- Menu driven control through touch screen.
- Automatic charging and discharging for up to 16 skis or manual charging for one snowboard.
- Two independent feed modules for an optimum throughput.
- Ski brakes will be clamped upwards with a binding rubber band or a pseudo sole.

2.6.1 Machine equipment

Thanks to the intelligent module concept, the machine can be equipped with the following modules in line with customer requirements:

Belt Module [b]

- Belt sanding for absolutely flat and fibre-free base
- Belt oscillation for long belt service lives

Stone module [s]

- Stone grinding with multiple cycles (ski moves back and forth - processing in both directions)
- Contact pressure from below - pneumatically for even material removal
- Stone oscillation for long stone service lifes

Disc module [d]

- Side edge tuning and edge tuning on the base side with Ceramic Disc Finish

Polishing module [p]

- Polishing of the base edge in the ski tip and tail end area.

Finish Module [f]

- Base hot waxing
- Base pre-polishing
- Base fine polishing

3 Technical data

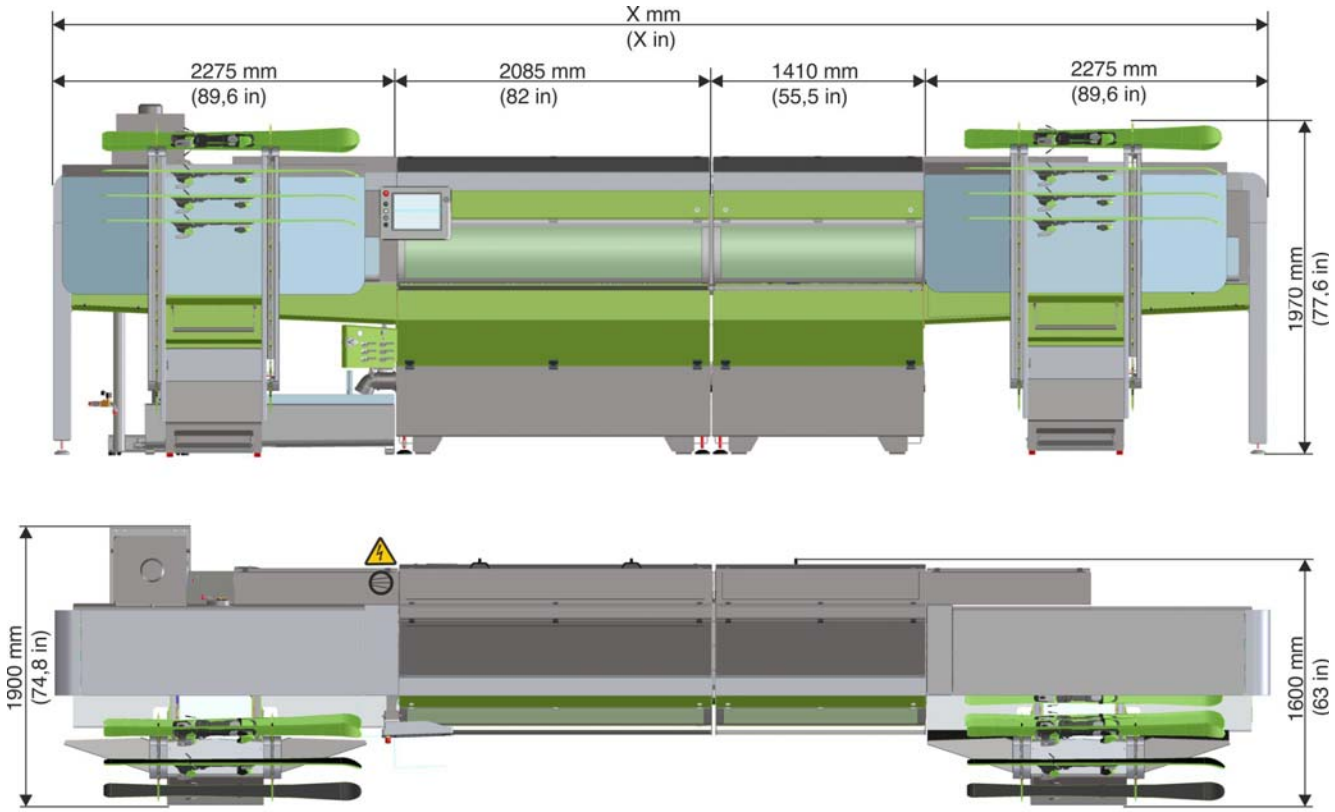
Type Discovery		
Rated voltage, frequency, power, rated current, fuses - min.-max.		
Discovery		3/N AC x 400-415 V, 50 Hz 3 AC x 208-220 V, 60 Hz Due to the various combinations for the modules and options the actual data for power, rated current and fuse rating are to be read off on the rating plate!
Vapor filter (option)		3/N AC x 400-415 V, 50 Hz, 550 W, 1,54 A 3 AC x 208-220 V, 60 Hz, 550 W, 2,66 A
Dimensions		
See illustration below		
Water tank volume		200 liters / 350 liters as of 3 base tuning modules
Band filter (optional)		60 l/min filter throughput 110l/min filter throughput as of 3 base tuning modules
Total weight		
Discovery (without cooling lubricant)		Due to the various combinations for the modules and options the actual total weight is to be read off on the rating plate!
Equipment dimensions Detailed description of the equipment (see chapt. 8.2 Definition of the equipment, page 37)		
	Ski length min. / max.	900 / 2000 mm (2150 mm when entered manually)
	Ski width min. / max.	60 mm / 140 mm (for waist max. approx. 115 mm)
	Wide ski length min. / max.	900 / 2000 mm (2150 mm when entered manually)
	Wide ski width min. / max.	140 mm / 190 mm (waist min. 100 mm)
	V-Shape length min. / max.	900 / 2000 mm (2150 mm when entered manually)
	V-Shape width min. / max.	140 mm / 190 mm (end area min. 80 mm)
	Board length min. / max.	900 / 2000 mm (2150 mm when entered manually)
	Board width min. / max.	200 mm / 340 mm
	XC length min. / max.	900 / 2000 mm (2150 mm when entered manually)
	XC width min.	35 mm without edge tuning 60 mm with edge tuning **Option XC** ■ 46 - 59 mm with edge tuning ■ 45 mm with edge tuning (max. 1 pair)
The maximum pretensioning of the sports equipment must not exceed 40 mm!		

Type Discovery	
Abrasive belt	
Grinding speed, belt	200 - 1500 rpm
Grinding force, belt	Ski max. 350 N / Board max. 900 N
Grinding stone	
Grinding stone diameter min. / max.	210 / 300 mm
Grinding speed, stone	150 - 2000 rpm
Grinding force, stone	Ski max. 350 N / Board max. 900 N
Dressing speed	3 - 35 mm/sec
Ceramic Discs	
Diameter Ceramic Discs	154 mm
Usable depth Ceramic Discs	Approx. 25 mm
Grinding speed Ceramic Discs	500 - 4500 rpm
Grinding angle side edge setting manual / electrical	89° - 87° (+/- 0,25°) / 89,5° - 85° (+/- 0,2°)
Grinding angle base edge setting manual / electrical	0,75° - 3° (+/- 0,25°) / 0,5 - 5° (+/- 0,2°)
Grinding force Ceramic Disc	5 - 75 N
Polishing discs	
Polishing disc diameter min./max.	190 mm / 250 mm
Polishing disc polishing speed	500 - 2000 rpm
Polishing disc width	50 mm
Polishing disc inclination	0,5° - 4° (preset ski 1,3°, board 2,5°)
Polishing disc polishing force	5 N - 75 N
Finish	
Waxing wheel, Ø min./max.	70 / 100 mm; (red, order no. 55-642-050-W)
Pre-polishing wheel, Ø min./max.	70 / 100 mm; (white, order no. 55-642-055-P)
Fine polishing wheel, Ø min./max.	70 / 100 mm; (blue, order no. 55-642-060-F)
Feed	
Feed speed	3 - 15 m/min
Display	
Screen	15" touchscreen monitor
Buffer battery	Lithium button cell, order number 15-480-106
Interface	
USB interface 1,1 / 2,0	Software update, data backup

Type Discovery	
Other data	
Operating pressure	7 bar
Compressor required	Delivery output between 250l/min and 400 l/min at 7 bar (depending on equipment level) **Use only dry and oil-free air!**
Permissible ambient temperature Humidity	 + 10 to 30°C 5 - 80%
Noise emission	The sound pressure level at a distance of 1 meter is 76,6 dB(A) for an average grinding process.

Ensure that the supply voltage is correct.
The supply values can be found on the rating plate near to the main switch.
A qualified electrician must be employed to connect the device to the mains supply!
As frequency converters are used together with power filters to control the speed, note that the use of residual current monitors is not recommended.
However, if for reasons of safety an earth fault circuit interrupter is stipulated as mandatory, only universal-current earth-leakage circuit breakers of type "B" (e.g.: ABB series F804, Doepke DFS 4B, or similar devices) and not type "B+" with a rated residual current of 300 mA may be used. If a plug connection is impermissible in the supply line, the machine must be permanently connected.

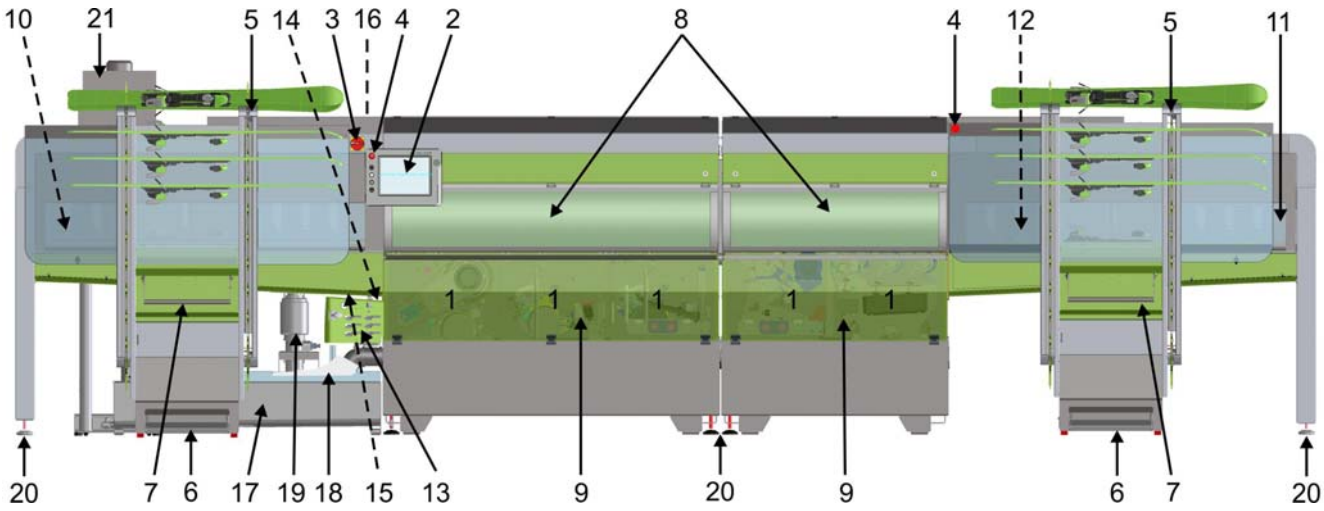
A TNS is specified for a supply voltage of 3x400 VAC 3N+PE.
This machine is designed for operation in an industrial network.



Length dimension depends on machine type		
Housing variants	**Length of overall machine [X] mm**	**Length of overall machine [X] in**
1 x 2 module housing	5960 mm	234.6 in
1 x 3 module housing	6635 mm	261.2 in
2 x 2 module housing	7370 mm	290.2 in
3 + 2 module housing	8045 mm	316.7 in
2 x 3 module housing	8720 mm	343.3 in
3 x 2 module housing	8780 mm	345.7 in
2 + 3 + 2 module housing	9455 mm	372.2 in
2 x 3 + 2 module housing	10130 mm	398.8 in
4 x 2 module housing	10190 mm	401.2 in

Technical changes reserved.

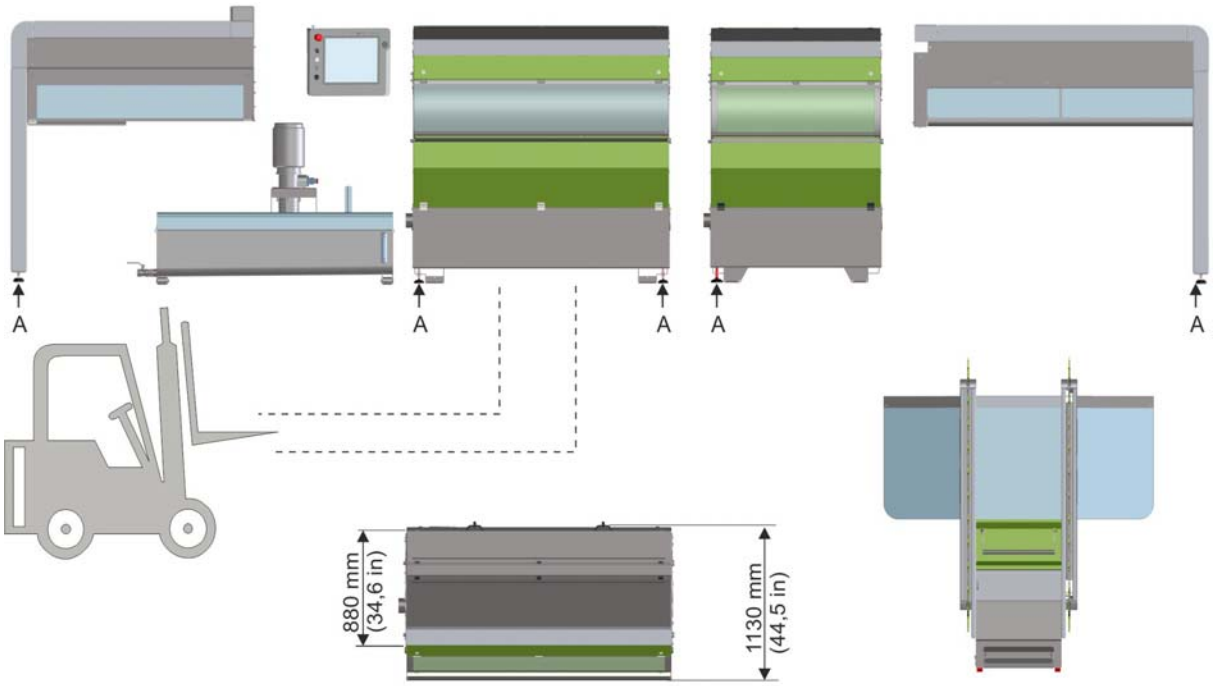
3.1 Overview of machine



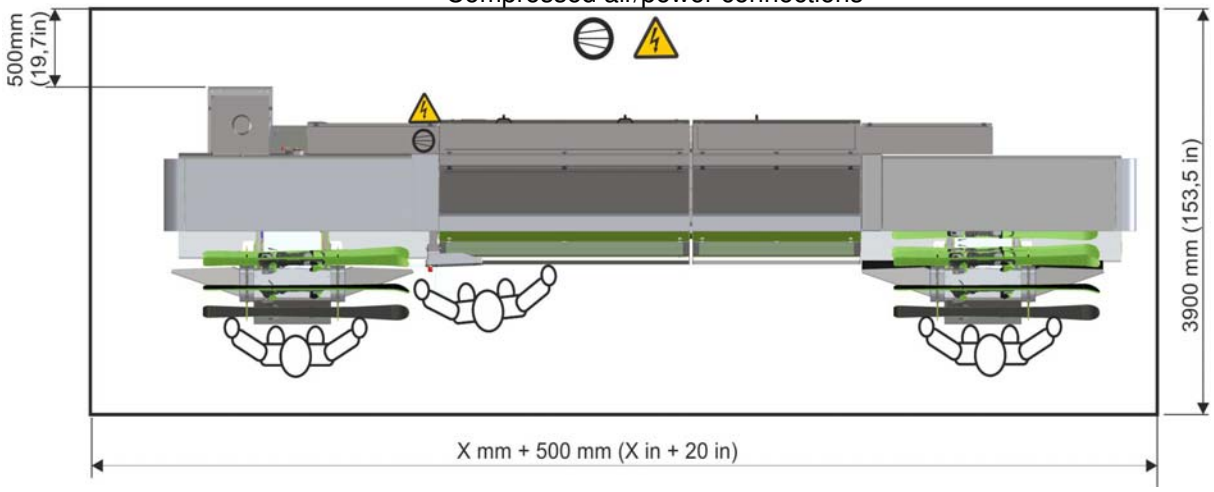
1) Module 1 - 8 (depending on equipment level)
2) Operating panel
3) Main switch
4) Emergency stop button
5) Ski magazine
6) Ski transport pedal
7) Ski magazine release
8) Grinding area door
9) Lower safety door
10) Charging safety door
11) Outlet safety door
12) Feed carriage
13) Ball valves coolant supply
14) Filter cartridge
15) Maintenance unit, compressed air connection
16) Mains connection
17) Water tank
18) Filter bag
19) Plunger pump
20) Adjustable base
21) Vapor filter (option)

4 Transport and Setup

- The floor must be suitable for a minimum surface load of 15000 N/m^2.
- Fork lift transport see following graphic.
- A transport width of no more than 880 mm can be achieved by removing the operator station and by disassembling the grinding area door (see diagram).
- Level the machine horizontally with the adjustable feet [A] and vertically by using a water level.
- The Mercury must be positioned and set-up by a WINTERSTEIGER technician.
- Workplaces see illustration



Compressed air/power connections



5 Connections and other preparatory work

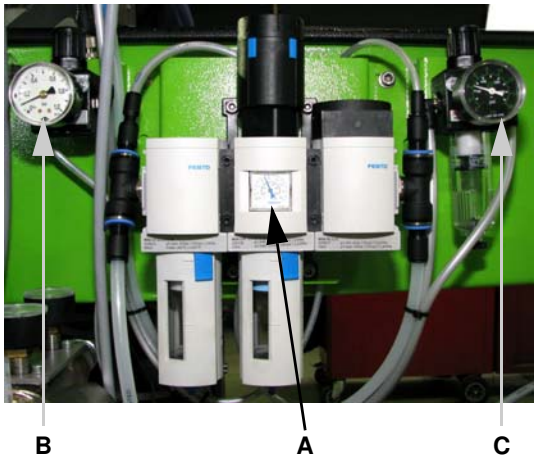
- Remove the transport retainers.
- Connect the compressed air.
- Set the pressure governor to 7 bar.
- The installation must be performed by a qualified electrician!
- Ensure that the supply voltage is correct. The machine voltage can be read from the rating plate.
- Observe the correct rotational direction for the motors! See red arrows on the grinding equipment. The direction may only be corrected by a qualified electrician!
- A water connection nearby simplifies changing and refilling of the coolant!

5.1 Preparation for operation

CAUTION **For your safety!**

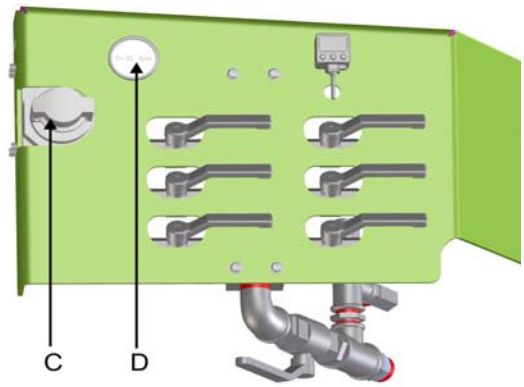
Check whether all safeguards and covers are installed.

5.1.1 Pneumatic system



- The operating pressure at the system pressure manometer [A] must be 7 bar, otherwise the machine must not be operated.

The pressure governor [B] is used for the pressure supply of the motors and must not be adjusted!

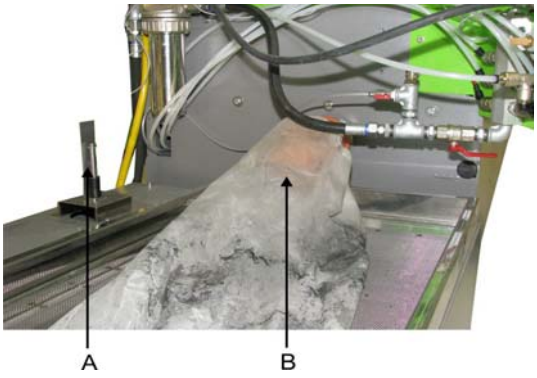


Shutting compressed air off

- Close the shut-off valve [C] blocks the compressed air.
- The supply pressure of the compressor is displayed on the pressure gauge [D].

Disconnect the compressed air in the evening!
Please ensure that the compressed air will be switched on with a pressure of 7 bar before the machine gets switched on!

5.1.2 Coolant tank



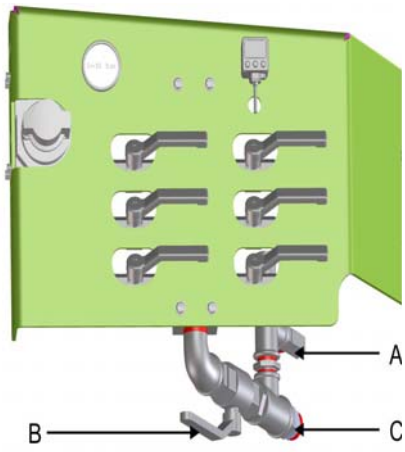
- Use only a water/emulsion mixture!

Under no circumstances, can the machine be operated or cleaned with water only!

Never clean the machine with a pressure cleaner! No liability or warranty will be assumed for consequential damages if the above is not observed.

- Please observe the coolant fill level according to the marker at the fill level indicator [A].
- Fasten the filter bag at the discharge port [B].

5.1.3 Coolant supply



Depending on the configuration of the machine, ball valves are provided for regulation of the coolant volume for the Belt, Stone, Disc and Polishing modules.

Coolant supply ball valve - Belt module:

The coolant volume supply for the abrasive belt is adjusted with this lever.

Coolant supply ball valve - Stone module:

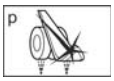
The coolant volume supply for the high pressure nozzle of the grinding stone is adjusted with this lever.

- The coolant supply for the grinding stone high-pressure nozzle should, if possible, be opened completely in order to achieve a cleaning effect on the grinding stone.

Coolant supply ball valve - Disc module:

The coolant volume supply for the spraying nozzle of the Ceramic Disc is adjusted with this lever.

- The coolant supply should be adjusted so that the Ceramic Discs are lightly wetted with coolant spray.



Coolant supply ball valve - Polishing module:

The coolant volume supply for the spraying nozzle of the polishing discs is adjusted with this lever.

- The coolant supply should be adjusted so that the coolant spray covers the complete width of the polishing disc.

A: Bottom rinse ball valve

The coolant volume supply for the bottom rinse of the housing is adjusted with this lever.

- The ball valve for the bottom rinse should, if possible, be opened completely in order to achieve a cleaning effect on the housing base.

B: Central stopcock cleaning

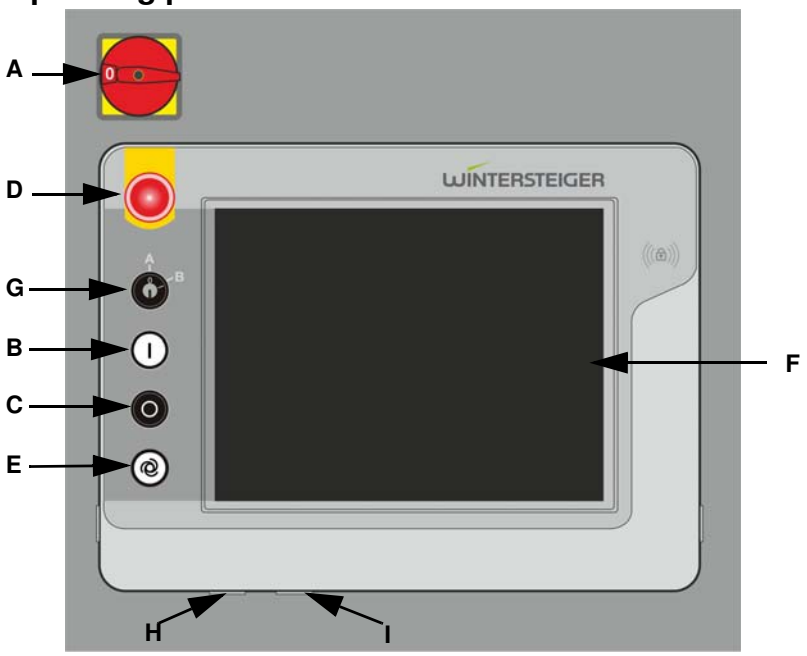
- Use this lever to lock all ball valves of the modules so that the machine can be cleaned with the cleaning hose.

C: Cleaning hose coupling

- For cleaning the machine.

6 Description of controls

6.1 Controls on the operating panel



A: Main switch

- Switches the entire power supply on and off. The main switch is located above the operating panel. The emergency stop screen appears after the system has booted.

B: Start button

- Switches the machine on.
- The safety door of the charging is closed after pressing the Start button. The referencing screen appears after this. After referencing the machine, this changes to the main screen and the tuning process can be started.

C: Stop button

- After pressing the stop key, the machine switches off immediately if no ski is tuned (the ejection of the grinding stone is recommended before switching off).
- The tuning sequence will be interrupted at the next tuning step if a ski is still being tuned and the ski (board) moves quickly to the charging and the safety door of the charging is opened (machine is not switched off).

D: Emergency stop button

- Switches the machine off if a dangerous situation occurs.

The button is pressed and remains fixed. It is no longer possible to switch the machine on using button [B]! Pulling out the emergency stop button unlocks it and it returns to the original position - it is then possible to switch the machine on using the button [B].
The safety door of the charging is opened by pressing the emergency stop button!

E: Starting tuning process

- Pressing the pushbutton [E] will start the tuning process and automatically activate the displayed program. Charging only starts if the machine is operational!

F: Touch screen monitor

- The touchscreen functions ensure optimum machine operation. A slight finger touch is enough to activate the desired field.

Never use sharp objects such as pens, knives or other similar items. As an option, a stylus designed especially for touch-screens can be ordered from WINTERSTEIGER (order no. 7000-0811-V01).

G: Key switch for manual charging

Manual charging is intended for grinding snowboards, wide skis, V shapes, or for operation in case the ski magazine fails.

- The ski magazines can be removed when the keyswitch is set to manual charging.

H: Starting tuning without a ski magazine

WARNING **Risk of injury!**

The charging starts automatically, therefore, be careful when working in this area. Do not reach in during the charging process.

- The tuning process is switched to manual mode by pressing both [H] buttons simultaneously.

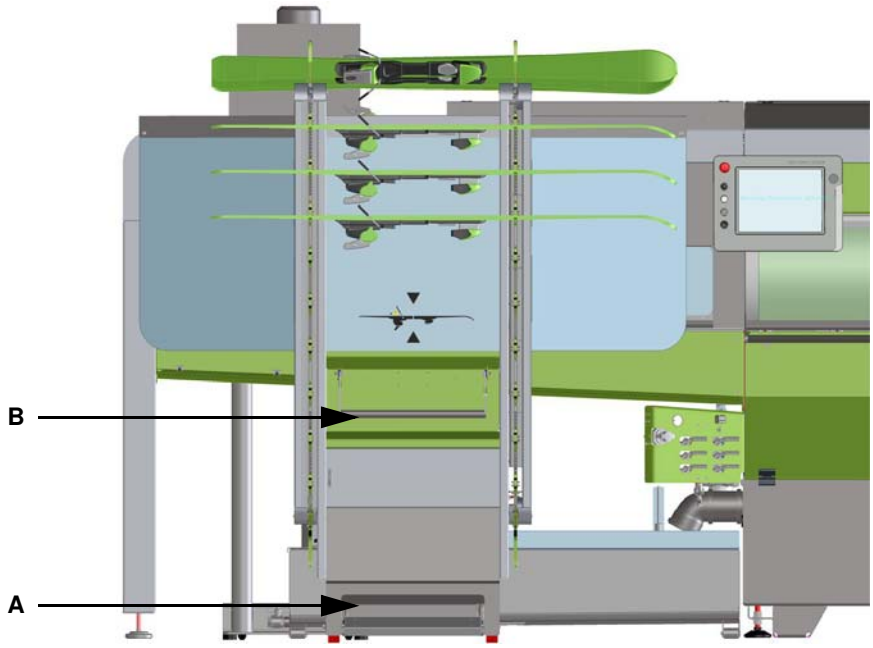
I: USB connection

- USB connection for any program updates

J: LAN connection

- LAN connection for any program updates

6.2 Ski magazine



A: Pedal ski transport

- Briefly actuating the pedal [A] cycles the ski magazine one position further. If the pedal is actuated for a longer period, the ski magazine moves until the pedal is released, or until the first ski has reached the transport belt on the charging unit.

B: Unlocking the ski magazine

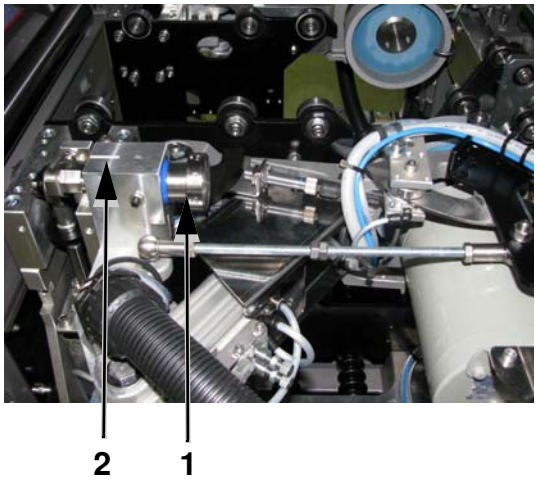
- Push the bar [B] up and pull the ski magazine to remove it.

WARNING **Risk of injury!**

If the ski magazine is removed during grinding operations, and if the keyswitch has not been set to manual charging, the machine automatically switches to emergency stop!

7 Basic settings before grinding operation

7.1 Manual grinding angle setting - Disc Module



Before adjusting the grinding angle, the disc units position themselves in the angle setting position (see chapt. 10.12.3 Manual angle setting position, page 70).

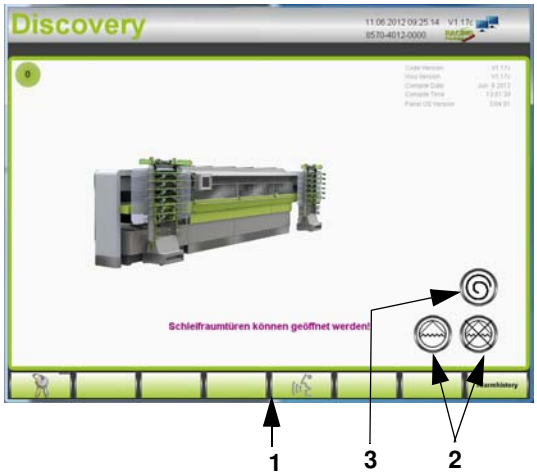
- Setting by adjusting the marked handwheel [1] onto the notch [2].

Angle grinding combinations for SE and BE: tolerance +/- 0,25°

Position	Angle BE	Angle SE	Effective edge angle
1	1°	89°	90°
2	1°	88°	89°
3	0,75°	87°	87,75°
4	1,25°	88°	89,25°
5	1,5°	88°	89,5°
6	2°	88°	90°
7	3°	88°	91°

Perform setting the same left and right.

7.2 Emergency Stop screen



- Switch on main switch.
  The emergency stop screen appears after the system has booted.

The language can be changed by pressing the symbol [1].

The cleaning pump can be switched on and off [2] for cleaning the machine inside with the cleaning hose using the emergency stop screen (see chapt. 13.1.1 Cleaning the interior of the machine, page 91).

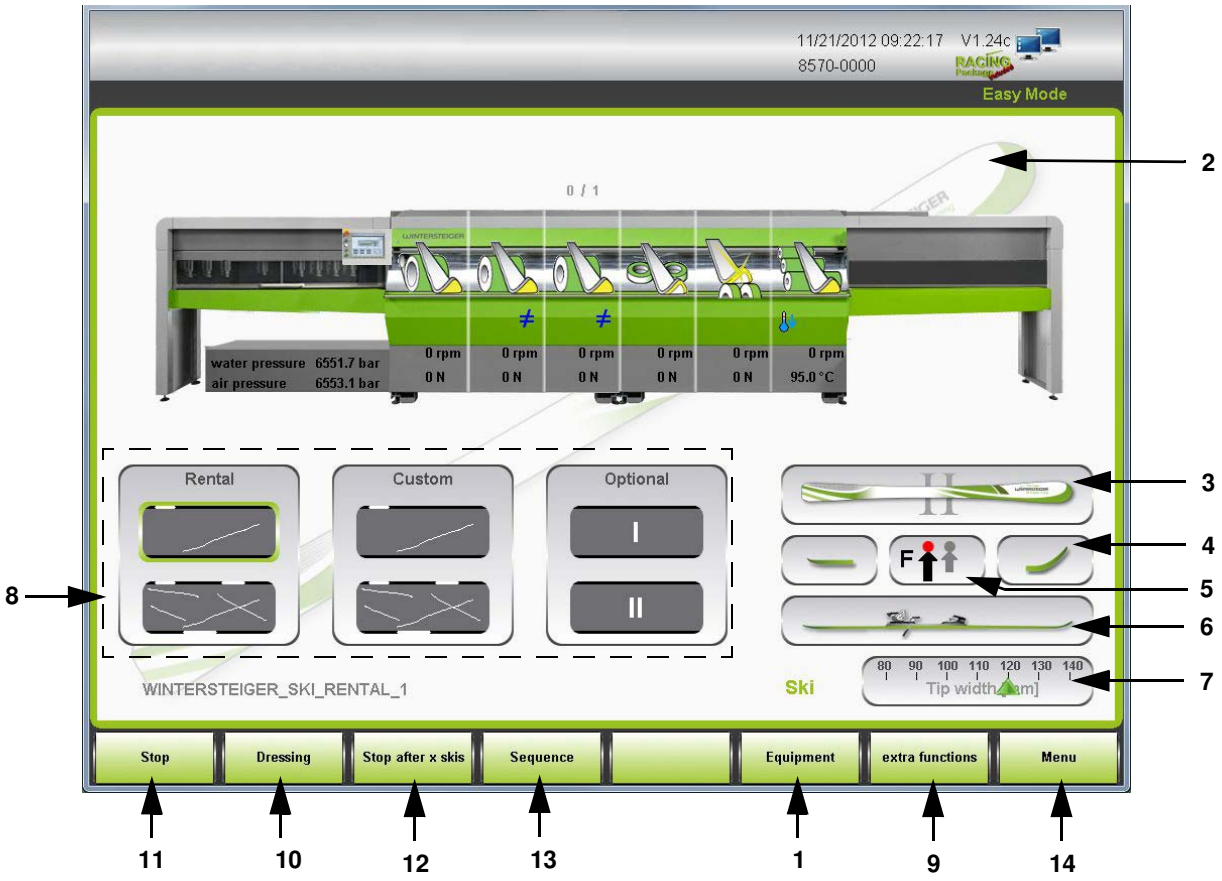
Furthermore, the grinding stone can be spin-dried by pressing the button [3] (see chapt. 13.1.1 Cleaning the interior of the machine, page 91).

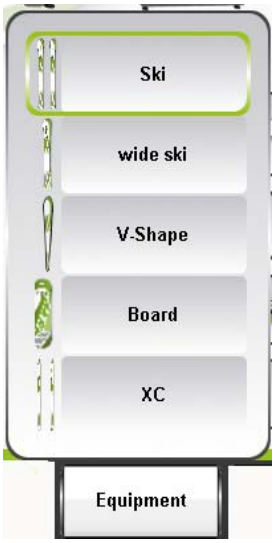
- Press the Start button [B] to go to the main screen.

7.3 Basic settings at main screen

The following parameters must be selected before the grinding operation.

Depending on the equipment of the machine, the available modules are shown on the screen.





Equipment [1]

The equipment selection is started by pressing the "Equipment" button on the main screen.

- Ski
- Wide ski
- V-Shape
- Board
- XC

- Selecting the desired equipment to load the preset grinding programs and display the respective graphic [13] on the main screen.

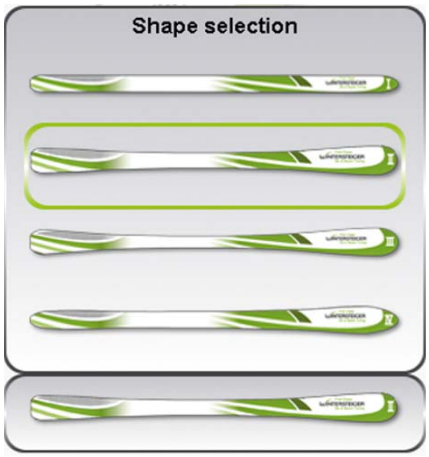
Equipment graphic [2]

- Grayed, automatic ski model creation enabled.
- Green display, automatic ski model creation disabled (manual waist selection required).

7.3.1 Automatic ski model identification

The Discovery automatically detects the length, width and waste of the ski.

If automatic ski model detection is disabled, the waist must be selected manually!



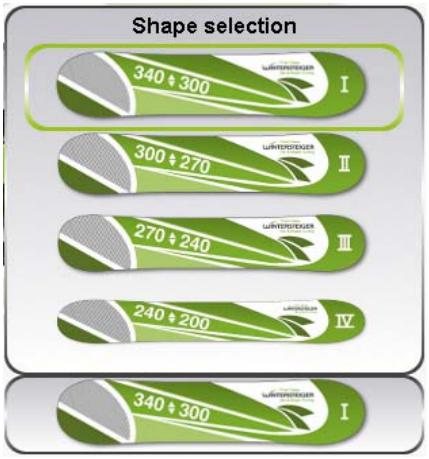
Waist selection [3]

A standard waist is assigned according to the selected equipment. Changes in the waist are made in the "Shape selection" window.

- By selecting a waist, a preset grinding force curve is allocated to the grinding program.

Ski

- All-round ski I
- Carving ski II
- Extreme carving ski III

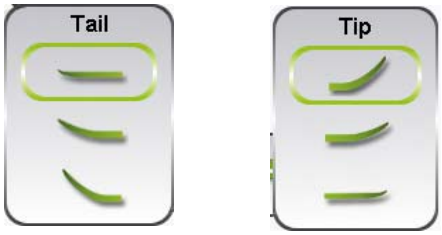


Board

By selecting Board, the correct board width must be allocated.

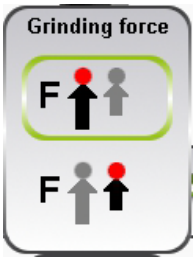
By selecting a board width, a preset grinding force curve is assigned to the grinding program.

- Board I 340...300 mm
- Board II 300...270 mm
- Board III 270...240 mm
- Board IV 240...200 mm



Selecting the ski tip and ski tail [4]

Depending upon the selection of ski tip and ski tail (board) the tuning will be adapted in this area.

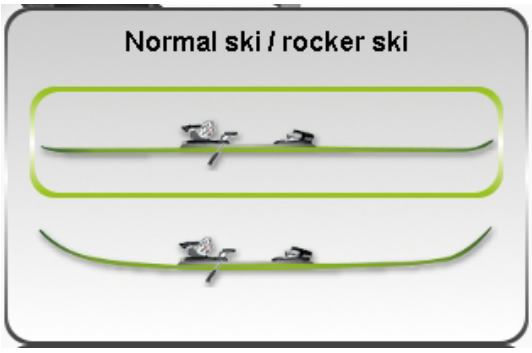


Grinding force [5]

Select between normal and reduced grinding force by pressing the selection field.

- Small arrow -> low grinding force
- Large arrow -> normal grinding force

It is imperative that the grinding force is reduced to avoid damages to the children ski!



Rocker [6]

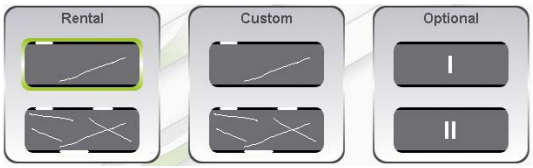
Select the Rocker function for tuning rocker skis or rocker boards.

Ensure that the ski is pressed flat against the support rollers after it has been charged by means of the feed stamps. Otherwise abort the tuning!

Ski tip width [7]

If the equipment "Ski, Wide Ski or V-Shape" is selected, a function field will also be shown, in which you can set the tip width using the slider.

The set-in point of the side edge tuning is optimized by setting the tip width.



Easy Keys [8]

Depending on the degree of damage to the equipment, an appropriate grinding program is loaded after selection and the tuning allocated.

The loaded program is displayed below the Easy Keys.

These are divided into three categories:

Rental

- Rental ski (board) - medium or high degree of damage

Customer

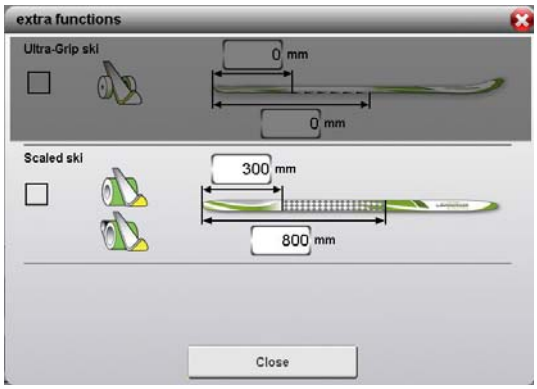
- Customer ski (board) - medium or high degree of damage

Optional

- Two individual grinding programs can also be saved here.

For assignment of the grinding program to the Easy Keys see chapt. 11.1 Easy Keys setting, page 76.

If a grinding program change is carried out, the "≠" sign is shown on the screen in the Stone module. The sign symbolizes that the structure on the grinding stone does not correspond to the loaded program. The structure is applied to the grinding stone when starting the grinding program.



Extra features [9]

Operating modes for special models can be set by pressing the "Extra functions" button.

Ultra-Grip ski

When selecting Ultra-Grip Ski, the side edge grinding can be skipped in the binding area.

Area data, ski end to stop position of the ceramic discs and ski end to set-in point of the ceramic discs.

Scaled Ski (XC)

When selecting Scaled Ski, the base grind in the scaling area can be skipped.

Area data, ski tail until start of the scales and ski tail until end of the scales.

The button will become colored if an extra function is selected.

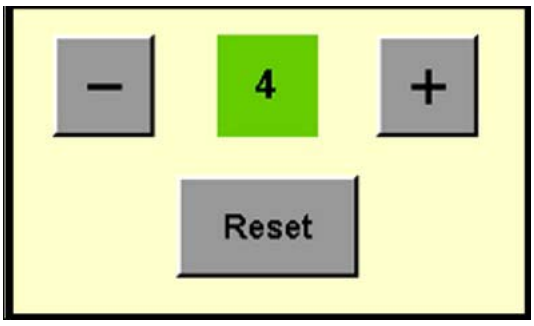
Dress [10]

- Pressing the "Dress" button dresses the grinding stone with the preset parameters of the loaded program.

Stop [11]

- Pressing the "Stop" button completes the ski currently being tuned, and the tuning sequence then stops.

Stop after x skis [12]



- Pressing the "Stop after x skis" button [12] opens an additional window.
- You can press the +/- buttons to enter the number of skis before the machine stops.
- Pressing the "Enter" button confirms your input.
- Pressing the "Reset" button cancels the entry and quits the function.

Sequence [13]

- Pressing the "Sequence" button displays the tuning sequence.

The tuning sequence can only be changed in Professional Mode.

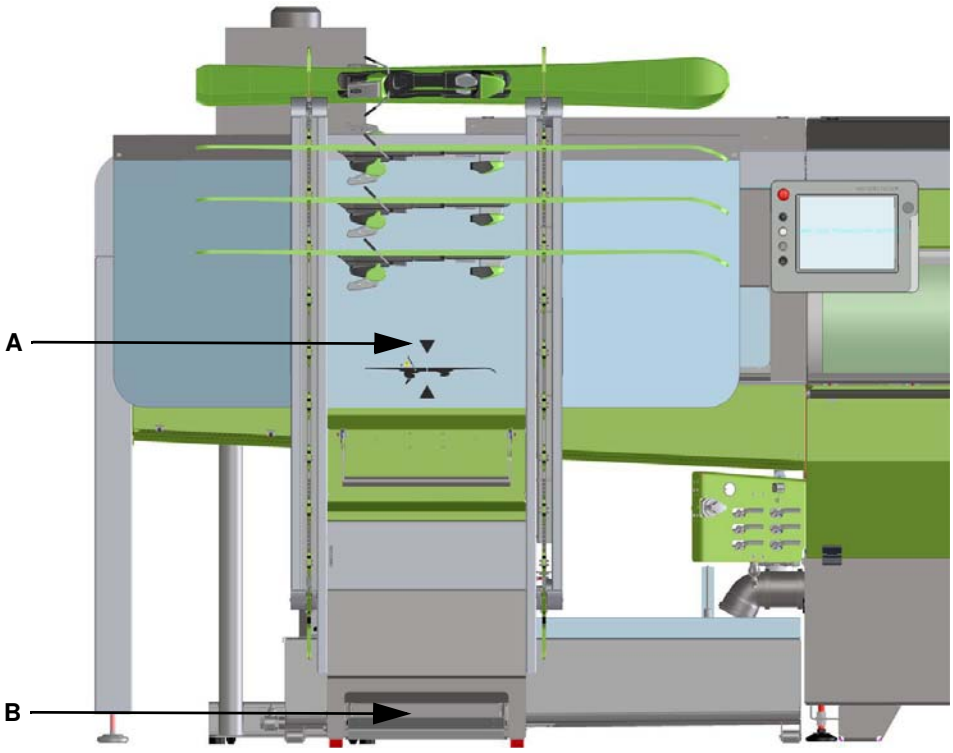
Menu [14]

- The general settings are accessed by pressing the "Menu" button.

8 Working with the machine

8.1 Filling the ski magazine

- Switch on main switch.
- Press the Start button.
- After referencing the machine, this changes to the main screen.



Pull the ski brakes up and tie with a rubber band.
Please ensure that ski brakes, which stick out opposite from the ski, are lifted 15 mm from the lower edge of the ski.
Insert the ski into the ski magazine with the gliding surface facing up and make sure that the center of the ski binding is located next to the [A] mark. Also make sure that the ski tip is pointing to the right.

- Briefly actuating the pedal [A] cycles the magazine one position further. If the pedal is actuated for a longer period, the magazine moves until the pedal is released, or until the first ski has reached the transport belt on the charging unit.

⚠CAUTION **Risk of injury!**

The ski magazine starts automatically, therefore, be careful when working in this area.
Do not reach in while the ski magazine is running!
Do not put any objects on top of ski magazine or lean objects against it!

8.2 Definition of the equipment

To ensure an optimum service for the different shapes and designs of the sports equipment, the equipment needs to be divided.

A label is attached to the charging to let you quickly determine the width of the equipment.

Ski

Skis with a maximum waist width of 115 mm are placed individually in the ski magazine with their gliding surfaces facing up for tuning (see chapt. 8.3 Handling for grinding with the ski magazine, page 38).

The waist of the skis is divided into four areas.

- All-round ski I
- Carving ski II
- Extreme carving ski III
- V-Shape IV

Dark green area on label.

Wide ski

Special designs for deep snow with a tip and tail area width of between 140 and 190 mm must be placed in the charging unit separately without using a ski magazine (see chapt. 8.4 Handling for grinding without the ski magazine, page 38).
The minimum width at the waist must be no less than 100 mm.
Light green area on label.

V-Shape

The special design V-shape is essentially wider in the tip area than in the tail area. The width in the tip area must be between 140 and 190 mm, the tail area must be minimum 80 mm. The V shape is inserted into the charging unit without a ski magazine (see chapt. 8.4 Handling for grinding without the ski magazine, page 38).
Light green area on label.

Board

All sports equipment as of a width of 200 mm must be tuned with the equipment selection "Board". Boards are also placed in the charging without a ski magazine (see chapt. 8.4 Handling for grinding without the ski magazine, page 38).

The waist of the boards is divided into four areas.

- Board widths between 200 - 240 mm waist selection -> "IV"
- Board widths between 240 - 270 mm waist selection -> "III"
- Board widths between 270 - 300 mm waist selection -> "II"
- Board widths between 300 - 340 mm waist selection -> "I"

Gray area on label.

Cross Country Ski (XC)

With this selection, cross country skis with a minimum width of **35 mm without edge tuning** as well as cross country skis with a minimum width of **60 mm with edge tuning** can be ground. Cross country skis are placed individually in the ski magazine with their gliding surfaces facing up for tuning (see chapt. 8.3 Handling for grinding with the ski magazine, page 38).

The maximum pretensioning of the cross country ski must not exceed 40 mm.

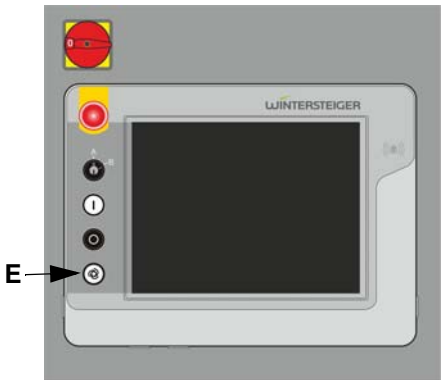
You can optionally convert the feed stamps to enable grinding the base edge of the Backcountry Skis with a width of between 59 mm and 45 mm (for a width of 45 mm, only 1 pair may be ground, as otherwise this can cause damage to the ceramic discs).

Gray area on label.

Failure to observe these instructions releases WINTERSTEIGER from any and all liability for damage incurred.

8.3 Handling for grinding with the ski magazine

8.3.1 Tuning skis or cross country skis



1) Place the ski or cross country ski into the ski magazine with the gliding surface facing up. The ski tips must face to the right.
2) Check whether the ski magazine is ready to hold skis when discharging.
3) Select the equipment, degree of damage, etc. (see chapt. 7.3 Basic settings at main screen, page 31).
4) You may need to correct the angle in case of manual grinding angle adjustment.

CAUTION **Risk of injury!**

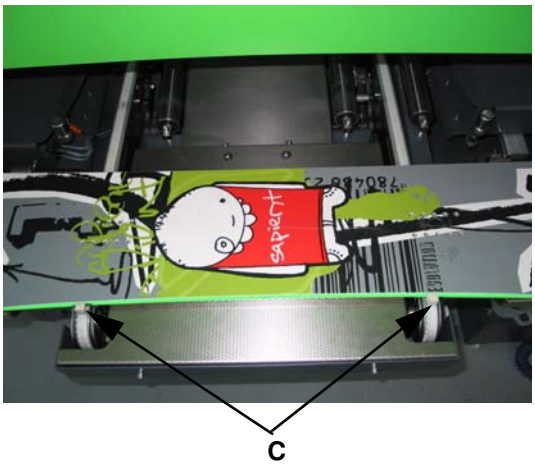
The ski magazine starts automatically, therefore, be careful when working in this area.
Do not reach in while the ski magazine is running!
Do not put any objects on top of ski magazine or lean objects against it!

5) Press the "Start tuning process" button; the ski is fed into the charging unit.
6) The tuning process starts.

8.4 Handling for grinding without the ski magazine

Snowboards, wide skis and V shapes can only be ground with manual charging (operation without the ski magazine). Additionally, if the ski magazine is damaged, skis can still be ground after manual charging.

8.4.1 Tuning snowboards, wide skis and V shapes



Remove all loose parts before the grinding process.
If possible, dismantle the binding before the grinding process. This avoids having to clean it after the grinding process. If the binding protrudes beyond the edge of the board, the binding must be removed.
If the grinding is done with the binding attached, ensure that it is situated between the feed stamps.

1) Select the equipment snowboard, wide ski or V shape and the degree of damage (see chapt. 7.3 Basic settings at main screen, page 31).
2) Set the keyswitch [A] to manual charging.
3) Remove the ski magazine (see chapt. 6.2 Ski magazine, page 29).
4) Position the snowboard, wide ski or V shape parallel to the front end of the charging unit and align with the two transport stops [C].
5) Press both [H] buttons.
6) The message window which appears will ask you to check the board width:

Was the correct board width selected on the main screen [1]?

- Board widths between 200 - 240 mm waist selection -> "IV"
- Board widths between 240 - 270 mm waist selection -> "III"
- Board widths between 270 - 300 mm waist selection -> "II"
- Board widths between 300 - 340 mm waist selection -> "I"

7) After checking the points, close the message window by pressing "OK".
8) Holding down the two [H] buttons transports the snowboard, wide ski or V shape into the machine, centers the ski and starts the grinding cycle.

If you release the buttons early, the transport is interrupted.
If you press both buttons again, the process continues.

⚠CAUTION **Risk of injury!**

Make sure that there are no persons in the vicinity of the charging and discharging sides.

9) After completing grinding, the board is deposited on the discharging side.

⚠CAUTION **Risk of injury!**

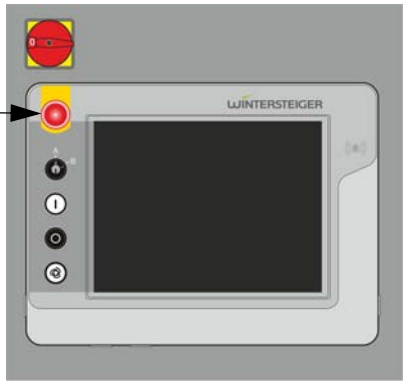
It is important that the snowboard, wide ski or V shape is not removed until it has been discharged!

10) Once the feed has returned to its starting position, the next board can be fed into the charging unit.

CAUTION **Risk of injury!**

If a malfunction occurs on the charging or discharging side, caused by a jammed snowboard, wide ski or V shape, press the emergency stop key before intervening.

8.4.2 If sports equipment gets jammed in the machine during the tuning:



- Press the emergency-stop button [D].
- The grinding area door can be opened after about 15 seconds.
- Remove the ski or board.

Pressing the emergency stop button can lead to damage to the ski/board!
The safety door of the charging is opened by pressing the emergency stop button!

9 Easy Mode

In Easy Mode, a top service will be achieved with only a few parameter inputs and the simplest of operation.

After implementation and selection of the basic settings (see chapt. 7 Basic settings before grinding operation, page 30) fault-free grinding operation will be ensured.

However, if special grinding programs, structures and grinding parameters are required, you need to change to Professional Mode.

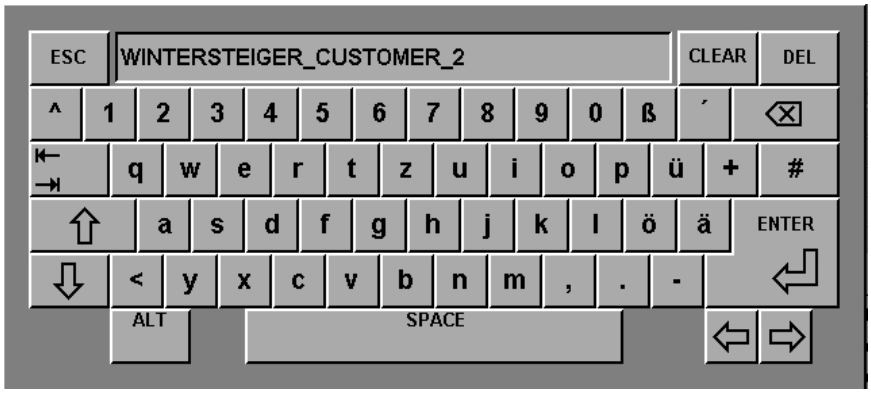
The change to Professional Mode is secured with a password entry.

10 Professional Mode

In Professional Mode, the tuning sequences and program parameters can be changed, new programs can be compiled and assigned to Easy Mode.

10.1 Information concerning input fields

When an input field is pressed, a number block or keyboard appears on the screen and can then be used to enter the required values.



Increase or decrease the value by using the arrow keys on the number block. The "x" button is used to exit the window without adopting the changed values. The minimum/maximum possible input value for each input field is also shown.

Each input must be confirmed using ENTER.

10.2 Entering the password

- Press the "Easy Mode" button on the main screen.
  The password screen is shown.
- Press the "Password" input field.
- Enter valid password in the number block and confirm with the "ENTER" button to go to the "Professional Mode" main screen.

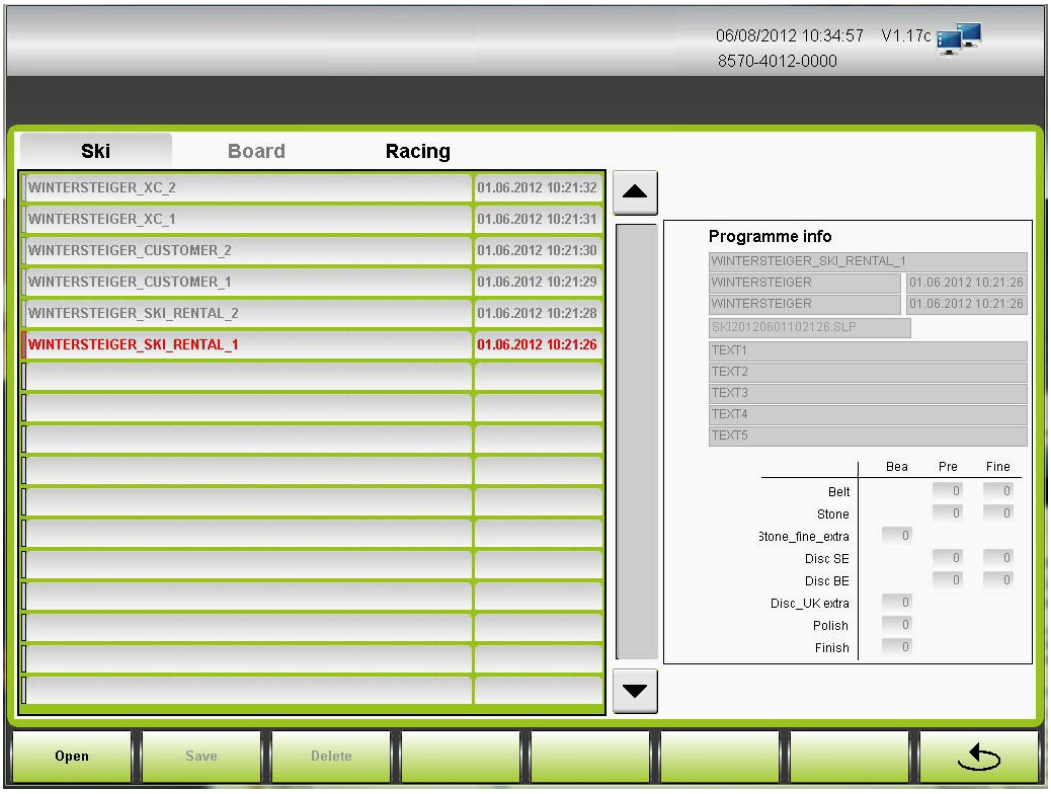
10.3 Professional Mode main screen

Entering the password takes you to Professional Mode.

The "Programs" button on the main screen is now enabled in Professional Mode.

10.4 Loading grinding parameter

The list of WINTERSTEIGER default grinding programs opens if the "Programs" button is pressed.



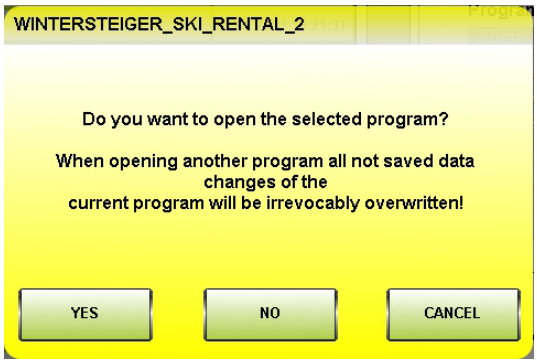
The grinding program list is divided into three different categories:

- Ski
- Board

- Racing (optional)

- Select the desired category by pressing the relevant tab.
  Each category has several default grinding programs.
- Select the desired program by touching the respective line.
  The most important information on the selected program is displayed on the right.
- Program information can be saved in this input window by pressing on the program line in the main screen.

The program info window can be write-protected, or the protection can be canceled, by entering the password in the password window and pressing the lock icon.

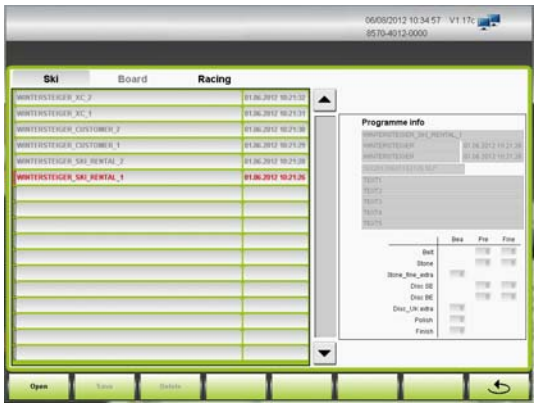


- Click on the "OPEN" button.

The adjoining message is displayed on the screen to ensure that possible changes in the previous program are not lost.

- Pressing the "YES" button opens the newly selected program. Changes in the previous program are not saved.
- You will return to the grinding program list by pressing the "NO" or "CANCEL" button, so that you may save the changed program.

10.5 Saving grinding program

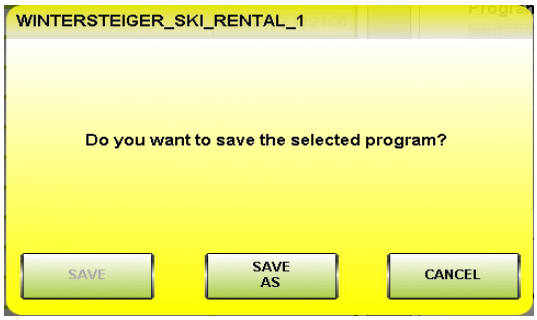


- The list of grinding programs opens when the "Programs" button on the main screen is pressed.

The program currently changed is shown in red in the list.

The WINTERSTEIGER default programs are read only (shaded light grey). They can be changed, however, they must be saved with a different name (Save as).

- The following screen opens if the "SAVE" button is pressed.

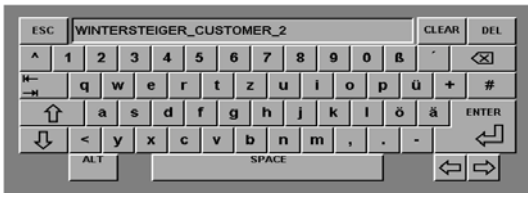


- The changed parameters and settings are imported by pressing the "SAVE" button again.
  You are then taken back to the main screen.

Only the "SAVE AS" button is active because a read-only program was used in this example.

Press the "SAVE AS" button to save the selected or changed program under a different name.

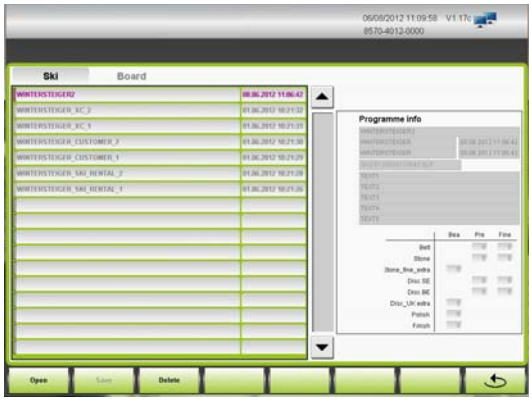
10.5.1 Save as



An alphanumeric input window opens.

- Enter the desired identification using the keypad that appears.
- Use the "x" button to cancel.
- The input will be confirmed by using the "ENTER" button.

10.6 Deleting grinding program



- The list of grinding programs opens when the "Programs" button on the main screen is pressed.

The current program will be displayed in red in the list.

The WINTERSTEIGER default programs are read-only and cannot be deleted. The program just loaded cannot be deleted either.

- Select the program to be deleted and press the "DELETE" button.

10.7 Belt Module - Changing parameters

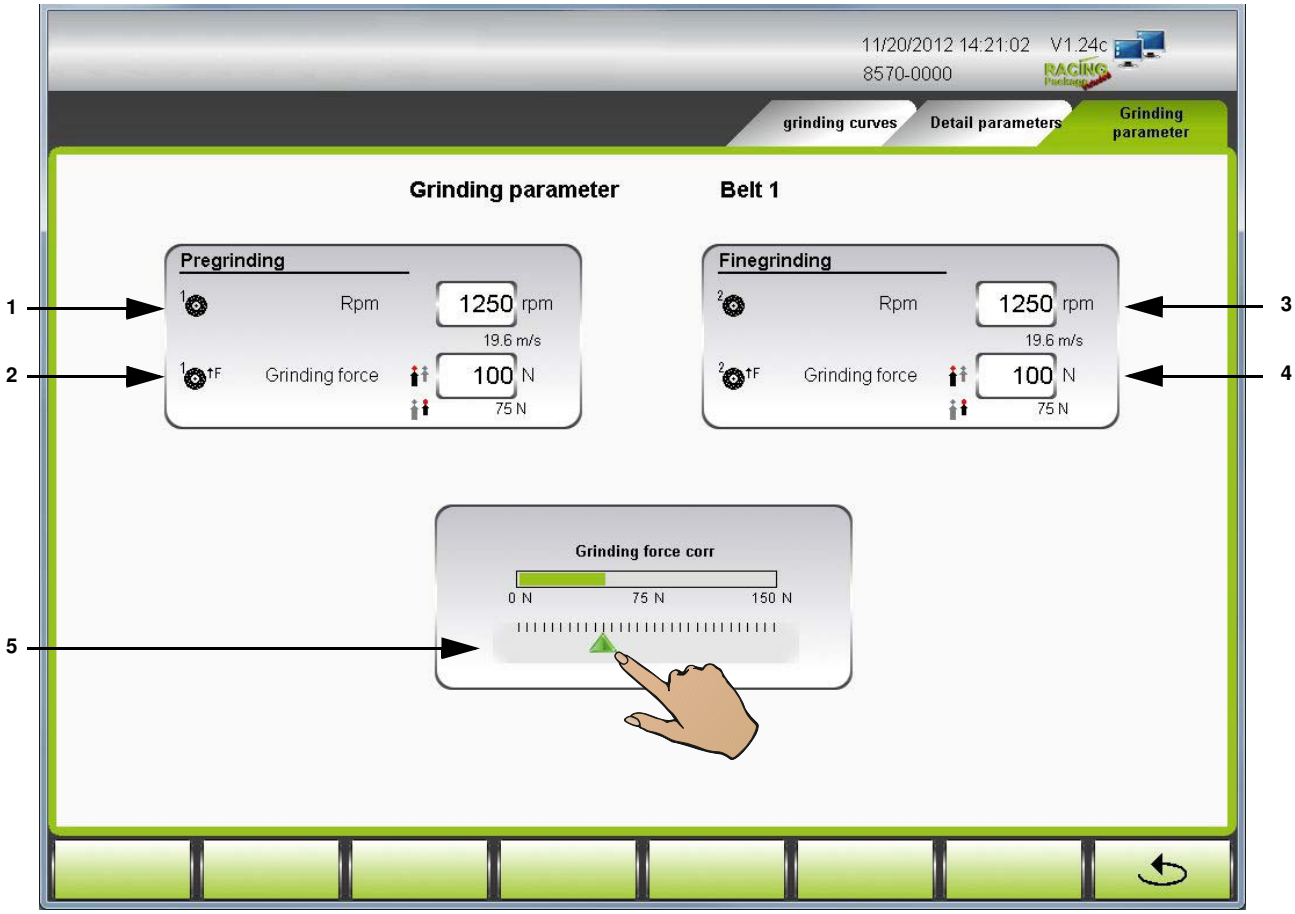
The "Program overview" window is opened by pressing one of the modules on the main screen.

10.7.1 Parameter overview

The most important parameters of all modules are displayed in this window. You can change to the relevant parameter input by pressing a field.

- Press in the "Belt" field to open the "Grinding parameters" window.

10.7.2 Belt module grinding parameters



Pre-grinding speed [1]

- This input field is used to enter the pre-grinding speed of the abrasive belt.
  The field below displays the cutting speed in meters per second.

Pre-grinding force [2]

- This input field is used to enter the basic force for belt fine grinding in Newtons.
  The field below displays the value of the reduced grinding force.

Fine-grinding speed [3]

- This input field is used to enter the pre-grinding speed of the abrasive belt.
  The field below displays the cutting speed in meters per second.

Fine grinding force [4]

- This input field is used to enter the basic force for belt fine grinding in Newtons.
  The field below displays the value of the reduced grinding force.

Grinding force correction [5]

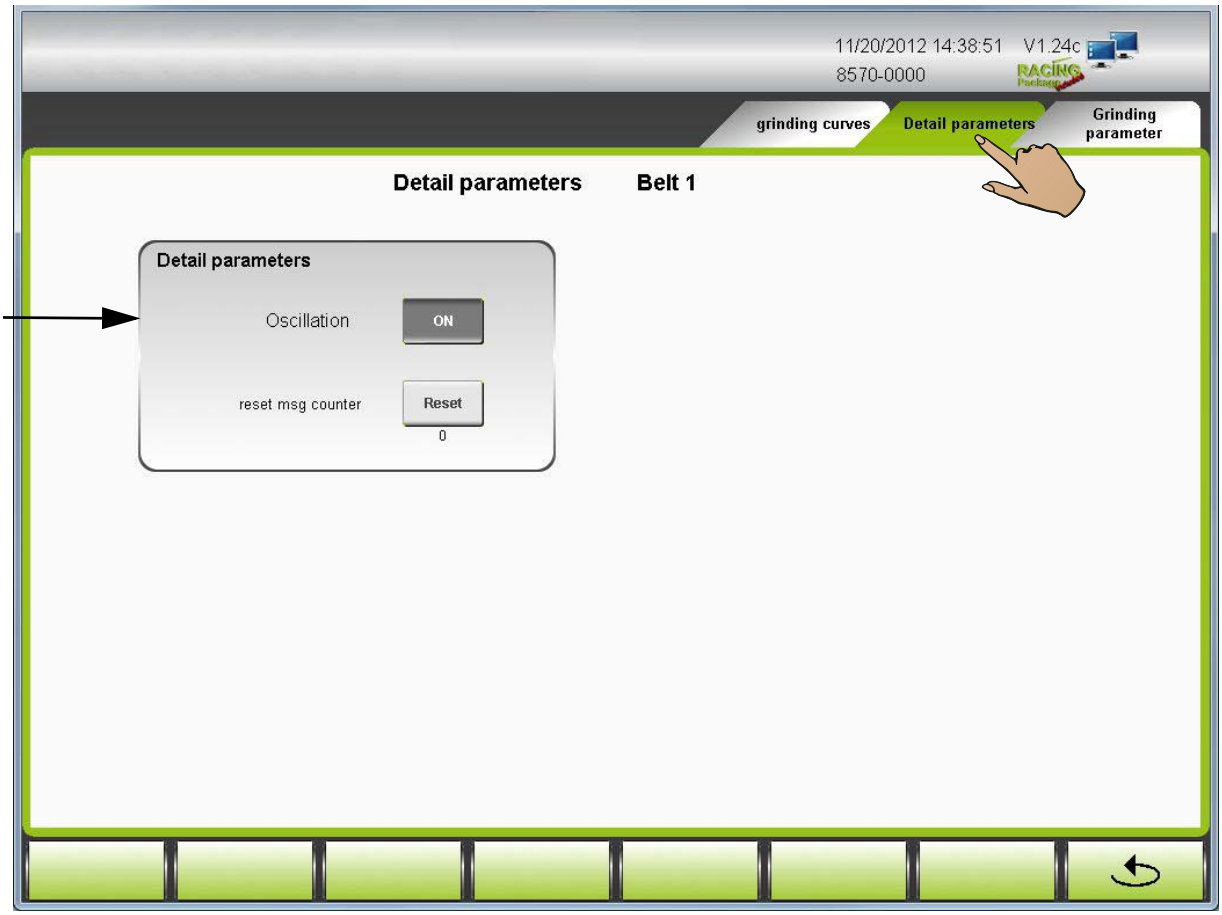
As the abrasive belt wears continuously, the reduction in the grinding performance can be compensated for using the grinding force correction.

- Adjust the slide to make a correction of up to 150 Newton; this is then used for all programs.

This grinding correction is not saved on a programme-to-programme basis. Use the "Dress belt" function to automatically reset the grinding force correction to "0".

10.7.3 Detailed parameters for Belt module

Change to the "Detailed parameters" window by pressing the tab.



Oscillation [1]

- Belt oscillation selection: ON/OFF.

Reset message counter of polishing disc [2]

- After replacing the belt, the message counter should be reset by pressing the "Reset" button.

If the message counter reaches a preset number, a text message will appear on the screen, prompting you to check or replace the abrasive belt. If this message is acknowledged by pressing the "Reset msg counter" button, the number is reset to "0".

Set-in point [11]

This function is used to change the set-in points for the grinding stone, e.g.: for rental skis.

For example, if +20 is selected in the "Set-in point" input field, the belt unit starts 20 mm in front of the specified start of grinding and stops 20 mm behind the specified end of grinding.

The input range is from +50 to -100 mm for both parameters. In the case of negative numbers, first enter the number and then the minus sign.

10.8 Stone module - Changing parameters

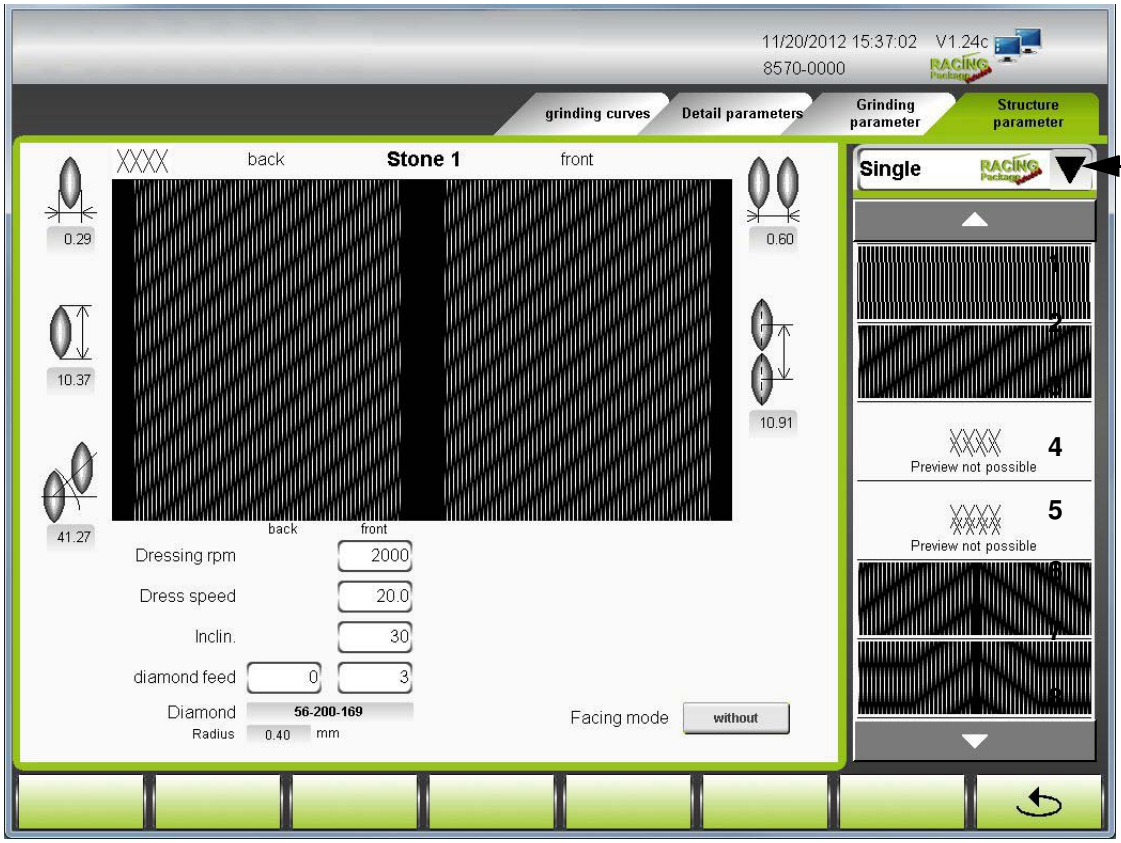
The "Program overview" window is opened by pressing one of the modules on the main screen.

10.8.1 Parameter overview

The most important parameters of the modules are displayed in this window. You can change to the relevant parameter entry by pressing a field.

- Press in the "Stone" field to open the "Structure parameters" window.

10.8.2 Structure parameters



- The corresponding structure is transferred to the program by selecting a structure [1-8].

The display of the following parameters depends on the selected structure.

If the structure is changed, a query asking whether the dressing procedure is to be started immediately appears when the window is closed. If you press the "NO" button, the structure icon on the main screen flashes until the dressing procedure has been carried out. The selection is reset by pressing the "Cancel" button.

Structure types

1)	Structure linear	5)	Structure arrow (racing option)
2)	Structure straight cross hatched	6)	Structure linear arrow (racing option)
3)	Structure cross hatched left	7)	Structure wave (racing option)
4)	Structure cross hatched right	8)	Structure chevron (racing option)

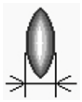
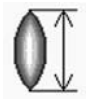
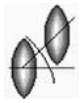
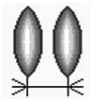
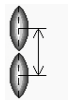
- Pressing the field [9] toggles between Single and Twin structure.

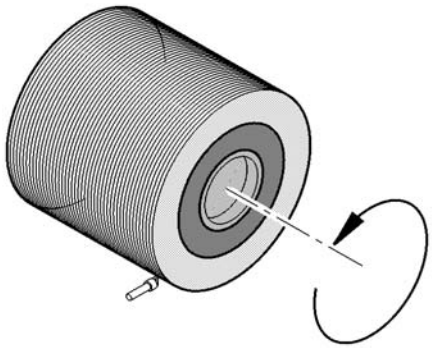
The selection of Twin structure is predominantly used for center-relevant structures (arrow, wave or chevron); the structure parameters dressing rpm, dressing speed and structure inclination can be entered separately for the front and rear part of the grinding stone.

Structure preview

The structure preview provides a graphic view showing how the selected structure is transferred to the ski.

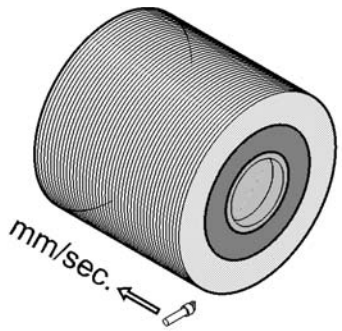
In addition, the following structure information is displayed:

-  Groove width in mm
-  Groove length in mm
-  Structure inclination
-  Transverse groove spacing in mm
-  Longitudinal groove spacing in mm



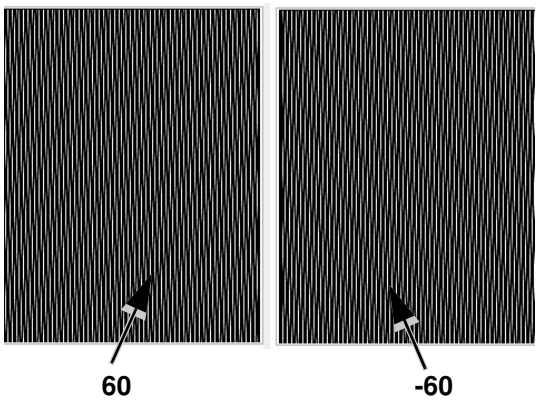
Dressing speed

- The speed of the stone for the dressing process will be set in the "Dressing rpm" input field.
  The input range is between 600 and 2000 rpm.



Dressing speed

- The speed of the dressing diamond will be set in the "Dressing speed" input field.
  The input range is between 3 and 35 mm/sec.



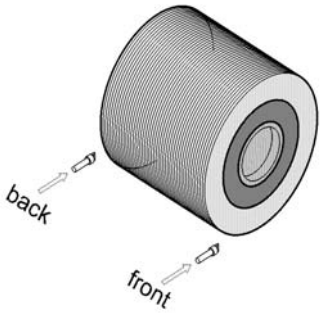
Structure inclination

- The inclination number for the crossed structure is changed in this input field.

e.g.:

- Positive values: Structure progresses to right
- Negative values: Structure progresses to left
- Value 0: straight, cross hatched structure

This value has no degree information!
The actual inclination is also influenced by the dressing rpm, dressing speed, grinding speed and feed speed.

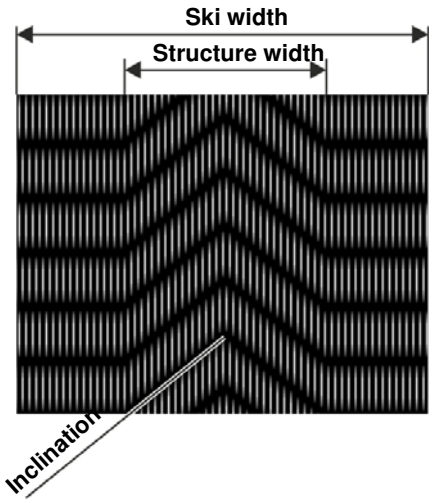


Diamond feed back

- The structure depth is entered in the "Diamond feed back" input field in steps of 1 to 2 feeds.
  1 feed corresponds to 0.01 mm.

Diamond feed front (standard feed)

- The structure depth is entered in the "Diamond feed front" input field in steps of 1 to 6 feeds.
  1 feed corresponds to 0.01 mm.



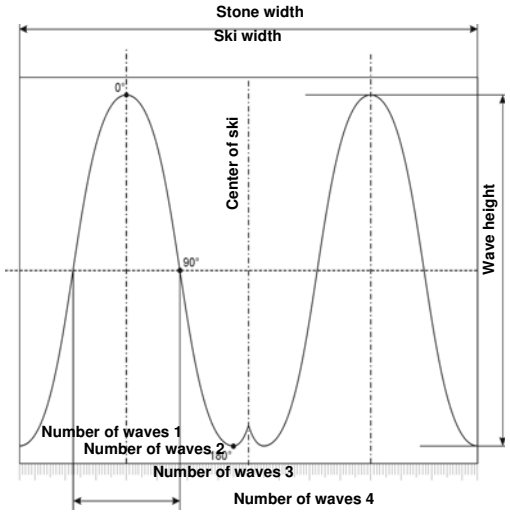
Structure width

This parameter is only active for the selection "Structure linear arrow" and Chevron.

The structure width parameter refers to the width of the "V" or arrow - see graphic.

The structure changes into a "V" or an arrow structure depending on the inclination (positive or negative value).

The following parameters are only active if wave structure is selected!



Wave height

- The wave height can be changed in this input field. Upon entering a negative value e.g.: -100, the wave will be mirrored around the horizontal axis.

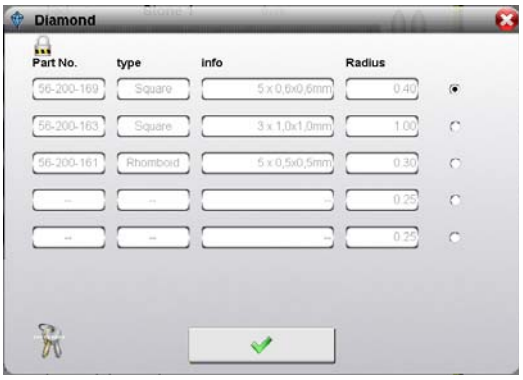
The wave height at the ski will also be influenced by the feed speed and the grinding speed.

Number of waves

- This input field is used to change the number of waves across the stone width.

Wave offset

- The wave form is moved off-center in this input field.



Diamond selection/Radius

- The diamond type that is used must be selected in order to attain agreement between the structure preview and the actual grinding pattern on the ski.
- Select the diamond from the list and confirm the selection with the "✓" button.

Facing mode

The following settings can be selected in this selection field.

1) Without

The selected structure is applied without facing onto the grinding stone.

2) Always

Before applying the selected structure, the grinding stone is faced with a very fine linear structure.

3) As per preselection

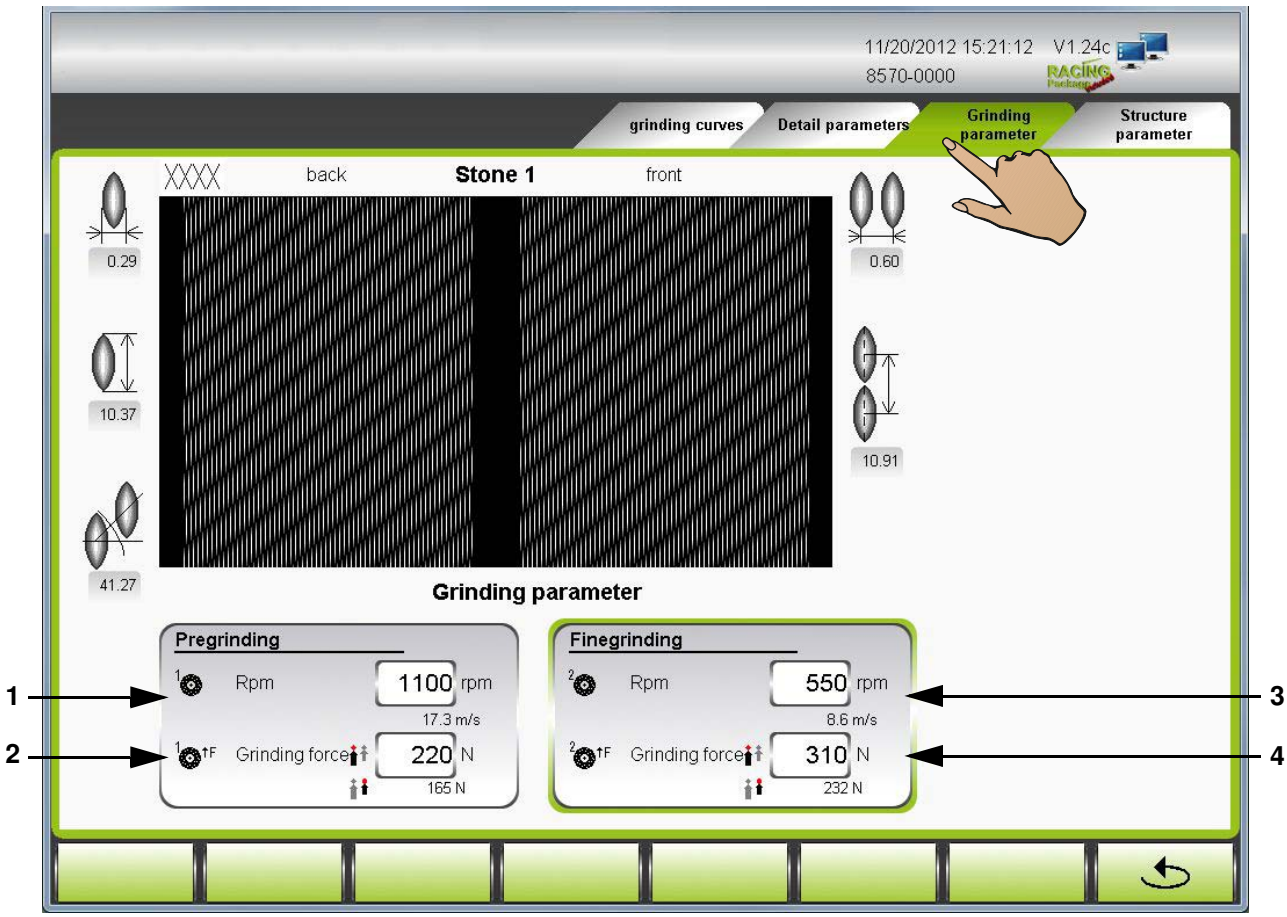
The grinding stone is only faced if the diamond feed is > 1 and/or the dressing speed is > 17 mm/sec. for the last structure.

Adding diamond

- Press key symbol.
  The password screen is shown.
- Enter the valid password on the number block.
- A new diamond can now be created in the input fields.
- The write-protection is reactivated after quitting the window.

10.8.3 Stone module grinding parameters

Change to the "Grinding parameters" window by pressing the tab.



Selecting the "Pre-grinding" or "Fine grinding" input field displays the relevant structure preview, as transferred to the ski (active input field has green border).

Pre-grinding speed [1]

- Select the "Pre-grinding speed" input field. Change the pre-grinding rpm using the number pad and confirm with "ENTER". The field below displays the cutting speed in meters per second.

Pre-grinding force [2]

- This input field is used to enter the basic force for stone pre-grinding in Newton. The field below displays the value of the reduced grinding force.

Fine grinding speed [3]

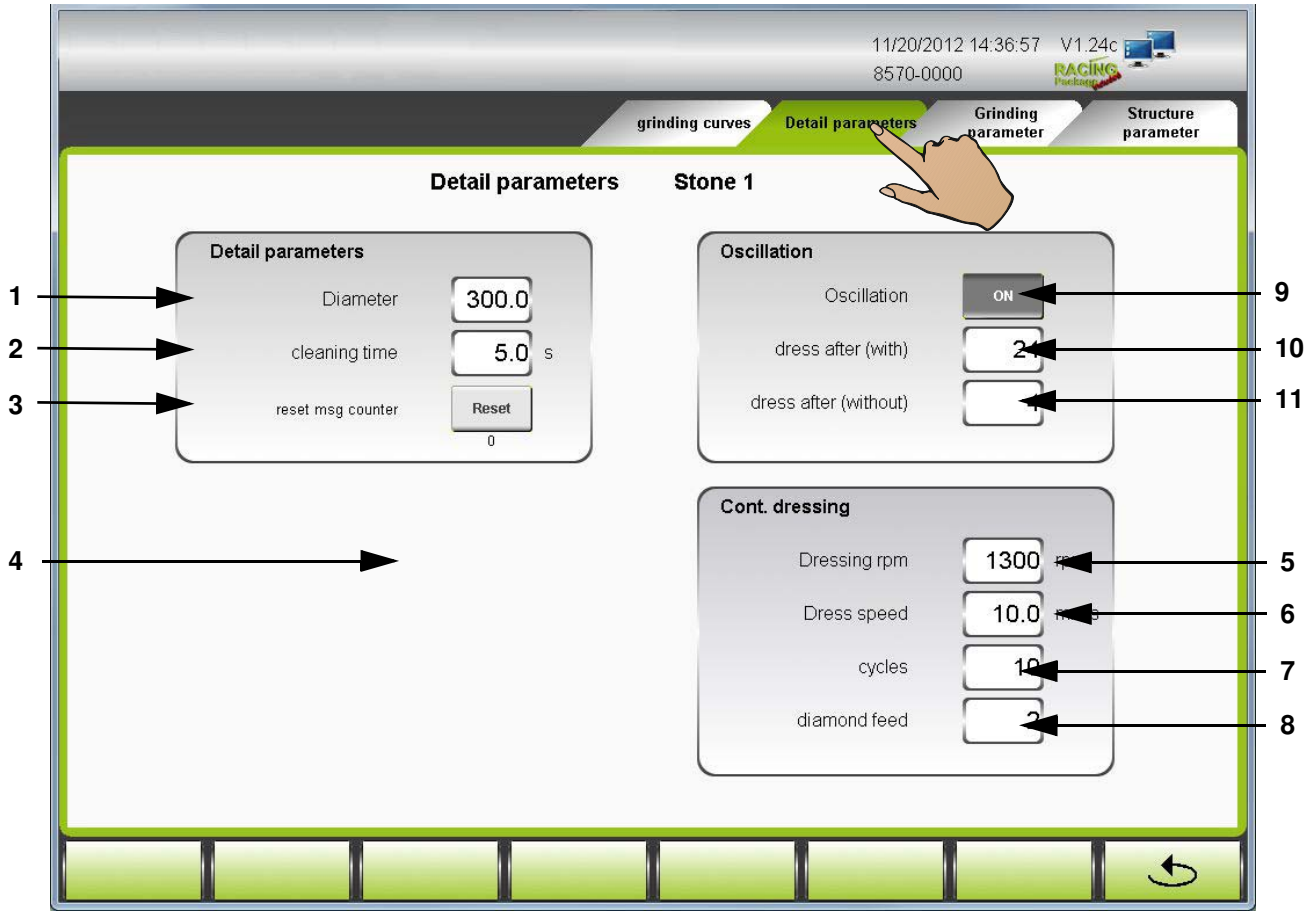
- Press the "Fine grinding" input field. Change the fine grinding speed using the number pad and confirm with "ENTER". The field below displays the cutting speed in meters per second.

Fine grinding force [4]

- This input field is used to enter the basic force for stone fine grinding in Newton. The field below displays the value of the reduced grinding force.

10.8.4 Detailed parameters for Stone module

Change to the "Detailed parameters" window by pressing the tab.



Stone diameter [1]

- This field shows the current stone diameter. If this value (in mm) does not correspond to the stone diameter, this must be corrected.

Due to the dressing cycles of the grinding stone, the grinding stone diameter will decrease which in turn leads to a change in the swivel-in time or the grinding set-in point of the grinding stone at the ski. The adjustment generally occurs automatically. However the note "Observe grinding stone diameter!" is occasionally shown to check the actual grinding stone diameter and adjust this, if necessary.

The grinding stone diameter must be corrected manually after the following work:

1) Changing the grinding stone
2) Changing or regrinding the diamond
3) For all work on the dressing unit of the stone carriage

Cleaning time [2]

- The stone cleaning time (0 - 9 sec.) will be entered into this input field after the dressing process (the stone cleaner will be deactivated if "0" is entered).

Reset message counter GRINDING STONE [3]

- After replacing the grinding stone, the message counter should be reset by pressing the "Reset" button.

If the message counter reaches a preset number of dressing cycles, a text message will appear on the screen, prompting you to check or replace the grinding stone or diamond. If this message is acknowledged by pressing the message or the "Reset msg counter" [4] button, the number is reset to "0".

Set-in point grinding stone [4]

- This function is used to change the set-in points for the grinding stone, e.g.: for rental skis.
- For example, if +20 mm is selected in the "Set-in point" input field, the grinding stone starts 20 mm in front of the specified start of grinding and stops 20 mm behind the specified end of grinding.

The input range is +50 to -100 cm. In the case of negative numbers, first enter the number and then the minus sign.

Continuous dressing rpm [5]

- The stone speed (rpm) during continuous dressing is specified in this input field.

Continuous dressing speed [6]

- The dressing speed during continuous dressing is specified in this input field.

Continuous dressing cycles [7]

- The number of dressing procedures during continuous dressing is specified in this input field.

Diamond feed [8]

- The structure depth is entered in the "Diamond feed" input field in steps of 1 to 6 feeds for continuous dressing.
  1 feed corresponds to 0.01 mm.

Notes regarding continuous dressing

During continuous dressing, ensure that the water cooling is sufficient. Maximum grinding stone speed of 1300 – 1800 rpm. Maximum dressing speed of approx. 18 – 23 mm/sec. If not observed, there is also a risk that the diamond will anneal out.

Oscillation [9]

- This input field can be used to select between oscillating and non-oscillating grinding stone. Application e.g.: for straight structure.

Dressing cycles with stone oscillation [10]

- Input that determines the number of tuning processes after which an oscillating stone will be dressed again.

Dressing cycles without stone oscillation [11]

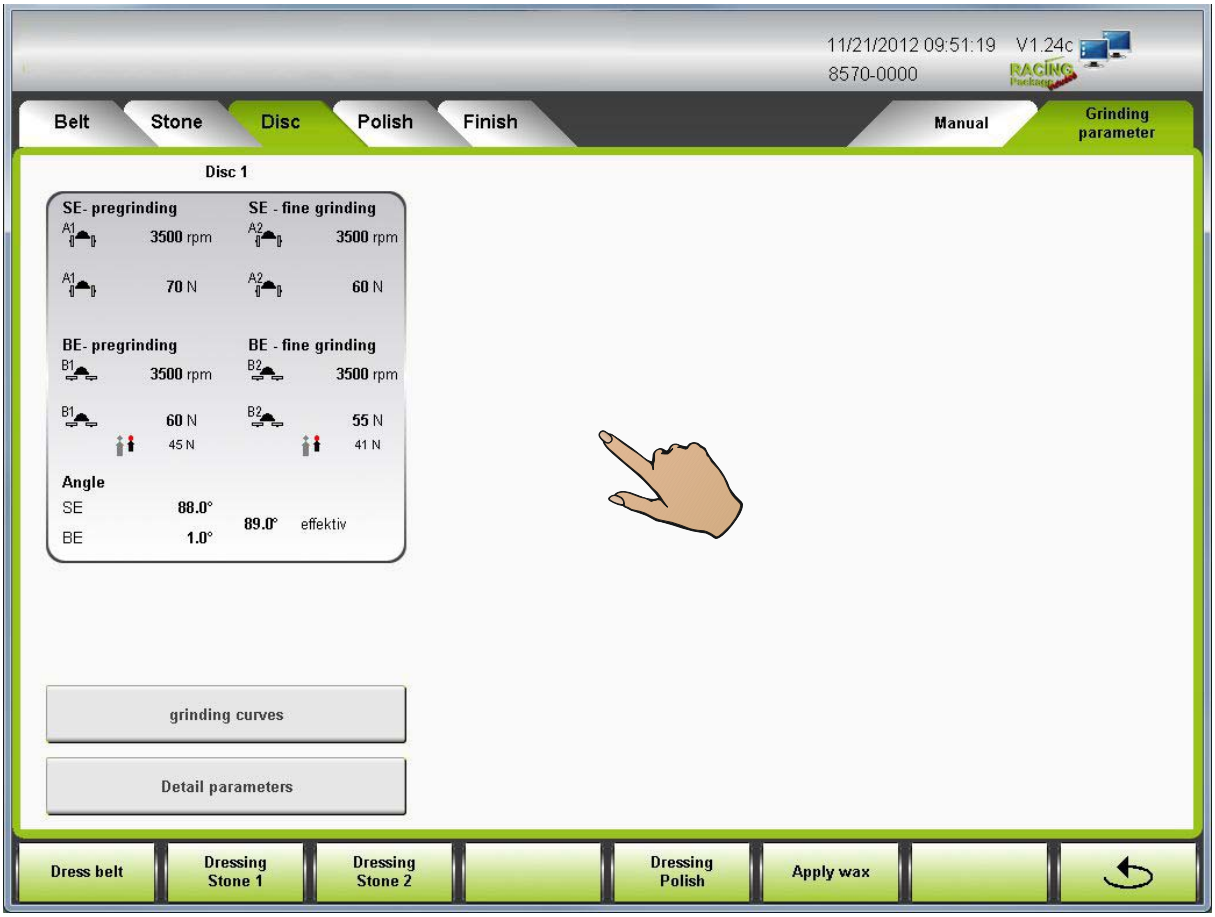
- Input that determines the number of tuning processes after which a non-oscillating stone will be dressed again.
  e.g.: for center related structures such as arrow, arrow with entry, wave or by simultaneous base and edge tuning.

10.9 Disc module - Changing parameters

The "Program overview" window is opened by pressing one of the modules on the main screen.

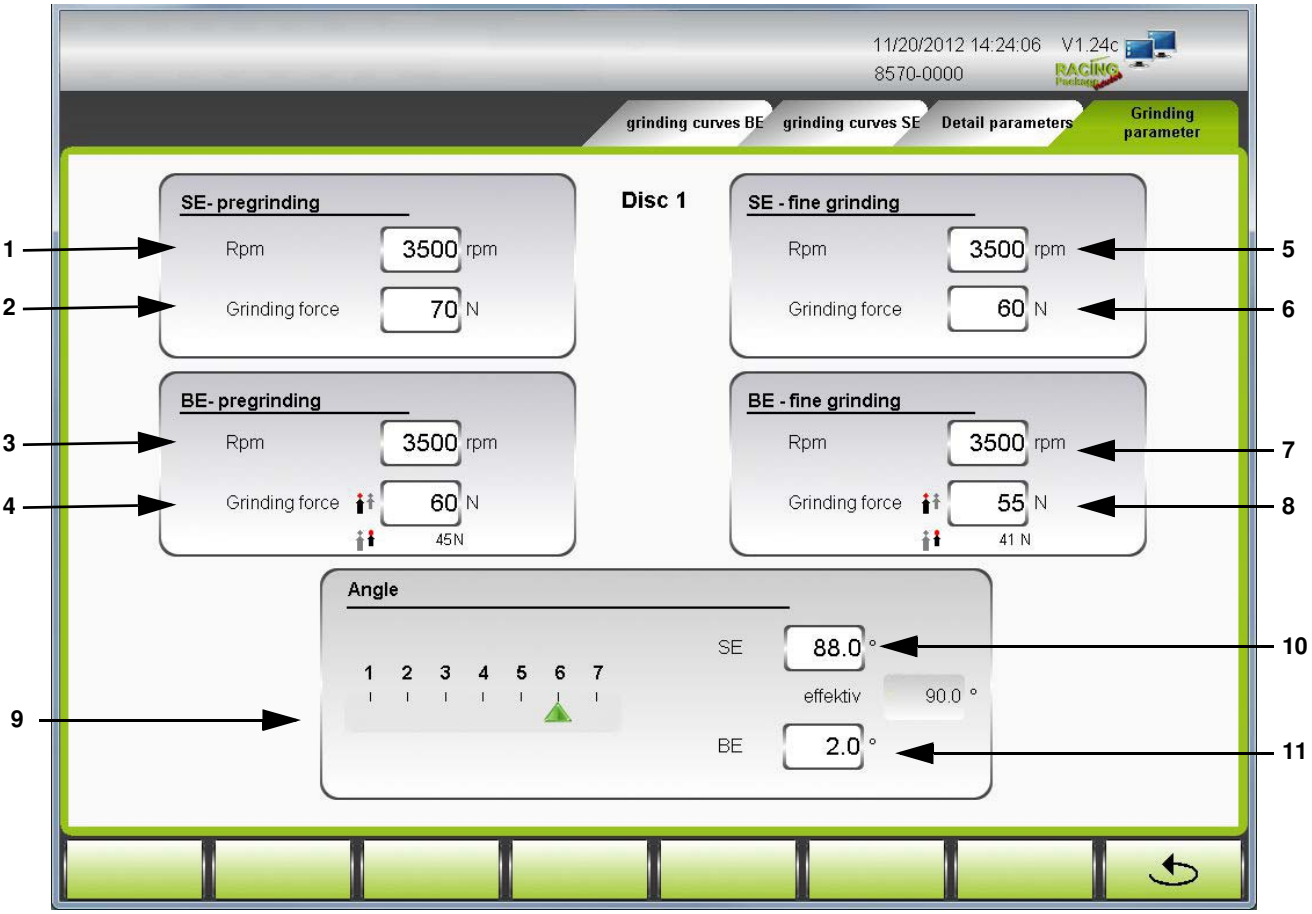
10.9.1 Parameter overview

The most important parameters of all modules are displayed in this window. You can change to the relevant parameter input by pressing a field.



- Press in the "Disc" field to open the "Grinding parameters" window.

10.9.2 Disc module grinding parameters



SE pre-grinding speed [1]

- This input field is used to enter the pre-grinding speed for side edge grinding.

SE pre-grinding force [2]

- This input field is used to enter the basic force for side edge pre-grinding in Newton.

BE pre-grinding speed [3]

- This input field is used to enter the pre-grinding speed for base edge grinding.

BE pre-grinding force [4]

- This input field is used to enter the basic force for base edge pre-grinding in Newton.

SE fine-grinding speed [5]

- This input field is used to enter the fine-grinding speed for side edge grinding.

SE fine-grinding force [6]

- This input field is used to enter the basic force for side edge fine grinding in Newton.

BE fine-grinding speed [7]

- This input field is used to enter the fine-grinding speed for base edge grinding.

BE fine-grinding force [8]

- This input field is used to enter the basic force for base edge fine grinding in Newton.

10.9.2.1 Manual angle setting

- Seven different angle settings can be selected by adjusting the slide [9]. The grinding angle for the base edge, side edge and effective edge angle will be displayed below.

Entering the grinding angle only serves for information and is not adopted in the edge grinding unit. The grinding angle must be set manually (see chapt. 7.1 Manual grinding angle setting - Disc Module, page 30)**.**

10.9.2.2 Automatic angle setting

- Seven different angle settings can be selected by adjusting the slide [9].
  The grinding angle for the base edge, side edge and effective edge angle will be displayed below.

SE side edge angle [10]

- The side edge angle can be modified between 85.0° and 89.5° in the "SE" input field.

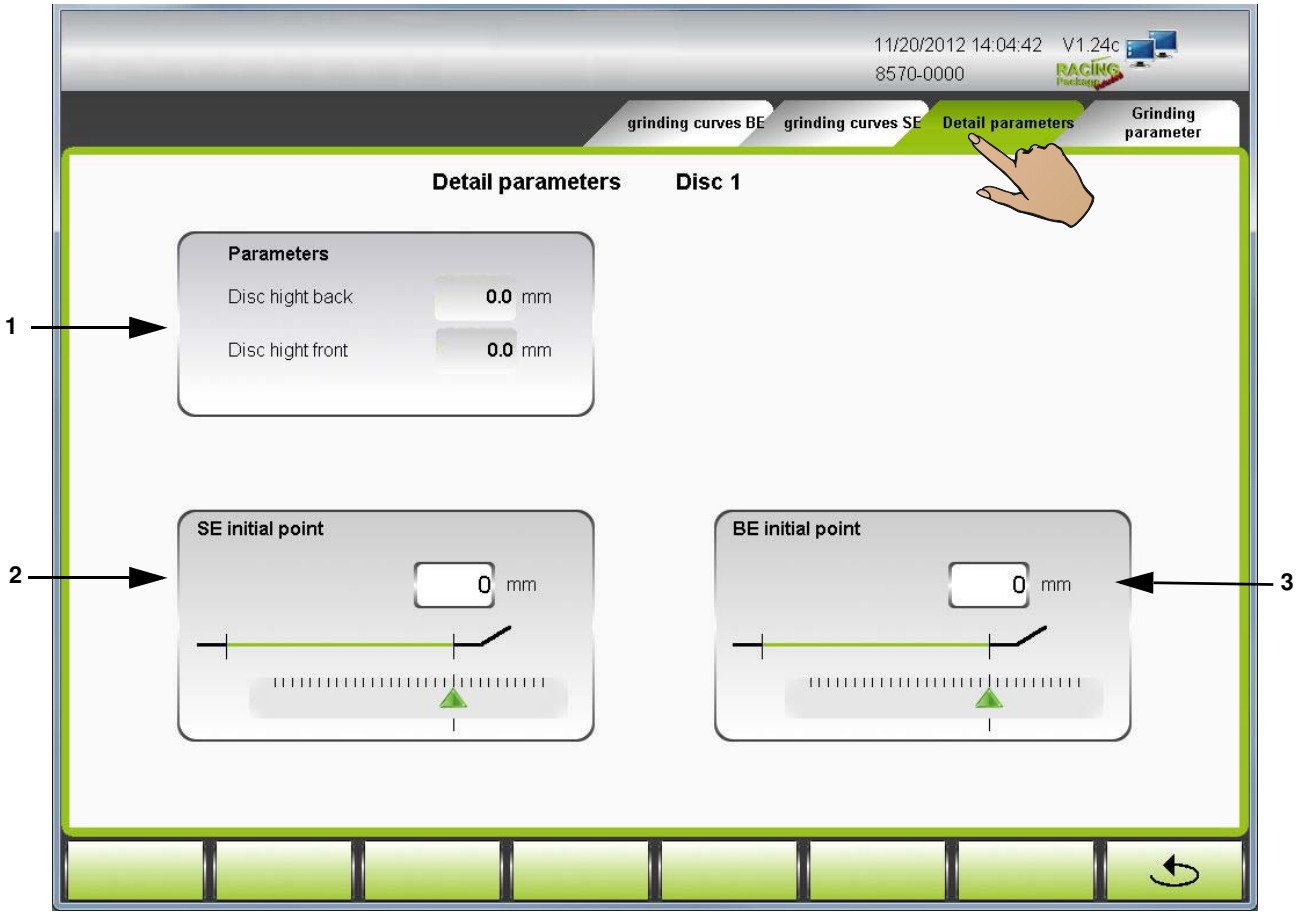
BE base edge angle [11]

- The base edge angle can be modified between 0.5° and 5.0° in the "BE" input field.

The modified angles are reset to the standard angle by adjusting the slide.

10.9.3 Detailed parameters for Disc module

Change to the "Detailed parameters" window by pressing the tab



Ceramic Discs usage display [1]

- The current width of the rear and front Ceramic Discs are displayed in these two output fields. A message is displayed on the screen when discs are nearly used up.

Set-in point SE [2]

- For example, if +20 is selected in the "Set-in point SE" input field, the Ceramic Discs for the side edge tuning start 20 mm in front of the specified start of grinding and stop 20 mm behind the specified end of grinding.

Set-in point BE [3]

- If -50 is selected in the "Set-in point BE" input field, the Ceramic Discs for the base edge tuning start 50 mm behind the specified start of grinding and stop 50 mm in front of the specified end of grinding.

The input range is from +50 to -100 mm for both parameters. In the case of negative numbers, first enter the number and then the minus sign.
The set-in points can also be changed using the slide.

10.10 Polishing module - Changing parameters

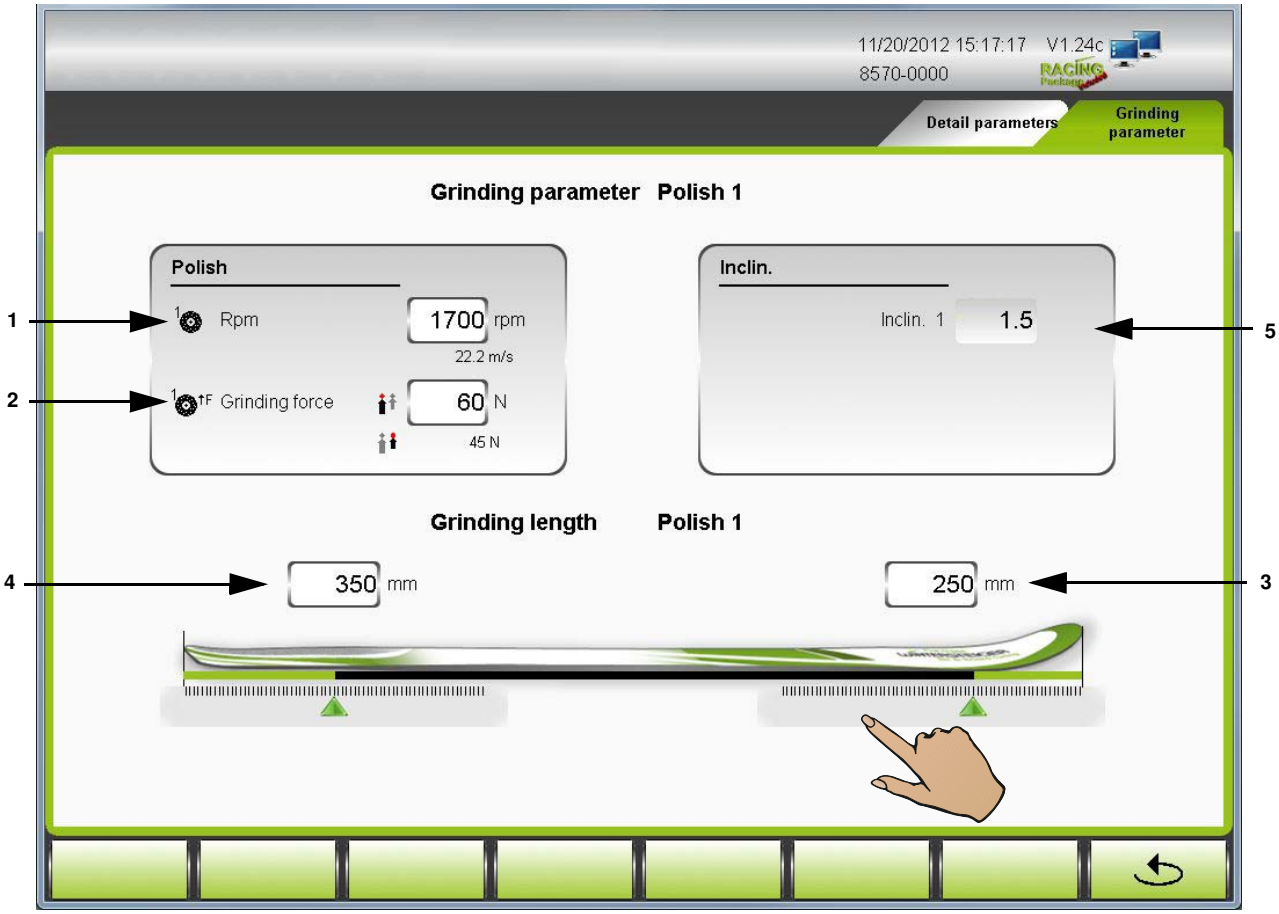
The "Program overview" window is opened by pressing one of the modules on the main screen.

10.10.1 Parameter overview

The most important parameters of all modules are displayed in this window. You can change to the relevant parameter input by pressing a field.

- Press in the "Polish" field to open the "Grinding parameters" window.

10.10.2 Polishing module grinding parameters



Polishing speed [1]

- The polishing speed of the polishing discs is entered in this input field.
  The field below displays the cutting speed in meters per second.

Polishing force [2]

- This input field is used to enter the basic force for polishing in Newton.
  The field below displays the value of the reduced polishing force.

Swivel out point ski tip [3]

- If, for example, 500 is selected in the "Swivel out point" input field, the polishing disc will swivel out 500 mm behind the ski tip.

Swivel in point ski tail [4]

- If, for example, 500 is selected in the "Swivel in point" input field, the polishing disc will swivel in 500 mm in front of the ski tail.

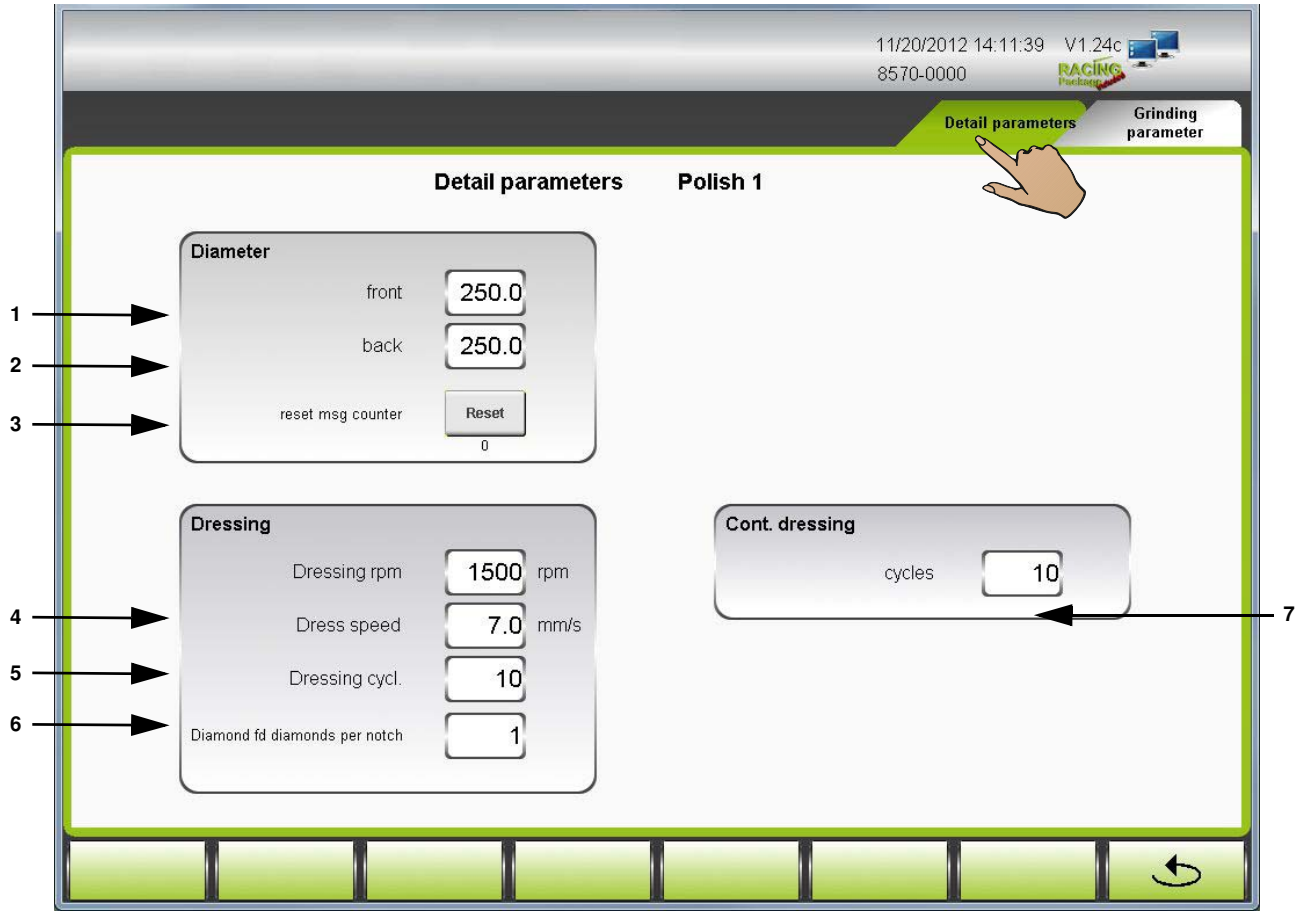
The swivel out or in points can also be changed using the slide.

Inclination angle [5] (optional)

With this option, you can select between two preset inclination angles, in relation to the program.

10.10.3 Detailed parameters for Polishing module

Change to the "Detailed parameters" window by pressing the tab



Diameter of the front polishing disc [1]

- see chapt. 10.10.3.1 Checking the polishing disc diameter - adjustment, page 65

Diameter of the rear polishing disc [2]

- see chapt. 10.10.3.1 Checking the polishing disc diameter - adjustment, page 65

Reset message counter of polishing disc [3]

- After replacing the polishing disc, the message counter should be reset by pressing the "Reset" button.

If the message counter reaches a preset number, a text message will appear on the screen, prompting you to check or replace the polishing disc. If this message is acknowledged by pressing the message or the "Reset msg counter" [3] button, the number is reset to "0".

Polishing speed [4]

- The dressing rpm of the polishing discs is entered in this input field.

Dressing speed [5]

- The dressing speed of the diamond polisher of the polishing disc is specified in this input field.

Dressing cycles [6]

- Input that determines the number of tuning processes after which a polishing disc will be dressed again.

At low dressing cycles, the steel edges of the ski can notch the polishing disc.

Continuous dressing cycles [7]

- The number of dressing procedures during continuous dressing is specified in this input field.

10.10.3.1 Checking the polishing disc diameter - adjustment

Due to the dressing cycles of the polishing discs, the diameter of the polishing discs will decrease, which in turn leads to a change in the swivel-in time or the polishing set-in point of the polishing disc at the ski. The adjustment generally occurs automatically. However, the window "Observe polishing disc diameter!" is occasionally shown to check the actual polishing disc diameter an adjust this, if necessary.

The polishing disc diameter must be corrected manually after the following work:

1) Replacing the polishing discs
2) Replacing the diamond
3) For all work on the dressing unit of the polishing module

10.11 Finish Module - Changing parameters

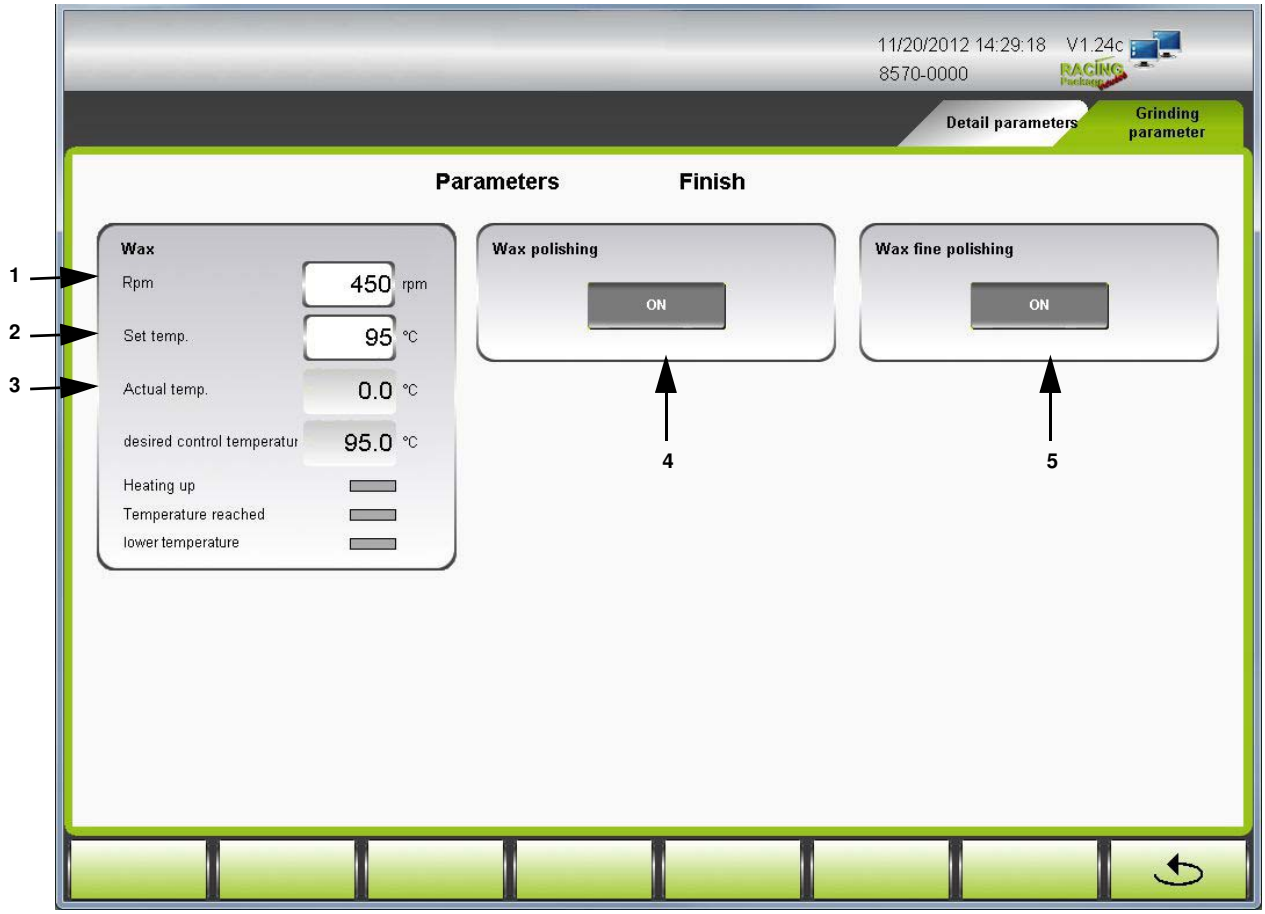
The "Program overview" window is opened by pressing one of the modules on the main screen.

10.11.1 Parameter overview

The most important parameters of all modules are displayed in this window. You can change to the relevant parameter input by pressing a field.

- Press in the "Finish" field to open the "Finish parameters" window.

10.11.2 Finish Module parameters



Waxing wheel speed [1]

- The waxing wheel speed is entered in this input field.

Waxing wheel setpoint temperature [2]

- The temperature of the waxing wheel can be set between 0° and 100° C in this input field.
- The default value is e.g.: 60°.

Waxing wheel actual temperature [3]

- The actual temperature is displayed in this input field.

Wax pre-polishing [4]

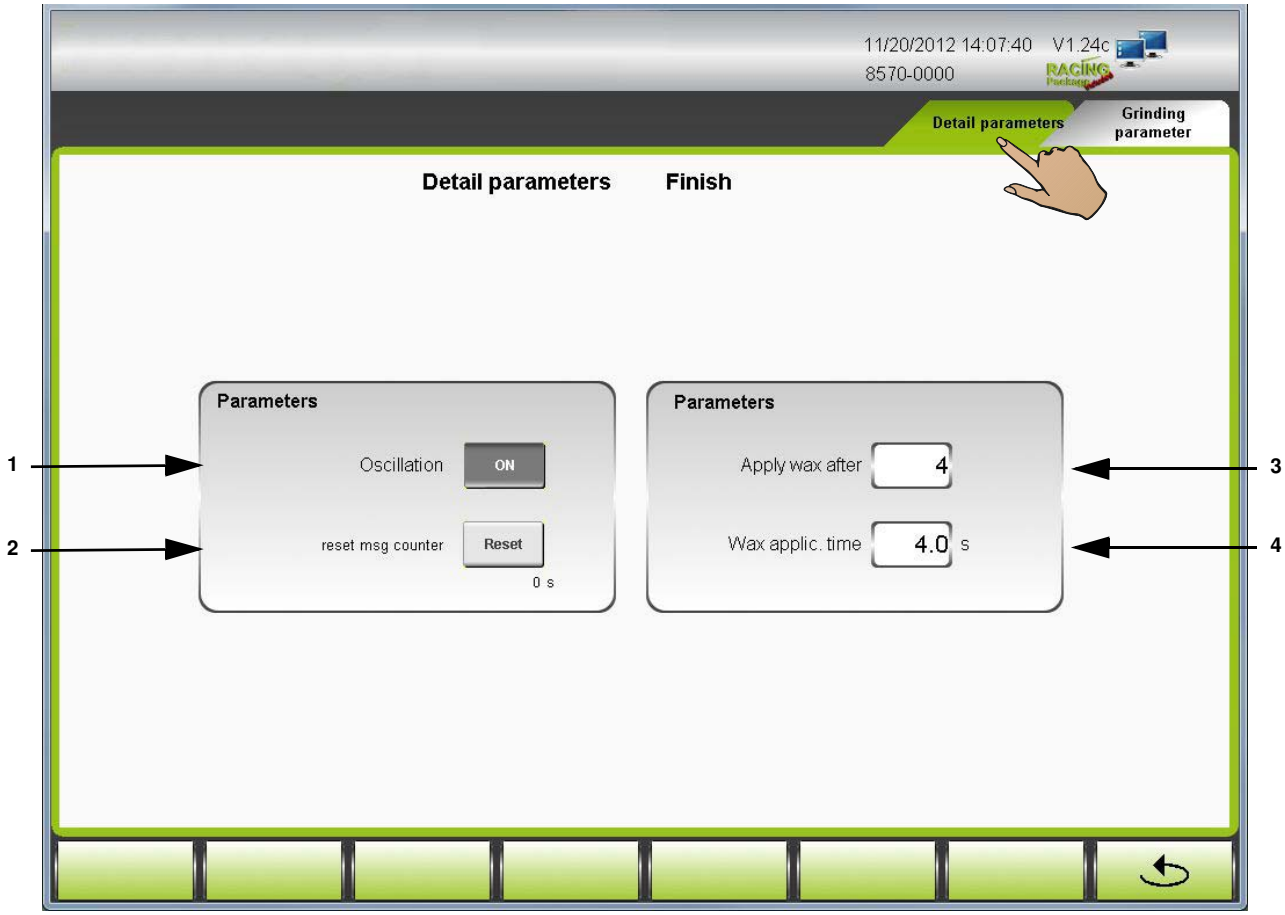
- Selection pre-polish: ON/OFF.

Wax fine polishing [5]

- Selection fine polish: ON/OFF.

10.11.3 Detailed parameters for Finish Module

Change to the "Detailed parameters" window by pressing the tab.



Oscillation [1]

- Selection oscillation waxing, pre-polishing and fine-polishing wheel: ON/OFF.

Reset message counter of wax block [2]

- After replacing the wax block, the message counter should be reset by pressing the "Reset" button.

If the message counter reaches a preset number, a text message will appear on the screen, prompting you to check or replace the wax block. If this message is acknowledged by pressing the message or the "Reset msg counter" button, the number is reset to "0".

Apply wax after [3]

- Number of skis/snowboards after which the wax block is pressed onto the waxing wheel.

Wax application duration [4]

- This input field is used to enter the time (in seconds) that the wax block is pressed onto the waxing wheel.

10.12 Manual functions

- The "Program overview" window is opened by pressing one of the modules on the main screen.

- The "Manual functions" window is opened by pressing the "Manual" tab in the "Parameter overview" window.

Tests and maintenance functions are carried out in the "Manual functions" window.

10.12.1 Changing position

After pressing the "Changing pos." button, all units will position themselves in the changing position and the machine will switch to emergency stop.

10.12.2 Service position

After pressing the "Service position" button, all units will position themselves in the service position (greasing position).

10.12.3 Manual angle setting position

This button is only active with the option "Manual grinding angle setting - Disc module".

After pressing the "Man. angle setting position" button, all disc units move into a position to make the manual grinding adjustment easier.

10.12.4 Manual functions of Belt module

1/2 rpm

- Pressing the button switches the belt motor on or off at a speed of 750 rpm.

Max. speed

- Pressing the button switches the belt motor on or off at a speed of 1500 rpm.

Dress belt

To optimally use a new abrasive belt, it must be softened (dressed) prior to use to prevent damage of the ski base.

Pressing the "Dress belt“ button will cause the abrasive belt to be softened for the preset time. After pressing the button, the grinding force correction is set to "0".

10.12.5 Manual functions of Stone module

1/2 rpm

- Pressing the button switches the stone motor on or off at a speed of 1000 rpm.

Max. speed

- Pressing the button switches the stone motor on or off at a speed of 2000 rpm.
  e.g.: Test run after a grinding stone change.

Dry-clean

- The grinding stone should be dry-cleaned after it has not been used for longer periods or after cleaning the machine. The grinding stone is dry-cleaned with the preset parameters by pressing the "Dry-clean" button.
- e.g.: If the stationary grinding stone is sprayed over with the cleaning hose when the machine is cleaned, the grinding stone should be dry-cleaned by pressing this button (risk of unbalance).

Continuous dressing

- The grinding stone is dressed with the parameters indicated in the "Detail parameters, Stone module" window by pressing the "Cont. dressing" button.
  The number of dressing cycles can also be changed.

Facing

- The grinding stone will be faced with a very fine cross structure if the "Facing" button is pressed. This has the advantage that the same starting basis is present for the structure that will be applied afterwards.

Clean stone

- The stone will be cleaned by the stone cleaner as long as the "Clean stone" button is pressed.

Changing position

- By pressing the "Changing pos." button, all units move into the position furthest front to guarantee an optimum change position.

Stone change - see chapt. 13.3.1 Stone change, page 101

Diamond change - see chapt. 13.3.2 Diamond change, page 102

10.12.6 Manual functions of Disc module

1/2 rpm

- Pressing the button switches the two disc motors on or off at a speed of 2250 rpm.

Max. speed

- Pressing the button switches the two disc motors on or off at a speed of 4500 rpm.
  e.g.: Test run after a Ceramic Disc change.

Dry-clean

- The Ceramic Discs should be dry-cleaned if they have not been used for longer periods or after cleaning the machine.
  The Ceramic Discs are dry-cleaned with the preset parameters by pressing the "Dry-clean" button.

10.12.7 Manual functions of Polishing module

1/2 rpm

- Pressing the button switches the two polishing motors on or off at a speed of 1000 rpm.

Max. speed

- Pressing the button switches the two disc motors on or off at a speed of 2000 rpm.
  e.g.: Test run after a polishing disc change.

Dry-clean

- The polishing discs should be dry-cleaned if they have not been used for longer periods or after cleaning the machine.
  The polishing discs are dry-cleaned with the preset parameters by pressing the "Dry-clean" button.

Continuous dressing

- The polishing discs are dressed with the parameters indicated in the "Detail parameters, Polishing module" window by pressing the "Cont. dressing" button.
  The number of dressing cycles can also be changed.

Inclination angle (optional)

You can change over to different inclination angles by keeping the button pressed down.

10.12.8 Manual functions of Finish module

Waxing wheel motor

- The motor of the waxing wheel is switched on as long as the "Test" button is pressed.

Pre-polishing wheel motor

- The motor of the pre-polishing wheel is switched on as long as the "Test" button is pressed.

Fine-polishing wheel motor

- The motor of the fine-polishing wheel is switched on as long as the "Test" button is pressed.

10.13 Variable grinding force setting

A partially increased grinding force is required in the tip and tail areas to achieve even grinding of the ski base coating for a highly waist-shaped ski. A reduced grinding force provides benefits for edge tuning in the tip and end areas.

Only the grinding force settings for stone grinding of skis will be described in the following because the approach for the grinding force settings is identical independent of the units.

- The "Program overview" window is opened by pressing one of the modules on the main screen.

- Pressing on the "Grinding force settings" field opens the "Grinding force curve" window.

10.13.1 Change grinding parameter

- The grinding force and the grinding force zones across the entire ski or board length can be defined in this window.

This selection is possible only in Professional mode.

- Selecting the ski type [1] activates the associated curve. The corresponding colored line is shown bold and the cross hairs [2] are positioned on this line.
  If the Board program is loaded, the curves are shown in the 4 different board widths.

6 specified points [4] are distributed across the entire ski length, which are displayed in percent [3] (0% = ski end, 100% = ski tip).

- Selecting a specified point [4] positions the cross hairs [2] at the relevant position.
- With the help of the cursor keys [6], the basic force [5] will be increased or decreased at the selected specified point.
- In addition, it is possible to shift the position of the selected specified point horizontally using the cursor keys [6].
- The entire curve can be moved upwards or downwards with the help of the buttons [7].

10.13.2 Copying - pasting curve

- By pressing the "Copy curve" button, the entire curve will be copied to paste it into another tuning process (e.g.: Disc SE grinding force curve).
- It is also possible, by pressing the "Paste X values" button, to only add the positions of the specified points [4] but not the grinding force to another tuning process.
- Pressing the "  " button takes you to the "Parameter overview" window.

11 General settings

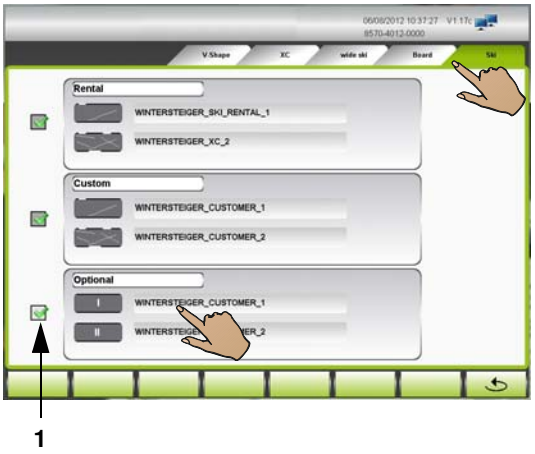
- Pressing the "Menu" button on the main screen opens the "Menu" window.

The menu values "Degree of damage" and "Manufacturer values" are only available in Professional mode.

11.1 Easy Keys setting

Press the "Easy Keys" button in the "Menu" window.

In this window, up to 6 grinding programs can be assigned for each equipment, which are then available for selection in Easy Mode on the main screen.



- Select desired equipment by pressing the tab.
- Press on the line to which you wish to assign a new grinding program.
  e.g. Optional 1

A list of the existing programs opens.

Depending on the equipment selection, the available programs are displayed.

- Select the required program.
- Confirm the selection with the "✓" button.
- The selection is canceled with the "✕" button.

You can change the name by pressing the name field of the Easy Keys.

The third damage category can be hidden by deactivating the check box [1] on the main screen.

11.2 Ski counter

- Press the "Ski counter" button in the "Menu" window.

Total production counter

The total number of tuned equipment since commissioning the machine is displayed in the top half of the window.

Daily production counter

The next 5 lines offer you the opportunity to manage 5 equipment counters by number and day.

e.g.: The number counter 1 and the days and hours will be reset to zero if the "RESET" button in Line "#1" is pressed.

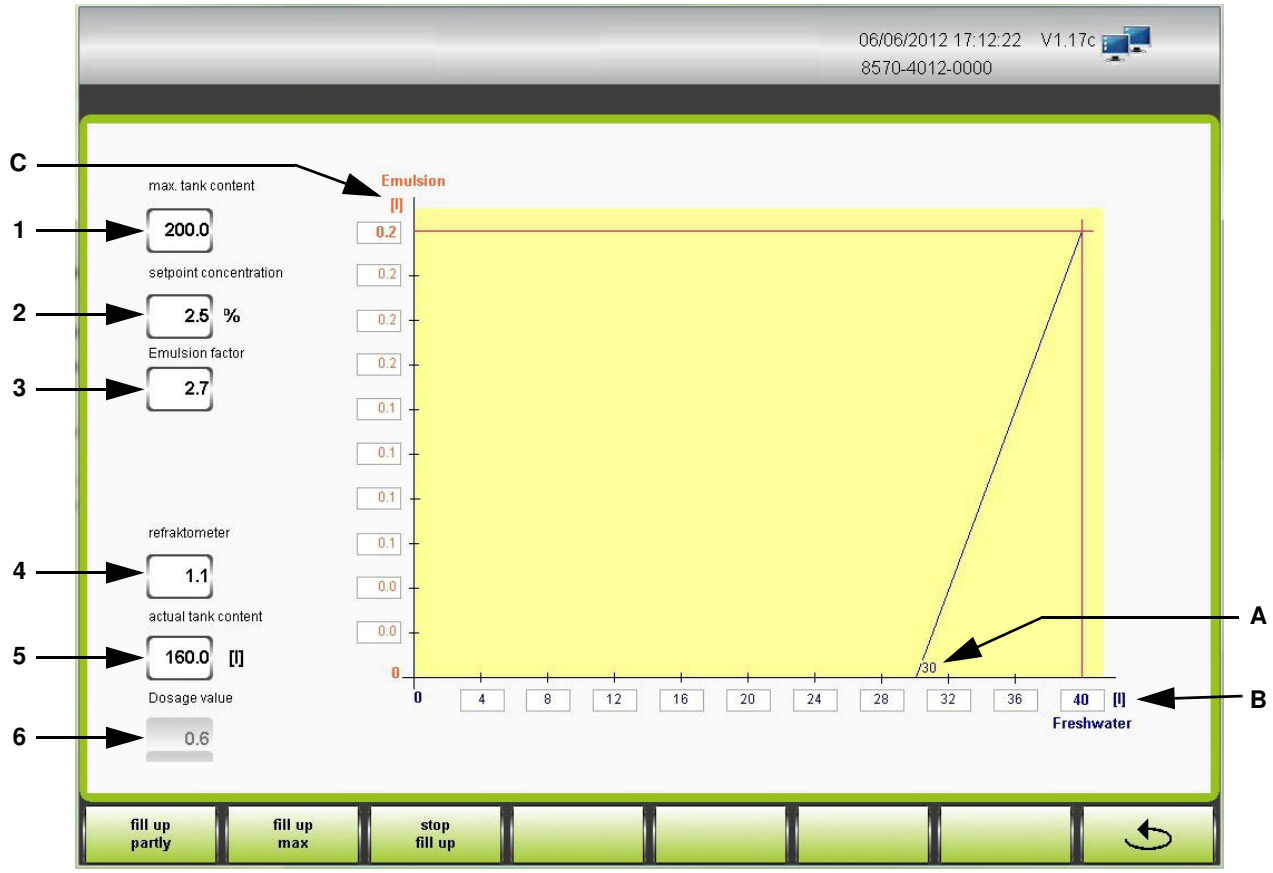
- Pressing the "  " button takes you back to the "MENU" window.

11.3 Emulsion calculator

Press the "Emulsion" button in the "Menu" window.

The emulsion calculator is used to calculate the correct mixing ratio for the emulsion.

Before the mixing ratio and the tank content can be measured, the machine must have been previously switched off for at least 15 minutes to allow the residual water to drain into the tank, so as to be able to obtain correct values using the emulsion calculator.



Max. tank content [1]

- The maximum filling amount of the water tank is specified in this input field.

Setpoint concentration [2]

- The emulsion/water mixing ratio is specified in this input field.
  The required mixing ratio can be seen on the corresponding emulsion container.

Emulsion factor [3]

- The emulsion factor for converting the actual mixing ratio using the value read on the refractometer is specified in this input field.

The required emulsion factor can be seen on the corresponding emulsion container or in the operating manual of the refractometer.

Sample calculation

The measured value of the coolant on the refractometer is 1.1 and the filling amount is approx. 160 liters.

- Enter the value 1.1 in the "Refractometer value" input field [4].
- Enter 170 liters in the "Actual tank content" input field [5].

The following data can be seen in the emulsion diagram according to the example:

A: The optimum emulsion/water mixing ratio is provided again if the tank is topped off with 30 litres of fresh water.

B: The water tank is full again if the tank is topped off with 40 litres of fresh water.

C: If the tank is topped off with 40 liters of fresh water, 0.2 liters of emulsion must be added.

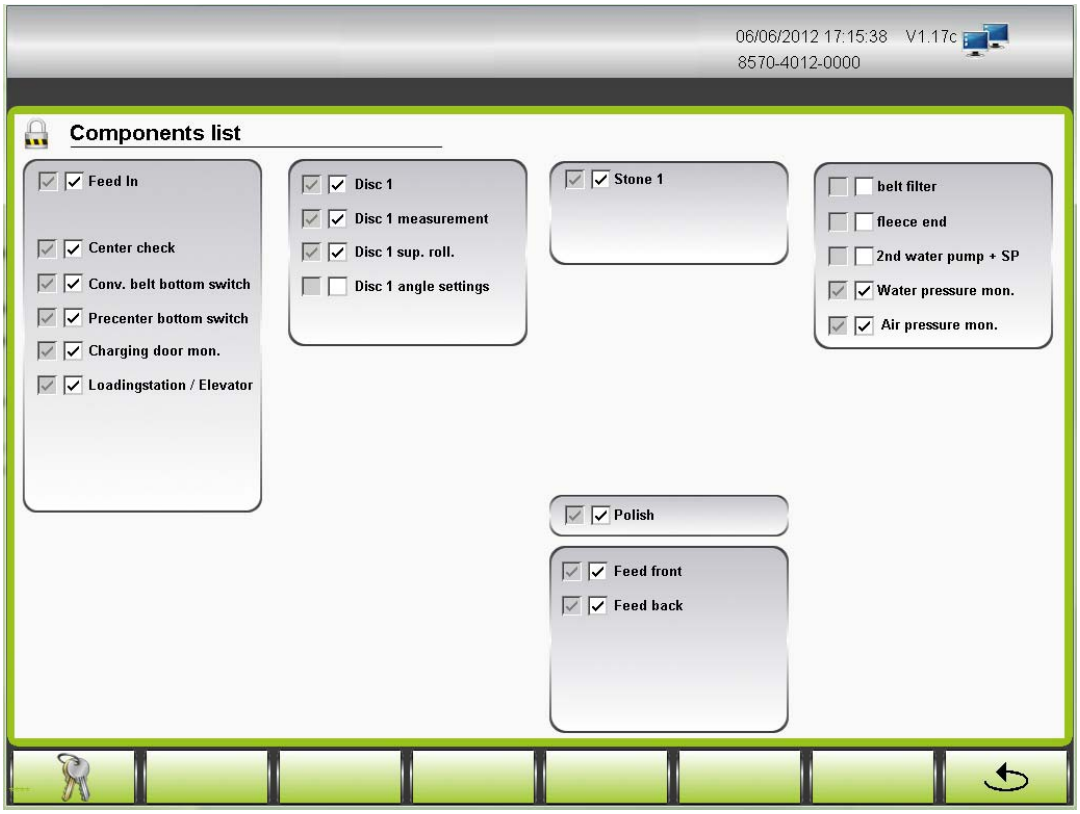
Dosage value [6]

If an emulsion mixing device with a dosing unit (order number 55-645-311) is available, the indicated dosage value 0.6 must be set for 40 liters.

11.4 Components list

Press the "Components list" button in the "Menu" window.

All components of the existing modules are marked with an [X] in this window. If a fault occurs in one of these components, this can be deactivated.



To prevent an unintended deactivation of the components, a password must first be entered.

Password entry for component list

- Press the "  " button.
- Enter the valid password on the number block.

The lock will be shown open after entering the password.

- This can only be deactivated by pressing the relevant component.

The deactivated component is reactivated the next time you switch on the machine using the main switch.

- Pressing the "  " button takes you back to the "MENU" window.

11.5 Alarms

- Press the "Alarm history" button in the "Menu" window or the error message bar at the top of the screen on the main screen.

Some fault messages lead to a direct machine shutdown.

Actual

The "Actual" window lists the last error messages currently pending.

After remedying the fault, this must be reset with the "Reset" button.

History

- Pressing the tab opens the "History" window.

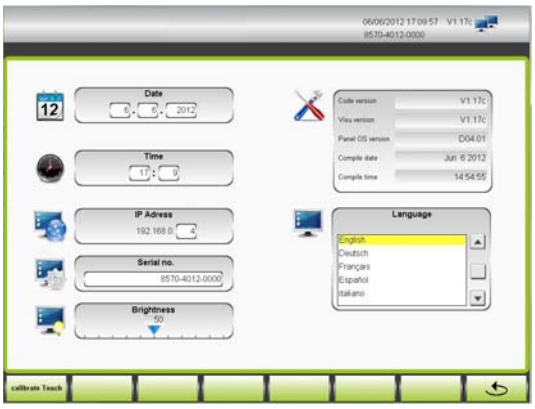
All the fault messages since the machine was commissioned are listed in this window.

The list can only be deleted by a WINTERSTEIGER service technician.

Summary

- Pressing the tab opens the "Summary" window.
- All error messages are listed by frequency or date when you press the "Refresh" button.
- All error messages are listed by frequency when you press the "Sort by count" button.
- All error messages are listed by date when you press the "Sort by date" button.
- Pressing the "  " button takes you back to the "MENU" window.

11.6 Screen, date and language setting



- Press the "Display settings" button in the "Menu" window.

Date

- Touch the field to be changed.
- Enter the desired number in the numbers block and confirm with "ENTER".

Language

- Touching the relevant language changes all the menu information to the language selected.

Brightness

- The brightness of the screen can be adjusted by sliding the controller.
- Pressing the "  " button takes you back to the "MENU" window.

11.7 Manufacturer's values

- Press the "Manufact. values" button in the "Menu" window.

The original WINTERSTEIGER programs for SKI, BOARD or EXTRA can be recompiled in this window.

This is necessary, e.g. for a module extension or software update!

Pressure curves

- All curves will be reset to the default manufacturer values of WINTERSTEIGER by pressing the "Grindcurves" button.
- Pressing the "  " button takes you back to the "MENU" window.

11.8 System

System settings can be made only by a WINTERSTEIGER service technician.

11.9 Setting parameters for belt module

Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Belt module				
Tuning processes	1-13	0-1		
Speed	200-1500 rpm	950 rpm		
Ski contact force	50-350 N	150-200 N		
Board contact force	50-900 N	300-500 N		
Set-in point	-100 to +50			
Oscillation	ON/OFF	ON		

11.10 Settings Parameters for Stone Module

	Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Stone Module					
Grinding stone pre-grinding	Stone tuning processes	1-13	2-6	< 2 only for structuring	> 4 for extreme damage
	Pre-grinding speed	150-2000 rpm	500-700 rpm	< 500 insufficient material removal	> 700 risk of base burns
	Contact pressure	50-700 N	260-320 N	< 260 N insufficient material removal	> 320 N danger due to notching the grinding stone
	Structure	Linear structure Crossed structure Angular crossed structure right Angular crossed structure left Arrow structure V-structure Wave structure	Linear structure Crossed structure Angular crossed structure right Angular crossed structure left	Crossed and angular crossed structures are characterized by good turning properties - optimum for average skiers	The longitudinal structure has good guide properties at high speeds - only for trained skiers as it influences the turning properties
	Dressing speed	3-35 mm/sec.	16-20 mm/sec.	16 mm/sec. for dry snow	20 mm/sec. for moist snow
	Dressing rpm	600-2000 rpm	1600-2000 rpm	< 1600 rpm too rough structure	

	Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Grinding stone fine grinding	Stone tuning processes	1-13	1		
	Fine-grinding speed	150-2000 rpm	350-450 rpm	< 350 larger structure spacing	> 450 rpm degrades the structure pattern
	Contact pressure	50-500 N	280-340 N	< 280 N insufficient material removal	> 340 N danger due to notching the grinding stone
	Structure	Linear structure Crossed structure Angular crossed structure right Angular crossed structure left Arrow structure V-structure Wave structure	Linear structure Crossed structure Angular crossed structure right Angular crossed structure left	Crossed and angular crossed structures are characterized by good turning properties - optimum for average skiers	The longitudinal structure has good guide properties at high speeds - only for trained skiers as it influences the turning properties
	Dressing speed	3-35 mm/sec.	16-20 mm/sec.	16 mm/sec. for dry snow	20 mm/sec. for moist snow
	Dressing rpm	600-2000 rpm	1600-2000 rpm	< 1600 rpm too rough structure	

11.11 Settings Parameters for Disc Module

	Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Disc Module					
Side edge grinding	SE tuning processes	1-13	1-2	1 cycle for light damage; 2 for normal damage and 3 for extreme damage	
	Pre-grinding speed	1500-4500 rpm	3800-4000 rpm	<3800 rpm insufficient material removal	> 4000 rpm degrades the structure
	Fine-grinding speed	1500-4500 rpm	3000 rpm		
	Contact force SE	5-75 N	50-75 N	< 50 N insufficient material removal	
	Set-in point SE	-100-50 mm	0	To be used for rental skis in order to vary the set-in point of the Ceramic Discs.	
Base edge grinding	BE tuning processes	1-13	1	Generally only necessary for 1 grinding cycle	
	Pre-grinding speed	1500-4500 rpm	3800-4000 rpm	<3800 rpm insufficient material removal	> 4000 rpm degrades the structure
	Fine-grinding speed	1500-4500 rpm	3000 rpm		
	Contact force BE	5-65 N	40-50 N	< 40 N structure in edge	> 50 N notches in base
	Set-in point BE	-100-50 mm	0	To be used for rental skis in order to vary the set-in point of the Ceramic Discs. This function could also be used for carving skis.	

11.12 Setting parameters for Polishing module

Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Polishing module				
Tuning processes	1-13	1		
Speed	500-1600 rpm	1500 rpm	<1000 insufficient material removal	
Contact pressure	5-75 N	40-60 N	< 40 N insufficient material removal	> 60 N danger due to notching the disk

11.13 Setting parameters for finish module

Parameters	Settings range min. - max.	Standard reference values	Working range small standard reference values	Working range large standard reference values
Waxing wheel				
	ON/OFF	ON	Switched ON or OFF in the "Sequence" window	
Temperature	0 - 110	95		
Apply wax after	0 - 50 sec.	4 cycles		
Wax application duration	0 - 9 sec.	2 sec.		
Oscillation	ON/OFF	ON		
Wax polishing				
	ON/OFF	ON	Switched ON or OFF in the "Detailed parameters" window	
Wax fine polishing				
	ON/OFF	ON	Switched ON or OFF in the "Detailed parameters" window	

12 Malfunctions

WARNING **Risk of injury!**

Work on the machine's electrical system must be carried out only by a qualified electrician in line with accepted practices.

12.1 Alarm messages on the screen

If a malfunction occurs, an alarm message is displayed in the top line of the screen. You can press the alarm line to open the alarm window. After resolving the malfunction, the message disappears.

12.2 Mechanical malfunctions

12.2.1 Belt module malfunctions

Malfunction	Cause	Elimination
Belt grinding quality not okay		
Speed reduction or rough, fiber-like structure	Belt not broken, contact force too high	Break belt with belt dressing stone, set contact force lower
Base is gray and fiber-like	Abrasive belt insufficiently broken	Break belt with belt dressing stone
	Insufficient coolant supply	Open coolant supply ball valve Check coolant level in the tank, check lines and spraying nozzles, replace filter fleece
	Coolant very dirty	Clean filter bag Clean coolant tank Replace coolant

12.2.2 Stone module malfunctions

Error, issue	Cause	Elimination
Stone grinding quality not okay		
Vibrations at grinding stone or chatter marks on grinding stone	The grinding stone is not balanced The grinding stone is loose The grinding stone is stuck	Balance stone Retighten and balance Dress grinding stone 1 - 2 times and check spraying
	The grinding stone was sprayed with coolant when stationary	When cleaning the machine with the cleaning hose, interrupt the supply of coolant for the grinding stone using the ball valve After cleaning, have the grinding stone dry-cleaned

Error, issue	Cause	Elimination
Grinding stone sticks rapidly	The high-pressure pump does not provide enough pressure	Check coolant level Clean: - screen in high-pressure pump - the high-pressure nozzle
	Filter cartridge blocked	Clean filter cartridge (see chapt. 13.1.6 Clean filter cartridge, page 97)
Fiber-like or burnt base.	Stone speed too fast	Reduce stone speed
	Insufficient coolant supply	Check coolant level in the tank, check lines and spraying nozzles, replace filter fleece Change coolant
Cracks visible at ski base	Structure depth of diamond too great	Reduce structure depth Dress grinding stone repeatedly Clean grinding stone with stone cleaner
	Vibrations at grinding stone	Balance stone
Notching the grinding stone	Too high a contact pressure	Set contact pressure lower
Grinding stone is not clean during dressing	The diamond polisher is used up	Install new diamond polisher
Structure not visible	Diamond polisher with too wide needles in use	Use diamond polisher with narrower needles
Ski is ground on one side or structure uneven over ski width	Centering or V-rollers dirty Diamond cross section too small (diamond is worn excessively during structuring)	Clean rollers Use diamond polisher with larger diamond cross section
Spraying not functioning or uneven	Nozzles are blocked Not enough water in tank Pump is blocked	Clean nozzles with compressed air Replenish water Disassemble pump, clean and assemble in the order of disassembly

12.2.3 Disc module malfunctions

Malfunction	Cause	Elimination
Edge grinding quality not okay		
Ceramic Disc no longer removes anything	Ceramic Disc stuck	Dress side walls on ski
Ceramic Disc unevenly worn	Deviation +/- 5 mm is normal	Left and right Ceramic Disc mixed up
Side edge grinding does not set correctly in or out	Equipment setting or width setting incorrect	see chapt. 7.3 Basic settings at main screen, page 31

12.2.4 Polishing module malfunctions

Malfunction	Cause	Elimination
Polishing quality not okay		
Vibration at the polishing disc or chatter marks at the edge	The polishing disc is out of balance The polishing disc is loose The polishing disc is stuck	Balance polishing disc Retighten and balance Dress grinding stone 1 - 2 times and check spraying
	The polishing disc was sprayed with coolant when stationary	When cleaning the machine with the cleaning hose, interrupt the supply of coolant for the polishing module using the ball valve After cleaning, have the polishing discs dry-cleaned
Polishing disc sticks rapidly	The high-pressure pump does not provide enough pressure Filter cartridge blocked	Check coolant level Clean: - screen in high-pressure pump - the high-pressure nozzle Clean filter cartridge (see chapt. 13.1.6 Clean filter cartridge, page 97)
Notching the polishing disc	Too high a contact pressure	Set contact pressure lower
Polishing disc is not clean during dressing	The diamond polisher is used up	Install new diamond polisher.
Spraying not functioning or uneven	Nozzles are blocked Not enough water in tank Pump is blocked	Clean nozzles with compressed air Replenish water Disassemble pump, clean and assemble in the order of disassembly

12.2.5 Finish module malfunctions

Malfunction	Cause	Elimination
Waxing		
Non homogeneous wax application	Temperature of waxing wheel too low	Increase temperature at temperature controller
Wax squirting out of waxing wheel	Excessive wax application to waxing wheel Temperature of waxing wheel too high	Reduce temperature at temperature controller
Excessive smoke emission	Temperature of waxing wheel too high	Reduce temperature at temperature controller
Polishing		
Polish wheel smearing	In case of excessive application of wax to the waxing wheel, the wax is transferred to the polish wheel	Replace polish wheel

13 Servicing - maintenance

13.1 General

Check all screws and adjusting screws regularly to ensure that they are tight.

Regularly check that all emergency stop devices are functioning properly. Keep the emergency stop devices free of dirt.

Risk of injury!

Before carrying out maintenance, setting, repair or cleaning work, ensure that the machine is switched off and disconnected from the mains supply. When carrying out work in an area which is not in close vicinity to the controls, we recommend that the main switch is locked.

13.1.1 Cleaning the interior of the machine

Always use the cleaning hose and the coolant for cleaning the machine - otherwise risk of corrosion!

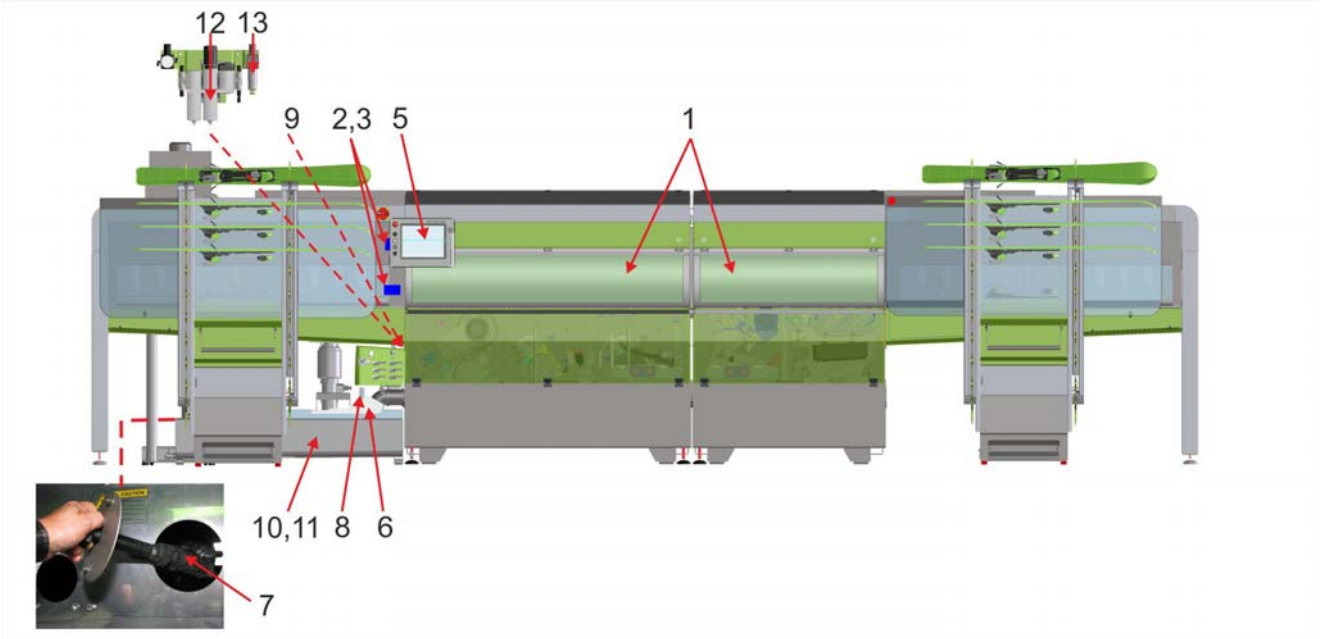
The following items must be adhered to when cleaning the systems while the doors are open:

- The main switch must be activated.
- Press Stop button.
- The grinding area door can be opened after about 15 seconds or after a message on the screen.
- The start window appears on the LCD.

- Close the central stopcock (see chapt. 5.1.3 Coolant supply, page 25).
- Press the button [1] to switch the cleaning pump on.
- Switch off cleaning pump with the button [2].
- If the stationary grinding stone is sprayed over with the cleaning hose when the machine is cleaned, the grinding stone should be spin-dried by pressing the button [3] (risk of unbalance).

Close the doors beforehand!

13.1.2 Basic machine maintenance - Coolant tank - Feed

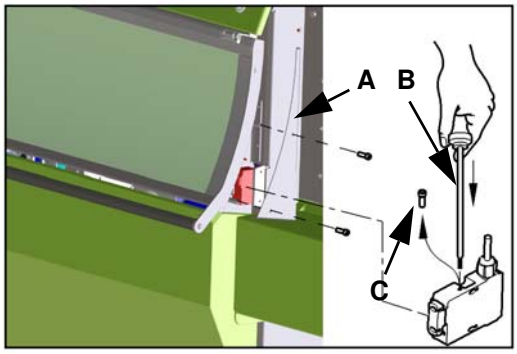


Item No.	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
Cleaning							
1) [1]	Entire exterior of machine and interior in particular	x					Please clean the rubber sealing lips before the covers are closed and installed
2)	Photo switch	x					
3)	Laser		x				
4)	Support rollers and centering rollers		x				
5)	Screen	x					With a moist cloth when the machine is switched off or as required - do not use cleaning agents
6)	Empty wastewater tank	x					The wastewater tank is only provided with the Mercury L (loading station)
Coolant system							
7)	Check filter bag and clean if required	x					More often if required

Item No.	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
8)	Clean the bar magnet	x					Remove the bar magnet from the coolant tank and clean using a cloth (carry out frequently when re-quired)
9)	Check fill level		x				More often if required
10)	Clean filter cartridge	x					If the pressure difference is greater than 1 bar between the plunger pump pressure gauge and fine filter pressure gauge during operation, the filter cartridge must be cleaned (see chapt. 13.1.6 Clean filter cartridge, page 97)
11)	Check pH value and mi-xing ratio		x				Suitable measuring instruments available as accessories
12)	Coolant change				x		See chapt. 13.1.7 General information for the correct handling of solid cooling lu-bricants, page 97. Mix ratio, see emulsion container
Miscellaneous							
13)	Check compressor con-tainer and maintenance unit for condensate and drain if necessary		x				
14)	Check ski drying main-tenance unit for conden-sate and drain if necessary		x				Option
15)	Maintenance by WINTERSTEIGER cust omer service depart-ment					x	Wear is unavoidable. Pro-fessional maintenance and checks are preventative measures and safeguard against breakdown and subsequent damage.

1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant! Cleaning of the machine with a high pressure cleaner is not permitted! No liability or warranty will be assumed for consequential damages if the above is not observed.

13.1.3 Unlocking the grinding area doors in an emergency

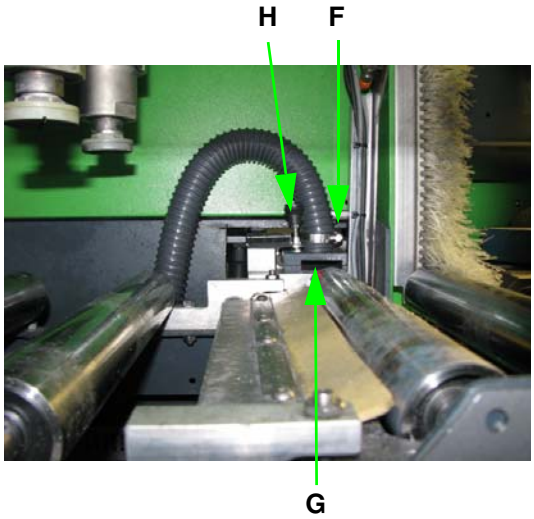


Opening the doors using the emergency release mechanism is only permitted in the event of a power cut (if necessary) or if the door switch is faulty.

- Remove side cover [A] on housing.
- Remove screw [B] with TORX screwdriver.
- The grinding area door can be opened by pressing in the TORX screwdriver [C] Ø 2,5 mm and tightening it here.

Reinsert the screw [B] into the safety lock after the grinding area door has been opened.

13.1.4 Clean laser



To achieve optimum ski measurements, the laser must be cleaned once a week!

Do not spray the laser with the cleaning hose!

1) Switch the machine to cleaning mode (see chapt. 13.1.1 Cleaning the interior of the machine, page 91).
2) Remove the ski magazine charging unit (see chapt. 6.2 Ski magazine, page 29).

CAUTION **Risk of eye injuries!**

Warning: laser beam - do not look at the LASER beam!

3) Loosen the fastening screw [H] on the laser cover.
4) Lift off and remove the laser cover [F].
5) Clean the laser glass [G] with a soft cloth and window cleaning agent.
6) Replace the laser cover [F] - observe the positioning holes!
7) Tighten the fastening screw [H].

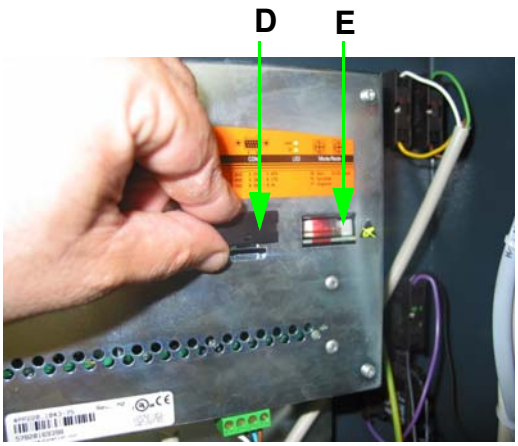
13.1.5 Changing the battery on the operating terminal

If an error message of "Battery discharged" is shown at the operating terminal, you must replace the battery within three weeks.

Under normal conditions, the battery has a service life of approximately 2 years, however this is reduced at high temperatures.

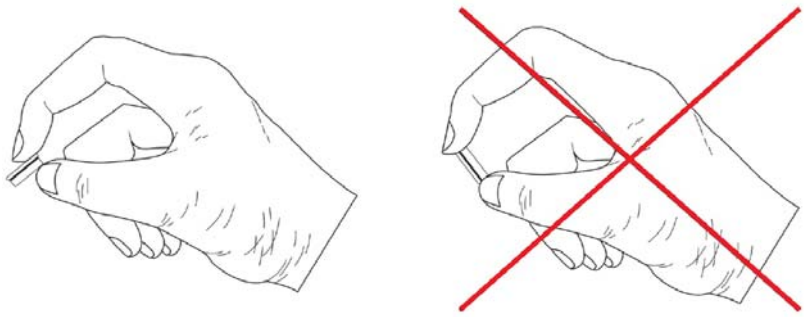
Always have a spare battery available.
If the battery is not exchanged in time, all the set values may be lost (order number 15-480-106).

Change the battery as follows



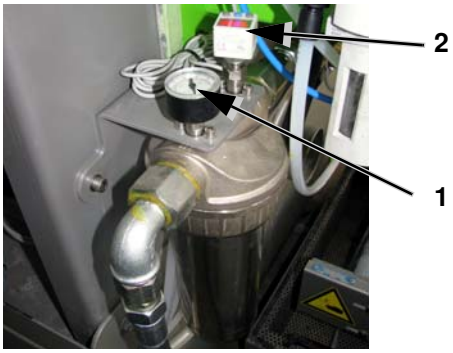
- Switch off main switch.
- If the supply voltage has not yet been switched on, switch it on for at least a minute then switch it off again.
- Open the rear cover at the operating terminal by removing 10 screws.
- Remove battery cover [D].
- Remove the battery [E] and immediately insert a new battery.

The battery must be replaced within 10 minutes to prevent PLC data being lost.
Do not touch battery with pliers or tweezers --> short circuit! Only the faces of the battery can be touched by hand.



Lithium batteries are hazardous waste! Dispose of empty batteries in line with local waste disposal regulations.

13.1.6 Clean filter cartridge



If the pressure difference is greater than 1 bar between the plunger pump pressure gauge [1] and fine filter pressure gauge [2] during operation, the filter cartridge must be cleaned.

- Press the emergency-stop button.
- Unscrew filter glass and clean filter cartridge with clear water.

13.1.7 General information for the correct handling of solid cooling lubricants

The cooling lubricants contain a high number of different chemicals so that they can fulfil their tasks (cooling, lubrication, removal of chippings, corrosion prevention). This makes the maintenance and care of the cooling lubricants very important.

Organizational measures

Please take special care of the cleanliness of the cooling lubricant emulsion to prevent the development of nitrosamines and microbial growth!

Among other things, please adhere to the following measures:

- Avoid the introduction of organic and inorganic food, cigarette butts, anticorrosion cleaning agents etc.
- Avoid foreign oils entering into the cooling lubricant systems.
- Avoid the intrusion of impurities and contaminants which contain secondary amines or which release those in significant quantities (above 0,2% in solid cooling lubricant concentrate). This includes e.g. detergents, certain corrosion protection agents, system cleaners.

The following analyses and measurements must be performed. TRGS 611 is the legal basis for the listed limit values in Austria and Germany. In other countries, observe the limits defined by national legislation.

Tests	Measurement frequencies	Threshold
CL concentration	Weekly	According to manu-facturer's instructions
Nitrate content of the preparation water	From time to time	Max. 50 mg/l
pH value	Weekly	8,5 - 9,0
Nitrite	Weekly	Max. 20 mg/l
Microbial count (recommended)	Monthly	10^6 germs
Total hardness	As required	Approx. 16°d

As part of FLUID MANAGEMENT, WINTERSTEIGER offers an analysis case for monitoring and measuring solid cooling lubricants as well as documentation of the measurement results. This allows you to immediately implement countermeasures if thresholds are exceeded. You can also extend the coolant change interval significantly beyond the normal 4 week limit In addition, WINTERSTEIGER fluid management includes accessories (high performance lubrication spray, system cleaner, machine foam cleaner, preservatives, skin protection sets), which are adapted to the emulsion and therefore largely prevent the introduction of contaminants.

Immediately implement countermeasures or change the grinding coolant if the threshold values are exceeded. **The emulsion must be changed after app. 1000 pairs of skis or after 4 weeks at the latest if WINTERSTEIGER fluid management is not used.** Drain the coolant system and clean it with a system cleaner after the end of the season and during longer standstills of the machine.

Safety measures

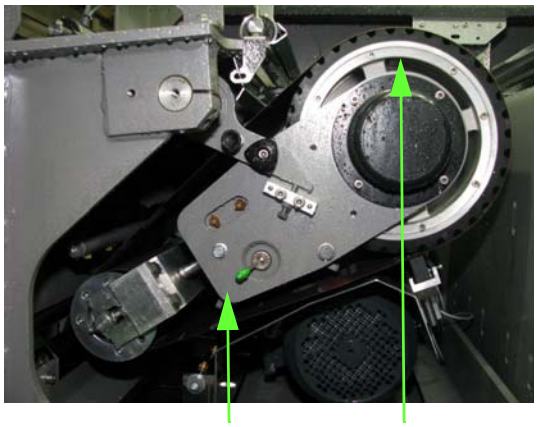
Use appropriate protective clothing (e.g., protective gloves, protective goggles, fluid repellant protective clothing) because the cooling lubricants can irritate the skin and cause other problems. A preventive skin protection (barrier cream) should be used if skin contact cannot be avoided.

Waste disposal

Do not drain into the sewage water system! Adequate disposal is required in accordance with the manufacturer's safety data sheet information and with the local laws.

13.2 Maintenance of Belt Module

13.2.1 Abrasive belt change



Move the Belt module into the changing position before replacing the abrasive belt (see chapt. 10.12.1 Changing position, page 70)**!**

1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off the main switch.
4) Relax belt by actuating the switch [A].
5) Remove used abrasive belt.
6) Push abrasive belt flush over the contact wheel and idler wheel.

Observe rotational direction!
Direction arrows are provided on the inside of the abrasive belt, these indicating the rotational direction!
Inspect surface of contact wheel [B] for dirt. Be sure to remove dirt accumulations, as these adversely affect the grinding pattern.

7) Tension abrasive belt again by using the switch [A].

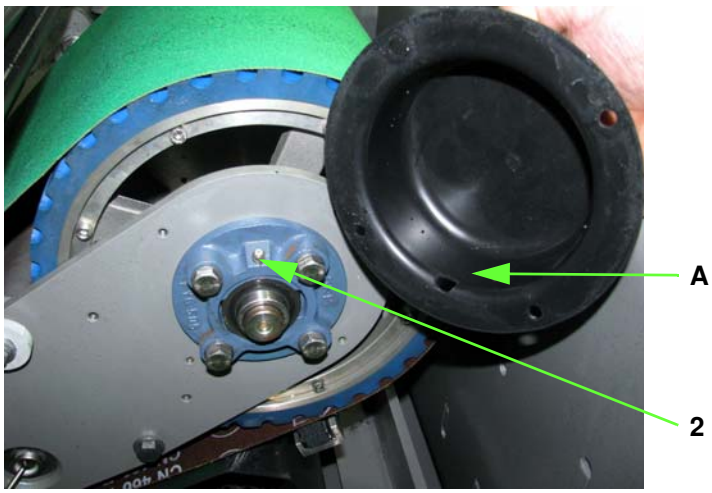
To optimally use a new abrasive belt, it must be softened (broken) prior to use to prevent damage of the ski base (see chapt. 10.12.4 Manual functions of Belt module, page 70)**.**

13.2.2 Maintenance work - Belt Module

Item No.:	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
Cleaning							
1) [1]	Clean the complete module	x					
Lubrication - Caution: Clean the greasing nipple before greasing!							
2) [2]	Grease flange bearing of belt unit					x	1 grease gun stroke per lubrication nipple after end of season. Afterwards, run the machine one more time with closed central stopcocks.

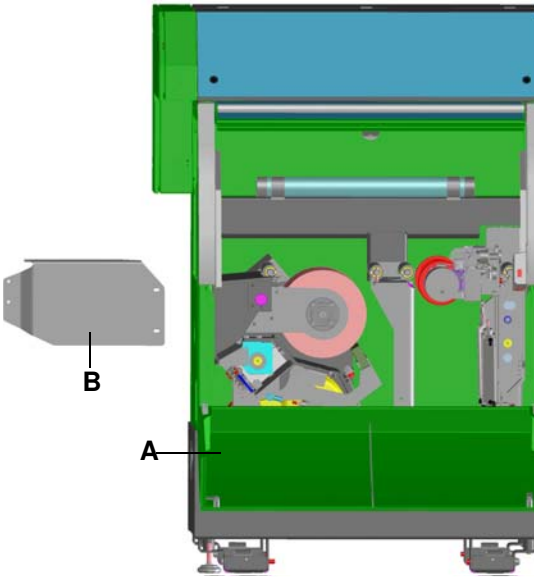
1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant! **Cleaning of the machine with a high pressure cleaner is not permitted!** No liability or warranty will be assumed for consequential damages if the above is not observed.

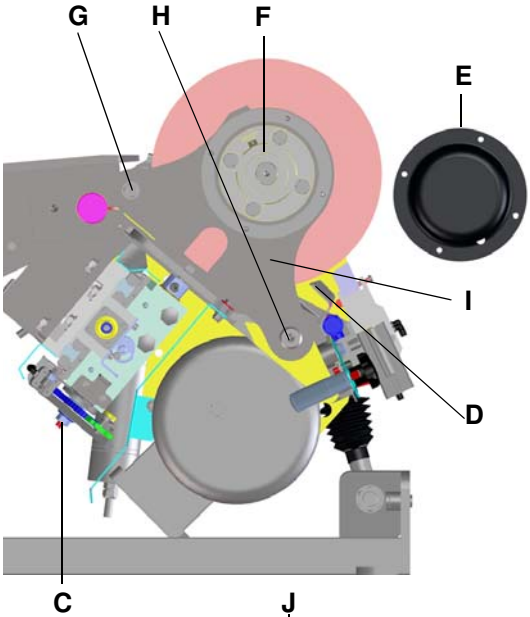
2 Move modules into service position before greasing (see chapt. 10.12.2 Service position, page 70).



13.3 Maintenance - Stone module

13.3.1 Stone change





Before changing the grinding stone, it must be moved into the change position (see chapt. 10.12.1 Changing position, page 70)**!**

1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off the main switch.
4) Open the lower safeguard [A] and dismantle the cover [B] in front of the grinding stone.
5) Rotate the diamond polisher back completely with the ratchet wheel [C].
6) Move the shim of the stone spraying system [D] all the way back.
7) Remove bearing cover [E]
8) Loosen screw [F] and remove clamp ring from flange bearing.
9) Remove upper set screw [G] and lower screw [H] on the stone support [G].
10) Detach the stone support [I].
11) Loosen the nut [J] with a wrench (size 55) while holding the shaft in place with second wrench (size 22).
12) Detach the grinding stone.

Clean and grease the drive shaft.

Make sure to inspect new stone for transport damages.

13) Slide the new grinding stone onto the drive shaft.
14) Screw nut [J] on grinding stone and tighten.
15) Fasten stone support [I] with the upper set screw [G] and lower screw [H].
16) Place clamp ring on flange bearing and fasten with screw [F].
17) Mount bearing cover [E].
18) Adjust the distance of the shim for the stone spraying system [D] to the grinding stone to approx. 1-3 mm.

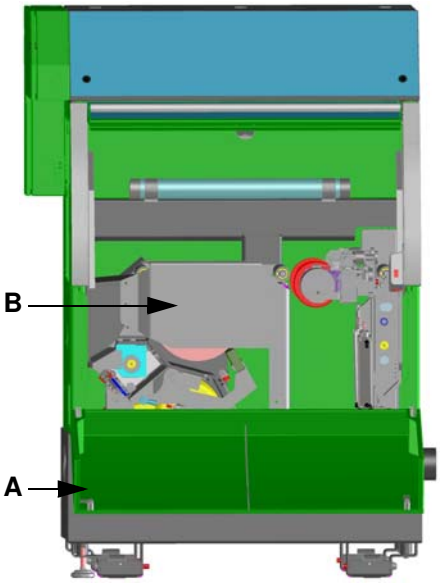
Execute diamond settings as described in chapt. 13.3.2 Diamond change, page 102**!**

19) Reattach the cover [B] in front of the grinding stone and close the lower safeguard [A].

- Perform test run (see chapt. 13.7 Execute test run in accordance with legal regulations, page 115).

After the grinding stone has been replaced, check and if necessary, correct the stone diameter! (see chapt. 10.8.4 Detailed parameters for Stone module, page 56)**.**

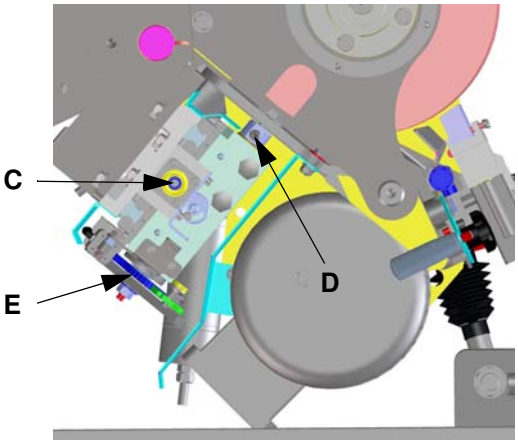
13.3.2 Diamond change



Before changing the diamond, it must be moved into the change position (see chapt. 10.12.5 Manual functions of Stone module, page 70)**!**

1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off main switch.
4) Open the lower safeguard [A] and dismantle the cover [B] in front of the grinding stone.
5) If necessary, move dressing carriage completely outward with hexagon socket wrench (size 4) [C].
6) Loosen hexagon socket screw [D], pull the diamond polisher out and clean the drill hole. Re-insert the new diamond with well-greased shaft up to the stop and tighten.

The screw must press onto the plane surface of the diamond shaft.

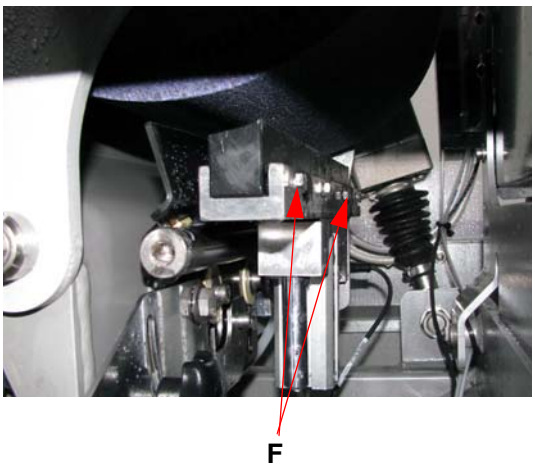


7) Rotate the dressing diamond back with ratchet wheel [E] (distance between stone and diamond app. 2 mm).
8) Turn the dressing carriage inwards with hexagon socket wrench (size 4) [C] until the diamond is positioned above the grinding stone.
9) Rotate the stone slowly by hand.
   Turn diamond forward with ratchet wheel [E] until it is in slight contact with the grinding stone.

- Mount guard and close grinding area door.
- Activate main switch - press Start button.
- Repeatedly press "DRESS" button until the grinding stone runs concentric (at least 5 times).

After the diamond has been replaced, check and if necessary, correct the stone diameter (see chapt. 10.8.4 Detailed parameters for Stone module, page 56)**!**

13.3.3 Changing the stone cleaning block



If the message "Stone cleaner used up" is displayed in the error message bar at the operating terminal, you must replace the stone cleaning block. The stone cleaning function is deactivated as of this point in time until it is replaced.

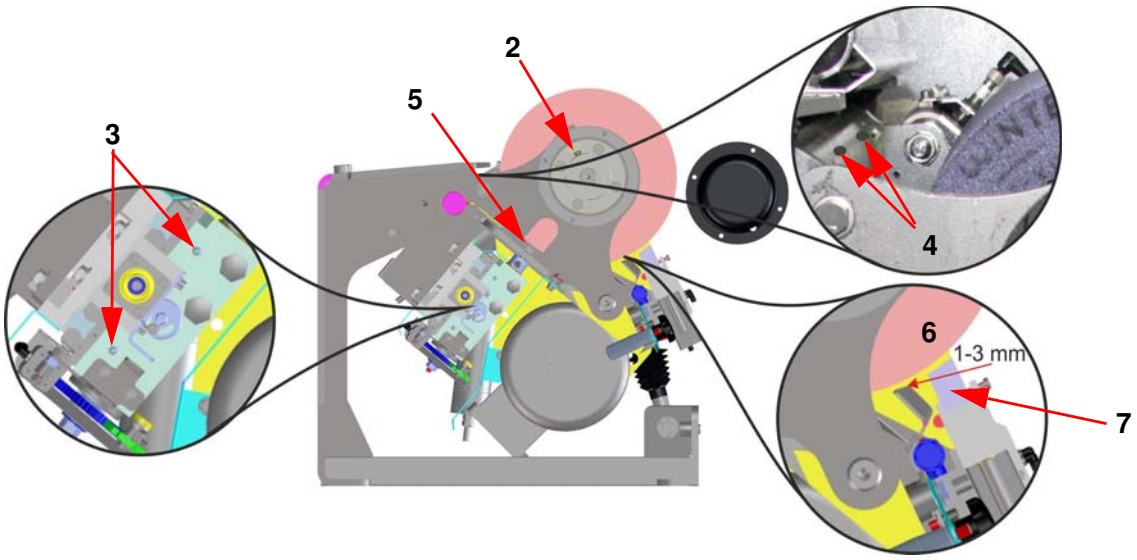
1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off the main switch.
4) Open lower safeguard.
5) Remove worn stone cleaning block by loosening the four screws [F].
6) Mount the new stone cleaning block with the sheet metal plate facing inwards.

Remove the metal sleeve that has fallen off the worn stone cleaning block from the bottom of the basin!

13.3.4 Maintenance work - Stone module

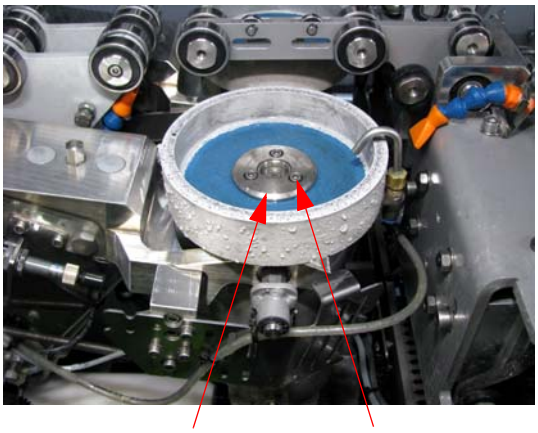
Item No.:	Maintenance work	Daily	Weekly	Biweekly	Monthly	Annually	Notes
Cleaning							
1) [1]	Clean the complete module	x					
Lubrication - Caution: Clean the greasing nipple before greasing!							
2)	Grease flange bearing of the stone module					x	1 grease gun stroke per lubrication nipple after end of season. Afterwards, run the machine one more time with closed central stopcocks.
3)	Grease dressing unit guide				x		1 grease gun stroke per lubricating nipple
4)	Grease stone rocker					x	10 grease gun strokes per lubricating nipple
Testing							
5)	Wear check diamond				x		Change if necessary
6)	Check and, if required, adjust distance of stone spraying system shim; distance to grinding stone approx. 1-3 mm		x				Clean if necessary
7)	Check wear of stone cleaning block		X				Change if necessary

1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant! **Cleaning of the machine with a high pressure cleaner is not permitted!** No liability or warranty will be assumed for consequential damage if you fail to observe this.



13.4 Maintenance - Disc module

13.4.1 Ceramic Disc replacement



Before changing the Ceramic Disc, move Ceramic Disc to the changing position (see chapt. 10.12.1 Changing position, page 70)**!**

1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off the main switch.
4) Remove 3 hexagon socket screws [A].
5) Remove Ceramic Disc.
6) Clean flange and grease with water-insoluble grease!

Make sure to inspect new Ceramic Disc for transport damage!

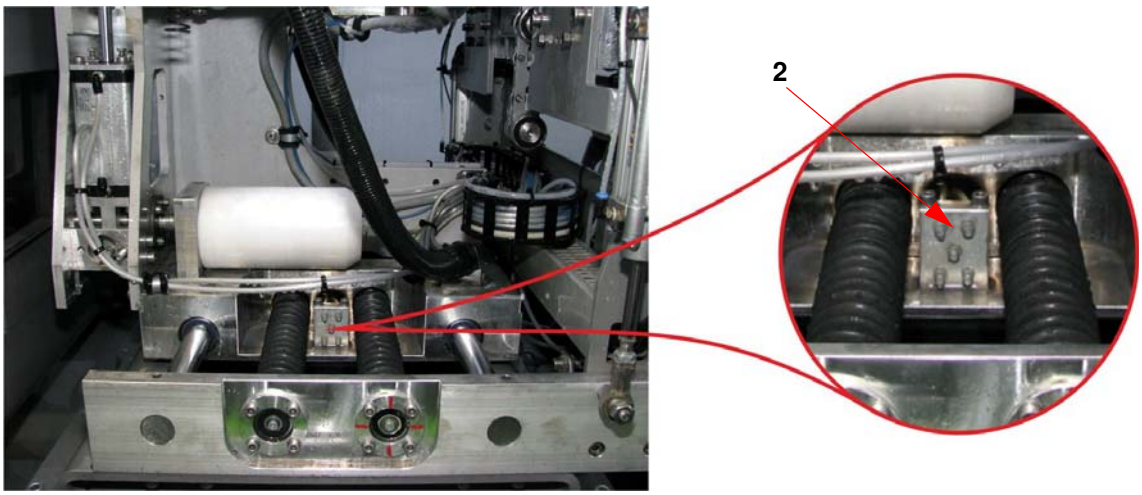
7) Slide new Ceramic Disc on.
8) Put flange [B] on and fasten Ceramic Disc with hexagon socket screws [A].
9) Mount guard and close grinding area door.
10) Perform test run (see chapt. 13.4.2 Maintenance work - Disc Module, page 106).

13.4.2 Maintenance work - Disc Module

Item No.:	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
Cleaning							
1) [1]	Clean the complete module	**x**					
Lubrication - Caution: Clean the greasing nipple before greasing!							
2) [2]	Grease disc module in front and back				**x**		1 grease gun stroke per lubricating nipple

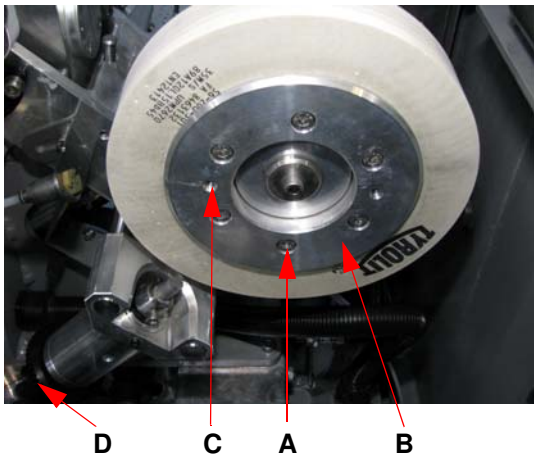
1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant! **Cleaning of the machine with a high pressure cleaner is not permitted!** No liability or warranty will be assumed for consequential damages if the above is not observed.

2 Move modules into service position before greasing (see chapt. 10.12.2 Service position, page 70).



13.5 Maintenance - Polishing module

13.5.1 Changing the polishing disc



Move the polishing discs into the change position before changing them (see chapt. 10.12.1 Changing position, page 70)**!**
Please follow the instructions of the change assistant!

After starting the change assistant, all units will position themselves in the changing position and the machine will switch to emergency stop.

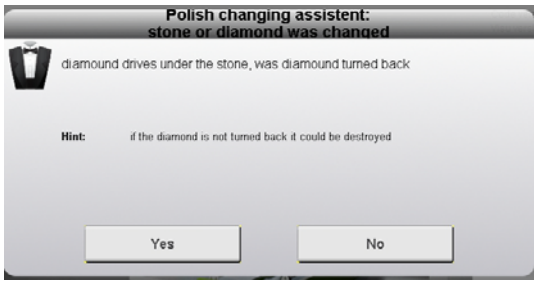
1) Please note the diameter of the new polishing discs.
2) Open grinding area door.
3) Switch off the main switch.
4) Rotate the dressing diamond with ratchet wheel [D] back completely.
5) Remove 6 x hexagon socket screws [A].
6) To pull the flange off [B] screw in 2 hexagon socket screws into the thread openings [C].
7) After removal of the flange, pull off the polishing disc.
8) Clean the polishing disc holding fixture and flange [B].

Make sure to inspect new polishing disc for transport damages!

9) Slip the new polishing disc onto the polishing disc holding fixture.
10) Fasten the polishing disc with the flange and the 6 greased hexagon socket screws.

When tightening the flange, make sure that the screws are only hand-tight first in order to center the flange. Then tighten the screws crosswise.

11) Close grinding area door and switch on main switch.
12) Confirm the polishing disc change in the message window displayed.



13) In this message window, you are prompted to confirm turning back the diamond polisher.

If the diamond polisher has not been turned back and you confirm the message with "YES", the diamond, polishing disc or machine can be damaged!

Diamonds will automatically position themselves over the polishing discs.

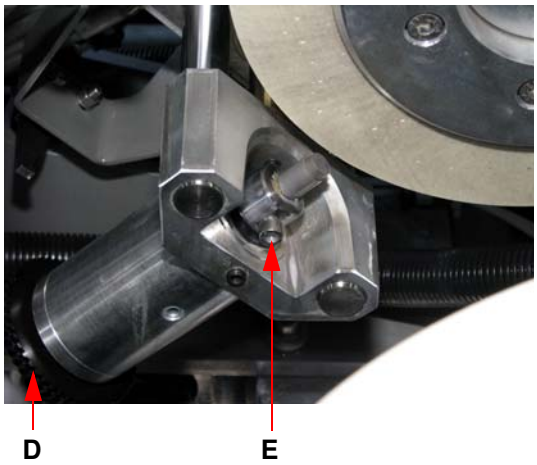
14) Execute diamond settings as described in chapt. 13.5.2 Diamond change, page 108 (steps 9-15)!

- Perform test run (see chapt. 13.7 Execute test run in accordance with legal regulations, page 115).

After the polishing disc has been replaced it is essential that the diameter be checked and if necessary corrected! (see chapt. 10.12.1 Changing position, page 70)**.**

After the polishing disc has been replaced adjust the polishing disc set-in points (see chapt. 13.5.3 Setting the polishing disc set-in point, page 110)**!**

13.5.2 Diamond change



Before the diamond change, the diamond must be moved into the change position (see chapt. 10.12.1 Changing position, page 70)**!**
Please follow the instructions of the change assistant!

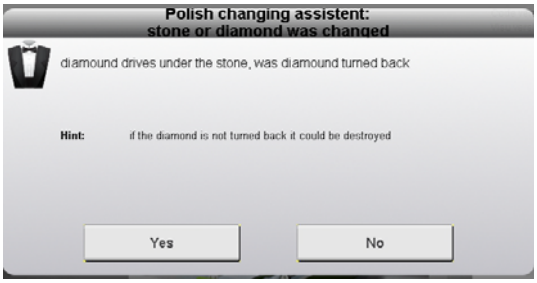
After starting the change assistant, all units will position themselves in the changing position and the machine will switch to emergency stop.

1) Please note the diameter of the new polishing discs.
2) Open grinding area door.
3) Switch off the main switch.
4) Rotate the dressing diamond with ratchet wheel [D] back completely.
5) Loosen hexagon socket screw [E], pull the dressing diamond out and clean the drill hole. Re-insert the new diamond with well-greased shaft up to the stop and tighten.

The screw must press onto the plane surface of the diamond shaft.

6) Close grinding area door and switch on main switch.

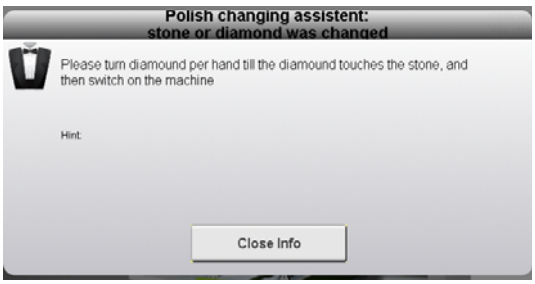
7) Confirm the diamond polisher change in the message window displayed.



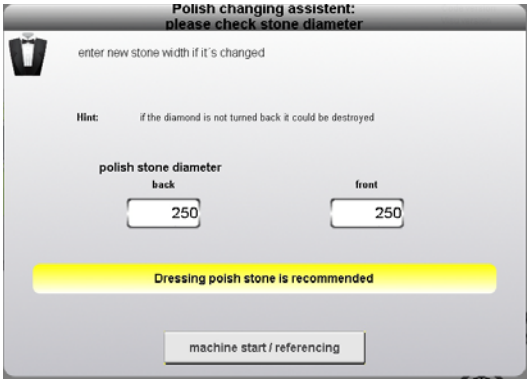
8) In this message window, you are prompted to confirm turning back the diamond polisher.

If the diamond polisher has not been turned back and you confirm the message with "YES", the diamond, polishing disc or machine can be damaged!

Diamonds will automatically position themselves over the polishing discs.

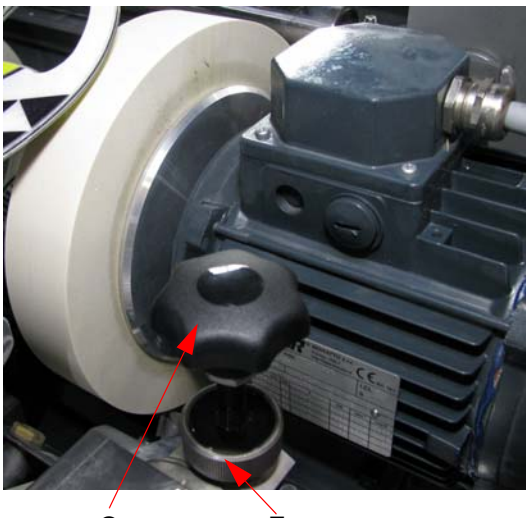


9) Open grinding area door.
10) Switch off the main switch.
11) Rotate the polishing disc slowly by hand.
12) Move diamond forward with ratchet wheel [D] until it is in slight contact with the polishing disc.
13) Mount guard and close grinding area door.
14) Switch on main switch.



15) In this message window, you are prompted to enter the noted diameter of the polishing disc at the start.
16) Press the "Start machine/Referencing" button.
17) Open the "Manual functions" button and press the "Cont. dressing" until the polishing disc is concentric (see chapt. 10.12.7 Manual functions of Polishing module, page 71).

13.5.3 Setting the polishing disc set-in point



Due to the dressing cycles of the polishing disc the diameter of the polishing disc will decrease which in turn leads to a change in the set-in point of the polishing disc at the ski tip.

Settings:

1) Loosen the knurled nut [F].
2) The set-in point at the tip end of the ski is adjusted by rotating the handwheel [G] counter clockwise.
3) Secure the handwheel [G] from turning with the knurled nut [F].

Adjust both sides evenly!

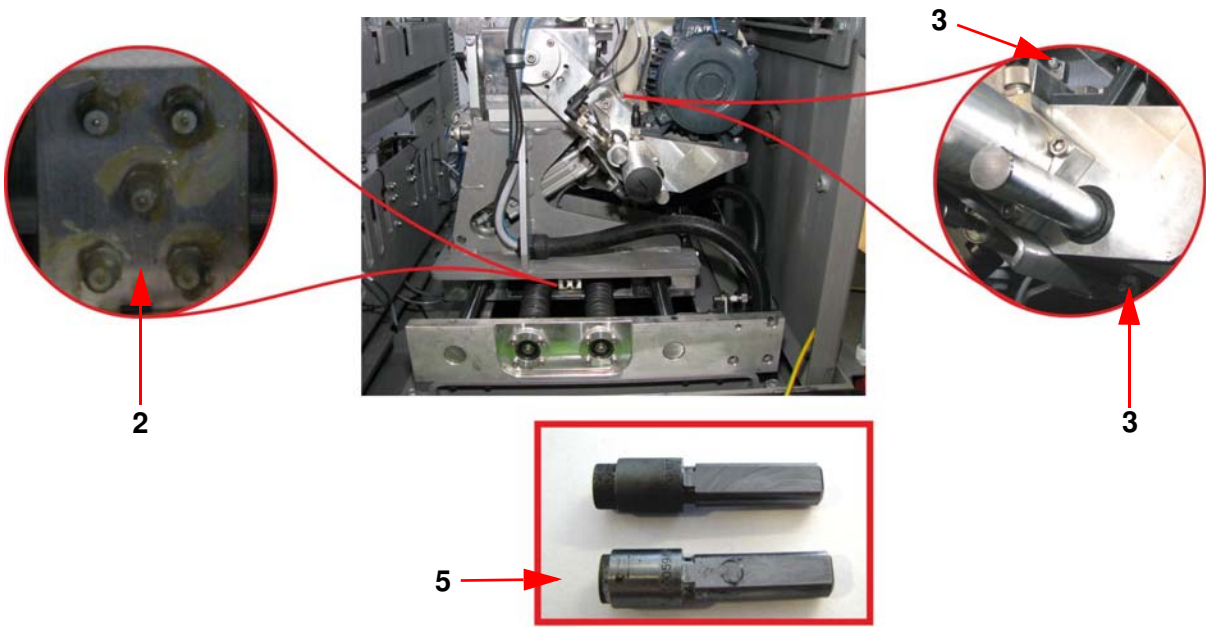
4) Release lock nut of the adjustment screw [H].
5) Turn the adjustment screw [H] until the desired value on the scale [K] is reached.
6) Lock the adjustment screw [S] into position with the lock nut.

13.5.4 Maintenance work - Polishing module

Item No.:	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
Cleaning							
1) [1]	Clean the complete module	**x**					
Lubrication - Caution: Clean the greasing nipple before greasing!							
2) [2]	Grease polishing module in front and back				**x**		1 grease gun stroke per lubricating nipple
3)	Grease dressing unit guide in front and back				**x**		1 grease gun stroke per lubricating nipple
Settings							
4)	Check and if necessary adjust the set-in point of the polishing disc			x			see chapt. 13.5.3 Setting the polishing disc set-in point, page 110
5)	Check diamond wear				**x**		Change if necessary (the diamond must be changed if only 2 mm or less remain, see picture)

1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant!
Cleaning of the machine with a high pressure cleaner is not permitted! No liability or warranty will be assumed for consequential damages if the above is not observed.

2 Move modules into service position before greasing (see chapt. 10.12.2 Service position, page 70).



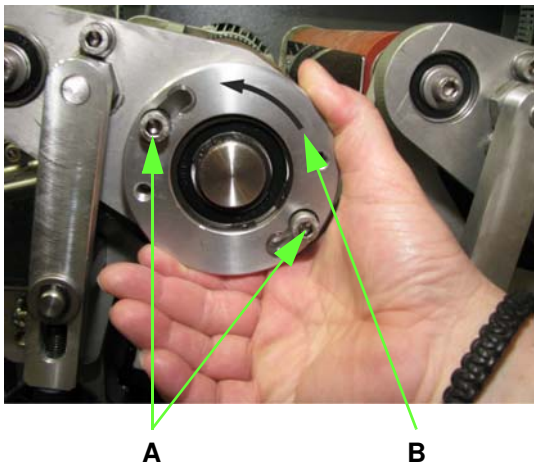
13.6 Maintenance - Finish Module

CAUTION **Danger of fire!**

Clean the housing of the wheels at regular intervals! Disassemble the waxing wheel monthly and clean the housing thoroughly inside and outside in case of heavy soiling. The accumulated wax can otherwise begin to smoke or burn!

13.6.1 Wheel change

A wheel change will be necessary if the wheel has worn as far as the start of the ring [C].



Move into the changing position before replacing the wheel (see chapt. 10.12.1 Changing position, page 70)**!**
The procedure for the wheel change is the same for the waxing, polishing and fine-polishing wheel.

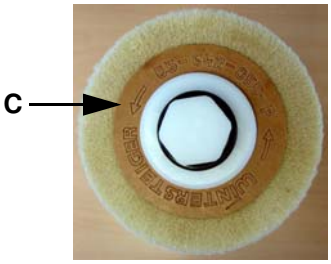
CAUTION **Danger of burns!**

Allow waxing wheel to cool down before replacing it!

1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Open lower safety door.

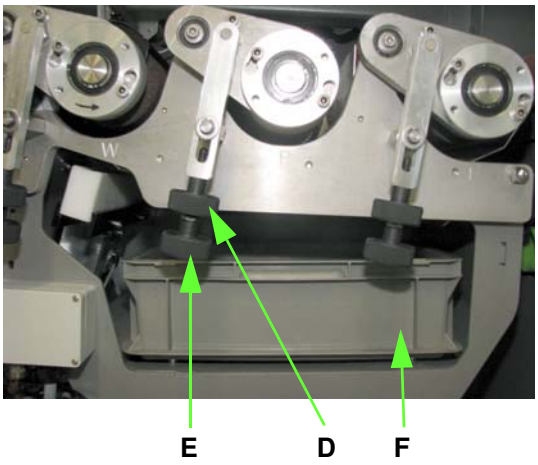
4) Switch off the main switch.
5) Loosen screws [A] with Allen key.
6) Turn bearing flange [B] clockwise and remove.
7) Pull out used wheel upwards.
8) Insert a new wheel.

Observe rotational direction!
See direction arrows on the ring [C] of the wheel.



9) Mount bearing flange [B] and turn anticlockwise.
10) Tighten screws [A] with Allen key.

13.6.2 Height adjustment of the wheels



The height adjustment of the wheel must be corrected due to wheel wear or after a wheel change, in order to attain an optimum polishing result.

The three wheels should be set so that the set-in point of the first wheel (waxing wheel) is lowest.

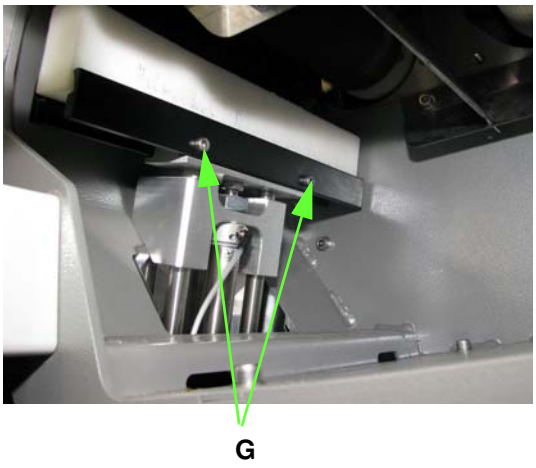
Settings:

The height adjustment of the wheel is the same for the waxing, polishing and fine-polishing wheel.

1) Loosen the knurled nut [D].
2) The height adjustment of the wheel is corrected by turning the knurled screw [E].
3) Fasten knurled screw [E] with knurled nut [D] again.

13.6.3 Waxing block change

If the message counter reaches a preset number, a text message will appear on the screen, prompting you to check or replace the wax block.



Move into the changing position before replacing the wax block (see chapt. 10.12.1 Changing position, page 70)**!**

CAUTION **Danger of burns!**

Allow wax block and waxing wheel to cool down beforehand!

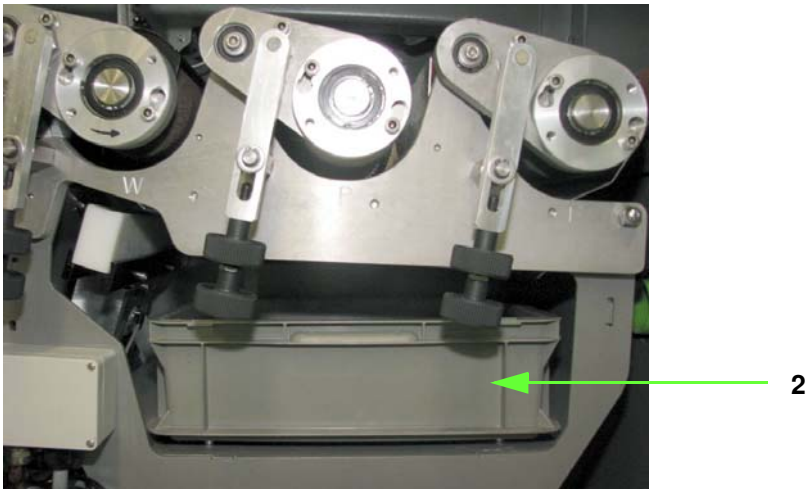
1) Press the emergency-stop button - Emergency stop screen appears.
2) Open grinding area door.
3) Switch off the main switch.
4) Open lower safety door.
5) Remove dirt collector [F].
6) Loosen screws [G] with Allen key.
7) Pull waxing block out.
8) Slide new wax block in so that it is flush and tighten with the screws [G].

The message counter must be reset after replacing a wax block (see chapt. 10.11.3 Detailed parameters for Finish Module, page 68)**.**

13.6.4 Maintenance work - Finish Module

Item No.:	Maintenance work	Daily	Weekly	Biwee-kly	Monthly	Annually	Notes
Cleaning							
1) [1]	Clean the complete module	x					
2)	Clean dirt collector		x				

1 **Danger of corrosion:** Do not use tap water to clean the machine! For cleaning, always use the cleaning hose and the coolant! **Cleaning of the machine with a high pressure cleaner is not permitted!** No liability or warranty will be assumed for consequential damages if the above is not observed.



13.7 Execute test run in accordance with legal regulations

Before the first use and after each remount, each grinding tool with an outside diameter of more than 100 mm must be tested in idle with the maximum permissible circumferential speed in the presence of an expert person. The test run must last 1 minute on all grinding machines. The test run can only be executed after all safety devices are installed and nobody is present in the danger zone. The grinding tool can only be used after a successful test run.

The following must also be observed for grinding tools:

- Protect from blows and impacts.
- Store dry and frost-free at constant temperatures if possible.
- Inspect the grinding tools for transportation damage prior to installation.
- Perform a sound check (ceramic bound grinding tools).
- Do not use unbalanced grinding tools (vibrations!).

13.8 Maintenance schedule

Maintenance work	MONTH																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Daily																															
Clean the whole exterior and interior of the machine																															
Check filter bag and clean if required																															
Clean the bar magnet																															
Check filter cartridge, if necessary clean																															
Clean the photo switch and laser																															
Empty wastewater tank																															
Clean the screen																															
Weekly																															
Check fill level in coolant tank																															
Check pH value and mixing ratio																															
Check wear of stone cleaning block																															
Clean support and centering rollers																															
Check compressor container and maintenance unit(s) for condensate and drain if necessary																															
Check ski drying maintenance unit for condensate and drain if necessary																															
Biweekly																															
Check and if necessary adjust stone spraying system distance																															
Check and if necessary adjust polishing disc set-in point																															
Monthly																															
Grease stone module dressing unit guides																															
Grease disc module guide																															
Grease polishing module guide																															
Grease polishing module dressing unit guides																															
Coolant change																															
Check wear of diamond(s)																															
End of season																															
Maintenance by WINTERSTEIGER customer service department																															
Belt module flange bearing 1 grease gun stroke																															
Stone module flange bearing 1 grease gun stroke																															
Grease stone rocker																															

Please copy before using!

14 Shut-down and disposal

Risk of injury!

Disconnect the machine from the mains supply or any external drive prior to shutting down and dismantling. Use only suitable tools for dismantling.

When shutting down the machine dismantle and dispose of all machine parts properly. Clean all oily and greasy components prior to disposal.
Oil and grease should never be allowed to pollute the environment.
Ensure that all disposal regulations specific to your country are adhered to!

- Dismantle the machine properly into its individual components.
- Clean oily and greasy components.
- Dispose of components by material group (steel, plastic, electrical and electronic components, etc.).
- Dispose of oil and grease in an environmentally friendly manner.

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CE Konformitätserklärung
Declaration of Conformity
Certificat de conformité
Declaración de conformidad
Dichiarazione di conformità

D
EN
F
ES
I

Hiermit erklären wir, dass das Produkt
We hereby declare that this product
Par la présente nous certifions que le dit produit
Por la presente declaramos que el producto
Con la presente dichiariamo che il prodotto

Discovery 2 **No.:**

Modules b,s,d,p,f

Steinschleifautomat / Automated Stone Grinde

folgender(-en) einschlägigen Bestimmung(en) entspricht:
conforms to the following regulations:
correspond à la (aux) spécification(s) suivante(s):
corresponde a la(s) siguiente(s) directiva(s) competente(s):
è conforme alla(e) seguente(i) disposizione(i):

EG-Maschinenrichtlinie 2006/42/EG

EG-Niederspannungsrichtlinie 2006/95/EG

EG-EMV-Richtlinie 2004/108/EG

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Ried /.I.,am 19.11.2012

Dipl.Ing. Reiner Thalacker
Vorsitzender des Vorstandes

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CE-Beauftragter