

Operating Instructions

B 600

Automatic Grinding and Polishing Machine



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Automatic Grinding and Polishing Machine B 600

Manufacturer

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Documents for the machine operator

Operating Instructions

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1. Important notes

1.1 Foreword

These operating instructions are meant to make it easier to get to know the automatic grinding and polishing machine, referred to in this document as grinding machine, and to use it properly for the intended purpose.

The operating instructions contain important information on how to operate the grinding machine safely, properly and cost-effectively. Observance of these instructions helps to avoid dangers, repair costs and downtimes, and increases the reliability and service life of the grinding machine.

The operating instructions must always be accessible at the place of use of the grinding machine.

The operating instructions must be read and used by all persons entrusted with working on the grinding machine, e.g. those entrusted with

- Transport, installation, commissioning
- Operation, including troubleshooting in the process flow, as well as
- Servicing (maintenance, repair).

In addition to the operating instructions and the binding accident prevention regulations applicable in the country and place of use of the machine, the generally acknowledged rules of technology with regard to safe and professional work practices are to be observed.

1.2 Warnings and symbols in the operating instructions

Heeding the following safety alert symbols/designations used in the operating instructions is absolutely necessary:



The hazard triangle with the signal word "CAUTION" is used as a work safety indication for all work which could result in death or physical injury.

Special care and caution must be taken when carrying out such jobs.



The signal word "ATTENTION" is used to call attention to hazards which could result in damage and/or destruction of the grinding machine or its environment if special attention is not paid while carrying out particular jobs.



The signal word "NOTE" calls attention to tips on use and useful information.

1. Important notes

1.3 Warning labels on the grinding machine and their meanings

The following warnings and safety alert signs have been affixed to the grinding machine:



CAUTION! DANGEROUS ELECTRICAL VOLTAGE (warning notice on the switch cabinet)

On being connected to the voltage supply (3x 400 V), the grinding machine becomes electrically live and touching its live parts directly could be life-threatening.

Live machine parts may be opened only by authorised, trained personnel.

The grinding machine must be separated from the mains supply before carrying out servicing, maintenance and repair jobs on it.



CAUTION! RISK OF INJURY FROM KNIFE (warning notice on the polishing unit)

Work on the grinding machine involves the sharpening of knives which could cause serious cut injuries due to their sharpness.

Protective gloves must be worn when carrying out such work, in particular when placing the knife.

Be careful when transporting blades. Use the protective devices provided by the knife manufacturer. Wear protective gloves and apron.

Protective gloves should be worn when changing the coolant (see Safety Data Sheet on "Coolant Lubricant").

1. Important notes

1.4 Rating plate and machine serial number



Figure 1-1 Rating plate

The rating plate is located on the left side of the machine.



Figure 1-2 Machine serial number

The machine number is located on the rating plate and on the top left of the machine.

1.5 Figure and item numbers in the operating instructions

If a component of the machine that is shown in a figure is described in the text, it is followed by a figure or item number in brackets.

Example: (3-13/1) denotes figure number 3-13, item 1.



Figure 3-13 SP 114 knife holder

The SP 114 (3-13/1) knife holder is fixed to the cross table using a quick-clamping device (3-13/2).

Vacuum suction is used to draw and fix the knives to the knife holder.

2. Safety

2.1 Basic safety instructions

2.1.1 Observe notes in the operating instructions

The basic prerequisite for the safe handling and uninterrupted operation of this grinding machine is knowledge of the basic safety instructions and regulations.

- These operating instructions contain important notes on how to operate the grinding machine safely.
- All persons carrying out work on the grinding machine must follow these operating instructions, in particular the safety notices.
- In addition, the accident prevention rules and regulations applicable at the place of use of the machine must also be observed.

2.1.2 Operator's duty

The operator is obliged to allow only those persons to work on the grinding machine, who

- are familiar with the basic occupational safety and accident prevention regulations and have been trained and instructed in the handling of the grinding machine,
- have read the operating instructions, particularly the "Safety" section, and have read and understood the warning notes. They have given a signed confirmation of this in writing.

It is also checked at regular intervals as to whether the worker is fulfilling his employee obligation to observe safety at work.

2.1.3 Obligations on the part of the personnel

All the personnel working on the grinding machine shall be obliged to

- observe the basic occupational safety and accident prevention regulations,
- read the operating instructions, particularly the "Safety" chapter, and the warning notes. They shall give a signed confirmation of this in writing.

2.1.4 Hazards associated with the handling of the machine

The grinding machine has been built to the latest technological standards and the acknowledged rules of technical safety. In spite of that, its use presents inherent risks which could result in bodily harm or even death of the user or third parties, or impairment of the grinding machine or other property.

The grinding machine may be used only:

- for the intended purpose, and
- in faultless condition with regard to safety-relevant aspects.

2. Safety

Faults that could impair safety must be eliminated immediately.

2.1.5 Malfunctions

If safety-relevant malfunctions occur in the grinding machine, or if the processing behaviour indicates that such malfunctions may have occurred, the grinding machine must be stopped immediately and until such time as the malfunction has been found and eliminated.

Allow only authorised technical staff to eliminate the malfunctions.

2.2 Proper use

The grinding machine is only meant for the automatic grinding, deburring and polishing of flat machine cutting knives.

Before starting work on a flat knife, it must be checked whether the knife fits on the grinding plate and knife holder. Only then may the knife on the grinding plate be inserted in the knife changer.

Any other use is considered improper use. KNECHT Maschinenbau GmbH does not assume any liability for damages resulting from improper use. The user alone bears the risk in such cases.

Use as intended includes the observance of all the instructions in the operating instructions.

The grinding machine is being used improperly, if, e.g.,

- devices are not fastened properly.
- work pieces other than flat machine cutting knives are ground.

2.3 Warranty and liability

Warranty and liability claims in case of personal injuries or property damage are excluded if such damage is attributable to one or more of the following causes:

- improper use of the grinding machine,
- improper transportation, commissioning, operation and maintenance of the grinding machine,
- operating the grinding machine with defective safety devices, or improperly attached or malfunctioning safety and protective equipment,
- ignoring the operating instructions with regard to transportation, commissioning, operation, maintenance and repair of the grinding machine.
- unauthorised structural alterations to the grinding machine,
- unauthorised modification, e.g. of the drive conditions (power and speed), and

2. Safety

- insufficient monitoring of machine parts that are exposed to wear.
- use of unapproved replacement and wear parts

Use only original replacement and wear parts. If parts are purchased from external suppliers, it cannot be guaranteed that they will be constructed and manufactured to withstand the stresses and provide the level of safety required for operating the grinding machine.

2.4 Safety regulations

2.4.1 Organisational measures

All the existent safety devices must be checked regularly.

Observe prescribed intervals for recurring maintenance work or as specified in the operating instructions.

2.4.2 Protective devices

Before commissioning the grinding machine, it must be ensured that all protective equipment is properly mounted and in functional condition.

Protective equipment may be removed only after the machine has stopped and has been secured against accidental restarting of the grinding machine.

When delivering spare parts, the protective equipment must be attached by the operator as stipulated.

2.4.3 Informal safety measures

The operating instructions must be permanently available at the place of use of the grinding machine. In addition to the operating instructions, the generally applicable as well as the locally relevant accident prevention regulations must also be made available and observed.

All the safety alert symbols and danger warnings on the grinding machine must be complete and clearly legible.

2.4.4 Selection and qualifications of the personnel

Only trained and instructed personnel may work on the grinding machine. The minimum legal age for employment must be observed.

The responsibilities of the personnel must be clearly assigned, i.e. commissioning, operation, maintenance and repair, etc.

Personnel still in the training or instruction phase may only be allowed to work on the grinding machine under the permanent supervision of an experienced person.

2. Safety

2.4.5 Machine control system

Do not make any changes to the software program under any circumstances. Parameters that the operator can set himself are excluded from this prohibition (e.g. setting the number of cycles).

Only trained and instructed personnel is allowed to activate the control unit.

2.4.6 Safety measures in normal operation

Refrain from any method of working which may pose a risk to safety. Only operate the grinding machine if all the safety devices are installed and fully functional.

Check the grinding machine for external signs of damage and correct operation of the safety devices at least once every shift.

Report any changes (including operating behaviour) immediately to the competent department/person. Where required, shut down the grinding machine immediately and secure against restarting.

Before switching on the grinding machine, ensure that no one is exposed to any risk from the start-up of the machine.

If there are any functional faults, immediately stop the machine and secure against restarting. Have the faults eliminated immediately.

2.4.7 Dangers due to electrical power

The switch cabinet must always remain secured against access. Only authorised personnel must be allowed to access it.

Work on electrical units or operating materials may only be performed by a qualified electrician in accordance with electrical rules.

Defects, such as damaged cables, cable connections, etc., must be immediately rectified by an authorised electrician.



Cables marked in yellow are electrically live even when the main switch is in off position.

2.4.8 Particular danger zones

When the grinding belt moves to working position, there is a hazard of pinching in the rear area of the machine. Suitable personal protective equipment must be worn.

2. Safety

2.4.9 Servicing (maintenance, repair) and fault rectification

Maintenance work is to be carried out on schedule by trained personnel. Inform operating personnel before starting repair work. The responsible supervisor is to be named.

For all service work, the grinding machine is to be disconnected from the power supply and secured against accidental restarting. Pull out the mains plug. Cordon off the servicing area, as far as possible.

After completion of the maintenance work and fault rectification, install all the safety devices and check whether they are fully functional.

2.4.10 Structural alterations to the grinding machine

Modifications, retrofitting or rebuilds of the grinding machine are not allowed without the permission of the manufacturer. This also applies to the installation and adjustment of safety devices.

No alterations may be carried out without prior written permission from KNECHT Maschinenbau GmbH.

Immediately replace machine parts which are not in perfect condition.

Use only original replacement and wear parts. If parts are purchased from external suppliers, it cannot be guaranteed that they will be constructed and manufactured to withstand the stresses and provide the level of safety required for operating the grinding machine.

2.4.11 Cleaning the grinding machine

Cleaning agents and materials used must be handled properly and disposed of in an environmentally friendly way.

Ensure that wear and replacement parts are disposed of in a safe and environmentally friendly way.

2.4.12 Oils and greases

When handling oils and greases, follow the safety instructions for the product. Observe special instructions for the foodstuffs sector.

2.4.13 Relocation of the grinding machine

Even when moving the machine a short distance from its site, disconnect it from all external power supply sources. Before restarting the machine, connect it properly to the current supply.

When loading or unloading, only use hoisting and load lifting equipment with sufficient load-bearing capacity. Appoint a qualified banksman (signaller) for the lifting process.

No persons other than those entrusted with this work may be present in the loading and installation area.

2. Safety

Only lift the grinding machine correctly with hoisting gear in accordance with the operating instructions (attachment points for hoisting equipment, etc.). Only use suitable transport vehicles with sufficient load-bearing capacity. Attach the load securely. Use suitable attachment points. When putting in operation again, proceed only as instructed in the operating instructions.

3. Description

3.1 Use as intended

The B 600 automatic grinding and polishing machine grinds, deburrs and polishes flat machine cutting knives.

3.2 Technical specifications

Height	_____	approx. 1790 mm
Width (incl. belt filter coolant unit)	_____	approx. 2754 mm
Depth (incl. magazine extension)	_____	approx. 2184 mm
Weight	_____	700 kg
Current supply*	_____	3x 400 V
Mains frequency*	_____	50 Hz
Output*	_____	11.0 kW
Energy consumption*	_____	10.5 A
Back-up fuse*	_____	25 A
Control voltage	_____	24 V DC
Pneumatic connection	_____	6.5 bar
Measured A-evaluated emission sound pressure level at workstation LpA**	_____	74 dB (A)
Air consumption	_____	max. 50 l/min
Operating noise at the grinding wheel (optional)	_____	72 dB (A)
Wet grinding belt	_____	2200 x 60 mm
Flap brushes	_____	d.180x30 mm

*) This data may vary depending on the electrical power supply

***) Noise emission information according to EN ISO 11202 (measurement uncertainty KpA. 2.5 dB(A))

A K 24 cutter knife R363 by KNECHT Maschinenbau GmbH was ground

3. Description

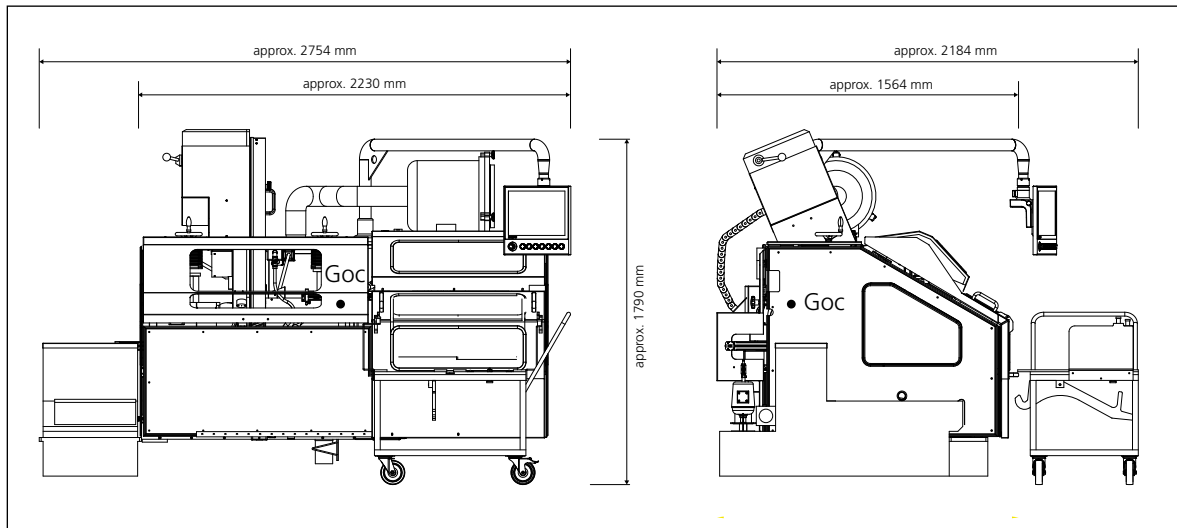


Figure 3-1 Dimensions in mm

3.3 Functional description

The grinding and polishing machine can be used to automatically sharpen, deburr and polish linear and convex flat cutter knives in knife size of maximum 600 x 400 mm.

The knife magazine can hold up to eight knives can be optionally extended to hold up to 16 knives. The knives are fed automatically and guided along the wet grinding wheel or the finned brushes precisely according to their shape.

The grinding angles of the wet grinding belt can be infinitely adjusted between 10° and 35°.

In case of emergency, the grinding and polishing machine can immediately be stopped by pressing the "Emergency Stop" button

3. Description

3.4 Description of the assemblies



Figure 3-2 General view of the grinding machine

- 1 Belt protecting hood
- 2 Belt unloading lever (concealed)
- 3 Hand wheel for height adjustment of "Deburring Unit"
- 4 Rear doors of polishing units (concealed)
- 5 Protective hood of the grinding compartment
- 6 Belt filter coolant unit
- 7 Hand wheel for height adjustment of "Polishing Unit"
- 8 Flow gauge
- 9 Suction unit
- 10 Control panel
- 11 Switch cabinet (concealed)
- 12 Hinged doors of the knife magazine (only needed for extending the magazine)
- 13 Adjustable machine feet

3. Description

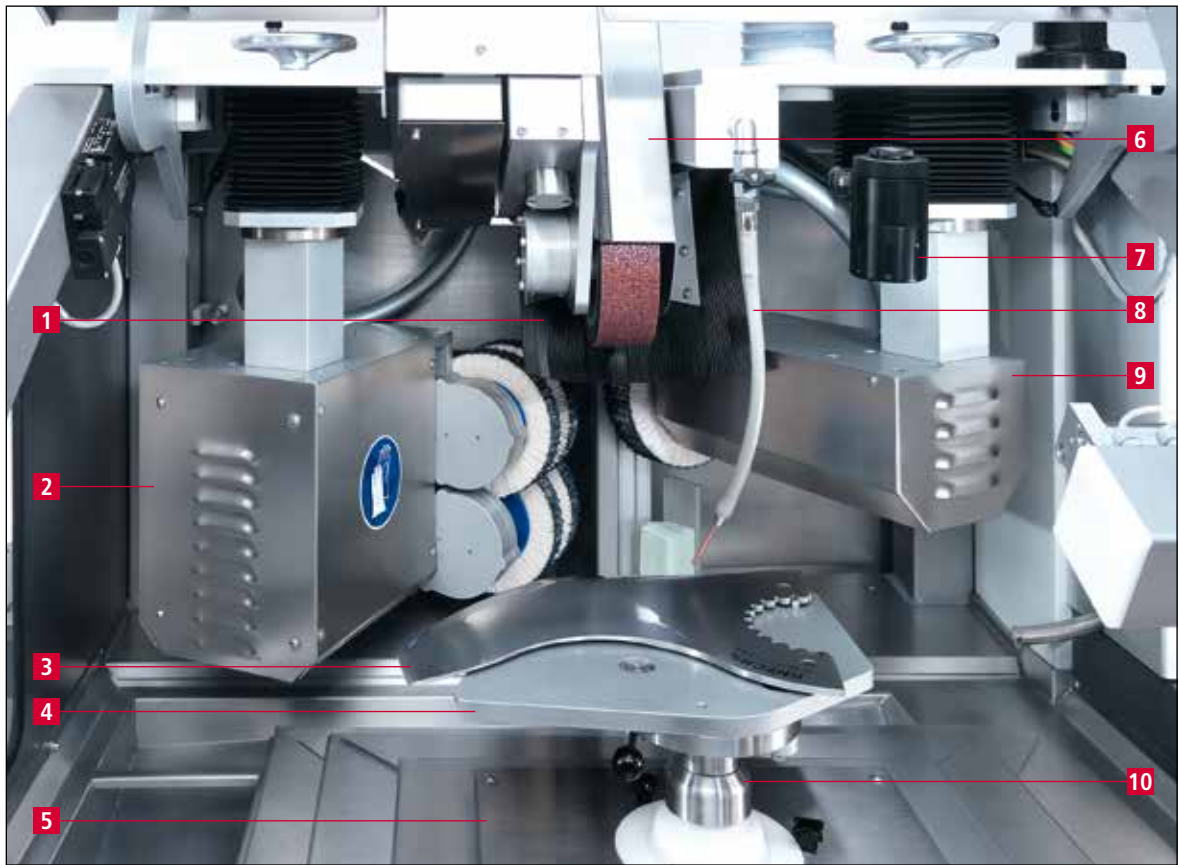
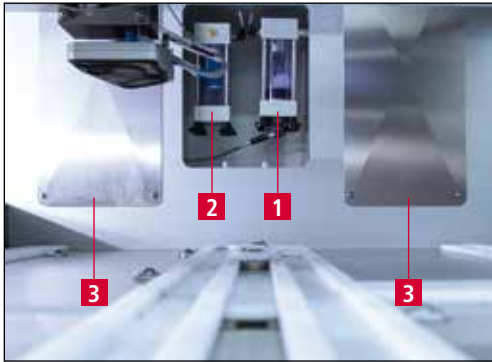


Figure 3-3 Interior view

- 1 Splash guard
- 2 Deburring unit on the left for knife blade
- 3 Knife
- 4 SP 114 knife holding fixture (optionally, SP 115 3-way knife holder)
- 5 Guard plate
- 6 Grinding unit
- 7 Work lamp
- 8 Air blow nozzle
- 9 Polishing unit for knife profile
- 10 Cross table

3. Description



- 1 Blow off device
- 2 Super fine filter
- 3 Pneumatic line switch cabinet

Figure 3-4 Interior view of knife changer

3.4.1 Switching the grinding machine on/off



Figure 3-5 Main switch

The main switch (3-5/1) is disposed on the switch cabinet in the rear of the machine.

Turning the main switch from "0" to "I" switches on the grinding machine.

Turning the main switch from "I" to "0" switches off the grinding machine.

3. Description

3.4.2 Control panel



Figure 3-6 Control panel

- 1 Display screen
- 2 "Emergency Stop" button
- 3 "Control On" button: Activates the controls (button starts flashing)
- 4 "Start" button: Starts the grinding program
- 5 "Stop" button: Stops the grinding program
- 6 "Abort Program": Aborts a running program
- 7 "Stop at cycle end"
- 8 "Vacuum On" button: Switches on the vacuum pump
- 9 "Setting mode" key switch: Position "1" for setting mode

3. Description

3.4.3 Layout of the user interface (main screen)



Figure 3-7 Main screen

- 1 Fault messages
- 2 Status display
- 3 Product data (loaded grinding program and corresponding geometry file)
- 4 Knife data (stored in the grinding program)
- 5 Knife machining time
- 6 Current process step settings (can be changed temporarily)
- 7 Current feed settings (can be changed temporarily)
- 8 ID number of machining steps (highlighted in blue = current work step)
- 9 Switching individual machining steps on/off (highlighted in grey = switched off)
- 10 Name of machining step (stored in the grinding program)
- 11 Segment (stored in the grinding program)
- 12 Feed sub-program
- 13 Touching position (stored in the grinding program)
- 14 Current machining step
- 15 Current feed (number, Y value, set cycles, actual cycles)
- 16 Current operating time of the wet grinding belt (in min)
- 17 Override (100% performance of the wet grinding belt; at 50% performance, the grinding time is increased by double the time)

3. Description

- 18 Actual value of grinding angle
- 19 Deburring (highlighted in white = active, red check-mark = inactive, highlighted in green = in use)
- 20 Grinding unit (highlighted in white = active, red checkmark = inactive, highlighted in green = in use)
- 21 Polishing (highlighted in white = active, red check-mark = inactive, highlighted in green = in use)
- 22 Polishing paste feed, "Deburring" (highlighted in yellow = pulse triggered)
- 23 Coolant monitoring unit (highlighted in white = active, red checkmark = inactive)
- 24 Polishing paste feed "Polishing" (highlighted in yellow = pulse triggered)
- 25 Compensation for finned brush wear (knife is additionally moved a certain distance towards the polishing unit blade on the left) (highlighted in yellow = active)
- 26 Automatic belt wear compensating unit (highlighted in white = active, red checkmark = inactive)
- 27 Compensation for knife wear (knife is additionally moved a certain distance closer to the polishing unit for back of the blade) (highlighted in yellow = active)
- 28 Magazine change (highlighted in white = active, red checkmark = inactive)
- 29 Magazine trolley (optional) (highlighted in white = active, red checkmark = inactive)
- 30 "F1 Automatic START": Starts the grinding program
- 31 "F2 STOP": Stops the grinding program
- 32 "F5 Home Position": Moves the cross table to home position
- 33 "F6 Reset": Resets all the machine control data (the initial status at machine start is restored)
- 34 "F7 RESET belt grinding time": Resets the grinding belt run time to zero (required after grinding belt change)
- 35 "F8 Settings": see Chapter 8.2
- 36 "F10 Edit product data": Changes the grinding program
- 37 "F11 Select knife type": Loads a new grinding program
- 38 "F12 back": Goes back to the previous screen

NOTICE

The assignment of the touch panel fields varies depending upon the current display screen. The respective assignment is indicated in text form.

3. Description

3.4.4 Coolant Unit



Figure 3-8 Belt filter coolant unit

The belt filter coolant unit (3-8/1) is located on the left side of the machine.

During grinding, the work piece must be permanently cooled.

Fill approx. 140 litres of water with coolant additive into the water tank.



Figure 3-9 Flow gauge

The grinding machine has a flow gauge (3-9/1) which automatically interrupts the program flow if there is no coolant flow.

The flow gauge (3-9/1) is located on the machine and must be cleaned regularly.



Figure 3-10 Coolant tap

The coolant volume can be regulated using the coolant tap (3-10/1).

NOTICE

Turning down the tap too far interrupts the program flow.

3. Description

3.4.5 Protective Hood



Figure 3-11 Protective hood of the grinding compartment

The protective hood (3-11/1) remains shut while the grinding process is on and cannot be opened. However, if one of the rear doors is opened, the program flow is aborted.

Press the "Stop" button (3-6/5) to open the protective hood.

The holder plate can be changed when the protective hood is open.

3.4.6 Knife Holder



Figure 3-12 3-axis cross-table

The knives are clamped onto a knife holder for machining.

Knives may only be ground using SP 114 or SP 115 knife holders.

Knife holders for new knife types can be obtained from KNECHT Maschinenbau GmbH on request.



Figure 3-13 SP 114 knife holder

The SP 114 (3-13/1) knife holder is fixed to the cross table using a quick-clamping device (3-13/2).

Vacuum suction is used to draw and fix the knives to the knife holder.

3. Description

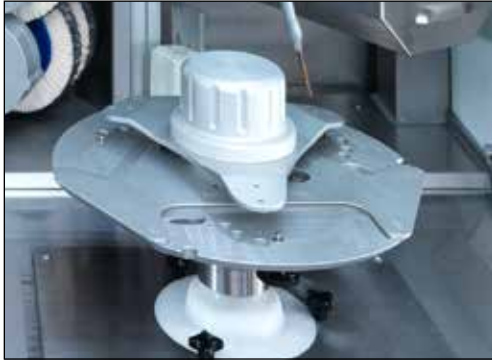


Figure 3-14 SP 115 knife holder

Multiple identical knives can be simultaneously clamped using the SP 115 3-slot knife holder.

ATTENTION

If not all the slots on the SP 115 are equipped with knives, empty slots absolutely must be deselected using the "Holder On/Off" function (8-1/2)!

3.4.7 Grinding Unit

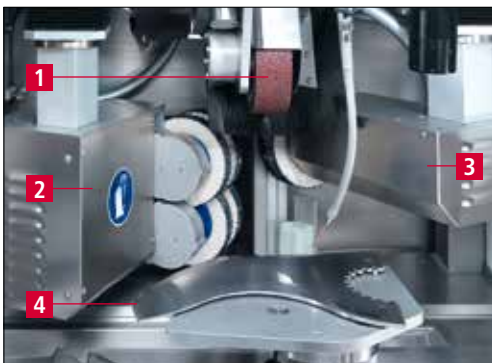


Figure 3-15 Grinding compartment

The wet grinding belt (3-15/1) is moved to rest position using the polishing units ((3-15/2) and 3-15/3)).

It is lowered onto the knife (3-15/4) for grinding. The grinding angle is stored in the product file and is automatically adjusted.

3. Description

3.4.8 Polishing units with polishing paste



Figure 3-16 Polishing units with polishing paste

The grinding machine is equipped with two polishing units ((3-16/1) and (3-16/2)) for polishing the knives.

The deburring unit (3-16/1) swivels forward and deburrs the cutting edge.

The polishing unit (3-16/2) swivels forward to polish the knife profile.

The position of the polishing/deburring unit relative to the knives can be adjusted with the help of the hand wheels ((3-2/3) and (3-2/7)).

The polishing paste is applied automatically in each case via a pneumatic cylinder.

3.4.9 Magazine Extension



Figure 3-17 Knife magazine with knife changer

The knife magazine can hold up to eight knives. The number can be optionally increased to 16 knives using a magazine trolley.

4. Transport



For transporting the machine, the locally applicable safety and accident prevention regulations must be observed.

Only transport the machine in upright position (with the machine feet facing downwards).

ATTENTION

There are parts jutting out on the underside of the machine which could be easily damaged.

4.1 Transport aids

For transporting and for setting up the grinding machine, only use adequately dimensioned transport aids, e.g. truck, forklift or hydraulic lift truck.

When using a forklift or a lift truck, move the fork under the grinding machine.

Bear in mind the centre of gravity of the machine. The centre of gravity (CoG) is shown in figure 3-1.

4.2 Transport damage

If damage is detected on unloading after acceptance of the delivery, inform KNECHT Maschinenbau GmbH and the freight forwarder about it immediately. If required, consult an independent expert immediately.

Remove the packaging and shipping straps. Remove the shipping straps on the grinding machine.

Dispose of the packaging in an environmentally friendly way.

4.3 Transport to another installation site

For transportation to another installation site, ensure that the space requirements are fulfilled (see Chapter 3.2).

A reliable electrical connection must be provided at the new installation site. The grinding machine must be stable and firmly placed.

The machine feet must be adjusted such that there is a slight downward slope towards the back.

4. Transport



CAUTION

Installations on the electrical system may only be performed by an authorized specialist. Observe the locally applicable safety and accident prevention regulations.

5. Installation

5.1 Selection of qualified personnel



It is advisable to have trained KNECHT personnel perform the installation work on the grinding machine.

We assume no liability for damage caused by improper installation.

5.2 Installation site

When determining the installation site, bear in mind the space requirement for installation, maintenance and repair work on the grinding machine (see Chapter 3.2).

5.3 Supply connections

The grinding machine can be connected upon delivery using the corresponding plug (32 A) for the power supply and a compressed air hose (5 m).



Confirm that the machine is correctly connected to the current supply.

5.4 Settings

The various components and the electrics are adjusted by KNECHT Maschinenbau GmbH before delivery.

ATTENTION

Unauthorised changes to set values are not permitted and may damage the grinding machine.

Control parameters may only be changed by accordingly qualified personnel. This person must be familiar with the machine functions and the meaning of the parameters. Otherwise, damage to the machine is likely to occur.

5. Installation

5.5 Initial commissioning of the grinding machine

Place the grinding machine at the installation site on a level base.

Level out floor unevenness by adjusting the machine feet (3-2/13) with a flat wrench (SW17) taking care to ensure that there is a slight downward slope towards the back.

Adjust the height of the knife changer at the magazine trolley.

Have a qualified specialist on site install the power supply.

Completely install and check the safety devices before commissioning.



Have all the protective devices checked for proper functioning by authorised specialists before initial operation of the machine.

Have a qualified specialist on site install the compressed air supply.



Confirm that the machine is correctly connected to the compressed air supply.

If the machine is connected incorrectly, escaping compressed air and hurtled parts can lead to injuries.

Observing the local safety and accident prevention regulations for compressed air is required.

6. Commissioning



All work on the machine may only be performed by trained personnel.

The locally applicable safety and accident prevention regulations must be observed.



Figure 6-1 Belt filter coolant unit

Set up the belt filter coolant unit, connect and fill with water and coolant additive as described in Chapter 3.4.4.

For information on the coolant additive, see Chapter 9.1.

Connect the power plug to the power socket provided on site (3x 400 V).

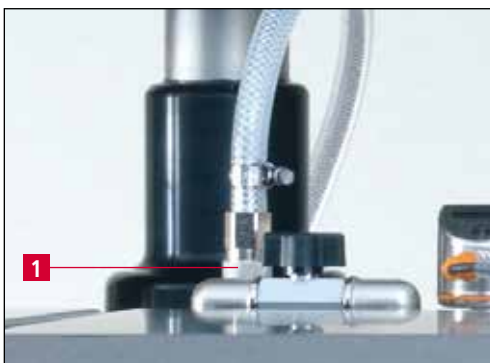


Figure 6-2 Compressed air port

Plug in the compressed air hose at the compressed air port (6-2/1).

Close the belt protective hood (3-2/1), rear doors (3-2/4) and protective hood (3-2/5).



Figure 6-3 Control panel

Set the main switch (3-5/1) to "I". Wait for the controls to initialise.

Switch on the control unit with the "Control On" button (6-3/1) when the "Control On" button (6-3/1) starts flashing.

6. Commissioning



Figure 6-4 Main screen

Select "F8 Settings" (6-4/1) in the main menu to check the direction of rotation of the wet grinding belt for the first time.

The "Settings" (6-5) screen appears.



Figure 6-5 Settings

Change to the "Manual Functions" (6-6) screen with the "F8 Manual Functions" touch panel field (6-5/1).



Figure 6-6 Manual functions

Change to the "Grinding Belt" (6-7) screen with the "F2 Grinding Belt" touch panel field (6-6/1).

6. Commissioning



Figure 6-7 "Grinding Belt" manual functions

Press the "On" (6-7/1) button in the "Grinding Belt" row of the touch panel to check the direction of rotation of the wet grinding belt.



Figure 6-8 Direction arrow for indicating the direction of rotation

The direction arrow (6-8/1) indicates the direction of rotation of the wet grinding belt.

Where necessary, switch the pole changer plug.

Go back to the main screen with "F12 Back" after ensuring that the direction of rotation is the prescribed direction.

NOTICE

Buttons highlighted in green are active.
Buttons highlighted in grey are inactive.

7. Operation

7.1 General principles of grinding technology

If a blade has become blunt, material must be removed from its surface to restore it to its original sharpness.

For that, the knife in question is ground to produce its cutting edge. If, in the process, a burr appears on the blade, then the grinding process was successful and can be concluded. Now, before the final sharpness is achieved, the burr must be removed in a further step. This is done with a finned brush.

As it is not only the sharp cutting edges but also the long service lives that define a blade, the cutting angle is another important indicator of a blade's performance. The smaller the cutting edge angle, the higher is the theoretical service life. In practice, however, the cutting edge breaks off and is therefore no longer sharp when the cutting edge angle is too small.

The cutting edge angles must therefore lie between 15° and 35°. If the cutting edge angles are less than 15°, the blade becomes so unstable that it breaks at the slightest resistance. If the cutting edge angle is greater than 35°, the blade is extremely stable, but service life will not be as long.

One more criterion for judging the properties of a cutting edge is the cutting edge profile.

There are three different ground profiles:



Tapered grinding



Convex grinding



Concave grinding

Convex ground profiles can mostly be found on cutter blades and hand knives. Tapered and concave ground profiles are predominantly found on circular knives and blades.

In general: Adhering to the profiles and the cutting edge angles specified by the manufacturer is required

7. Operation

7.2 Switching on the grinding machine

Set the main switch (see figure 3-5/1) to "I". Wait for the controls to initialise. The main screen appears.

Press the "Control On" button (3-6/3). The control unit is now activated.

7.3 Grinding of cutter knives

7.3.1 Loading the grinding program



Figure 7-1 Main screen

Press the "F11 Select knife type" (7-1/1) touch panel field on the main screen. A screen with the "Open" (7-2) button appears. The grinding programs are located in the product data folder.

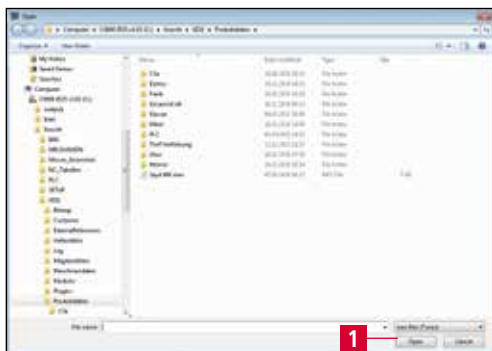


Figure 7-2 Loading the grinding program

Select the desired grinding program by double clicking on the file in question (grinding programs have the ending *.mes). Alternatively, you can single click on the product file and then press the "Open" button (7-2/1).

The relevant grinding program is now loaded and the "Open" screen is closed.

ATTENTION

Use the grinding program that matches the knife. An incorrect grinding program can damage the machine and knife.

7. Operation



Figure 7-3 Main screen

NOTICE

The selected grinding program appears on the main screen in the "Program Active" row (7-3/1).

The number of the knife holder matching the grinding program appears on the main screen under "Holder Number" (7-3/2). This number is engraved on the knife holder.

The "Plate Number" (7-3/3) indicates the grinding plate matching the knife. The number is engraved on a label on the grinding plate

7. Operation

7.3.2 Grinding



Figure 7-4 Main screen

Move the cross table to the home position by pressing the "F5 Home Position" touch panel field (7-4/1).

Open the protective hood.



Figure 7-5 Placing the SP 114 knife holder

Place the knife holder (7-5/1) on the cross table (7-5/2)

ATTENTION

Cross table and bearing surface of the grinding plate must be clean.

Check whether the labelling on the knife holder is identical to the labelling on the knife.

Use of a knife holder that does not match the knife can lead to damage to the knife and machine.

7. Operation



Figure 7-6 Fixing the knife holder

Fix the knife holder (7-6/1) by turning the quick clamping lever (7-6/2) in counter-clockwise direction.



Figure 7-7 Knives on grinding plates

Place the knives (7-7/1) on the designated grinding plates (7-7/2) (see grinding plate number).

The grinding plates have locating boreholes or bolts. The knives must lie in the knife holder of the grinding plates. Stack the grinding plates.

ATTENTION

Place the knives only in the designated grinding plates. Check whether the labelling is identical to the data in the program.

Use of a grinding plate that does not match the knife can lead to damage to the knife and machine.

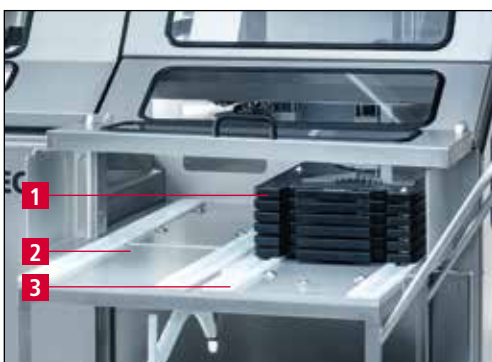


Figure 7-8 Knife stack in machine

A magazine trolley (7-8/2) is optionally available for transporting the knife stack (7-8/1).

Push the knife stack (7-8/1) as far as it will go into the machine via the guide rails (7-8/3) on the right side.

Shut the doors of the machine.

7. Operation



Figure 7-9 Starting the grinding program

Press the “Start” button (7-9/1) that now starts flashing. The grinding process starts.

All the knives present in the knife magazine are ground, polished and deburred fully automatically.

The machine need not be supervised as it shuts down automatically in case of faults.

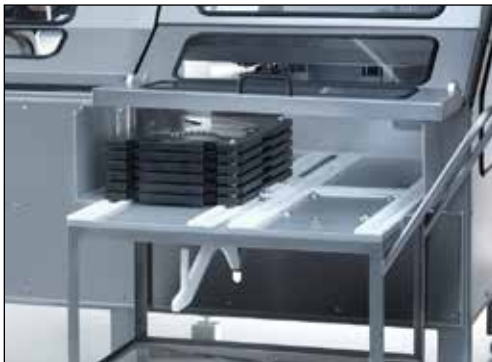


Figure 7-10 Removing the knives

The finish machined knife stack is now deposited on the left side of the knife changer. The knives can be removed.

7. Operation

7.4 Adjusting the deburring unit

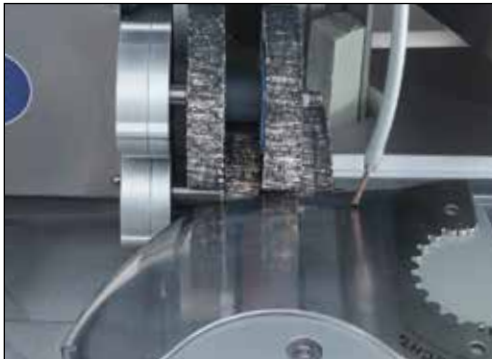


Figure 7-11 Adjusting the deburring unit

Because the upper and lower brushes of the deburring unit wear in very different ways, the position of the deburring unit must be readjusted at regular intervals.

When deburring in automatic mode, stop and press "Vacuum On" (7-9/2) button.

Using the touchscreen button "Deburring Unit Forward/Backward" (8-8/2) in manual functions, swivel the deburring unit to the knife.

When using the hand wheel to adjust the height of the "Deburring Unit" (3-2/3), adjust the deburring unit so that the cutting edge is at the point of intersection with the finned brush.

ATTENTION

The height of the deburring unit must be adjusted so that the point of intersection of the polishing brushes lies on the knife edge.

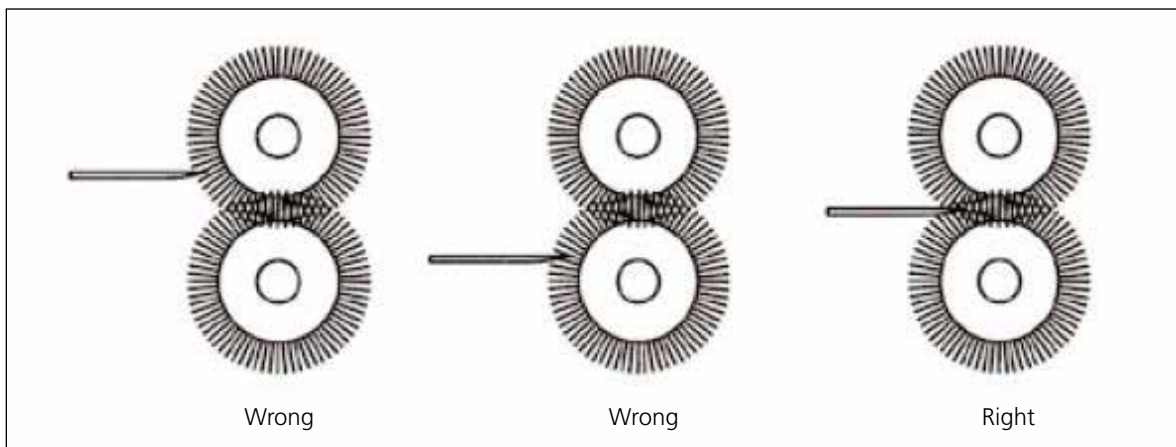


Figure 7-12 Adjusting the deburring unit

7. Operation

7.5 Replacing the grinding belt



CAUTION

For all work on the grinding and polishing machine, the locally applicable safety and accident prevention regulations as well as instructions in the "Safety" and "Important Notes" section of the operating instructions must be observed.

ATTENTION

Only original grinding belts may be used.

Incorrect grinding belts can lead to overheated blades that can cause knife breaks.

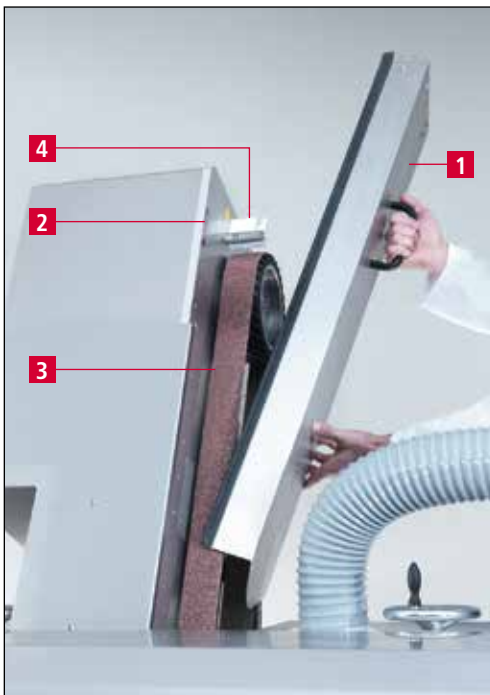


Figure 7-13 Changing the grinding belt

Pull the belt protecting hood (7-13/1) upward and remove.

Turn the belt unloading lever (concealed) (3-2/2); unload and remove the grinding belt (7-13/3).

Load the new grinding belt taking care that the direction of rotation is correct (the direction of rotation of the motor is counter-clockwise). There is a direction arrow on the grinding unit (7-13/2) to check the direction of rotation.

If the grinding belt is not running exactly on the contact disc, it can be aligned with the belt control knob (7-13/4).

Turning the belt control knob in counter-clockwise direction makes the grinding belt run to the left. Turning in clockwise direction makes the belt run to the right.

7. Operation

7.6 Changing the finned brushes of the polishing unit



Figure 7-14 Manual functions "Polishing Unit"

Navigate from the "F8 Settings" (3-7/35) main menu, through "F8 Manual Functions" (8-1/18) and "F4 Polishing Unit" (8-6/9), to the manual functions of the "Polishing Unit". Swivel the polishing unit forward with the "Forward" (7-14/1) touch panel button.

ATTENTION

Set the "Setting Mode" key switch (3-6/9) to Position "1" (1 h.) so that the polishing unit remains in front when the safety doors open.



Figure 7-15 Changing the finned brushes of the polishing unit

Open the protective hood and insert the bar (7-15/1) in the hole in the clamping flange behind the finned brush.

Insert the tap wrench (7-15/2) in the holes of the clamping flange and unscrew in clockwise direction.

Exchange the finned brush and screw back the clamping flange in counter-clockwise direction.

7. Operation

7.7 Changing the finned brushes of the deburring unit



Figure 7-16 Manual functions "Deburring Unit"

Use the main menu option "F8 Settings" (3-7/35), followed by "F8 Manual Functions" (8-1/18), and "F3 Deburring Unit" (8-6/8) to access the manual functions of the deburring unit. Swivel the deburring unit forward using the "Forward" touchscreen option (7-16/1).

ATTENTION

Set the "Setting Mode" key switch (3-6/9) to Position "1" (1 h.) so that the deburring unit remains in front when the safety doors open.



Figure 7-17 Changing the finned brushes of the deburring unit

Open the protective hood and loosen the upper nut (7-17/1) in counter-clockwise direction using the SW22 flat wrench. Loosen the lower nut in clockwise direction.

Remove the finned brushes and flange and mount the new finned brushes in reverse sequence. Tighten the nuts (7-17/1) back again.

7. Operation

7.8 Changing the polishing pastes

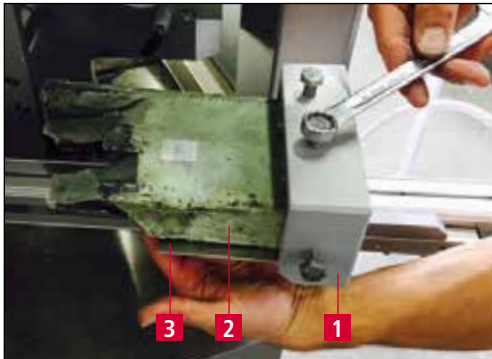


Figure 7-18 Changing the polishing paste

Open the rear doors and unscrew the clamping claw (7-18/1) with a SW17 combination wrench. Take out the polishing paste (7-18/2).

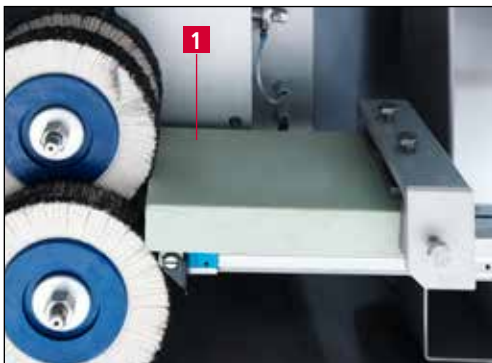


Figure 7-19 Inserting the new polishing paste

Insert new polishing paste. Due to its length, the new polishing paste (7-19/1) must first be supported by a plate underneath (7-18/3). Tighten the clamping claw (7-18/1) back again.

ATTENTION

A new polishing paste must initially be supported with a plate underneath. This prevents the paste from breaking off. The supporting paste must be removed as soon as approximately half of the polishing paste has been used up.

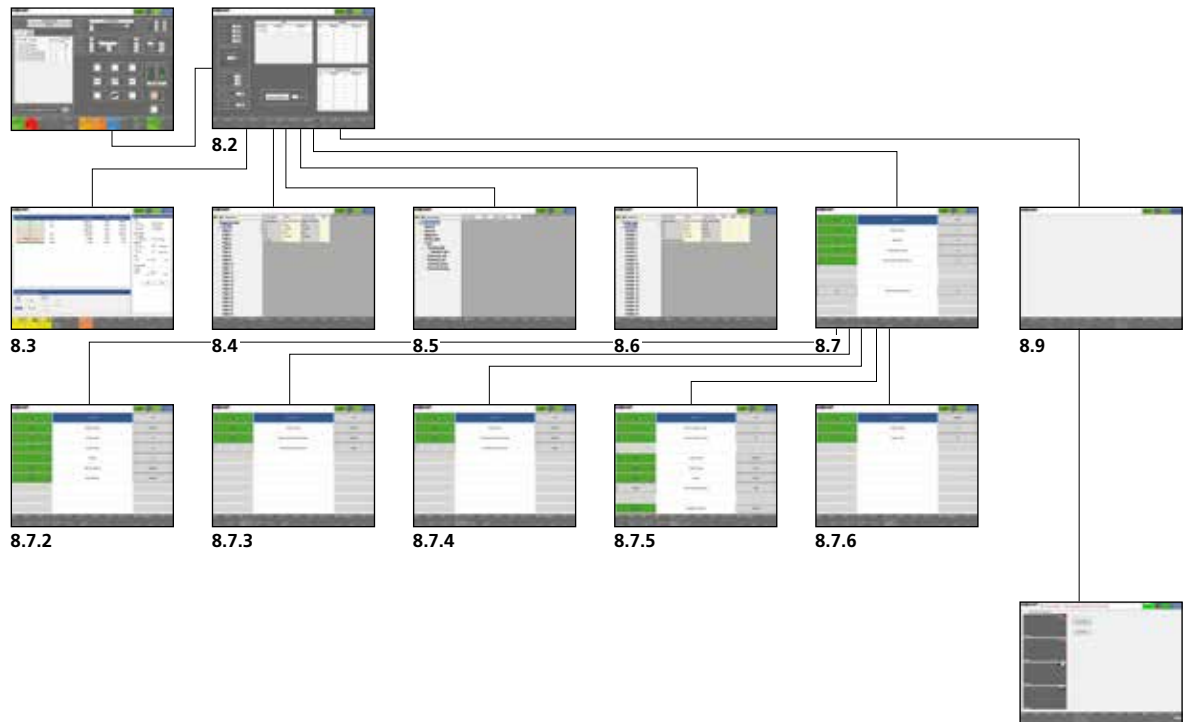
Tighten the clamping claw only lightly until the pyramidal tips are pressed all the way into the paste.

Use only original polishing pastes as the knives will otherwise not be sharpened properly.

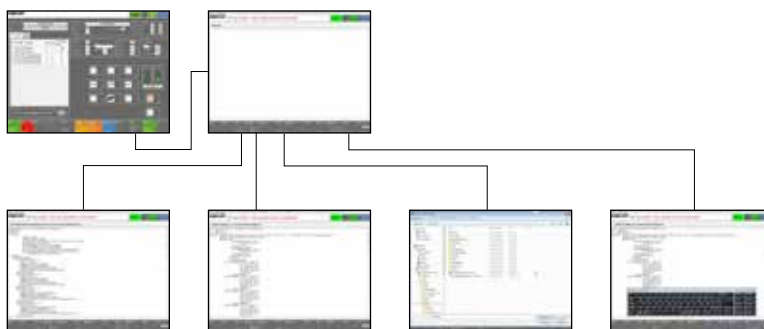
8. Control system

8.1 Overview of control sub-programs

8.1.1 "F8 Settings"



8.1.2 "F10 Edit Product Data"



8.1.3 "F11 Select Knife Type"



8. Control system

8.2 Settings

Settings other than the "Start" or "Stop" basic functions of the machine are carried out using the "F8 Settings" main menu (3-7/35).

ATTENTION

Changes to the settings can damage the machine.



Figure 8-1 Settings

- 1 Running performance of the individual axes
- 2 Holder – on/off (Individual knife slots can be deactivated when using a multi-slot holder.)
- 3 Holder – Belt repeat (For additional grinding runs, enter the desired number. Concerns the entire knife stack. Inputs are temporary.)
- 4 Holder – Belt pressure (enter desired grinding pressure. Concerns the entire knife stack. Inputs are temporary.)
- 5 Magazine – Belt repeat (For additional grinding runs, enter the desired number. The number of grinding runs can be configured individually for each knife. The top knife in stack is no. 1, the second knife is no. 2, etc. Inputs are temporary.)
- 6 Magazine – enter belt pressure (Desired grinding pressure for every knife. Inputs are temporary.)

8. Control system

- 7 Central lubrication system (number of the next, automatic lubrication)
- 8 Magazine changer – Belt repeat (For additional grinding runs, enter the desired number. The number of grinding runs can be configured individually for each knife. The top knife in stack is no. 1, the second knife is no. 2, etc. Concerns the knife on the trolley of the magazine extension. Inputs are temporary.)
- 9 Magazine changer – enter belt grinding pressure (desired grinding pressure for every knife. Concerns the knife on the trolley of the magazine extension. Inputs are temporary.)
- 10 Change position (transfer position of knife from knife changer to cross table and reverse.)
- 11 Gripper (number of knife changer cycles)
- 12 Approach grinding angle (The angle entered is approached by the machine. Function is only necessary for servicing purposes.)
- 13 Knife counter (number of knives ground)
- 14 "F3 Axes": Status display of machine axes; option of manual control.
- 15 "F5 Magazine data": Calls up magazine data.
- 16 "F6 Machine data": Display of machine data factory settings.
- 17 "F7 Holder data": Display of current holder data.
- 18 "F8 Manual functions": Permits manual operation of the machine.
- 19 "F9 Message texts": Displays all the error messages sequentially (number, frequency, beginning).
- 20 "F10 Options": Change language, etc.
- 21 "F12 back": Goes back to the previous screen

8. Control system

8.3 Axes

Call the "F3 Axes" sub-menu (8-1/14) via the "F8 Settings" main menu (3-7/35). The "Axes" screen (8-2) permits various manual settings (including setting the traverse type and/or speed).

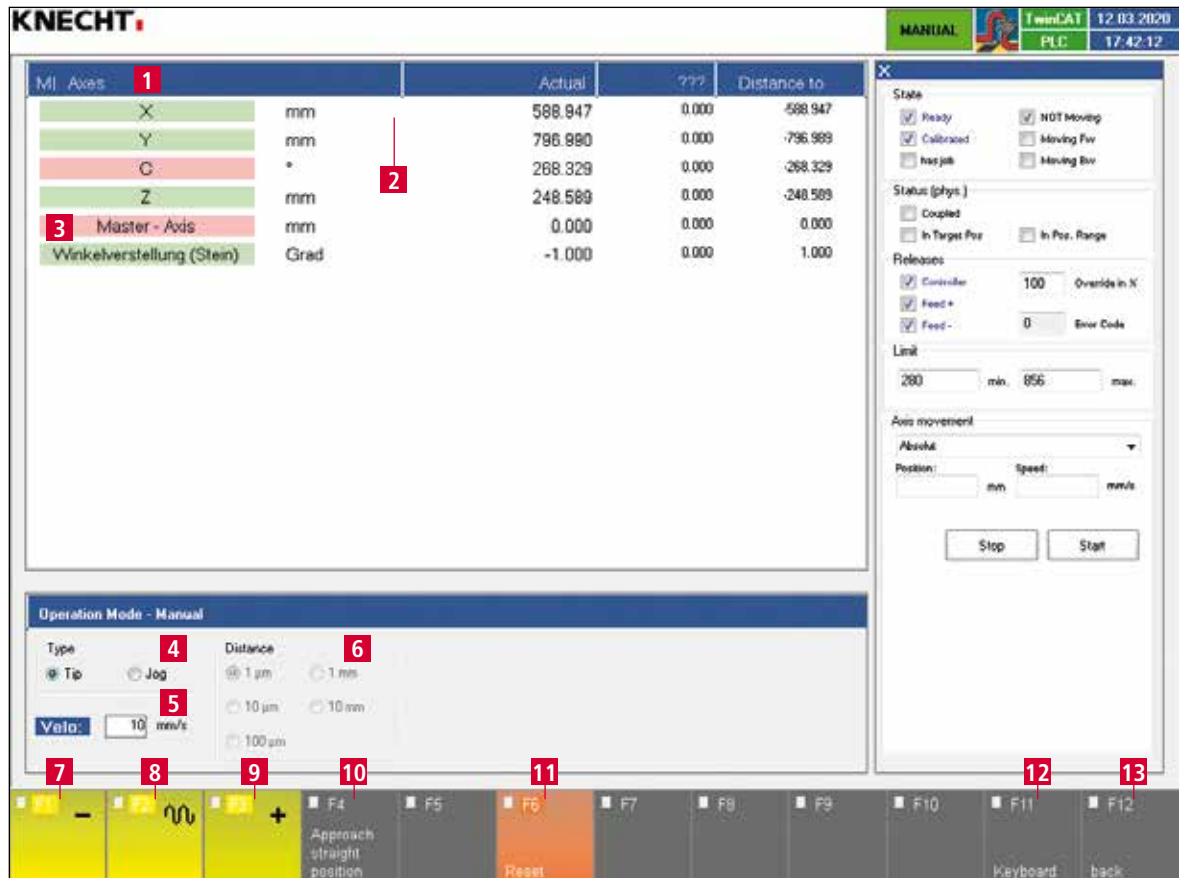


Figure 8-2 Axes

- 1 Axis table (indicates actual position)
- 2 Blue marking (selected axis is active; option of manual traverse type (with F1, F2, F3))
- 3 Master axis (virtual axis; manual traverse option not available (stored in the grinding program))
- 4 Type: Set the traverse type (Tip = machine moves continuously, Jog = machine moves step by step)
- 5 Velo (traverse speed for "Tip" traverse type in mm/s. The keyboard for changing the value is automatically opened.)
- 6 Distance (distance that is traversed in each step for the "Jog" traverse type)
- 7 "F1 Traverse Distance -": The selected axis traverses backwards continuously or step by step depending upon the traverse type
- 8 "F2 Rapid Traverse": Activates the rapid traverse for quick feed
- 9 "F3 Traverse Distance +": The selected axis traverses forwards continuously or step by step depending upon the traverse type
- 10 "F4 Approach Straight Position": Approaches the next straight position
- 11 "F6 Reset"

8. Control system

- 12 "F11 Keyboard": Keyboard is shown
- 13 "F12 Back": Goes back to the previous screen

8. Control system

8.4 Magazine Data

Call the "F5 Magazine Data" sub-menu (8-1/15) via the "F8 Settings" main menu (3-7/35). The "Magazine Data" screen (8-3) permits you to select various grinding plates and manually change the respective coordinates. However, you may do this only in consultation with KNECHT Maschinenbau GmbH.

ATTENTION

Changes to the coordinate data can lead to damage to the knife or the machine.

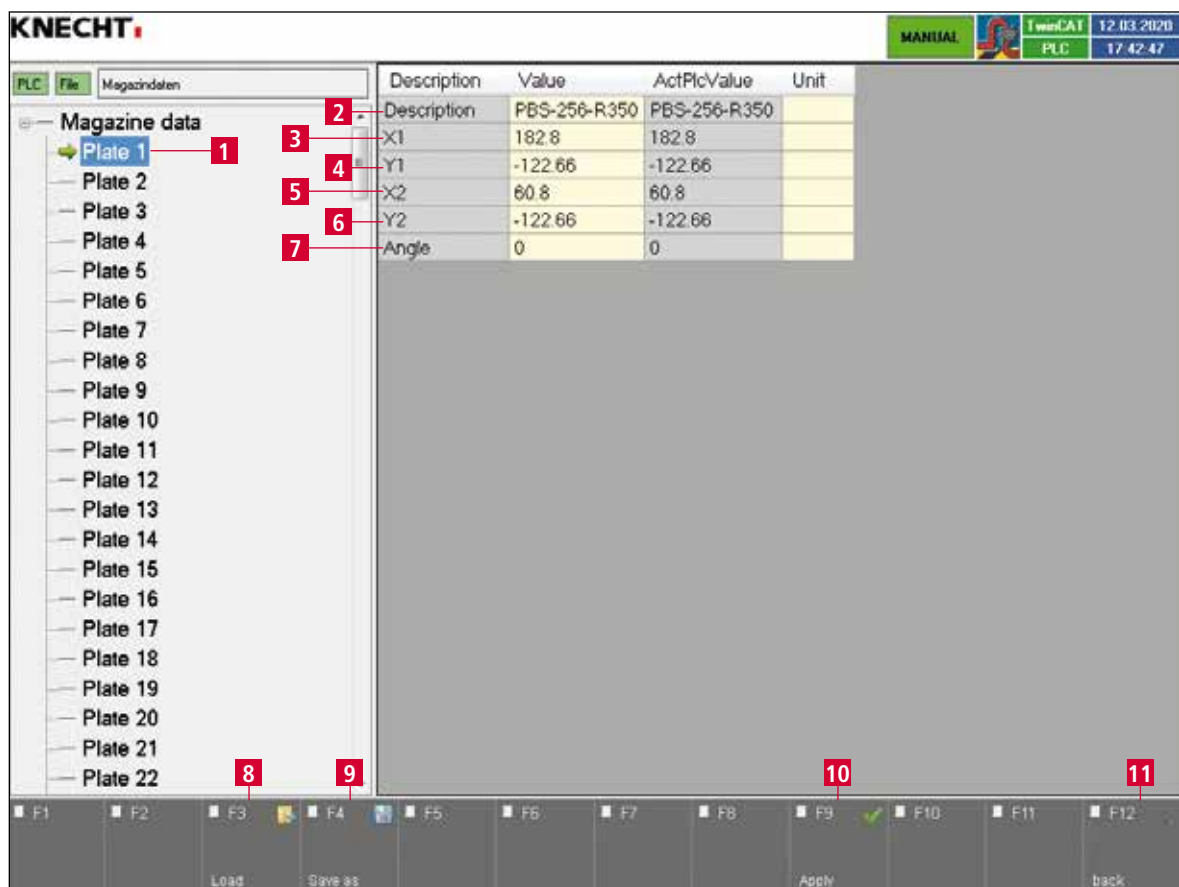


Figure 8-3 Magazine data

- 1 Magazine data (selected grinding plate is marked with a green arrow)
- 2 Description of the knife
- 3 X value knife holder 1 (from drawing)
- 4 Y value knife holder 1 (from drawing)
- 5 X value knife holder 2 (from drawing)
- 6 Y value knife holder 2 (from drawing)
- 7 Angle
- 8 "F3 Load": Load values from the machine control unit
- 9 "F4 Save as": Save changed values

8. Control system

- 10 "F9 Apply": Transfer changed values to the machine control unit
- 11 "F12 Back": Goes back to the previous screen

8. Control system

8.5 Machine Data

Call the "F6 Machine Data" sub-menu (8-1/16) via the "F8 Settings" main menu (3-7/35). All the machine data are stored in the "Machine Data" screen (8-4). You can change the control parameters of the machine here. However, you may do this only in consultation with KNECHT Maschinenbau GmbH.

ATTENTION

Changes can lead to damage to the knife or the machine.



Figure 8-4 Machine data

- 1 Machine data (data highlighted in blue are displayed)
- 2 Options
- 3 General
- 4 Magazine
- 5 Rotary table
- 6 Tools
- 7 Tools – Grinding belt
- 8 Tools – Grinding belt – Utilisation time

8. Control system

- 9 Tools – Deburring unit
- 10 Tools – Polishing unit
- 11 Tools – Grinding wheel (optional)
- 12 Tools – Knife shortening (optional)
- 13 "F3 Load": Load programs with machine data
- 14 "F4 Save as": Save changed machine data
- 15 "F9 Apply": Transfer machine data to the machine
- 16 "F12 Back": Goes back to the previous screen

8. Control system

8.6 Holder Data

Call the "F7 Holder Data" sub-menu (8-1/17) via the "F8 Settings" main menu (3-7/35). The "Holder Data" screen (8-5) permits you to select various holder data and manually change the respective coordinates. However, you may do this only in consultation with KNECHT Maschinenbau GmbH.

ATTENTION

Changes can lead to damage to the knife or the machine.

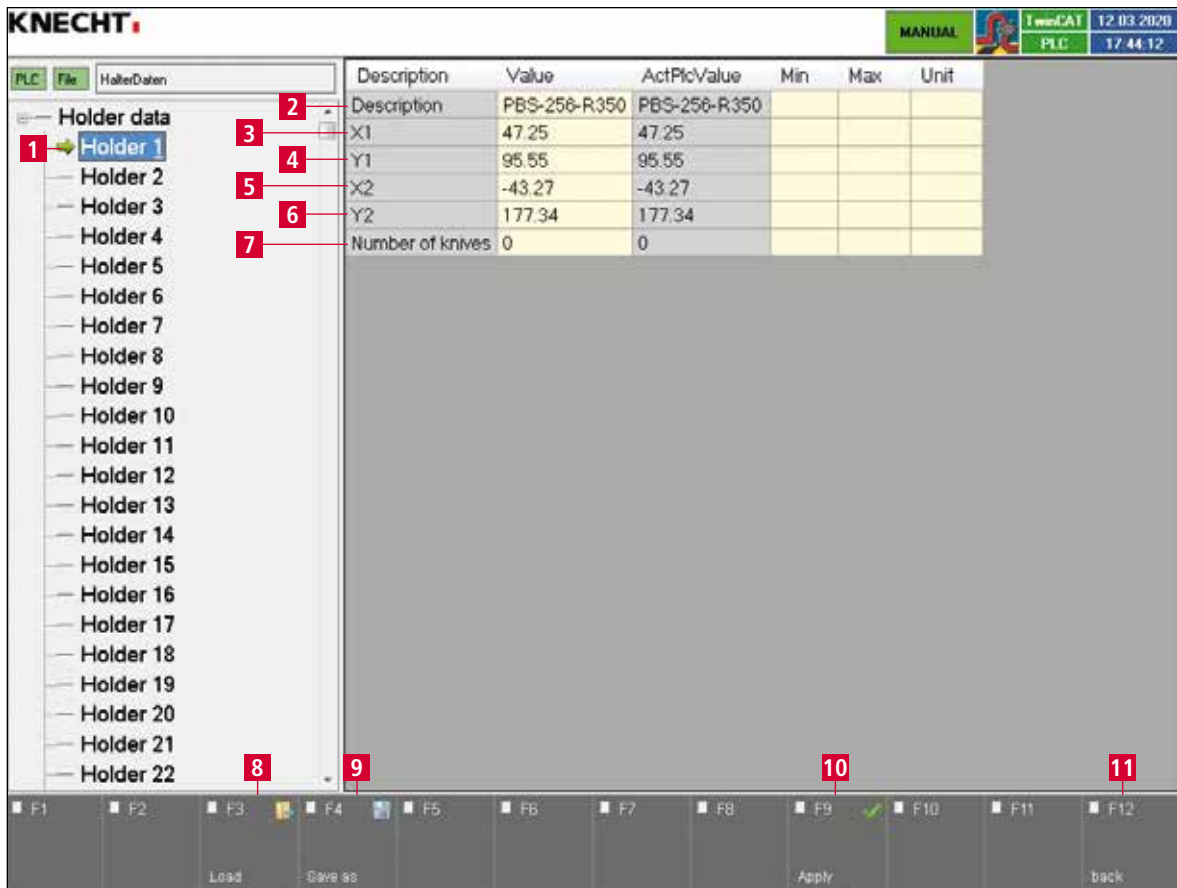


Figure 8-5 Holder data

- 1 Holder number
- 2 Description of the knife
- 3 X value knife holder 1 (from drawing)
- 4 Y value knife holder 1 (from drawing)
- 5 X value knife holder 2 (from drawing)
- 6 Y value knife holder 2 (from drawing)
- 7 Number of knives
- 8 "F3 Load": Load values from the machine control unit

8. Control system

- 9 "F4 Save as": Save changed values
- 10 "F9 Apply": Transfer changed values to the machine control unit
- 11 "F12 back": Goes back to the previous screen

8. Control system

8.7 Manual Functions

The manual functions allow you to operate the machine by hand. Call the "F8 Manual Functions" sub-menu (8-1/18) via the "F8 Settings" main menu (3-7/35). Various functions of the machine can be individually activated/deactivated.

ATTENTION

Buttons highlighted in green are active. Buttons highlighted in grey are inactive.

NOTICE

Manual functions are not needed in normal operation. During maintenance work (e.g. when changing the finned brushes), the individual machine components can be moved to a more easily accessible position using the manual functions.

8.7.1 General

When the "F8 Manual Functions" sub-menu (8-1/18) is called, the screen initially switches to the general manual functions (8-6).



Figure 8-6 Manual functions "General"

8. Control system

- 1 Lock/unlock the safety doors
- 2 Switch the vacuum pump On/Off
- 3 Switch the suction system On/Off
- 4 Switch rotary table vacuum on/off
- 5 Switch rotary table air on/off
- 6 Switch central lubrication on/off
- 7 "F2 Grinding belt": Activate/deactivate grinding belt functions
- 8 "F3 Deburring unit": Manually operate deburring unit (cutting edge) functions
- 9 "F4 Polishing unit": Manually operate polishing unit functions (knife profile)
- 10 "F5 Knife changer": Manually operate knife changer functions
- 11 "F6 Grinding wheel" (optional): Manually operate grinding wheel functions
- 12 "F10 Save": Change changes
- 13 "F11 Mode": (Change the display mode. This is not needed.)
- 14 "F12 back": Goes back to the previous screen

8.7.2 Grinding Belt



Figure 8-7 Manual functions "Grinding Belt"

- 1 Switch the grinding belt On/Off
- 2 Water deflector Forward/Backward
- 3 Switch coolant valve On/Off
- 4 Switch the coolant pump On/Off
- 5 Switch grinding On/Off (grinding belt and coolant valve are automatically switched on and the water deflector is moved forward)
- 6 Move grinding belt Forward/Backward pneumatically
- 7 Move grinding belt Forward/Backward electrically

8.7.3 Deburring unit (cutting edge)



Figure 8-8 Manual functions "Deburring Unit"

- 1 Switch deburring unit on/off
- 2 Run deburring unit forward/backward
- 3 Run deburring unit polishing paste forward/backward
- 4 Deburring unit polishing paste impulse (runs forward and backward automatically)

8. Control system

ATTENTION

“Setting Mode” key switch (3-6/9): Switch on Pos. “0” (11 h.) = The polishing unit automatically moves backwards when the safety doors open. Switch on Pos. “1” (1 h.) = The polishing unit remains in front.

8.7.4 Polishing unit (knife profile)



Figure 8-9 Manual functions “Polishing unit”

- 1 Switch polishing unit on/off
Run polishing unit forward/backward
- 3 Run polishing unit polishing paste forward/backward
- 4 Polishing unit polishing paste impulse (runs forward and backward automatically)

ATTENTION

“Setting Mode” key switch (3-6/9): Switch on Pos. “0” (11 h.) = The polishing unit automatically moves backwards when the safety doors open. Switch on Pos. “1” (1 h.) = The polishing unit remains in front.

8.7.5 Knife Changer



Figure 8-10 Manual functions “Knife Changer”

- 1 Switch gripper air On/Off
- 2 Switch circuit 1 gripper vacuum On/Off
- 3 Switch circuit 2 gripper vacuum On/Off
- 4 Move knife changer Forward/Backward (left position = transfer knife to cross table; right position = knife pickup)
- 5 Lock/unlock centre locking
- 6 Move gripper Up/Down
- 7 Knife changer work flow (centre position = deposit knife (position is locked; gripper moves down and up), right position = knife pickup (gripper moves down and up))
- 8 Move magazine changer In/Out

8. Control system

8.7.6 Grinding Disk (optional)



- 1 Move grinding wheel Forward/Backward
- 2 Switch grinding wheel On/Off
- 3 Switch coolant valve On/Off

Figure 8-11 "Grinding Disk" manual functions

8. Control system

8.8 Message Texts



Figure 8-12 Message texts

The "Message Texts" screen (8-12) serves only to display the status messages of the machine in detail.

The "Message Texts" screen provides an overview of the number of errors that are hindering the operation of the machine at a particular moment. Furthermore, the sub-menu informs as to which errors have occurred and since when they have been active.

NOTICE

No settings can be performed in the "Message Texts" sub-menu. The errors are also displayed in the top half of the main screen (3-7/1).

8.9 Options

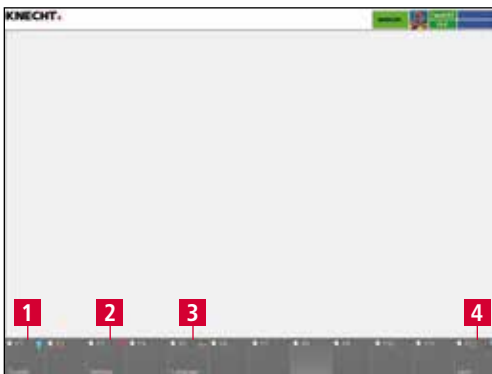


Figure 8-13 Options

- 1 "F1 Sysinfo"
- 2 "F3 Settings"
- 3 "F5 Language": Change language
- 4 "F12 back": For going back to the previous screen

8. Control system

8.10 Setting up an internet connection



Figure 8-14 Power supply connection

NOTICE

The machine has an Ethernet connection. Use the optional, integrated VPN router to create a secure connection between the machine and KNECHT Maschinenbau GmbH. This connection can be activated or deactivated by the operator using the key switch on the control cabinet.

This connection gives the KNECHT service technician access to the control in order to diagnose the machine, change the software settings, and load or edit new grinding programs.

An active internet connection is required to establish the connection.

During commissioning, configure the VPN router according to the specified IT infrastructure so that the machine communicates exclusively with KNECHT Maschinenbau GmbH via the VPN server. There is no communication within the customer network. In this way, the network is optimally protected.

To establish the internet connection, connect the supplied Ethernet cable to the on-site network socket (RJ 45) and the network connection on the control cabinet (8-14/1).

9. Care and maintenance

9.1 Coolant additive

An additive must be added to the coolant to avoid corrosion of the machine guides (see Chapter 9.1.1). The additive to be used is Colometa SBF-PN. Dosage 3% according to insert.

ATTENTION

No other coolant additive may be used without the approval of KNECHT Maschinenbau GmbH.

9.1.1 Cooling lubricant maintenance plan

- Check fill level daily.
- After topping up with water, always measure concentration and if necessary top up with cooling lubricant.
- Check cooling lubricant concentration weekly.

Cooling lubricant: Colometa SBF-PN	Refractometer °Brix: 3 - 5			
Date:	°BRIX	Conc %	Remarks etc.	Signature

(The value read off in Brix multiplied by 1.8 is the concentration in %).

The concentration must always lie between 3 - 5 °Brix (corresponds to between 5 and 9% concentration).

Check the cooling lubricant regularly for odour and appearance. The cooling lubricant must be replaced at the latest every three months (biological hazard due to germ formation in the cooling lubricant).

Maintenance plan has been enclosed for copying.

ATTENTION

Used coolant must be disposed of properly.

9. Care and maintenance

9.2 Lubrication and Maintenance

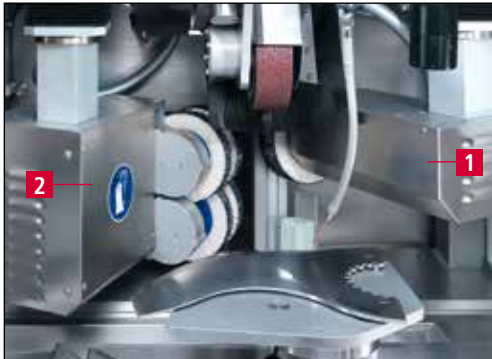


Figure 9-1 Polishing unit gear wheels

NOTICE

Lubricate the gear wheels of the polishing and deburring units semi-annually.

To do so, remove the cover of the polishing/deburring unit (9-1/1) and (9-1/2) and give two pumps from the grease gun on the respective lubrication nipples.

Relubricate the deburring unit (9-1/2) only if there is an increased level of noise. Too much grease makes the system sluggish.



Figure 9-2 Flow gauge

The flow gauge (9-2/1) must be removed and cleaned semi-annually.

For this purpose, disconnect the connector (9-2/2) and turn the flow gauge in counter-clockwise direction by hand. Clean the measuring probe with a clean cloth.

Slightly grease the thread (not the probe) and tighten back again.

9. Care and maintenance

9.2.1 Lubrication schedule and lubricant table

Lubricating activity	Interval	OEST	SHELL	EXXON Mobil
Oil machine parts after cleaning	After each grinding operation	Paraffinum Perliquidum 16L	Shell Risella 917	Marcol 82
Lubricate parts (except for deburring unit) with lubrication nipple (see figure 9-1)	Semi-annually	L2 multipurpose grease	Gadus S2 V 100 2	Mobilith SHC 100
Lubricate thread of star handles and flow gauge	Semi-annually	L2 multipurpose grease	Gadus S2 V 100 2	Mobilith SHC 100

9. Care and maintenance

9.3 Cleaning



Figure 9-3 Switching the coolant pump On/Off

Clean the machine after each grinding operation to prevent grinding sludge from drying, hence making it harder to remove.

In the main menu, press the coolant icon (9-3/1) for 1 second until the “Coolant On/Off” button appears.

Switch on the coolant pump with the “On” touch panel button and wash the machine with the scrubber.

ATTENTION

Flap brushes must not get wet, since they can only absorb polishing paste and can only correctly deburr a knife in dry state.

After washing, shut off the water supply to the scrubber to avoid flooding.

After cleaning, lightly grease the machine with non-corrosive oil (also refer to lubrication schedule in Chapter 9.2.1).

The coolant is to be replaced every three months.

ATTENTION

Dispose of the coolant in an environmentally friendly way!

9. Care and maintenance

9.4 Maintenance Plan

Interval	Component assembly	Maintenance activity
Daily	Polishing paste	Clean the paste feeding unit and ensure that it is moving freely.
		If the left polishing paste has worn to the support plate, immediately remove support plate (see section 7.8).
	Rotary table	Clean the plates with scrubber.
	Interior	Clean the glass on the machine lamps.
	Knife magazine and magazine extension	Clean the magazine rails and the magazine extension mechanism.
	Belt filter coolant unit	Check fill level. If the system was refilled with water, immediately measure the coolant concentration. Refill with additional coolant as needed.
Weekly	Grinding belt drive	Remove the belt protecting hood; remove contact disk and clean them.
	Polishing/deburring unit	Check diameter of the finned brushes. If smaller than 165 mm, install new finned brushes.
		Remove the polishing paste from the finned brushes using a cleaning brush. After cleaning, reapply the polishing paste to the brushes.
	Rotary table	Remove and clean the plates.
		Remove the bellows. Clean and oil the guides.
		Clear the water drain holes in the X- and Y axis.
		Check the seals and O-rings of SP 114.
		Retighten the nuts of the clamping lever/rotary table.
	Knife changer	Check gripper seal.
	Extraction	Clean the hose socket.
		Remove filter and clean housing.
	Monthly	Grinding belt drive
Polishing/deburring unit		Clear drainage hole on the underside of the hood of the polishing/deburring unit.
		Grease the polishing unit if it is making a lot of noise.
		Lubricate polishing unit if there is an increased level of noise. ATTENTION: Too much grease makes the system sluggish.
Semi-annually	Grinding belt drive	Remove covering. Clean and oil guides. Grease lubrication nipple.
	Water system	Remove and clean flow gauges.
	Extraction	Check woven filter medium and seal.
		Blow out the hose from extraction unit to the grinding compartment.
Annually		Request service call from KNECHT Maschinenbau GmbH

10. Disassembly and disposal

10.1 Disassembly

All operating materials must be disposed of correctly.

Secure moving parts against slipping.

The disassembly must be carried out by a qualified specialist company.

10.2 Disposal

At the end of the machine service life, it must be disposed of by a qualified specialist company. In exceptional cases and in agreement with KNECHT Maschinenbau GmbH, the machine can be returned.

Operating materials (e.g. grinding belts, finned brushes, grinding wheels, coolant etc.) must also be disposed of correctly.

11. Service, spare parts and accessories

11.1 Postal Address

KNECHT Maschinenbau GmbH
Witschwender Straße 26
88368 Bergatreute
Germany

Phone +49-7527-928-0
Fax +49-7527-928-32

mail@knecht.eu
www.knecht.eu

11.2 Service

Service management:
See postal address

service@knecht.eu

11.3 Spare parts

If you need spare parts, please use the spare parts list provided with the machine. Please place your order as shown below.

Please always include the following information: (Example)

Machine type	(B600)
Machine serial number	(450458600)
Designation of assembly	(013B600-0130 X axis)
Designation of individual part	(oblique groove ball bearing)
Item number	(27)
Drawing No.	(405A-50-320)
Quantity	(1 pc.)

Please feel free to contact us with any questions.

11. Service, spare parts and accessories

11.4 Accessories

11.4.1 Abrasives used

Type	Dimension	Grain	Order number	Remark
Wet grinding belt	2200x60	80	412A-62-0725	
	2200x60	100	412A-63-0726	
	2200x60	120	412A-64-0727	
	2200x60	240	412A-66-0728	
Wet grinding belt, compact grain	2200x60	180	412A-70-0180	Assembled on delivery
Sisal finned brush (right)	d.200x50xd.25		412J-02-8150	Assembled on delivery
Polishing paste (right)	250x50x60		412R-05-0825	Assembled on delivery
Sisal finned brush (left)	d.180x30xd.17		412J-02-0180	Assembled on delivery
Polishing paste (left)	250x40x140		412R-06-0140	Assembled on delivery
Wet grinding wheel A	d.200x60xd.50	80	412B-11-10162	
Woven filter medium VL	02/35/042		418P-11-0420	Included in the scope of delivery
Coolant additive Colometa SBF-PN	20 ltr. Package		417C-25-0011	Included in the scope of delivery

ATTENTION

No other abrasives may be used without the approval of KNECHT Maschinenbau GmbH.

KNECHT Maschinenbau GmbH accepts no liability if other abrasives are used.

If you require wet grinding belts, grinding wheels, finned brushes, polishing pastes or other accessories, please contact our sales staff, dealers, or KNECHT Maschinenbau GmbH directly.

Thank you for buying our product!

12. Appendix

12.1 EC Declaration of Conformity

in accordance with the EC Directive 2006/42/EC

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EC

We hereby declare that the machine mentioned below fulfils the basic health and safety requirements of the relevant EC Directive by virtue of the machine's construction and design and the version placed by us on the market.

This declaration becomes void if the machine is modified in any way without our consent.

Designation of the machine: Automatic Grinding and Polishing Machine
Type designation: B 600

Applicable harmonised standards, in particular: DIN EN ISO 12100-1
DIN EN ISO 12100-2
DIN EN ISO 60204-1
DIN EN 13218
DIN EN 349

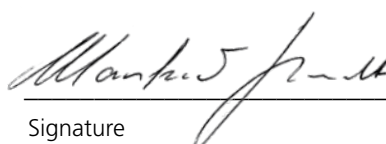
Responsible for the documentation: Peter Heine (Dipl. Ing. Mechanical Engineering)
Phone +49-7527-928-15

Manufacturer: KNECHT Maschinenbau GmbH
Witschwender Straße 26
88368 Bergatreute
Germany

Complete technical documentation is available. The operating instructions document for the machine is available in its original version and in the native language of the user.

Bergatreute, April 14, 2020

Place, date


Signature

Managing Director

Signatory details

KNECHT Maschinenbau GmbH

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