Saw chain grinder
Model X4

Manual

Contents

Foreword

Thank you for entrusting us to supply your company with an ANAB X4 chain grinder.

The purpose of the instruction manual is to provide basic and necessary knowledge concerning the functions and design of the machine.

The manual contains plenty of useful information you should know, even if you are familiar with grinders and their use.

Read the manual before putting the machine into operation, since correct care and handling are necessary to ensure that the chain grinder offers you optimal functionality and economy.

If you have any questions, kindly contact our Customer Service department or a sales representative, who will be happy to help.

In case of enquiries or if you would like to order spare parts, please specify the machine type, machine number and year of manufacture.

Year of manufacture:	
Machine type:	
Machine number:	
Delivery date:	
Checked by:	
Installation date:	
Signature:	
Remarks:	

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We reserve the right to change the technical specifications without prior notice.

Images may differ from your specific machine, depending on the machine model.

General

The ANAB X4 chain grinder is an automatic grinding machine for saw and machine chains. Working methods and adjustment options mean that just about any type of chain can be sharpened.

Automatic detection of the direction of the cutting teeth means that the grinding wheel is always in the correct position. The machine operates electro-pneumatically and the functions are controlled by a programmable control unit.

All electrical equipment is located in the lower part of the machine, where it is protected. The machine is designed for long-term and largely maintenance-free operation; only minor adjustments are required.

When servicing the machinery, only trained service personnel should be engaged.

The following settings should be made prior to grinding:

- Drive link thickness
- Pitch
- Grinding depth / Rider height
- Felling and tooth length
- Compressed air
- Number of cutting teeth
- Setting the grinding angle α.

Chain type	Grinding wheel
.404″	3 mm grinding wheel with smaller diameter
.404″ Stihl Rmhs	5.5 mm grinding wheel

Safety Instructions

- Whenever any work is carried out on or near a machine in operation (e.g. when profiling a grinding wheel), protective clothing, protective gloves, and a full-face visor must be worn!
- Hearing protection must be worn in the vicinity of a machine in operation!
- Only use original ANAB-approved grinding wheels!
- Always check that the chains are undamaged before grinding (for example, damaged teeth or rivets)!
- Crooked chains must be discarded or straightened before grinding!
- Broken chains (cutting teeth) must be repaired before grinding!
- Heavily chipped/burred chains must always be discarded!
- Close the door before grinding!
- Always check before operation that the compressed air gauge shows the approved value! Risk of explosion if the pressure is too high.
- Always make sure that there is no damage to the electrical connection before starting the machine!
- The electrical connection must be earthed by a professional!
- In the event of an electrical malfunction, a licenced electrician must be called in!
- In the event of malfunction in other machine parts: Contact your service engineer or ANAB!
- Always make sure that there are no unauthorised persons in the vicinity of the machine during operation!
- If a warning sign is missing or damaged and no longer clearly legible, it must be replaced as soon as possible!

Technical data

Drive system: Electrical/pneumatic.

Control system: PLC based, fully automatic or manually step by step. Sensor for cutting teeth, always grinds in the correct direction.

Drive link thickness: Continuous adjustment 1.3–3.0 mm.

Chain types: Standard chains

Grinding wheels: Special profile.

Electric motor: 1.1 kW frequency inverter.

Motor speed: Continuous adjustment with frequency inverter.

Display: 7"

Compressed air

Pressure: approx. 6 Bar.

Air requirement: min. 33 l/min.

CAUTION

The air should be separated from water after the main compressor

Connection: R 1/4"

Min. hose dimension: 10 mm internal.
Unit containing pressure regulator and shut-off valve included.

Space requirement for the machine

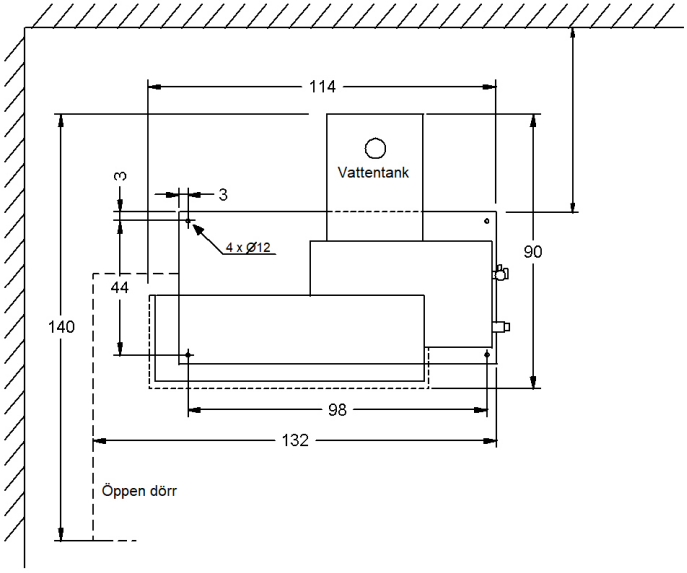


Image 1. Space requirement for machine

The distance between the wall and the machine should be at least 60 cm.
The distance to the wall should be at least 40 cm.
The height of the machine is approx. 208 cm.

There should be sufficient space around the machine so that working at the machine is not hampered.

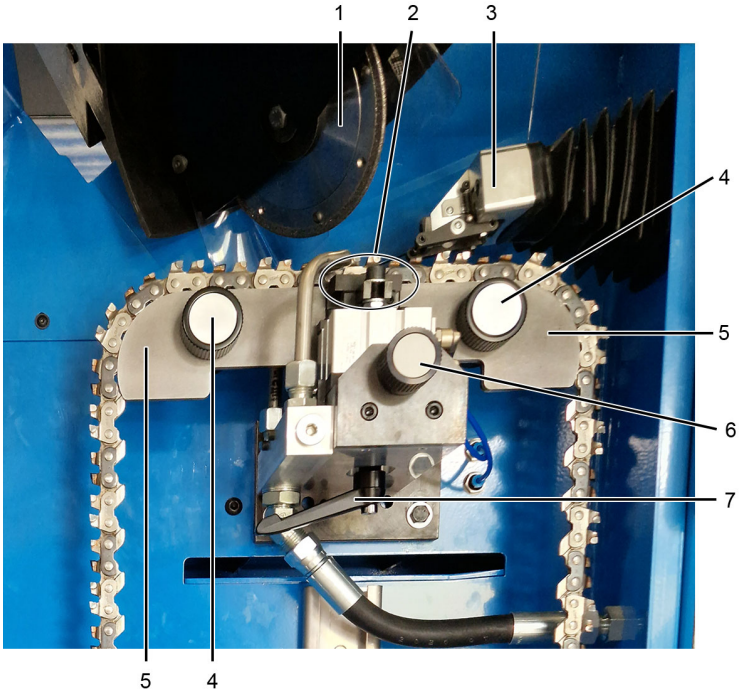
Access to doors, hatches and protective panels when carrying out service work must also be ensured.

Overview

1 Grinder
2 Grinding wheel
3 Clamp
4 Control panel

Image 2. Machine overview

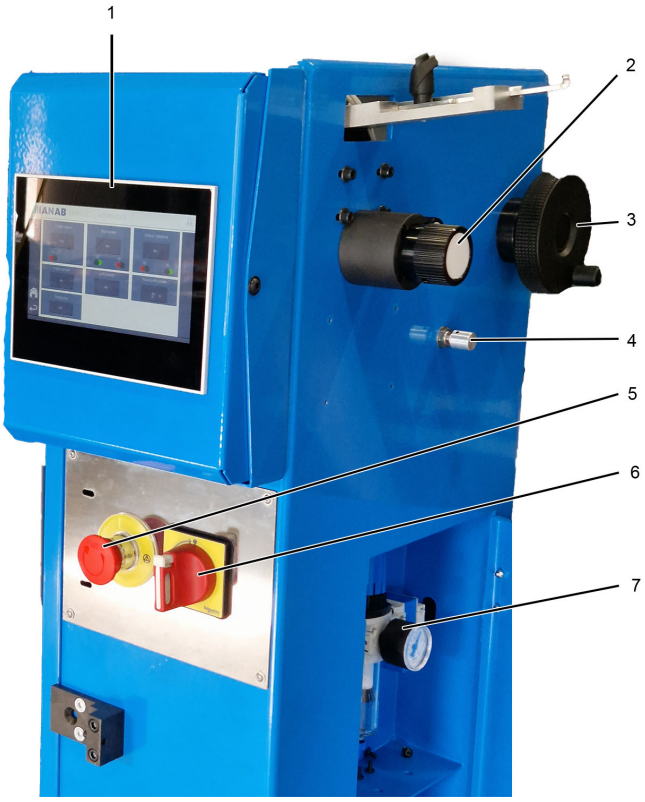
Grinding section



1 Grinding wheel
2 Clamping piece
3 Feeder
4 Gap setting knob
5 Chain rail plates
6 Setting drive link thickness
7 Locking knob, chain holder

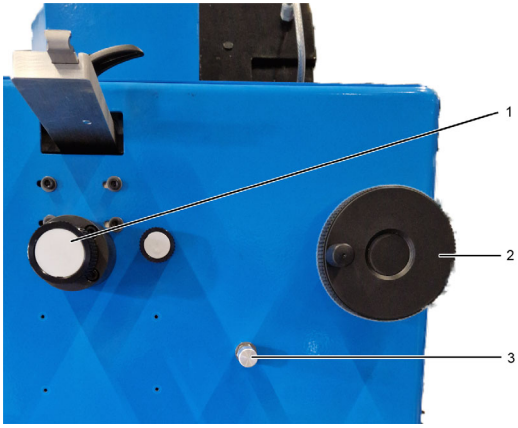
Image 3. Grinding section

Operating panel



1	Touch display	5	Emergency stop
2	Setting the grinding quantity	6	Main switch
3	Setting grinding depth β	7	Air pressure gauge
4	Down-feed speed adjustment, grinding head		

Image 4. Operating panel



1 Setting grinding quantity
2 Setting grinding depth
3 Lifting setting, feeder unit

Image 5. Operating panel side

Machine use

Before grinding

In principle, it is possible to grind rigid, damaged or otherwise defective chains, but this is not appropriate for safety reasons.

Visually inspect the chains thoroughly before grinding, keep an eye out for cracking around the rivets in particular. Always check that the chains are undamaged before grinding (for example, damaged teeth or rivets)!
Clean the chains and lubricate them before grinding for best results. Discard defective chains.

The following settings should be made prior to grinding:

- Drive link thickness
- Grinding depth / Rider height
- Felling and tooth length
- Compressed air
- Number of cutting teeth

Common chain defects requiring the chain to be discarded:

- Rigid chains, poorly lubricated with cuts in the rivets.
- Deep chips that require heavy grinding.
- Bent teeth or links.
- Fatigue damage, cracking around the rivets.
- Abraded teeth (tooth length should not be less than 5-6 mm on machine chains).
- Uneven filing, noticeably different tooth lengths.
- Dry chains, loose rivets.
- Crooked chains must be discarded or straightened before grinding!
- Broken chains (cutting teeth) must be repaired before grinding!
- Heavily chipped/burred chains must always be discarded!

Working principle

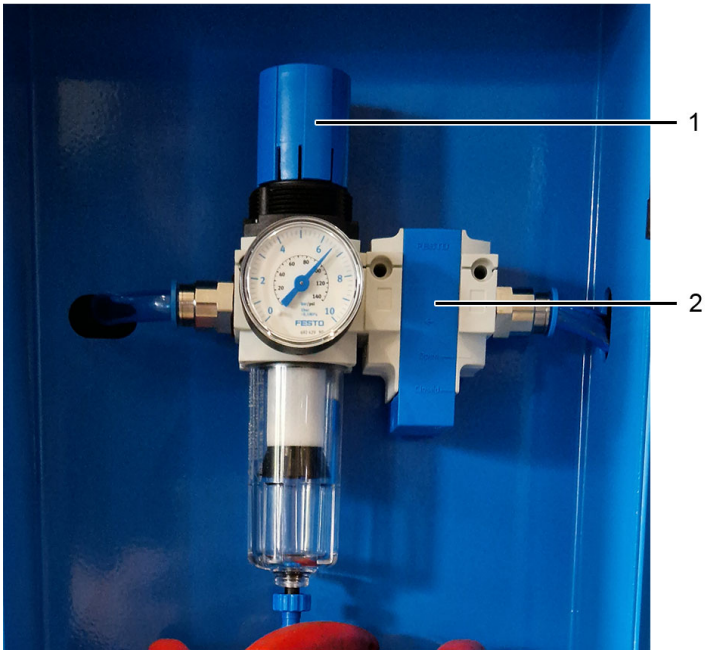
When feeding the chain, the machine detects each saw tooth and detects whether there is an inner or outer cutting tooth in the grinding position. After this, the grinding wheel is turned and lowered for grinding.

Compressed air:

The compressed air should be turned off with the valve (See *Figure 6* Pos *2 Shutting off air*) when the machine is not in use.

Open the air valve slowly.

Set the air pressure with knob (See *Figure 6* Pos *1 Knob, pressure regulator*) to 6 bar on the pressure gauge.



1 Knob, pressure regulator 2 Shutting off air

Image 6. Pressure gauge

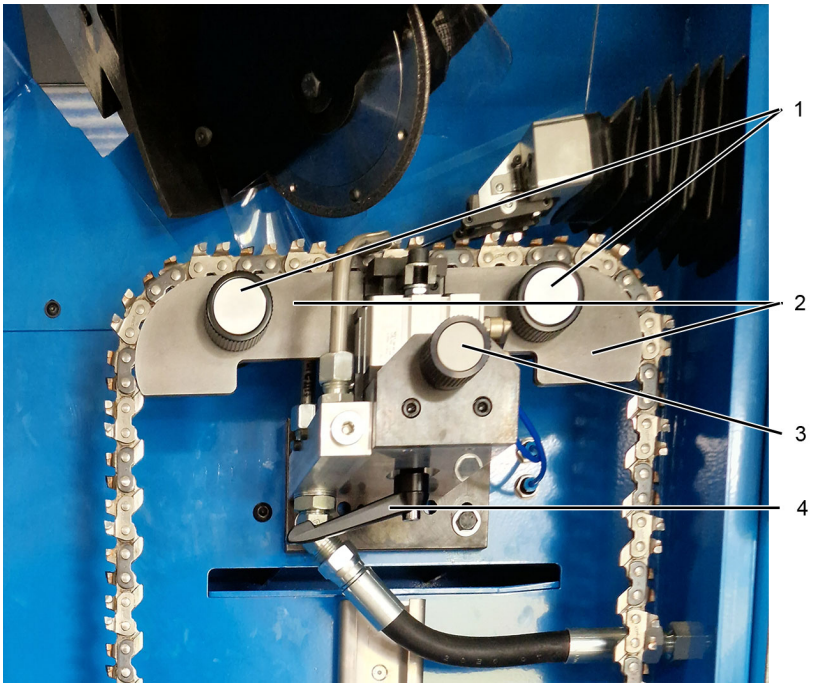
Drive link thickness

1 Loosen the locking knob (See *Figure 7* Pos *4 Locking knob, chain holder*) on the underside of the chain holder.

2 Set the correct value using the adjustment knob (See *Figure 7* Pos *3 Setting drive link thickness*).

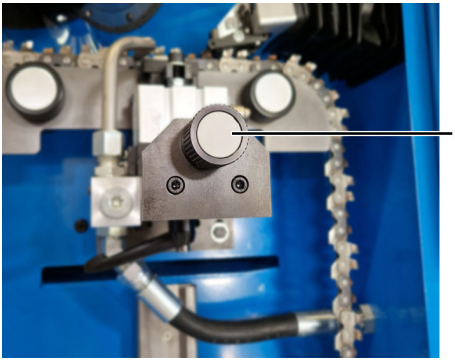
3 Increase or decrease the distance between the chain rail plates with the gap setting knobs (See *Figure 7* Pos *1 Gap setting knob*) , so that the chain runs easily when fed.

4 Lock the setting with the locking knob (See *Figure 7* Pos *4 Locking knob, chain holder*) on the underside of the chain holder.



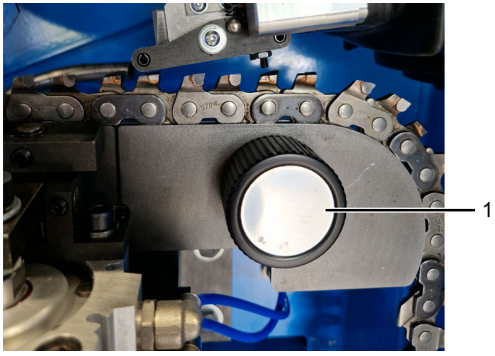
1 Gap setting knob
2 Chain rail plates
3 Setting drive link thickness
4 Locking knob, chain holder

Image 7. Chain holder Locking knob



1 Setting drive link thickness

Image 8. Setting - drive link thickness



1 Gap setting knob

Image 9. Gap setting

Feed setting

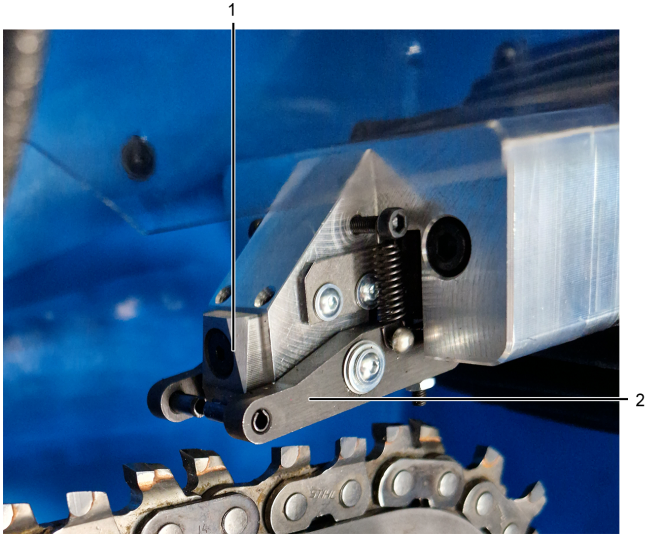
The settings usually only need to be adjusted when changing the chain type.

Power and compressed air must be turned on and the correct grinding wheel must be mounted. (See *Table* page 2)

1 Place the chain in the chain holder's groove and hang on the chain weight if necessary.

2 Move the chain's cutting tooth underneath the feed unit's sensor arms. You can press down the feeder to make sure that the correct sensor arm is touched. (See *Figure 10* and *Figure 11*)

3 Go to the chain adjustment page. Press the button on the display for feeding the tooth forward (See *Figure 23* page 23) and simultaneously turn the knob for adjusting the lifting cylinder (See *Figure 5* Pos *3 Lifting setting, feeder unit* page 9)



1 Feeder 2 Sensor arm

Image 10. Feeder unit

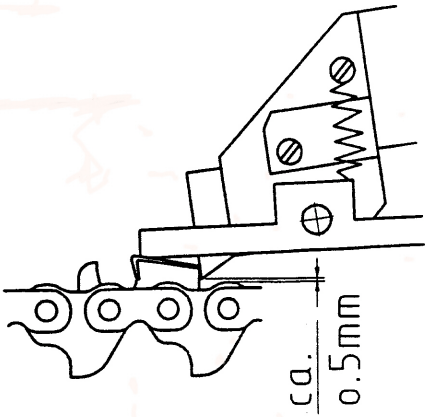


Image 11. Adjusting distance

Grinding depth adjustment

Note

Adjustment that is normally performed after completed Feed setting.

1 After feed setting has been performed (See section *Feed setting* page 14), the correct grinding depth needs to be checked.

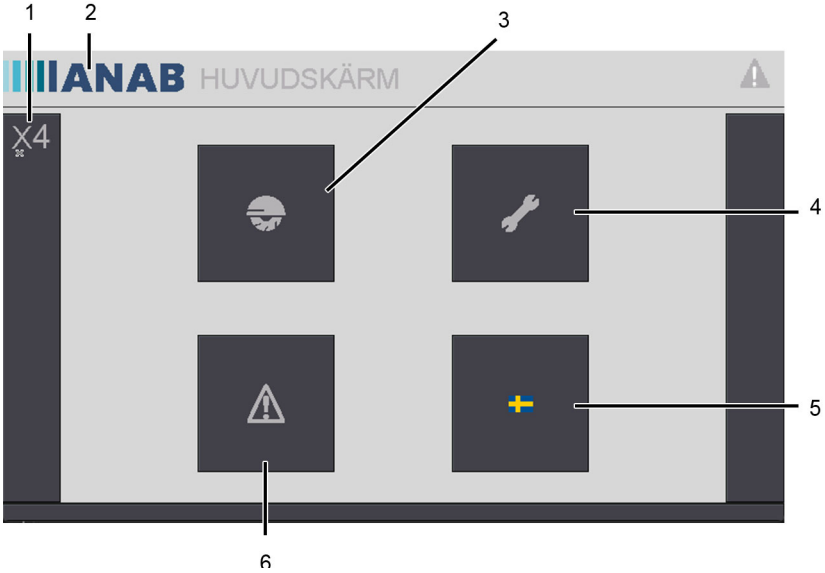
2 On the chain adjustment page on the display, press the down arrow button (See *Figure 23* page 23) and then turn the knob to adjust the grinding depth (See *Figure 5* page 9

3 Test your setting by using the function button for chain setting (See *Figure 23* page 23): press and hold the button on the right side of the display, which will cause the machine to start the grinding motor and lower the grinding unit as long as the button is pressed.

Main screen

Main screen touch display

Start page



1	Machine model	4	Machine setting
2	Contact page	5	Language setting
3	Grinding	6	Alarm page

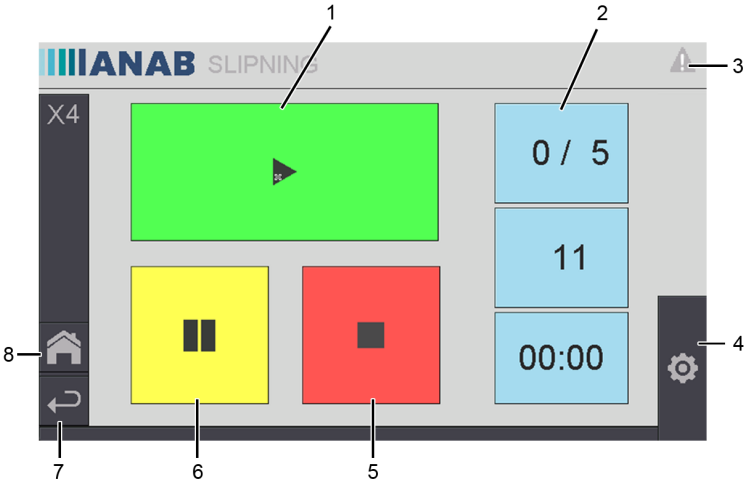
Image 12. Main screen touch display

Contact page

Image 13. Contact information

If you have any questions about the machine, you can find all the contact information under the contact page.

Grinding page



1	Start	5	Stop
2	Number of teeth	6	Pause
3	Alarm triangle (only if alarms are present)	7	Previous page
4	Grinding settings	8	Home

Image 14. Grinding page

Note

The pause button pauses the current program. Stop halts the entire program. In the case of Stop, the program must be re-set.

Setting the number of teeth

1 Press the Number of teeth button (See *Figure 14* Pos *2 Number of teeth*), after which you will be taken to the submenu for setting the number of teeth.

2 Enter the number of teeth for the chain that is to be sharpened.

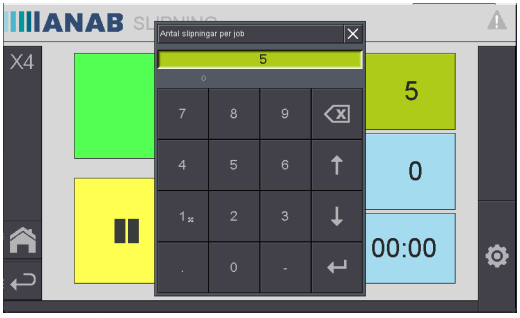


Image 15. Setting Number of teeth

3 Confirm selection with Enter (↵).

Grinding settings

1 Go to the Grinding page, then press the settings button as shown below.

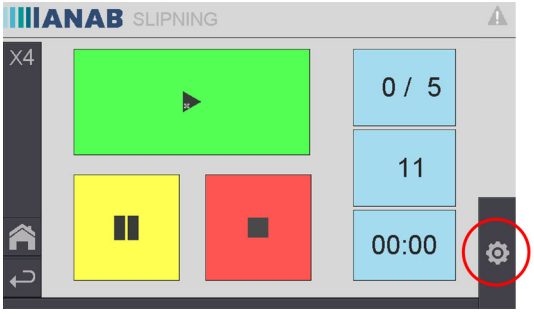
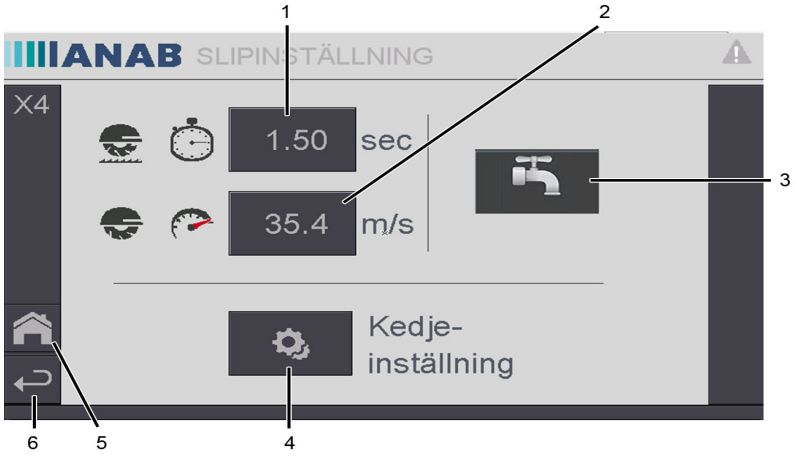


Image 16. Settings button

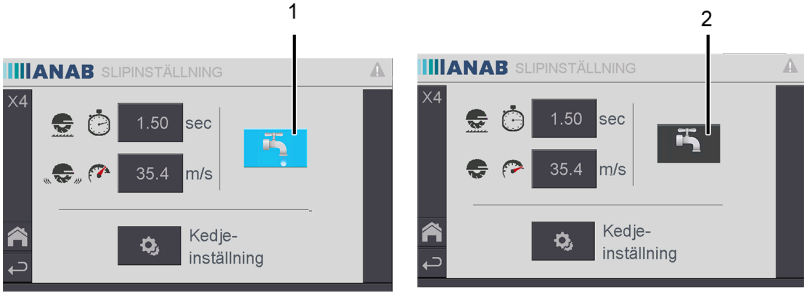
Press the relevant function to change the image to perform setting.



1	Grinding duration	4	Chain setting
2	Motor speed	5	Start page
3	Water pump indicator On/Off	6	Previous page

Image 17. Grinding setting, chain

Water pump indicator



1	Water pump ON	2	Water pump OFF

Image 18. Water pump On/Off

Setting grinding duration

Image 19. Grinding duration setting

1 Press setting for grinding duration.

2 Enter the value for the selected parameter.

3 Confirm selection with Enter (↵).

Note

Grinding duration indicates how long the grinding wheel will be in the bottom position against the chain.

Motor speed

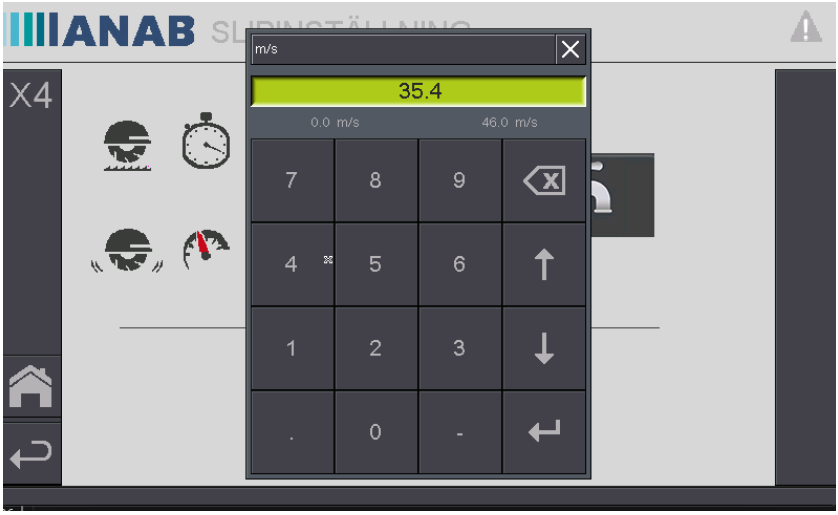


Image 20. Input - motor speed

1 Press setting for motor speed.
2 Enter the value for the selected parameter.
3 Confirm selection with Enter (↵).

Note

Grinding wheel speed Max speed 45 m/s. 60 m/s for Aluminium.

Chain setting

Chain setting - Step 1

After the chain has been positioned correctly (see Figure *11 Adjusting distance* page 15).

1 Press the button according to Figure *21 Chain setting - Step 1*. The machine then feeds one tooth forward before waiting.

2 Set the position with the knob for setting the grinding quantity (see Figure *4 Operating panel* page 8 and *5 Operating panel side* page 9).

Image 21. Chain setting - Step 1

Chain setting - Step 2

1 Press the button according to Figure *22 Chain setting - Step 2*. The machine then locks the chain and goes back with the feeder so that you can make further settings.

Image 22. Chain setting - Step 2

Chain setting - Step 3

There are two options here. See Figure *23 Chain setting - Step 3*.

Using the button at the bottom left, lower the grinding unit to make it possible to check the depth setting safely (See Figure *4 Operating panel* page 8 and *5 Operating panel side* page 9).

The button at the bottom right is a touch-sensitive button. As long as it is held in, the machine will start the grinding motor and lower the grinding unit to the chain according to the previous setting; when the button is released, the machine will stop the motor and return the grinding unit to the normal position.

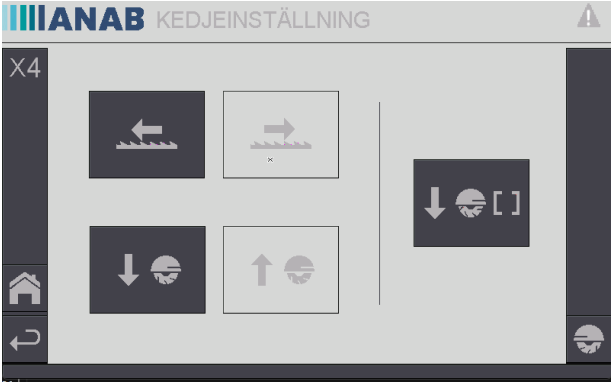


Image 23. Chain setting - Step 3

Chain setting - Step 4

Using the button at the bottom right, the grinding unit is raised back to the normal position.

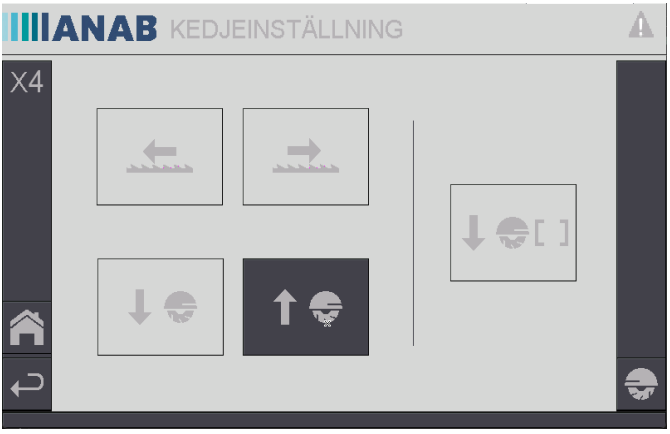
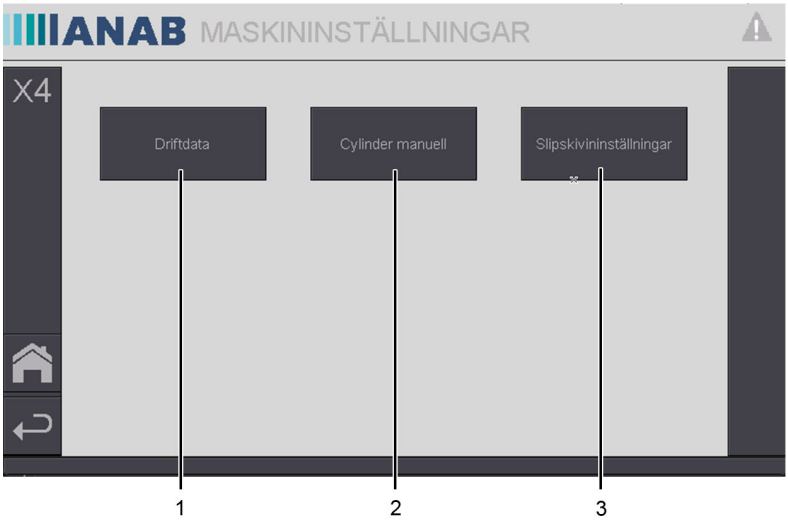


Image 24. Chain setting - Step 4

Machine settings



1 Operating data
2 Cylinder, manual operation
3 Grinding wheel settings

Image 25. Machine settings

Grinding wheel setting

1 Press Machine settings - Grinding wheel settings

1	Counter, grinding wheel	4	Rotation lock
2	Resetting	5	Selection for type of grinding wheel
3	Setting diameter grinding wheel		

Image 26. Grinding wheel settings

Direction of rotation

ON = The direction of rotation of the grinding wheel changes.
OFF = The direction of rotation is suitable for profiling.

Cylinder, manual operation

Image 27. Setting for manual operation

Note

Red and Green sliders indicate whether the sensor is active/working. If the sliders indicate red in both cases, the sensor is probably out of order or incorrectly positioned.

Operating data

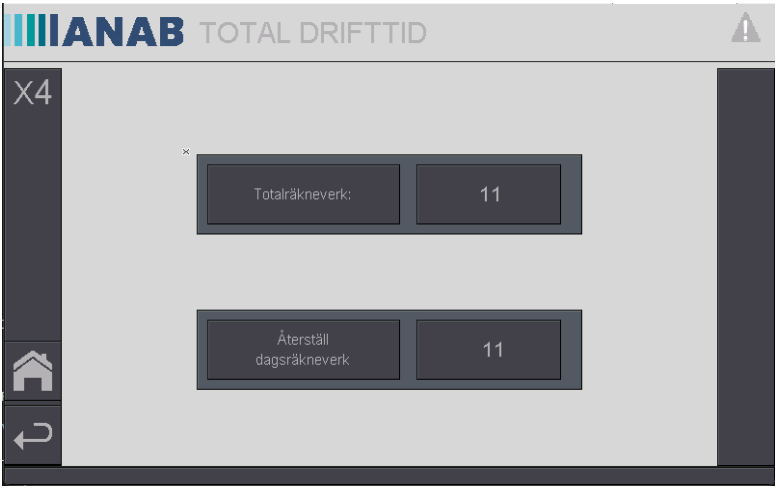


Image 28. Total operating time

Language setting

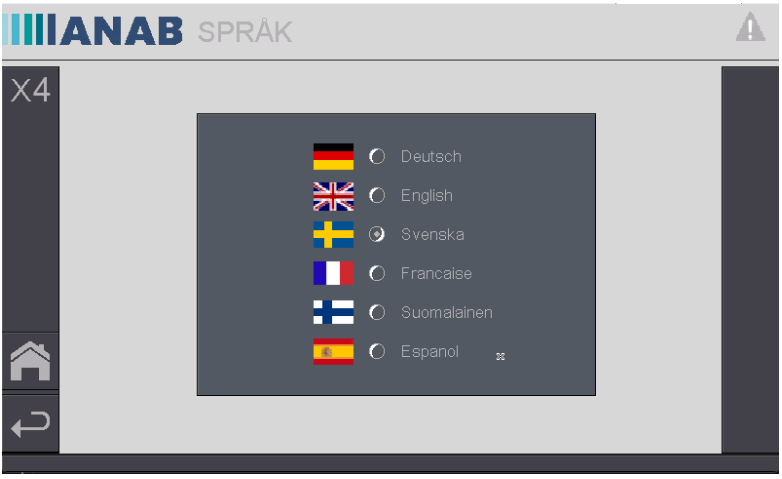


Image 29. Language selection

Note

Press the desired language twice to confirm your selection.

Alarm page

Alarm, grinding

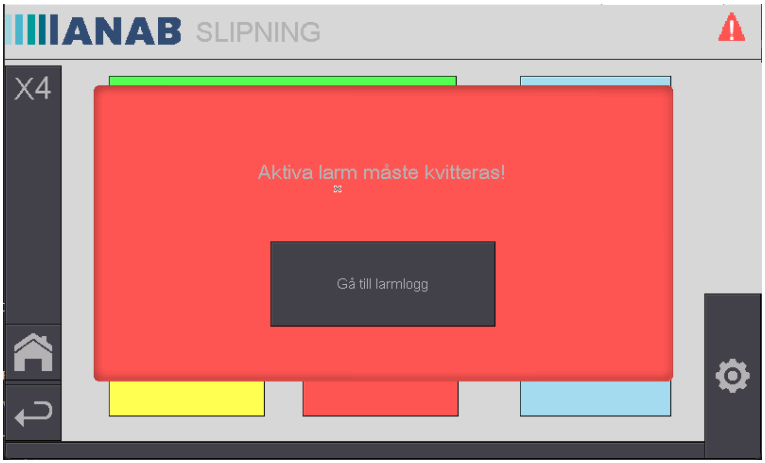
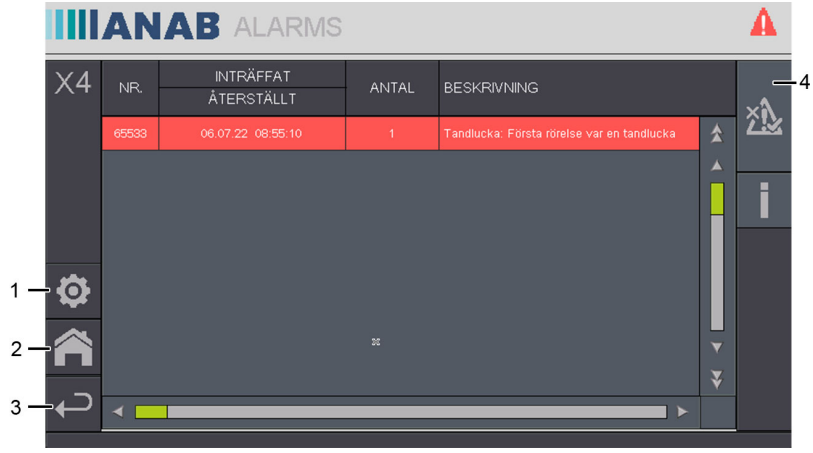


Image 30. Alarm, grinding



1 Settings
2 Menu screen - Home
3 Previous page
4 Alarm acknowledgement

Image 31. Menu buttons, touch display

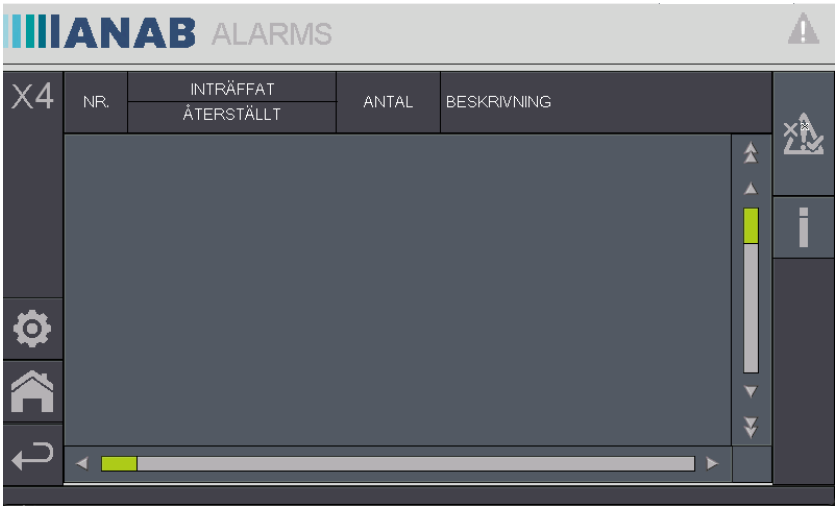


Image 32. Alarm page without alarm

Alarms that need to be acknowledged are listed here.

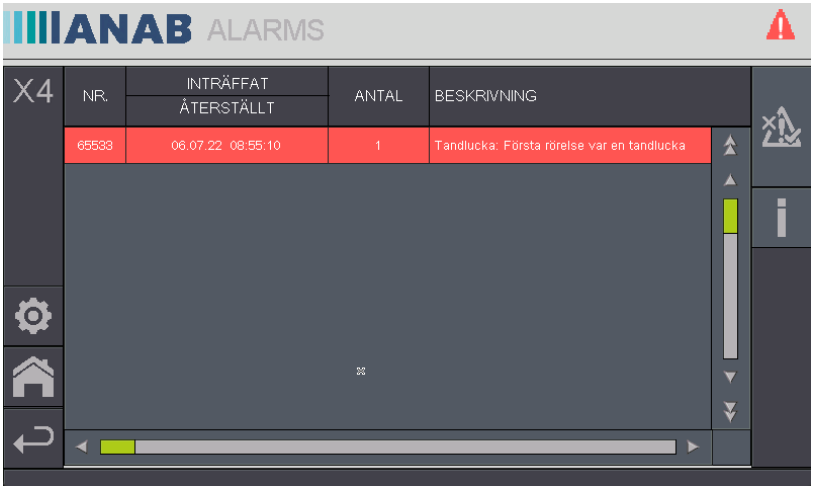


Image 33. Example of alarm

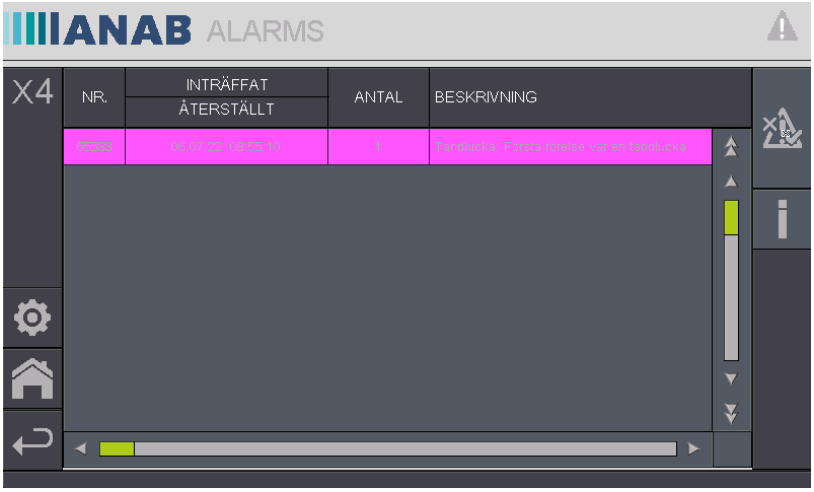


Image 34. Acknowledged alarm

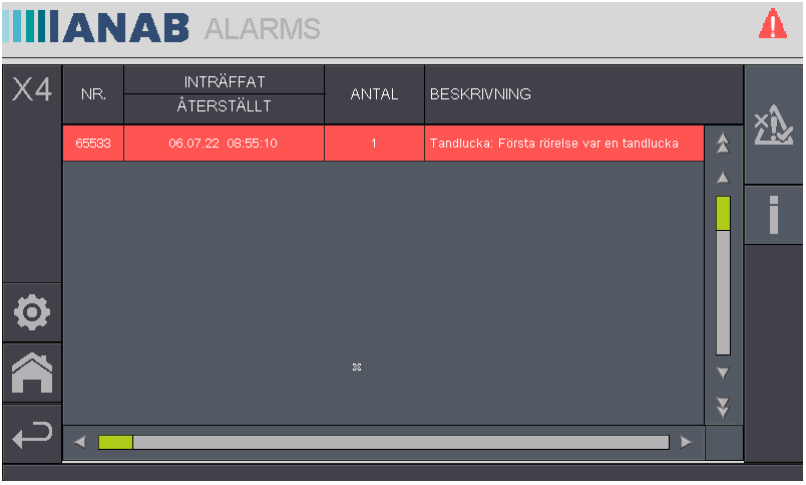


Image 35. Alarm page

The alarm is reset with the acknowledgement button on the menu screen.

Maintenance

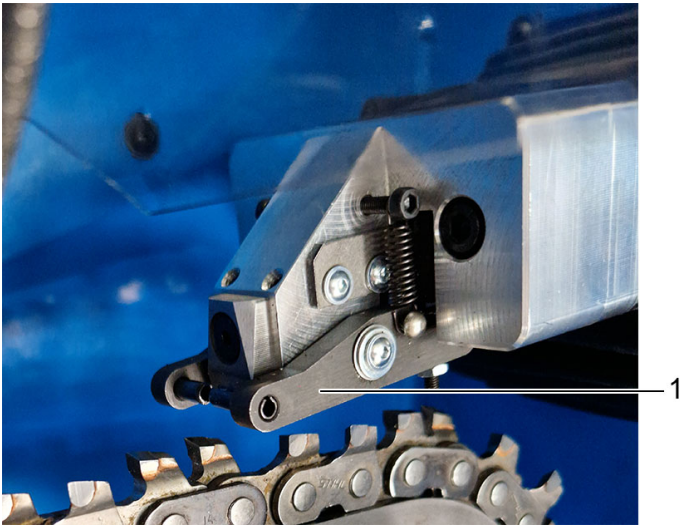
The machine is designed for long-term, safe operation without the need for special servicing. However, for preventive purposes, some elements should be checked regularly.

Safety

During all forms of maintenance, the **machine's power supply** and **compressed air** must always **be turned off** to eliminate any unnecessary accident risks. During troubleshooting, etc., measures should be taken to prevent accidental activation of the machine.

Daily

- Clean the sensor arms *Figure 36* on the feeder unit
- Clean the chain holder, the "chain rail", to prevent inadequate clamping.
- Use a cloth or a small brush to clean.
- Avoid cleaning with compressed air as grinding particles can spread into the machine.



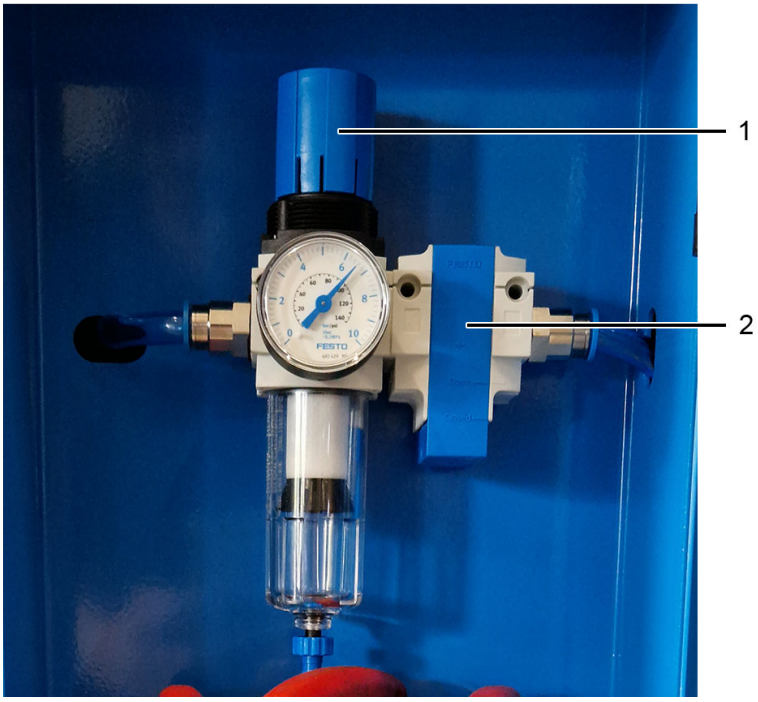
1 Sensor arm

Image 36. Sensor arm on feeder unit

Adjusting the air pressure

1 Increasing the pressure: Lift the plastic cover on the pressure regulator and turn clockwise until the gauge shows the correct pressure. (See *Figure 37*)

2 Decreasing the pressure: Turn anticlockwise and reduce to just below the desired pressure, then increase to the desired pressure.



1 Air pressure knob 2 Air shut-off valve

Image 37. Pressure gauge

Note

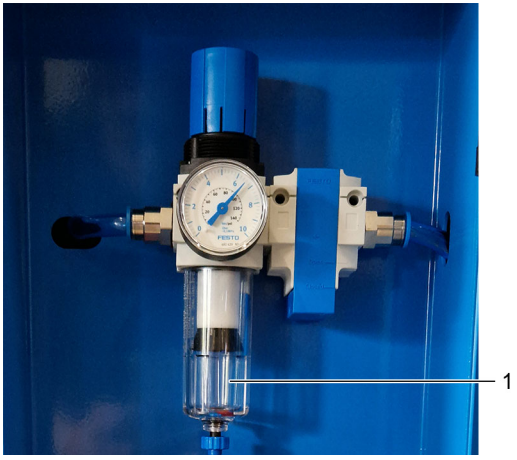
Recommended working pressure is approx. 6 bar.

If necessary, check/clean compressed air

- Empty the water separator on the pressure-reducing valve. (Loosen by turning the glass cup clockwise)
- Clean the filter. (Mounted in the water separator)
- Wash the filter with spirits or similar.
- Then blow clean from the inside out and allow to dry.

CAUTION

The glass cup (container) must be cleaned in warm water with dishwashing liquid or regular detergent for household use. Solvents such as acetone, benzene and some alcohols may dissolve the plastic. If you are in doubt, check with ANAB.



1 Filter in glass cup

Image 38. Glass cup with filter

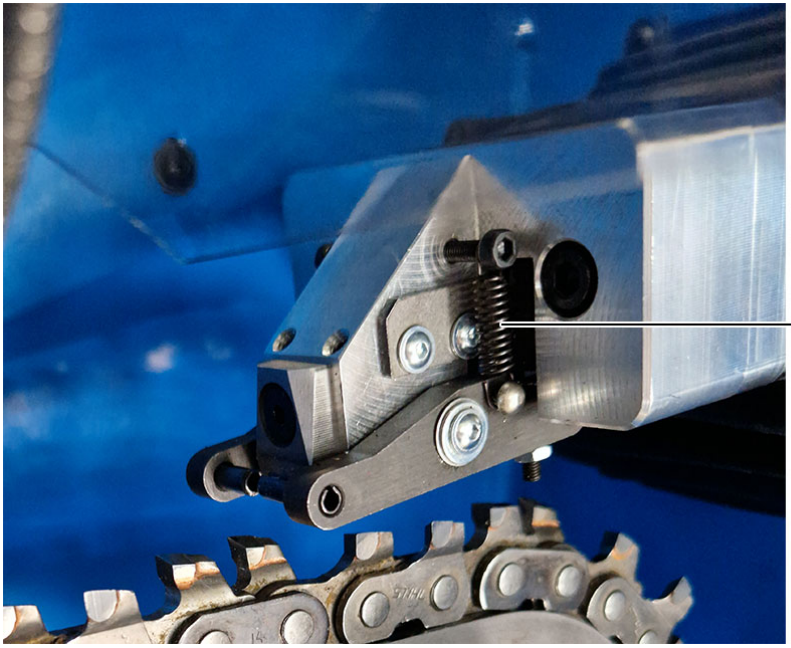
Cleaning machine

1 Clean the mating surface between the sensor arms and the microswitches. Use cleaning spray (CRC Bräkleen is recommended) and gently blow clean with compressed air. (See *Figure 39*)

2 Clean the entire machine.

3 Check electrical connections. Check *Belt tensioning* page 38, motor and grinding wheel.

4 Clean filter, see *Figure 40* page 36



1 Microswitch

Image 39. Microswitch on sensor arm

1 Filter for cooling water

Image 40. Metal filter

Changing the grinding wheel

1 Turn off the power supply to the machine and make certain that it cannot be activated accidentally.

2 Loosen the screws for the cover and remove it.

3 Hold the grinding wheel firmly with one hand and loosen the centre bolt (normal right thread) with a 13 mm spanner. (See *Figure 41*)

4 Replace the wheel, hold with your hand and tighten the bolt to a torque of at least 40 Nm.

5 Refit the cover.

Image 41. Changing the grinding wheel

Note

For the best grinding results, only use original ANAB grinding wheels.

Belt tensioning

1 Turn off the power supply to the machine and make certain that it cannot be activated accidentally.

2 Remove the motor cover.

3 Ease off the four hex screws securing the motor.

4 Under the motor, use a screwdriver or similar to stretch the belt. (See *Figure 42*)

CAUTION

Do not stretch too much. It must be possible to push the belt in approximately 10 mm in the middle.

5 Retighten the screws on the motor.

6 Refit the protective cover.

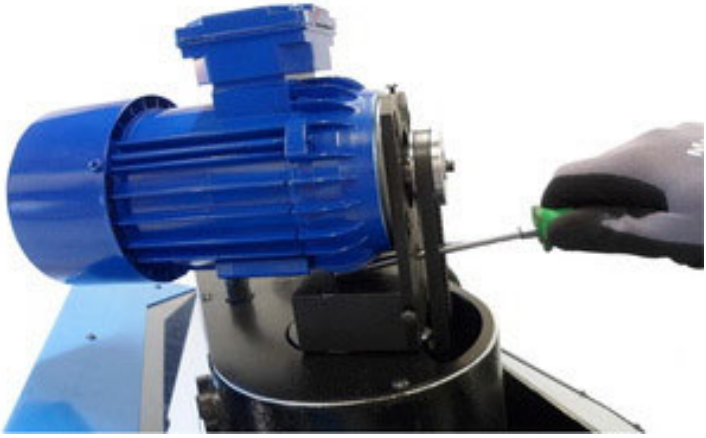


Image 42. Belt tensioning

CAUTION

The belt tension should be checked and adjusted if necessary after approx. 20 hours of operation.

Replacing the drive belt

1 Turn off the power supply to the machine and make certain that it cannot be activated accidentally.

2 Remove the motor and grinding head covers. Loosen the locking knob with an Allen key.

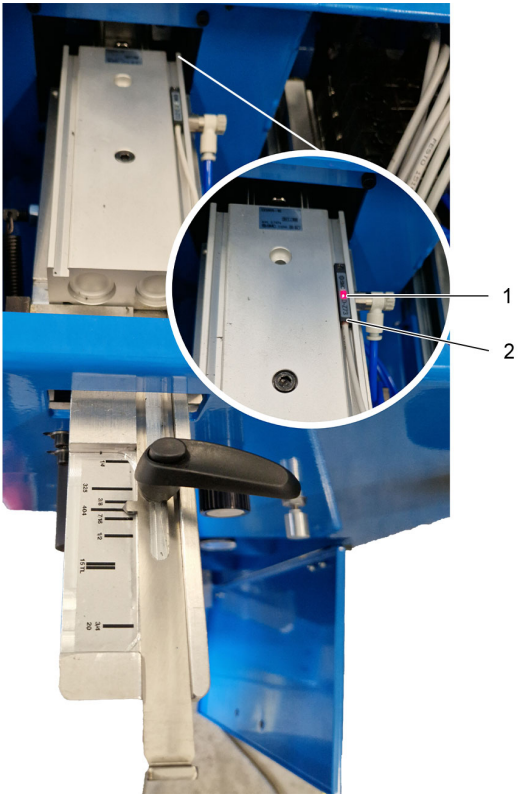
3 Loosen the hex screws securing the motor and unscrew the set screw under the motor.

4 Change the belt. Preferably use an original belt from ANAB.

5 Tension the belt (refer to the " *Belt tensioning*" section). Refit the covers, locking knob and screws.

Close-up images

Feeder unit linear control

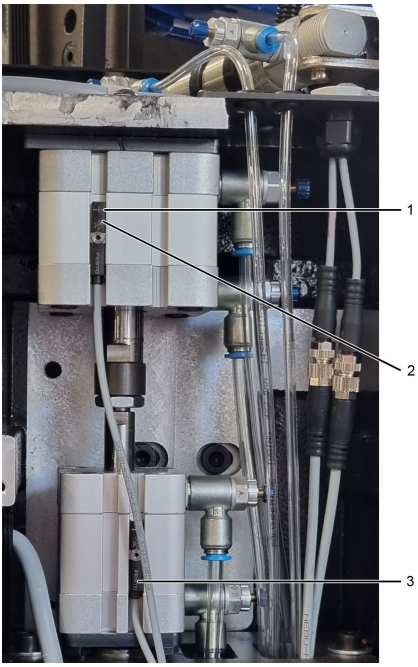


1 LED

2 Forward feeding sensor FeederOut

Image 43. Linear control

Grinding wheel lifting cylinder



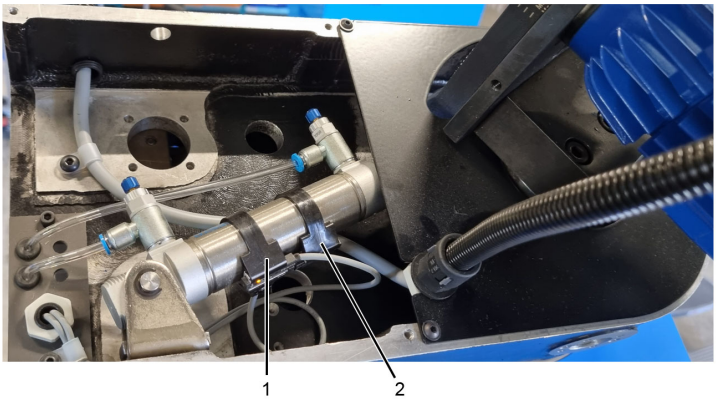
1 Limit position sensor, Grinder down

2 LED

3 Limit position sensor, Grinder up

Image 44. Lifting cylinder

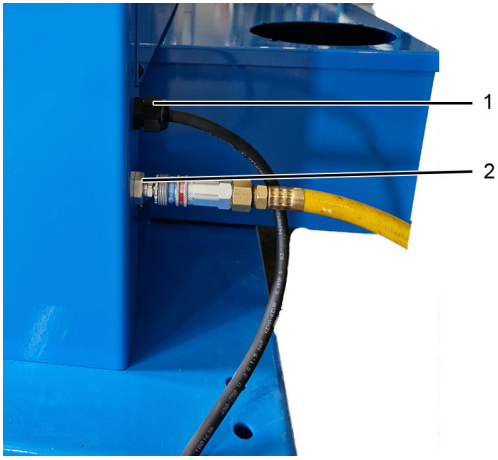
Swivel cylinder



1 Swivel cylinder, internal sensor 2 Swivel cylinder, external sensor

Image 45. Swivel cylinder

Connections



1 Power supply 2 Compressed air connection

Image 46. Connections

Troubleshooting

Problem solving

The machine does not start

Turn the machine off at the switch (*Figure 6* page 8) and turn on again. (This resets the electronics)

Motor guard triggered

Look for the fault and reset the motor guard.

Sensor arms do not rise/both sensor arms rise

- Chain fault or mechanical fault that has worn out the chain rail. Not enough play between the arms
- Also check the microswitches at the sensor arms.

Alarm from the frequency inverter

- Is the correct grinding wheel on the **Settings page** selected?
- Turn off the power supply for the machine with the main switch (*Figure 6* page 8) and then turn it on again after a few seconds. (The frequency inverter is reset again)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