

KNOLL

Installation and Operating Instructions

Hydrostatic Filter Type HF

GB

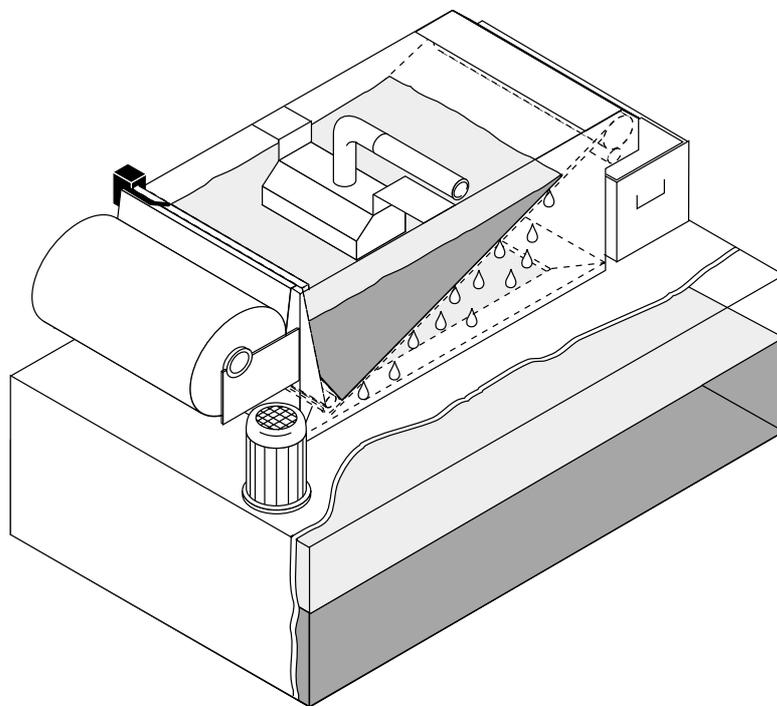


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1 Description of the product and functions

Scope

Cleaning of cooling lubricants (oils, emulsions) and scouring solutions

Range of application

- For use with machine tools (individual machines and machine groups) as independent cleaning unit
addition to swarf conveyors
- Effective separating size up to 10 µm, depending on quality of filter band and type of liquid

Function

- Contaminated liquids are conveyed to the upper part of the HF unit
- Liquid flows through the filter band
- Swarf and dirt particles are held back

Automatic regeneration of the filter band

a) Mainly sludge contamination

- Increasing filter resistance because of the retained dirt particles
- Liquid level rises
- Switch pulse of the float switch (top switch point), filter band drive is switched on
- Used filter band is moved out, new filter band is pulled in
- Liquid level decreases
- Switch pulse of the float switch (bottom switch point), filter band drive is switched off

b) Mainly swarf contamination

- Liquid level does not rise despite increasing contamination
- Interval control by means of two separately controllable time relays, resulting in brief belt advance and swarf discharge



- **Do not clean combustible liquids!**
- **Do not use equipment for purposes other than intended!**

Noise level: < 70 dB(A)

Optional accessories

Stripping device, holding-down device, take-up attachment, adjusting sleeves

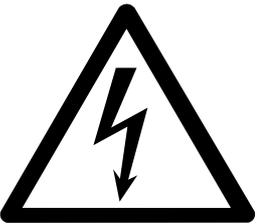
Most equipment is customized; therefore, shape and position of components described in this documentation may vary. In this case, these operating instructions may be used as an example.

2 Danger and safety instructions

2.1 General instructions



- Always observe all statements and instructions in the operating instructions delivered with the plant!
- It is forbidden for unqualified persons to work at the plant!
- Observe correct fastening if components were installed by customer!
- Never bypass safety contrivances (e.g. safety clutch)!
- The operation of safety contrivances must always be guaranteed!

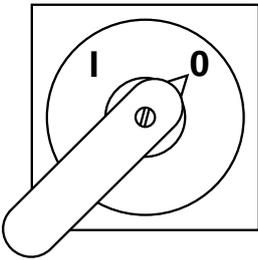


- Work on the electrical plant may only be carried out by qualified personnel!
- Observe the relevant VDE requirements and connection requirements of the responsible Electricity Board!

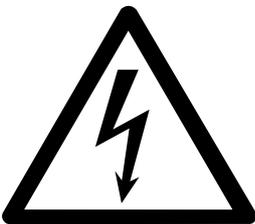


- Cover the scraper belt and all driving elements before starting!
- Do not remove covers while plant is in operation!

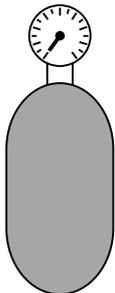
2.2 Instructions for repair, maintenance and malfunctions



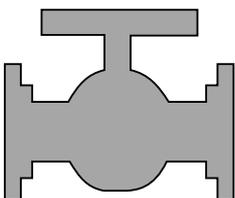
- **Switch off the main switch!**
- **Secure the plant against being started accidentally!**



- **Ensure that the plant is dead!**



- **Depressurize the plant!**



- **Close pipe valves!**
- **Remove all noxious materials!**
- **Coolants must not enter the environment!**



- **When handling chips, wear protective clothing, safety boots and protective gloves.**

3 Unpacking and handling

3.1 Unpacking

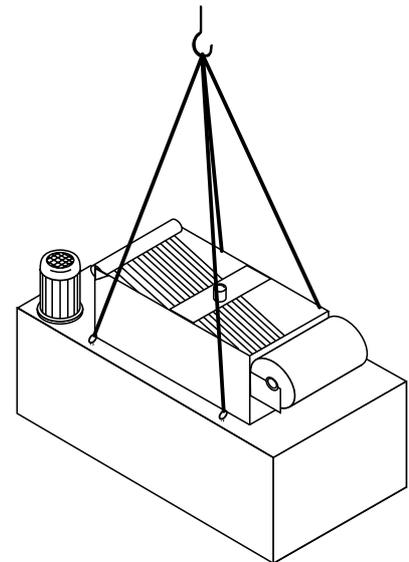
- Remove packing foil
- Loosen and mount the components (e.g. deposit container) fastened to the equipment
- Remove any accessories that may be inside the equipment
- Remove the shipping pallet

3.2 Handling

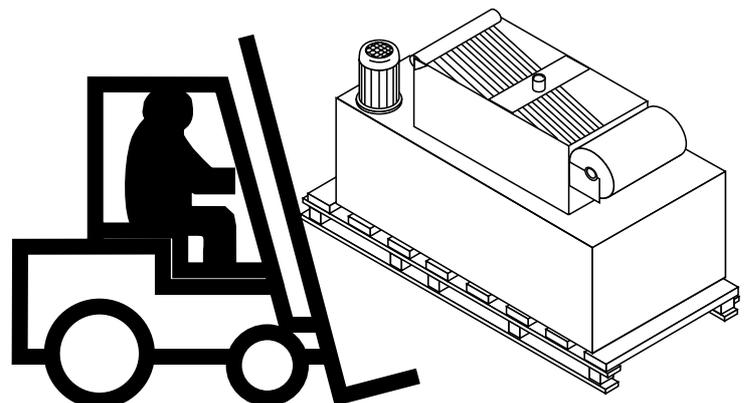


- **Do not stop beneath suspended loads!**
- **The figures shown on this page are provided as examples. The provided suspension devices (e.g. eyes, eye bolts) are to be used under all circumstances.**

- **By crane:**
Always transport by crane if no longer in the original packing. Use the suspension devices provided (e.g. eye hooks, lifting screws)



- **By stacker truck:**
Only in the original packing and with the greatest of care.



4 Erection and installation



- **Ensure secure and stable installation!**
- **Secure equipment against accidental start-up!**

- Place hydrostatic filter on a level surface
- Connect supply and return lines



Check retrofitted lines for leaks

- Mount the deposit container.
- Connect electric power supply of motor(s) and pump(s)



Check for correct sense of rotation (see arrow) and safe earth connection

5 Start-up and operation

5.1 Prior to initial operation

- Electrical components must be connected (note voltage, frequency, strength of current and direction of rotation)
- Do a leak test on pipings for liquids (transport damage)
- Fill up with required liquids (coolants, lubricants, oils, etc.)
- The entire equipment must be free from coarse parts (tools etc.)

5.2 Switching on/off



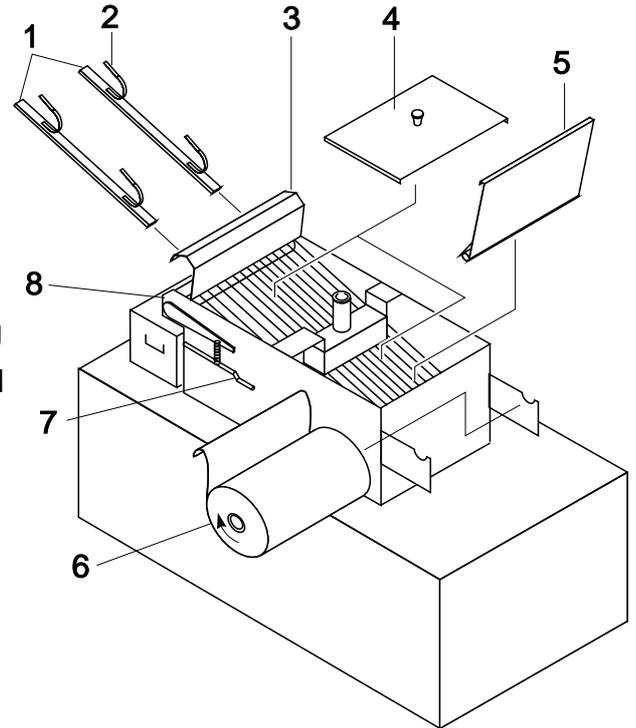
In general, hydrostatic filter systems are switched on and off automatically with the processing machine

A separate switch cabinet is manufactured and designed according to customer specifications.

6 Maintenance

6.1 Installing a new filter band

- Switch off equipment
- Remove splash guards (4)
- Push baffle plate (5) in conveying direction from its seat and lift baffle plate out of the filter housing
- Unscrew hexagon screw (8) and open hand guard (3)
- If provided with holding-down device:
 - Unlock holding clamps (2) of holding-down device (1) by pushing them downwards
 - Remove holding-down device in conveying direction
- Press lever (7) downwards and disengage lever
- Remove remaining filter band from the unit
- Clean equipment from soil deposits
- Install new filter band roll (6)

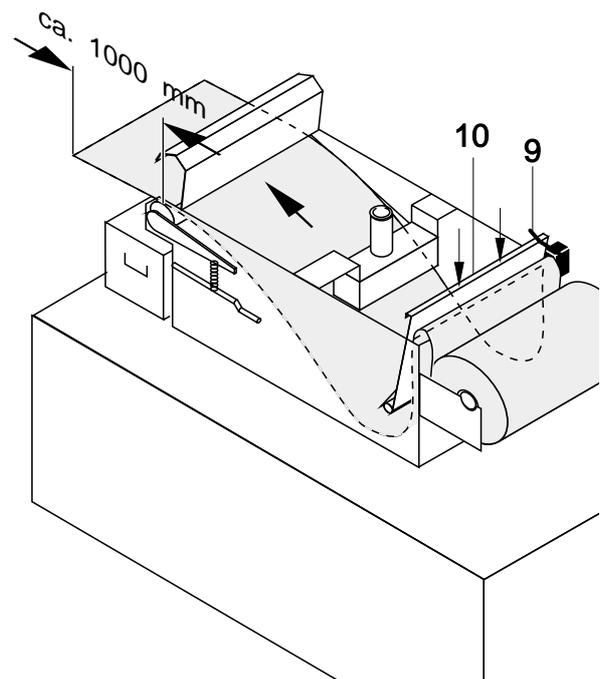


-  **Use only specified type of filter band**
Material: polyester
Min. tensile force: 150 N / 50 mm
according to DIN 53857

- Lift the sensor arm of the “lack of filter band” switch
- Pull filter band into the housing
- Pull filter band out between hand guard and guide roller for approx. 1000 mm
- Insert baffle plate (5), do not lock yet

 Take care not to damage new filter band

- Centre filter band and align evenly



- Turn lever (7) back to its initial position A and lock
- Install and lock holding-down device (1) if provided
- Lift baffle plate (5) by approx. 100 mm from its resting position (D), then insert completely into filter housing (C)
- Press baffle plate against conveying direction and lock

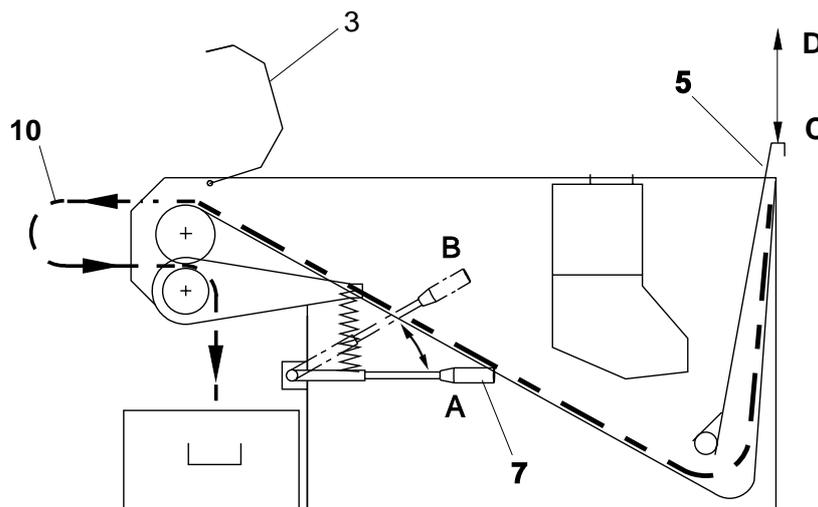


- **Danger:**
- **Do not reach between rollers!**

- Close and lock hand guard (3)
- Install splash guards (4)



If provided:
delete "lack of filter band" signal at the processing machine.

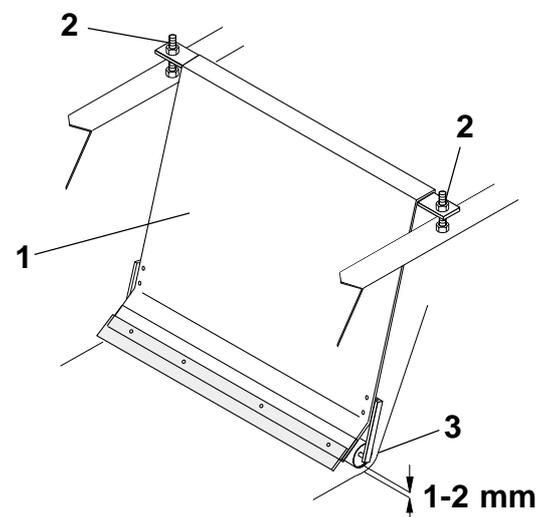


6.2 Adjusting the Baffle Plate

- To ensure that the filter fleece is properly fitted, evenly adjust the baffle plate on both sides by means of the adjusting screws (2) to a distance of 1-2 mm approx. to the container bottom (3)



In case the baffle plate is unevenly adjusted, the filter fleece may tear.



6.3 Setting the adjusting sleeve



Adjusting sleeves are optional accessories and control the rate of flow

When the adjusting sleeve is not set correctly:

- this results in high filter band consumption
- equipment will not work properly

The adjusting sleeve is to be set only at maximum liquid consumption of the processing machine

6.4 Equipment without feed hopper

- Unscrew the sealing cap (1) with seal
- Loosen the locking screw (2)
- Screw in the adjusting nipple (3) in clockwise direction until liquid level A rises only with increasing contamination of the filter band



Turning the adjusting nipple (3) in clockwise direction reduces the rate of flow

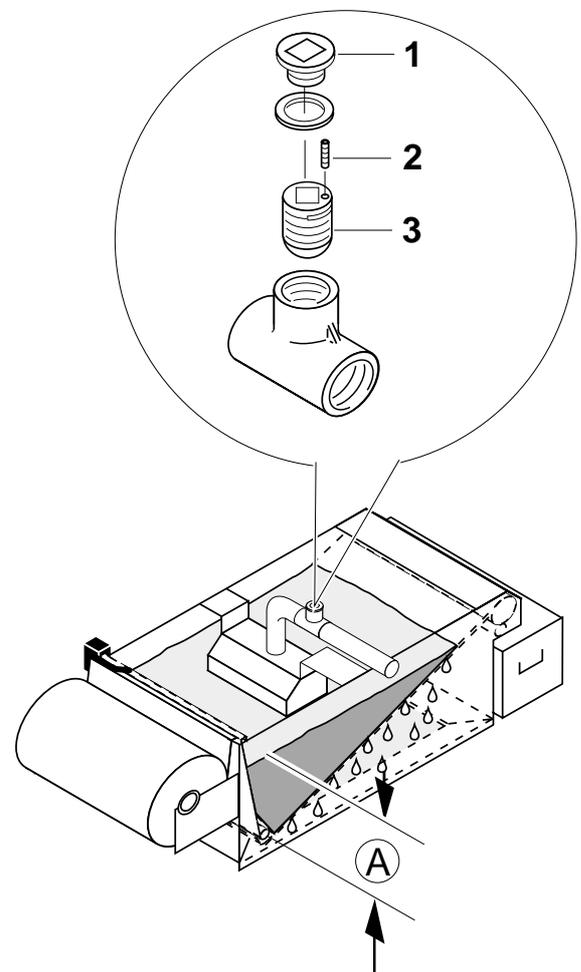
Do not completely unscrew the adjusting nipple, otherwise liquid is forced out by pressure

- Tighten the locking screw (2)
- Screw in the sealing cap (1), use new seal if necessary



Liquid level with correctly adjusted rate of flow:

- Rising within range **A** with increasing contamination of the filter band
- Dropping slowly after filter band transport
- Constant circulation between processing machine and filter system



6.5 Equipment with feed hopper



When adjusting sleeve is not set correctly:

- Filter band will be excessively contaminated by liquid from the by-pass which is cleaned unnecessarily.
- Feed hopper overflow resulting in contamination of purified water.

- Unscrew the sealing cap (1) with seal
- Loosen the locking screw (2)
- Screw in the adjusting nipple (3) in clockwise direction until the liquid level B in the feed hopper (5) starts to rise



Turning the adjusting nipple (3) in clockwise direction reduces the rate of flow

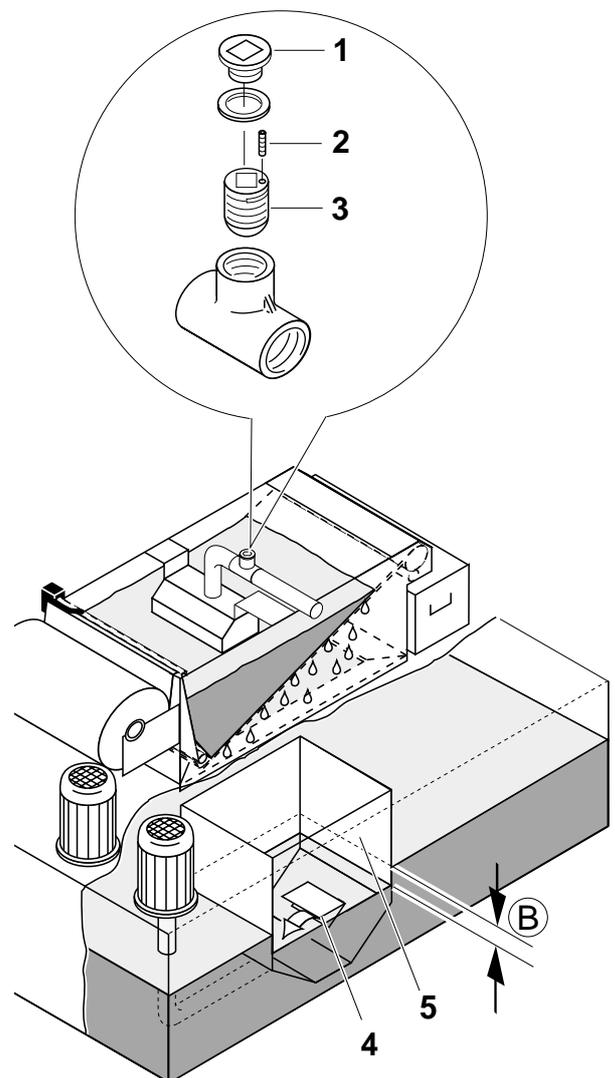
Do not completely unscrew the adjusting nipple, otherwise liquid is forced out by pressure

- Unscrew adjusting nipple (3) until liquid level B begins to fall slowly
- Tighten the locking screw (2)
- Screw in the sealing cap (1), use new seal if necessary



Correctly adjusted rate of flow:

- Liquid level will rise only for a short time in range B
- Flap trap (4) is always slightly open



7 Information on coolants / tanks

- Circulate coolants continuously (weekend circulation recommended)
- Do not feed any organic matter
- Avoid foreign oil charge
- Temperature should be below 25°C for emulsion, if possible
- pH-value should be within neutral range
- Hardness of the initial water should not exceed 15° dH
- Hardness due to upgrading must not exceed 20° dH

Cleaning the coolant tanks

- Cleaning intervals heavily depend upon the kind of processing, material, type of coolant and working hours, no general interval can therefore be specified.
- A cleaning interval between four and eight weeks is recommended as standard value.

8 Maintenance table

Subassembly/ Component	Interval	Action	Safety instructions/ remarks
Coolant	1 day	Check filling level	Replenish only with specified coolant
Deposit container	1 day	Empty	
Baffle plate seal	1 month	Check for damage, clean	Replace defective seal, check each time when changing filter band
Pumps	1 month	See operating instructions of manufacturer	
Tanks and pipelines	6 months	Check for leaks, damage and corrosion	Ensure that no hazardous substances escape
Electrical equipment			
- Motors	-----	See operating instructions of manufacturer	
- Wiring	3 months	Check for interruptions and damage	Replace defective lines
Guide roller at baffle plate	filter band change	Check smooth operation	
Needle slot screen/hole screen	filter band change	Clean	
Drive shaft, rubber rollers of filter band drive	filter band change	Clean grooves, remove dirt	
Float switch	filter band change	Clean	

Subassembly/ Component	Interval	Action	Safety instructions/ remarks
Coolant tanks	500 working hours	Check for contamination (sludge deposits) and clean, if need be	Depending on the tooling method, the interval may greatly be shortened

9 Correction of malfunctions

Malfunction	Possible causes	Remedy
Filter band is not moved on, HF is flooded	Lever of pressure roller not locked	Turn lever to position A and lock (see Chapt. 5.2)
	Pressure roller extremely soiled	Clean
	Drive motor without power or defective	Check electrics, replace drive motor if necessary
	Float switch defective or soiled	Replace or clean switch
	"Lack of filter band" switch defective or sensor arm bent	Replace def. part
	Filter band is wrapped around the drive roller	Deposit container full, filter band stuck to drive roller
Filter band is torn	Filter housing soiled, baffle plate damaged or guide roller stuck	Clean filter housing, check baffle plate and guide roller, replace parts if required
	Wrong type of filter band installed	Use the specified type of filter band
	Swarf under holding-down bars	Dismantle and clean holding-down device

Malfunction	Possible causes	Remedy
	End of filter band is stuck to carrier roller	Use original filter band
Dirt in the clean water tank	Filter band is torn	See "filter band torn"
	Filter band puckered	Clean holding-down bars and filter bottom
	Baffle plate has moved upwards	Re-install and lock baffle plate
	Excessive swarf behind baffle plate	Clean equipment
	HF overflow due to excessive foaming	Add foam inhibitors
	Filter band is moved on though end is reached, unfiltered liquid runs into clean water tank.	"Lack of filter band" switch defective or sensor arm bent - replace with new parts
Excessive foaming of liquid	Water too soft or fresh water supply	Add foam inhibitors

10 Attachment

Take-up attachment



The take-up attachment is an optional accessory and may be retrofitted.

Removing rolled-up filter band

- Switch the equipment off and secure against accidental start-up
- Cut filter band between discharge opening and take-up attachment (1)
- Lift spring plate (2) and simultaneously open clamping lever in direction of arrow (3)



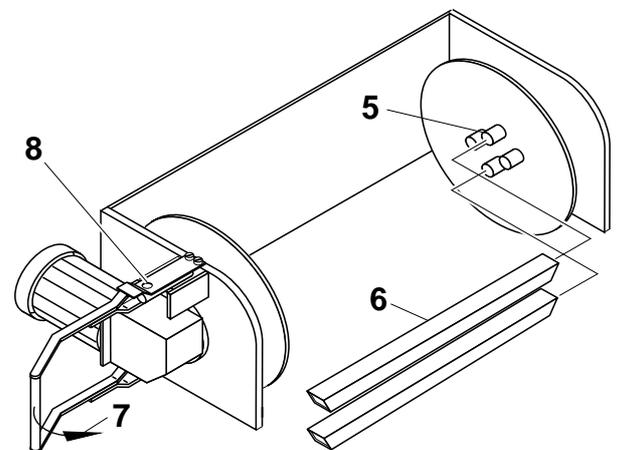
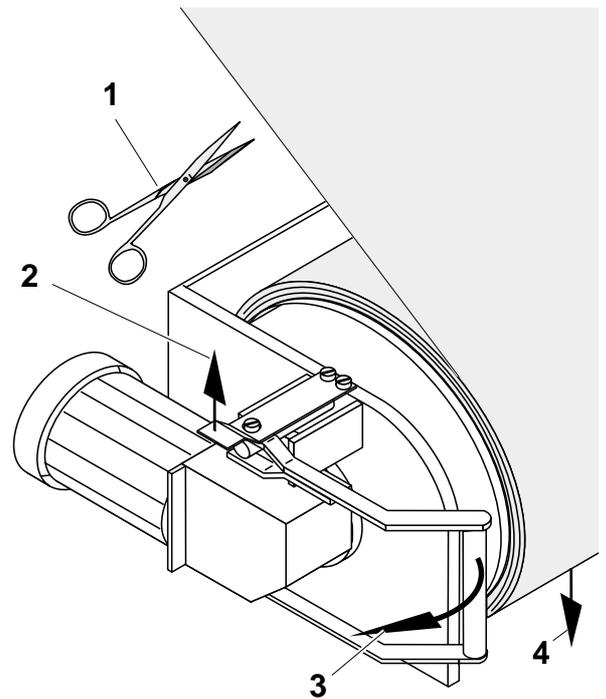
- **Danger!**
Filter band roll will drop from its holder (4) when clamping lever is completely opened.

- Open clamping lever until filter band roll drops from its holder (4)
- Pull holding tubes (6) out of filter band roll
- Close clamping lever (7) until both holding tubes can be inserted and are also supported by the locating bolts
- Insert holding tubes with the chamfered side pointing downwards



- **Danger!**
Do not reach between the moving parts of the take-up attachment when clamping

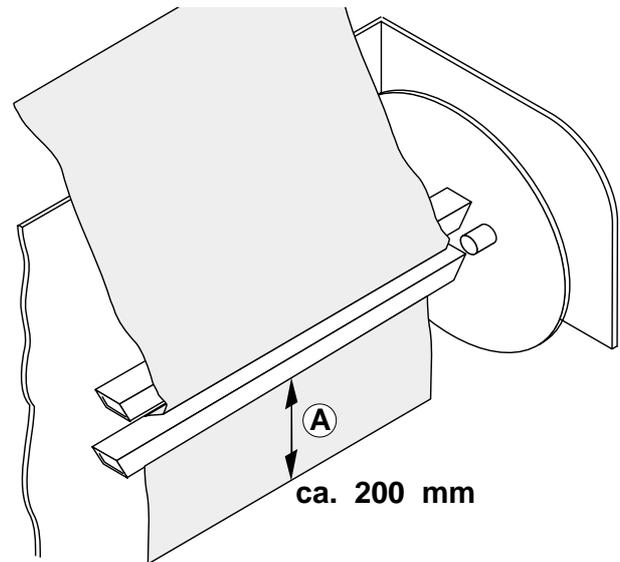
- Close clamping lever completely (locking screw must be engaged in the bore (8) of the spring plate)



- Operate filter band transportation
- Guide filter band between the holding tubes
- Dimension "A" must be approx. 200 mm



During the next filter band transportation the filter band will be rolled up and tensioned automatically.



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