



Translation of the original installation instructions
Automatic metal-edge filter with radial scraper cleaning
AF 42 S

Welded design

Material No. of original installation instructions
70530528



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2 General safety instructions

2.1 Safety instructions for installation and operating personnel

This translation of the original instructions contains important safety information which must be heeded at all times during installation, normal operation and maintenance.

Non-observance can result in the following risks to persons and the environment as well as in damage to the machine or plant:

- ⇒ Failure of critical functions of the machine or plant or of its component parts.
- ⇒ Danger to persons from electrical or mechanical effects as well as from chemical reactions.
- ⇒ Danger to the environment owing to the leakage of hazardous substances.

Before installation / start-up:

- Read this translation of the original instructions carefully.
- Make sure that installation and operating personnel are adequately trained.
- Make sure the contents of the original instructions are fully understood by the responsible persons.
- Define areas of responsibility and competence.
- Prepare a maintenance schedule.

During operation of the plant:

- Keep this translation of the original instructions handy at the place of use.
- Heed the safety instructions. Always operate the machine / plant in accordance with its ratings.

If in doubt:

- Consult the manufacturer.

2.2 Warning structure

Where possible, warnings are structured according to the following system:

Signal word	
Possibly with symbol	Nature and source of the danger ⇒ Potential consequences of non-observance • Action to avert the danger.

2.3 Warning symbols used

⚠ DANGER!
Immediate danger! ⇒ Non-observance will result in serious or fatal injury.
⚠ WARNING!
Potentially dangerous situation! ⇒ Non-observance can result in serious or fatal injury.
⚠ CAUTION!
Potentially dangerous situation! ⇒ Non-observance can result in minor or moderate injuries.
IMPORTANT!
Potentially dangerous situation! ⇒ Non-observance can result in property damage.

2.4 Other symbols used

	Danger: High voltage!
	Danger information about explosion protection
	Information about environmental protection
	Protective clothing must be worn!
	Eye protection must be worn!
	Respirator must be worn!
	Hand symbol: Indicates general information and recommendations
	Bullet: Indicates the order in which actions are to be carried out
	Arrow: Indicates responses to actions

3 Glossary

Draining:

The drain valve opens. The solid particles that have settled in the collection cone are discharged.

Cleaning:

The filter cartridge is cleaned. The coiled cartridge is turned and cleaned by a stationary scraper.

Aerosol:

Distribution of tiny liquid droplets (or solid particles) in a gas.

Agglomerate:

Structure made up of several small particles which have formed a ball (agglomerated) as a result of physical forces.

Initial differential pressure:

Differential pressure at the start of the filtration process (when the coiled cartridge is "clean").

Differential pressure (Δp):

Pressure difference between the dirty side and the clean side.

Cartridge (coiled):

Cylindrical structure consisting of a core element with triangular wires wound or welded onto it. The suspension to be filtered flows from the outside to the inside. Solids are retained on the outer surface of the cartridge.

Filter cake:

Layer that is built up by the solids retained on the surface of the coiled cartridge.

Filtered fluid:

Substance that is filtered.

Filtration mode:

The metal-edge filter operates normally and the drain valve is closed.

Homogenisation:

A system of substances is given a uniform composition.

Concentrate:

Quantity of residues enriched with solids that is discharged from the automatic filter periodically. Further treatment may be necessary, depending on the application.

Suspension (dirty suspension):

System of substances to be filtered, generally consisting of solids in a liquid.

Pilot control:

5/2-way magnetic valves piloted by the controller that switch pneumatic valves.

4 General information

4.1 Manufacturer

Filtration Group GmbH
 Schleifbachweg 45
 D-74613 Öhringen
 Phone +49 7941 6466-0
 Fax +49 7941 6466-429
 fm.de.sales@filtrationgroup.com
 www.filtrationgroup.com

4.2 Information about the original instructions

FG Mat. No.: 70530528
 Date: 13.12.17
 Revision status: 04

4.3 ATEX model code



	II	2	G	c	T3
	1.	2.	3.	4.	5.
1.	II Valid for use above ground				
2.	Use in:		Zone 1 2	Zone 2 3	
3.	Atmosphere G = Gas D = Dust		G	G	
4.	Types of protection c = Constructional safety				
5.	T3 = The maximum surface temperature on the filtration device is 200°C				

(Space for name-plate)

(Space for ATEX name-plate)

The Ex type of protection is only valid in conjunction with the declaration of conformity.

5 Intended application

⚠ DANGER!

PROHIBITED:

- Use for other purposes without prior consultation with the manufacturer.
- Use in hazardous areas unless explicitly mentioned in the contract documentation.
- Use with smouldering, burning or sticky particles.
- Use with highly explosive dusts (e.g. aluminium dust, explosives, etc.).

⚠ CAUTION!

This FG metal-edge filter is only allowed to be used in accordance with the operating conditions specified in the contract documentation and in the original instructions. All forms of use which deviate from or exceed the limits of use described above are considered to be contrary to the intended purpose. The manufacturer shall not be liable for any damage resulting from such use.

IMPORTANT!

Conditionally allowed:

- Use of solvents in consultation with the manufacturer.
- Reverse flow through the filter (pressure < 0.6 bar).

FG metal-edge filters are designed for filtering fluids or pastes up to a maximum viscosity of 500,000 mPas and can be cleaned without interrupting operation. They are cleaned either manually or automatically.

6 Machine description

6.1 Principle of the process

Filtration

A triangular wire is wound or welded immovably on a threaded, profiled inner core. The gap width and thus the filter rating are determined by the thread pitch. The suspension flows through the filter cartridge from the outside to the inside. Particles settle on the outside of the cartridge. There is a significantly enlarged cross-section downstream of the narrowest gap due to the triangular geometry. Clogging is practically eliminated as a result.

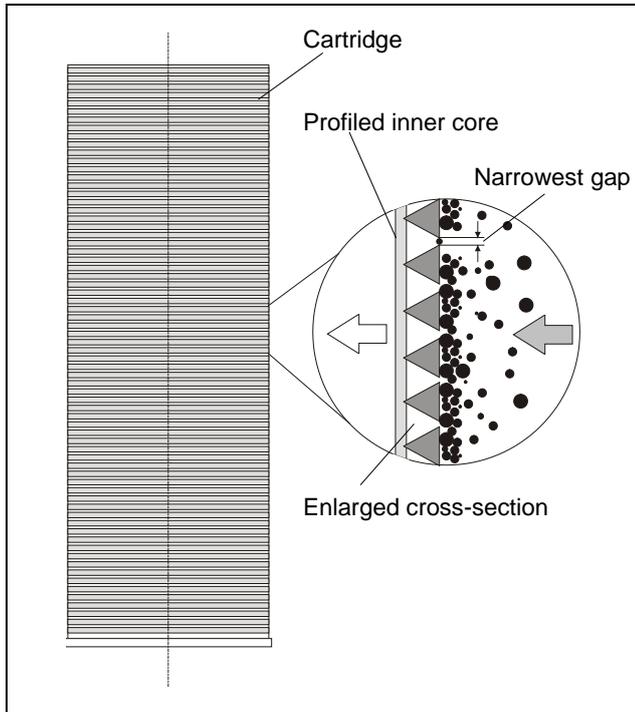


Fig. 1: Separation principle on the filter element

Cleaning

The particles that settle on the coiled or welded cartridge cause the differential pressure between the dirty side and the clean side to increase.

If this pressure difference exceeds a (settable) threshold, a cleaning cycle is started or the unit must be cleaned manually. The cartridge begins to turn. The filter cake is detached from the cartridge by the scraper.

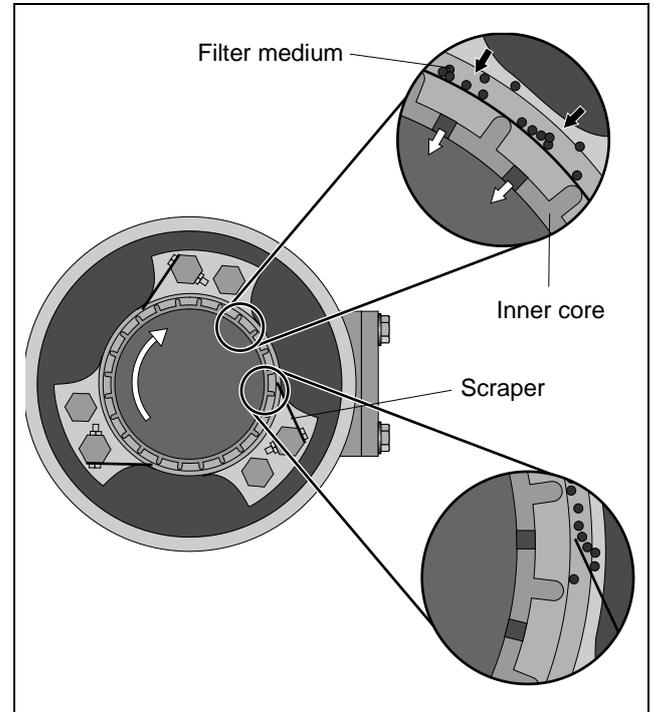


Fig. 2: Separating and cleaning principle on the coiled cartridge

To start a cleaning cycle

A cleaning cycle can be started in the following ways:

- Manually
- By means of a differential pressure switch
- By means of a time switch
- Controlled by a machine tool

6.2 Main components of the metal-edge filter

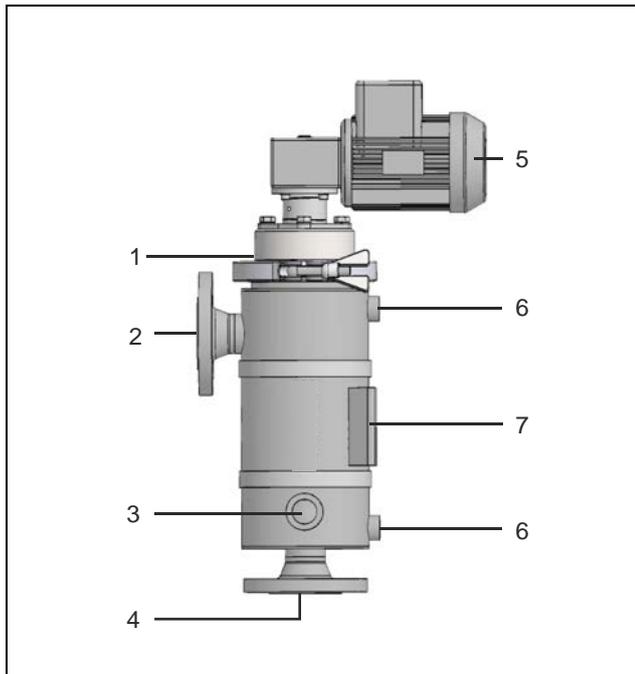


Fig. 3: Diagram of the main components

1	Vent screw
2	Inlet on dirty side
3	Concentrate drain
4	Outlet on clean side
5	Gear motor
6	Connection for heating circuit
7	Name-plate

6.3 Operating principle of a metal-edge filter

- 1**
Dirty suspension flows into the metal-edge filter.
- 2**
The suspension flows through the filter cartridge. A fluid flows around the dirty side in a double jacket to heat the suspension and keep it in a liquid state.
- 3**
The suspension flows through the cartridge from the outside to the inside. Particles settle on the cartridge.

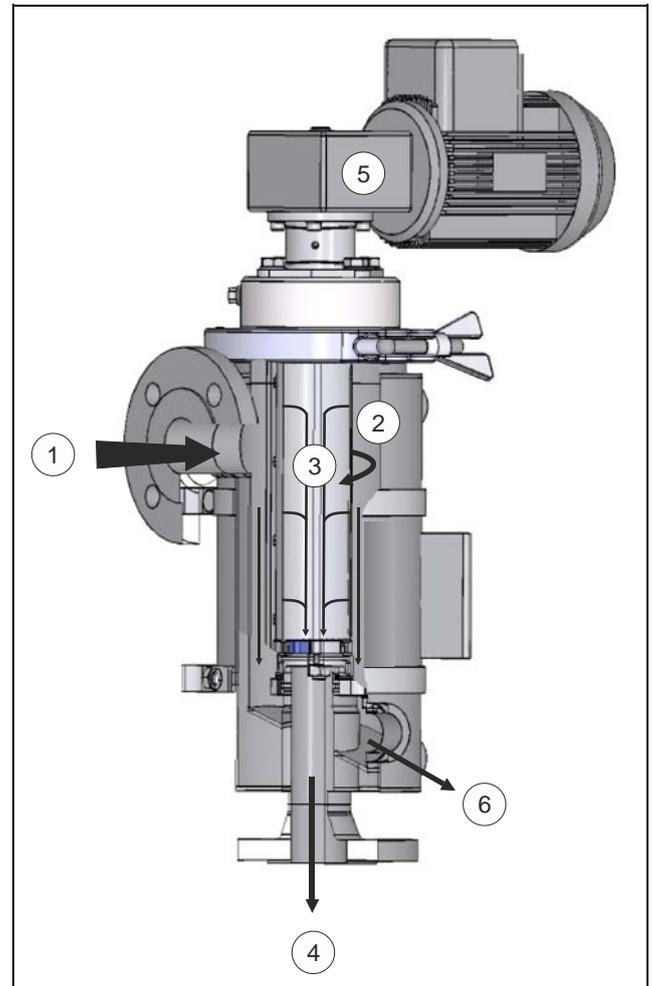


Fig. 4: Operating principle of a metal-edge filter

- 4**
The filtered fluid reaches the clean side and exits the filter.
- 5**
A cleaning cycle is started after a preset time. The filter cartridge is turned by the gear motor. The separated particles are detached by the stationary scrapers. The filtration process is not interrupted.
- 6**
The enriched particles on the dirty side can be periodically discharged.

7 Technical data

7.1 General data (excluding optional equipment)

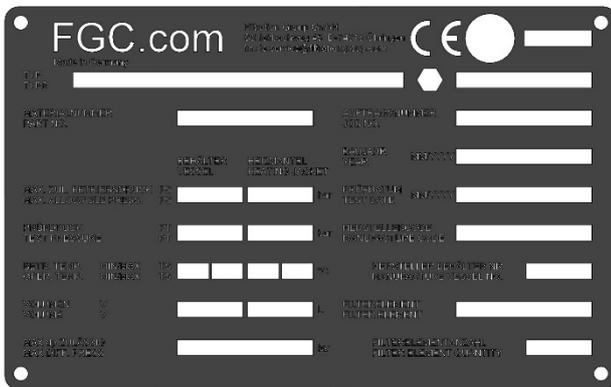
Electrical power consumption*: ... 250 V AC / 400 V 3NPE
 Gear motor: See data sheet
 Noise emission (peaks): < 70 dB(A)
 Weight: 28 kg
 Dimensions: See data sheet
 Min. dismantling clearance above filter: ... See data sheet
 Total dry weight without valves: See data sheet
 Max. permissible operating pressure: 10 bar
 Max. permissible operating temperature 100°C

*See also name-plate on gear motor

7.2 Order-specific data

	<p>The name-plate is rendered invalid if the coiled cartridge or the inner assembly are modified.</p> <ul style="list-style-type: none"> Please request a new name-plate from the manufacturer.
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This data is order-specific and can be taken from the name-plate.



8 Transport and storage

Transport

- Always transport horizontally in the original packaging.
- Avoid vibrations.

Storage

- Always store horizontally in the original packaging.
- Always store in a dry, frost-free room.



	Seaworthy packaging is specified in the contract documentation as an option.
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9 Installation

⚠ DANGER!

	<p>Explosion hazard!</p> <p>⇒ Risk of injury to persons or damage to property.</p> <ul style="list-style-type: none"> This FG metal-edge filter is only allowed to be installed and operated in the category specified in the contract documentation (offer / order confirmation). If no category is specified: Do not operate the FG metal-edge filter in hazardous areas! The owner is responsible for zone classification. The owner is solely responsible for implementing the necessary explosion protection measures! If in doubt, please consult the responsible authorities.
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⚠ DANGER!

	<p>Explosion hazard!</p> <p>⇒ Risk of injury to persons or damage to property.</p> <ul style="list-style-type: none"> The unit is only allowed to be installed, accepted and tested by a suitably trained person (99/98/EC).
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⚠ WARNING!

If the unit is installed by unauthorised persons:

⇒ Risk of injury.

⇒ All warranty claims are rendered invalid.

- The unit must be installed by a suitably trained person!

9.1 Installation

⚠ DANGER!	
	<p>Explosion hazard!</p> <p>⇒ Risk of injury to persons or damage to property.</p> <ul style="list-style-type: none"> • Check the conductivity between all components! • Note the maximum permissible resistance: $R < 10 \Omega$. • Make sure earthing is provided on the site.
	<p>It must be possible to remove the inner assembly in order to carry out maintenance work.</p>

- Prepare a suitable seat on which to mount the filter (see data sheet).
- Be sure to allow the required clearances for dismantling and discharging (see data sheet).
- Pick up the metal-edge filter using suitable hoisting gear and remove it from the packaging.
- Bolt the metal-edge filter to the prepared seat.
- Remove the protection caps on the connections.
- Connect the pipes.

Pressure relief

- Design measures must be incorporated to prevent inadmissible excess pressure on the dirty side.
- Install a pressure relief valve if necessary.

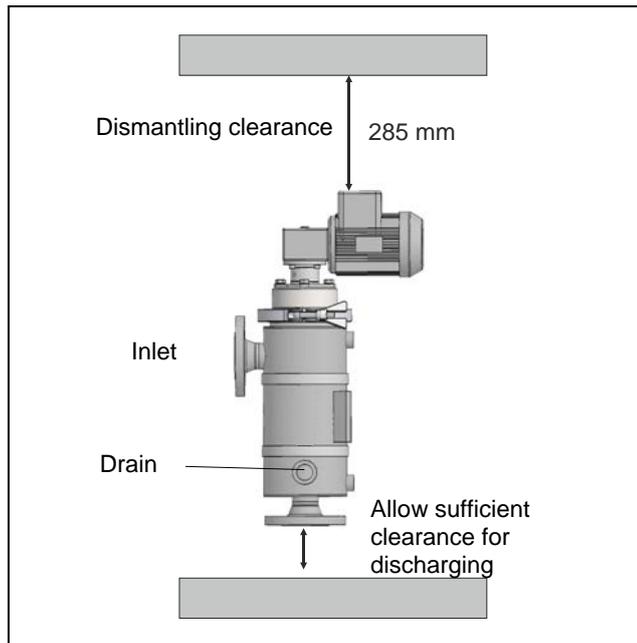


Fig. 5: Mechanical installation

9.2 Installation of the drain line

⚠ CAUTION!	
High pressure at the drain valve!	
<p>⇒ Risk of injury to persons or damage to property.</p> <ul style="list-style-type: none"> • Depressurise prior to installing or dismantling. 	

- Make sure the drain line is securely fastened.
- Don't discharge concentrate into the atmosphere.
- Provide splash protection if necessary.
- Lay the pipes without a siphon if possible. Sedimented concentrate leads to a risk of clogging!

9.3 Electropneumatic connections

⚠ DANGER!	
Danger of electric shock!	
	<p>⇒ Risk of serious or fatal injury in case of contact with electrical components.</p> <ul style="list-style-type: none"> • All electrical installation work must be carried out by a suitably qualified electrician!

9.3.1 Connection to the customer's controller

Gear motor

- Refer to the name-plate and / or the contract documentation for details of the ratings (see also terminal diagram).
- Install a suitable motor circuit-breaker.
- Connect the gear motor.

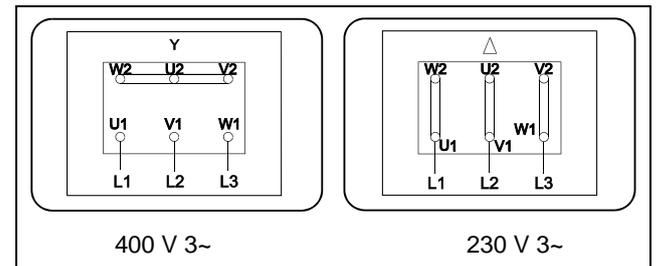


Fig. 6: Standard gear motor connections

Automatic drain valve (optional)

- Provide a suitable compressed air supply.
- Provide a suitable 5/2-way valve for piloting.

	<p>Refer to the contract documentation for special designs.</p>
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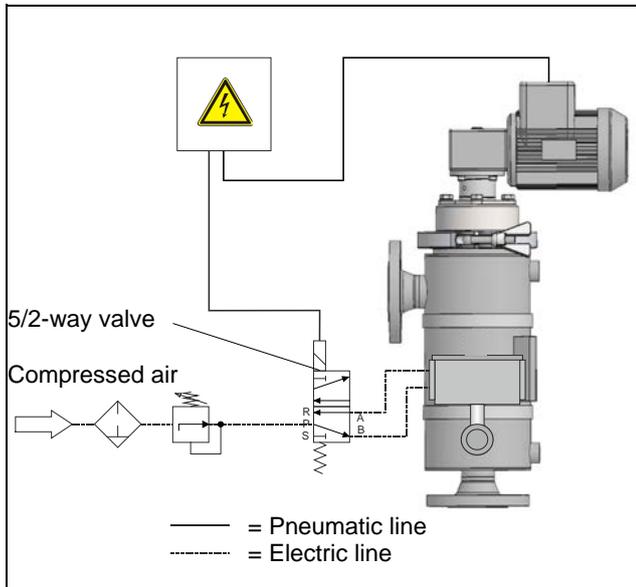


Fig. 7: Electropneumatic connections

	Required on the switch box:
	<ul style="list-style-type: none"> • Hand release for cleaning • Hand release for drain valve

9.3.2 Connection to a FG controller (optional)

- Connect the power connector, gear motor and pilot valve (optional) in accordance with the enclosed circuit diagram.

9.4 Control options

Control of the cleaning process differs according to the application. The control options described here are examples and are simply intended to serve as a guide.

9.4.1 Time-controlled cleaning, manual draining

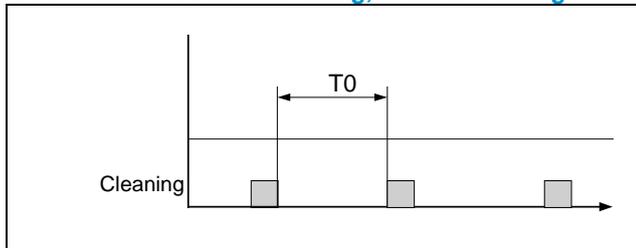


Fig. 8: Time-controlled cleaning

Parameter	Description	Recommended value
T_0	Interval time	60 s to 24 h

9.4.2 Time-controlled cleaning and draining

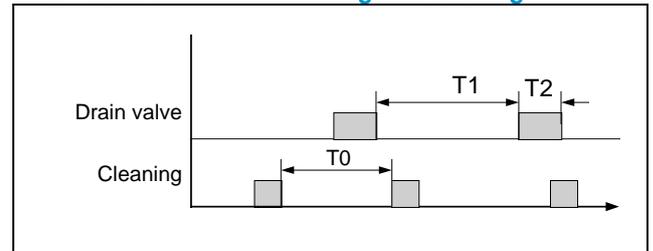


Fig. 9: Time-controlled cleaning / draining

Parameter	Description	Recommended value
T_0	Interval time for cleaning	60 s to 24 h
T_1	Interval time of drain valve	60 s to 24 h
T_2	Opening time of drain valve	2 to 5 s

9.4.3 Time-controlled cleaning, counter-controlled draining

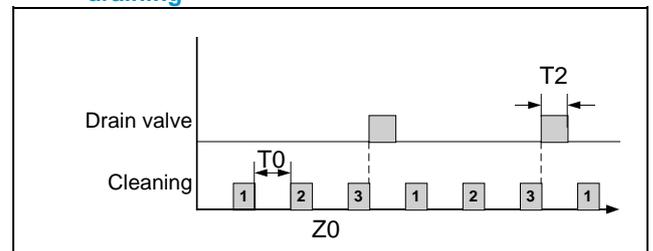


Fig. 10: Time-controlled cleaning, counter-controlled draining

Parameter	Description	Recommended value
T_0	Interval time for cleaning	60 s to 24 h
Z_0	Cleaning counter	3 - 5
T_2	Opening time of drain valve	2 to 5 s

9.4.4 Time-controlled cleaning

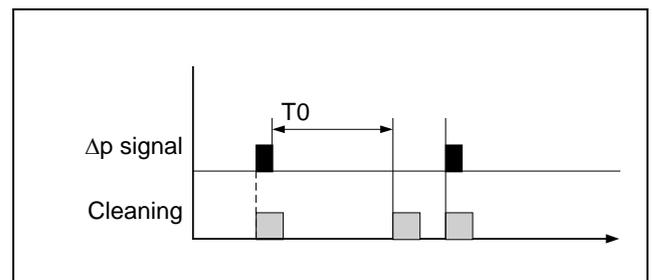


Fig. 11: Time-controlled cleaning

Parameter	Description	Recommended value
T_0	Max. interval time	6 to 600 s

10 Start-up

⚠ DANGER!

This FG metal-edge filter is not allowed to be put into operation until the relevant machinery into which it is to be incorporated has been declared in conformity with the applicable EC directives, harmonised standards, European standards or equivalent national standards.

⚠ DANGER!



Explosion hazard!

- ⇒ Risk of injury to persons or damage to property.
- The FG metal-edge filter must be completely vented prior to start-up if it is to be used with media that are capable of forming explosive gases.
- The FG metal-edge filter must be completely filled with fluid.
- Take steps to prevent air pockets.

⚠ DANGER!

Danger due to high pressure in the filter!

- ⇒ Risk of injury to persons or damage to property.
- Do not allow concentrate to spatter into the atmosphere!

- Check that the protection caps have been removed from the connections.
- Remove all foreign particles from the filter.
- Check the pipe connections.
- Tighten all screws.
- Flush the pipes.

10.1 Functional test

To check the direction of rotation of the gear motor

- Unscrew the cover of the gear motor.
- Start up the gear motor briefly (< 1 s).
- Compare the direction of rotation of the shaft with that shown by the arrow (default direction: clockwise).
- Reverse the terminal connections of the gear motor if necessary.
- Screw the cover of the gear motor back on again.

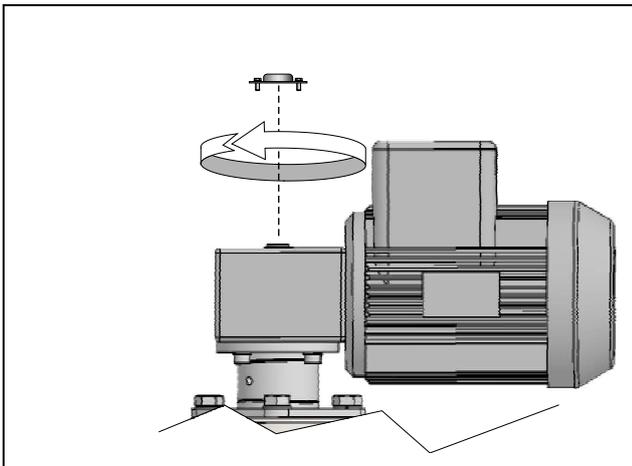


Fig. 12: Direction of rotation of the gear motor

To test the function of the drain valve (optional)

- Connect compressed air to the pilot valve.
- Press the hand release for the pilot valve.
- ⇒ The drain valve opens.
- Set the hand release to the "off" position.
- ⇒ The drain valve closes.

10.2 Operating settings

- Switch on the controller.
- Carefully open the inlet.
- Vent the filter.

⚠ CAUTION!

- ⇒ The bearings can heat up if the pump is run dry!
- The filter must be completely vented!

Settings for time-controlled cleaning

- Set the times according to the operating conditions and correct them if necessary.

Initial differential pressure

The initial differential pressure varies according to the application.

General guide for low-viscosity fluids:

Installation on discharge side: $\Delta p \leq 0.3$ bar

Installation on suction side: $\Delta p \leq 0.03$ to 0.1 bar

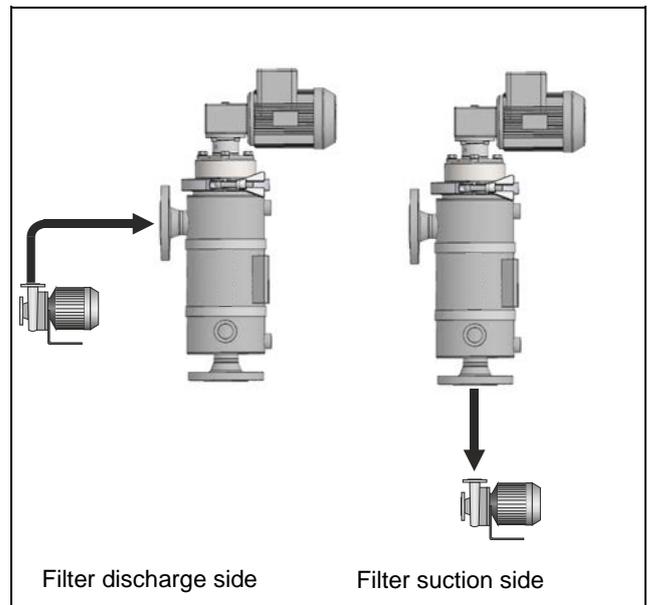


Fig. 13: Initial differential pressure



At the end of a cleaning cycle, the differential pressure (Δp) should return almost to the original initial differential pressure. If not, the cleaning function is faulty (in this case, please consult the manufacturer).

11 Normal operation

⚠ DANGER!	
Danger due to high pressure in the filter!	
⇒ Risk of injury to persons or damage to property.	
<ul style="list-style-type: none"> Do not allow concentrate to spatter into the atmosphere! 	
	Dispose of concentrate in a manner which does not pollute the environment! Consult the responsible authorities before deciding upon the most suitable disposal method.

The following parameters must be monitored daily during normal operation:

- Differential pressure
- Concentrate bowl level
- Controller functions

To flush the drain line

⚠ CAUTION!	
A high proportion of fine dirt particles in a long pipe can lead to clogging!	
⇒ Risk of injury to persons or damage to property.	
<ul style="list-style-type: none"> Flush the drain line daily / weekly, depending on the application. 	

- Open the drain valve manually for approx. 10 to 15 s.
- ⇒ The drain line is flushed.

12 Shutting down the metal-edge filter

12.1 Temporary shut-down

On the installed metal-edge filter controller:

- Switch OFF the main switch.

12.2 Prolonged shut-down (> 48 h)

- Start a manual cleaning cycle.
- Clean the inner assembly (section 14.3.1).
- Fill the metal-edge filter completely with fluid.
- Switch OFF the main switch.

12.3 Emergency shut-down

- Switch OFF the main switch.
- ⇒ The power supply is interrupted.

13 Troubleshooting

Fault	Possible cause	Remedy
Gear motor does not turn	Motor circuit breaker tripped	Reset the motor circuit breaker Test the gear motor
	Substance to be filtered has solidified	Clean the filter
Valve does not open	Not enough compressed air	Increase the pressure
	Pilot valve defective	Test the pilot valve
	Pilot valve incorrectly connected	Check the electrical and pneumatic connections
Initial differential pressure no longer reached	Solids concentration too high	Use a suitable prefilter
	Gear motor rotating in wrong direction	Check the direction of rotation
	Cleaning time too short	Increase the cleaning time (the gear motor should be turned at least 1 or 2 turns)
Increased concentration of dirt on clean side	Coiled cartridge defective	Check the coiled cartridge and if necessary replace
	Seals brittle	Check the seals and if necessary replace
Excessive leakage at shaft seal	Shaft seal defective	Replace the shaft seal

14 Maintenance

⚠ DANGER!	
	Explosion hazard! ⇒ Risk of injury to persons or damage to property. <ul style="list-style-type: none"> • Work is only allowed to be carried out in hazardous areas if appropriate safety precautions are implemented. • Safety precautions must be implemented by the owner.
	⚠ WARNING! If the unit is maintained by unauthorised persons: ⇒ Risk of injury. ⇒ All warranty claims are rendered invalid. <ul style="list-style-type: none"> • The unit must be maintained by a suitably trained person!

Before all maintenance work:

- Shut down the metal-edge filter (section 12).
- Take steps to prevent the machine / plant from being switched on again by unauthorised persons.



- Wear protective clothing and equipment appropriate to the hazard potential of the medium (e.g. eye protection, respirator, protective clothing, etc.).
- Carry out the maintenance work.
- Start up the metal-edge filter again (section 10).

14.1 Inspection and maintenance schedule

- Refer also to the contract documentation.

Interval	Component	Activity
Weekly	Metal-edge filter	Check for leakage Check the differential pressure
	Pipes	Clean
Monthly	Coiled cartridge	Inspect for wear and if necessary clean
	Metal-edge filter	Check the conductivity between all components. Note the maximum permissible resistance: $R < 10 \Omega$
Yearly or when cooling lubricant replaced	Bearings	Check the clearance
	Valves	Test the functions
	Coiled cartridge	Clean
	Metal-edge filter	Clean
	Seal kit	Check for leakage
	The necessary inspection and maintenance work is dependent on the particular application. Please consult the manufacturer if necessary.	

14.2 Removing the inner assembly

⚠ DANGER!

The metal-edge filter is pressurised!

- ⇒ Risk of injury to persons or damage to property!
- Make sure the pipe is depressurised prior to opening the metal-edge filter.



The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Close the filter inlet and outlet.
 - Relieve the pressure in the pipe if necessary.
- Open the air-release valve.
 - Open the drain valve.

⇒ The filter is discharged.
- Turn off the compressed air supply.
- Disconnect the gear motor.

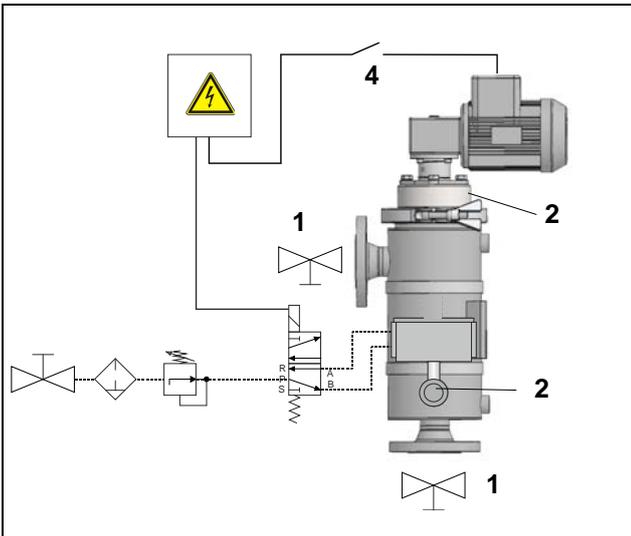


Fig. 14: Disconnecting the filter

5

- Loosen and remove the cylinder head screws (3.3) and the spring washers (3.4) on the bell housing of the gear motor.
- Withdraw the gear motor (1) vertically from the shaft.

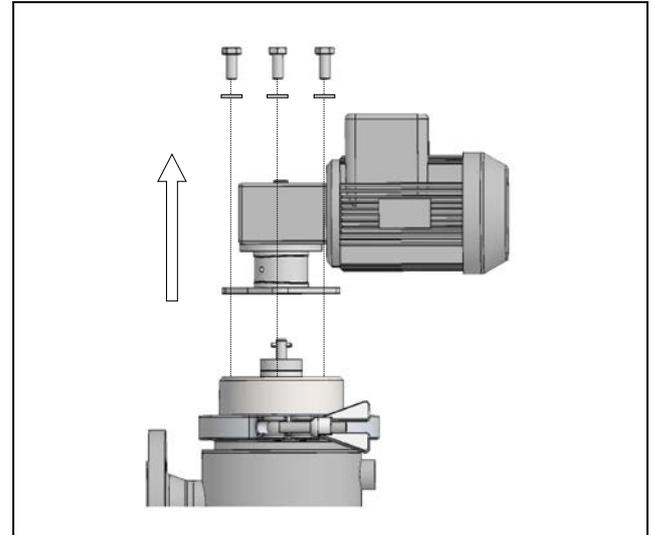


Fig. 15: Removing the gear motor

6

- Loosen and remove the clamp (5).

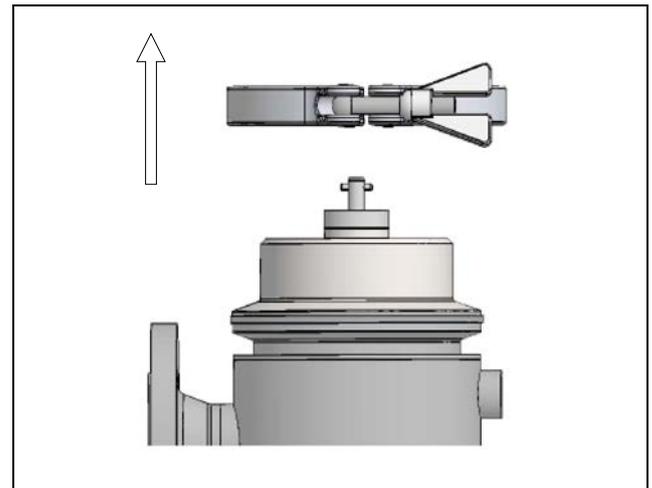


Fig. 16: Removing the clamp

7

- Withdraw the inner assembly vertically.

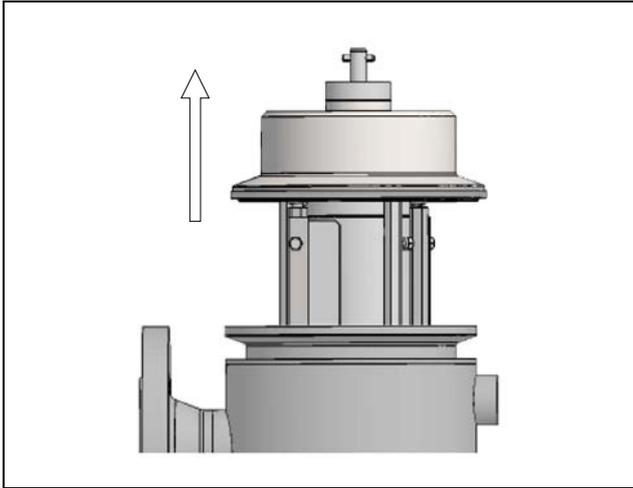


Fig. 17: Removing the inner assembly

- Lay the inner assembly down carefully on a level surface, taking care not to damage the coiled cartridge.

⇒ The inner assembly can now be maintained.

- Install in reverse order.
- Lower the inner assembly into position, making sure it is absolutely straight.

14.3 Cleaning the filter

14.3.1 Cleaning the inner assembly

⚠ WARNING!

Danger of aerosol formation!

- All work must be carried out in a room with a suitable extraction system!



- Wear protective clothing and equipment appropriate to the hazard potential of the medium (e.g. eye protection, respirator, protective clothing, etc.).
- Remove any coarse impurities by mechanical means.
- Wash out the inner assembly in a suitable cleaning solution.
- Carefully blow out the inner assembly with a steam jet or compressed air.
- Clean (or if necessary replace) and oil the seals.

14.3.2 Cleaning the filter housing



- Wear protective clothing and equipment appropriate to the hazard potential of the medium (e.g. eye protection, respirator, protective clothing, etc.).
- Remove any coarse impurities by mechanical means.
- Wash out the filter housing in a suitable cleaning solution.

14.4 Replacing the coiled cartridge

⚠ WARNING!

If the unit is maintained by unauthorised persons:

- ⇒ Risk of injury.
- ⇒ All warranty claims are rendered invalid.
- The unit must be maintained by a suitably trained person!



The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Remove the inner assembly (section 14.2).
- Clean the filter (section 14.3).

1

- Loosen the hexagon nut (14) and remove it together with the spring washers (13).
- Remove the centre flange (18).

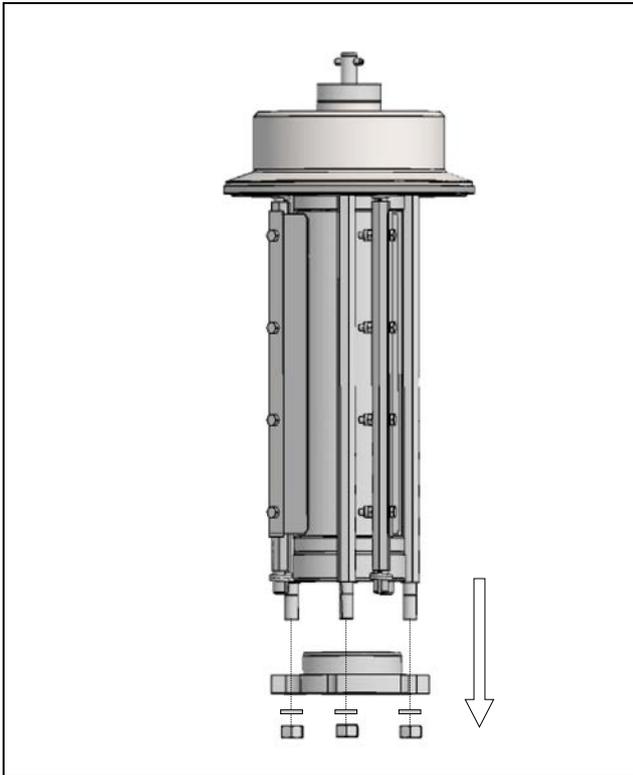


Fig. 18: Removing the centre flange

2

⚠ CAUTION!

Danger of crushing due to preloaded springs!

- ⇒ Fingers may be crushed.
- Never attempt to reach between the scraper and the coiled cartridge!

- Completely remove the coiled cartridge.

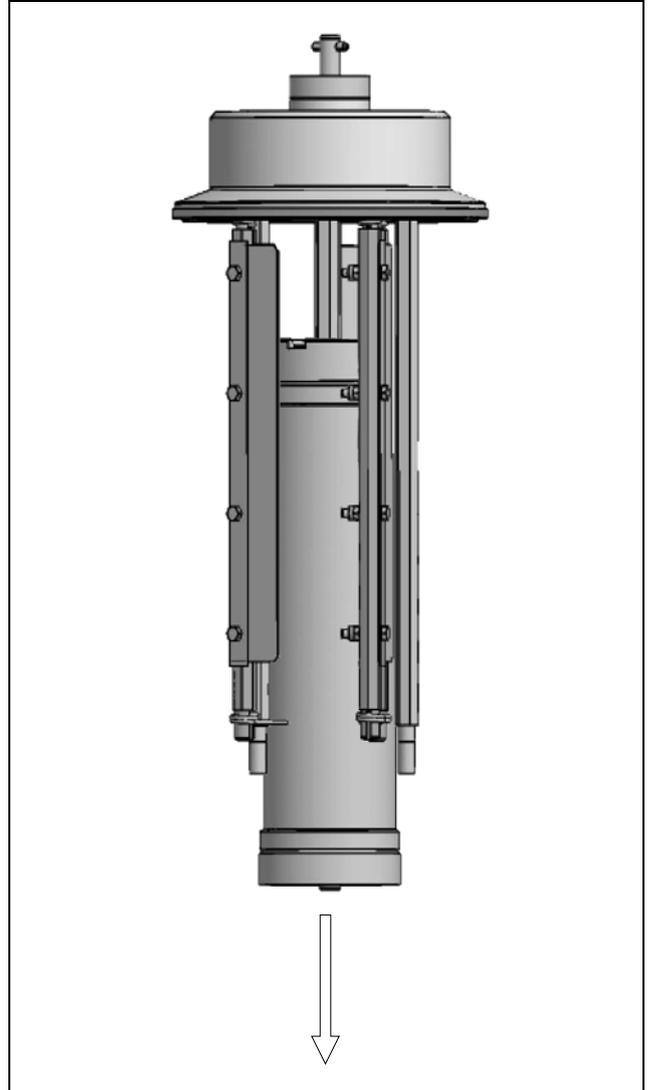


Fig. 19: Completely removing the coiled cartridge

3

- Loosen and remove the hexagon nuts (16).

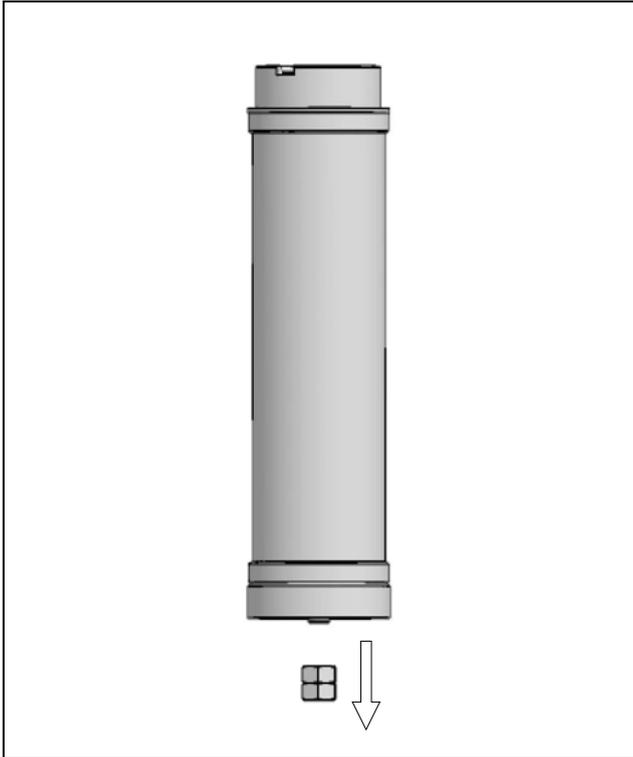


Fig. 20: Removing the hexagon nuts

4

- Remove the cartridge ring (17).

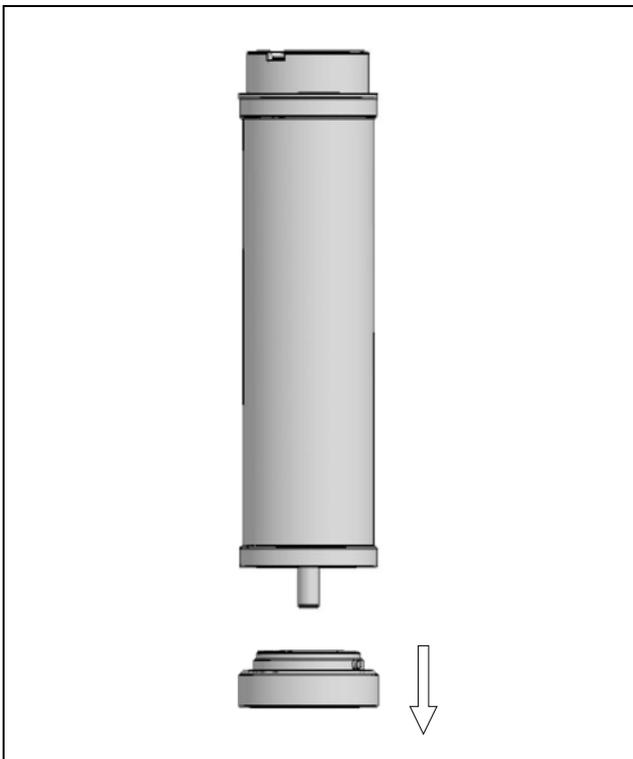


Fig. 21: Removing the cartridge ring

5

- Carefully pull the coiled cartridge vertically down.

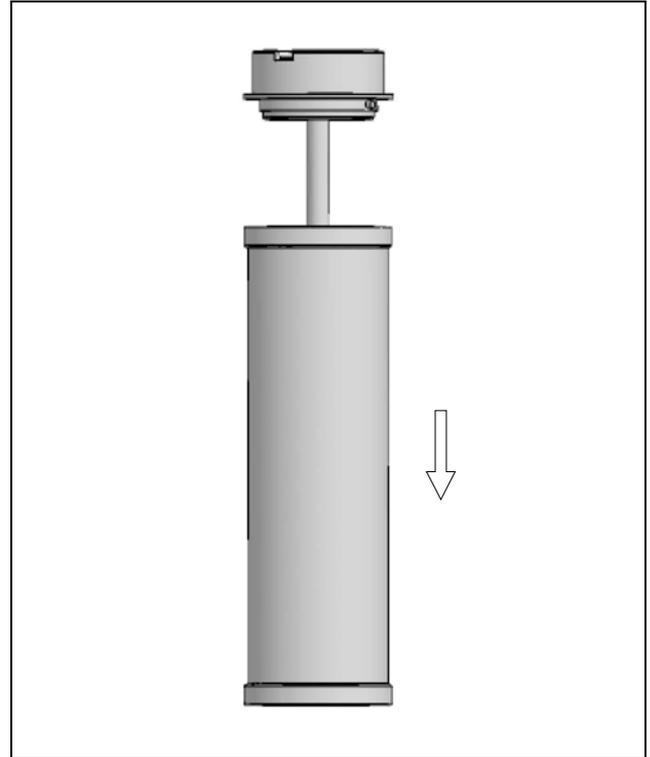


Fig. 22: Removing the coiled cartridge

- Install in reverse order.

14.5 Replacing the scraper and springs

⚠ WARNING!

If the unit is maintained by unauthorised persons:

- ⇒ Risk of injury.
- ⇒ All warranty claims are rendered invalid.
- The unit must be maintained by a suitably trained person!



The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Remove the inner assembly (section 14.2).
- Clean the filter (section 14.3).
- Remove the coiled cartridge from the inner assembly (section 14.4, steps 1 to 3).

1

- Pull the scraper unit (19) down vertically to remove it.

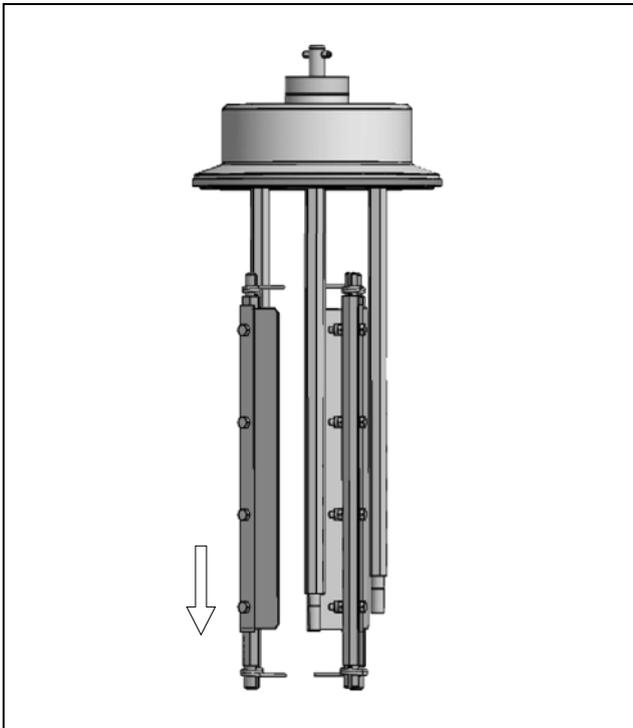


Fig. 23: Removing the scraper unit

2

- Loosen the hexagon screws (19.5) and the lock nuts (19.6) on the scraper.

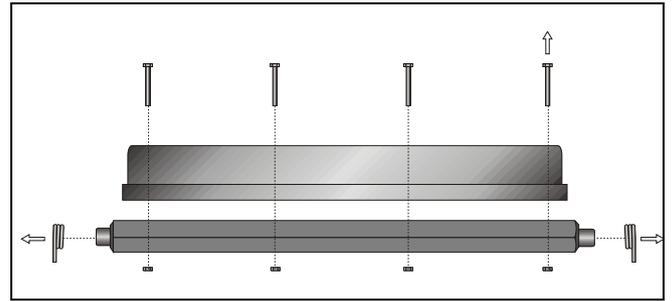


Fig. 24: Dismantling the scraper unit

- ⇒ The scraper (19.3) and springs (19.7) can now be replaced.

- Install in reverse order.

After installing:

- The legs of the springs must be on the outside.
- The springs must be located behind the distance bolts.
- The scraper must rest correctly on the coiled cartridge.
- The scraper must be inserted straight.
- Check all screws and tighten them if necessary.

14.6 Replacing the cartridge seals and guides

⚠ WARNING!

If the unit is maintained by unauthorised persons:

- ⇒ Risk of injury.
- ⇒ All warranty claims are rendered invalid.
- The unit must be maintained by a suitably trained person!



The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Remove the inner assembly (section 14.2).
 - Clean the filter (section 14.3).
 - Remove the coiled cartridge from the inner assembly (section 14.4, steps 1 to 3).
- ⇒ The seals can now be replaced.

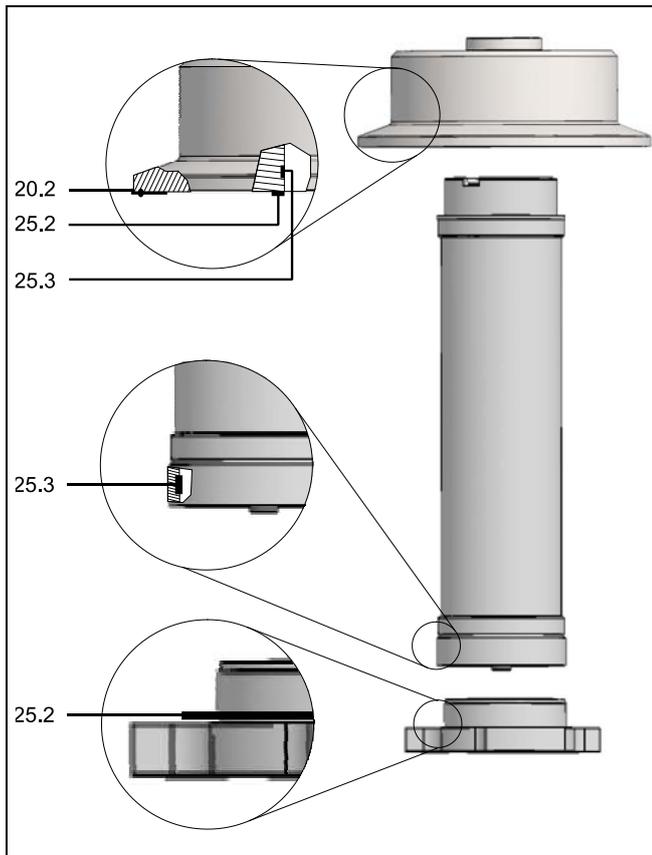


Fig. 25: Replacing the cartridge seals and guides

14.7 Replacing the shaft seal

⚠ WARNING!

If the unit is maintained by unauthorised persons:

- ⇒ Risk of injury.
- ⇒ All warranty claims are rendered invalid.
- The unit must be maintained by a suitably trained person!



The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Remove the coiled cartridge (section 14.4, steps 1 to 2).

1

- Remove the clamping pin (3.7).

2

- Loosen and remove the cylinder head screws (8).

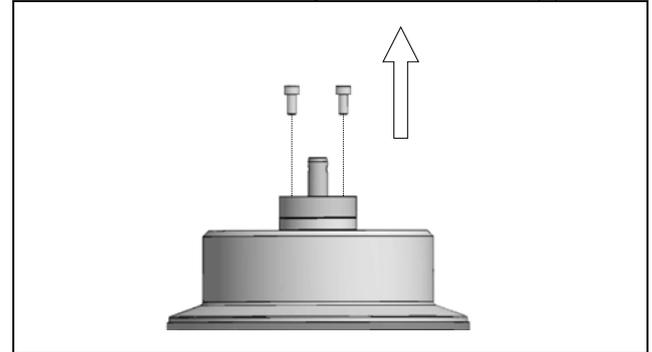


Fig. 26: Loosening and removing the cylinder head screws

3

- Carefully remove the sealing flange (9) from the drive shaft.

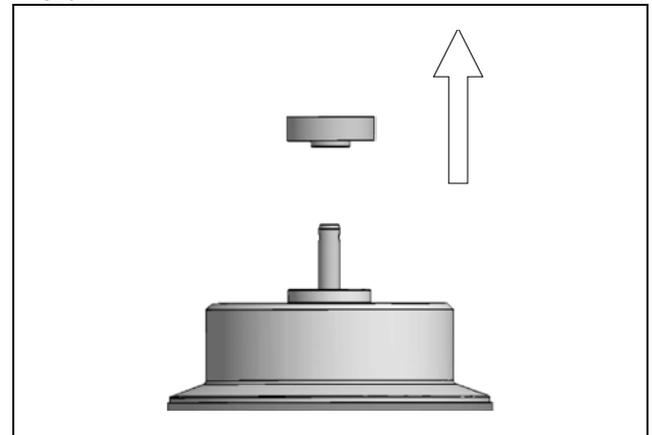


Fig. 27: Removing the sealing flange

- 4
- Pull the drive shaft (10) down vertically to remove it from the cover.

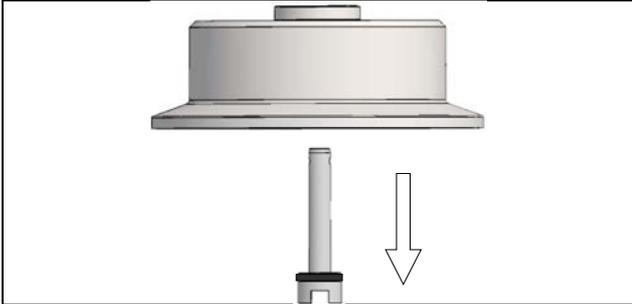


Fig. 28: Removing the drive shaft

- 5
- Remove the O-ring (20.5) from the drive shaft.

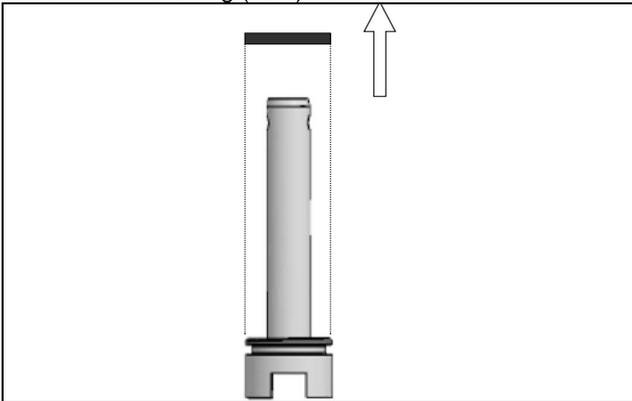


Fig. 29: Removing the seal

- 6
- Remove the Quad-Ring (20.3) and the backup ring (20.4) from the cover.

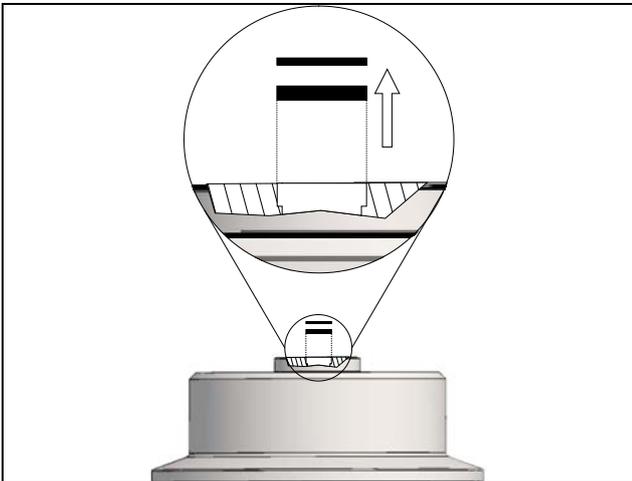


Fig. 30: Removing the Quad-Ring and the backup ring

- 7
- Clean the shaft seal attachment, drive shaft and shaft bearing insert.
 - Oil the new sealing elements lightly and install them.
 - Install in reverse order.

After installing:

- Press the shaft seal attachment and the sealing disc together and carefully push them over the shaft.
- Screw in the cylinder head screws hand-tight.
- Turn the drive shaft slightly and pull it up.
- Tighten the hexagon screws.

14.8 Replacing the shaft guide

⚠ WARNING!

If the unit is maintained by unauthorised persons:

- ⇒ Risk of injury.
- ⇒ All warranty claims are rendered invalid.
- The unit must be maintained by a suitably trained person!

 The numbers indicated in parentheses correspond to those used in the spare parts drawing.

- Remove the coiled cartridge (section 14.4, steps 1 to 2).
- Replace the shaft seals (section 14.7, steps 1 to 4).

1

- Remove the bearing bush (25.1) from the sealing flange.

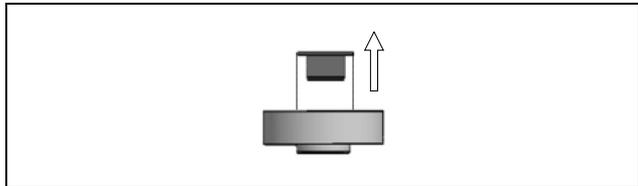


Fig. 31: Removing the bearing bush from the sealing flange

2

- Remove the bearing bush (25.1) from the cover.

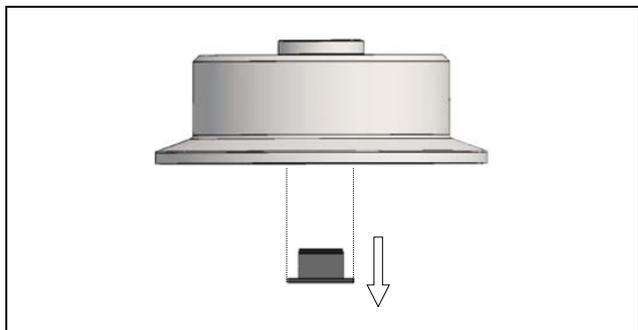


Fig. 32: Removing the bearing bush from the cover

3

- Clean all dismantled components (including the drive shaft).

- Install in reverse order.

After installing:

- Press the shaft seal attachment and the sealing disc together and carefully push them over the shaft.
- Screw in the cylinder head screws hand-tight.
- Turn the shaft slightly and pull it up.
- Tighten the cylinder head screws.

15 List of parts

No.	Designation	Qty.	Benennung
1	Gear motor	1	Getriebemotor
3	Bell housing with screws	1	Motoraufnahme Z AF71/G1
3.1	Snap ring	1	Sicherungsring 14 x 1 DIN 471
3.2	Feather key	1	Passfeder 5 x 5 x 25 DIN 6885
3.3	Cylinder head screw	4	Zylinderschraube M6 x 16 ISO 4762
3.4	Spring washer	4	Federring A6 DIN 128
3.5	Bell housing	1	Motorblock
3.6	Motor shaft	1	Motorwelle AF71/G1
3.7	Clamping pin	1	Spannstift 4x18 DIN 1481
4	Vent screw	1	Entlüftungsschraube G1/8
5	Hexagon screw	4	Sechskantschraube M10 x 25 ISO 4017
6	Spring washer	4	Federring A10 DIN 127
7	Cover AF42/S1	1	Deckel AF42/S1
8	Cylinder head screw	2	Zylinderschraube M5 x 12 ISO 4762
9	Sealing flange	1	Dichtflansch AF71/G1
10	Drive shaft AF42/S1	1	Antriebswelle AF42/S1
11	Cartridge cover	1	Spulendeckel Z AF72
12	Distance bolt	3	Distanzbolzen AF72
13	Spring washer	3	Federring A8 DIN 127
14	Hexagon nut	3	Sechskantmutter M8 ISO 4032
15	Rod	1	Stange
16	Hexagon nut	3	Sechskantmutter M10 ISO 4032
17	Cartridge ring	1	Spulering
18	Centre flange	1	Zentrierflansch
19	Scraper Z AF72 VP	1	Abstreifer Z AF72 VP
19.1	Upper spring	1	Schenkelfeder oben AF72
19.2	Scraper shaft	1	Abstreiferwelle
19.3	Scraper	1	Abstreifer
19.4	Stiffening plate	1	Verstärkungsblech
19.5	Hexagon screw	4	Sechskantschraube M4 x 20 ISO 4017
19.6	Lock nut	4	Sicherungsmutter M4 DIN 980
19.7	Bottom spring	1	Schenkelfeder unten AF72
20	Seal kit AF42/S1 FPM FDA VP	1	Dichtsatz AF42/S1 FPM FDA VP
20.1	Sealing ring	1	Dichtring 10 x 13,5 DIN 7603
20.2	Sealing ring	1	Dichtring D125 DIN 32676
20.3	Quad-Ring	1	Quad-Ring 10.2 x 2,62 FPM FDA
20.4	Backup ring	1	Stützring 10 x 14,8 x 1,2 PTFE
20.5	O-ring	1	O-Ring 17,17 x 1,78 FPM FDA
20.6	O-ring	1	O-Ring 57,00 x 3,00 FPM FDA
25	Bearing bush kit AF42/S1 VP	1	Buchsensatz AF42/S1 VP
25.1	Bearing bush	2	Buchse 10 x 12 x 09 FDA
25.2	Axial bearing disc	2	Anlaufscheibe 70 x 62 x 1,5 PTFE
25.3	Radial bearing ring	2	Führungsring 61,5 FDA

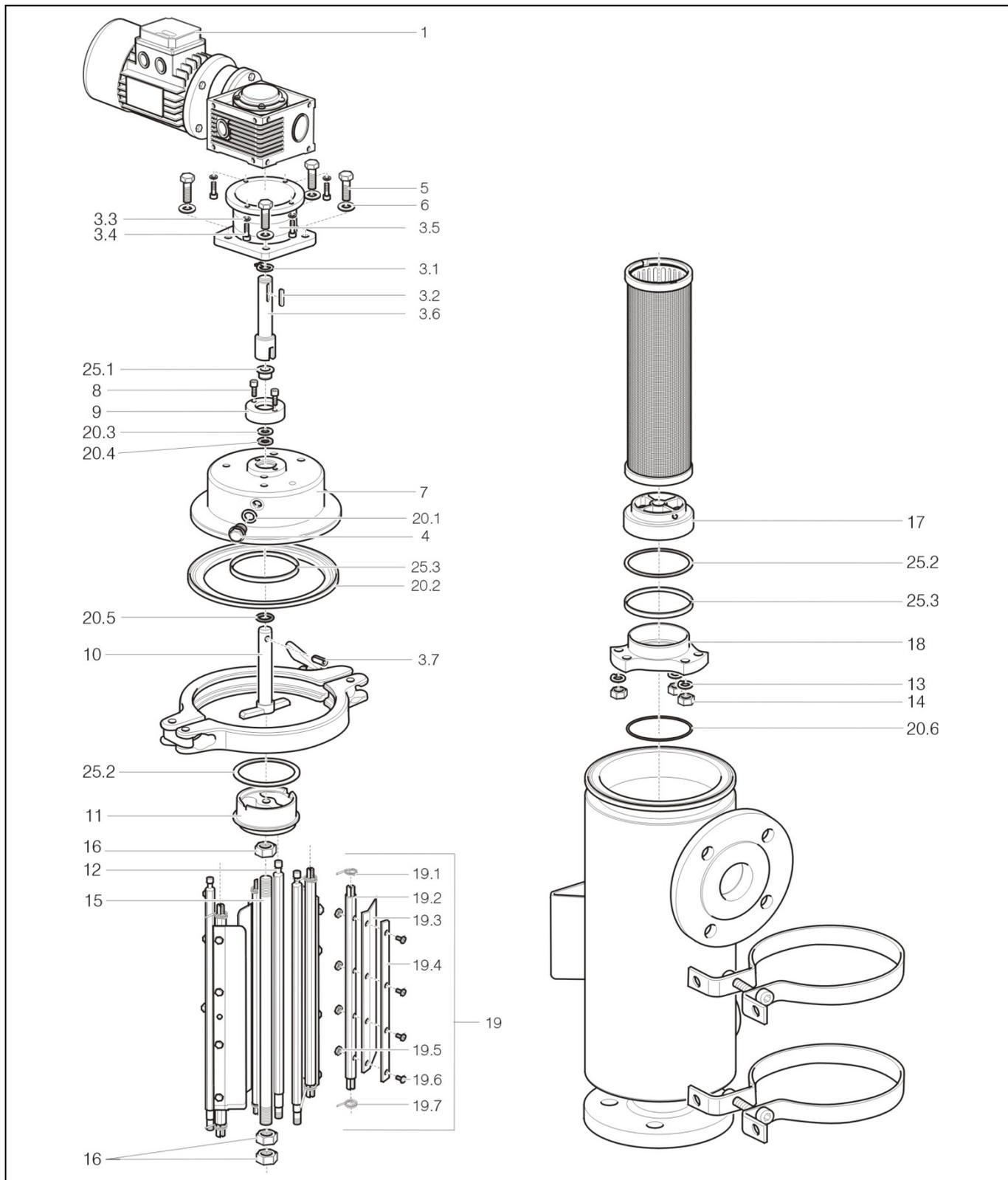
16 Spare parts

No.	Designation	Material no.	Benennung
10	Drive shaft AF42/S1	70524069	Antriebswelle AF42/S1
19	Scraper Z AF72 VP	70320715	Abstreifer Z AF72 VP
20	Seal kit AF42/S1 FPM FDA VP	70526740	Dichtsatz AF42/S1 FPM FDA VP
25	Bearing bush kit AF42/S1 VP	70526743	Buchsensatz AF42/S1 VP

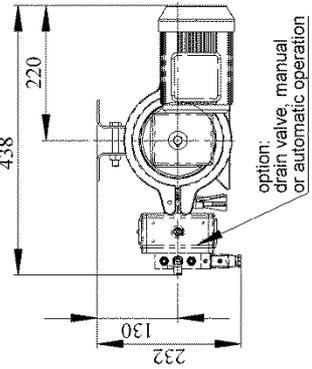
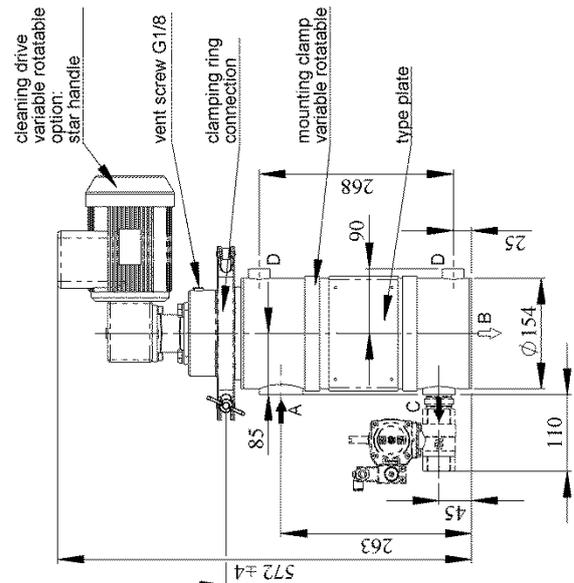


Please request a separate spare parts drawing and list of spare parts for special versions.

17 Exploded view



A	<p>standard filter specification</p> <p>for liquid group 2 according pressure equipment-directive 2014/68/EU article 13</p> <p>max. operating pressure 10bar max. operating temperature 100°C</p>	<p>automatic metal edge filter AF 42 SH</p> <p>with radial scraper cleaning welded design</p>	<p>Vers.-/Änder.-Nr. / Änderungsbearbeitung 01_19009328798 Logo von Gehäuse entfernt; Überarbeitet</p>	<p>Datum 10.08.2017 16:00</p>	<p>Blatt 1 von 2</p>	<p>Büro 230</p>																																	
B	<p>materials</p> <p>housing and cover carbon steel, 1.4301, 1.4571 internals carbon steel, 1.4301, 1.4571 bearing bushes PTFE-based seals FKM cartridge welded 1.4571 (Δp_{max} 10bar) cartridge coiled 1.4571 or 1.4571/Alu (Δp_{max} 30bar) external coating synthetic resin primer blue RAL 5007</p>	<p>motor specification</p> <p>gear motor insulation class F, IP55 torque: 14Nm</p> <table border="1"> <tr> <th>Hz</th> <th>V $\pm 10\%$</th> <th>kW</th> <th>U/min</th> <th>A</th> </tr> <tr> <td>50</td> <td>230</td> <td>0,06</td> <td>18</td> <td>0,7</td> </tr> <tr> <td>50</td> <td>400</td> <td>0,06</td> <td>18</td> <td>0,4</td> </tr> <tr> <td>60</td> <td>266</td> <td>0,072</td> <td>21</td> <td>0,8</td> </tr> <tr> <td>60</td> <td>460</td> <td>0,072</td> <td>21</td> <td>0,42</td> </tr> </table>	Hz	V $\pm 10\%$	kW	U/min	A	50	230	0,06	18	0,7	50	400	0,06	18	0,4	60	266	0,072	21	0,8	60	460	0,072	21	0,42	<p>connection and sizes</p> <p>A - inlet G1 1/2 B - outlet G1 1/2 C - drain G1 D - heating jacket conn. G 1/2 all threaded holes according DIN 3852</p> <p>drive seal: o-ring, squared ring</p> <p>cover closing: clamping ring connection</p>	<p>Ex-proof standard according ATEX 2014/34/EU:</p> <p>electrical components in Ex II 2G T3 mechanical design in Ex II 2G c T3</p> <p>Other version on request.</p>	<p>Verpackungsart / Packaging type Oberflächen- / Oberflächen- / surface property Verstärkung / material</p>	<p>Proj.-Nr. / Kd.-Dok.-Nr. / cust.doc. no. 68DE-7170 Kd.-Verw. / Kd.-Schl. / cust. key zul. Abweichungen / allowed deviations</p>	<p>ISO 14405 (E) ISO 14405 (E)</p> <p>Mass kg (berechnet / given) / mass kg (calculated / agreed)</p>	<p>enthaelt krit. Merkmal / contains crit. charact. nein/no:</p>	<p>Format / A3 Blatt / page</p>	<p>Start / 08.06.2010 Fert. / 08.06.2010</p>	<p>Dok.-Nr. / 5050-20074116-S00 Dok.-Nr. / PRACH-ERM</p>	<p>Teil-Nr. / 200 Teil-Nr. / 250</p>	<p>Reifegrad / 002 Reifegrad / 002</p>	<p>Version / 01 Version / 01</p>
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19 Declaration of incorporation

As defined by the EC Machinery Directive

EU – Einbauerklärung
EU Declaration of incorporation
Déclaration relative au montage UE



Der Hersteller
The manufacturer
Le producteur

Filtration Group GmbH
Schleifbachweg 45
74613 Öhringen
Telefon 07941 6466-0
Telefax 07941 6466-429

erklärt hiermit, dass das folgende Produkt
hereby declares that the following product
déclare par la présente que le produit suivant

Produktbezeichnung:
Product designation:
Désignation du produit :
Typenbezeichnung:
Type designation:
Désignation du type :
Funktionsbeschreibung:
Machine description:
Description du fonctionnement :

Automatik-Kantenspaltfilter
Automatic metal edge filter
Filtres automatiques à fentes

AF 42 S

Filtration von Feststoffen
Filtration of solids
Filtration de solides

den in der Anlage dargestellten grundlegenden Anforderungen der Richtlinie 2006/42/EU entspricht.
conforms to the essential requirements of the Machinery Directive 2006/42/EU pursuant to the Annex.
répond aux exigences fondamentales de la directive 2006/42/UE, décrites en annexe.

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EU über Maschinen entspricht.
The partly completed machinery must not be put into service until the relevant machinery into which this partly completed machinery is to be incorporated has been declared in conformity with the Machinery Directive 2006/42/EU.
La machine incomplète ne doit être mise en service qu'après avoir déterminé que la machine, dans laquelle la machine incomplète doit être montée, correspond aux dispositions de la directive machines 2006/42/UE.

Folgende harmonisierten Normen wurden angewandt:
The following harmonised standards have been used: **DIN EN ISO 12100:2011-03, DIN EN ISO 4414:2011-04**
Les normes harmonisées ci-dessous ont été appliquées :

Der Hersteller verpflichtet sich, die speziellen Unterlagen zur unvollständigen Maschine, einzelstaatlichen Stellen auf Verlangen schriftlich zu übermitteln. Die zur Maschine gehörenden speziellen technischen Unterlagen nach Anhang VII Teil B wurden erstellt.
The manufacturer undertakes to transmit any specific documentation on the partly completed machinery to the appropriate national authorities in writing on request. All specific technical documentation belonging to the machinery has been compiled pursuant to Annex VII Section B.
Le fabricant s'engage à transmettre les documents spécifiques à la machine incomplète par écrit aux administrations nationales respectives sur leur demande. Les documents techniques spécifiques selon Annexe VII partie B faisant partie de la machine ont été établis.

Dokumentationsverantwortlicher/Abteilung:
Responsible for documentation/department:
Responsable de la documentation/Service :

Filtration Group GmbH
Schleifbachweg 45
74613 Öhringen

Unterzeichner:
Signatory:
Signataire :

Wolfram Zuck
Dipl.-Ing. (FH) Industrial Engineering
Managing Director, Plant Manager Öhringen

Öhringen,

13/17/17
Datum/Date/Date


Unterschrift/Signature/Signature

Anlage/Annex/Annexe

3 Seiten/pages/pages

Anlage zur Einbauerklärung gemäß Richtlinie
2006/42/EU für Automatik-Kantenspaltnfilter
Annex to the Declaration of Incorporation pursuant to
the Machinery Directive 2006/42/EU for automatic metal
edge filter



Annexe à la déclaration de montage selon la directive
2006/42/UE pour filtres automatiques à fentes
Beschreibung der grundlegenden Sicherheits- und Gesundheits-
schutzanforderungen (soweit zutreffend) gemäß 2006/42/EU, An-
hang 1, die zur Anwendung kommen und eingehalten wurden.
List of the essential health and safety requirements (where applicable)
pursuant to 2006/42/EU, Annex 1, applied and fulfilled.
Description des exigences fondamentales relatives à la sécurité et à
la protection de la santé (si applicables) selon 2006/42/UE, annexe 1,
appliquées et respectées.

Grundlegende Anforderung Essential requirements Exigence fondamentale	Erfüllt Fulfilled Remplie
Grundsätze für die Integration der Sicherheit Principles of safety integration Principes d'intégration de la sécurité	ja yes oui
Materialien und Produkte Materials and products Matériaux et produits	ja yes oui
Konstruktion der Maschine im Hinblick auf die Handhabung Design of machinery to facilitate its handling Construction de la machine au regard de sa manipulation	ja yes oui
Steuerungen und Befehleinrichtungen Control systems Commandes et dispositifs de commande	nein no non
Risiko des Verlusts der Standsicherheit Risk of loss of stability Risque de perte de la stabilité statique	ja yes oui
Bruchrisiko beim Betrieb Risk of break-up during operation Risque de rupture en fonctionnement	ja yes oui
Risiken durch herabfallende oder herausgeschleuderte Gegenstände Risks due to falling or ejected objects Risques dus à la chute ou à l'éjection d'objets	ja yes oui
Risiken durch Oberflächen, Kanten und Ecken Risks due to surfaces, edges or angles Risques dus aux surfaces, arêtes et angles	ja yes oui
Risiken durch Änderung der Verwendungsbedingungen Risks related to variations in operating conditions Risques dus à la modification des conditions d'utilisation	ja yes oui
Risiken durch bewegliche Teile Risks related to moving parts Risques dus à des parties mobiles	ja yes oui
Wahl der Schutzeinrichtung gegen Risiken durch bewegliche Teile Choice of protection against risks arising from moving parts Choix du dispositif de protection contre les risques dus à des parties mobiles	ja yes oui
Risiko unkontrollierter Bewegungen Risks of uncontrolled movements Risque de mouvements incontrôlés	ja yes oui
Anforderungen an Schutzeinrichtungen Required characteristics of guards and protective devices Exigences relatives aux dispositifs de protection	nein no non
Elektrische Energieversorgung Electricity supply Alimentation électrique	ja yes oui
Statische Elektrizität Static electricity Électricité statique	ja yes oui

Nichtelektrische Energieversorgung Energy supply other than electricity Alimentation en énergie non-électrique	ja yes oui
Montagefehler Errors of fitting Erreurs de montage	ja yes oui
Extreme Temperaturen Extreme temperatures Températures extrêmes	ja yes oui
Brand Fire Incendie	ja yes oui
Explosion Explosion Explosion	ja yes oui
Lärm Noise Bruit	ja yes oui
Vibrationen Vibrations Vibrations	ja yes oui
Strahlung Radiation Rayonnement	ja yes oui
Strahlung von außen External radiation Rayonnement depuis l'extérieur	ja yes oui
Emission gefährlicher Werkstoffe und Substanzen Emissions of hazardous materials and substances Emission de substances et matériaux dangereux	ja yes oui
Risiko, in eine Maschine eingeschlossen zu werden Risk of being trapped in a machine Risque de se faire enfermer dans une machine	nein no non
Ausrutsch-, Stolper- und Sturzrisiko Risk of slipping, tripping or falling Risque de dérapage, de trébuchement et de chute	nein no non
Blitzschlag Lightning Foudre	nein no non
Wartung der Maschine Machinery maintenance Entretien de la machine	nein no non
Zugang zu den Bedienungsständen und den Eingriffspunkten für die Instandhaltung Access to operating positions and servicing points Accès aux postes de commande et aux points d'intervention pour la maintenance	nein no non
Trennung von den Energiequellen Isolation of energy sources Séparation des sources d'énergie	nein no non
Eingriffe des Bedienungspersonals Operator intervention Interventions des opérateurs	ja yes oui
Reinigung innen liegender Maschinenteile Cleaning of internal parts Nettoyage de parties internes de la machine	nein no non
Informationen und Warnhinweise an der Maschine Information and warnings on the machinery Informations et avertissements sur la machine	ja yes oui
Warnung vor Restrisiken Warning of residual risks Avertissement quant aux risques résiduels	ja yes oui
Kennzeichnung der Maschinen Marking of machinery Marquage des machines	nein no non

Betriebsanleitung Instructions Mode d'emploi	ja yes oui
Nahrungsmittelmaschinen und Maschinen für kosmetische oder pharmazeutische Erzeugnisse Foodstuffs machinery and machinery for cosmetics or pharmaceutical products Machines pour denrées alimentaires et machines pour produits cosmétiques ou pharmaceutiques	nein no non
Handgehaltene und/oder handgeführte tragbare Maschinen Portable hand-held and/or hand-guided machinery Machines tenues à la main et/ou portables guidées à la main	ja yes oui

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