



Translation of the original instructions with assembly instructions  
High-pressure metal-edge filter with radial cleaning AF 71 H

Mat. No. of Instruction Manual  
79719253



## 1 Table of contents

1	Table of contents .....	2
2	General safety instructions .....	2
2.1	Safety instructions for installation and operating personnel .....	2
2.2	Warning structure.....	2
2.3	Warning symbols used.....	3
2.4	Other symbols used .....	3
3	Glossary.....	3
4	General information .....	4
4.1	Manufacturer.....	4
4.2	Information about the Instruction Manual.....	4
4.3	ATEX model code.....	4
5	Intended application .....	4
6	Functional description.....	5
6.1	Principle of the process.....	5
6.2	Main components of the metal-edge filter .....	5
6.3	Operating principle of a metal-edge filter .....	6
7	Technical data .....	6
7.1	General data .....	6
7.2	Order-specific data.....	6
7.2.1	Name-plate .....	6
8	Transport and storage .....	6
8.1	Transport .....	6
8.2	Storage .....	6
9	Installation .....	7
9.1	Installation.....	7
9.2	Electro-pneumatic connections.....	8
9.2.1	Connection to customer's controller.....	8
9.2.2	Connection to FG controller (optional).....	8
9.3	Control variants.....	8
10	Start-up .....	9
10.1	Functional test .....	9
10.2	Operating settings.....	9
11	Normal operation .....	10
11.1	Rinsing the drain line .....	10
12	Shutting down the metal-edge filter .....	10
12.1	Temporary shut-down .....	10
12.2	Prolonged shut-down (> 48 h).....	10
12.3	Emergency shut-down .....	10
13	Troubleshooting.....	10
14	Maintenance .....	11
14.1	Inspection and maintenance schedule.....	11
14.2	Removing the inner assembly.....	11
14.3	Cleaning the filter .....	12
14.3.1	Cleaning the inner assembly .....	12
14.3.2	Cleaning the filter housing .....	12
14.4	Replacing the filter cartridge .....	13
14.5	Replacing the scraper .....	13
14.6	Replacing the cup seal packing .....	14
14.7	Replacing the axial bearing disc .....	14
15	Spare parts drawing.....	15
16	Parts list.....	16
17	Spare parts .....	17
18	Declaration of incorporation .....	18
19	Declaration of conformity.....	22
20	Index.....	23

## 2 General safety instructions

### 2.1 Safety instructions for installation and operating personnel

This Instruction Manual contains important safety instructions 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 system:

- ⇒ Failure of critical functions of the machine or system 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 the Instruction Manual carefully.
- Make sure that installation and operating personnel are adequately trained.
- Make sure the contents of the Instruction Manual are fully understood by the responsible persons.
- Define areas of responsibility and competence.
- Prepare a maintenance schedule.

#### During operation of the system:

- Keep the Instruction Manual handy at the place where the system is used.
- Heed the safety instructions. Always operate the machine/system 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	<b>Nature and source of the danger</b> ⇒ Potential consequences of non-observance • Action to avert the danger.

## 2.3 Warning symbols used

 <b>DANGER!</b>	
<b>Immediate danger!</b>	⇒ Non-observance will result in serious or fatal injury.
 <b>WARNING!</b>	
<b>Potentially dangerous situation!</b>	⇒ Non-observance can result in serious or fatal injury.
 <b>CAUTION!</b>	
<b>Potentially dangerous situation!</b>	⇒ Non-observance can result in minor or moderate injuries.
<b>CAUTION! (without a symbol)</b>	
<b>Potentially dangerous situation!</b>	⇒ Non-observance can result in property damage.

## 2.4 Other symbols used

	Danger from high voltage
	Danger information about explosion protection
	Information about environmental protection
	Wear protective clothing!
	Wear goggles!
	Wear a respirator!
	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

### Aerosol:

Distribution of minute liquid droplets (or solid particles) in a gas acting as the outer phase.

### Agglomerate:

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

### Initial differential pressure:

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

### Differential pressure ( $\Delta p$ ):

Difference between the pressure on the dirty side and the clean side.

### Filter cartridge:

Cylindrical structure consisting of a profiled inner core with triangular wires wound or welded onto it. The suspension to be filtered flows inward. Solids are retained on the outer surface of the filter cartridge.

### Filter cake:

Layer that is built up by the solids retained on the surface of the filter 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. Is discharged from the filter periodically. Further treatment may be necessary, depending on the application.

### Cooling lubricant:

Cooling lubricant acc. to DIN 51385.

### Siphon:

U-shaped pipe. A siphon cannot be discharged without a valve.

### Suspension (raw suspension):

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

### Pilot control:

5/2-way 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 Instruction Manual

Date: ..... 05.12.17  
FG Mat. No.: ..... 79719253  
Version: ..... 07

### 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:	Zones 1+2 2	Zone 2 3	
3.	Atmosphere G = Gas D = Dust	G	G	
4.	Types of protection C = Design 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 protection class is only valid in conjunction with the declaration of conformity.

## 5 Intended application

### DANGER!

**Operation contrary to the intended purpose can be dangerous!**

- ⇒ The manufacturer is discharged from all liability and all warranty claims are rendered invalid.
- This metal-edge filter is only allowed to be used in accordance with the operating conditions specified in the contract documentation and in the Instruction Manual.
- All forms of use which deviate from or exceed the limits of use described above are considered to be contrary to the intended purpose.

### DANGER!

**Operation contrary to the intended purpose can be dangerous!**

- ⇒ The manufacturer is discharged from all liability and all warranty claims are rendered invalid.

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 adhesive particles.
- Use with highly explosive liquids or pastes.



### CAUTION!

Conditionally allowed:

- Use of solvents  
(in consultation with the manufacturer!)
- Reverse flow through the filter (pressure < 0.6 bar).
- Pressure pulses > 1 million load alternations: consult the manufacturer.

FG metal-edge filters are designed for filtering liquids 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.

### Main applications:

- Cooling lubricant filtration
- Product filtration
- Preseparation in a filter cascade
- Protective filtration before or after certain process steps
- Process filtration
- Destruction of unwanted agglomerates

## 6 Functional description

### 6.1 Principle of the process

#### Filtration

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

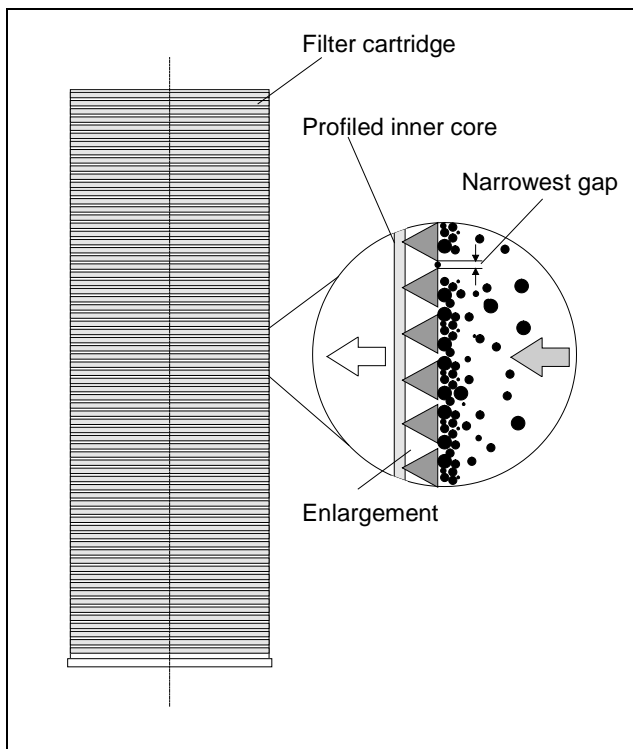


Fig. 1: Separating principle on the filter cartridge

#### Cleaning

The particles that settle on the dirty side of the filter cartridge cause the differential pressure between the dirty side and the clean side to increase.

If this pressure difference exceeds a (settable) limit value, a cleaning process is started. The filter cartridge begins to turn. The filter cake is detached from the cartridge by the scraper.

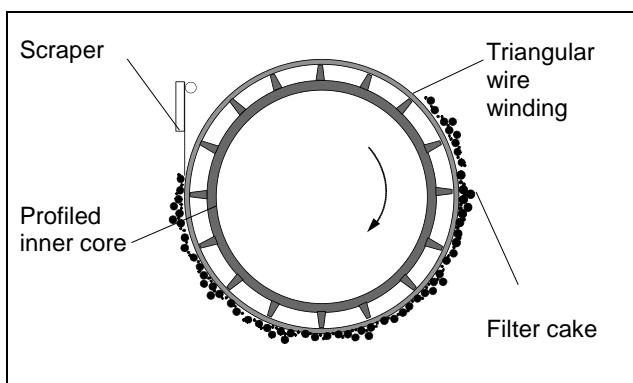


Fig. 2: Cleaning

#### To start a cleaning process

A cleaning process 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

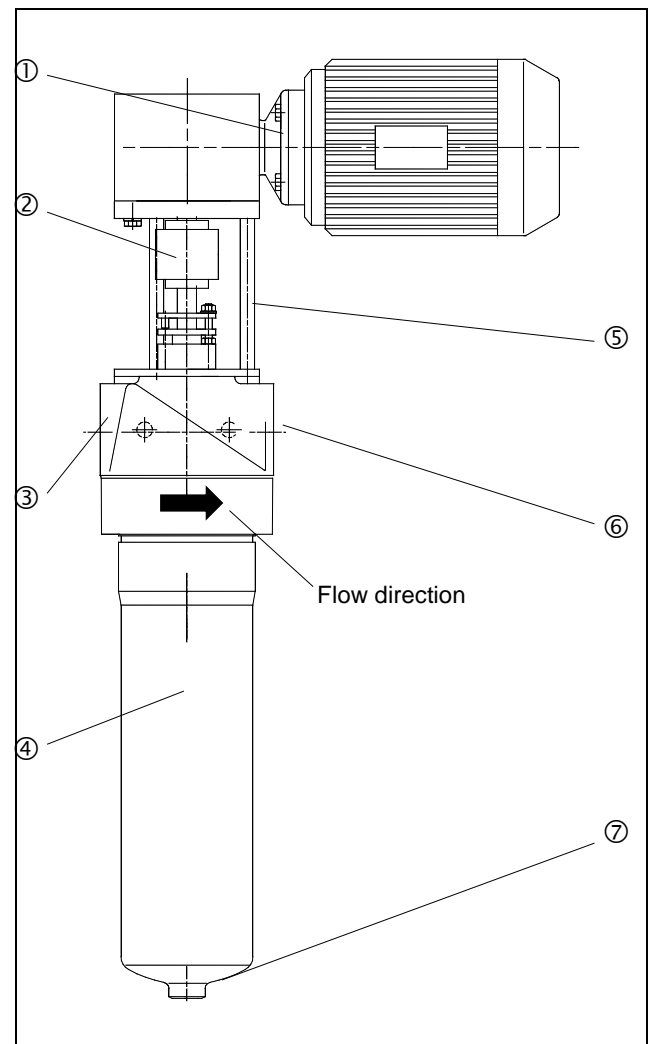


Fig. 3: Diagram of the main components

1	Gear motor for driving the filter cartridge
2	Shaft coupling
3	Suspension inlet
4	Filter housing
5	Motor stator
6	Clean side discharge
7	Sludge drain

### 6.3 Operating principle of a metal-edge filter

1

The raw suspension flows into the metal-edge filter.

2

The suspension flows through the filter cartridge.  
Particles settle on the cartridge.

3

The filtered fluid enters the clean side and exits the filter.

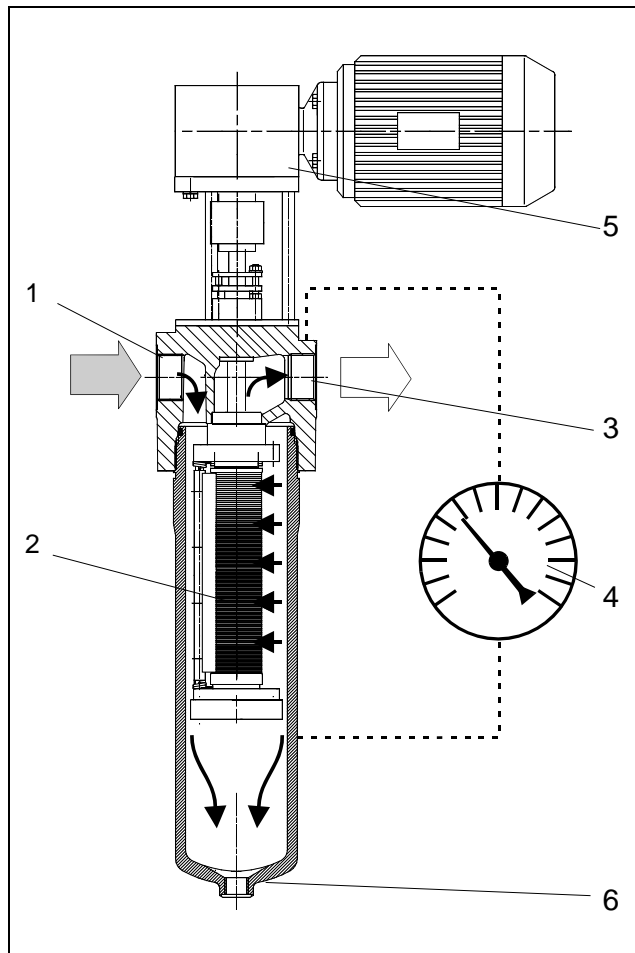


Fig. 4: Operating principle of a metal-edge filter

4

The cleaning process starts when the maximum differential pressure is reached (optional) or after a preset time.

5

The filter cartridge is turned either by the gear motor or by the ratchet. The separated particles are detached by the stationary scraper.  
The filtration process is not interrupted.

6

The enriched particles on the dirty side can be periodically discharged by means of suitable devices.

## 7 Technical data

### 7.1 General data

Electrical energy consumption*: .....	250VAC/400V3NPE
.....	0.18 kW
Noise emission (peaks): .....	< 70 dB(A)
Dimensions: .....	See data sheet
Min. dismantling clearance above filter: .....	325 mm
Total dry weight without valves: .....	Approx. 20 kg
Max. permissible operating pressure: .....	< 400 bar
Max. perm. diff. pressure of coiled cartridge: .....	< 30 bar
Max. perm. diff. pressure of welded cartridge: .....	< 20 bar

\*See also name-plate on gear motor

### 7.2 Order-specific data

	The name-plate is rendered invalid if the filter cartridge or the inner assembly are modified. Please request a new name-plate from the manufacturer.
--	--

This data is order-specific and can be taken from the name-plate.

#### 7.2.1 Name-plate

FGC.com		Filtration Group GmbH	
Made in Germany		Schleifbachweg 45 D-74613 Öhringen	
		fm.de.service@filtrationgroup.com	
TYPE			
PART NO		JOB NO	
	°C	bar	

## 8 Transport and storage

### 8.1 Transport

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



### 8.2 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.
--	--

## 9 Installation


<b>⚠ DANGER!</b>	
	<b>Explosion hazard!</b> ⇒ Risk of injury to persons or damage to property <ul style="list-style-type: none"> <li>This FG metal-edge filter is only allowed to be installed and operated in the category specified in the contract documentation (offer/order confirmation).</li> <li>If no category is specified: Do not operate the FG metal-edge filter in a hazardous area!</li> <li>The owner is responsible for zoning.</li> <li>The owner of the plant is solely responsible for implementing the appropriate explosion protection measures!</li> <li>If in doubt, please consult the responsible authorities.</li> </ul>
<b>⚠ DANGER!</b>	
	<b>Danger if work is carried out on the system by unauthorised persons!</b> ⇒ Risk of injury to persons or damage to property. <ul style="list-style-type: none"> <li>The system is only allowed to be installed, accepted and tested by a suitably qualified person (99/98/EC).</li> </ul>
<b>⚠ WARNING!</b>	
<b>Danger if work is carried out on the system by unauthorised persons!</b> ⇒ Risk of injury to persons or damage to property. <ul style="list-style-type: none"> <li>All installation work must be carried out by suitably qualified personnel.</li> </ul>	

### 9.1 Installation

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

- Be sure to allow the required clearances for dismantling and discharging (see data sheet).
- Lift the metal-edge filter out of the packaging.
- Fasten the filter to the fixing bracket (see spare parts drawing (55)).
- Remove the protection caps from the connections.
- Connect the pipes.

### Pressure relief

<b>⚠ DANGER!</b>	
	<b>Explosion hazard!</b> ⇒ Risk of injury to persons or damage to property <ul style="list-style-type: none"> <li>Check the conductivity between all components!</li> <li>Note the maximum permissible resistance: <math>R &lt; 10 \Omega</math>.</li> <li>Make sure that earthing is provided by the customer.</li> </ul>

Design measures must be incorporated to prevent inadmissible excess pressure on the dirty side.

- Install pressure relief devices if necessary.

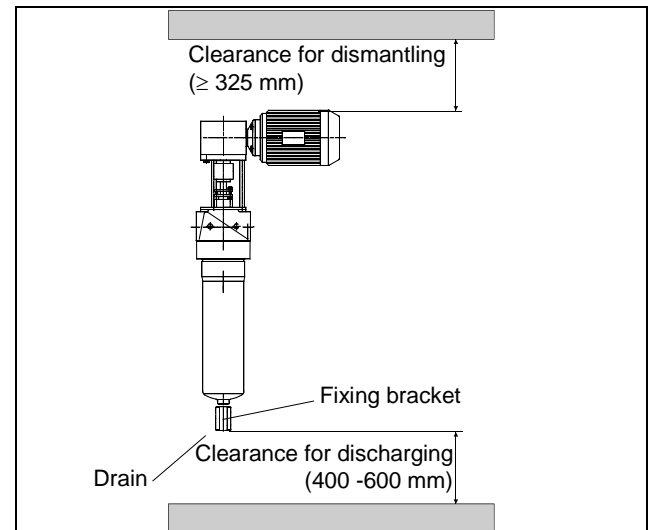


Fig. 5: Mechanical installation

### Special mounting instructions for the drain line

<b>⚠ DANGER!</b>
The full inlet pressure (up to 400 bar) is present at the drain valve!

- Make sure the drain line is securely fastened.
- Do not 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!
- Provide a pressure relief device to enable the pressure to be relieved safely.



## 9.2 Electro-pneumatic connections

### **⚠ DANGER!**



#### **Danger of electric shock!**

- ⇒ Risk of serious or fatal injury in case of contact with electrical components.
- All electrical installation work must be carried out by a suitably qualified electrician.

### 9.2.1 Connection to customer's controller

#### **Gear motor**

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

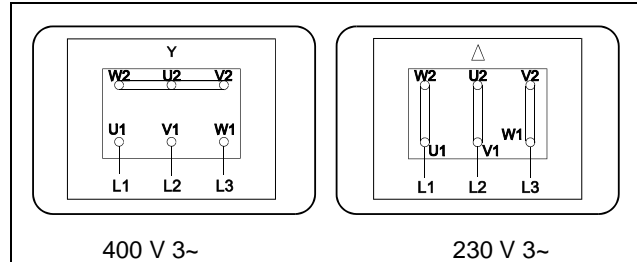


Fig. 6: Connection of a standard gear motor

#### **Differential gauge/switch (optional)**

- Refer to the enclosed manufacturer's documentation for details of the connections.

#### **Drain valve (optional)**

- Provide a suitable compressed air supply.
- Provide 5/2-way valves for piloting.
- Refer to the documentation in the Appendix for connection instructions.

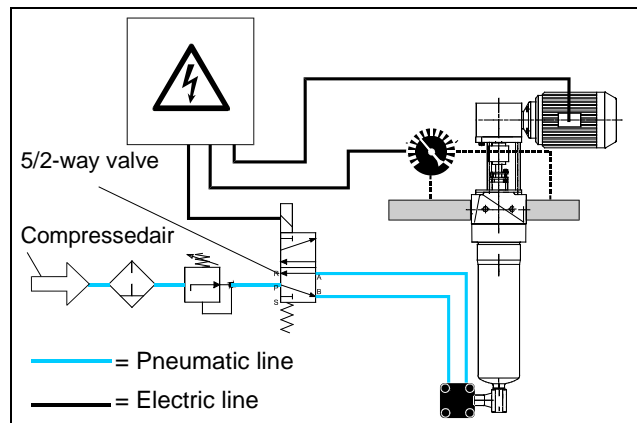


Fig. 7: Electro-pneumatic connections



- Provide a manual operator for the cleaning valve and a second manual operator for the drain valve on the switch box.

### 9.2.2 Connection to FG controller (optional)

- Connect the incoming feeder, gear motor, differential gauge/switch (optional) and pilot valves (optional) in accordance with the enclosed circuit diagram.

## 9.3 Control variants

The cleaning process is controlled differently according to the application. The control variants<sup>1</sup> and times described here are examples and are simply intended to serve as a guide.

### ☐ Time-controlled cleaning, manual draining

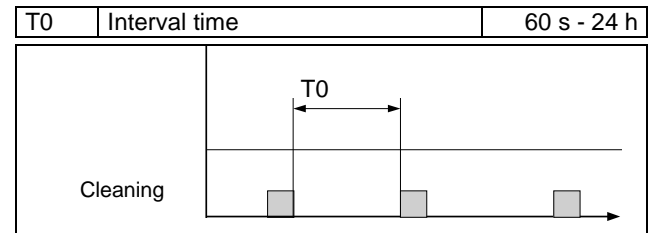


Fig. 8: Time-controlled cleaning

### ☐ Time-controlled cleaning and draining

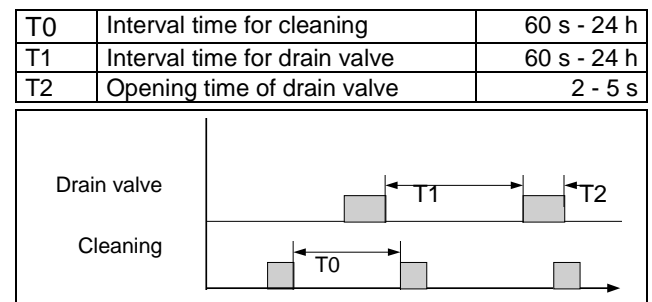


Fig. 9: Time-controlled cleaning/draining

### ☐ Time-controlled cleaning, counter-controlled draining

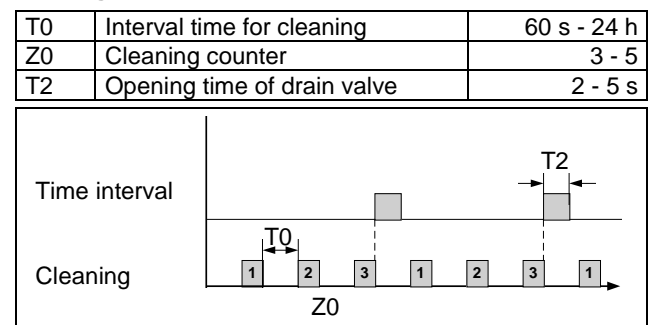


Fig. 10: Time-controlled cleaning, counter-controlled draining

### ☐ Differential pressure/time-controlled cleaning

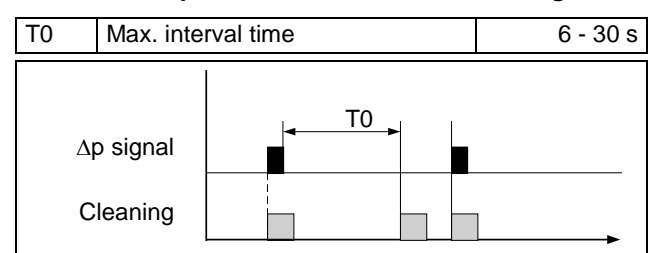


Fig. 11: Differential pressure/time-controlled cleaning

<sup>1</sup> Check the box for the appropriate control variant




## 10 Start-up

### **DANGER!**

This metal-edge filter is not allowed to be put into operation until it has been established that the machine in which it is to be installed complies with the requirements of the applicable EC directives, harmonised standards, European standards or equivalent national standards.

### **DANGER!**

	<p><b>Explosion hazard!</b></p> <p>⇒ Risk of injury to persons or damage to property.</p> <ul style="list-style-type: none"><li>• The metal-edge filter must be completely vented for use with all media which are capable of forming explosive gases.</li><li>• The metal-edge filter must be completely filled with liquid.</li><li>• Take steps to prevent air pockets.</li></ul>
---	--

### **DANGER!**

**Danger due to high pressure in the metal-edge filter!**

⇒ Risk of injury to persons or damage to property

- Do not allow concentrate to spatter into the atmosphere.

Make sure that:

- All foreign particles are removed from the metal-edge filter.
- All pipe connections are tightened securely.
- All screws are tightened.
- All pipes and the metal-edge filter are rinsed.

### 10.1 Functional test

#### Direction of rotation of the gear motor

- Remove the screws on the cover of the gear motor.
- Remove the cover of the gear motor.
- Start up the gear motor briefly (< 1 s).
- Compare the actual direction of rotation of the shaft with that indicated by the arrow (clockwise rotation).
- Reverse the terminal connections of the gear motor if necessary.
- Fit the gear motor cover again and screw it tight.

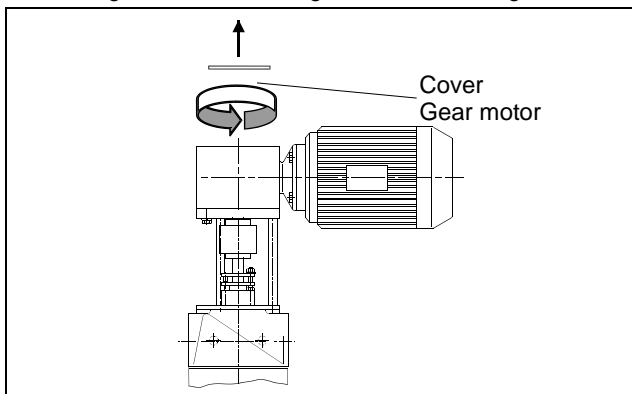


Fig. 12: Direction of rotation of the gear motor

#### To check the differential gauge/switch (optional)

- Refer to the enclosed manufacturer's documentation.

#### To check the function of the drain valve (optional)

- Connect compressed air to the pilot valve.
- Press the manual operator for the pilot valve.
- ⇒ The drain valve is opened.
- Set the manual operator to the OFF position.
- ⇒ The drain valve is closed.
- Refer to the enclosed manufacturer's documentation.

## 10.2 Operating settings

- Switch on the controller.
- Open the inlet.
- Make a note of the initial differential pressure (optional).

#### Settings for time-controlled cleaning

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


#### Settings for differential pressure-controlled cleaning with a contact gauge

- Adjust the set differential pressure to the setpoint (see contract documentation).


#### Initial differential pressures

The initial differential pressures vary according to the application.

General guide:  $\Delta p \leq 0.3 \text{ bar}$

	After cleaning, the differential pressure must 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

<b>⚠ DANGER!</b>	
<b>Danger due to high pressure in the metal-edge filter!</b> ⇒ Risk of injury to persons or damage to property <ul style="list-style-type: none"> <li>Do not allow concentrate to spatter into the atmosphere!</li> </ul>	
	Always 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 must be monitored daily during normal operation:

- Differential pressure
- Concentrate bowl level
- Controller functions

### 11.1 Rinsing the drain line

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

#### To rinse the drain line

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

## 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 cleaning process manually.
- Clean the metal-edge filter (refer to section 14.3).
- Fill the metal-edge filter completely with liquid.
- 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 Check the gear motor
	Filtered fluid solidified	Clean the filter Renew the axial bearing disc (61)
Valve does not open	Not enough compressed air	Increase the pressure
	Pilot valve defective	Check the pilot valve
	Pilot valve connected incorrectly	Check the electrical and pneumatic connections
Initial differential pressure no longer reached	Solids concentration too high	Use a suitable prefilter
	Gear motor direction incorrect	Check the direction of rotation
	Cleaning time too short	Increase the cleaning time (at least 1 - 2 revolutions of the gear motor)
Increased concentration of dirt on clean side	Filter cartridge defective	Check the filter cartridge and if necessary renew
	Seals brittle	Check the seals and if necessary renew
Excessive leakage at shaft seal		Tighten or renew the shaft seal
		Renew the axial bearing disc (61) and O-ring

## 14 Maintenance

### ⚠ WARNING!

**Danger if work on the system is carried out by unauthorised persons!**

- ⇒ Risk of injury to persons or damage to property.
- All maintenance work must be carried out by suitably qualified personnel.

#### Before all maintenance work:

- Shut down the metal-edge filter.
- Take steps to prevent the system from being switched on again by unauthorised persons.




- Take any necessary safety precautions (protective clothing, goggles, etc.).



- Carry out the maintenance work.
  - Start up the metal-edge filter again.
  - Observe the metal-edge filter.
- Does it operate normally?

### 14.1 Inspection and maintenance schedule

- Refer also to the contract documentation.

	Assembly	Activity
Weekly	Metal-edge filter	Visual inspection for leakage, differential pressure <sup>2</sup>
	Pipes	Clean
Monthly	Filter	Check for wear and clean
 Yearly or when cooling lubricant replaced	FG metal-edge filter	Check the leakage resistance between conductive components (< 10 Ω)
	Bearings	Visual inspection of clearance
	Valves	Functional test
	Filter	Clean
	Seal kit	

### 14.2 Removing the inner assembly

#### ⚠ DANGER!

**The filter is pressurised (up to 400 bar)!**

- First relieve the pressure!
- Then open the filter!

1

- Close the filter inlet and outlet.
- Relieve the pressure in the pipes if necessary.

2

- Open the air-release valve.
  - Open the drain valve.
- ⇒ The filter is discharged.

3

- Turn off the compressed air supply.

4

- Disconnect the pneumatic drain valve if necessary.

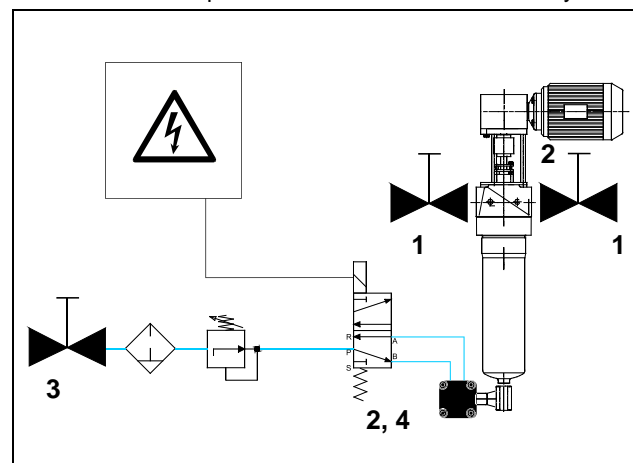


Fig. 13: Disconnecting the filter

<sup>2</sup> Optional

5

- Unscrew the filter housing with an open-ended spanner (a/f 30)<sup>3</sup>, then pull it **vertically** down to remove it.

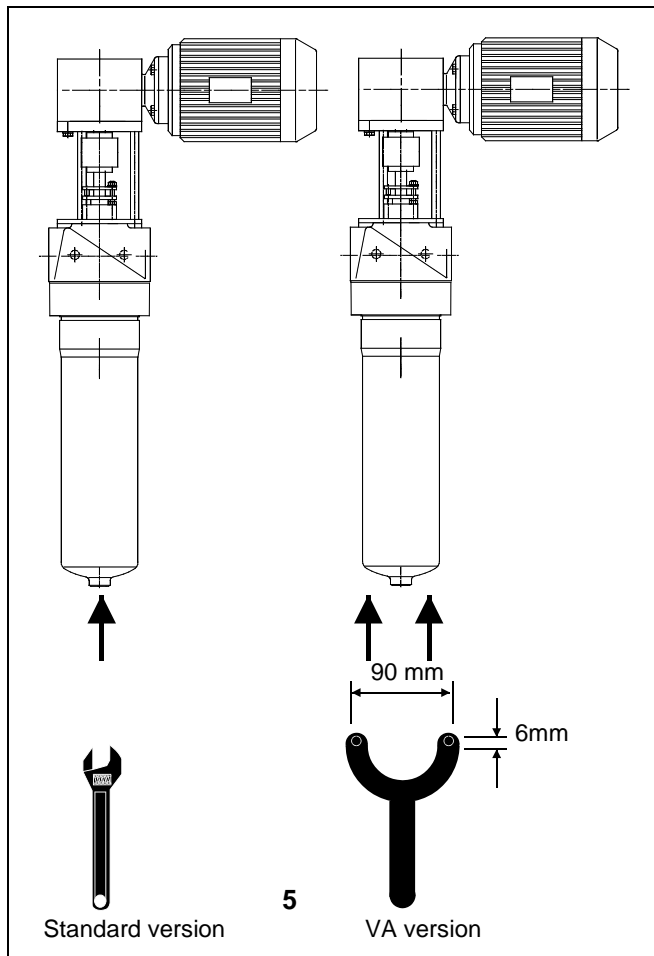


Fig. 14: Unscrewing the filter housing

#### To install

Install in reverse order.

- Note the flow direction.
- Lower the inner assembly into position, making sure it is absolutely straight.
- VA version: Coat the thread with mounting fluid.

## 14.3 Cleaning the filter

### 14.3.1 Cleaning the inner assembly



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

#### **WARNING!**

##### **Danger of aerosol formation!**

- All work must be carried out in a room with a suitable extraction system!
- Clean (or if necessary renew) 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. goggles, respirator, protective clothing, etc.).
- Remove any coarse impurities by mechanical means.
- Wash the filter housing in a suitable cleaning solution.

<sup>3</sup> Use an AMF 76480125 open-ended spanner for 6 mm pins on the VA version

## 14.4 Replacing the filter cartridge

### **⚠ WARNING!**

**If the system is maintained by unauthorised persons:**

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

### **To remove the filter cartridge**

(The numbers correspond to those used in the spare parts drawing)

- Unscrew the filter cartridge with the centre flange (28).
- Loosen the hexagon screws (27) and remove them together with the spring washers.
- Open out the scraper (52).
- Carefully pull the filter cartridge (30) down and withdraw it.

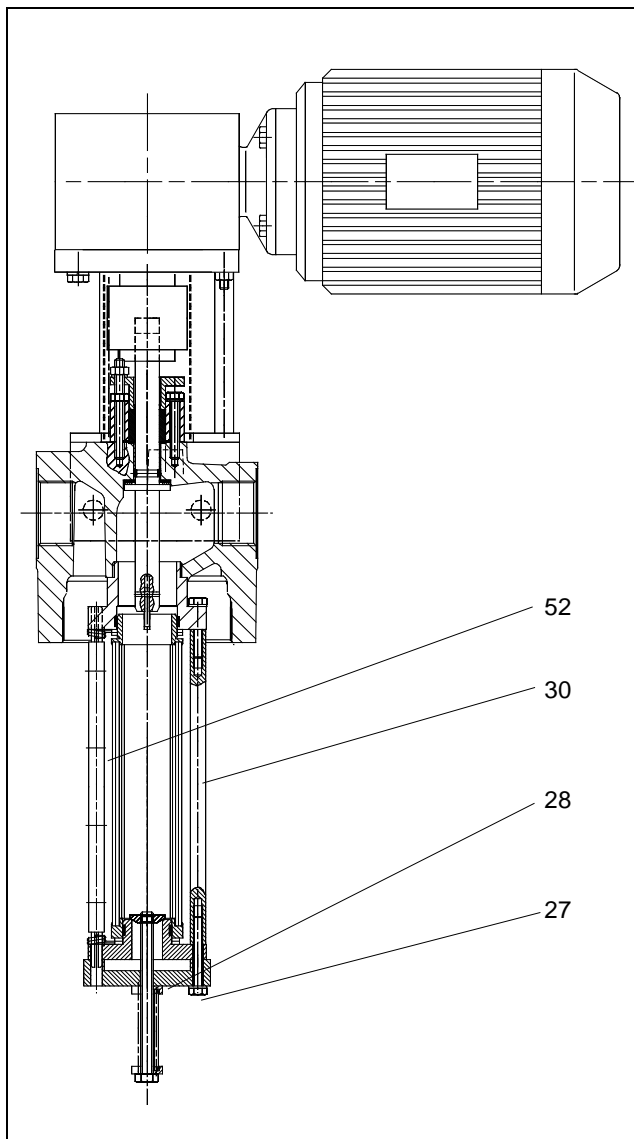


Fig. 15: Removing the coiled cartridge

### **To install the filter cartridge**

- Oil the O-rings (17).
- Check and clean the axial bearing discs (31/32), and if necessary renew them.
- Install in reverse order.

## 14.5 Replacing the scraper

- Remove and clean the inner assembly (refer to section 14.4 "Replacing the filter cartridge", page 13).
- Pull the scraper unit down and remove it.
- Loosen the locking screws (50) on the scraper (52).
- Replace the scraper (52).

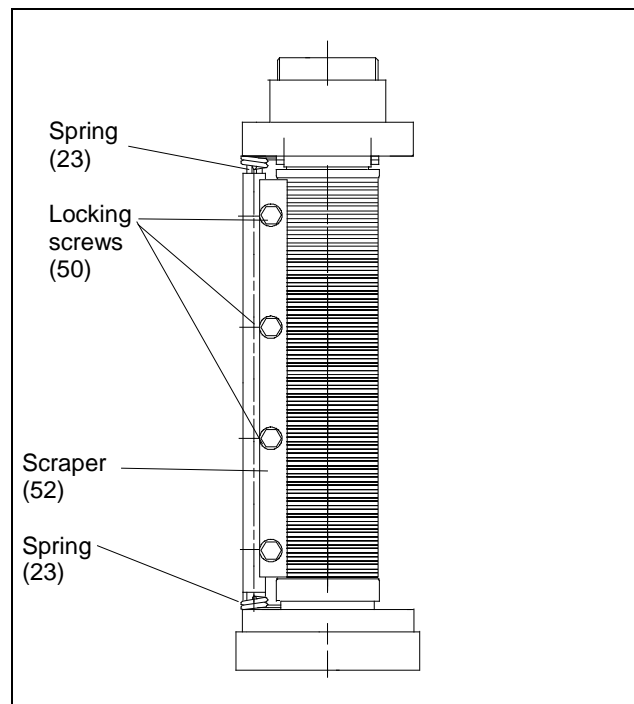


Fig. 16: Replacing the scraper

### **After installing:**

- The spring (3/4) must rest in the slots provided.
- The scraper must rest correctly on the cartridge.
- The scraper must not be askew.
- Check all screws and tighten them if necessary.

## 14.6 Replacing the cup seal packing



- De-energise and disconnect the gear motor.
- Loosen the hexagon nuts (3/4) on the motor stator.
- Carefully pull the gear motor and coupling (1/6) vertically off the shaft.

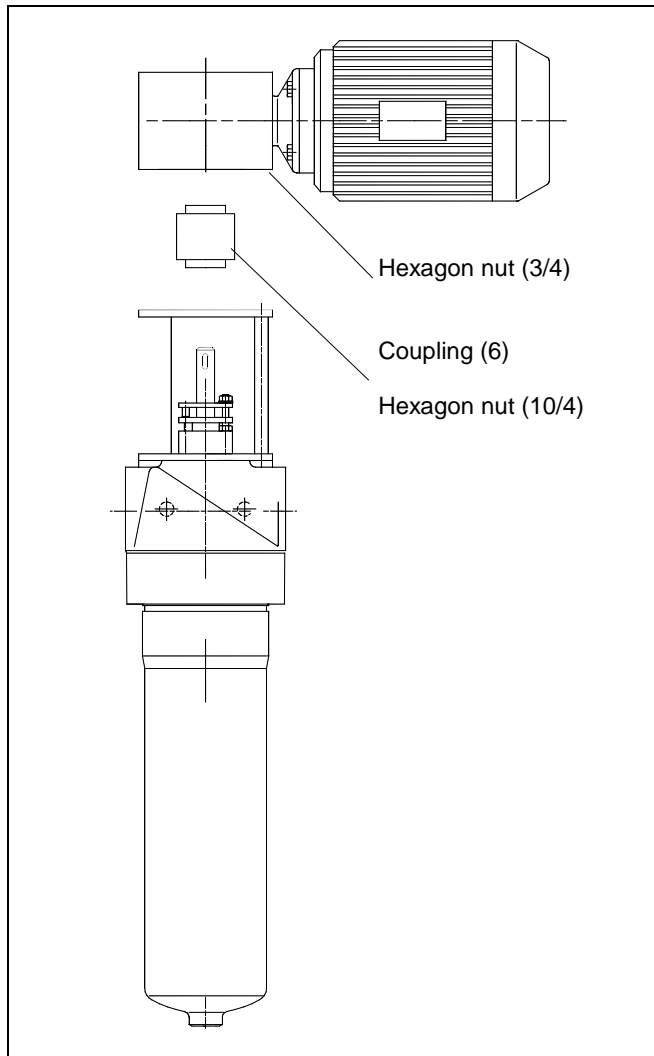


Fig. 17: Removing the gear motor

- Loosen the hexagon nuts (10).
- Remove the gland (45).
- The cup seal packing (11) is now accessible and can be replaced.

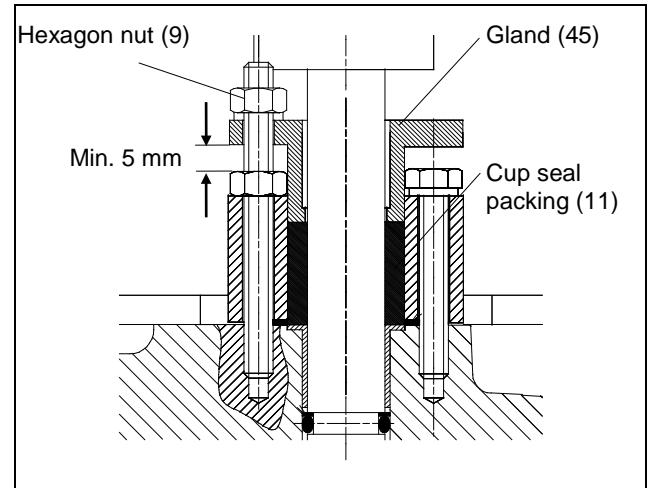


Fig. 18: Revealing the cup seal packing



Check the axial bearing discs and if necessary renew them.

### To install the cup seal packing

- Insert the cup seals one at a time pitched at 180°.
- Insert the gland (45).
- Screw on the hexagon nuts (10) and tighten them carefully.
- Remember to allow the specified narrowest gap (min. 5 mm).

The gland packing requires only minimal maintenance. Slight leakage is normal and is necessary for lubrication

## 14.7 Replacing the axial bearing disc

### To remove

- Remove the cup seal packing (refer to section 14.6).
- Unscrew the housing (refer to section 14.2).
- Unscrew the inner assembly (refer to section 14.4).
- Pull the shaft (7) down and withdraw it.
- Pull off the axial bearing disc.

### To install

- Mount the axial bearing disc with the coated side resting against the filter head.
- Reassemble all other components in reverse order.

## 15 Spare parts drawing

(Standard version with carbon steel inner assembly)

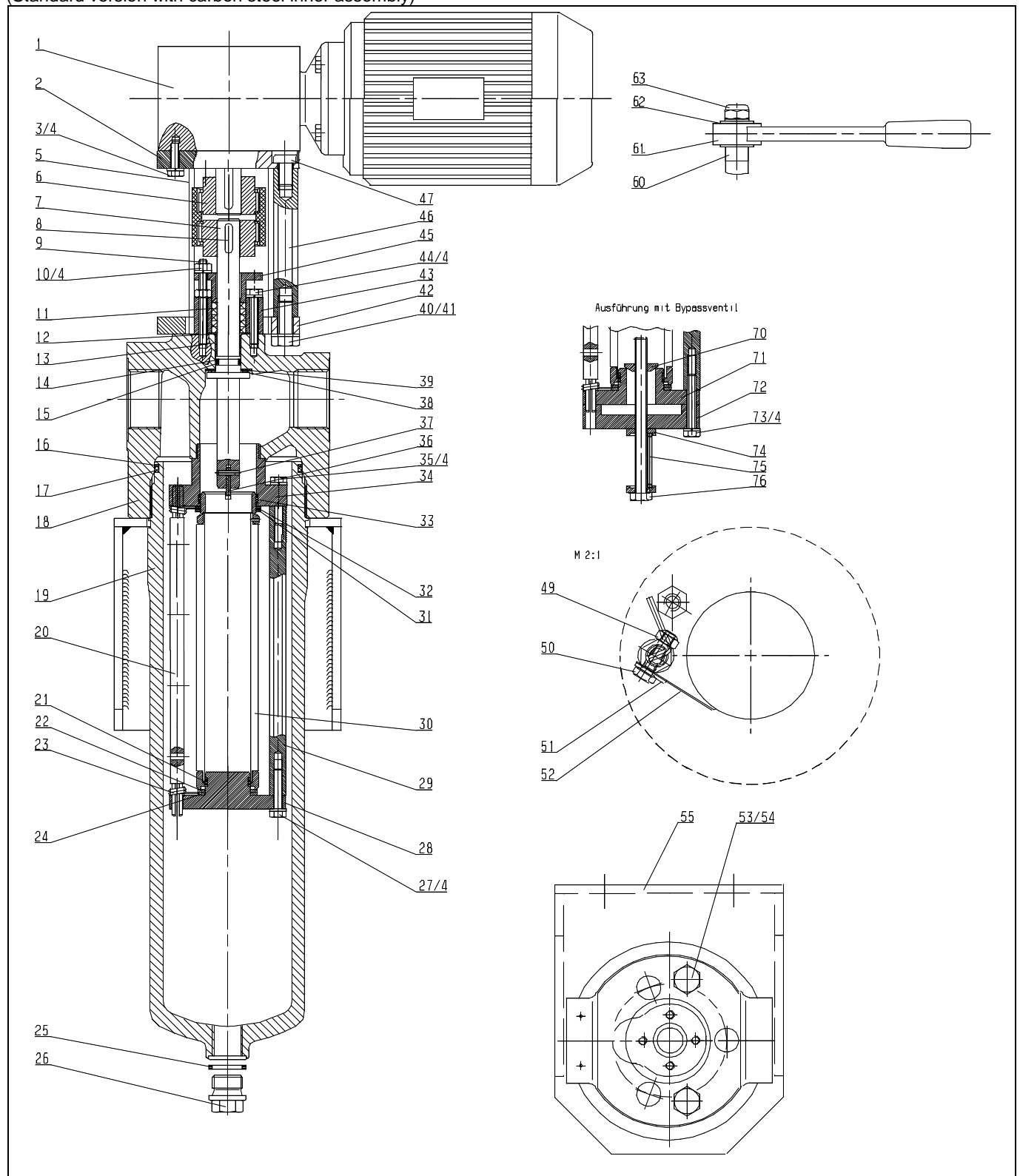


Fig. 19: Spare parts drawing for the AF 71H (ID. No.: 971.925.3)



Please request a separate spare parts drawing and list of spare parts for all other filter versions!



## 16 Parts list

Ser. no.	Designation	Qty.	Benennung/DIN Bezeichnung
1	Motor	1	Motor
2	Flange	1	Flansch
3	Hexagon screw M6x25 DIN 24017	4	6kt.-Schraube M6x25 DIN 24017
4	Spring A6 DIN 127	14	Federring A6
5	Shaft protection	1	Wellenschutz / Innenzarge
6	Coupling	1	Kupplung
7	Shaft	1	Welle
8	Adjusting piece	1	Paßfeder 5 x 5 20 DIN 6885
9	Threaded rod M6x65	2	Gewindestange M6x65
10	Hexagon nut M6 DIN 934	4	6kt.-Mutter M6 DIN 934
11	Packing kit PTFE	1	Manschetten-Packung PTFE
12	Gasket	1	Dichtung 24.2/30x1.5
13	Bearing	1	Buchse
14	Back-up ring SP 12, 7x17, 2x0.7	1	Stützring SP 12, 7x17, 2x0, 7
15	O-ring Ø 12, 37x2, 62	1	O-Ring Ø 12,37x2, 62
16	Back-up ring	1	Stützring 104/97.7x1.23
17	O-ring Ø 94.85x3.53 FPM	1	O-Ring Ø 94.85x3.53 FPM
18	Filter head	1	Filterkopf
19	Filter housing	1	Filtergehäuse mit Ablass G ½"
20	Scraper shaft	1	Abstreiferwelle
21	Guide ring 28.8/31.9x6.4	1	Führungsring 28.8/31.9x6.4
22	Disc	1	Anlaufscheibe
23	Spring	2	Schenkelfeder
24	Gasket A32x46 DIN 7603-PTFE	1	Dichtring A32x46 DIN 7603-PTFE
25	Gasket A21x26 DIN 7603-CU	1	Dichtring A21x26 DIN 7603-CU
26	Plug	1	Verschlußschraube G ½" DIN 910
27	Hexagon screw M6x30 DIN 24017	3	6kt.-Schraube M6x30 DIN 24017
28	Centre flange	1	Zentrierflansch
29	Scraper fixing	3	Abstreifträger
30	filter cartridge	1	Filterelement
31	Gasket A39x46 DIN 7603-PTFE	1	Dichtring A39x46 DIN 7603-PTFE
32	Disc 39.1/46.2	1	Anlaufscheibe 39.1/46.2
33	Guide ring 39/42x6. 4	1	Führungsring 39/42x6. 4
34	Holding fixture	1	Aufnahme
35	Hexagon screw M6x30 DIN 24017	3	6kt.-Schraube M6x30 DIN 24017
36	Connecting part	1	Mitnehmer
37	Straight grooved pin	1	Zylinderkerbstift 3x16 DIN 1473
38	Adjusting washer	1	Paßscheibe DIN 988 20x28x1.0
39	Disc	1	Anlaufscheibe DIN 988
40	Hexagon screw M10x25 DIN 24017	3	6kt.-Schraube M10x25 DIN 24017
41	Washer B10.5 DIN 125	3	Scheibe B10.5 DIN 125
42	Flange	1	Flansch
43	Washer	1	Scheibe
44	Hexagon screw M6x35 DIN 24017	2	6kt.-Schraube M6x35 DIN 24017
45	Gland	1	Brille
46	Threaded rod	3	Gewindestange
47	Cylinder screw M10x16 DIN 7984	3	Zylinderschraube M10x16 DIN 7984
48	Shaft	1	Motorwelle NM8V 040
49	Hexagon nut M4 DIN 985	4	6kt.-Mutter M4 DIN 985
50	Hexagon screw M4x16 DIN 24017	4	6kt.-Schraube M4x16 DIN 24017
51	Scraper support	1	Verstärkungsblech
52	Scraper	1	Abstreifer
53	Hexagon screw M12x30 DIN 24017	2	6kt.-Schraube M12x30 DIN 24017
54	Spring B12 DIN 127	2	Federring B12 DIN 127
55	Holding fixture	1	Befestigungswinkel
60	Adapter	1	Adapter
61	Ratchet	1	Zahnradknarre 3/8"
62	Washer A8.4 DIN 125	1	Scheibe A8.4 DIN 125
63	Hexagon nut M8 DIN 985	1	6kt.-Mutter M8 DIN 985
70	Valve disc	1	Ventilteller

Ser. no.	Designation	Qty.	Benennung/DIN Bezeichnung
71	Centre flange	1	Zentrierflansch
72	Valve plate	1	Ventilplatte
73	Hexagon screw M6x40 DIN 24017	3	6kt.-Schraube M6x40 DIN 24017
74	Washer	2	Scheibe
75	Valve spring	1	Ventilfeder
76	Hexagon screw M8x110 DIN 24017	1	6kt.-Schraube M8x110 DIN 24017
78	Set of bearings VP	1	Buchsensatz VP
79	Set of gaskets VP	1	Dichtungssatz VP

## 17 Spare parts

Designation	Material no.	Benennung
Set of gaskets VP	79797176	Dichtungssatz VP (Pos 11, Pos 12, Pos 13, Pos 14, Pos 15, Pos 16, Pos 17)
Set of bearings VP	79797184	Buchsensatz VP
Scraper	78389447	Abstreifer
Spring	77650419	Schenkelfeder

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 :

Automatik-Kantenspaltfilter  
Automatic metal edge filter  
Filtres automatiques à fentes

Typenbezeichnung:  
Type designation:  
Désignation du type :

AF 71 H

Funktionsbeschreibung:  
Machine description:  
Description du fonctionnement :

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:  
Les normes harmonisées ci-dessous ont été appliquées :

DIN EN ISO 12100:2011-03, DIN EN ISO 4414:2011-04

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,

03.07.2017

Datum/Date/Date

Unterschrift/Signature/Signature

Anlage/Annex/Annexe

3 Seiten/pages/pages

Anlage zur Einbauerklärung gemäß Richtlinie  
2006/42/EU für Automatik-Kantenspaltfilter  
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 Befehlseinrichtungen 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 Electricité 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



EU – Konformitätserklärung  
EU declaration of conformity  
Déclaration de conformité 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 :	Automatik-Kantenspaltfilter Automatic metal edge filter Filtres automatiques à fentes
Typenbezeichnung: Type designation: Désignation du type :	AF 71 H
Funktionsbeschreibung: Machine description: Description du fonctionnement :	Filtration von Feststoffen Filtration of solids Filtration de solides

allen einschlägigen Bestimmungen der Druckgeräterichtlinie 2014/68/EU, Anhang 1 entspricht.  
conforms to all relevant provisions of the pressure equipment directive 2014/68/EU, annex I.  
répond à toutes les dispositions applicables de la directive équipements sous pression 2014/68/UE , annexe I .

Angewendete harmonisierte Normen, insbesondere  
Applied harmonized standards in particular  
Normes harmonisées utilisées, notamment

AD 2000

Angewendete nationale Normen und technische Spezifikationen, insbesondere  
Applied national norms and techn. specifications, especially  
Normes et spécifications nationales utilisées, notamment

HP0, TRD/TRB

Und allen wesentlichen Schutzanforderungen der Ex-Richtlinie 2014/34/EU entspricht.  
Conforms to all the basic requirements of the Ex-directive 2014/34/EU.  
Répond à toutes les exigences essentielles de la Ex-directive 2014/34/UE .

Folgende harmonisierten Normen wurden angewandt:  
The following harmonised standards have been used:  
Les normes harmonisées ci-dessous ont été appliquées :

EN 1127-1 und EN 13463-1

Unterzeichner:  
Signatory:  
Signataire :

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

Öhringen,

07.07.2017

Datum/Date/Date

A handwritten signature in black ink, appearing to read 'W. Zuck', written over a horizontal line.

Unterschrift/Signature/Signataire



## 20 Index

<b>A</b>		
Axial bearing disc.....	10, 14	
<b>C</b>		
Cleaning.....	5, 8, 9	
Compressed air .....	12	
Concentrate .....	7, 10	
Conductivity .....	7	
Cooling lubricant filtration.....	4	
Cup seal packing .....	14	
<b>D</b>		
Differential pressure.....	9	
Discharge.....	8	
Discharge clearance .....	7	
Dismantling clearance .....	7	
Drain valve.....	7, 8, 11	
<b>E</b>		
Enlargement .....	5	
Environmental protection .....	3	
<b>F</b>		
Filter cartridge.....	5, 13	
<b>G</b>		
Gear motor.....	5, 6, 10, 14	
<b>I</b>		
Initial differential pressure.....	9	
Inlet.....	9	
Inner assembly .....	12	
Intended application .....	4	
Interval time.....	8	
<b>L</b>		
Leakage.....	2, 14	
<b>M</b>		
Manufacturer .....	2, 4	
Maximum permissible resistance .....	7	
<b>P</b>		
Preseparation .....	4	
Pressure difference .....	5	
Pressure relief .....	7	
Profiled inner core .....	5	
Protective clothing .....	11	
Protective clothing and equipment .....	12	
<b>R</b>		
Risks.....	2	
<b>S</b>		
Safety instructions .....	2	
Scraper.....	5, 13	
Siphon .....	7	
Splash protection.....	7	
Suspension.....	5	
<b>V</b>		
Viscosity .....	4	
<b>W</b>		
Warnings .....	3	



Filtration Group GmbH  
Schleifbachweg 45  
D-74613 Öhringen  
Phone +49 7941 6466-0  
Fax +49 7941 6466-429  
[fm.de.sales@filtrationgroup.com](mailto:fm.de.sales@filtrationgroup.com)  
[www.filtrationgroup.com](http://www.filtrationgroup.com)  
79719253.107.12/2017