ORIGINAL OPERATING INSTRUCTIONS

RHG CONDUCTOR CLEANING DEVICE FOR U10 AND FABA100

SYSTEM MANUAL
INSTALLATION MANUAL
MAINTENANCE MANUAL

EN | V1.06 | DCL 233

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1 DOCUMENT HISTORY

Material number	Version	Edition	Description/changes
-	1.01	01/2023	First edition
-	1.02	02/2023	Adaptation of intended use
-	1.03	04/2023	Adaptation of scope of delivery and connection diagrams
-	1.04	08/2023	Adaptation of system overview
-	1.05	12/2023	Adaptation of illustrations
-	1.06	08/2024	Adaptation of filter replacement/dust collection container, adaptation of corporate design

2 GENERAL

2.1 About these instructions

2.2 Symbols

Safety instructions in this manual are identified by symbols. Each safety instruction begins with a signal word that indicates the severity of the hazard. The various types of warnings and safety instructions and their structure are explained below.

DANGER!

The source of the hazard is described here.

This combination of a symbol and a signal word indicates an immediately dangerous situation that will result in death or serious injury unless avoided.

► The actions to prevent the hazard are identified here.

DANGER!

The source of an electrical hazard is described here.

This combination of a symbol and a signal word indicates an immediately dangerous situation related to electricity that will result in death or serious injury unless avoided.

► The actions to prevent the hazard are identified here.

WARNING!

The source of the hazard is described here.

This combination of a symbol and a signal word indicates a potentially dangerous situation that may result in death or serious injury unless avoided.

► The actions to prevent the hazard are identified here.

CAUTION!

The source of the hazard is described here.

This combination of a symbol and a signal word indicates a potentially dangerous situation that may result in light or moderate injury unless avoided.

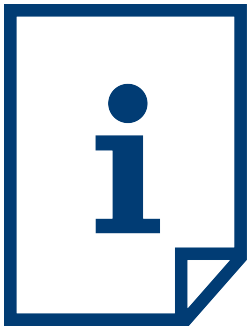
► The actions to prevent the hazard are identified here.

NOTICE!

The source of the hazard is described here.

This combination of a symbol and a signal word indicates a potentially dangerous situation that may result in property or environmental damage unless avoided.

► The actions to prevent the hazard are identified here.



NOTICE!

This indicates a reference to another place in this text or another document.

This combination of a symbol and a signal word indicates a reference to another place in this text or in a different document.

► The places in the text or references to other documents are identified here.

TIPS AND RECOMMENDATIONS!

► Simple tips and recommendations from our long years of experience are provided here.

2.3 Copyright protection

2.4 Disclaimer

The information in this document has been compiled in consideration of applicable standards and regulations, accepted rules of engineering, as well as our years of knowledge and experience.

The manufacturer shall not be liable for damages resulting from:

- Failure to observe the technical documentation
- Uses other than the intended use
- Use by personnel without the required training
- Unauthorized modifications or technical changes
- Use of non-approved spare parts or accessories

The actual scope of delivery may vary from the descriptions and images in this document in case of custom versions, the selection of additional order options, or due to latest technical changes.

The obligations agreed in the supply contract, the general terms and conditions and the terms and conditions of delivery, and the laws and regulations applicable at the time the contract was signed all apply.

We reserve the right to make technical changes to improve the usability and for further development.

2.5 Customer service

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2.6 Warranty

2.6.1 Warranty terms and conditions

The information in this document has been compiled in consideration of applicable standards and regulations, accepted rules of engineering, as well as our accumulated years of knowledge and experience.

The warranty period and the scope of the warranty are defined in the terms of the contract and the general terms and conditions of delivery of Vahle GmbH & Co. KG.

Our general terms of warranty and delivery are published on our website. www.vahle.de

⚠ WARNING!

No liability in case of unauthorized changes, modifications, or accessories!

Changes or modifications to the delivered product require the permission of the manufacturer. Genuine spare parts and manufacturer-approved accessories provide safety. The use of non-approved parts voids any liability of the manufacturer.

► Always consult the manufacturer first!

The warranty immediately expires if one or several of the following situations arise(s):

- If the product is modified without permission from Vahle.
- If the operator independently performs repairs during the warranty period or has repairs performed by third parties.
- If the product has been handled or maintained inappropriately.
- If parts are used that are not original parts approved by Vahle.
- If the information in this documentation is not observed.

3 SAFETY INSTRUCTIONS

3.1 Safety

This section gives an overview of all important safety aspects relating to the protection of personnel as well as the safe use and fault-free operation. Other, task-specific safety instructions can be found in the sections on the individual phases of the product's life.

DANGER!

Failure to observe the safety instructions may result in risks to life and health!

3.2 Intended use

The RHG conductor cleaning device enables conductor rails with a phase spacing of 14 mm (U10) and 15 mm (FABA 100) to be automatically and preventively cleaned to remove loose dust deposits and carbon dust.

The suction heads are basically intended for use during operation and therefore in the live rail. No voltage may be tapped from the conductor rail via the suction heads themselves.

3.3 General risks

The following section describes residual risks that arise even if the product is used as intended. Observe the safety instructions listed here in the other sections of these instructions to reduce the risk of injuries or damage to property and equipment and to avoid dangerous situations.

Do not change or modify the system inappropriately!

WARNING!

Risk of death from improper replacement or removal!

Errors during the removal or replacement of components may cause life-threatening situations or significant property damage

► Observe the safety instructions before beginning any removal work.

3.3.1 Danger from electrical energy

Perform the following safety work according to VDE 0105-100 (this work must be carried out by a qualified electrician, see chapter: “2 Security”).

Activate

The required separation distances must be established.

Secure against restart

During work, a prohibition sign must be attached reliably on switching handles or drives of switches, control units, pressure and sensing devices, safety parts, circuit breakers that have been used to unlock a system part or that can be used to connect electricity. If this is not possible, then the clearly associated prohibition sign must be nearby. Existing mechanical interlocking devices against restart must be used for manually operated switches.

Determine absence of voltage

Absence of voltage is to be determined at or as close as possible to the work site at all pins. Absence of voltage must be checked with a voltage tester immediately before and after use.

Grounding and short-circuiting

Parts on which work will be performed at the work place must first be grounded and then short circuited. Grounding and short-circuiting must be visible from the workplace. Deviating from the above, it is permitted to ground and short-circuit near the work place if this is required due to local conditions or for safety reasons. Devices for grounding and short-circuiting must always first be connected with the grounding system or the ground electrode and afterwards with the parts to be grounded. Grounding and short-circuiting may be waived in certain low-voltage systems (see VDE 0100-100).

Cover adjacent, live parts or isolate them

Before starting work, check whether it is appropriate to make adjacent parts voltage-free.

DANGER!

Danger of death due to electrical current!

Contact with live parts can result in life-threatening injuries.

► Make sure that the relevant components are not live or under voltage, and that there is no unauthorized approximation.

3.4 Responsibilities of the operating company

Definition of the operating company

The owner is listed in the order confirmation and has the following owner obligations:

Owner obligations

The system is put to commercial use. The owner of the system is therefore subject to laws and regulations on workplace health and safety. In addition to the safety instructions in this document, the safety, accident prevention, and environmental regulations for the system's field of application must be followed. The following applies in particular:

- The owner ensures protection against electric shock (contact protection).
- The owner must inform himself about applicable workplace health and safety regulations and conduct a risk assessment for additional hazards that may arise from the special operating conditions at the installation site. These must be implemented as facility instructions for the operation of the system.
- Over the entire time, the owner has to verify that the instructions drafted by him for the operation of the system conform to the current state of applicable regulations and adapt the instructions as necessary.
- The owner must clearly define responsibilities for the installation, operation, maintenance, and cleaning of the system.
- The owner must ensure that all employees who handle the system have read and understood the operating instructions. The owner is also required to provide training periodically and instruct personnel about the risks.

The owner is also responsible for ensuring that the system is always in good technical condition. The following therefore applies:

- The owner must ensure that the maintenance intervals described in this documentation are observed.
- Control and safety devices provided by the owner for the operation of the system must be checked for completeness and functional safety.
- The owner must ensure that assembly and installation comply with EN 60204.
- The owner must ensure that all components are de-energized in the event of an emergency off. This applies in particular to the parallel busbar.

3.5 Personnel requirements

3.5.1 Qualifications

The tasks described in this manual present various requirements to the qualifications of the persons performing them.

⚠ WARNING!

Hazard in case of insufficient qualification of personnel!

Insufficiently qualified persons are unable to judge the risks when working on the system, which puts them and others at risk of severe or fatal injuries.

- ► All work must be performed by qualified personnel only.
- ► Insufficiently qualified personnel must stay out of the work area.

Operator

The operator has been instructed by the owner about the tasks assigned to him and the risks of inappropriate actions. An operator may perform tasks that go beyond normal operation only if this is indicated in the instructions and the owner has expressly assigned him with such a task.

Electrically qualified person (see VDE 0105-100)

Due to their professional training, knowledge, experience, and knowledge of the relevant standards and regulations, professional electricians are able to carry out work on electrical installations and to independently recognize and avoid possible hazards. The professional electrician has been specifically trained for his/her professional working environment and is conversant with the relevant standards and regulations.

Qualified personnel

Qualified personnel are able, based on their technical training, knowledge, experience, and familiarity with applicable regulations, to perform the assigned tasks and independently detect and avoid potential hazards.

Instructed personnel

The instructed person has been instructed by the owner about the assigned tasks and the risks of inappropriate actions. Such persons must also have read and understood these safety instructions and observe them during their work.

This may need to be confirmed by the customer/user with a signature.

3.6 Personal protective equipment

Every person who is instructed to work on the system or in the vicinity of the system (support personnel) must wear personal protective clothing/equipment for the suitable type of their work. Personal protective equipment has the purpose of protecting personnel against hazards to their health and safety at work. The owner is responsible for ensuring that protective equipment is worn.

Personal protective equipment is described below:

Safety shoes

Safety shoes protect against falling parts as well as against slipping.

Protective goggles

Protective goggles protect against flying particles and liquid sprays.

Helmet

Helmets protect against falling or flying parts and materials.

Gloves

Gloves protect hands against chafing and abrasion, cuts and punctures, as well as against contact with hot surfaces.

Protective work clothes

Work clothing is close fitting and resistant to tearing, with close-fitting sleeves and without any projecting parts. It is designed to protect against being caught by moving parts of machinery. However, it must not reduce mobility. Do not wear rings, necklaces, or other jewelry. Long hair must be covered (cap, hat, hairnet, or similar). Fall-arrest equipment, face protection, and hearing protection according to DGUV Regulation 112-189.

Hearing protection

To protect against severe and permanent hearing loss.

Breathing protection

To protect against severe and chronic conditions of the airways.

3.7 Safety devices

⚠ WARNING!

Danger from non-functional safety devices!

Non-functional or disabled safety devices cause a risk of severe injuries or even death.

► Before beginning any work, verify that all safety devices are functional and installed properly.

► Never disable or override safety devices.

In addition to locally applicable safety regulations, the following safety instructions must be observed.

The following accident prevention regulations (UVV; Germany) and the new Accident Prevention Regulations – Principles of Prevention (DGUV Regulation 1; Germany) must always be observed.

3.8 Conduct in case of danger or accident

Precautions:

- Have first-aid equipment (first-aid kit, blankets, etc.) and fire extinguisher ready.
- Maintain free access for emergency services vehicles.

Conduct in case of accident:

- Secure site of accident and call first-aid personnel.
- Alert emergency services.
- Provide first aid.

3.9 Signage

The following symbols and instruction signs are located in the work area. They relate to the immediate environment in which they are installed.

DANGER!

Danger of death due to electrical current!

Contact with live parts can result in life-threatening injuries.

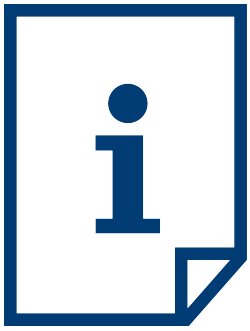
► Make sure that the relevant components are not live or under voltage, and that there is no unauthorized approximation.

WARNING!

Danger from illegible signs!

Over time, labels and signs can get dirty or can become unreadable in other ways, which means that the dangers are not identified and that operating instructions cannot be followed.

► Always keep all safety, warning, and operating instructions in a legible condition.



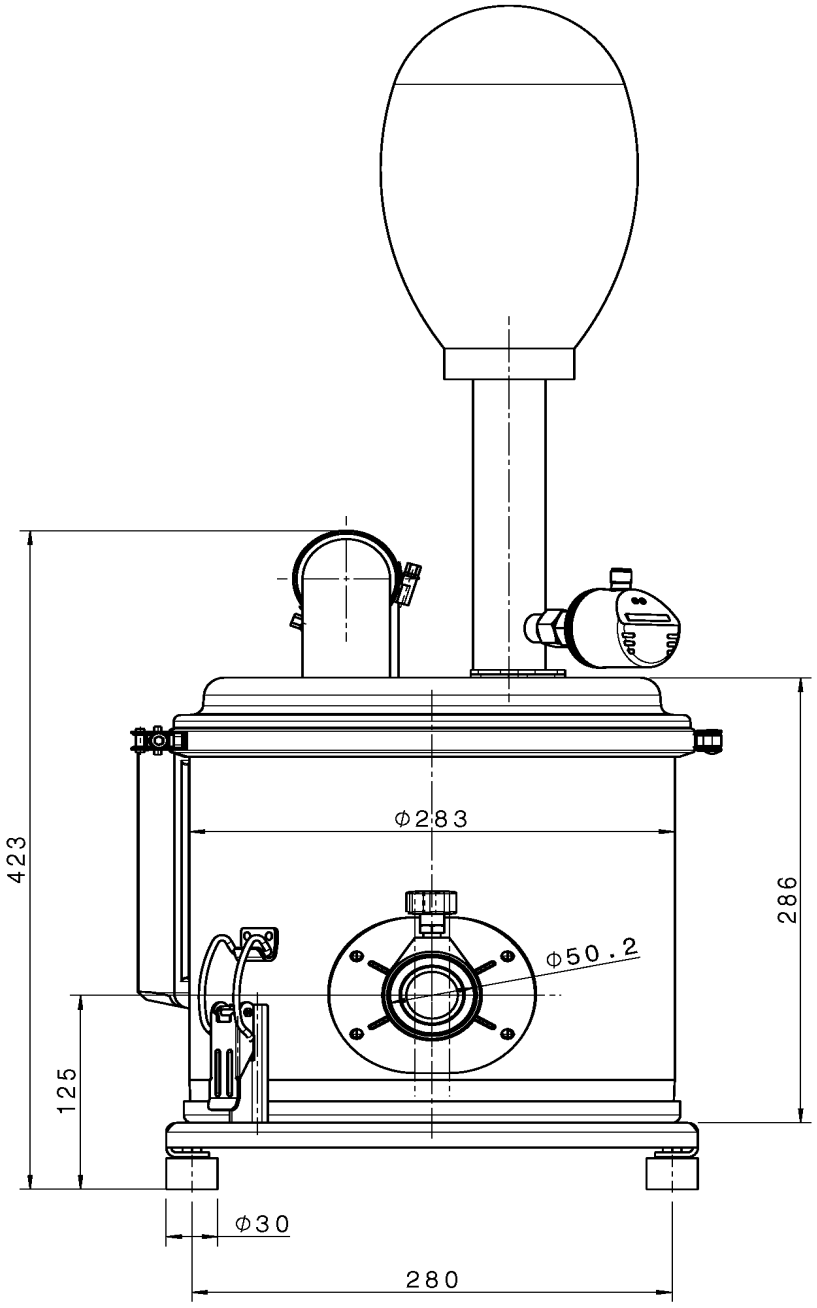
NOTICE!

Follow instructions!

Only use the designated product after this documentation has been completely read and understood.

4 TECHNICAL DATA

Technical data	
Weight [kg]	30
Dimensions (l x w x h) [mm]	710 x 310 x 760
Container capacity [dm³]	15
Suction hose length [m]	2.5
Suction hose diameter [mm]	50
Filter surface [cm²]	2420
Protection class [IP]	55
Operating temperature [°C]	5 -45
Storage temperature [°C]	0 - 40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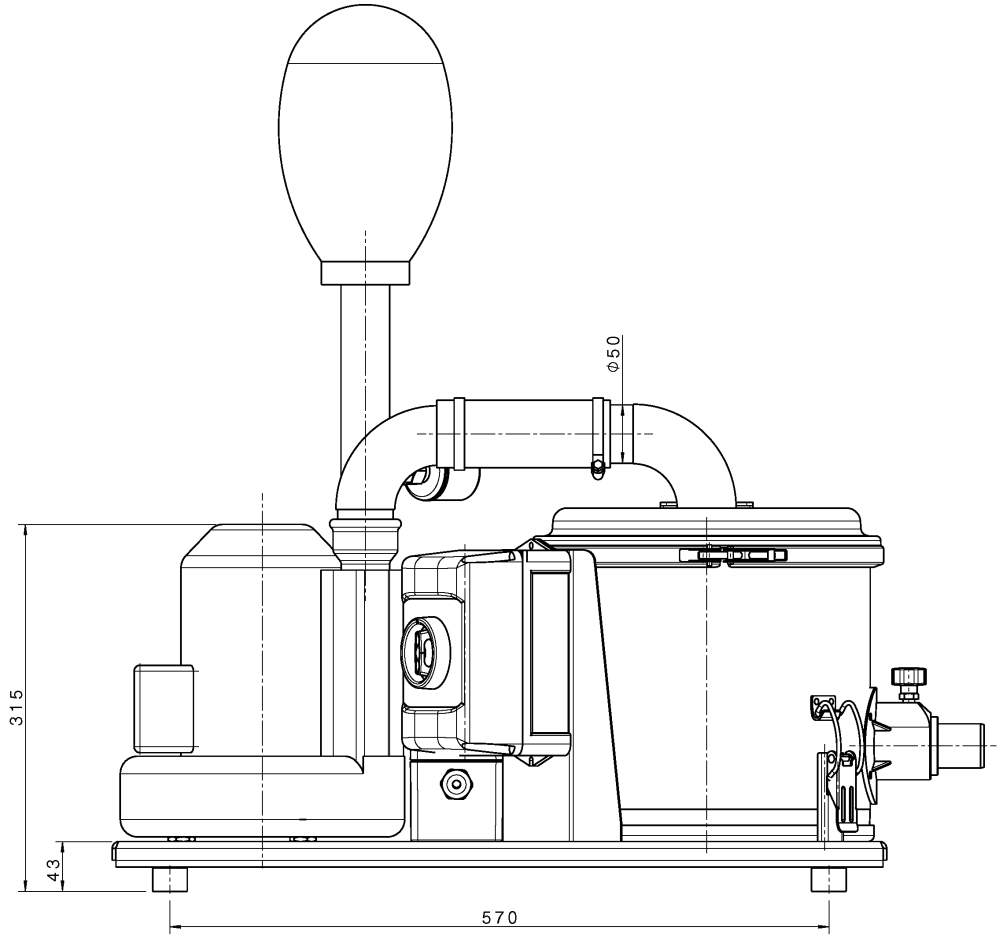
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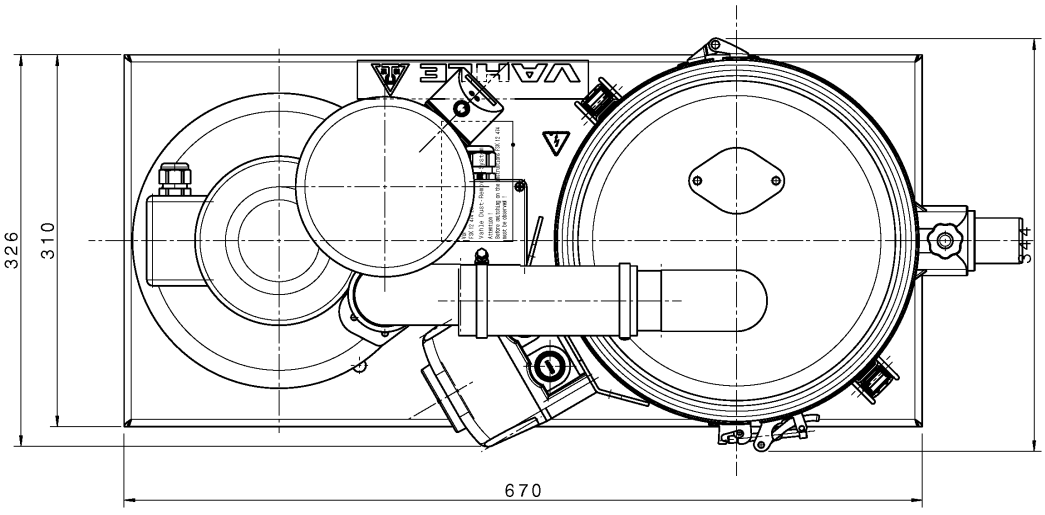

326
310
544
670

Single-phase motor

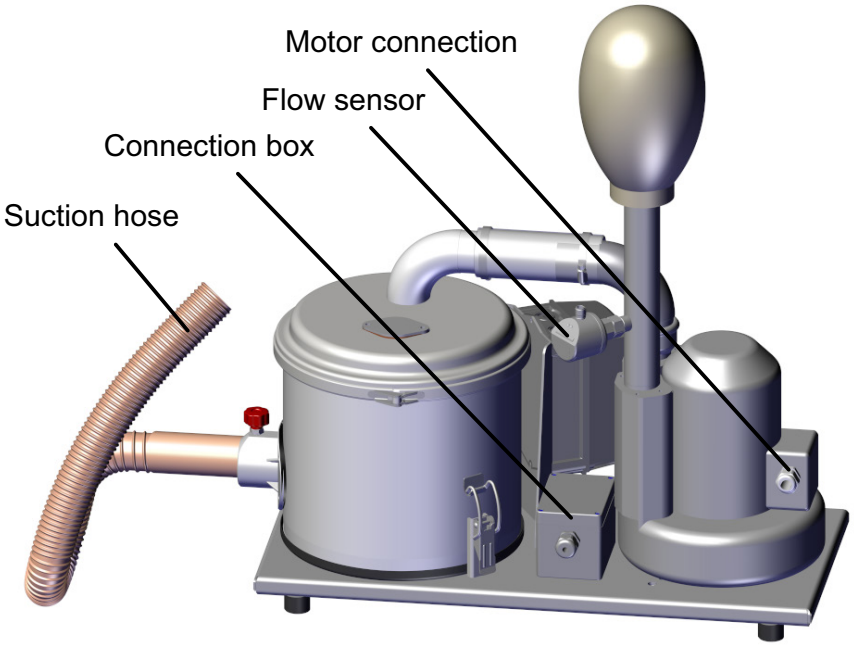
Designation		60 Hz
Voltage [V_{AC}]		115
Rated power [kW]		0.45
Current draw 115 V_{AC}	[A]	6.0
Vacuum / Ws [mm]		1,100
Air output / min [l]		1,400
Sound pressure level [dBA]		65

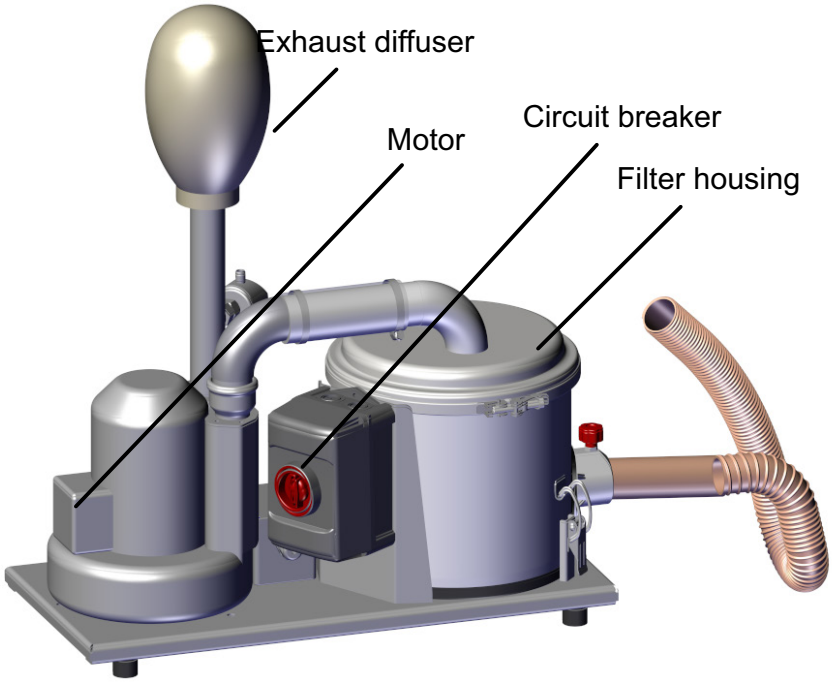
3-phase motor

Designation		50 - 60 Hz
Voltage [V_{AC}]		380 - 480
Rated power [kW]		0.40
Current draw 400 V_{AC}	[A]	1.5
Vacuum / Ws [mm]		1,100
Air output / min [l]		1,600
Sound pressure level [dBA]		65

5 LAYOUT AND FUNCTION

5.1 System overview





5.2 Brief system description

The RHG conductor cleaning device enables conductor rails with a phase spacing of 14 mm (U10) and 15 mm (FABA 100) to be automatically and preventively cleaned to remove loose dust deposits and carbon dust. The conductor cleaning device consists of a vacuum pump with filter housing and a suction hose (2.5 m). The suction unit (U10) or the suction nozzle (FABA100) must be ordered separately depending on the number of poles.

The conductor cleaning device has a motor overload switch and is attached to the EMS vehicle on site.

The suction unit for the U10 has cleaning elements that are mounted in place of the carbon brushes and that pick up dirt directly in the conductor rail. The cleaning elements consist of carbon brush material and can electrically bridge separation points.

Fully insulated cleaning elements are available on request for systems where separation points must not be bridged. A reduced service life must be taken into account in this case.

The compact conductor cleaners are available with the same number of poles as the compact current collectors. They differ from “normal” current collectors because they have a cleaning element installed in place of carbon brushes. They are installed in the same way as current collectors and perform a cleaning function through the integrated suction nozzle.

The suction unit for FABA 100 is a suction nozzle that picks up the dirt at a defined distance in front of the conductor rail over the entire number of poles.

For safety reasons, cleaning elements must not conduct electricity.

5.3 Assembly overview

Versions	Designation	Ident. -No.
Single-phase motor, 115 V_{AC} for direct mains connection	RS-RHG-1/115 - UL	0145170/00
3-phase motor, 400 V_{AC} for direct connection	RS-RHG-3/400	0145166/00
3-phase motor, 400 V_{AC} With 24 V connection	RS-RHG-3/400/24	0145171/00

6 COMMISSIONING

6.1 Safety instructions for commissioning

DANGER!

Electrical voltage on the system

Death or serious injury from electric shock.

► Before beginning any work, ensure that the system is free of voltage and remains so for the duration of the work. Observe the safety instructions!

DANGER!

Danger of death due to electrical current!

Contact with live parts can result in life-threatening injuries.

► Make sure that the relevant components are not live or under voltage, and that there is no unauthorized approximation.

WARNING!

Risk of injury in case of improper operation!

Improper operation may result in serious injury or property damage.

► Observe the safety instructions from section “3 Safety instructions.”

► Are all acceptance reports available? (initial startup)

► Are there no people in the danger zones?

► Was the assembly performed completely according to instructions?

► Have excess materials, tools and auxiliary devices been cleared from the danger zones?

► Has the electrical system been powered up by an authorized electrically trained person (see section “3 Safety instructions”)

WARNING!

Danger to unauthorized persons!

Unauthorized persons who do not meet the requirements described here do not know the dangers in the respective work area.

► Keep unauthorized persons away from the work area.

► If in doubt, speak to people and expel them from the work area.

► Interrupt the work as long as the unauthorized persons are in the work area.

⚠ WARNING!

Hazard in case of insufficient qualification of personnel!

Insufficiently qualified persons are unable to judge the risks when working on the system, which puts them and others at risk if severe or fatal injuries.

- ► All work must be performed by qualified personnel only
- ► Insufficiently qualified personnel must stay out of the work area

⚠ WARNING!

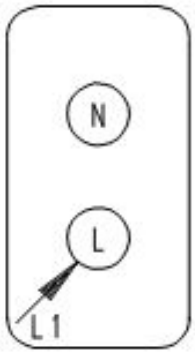
Risk of injury from falling parts!

In case of improper use (faulty assembly, misuse, failure to perform maintenance, etc.), there is a risk of parts falling down.

- ► Wear a helmet
- ► Perform regular maintenance

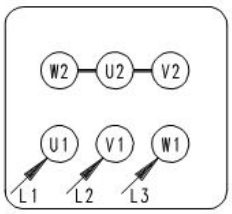
6.2 Motor connection

Motor circuit with single-phase motor



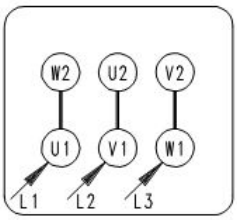
Delivery condition

Motor circuit with 3-phase motor, star connection



Delivery condition

Motor circuit with 3-phase motor, delta connection



Required tools:

⚒ Socket wrench, 7 mm

Installation steps:

1. To carry out the conversion, loosen the six nuts on the motor connection terminal.
2. Remove the three bridges and place them as shown in the illustration.
3. Retighten the six nuts. Caution: Risk of breaking the connection terminal.

6.3 Installation

Prerequisites:

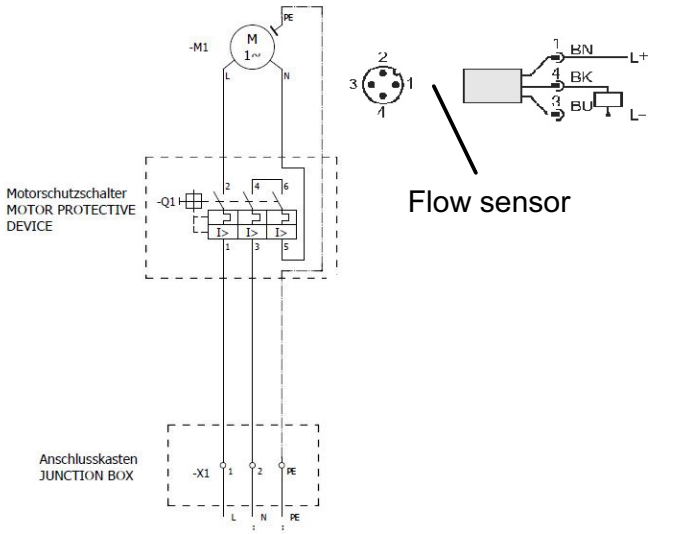
✓ The motor is prepared 6.2 Motor connection accordingly.

Required tools:

⚒ Open-end wrench

Installation steps:

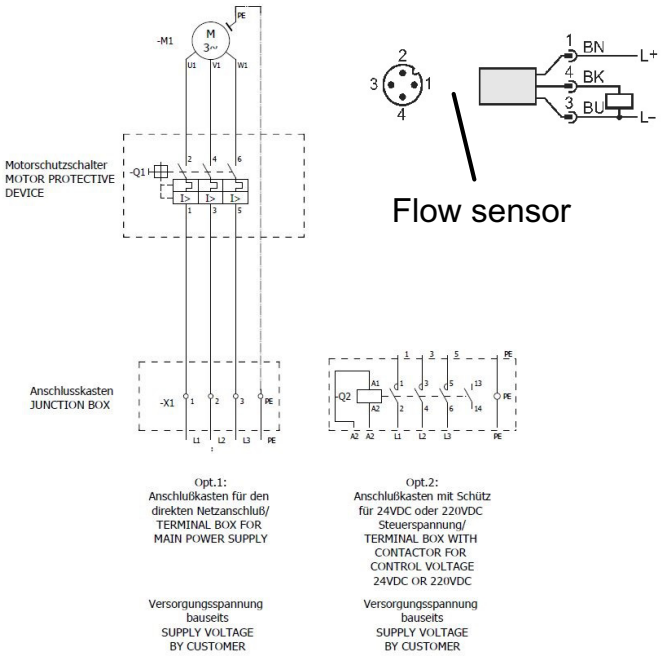
1. Use the clamping brackets to mount the conductor cleaning device on a square tube (max. 80 mm).
2. Mount the suction unit on the current collector.
3. Establish the motor connection according to the following motor connection plan.



The flow sensor must be integrated by the customer!

Versorgungsspannung
bauseits
SUPPLY VOLTAGE
BY CUSTOMER

Fig. 6-1 Single-phase motor connection plan



The flow sensor must be integrated by the customer!

Fig. 6-2 3-phase motor connection plan

7 MALFUNCTIONS

7.1 Safety information about malfunctions

⚠ WARNING!

Risk of injury in case of improper troubleshooting!

Improper troubleshooting may cause serious injuries or property damage.

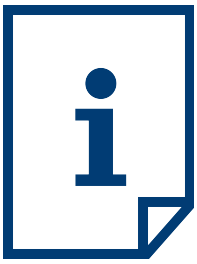
► Ensure sufficient installation space before beginning any work.

► Switch off power supply, verify that the system is free of voltage, and secure against switching back on.

7.2 Procedure in the event of malfunction

General principle:

- In the event of malfunctions that pose an immediate hazard to persons or property, immediately activate the safety devices.
- Determine the cause of the fault.
- Notify the person in charge at the place of operation.



NOTICE!

The inspection and maintenance tasks listed in the technical documentation must be performed and documented regularly:

(location, spare part, task performed, date, name of inspector).

► Only persons with the required training, qualification and authorization may perform troubleshooting work on the system.

Malfunction	Possible fault	Possible solution
Turbine does not rotate	No mains voltage	Check mains voltage
	Motor overload switch not unlocked	Switch on the motor overload switch
	Motor overload switch triggered by a clogged filter	Check the filter, replace it if necessary, then switch on the motor overload switch
Weak suction/no suction	Flow sensor detected and switches off	Check the filter, replace it if necessary, then switch on the motor overload switch
	Suction hose damaged	Check suction hose and replace if necessary
	Seal worn	Check the seals and replace them if necessary
	Air loss	Locks, locking screws, container, filter chamber for leaks check
	Container full	Empty container
	Filter saturated	Replace filter

Malfunction	Possible fault	Possible solution
Ejecting dust or liquids	Suction hose damaged	Check suction hose, replace if necessary
	Filter damaged	Replace filter
	Filter not suitable for suction type	Fit a suitable filter for the material to be sucked up

8 MAINTENANCE

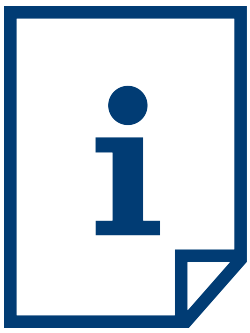
The main aim of this section is to maintain the system's target condition and operational capability. By avoiding malfunctions and unplanned downtimes, regular maintenance can increase the utilization rate. Efficient planning of maintenance work and material is a prerequisite. In order to carry out safe maintenance by appropriately trained personnel, the following instructions must be observed:

DANGER!

Danger of death due to electrical current!

Contact with live parts can result in life-threatening injuries.

► Make sure that the relevant components are not live or under voltage, and that there is no unauthorized approximation.



NOTICE!

The inspection and maintenance work listed in the technical documentation must be performed and documented regularly

(location, spare part, task performed, date, name of inspector)

► System fault elimination may only be carried out by trained, qualified, and authorized persons.

Date	Name	Maintenance/servicing work	Instructions given by	Signature

8.1 Safety information about repairs

DANGER!

Risk of fatal injuries from electrical current!

Contact dust is conductive and can cause short circuits.

► Make sure that no carbon dust gets between the phases during maintenance.

DANGER!

Before beginning any work, ensure that the system is free of voltage and remains so for the duration of the work. Observe the safety instructions in the section 6.1 Safety instructions for commissioning!

WARNING!

Risk of injury due to improperly performed maintenance work!

Improper maintenance can result in serious personal injury or property damage.

► Ensure that there is sufficient clearance before starting work.

► Pay attention to order and cleanliness in the workplace!

► Follow the procedure according to3 Safety instructions before starting work.

WARNING!

Danger due to insufficiently qualified persons!

Insufficiently qualified persons cannot assess the risks involved in operating the system and expose themselves and others to the risk of serious or fatal injuries.

► Have all work performed only by persons qualified for the task.

► Inadequately qualified persons should be kept away from the work area.

CAUTION!

Tripping hazard due to protruding parts

There is a tripping hazard during the work.

► Watch out for steps and holes in the floor when walking inside the work area and the danger zone. There must be no loose objects in the work area.

CAUTION!

For maintenance and cleaning work where carbon brush dust may get into the ambient air, respirator masks must be used:

► Wear respirator mask acc. to EN 149, min. protection level FFP3.
For example, Vahle ID no. 10017880

► Never blow out the mask with compressed air.

8.2 Spare parts

8.2.1 Filter bag dust class M

Designation	Weight [g]	ID no.
Filter bag, dust class M antistatic	0.005	10032500

8.2.2 HEPA filter dust class H

Designation	Weight [g]	ID no.
HEPA filter, dust class H, D250 x H98	0.005	10032501

8.2.3 Blow-out bag/diffuser

Designation	Weight [g]	ID no.
Blow-out bag/diffuser D60	0.005	10032502

8.2.4 Filter seal

Designation	Weight [g]	ID no.
Filter seal	0.002	10032503

8.3 Maintenance intervals

Interval	Service/monitoring	Personnel
Every 6 months	• Replacing HEPA filters	Qualified persons

8.4 Filter bag replacement

Open the conductor cleaning device

Step 1

Required tools:

⚒ Multimeter

Work steps:

1. De-energize the conductor cleaning device.
2. Verify the absence of voltage with a multimeter.
3. Remove the suction hose at the port (1).
4. Place the conductor cleaning device with the base plate on a suitable workstation.

Step 2

Work steps:

1. Loosen the connection to the ground line (1) with the wing nut (2).
2. Place the cable lug with the cable aside.
3. Screw the wing nut back on to prevent loss.

Step 3

Required tools:

⚒ 7 mm external hex socket

Work steps:

1. Loosen the clamp (1) from the intake manifold (2) with a 7 mm external hex socket.
2. Push the clamp down toward the motor.

Step 4

Work steps:

1. Pull the suction hose (1) down from the intake manifold with a slight twisting motion.
2. Be careful not to damage the intake hose (ground cable).
3. Optionally, you can loosen the tabs (2) on the base plate and remove the container.

Step 5

Work steps:

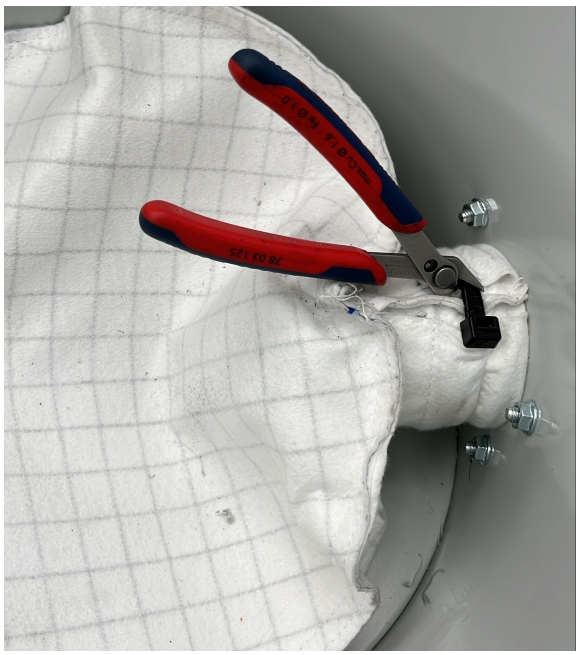
1. Open the clamp (1) on the dust collection container.
2. Remove the clamp.

Step 6

Work steps:

1. Remove the lid (1) of the suction container.
2. Place the lid on a suitable work surface.

Replacing the dust collection container



Step 1

Required tools:

⚒ Side cutter

Work steps:

1. Open the cable tie with a side cutter.
2. Place the side cutter aside.

Step 2

Work steps:

1. Remove the filter bag (1) and close it with a cable tie.
2. Avoid creating dust swirls.

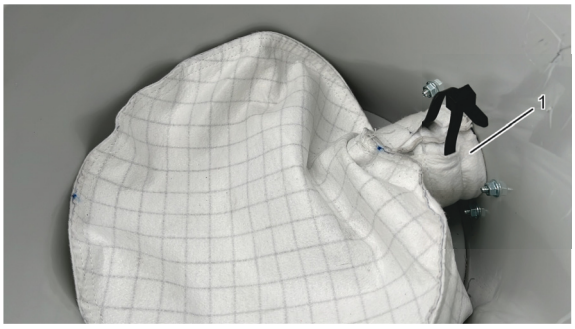
Step 3

Required tools:

⚒ Cleaning cloths

Work steps:

1. Clean the inside of the container with a cleaning cloth.
2. Check the container for damage.



Step 4

Required tools:

- ⚒ Cable tie
- ⚒ Filter bag

Work steps:

1. Place a new cable tie around the filter bag.
2. Lightly secure the cable tie to the tab.
3. Attach the new filter bag to the nozzle (1).
4. Make sure to guide the filter bag over the cable tie mount.

Step 5

Required tools:

- ⚒ Side cutter

Work steps:

1. Tighten the cable tie.
2. Cut off the protruding part of the cable tie with a side cutter.
3. Check the filter bag for damage.
4. Ensure that it is properly seated in the container.

Close the conductor cleaning device

Step 1

Required tools:

⚒ 7 mm internal hex socket

Work steps:

1. Install the lid (1) with the clamping bracket (2).
2. Readjust the clamping bracket if the clamping force is insufficient.
3. Secure the suction hose (3) to the port (4).
4. Be careful not to damage the ground wire.

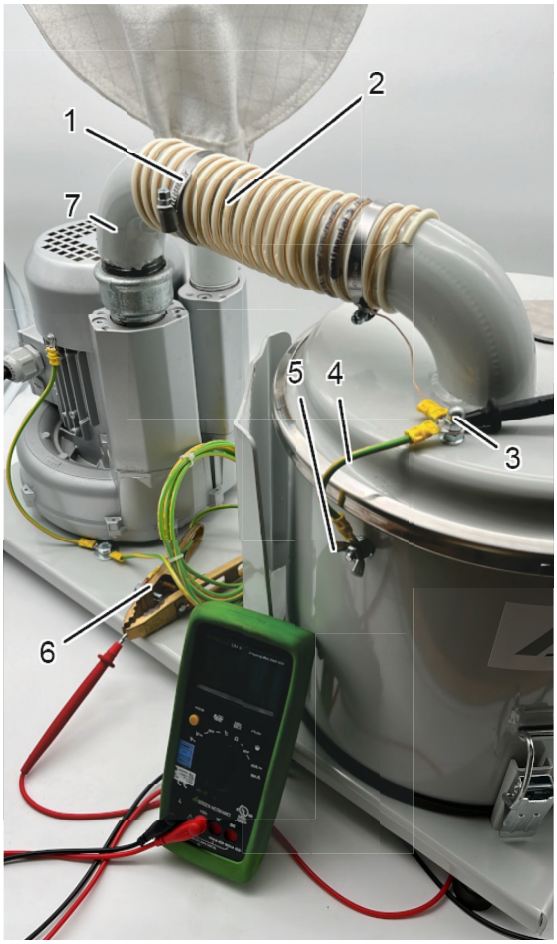
Step 2

Required tools:

⚒ Cleaning agent

Work steps:

1. Clean the contact surfaces of the clamping bracket to prevent transfer resistance of the grounding.
2. Close the clamping brackets.
3. Check the play of the clamping brackets.
4. In the event of damage to the clamping brackets, putting into operation is impossible.



Step 3

Required tools:

- ⚒ 7 mm external hex socket
- ⚒ Multimeter

Work steps:

1. Secure the clamp (1) to the port (7) to secure the suction hose (2) against unintentional detachment.
2. Connect the ground cable (4) to the wing nut (5) hand tight.
3. Clamp a multimeter between the ground terminal (6) and the grounding pole (3) on the lid.
4. Check the resistance value.
5. Make sure that the measured resistance value <1 Ohm.
6. Disconnect the multimeter.

Step 4

Required tools:

⚒ Multimeter

Work steps:

1. Mount the conductor cleaning device onto the system.
2. Install the ground terminal on the steel structure of the conductor cleaning device.
3. Check the connection between the steel structure and the grounding point on the lid again.
4. Make sure that the measured resistance value <1 Ohm.
5. Put the conductor cleaning device into operation.

8.5 HEPA filter replacement

Open the conductor cleaning device

Step 1

Required tools:

⚒ Multimeter

Work steps:

1. De-energize the conductor cleaning device.
2. Verify the absence of voltage with a multimeter.
3. Remove the suction hose at the port (1).
4. Place the conductor cleaning device with the base plate on a suitable workstation.

Step 2

Work steps:

1. Loosen the connection to the ground line (1) with the wing nut (2).
2. Place the cable lug with the cable aside.
3. Screw the wing nut back on to prevent loss.

Step 3

Required tools:

⚒ 7 mm external hex socket

Work steps:

1. Loosen the clamp (1) from the intake manifold (2) with a 7 mm external hex socket.
2. Push the clamp down toward the motor.

Step 4

Work steps:

1. Pull the suction hose (1) down from the intake manifold with a slight twisting motion.
2. Be careful not to damage the intake hose (ground cable).
3. Optionally, you can loosen the tabs (2) on the base plate and remove the container.

Step 5

Work steps:

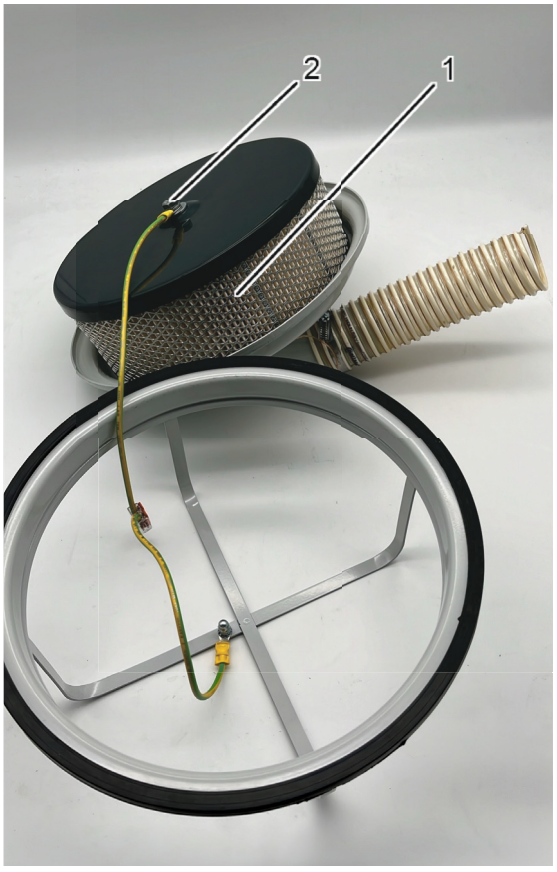
1. Open the clamp (1) on the dust collection container.
2. Remove the clamp.

Step 6

Work steps:

1. Remove the lid (1) of the suction container.
2. Place the lid on a suitable work surface.

Filter replacement



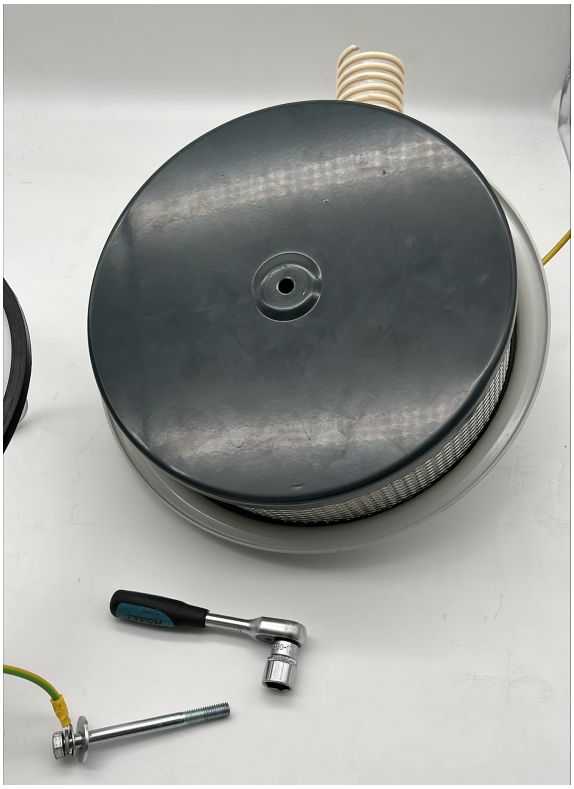
Step 1

Required tools:

⚒ 13 mm external hex socket

Work steps:

1. Check whether the HEPA filter (1) needs to be replaced (maintenance interval).
2. Loosen the hexagon screw (2) with a 13 mm socket.



Step 2

Work steps:

1. Remove the lid from the HEPA filter.
2. Disassemble all assemblies.

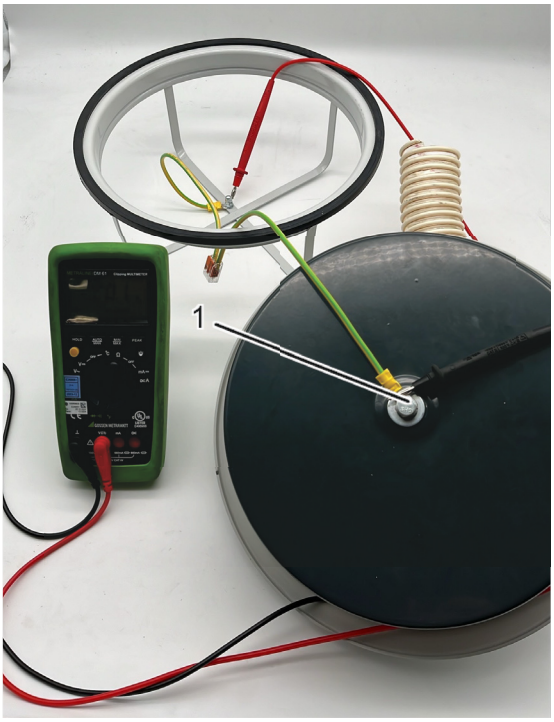
Step 3

Required tools:

- ⚒ HEPA Filter
- ⚒ Cleaning cloth

Work steps:

1. Clean all assemblies with a cleaning cloth.
2. Replace the HEPA filter (1).
3. Assemble the components.



Step 4

Required tools:

- ⚒ Multimeter
- ⚒ 13 mm external hex socket

Work steps:

1. Insert the hexagon screw and fasten it with a 13 mm external hex socket.
2. Use a multimeter to check the grounding resistance.
3. Make sure that the measured resistance value <1 Ohm.

Close the conductor cleaning device

Step 1

Required tools:

- ⚒ 7 mm internal hex socket

Work steps:

1. Install the lid (1) with the clamping bracket (2).
2. Readjust the clamping bracket if the clamping force is insufficient.
3. Secure the suction hose (3) to the port (4).
4. Be careful not to damage the ground wire.

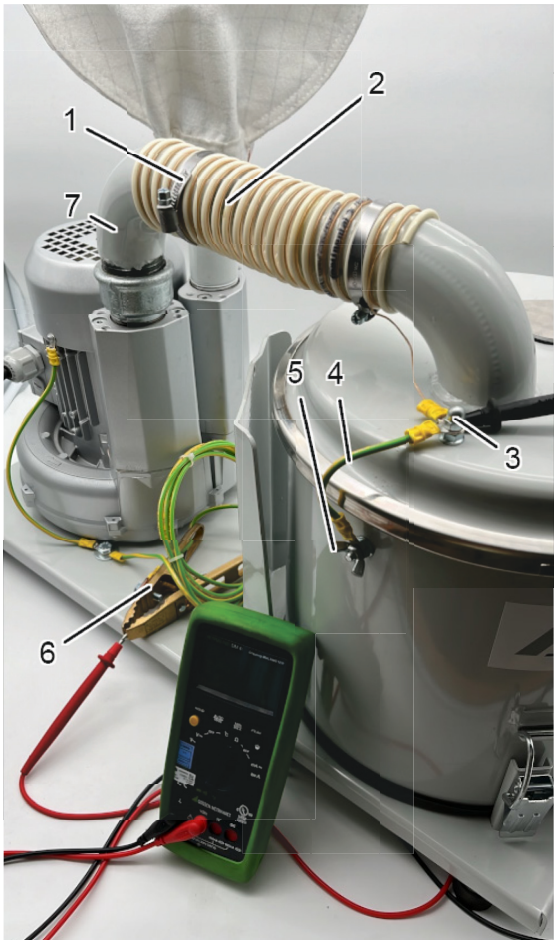
Step 2

Required tools:

- ⚒ Cleaning agent

Work steps:

1. Clean the contact surfaces of the clamping bracket to prevent transfer resistance of the grounding.
2. Close the clamping brackets.
3. Check the play of the clamping brackets.
4. In the event of damage to the clamping brackets, putting into operation is impossible.



Step 3

Required tools:

- ⚒ 7 mm external hex socket
- ⚒ Multimeter

Work steps:

1. Secure the clamp (1) to the port (7) to secure the suction hose (2) against unintentional detachment.
2. Connect the ground cable (4) to the wing nut (5) hand tight.
3. Clamp a multimeter between the ground terminal (6) and the grounding pole (3) on the lid.
4. Check the resistance value.
5. Make sure that the measured resistance value <1 Ohm.
6. Disconnect the multimeter.

Step 4

Required tools:

⚒ Multimeter

Work steps:

1. Mount the conductor cleaning device onto the system.
2. Install the ground terminal on the steel structure of the conductor cleaning device.
3. Check the connection between the steel structure and the grounding point on the lid again.
4. Make sure that the measured resistance value <1 Ohm.
5. Put the conductor cleaning device into operation.

9 TRANSPORT AND STORAGE

9.1 Safety instructions for transport and storage

NOTICE!

Damage due to improper transport or storage. Improper transport or storage may cause significant property damage!

- ► Storage temperature: 0 °C to +45 °C
- ► Storage location: Indoors, dry, no exposure to chemicals.
- ► Do not expose to direct sunlight.
- ► Exercise caution and observe the symbols on the packaging while unloading the pieces at delivery or during transport on the facilities.

9.2 Transport inspection

Check the delivery for completeness and transport damage upon receipt!

If any external damage is found:

- Refuse delivery or accept delivery only conditionally.
- Note the scope of the damage in the transport documents or on the carrier's delivery note.

NOTICE!

The delivery may be damaged during transport!

Report all defects as soon as they are found. Claims for damages can only be made during the applicable period.

- ► Document and report the defects found.

9.3 Assemblies and individual parts

All units and individual parts are packaged in cardboard boxes for transport and storage.

10 DISASSEMBLY AND DISPOSAL

10.1 Preparation for disassembly

- Switch off the system and secure it against switching back on.
- Physically disconnect the entire power supply from the system.
- Loosen and remove all screws.

DANGER!

Danger of death due to electrical current!

Contact with live parts can result in life-threatening injuries.

► Make sure that the relevant components are not live or under voltage, and that there is no unauthorized approximation.

10.2 Safety instructions for removal/replacement

During disassembly, always observe the information in section 3.3.1 .

WARNING!

Risk of death from improper replacement or removal!

Errors during the removal or replacement of components may cause life-threatening situations or significant property damage

► Observe the safety instructions before beginning any removal work.

CAUTION!

All accessories must be checked for wear.

Only defect-free parts may be reused.

► Use only genuine VAHLE spare parts.

10.3 Disposal

When the system reaches the end of its useful life, the system must be dismantled and disposed of in an environmentally sound manner in accordance with the valid local regulations and laws.

NOTICE!

Electronic scrap is hazardous waste. For its disposal, please observe the locally applicable regulations and relevant laws in the respective country.

11 PROTECTIVE MEASURES

11.1 EU conformity declaration

VAHLE

EC- declaration of incorporation

PAUL VAHLE GmbH & Co. KG
Westicker Str. 52, D-59174 Kamen,Deutschland

Herewith we declare, that the incomplete machine

Group	**02**
Product	**CLEANING DEVICE**
Type	**CLEANING DEVICE RHG** **incl. accessories**

is confirm with the basic requirements of the EC Machine Directive (2006/42/EC), article 1.1 until Article 1.7 as applicable.

The following harmonized standards respectively other technical norms and specifications have been applied:

EN 60204-1:	**2018**
EN 60204-32:	**2008**
EN 60664-1:	**2007**
EN ISO 12100:	**2010**

Furthermore we declare, that the relevant technical documentation according to Appendix VII, Part B, have been issued and we commit ourselves to forward the documents on request to the market regulators as written documents or electronically.
The commissioning of the incomplete machine is prohibited until the incomplete machine has been installed in a machine which then meets the requirements of the
EC Machine Directive 2006/42/EC.

Name of the person which is responsible for the documentation: Stefan Bürmann

Adress of the nominated person: see manufacturers adress

Kamen, 09.01.2023

i.V. Michael Heitmann

Michael Heitmann
Director Quality Management

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CE

TECHNICAL DOCUMENTATION