



MAINTENANCE INSTRUCTIONS

EN

Translation of the Original

ASM 340

Leak detector

PFEIFFER  **VACUUM**

Disclaimer of liability

These operating instructions describe all models and variants of your product. Note that your product may not be equipped with all features described in this document. Pfeiffer Vacuum constantly adapts its products to the latest state of the art without prior notice. Please take into account that online operating instructions can deviate from the printed operating instructions supplied with your product.

Furthermore, Pfeiffer Vacuum assumes no responsibility or liability for damage resulting from the use of the product that contradicts its proper use or is explicitly defined as foreseeable misuse.

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We reserve the right to make changes to the technical data and information in this document.

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1 About this manual



IMPORTANT

Read carefully before use.
Keep the manual for future consultation.

1.1 Validity

This maintenance manual is intended for customers of Pfeiffer Vacuum. It describes the maintenance procedures that the customer can perform on the respective product. **This document has to be used in conjunction with the operating instructions of the product with the same name.**

1.1.1 Applicable documents

Document	Part Number
ASM 340 Operating instructions	128863*

* also available at www.pfeiffer-vacuum.com

1.1.2 Products concerned

This document applies to products with the following part numbers:

Part Number	Description
JSVA02AxMx9x	ASM 340 Wet (all models)
KSBA02AxMM9A	ASM 340 Dry (all models)
MSXA02AxMM9A	ASM 340 Integrable (all models)

1.2 User target group

This maintenance manual is intended for all persons responsible for product maintenance, for the following operations:

- disassembly
- maintenance
- cleaning

The work described in this document must **only** be carried out by persons with suitable technical training (e.g. maintenance technicians) and have completed the necessary training as provided by Pfeiffer Vacuum.

1.3 Conventions

1.3.1 Instructions in the text

Usage instructions in the document follow a general structure that is complete in itself. The required action is indicated by an individual step or multi-part action steps.

Individual action step

A horizontal, solid triangle indicates the only step in an action.

- ▶ This is an individual action step.

Sequence of multi-part action steps

The numerical list indicates an action with multiple necessary steps.

1. Step 1
2. Step 2
3. ...

1.3.2 Pictographs

Pictographs used in the document indicate useful information.



Note



Tip



Check a key point on the graphic.



Apply the stated tightening torque.



Respect the chronological order of operations and/or assembly/disassembly direction.



Correct, right choice.



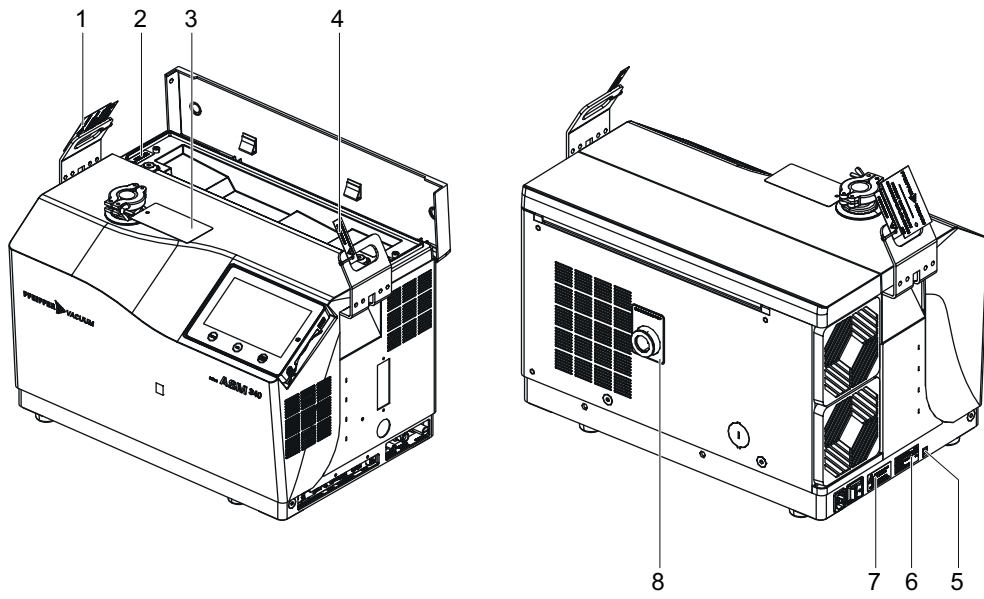
Incorrect, wrong choice.

1.3.3 Labels

I/O	Main switch/Circuit breaker
INPUTS/OUTPUTS	Inputs/Outputs communication interface connector
SERIAL	9-pin D-Sub RS-232 serial link connector
NETWORK	Ethernet connector
USB	USB connector
PROFIBUS DP	9-pin D-Sub Profibus connector
PROFINET IO	RJ-45 Profinet connector

1		This label indicates that the product has been certified compliant with quality control upon leaving the factory.
2		This label indicates that some of the internal parts are electrically live and could cause electrical shock in case of contact. <ul style="list-style-type: none"> Disconnect the main power supply cable from the product before removing the cover.
3		Wet Model only This label indicates that the backing pump is drained at the factory. The oil must be filled before the detector is put into service for the first time.
4		This label indicates that the product must be handled using the devices identified by this label. <ul style="list-style-type: none"> Comply with the rules for moving the equipment, taking weight and dimensions into account.
5		This label indicates that the product is subject to regulations for the treatment of electrical and electronic equipment waste (refer to the EC declaration of conformity for the product).

6		<p>Product rating plate.</p> <table border="1"> <tr> <td>1</td> <td>Weight</td> <td></td> <td>5</td> <td>Part number</td> </tr> <tr> <td>2</td> <td>Use voltage</td> <td></td> <td>6</td> <td>Description</td> </tr> <tr> <td>3</td> <td>Use frequency</td> <td></td> <td>7</td> <td>Serial number</td> </tr> <tr> <td>4</td> <td>Maximum power consumption</td> <td></td> <td>8</td> <td>Date of manufacture</td> </tr> </table>	1	Weight		5	Part number	2	Use voltage		6	Description	3	Use frequency		7	Serial number	4	Maximum power consumption		8	Date of manufacture
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7		<p>This label indicates that some of the internal parts are electrically live and could cause electrical shock in case of contact.</p> <ul style="list-style-type: none"> Do not use the product if the main power supply cable is not earthed. Disconnect the main power supply cable from the product before servicing the product. 																				
8		<p>Integrable model only This label indicates that the connection hole for the external backing pump is on the rear side.</p>																				
-		<p>This label guarantees to the user that the product packaging has not been opened since leaving the factory.</p>																				
-		<p>This label indicates that the product has been customized at the customer's request.</p>																				
-		<p>This label indicates the grounding point on the product.</p>																				
-		<p>For service centers use only (Example)</p>																				
-		<p>This label indicates the MAC address for the options installed in the product. (Example)</p>																				
-		<p>This label provides information regarding firmware installed in the product. (Example)</p> <table border="1"> <tr> <td>1</td> <td>Firmware name</td> <td></td> <td>3</td> <td>Firmware checksum</td> </tr> <tr> <td>2</td> <td>Firmware version</td> <td></td> <td>4</td> <td>Publication date</td> </tr> </table>	1	Firmware name		3	Firmware checksum	2	Firmware version		4	Publication date										
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2 Safety

2.1 General safety information

The following 4 risk levels and 1 information level are taken into account in this document.

DANGER

Immediately pending danger

Indicates an immediately pending danger that will result in death or serious injury if not observed.

- ▶ Instructions to avoid the danger situation

WARNING

Potential pending danger

Indicates a pending danger that could result in death or serious injury if not observed.

- ▶ Instructions to avoid the danger situation

CAUTION

Potential pending danger

Indicates a pending danger that could result in minor injuries if not observed.

- ▶ Instructions to avoid the danger situation

NOTICE

Danger of damage to property

Is used to highlight actions that are not associated with personal injury.

- ▶ Instructions to avoid damage to property



Notes, tips or examples indicate important information about the product or about this document.

2.1.1 Safety instructions

All safety instructions in this document are based on the results of the risk assessment carried out in accordance with Low-Voltage Directive 2014/35/EU regarding electrical safety. Where applicable, all life cycle phases of the product were taken into account.

WARNING

Risk of electric shock due to non-compliant electrical installations

This product uses mains voltage for its electrical supply. Non-compliant electrical installations or installations not done to professional standards may endanger the user's life.

- ▶ Only qualified technicians trained in the relevant electrical safety and EMC regulations are authorized to work on the electrical installation.
- ▶ This product must not be modified or converted arbitrarily.

WARNING

Risk of electric shock in case of contact with products that are not electrically isolated

When powering off _mains switch to **O**_, certain components located between the mains connection and the circuit breaker will still contain an electric charge (live). There is a risk of electric shock in case of contact.

- ▶ Make sure that the mains connection is always visible and accessible so that it can be unplugged at any time.
- ▶ Disconnect the mains cable from the electrical network before working on the product.
- ▶ Wait 5 minutes after power-off before working on the product and/or removing the cover(s).

⚠ WARNING

Risk of serious injury due to falling objects

When transporting parts/components and during product maintenance, there is a danger of injury caused by loads slipping or falling.

- ▶ Carry small and medium-size components with both hands.
- ▶ Transport components that weigh more than 20 kg using suitable lifting gear.
- ▶ Wear safety shoes with steel toes in accordance with directive EN 347.

⚠ WARNING

Risk of burns in case of contact with hot surfaces

For the operator's safety, the products are designed to avoid thermal risk. However, specific operating conditions may exist that require extra caution on the part of the operator due to the high temperatures (surfaces > 70 °C for parts inside the cover(s)).

- ▶ Wait for the product to fully cool down before working on it.
- ▶ Protective gloves must be worn in accordance with standard EN ISO 21420.

⚠ WARNING

Health risk related to residual traces on the parts tested

A leak detection operation must be carried out under environmental conditions that do not present any risks to the operator and the equipment. The user and/or integrator of the product are fully responsible for the operational safety conditions of the equipment.

- ▶ Do not test parts or equipment with traces of harsh, chemical, corrosive, inflammable, reactive, toxic, or explosive substances, nor condensable vapors, even in small amounts.
- ▶ Apply the relevant safety instructions in accordance with local regulations.

⚠ CAUTION

Risk of pinching when handling the storage box cover

- ▶ Be careful not to leave your fingers under the cover when closing.

⚠ DANGER

Health hazard in case of contact with components contaminated

The components of the pumping circuit and the analyzer cell are contaminated with the gases pumped through the tested parts. These gases may be toxic, corrosive and/or reactive. Any contact with the contaminated parts or by-products generated by the process may be injurious to health.

- ▶ Wear appropriate protective equipment when performing maintenance on the components of the pumping line, vacuum block and analyzer cell.
- ▶ Ventilate the area thoroughly or carry out the maintenance under an extraction hood.
- ▶ Do not eliminate the by-products/residue as common waste; have them destroyed by a qualified company where necessary.

⚠ WARNING

Poisoning risk in case of gas leakage after maintenance

When connecting/disconnecting pumping line components (pumps, analyzer cell, vacuum block, pipework, valves, etc.) for maintenance, the tightness of the installation is broken, potentially causing leakage of hazardous residual gases (pumped gases for parts to be tested).

- ▶ During disassembly, always protect the bearing surfaces of the connecting flanges between the pumping line components.
- ▶ After reassembly, perform a tightness check on the pumping line of the detection system.

⚠ WARNING

Risk linked to the various energy sources

Electrical circuit and other pressurized circuits as nitrogen are potential hazards.

- ▶ Always lock these sources of energy before working on the product.

⚠ DANGER**Risk of poisoning in case of contact with the operating fluid**

There is a potential poisoning danger if the operating fluid comes into contact with the skin or the vapor is inhaled.

- ▶ Wear protective gear such as gloves, glasses and a mask when handling the oil.

General maintenance recommendations

- When you order spare parts, you must mention everything featured on the product rating plate.
- Comply with all safety and risk prevention instructions in accordance with local safety standards.
- Wait 5 minutes after powering off before working on the electrical components.
- Regularly check compliance with all precautionary measurements.
- Do not turn on the product if the covers are not in place.
- Fill in the declaration of contamination form available on our website. Attach it to the product before shipping to one of our Pfeiffer Vacuum service centers.
- Use the original packaging to return the product to a Pfeiffer Vacuum service center: the manufacturer shall not be held liable for damage resulting from transport in unsuitable packaging.

2.1.2 Precautions**Duty to provide information on potential dangers**

The product holder or user is obliged to make all operating personnel aware of dangers posed by this product.

Every person who is involved in the installation, operation or maintenance of the product must read, understand and adhere to the safety-related parts of this document.

**Obligation to provide personal protective equipment**

The operators or employers are obliged to provide the user of the product with the necessary personal protective equipment (PPE).

Persons responsible for installing, operating and repairing the product must wear PPE for safety.

**Infringement of conformity due to modifications to the product**

The Declaration of Conformity from the manufacturer is no longer valid if the operator changes the original product or installs additional equipment.

- Following the installation into a system, the operator is required to check and re-evaluate the conformity of the overall system in the context of the relevant European Directives, before commissioning that system.

**Installation and use of the accessories**

The products can be fitted with special accessories.

The installation, use and refurbishment of the connected accessories are described in detail in the respective operating instructions.

- Only use original accessories.
- Accessory part numbers (see chapter “Accessories”).

Only qualified personnel trained in safety regulations (EMC, electrical safety, chemical pollution) are authorized to carry out the installation and maintenance described in this manual. Our service centers can provide the necessary training.

- ▶ Do not remove the blanked-off flange from the inlet port while the product is not in use.
- ▶ Do not expose any part of the human body to the vacuum.
- ▶ Follow the safety and accident prevention requirements.
- ▶ Regularly check compliance with all precautionary measurements.
- ▶ Do not turn on the product if the cover is not in place.
- ▶ Do not move the product while it is in use (product powered on).

3 General information

3.1 Spare parts



Replacement of defective parts

The initial safety conditions of the product call into question if non-original parts are used.

- Use only spare parts available for order from Pfeiffer Vacuum Service ([see chapter "Spare parts", page 45](#)).
- To identify the product and communicate with Pfeiffer Vacuum look at the product's rating plate.

3.2 Preparatory work

The detector does not require any maintenance at the customer's premises, except for the sub-assembly maintenance described in this manual. All other maintenance must be carried out by our service center ([see chapter "Service solutions by Pfeiffer Vacuum", page 43](#)).

NOTICE

Damage to the equipment if a detector is handled while switched on

If it is necessary to move or work on the product, the user must first make sure that the detector is fully shut down, otherwise there is a risk of damage to some of the detector components. When the main switch/circuit breaker is set to **O**:

- ▶ Unplug the power cable.
- ▶ Wait for the control panel screen to turn off completely before working on the product and/or removing the cover(s).
- ▶ Wait 5 minutes after power-off before working on the product.

Procedure

To ensure the proper operation of the detector after on-site maintenance, follow the recommendations provided below:

- ▶ Handle the detector so it can be moved in the maintenance area (see chapter "Handling" of the Operating instructions.)
 - Clean, dust-free room.
- ▶ Wear suitable protective equipment.
- ▶ Use the recommended tools for each maintenance operation.
 - If necessary, a maintenance set is available to order (see chapter "Tools").
- ▶ Always protect the surfaces of connecting flanges (analyzer cell, pumps and pipework).
- ▶ After reassembly, perform a leak test on the replaced sub-assembly.

4 Maintenance frequency and responsibilities

Maintenance level 1 and 2 operations are described in this manual.

Level 3 maintenance operations require a technician from the Pfeiffer Vacuum Service network.

Operation	Number of hours in use	Level ¹⁾	Site ²⁾
Backing pump RVP 1015 (Wet Model)			
Oil level and appearance checking	According to conditions of use	2	OS
Oil change replacement	8,600 hours 4,300 hours in case of harsh usage (with significant flow or contamination)	2	OS
Oil mist separator replacement	8,600 hours 4,300 hours in case of harsh usage (with significant flow or contamination)	2	OS
Pump replacement	As needed	3	OS
Backing pump MVP 020-3DC (Dry Model)			
Diaphragms and valves replacement	17,200 hours	3	OS
Pump replacement	As needed	3	OS
Backing pump (Integrable model)			
Adhere to the maintenance intervals for the backing pump connected to the detector.	-	-	-
turbomolecular pump SplitFlow 50			
Operating fluid reservoir replacement	4 years or 17,200 hours	2	OS
Bearings replacement	4 years or 17,200 hours	3	OS
TC 110 electronic unit replacement	As needed	3	OS
Pump replacement	As needed	3	OS
Analyzer cell			
Seal replacement	As needed	2	OS
Filament replacement	As needed	2	OS
Overhaul of analyzer cell	As needed	3	OS
Valves			
All valves replacement	500,000 tests or 4 years	3	OS
Filters			
Cleaning or replacement of the air filter	According to conditions of use	1	OS
Cleaning or replacement of the inlet vent filter	According to conditions of use	2	OS
Pirani gauge			
Setting	According to conditions of use Every 4,300 hours (recommended)	1	OS
Gauge replacement	As needed	2	OS
Fans			
Fan replacement	As needed	2	OS
Fan air filter cleaning or replacement	According to conditions of use	1	OS
Calibrated leak			
Recalibration	Every 2 years (recommended)	2	WS
Leak detector			
Overhaul of the detector	According to conditions of use Every 4 years (recommended)	3	OS/WS
1) Maintenance level	2) Maintenance site		
<ul style="list-style-type: none"> • 1: Operator • 2: Technician with Pfeiffer Vacuum training • 3: Pfeiffer Vacuum maintenance technician 	<ul style="list-style-type: none"> • OS: on customer site • WS: Pfeiffer Vacuum service center 		

Maintenance time monitoring

The maintenance timers of the backing pump, the turbomolecular pump and the valves alert the operator that a maintenance operation must be carried out (see chapter “Timers before next maintenance” of the operating instructions).



How to contact us

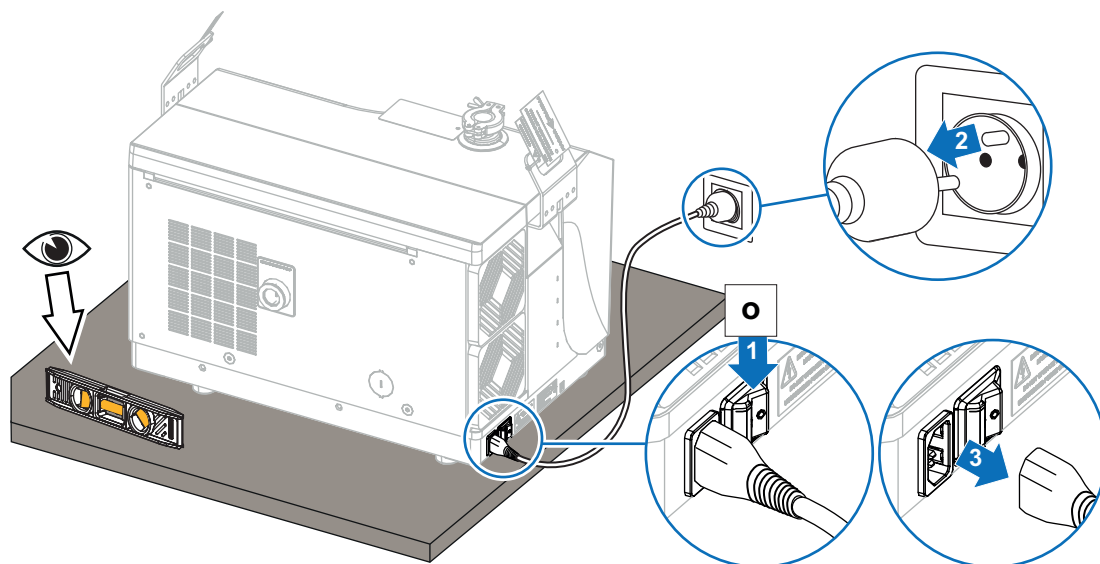
Product overhauls must be carried out by personnel with manufacturer training. Contact our nearest service center at the following e-mail address: [Pfeiffer Vacuum Service Support](mailto:Pfeiffer_Vacuum_Service_Support).

5 Service - Maintenance

5.1 Cleaning

- ▶ Clean the cover(s) with a soft, lint-free cloth and a product that will not damage the paint, painted surfaces or the labels.

5.2 Detector powering off



 The detector is installed on a horizontal work surface.

Pump stop due to power failure

When there is a mains power failure, the detector shuts down: it switches on again automatically when power is restored.

5.3 Air inlet before a maintenance operation

In order to allow the disassembly of vacuum circuit components, an air inlet is a necessary prerequisite.

Stop and vent

To carry out maintenance on vacuum circuit components, the vacuum circuit of the detector must be at atmospheric pressure.

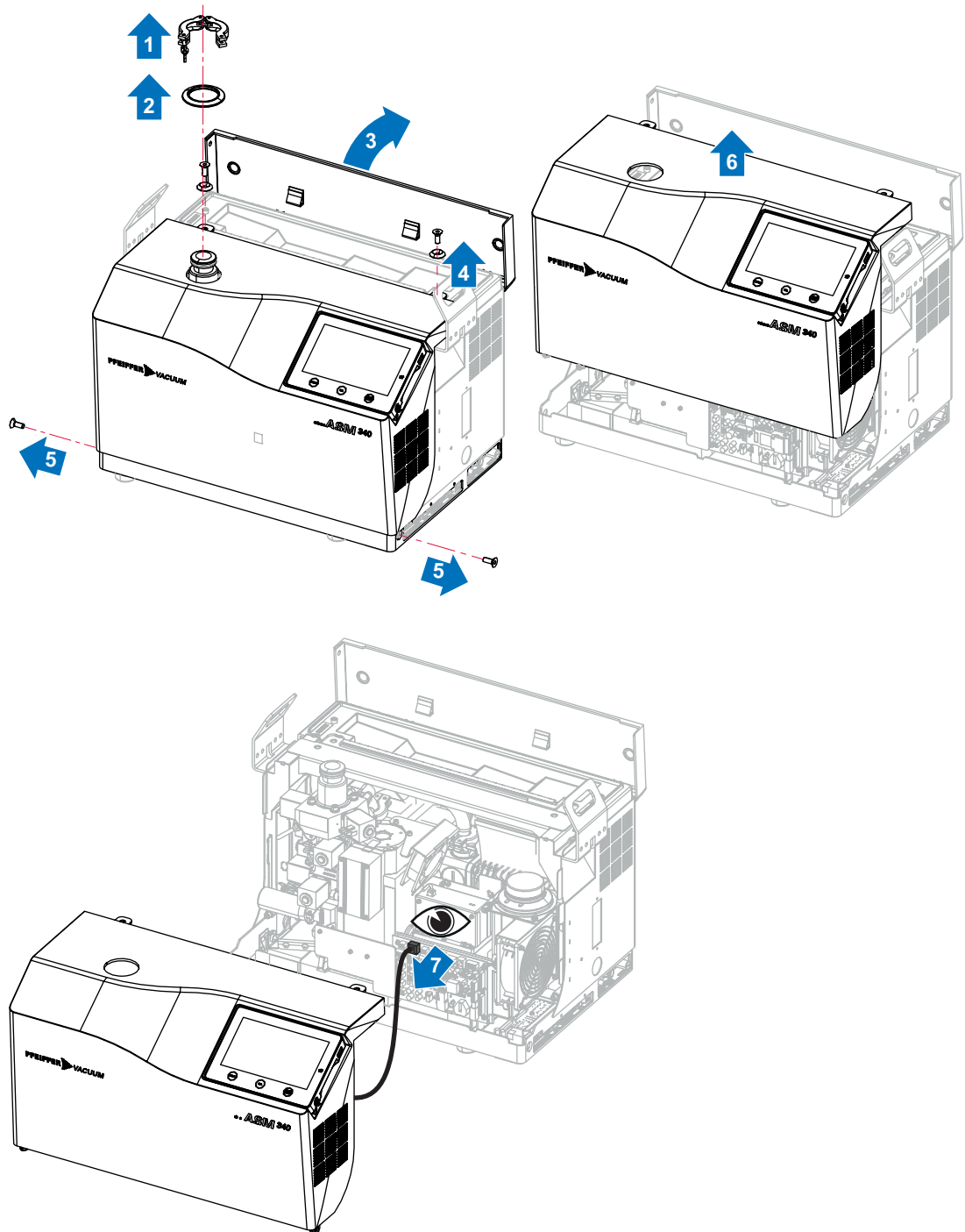
1. Press **[Stop and vent]**.
 - The turbomolecular pump slows to a speed that allows venting.
 - A message notifies the user when the leak detector can be shut down.
 - If the user does not wish to stop the detector, press **[Restart leak detector]**. The detector start-up screen is displayed.
2. Stop the leak detector.
3. Wait until the control panel turns off completely and unplug the mains power cable before working on the detector.


5.4 Front cover disassembly/reassembly

Prerequisite

- ▶ Power off the leak detector (see chapter "Powering Off").

Disassembly



 RJ9 connector on the supervisor board: connecting the control panel cable

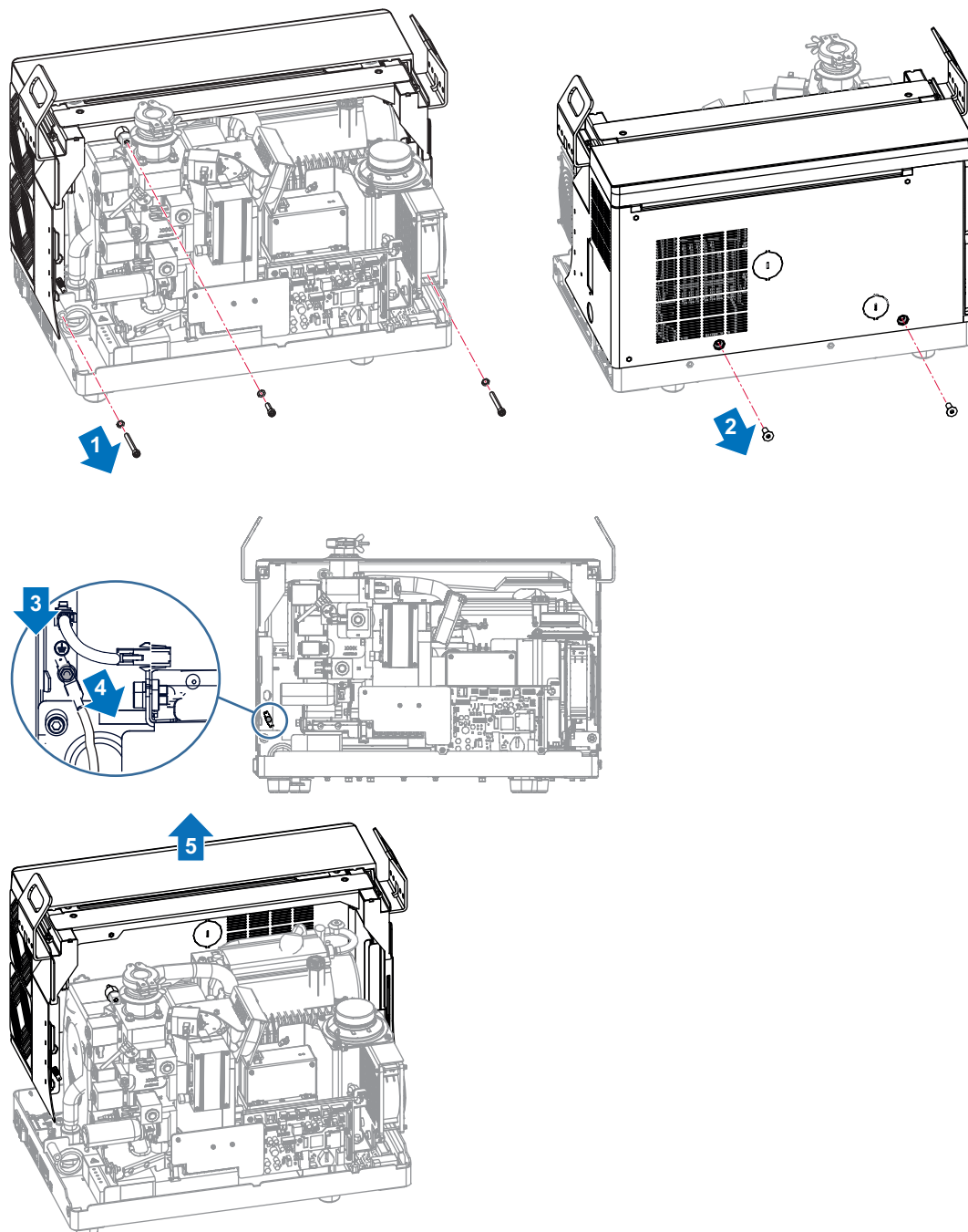
Reassembly

- ▶ Follow the disassembly steps in reverse.

5.5 Rear cover disassembly/Reassembly

Prerequisite

- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

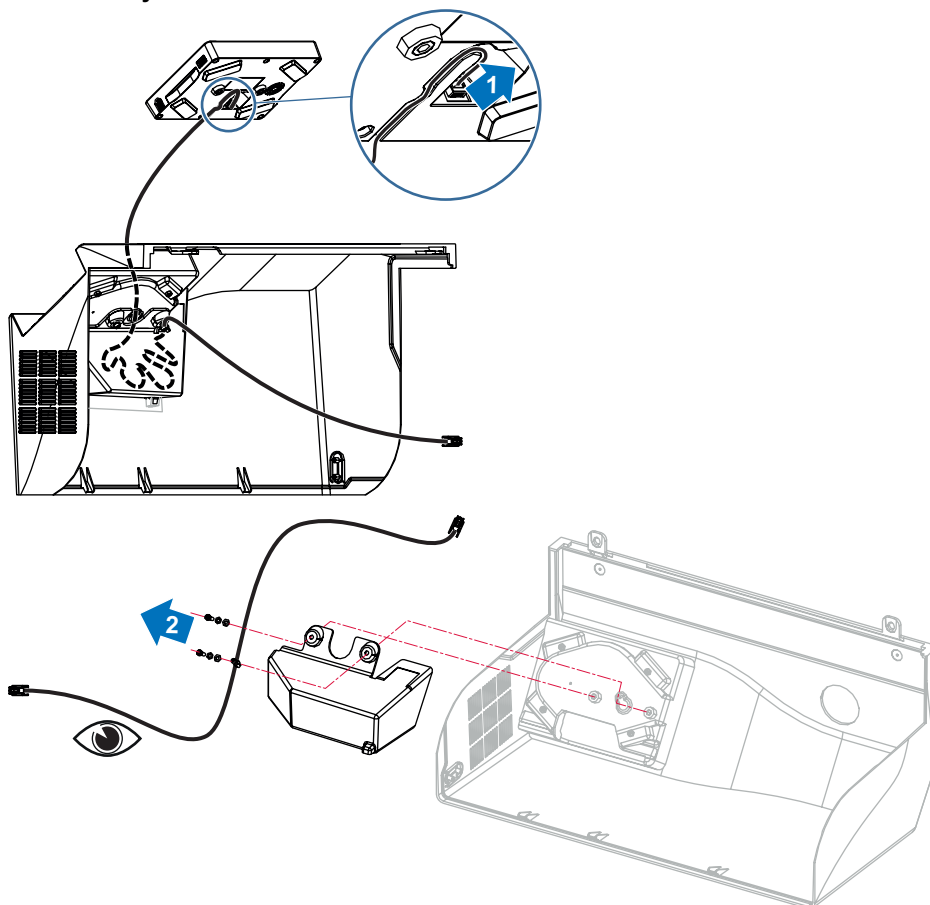
Disassembly**Reassembly**


Follow the disassembly steps in reverse.

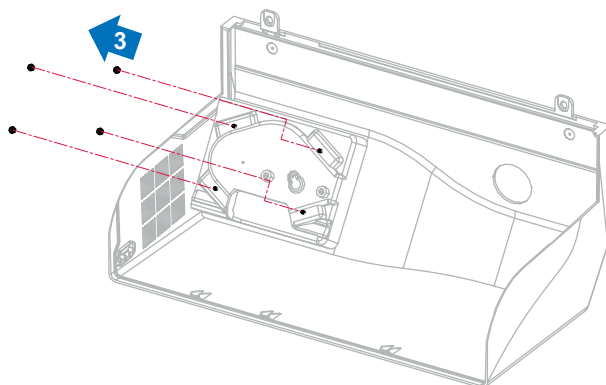
5.6 Front cover replacement**Prerequisite**

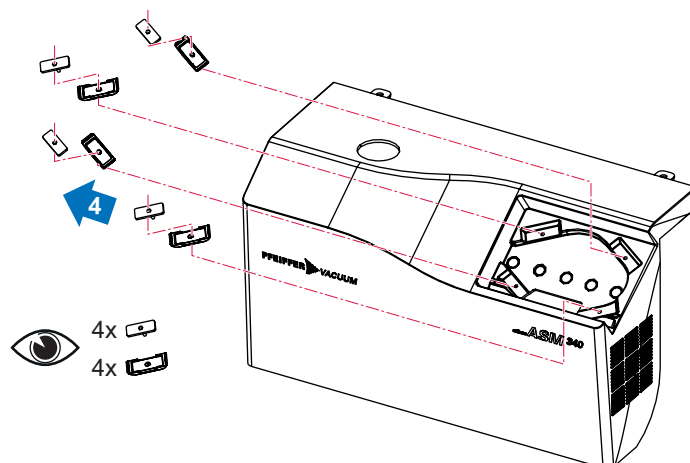
- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

Disassembly



 There are 25 turns between the RJ9 connector on the supervisor board and the fixing clamp.





 The 4 magnets and backplates are kept for reassembly.

Reassembly

- ▶ Follow the disassembly steps in reverse.

5.7 Internal calibrated leak replacement



Checking the condition of the internal calibrated leak

Change the internal calibrated leak if it has significant impact marks: it must be replaced.



Recalibration of a calibrated leak with tank

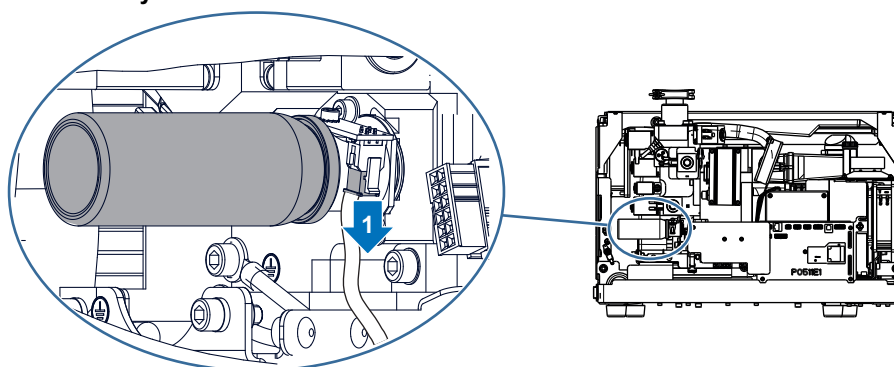
To guarantee the reliability of the test, we recommend that you regularly recalibrate (2 years recommended) every calibrated leak with tank to check its leak rate: this applies to both internal and external calibrated leaks.

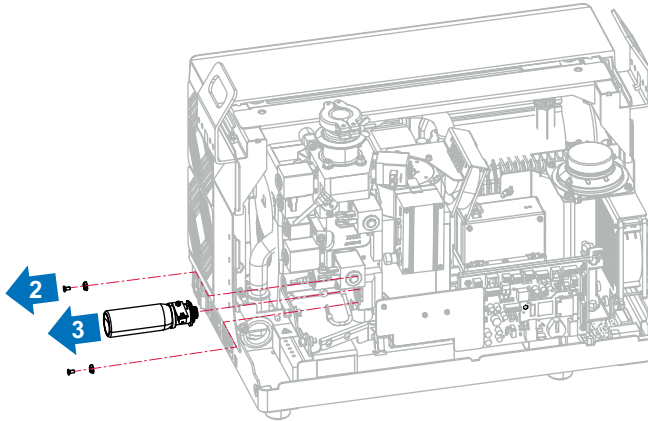
Return the calibrated leak for recalibration to the manufacturer's service center.

Prerequisite

- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

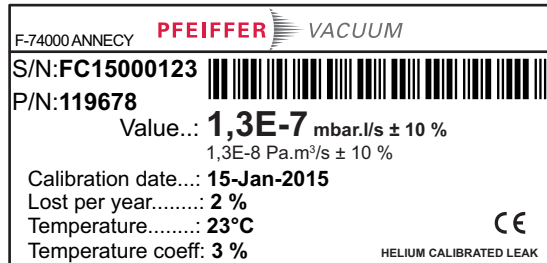
Disassembly





Reassembly

1. Follow the disassembly steps in reverse.
2. Update the parameters of the calibrated leak (see chapter “Calibrated leak setting” of the operating instructions).
 - This operation can be carried out with the information featured on the calibrated leak rating plate or the calibrated leak certificate supplied with the leak.



Example of calibrated leak rating plate

3. Perform a calibration on the detector.

Tightness test after calibrated leak maintenance

- ▶ Open the calibration valve to carry out the test.
- ▶ Spray a light flow of Helium 4 around the calibrated leak.
 - **leak rate measured <math> < 1 \cdot 10^{-8} \text{ mbar}\cdot\text{l/s} </math> ($1 \cdot 10^{-9} \text{ Pa}\cdot\text{m}^3/\text{s}$).**

5.8 Analyzer cell maintenance



Pollution of vacuum circuit components

During maintenance operations for vacuum circuit components, avoid any contamination which could subsequently result in the degassing of the parts. Special caution must be exercised to ensure cleanliness. To avoid this:

- Perform the maintenance in an appropriate area (clean, dust-free and ventilated).
- Use non-woven materials.
- Dust the parts with filtered dry air (unless otherwise stated).
- Wear unpowdered vinyl gloves (clean room gloves).

5.8.1 Analyzer cell disassembly/reassembly

⚠ WARNING

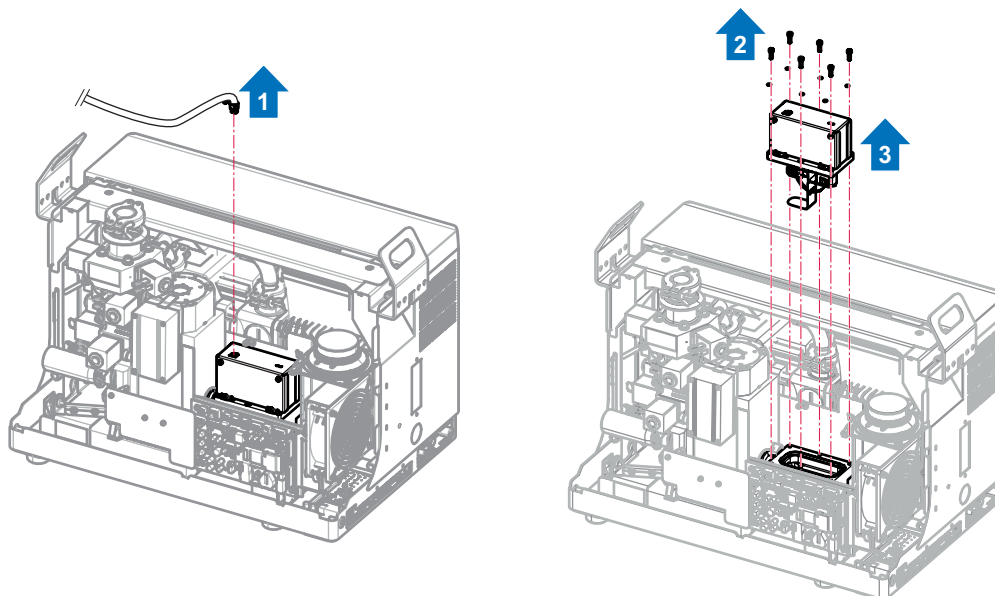
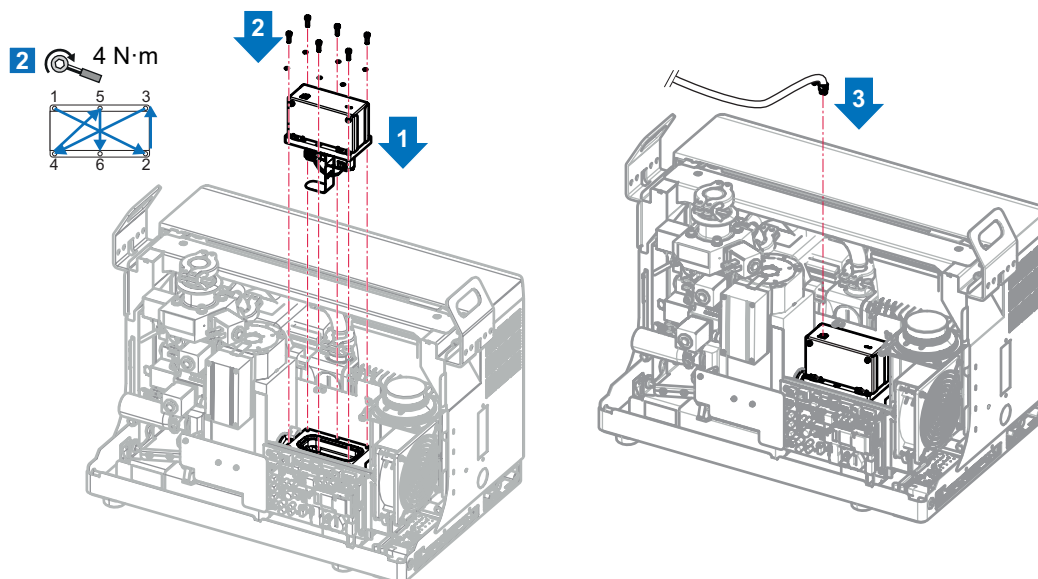
Risk of burns in case of contact with hot surfaces

For the operator’s safety, the products are designed to avoid thermal risk. However, specific operating conditions may exist that require extra caution on the part of the operator due to the high temperatures (surfaces > 70 °C for parts inside the cover(s)).

- ▶ Wait for the product to fully cool down before working on it.
- ▶ Protective gloves must be worn in accordance with standard EN ISO 21420.

Prerequisites

1. Make an air inlet on the vacuum circuit (see chapter "Air inlet before a maintenance operation").
2. Remove the front cover (see chapter "Front cover disassembly/reassembly").
3. Remove the fan (see chapter "Turbomolecular pump fan replacement").

Analyzer cell disassembly**Analyzer cell reassembly****Distortion of the measurement results with non-compliant analyzer cell**

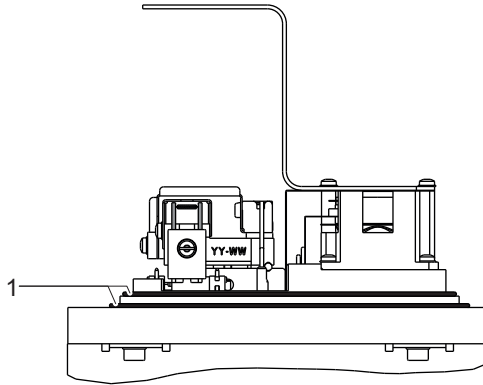
When it leaves the factory, the analyzer cell is set for the product in which it is installed.

The use of an analyzer cell different from the original component requires settings. Without these settings, the measurements made by the product are not correct. Only a Pfeiffer Vacuum service center can make these settings.

Tightness test after analyzer cell reassembly

- ▶ Spray a light flow of Helium 4 around the analyzer cell.
 - Leak rate measured $< 3 \cdot 10^{-10}$ mbar·l/s ($3 \cdot 10^{-11}$ Pa·m³/s).

5.8.2 Seal replacement



1 Seals

1. Remove the detector analyzer cell (see chapter “Disassembly/reassembly of the analyzer cell”).
2. Check the condition of the seals: change them if necessary.
3. Replace the 2 seals. **Never lubricate the seals.**

5.8.3 Filament replacement

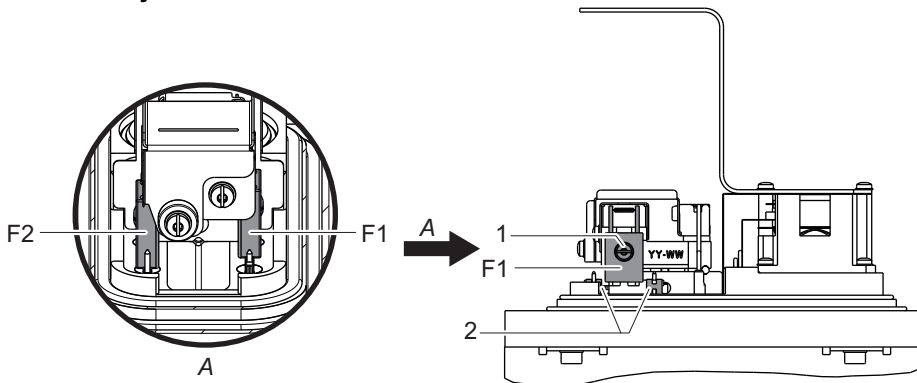
NOTICE

Distortion of product performance due to damaged filament

The new filament has a white deposit on the surface.
 With use, the white deposit oxidizes and turns black: this is normal.
 Any contact with the filament may damage it.

- ▶ Keep the filament in its protective box when it is not installed in the analyzer cell.
- ▶ Do not touch the filament with your fingers (even with gloves) or any other object.
- ▶ Do not clean the new or used filament with cloth or fingers.
- ▶ Do not dust the filament with pressurized air or by blowing on it.

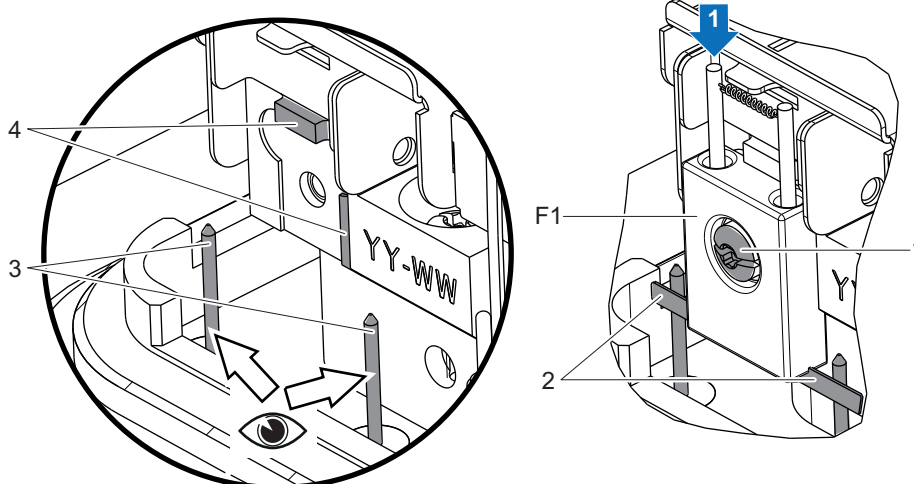
Disassembly




- | | |
|---------------|---------------------------|
| F1 Filament 1 | 1 Fixing screw and washer |
| F2 Filament 2 | 2 Fastening clips |

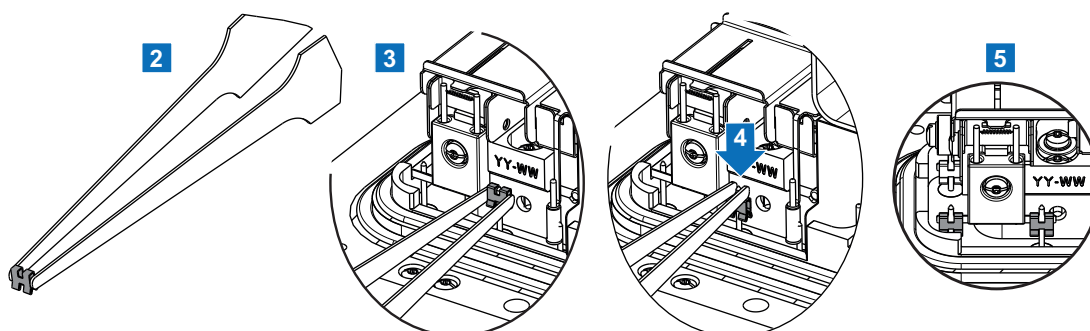
1. Remove the detector analyzer cell (see chapter “Disassembly/reassembly of the analyzer cell”).
2. Remove the fixing screw and washer of the defective filament.
3. Remove the 2 fastening clips using flat pliers (2 new clips are supplied with the spare filament).

Reassembly



- | | | | |
|----|-------------------------|---|-----------------|
| F1 | Filament 1 | 3 | Connectors |
| 1 | Fixing screw and washer | 4 | Centering stops |
| 2 | Filament strip | | |

 The connectors are perpendicular to the supporting surface and parallel to each other.



1. Place the new filament on its housing against both centering stops. Fix it with the screw and washer provided with the filament.
2. Fit the fastening clips on the connectors on each side of the filament.
3. Reassemble the analyzer cell (see chapter "Disassembly/reassembly of the analyzer cell").
4. Update the replaced filament maintenance counter from the menu (see chapter "Information" of the operating instructions).

5.9 Backing pump maintenance (Wet Model)

5.9.1 Oil level checking

For the pump to function in optimal conditions, the oil level must be checked regularly.

If the oil level is not between the minimum and maximum marks, readjust the level (see chapter "Filling the pump").

5.9.2 Oil quality checking

For the pump to function in optimal conditions, the oil quality must be checked regularly.

A thickening of the oil, accompanied by a blackening of the oil and a "burnt" odor, are signs of lubricant deterioration.

1. Drain the pump (see chapter "Draining the pump").
2. Flush the pump with new oil (see chapter "Flushing the pump").
3. Fill the pump with new oil (see chapter "Filling the pump").

5.9.3 Draining the pump

⚠ DANGER

Risk of poisoning in case of contact with the operating fluid

There is a potential poisoning danger if the operating fluid comes into contact with the skin or the vapor is inhaled.

- ▶ Wear protective gear such as gloves, glasses and a mask when handling the oil.

⚠ WARNING

Risk of intoxication due to components or devices contaminated with toxic substances

Toxic process substances contaminate some equipment parts. During maintenance operations, any contact with these toxic substances presents a health risk. The illegal disposal of toxic substances harms the environment.

- ▶ Observe the appropriate safety precautions and avoid health or environmental risks from toxic process substances.
- ▶ Wear personal protective equipment.
- ▶ Decontaminate the relevant parts before performing maintenance operations.

Tools/Consumables

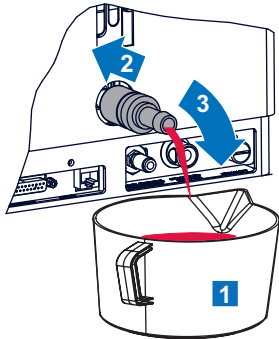
- 1 oil recovery container (capacity = 1.5 liter)
- 1 funnel supplied with the product
- 1 drain connector supplied with the product

Prerequisite

- ▶ Power off the leak detector (see chapter “Powering Off”).

Procedure

The pump must be drained when it is hot.



5.9.4 Flushing the pump

⚠ DANGER

Risk of poisoning in case of contact with the operating fluid

There is a potential poisoning danger if the operating fluid comes into contact with the skin or the vapor is inhaled.

- ▶ Wear protective gear such as gloves, glasses and a mask when handling the oil.

NOTICE

The product may be damaged if an unauthorized operating fluid is used

The pumps are tested at the factory using Pfeiffer Vacuum oil. Using any other oil may adversely affect the pump and its performance.

- ▶ It is **essential** that the oil recommended by the manufacturer is used.



Safety data sheets

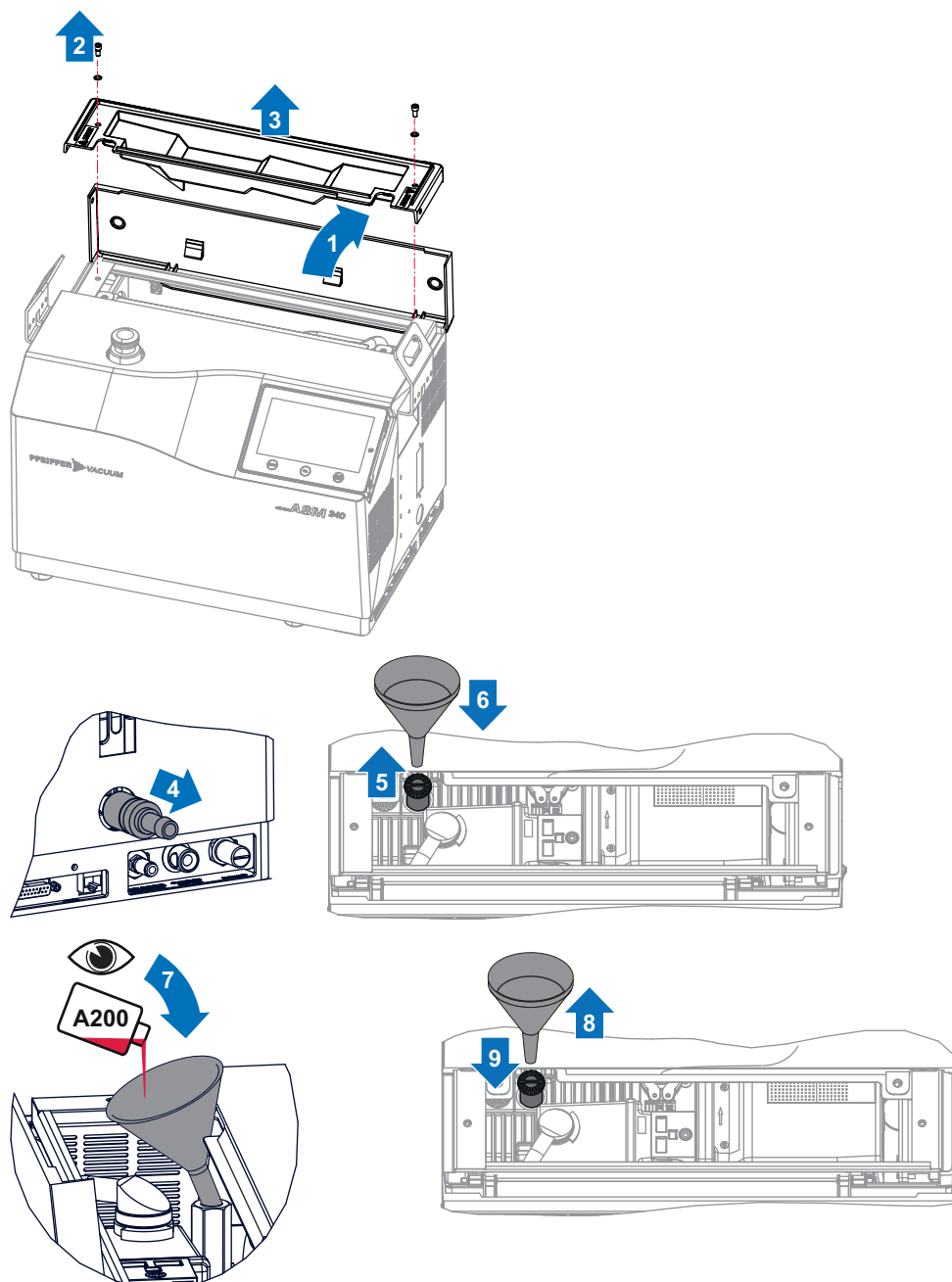
You can obtain the safety data sheets for operating fluids from Pfeiffer Vacuum on request, or from the [Pfeiffer Vacuum Download Center](#).

Tools/Consumables

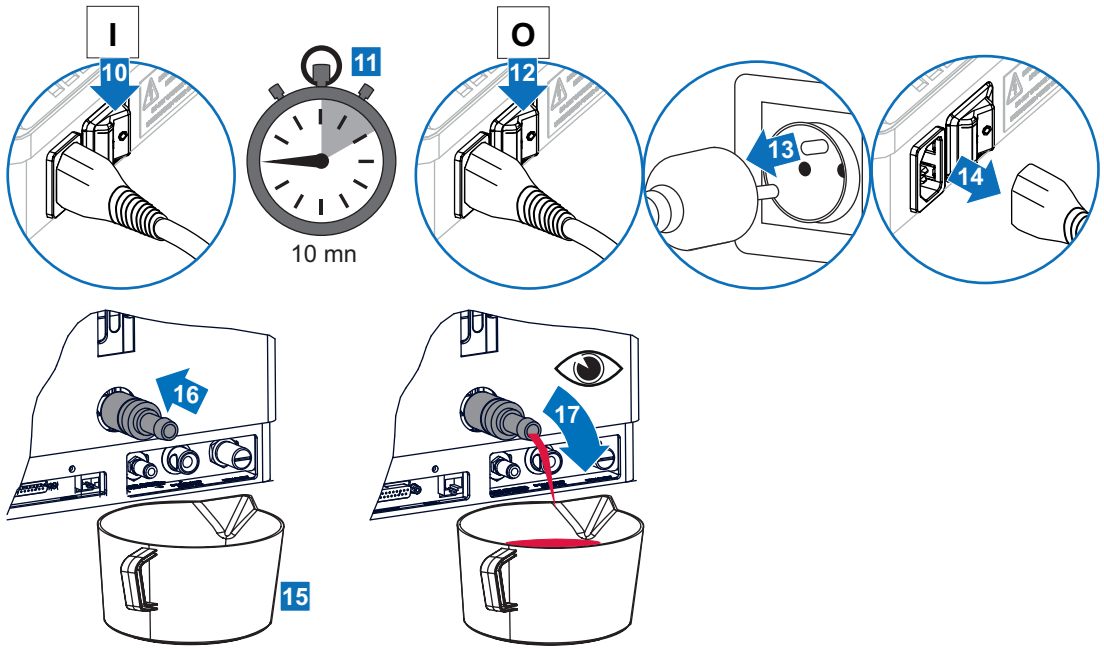
- 1 oil recovery container (capacity = 1.5 liter)
- 1 funnel supplied with the product
- 1 drain connector supplied with the product
- 1 A200 oil can (1 liter)

Prerequisites

1. Power off the leak detector (see chapter "Powering Off").
2. Drain the pump (see chapter "Draining the pump").



The oil can (1 liter) is poured in completely, very slowly.



 All of the oil that has been poured into the pump is collected in the tank.

5.9.5 Filling the pump

DANGER

Risk of poisoning in case of contact with the operating fluid

There is a potential poisoning danger if the operating fluid comes into contact with the skin or the vapor is inhaled.

- ▶ Wear protective gear such as gloves, glasses and a mask when handling the oil.

NOTICE

The product may be damaged if an unauthorized operating fluid is used

The pumps are tested at the factory using Pfeiffer Vacuum oil. Using any other oil may adversely affect the pump and its performance.

- ▶ It is **essential** that the oil recommended by the manufacturer is used.



Safety data sheets

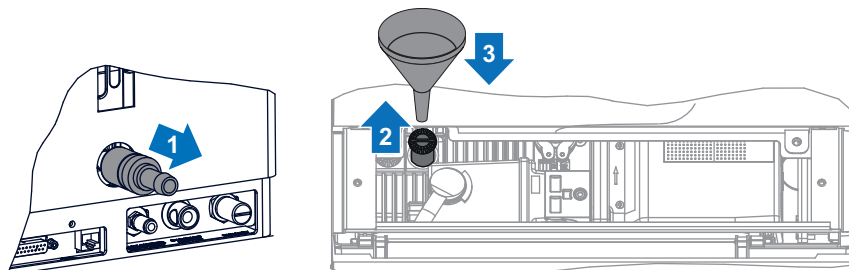
You can obtain the safety data sheets for operating fluids from Pfeiffer Vacuum on request, or from the [Pfeiffer Vacuum Download Center](#).

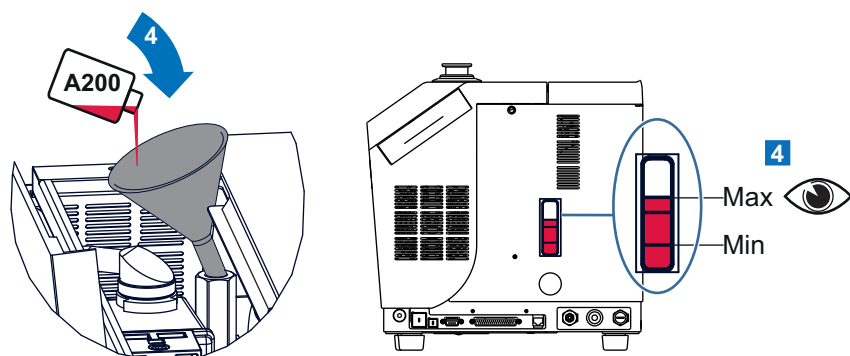
Tools/Consumables

- 1 funnel supplied with the product
- 1 A200 oil can (1 liter)

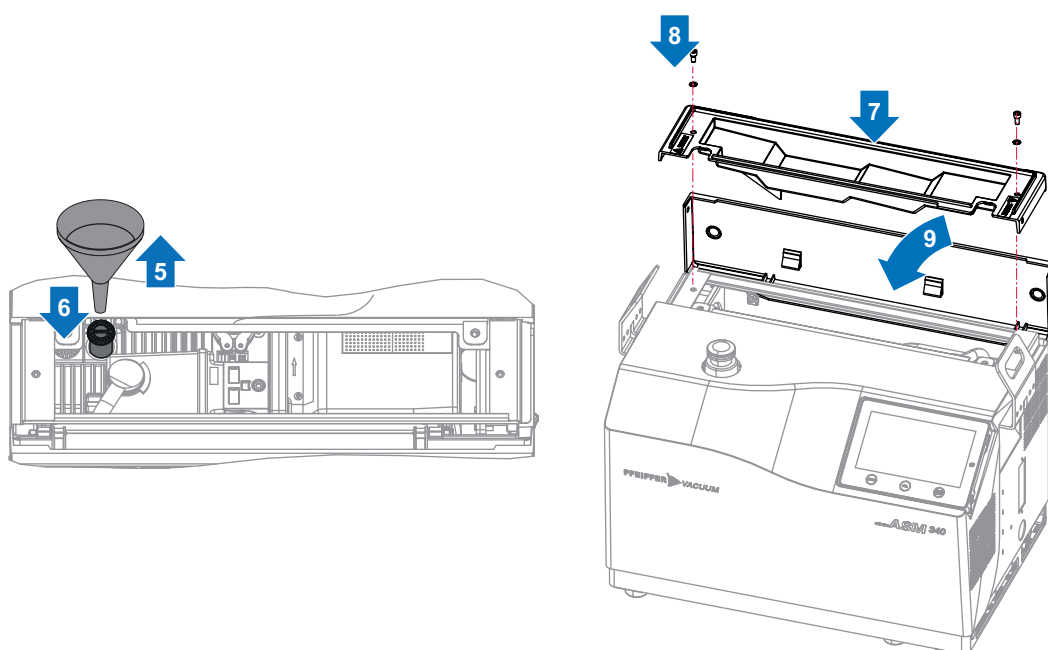
Prerequisites

1. Power off the leak detector (see chapter "Powering Off").
2. Flush the pump with new oil (see chapter "Flushing the pump").





 Oil filling is carried out until the maximum level is reached.

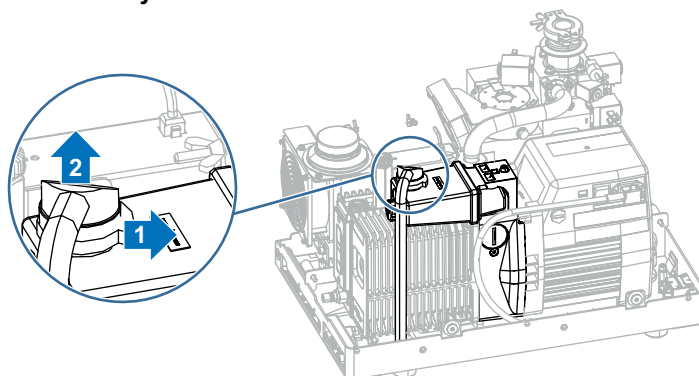


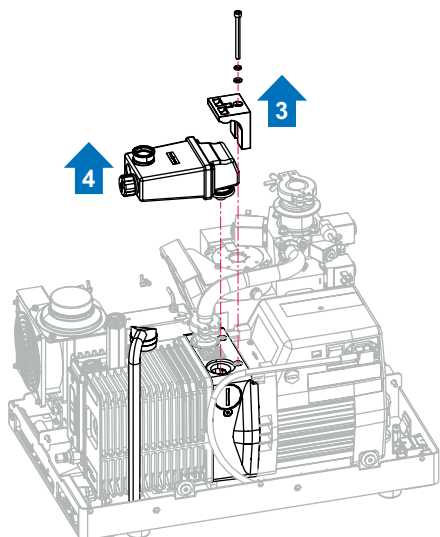
5.9.6 Internal oil mist separator replacement

Prerequisites

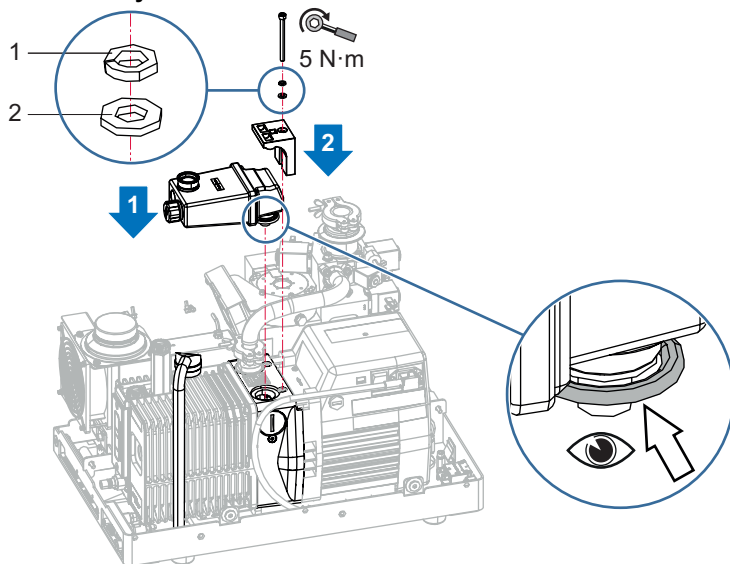
1. Remove the front cover (see chapter "Front cover disassembly/reassembly").
2. Remove the rear cover (see chapter "Rear cover disassembly/reassembly").


Disassembly





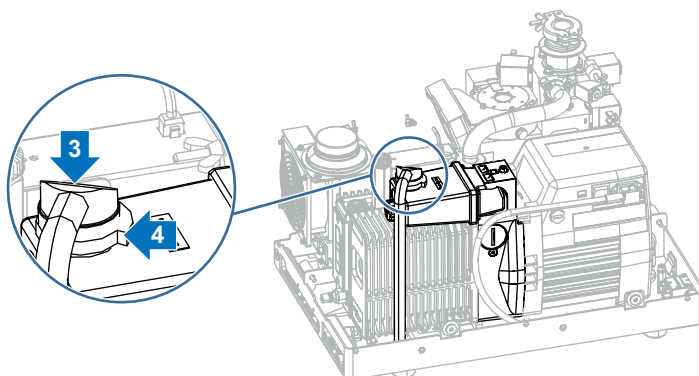
Reassembly



 **The seal must be present on the oil mist separator.**

1 Elastic split washer

2 Flat washer

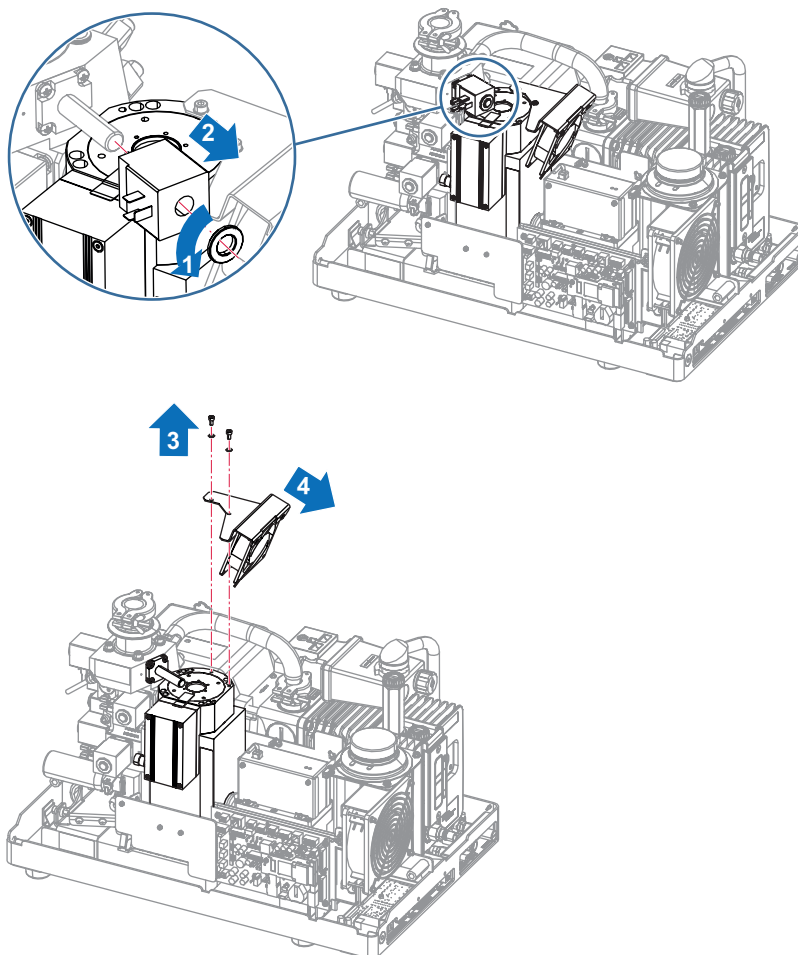


5.10 Maintenance of the turbomolecular pump

5.10.1 Access to the turbomolecular pump operating fluid reservoir

Prerequisites

1. Make an air inlet on the vacuum circuit (see chapter "Air inlet before a maintenance operation").
2. Remove the front cover (see chapter "Front cover disassembly/reassembly").
3. Remove the rear cover (see chapter "Rear cover disassembly/reassembly").



5.10.2 Turbomolecular pump operating fluid reservoir replacement

⚠ DANGER

Risk of poisoning in case of contact with the operating fluid

There is a potential poisoning danger if the operating fluid comes into contact with the skin or the vapor is inhaled.

- ▶ Wear protective gear such as gloves, glasses and a mask when handling the oil.

⚠ WARNING

Risk of intoxication due to components or devices contaminated with toxic substances

Toxic process substances contaminate some equipment parts. During maintenance operations, any contact with these toxic substances presents a health risk. The illegal disposal of toxic substances harms the environment.

- ▶ Observe the appropriate safety precautions and avoid health or environmental risks from toxic process substances.
- ▶ Wear personal protective equipment.
- ▶ Decontaminate the relevant parts before performing maintenance operations.

NOTICE

The product may be damaged if an unauthorized operating fluid is used

The pumps are tested at the factory using Pfeiffer Vacuum oil. Using any other oil may adversely affect the pump and its performance.

- It is **essential** that the oil recommended by the manufacturer is used.



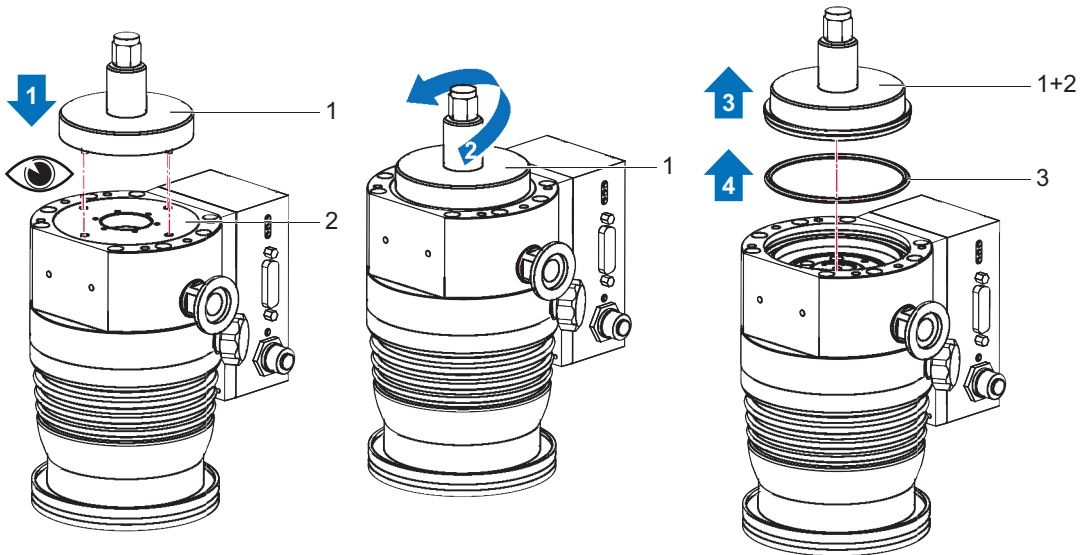
Safety data sheets

You can obtain the safety data sheets for operating fluids from Pfeiffer Vacuum on request, or from the [Pfeiffer Vacuum Download Center](#).

Prerequisites

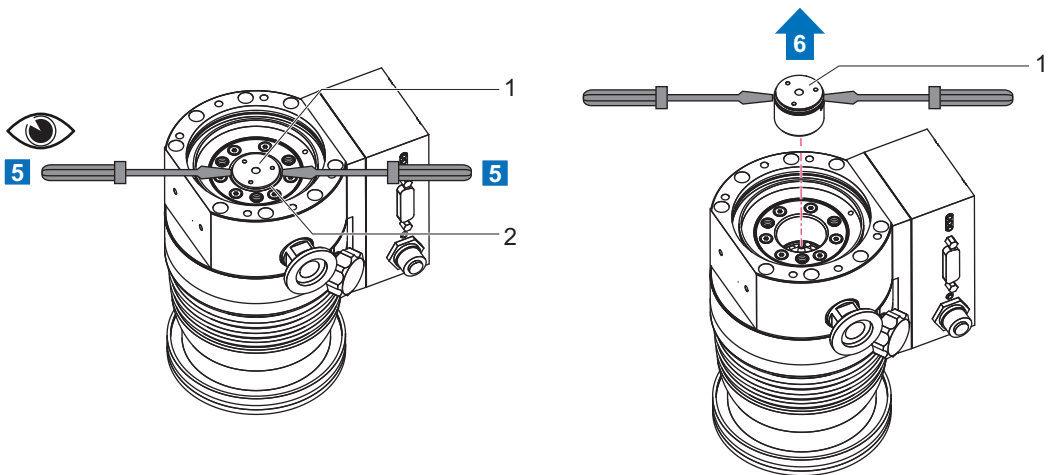
1. Remove the front cover (see chapter "Front cover disassembly/reassembly").
2. Remove the rear cover (see chapter "Rear cover disassembly/reassembly").
3. Access the operating fluid reservoir (see chapter "Access to the turbomolecular pump operating fluid reservoir").


Operating fluid reservoir disassembly



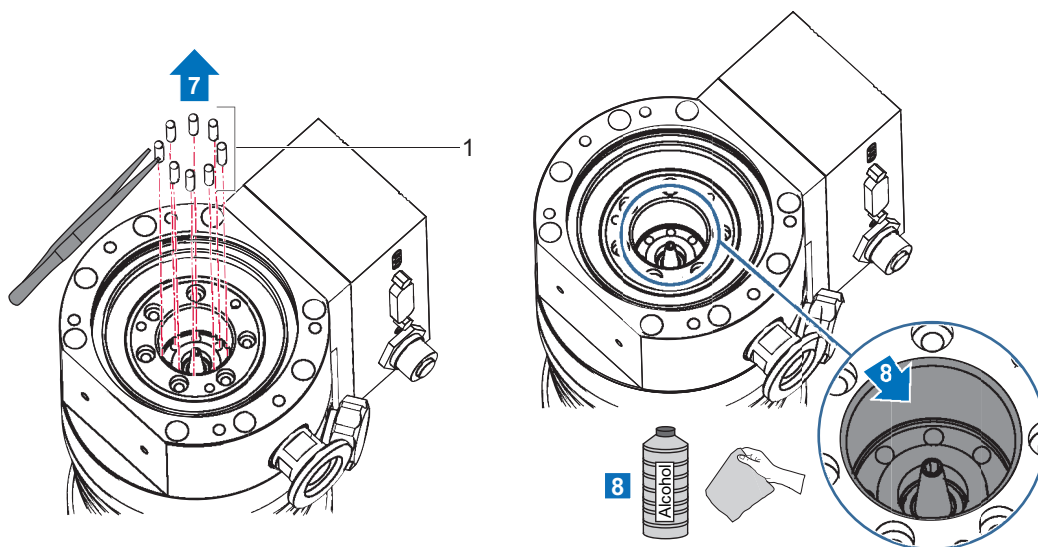
The pins of the spanner fit into the notches in the housing cover.

- | | |
|-----------------------------|----------|
| 1 Spanner for housing cover | 3 O-ring |
| 2 Housing cover | |



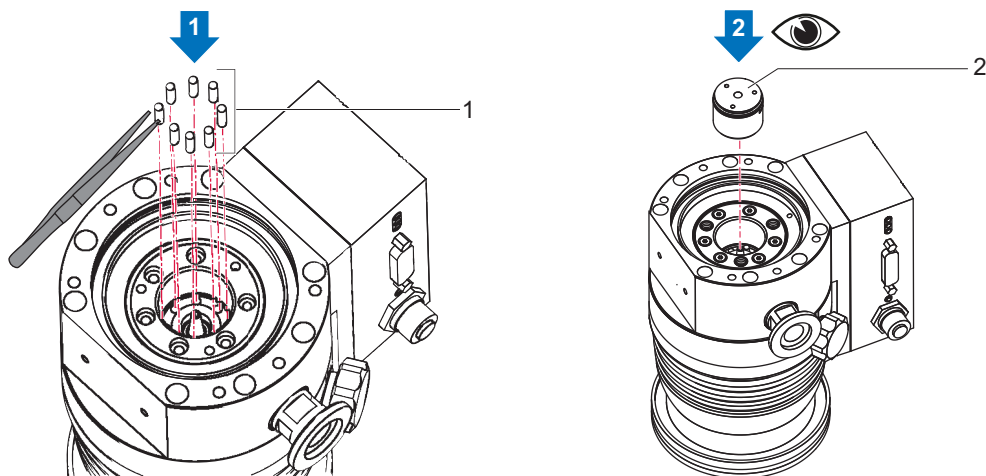
 The 2 flat screwdrivers in the circumferential groove of the operating fluid reservoir are positioned approximately 180° to each other.


- 1 Operating fluid reservoir
- 2 Circumferential groove
- 3 O-ring



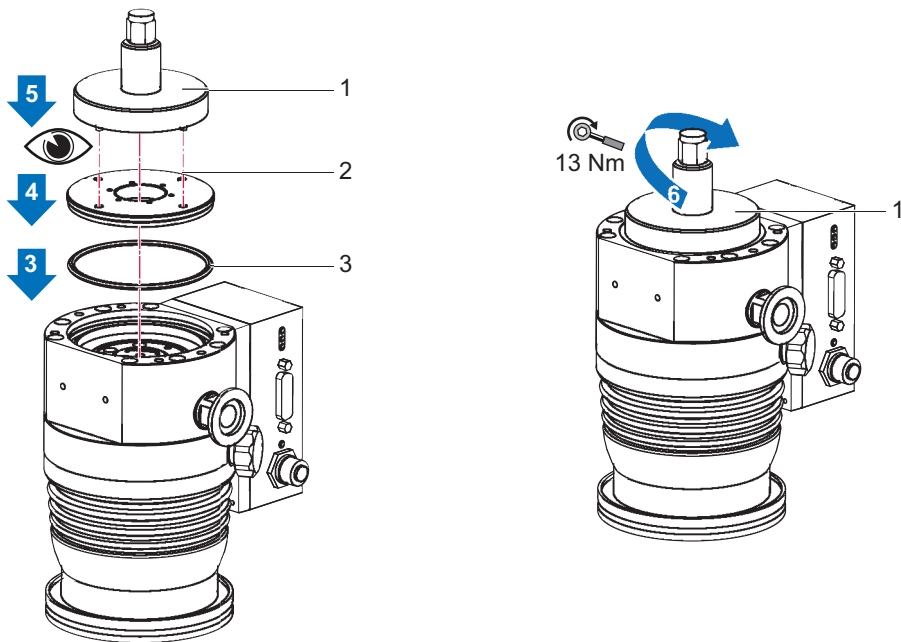
- 1 Capillary rod (x8)

Operating fluid reservoir reassembly



 The operating fluid reservoir slides smoothly out of its container in the bearing support frame. The operating fluid reservoir sits freely in the pump.

- 1 Capillary rod (x8)
- 2 Operating fluid reservoir



 The pins of the spanner fit into the notches in the housing cover.

- 1 Spanner for housing cover
- 2 Housing cover
- 3 O-ring

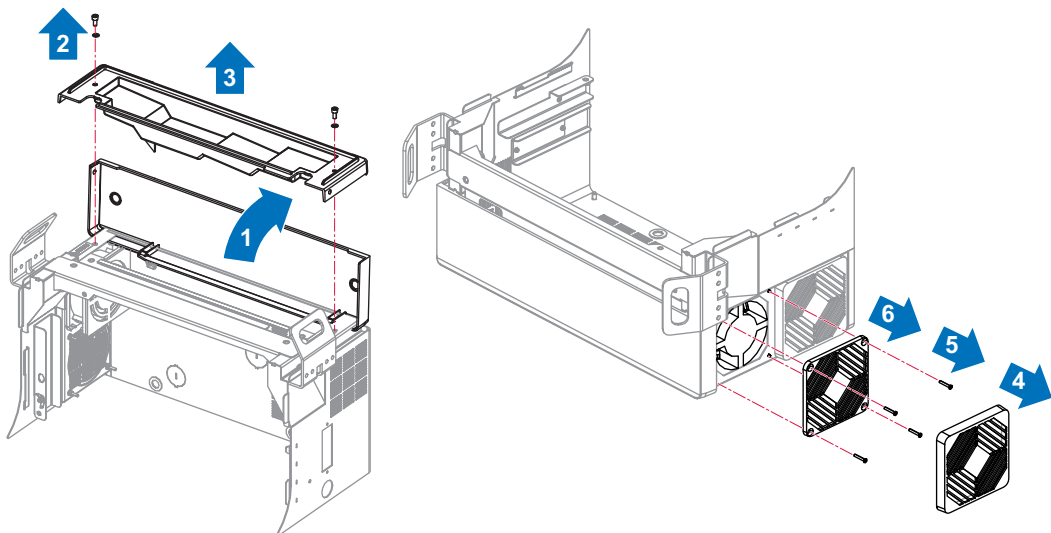
5.11 Fan maintenance

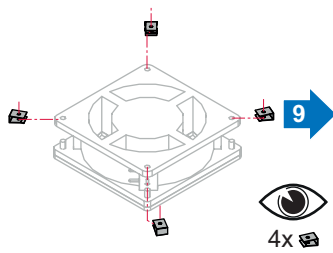
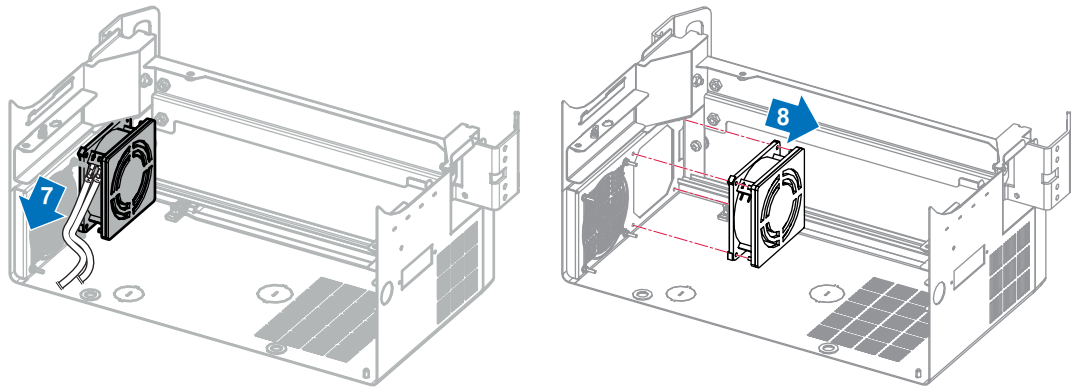
5.11.1 Air inlet fan replacement

Prerequisites

1. Remove the front cover (see chapter "Front cover disassembly/reassembly").
2. Remove the rear cover (see chapter "Rear cover disassembly/reassembly").

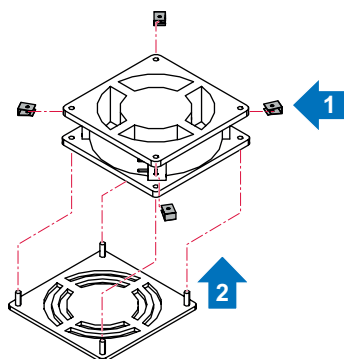
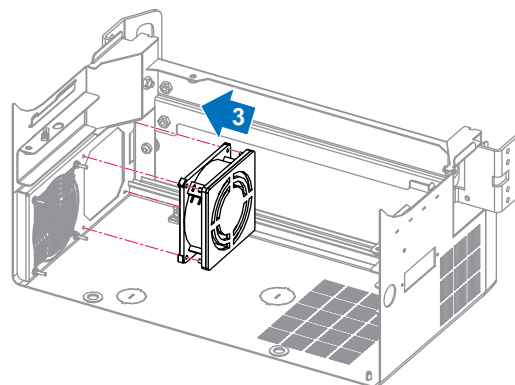
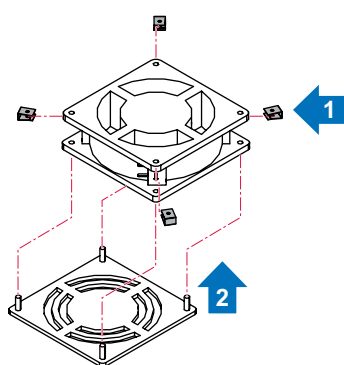
Air inlet fan disassembly

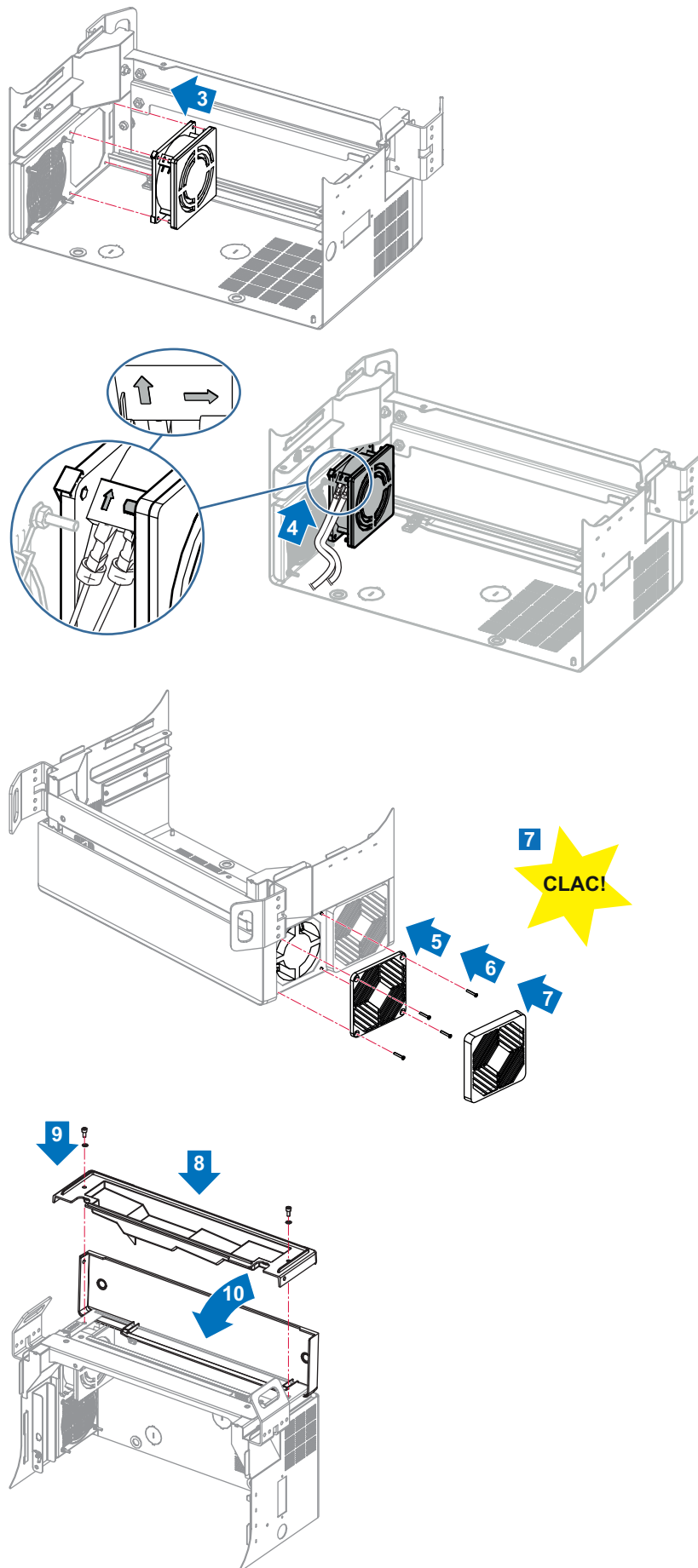




 The 4 clamps are kept for reassembly.

Air inlet fan reassembly



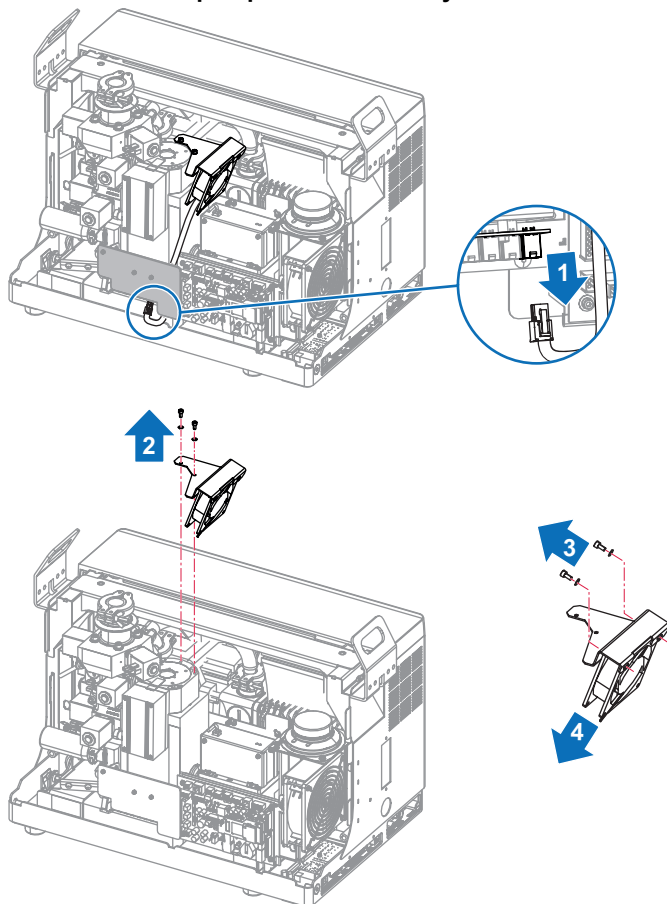


5.11.2 Turbomolecular pump fan replacement

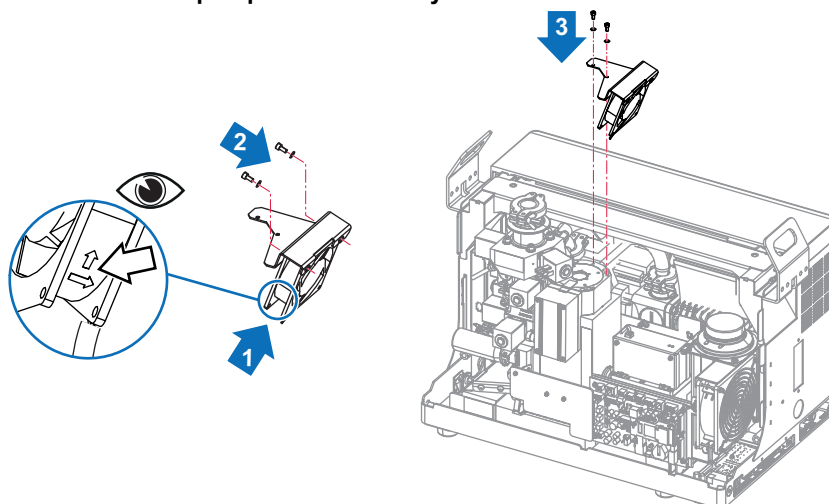
Prerequisite

- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

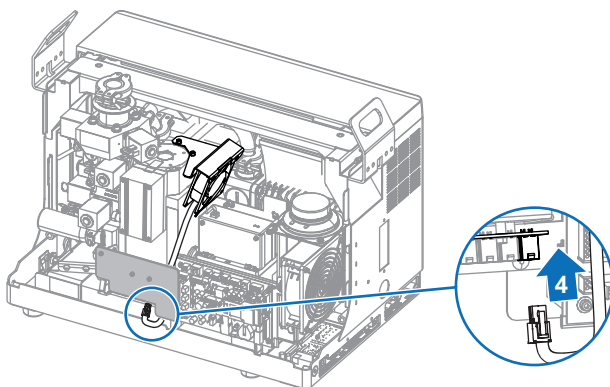
Turbomolecular pump fan disassembly



Turbomolecular pump fan reassembly



 The direction of fitting must be respected.

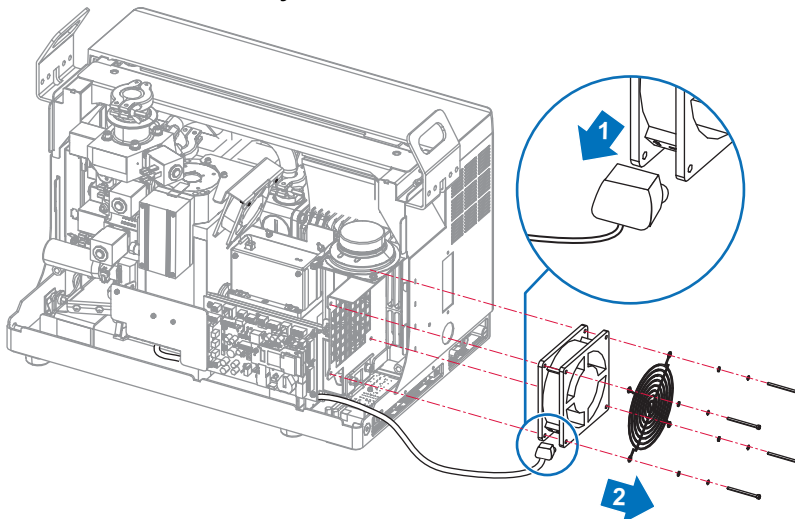


5.11.3 Exhaust fan replacement

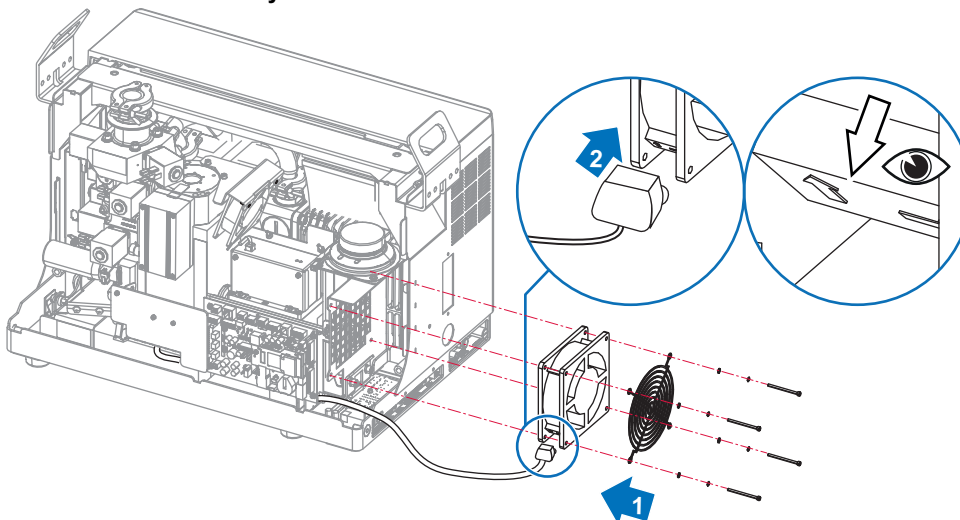
Prerequisite

- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

Exhaust fan disassembly



Exhaust fan reassembly



 The direction of fitting must be respected.

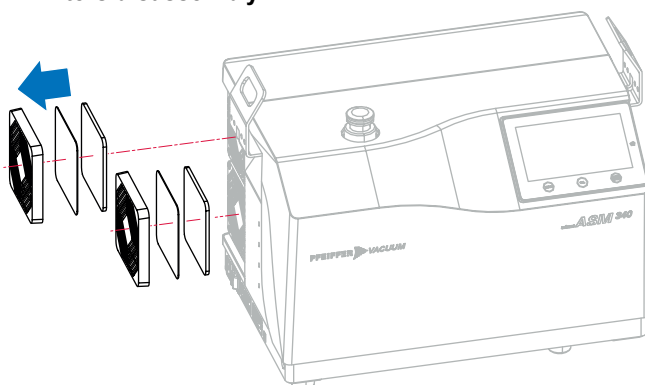
5.12 Filter maintenance

5.12.1 Cover air filters replacement

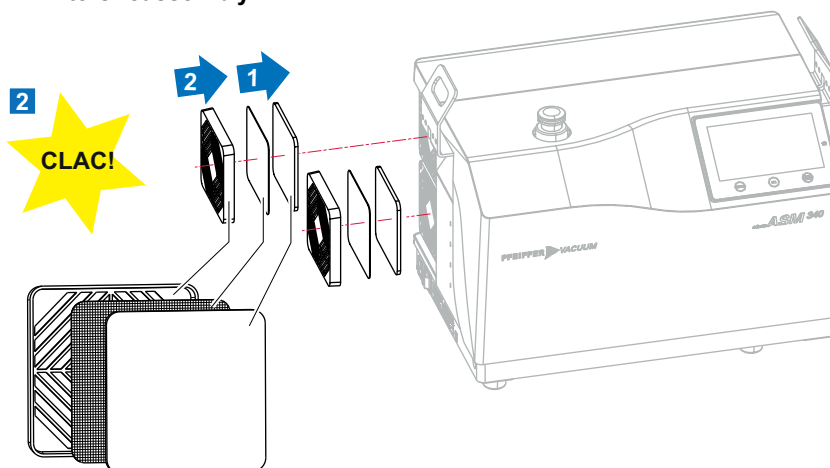
Prerequisite

- ▶ Power off the leak detector (see chapter "Powering Off").

Air filters disassembly



Air filters reassembly

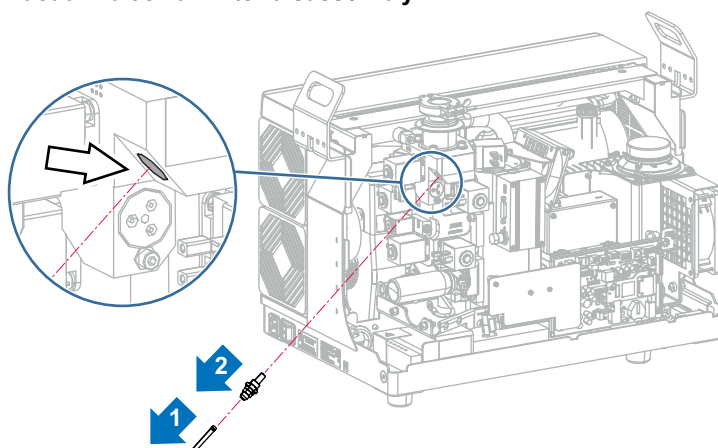


5.12.2 Vacuum block air filter replacement

Prerequisite

- ▶ Remove the front cover (see chapter "Front cover disassembly/reassembly").

Vacuum block air filter disassembly



Vacuum block air filter reassembly

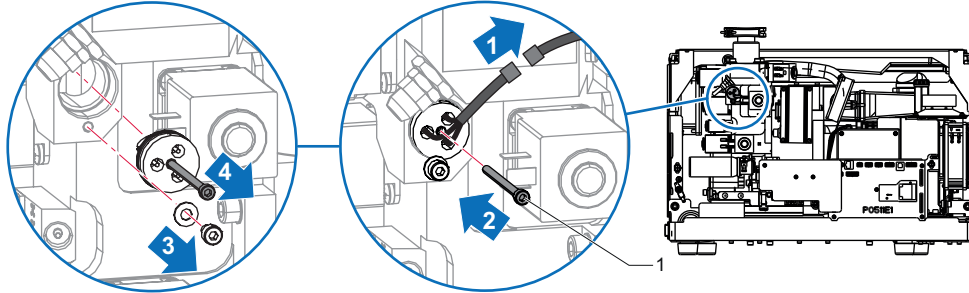
- ▶ Follow the disassembly steps in reverse.

5.13 Pirani gauge replacement

Prerequisites

1. Put the detector on 'Stand-by' mode.
2. Make an air inlet by pressing on the [VENT] function key or on the corresponding pictograph on the main screen.
3. Remove the blanking plate from the inlet port.
4. Remove the front cover (see chapter "Front cover disassembly/reassembly").

Pirani gauge disassembly



1

CHc screw (CHc screw in the maintenance kit supplied with the detector)

Pirani gauge reassembly

1. Follow the disassembly steps in reverse.
 - When inserting the new gauge, do not bring the gauge filaments into contact with the vacuum block.
2. Make adjustments to the gauge (see chapter "Calibration of the internal Pirani gauge" of the operating Instructions).

Tightness test after Pirani gauge maintenance

1. Put the detector into cycle.
2. Spray a light flow of Helium 4 around the gauge.
 - **leak rate measured** $< 3 \cdot 10^{-10} \text{ mbar} \cdot \text{l/s}$ ($3 \cdot 10^{-11} \text{ Pa} \cdot \text{m}^3/\text{s}$).

6 Decommissioning

6.1 Shutting down for longer periods

If the detector must be shut down for an extended period of time, after use it is recommended that you:

1. Apply the extended storage procedure (see chapter “Storage” of the Operating Instructions).
2. Keep the detector in its original packaging or under its protective cover in a dust-free environment.
3. Recommission according to the instructions in the chapter “Operation” of the Operating Instructions. If a problem occurs, contact your Pfeiffer Vacuum service center.

6.2 Disposal



Environmental protection

The product and its components **must be disposed of in accordance with the applicable regulations relating to environmental protection and human health**, with a view to reducing natural resource wastage and preventing pollution.

Our products contain various recyclable materials: iron, steel, stainless steel, cast iron, brass, aluminum, nickel, copper, PTFE, FEP.

Familiarize yourself with the service request procedure and fill in the declaration of contamination when returning products to our service centers (see chapter “Service solutions by Pfeiffer Vacuum”, page 43).

6.2.1 Restriction of Hazardous Substances (RoHS)



The ‘Restriction of Hazardous Substances’ (RoHS) directive

The RoHS directive lays down rules on the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) with a view to contributing to the protection of human health and the environment, including the environmentally sound recovery and disposal of WEEE.

The manufacturer must ensure that EEE placed on the market, including cables and spare parts intended for repair, reuse, update or capacity building, contain hazardous substances subject to limitation to the extent permitted by law.

6.2.2 Electrical and Electronic Equipment (EEE)

Electrical and Electronic Equipment (EEE) contain polluting material (electronic boards, batteries, screens, capacitors, mercury, etc.)

Depollution and subsequent recycling of this equipment are necessary to preserve our natural resources and particularly strategic raw materials.



This product bears the identification logo because it is subject to regulations on the management of Waste from EEE.

The manufacturer shall only be required to take back EEE marked Pfeiffer Vacuum sold by Pfeiffer Vacuum:

- EEE subject to applicable regulations for recycling end-of-life products;
- Complete, non modified EEE using original Pfeiffer Vacuum spare parts and including all of their assemblies and sub-assemblies, excluding batteries.

Product on sale on French soil



In the absence of any specific contract and pursuant to current applicable legislation (and Articles R543-172 et seq. of the Environment Code in particular), all EEEs sold by Pfeiffer Vacuum on French soil are covered by the organization and financing of removal and treatment of waste from EEEs provided by Pfeiffer Vacuum.

In order to fulfill its obligations, Pfeiffer Vacuum finances the collection and recycling of waste from EEE by subscribing to **ecosystem**. This voluntary arrangement enables owners of EEEs on French soil to benefit from easy, free solutions to ensure that EEEs subject to the regulations are recycled.

To find out more about the collection solutions, contact **ecosystem** who will inform you of the best collection solution for your needs: www.ecosystem.eco

For further details, consult the General Conditions of Sale available in French on the Pfeiffer Vacuum website.

Product on sale outside of France






In the absence of any specific contract and pursuant to Directive 2012/19/EC on the treatment of waste from EEE, for all EEE sold by Pfeiffer Vacuum outside of France (European Union and third countries), the owner shall be exclusively responsible for organizing and financing the collection and treatment of waste from EEE sold by Pfeiffer Vacuum.

The owner is exclusively responsible, in particular, for its collection (gathering, sorting and storage of waste for its transportation to the treatment site), recycling, recovery and/or disposal, unless otherwise required by legal provisions applicable in the country where the owner is located, which must be reported to Pfeiffer Vacuum by the owner.

7 Malfunctions

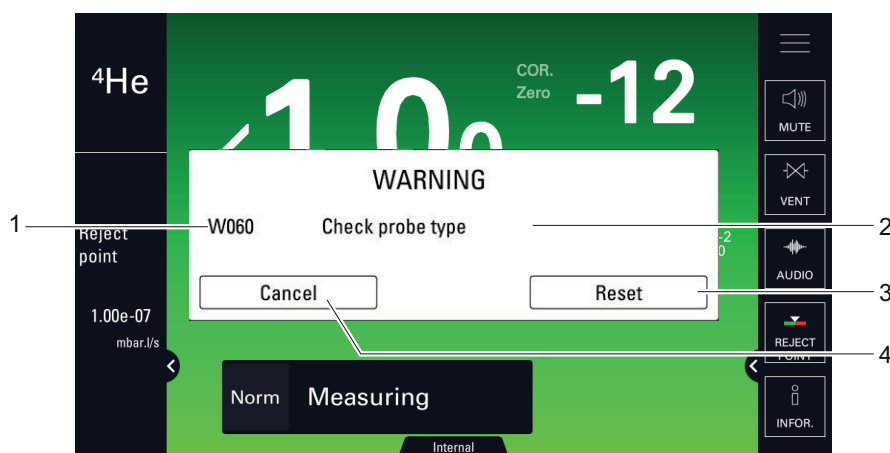
7.1 Operation monitoring

During operation, the user is notified of an incident on the detector control panel.

Type of fault	Control panel	
Warning		Press on [i Next] to display the fault.
Error		Message display. Press on [i Next] to display the fault.
Critical error		Display of "Critical error - E244" message. Contact our service center.

7.2 Fault display

Click on **[i Next]** to display the fault.



- | | |
|---------------------|---|
| 1 Fault code | 3 Removing the fault: the fault will be displayed again if the origin of the fault has not been resolved. |
| 2 Fault description | 4 Hiding the fault (without removing the fault) |

7.3 Troubleshooting guide

The troubleshooting guide helps correct the malfunctions reported on the detector's control panel or affecting the detector. It can be consulted from an interactive application.

1 Selection of navigation language

2 Selection of product and key word

3 Start of search

4 Selection of symptom

5 Diagnosis display

- 1 Selection of navigation language
- 2 Selection of product and key word
- 3 Start of search
- 4 Selection of symptom
- 5 Diagnosis display

Consultation of the application

The **Troubleshooting guide** is available from our service center.

1. Start the **Troubleshooting Guide** application.
2. Select the navigation language.
3. Select the product and the appropriate key word.
4. Start the search.
5. Select a symptom: the origin and diagnosis of this symptom are displayed.

8 Service solutions by Pfeiffer Vacuum

We offer first-class service

High vacuum component service life, in combination with low downtime, are clear expectations that you place on us. We meet your needs with efficient products and outstanding service.

We are always focused on perfecting our core competence – servicing of vacuum components. Once you have purchased a product from Pfeiffer Vacuum, our service is far from over. This is often exactly where service begins. Obviously, in proven Pfeiffer Vacuum quality.

Our professional sales and service employees are available to provide you with reliable assistance, worldwide. Pfeiffer Vacuum offers an entire range of services, from [original replacement parts](#) to [service contracts](#).

Make use of Pfeiffer Vacuum service

Whether preventive, on-site service carried out by our field service, fast replacement with mint condition replacement products, or repair carried out in a [Service Center](#) near you – you have various options for maintaining your equipment availability. You can find more detailed information and addresses on our homepage, in the [Pfeiffer Vacuum Service](#) section.

You can obtain advice on the optimal solution for you, from your [Pfeiffer Vacuum representative](#).

For fast and smooth service process handling, we recommend the following:



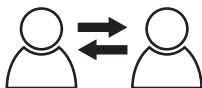
1. Download the up-to-date form templates.
 - [Explanations of service requests](#)
 - [Service requests](#)
 - [Contamination declaration](#)



- a) Remove and store all accessories (all external parts, such as valves, protective screens, etc.).
 - b) If necessary, drain operating fluid/lubricant.
 - c) If necessary, drain coolant.
2. Complete the service request and contamination declaration.



3. Send the forms by email, fax, or post to your local [Service Center](#).

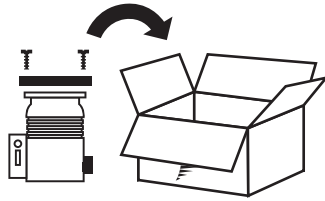


4. You will receive an acknowledgment from Pfeiffer Vacuum.

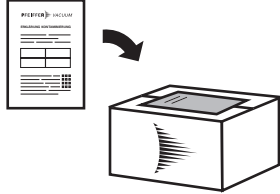
PFEIFFER VACUUM

Submission of contaminated products

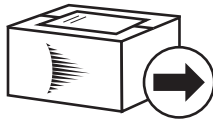
No microbiological, explosive, or radiologically contaminated products will be accepted. Where products are contaminated, or the contamination declaration is missing, Pfeiffer Vacuum will contact you before starting service work. Depending on the product and degree of pollution, **additional decontamination costs** may be incurred.



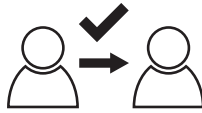
5. Prepare the product for transport in accordance with the provisions in the contamination declaration.
 - a) Neutralize the product with nitrogen or dry air.
 - b) Seal all openings with blind flanges, so that they are airtight.
 - c) Shrink-wrap the product in suitable protective foil.
 - d) Package the product in suitable, stable transport containers only.
 - e) Maintain applicable transport conditions.



6. Attach the contamination declaration to the **outside** of the packaging.



7. Now send your product to your local Service Center.



8. You will receive an acknowledgment/quotation, from Pfeiffer Vacuum.

PFEIFFER VACUUM

Our sales and delivery conditions and repair and maintenance conditions for vacuum devices and components apply to all service orders.

9 Spare parts

9.1 Tools

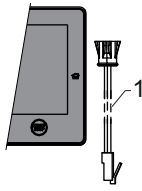


Designation	Qty	Part Number
The maintenance set contains:		114718
Box-shank nut spinner	1	-
Screwdriver for TORX® 6x35 screws	1	-
CHC screw, M4x80	1	-
CHC screw, M4x12	3	-
Washer, M4	3	-
CHC screw, M3x6	4	-
Washer, M3	4	-
2.5 mm male hexagonal wrench	1	-
3 mm male hexagonal wrench	1	-
4 mm male hexagonal wrench	1	-
5 mm male hexagonal wrench	1	-
Seal - 3G analyzer cell	2	-
ANXR screwdriver, 20x100	1	-

Designation	Qty	Part Number
Adaptor pack for calibrated leak, DN 16 ISO-KF	1	110715
Adaptor pack for calibrated leak, DN 25 ISO-KF	1	110716
Unequal tee, DN 25/25/16 ISO-KF	1	068269
Calibrated leak + valve 1/3 10-6, DN 25 ISO-KF	1	FV4610
Silicon vacuum grease (100 g tube)	1	064600
Needlenose pliers	1	115396

9.2 Leak detector spare parts

Display

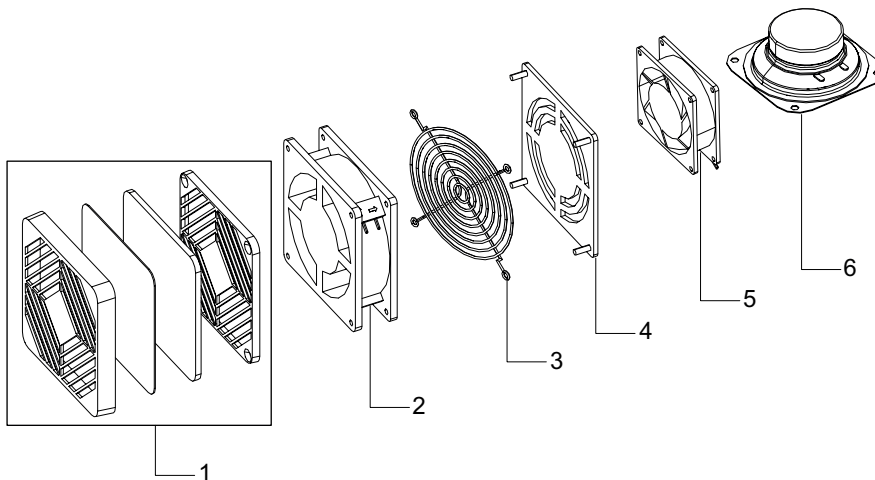


Item	Designation	P/N	Qty	Comments
1	RJ9 control panel cable - 5 m	123909	1	-

Power and electrical supply

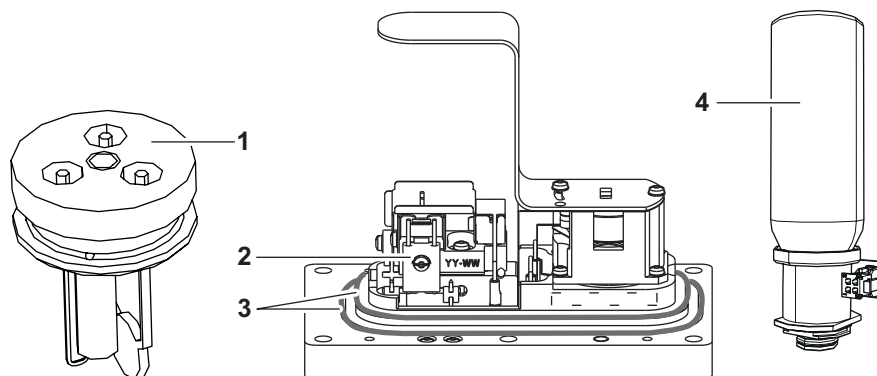


Designation	P/N	Qty	Comments
2 m mains cable - France/Germany	103566	1	-
2 m mains cable - USA	103567	1	-
2 m mains cable - UK	104411	1	-
2 m mains cable - Italy	104758	1	-
2 m mains cable - Switzerland	103718	1	-



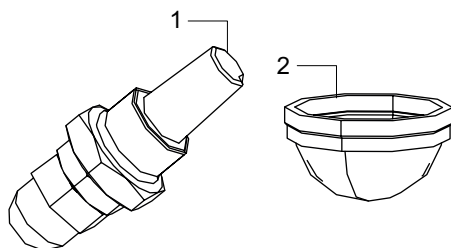
Item	Designation	P/N	Qty	Comments
1	Grill + Fan filter	104754	1	-
2	Fan	101094	1	-
3	Fan grill - 120 x 120 mm	056067	1	-
4	Protection grid - 120 x 120 mm	104753	1	-
5	Fan - 80 x 80 x 25 mm	121658	1	-
6	Speaker - 90 dB/D 10 cm	060097	1	-

Measurement



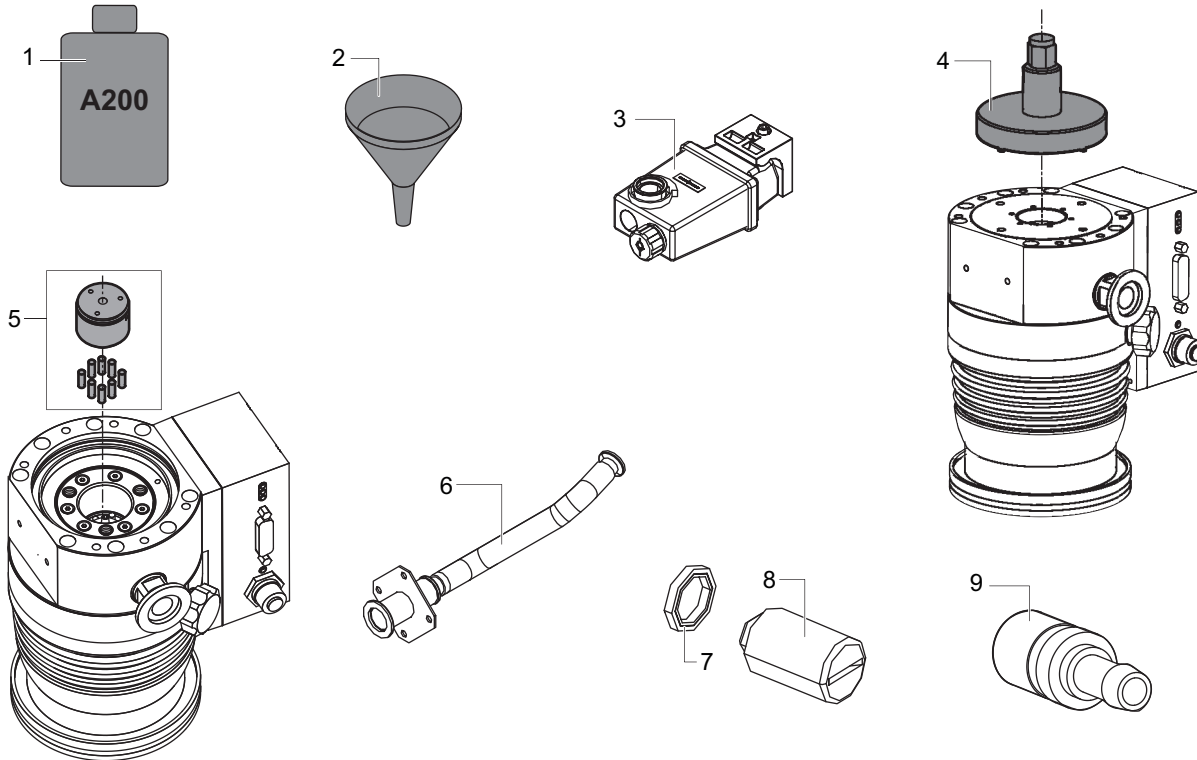
Item	Designation	P/N	Qty	Comments
1	PI1 gauge - aluminum	795706	1	-
2	Filament - 3G analyzer cell	114864S	1	-
3	NBR seal - 3G analyzer cell	114346	1	Sold individually
4	Internal calibrated leak	121528S	1	-

Vacuum block



Item	Designation	P/N	Qty	Comments
1	Vacuum block sintered filter	122237	1	-
2	Inlet pipe filter	114494	1	-

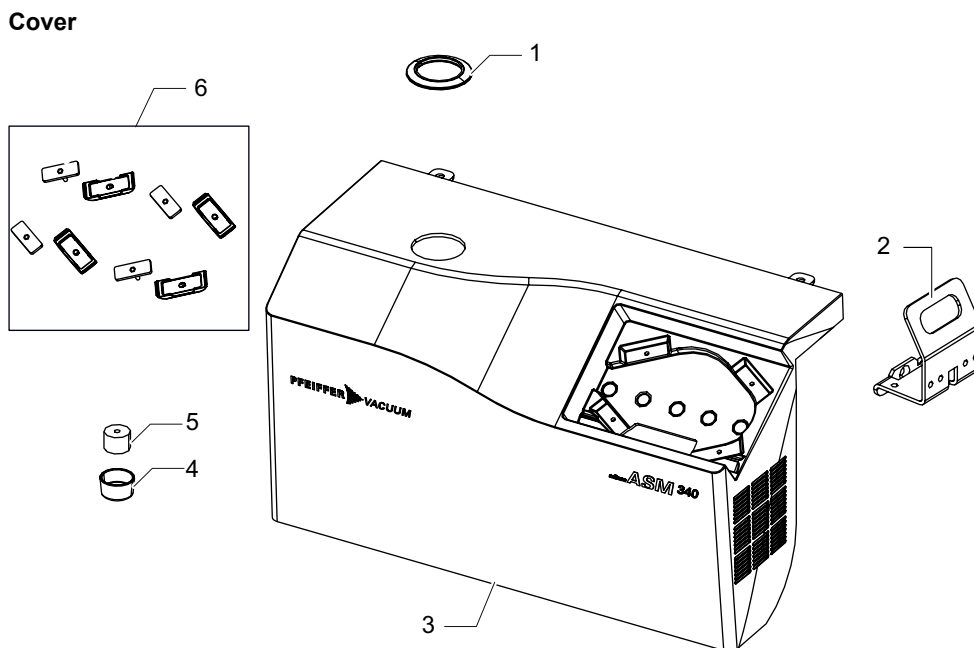
Pumping



Item	Designation	P/N	Qty	Comments
1	A200 oil	068694	1	1 liter can Wet Model only
2	Plastic funnel	067592	1	Wet Model only
3	Disposable oil mist separator 21 m ³ /h - D 30 mm	121494	1	Wet Model only
4	Special key for the oil reservoir	PV M40 813	1	-
5	operating fluid reservoir for SplitFlow 50	PM 143 740 -T	1	-
6	Pumping connection hose	A334533	1	Integrable model only
7	Silencer ring - MVP 020-3DC	109528	1	Dry Model only
8	Silencer - MVP 020-3DC	114494	1	Dry Model only
9	Draining connector	107646	1	Wet Model only
-	Exhaust nozzle	122405	1	Wet Model only (accessory)

Pipes - Connections - Seals

Designation	P/N	Qty	Comments
Quick connect clamp, DN 10/16 ISO-KF	110BSR016	1	-
Quick connect clamp, DN 20/25 ISO-KF	120BSR025	1	-
Quick connect clamp, DN 32/40 ISO-KF	120BSR040	1	-
Stainless steel blanking plate, DN 40 ISO-KF	120FBL040	1	-
HNBR O-ring, DN 25 ISO-KF	106022	1	-
HNBR O-ring, DN 40 ISO-KF	106023	1	-
HNBR O-ring, DN 16 ISO-KF	106021	1	---
Centering ring, DN 25 ISO-KF	120ZRG025	1	-
Centering ring, DN 40 ISO-KF	120ZRG040	1	-
Centering ring, DN 16 ISO-KF	120ZRG016	1	-
Polyurethane tube, D6 mm thickness 1 mm	118207	1	Sold by the meter



Item	Designation	P/N	Qty	Comments
1	Inlet pipe blanking plate DN 25 ISO-KF	A334286	1	-
2	Lifting handle	A333918	1	-
3	Cover	121565	1	-
4	Frame foot	A459023	1	-
5	Isolator/Damper	082691	1	-
6	Raise plates for control panel (studs and counterplates)	129863	1	-
-	Protective cover	A006733	1	-

9.3 Accessories

Item	Designation	Part Number	Qty	Comments
1	Bronze dust filter 20 µm D 114 mm	105847	1	-
2	Bronze dust filter 5 µm D 114 mm	105848	1	-
	Stainless steel dust filter D 114 mm	-	1	5 or 15 µm - Consult us
3	O-ring Ø 5 mm - D 114 mm	082152	1	-
4	Bronze dust filter 20 µm, DN 25/25 ISO-KF	105841	1	-
5	Bronze dust filter 20 µm, DN 40/40 ISO-KF	105842	1	-
6	Bronze dust filter 20 µm, DN 40/25 ISO-KF	105843	1	-
7	Bronze dust filter 5 µm, DN 25/25 ISO-KF	105844	1	-
8	Bronze dust filter 5 µm, DN 40/40 ISO-KF	105845	1	-
9	Bronze dust filter 5 µm, DN 40/25 ISO-KF	105846	1	-
	Stainless steel dust filter, DN 25/25 ISO-KF	-	1	5 or 15 µm - Consult us
	Stainless steel dust filter, DN 40/40 ISO-KF	-	1	5 or 15 µm - Consult us
	Stainless steel dust filter, DN 40/25 ISO-KF	-	1	5 or 15 µm - Consult us

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Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

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From a single component to complex systems:

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perfect vacuum solution?
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