



OPERATING INSTRUCTIONS

EN

Translation of the original instructions

OME 16 C

Oil Mist Eliminator

PFEIFFER  **VACUUM**

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1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refers to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.com.

1.2 Conventions

Safety instructions

The safety instructions in Pfeiffer Vacuum operating instructions are the result of risk evaluations and hazard analyses and are oriented on international certification standards as specified by UL, CSA, ANSI Z-535, SEMI S1, ISO 3864 and DIN 4844. In this document, the following hazard levels and information are considered:

DANGER
<p>Imminent danger Indicates an imminent hazardous situation that will result in death or serious injury.</p>
WARNING
<p>Possibly imminent danger Indicates an imminent hazardous situation that can result in death or serious injury.</p>
CAUTION
<p>Possibly imminent danger Indicates an imminent hazardous situation that can result in minor or moderate injury.</p>
NOTICE
<p>Command or note Command to perform an action or information about properties, the disregarding of which may result in damage to the product.</p>

Pictographs



Prohibition of an action to avoid any risk of accidents, the disregarding of which may result in serious accidents



Warning of a displayed source of danger in connection with operation of the unit or equipment



Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents



Important information about the product or this document

Instructions in the text

→ Work instruction: here you have to do something.

Abbreviations

OME: Oil mist eliminator

ODK: Oil drain kit (oil return device)

Symbols used

The following symbols are used consistently throughout in all illustrations:

⓪ Vacuum flange

Ⓛ Exhaust flange

Ⓧ Connection flange OME

2 Safety

2.1 Safety precautions



Duty to inform

Each person involved in the installation or use of the component must read and observe the safety-related parts of these instructions.

- The operator is obligated to make operating personnel aware of dangers originating from the component or the entire system.



CAUTION

High pressure in the exhaust chamber of the pump!

Danger of damage to the seals and danger of the pump bursting.

- Monitor saturation level of the filter elements; if necessary connect a suitable manometer at the operating fluid intake port of the pump and measure the exhaust pressure (max. 150 kPa abs.).
- Monitor thermal overload of the pump.
- Before carrying out any work read and observe the operating and safety instructions of the pumping station and the individual components.
- Observe the safety and accident prevention regulations.
- Check regularly that all safety precautions are being complied with.
- When returning the components to us please note the instructions in the Service section.

2.2 Proper use

- Only use the oil mist eliminator to filter oil mist from the gas flow of rotary vane pumps.
- Suitable for processes requiring increased media resistance (corrosive gases).
- Suitable for pumps with PFPE-based (perfluoropolyether) operating fluid (e.g. F4).
- Simply mount the OME 16 C onto the exhaust port of rotary vane pumps.
- Use the OME 16 C in accordance with the corresponding approved pumping speed.
- Operate OME 16 C preferably with oil return to avoid operating fluid discharge.

2.3 Improper use

Improper use will cause all claims for liability and warranties to be forfeited. Improper use is defined as usage for purposes deviating from those mentioned above, especially:

- the use at pumps with mineral or synthetic operating fluids (like e.g. D1)
- connection to pumps or units which are not suitable for this purpose according to their operating instructions
- connection to units which have exposed voltage-carrying parts
- use of accessories or spare parts, which are not named in this manual
- pumping-off of gases and vapors that may be prone to polymerization or may resinify the filter inserts

3 Transport and storage

3.1 Storage

The OME 16 C should be stored dry and protected from moisture. The filter insert can absorb moisture, and the lubrication properties of the oil and hence the ultimate pressure can be negatively influenced in pumps with an oil return unit.

4 Product description

4.1 Product identification

To correctly identify the product when communicating with Pfeiffer Vacuum, always have the information from the rating plate available.

- Date of manufacture
- Model and model number

Scope of delivery

- Filter housing with filter element
- Operating instructions

4.2 Function

The oil mist eliminator is mounted on the exhaust port of rotary vane pumps. It filters oil mist particles from the conveyed gas flow and thus reduces the escape of operating fluid mist.

The filter element made of glass polyester fleece is integrated in a cylindrical sheet metal casing. The collected operating fluid can be drained with a drain screw.

To return the filtered operating fluid from the OME into the pump without interrupting the pump operation, an operating fluid return (optional) can be used.

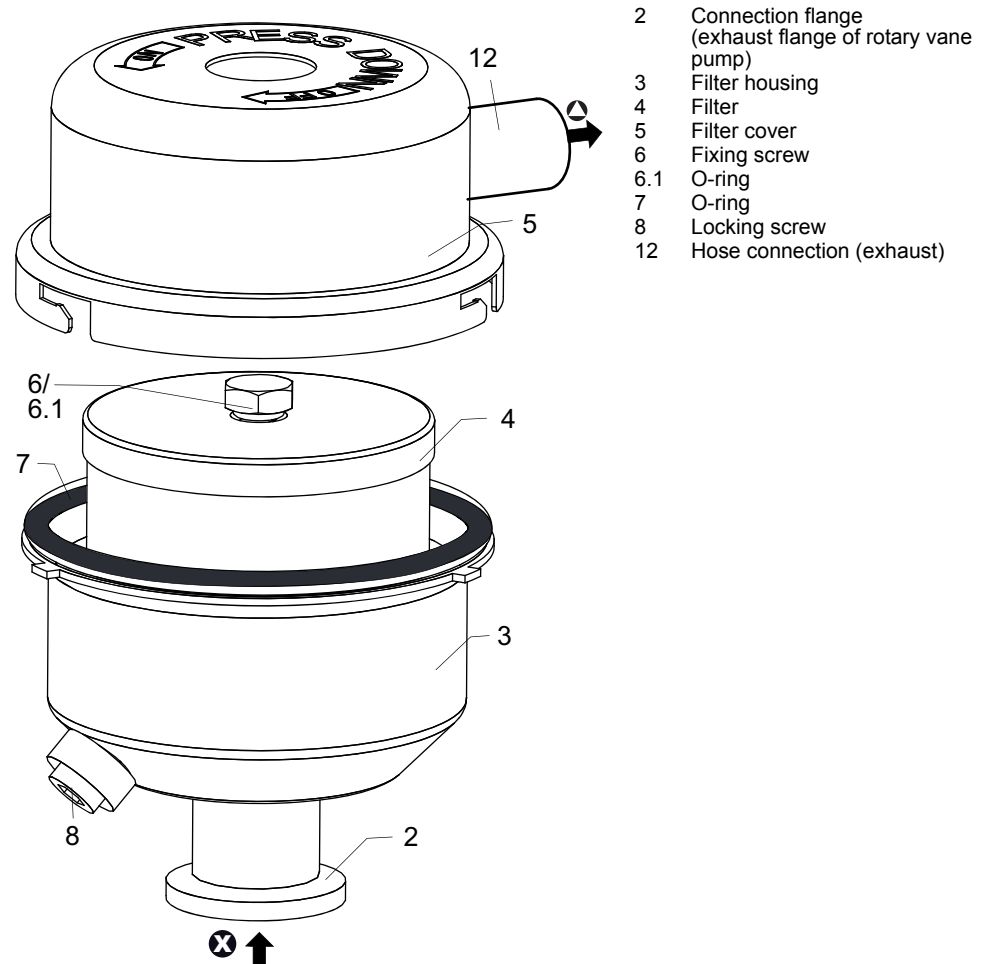


Fig. 1: OME 16 C

Operating fluid return line

The use of the operating fluid return increases the operational safety of the pump and reduces the maintenance requirements.

Range of application

The OME 16 C is suitable for rotary vane pumps with low gas throughput up to a pumping speed of 12 m³/h.

5 Installation

5.1 Assembly

An ISO small flange is provided on the input side for installing the OME 16 C in a vacuum system. The flange is provided with a protective cap when delivered to protect the sealing surface.

If gases are pumped that may not enter the atmosphere, an exhaust line must be connected to the exhaust line.



WARNING

Poisonous substances exit from the exhaust!

There is a poisoning hazard from discharged gases or vapors that can be hazardous and/or polluting during use.

- Install and run the exhaust line so that overpressure cannot build up inside it.
- Follow the vacuum pump installation instructions in the respective operating instructions.



NOTICE

Vacuum component

Dirt and damage impair the function of the vacuum component.

- When handling vacuum components, ensure that they are kept clean and are protected against damage.
- Ensure that the connection flange is clean, dry and free of grease.



- Turn off the vacuum pump, vent to atmospheric pressure and allow to cool.
- Remove the protective cap from the connection flange.
- Place OME on the exhaust side of the pump with flange pointing downwards and fit with clamping ring (accessories), pay attention to centering ring.
- If a **centring-ring with an outlet nozzle** has been fitted at the side of the pump, replace this with a standard version centring-ring.
- Lay exhaust line from the OME sloping downward so that no condensate can flow back.
 - If an air trap is created in the system, then a device for draining condensation water must be provided at the lowest point.

5.2 Installing the operating fluid return line

OME 16 C at Duo 3 / 6
/ 11 MC

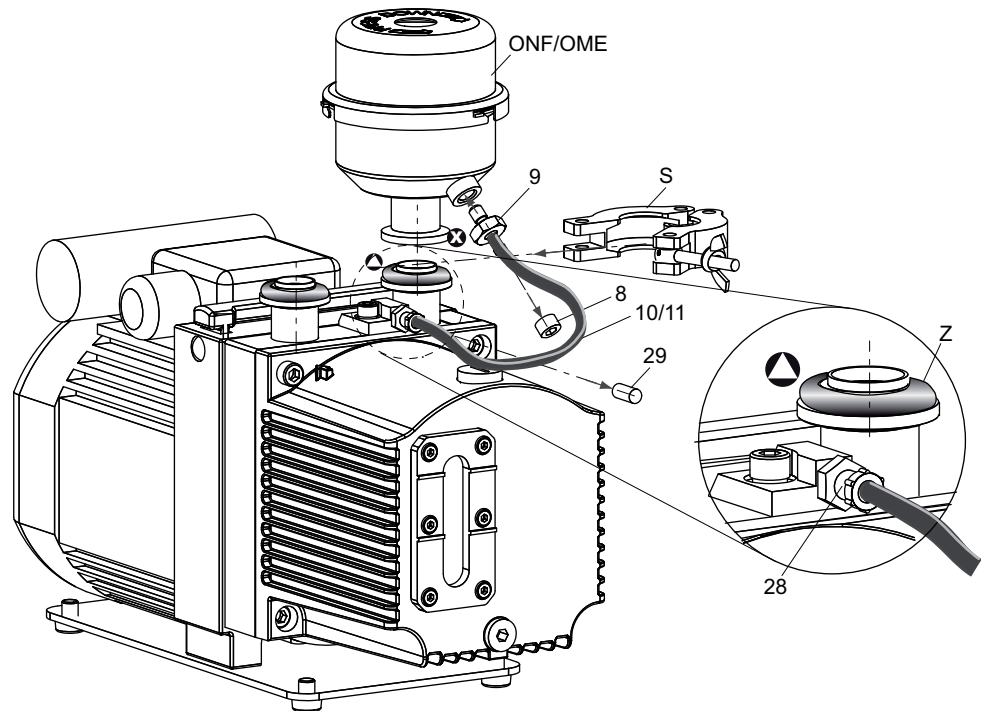


Fig. 2: OME 16 C with operating fluid return line

8	Locking screw	11	Spring (inside the hose)	S	Clamping ring
9	Fitting	28	Fitting	Z	Centering ring
10	Operating fluid return hose	29	Locking cap		

- Unscrew locking screw 8.
- Drain off operating fluid if so and fill in the pump.
- Screw in fitting 9 in place of the locking screw 8; take care with seal ring.
- Unscrew and remove the union nut of the screw fitting 28 and remove the sealing plug 29.
- Insert spring 11 into hose 10 (anti-kink device).
- Fit operating fluid return hose 10 at both sides,
 - keep the hose as short as possible and protect it from bending.
- Tighten union nut of both screw fittings.

**OME 16 C at
DUO 5 MC**

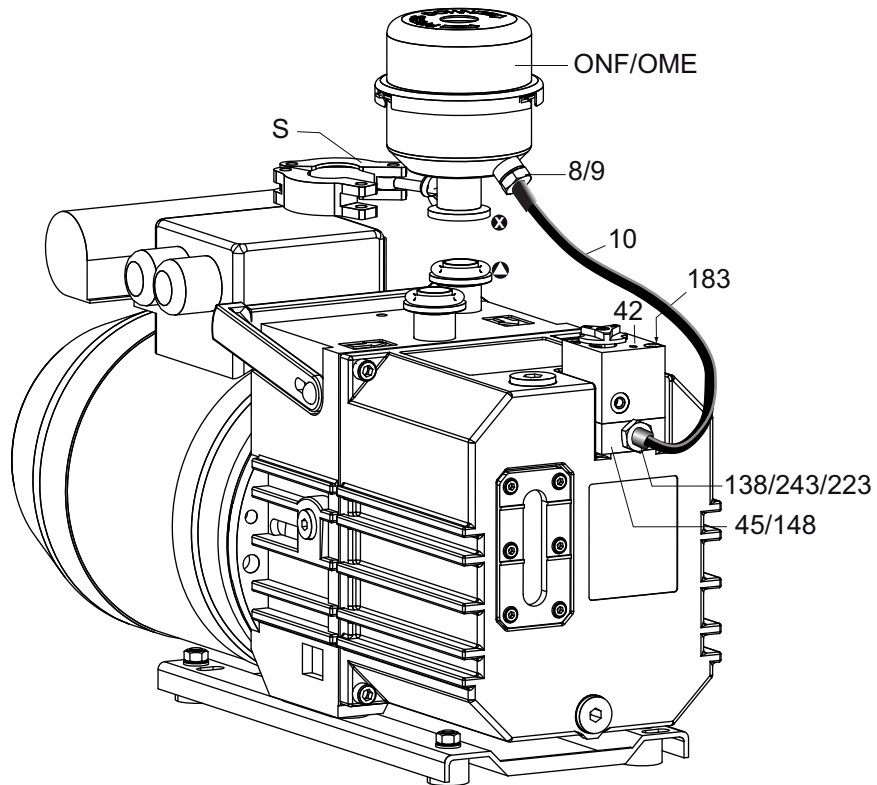


Fig. 3: Duo 5 MC with OME 16 C and operating fluid return

8	Operating fluid drain screw	45	Intermediate flange	223	Hose clip
9	Fitting	138	O-ring	243	Hose nipple
10	Operating fluid return hose	148	O-ring	S	Clamping ring
42	Gas ballast valve	183	Cylinder screw		

- Unscrew locking screw 8.
- Drain off operating fluid if so and fill in the pump.
- Screw in fitting 9 in place of the locking screw 8; take care with seal ring.
- Remove gas ballast valve 42 from the pump and absorb the operating fluid underneath.
- Re-fit the gas ballast valve 42 with intermediate flange 45 and screw tight with longer screws 183 (torque: **2.5 Nm**); take care with O-ring 148.
- Screw fitting/hose nipple 243 into intermediate flange 45 and tighten slightly; pay attention to O-ring 138.
- Fit operating fluid return hose 10 at both sides,
 - keep the hose as short as possible and protect it from bending.
- Fasten hose clip 223.
- Tighten the union nut of the screw fitting 9.

6 Operation

When operating without operating fluid return line, the risk increases that with high gas throughput the accumulated operating fluid may flow out from the filter cover of the OME 16 C.

- Check fill level regularly during operation.
- Drain off operating fluid if so and fill in the pump.



WARNING

Emission of toxic substances from the exhaust!

Danger of poisoning from emitted gases or vapours, which can be detrimental to health and/or can pollute the environment, depending on the particular application.

- Comply with the applicable regulations when working with toxic substances.
- Only officially approved filter systems may be used to separate and remove these substances.



CAUTION

Watch out for excess pressure in the exhaust line.

There is a risk of damage to the seals, and a risk of rupture or overloading of the pump.

- Ensure that there is no excess pressure at the OME exit point.
- Open the inlet valves either before or at same time as starting the pump.



NOTICE

Make sure that the return for the operating fluid works.

Operating fluid is only sucked in and returned from an operating pressure of < 100 hPa and starting from a minimum quantity of operating fluid in the OME 16 C.

- Long evacuation phases with a high intake pressure should always be followed by operating phases with a lower operating pressure.



NOTICE

Risk of the filter elements becoming blocked with resin!

When pumping gases and vapors with a tendency towards polymerization, the OME 16 C filter elements can become resinified.

- Observe the corresponding safety devices such as the saturation indicator or pressure relief valve.



NOTICE

Damage to the pump due to condensate in the operating fluid!

Returned condensate generated by vapors or by temperature differences between the oil mist eliminator and pump impairs the quality of the operating fluid and negatively impacts the pump's final vacuum.

- Drain operating fluid built up with condensate in a time manner.



Please note that the smallest oil particles can only be separated to a limited extent.

The degree of separation of the filter elements depends upon the gas flow rate and the distribution of particles in the gas flow.

- An increased leakage of oil mist at the exhaust flange of the OME 16 C as well as a functional decline in the operating fluid return serve as an indicator of the saturation level of the filter element.

7 Maintenance

7.1 Draining the operating fluid

The intervals at which the operating fluid is drained depends on the respective operating conditions.



WARNING
<p>Operating fluid may contain toxic substances from the pumped media! Danger of poisoning from the emission of harmful substances from the operating fluid.</p> <p>→ Wear suitable protective clothing and respirators. → Dispose of operating fluid according to the local regulations</p>

- Turn off the vacuum pump, vent to atmospheric pressure and allow to cool.
- Ensure that the exhaust line is depressurized.
- Unscrew locking screw 8.
- Drain off operating fluid.
- Separate the operating fluid from the condensate.
 - If the drained operating fluid is free of contamination, it can be reused.
- Screw in locking screw 8; use new sealing tape.

Operating fluid return line

Due to the automatic operating fluid return, it is not necessary to drain the operating fluid manually.

7.2 Changing the filter element

The filter element must be exchanged when the exhaust pressure increases, so that

- oil mist escapes from the gas outlet orifice of the OME 16 C or
- the back pressure in the pump exceeds the overpressure of > 1500 hPa with the gas ballast valve open and "0" gas throughput.
 - Close (blank off using flanges) the intake port and use a suitable manometer to measure the exhaust pressure in the operating fluid fill orifice.



DANGER
<p>Danger to health by hazardous substances during maintenance or installation Depending on the process vacuum pumps, components or operating fluids can be contaminated by toxic, reactive or radioactive substances.</p> <p>→ Wear adequate protective equipment during maintenance and repairs or in case of reinstallation.</p>

WARNING
<p>Contamination of parts and operating fluid by pumped media is possible. Poisoning hazard through contact with materials that damage health.</p> <p>→ In the case of contamination, carry out appropriate safety precautions in order to prevent danger to health through dangerous substances. → Decontaminate affected parts before carrying out maintenance work.</p>

NOTICE
<p>Disclaimer of liability Pfeiffer Vacuum accepts no liability for personal injury or material damage, losses or operating malfunctions due to improperly performed maintenance. The liability and warranty entitlement expires.</p>

→ Safely dispose of the materials according to the locally applicable regulations.

Dismantling

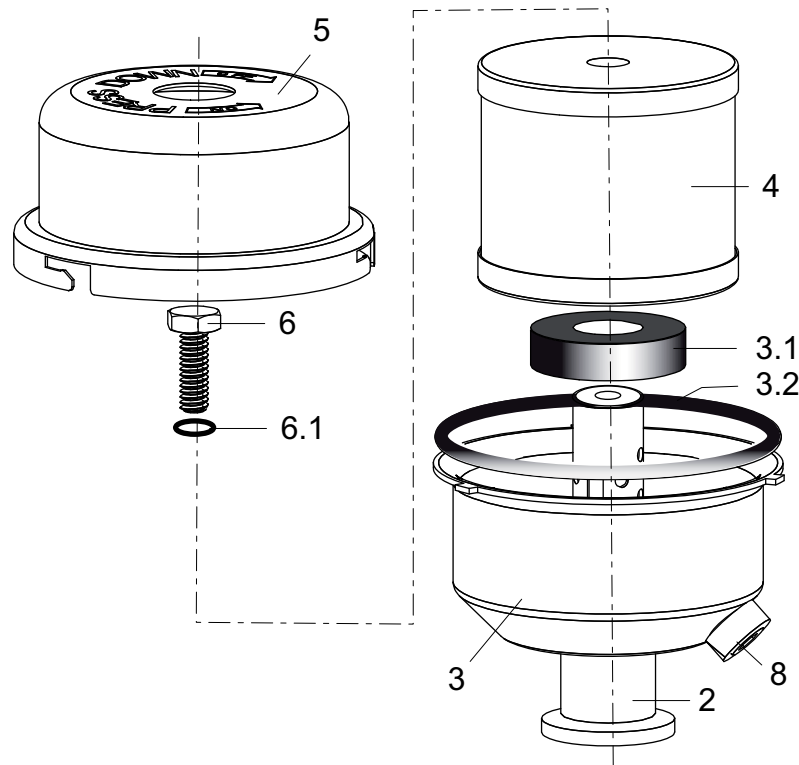


Fig. 4: OME 16 C

2	Connection flange (exhaust flange of rotary vane pump)	3.2	O-ring	6	Fixing screw
3	Filter housing	4	Filter	6.1	O-ring
3.1	Rubber buffer	5	Filter cover	8	Locking screw

- Carry out preliminary work as described before.
- Remove OME 16 C from the system and pour out the remaining operating fluid.
- Undo bayonet fastening from filter cover 5 and remove cover.
- Remove fixing screw 6; pay attention to O-ring 6.1.
- Replace filter element 4; cleaning is not recommended in most cases.
- Exchange wear parts according to spare parts package.
- Lightly oil all o-rings with the respective operating fluid before fitting.
- **Assembling** is carried out in reverse order.

7.3 Cleaning the operating fluid return line

When there is a functional decline in the operating fluid return or when changing the filter element the connecting pipe must be cleaned:

→ Dismantle and clean the hose connection 10 between OME 16 C and the pump.

Duo 3 ... 11 MC

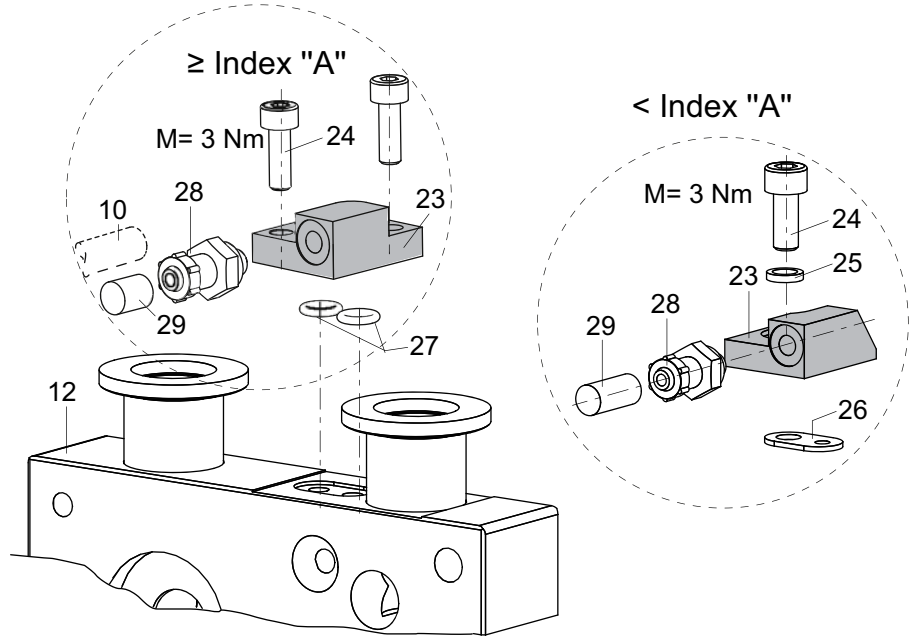


Fig. 5: Dismantling and cleaning the oil return line

→ Clean the nozzle bore on the underside of the ODK connection 23.

Duo 5 MC

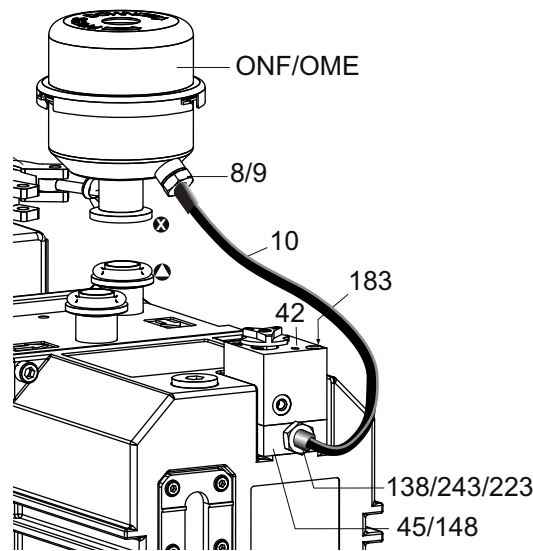


Fig. 6: Dismantling and cleaning the oil return line

→ Unscrew the hose nipples 243 from the intermediate flange 45 and clean the nozzle bore.

→ Screw fitting/hose nipple 243 into intermediate flange 45 and tighten slightly; pay attention to O-ring 138.

8 Service

Pfeiffer Vacuum offers first-class service!

- Fast replacement with exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: www.pfeiffer-vacuum.com (Service).

Maintenance and repairs in the Pfeiffer Vacuum ServiceCenter

The following steps are necessary to ensure a fast, smooth servicing process:

- Download the forms "Service Request" and "Declaration on Contamination".¹⁾
- Fill out the "Service Request" form and send it by fax or e-mail to your Pfeiffer Vacuum service address.
- Include the confirmation on the service request from Pfeiffer Vacuum with your shipment.
- Fill out the declaration on contamination and include it in the shipment (required!).
- Drain off operating fluid.
- If possible, send pump or unit in the original packaging.

Sending of contaminated pumps or devices

No units will be accepted if they are contaminated with micro-biological, explosive or radioactive substances. "Hazardous substances" are substances and compounds in accordance with the hazardous goods directive (current version). If pumps are contaminated or the declaration on contamination is missing, Pfeiffer Vacuum performs decontamination at the shipper's expense.

- Neutralise the pump by flushing it with nitrogen or dry air.
- Close all openings airtight.
- Seal the pump or unit in suitable protective film.
- Return the pump/unit only in a suitable and sturdy transport container and send it in while following applicable transport conditions.

Service orders

All service orders are carried out exclusively according to our repair conditions for vacuum units and components.

¹⁾ Forms under www.pfeiffer-vacuum.com

9 Accessories

Designation	OME 16 C
Oil return unit from OME 16 C to Duo 1.6/Duo 3/Duo 6/Duo 11	PK 005 986 -T
Oil return unit from OME 16 C to Duo 5 M	PK 005 987 -T
Oil return unit from OME 16 C to Duo 1.3/Duo 2.5/Uno 5	PK 005 990 -T

10 Technical data and dimensions

10.1 General

Conversion table: pressure units

	mbar	bar	Pa	hPa	kPa	Torr mm Hg
mbar	1	$1 \cdot 10^{-3}$	100	1	0.1	0.75
bar	1000	1	$1 \cdot 10^5$	1000	100	750
Pa	0.01	$1 \cdot 10^{-5}$	1	0.01	$1 \cdot 10^{-3}$	$7.5 \cdot 10^{-3}$
hPa	1	$1 \cdot 10^{-3}$	100	1	0.1	0.75
kPa	10	0.01	1000	10	1	7.5
Torr mm Hg	1.33	$1.33 \cdot 10^{-3}$	133.32	1.33	0.133	1

1 Pa = 1 N/m²

Conversion table: gas throughput units

	mbar-l/s	Pa·m ³ /s	sccm	Torr-l/s	atm·cm ³ /s
mbar-l/s	1	0.1	59.2	0.75	0.987
Pa·m ³ /s	10	1	592	7.5	9.87
sccm	$1.69 \cdot 10^{-2}$	$1.69 \cdot 10^{-3}$	1	$1.27 \cdot 10^{-2}$	$1.67 \cdot 10^{-2}$
Torr-l/s	1.33	0.133	78.9	1	1.32
atm·cm ³ /s	1.01	0.101	59.8	0.76	1

10.2 Technical data

Parameter	OME 16 C
Degree of separation	99.98 %
Flange (in)	DN 16 ISO-KF
Flange (out)	Hose connection, DN 16
Exhaust pressure, max.	Atmospheric pressure
Pressure max. (absolute)	1500 hPa
For pumping speed	≤12 m ³ /h
Capacity	0.02 l
Weight	0.35 kg

10.3 Dimensions

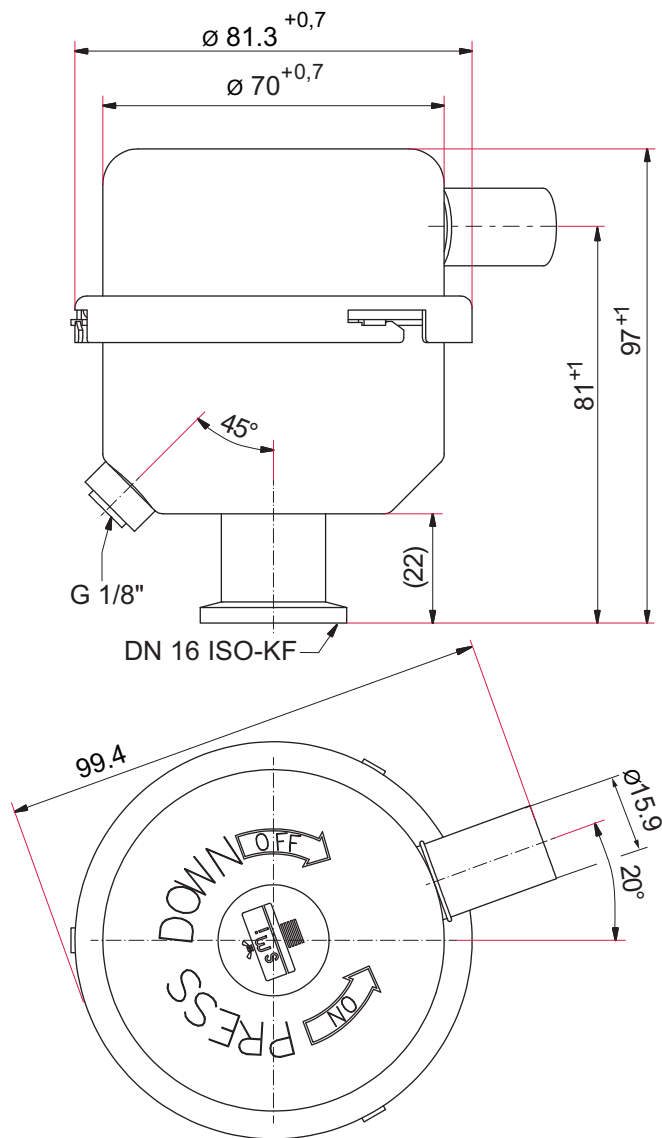


Fig. 7: OME 16 C

11 Spare parts

The spare parts packages listed here are only applicable for standard models.

Please state all information on the rating plate when ordering spare parts. Other spare parts than those described in this manual must not be used without the agreement of Pfeiffer Vacuum.

11.1 Spare parts packages

Spare parts package	Model	No.	Consisting of
Maintenance kit	OME 16 C	PK E07 026 -T	3.1, 3.2, 4, 6.1

12 Disposal

Products or parts thereof (mechanical and electrical components, operating fluids, etc.) may cause environmental burden.

→ Safely dispose of the materials according to the locally applicable regulations.

VACUUM SOLUTIONS FROM A SINGLE SOURCE

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

COMPLETE RANGE OF PRODUCTS

From a single component to complex systems:

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