OPERATING INSTRUCTIONS

EN

Translation of the Original

MVP 003-2 DC

Diaphragm Pump

PFEIFFER VACUUM

Dear Customer,

Thank you for choosing a Pfeiffer Vacuum product. Your new diaphragm pump is designed to support you with its performance, perfect operation and without impacting your individual application. The name Pfeiffer Vacuum stands for high-quality vacuum technology, a comprehensive and complete range of top-quality products and first-class service. From this extensive, practical experience we have gained a large volume of information that can contribute to efficient deployment and to your personal safety.

In the knowledge that our product must avoid consuming work output, we trust that our product can offer you a solution that supports you in the effective and trouble-free implementation of your individual application.

Please read these operating instructions before putting your product into operation for the first time. If you have any questions or suggestions, please feel free to contact info@pfeiffer-vacuum.de.

Further operating instructions from Pfeiffer Vacuum can be found in the Download Center on our website.

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.

Copyright

Table of contents

List of tables

List of figures

1 About this manual

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

1.1 Validity

These operating instructions are a customer document of Pfeiffer Vacuum. The operating instructions describe the functions of the named product and provide the most important information for the safe use of the device. The description is written in accordance with the valid directives. The information in these operating instructions refers to the product's current development status. The document shall remain valid provided that the customer does not make any changes to the product.

1.1.1 Applicable documents

Designation	Document
Declaration of conformity	A component of these operating instructions

1.1.2 Variants

These instructions apply to diaphragm pumps of the DC series:

- MVP 003-2 DC as standard version
- MVP 003-2 DC Vario with control input and rotation speed output

1.2 Target group

These operating instructions are aimed at all persons performing the following activities on the product:

- Transportation
- Setup (Installation)
- Usage and operation
- Decommissioning
- Maintenance and cleaning
- Storage or disposal

The work described in this document is only permitted to be performed by persons with the appropriate technical qualifications (expert personnel) or who have received the relevant training from 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

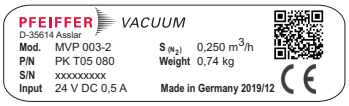
Pictographs used in the document indicate useful information.

Note

Tip

1.3.3 Stickers on the product

This section describes all the stickers on the product along with their meaning.

	**Rating plate** Rating plate of the diaphragm pump
	**Closure seal** The product is sealed ex-factory. Damaging or removing a closure seal results in loss of the warranty.

Tbl. 1: Stickers on the product

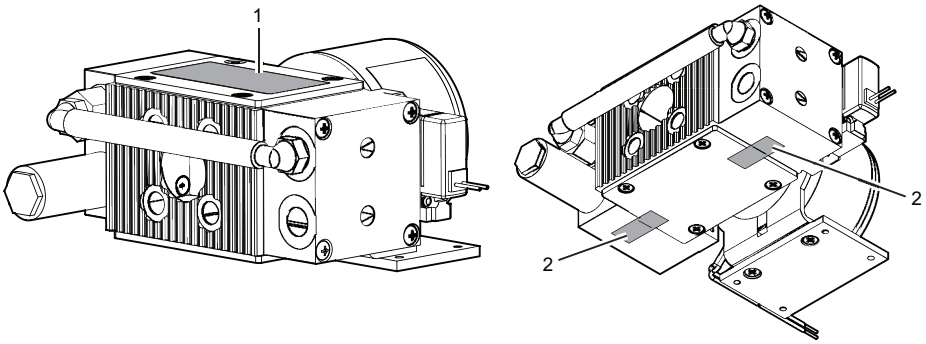


Fig. 1: Position of the stickers on the product

1 Rating plate 2 Closure seal

1.3.4 Abbreviations

Abbreviation	Meaning in this document
AWG 24	Coding for wire diameter (American Wire Gauge)
DC	Direct current
DN	Nominal diameter (diamètre nominal)
EPDM	Ethylenepropylene diene-monomer rubber
f	Rotation speed value of a vacuum pump (frequency, in rpm or Hz)
FKM	Fluorocarbon rubber
GND	Ground
LED	Light emitting diode
MVP	Diaphragm vacuum pump
n.c.	not connected
MSL	Mean sea level
[P:xxx]	Electronic drive unit control parameters. Printed in bold as a three-digit number in square brackets. Frequently displayed in conjunction with a short description. Example: **[P:312]** software version
PA	Polyamide
PE	Protective earth (earthed conductor)
PTFE	Polytetrafluoroethylene
PVC	Polyvinyl chloride
WAF	Width Across Flats

Abbreviation	Meaning in this document
T	Temperature (in °C), property abbreviation of the vacuum pump
U	Control voltage in V

Tbl. 2: Abbreviations used in this document

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.

2.2 Safety instructions

All safety instructions in this document are based on the results of the risk assessment carried out in accordance with Machinery Directive 2006/42/EC Annex I and EN ISO 12100 Section 5. As far as applicable, all unit life cycle phases have been considered.

Risks during transport

⚠ WARNING

Danger of serious injury due to falling objects

Due to falling objects there is a risk of injuries to limbs through to broken bones.

► Take particular care and pay special attention when transporting products manually.
► Do not stack the products.
► Wear protective equipment, e.g. safety shoes.

Risks during installation

⚠ DANGER

Danger to life from electric shock

Power supply packs that are not specified or are not approved will lead to severe injury to death.

- ► Make sure that the power supply pack meets the requirements for double isolation between mains input voltage and output voltage, in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Make sure that the power supply pack meets the requirements in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Where possible, use original power supply packs or only power supply packs that correspond with the applicable safety regulations.

⚠ DANGER

Danger to life from electric shock

When establishing the voltages that exceed the specified safety extra-low voltage (according to IEC 60449 and VDE 0100), the insulating measures will be destroyed. There is a danger to life from electric shock at the communication interfaces.

- ► Connect only suitable devices to the bus system.

⚠ WARNING

Risk of fatal injury due to electric shock on account of incorrect installation

The device's power supply uses life-threatening voltages. Unsafe or improper installation can lead to life-threatening situations from electric shocks obtained from working with or on the unit.

- ► Ensure safe integration into an emergency off safety circuit.
- ► Do not carry out your own conversions or modifications on the unit.

⚠ WARNING

Danger to life from poisoning where toxic process gases leak with no exhaust line

During normal operation, the vacuum pump expels exhaust gases and vapors freely into the air. In processes involving toxic media, there is a risk of injury and danger to life due to poisoning.

- ► Observe the relevant regulations for handling toxic substances.
- ► Safely purge toxic process gases via an exhaust line.

⚠ CAUTION

Danger of injury from bursting as a result of high pressure in the exhaust line

Faulty or inadequate exhaust pipes lead to dangerous situations, e.g. increased exhaust pressure. There is a danger of bursting. Injuries caused by flying fragments, the escaping of high pressure, and damage to the unit cannot be excluded.

- ► Route the exhaust line without shut-off units.
- ► Observe the permissible pressures and pressure differentials for the product.
- ► Check the function of the exhaust line on a regular basis.

Risks during operation

⚠ WARNING

Danger of poisoning due to toxic process media escaping from the exhaust pipe

During operation with no exhaust line, the vacuum pump allows exhaust gases and vapors to escape freely into the air. There is a risk of injury and fatality due to poisoning in processes with toxic process media.

- ► Observe the pertinent regulations for handling toxic process media.
- ► Safely purge toxic process media via an exhaust line.
- ► Use appropriate filter equipment to separate toxic process media.

⚠ WARNING

Explosion hazard from reactive, potentially explosive or other hazardous gas/air mixtures

Uncontrolled inlet of gas at the gas ballast valve leads to sparks generated mechanically following diaphragm rupture, hot surfaces or to potentially explosive gas/air mixtures in the vacuum system caused by static electricity.

- ► If necessary, use inert gas for supplying the flushing gas in order to avoid a potential ignition.

⚠ WARNING

Risk of poisoning due to toxic process gases escaping

For intake pressures > 500 hPa, process gas may escape from the open gas ballast valve. There is a risk of injury and fatality due to poisoning in processes with toxic process media.

- ► If necessary, use inert gas to avoid potential contamination.
- ► If necessary, use an extraction line.

⚠ CAUTION

Danger of burns on hot surfaces

Depending on the operating and ambient conditions, the surface temperature of the vacuum pump can increase to above 70 °C.

- ► Provide suitable touch protection.

Risks during maintenance, decommissioning and in the event of malfunctions

⚠ WARNING

Health hazard through poisoning from toxic contaminated components or devices

Toxic process media result in contamination of devices or parts of them. During maintenance work, there is a risk to health from contact with these poisonous substances. Illegal disposal of toxic substances causes environmental damage.

- ► Take suitable safety precautions and prevent health hazards or environmental pollution by toxic process media.
- ► Decontaminate affected parts before carrying out maintenance work.
- ► Wear protective equipment.

⚠ CAUTION

Danger of injury from moving parts

After a power failure or a standstill as a result of overheating, the motor restarts automatically. There is a risk of injury to fingers and hands if they enter the operating range of rotating parts.

- ► Safely disconnect motor from the mains.
- ► Secure the motor against reactivation.
- ► Dismantle the vacuum pump for inspection, away from the system if necessary.

Risks during disposal

⚠ WARNING

Health hazard through poisoning from toxic contaminated components or devices

Toxic process media result in contamination of devices or parts of them. During maintenance work, there is a risk to health from contact with these poisonous substances. Illegal disposal of toxic substances causes environmental damage.

- ► Take suitable safety precautions and prevent health hazards or environmental pollution by toxic process media.
- ► Decontaminate affected parts before carrying out maintenance work.
- ► Wear protective equipment.

2.3 Safety precautions

⚠ DANGER

Danger to life from electric shock

Power supply packs that are not specified or are not approved will lead to severe injury to death.

- ► Make sure that the power supply pack meets the requirements for double isolation between mains input voltage and output voltage, in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Make sure that the power supply pack meets the requirements in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Where possible, use original power supply packs or only power supply packs that correspond with the applicable safety regulations.

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.

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.

General safety precautions

- ► Prevent process gases and their reaction and ancillary products that are harmful to health and the environmental from escaping, or dispose of these according to the applicable regulations.
- ► Avoid contact with process gases that are harmful to health and if required, wear personal protective clothing.
- ► Check the media compatibility of parts carrying media.
- ► Observe all applicable safety and accident prevention regulations.
- ► Check that all safety measures are observed at regular intervals.
- ► Do not expose body parts to the vacuum.
- ► Never disconnect plug connections during operation.
- ► Never fill or operate the unit with cleaning agents or cleaning agent residues.
- ► Do not carry out your own conversions or modifications on the unit.
- ► Observe the unit protection degree prior to installation or operation in other environments.
- ► Provide suitable touch protection, if the surface temperature exceeds 70°C.
- ► Keep lines and cables away from hot surfaces.
- ► Before returning the vacuum pump, observe the notes in the chapter Service solutions.

2.4 Limits of use of the product

Installation location	Interiors, protected against the accumulation of dust and weather influences, in a non-explosive, dry environment
Installation altitude	max. 2000 m above sea level
Relative humidity of air	80% at T ≤ 31 °C, to max. 50% at T ≤ 40 °C
Protection degree	IP 30
Degree of pollution	2

Intake temperature of medium to be pumped	+5 °C to +40 °C
Ambient temperature	+5 °C to +40 °C

Tbl. 3: Permissible ambient conditions

2.5 Proper use

- ► Use the vacuum pump for vacuum generation only.
- ► Adhere to the installation, commissioning, operating, and maintenance instructions.
- ► Use only accessory parts recommended by Pfeiffer Vacuum.

2.6 Foreseeable improper use

Improper use of the product invalidates all warranty and liability claims. Any use that is counter to the purpose of the product, whether intentional or unintentional, is regarded as improper use; in particular:

- Pumping of corrosive media
- Pumping explosive media
- Pumping radioactive or volatile media
- Pumping of gases that contain contamination such as particles, dust, or condensate
- Pumping of fluids
- Pumping FKM-solubilizing media
- Pumping vapors from combustible liquids
- Pumping pressurized media (> atmospheric pressure)
- Pumping media that can condense or cause adhering deposits to form in the suction chamber
- Using the vacuum pump outside the specified range of application
- Using the vacuum pump below ground
- Using the vacuum pump to generate pressure
- Use of the vacuum pump in systems in which sporadic loads and vibrations or periodic forces act on the unit
- Using the vacuum pump in strong electrical, magnetic, or electromagnetic fields
- Connecting to vacuum pumps and units that are not designed for this purpose according to their operating instructions
- Connecting to units with exposed live parts
- Connecting to sockets without earthing contact
- Use of pipes to lift the vacuum pump
- Use of accessories or spare parts not listed in these instructions
- Using the vacuum pump as a climbing aid
- Using the connection lines between the diaphragm heads as carrying handles
- Using the pump in ambient conditions that do not meet the specified IP protection degree limits

2.7 Personnel qualification

The work described in this document may only be carried out by persons who have appropriate professional qualifications and the necessary experience or who have completed the necessary training as provided by Pfeiffer Vacuum.

Training people

1. Train the technical personnel on the product.
2. Only let personnel to be trained work with and on the product when under the supervision of trained personnel.
3. Only allow trained technical personnel to work with the product.
4. Before starting work, make sure that the commissioned personnel have read and understood these operating instructions and all applicable documents, in particular the safety, maintenance and repair information.

2.7.1 Ensuring personnel qualification

Specialist for mechanical work
Only a trained specialist may carry out mechanical work. Within the meaning of this document, specialists are people responsible for construction, mechanical installation, troubleshooting and maintenance of the product, and who have the following qualifications:

- Qualification in the mechanical field in accordance with nationally applicable regulations
- Knowledge of this documentation

Specialist for electrotechnical work
Only a trained electrician may carry out electrical engineering work. Within the meaning of this document, electricians are people responsible for electrical installation, commissioning, troubleshooting, and maintenance of the product, and who have the following qualifications:

- Qualification in the electrical engineering field in accordance with nationally applicable regulations
- Knowledge of this documentation

In addition, these individuals must be familiar with applicable safety regulations and laws, as well as the other standards, guidelines, and laws referred to in this documentation. The above individuals must have an explicitly granted operational authorization to commission, program, configure, mark, and earth devices, systems, and circuits in accordance with safety technology standards.

Trained individuals
Only adequately trained individuals may carry out all works in other transport, storage, operation and disposal fields. Such training must ensure that individuals are capable of carrying out the required activities and work steps safely and properly.

2.7.2 Personnel qualification for maintenance and repair

Advanced training courses
Pfeiffer Vacuum offers advanced training courses to maintenance levels 2 and 3.

Adequately trained individuals are:

- **Maintenance level 1**
  - Customer (trained specialist)
- **Maintenance level 2**
  - Customer with technical education
  - Pfeiffer Vacuum service technician
- **Maintenance level 3**
  - Customer with Pfeiffer Vacuum service training
  - Pfeiffer Vacuum service technician

2.7.3 Advanced training with Pfeiffer Vacuum

For optimal and trouble-free use of this product, Pfeiffer Vacuum offers a comprehensive range of courses and technical trainings.

For more information, please contact Pfeiffer Vacuum technical training.

3 Product description

3.1 Function

Diaphragm pumps are dry compressing positive displacement pumps. The movement of diaphragms generates a periodic change of the suction chamber volume. The gas flow causes the valves to open and close automatically. The pump unit is directly connected to the drive motor.

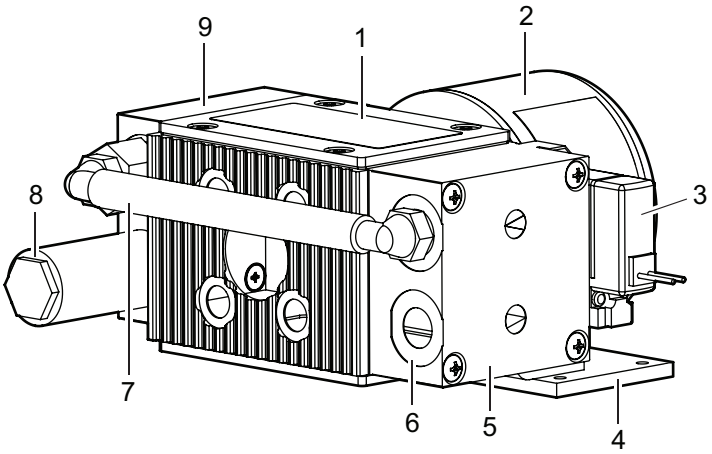


Fig. 2: Diaphragm pump design

1 Housing cover
2 Drive motor
3 Solenoid valve on the gas ballast system
4 Fixing plate
5 Diaphragm head 1
6 Vacuum connection G 1/8"
7 Hose connection
8 Exhaust connection with silencer
9 Diaphragm head 2

3.1.1 Drive

The drive motor is a DC motor with a voltage range of 24 V DC (±10 %).

The drive motor does not have a mains switch or excess temperature cut-out.

3.1.2 Pumping system

The diaphragm pump has 2 diaphragm heads and 2 pumping stages.

3.1.3 Cooling

The diaphragm pump is convection-cooled. The drive motor has not got its own fan.

3.1.4 Gas ballast

An integrated gas ballast system serves the controlled supply of ambient air or inert gas into the suction chamber. Gas ballast supports the reduction of condensate accumulating in the pumping system. An open solenoid valve on the gas ballast system enables the diaphragm pump to be started safely under vacuum. The solenoid valve is closed without current.

3.2 Electrical connections

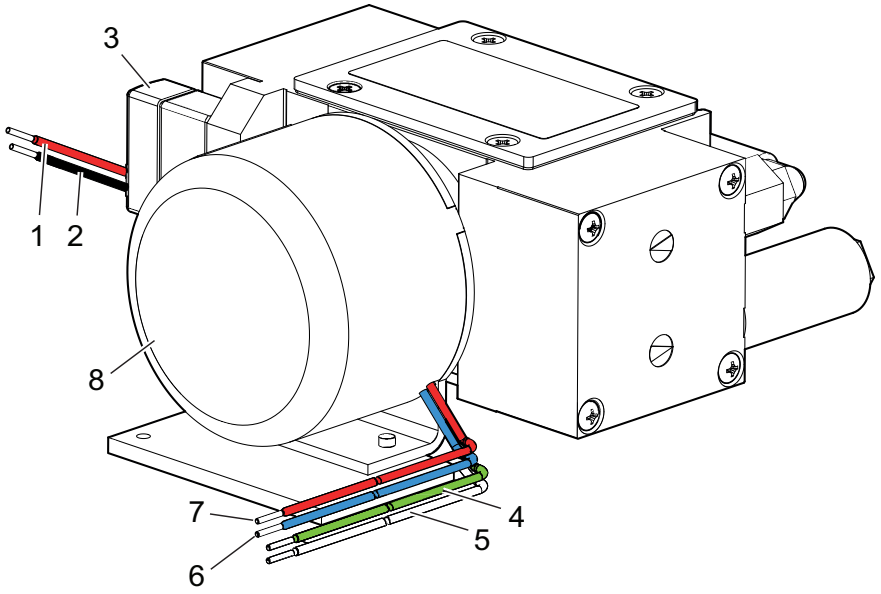


Fig. 3: Electrical connections

1	+24 V DC (red)	5	Control input (white)
2	Ground/GND (black)	6	Ground/GND (blue)
3	Solenoid valve on the gas ballast system	7	+24 V DC (red)
4	Rotation speed output (green)	8	Motor

3.3 Identifying product

- ► To ensure clear identification of the product when communicating with Pfeiffer Vacuum, always keep all of the information on the rating plate to hand.
- ► Learn about certifications through test seals on the product or at www.tuev-sued.de.

3.4 Scope of delivery

- Vacuum pump with integrated electronic drive unit
- Silencer
- Operating instructions
- Blind plug on the vacuum connection

4 Transportation and Storage

4.1 Transporting the vacuum pump

⚠ WARNING

Danger of serious injury due to falling objects

Due to falling objects there is a risk of injuries to limbs through to broken bones.

- ► Take particular care and pay special attention when transporting products manually.
- ► Do not stack the products.
- ► Wear protective equipment, e.g. safety shoes.

Packing

We recommend keeping the transport packaging and original protective cover.

Safe transport of the product

- ► Observe the weight specified on the packaging.
- ► Where possible, always transport or ship the product in the original packaging.
- ► Always place the product on an adequately sized, level surface.

Transporting the vacuum pump without its packaging

1. Unpack the vacuum pump.
2. To protect the inside of the pump, leave the blind plugs on the vacuum connection during transport.
3. Lift the vacuum pump on both front sides.
4. Lift the vacuum pump out of the transport packaging.
5. Make sure that no forces are acting on the piping system.
6. Always place the vacuum pump on an adequately sized, level surface.

4.2 Storing vacuum pump

Packing

We recommend storing the product in its original packaging.

Safe storing vacuum pump

- ► Seal the vacuum connection with the blind plug.
- ► Store the vacuum pump only in dry, dust-free rooms, within the specified ambient conditions.
- ► In rooms with humid or aggressive atmospheres: Hermetically seal the vacuum pump together with a drying agent in a plastic bag.

5 Installation

5.1 Installing the vacuum pump

Procedure

- ► Place the vacuum pump on a flat, horizontal surface.
- ► For stationary installation, screw the vacuum pump direct to the mounting surface.
- ► When installing the pump in a closed housing, ensure adequate air circulation.
- ► Keep the specifications on the motor rating plate visible and freely accessible.

5.2 Connecting the vacuum side

NOTICE

Property damage from contaminated gases

Pumping gases that contain contamination damages the vacuum pump.

- ► Use suitable filters or separators from the Pfeiffer Vacuum range of accessories, to protect the vacuum pump.

Installation and operation of accessories

Pfeiffer Vacuum offers a series of special, compatible accessories for its diaphragm pumps.

- Information and ordering options for approved accessories can be found online.
- Described accessories are not included in the shipment.

Preventing throttling losses

Using the shortest possible vacuum connection lines with large nominal diameter prevents pressure losses.

Condensate separator

Pfeiffer Vacuum recommends the installation of a condensate separator in case vapors are formed from moisture during evacuation.

Procedure

1. Remove the blind plug from the vacuum connection.
2. Establish the shortest possible connection between vacuum pump and vacuum chamber.
3. Choose a minimum vacuum line diameter equal to the nominal diameter of the vacuum connection.
4. Depending on the pump type, use PVC or metallic hoses with flange connections from the Pfeiffer Vacuum component shop.
5. Connect the vacuum pump to the vacuum system using the vacuum connection.

5.3 Connect exhaust side

⚠ WARNING

Danger to life from poisoning where toxic process gases leak with no exhaust line

During normal operation, the vacuum pump expels exhaust gases and vapors freely into the air. In processes involving toxic media, there is a risk of injury and danger to life due to poisoning.

- ► Observe the relevant regulations for handling toxic substances.
- ► Safely purge toxic process gases via an exhaust line.

⚠ CAUTION

Danger of injury from bursting as a result of high pressure in the exhaust line

Faulty or inadequate exhaust pipes lead to dangerous situations, e.g. increased exhaust pressure. There is a danger of bursting. Injuries caused by flying fragments, the escaping of high pressure, and damage to the unit cannot be excluded.

- ► Route the exhaust line without shut-off units.
- ► Observe the permissible pressures and pressure differentials for the product.
- ► Check the function of the exhaust line on a regular basis.

⚠ CAUTION

Health hazard from increased noise emission

Operation without silencer leads to higher noise emissions. Remaining in the close proximity of the vacuum pump for a sustained period of time may cause hearing damage.

- ► Install a suitable exhaust line.
- ► Wear hearing protection.

Condensate separator

Pfeiffer Vacuum recommends installing a condensate separator, with condensate drain at the lowest point of the exhaust line.

Procedure

1. Check the installed silencer for free passage.
2. Choose a minimum exhaust line diameter equal to the nominal diameter of the connection flange.
3. Depending on the pump type, use PVC or metallic hoses with flange connections from the Pfeiffer Vacuum component shop.
4. Option: In case of higher gas throughputs, mount an exhaust line.
5. Route the piping downwards from the vacuum pump, to prevent condensate return.
6. Support or suspend the piping to the vacuum pump so that no piping system forces act on the vacuum pump.

5.4 Establishing the electric connection

⚠ DANGER

Danger to life from electric shock

Power supply packs that are not specified or are not approved will lead to severe injury to death.

- ► Make sure that the power supply pack meets the requirements for double isolation between mains input voltage and output voltage, in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Make sure that the power supply pack meets the requirements in accordance with IEC 61010-1 IEC 60950-1 and IEC 62368-1.
- ► Where possible, use original power supply packs or only power supply packs that correspond with the applicable safety regulations.

⚠ DANGER

Danger to life from electric shock

When establishing the voltages that exceed the specified safety extra-low voltage (according to IEC 60449 and VDE 0100), the insulating measures will be destroyed. There is a danger to life from electric shock at the communication interfaces.

- ► Connect only suitable devices to the bus system.

⚠ WARNING

Risk of fatal injury due to electric shock on account of incorrect installation

The device's power supply uses life-threatening voltages. Unsafe or improper installation can lead to life-threatening situations from electric shocks obtained from working with or on the unit.

- ► Ensure safe integration into an emergency off safety circuit.
- ► Do not carry out your own conversions or modifications on the unit.

⚠ CAUTION

Danger of injury from moving parts

After a power failure or a standstill as a result of overheating, the motor restarts automatically. There is a risk of injury to fingers and hands if they enter the operating range of rotating parts.

- ► Safely disconnect motor from the mains.
- ► Secure the motor against reactivation.
- ► Dismantle the vacuum pump for inspection, away from the system if necessary.

NOTICE

Risk of property damage from excess voltage

Incorrect or excessive mains voltage will destroy the motor.

- ► Always observe the motor rating plate specifications.
- ► Route the mains connection in accordance with locally applicable provisions.
- ► Always provide a suitable mains fuse to protect the motor and supply cable in the event of a fault.

NOTICE

Property damage due to incorrect polarity

Incorrect or excessive supply voltage will destroy the motor.

- ► Always observe the motor rating plate specifications.
- ► When connecting the supply cable, observe the colored marking on the corresponding wires.
- ► Always provide a suitable mains fuse.

Connecting the motor

- ► Connect the +24 V DC voltage supply and the ground to the corresponding wires (AWG 24, red and blue) according to the rating plate.

Connecting the motor of the Vario variant

1. Connect the +24 V DC voltage supply and the ground to the corresponding wires (AWG 24, red and blue) according to the rating plate.
2. Connect the control input to the corresponding wire (AWG 24, white).
   - – Input supply voltage: 0 to 5 V DC
3. Connect the rotation speed output to the corresponding wire (AWG 24, green).
   - – The connection is optional.

Connecting the solenoid valve on the gas ballast system

- ► Connect the +24 V DC voltage supply and the ground to the corresponding wires (AWG 24, red and black).
- ► Make sure that a circuit breaker is fitted so that the solenoid valve is not always open during operation.
  - – This prevents a continuous pressure rise caused by the gas ballast system.

6 Operation

6.1 Putting the vacuum pump into operation

⚠ WARNING

Danger of poisoning due to toxic process media escaping from the exhaust pipe

During operation with no exhaust line, the vacuum pump allows exhaust gases and vapors to escape freely into the air. There is a risk of injury and fatality due to poisoning in processes with toxic process media.

- ► Observe the pertinent regulations for handling toxic process media.
- ► Safely purge toxic process media via an exhaust line.
- ► Use appropriate filter equipment to separate toxic process media.

⚠ CAUTION

Danger of burns on hot surfaces

Depending on the operating and ambient conditions, the surface temperature of the vacuum pump can increase to above 70 °C.

- ► Provide suitable touch protection.

NOTICE

Vacuum pump damage caused by overpressure

Mixing up the connections causes overpressure overload. The vacuum pump can be started only against max. 1 bar differential pressure between inlet and outlet; otherwise the motor jams and sustains damage.

- ► Make sure that the distributor is installed correctly on the diaphragm heads, before connecting the vacuum pump to the vacuum equipment.
- ► Before commissioning, make completely sure that the pressure side pressure is below the permissible limit.

Procedure

1. Compare the frequency specifications on the rating plate with the available supply voltage.
2. Check the exhaust connection for free passage.
3. Actuate the shut-off units so that the shut-off units open before or at the same time as the pump starts up.

6.2 Switching on the vacuum pump

⚠ CAUTION

Danger of burns on hot surfaces

Depending on the operating and ambient conditions, the surface temperature of the vacuum pump can increase to above 70 °C.

- ► Provide suitable touch protection.

Warm-up time of the vacuum pump

The warm-up time depends on the ambient temperature and takes at least 30 minutes.

When pumping down dry gases, no special precautions are required.

Prerequisite

- Electrical connections established

Switching on the vacuum pump

1. If required, switch the vacuum pump on in each pressure range by applying the supply voltage.
2. Allow the vacuum pump to warm up prior to process start, with the vacuum connection closed.

The vacuum pump achieves the specified throughput and final pressure values once the operating temperature has been reached.

6.3 Rotation speed setting mode with Vario variant

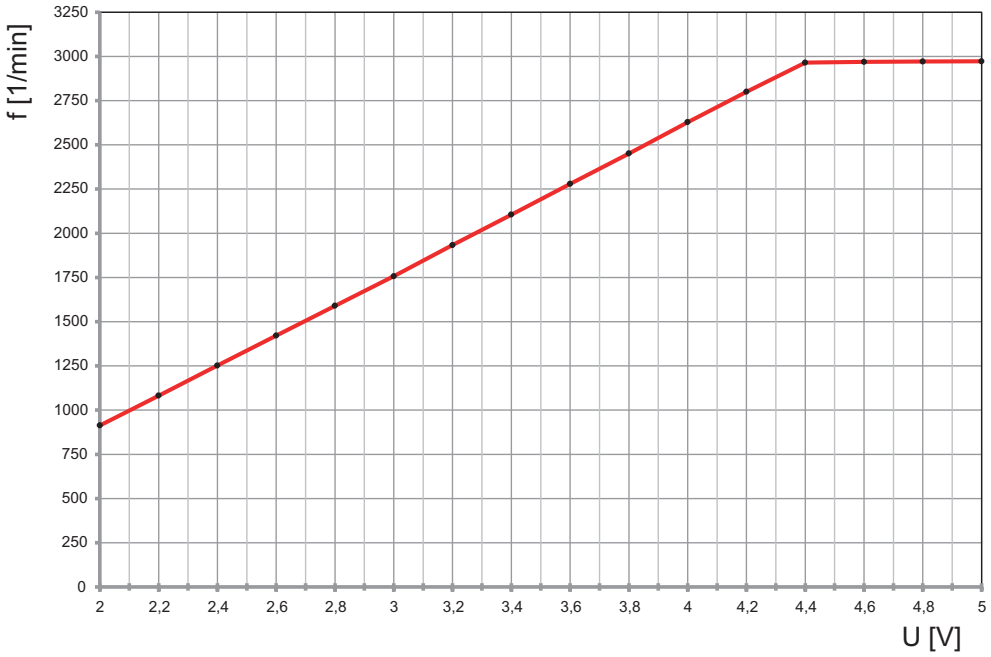


Fig. 4: Control voltage and rotation speed

f Rotation speed in rpm U Control voltage 0 to 5 V DC

Rotation speed output

- Impulses per revolution: 6
- Output level high: 4.5 to 5.4 V
- Output level low: max. 0.5 V

Prerequisites

- Electrical connections established

Adjusting rotation speed

► Set the rotation speed using the control voltage.

6.4 Operating the diaphragm pump with gas ballast

⚠ WARNING

Explosion hazard from reactive, potentially explosive or other hazardous gas/air mixtures

Uncontrolled inlet of gas at the gas ballast valve leads to sparks generated mechanically following diaphragm rupture, hot surfaces or to potentially explosive gas/air mixtures in the vacuum system caused by static electricity.

► If necessary, use inert gas for supplying the flushing gas in order to avoid a potential ignition.

⚠ WARNING

Risk of poisoning due to toxic process gases escaping

For intake pressures > 500 hPa, process gas may escape from the open gas ballast valve. There is a risk of injury and fatality due to poisoning in processes with toxic process media.

► If necessary, use inert gas to avoid potential contamination.
► If necessary, use an extraction line.

NOTICE

Risk of damage from condensation in vacuum pump

During operation without gas ballast, condensation may form as a result of the vapor compatibility of the vacuum pump being exceeded.

- ► Pump condensable vapors only when the vacuum pump is warm and the gas ballast valve open.
- ► To protect the vacuum pump against corrosion, allow the vacuum pump to run on after process end for another 30 minutes with the gas ballast valve open.

Vapors or moisture from pumped media impair the throughput after condensation in the vacuum pump.

Behavior with process gases with condensable vapors

- ► Operate the vacuum pump with gas ballast, i.e. with the gas ballast valve open.

6.5 Switching off the vacuum pump

Procedure

1. Allow the vacuum pump to run on for 5 to 10 minutes with the vacuum connection open to allow any condensate that may be present to be removed from the vacuum pump.
2. If required, switch the vacuum pump off in each pressure range.
3. Disconnect the voltage supply on the power supply pack.

7 Maintenance

7.1 Maintenance instructions

⚠ WARNING

Health hazard through poisoning from toxic contaminated components or devices

Toxic process media result in contamination of devices or parts of them. During maintenance work, there is a risk to health from contact with these poisonous substances. Illegal disposal of toxic substances causes environmental damage.

- ► Take suitable safety precautions and prevent health hazards or environmental pollution by toxic process media.
- ► Decontaminate affected parts before carrying out maintenance work.
- ► Wear protective equipment.

⚠ CAUTION

Danger of injury from moving parts

After a power failure or a standstill as a result of overheating, the motor restarts automatically. There is a risk of injury to fingers and hands if they enter the operating range of rotating parts.

- ► Safely disconnect motor from the mains.
- ► Secure the motor against reactivation.
- ► Dismantle the vacuum pump for inspection, away from the system if necessary.

NOTICE

Damage caused by unsuitable cleaning agents

Unsuitable cleaning agents damage pump parts.

- ► Use only approved cleaning agents to clean pump parts.
- ► Use only a clean dry cloth to clean the diaphragms and valves.
- ► Do not use any alcohol or other cleaning agents to clean the diaphragms and valves.

NOTICE

Danger of property damage from improper maintenance

Unprofessional work on the vacuum pump will lead to damage for which Pfeiffer Vacuum accepts no liability.

- ► We recommend taking advantage of our service training offering.
- ► When ordering spare parts, specify the information on the nameplate.

The following section relates to the tasks for cleaning and maintaining the vacuum pump. Valves and diaphragms are wear parts.

Component	Operating hours
Diaphragms	8 000
Valves	8 000

Tbl. 4: Typical service life with normal use

Prerequisites

- Vacuum pump switched off
- Vacuum pump vented to atmospheric pressure
- Vacuum pump cooled

Required materials

- Cloth (clean, lint-free)
- Water or mild soap solution

Servicing the vacuum pump

1. Disconnect the vacuum pump from the voltage supply.
2. Secure the motor against reactivation.
3. Remove any external contamination on the vacuum pump with cloth slightly moistened with water or a mild soap solution.
4. Allow all cleaned parts to dry well.
5. For maintenance work, only dismantle the vacuum pump to the extend needed.
6. Clean the suction chamber, diaphragms, and valves with a dry cloth.
7. Examine the diaphragms and valves for cracks at the latest when the pressure values achieved decrease.

7.2 Checklist for inspection and maintenance

Maintenance frequency and service lives

Maintenance frequency and service lives are process-dependent. Chemical and thermic loads or contamination reduce the recommended reference values.

- Determine the specific service lives during the first operating interval.
- Consult with Pfeiffer Vacuum Service if you wish to reduce the maintenance frequency.

Maintenance by Pfeiffer Vacuum Service

We recommend that Pfeiffer Vacuum Service carry out maintenance work. If the specified intervals are exceeded, or if maintenance work is carried out improperly, no warranty or liability claims are accepted on the part of Pfeiffer Vacuum. This also applies wherever parts other than original spare parts are used.

Action	Inspection	Maintenance	Required material
Interval	**as required; at least once every six months**	**as required; at least every 2 years**	
Check silencer for contamination [1)]	■		
Test vacuum pump optically and acoustically	■		
Read out and analyze pump data [2)]		■	
Clean the vacuum pump		■	
Change the diaphragms and valves		■	Overhaul kit
Change silencer [3)]		■	Silencer
Performing a function test		■	
Performing incoming inspection		■	
Clean vacuum pump completely		■	
Change gas ballast filter [4)]		■	Filter
Replace wear parts		■	Diaphragms, valves, sealing rings, silencers

Tbl. 5: Maintenance intervals

1) if present
2) DC pumps only
3) if present
4) if present

7.3 Change the diaphragms and valves

NOTICE

Property damage from incorrect installation

Change in dead volume due to incorrect installation of the original spacer disks impairs the final vacuum or leads to bearing damage.

- ► During disassembly, keep the existing spacer disks separate per installation location.
- ► Reinstall the same number of original spacer disks per diaphragm head.

7.3.1 Dismantling diaphragm head and valves

Required tools

- Torx screwdriver, **T 10**

Avoid all possibility of confusing the parts

Label all diaphragm head covers, intermediate plates and the housing with a continuous felt-tip pen mark to avoid all possibility of confusing the parts during later assembly.

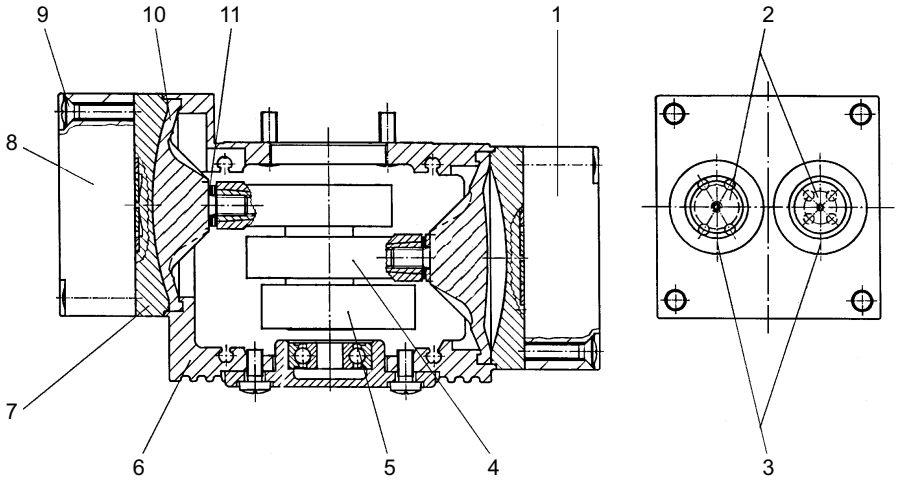


Fig. 5: Section diagram of the MVP with open housing cover

1	Diaphragm head cover	7	Intermediate plate
2	Valves	8	Diaphragm head cover
3	Sealing rings	9	Screws
4	Connection rod	10	Diaphragm
5	Counterweight	11	Spacer disks
6	Housing		

Procedure

1. Unscrew the screws from the housing cover.
2. Remove the housing cover.
3. Unscrew the screws from both diaphragm head covers.
4. Do not try to undo the hose connection.
5. Remove both diaphragm head covers together with the hose connection.
   - Pay attention to the sealing rings.
6. Rotate the diaphragm pump so that the diaphragm head to be dismantled is facing upwards.
7. Remove the intermediate plate.
8. Release the valves and sealing rings from the intermediate plate.
9. Move the connection rod into top dead center by rotating the counterweight.
10. Lift the diaphragm slightly at the side.
11. Unscrew and remove the diaphragm from the connection rod by hand.
    - Pay attention to the spacer disks.

7.3.2 Cleaning and replacing the diaphragms and valves

Prerequisite

- Diaphragm and valves removed

Required spare parts

- Overhaul kit

Required consumables

- Clean, dry cloth
- Isopropanol

Procedure

1. Clean diaphragms and valves with a clean, dry cloth.
   – Do not use isopropanol or other cleaning agents to clean diaphragms and valves.
2. Clean valve seats, intermediate plate and head cover with isopropanol.
3. Check valve seats, intermediate plate and head cover for wear.
4. Replace all wear parts according to the inspection sets.

7.3.3 Mounting diaphragm head and valves

Spacer disks

Spacer disks are available in 3 sizes:

- 8.0 × 4.0 × 0.1 mm
- 8.0 × 4.0 × 1.0 mm
- 8.0 × 4.2 × 0.3 mm

The number and size of the spacer disks vary between the diaphragm heads.

Install the same number and size of original spacer disks per diaphragm head.

Required tools

- Torx screwdriver, **T 10**

Procedure

1. Rotate the diaphragm pump so that the diaphragm head to be mounted is facing upwards.
2. Move the connection rod into top dead center by rotating the counterweight.
3. Screw the diaphragm into the connection rod by hand.
   – Pay attention to the spacer disks.
4. Place the valves and the sealing rings in the intermediate plate.
5. Position the intermediate plate.
6. Do not try to undo the hose connection.
7. Fit both diaphragm head covers together with the hose connection.
   – Pay attention to the sealing rings.
8. Screw the screws slightly into both diaphragm head covers.
9. Rotate the counterweight and check that the diaphragm pump runs smoothly.
10. Tighten the screws crosswise into the diaphragm head.
    – Tightening torque: **0,8 Nm +/- 0,1 Nm**
11. Position the housing cover on the diaphragm pump.
12. Tighten the housing cover with the screws.

8 Decommissioning

Before shutting down the vacuum pump, observe the following instructions to adequately protect the interior of the vacuum pump (suction chamber) from corrosion:

Procedure for temporary vacuum pump shutdowns

1. Allow the vacuum pump to run on for 5 to 10 minutes with the vacuum connection open to allow any condensate that may be present to be removed from the vacuum pump.
2. If media has entered the vacuum pump that may attack the pump materials or lead to deposits, clean the inside of the pump heads.

Procedure for longer vacuum pump shutdowns

1. Disconnect the vacuum pump from the vacuum system.
2. Remove the vacuum pump from the vacuum system if necessary.
3. Seal the vacuum connection with the original sealing plugs.
4. Store the vacuum pump in dry, dust-free rooms, within the specified ambient conditions.
5. Pack the vacuum pump together with a drying agent in a plastic bag, and seal the vacuum pump airtight if it is to be stored in rooms with damp or aggressive atmospheres.

9 Recycling and disposal

⚠ WARNING

Health hazard through poisoning from toxic contaminated components or devices

Toxic process media result in contamination of devices or parts of them. During maintenance work, there is a risk to health from contact with these poisonous substances. Illegal disposal of toxic substances causes environmental damage.

- ► Take suitable safety precautions and prevent health hazards or environmental pollution by toxic process media.
- ► Decontaminate affected parts before carrying out maintenance work.
- ► Wear protective equipment.

Environmental protection

You **must** dispose of the product and its components in accordance with all applicable regulations for protecting people, the environment and nature.

- Help to reduce the wastage of natural resources.
- Prevent contamination.

9.1 General disposal information

Pfeiffer Vacuum products contain materials that you must recycle.

- ► Dispose of our products according to the following:
  - – Iron
  - – Aluminium
  - – Copper
  - – Synthetic
  - – Electronic components
  - – Oil and fat, solvent-free
- ► Observe the special precautionary measures when disposing of:
  - – Fluoroelastomers (FKM)
  - – Potentially contaminated components that come into contact with media

9.2 Dispose of diaphragm pumps

Pfeiffer Vacuum diaphragm pumps contain materials that you must recycle.

1. Disconnect the electronic drive unit.
2. Dismantle the motor.
3. Decontaminate the components that come into contact with process gases.
4. Separate the components into recyclable materials.
5. Recycle the non-contaminated components.
6. Dispose of the product or components in a safe manner according to locally applicable regulations.

10 Malfunctions

⚠ CAUTION

Danger of injury from moving parts

After a power failure or a standstill as a result of overheating, the motor restarts automatically. There is a risk of injury to fingers and hands if they enter the operating range of rotating parts.

- ► Safely disconnect motor from the mains.
- ► Secure the motor against reactivation.
- ► Dismantle the vacuum pump for inspection, away from the system if necessary.

NOTICE

Danger of property damage from improper maintenance

Unprofessional work on the vacuum pump will lead to damage for which Pfeiffer Vacuum accepts no liability.

- ► We recommend taking advantage of our service training offering.
- ► When ordering spare parts, specify the information on the nameplate.

Should malfunctions occur, you can find information about potential causes and how to fix them here:

Problem	Possible causes	Remedy
Vacuum pump will not start up	• No supply voltage or voltage does not correspond to the motor data	• Check the supply voltage.
	• Pump temperature too low	• Heat the vacuum pump to a temperature of > 12 °C.
	• Diaphragms or valves dirty	• Clean the vacuum pump.
	• Overpressure in the exhaust lead	• If required, check and clean the exhaust line.
	• Pressure in the intake line < atmospheric pressure	• Vent the vacuum pump.
Vacuum pump switches off after a while after being started	• Exhaust pressure too high	• Check exhaust line outlet opening and exhaust side accessories.
Vacuum pump does not reach the specified ultimate pressure	• Condensate in the vacuum pump	• Operate the vacuum pump over a longer period at atmospheric pressure and, if necessary, with the gas ballast valve open.
	• Gas ballast valve open	• Close the gas ballast valve.
	• Soiled valves or diaphragms	• If necessary, clean or replace the valves and diaphragms.
	• Leak in system	• Locate and eliminate the leak.
Pumping speed of vacuum pump too low	• The intake line is not suitably dimensioned	• Make sure that connections are short and cross sections adequately dimensioned.
	• Exhaust pressure too high	• Check exhaust line outlet opening and exhaust side accessories.

Problem	Possible causes	Remedy
Unusual noises during operation	• Defective valves or diaphragms	• If necessary, clean or replace the valves and diaphragms.
	• Suction chamber dirty	• Clean suction chamber.
	• Silencer loose or missing	• If necessary, check or replace the silencer.
	• Valves dirty or defective	• If necessary, clean or replace the valves and diaphragms.
	• Connection rod or motor bearing defective	• Contact Pfeiffer Vacuum Service.

Tbl. 6: Troubleshooting on diaphragm pumps

11 Service solutions by Pfeiffer Vacuum

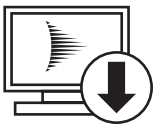
We offer first-class service
High vacuum component service life, in combination with low downtime, are clear expectations that you place on us. We meet your needs with efficient products and outstanding service.

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 section.

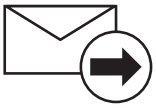
You can obtain advice on the optimal solution for you, from your Pfeiffer Vacuum representative.
For fast and smooth service process handling, we recommend the following:



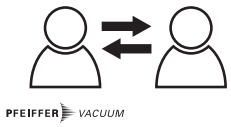
1. Download the up-to-date form templates.
   - Explanations of service requests
   - Service requests
   - Contamination declaration

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.

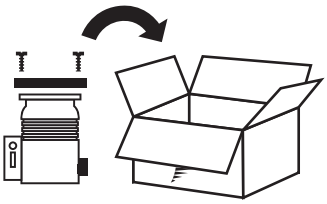


3. Send the forms by email, fax, or post to your local Service Center.

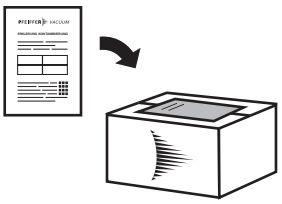


4. You will receive an acknowledgment from Pfeiffer Vacuum.

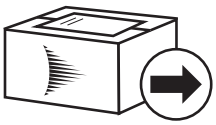
Submission of contaminated products
No microbiological, explosive, or radiologically contaminated products will be accepted. Where products are contaminated, or the contamination declaration is missing, Pfeiffer Vacuum will contact you before starting service work. Depending on the product and degree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



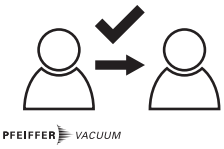
5. Prepare the product for transport in accordance with the provisions in the contamination declaration.
a) Neutralize the product with nitrogen or dry air.
b) Seal all openings with blind flanges, so that they are airtight.
c) Shrink-wrap the product in suitable protective foil.
d) Package the product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

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

12 Spare part packages

Ordering spare part packages

- ► Have the vacuum pump part number to hand, along with other details from the rating plate if necessary.
- ► Install original spare parts only.
- ► When ordering the inspection set, observe the respective part number of the diaphragm pump.

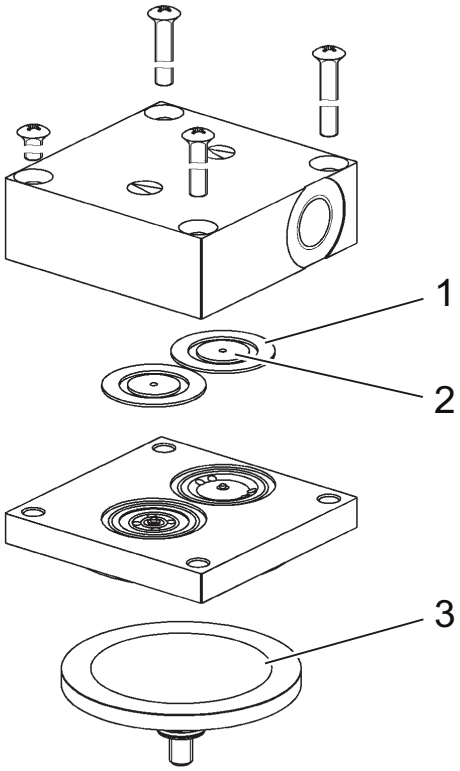


Fig. 6: Spare parts of the inspection sets

1 Valve plate
2 Sealing ring
3 Diaphragm

Spare parts	Order number	Description
Overhaul kit	PU E22 035 -T	Valve plates, sealing rings, diaphragms
Silencer	P 0920 567 E	-

Tbl. 7: Spare parts

13 Accessories

13.1 Accessory information

Hose connections
Hose connections with adapters for connecting to a turbopump

Screwing flange
Screwing flange, including seal for the intake side of the vacuum pump

13.2 Ordering accessories

Designation	Order number
Screwing flange DN 16 ISO-KF / 1/8" thread incl. seal	PK 050 108 -T
Hose connection DN 6 x 400 mm with straight connector 1/8" thread and 1/4" thread including seal	P 0920 739
Push-in fitting G 1/8" including seal for hose connection (8/6 mm)	P 4131 029

Tbl. 8: Accessories

14 Technical data and dimensions

14.1 General

Basis for the technical data of Pfeiffer Vacuum diaphragm pumps:

- Specifications according to PNEUROP committee PN5
- ISO 21360:2012: “Vacuum technology - Standard methods for measuring vacuum-pump performance - General description”

The following harmonized standards are fulfilled:

- IEC 61010-1
- UL 61010-1
- CSA 61010-1

	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						

Tbl. 9: Conversion table: Pressure units

	mbar l/s	Pa m³/s	sccm	Torr l/s	atm cm³/s
mbar l/s	1	0.1	59.2	0.75	0.987
Pa m³/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 cm³/s	1.01	0.101	59.8	0.76	1

Tbl. 10: Conversion table: Units for gas throughput

14.2 Technical data

Type designation	MVP 003-2	MVP 003-2	MVP 003-2
Part number	PK T05 080	PK T05 081	PK T05 083
Connection flange (in)	G 1/8"	G 1/8"	G 1/8"
Connection flange (out)	G 1/8" with silencer	G 1/8" with silencer	G 1/8" with silencer
Number of pumping stages	Two stage	Two stage	Two stage
Pumping speed	0.25 m³/h	0.25 m³/h	0.25 m³/h
Gas ballast	No	Yes	Yes
Final pressure	7 hPa	7 hPa	7 hPa
Intake pressure max.	1000 hPa	1000 hPa	1000 hPa
Exhaust pressure, max.	1300 hPa	1300 hPa	1300 hPa
Rotation speed	3 000 rpm	3 000 rpm	1 000 – 3 000 rpm
Integral leak rate	$6 \cdot 10^{-3}$ Pa m³/s	$6 \cdot 10^{-3}$ Pa m³/s	$6 \cdot 10^{-3}$ Pa m³/s
Operating voltage: DC	24 V	24 V	24 V
Input voltage: tolerance	±5 %	±5 %	±5 %
Current, max.	0.5 A	0.5 A	0.5 A
Short circuit current of voltage source, max.	45 A	45 A	45 A

Type designation	MVP 003-2	MVP 003-2	MVP 003-2
Cooling method	Natural convection	Natural convection	Natural convection
Operating altitude, max.	2000 m	2000 m	2000 m
Protection degree	IP30	IP30	IP30
Ambient temperature	5 – 40 °C	5 – 40 °C	5 – 40 °C
Temperature: Storage	5 – 40 °C	5 – 40 °C	5 – 40 °C
Sound pressure level	48 dB(A)	48 dB(A)	48 dB(A)
Weight	0.74 kg	0.74 kg	0.74 kg

Tbl. 11: Technical data MVP 003-2 DC

14.3 Substances in contact with the media

Pump parts	Substances in contact with the media
Diaphragm	PTFE-coated
Valves	EPDM
Head cover	Aluminum alloy
Intermediate plate	Aluminum alloy
Hose connection	PVC
Elbow union	CuZn, nickel-plated
Straight compression coupling on the suction hose	CuZn, nickel-plated
Exhaust, silencer	PA

Tbl. 12: Materials that make contact with the process media

14.4 Dimensions

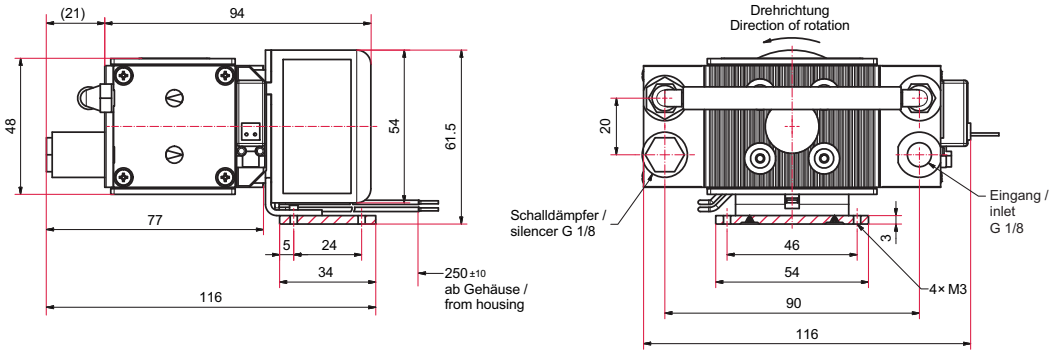


Fig. 7: Dimensions MVP 003-2 DC

Dimensions in mm

EC Declaration of Conformity

Declaration for product(s) of the type:

Diaphragm pump
MVP 003-2 DC

We hereby declare that the listed product satisfies all relevant provisions of the following **European Directives**.

Machinery 2006/42/EC (Annex II, no. 1 A)
Electromagnetic compatibility 2014/30/EU
Restriction of the use of certain hazardous substances 2011/65/EU
Restriction of the use of certain hazardous substances, delegated directive 2015/863/EU

Harmonized standards and applied national standards and specifications:

EN ISO 12100:2010	EN IEC 55014-2:2021
EN 1012-2:1996+A1:2009	EN IEC 61000-3-2:2019
EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019; Correction 2	EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022
EN IEC 55014-1:2021	EN IEC 63000:2018

The authorized representative for the compilation of technical documents is
Dr. Adrian Wirth, Pfeiffer Vacuum GmbH, Berliner Straße 43, 35614 Asslar, Germany.

Signature:

Pfeiffer Vacuum GmbH
Berliner Straße 43
35614 Asslar
Germany

(Daniel Sälzer)
Managing Director

Asslar, 2023-02-07

CE

PFEIFFER VACUUM

UK Declaration of Conformity

This declaration of conformity has been issued under the sole responsibility of the manufacturer.

Declaration for product(s) of the type:

Diaphragm pump

MVP 003-2 DC

We hereby declare that the listed product satisfies all relevant provisions of the following **British Directives**.

Supply of Machinery (Safety) Regulations 2008

Electromagnetic Compatibility Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Applied standards and specifications:

EN ISO 12100:2010	EN IEC 55014-2:2021
EN 1012-2:1996+A1:2009	EN IEC 61000-3-2:2019
EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019; Correction 2	EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022
EN IEC 55014-1:2021	EN IEC 63000:2018

The manufacturer's authorized representative in the United Kingdom and the authorized agent for compiling the technical documentation is Pfeiffer Vacuum Ltd, 16 Plover Close, Interchange Park, MK169PS Newport Pagnell.

Signature:

Pfeiffer Vacuum GmbH
Berliner Straße 43
35614 Asslar
Germany

(Daniel Sälzer)
Managing Director

Asslar, 2023-05-24

UK CA

PFEIFFER VACUUM

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:
We are the only supplier of vacuum technology that provides a complete product portfolio.

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Benefit from our know-how and our portfolio of training opportunities!
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Are you looking for a perfect vacuum solution? Please contact us

Pfeiffer Vacuum GmbH
Headquarters • Germany
T +49 6441 802-0
info@pfeiffer-vacuum.de

www.pfeiffer-vacuum.com

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