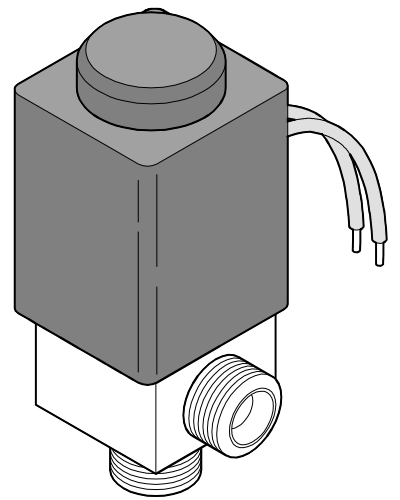


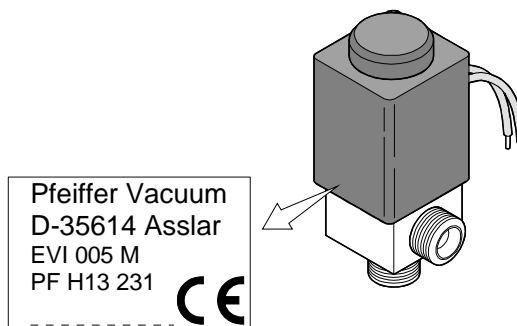
Mini angle valve
electromagnetically actuated
(Complete valve)

EVI 005 M



Product identification

In all communications with Pfeiffer Vacuum Instruments, please specify the information given on the product nameplate. For convenient reference copy that information into the nameplate replica below.



Validity

This document applies to products with part number
PF H13 231.

The part number can be taken from the solenoid coil.

We reserve the right to make technical changes without prior notice.

Intended use

The EVI 005 M is predominantly used in fast-cycling vacuum systems, for example, for gas analysis and coating processes.

Functional principle

The EVI 005 M is opened electromagnetically and closed by the prestressed pressure spring.

It will close, or will remain closed, on power loss.

Trademarks

The following trademark and firm are the property their owner:

Viton™

DuPont Co.

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1 Safety

1.1 Symbols used



DANGER

Information on preventing any kind of physical injury.



WARNING

Information on preventing extensive equipment and environmental damage.



Note

Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

← 20 → Dimensions in mm

→ See page ...

1.2 Personnel qualifications



Skilled personnel

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

1.3 General safety instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
Consider possible reactions between the materials (→ 6) and the process media.
Consider possible reactions of the process media due to the heat generated by the product (→ 6).
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before you begin to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Communicate the safety instructions to all other users.

1.4 Liability and warranty

Pfeiffer Vacuum Instruments assumes no liability and the warranty becomes null and void if the end-user or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of changes (modifications, alterations etc.) to the product
- use the product with accessories not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

2 Technical data

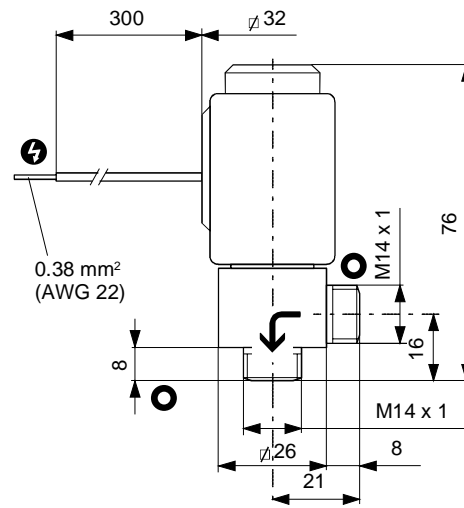
Mini angle valve	EVI 005 M
Version	normally closed
Nominal diameter	5 mm
Vacuum connections (accessories)	<ul style="list-style-type: none"> • Flange fitting DN 10 ISO-KF • Tube connection OD 1/4" • Tube connection OD 6 mm
Power specifications	
voltage	24 VDC ±10%
Power	10 W
Duty cycle	100% (i.e. continuous duty possible)
Type of protection	IP 65 according to DIN 40 050
Conductance for air	
molecular flow	0.3 l/s
laminar flow	3 l/s
Installation angle	any
Switching frequency max.	300 / min ¹⁾
Cycles to first overhaul	≈ 2,000,000 ²⁾
Tightness	1×10 ⁻⁹ mbar l/s
Pressure range	1×10 ⁻⁸ mbar ... 10 bar (absolute)
Pressure difference Δp	
in closing direction	5 bar
in opening direction	1.5 bar
Opens against a pressure difference Δp	1 bar (with 24 VDC)
Closing time	7 ms ¹⁾
Opening time	30 ms ¹⁾
Temperatures	
ambiance	5 °C ³⁾ ... 40 °C
heat generation	60 °C (after 1 1/4 hours on continuous duty)
bakeout with idle coil	120 °C
bakeout without coil	150 °C
Materials	
housing	stainless steel 1.4301
actuator	stainless steel 1.4105
seals	FPM (Viton)
Weight	0.3 kg




¹⁾ With pressure difference Δp = 0

²⁾ Under clean operating conditions

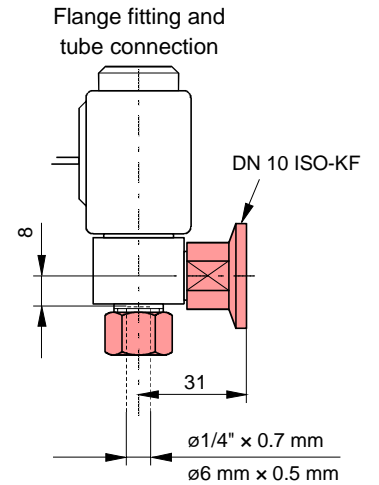
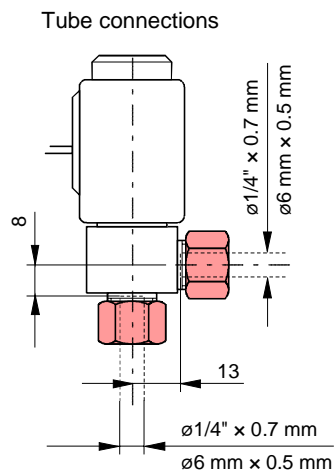
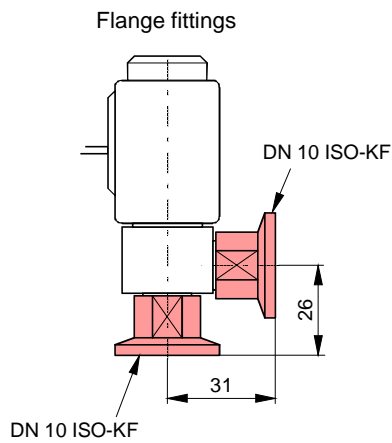
³⁾ -15 °C, if the ambiance is free of condensable gases

Dimensions



-  Flow direction
-  Electrical connection
-  Protective cap (vacuum connection)

Space requirements with accessories (Accessories → 9)



3 Installation

3.1 Vacuum connection

 **Note**



Caution: vacuum component
 Dirt and damages impair the function of the vacuum component.
 When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.


 **Note**



Caution: dirt sensitive area
 Dirt prolongs the pumpdown process.
 Always wear clean, lint-free gloves and use clean tools when working in this area.

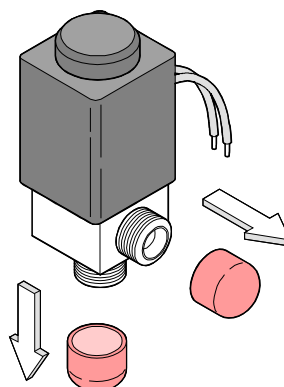
1

Remove the protective caps.

 **Note**

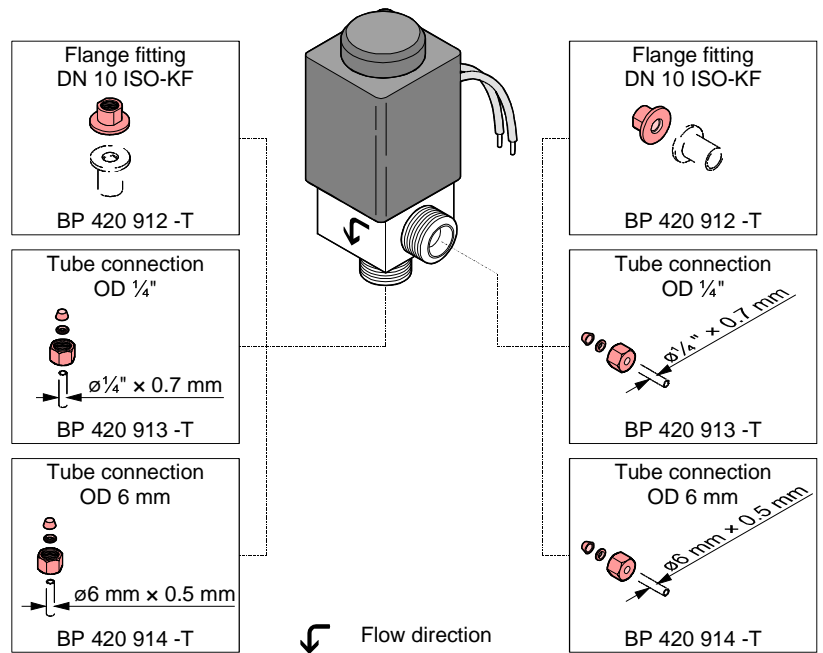


Keep the protective caps and put them in place again when removing the product from the vacuum system.



2 Mount the valve to the vacuum system using an accessory.

Accessories



See separate document for installation of the accessories.
Space requirements with accessories → 7.

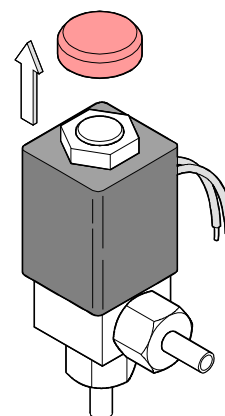
3.2 Electrical connection

Skilled personnel

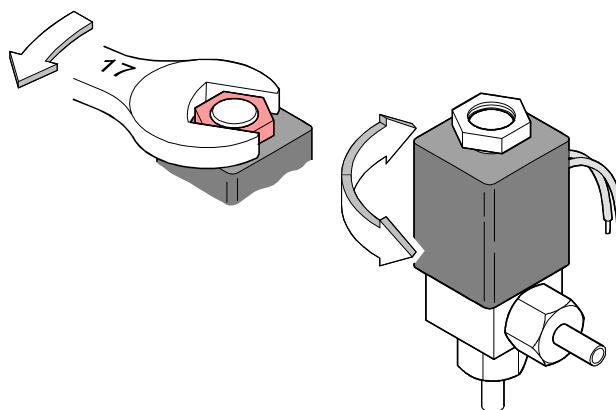
The electrical connection must be established by a skilled electrician.

3.2.1 Bringing the cable strands into the desired position

1 Remove the protective cap.



- 2 Unfasten the hexagon nut and rotate the solenoid coil until the cable strands are in the desired position.



- 3 Tighten the hexagon nut with a torque of $\leq 3 \text{ Nm}$ and place the protective cap.

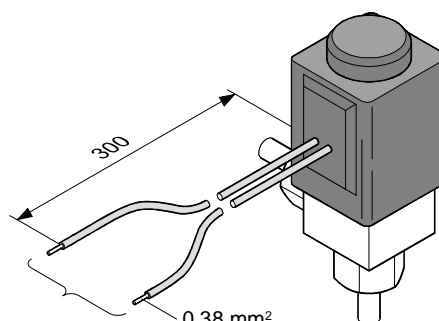
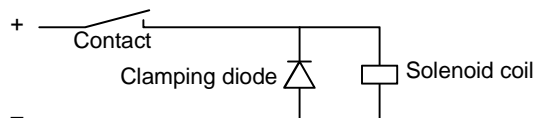
3.2.2 Establishing the electrical connection

The electrical connection is established via the two cable strands. Adhere to the local regulations with regard to the installation.

Note



Caution: switching of inductive loads (solenoid coil)
 Inductive loads may considerably reduce the life of or even destroy contacts.
 Preferably a clamping diode should be connected in parallel to the solenoid coil. The polarity should be chosen in such a way that the diode blocks when the normal operating voltage is applied.



The polarity of the 24 VDC connection need not be considered.

4 Operation

The product is ready for operation as soon as it has been installed.

The EVI 005 M will close, or remain closed, on power loss.

Pressure range 1×10^{-8} mbar ... 10 bar (absolute)

Pressure difference Δp in closing direction

Note

Caution: pressure difference
With $\Delta p > 5$ bar the O-ring of the valve plate can get damaged.
Avoid pressure differences $\Delta p > 5$ bar.

Pressure difference Δp in opening direction

Note

Caution: pressure difference
With $\Delta p > 1.5$ bar the valve is opened.
Avoid pressure differences $\Delta p > 1.5$ bar.

Opens against a pressure difference Δp

Note

Caution: Pressure difference
With $\Delta p > 1$ bar the valve cannot open.
Avoid pressure differences $\Delta p > 1$ bar.

5 Deinstallation



DANGER



Caution: contaminated parts

Contaminated parts can be detrimental to health.

Before you begin to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.



Note



Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.



Note



Caution: dirt sensitive area

Dirt prolongs the pumpdown process.

Always wear clean, lint-free gloves and use clean tools when working in this area.

Preconditions

- Vacuum system vented
- Control system disconnected from the power source

Procedure

1

Disconnect the product from the power source.

2

Disconnect the product from the vacuum system and place the protective caps.

6 Maintenance

Under clean operating conditions the product requires no maintenance during the rated cycle life.

6.1 Cleaning the valve



STOP DANGER

Caution: contaminated parts

Contaminated parts can be detrimental to health.

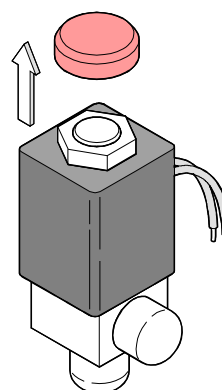
Before you begin to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Precondition

Valve disconnected from the vacuum system (→ 12)

Disassembling the valve

- 1 Remove the protective cap.

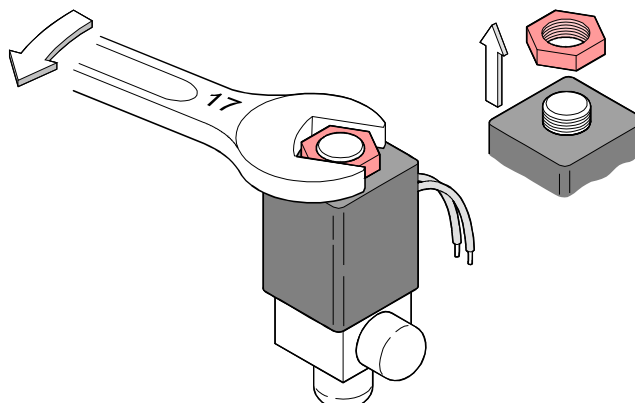


- 2 Unfasten and remove the hexagon nut.

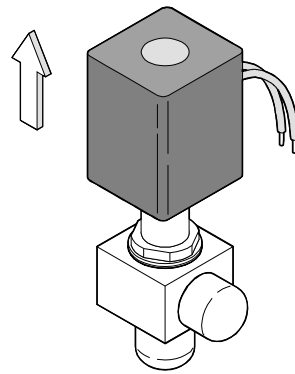
Note



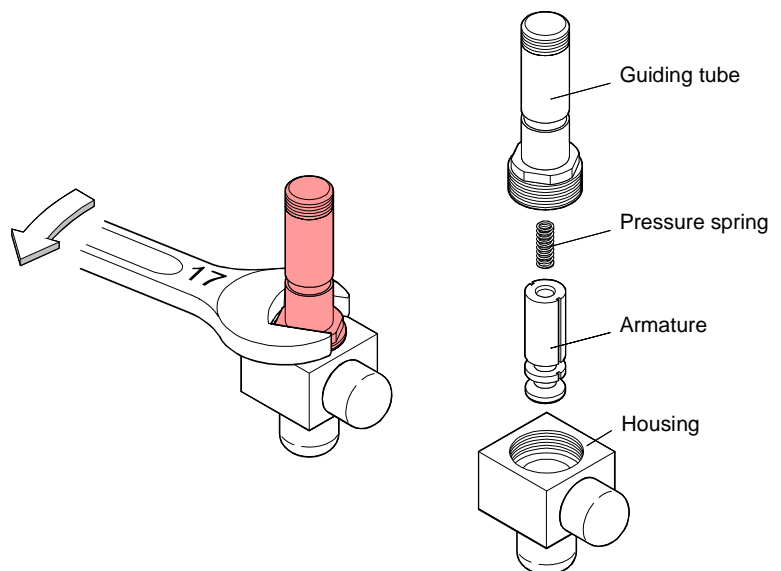
When reinstalling the product, tighten the connection with a maximum torque of 3 Nm. Otherwise the solenoid coil will be damaged.



- 3** Remove the solenoid coil.



- 4** Unscrew the guiding tube and disassemble it.

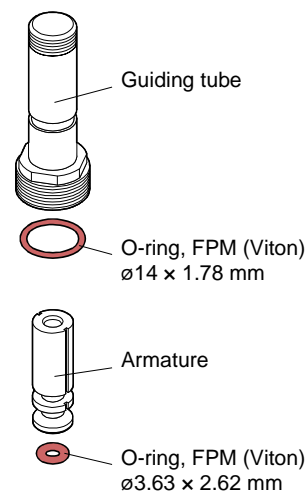


5 Remove the O-rings.

Note



When reinstalling the product, be careful to insert the O-rings level into the grooves without twisting them.



Cleaning the valve

6 Clean the valve.

DANGER



Caution: cleaning agents

Cleaning agents can be detrimental to health and environment. Adhere to the relevant regulations and take the necessary precautions when handling and disposing of cleaning agents. Consider possible reactions with the product materials (→ 6).

- Clean the parts with a grease-solving, non-scouring cleaning agent.
- After cleaning, the parts should preferably be rinsed with alcohol and subsequently heated to $\approx 50^{\circ}\text{C}$ in an oven or with an industrial blower.
- Clean the sealing surfaces with a lint-free cloth soaked with alcohol. Allow them to dry.
- Wipe the O-rings with a lint-free cloth which has been slightly moistened with vacuum oil.

Reassembling the valve

7 Proceed in reverse order to reassemble the valve.

Note



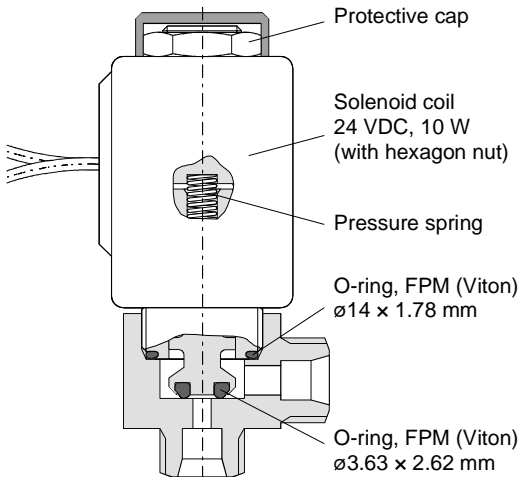
After reassembly, a few switching cycles should be performed in order for the O-rings to perfectly adapt to the sealing surfaces. Take the necessary precautions for this procedure.

7 Spare parts

When ordering spare parts, always indicate:

- all information on the nameplate
- description and ordering number according to the spare parts list.

Spare parts list

Description	Ordering number
<p>Spare parts kit comprising:</p> 	<p>BN 841 320 -T</p>

8 Returning the product

WARNING

Caution: forwarding contaminated products

Products returned to Pfeiffer Vacuum for service or repair should preferably be free of harmful substances (e.g. radioactive, toxic, caustic or microbiological).

Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a completed declaration of contamination.

Products that are not clearly declared as "free of harmful substances" are decontaminated at the expense of the customer.

When returning a product for service, put it in a tight and impact resistant package.

9 Disposal



DANGER

Caution: contaminated parts

Contaminated parts can be detrimental to health.

Before you begin to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Separating the components

After disassembling the product, separate its components according to the following criteria:

Components with exposure to process gases

Components which have been exposed to radioactive, toxic, caustic, or micro-biological process gases must be disposed of in accordance with the relevant national regulations.

Components which have been exposed to other process gases must be separated according to their materials and recycled.

Components without exposure to process gases

Such components must be separated according to their materials and recycled.

Declaration of Contamination


The repair and/or service of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.
 This declaration can only be completed and signed by authorised and qualified staff.

1 Description of product
 Type _____
 Article No. _____
 Serial No. _____

2 Reason for return

3 Operating fluid(s) used

4 Process related contamination of product:

toxic	yes <input type="checkbox"/>	no <input type="checkbox"/>	 *) Products thus contaminated will not be accepted without written evidence of decontamination!
corrosive	yes <input type="checkbox"/>	no <input type="checkbox"/>	
biological hazard	yes <input type="checkbox"/>	no <input type="checkbox"/> *)	
explosive	yes <input type="checkbox"/>	no <input type="checkbox"/> *)	
radioactive	yes <input type="checkbox"/>	no <input type="checkbox"/> *)	
other harmful substances	yes <input type="checkbox"/>	no <input type="checkbox"/>	

5 Harmful substances, gases and/or by-products
 Please list all substances, gases and by-products which may have come into contact with the product:

Trade/Product name Manufacturer	Chemical name (or symbol)	Dangerous material class	Measures if spillage	First aid in case of human contact

6 Legally binding declaration:
 I hereby declare that the information supplied on this form is complete and accurate. The dispatch of the contaminated product will be in accordance with the appropriate regulations covering packaging, transportation and labelling of dangerous substances.

Name of organisation or company _____

Address _____ Post code _____

Phone _____ Telex _____

E-Mail _____

Name _____

Date and legally binding signature _____ Company stamp _____

Copies: Original to manufacturer or representative - 1 copy attach to consignment packaging - 1 copy for file of sender

