

OPERATING INSTRUCTIONS

EN

Original

Z-MANIPULATOR, MOTORIZED

420MZANNH-HHH-m

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.

This operating manual applies to the following products.

Z-axis manipulators with the order numbers

420MZANNN-HHH-m

NNN = Flange size (DN)

HHH = Travel range (mm)

m = motorized

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.

2 Safety

2.1 Safety precautions



Duty to inform

Each person involved in the installation or operation of the unit must read and observe the safety-related parts of these operating instructions.

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



WARNING

Bursting hazard!

The diaphragm bellow may burst if exposed to inadmissible overpressure.

→ Do not connect the manipulator to overpressure vessels which are operated with pressure values exceeding ambient pressure.

2.2 Protective equipment

In certain situations the handling of the product requires wearing of personal protective equipment. The owner, respectively the employer are obligated to provide adequate equipment to any operating persons.



WARNING

Danger to health and environment by hazardous substances or mixtures!

Depending on the process the product may be contaminated by hazardous substances or mixtures.

→ Wear adequate protective equipment during maintenance and repairs or in case of deinstallation.

→ Observe the safety data sheet of the hazardous substance or mixture provided by the respective suppliers.

2.3 Proper use



Commissioning of the partly completed machinery is prohibited

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated, has been declared in conformity with the provisions of the machinery directive 2006/42/EC.

- This product is intended to be attached to a vacuum chamber to become part of a vacuum system.
- Transfer mechanical movement into a vacuum chamber.
- This product is designed to withstand forces which result from an inwards pointing pressure difference (vacuum). Additional or differently pointed forces may damage or destruct the product.
- Linkage of the product with a suitable control system by the user for a targeted function of the product.
- Use within the technical parameters given in chapter „Technical Data“.

2.4 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:

- Operating with overpressure.
- Exceeding the maximum load capacity.
- Usage without installation on a vacuum chamber.

2.5 Partly completed machinery

This Product is a partly completed machinery in terms of the Machinery Directive 2006/42/EC.

Partly completed machinery cannot comply fully with the essential health and safety requirements set out in Annex I of the Machinery Directive 2006/42/EC, since certain of the risks may result from the fact that the machinery is not complete or from the interface between the partly completed machinery and the rest of the machinery or assembly of machinery into which the partly completed machinery is to be incorporated. In this case these requirements are met. The user has to incorporate this product into a vacuum system.

3 Product description

3.1 Product identification

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



Fig. 1: Example for a rating plate

Pfeiffer Vacuum Components & Solutions GmbH
 Anna-Vandenhoeck-Ring 44
 37081 Göttingen/Germany
 T +49 551 999 63-0
 F +49 551 999 63-3010
 service-cs@pfeiffer-vacuum.de
 www.pfeiffer-vacuum.com

3.2 Function

This manipulator is a device which allows for linear movement of applications within a vacuum chamber. Usually the application is fixed to the moveable flange. The distance between the chamber connection flange and the moveable flange is equal to the travel range of the manipulator.

The hermetical sealment is ensured by a diaphragm bellows unit.

The drive unit is a 2-phase stepper motor. The manipulator is equipped with end switches to restrict the movement range. The manipulator is equipped with an electromagnetic brake to hold the position when the stepper motor is switched off (parking position). The brake also acts as an emergency stop in case of an electricity cut.

3.3 Documentation

The documentation of this product contains:

- This manual
- Operating manuals for the individual components
- Declaration of Incorporation according to Machinery Directive 2006/42/EC, Annex II
- Technical layout drawing

3.4 Used terms

Used symbols

The following symbols are used consistently throughout in all illustrations:

- ⚡ Electrical connection
- Ⓜ Chamber connection flange

The following terms are used within this documentation.

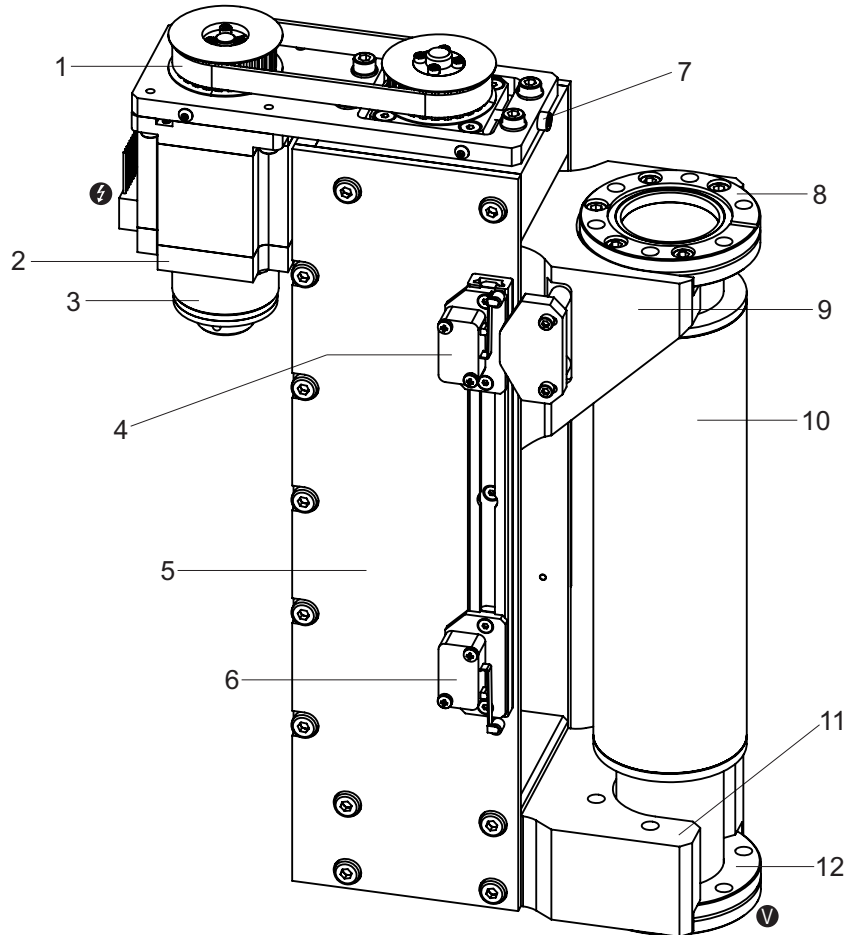


Fig. 2: Manipulator, used terms (view without tooth belt cover)

1	Tooth belt	7	Tooth belt tension adjustment screw
2	Stepper motor	8	Moveable flange
3	Electromagnetic brake	9	Sliding carriage with flange holder
4	Upper end switch	10	Diaphragm bellows
5	Guide girder	11	Flange holder
6	Lower end switch	12	Chamber connection flange

4 Transport and storage

4.1 Transport



WARNING

Risk of injury from falling objects!

Falling objects may result in death or serious injury.

- Carry small and mid-size products two-handed or with two persons.
- Secure products located on higher levels from falling down.
- Carry products > 20 kg by using suitable lifting gear.
- Do not step under elevated loads.
- Wear safety shoes with steel toe cap according to EN 347.

NOTICE

Sensitive parts

The sealing surfaces of the flanges and the diaphragm bellows are sensitive parts and must not be damaged.

- Handle the product with care.
- Use gloves when touching vacuum-related parts.

4.2 Storage

- Check that all the openings of the product are securely closed.
- Store the product in a cool, dry and dust-free place; preferably at room temperatures (approx. 20°C).
 - For a longer period of storage, seal the product in a PE bag with drying agents enclosed.

5 Installation

5.1 Installation location

Observe the following requirements when using the product:

- no outdoor use
- weatherproof place
- not in damp or humid areas
- not in dusty areas

5.2 Preparatory work

→ Check sealing surface of the flanges prior to assembly.

5.3 Vacuum connection



NOTICE

Danger of damage to flange!

Horizontal mounting results in high forces being transferred to the flange.

→ Provide additional measures for horizontal mounting to prevent damage to the flange caused by the product weight (e.g. additional support).



Seals

Please note: Temperature and pressure range are significantly influenced by the seal type.

→ Use metal seals for best possible tightness.

→ Remove locking cap from the vacuum flange.

→ Place copper gasket (not included in the scope of delivery) in the flange of the vacuum chamber.

→ Place chamber connection flange slowly on the flange of the vacuum chamber. Make sure the screw holes are placed onto each other.

→ Fix chamber connection flange with screws and nuts with an appropriate tool. Use washers.

→ Tighten diagonally opposite screws to avoid damage to copper gasket .

5.4 Bellows guidance



NOTICE

Possible damage to the diaphragm bellows!

Diaphragm bellows with a long travel range can bend out during movement and get damaged.

→ Provide internal or external bellows guidance according to the table given below.

Whether an internal or external bellows guidance is necessary can be determined according to the table given below. A distinction is made between the operating conditions with and without vacuum within the diaphragm bellows.

Possible variants for the bellows guidance:

- Internal bellows guidance (e. g. a continuous, even pipe with a maximum surface roughness of $R_a = 0.8$)
- External bellows guidance ex factory (with extra charge)

The external bellows guidance cannot be backfitted.

Order number	Nominal diameter [DN]	Travel range [mm]	Bellows guidance necessary without vacuum	Bellows guidance necessary with vacuum
420MZA040-100-m	DN 40 CF	100	no	no
420MZA040-150-m	DN 40 CF	150	no	no
420MZA040-200-m	DN 40 CF	200	yes	no
420MZA040-300-m	DN 40 CF	300	yes	no
420MZA040-400-m	DN 40 CF	400	yes	yes
420MZA063-100-m	DN 63 CF	100	no	no
420MZA063-150-m	DN 63 CF	150	no	no
420MZA063-200-m	DN 63 CF	200	no	no
420MZA063-300-m	DN 63 CF	300	yes	no
420MZA063-400-m	DN 63 CF	400	yes	no
420MZA100-100-m	DN 100 CF	100	no	no
420MZA100-150-m	DN 100 CF	150	no	no
420MZA100-200-m	DN 100 CF	200	no	no
420MZA100-300-m	DN 100 CF	300	no	no
420MZA100-400-m	DN 100 CF	400	yes	no

Table 1: Note: A distinction is made between the operating conditions with and without vacuum within the diaphragm bellows.

5.5 Adjustment of the end switches



NOTICE

Danger of damage to the drive unit

The end switches must switch off the motor prior to reaching the mechanical end stops. In case the end switches are preconfigured ex works any changes to the end switches will be at the responsibility of the operator.

→ Always configure the end switches so that the motor does not push against the mechanical end stops.

The manipulator is equipped with two end switches to restrict the movement range.

By default the end switches are set for a maximum travel range. For the corresponding distance between the chamber connection flange and the moveable flange please see the chapter "Technical data" or the technical layout drawing.

5.6 Connection to a control system



DANGER

Voltage-bearing elements

Danger to life from electric shock.

- The electrical connection can be carried out only by trained and authorised electricians.
- Disconnect the power supply and secure it against being switched back on.
- Ensure the system is adequately earthed.

The control systems for the electrical drive train have to be configured, programmed and made suitable for the specific circumstances by the manufacturer of the machinery in which this uncompleted machinery is to be incorporated.

An estimation of the safety and reliability of the control system, the safety of the control devices, the starting, the normal stopping, the operational stopping, the emergency stopping and an integration into the safety concept of the final machinery may therefore only be given by the manufacturer of the then completed machinery.

This also applies for safety-related considerations in respect of the selection of the type of control system or operating mode and the case of power supply failure.

Connecting the end switches

The end switches have to be connected to the control system, to allow them to relay the signal to the control system.

- Connect end switches to the control-system.
- Configure control system: the control system has to acquire the signals sent by the end switches.

Brake control system



NOTICE

Danger of overloading the brake!

The brake is only intended for static holding.

- Do not use the brake for braking the movement of the manipulator.

The brake has the following operating conditions:

Supply voltage	Betriebszustand
switched off	Brake closed
switched on	Brake open

The brake has to be connected to a supply voltage of 24 V / 0.5 A.

Note the following points:

- 1) Permanent operation of the brake is possible because of an integrated module which reduces the voltage and therefore prevents inadmissible high temperatures.
- 2) The manipulator (motor drive) should not be slowed down by the brake. The brake is only intended for holding the parking position. Prior to switching off the stepper motor the brake has to be switched off (brake closed). This prevents any movement by the manipulator caused by the force of the vacuum. The brake is then holding the current position of the manipulator.

Motor control system



NOTICE

Danger of damage to the drive unit!

Driving the spindle nut into the mechanical end stops may cause damage to the drive unit.

→ Configure control system so that the number of revolutions of the motor are reduced prior to reaching the end-switches.

The motor has to be connected bipolar (serial or parallel) to a motor control system, suitable for 2-phase stepper motors. The maximum current per phase for a bipolar serial connection must not exceed 1.41 A, the maximum current per phase for a bipolar parallel connection must not exceed 2.82 A.

→ For a configuration of the motor note the data sheet and the torque graph of the manufacturer.

The bipolar parallel connection with 2.8 A and 48 V is recommended to maintain max. torque even with higher revolutions.

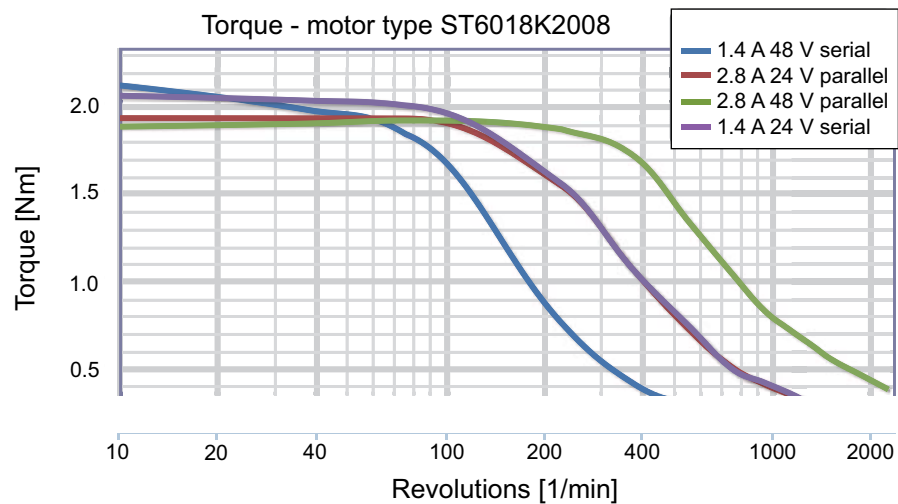


Fig. 3: Motor torque graph

6 Operation

6.1 Before switching on



Commissioning of the partly completed machinery is prohibited

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated, has been declared in conformity with the provisions of the machinery directive 2006/42/EC.



CAUTION

Crushing hazard!

Moving carriage with flange holder may crush fingers.

→ Keep hands clear of moving carriage during operation.



CAUTION

Crushing and entanglement hazard!

Danger of fingers and hands being crushed by moving parts. Danger of hair or loose clothing being entangled by rotating parts.

→ Do not operate Manipulator without tooth belt cover.

→ Do not deviate from the performance data given in the chapter "Technical Data".

→ Observe the maintenance instructions given in the chapter "Maintenance / replacement".

→ Do not bring the product into service if it shows apparent damage.

6.2 Manipulator movement

To move the manipulator observe the following steps.

- Switch on the stepper motor with a holding current. Do not yet execute any steps.
- Open the brake (switch on supply voltage).
- Move the manipulator with the stepper motor.

The brake may be reactivated after the movement of the manipulator (supply voltage switched off) so holding the motor with the holding current is not necessary any more.

6.3 Bakeout

We recommend the following procedures for baking out the product.



Bakeout

Please note: The service life of the diaphragm bellows can be increased if the diaphragm bellows does not get baked out while being compressed.

→ Extend the manipulator to at least 2/3 of the travel range before baking out.

→ Bake out vacuum-relevant parts with heating sleeve.

For the following parts a baking temperature of max. 80 °C has to be kept (see chapter "Technical data"):

- Motor unit with tooth belt
- End switches

These parts can be removed (see chapter "Maintenance / replacement").

7 Maintenance / replacement

7.1 Precautions



NOTICE

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.



DANGER

Voltage-bearing elements!

Danger to life from electric shock.

- Work on electrical installations may be carried out by trained and authorised electricians only.
- Disconnect the power supply and secure it against being switched back on.



CAUTION

Crushing and entanglement hazard!

Crushing and entanglement hazard caused by moving transmission parts. Danger of fingers being crushed by carriage with flange holder.

- Disconnect the manipulator from the power supply before beginning maintenance.
- Vent the vacuum chamber before beginning maintenance.
- Make sure the manipulator does not carry any loads.

7.2 Tools and lubricants

The following tools are needed for maintenance:

- Hexagon socket wrench set

The following greases are needed for the maintenance of the manipulator:

Part	Grease	Order number
Guidance rail and spindle	Spindle grease (or any other grease based on Perfluoropolyether with Polytetrafluorethylen-thickener).	YFG-M08



Remove tooth belt cover

The screws only have to be loosened to remove the tooth belt cover. The screws do not have to be removed completely.

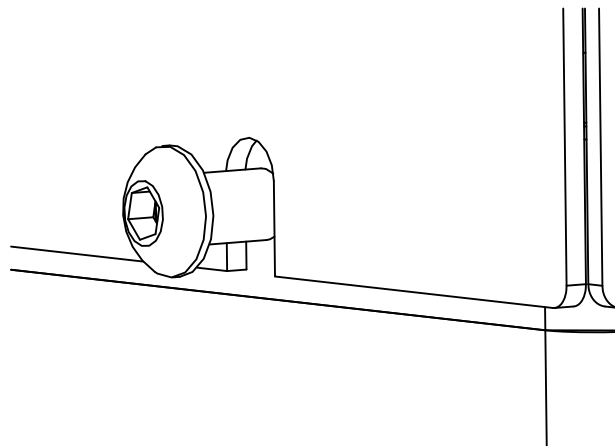


Fig. 4: Tooth belt cover

7.3 Intervals for inspection

Depending on the process, the required replacement intervals for lubricants and the intervals for inspection, maintenance and overhaul may be shorter than the guide values specified in the table. Consult with the manufacturer, if necessary.

Checklist for inspection, maintenance and overhaul

Part	Activity	after ... working hours	at latest
Whole manipulator	Visual inspection for alterations or damaged parts		after 2 months
Spindle	Check greasing, regrease if necessary	1,000	after 2 months
Guidance rail	Check greasing, regrease if necessary	1,000	after 2 months
Tooth belt	Visual inspection for cracks	1,000	after 2 months
	Check belt tension		

Checking tooth belt tension

For checking the tooth belt tension observe the following steps.

- Remove tooth belt cover.
- Press tooth belt gently with one finger.

The tooth belt should not yield more than 2-3 mm. If the tooth belt tension is too low the tension should be adjusted.

Adjust tooth belt tension

Adjust the tooth belt tension as follows.

- Remove tooth belt cover.
- Loosen drive unit holder screws (do not remove screws).
- Adjust tooth belt tension with a suitable hexagon socket wrench via the adjustment screw.
- Check tooth belt tension as described above.

Tooth belt replacement

A tooth belt replacement is not necessary within the life cycle of the manipulator. Should a tooth belt replacement however become necessary observe the following steps.

- Remove tooth belt cover.
- Loosen the four screws of the drive unit holder (do not remove the screws completely).
- Loosen the tooth belt tension adjustment screw (do not remove the screw completely).
- Slide the stepper motor together with the drive unit holder in the direction of the guide girder.
- Loosen the screws of the motor-pulley tensioner for about 2 mm (do not remove the screws completely).
- Remove one of the screws and put it into the thread of the pulley. Loosen the shaft-hub connection.
- Pull off the motor-pulley together with the tooth belt.
- Put a new tooth belt onto the motor-pulley.
- Put the motor-pulley together with the new tooth belt back in place.
- Slide the tooth belt over the second pulley.
- Tighten the screws of the motor-pulley tensioner.
- Slide the stepper motor together with the drive unit holder away from the guide girder.
- Tighten the tooth belt with the adjustment screw.
- Tighten the four screws of the drive unit holder.
- Mount the tooth belt cover.

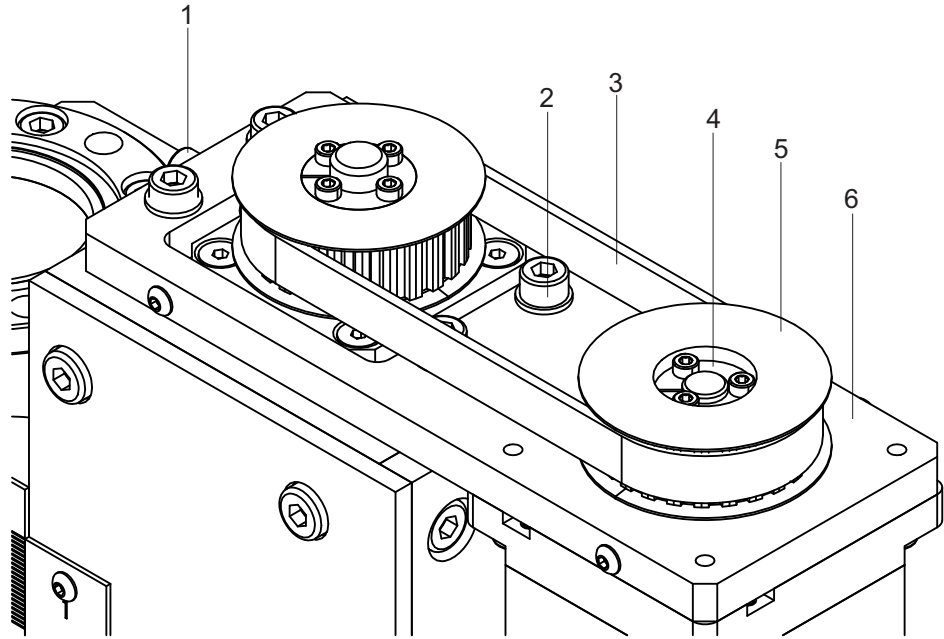


Fig. 5: Tooth belt (view without tooth belt cover)

- | | | | |
|---|-------------------------------------|---|-------------------------------|
| 1 | Tooth belt tension adjustment screw | 4 | Tensioner of the motor-pulley |
| 2 | Drive unit holder screws (4 pieces) | 5 | Motor-pulley |
| 3 | Tooth belt | 6 | Drive unit holder |

7.4 Accessories

Designation	Order number
Copper gasket, OFHC-copper, DN 100 CF	490DFL100-S10
Copper gasket, OFHC-copper, DN 63 CF	490DFL063-S10
Copper gasket, OFHC-copper, DN 40 CF	490DFL040-S10
Spindle grease	YFG-M08

7.5 Spare parts

The manipulator was designed in a way which allows for an easy replacement of the diaphragm bellows.

We recommend to send in the product for repairs or parts replacements (see chapter "Service").

Spare parts:

- Diaphragm bellows
- Spindle
- Motor unit with tooth belt

8 Decommissioning

8.1 Dismantling

Observe the same measures and rules given in the chapters "Transport and storage" and "Installation" accordingly for a dismantling.

8.2 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.

9 Service

Maintenance and repairs

Please direct service requests concerning this product towards:

Pfeiffer Vacuum Components & Solutions GmbH
Anna-Vandenhoeck-Ring 44
37081 Göttingen/Germany
T +49 551 999 63-0
F +49 551 999 63-3010
service-cs@pfeiffer-vacuum.de

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

- Download the form "Declaration on Contamination".¹⁾
- Fill in the contamination declaration and enclose it in the shipment (required!).
- Dismantle all accessories.
- Drain operating fluids/lubricants.
- Send the product in its original packaging if possible.

Depending on the process the product may be contaminated by hazardous substances or mixtures in the meaning of Regulation (EC) 1272/2008, such as toxic, corrosive, flammable or carcinogen.

- No products will be accepted if they are contaminated with micro-biological, explosive or radioactive substances.
- If products are contaminated or the declaration on contamination is missing, we will perform a decontamination at the shipper's expense.

Sending of contaminated products

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

For further information, addresses and forms please visit

www.pfeiffer-vacuum.com

¹⁾ Forms under www.pfeiffer-vacuum.com

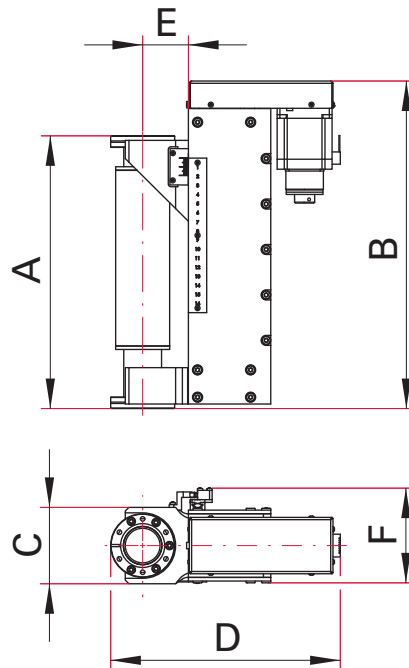
10 Technical data and dimensions

10.1 Technical data

Mounting		Unit	
Installation location			no outdoor use, weatherproof place, not in damp or humid areas, not in dusty areas
Mounting orientation			any
Operating conditions		Unit	
Pressure range	hPa		$1 \cdot 10^{-10}$ to ambient pressure
Tightness	Pa m ³ /s		$1 \cdot 10^{-11}$
Operating temperature	°C		-10 to 50
Bakeout temperature without electric parts	°C		max. 230
Bakeout temperature with electric parts	°C		max. 80
Technical parameter		Unit	
Nominal diameter			See order number: 420MZANNN-HHH-m NNN = Nominal diameter (DN)
Travel range	mm		See order number: 420MZANNN-HHH-m HHH = Travel range
Resolution	µm		1.25 (at 1/8 motor step)
Repeatable precision	µm		1.25 (at 1/8 motor step)
Pitch of the ball screw drive	mm/rotation		2
Maximum load capacity	kg		25
Inner diameter			DN 40: 38 mm; DN 63: 65 mm; DN 100: 102 mm
Service life	cycles		Min. 10,000 at full deflection (bellows easy to replace)
Materials			Stainless steel (diaphragm bellows: 316L, flange and tube: 304L, housing: 304)
Electrical connection data		Unit	
Power consumption			Motor: 4,8 V DC, max. 2,8 A/ Phase bipolar parallel; brake: 24 V DC, 0,5 A
Motor version			2-phase stepper motor

For up-to-date datasheets please visit www.pfeiffer-vacuum.com (Products).

10.2 Dimensions



Nominal diameter [DN]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	Order number
DN 40 CF	150 to 250	310	84	251	50	104	420MZA040-100-m
DN 40 CF	150 to 300	360	84	251	50	104	420MZA040-150-m
DN 40 CF	165 to 365	425	84	251	50	104	420MZA040-200-m
DN 40 CF	190 to 490	550	84	251	50	104	420MZA040-300-m
DN 40 CF	220 to 620	680	84	251	50	104	420MZA040-400-m
DN 63 CF	150 to 250	310	128	293	70	104	420MZA063-100-m
DN 63 CF	150 to 300	360	128	293	70	104	420MZA063-150-m
DN 63 CF	165 to 365	425	128	293	70	104	420MZA063-200-m
DN 63 CF	190 to 490	550	128	293	70	104	420MZA063-300-m
DN 63 CF	220 to 620	680	128	293	70	104	420MZA063-400-m
DN 100 CF	190 to 290	350	176	343	91	126	420MZA100-100-m
DN 100 CF	190 to 340	400	176	343	91	126	420MZA100-150-m
DN 100 CF	190 to 390	450	176	343	91	126	420MZA100-200-m
DN 100 CF	190 to 490	550	176	343	91	126	420MZA100-300-m
DN 100 CF	212 to 612	672	176	343	91	126	420MZA100-400-m

Einbauerklärung *Declaration of Incorporation*

nach Richtlinie 2006/42/EG, Anhang II, Nr. 1 B
according to Directive 2006/42/EC, Annex II, No. 1 B

Die speziellen technischen Unterlagen gemäß Anhang VII Teil B wurden erstellt.

The relevant technical documentation is compiled in accordance with part B of Annex VII.

Hiermit erklären wir, dass das unten aufgeführte Produkt eine unvollständige Maschine nach Artikel 2g ist und ausschließlich zum Einbau in oder zum Zusammenbau mit einer anderen Maschine oder Ausrüstung vorgesehen ist. Diese unvollständige Maschine ist in Übereinstimmung mit den Bestimmungen der folgenden EG-Richtlinien:

We hereby declare that the product specified below is partly completed machinery according to Article 2g and is exclusively intended for incorporation in or with other machinery or equipment. The partly completed machinery specified below is also in compliance with the provisions of the following EC-directives:

Bevollmächtigt, die speziellen technischen Unterlagen gemäß Anhang VII B zusammenzustellen ist:

Authorised to compile the relevant technical documentation according to Annex VII B is:

Pfeiffer Vacuum Components & Solutions GmbH
Anna-Vandenhoeck-Ring 44
37081 Göttingen

Auf begründetes Verlangen werden die speziellen Unterlagen zu der unvollständigen Maschine an die zuständige Behörde elektronisch übermittelt.

In response to a reasoned request by the national authorities, relevant information on the partly completed machinery will be transmitted electronically.

Beschreibung und Identifizierung der unvollständigen Maschine:

Description and identification of the partly completed machinery:

UHV-Z-Achsen Manipulator mit Schrittmotorantriebseinheit zur Einbindung in ein Vakuumsystem
UHV Z-Axis Manipulator with stepper motor drive unit to be incorporated into a vacuum system
Artikel-Nr./order no.: 420MZANNN-HHH-m (NNN=Nennweite/nominal diameter; HHH=Hubweg/travel range)

Folgende grundlegende Sicherheits- und Gesundheitsschutzanforderungen gemäß Anhang I dieser Richtlinie kommen zur Anwendung und wurden eingehalten:

The following essential health and safety requirements according to Annex I of this directive are applicable and have been fulfilled:

1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.3.8.1, 1.5.8, 1.7.4, 1.7.4.1

Diese unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die diese unvollständige Maschine eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated, has been declared in conformity with the provisions of the machinery directive.

Göttingen, 25.07.2017

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