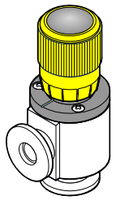
# Dosing Valve

manually actuated

21120-..01-000.

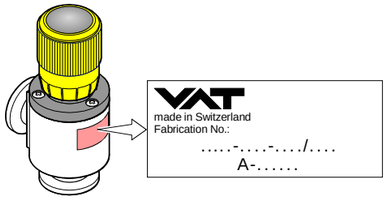


Operating Manual

601316EA (1305)

## Product Identification

In all communications with VAT, please specify the information on the product nameplate. For convenient reference copy that information into the space provided below.




## Validity

This document applies to products with part number 21120-..01-000..

The part number (No.) can be taken from the product nameplate.

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

All dimensions in mm.

## Intended Use

The coarse dosing valve 21120-..01-000. is used

- for admitting a reproducible flow of gas into a vacuum system
- for slow venting of a vacuum system.

## Functional Principle

A spindle drive converts the rotation of the rotary knob into a linear movement for opening and closing the valve.

## Safety

### Symbols Used

**DANGER**

Information on preventing any kind of physical injury.

**WARNING**

Information on preventing extensive equipment and environmental damage.

**Caution**

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

### 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.

### General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
  Consider possible reactions between the materials (→ "Technical Data") and the process media.
- 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 beginning 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.

### Liability and Warranty

VAT 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 interventions (modifications, alterations etc.) on 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.

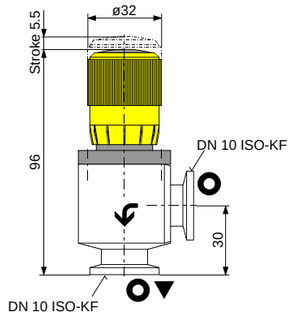
## Technical Data

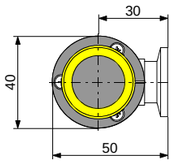
| | |
|---|---|
| Vacuum connection | DN 10 ISO-KF |
| Conductance for air<br>At 1 mbar<br>At $10^{-2}$ mbar | <br>≤1.5 l/s<br>≤0.65 l/s |
| Mounting orientation | any |
| Cycles to first maintenance | ≈200'000 cycles [1] |
| Gas flow | 40 … 1700 mbar l/s |
| Tightness | $1\times10^{-8}$ mbar l/s |
| Pressure range | $1\times10^{-7}$ mbar … 4 bar (absolute) |
| Pressure difference Δp<br>In closing direction<br>In opening direction | <br>3 bar<br>4 bar |
| Opens against Δp | 3 bar |
| Number of rotations through the range of movement | ≈3.5 |
| Temperatures<br>Ambiance<br>Bakeout (housing) | <br>5 [2] … 40 °C<br>100 °C |
| Materials<br>Housing<br>Valve plate<br>Seals | <br>aluminum<br>stainless steel 1.4301<br>FPM |
| Weight | 0.2 kg |

1) Under clean operating conditions.

2) –15 °C, if the ambiance is free of condensable gases.

Dimensions [mm]



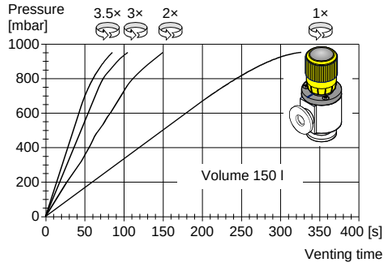




Preferred flow direction

Protective lid

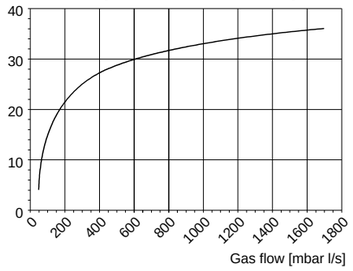
Valve seat side

Venting time




**Gas flow (average [3])**

Scale divisions [1 rotation = 12 scale divisions]




3) Due to mechanical tolerances, variations of up to a factor of 2 are possible.

## Installation

**DANGER**

Caution: overpressure in the vacuum system >1 bar

Injury caused by released parts and harm caused by escaping process gases can result if clamps are opened while the vacuum system is pressurized.

Do not open any clamps while the vacuum system is pressurized. Use the type clamps which are suited to overpressure.

**Caution**

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.

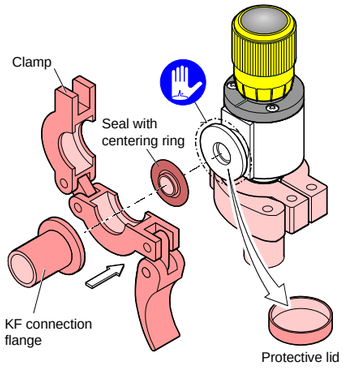
**Caution**

Caution: dirt sensitive area

Touching the product or parts thereof with one's bare hands increases the desorption rate.

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

Remove protective caps and make vacuum connection.




Keep the protective lids.

## Operation

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

Factory-set valve position: slightly opened.

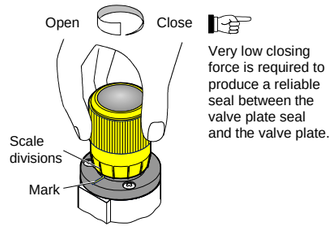
**Caution**

Caution: high sealing pressure

A too high pressure when closing may damage the product.

Do not use unnecessarily high sealing pressure.

The valve position can be read on a scale with 12 divisions per rotation.




Very low closing force is required to produce a reliable seal between the valve plate seal and the valve plate.

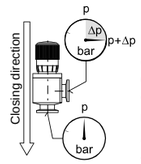
Pressure difference Δp in closing direction

**Caution**

Caution: pressure difference

With Δp > 3 bar the valve may start leaking.

Avoid pressure differences Δp > 3 bar.



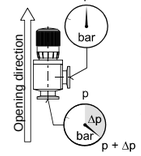

Pressure difference Δp in opening direction

**Caution**

Caution: pressure difference

With Δp > 4 bar the valve plate may lift.

Avoid pressure differences Δp > 4 bar.




Opens against a pressure difference Δp

**Caution**

Caution: pressure difference

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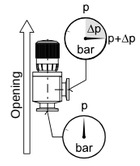



## Deinstallation

**DANGER**

Caution: contaminated parts

Contaminated parts can be detrimental to health and environment.

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

**Caution**

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.

**Caution**

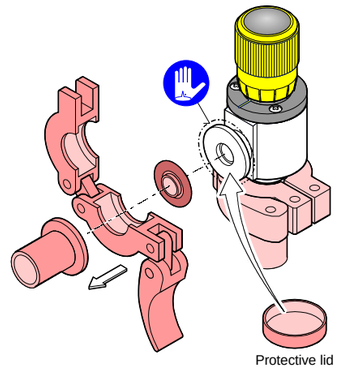
Caution: dirt sensitive area

Touching the product or parts thereof with one's bare hands increases the desorption rate.

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

Vacuum system is vented.

Remove valve from vacuum system and place the protective lids.



## Maintenance / Repair

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

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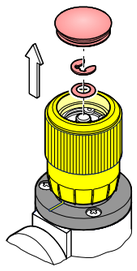
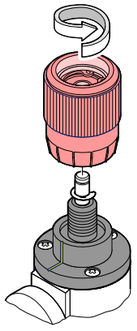
The valve has been removed from the vacuum system (→ "Deinstallation").

❶ Remove cap and circlip

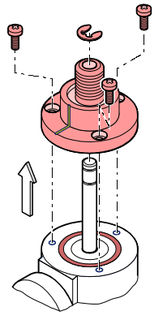


❷ Remove rotary knob

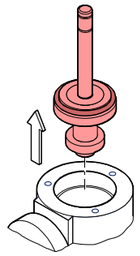


The sliding fit makes it more difficult to remove the rotary knob.

❸ Remove flange cover

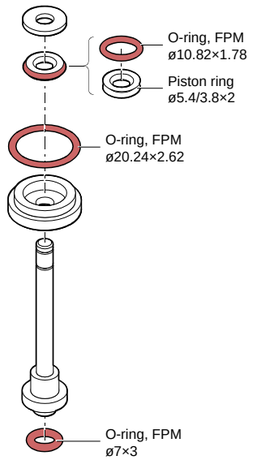


❹ Remove the valve plate



❺ Disassemble valve plate

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




❻ Clean valve

**DANGER**

Caution: cleaning agents

Cleaning agents can be detrimental to health and environment.

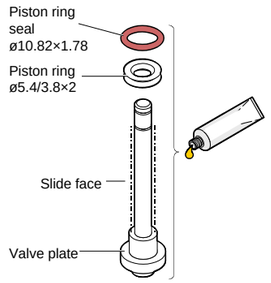
Adhere to the relevant regulations and take the necessary precautions when handling and disposing of cleaning agents. Consider possible reactions with the product materials (→ "Technical Data").

- Carefully clean the parts with a grease solving, non-scouring cleaner.
- After cleaning the parts should preferably be rinsed with alcohol and subsequently heated to ≈50° C in an oven or with an industrial blower.
- Carefully clean the sealing surfaces with a lint-free cloth soaked with alcohol. Allow them to dry.

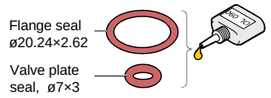
❼ Proceed in reverse order to reassemble the valve

**Vorsicht**

Before reassembling the valve, slightly lubricate the slide face, piston ring and piston ring seal with high vacuum lubricant (583409) ...




... and wipe the flange and valve plate seals with a lint-free cloth moistened with high vacuum oil (583413).




## Accessories

| | Ordering number |
|---|---|
| High vacuum lubricant | 583409 |
| High vacuum oil | 583413 |

## Spare Parts

When ordering spare parts, always indicate:

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

| | Ordering number |
|---|---|
| *Seal kit*<br>comprising<br>1 O-ring, FPM60, ø7×3<br>1 O-ring, FPM75, ø10.82×1.78<br>1 O-ring, FPM75, ø20.24×2.62<br>1 piston ring, Kl 6, ø5.4/3.8×2 | 579031 |

## Returning the Product

**WARNING**

Caution: forwarding contaminated products

Contaminated products (e.g. radioactive, toxic, caustic or microbiological hazard) can be detrimental to health and environment.

Products returned to VAT should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination. The form can be downloaded from our website www.vatvalve.com.

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

Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

## Disposal

**DANGER**

Caution: contaminated parts

Contaminated parts can be detrimental to health and environment.

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

**WARNING**

Caution: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations.

Separating the components

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

- Contaminated components

  Contaminated components (radioactive, toxic, caustic, or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

- Other components

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